

Section 1. System Overview

Radio Shack's TRS-80 Model 100 is a portable computer equipped with built-in software to perform a variety of useful tasks such as text preparation, schedule and address organizing, and telecommunications.

Additionally, Model 100 has the following standard features:

- Enhanced version of Microsoft BASIC
- Full-size typewriter style keyboard
- LCD with seven lines by 40 columns
- Built-in modem
- Built-in cassette interface
- Built-in bar code reader interface
- Parallel printer interface

Other features available are: real time clock and calendar, upper- and lowercase characters, and RAM internally expandable to 32K bytes.

Specifications

Main Components

Keyboard

71 keys (9 x 8 matrix)	
Alphabet keys	27
Number keys	10
Picture-control keys	7
Function keys	8
Special symbol keys	8
Mode keys	5
Other special-use keys	6

Specifications Cont'd

<i>LCD display</i>	
Display panel	240 x 64 Full-Dot matrix
Dot pitch	1/32 duty
Dot size	1/6.66 bias
Effective display area	0.8 x 0.8 mm 0.73 x 0.73 mm 191.2 x 50.4 mm
<i>Operation batteries</i>	
Batteries	Four AA alkaline-manganese batteries
Operation time	5 days (at 4 hours/day) 20 days (at 1 hour/day)
	Note: I/O is disconnected.
<i>Memory protection battery</i> (on Main PCB)	
Battery	Rechargeable
Protection time	About 40 days (8 KB) About 10 days (32 KB)
Recharge method	Trickle charge by AC adaptor, or operation batteries
<i>LSIs</i>	
CPU	80C85 Code and pin compatible with 8085
ROM	Max. 64 KB (2 banks of 32 KB) Standard 32 KB Option 32 KB
RAM	Max. 32 KB Standard 8 KB RAM pack Incremental 8 KB RAM pack on PCB
<i>Clock/Calendar</i>	
	μPD1990AC No leap year/no February 29

I/O Interface

RS-232C (conforms to EIA Standard)

Signal

TXR (Transmit Data)
RXR (Receive Data)
RTS (Request to Send)
CTS (Clear to Send)
DSR (Data Set Ready)
DTR (Data Terminal Ready)

Communications protocol

Word length

Parity

Stop Bit length

Baud rate

6, 7, or 8 bits

NON, EVEN, or ODD

1 or 2 bits

75, 110, 300, 600, 1200, 2400, 4800, 9600, 19200
BPS

Specifications Cont'd

Max. transmission distance	5m
Driver max. voltage output	$\pm 5V$
Driver min. voltage output	$\pm 3.5V$
Receiver max. voltage input	$\pm 18V$
Receiver min. voltage input	$\pm 3V$
<i>Modem/coupler</i> (conforms to BEL103 standards)	
Baud rate	300 BPS
Programmable items:	
Data length	6, 7, or 8 bits
Parity	NON, EVEN, or ODD
Stop bit	1 or 2 bits
Full duplex	Answer/call switchable mode
Other functions	Hang-up and auto-dialer
<i>Audio cassette interface</i>	
Data rate	1500 BPS (MARK: 2400 Hz, SPACE: 1200 Hz)
<i>Printer interface</i> (conforms to Centronics interface standards)	
Handshake signal	$\overline{\text{STROBE}}$, $\overline{\text{BUSY}}$, $\overline{\text{BUSY}}$

Controls and Functions

Power switch. Move this switch toward the front to turn the power ON. To conserve the batteries, Model 100 automatically turns the power off if the unit is not used within 10 minutes. When an automatic power-off occurs, the switch remains in the ON position even though the power is off. To turn the power on, move the switch to the OFF position, then back to ON.

ANS/ORIG selector. Selects the modem answer mode or call mode. If you are originating a phone call to another computer, set the switch to ORIG. If another computer is calling your Model 100, set to ANS.

DIR/ACP selector. This switch allows you to select either direct connection or acoustic coupler modem connection. If you are communicating with another computer by telephone via the built-in Direct Connect Modem, set the switch to the DIR position. If you are using the optional/extra Model 100 Acoustic Coupler (*Radio Shack Catalog Number 26-3805*), set the selector to the ACP position.

Memory power switch. This switch prevents over discharge of the Ni-Cad battery for RAM back-up. Model 100 will not operate regardless of the setting of the power switch unless this switch is on. Set the switch to OFF if the Model 100 is not to be used for a long time. Note that the RAM will not be backed up when this switch is set to OFF.

RESET switch. If the Model 100 "locks up" (i.e., the display "freezes" and all keys appear inoperative), press this button to return to the Main Menu (start-up) screen. It's highly unlikely that the Model 100 will lock-up when you are using the built-in application programs. However, this situation may occur with customized programs.

Display adjustment dial. This control adjusts the contrast of the LCD display relative to the viewing angle.

Special Function — Automatic Power OFF.

When there is no program operation (awaiting command) for ten minutes, the power is automatically cut off.

To start again, the power switch must be turned OFF and then ON, thus releasing the automatic power OFF condition. (The display will be the same as before the power was turned off.)

Connectors

RS-232C	25 pins (DB-25S)
Printer	26 pins (FRC2-C26-L13-ON)
Modem	8 pins (TCS-4490)
Cassette	8 pins (TCS-4480)
Bar code reader	9 pins (A-7224)
System Bus	40 pins (IC Socket)
AC adapter	5.5 (Center Minus)

Section 2. Disassembly/Reassembly

This section describes the procedures for disassembling and reassembling the Model 100 Portable Computer.

To disassemble the computer:

Case

1. Disconnect all cables from the unit (printer cables, cassette cables, etc.).
2. Turn the Computer over and place it on a piece of cloth or another soft material to prevent scratching the Display. Remove the four screws **A** near the corners to separate the lower case (black area) from the upper case.
3. Turn the Computer over again and remove the upper case, opening it to the right side. Note that the upper and lower case are also held by snaps. You'll need to pull the upper case firmly, but gently. (The LCD, Keyboard, and Buzzer are connected to the CPU Board in the lower case.)
4. Remove the LCD, the Keyboard, and the Buzzer connectors from the CPU Board.

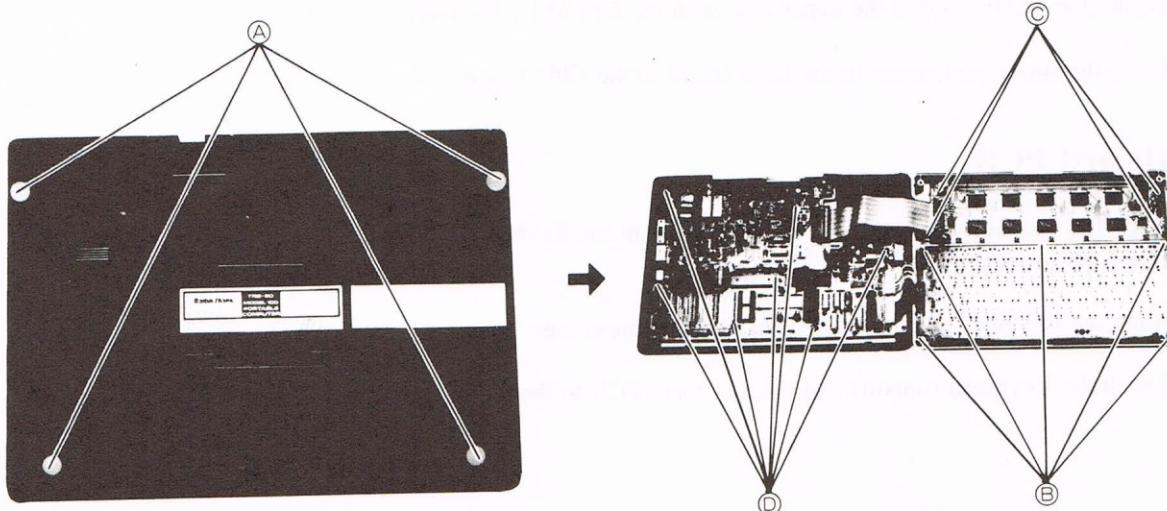


Figure 2-1. Bottom View

Figure 2-2. Interior View

Keyboard PCB

1. Remove the five screws ⑧ from the Keyboard PCB on the upper case and then remove the Board.
2. Remove the Keyboard PCB supports.

LCD Board

Remove the four screws ⑨ from each corner of the LCD and then remove the Board.

CPU Board

1. Remove the seven screws ⑩ holding the CPU board to the lower case.
2. Remove the CPU Board by lifting it upward. Be especially careful when removing the RESET Switch and the battery contact spring.

To reassemble:

CPU Board

1. Align the screw positions of the lower case with the CPU Board. Then insert the CPU Board, starting at the rear. Be sure that the RESET Switch fits properly in its notch.
2. Secure the battery contact spring.
3. Secure the CPU Board to the lower case with the seven M3 x 8 screws.

LCD PCB

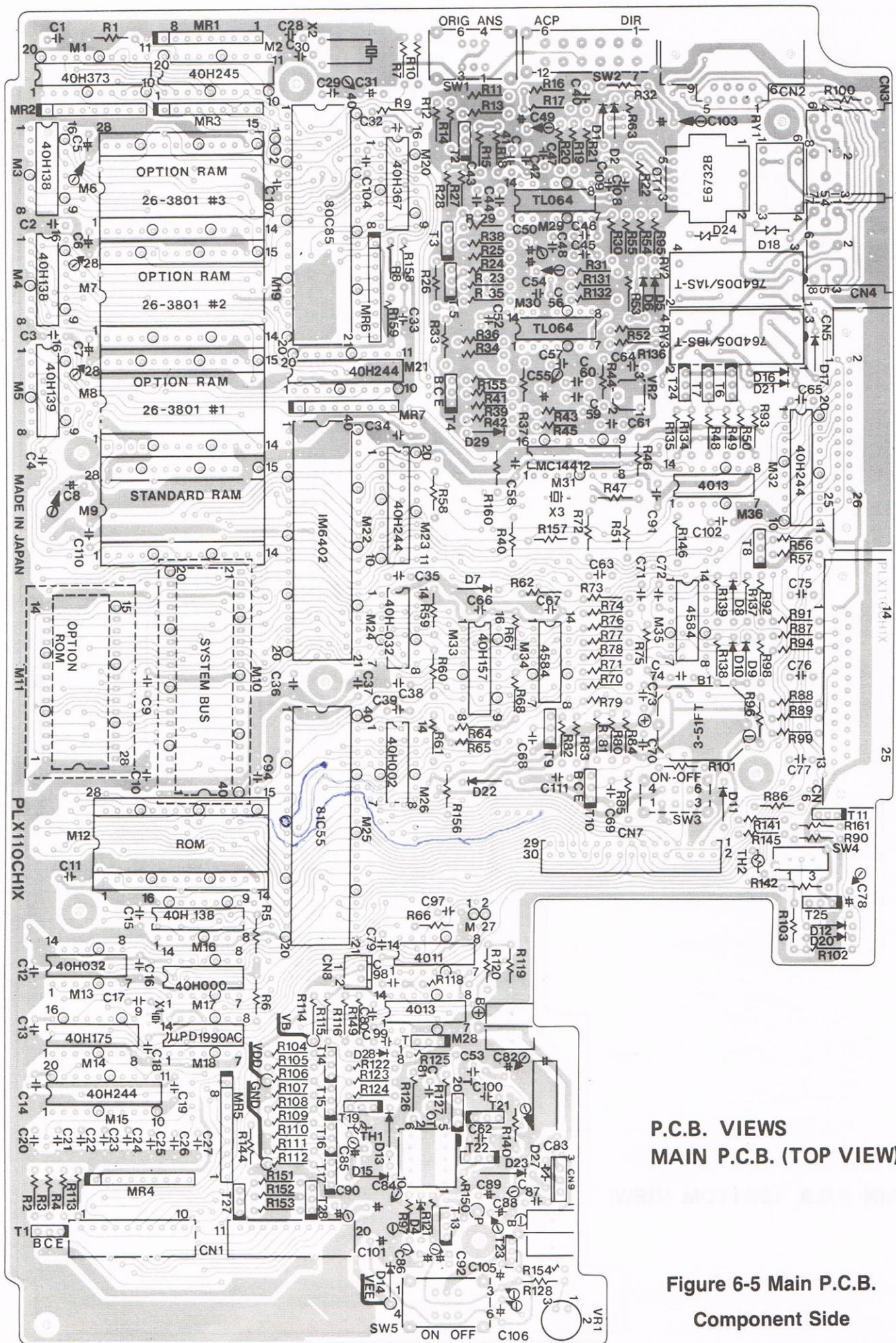
1. Secure the LCD Board to the upper case with the four M3 x 3 screws.
2. Insert the Buzzer connector in the LCD Board to the CPU Board.

Keyboard PCB

1. Align the two Keyboard supports with the holes in the Keyboard PCB and attach so that they fit on the PCB's longer edges.
2. Align the Keyboard supports and holes with the upper case screws.
3. Attach the Keyboard supports and the Keyboard PCB to the upper case using the five M3 x 8 screws.

Case

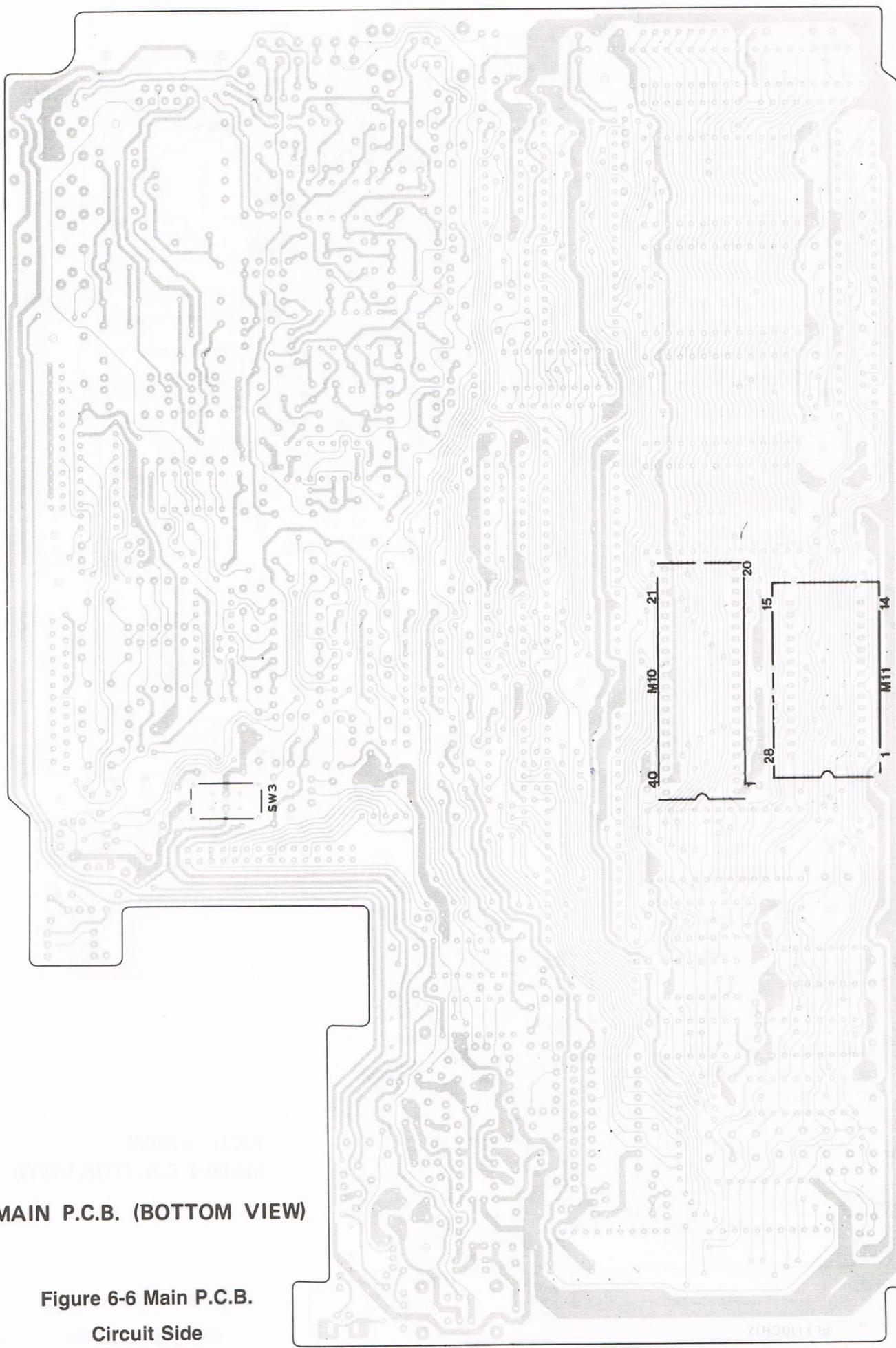
1. Double-check to be sure all wires are connected correctly and all boards are properly fastened.
2. Place the upper and lower cases side by side with the upper case next to the right side of the lower case.
(Be careful not to scratch the Display.)
3. Attach the LCD and Keyboard connectors to the CPU Board in the lower case.
4. Carefully swing the upper case over the lower case. Avoid pulling on the connecting cables.
5. Align the upper and lower cases so that the tabs fit well.
6. Hold both cases together, turn the unit over and secure with the four M3 x 8 screws.



P.C.B. VIEWS

MAIN P.C.B. (TOP VIEW)

**Figure 6-5 Main P.C.B.
Component Side**



MAIN P.C.B. (BOTTOM VIEW)

**Figure 6-6 Main P.C.B.
Circuit Side**

LCD P.C.B. VIEWS

(TOP VIEW)

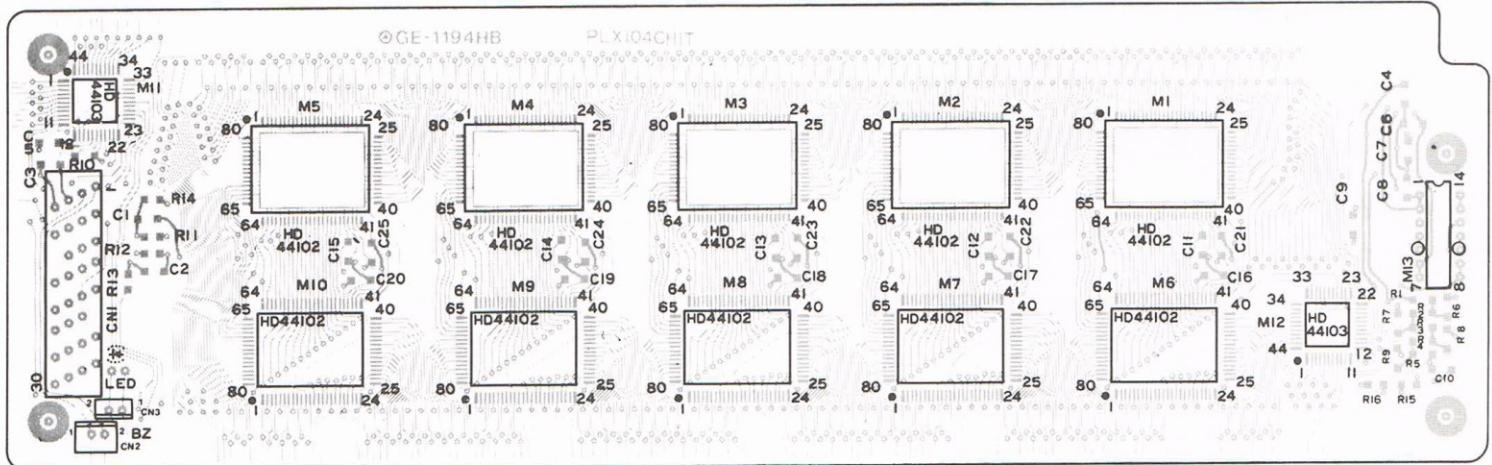


Figure 6-7 LCD P.C.B. — Component Side

(BOTTOM VIEW)

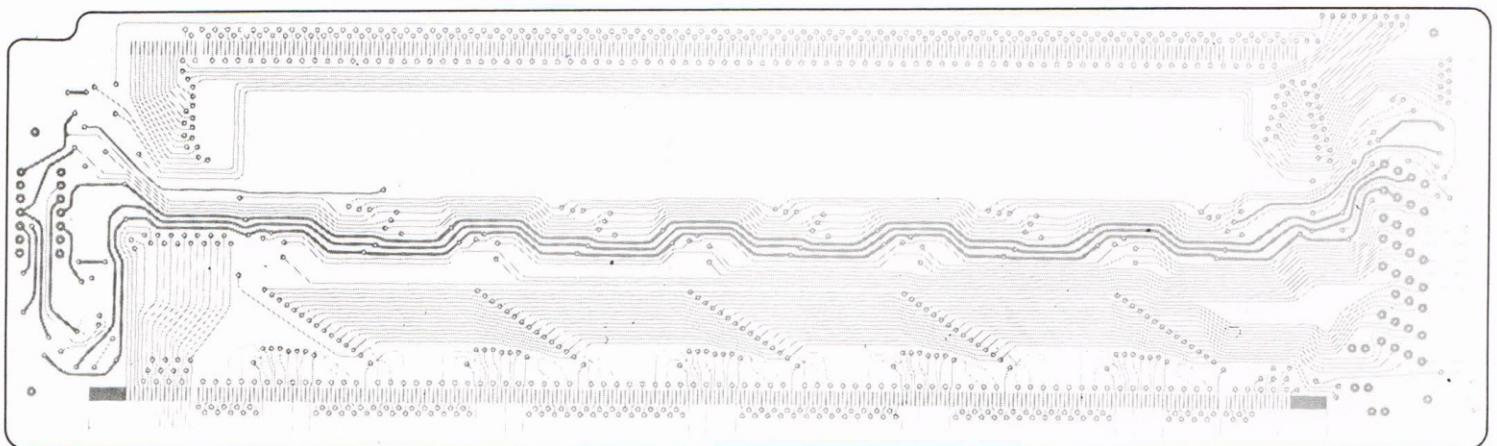


Figure 6-8 LCD P.C.B. — Circuit Side

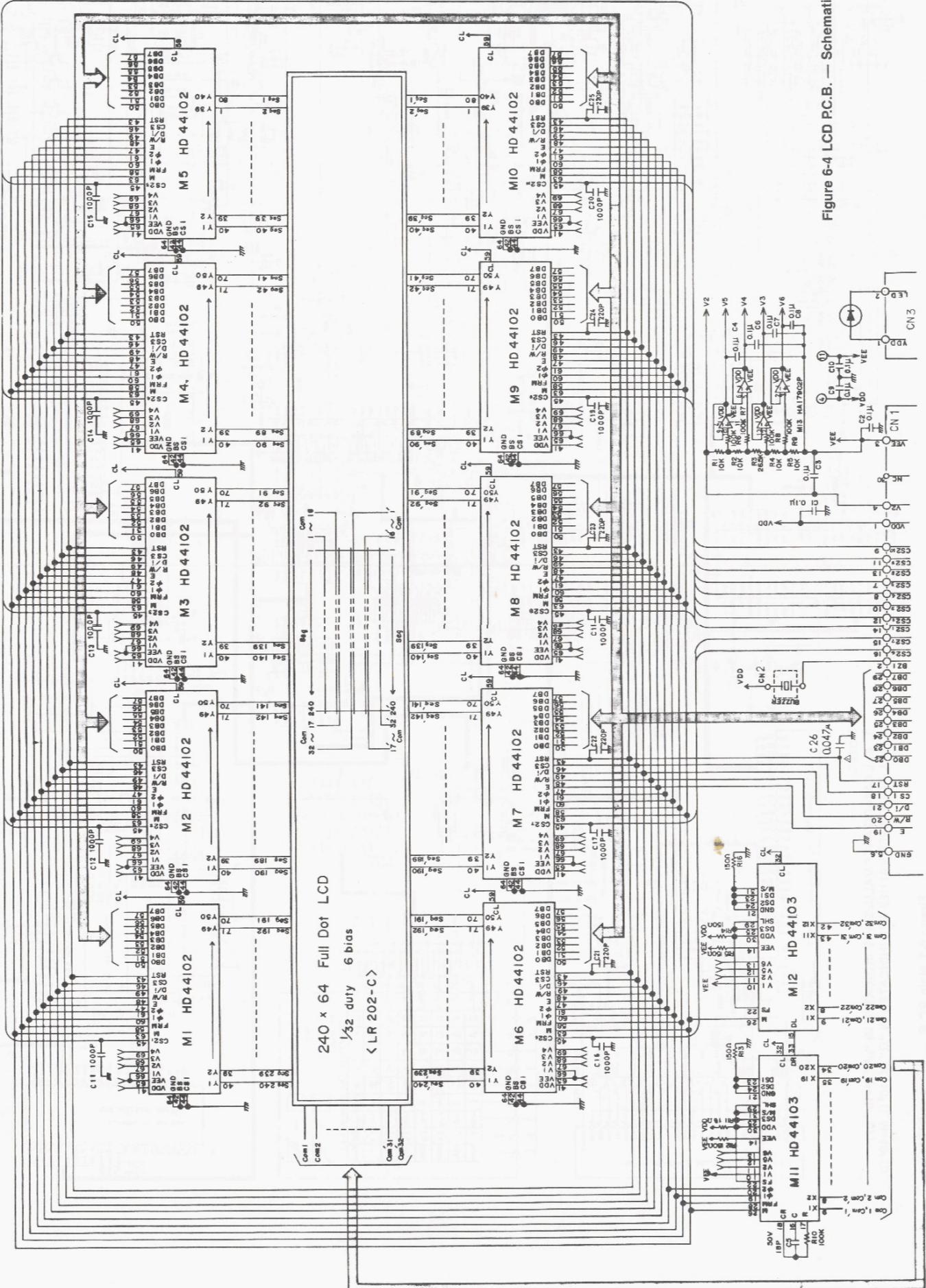


Figure 6-4 LCD PC.B.—Schematic Diagram

