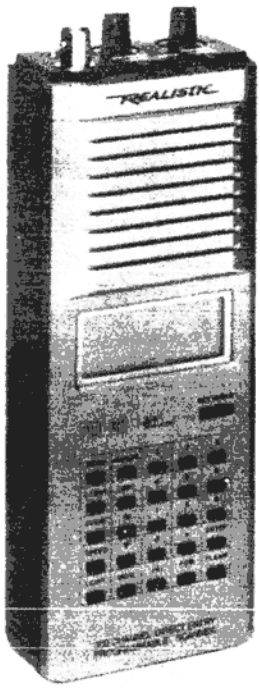
REALISTIC®

Service Manual

20-133

PRO-32
PORTABLE SCANNER
VHF/UHF AM/FM RECEIVER

Catalog Number: 20-133



CUSTOM MANUFACTURED FOR RADIO SHACK, A DIVISION OF TANDY CORPORATION

CONTENTS

SPECIFICATIONS

Description	Nominal spec.	Limit spec.
Frequency Coverage		
VHF LOW (or MID*)		30 ~ 54 MHz 5 kHz steps * or 68 ~ 88 MHz 5 kHz steps
AIRCRAFT		108 ~ 136 MHz 25 kHz steps
VHF HIGH		138 ~ 174 MHz 5 kHz steps
UHF		380 ~ 512 MHz 12.5 kHz steps
Sensitivity (20 dB S/N)		
FM: 3 kHz DEV. at 1 kHz		
AM: 60 % MOD. at 1 kHz		
VHF LOW (or MID*) FM	0.6 μV (1.0 μV*)	2 μV
AIRCRAFT AM	2.0 μV	5 μV
VHF HIGH FM	1.0 μV	3 μV
UHF FM	1.0 μV	4 μV
Selectivity — 6 dB	±9 kHz	±12 kHz
—50 dB	±15 kHz	±18 kHz
Spurious Rejection		
at 40 MHz (or 78 MHz*)	50 dB	40 dB
at 120 MHz	50 dB	40 dB
at 154 MHz	50 dB	40 dB
at 450 MHz		Not specified
(except primary image)		
IF Rejection 10.7 MHz	50 dB	40 dB
Modulation Acceptance (EIA RS-204-A)	±8 kHz	±5 kHz
Signal to Noise Ratio		
VHF LOW (or MID*)	45 dB	30 dB
AIRCRAFT	35 dB	25 dB
VHF HIGH	45 dB	30 dB
UHF	35 dB	25 dB
Residual Noise (Vol. Min)	3 mV	5 mV
Scanning Rate Fast	8 channels/sec.	6 ~ 10 channels/sec.
Slow	4 channels/sec.	3 ~ 5 channels/sec.
Search Rate Fast	8 steps/sec.	6 ~ 10 steps/sec.
Slow	4 steps/sec.	3 ~ 5 steps/sec.
Priority Sampling	2 sec.	1 ~ 3 sec.
Scan Delay Time	2 sec.	1 ~ 3 sec.
Audio Output Power	300 mW	200 mW

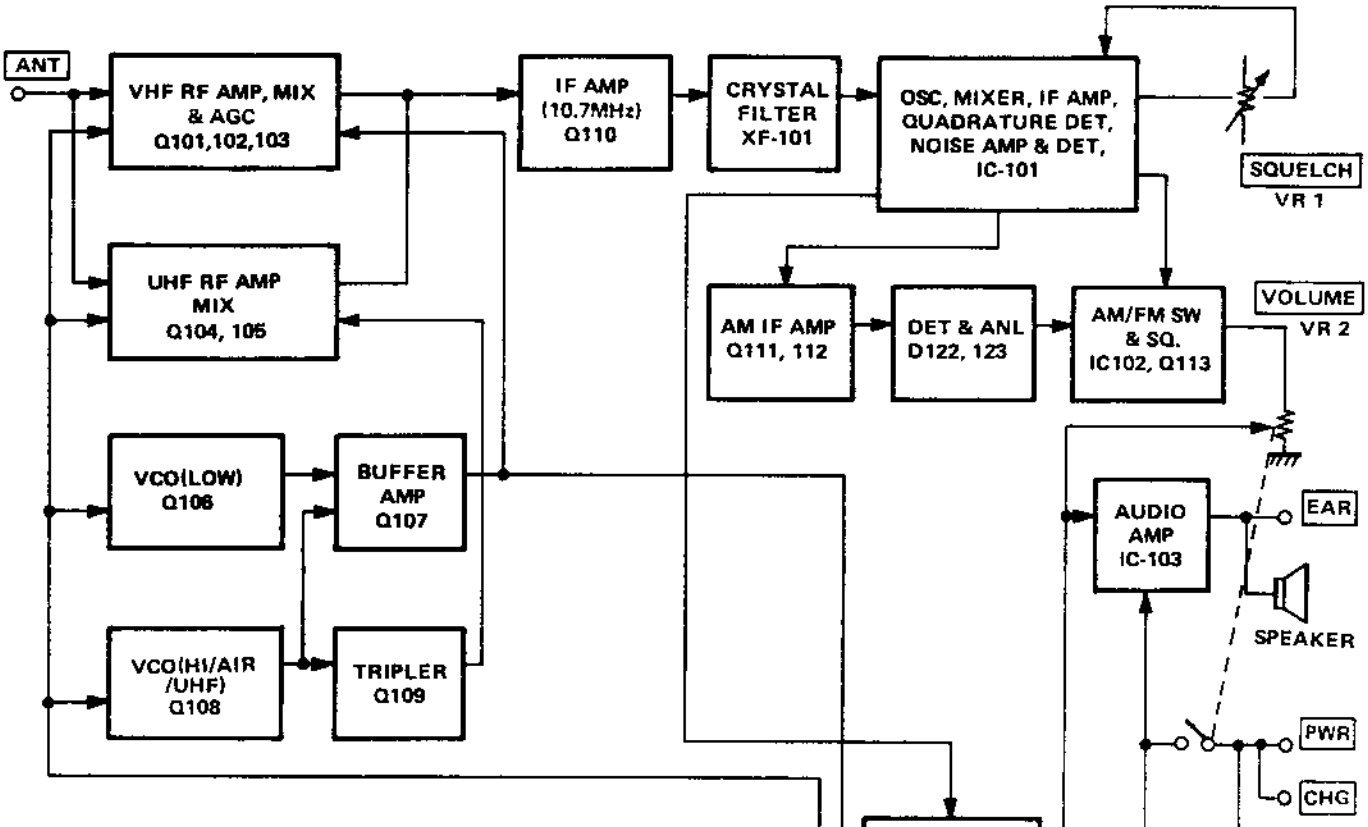
Channels of Operation	Any 200 channels in any band combination
Channel, Frequency and Mode Display	Liquid crystal display
Receiving System	Direct Key entry Digital-Controlled Synthesizer, Superheterodyne 1st IF: 10.7 MHz 2nd IF: 455 kHz
Power Source	9 V DC negative ground only 6 AA batteries or a suitable adapter
Jacks	Antenna, Earphone, External Power and Charge

NOTE: *Nominal Specs represent the design specs: all units should be able to approximate these — some will exceed and some may drop slightly below these specs. Limit Specs represent the absolute worst condition that still might be considered acceptable; in no case should a unit perform to less than within any Limit Spec.*

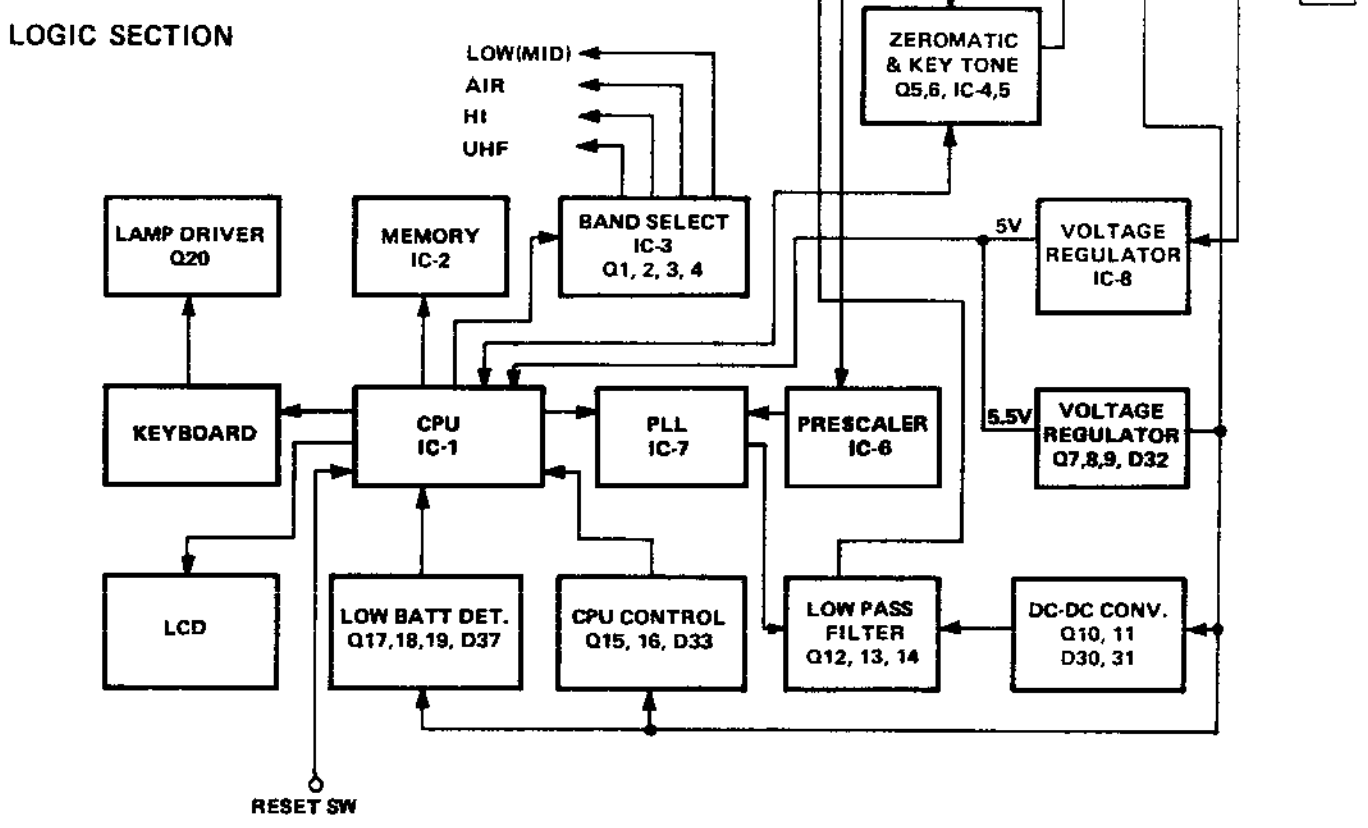
** VHF MID (68 ~ 88 MHz) range is for European and Australian Models only.*

BLOCK DIAGRAM

LINEAR SECTION



LOGIC SECTION



PRINCIPLES OF OPERATION

The PRO-32 is a PLL (Phase Locked Loop) Synthesized VHF/UHF AM/FM Receiver, controlled by a CPU (Central Processing Unit) via the keyboard.

The VHF Low Band (30 ~ 54 MHz) or Mid Band (68 ~ 88 MHz) and High Band (138 ~ 174 MHz) are received in 5 kHz increments. Aircraft Band (108 ~ 136 MHz) is set up for 25 kHz increments, and the UHF Band (380 ~ 512 MHz) for 12.5 kHz increments.

Receiving frequency range, frequency determination, scanning speed, delay time, etc., are all functions controlled by the CPU. The CPU is able to do only the assigned functions, and no modification of the CPU is feasible.

The following paragraphs explain the operation of the circuit in terms of the functional blocks:

A varactor (variable capacitance diode) tuning ("Automatic Tuning System") is employed on all Bands.

Field-effect transistors (FET) are used in the RF/MIX circuits of Low (Mid), High and Aircraft Bands, to achieve optimum mix-modulation and mutual-modulation characteristics.
Q110 amplifies the 10.7 MHz IF.
A 10.7 MHz monolithic Crystal Filter is incorporated for better selectivity.

IC-101 contains the Local Oscillator, Mixer, IF Amplifier, Quadrature FM Detector, Noise Amplifier and DC amplifier. A Crystal Oscillator produces 10.245 MHz, which mixed with 10.7 MHz, resulting in 455 kHz IF. A 455 kHz Ceramic filter is provided to increase selectivity. The 455 kHz IF is amplified in the IF Amp stage, and a Quadrature FM Detector detects it to an audio signal. A portion of the 455 kHz Ceramic Filter output is picked up, amplified and detected by the AM IF Amp, which consists of Q111 and Q112 and is then applied to the next stage via the ANL circuit.

Detected output of AM and FM is applied to IC103. IC103 amplifies audio signals and feeds them to the speaker.

The Zeromatic circuit consists of IC-4, 5 and Q5, 6 and functions in the search mode.

IC-1 is the CPU. The CPU does data processing, calculation, etc. Any unstable supply voltage (V_{DD}) to the CPU can produce CPU malfunctions, such as wrong data processing, wrong data transfer, etc. To overcome this C10 and R51 "initialize" the CPU. Initialization is done when RESET switch pushed. Figure A shows initializing waveform.

The CPU contains two clocks. One produces the waveform shown in Fig. B at Pins 49 and 50, which is used for program functioning. The other waveform, which appears at Pins 3 and 4, is derived from X-2 (32.768 kHz) which is used to determine Delay time, LCD display, etc. (Shown in Fig. C).

IC7 is the PLL frequency synthesizer. The VCO output is 1/64 or 1/65 divided by Pre-scaler IC6. The output of Pins 15 and 16 of IC7 is applied to the VCO control via the Low Pass Filter (Q12, 13, 14).

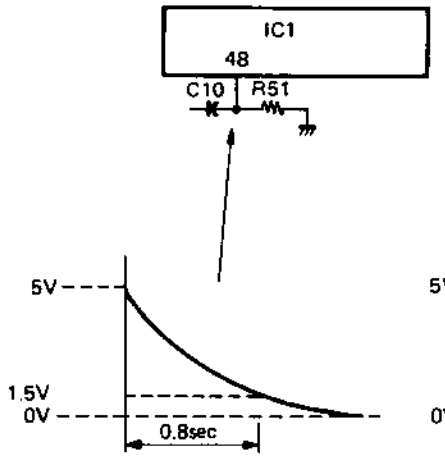


Figure A

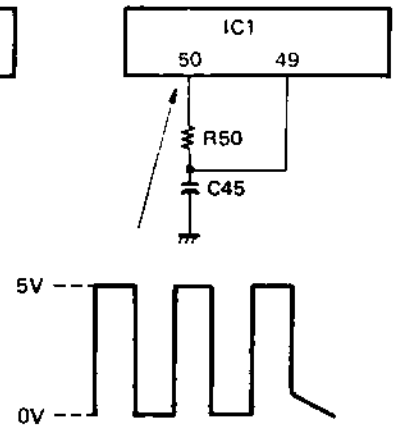


Figure B

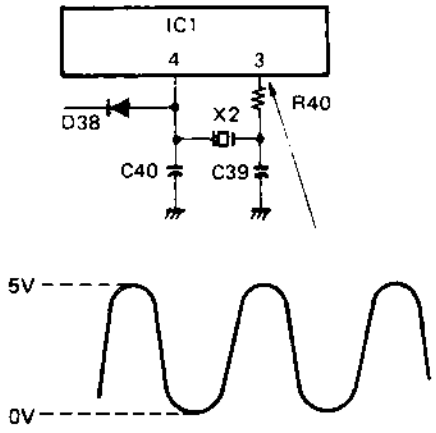
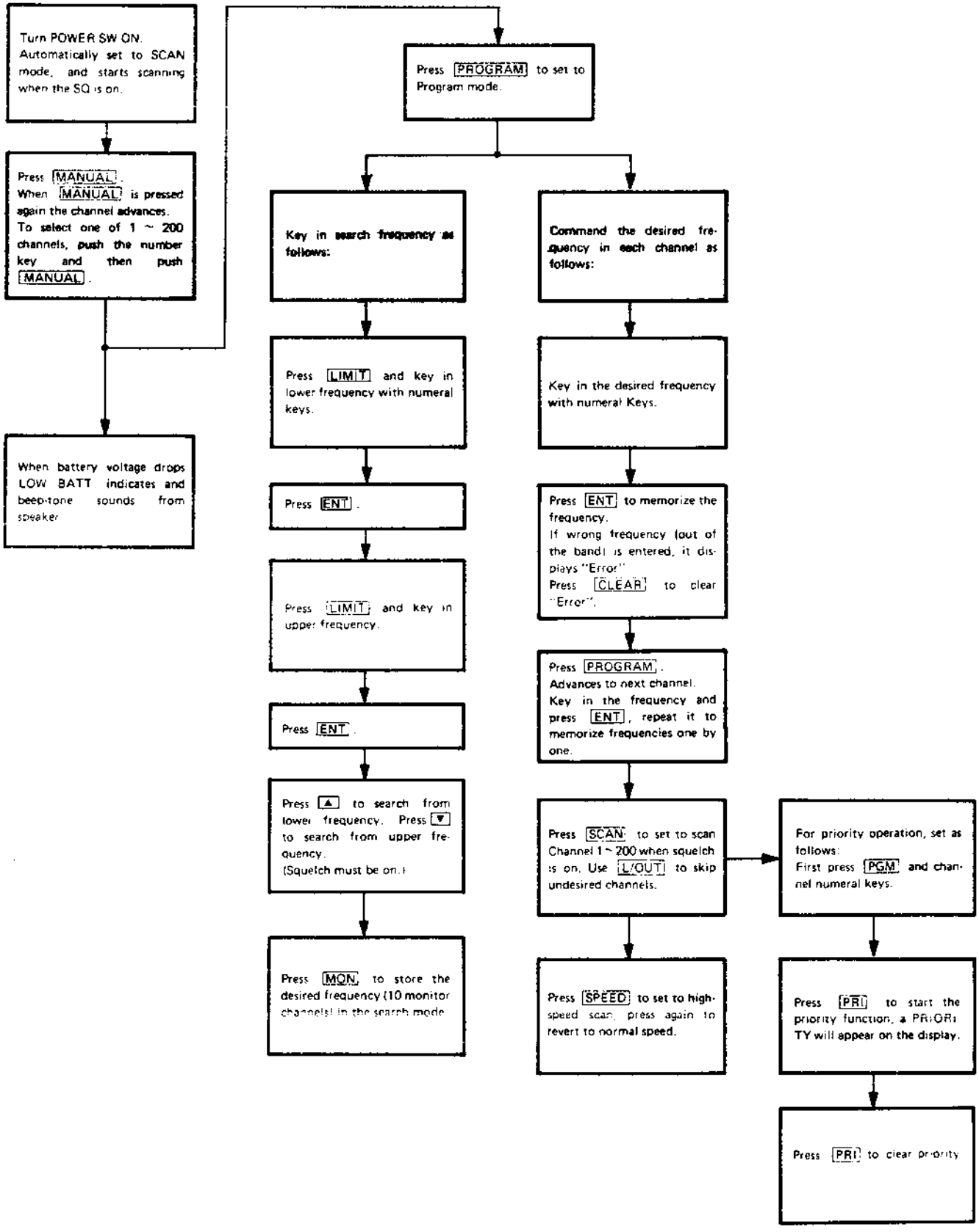


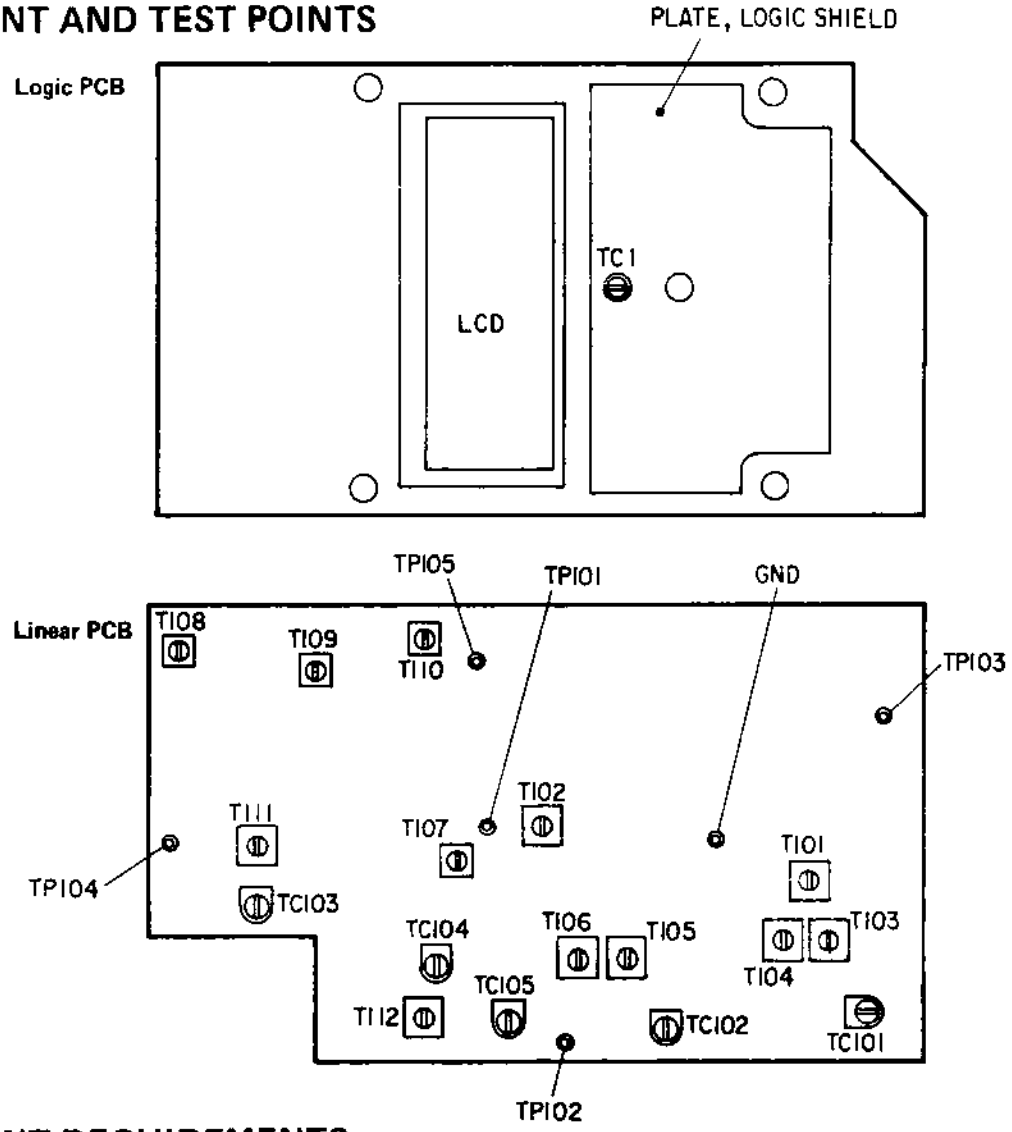
Figure C

GENERAL OPERATION OUTLINE



ALIGNMENT

ALIGNMENT AND TEST POINTS



ALIGNMENT REQUIREMENTS

Test equipment

1. Oscilloscope (0 ~ 500 kHz, 0 ~ 50 MHz)
2. AC SSVM
3. DC SSVM
4. Frequency Counter (200 MHz)
5. 8-ohm dummy load
6. Slow Sweep Generator with variable marker (10.7 MHz)
7. VHF Sweep Generator with variable marker (30 ~ 54 MHz, 108 ~ 174 MHz)
8. UHF Sweep Generator with variable marker (380 ~ 512 MHz)
9. FM Signal Generator (30 ~ 54 MHz, 138 ~ 174 MHz, 380 ~ 512 MHz)
10. AM Signal Generator (108 ~ 136 MHz)

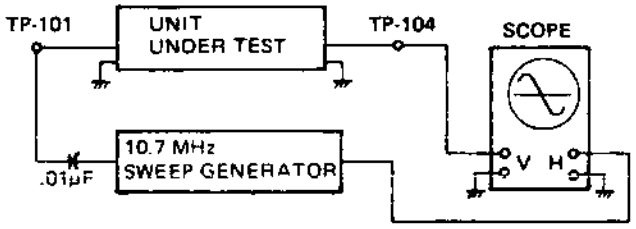
NOTE 1: *Use non-metallic tuning tools.*
The test equipment and Receiver should be warmed up at least 30 minutes before proceeding with alignment.
Input signal from the Generator should be kept as low as possible and still obtain usable output.

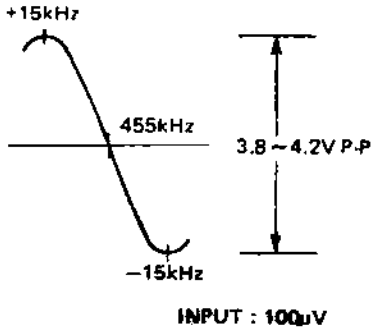
NOTE 2: *Three silver oxide batteries are required to hold the memory when main battery is disconnected. Always be sure the unit is loaded with fresh batteries or the pre-programmed channels will be lost (and will have to be re-programmed).*

NOTE 3: *For servicing VHF Mid band of European/Australian models, see Appendix on page 45.*

IF SECTION ALIGNMENT

Step 1: Connect instruments as shown below.





Step 2: Adjust T108 for maximum output so that the 455 kHz marker is in the center of the discriminator curve and for best linearity, as shown above.
During alignment, maintain Sweep Generator output at the lowest level possible to prevent overloading.

VCO ALIGNMENT

VHF LO BAND

Step 1: Connect a DC SSVM to TP103 and ground.
Step 2: Program CH1, 2 and 3 as follows:
CH1 (30 MHz), CH2 (40 MHz), CH3 (54 MHz).
Step 3: Select Channel 3 (54 MHz) and adjust TC103 for 13V on the DC SSVM.
Step 4: Select Channel 1 (30 MHz) and adjust T111 for 1.0V on the DC SSVM.
Step 5: Repeat steps 3 and 4 until no improvement is observed. The DC SSVM should read as below.

30 MHz	Voltage at TP103	0.9 – 1.1V
40 MHz	Voltage at TP103	4.1 – 4.5V
54 MHz	Voltage at TP103	12.7 – 13.3V

REFERENCE FREQUENCY OSC ALIGNMENT

Step 1: Connect Frequency Counter to Q107 Collector through a ceramic capacitor (47 ~ 100 pF) and ground.
Step 2: Select Channel 2 (40 MHz) and observe VCO Frequency.
Step 3: Adjust TC1 so that the frequency is 50.700 MHz ±20 Hz.
Step 4: Repeat VHF LO BAND VCO ALIGNMENT.

AIRCRAFT HI BAND AND UHF BAND

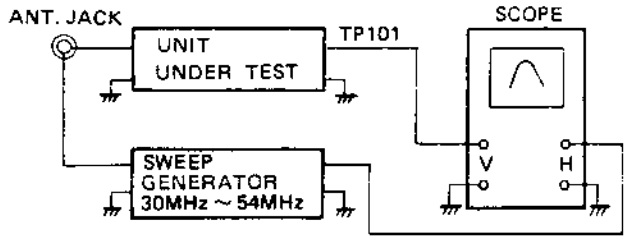
Step 1: Connect a DC SSVM to TP-103 and ground.
Step 2: Program CH1, 2, and 3 ~ 9 as follows:
CH1 (108 MHz), CH2 (120 MHz), CH3 (136 MHz), CH4 (380 MHz), CH5 (138 MHz), CH6 (150 MHz), CH7 (450 MHz), CH8 (174 MHz), CH9 (512 MHz).
Step 3: Select Channel 9 (512 MHz) and adjust TC104 for 13V on the DC SSVM.
Step 4: Select Channel 1 (108 MHz) and adjust T112 for 1.0V on the DC SSVM.
Step 5: Repeat steps 3 and 4 until no improvement is observed. The DC SSVM should read as below.

108 MHz	Voltage at TP103	0.9 – 1.1V
120 MHz	Voltage at TP103	2.2 – 3.0V
136 MHz	Voltage at TP103	5.6 – 6.5V
380 MHz	Voltage at TP103	1.2 – 2.0V
138 MHz	Voltage at TP103	1.8 – 2.5V
150 MHz	Voltage at TP103	3.7 – 4.7V
450 MHz	Voltage at TP103	5.5 – 6.6V
174 MHz	Voltage at TP103	9.8 – 11.0V
512 MHz	Voltage at TP103	12.7 – 13.3V

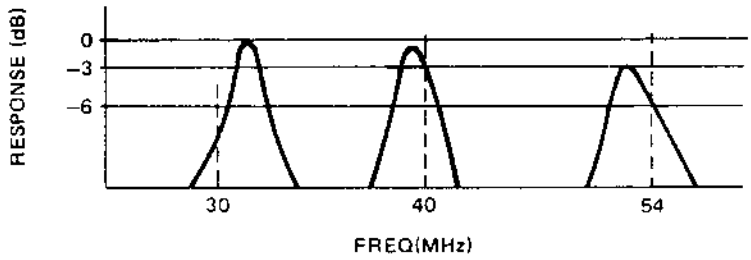
RF AMP ALIGNMENT

VHF LO BAND

Step 1: Connect instruments as shown below.



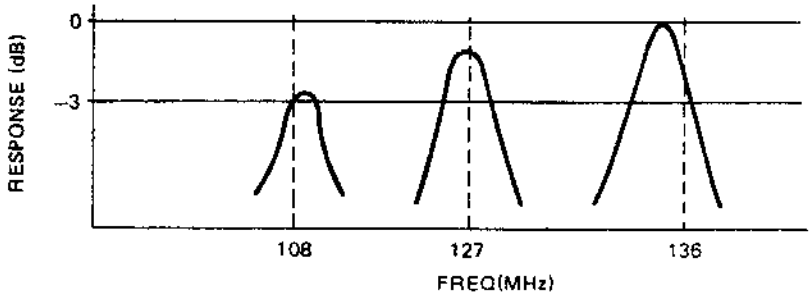
Step 2: Program 30 MHz (CH1), 40 MHz (CH2) and 54 MHz (CH3).
Step 3: Select Channel 2 (40 MHz) and adjust T101 and T102 as shown below RF waveform.
Step 4: Check Channels 1 through 3 for the below RF waveform. A slight deviation as shown below is acceptable.



AIRCRAFT BAND

Step 1: Connect instruments: Same connection as VHF Lo band except Sweep Generator frequency, change to 108 MHz to 136 MHz.
Step 2: Program 108 MHz (CH1), 127 MHz (CH2), 136 MHz (CH3)
Step 3: Select Channel 2 (127 MHz) and adjust T103 and T105 for maximum RF waveform.
Step 4: Check Channels 1 through 3 for maximum RF waveform. Slight deviation as shown below is acceptable.

NOTE: *Perform AIRCRAFT BAND RF AMP ALIGNMENT before VHF-HI BAND. If this procedure is not followed, alignment may be impossible and/or inaccurate.*



VHF-HI BAND

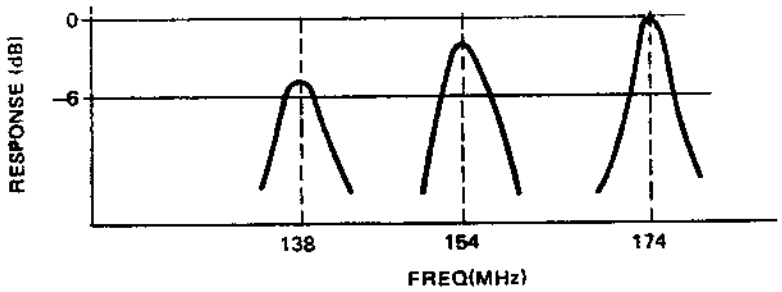
138 MHz (CH1), 154 MHz (CH2), 174 MHz (CH3)

Step 1: Connect instruments: Same connection as VHF Lo band except Sweep Generator frequency, change to 138 MHz to 174 MHz.

Step 2: Program 138 MHz (CH1), 154 MHz (CH2), 174 MHz (CH3).

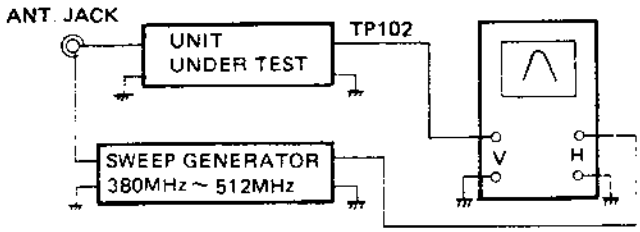
Step 3: Select Channel 2 (154 MHz) and adjust T104 and T106 for maximum RF waveform.

Step 4: Check Channels 1 through 3 for maximum RF waveform. Slight deviation as shown below is acceptable.



UHF BAND

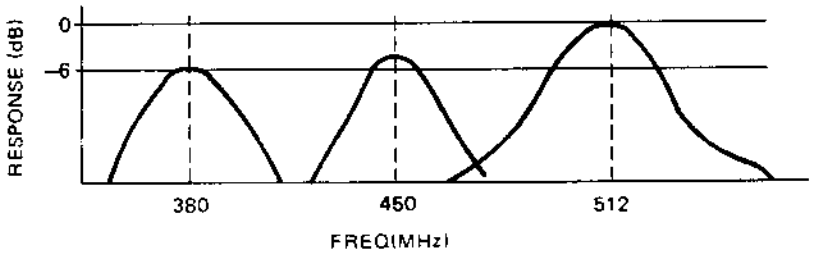
Step 1: Connect instruments as shown below.



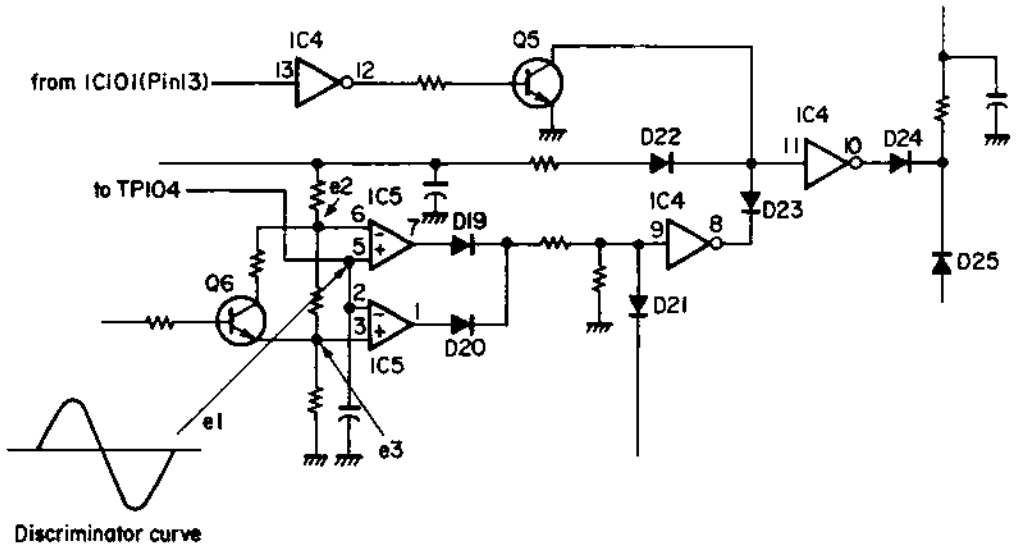
Step 2: Program 380 MHz (CH1), 450 MHz (CH2) and 512 MHz (CH3).

Step 3: Select Channel 1 (380 MHz) and adjust TC101 and TC102 as shown below.

Step 4: Check Channels 1 ~ 3 for the below RF waveform at each frequency marker. A slight deviation as shown below is acceptable.



ZEROMATIC FUNCTION TEST PROCEDURE

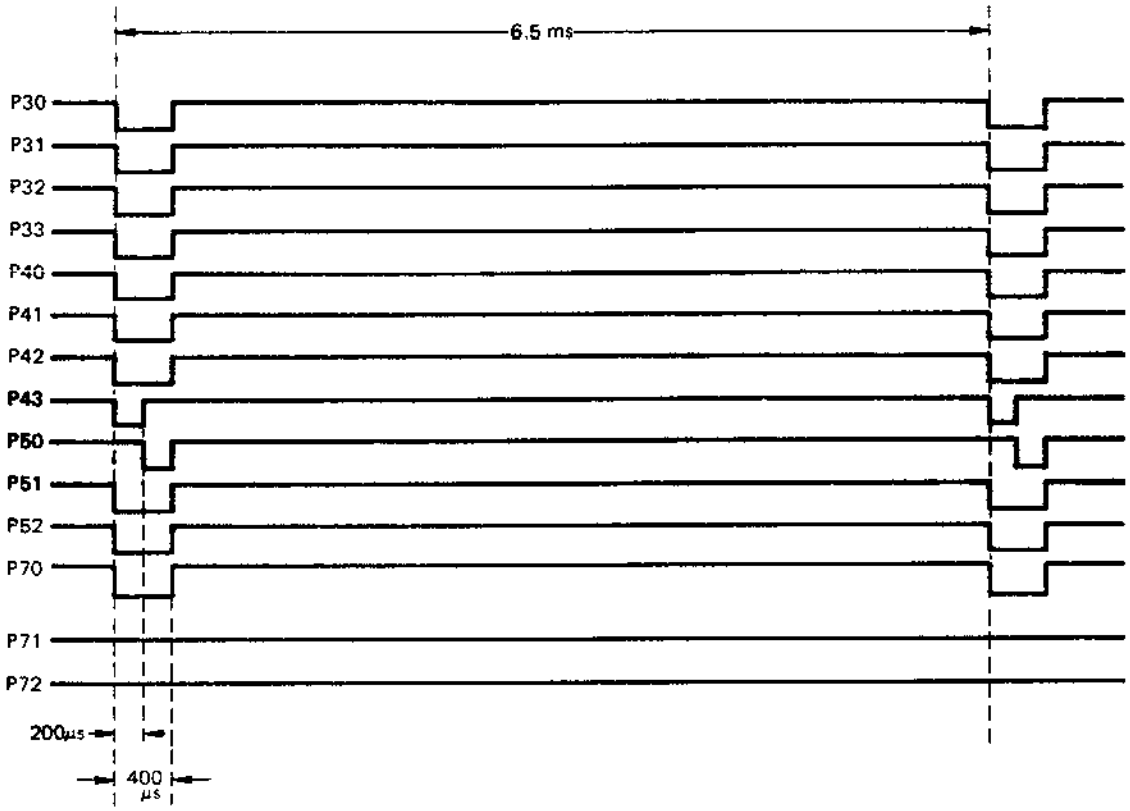


(Zeromatic functions when OUTPUT is in "H" level.)

	$0 < e_1 < e_3$	$e_3 < e_1 < e_2$	$e_2 < e_1 < V_{CC}$
OUTPUT (IC4 Pin No. 8)	L	H	L

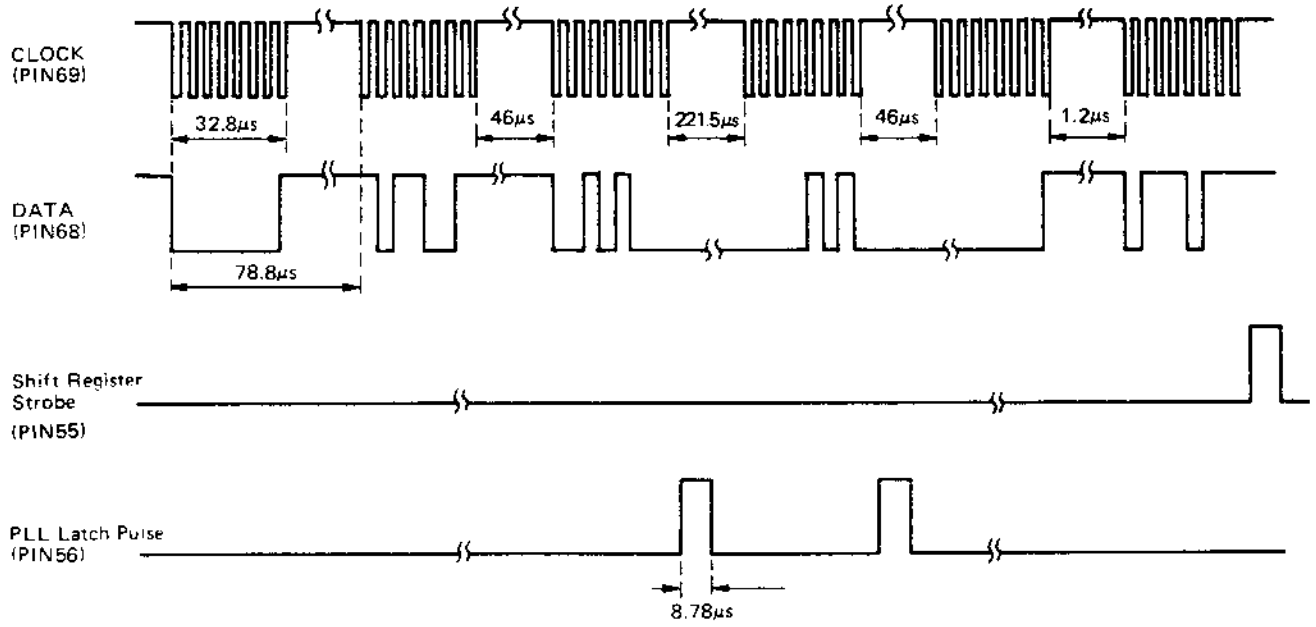
To adjust e_1 voltage, receive signal in Manual mode, and set T108 to obtain 2.6V ($1/2V_{CC}$) at TP-104. It is convenient to use the National Weather Service Signal for the adjustment.
In the event Zeromatic does not function correctly, refer to "REFERENCE FREQUENCY OSC ALIGNMENT" and check 50.700 MHz ± 20 Hz, and adjust T108 again at 2.6V DC while a Signal is being received.

KEYS ACCESS PULSE OUTPUT(IC1)



NOTE: Use a signal at Pin 66 of IC1 as trigger, and then observe the keys access pulse when [PGM] key pressed.

PLL DATA WAVEFORM(IC1)



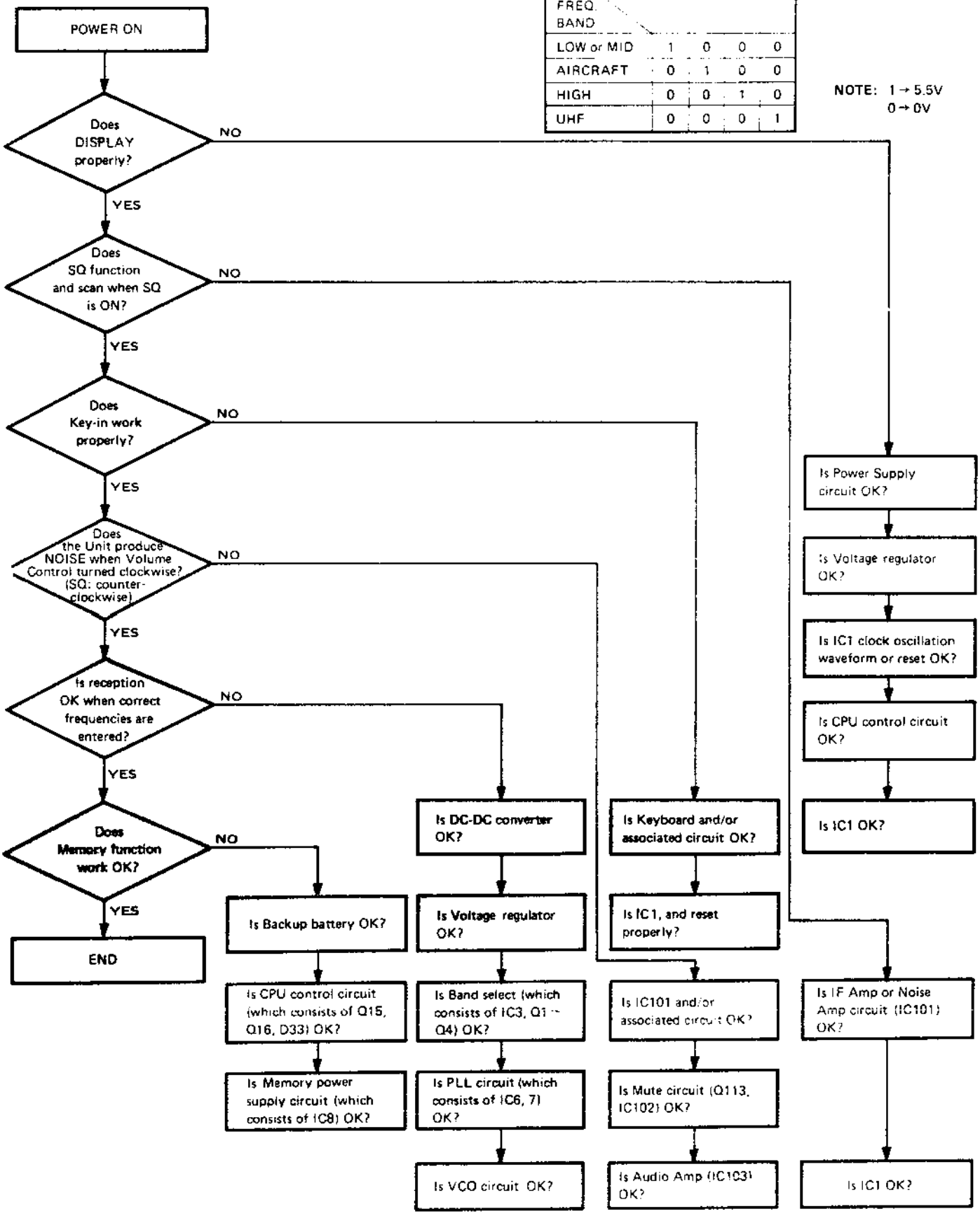
NOTE: Enter 150.000 MHz to channel 1 and lock out other channels. Observe the waveforms while scanning.

RECEPTION CHECK

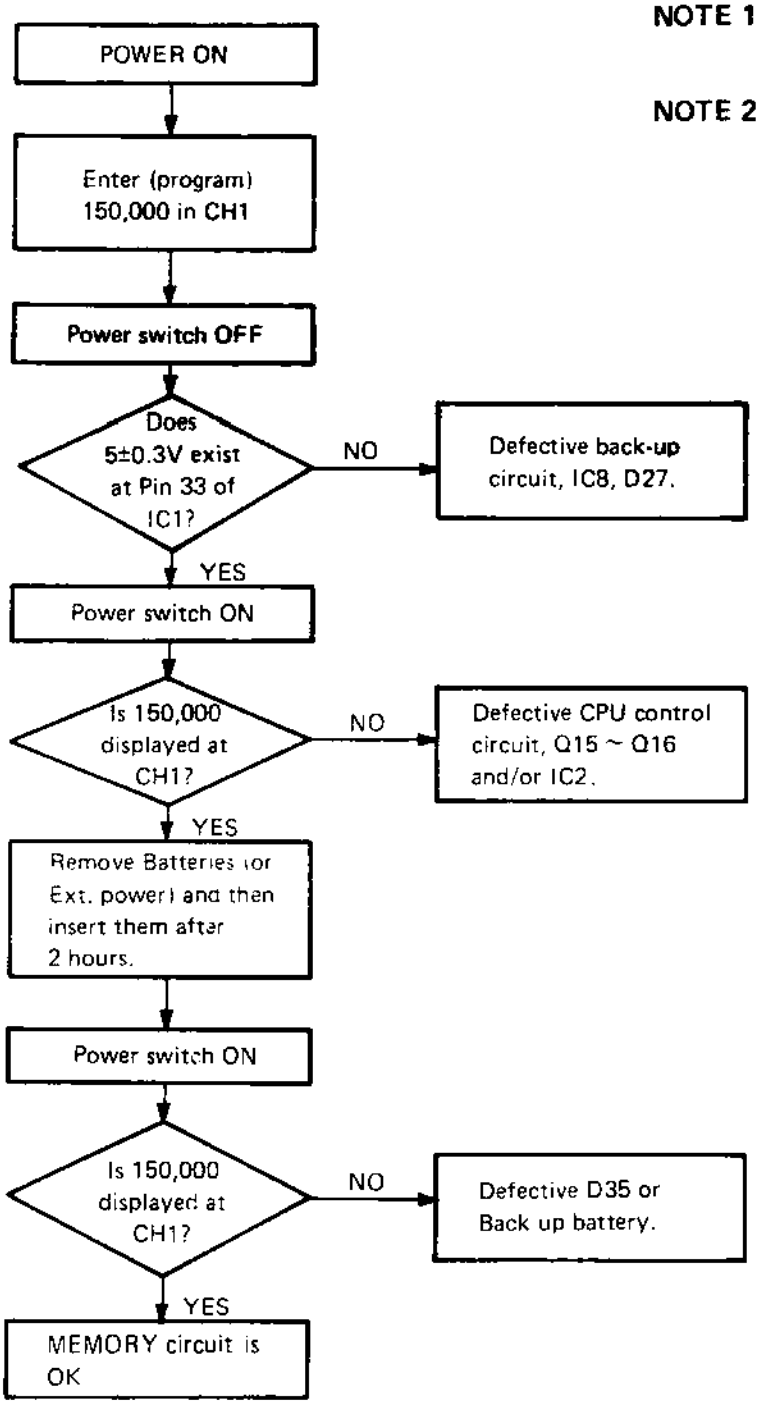
Table-1

J1 PIN No. / FREQ. BAND	11	12	13	14
LOW or MID	1	0	0	0
AIRCRAFT	0	1	0	0
HIGH	0	0	1	0
UHF	0	0	0	1

NOTE: 1 → 5.5V
0 → 0V



MEMORY CHECK



NOTE 1: Prior to checking CPU System, measure supply voltage to ICs. (See schematic diagram.)

NOTE 2: While checking the following items, the ICs can "latch up". If so push RESET switch about one second and then continue.

TROUBLESHOOTING

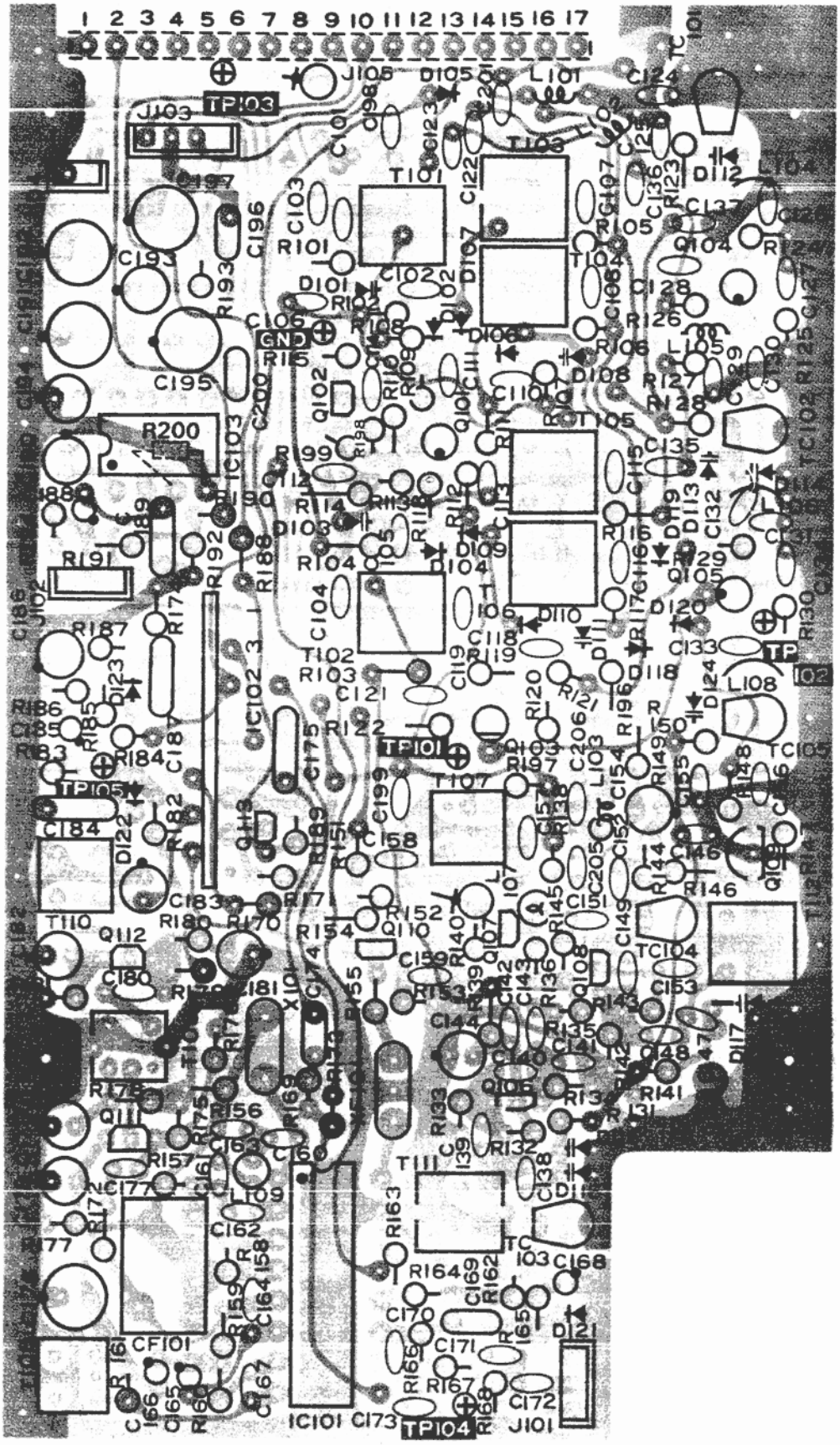
Symptom	Cause/Remedy
1) Display does not light and no sound when POWER is on. Volume control: MAX. Squelch control: counterclockwise (CCW)	1) Defective Batteries: Change batteries. 2) Wrong Polarity of batteries: Adjust polarity of batteries. 3) Defective External power jack or charge jack: Replace. 4) Defective ON-OFF switch on volume control: Replace.
2) Display lights but no sound Volume control: MAX. Squelch control: CCW	1) Defective speaker or EXT. SPKR jack: Replace the defective parts. 2) Defective audio amplifier IC103 and/or associated circuit components: Replace the defective copmonents. 3) Defective IF amplifier IC101 and/or associated circuit components: Replace the defective components. 4) Defective functional squelch control and/or associated circuit components: Replace the defective components. 5) Defective IC4, Q5 and IC102 and/or associated circuit: Replace the defective parts.
3) Sound but display does not light Volume control: MAX. Squelch control: CCW	1) Defective LCD or rubber connector: Replace the defective parts. 2) Defective Q15, 16, D33 CPU control circuitry: Replace the defective parts.
4) Does not scan and squelch does not operate	1) Defective IC101 and/or associated circuit components: Replace the defective components. 2) Defective IC1 and/or associated circuit components: Replace the defective components.
5) Does not scan but squelch operates	1) Faulty connection between Linear and Logic PCB: Replace the defective parts. 2) Defective Keyboard and/or associated circuit components: Replace the defective components. 3) Defective IC1 and/or associated circuit components: Replace the defective components.
6) Display incorrectly and/or unable to key in correctly when RESET switch is pushed	1) Defective Keyboard and/or associated circuit: Replace the defective parts. 2) Defective CPU (IC1) and/or associated circuit: Replace the defective parts.
7) Displays correctly at the time of programming, but after scanning becomes faulty	1) Defective CPU (IC1) and/or associated circuit: Replace the defective parts.
8) MANUAL select operates but SCAN does not operate	1) Squelch control is not adjusted right: Adjust squelch clockwise.
9) All bands do not operate but display OK	1) Faulty connection between Linear and Logic PCBs: Replace the defective parts. 2) Defective Q12 ~ 14 in Low-pass filter: Replace the defective parts. 3) Defective IC6, 7 and/or associated circuit: Replace the defective parts. 4) Defective IC3, Q1 ~ 4 and/or associated circuit: Replace the defective parts. 5) Defective Q7 ~ 9 voltage regulator and/or Q10, 11, D30, 31 DC-DC converter circuit: Replace the defective parts.

Symptom	Cause/Remedy
10) Lo (Mid) band does not operate but Air, Hi, UHF band operate	1) Defective D101 ~ 104, T101, 102 Tuning circuit and/or Q106 VCO circuit: Replace the defective parts. 2) Defective Q1, IC3 and/or associated circuit: Replace the defective parts.
11) Aircraft band does not operate but Lo, Hi, UHF operate	1) Defective D105, T103, 105 and/or associated circuit: Replace the defective parts. 2) Defective AM IF Amp including Q111, 112: Replace the defective parts. 3) Defective Q2 in band switch circuit: Replace the defective parts.
12) Hi band does not operate but Lo, Air, UHF band operate	1) Defective D106, T104, 106 and/or associated circuit: Replace the defective parts. 2) Defective Q3 in band switch circuit: Replace the defective parts.
13) UHF band does not operate but Lo, Air, Hi band operate	1) Defective Q104, 105 and Q109 and/or associated circuit: Replace the defective parts. 2) Defective Q4 in band switch circuit: Replace the defective parts.
14) Does not make beep tone	1) Defective IC4 and/or associated circuit: Replace the defective parts.
15) LOW BATT does not indicate when battery voltage down	1) Defective Q17~19, D37 and/or associated circuit: Replace the defective parts.
16) "Zeromatic" does not operate or holds on a drifted frequency at search operation	1) Defective IC4, 5, Q6 in Zeromatic circuit: Replace the defective parts. 2) Discriminator coil is out of adjustment: TP104 shall have 1/2 V_{CC} (approx. 2.6V) in normal receiving mode. 3) Is 50.700 MHz adjusted correctly?: Refer to REFERENCE FREQUENCY OSC ALIGNMENT on page 9.

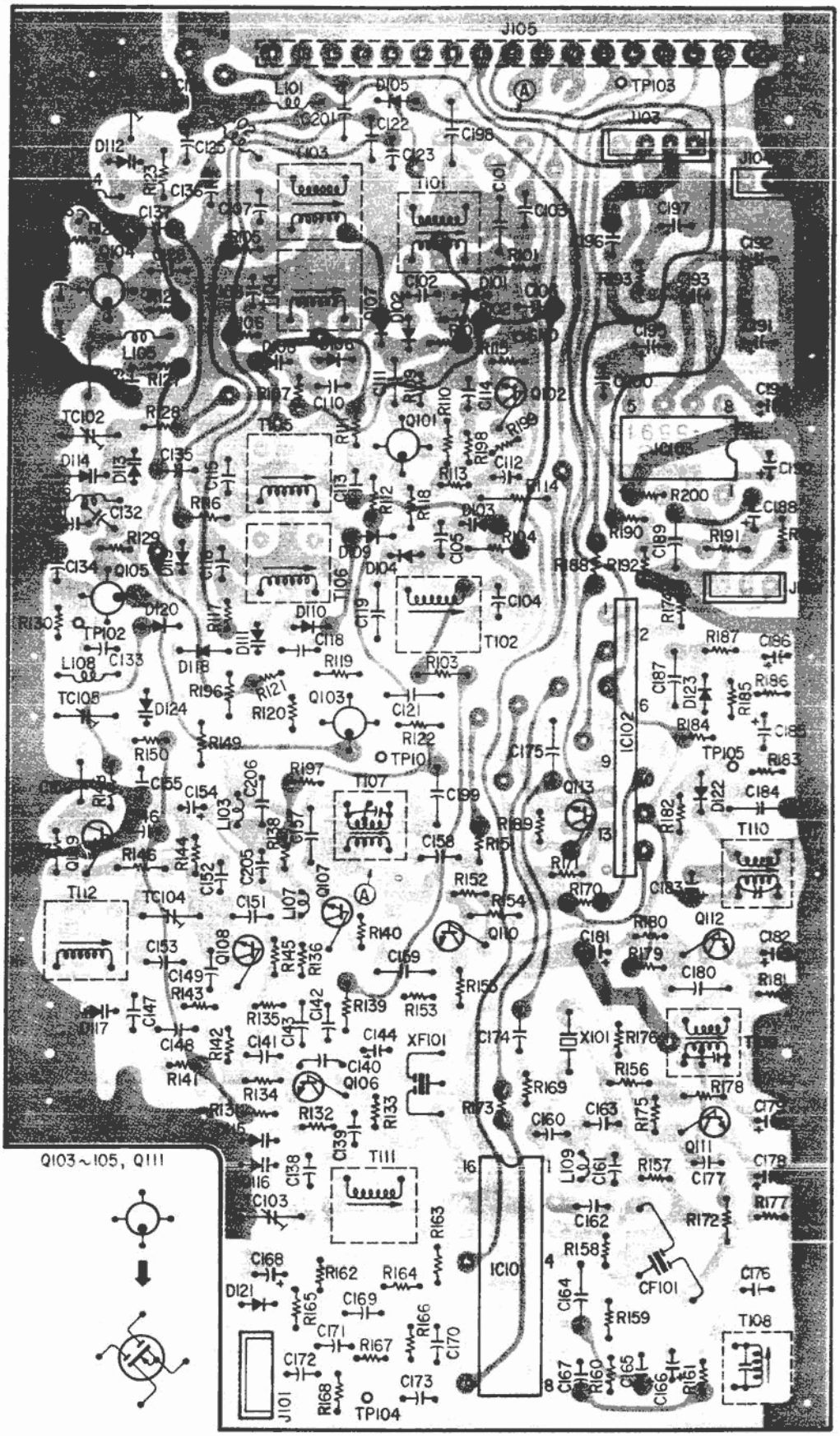
Important Note:
Pulse generated while checking circuits and/or certain combinations of key operation may cause improper operation. To clear the malfunction, re-initialization of CPU is necessary: Push RESET switch. All channels (200 ch) will be cleared and frequency indicator displays 000.000.

P.C. BOARDS (TOP AND BOTTOM VIEWS)

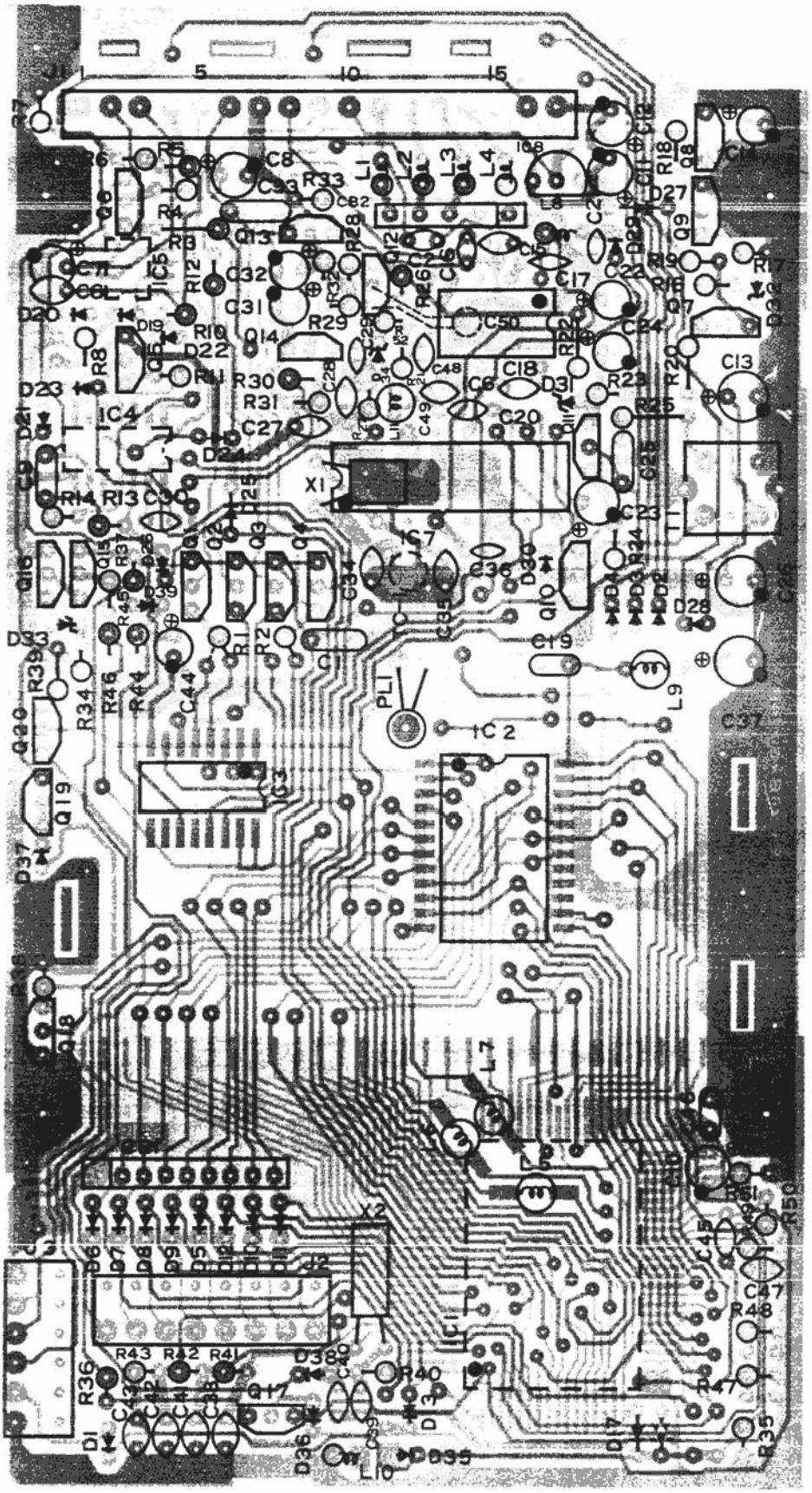
LINEAR P.C. BOARD (TOP VIEW)



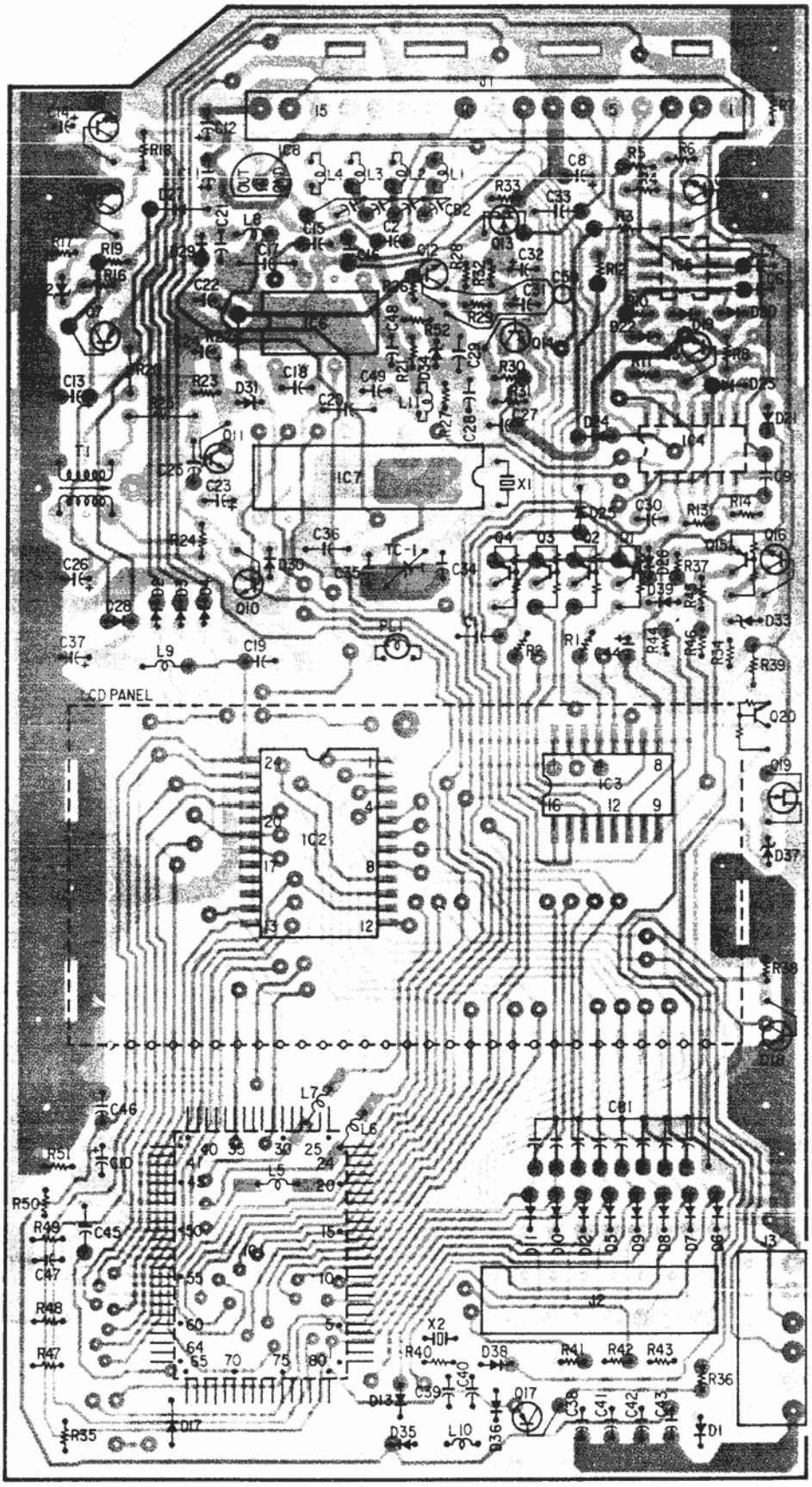
LINEAR P.C. BOARD (BOTTOM VIEW)



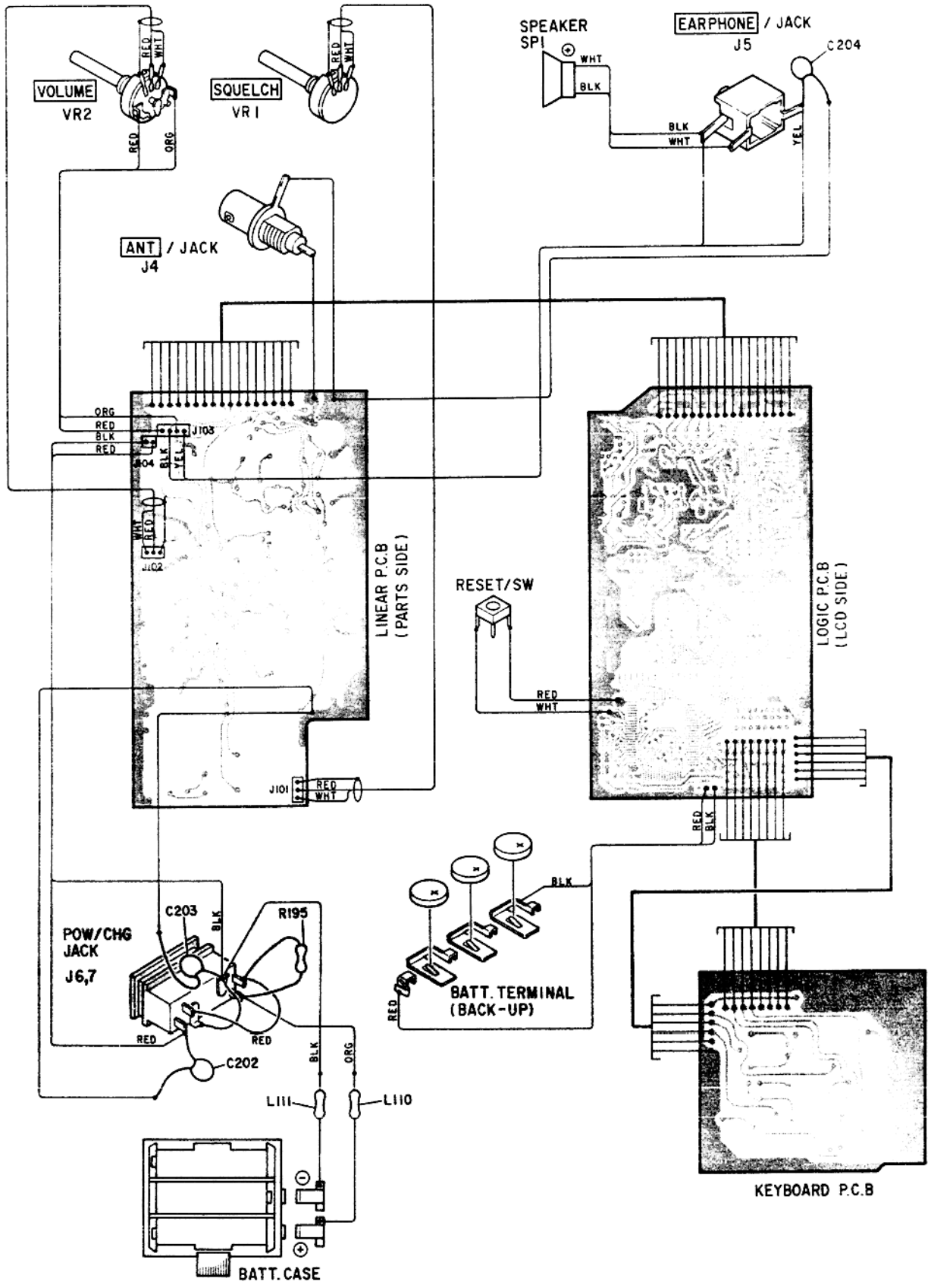
LOGIC P.C. BOARD (TOP VIEW)



LOGIC P.C. BOARD (BOTTOM VIEW)

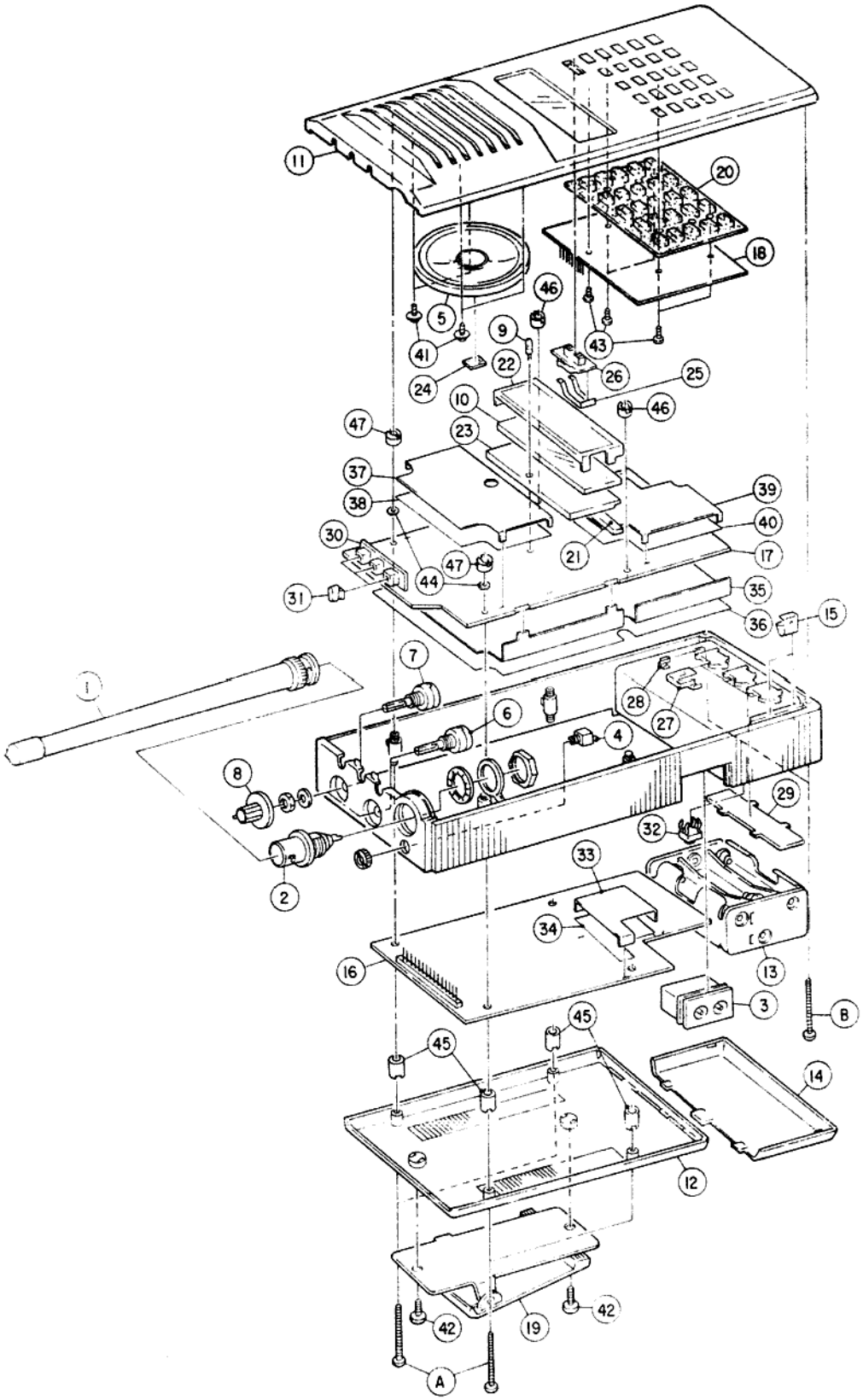


WIRING DIAGRAM (LINEAR SECTION)



DISASSEMBLY DIAGRAM/EXPLODED VIEW

Step 1. Remove 4 screws Ⓐ
Step 2. Remove 2 screws Ⓑ (located inside of battery cover).
Step 3. Open the front and rear cabinet.
Use care not to damage speaker leads connected to the front cabinet.



ELECTRICAL PARTS LIST

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice of this service manual. Don't degrade the safety of the product through improper servicing.

CAPACITORS						
Ref. No.	**Description**				**RS Part No.**	**MFR's Part No.**
C1	Mylar*	0.01μF	50WV	±10%	CC103KJMP	AMZ-103K50
C2	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C3	Not used					
C4	Not used					
C5	Not used					
C6	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C7	Tantalum	0.1μF	35WV	±20%	CC104MGTP	CS15E1V0R1M1S
C8	Tantalum	0.47μF	35WV	±20%	CC474MGTP	CS15E1VR47M1S
C9	Mylar	0.0033μF	50WV	±10%	CC332KJMP	AMZ-332K50
C10	Tantalum	1μF	25WV	±20%	CC105MFTP	CS15E1E010M1S
C11	Tantalum	0.1μF	35WV	±20%	CC104MGTP	CS15E1V0R1M1S
C12	Tantalum	0.1μF	35WV	±20%	CC103MGTP	CS15E1V0R1M1S
C13	Electrolytic	220μF	6.3WV	±20%	CC227MBAP	ECEA0JK221
C14	Electrolytic	10μF	16WV	±20%	CC106MDAP	ECEA1CK100
C15	Ceramic	470pF	50WV	±10%	CF-2030	HE40SJYB471K
C16	Ceramic	5pF	50WV	±0.5%	CF-1105	HE40SJSL050D
C17	Ceramic	0.01μF	50WV	+80%–20%	CC103ZJCP	HE70SJYF103Z
C18	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C19	Multi Layer	0.1μF	50WV	±20%	CC104MJCP	SR295C104M
C20	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C21	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C22	Electrolytic	4.7μF	25WV	±20%	CC475MFAP	ECEA1EK4R7
C23	Tantalum	0.47μF	35WV	±20%	CC474MGTP	CS15E1VR47M1S
C24	Electrolytic	10μF	16WV	±20%	CC106MDAP	ECEA1CK100
C25	Mylar	0.001μF	50WV	±10%	CF-7481	AMZ-102K50
C26	Electrolytic	47μF	10WV	±20%	CC476MCAP	ECEA1AK470
C27	Ceramic	220pF	50WV	±10%	CC221KJCP	HE40SJYB221K
C28	Ceramic	22pF	50WV	±10%	CF-1981	HE40SJSL220K
C29	Ceramic	0.0047μF	50WV	±10%	CF-2455	HE50SJYF472K
C30	**Ceramic**	**220pF**	**50WV**	**±10%**	**CC221KJCP**	**HE40SJYB221K**
C31	**Tantalum**	**1μF**	**25WV**	**±20%**	**CC105MFTP**	**CS15E1E010M1S**
C32	**Tantalum**	**0.33μF**	**35WV**	**±20%**	**CC334MGTP**	**CS15E1VR33M1S**
C33	**Mylar**	**0.01μF**	**50WV**	**±10%**	**CC103KJMP**	**AMZ-103K50**
C34	**Ceramic**	**39pF**	**50WV**	**±10%**	**CF-1816**	**HE40SJSL390K**
C35	**Ceramic**	**56pF**	**50WV**	**±10%**	**CF-1373**	**HE40SJSL560K**
C36	Ceramic	0.01μF	50WV	+80%–20%	CC103ZJCP	HE70SJYF103Z
C37	Electrolytic	220μF	6.3WV	±20%	CC227MBAP	ECEA0JK221
C38	Ceramic	0.001μF	50WV	±10%	CC102KJCP	HE50SJYB102K
C39	Ceramic	33pF	50WV	±10%	CF-1315	HE40SJSL330K
C40	Ceramic	22pF	50WV	±10%	CF-1981	HE40SJSL220K
C41	Ceramic	0.001μF	50WV	±10%	CC102KJCP	HE50SJYB102K
C42	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C43	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C44	Electrolytic	1μF	50WV	±20%	CC105MJAP	ECEA1HK010
C45	Ceramic	33pF	50WV	±10%	CF-1315	HE40SJSL330K

* Mylar is a registered trademark of E.I. Du Pont de Nemours and Company.

Ref. No.	Description				RS Part No.	MFR's Part No.
⚠ C46	Multi Layer	0.1μF	50WV	±20%	CC104MJCP	SR295C104M
C47	Ceramic	0.001μF	50WV	±10%	CC102KJCP	HE50SJYB102K
C48	Ceramic	47pF	50WV	±10%	CF-1366	HE40SJSL470K
C49	Ceramic	220pF	50WV	±10%	CC221KJCP	HE40SJYB221K
C50	Ceramic	56pF	50WV	±10%	CF-1373	HE40SJSL560K
C101	Ceramic	0.01μF	50WV	+80%–20%	CF-1751	HE70SJYF103Z
C102	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C103	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C104	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C105	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C106	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C107	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C108	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C109	Not used					
C110	Ceramic	330pF	50WV	±10%	CF-2029	HE40SJYB331K
C111	Ceramic	22pF	50WV	±10%	CF-1981	HE40SJSL220K
C112	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C113	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C114	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C115	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C116	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C117	Not used					
C118	Ceramic	330pF	50WV	±10%	CF-2029	HE40SJYB331K
C119	Ceramic	10pF	50WV	±0.5%	CF-1815	HE40SJSL100D
C120	Not used					
C121	Ceramic	0.01μF	50WV	+80%–20%	CF-1751	HE70SJYF103Z
C122	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C123	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C124	Ceramic	2pF	50WV	±0.5%	CF-1030	HE40SJSL020D
C125	Ceramic	5pF	50WV	±0.5%	CF-1105	HE40SJSL050D
C126	Ceramic	5pF	50WV	±0.5%	CF-1105	HE40SJSL050D
C127	Ceramic	100pF	50WV	±10%	CF-2454	HE40SJYB101K
C128	Ceramic	33pF	50WV	±10%	CF-1315	HE40SJSL330K
C129	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C130	Ceramic	10pF	50WV	±0.5%	CF-1815	HE40SJSL100D
C131	Ceramic	2pF	50WV	±0.5%	CF-1030	HE40SJSL020D
C132	Ceramic	10pF	50WV	±0.5%	CF-1815	HE40SJSL100D
C133	Ceramic	2pF	50WV	±0.5%	CF-1030	HE40SJSL020D
C134	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C135	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C136	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C137	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C138	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C139	Ceramic	33pF	50WV	±10%	CF-1315	HE40SJSL330K
C140	Ceramic	68pF	50WV	±10%	CF-1959	HE40SJSL680K
C141	Ceramic	33pF	50WV	±10%	CF-1315	HE40SJSL330K
C142	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C143	Ceramic	5pF	50WV	±0.5%	CF-1105	HE40SJSL050D
C144	Electrolytic	10μF	16WV	±20%	CC106MDAP	ECEA1CK100
C145	Not used					
C146	Ceramic	0.001μF	50WV	±10%	CF-7481	HE50SJYB102K
C147	Ceramic	470pF	50WV	±10%	CF-2030	HE40SJYB471K
C148	Ceramic	47pF	50WV	±10%	CF-1366	HE40SJSL470K

Ref. No.	Description				RS Part No.	MFR's Part No.
C149	Ceramic	10pF	50WV	±0.5%	CF-1815	HE40SJSL100D
C150	Not used					
C151	Ceramic	5pF	50WV	±0.5%	CF-1105	HE40SJSL050D
C152	Ceramic	10pF	50WV	±0.5%	CF-1815	HE40SJSL100D
C153	Ceramic	0.001μF	50WV	±10%	CC102KJCP	HE50SJYB102K
C154	Electrolytic	10μF	16WV	±20%	CC106MDAP	ECEA1CK100
C155	Ceramic	0.001μF	50WV	±10%	CC102KJCP	HE50SJYB102K
C156	Ceramic	22pF	50WV	±10%	CF-1981	HE40SJSL220K
C157	Ceramic	0.01μF	50WV	+80%–20%	CF-1751	HE70SJYF103Z
C158	Ceramic	0.001μF	50WV	±10%	CC102KJCP	HE50SJYB102K
C159	Ceramic	0.01μF	50WV	+80%–20%	CF1751	HE70SJYF103Z
C160	Ceramic	39pF	50WV	±10%	CF1816	HE40SJSL390K
C161	Ceramic	22pF	50WV	±10%	CF-1981	HE40SJSL220K
C162	Ceramic	0.001μF	50WV	±10%	CC102KJCP	HE50SJYB102K
C163	Ceramic	100pF	50WV	±10%	CF-2454	HE40SJYB101K
C164	Ceramic	0.047μF	50WV	+80%–20%	CF-1794	HC10SJZF473Z
C165	Tantalum	0.47μF	35WV	±20%	CC474MGTP	CS15E1VR47M1S
C166	Tantalum	0.47μF	35WV	±20%	CC474MGTP	CS15E1VR47M1S
C167	Ceramic	8pF	50WV	±0.5%		HE40SJSL080D
C168	Tantalum	0.22μF	35WV	±20%	CC224MGTP	CS15E1VR22M1S
C169	Mylar	0.01μF	50WV	±10%	CC103KJMP	AMZ-103K50
C170	Ceramic	5pF	50WV	±0.5%	CF-1105	HE40SJSL050D
C171	Ceramic	470pF	50WV	±10%	CF-2030	HE40SJYB471K
C172	Ceramic	470pF	50WV	±10%	CF-2030	HE40SJYB471K
C173	Ceramic	0.001μF	50WV	±10%	CC102KJCP	HE50SJYB102K
C174	Mylar	0.01μF	50WV	±10%	CC103KJCP	AMZ-103K50
C175	Mylar	0.047μF	50WV	±10%	CC473KJMP	AMZ-473K50
C176	Electrolytic	220μF	6.3WV	±20%	CC227M8AP	ECEA0JK221
C177	Ceramic	470pF	50WV	±10%	CF-2030	HE40SJYB471K
C178	Electrolytic	1μF	50WV	±20%	CC105MJAP	ECEA1HK010
C179	Electrolytic	10μF	16WV	±20%	CC106MDAP	ECEA1CK100
C180	Ceramic	0.01μF	50WV	+80%–20%	CF-1751	HE70SJYF103Z
C181	Electrolytic	47μF	10WV	±20%	CC476MCAP	ECEA1AK470
C182	Electrolytic	1μF	50WV	±20%	CC105MJAP	ECEA1HK010
C183	Electrolytic	10μF	16WV	±20%	CC106MDAP	ECEA1CK100
C184	Mylar	0.056μF	50WV	±10%	CC563KJMP	AMZ-563K50
C185	Tantalum	0.1μF	35WV	±20%	CC104MGTP	CS15E1V0R1M1S
C186	Electrolytic	1μF	50WV	±20%	CC105MJAP	ECEA1HK010
C187	Mylar	0.033μF	50WV	±10%	CC333KJMP	AMZ-333K50
C188	Tantalum	0.1μF	35WV	±20%	CC104MGTP	CS15E1V0R1M1S
C189	Mylar	0.047μF	50WV	±10%	CC473KJMP	AMZ-473K50
C190	Electrolytic	2.2μF	50WV	±20%	CC225MJAP	ECEA1HK2R2
C191	Electrolytic	220μF	10WV	±20%	CC227MJAP	ECEA1AU221
C192	Electrolytic	220μF	10WV	±20%	CC227MJAP	ECEA1AU221
C193	Electrolytic	4.7μF	25WV	±20%	CC475MFAP	ECEA1EK4R7
C194	Electrolytic	10μF	16WV	±20%	CC106MDAP	ECEA1CK100
C195	Electrolytic	100μF	10WV	±20%	CC334MGTP	ECEA1AK101
C196	Multi Layer	0.1μF	50WV	±20%	CC104MJCP	SR295C104M
C197	Electrolytic	220μF	10WV	±20%	CC227MCAP	ECEA1AU221
C198	Ceramic	0.001μF	50WV	±10%	CC102KJCP	HE50SJYB102K
C199	Ceramic	0.01μF	50WV	+80%–20%	CC103ZJCP	HE70SJYF103Z

Ref. No.	Description				RS Part No.	MFR's Part No.
C200	Multi Layer	0.1μF	50WV	±20%	CC104MJCP	SR295C104M
C201	Ceramic	0.01μF	50WV	+80%–20%	CC103ZJCP	HE70SJYF103Z
C202	Multi Layer	0.1μF	50WV	±20%	CC104MJCP	SR295C104M
C203	Ceramic	0.001μF	50WV	±10%	CC102KJCP	HE50SJYB102K
C204	Ceramic	0.01μF	50WV	+80%–20%	CC103ZJCP	HE70SJYF103Z
C205	Ceramic	47pF	50WV	±10%	CC470KJCP	HE40SJSL470K
C206	Ceramic	47pF	50WV	±10%	CC470KJCP	HE40SJSL470K

DIODES

Ref. No.	Description			RS Part No.	MFR's Part No.
D1		1S2076A	(Silicon)	DX-1056	1S2076A
D2		1S2076A	(Silicon)	DX-1056	1S2076A
D3		1S2076A	(Silicon)	DX-1056	1S2076A
D4		1S2076A	(Silicon)	DX-1056	1S2076A
D5		1S2076A	(Silicon)	DX-1056	1S2076A
D6		1S2076A	(Silicon)	DX-1056	1S2076A
D7		1S2076A	(Silicon)	DX-1056	1S2076A
D8		1S2076A	(Silicon)	DX-1056	1S2076A
D9		1S2076A	(Silicon)	DX-1056	1S2076A
D10		1S2076A	(Silicon)	DX-1056	1S2076A
D11		1S2076A	(Silicon)	DC-1056	1S2076A
D12		1S2076A	(Silicon)	DX-1056	1S2076A
D13		1S2076A	(Silicon)	DX-1056	1S2076A
D14	Not used				
D15	Not used				
D16	Not used				
D17		1S2076A	(Silicon)	DX-1056	1S2076A
D18	Not used				
D19		1S2076A	(Silicon)	DX-1056	1S2076A
D20		1S2076A	(Silicon)	DX-1056	1S2076A
D21		1S2076A	(Silicon)	DX-1056	1S2076A
D22		1S2076A	(Silicon)	DX-1056	1S2076A
D23		1S2076A	(Silicon)	DX-1056	1S2076A
D24		1S2076A	(Silicon)	DX-1056	1S2076A
D25		1S2076A	(Silicon)	DX-1056	1S2076A
D26		1S2076A	(Silicon)	DX-1056	1S2076A
D27		1S2076A	(Silicon)	DX-1056	1S2076A
D28		1S2076A	(Silicon)	DX-1056	1S2076A
D29		1S2076A	(Silicon)	DX-1056	1S2076A
D30		1S2076A	(Silicon)	DX-1056	1S2076A
D31		HZ16-3L	(Silicon)	DX-2499	HZ16-3L
D32		HZ6A1L	(Silicon)	DX-1414	HZ6A1L
D33		HZ4BLL	(Silicon)	DX-1192	HZ4BLL
D34		HZ12B2L	(Silicon)	DX-2500	HZ12B2L
D35		1S2076A	(Silicon)	DX-1056	1S2076A

Ref. No.	Description			RS Part No.	MFR's Part No.
D36		1S2076A	(Silicon)	DX-1056	1S2076A
⚠D37		HZ6A1L	(Silicon)	DX-1414	HZ6A1L
D38		1S2076A	(Silicon)	DX-1056	1S2076A
D39		1S2076A	(Silicon)	DX-1056	1S2076A
D101	Varactor	BB329	(Silicon)	DX-1739	BB329
D102		1SS85	(Silicon)	DX-1462	1SS85
D103	Varactor	BB329	(Silicon)	DX-1739	BB329
D104		1SS85	(Silicon)	DX-1462	1SS85
D105		1S2076A	(Silicon)	DX-1056	1S2076A
D106		1SS85	(Silicon)	DX-1462	1SS85
D107		1SS85	(Silicon)	DX-1462	1SS85
D108	Varactor	1SV136	(Silicon)	DX-2504	1SV136
D109		1SS85	(Silicon)	DX-1462	1SS85
D110		1SS85	(Silicon)	DX-1462	1SS85
D111	Varactor	1SV136	(Silicon)	DX-2504	1SV136
D112	Varactor	1SV89BS2	(Silicon)	DX-0319	1SV89BS2
D113	Varactor	1SV89BS2	(Silicon)	DX-0319	1SV89BS2
D114	Varactor	1S2090	(Silicon)	DX-1031	1S2090
D115	Varactor	BB329	(Silicon)	DX1739	BB329
D116	Varactor	BB329	(Silicon)	DX-1739	BB329
D117	Varactor	1SV89BS2	(Silicon)	DX-0319	1SV89BS2
D118		1S2076A	(Silicon)	DX-1056	1S2076A
D119		1S2076A	(Silicon)	DX-1056	1S2076A
D120		1S2076A	(Silicon)	DX-1056	1S2076A
D121		1K261	(Germanium)	DX-1325	1K261
D122		1K261	(Germanium)	DX-1325	1K261
D123		1K261	(Germanium)	DX-1325	1K261
D124	Varactor	1SV89BS2	(Silicon)	DX-0319	1SV89BS2

ICs

Ref. No.	Description	RS Part No.	MFR's Part No.
IC1	GRE-0437A (CPU) (C-MOS) (Logic)	MX-6965	GRE-0437A
IC2	TC5517CF-20 or μPD446G (Memory) (C-MOS)	MX-6966	μPD446G
IC3	μPD4094BG (Band Selector) (C-MOS)	MX-6967	μPD4094BG
IC4	μPD4069UBG (Beep Tone OSC/SQ./SWG.) (C-MOS)	MX-6968	μPD4069UBG
IC5	μPD358G (Zeromatic Cont.) (Bipolar)	MX-6969	μPD358G
IC6	MB504P-G (Pre-Scaler) (Bipolar)	MX-6970	MB504P-G
IC7	MC145158 (PLL) (C-MOS)	MX-4014	MC145158
⚠IC8	S-81250HG (Regulator) (Bipolar)	MX-6971	S-81250HG
IC101	TK10420 (IF Amp./DET./SQ./CONT.) (Linear)	MX-4012	TK10420
IC102	LC4066BS (Switching) (Linear)	MX-6964	LC4066BS
IC103	LM-386N-1 (Audio-Amp.) (Linear)	MX-4746	LM-386N-1

COILS & TRANSFORMERS

Ref. No.	Description	RS Part No.	MFR's Part No.
L1	Coil, Choke (100μH)	CB-2070	LAL03NA101K
L2	Coil, Choke (100μH)	CB-2070	LAL03NA101K
L3	Coil, Choke (100μH)	CB-2070	LAL03NA101K
L4	Coil, Choke (100μH)	CB-2070	LAL03NA101K
L5	Coil, Choke (10μH)	CB-2071	FL3H100K
L6	Coil, Choke (10μH)	CB-2071	FL3H100K
L7	Coil, Choke (10μH)	CB-2071	FL3H100K
L8	Coil, Choke (100μH)	CB-2070	LAL03NA101K
L9	Coil, Choke (2.2mH)	CB-2072	FL7H222J
L10	Coil, Choke (100μH)	CB-2070	LAL03NA101K
L11	Coil, Choke (10μH)	CB-2071	FL3H100K
L101	Coil, Antenna (Low)	CA-9886	4LNC092
L102	Coil, Antenna (Hi/Air)	CB-2673	4LNC122
L103	Coil, Choke (0.82μH)	CB-2069	LAL04NAR82M
L104	Coil, RF (UHF)	CA-4654	8LNR093
L105	Coil, Antenna (Hi/Air)	CB-2673	4LNC122
L106	Coil, RF (UHF)	CA-4654	8LNR093
L107	Coil, Choke (0.22μH)	CB-2049	FL3HR22M
L108	Coil, RF (UHF)	CA-4654	8LNR093
L109	Coil, Choke (10μH)	CB-2096	FL3H100K
L110	Coil 47μH	CB-2073	LAL04NA470K
L111	Coil 47μH	CB-2073	LAL04NA470K
T1	Coil, DC-DC Converter Transformer	CA-9889	7PSO-244
T101	Coil, RF (Low)	CA-2092	GR-N5341
T102	Coil, RF (Low)	CA-2092	GR-N5341
T103	Coil, RF (Air)	CA-9876	GR-N783
T104	Coil, RF (Hi)	CA-9880	GR-N784
T105	Coil, RF (Air)	CA-9876	GR-N783
T106	Coil, RF (Hi)	CA-9880	GR-N784
T107	Coil, IF (10.7 MHz)	CA-9881	GR-D680
T108	Coil, IF (Air)		GR-D622
T109	Coil, Audio (Air)	CA-9882	GR-D681
T110	Coil, IF (Air)	CA-9883	GR-D682
T111	Coil, VCO (Low)	CA-9884	GR-N785 or GR-N790
T112	Coil, VCO (Air/UHF)	CA-9885	GR-C787

TRANSISTORS

Ref. No.	Description	RS Part No.	MFR's Part No.
Q1	UN4111 or RN2202 (PNP) w/Resistor	MX-4016	UN4111 or RN2202
Q2	UN4111 or RN2202 (PNP) w/Resistor	MX-4016	UN4111 or RN2202
Q3	UN4111 or RN2202 (PNP) w/Resistor	MX-4016	UN4111 or RN2202
Q4	UN4111 or RN2202 (PNP) w/Resistor	MX-4016	UN4111 or RN2202
Q5	2SC2458(GR) (NPN)	2SC2458GR	2SC2458(GR)

Ref. No.	Description	RS Part No.	MFR's Part No.
Q6	2SC2458(GR) (NPN)	2SC2458GR	2SC2458(GR)
Q7	2SA1150(Y) (PNP)	2SA1150Y	2SA1150(Y)
Q8	2SC2458(GR) (NPN)	2SC2458GR	2SC2458(GR)
Q9	2SC2458(GR) (NPN)	2SC2458GR	2SC2458(GR)
Q10	2SC2458(GR) (NPN)	2SC2458GR	2SC2458(GR)
Q11	2SC2458(GR) (NPN)	2SC2458GR	2SC2458(GR)
Q12	2SA1150(Y) (PNP)	2SA1150Y	2SA1150(Y)
Q13	FET 2SK118(O,R)	2SK118O,R	2SK118(O,R)
Q14	2SC2458(GR) (NPN)	2SC2458GR	2SC2458(GR)
Q15	UN4111 or RN2202 (PNP) w/Resistor	MX-4016	UN4111 or RN2202
Q16	2SC2458(GR) (NPN)	2SC2458GR	2SC2458(GR)
Q17	2SA1150(Y) (PNP)	2SA1150Y	2SA1150(Y)
Q18	2SC2458(GR) (NPN)	2SC2458GR	2SC2458(GR)
Q19	FET 2SK118(R)	2SK118R	2SK118(R)
Q20	UN4111 or RN2202 (PNP) w/Resistor	MX-4016	UN4111 or RN2202
Q101	FET 3SK96	3SK96	3SK96
Q102	2SC2458(Y) (NPN)	2SC2458Y	2SC2458(Y)
Q103	FET 3SK101(Y)	3SK101Y	3SK101(Y)
Q104	2SC2464 (NPN)	2SC2464	2SC2464
Q105	2SC2466 (NPN)	2SC2466	2SC2466
Q106	2SC2668(O,Y) (NPN)	2SC2668O,Y	2SC2668(O,Y)
Q107	2SC2668(O,Y) (NPN)	2SC2668O,Y	2SC2668(O,Y)
Q108	2SC2668(O,Y) (NPN)	2SC2668O,Y	2SC2668(O,Y)
Q109	2SC2498 (NPN)	2SC2498	2SC2498
Q110	2SC2668(O,Y) (NPN)	2SC2668O,Y	2SC2668(O,Y)
Q111	2SC2458(Y) (NPN)	2SC2458Y	2SC2458(Y)
Q112	2SC2458(Y) (NPN)	2SC2458Y	2SC2458(Y)
Q113	2SC2458(Y) (NPN)	2SC2458Y	2SC2458(Y)

RESISTORS

Ref. No.	Description				RS Part No.	MFR's Part No.
R1	Carbon film	10 ohm	1/6W	±5%	N0063ECC	ELR20J100
R2	Carbon film	10 ohm	1/6W	±5%	N0063ECC	ELR20J100
R3	Carbon film	10k ohm	1/6W	±5%	N0281ECC	ELR20J103
R4	Carbon film	2.2k ohm	1/6W	±5%	N0216ECC	ELR20J222
R5	Carbon film	3.3k ohm	1/6W	±5%	N0230ECC	ELR20J332
R6	Carbon film	4.7k ohm	1/6W	±5%	N0247ECC	ELR20J472
R7	Carbon film	1.5k ohm	1/6W	±5%	N0206ECC	ELR20J152
R8	Carbon film	22k ohm	1/6W	±5%	N0311ECC	ELR20J223
R9	Not used					
R10	Carbon film	22k ohm	1/6W	±5%	N0311ECC	ELR20J223
R11	Carbon film	22k ohm	1/6W	±5%	N0311ECC	ELR20J223
R12	Carbon film	10k ohm	1/6W	±5%	N0281ECC	ELR20J103
R13	Carbon film	1M ohm	1/6W	±5%	N0445ECC	ELR20J105
R14	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473

Ref. No.	Description				RS Part No.	MFR's Part No.
R15	Not used					
R16	Carbon film	1k ohm	1/6W	±5%	N0196ECC	ELR20J102
R17	Carbon film	22k ohm	1/6W	±5%	N0311ECC	ELR20J223
R18	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R19	Carbon film	2.2k ohm	1/6W	±5%	N0216ECC	ELR20J222
R20	Carbon film	10 ohm	1/6W	±5%	N0063ECC	ELR20J100
R21	Carbon film	2.2k ohm	1/6W	±5%	N0216ECC	ELR20J222
R22	Carbon film	100 ohm	1/6W	±5%	N0132ECC	ELR20J101
R23	Carbon film	22k ohm	1/6W	±5%	N0311ECC	ELR20J223
R24	Carbon film	33k ohm	1/6W	±5%	N0324ECC	ELR20J333
R25	Carbon film	220 ohm	1/6W	±5%	N0149ECC	ELR20J221
R26	Carbon film	4.7k ohm	1/6W	±5%	N0247ECC	ELR20J472
R27	Carbon film	10k ohm	1/6W	±5%	N0281ECC	ELR20J103
R28	Carbon film	560 ohm	1/6W	±5%	N0176ECC	ELR20J561
R29	Carbon film	560 ohm	1/6W	±5%	N0176ECC	ELR20J561
R30	Carbon film	4.7k ohm	1/6W	±5%	N0247ECC	ELR20J472
R31	Carbon film	4.7k ohm	1/6W	±5%	N0247ECC	ELR20J472
R32	Carbon film	2.2k ohm	1/6W	±5%	N0216ECC	ELR20J222
R33	Carbon film	22k ohm	1/6W	±5%	N0311ECC	ELR20J223
R34	Carbon film	4.7k ohm	1/6W	±5%	N0247ECC	ELR20J472
R35	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R36	Carbon film	10k ohm	1/6W	±5%	N0281ECC	ELR20J103
R37	Carbon film	22k ohm	1/6W	±5%	N0311ECC	ELR20J223
R38	Carbon film	4.7k ohm	1/6W	±5%	N0247ECC	ELR20J472
R39	Carbon film	82 ohm	1/6W	±5%	N0122ECC	ELR20J820
R40	Carbon film	330k ohm	1/6W	±5%	N0410ECC	ELR20J334
R41	Carbon film	100k ohm	1/6W	±5%	N0371ECC	ELR20J104
R42	Carbon film	100k ohm	1/6W	±5%	N0371ECC	ELR20J104
R43	Carbon film	100k ohm	1/6W	±5%	N0371ECC	ELR20J104
R44	Carbon film	100k ohm	1/6W	±5%	N0371ECC	ELR20J104
R45	Carbon film	10k ohm	1/6W	±5%	N0281ECC	ELR20J103
R46	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R47	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R48	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R49	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R50	Carbon film	39k ohm	1/6W	±5%	N0330ECC	ELR20J393
R51	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R52	Carbon film	470k ohm	1/6W	±5%	N0423ECC	ELR20J474
R101	Carbon film	100 ohm	1/6W	±5%	N0132ECC	ELR20J101
R102	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R103	Carbon film	100 ohm	1/6W	±5%	N0132ECC	ELR20J101
R104	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R105	Carbon film	100 ohm	1/6W	±5%	N0132ECC	ELR20J101
R106	Carbon film	100 ohm	1/6W	±5%	N0132ECC	ELR20J101
R107	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R108	Carbon film	4.7k ohm	1/6W	±5%	N0247ECC	ELR20J472
R109	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R110	Carbon film	100k ohm	1/6W	±5%	N0371ECC	ELR20J104
R111	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R112	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R113	Carbon film	100k ohm	1/6W	±5%	N0371ECC	ELR20J104
R114	Carbon film	220 ohm	1/6W	±5%	N0149ECC	ELR20J221
R115	Carbon film	47 ohm	1/6W	±5%	N0099ECC	ELR20J470

Ref. No.	Description				RS Part No.	MFR's Part No.
R116	Carbon film	100 ohm	1/6W	±5%	N0132ECC	ELR20J101
R117	Carbon film	100 ohm	1/6W	±5%	N0132ECC	ELR20J101
R118	Carbon film	10 ohm	1/6W	±5%	N0063ECC	ELR20J100
R119	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R120	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R121	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R122	Carbon film	2.2k ohm	1/6W	±5%	N0216ECC	ELR20J222
R123	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R124	Carbon film	470 ohm	1/6W	±5%	N0169ECC	ELR20J471
R125	Carbon film	4.7k ohm	1/6W	±5%	N0247ECC	ELR20J472
R126	Carbon film	10k ohm	1/6W	±5%	N0281ECC	ELR20J103
R127	Carbon film	100 ohm	1/6W	±5%	N0132ECC	ELR20J101
R128	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R129	Carbon film	1M ohm	1/6W	±5%	N0445ECC	ELR20J105
R130	Carbon film	1k ohm	1/6W	±5%	N0196ECC	ELR20J102
R131	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R132	Carbon film	15k ohm	1/6W	±5%	N0297ECC	ELR20J153
R133	Carbon film	22k ohm	1/6W	±5%	N0311ECC	ELR20J223
R134	Carbon film	1k ohm	1/6W	±5%	N0196ECC	ELR20J102
R135	Carbon film	470 ohm	1/6W	±5%	N0169ECC	ELR20J471
R136	Carbon film	100k ohm	1/6W	±5%	N0371ECC	ELR20J104
R137	Not used					
R138	Carbon film	100 ohm	1/6W	±5%	N0132ECC	ELR20J101
R139	Carbon film	100 ohm	1/6W	±5%	N0132ECC	ELR20J101
R140	Carbon film	47 ohm	1/6W	±5%	N0099ECC	ELR20J470
R141	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R142	Carbon film	22k ohm	1/6W	±5%	N0311ECC	ELR20J223
R143	Carbon film	15k ohm	1/6W	±5%	N0297ECC	ELR20J153
R144	Carbon film	1k ohm	1/6W	±5%	N0196ECC	ELR20J102
R145	Carbon film	220 ohm	1/6W	±5%	N0149ECC	ELR20J221
R146	Carbon film	22 ohm	1/6W	±5%	N0078ECC	ELR20J220
R147	Carbon film	470k ohm	1/6W	±5%	N0423ECC	ELR20J474
R148	Carbon film	1k ohm	1/6W	±5%	N0196ECC	ELR20J102
R149	Carbon film	100 ohm	1/6W	±5%	N0132ECC	ELR20J101
R150	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R151	Carbon film	5.6k ohm	1/6W	±5%	N0257ECC	ELR20J562
R152	Carbon film	220k ohm	1/6W	±5%	N0396ECC	ELR20J224
R153	Carbon film	1k ohm	1/6W	±5%	N0196ECC	ELR20J102
R154	Carbon film	2.2k ohm	1/6W	±5%	N0216ECC	ELR20J222
R155	Carbon film	2.2k ohm	1/6W	±5%	N0216ECC	ELR20J222
R156	Carbon film	47 ohm	1/6W	±5%	N0099ECC	ELR20J470
R157	Carbon film	1k ohm	1/6W	±5%	N0196ECC	ELR20J102
R158	Carbon film	1.5k ohm	1/6W	±5%	N0206ECC	ELR20J152
R159	Carbon film	1.5k ohm	1/6W	±5%	N0206ECC	ELR20J152
R160	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R161	Carbon film	22k ohm	1/6W	±5%	N0311ECC	ELR20J223
R162	Carbon film	100k ohm	1/6W	±5%	N0371ECC	ELR20J104
R163	Carbon film	27k ohm	1/6W	±5%	N0316ECC	ELR20J273
R164	Carbon film	2.2k ohm	1/6W	±5%	N0216ECC	ELR20J222
R165	Carbon film	4.7k ohm	1/6W	±5%	N0247ECC	ELR20J472
R166	Carbon film	1M ohm	1/6W	±5%	N0445ECC	ELR20J105
R167	Carbon film	2.2k ohm	1/6W	±5%	N0216ECC	ELR20J222

Ref. No.	Description				RS Part No.	MFR's Part No.
R168	Carbon film	10k ohm	1/6W	±5%	N0281ECC	ELR20J103
R169	Carbon film	10k ohm	1/6W	±5%	N0281ECC	ELR20J103
R170	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R171	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R172	Carbon film	3.3k ohm	1/6W	±5%	N0230ECC	ELR20J332
R173	Carbon film	100k ohm	1/6W	±5%	N0371ECC	ELR20J104
R174	Carbon film	100k ohm	1/6W	±5%	N0371ECC	ELR20J104
R175	Carbon film	220k ohm	1/6W	±5%	N0396ECC	ELR20J224
R176	Carbon film	5.6k ohm	1/6W	±5%	N0257ECC	ELR20J562
R177	Carbon film	470 ohm	1/6W	±5%	N0169ECC	ELR20J471
R178	Carbon film	100 ohm	1/6W	±5%	N0132ECC	ELR20J101
R179	Carbon film	220k ohm	1/6W	±5%	N0396ECC	ELR20J224
R180	Carbon film	5.6k ohm	1/6W	±5%	N0257ECC	ELR20J562
R181	Carbon film	100 ohm	1/6W	±5%	N0132ECC	ELR20J101
R182	Carbon film	10k ohm	1/6W	±5%	N0281ECC	ELR20J103
R183	Carbon film	2.2k ohm	1/6W	±5%	N0216ECC	ELR20J222
R184	Carbon film	100k ohm	1/6W	±5%	N0371ECC	ELR20J104
R185	Carbon film	10k ohm	1/6W	±5%	N0281ECC	ELR20J103
R186	Carbon film	10k ohm	1/6W	±5%	N0281ECC	ELR20J103
R187	Carbon film	10k ohm	1/6W	±5%	N0281ECC	ELR20J103
R188	Carbon film	10k ohm	1/6W	±5%	N0281ECC	ELR20J103
R189	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473
R190	Carbon film	470k ohm	1/6W	±5%	N0423ECC	ELR20J474
R191	Carbon film	470k ohm	1/6W	±5%	N0423ECC	ELR20J474
R192	Carbon film	33k ohm	1/6W	±5%	N0324ECC	ELR20J333
R193	Carbon film	22 ohm	1/6W	±5%	N0078ECC	ELR20J220
R194	Carbon film	4.7k ohm	1/6W	±5%	N0247ECC	ELR20J472
R195	Carbon film	39 ohm	1/4W	±5%		ERD-25UJ390
R196	Carbon film	10k ohm	1/6W	±5%	N0281ECC	ELR20J103
R197	Carbon film	100 ohm	1/6W	±5%	N0132ECC	ELR20J101
R198	Carbon film	100k ohm	1/6W	±5%	N0371ECC	ELR20J104
R199	Carbon film	10 ohm	1/6W	±5%	N0063ECC	ELR20J100
R200	Carbon film	47k ohm	1/6W	±5%	N0340ECC	ELR20J473

CAPACITOR ARRAYS

Ref. No.	Description	RS Part No.	MFR's Part No.
CB1	0.001μF x 4 50WV +80% −20%	C-1807	EXF-P4102ZFW
CB2	100pF x 8 50WV ±20%	C-1806	EXF-P8101MF

CAPACITORS, TRIMMER

Ref. No.	Description		RS Part No.	MFR's Part No.
TC1	Trimmer	20pF	C-1212	ECR-RN020K86A
TC101	Trimmer	10pF	C-1743	ECV-1ZW10x53T
TC102	Trimmer	20pF	C-1551	ECV-1ZW20x53T
TC103	Trimmer	10pF	C-1743	ECV-1ZW10x53T
TC104	Trimmer	10pF	C-1743	ECV-1ZW10x53T
TC105	Trimmer	10pF	C-1743	ECV-1ZW10x53T

CRYSTALS & FILTERS

Ref. No.	Description	RS Part No.	MFR's Part No.
X1	Crystal (6.4 MHz)	MX-1247	6.4 MHz
X2	Crystal (32.768 kHz)	MX-1039	32.768 kHz
X101	Crystal (10.245 MHz)	MX-2605	T5717
XF101	Filter, Crystal (10.7 MHz)	C-1149	T5718
CF101	Filter, Ceramic (455 kHz)	C-1044	CFW455D

MISCELLANEOUS

Ref. No.	Description	RS Part No.	MFR's Part No.
J1	Connector, Housing		3024-17CH
J2	Connector, Housing		5124-8BHPB
J3	Connector, Housing		5124-6BHPB
J101	Connector, Pin (3 Pin)	J-5678	PI22A03M
J102	Connector, Pin (3 Pin)	J-5678	PI22A03M
J103	Connector, Pin (4 Pin)	J-4050	PI22A04M
J104	Connector, Pin (2 Pin)	J-4051	PI22A02M
J105	Connector, Pin (17 Pin)	J-5683	3022-17A
PL-1	Lamp 6V 30mA	L-0053	MM0602
TP101	Pin, Test		ERD-25TC0
TP102	Pin, Test		ERD-25TC0
TP103	Pin, Test		ERD-25TC0
TP104	Pin, Test		ERD-25TC0
TP105	Pin, Test		ERD-25TC0
J4	Jack, Antenna	J-0085	GE-85D-5383
J5	Jack, Earphone	J-0086	HSJ0289-01-050
J6	Jack, Ext, Power Charge	J-0087	EC-002-1-1
J7	Jack, Ext, Power Charge	J-0087	EC-002-1-1
SP-1	Speaker 0.3W 8Ω	SP-5277	SP-505
SW-1	See VR-2.		

VARIABLE RESISTORS

Ref. No.	Description	RS Part No.	MFR's Part No.
VR-1	Squelch 10kΩ (C)	P-7246	15FH15C10K
VR-2	Volume, w/Switch SW1 10kΩ (A)	P-7467	V12MA-1S(SJ)

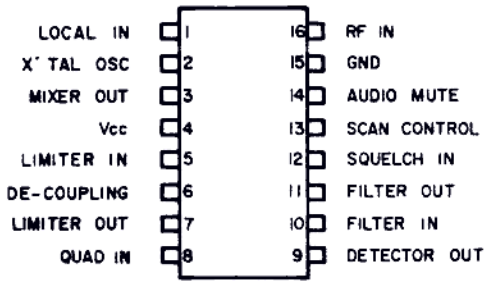
MECHANICAL PARTS LIST

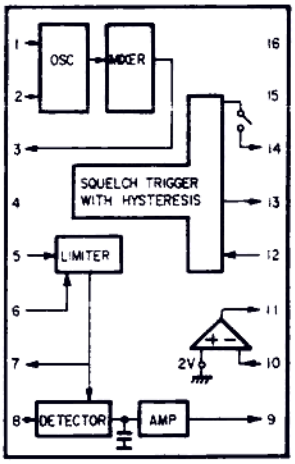
MISCELLANEOUS			
Ref. No.	Description	RS Part No.	MFR's Part No.
①	Antenna, Rubber (Lo, Hi, UHF, Air)	A-4011	GE-85D-5376
② J4	Jack, Antenna	J-0085	GE-85D-5383
③ J6, J7	Jack, Ext, Power, Charge	J-0087	EC-002-1-1
④ J5	Jack, Earphone	J-0086	HSJ0289-01-050
⑤ SP-1	Speaker 0.3W 8Ω	SP-5277	SP-505
⑥ VR-1	Control, Squelch 10kΩC	P-7246	V12M4-1N15FH15C10K
⑦ VR-2/SW1	Control, Volume w/Power Switch 10kΩA	P-7467	V12-M4-1S(SJ)15FH15A10K
⑧	Knob, Volume, Squelch	K-0267	GE-84D-4855
⑨ PL1	Lamp 6V 30mA	L-0053	MM0602
⑩	LCD	L-1960	LCB5D6011A
⑪	Case Assembly, Front (Non repairable)	Z-0727	GA-85D-5471
⑫	Case Assembly, Rear (Non repairable)	Z-0729	GA-85D-5473
⑬	Case, Battery	B-0733	GE-82D-3490
⑭	Cover, Battery Compartment	DB-0084	GE-85C-5460
⑮	Terminal, Battery		GE-80D-1215
⑯	P.C. Board Assembly, Linear	XB-1126	GA-85D-5866
⑰	P.C. Board Assembly, Logic	XB-1127	GA-85D-5867
⑱	P.C. Board Assembly, Keyboard	XB-1128	GA-85D-5869
⑲	Clip, Belt Assembly (Non repairable)	H-6022	GA-80D-1531
⑳	Rubber, Keyboard	K-0584	GE-84D-5283
㉑	Connector, LCD	J-5686	GE-85D-5464
㉒	Holder, LCD		GE-85D-5465
㉓	Reflector, LCD		GE-85D-5463
㉔	Pad, Speaker		GE-85D-5373
㉕	Contact, Key-Lock Switch	HC-1745	GE-82D-3395
㉖	Knob, Key-Lock Switch	K-0588	GE-85D-5462
㉗	Terminal, Back-up Batteru (L)		GE-82D-3393
㉘	Terminal, Back-up Battery (S)		GE-82D-3394
㉙	Cover, Back-up Battery	DB-0083	GE-82D-3383
㉚	Remote Switch Assembly w/P.C.B.	S-7038	GA-85D-5868
㉛	Knob, Remote Switch	K-0360	GE-85D-5461
㉜	Switch Push (Reset)	S-2985	KHH10906
㉝	Plate, VCO Shield (bottom)		GE-85D-5862
㉞	Fiber, VCO Shield		GE-85D-5863
㉟	Case, Logic Shield		GE-85D-5469
㊱	Fiber, Logic Shield		GE-85D-5470
㊲	Plate, Logic Shield (bottom)		GE-85D-5864
㊳	Fiber, Logic Shield Plate (bottom)		GE-85D-5865
㊴	Case, CPU Shield		GE-85D-5928
㊵	Fiber, CPU Shield		GE-85D-5929
Ⓐ	Screw, Pan Head Machine Blk 2x36		PM 2x36
Ⓑ	Screw, Pan Head Machine Blk 2x28		PM 2x28
㊶	Screw, TP Head Tapping 2x4		TP 2x4
㊷	Screw, Trass Head, 3x4		3x4
㊸	Screw, CM, Tapping + 2x4 1P		CM 2x4
㊹	Flat Washer		GE-85D-6166
㊺	Stud Linear P.C.B.		GE-82D-3509
㊻	Stud Logic (Blk) P.C.B.		GE-82D-3508B
㊼	Stud Logic P.C.B.		GE-85D-5468

SEMICONDUCTOR LEAD IDENTIFICATION AND IC CIRCUIT DIAGRAM

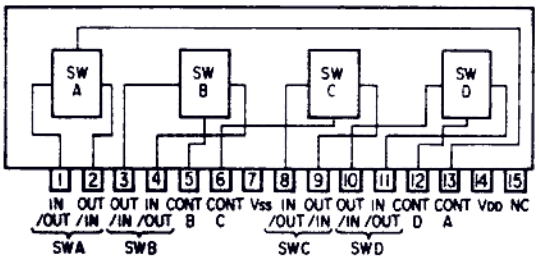
IC LEAD IDENTIFICATION

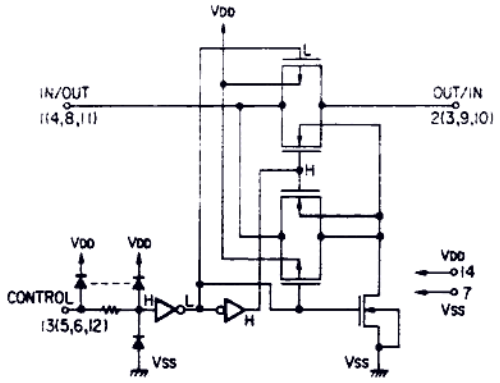
IC101 TK10420



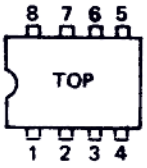


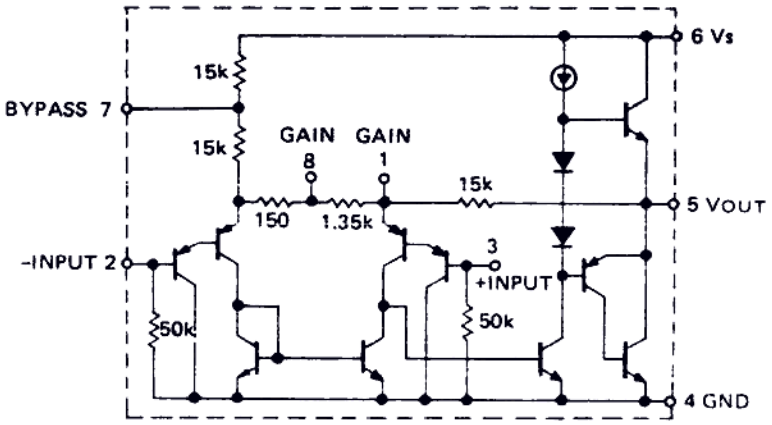
IC102 LC4066BS



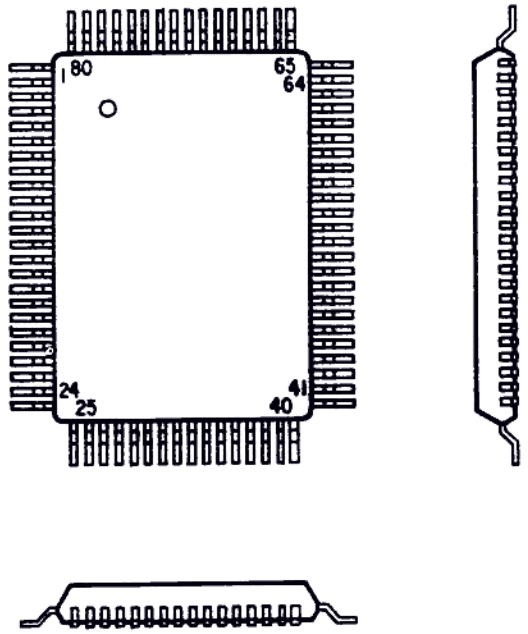


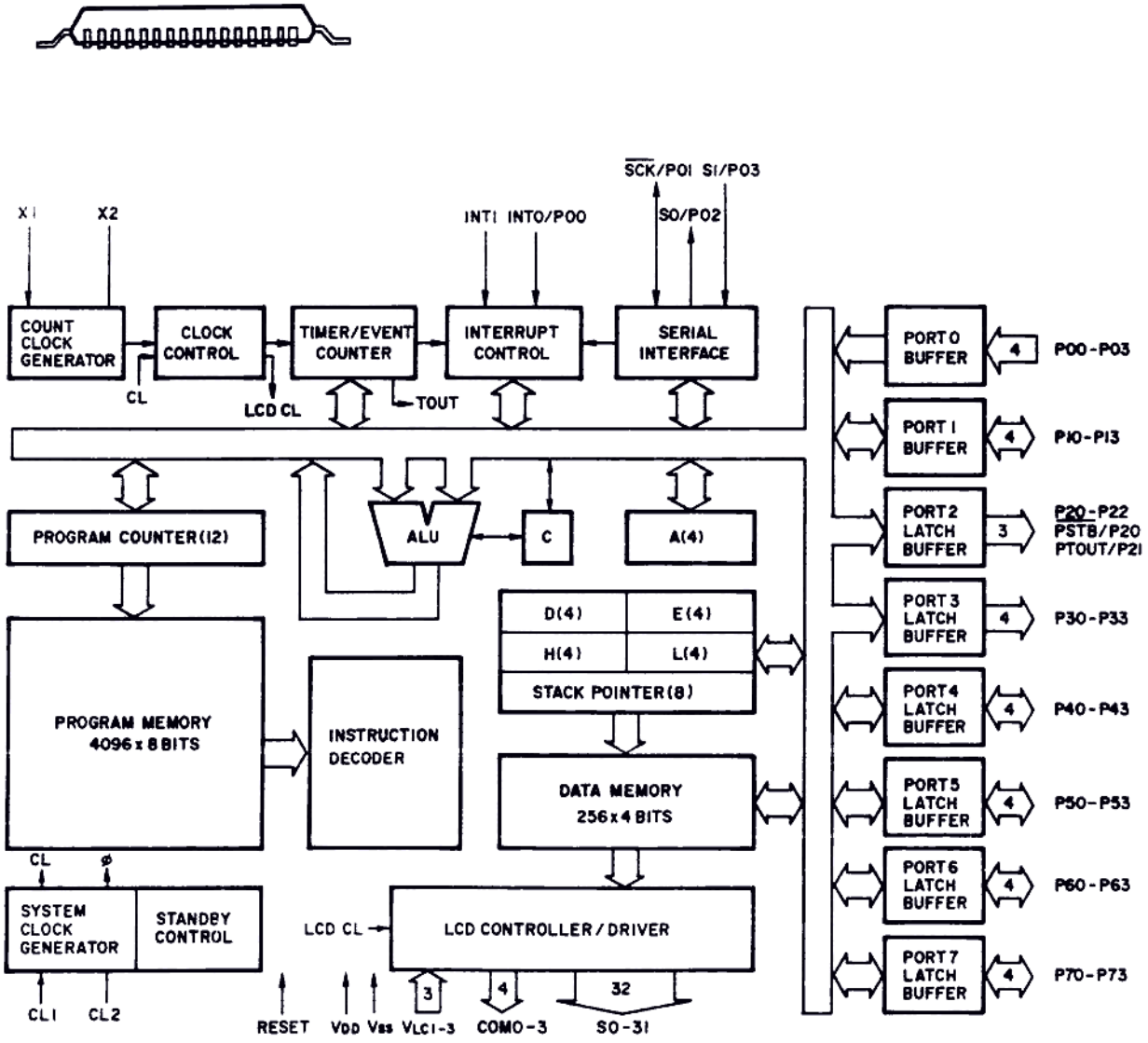
IC103 LM368N-1



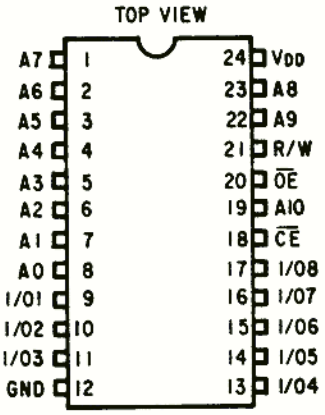


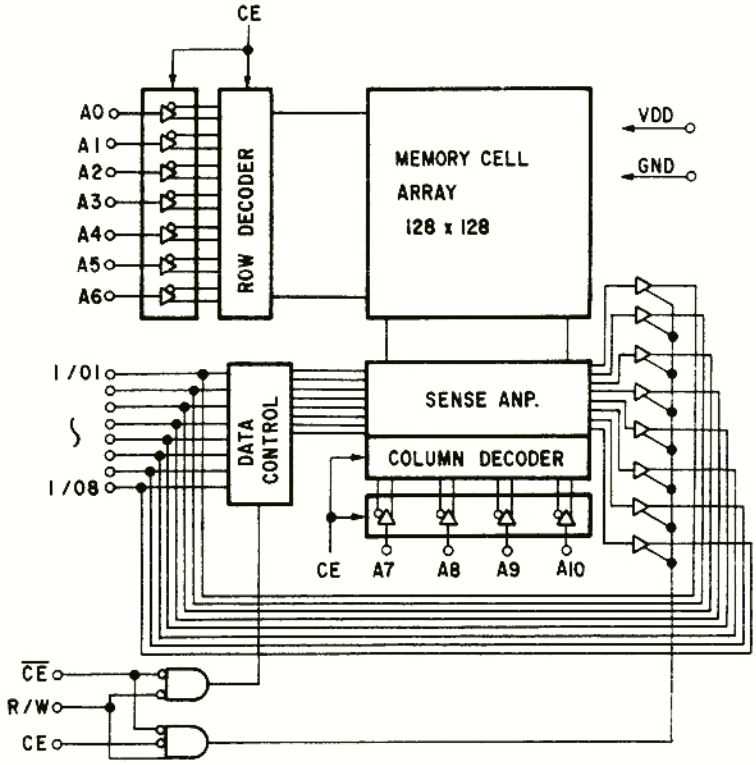
IC1 GRE-0437A



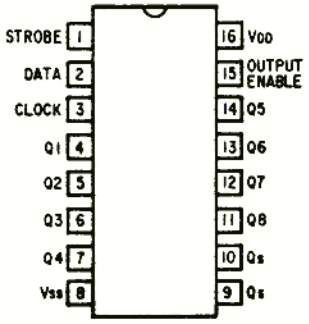


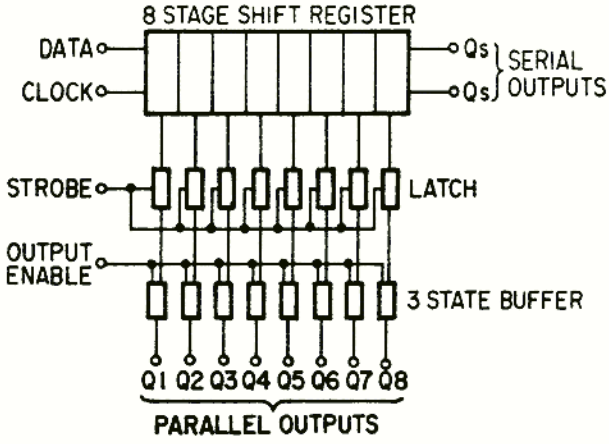
IC2 TC5517BF-20 or μPD446G



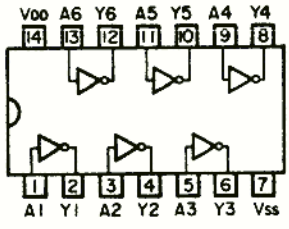


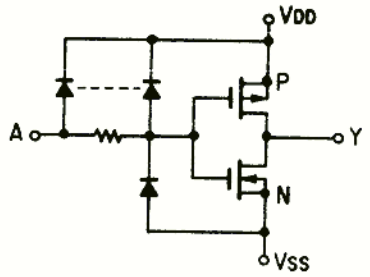
IC3 μPD4094BG



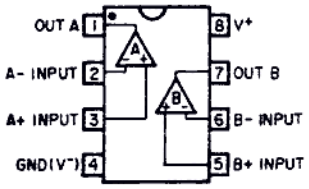


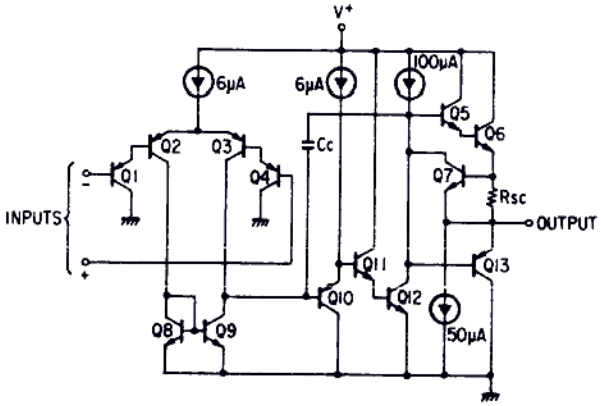
IC4 μPD4069UBG



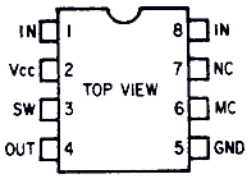


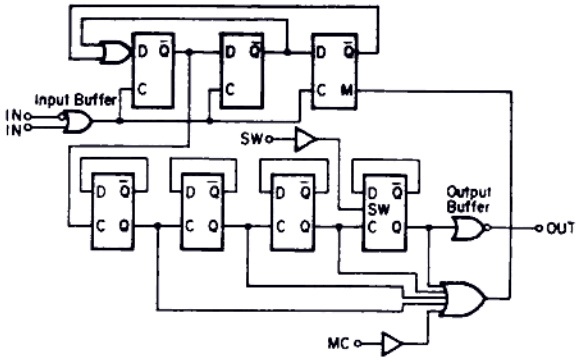
IC5 μPD358G



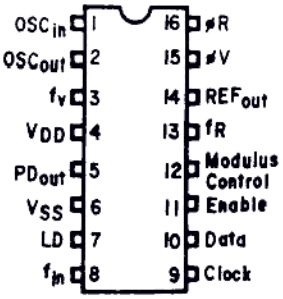


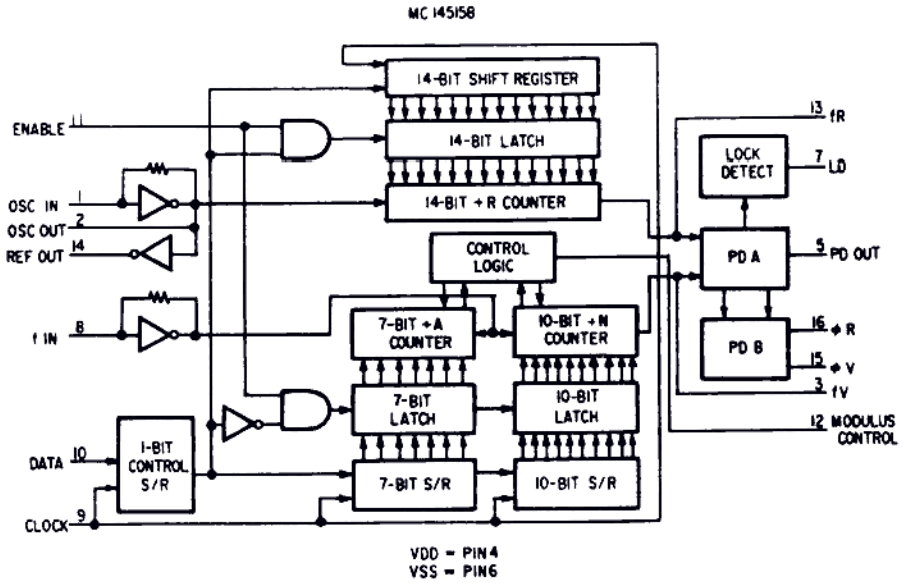
IC6 MB504P-G



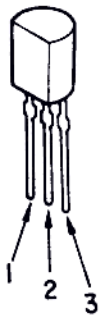


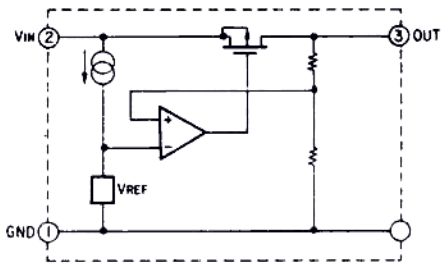
IC7 MC145158





IC8 S-81250HG

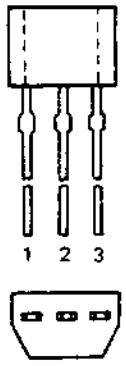




TRANSISTOR LEAD IDENTIFICATION

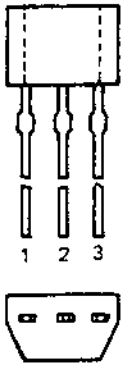
A) 2SK118(R,O)
B) 2SA1150(Y,GR), 2SC2458(Y,GR), 2SC2668(O,Y), RN2202
C) 2SC2498
D) 3SK101(Y)
E) 2SC2464, 2SC2466
F) UN4111
G) 3SK96

(A)



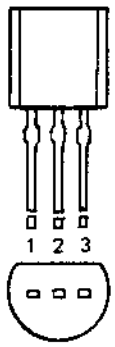
1. SOURCE
2. GATE
3. DRAIN

(B)



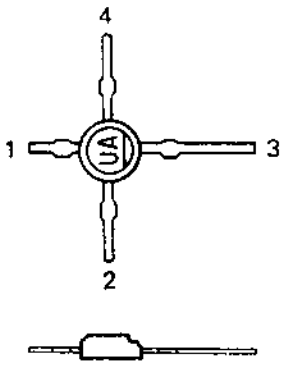
1. EMITTER
2. COLLECTOR
3. BASE

(C)



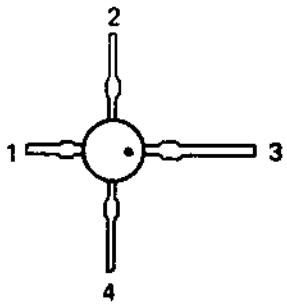
1. BASE
2. EMITTER
3. COLLECTOR

(D)



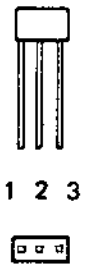
1. GATE 1
2. SOURCE
3. DRAIN
4. GATE 2

(E)



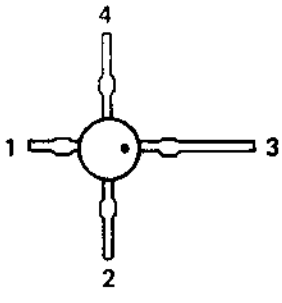
1. EMITTER
2. BASE
3. COLLECTOR
4. BASE

(F)



1. EMITTER
2. COLLECTOR
3. BASE

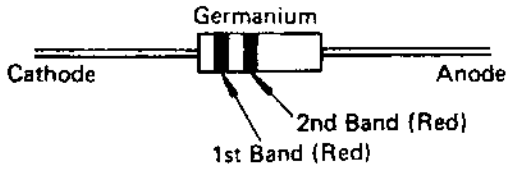
(G)



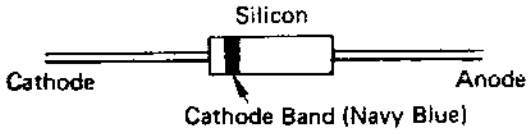
1. GATE 1
2. GATE 2
3. DRAIN
4. SOURCE

DIODE IDENTIFICATION AND LEAD POLARITY

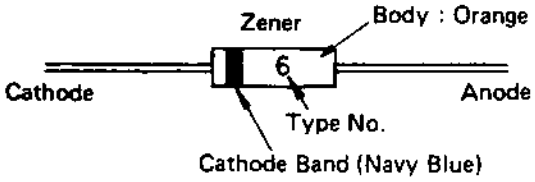
A) 1K261



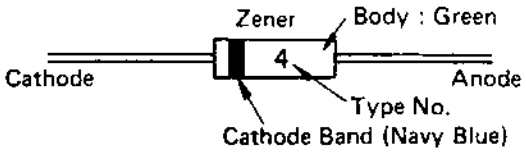
B) 1S2076A



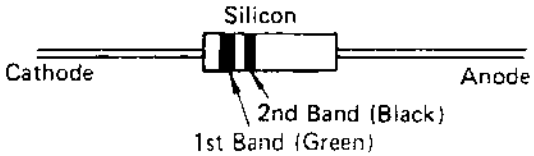
C) HZ6A1L, HZ-12B2L
HZ16-3L



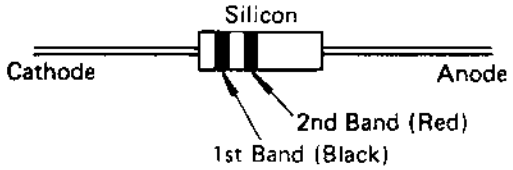
D) HZ4BLL



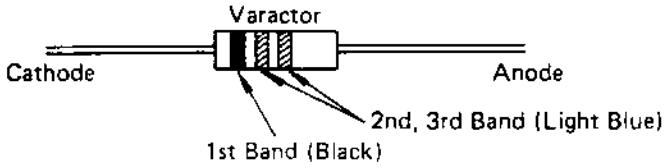
E) 1SS85



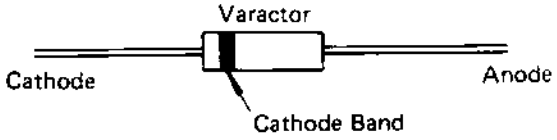
F) 1S2090



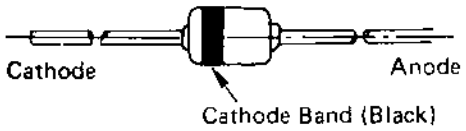
G) 1SV89BS2



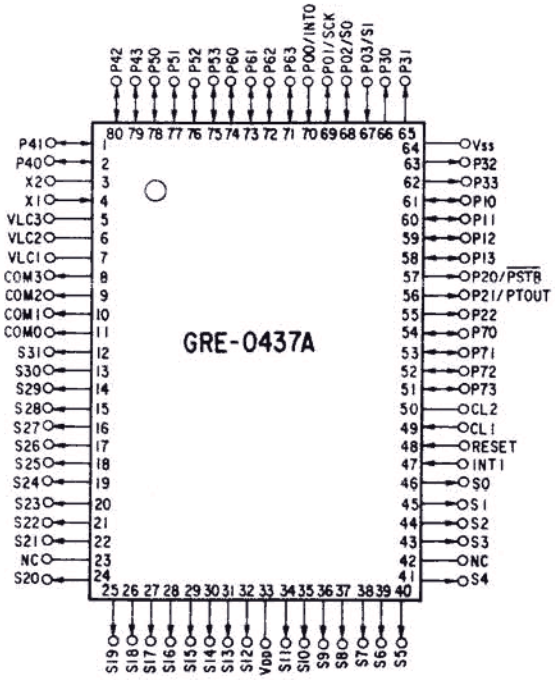
H) BB329



I) 1SV136



MICROPROCESSOR (IC1) PORT FORMAT



Pin No.		Pin No.		Pin No.	
1	Band select, keyboard	31	LCD	60	Memory Data I/O
2	Band select, keyboard	32	LCD	61	Memory Data I/O
3	Count clock oscillator	33	VDD	62	Band select, keyboard
4	Count clock oscillator	34	LCD	63	Band select, keyboard
5	LCD bias	35	LCD	64	VSS
6	LCD bias	36	LCD	65	Band select, keyboard
7	LCD bias	37	LCD	66	Band select, keyboard
8	LCD	38	LCD	67	Squelch Input
9	LCD	39	NC	68	Serial Date out
10	LCD	40	NC	69	Serial, clock
11	LCD	41	NC	70	Hold Input
12	LCD	42	NC	71	LCD control
13	LCD	43	NC	72	Key tone
14	LCD	44	NC	73	Mute out
15	LCD	45	NC	74	Memory Data I/O
16	LCD	46	NC	75	Memory output enable
17	LCD	47	GND	76	Keyboard
18	LCD	48	RESET	77	Keyboard
19	LCD	49	System clock oscillator	78	Keyboard
20	LCD	50	System clock oscillator	79	Keyboard
21	LCD	51	Key Lock, Low Batt, Band	80	Band select, keyboard
22	LCD		Select Input		
23	NC	52	Keyboard		
24	LCD	53	Keyboard		
25	LCD	54	Keyboard		
26	LCD	55	Shift register strobe		
27	LCD	56	PLL latch pulse out		
28	LCD	57	Memory write enable		
29	LCD	58	Memory Data I/O		
30	LCD	59	Memory Data I/O		

APPENDIX

VHF-MID Band Alignment for European/Australian models

CIRCUIT REVISION

1. The following parts should be changed as shown below.

Ref. No.	Low band	Mid band
L101	4LNC092	4LNC122
T101	GR-N5341	GR-N553
T102	GR-N5341	GR-N544
C102	0.001μF	33pF
C105	0.001μF	33pF
C138	0.001μF	39pF
C140	68pF	27pF
C141	33pF	5pF
D115	BB329	Not used

2. D17 changed to IC1 pin 63 from IC1 pin 65.
3. R1 changed to IC3 pin 5 from IC3 pin 4.

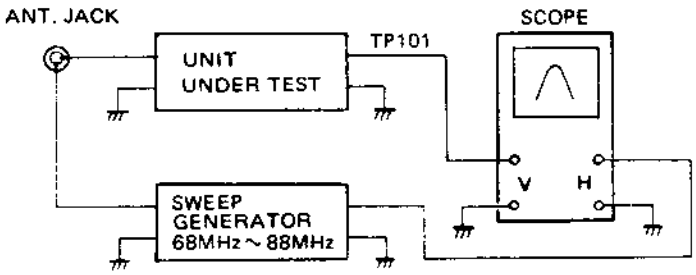
VCO ALIGNMENT

Step 1: Connect a DC SSVM to TP103 and ground.
Step 2: Program CH1, 2 and 3 as follows:
CH1 (68 MHz), CH2 (78 MHz), CH3 (88 MHz)
Step 3: Select channel 3 (88 MHz) and adjust TC103 for 11.0V on the DC SSVM.
Step 4: Select channel 1 (68 MHz) and adjust T111 for 1.5V on the DC SSVM.
Step 5: Repeat steps 3 and 4 until no improvement is observed.
The DC SSVM should show as below.

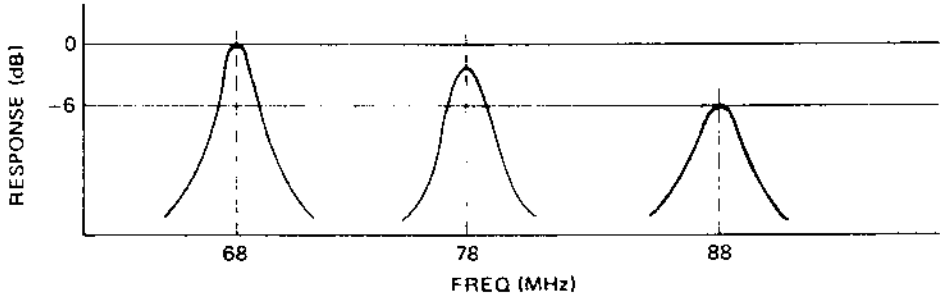
68 MHz	Voltage of TP103	1.4– 1.6V
78 MHz	Voltage of TP103	5.1– 5.4V
88 MHz	Voltage of TP103	10.0–11.3V

RF AMP ALIGNMENT

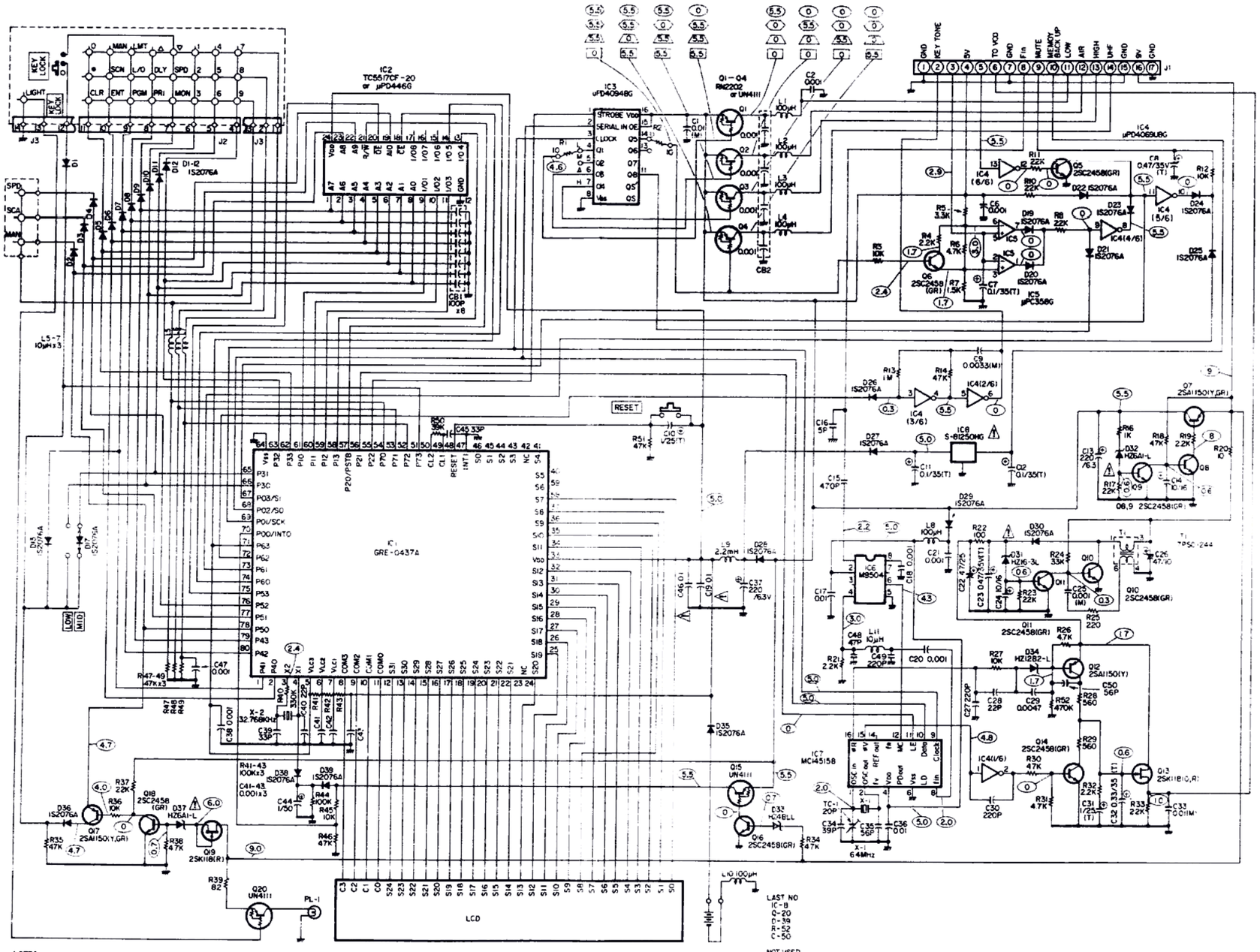
Step 1: Connect instruments as shown below.



Step 2: Program 68 MHz (CH1), 78 MHz (CH2), 88 MHz (CH3).
Step 3: Select Channel 1 (68 MHz) and adjust T101 and T102 for maximum RF waveform.
Step 4: Check the Channels 1 ~ 3 one by one for maximum RF waveform.
Slight deviation as shown below is acceptable.



SCHEMATIC DIAGRAM (LOGIC SECTION)

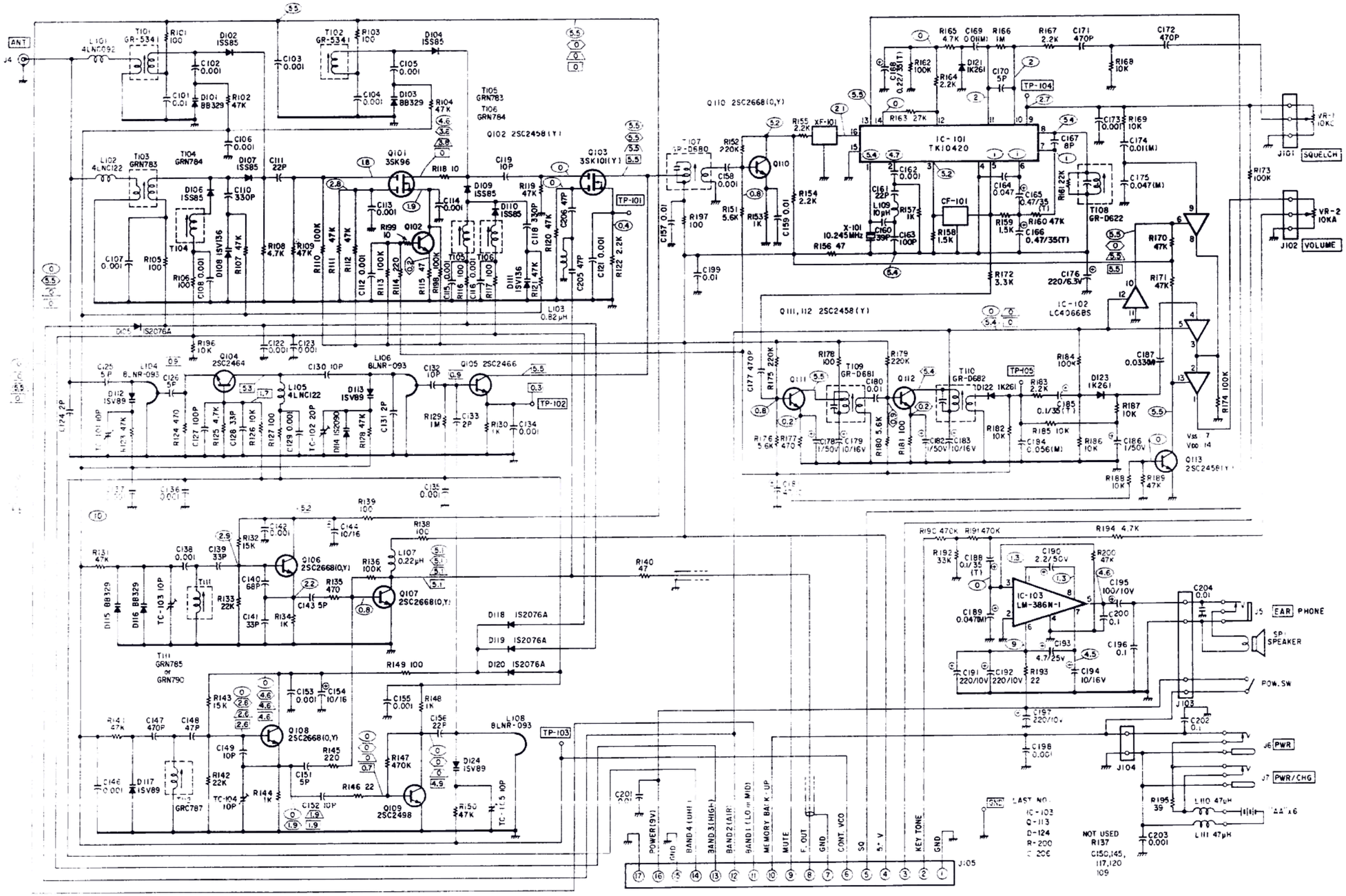


NOTES

1. RESISTANCE VALUES IN OHMS (K=1000, M=1000000)
2. CAPACITANCE VALUES IN μF (P=μμF)
3. (T) : TANTALUM CAPACITOR
4. (M) : MYLAR CAPACITOR
5. NO SUFFIXED CERAMIC CAPACITOR
6. ( ) DENOTES DC VOLTAGE MEASURED WITH DC VOLTMETER (100KΩ/V) UNDER FOLLOWING CONDITIONS CH : LOW BAND AT 30MHz MUNUAL OPERATION, VOLUME AT MINIMUN AND SQUELCH CCW
7. ( ) DENOTES VOLTAGE FOR AIRCRAFT BAND OPERATION
8. ( ) DENOTES VOLTAGE FOR HIGH BAND OPERATION
9. ( ) DENOTES VOLTAGE FOR UHF BAND OPERATION

CAUTION : SINCE THE COMPONENT MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED ON PARTS LIST ONLY.

SCHEMATIC DIAGRAM (LINEAR SECTION)



NOTES

1. RESISTANCE VALUES IN OHMS (K=1000, M=1000000)
2. CAPACITANCE VALUES IN µF (P=µµF)
3. (T) TANTALUM CAPACITOR
4. (M) MYLAR CAPACITOR
5. NO SUFFIXED CERAMIC CAPACITOR
6. ( ) DENOTES DC VOLTAGE MEASURED WITH DC VOLTMETER (100KΩ/V) UNDER FOLLOWING CONDITIONS: CH-1 LOW BAND AT 30MHz MANUAL OPERATION, VOLUME AT MINIMUM AND SQUELCH CCW
7. ( ) DENOTES VOLTAGE FOR AIRCRAFT BAND OPERATION
8. ( ) DENOTES VOLTAGE FOR HIGH BAND OPERATION
9. ( ) DENOTES VOLTAGE FOR UHF BAND OPERATION

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3,794,925
3,801,914
3,961,261
3,962,644
4,027,251
4,092,594
4,123,715
4,245,348

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