

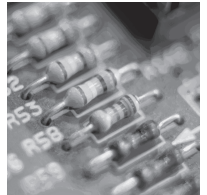


HARDWARE SETUP

Orientation

OBJECTIVES

1. Disassemble the Marcraft 8000 Trainer.
2. Verify the correct orientation of interface cables.
3. Assemble the Marcraft 8000 Trainer.
4. Boot up the system.



Hardware

RESOURCES

1. Phillips screwdriver
2. Marcraft 8000 Trainer
3. Windows 2000 installed
4. Windows Millennium installed

DISCUSSION

Welcome to Marcraft International's Orientation Lab. In this procedure you will start a computer to verify that it is operating properly. Then you will disassemble the computer and then reassemble it. You will go through all the steps of disassembly except actually taking the drives and motherboard out of the system. This is not necessary because it is just a matter of common sense and using a screwdriver. Then you will reassemble the computer, applying the correct orientation of power and interface cables, along with the computer's front panel connections.

Most PCs are capable of working with several different types of disk storage devices. The drives that are normally included as standard equipment with a PC are a 3½ inch floppy disk drive (FDD), a multi-gigabyte hard disk drive (HDD), and a CD-ROM drive. These units can typically be found in the front section of the system unit as illustrated in Figure 1-1.

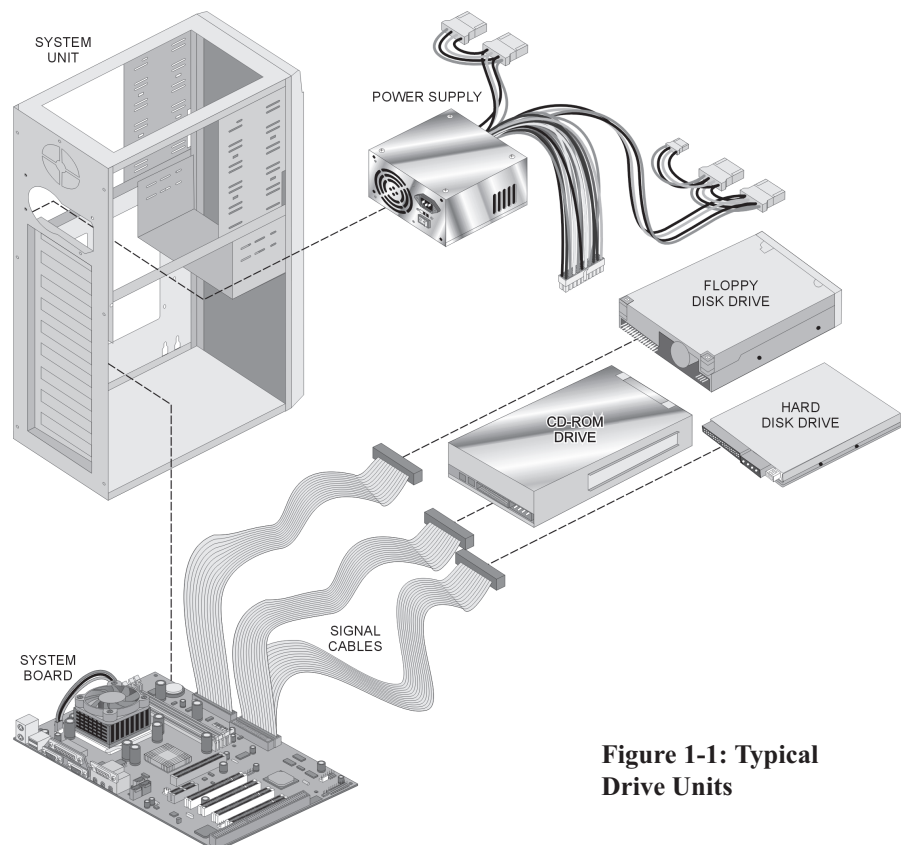
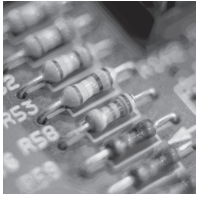


Figure 1-1: Typical Drive Units

PROCEDURE - 1



Hardware

PROCEDURE

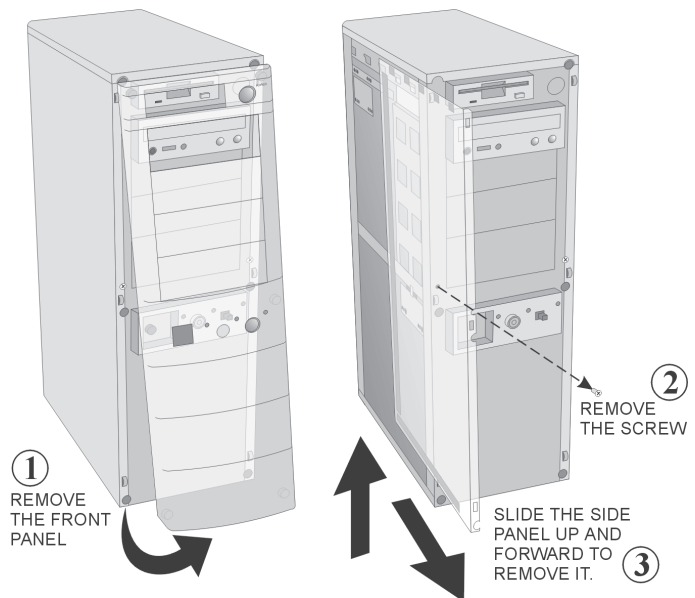
1. Booting up the computer

- ___ a. Push the power button to turn the computer on. The computer should do a quick memory test (some numbers will count on the screen).
- ___ b. The computer will boot up to a Software menu.
- ___ c. Choose Microsoft Windows Millennium Edition by pressing the DOWN ARROW key once.
- ___ d. Press ENTER, and the computer will boot into Microsoft Millennium.
- ___ e. Use the path Start /Shut Down, and then select “Shut down” from the drop-down menu in the Shut Down Windows dialog box.
- ___ f. Click the OK button. The computer will close Millennium and shut down.

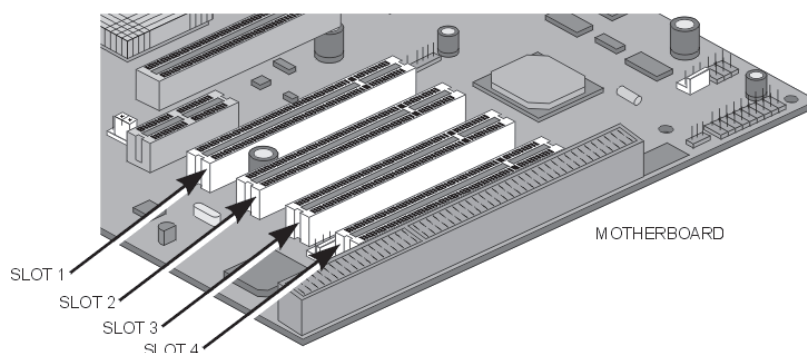
NOTE: The computer will shut down Windows Millennium and the power will turn off automatically.

2. Identify adapter cards

- ___ a. Unplug the power cord from the back of the computer.
- ___ b. Remove the screws on the back panel of the computer cover.
- ___ c. Take off computer cover (similar to steps shown in Figure 1-2).
- ___ d. Identify the video card. It is the one that the monitor is plugged into.
- ___ e. Write down the slot that it is plugged into in Table 1-1. Slots are numbered from right to left starting at slot 1. See Figure 1-3.



**Figure 1-2:
Removing the
Computer Cover**



**Figure 1-3:
Numbered Slots**

- ___ f. Identify the modem card. It is the card with the two telephone ports in the back of it.
- ___ g. Write down which slot it is installed into in Table 1-1.
- ___ h. Identify the network card. It is the one with the oversized phone port. This is really a network port called an RJ-45 or 10-base-T port.
- ___ i. Write down the slot in Table 1-1.

3. Disconnect external cables (See Figure 1-4)

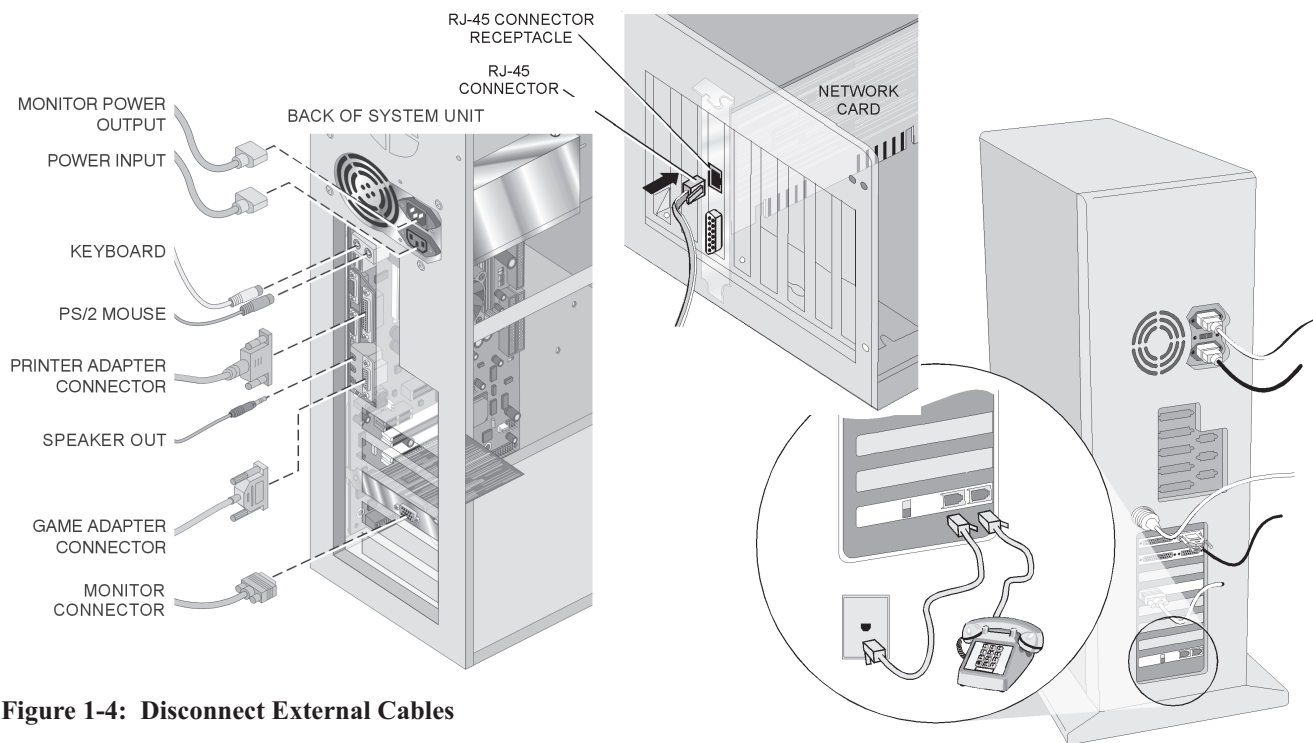


Figure 1-4: Disconnect External Cables

- ___ a. Disconnect the keyboard from the back of the computer.
- ___ b. Disconnect the PS/2 mouse.
- ___ c. Disconnect the phone cable.
- ___ d. Disconnect the RJ-45 network cable.
- ___ e. Disconnect the printer cable if you have one.

4. Disconnect all internal cables

- ___ a. Disconnect the IDE ribbon cable from the hard drive.
- ___ b. Disconnect the IDE ribbon cable from the CD-ROM.
- ___ c. Disconnect the IDE ribbon cable(s) from the system board.
- ___ d. Disconnect the FDD ribbon cable from the floppy disk drive.
- ___ e. Disconnect the FDD ribbon cable from the system board.
- ___ f. Remove all the cables from the computer.

5. Disconnect power supply connections

- ___ a. Disconnect the power connector from the hard drive.
- ___ b. Disconnect the power connector from the CD-ROM.
- ___ c. Disconnect the power connector from the floppy drive.
- ___ d. Disconnect the power connector from the system board.

PROCEDURE - 1

6. Remove the adapter cards

- ___ a. Unscrew the video card from the back panel, and then remove it and place it into an anti-static bag.
- ___ b. Repeat Step a to the modem card.
- ___ c. Repeat Step a to the network card.

7. Disconnect all front panel connections (See Figure 1-5)

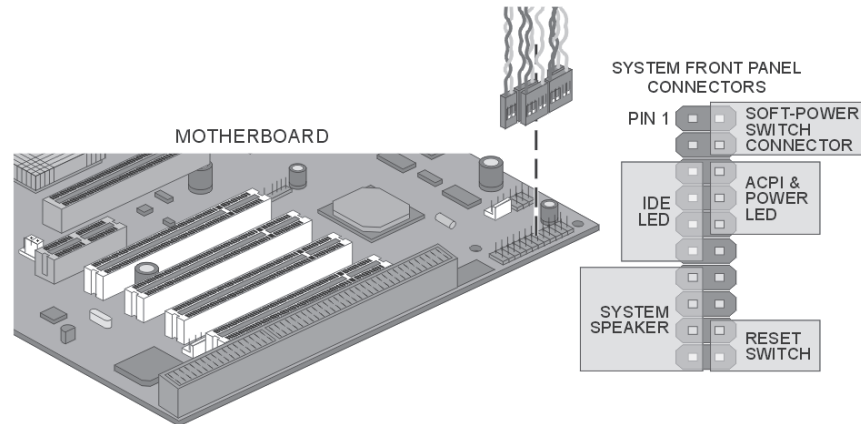


Figure 1-5: Front Panel Connections

- ___ a. Remove the power switch connector.
- ___ b. List the color of the wires in Table 1-2.
- ___ c. Remove the speaker connector.
- ___ d. List the color of the wires in Table 1-2.
- ___ e. Remove the power LED connector.
- ___ f. List the color of the wires in Table 1-2.
- ___ g. Remove the hard drive channel 1 LED connector.
- ___ h. List the color of the wires in Table 1-2.
- ___ i. Remove the hard drive channel 2 LED connector.
- ___ h. List the color of the wires in Table 1-2.
- ___ j. Remove the reset switch connector.
- ___ k. List the color of the wires in Table 1-2.

For all practical purposes, the disassembly of the computer is now complete. From this point you could also remove the drives and motherboard from the case, but this is a simple mechanical procedure that takes a little time. We are now going to reassemble the computer.

8. Connecting the front panel connections (See Figure 1-5)

- ___ a. Find the power LED connector and connect it to the motherboard where it is labeled Power LED. See Table 1-2 if needed.
- ___ b. Find the reset switch connector and connect it to the motherboard where it is labeled Reset.
- ___ c. Find the power switch connector and connect it to the motherboard where it is labeled Power Switch.
- ___ d. Find the hard-disk drive LED Channel 1 connector and connect it to the motherboard where it is labeled HDD1 LED.
- ___ e. Find the hard-disk drive LED Channel 2 connector and connect it to the motherboard where it is labeled HDD2 LED.
- ___ f. Find the speaker connection and connect it to the motherboard where it is labeled Speaker.

9. Install the adapter cards

Make sure the cards are lined up properly with the slots. It will require a firm push to get the cards reseated in the motherboard expansion slot.

- ___ a. Install the video card into the slot recorded in Table 1-1 and screw it into the back panel.
- ___ b. Install the modem card into the slot recorded in Table 1-1 and screw it into the back panel.
- ___ c. Install the network card into the slot recorded in Table 1-1 and screw it into the back panel.

10. Connect the power supply (See Figure 1-6)

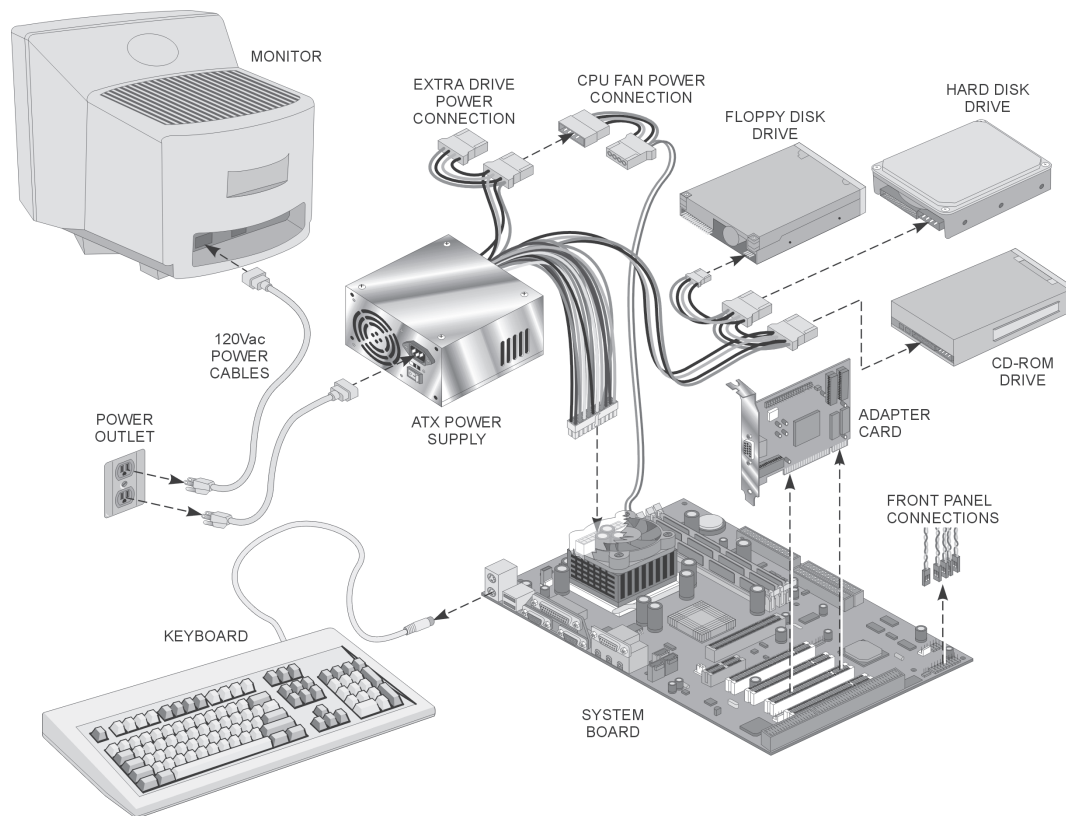


Figure 1-6:
Connecting the
Power Supply

NOTE: All the connectors are keyed to plug only in one way.

- ___ a. Plug the ATX power connector into the system board.
- ___ b. Plug the power connector into the floppy disk drive.
- ___ c. Plug the power connector into the hard disk drive.
- ___ d. Plug the power connector into the CD-ROM drive.

PROCEDURE - 1

The disk drives are connected to the system through flat ribbon cables. The cables are different sizes so there should be no problem with mixing them up. However, it is possible to connect some disk drive signal cables in reverse. Pay attention to the small color stripe, usually red, that runs along one edge of the cable. This is the Pin-1 indicator stripe and points to the #1 pin of the interface on both ends, as illustrated in Figure 1-7. There are some floppy and hard drive cables that enable you to connect a second disk drive on the same cable. Though it has become very common to see this done with hard drives, it's no longer a common occurrence with floppy drives. On floppy drive cables one end has a twist in the middle of the ribbon cable to tell the computer which drive is A: and which one is B:. The connector at the end of the cable designated as drive A:.

The floppy disk drive allows the system to load programs and data from a removable diskette. The hard disk drive is a sealed unit and has no removable parts. It runs as long as power is applied to the system. The CD-ROM, like the floppy drive, allows the system to load programs from a removable CD. CDs hold large quantities of data that can be read by the system, are removable, and can be exchanged for one holding different data as desired.

11. Connect the ribbon cables

- ___ a. Connect the floppy disk drive to ribbon cable as in Figure 1-7.

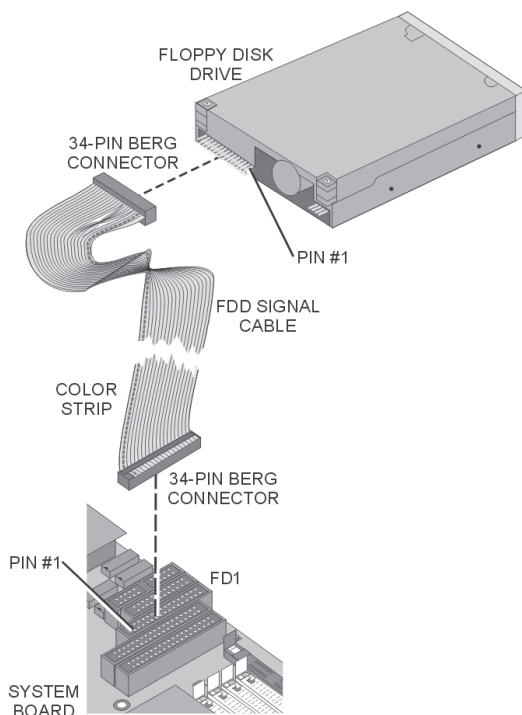


Figure 1-7: Connecting the Ribbon Cable

- ___ b. Connect the system board to the ribbon cable, striped side to pin 1.
- ___ c. Connect the power cord to the computer.
- ___ d. Turn the computer on.
- ___ e. Does the LED on the floppy disk drive turn on immediately?
- ___ f. Turn the power off.
- ___ g. Unplug the power supply.
- ___ h. If you answered no to Step e above, skip to Step j.
- ___ i. The cable is on backwards if you answered Yes to Step e. Reconnect it correctly.
- ___ j. Connect the hard disk drive cable to the motherboard in the Primary IDE controller, striped side to pin 1.
- ___ k. Plug the middle of the connector into the hard drive, striped side to pin 1, and plug the end into the CD-ROM drive, striped side to pin 1.

12. Connect the external cables

- ___ a. Plug the keyboard into the lower connection. Make sure the orientation is correct, otherwise you could bend pins and ruin the keyboard.
- ___ b. Plug the mouse into the port just above the keyboard, again checking orientation.
- ___ c. Plug the monitor back into the video card. The connector is keyed and can only be plugged in one way. Be careful not to bend pins, as this will ruin the monitor.
- ___ d. Plug in the power cord.
- ___ e. Replace the cover of the computer.
- ___ f. Screw in the cover screws.

NOTE: Reassembly is complete. You need to reboot the computer to see if it is still working properly.

13. Booting up the computer

- ___ a. Push the power button to turn the computer on. The computer should do a quick memory test (some numbers will count on the screen).
- ___ b. The computer will boot up to a Software menu.
- ___ c. Choose Microsoft Windows Millennium Edition by pressing the DOWN ARROW key once.
- ___ d. Press ENTER.
- ___ e. The computer will boot into Microsoft Millennium.
- ___ f. Click the Start button on the lower left.
- ___ g. Click on Shut Down.
- ___ h. The Shut Down Windows dialog box appears.
- ___ i. Click the scroll arrow in the middle of the box.
- ___ j. Select "Shut down".
- ___ k. Click the OK button.

TABLES

Table 1-1

| Adapter Card | Slot |
|---------------|------|
| Video Card: | |
| Modem Card: | |
| Network Card: | |

Table 1-2

| Cable | Color |
|------------------|-------|
| Power Switch: | |
| Speaker: | |
| Power LED: | |
| IDE 1st channel: | |
| IDE 2nd channel: | |
| Reset: | |

PROCEDURE - 1



Feedback

LAB QUESTIONS

1. What does the colored stripe on a disk drive's signal cable indicate?
2. When connecting the floppy disk drive signal cable to the floppy disk drive, what precaution should be taken?
3. How do you shut down Windows Millennium?
4. How do you identify a Network Interface Card (NIC)?
5. What will happen if you plug a floppy drive cable in backwards?
6. How many wires are on the power connectors for a hard drive?
7. Counting away from the keyboard connector, in which direction are the slots in a motherboard labeled?