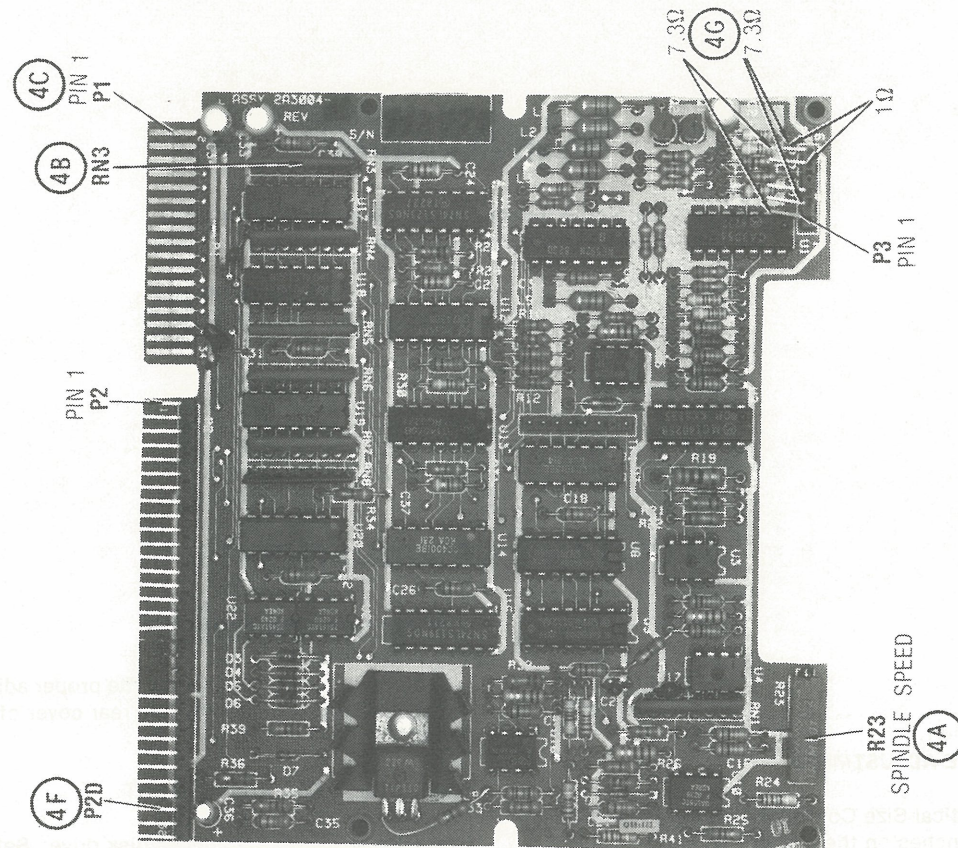
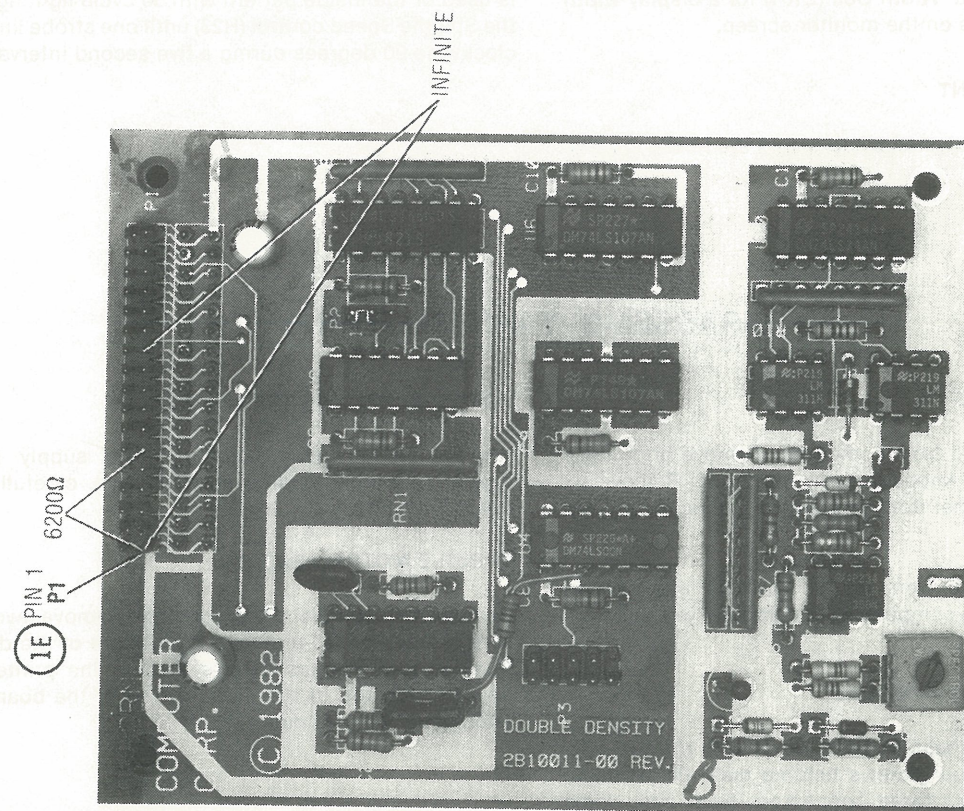


PRELIMINARY SERVICE CHECKS (Continued)



DISK DRIVE BOARD



DOUBLE DENSITY BOARD

PRELIMINARY SERVICE CHECKS

This data provides the user with a time-saving service tool which is designed for quick isolation and repair of computer system malfunctions.

Check all interconnecting cables for good connection and correct hook-up before making service checks.

Disconnect all external peripherals from the computer system to eliminate possible external malfunctions.

Replacement or repair of the power supply board, main logic board, keyboard, disk drive boards, double density board, or connectors may be necessary after the malfunction has been isolated.

GENERAL OPERATING INSTRUCTIONS

BOOT UP

To boot up on CP/M® (or any bootable program on diskette), put a diskette containing CP/M in disk drive A and press the RETURN key. If a HELP program comes up on the monitor screen, press the ESC key to get CP/M. The computer can be booted up from disk drive B by pressing the SHIFT and " (Quote) keys together (disk drive B will then become disk drive A). CP/M is loaded when the A> appears on the monitor screen.

RESET BUTTON

Pressing the RESET button on the computer will reset the computer and any program in memory will be lost.

MBASIC™

To load MBASIC from CP/M, put a diskette containing MBASIC in disk drive A, type MBASIC and press the RETURN key. To load a program from a diskette, type LOAD and the name of the program enclosed in quotes, then press the RETURN key. To save a program on a diskette type SAVE and the name of the program enclosed in quotes, then press the RETURN key. To list the programs on the diskette in the current disk drive, type FILES and press the RETURN key. Use FILES "A:*.*)" for disk drive A or FILES "B:*.*)" for disk drive B if that drive is not the current drive. To get back to CP/M from MBASIC, type SYSTEM and press the RETURN key.

CP/M

To list the programs on the diskette in the current disk drive, type DIR and press the RETURN key. Use DIR A: for disk drive A or DIR B: for disk drive B if that drive is not the current drive.

The type of data stored on a diskette is identified by the three letters after the program name (ASM = Assembly Language, BAS = Basic Program, COM = Command File, DAT = Data File, etc...)

To make disk drive B the current drive, type B: and press the RETURN key. To make disk drive A the current drive again, type A: and the RETURN key. To load a program, type the name of the program and press the RETURN key.

FORMATTING A DISKETTE

A blank diskette must be formatted before it can be used to save data. Boot up on CP/M and use the Format section of the COPY program to format a new diskette.

CP/M is a registered trademark of Digital Research, Inc.

MBASIC is a trademark of Microsoft Corporation.



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PRELIMINARY SERVICE CHECKS (Continued)

SERVICE CHECKS

SEE INTERCONNECTING DIAGRAM, PLACEMENT CHART, AND PHOTOS TO MATCH THE NUMBER IN THE CIRCLES WITH THOSE IN THE FOLLOWING DATA FOR SERVICE CHECKS TO BE PERFORMED.

1 POWER SUPPLY

- (A) Check Fuses F1 and F2. If F2 is bad, replace the fuse and disconnect Socket P7 from from Plug L and N on the power supply board. Check for shorts from each pin of the AC power plug to the other two pins. If any two pins are shorted, replace the AC Line Choke (FL1). Reconnect Socket P7 to Plug L and N.
- (B) If Fuse F1 is bad, replace the fuse and disconnect the socket from Plug P7 on the main logic board. Apply AC power and check for 5V at pin 4 and 12V at pin 2 of Plugs J4 and J5 on the power supply board. If the voltages are missing or Fuse F1 blows, replace or troubleshoot the power supply board.
- (C) If the power supply checks good, disconnect the socket from Plug P9 on the main logic board. Use a low power ohmmeter to check for 31 ohms from pin 7 to pin 1 of the socket. If the resistance reading is not correct, troubleshoot or replace the monitor.
- (D) If the monitor resistance checks good, disconnect the socket from Plug P1 on the double density board. Use a low power ohmmeter to check for infinite resistance from pin 1 to pin 11 and 239 ohms from pin 1 to pin 21 of the socket. If the resistance readings are not correct, troubleshoot the disk drives.
- (E) If the disk drive resistance checks good, disconnect the socket from Plug P8 on the main logic board. Use a low power ohmmeter to check for 6200 ohms from pin 1 to pin 11 and infinite resistance from pin 1 to pin 21 of Plug P1 on the double density board. If the readings are not correct, troubleshoot or replace the double density board.
- (F) Disconnect the disk drives, double density board, monitor and power supply from the main logic board. Use a low power ohmmeter to check for 15K ohms from pin 1 to pin 3, infinite resistance from pin 2 to pin 3 and pin 7 to pin 3 and 251 ohms from pin 6 to pin 3 of Plug P7 on the main logic board. If the readings are not correct, replace or troubleshoot the main logic board.

2 COMPUTER DOES NOT COME UP PROPERLY

- (A) Check IC's UC11 and UD11 on main logic board by substitution.

3 KEYBOARD

- (A) One key is not functioning properly. Clean the key contacts with a spray contact cleaner. If the key is still bad, replace the key.
- (B) Several keys are not functioning. Check the keyboard socket that connects to Plug P4 on the main logic board for good contact. If the socket is making good contact, replace or troubleshoot the main logic board.

4 DISK DRIVE

- Clean the disk drive head, see "Head Cleaning" section.
- Check the cable connectors on the disk drive boards, double density board and main logic board.
- Check the ground connections on all the shields.
- Interference from the horizontal circuits in the internal monitor can cause disk drive problems. Disconnect the internal monitor socket from Plug P9 and connect an external monitor to Plug P5 on the main logic board. If the problem clears up, check the shields on the internal monitor and check the internal monitor operation.
- (A) Check the spindle speed of the disk drive, see the "Spindle Speed Adjustment" in the disk drive adjustments.
- (B) A plug in Resistor Network RN3 is used in disk drive A to program it as disk drive A. Check the Resistor Network RN3 for good connection.

- WARNING: It is possible for a defective disk drive to write on or erase information on a diskette even if the diskette is write protected. Check the disk drive by first using a diskette that has programs that have been backed up on another diskette.
- (C) Computer will not boot up with the external monitor connected. Remove AC power, disconnect socket to disk drive A plug P1 and try booting up on disk drive B. If the computer boots up, replace or troubleshoot disk drive A. If the computer does not boot up, reconnect disk drive A, disconnect disk drive B and try booting up. If the computer boots up, replace or troubleshoot disk drive B.

PRELIMINARY SERVICE CHECKS (Continued)

HEAD CLEANING

Use 97% isopropyl alcohol, head cleaning fluid or head cleaning diskette to clean the disk drive head.

MISCELLANEOUS ADJUSTMENTS

TOOLS

GC ELECTRONICS
L101 8606,9302,9440

VERTICAL SIZE ADJUSTMENT

Adjust the Vertical Size Control (R312) for a display height of about 2.75 inches on the monitor screen.

HORIZONTAL WIDTH ADJUSTMENT

Adjust the Horizontal Width Coil (L101) for a display width of about 3.75 inches on the monitor screen.

FOCUS ADJUSTMENT

The focus may be adjusted by adjusting the Focus Control (R136).

CENTERING ADJUSTMENT

Centering is accomplished by the proper adjustment of the magnetic rings located on the rear cover of the deflection yoke.

SPINDLE SPEED ADJUSTMENT

Insert a blank diskette in the disk drive. Set the disk drive on its side with the strobe wheel visible. Press the RETURN key to start disk drive A or the SHIFT" (Quote) keys to start disk drive B. Use the outside pattern when 60 cycle lighting is used or the inside pattern with 50 cycle lighting. Adjust the Spindle Speed control (R23) until one strobe line rotates clockwise 90 degrees during a five second interval.

DISASSEMBLY INSTRUCTIONS

CABINET REMOVAL

Disconnect keyboard from computer. Remove brightness and contrast control knobs from cabinet front. Remove six screws holding cabinet front and remove cabinet front from computer.

Remove five screws from cabinet bottom and remove cabinet bottom from computer. Lift computer chassis from cabinet top.

MAIN LOGIC BOARD REMOVAL

Position computer chassis upside down with the CRT facing you. Remove four screws holding main PC board to chassis. Disconnect three connectors from main logic board and remove board from chassis.

POWER SUPPLY BOARD REMOVAL

Remove four screws holding power supply board to chassis. With the wires still attached, carefully lift the board from chassis.

SPINDLE MOTOR REMOVAL

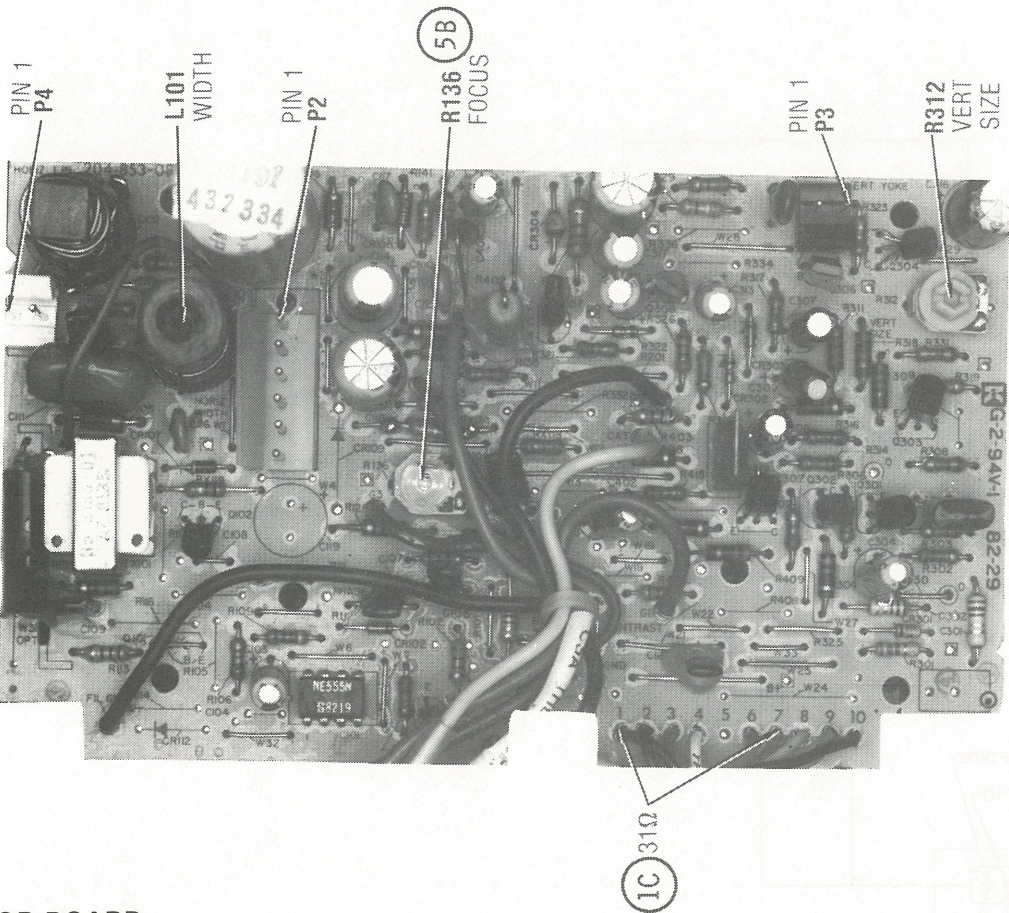
Remove the spindle motor belt and remove two Phillips screws holding the motor to the bottom of the disk drive. Remove four Phillips screws holding the printed circuit board to the top of the disk drive. Lift the board up and remove the spindle motor.

OSBORNE
MODEL OCC1A

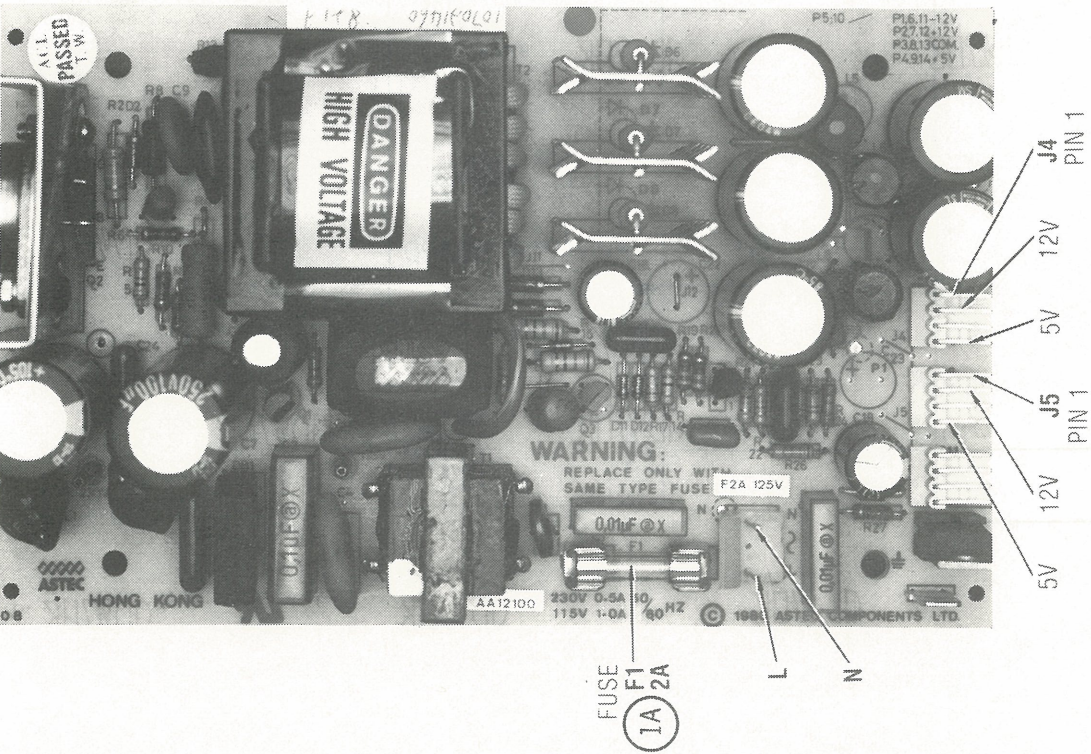
PRELIMINARY SERVICE CHECKS (Continued)

PRELIMINARY SERVICE CHECKS (Continued)

SERVICE CHECKS (Continued)



MONITOR BOARD



POWER SUPPLY BOARD

- (D) Computer still will not boot up. Substitute another double density board and try booting up. If the computer boots up replace or troubleshoot the double density board.
- (E) If computer still will not boot up. Substitute the Floppy Disk Controller IC (UB7) on the main logic board and try booting up. If the computer does not boot up, replace or troubleshoot the main logic board.
- (F) Spindle Motor (M1) on one disk drive will not run. Check the disk drive motor belt. If the belt is good, check the motor by disconnecting the motor Socket P2D from Plug P2 and substituting a good motor. If the motor is replaced, check the Spindle Speed Adjustment, see the "Spindle Speed Adjustment" in the disk drive adjustments.
- (G) Disk drive has read or write problems. Check the resistance of the read/write head 7.3 ohms from pin 1 to pin 6 and pin 2 to pin 6 of socket connected to Plug P3 on disk drive board and the erase head (1 ohm from pin 5 to pin 6 of socket connected to Plug P3). If the head resistances check good, replace or troubleshoot the disk drive board.

5 MONITOR

- (A) Monitor is not functioning. Disconnect the internal monitor socket from Plug P9 and connect an external monitor to Plug P5 on main logic board. If the external monitor has the proper display, replace or troubleshoot the internal monitor. If there is no display on the external monitor, replace or troubleshoot the main logic board.
- (B) If the monitor height, width, focus or centering is incorrect, refer to the monitor adjustments.

TEST EQUIPMENT AND TOOLS

TEST EQUIPMENT

- Digital Volt/Ohm Meter
- Logic Probe
- Monitor

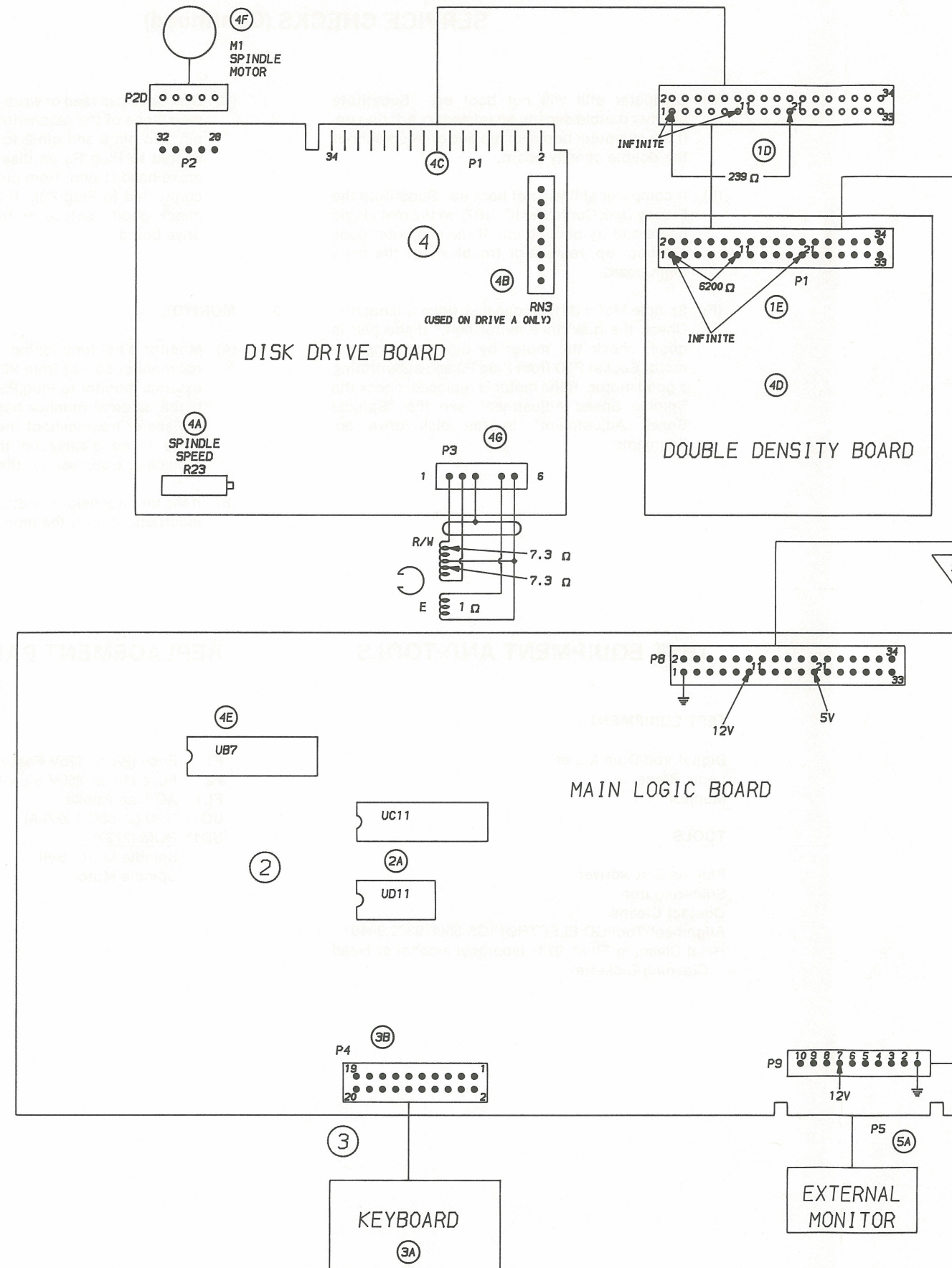
TOOLS

- Phillips Screwdriver
- Soldering Iron
- Contact Cleaner
- Alignment Tool-GC ELECTRONICS 8606,9302,9440
- Head Cleaning Fluid, 97% isopropyl alcohol or Head Cleaning Diskette.

REPLACEMENT PARTS

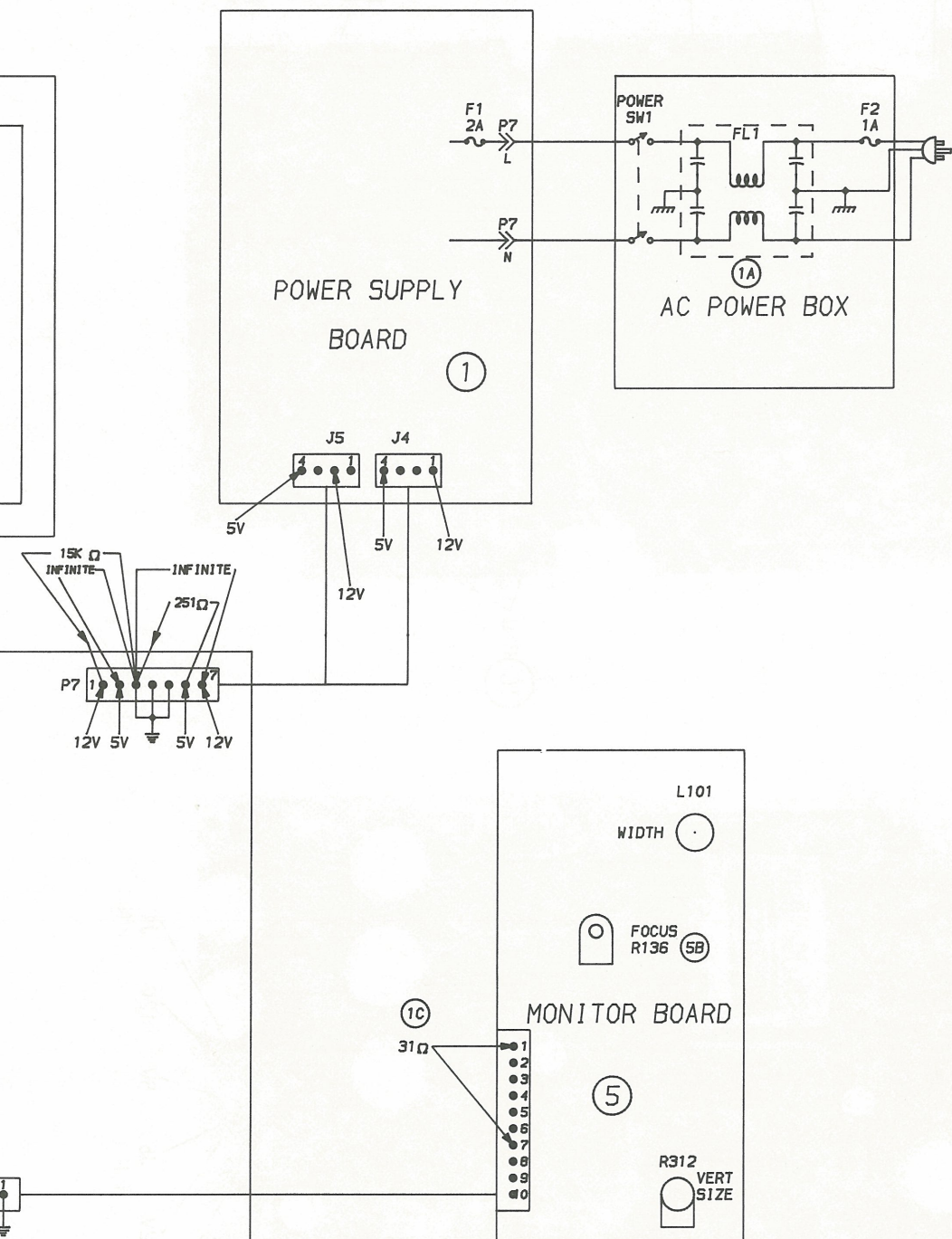
- F1 Fuse (2A @ 125V Fast-Acting)
- F2 Fuse (1A @ 250V Slow-Blow)
- FL1 AC Line Choke
- UC11 CPU (D780C-1 Z80-A)
- UD11 ROM (2732)
- Spindle Motor Belt
- Spindle Motor

PRELIMINARY SERVICE CHECKS (Continued)



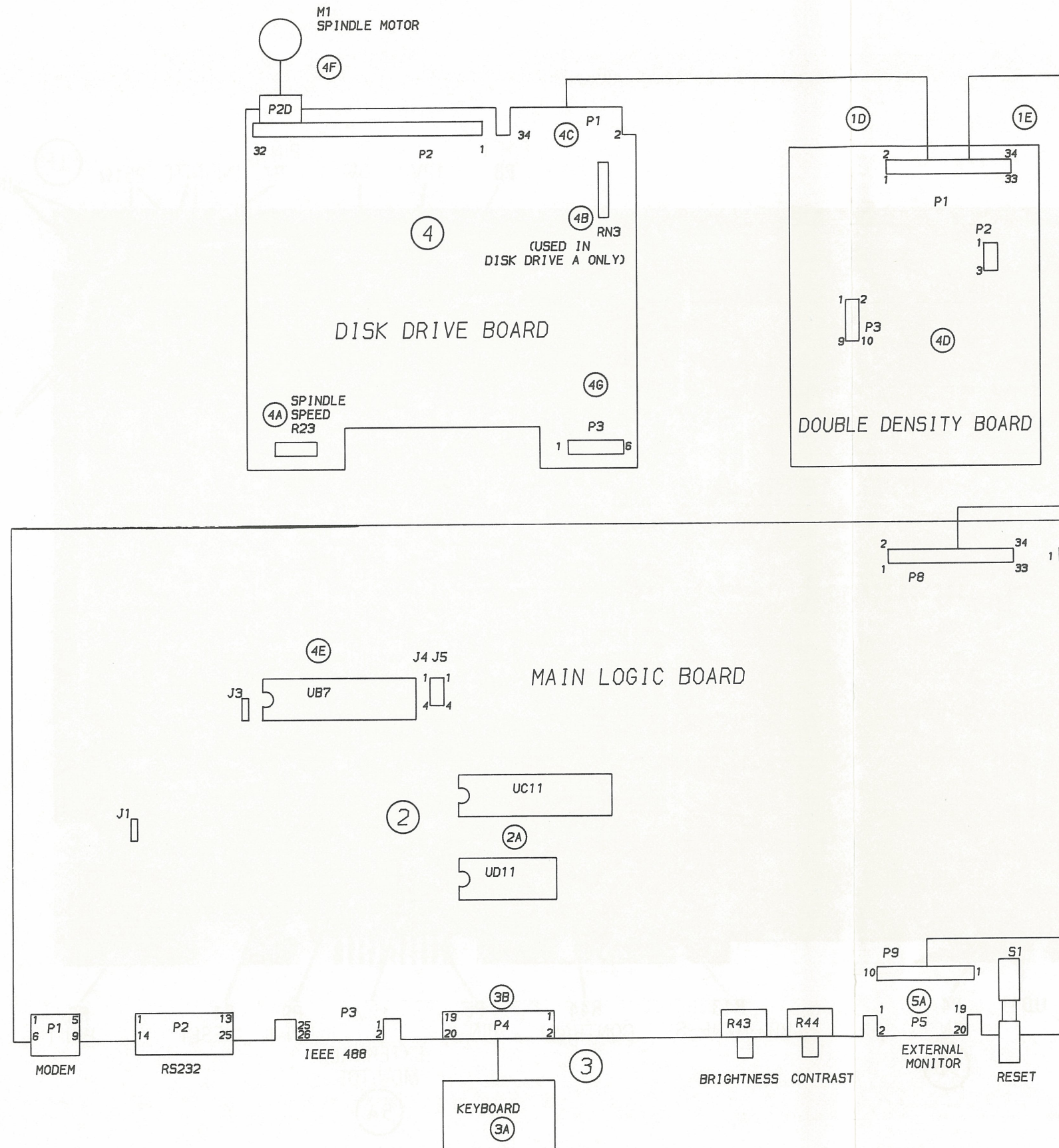
INTERCONNECTING DIAGRAM

PRELIMINARY SERVICE CHECKS (Continued)

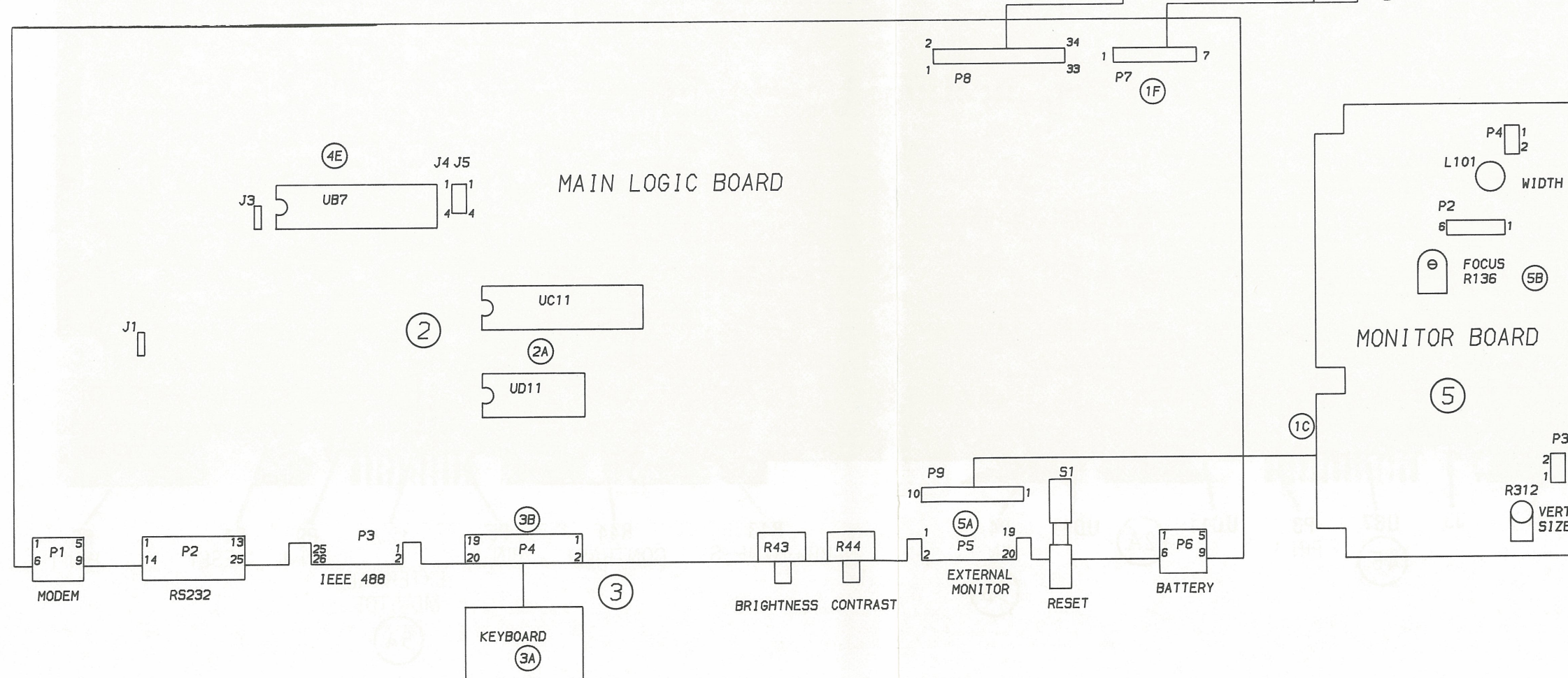
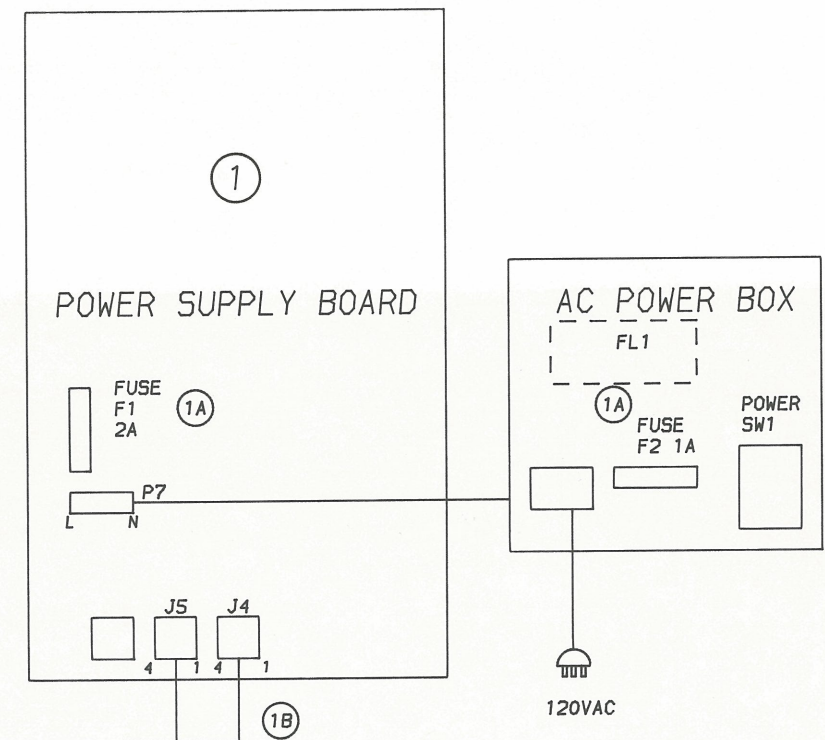


INTERCONNECTING DIAGRAM

PRELIMINARY SERVICE CHECKS (Continued)

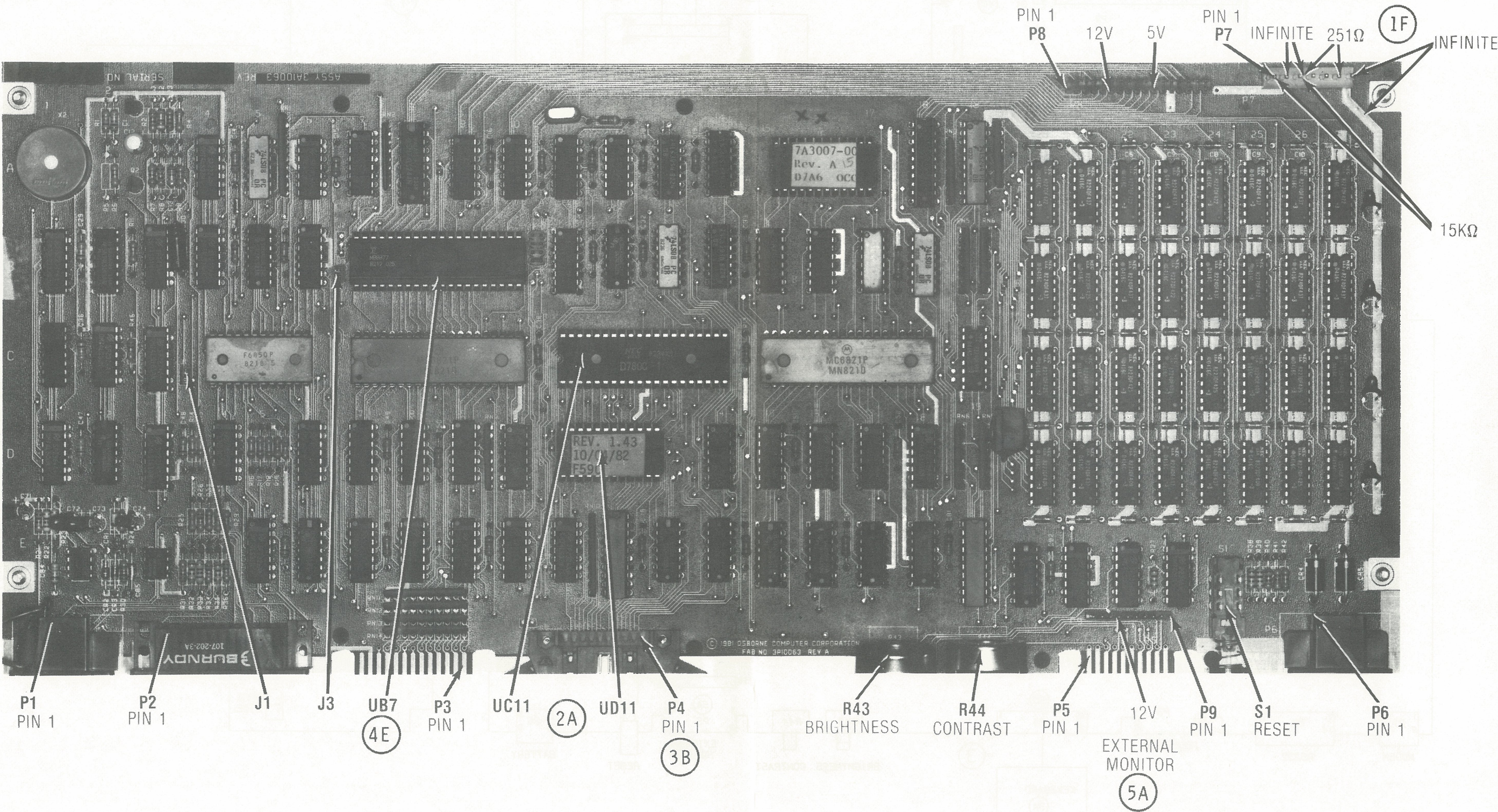


PRELIMINARY SERVICE CHECKS (Continued)



PRELIMINARY SERVICE CHECKS (Continued)

PRELIMINARY SERVICE CHECKS (Continued)



MAIN LOGIC BOARD

MAIN LOGIC BOARD