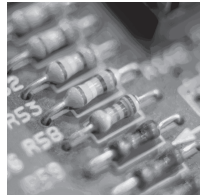


IDE Troubleshooting

OBJECTIVES

1. Explore IDE cable configurations.
2. Explore IDE device Master/Slave jumper settings.



Hardware

RESOURCES

1. Marcraft 8000 Trainer with Windows 2000 and Millennium installed
2. Marcraft Fault Set with faulted IDE cable

DISCUSSION

The first section is dedicated to installing the hardware of a typical hard disk drive unit. The final section of the procedure concentrates on the diagnostic and troubleshooting aspects associated with typical HDD units.

In Lab 4 you entered the BIOS's CMOS Configuration Setup program, and detected parameters to match the type of HDD being installed. Drive Type information for SCSI drives normally requires that the CMOS configuration be set to "none installed" to operate correctly.

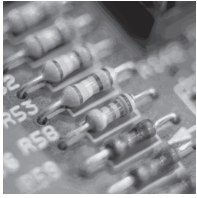
Before exchanging or reformatting a hard disk drive, it is always advisable to make backups of the drive's contents and record its configuration parameters.

The drive's type parameters should be verified, and its physical Drive Select or Master/Slave setting should be made. These parameters may be in an information booklet that comes with the drive or on a sticker that is mounted on the drive itself. In some cases, it is somewhat difficult to access the information after the drive has been installed in the system unit, so the instructor should write this information down in a more easily-read location.

The Master/Slave setting will normally be Master if the unit is the primary or the only HDD in the system. This is the default setting from the factory. The CD-ROM will be the Slave unit by default.

Hard drives are very sensitive to physical damage. If you drop a hard drive even from 4 inches above the table there is no guarantee that it will still work. The heads on the hard drive will crash on the disk and create bad or unreadable sectors, especially if sector 0 is involved. Then the drive table and information will be lost and the drive will be unusable.

PROCEDURE - 7



Hardware

PROCEDURE

1. Standard configuration

- ___ a. Refer to the HDD documentation to determine the Drive Select or Master/Slave jumper settings.
- ___ b. Obtain the drive's parameter information from the driver or information booklet and record it in Table 7-1.
- ___ c. Check to make sure that all the screws are secure in the drive and that it is not loose. See Figure 7-1.

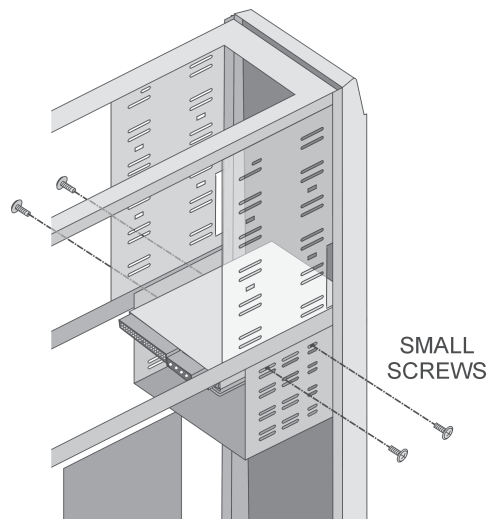


Figure 7-1:
Hard Drive Mounting
Screws Are Secure

NOTE: IDE drives use a single wide signal cable. As you know from Lab 1, the signal cable must be aligned correctly at both the drive and controller ends. The stripe must be aligned with the #1 pin at both ends. All new cables are keyed to prevent backwards installation.

- ___ d. Verify the connection of the signal cables to the HDD, the CD-ROM, and the HDD controller on the system board.
- ___ e. Turn the computer on.
- ___ f. Press DELETE to enter CMOS when prompted.
- ___ g. Go into Standard CMOS setup.
- ___ h. The Primary Master should be the HDD. Press ENTER to verify it is set to "Auto".
- ___ h. Make sure all other hard drives are set up for Auto detection, and be sure the "Access Mode" is also set to Auto. Change the settings if they are not set to Auto.
- ___ i. Press ESC to view the Main menu.
- ___ j. Press F10, Y, and ENTER to save and exit CMOS.
- ___ k. Verify that the computer boots up to the software menu where you have the choices of Microsoft Windows 2000 Professional or Microsoft Windows Millennium Edition.
- ___ l. Turn the computer off.

2. Master IDE devices

- ☐ a. Connect the CD-ROM and hard disk drive to the same ribbon cable (the original HDD cable). Verify that the hard disk drive is set to Master on the Drive Select jumper. Verify the CD-ROM to the Master setting also on the Drive Select jumper.
- ☐ b. Turn the computer on.
- ☐ c. Write the results in Table 7-2.
- ☐ d. Turn the computer off.

3. Master CD-ROM, Slave HDD

- ☐ a. Change the jumper on the hard disk drive to the Slave setting.
- ☐ b. Turn the computer on.
- ☐ c. Press DELETE to enter CMOS.
- ☐ d. Enter Standard CMOS setup.
- ☐ e. Note the differences in Table 7-3.
- ☐ f. Press F10, Y, and ENTER to save and exit CMOS.
- ☐ g. Write the results in Table 7-4.
- ☐ h. Turn the computer off.

4. Master HDD, Slave CD-ROM

- ☐ a. Change the CD-ROM Drive Select jumper back to the Slave position.
- ☐ b. Change the hard drive jumper back to the Master position.
- ☐ c. Turn the computer on.
- ☐ d. Record the results in Table 7-5.
- ☐ e. Turn the computer off.

As you can see, it doesn't matter which drive is set to Master as long as there is only one drive set to Master. However, if the slave device had been a hard drive instead of a CD-ROM the computer would have tried to boot from the IDE-0 every time. If it wasn't bootable you would have received an error message.

5. Incorrect IDE cable orientation

- ☐ a. Unplug the 80-pin cable from the CD-ROM and HDD.
- ☐ b. Plug the 40-wire CD-ROM cable into the HDD.
- ☐ c. Turn the computer on.
- ☐ d. Write the results in Table 7-6.
- ☐ e. Turn the computer off.

6. Marcraft Fault Set

- ☐ a. Open the Marcraft Fault Set and get the faulted IDE cable.
- ☐ b. Install the cable to the system board, HDD, and CD-ROM oriented the correct way.
- ☐ c. Turn the computer on and record the results in Table 7-7.
- ☐ d. Turn the computer off.

7. Return all cables and jumpers to their original configuration.



TABLES

Table 7-1

HDD Parameters From Information Book or Sticker		
Cylinders	Heads	Sectors

Table 7-2

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Table 7-3

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Table 7-4

Table 7-5

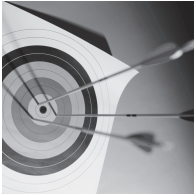
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Table 7-6

Table 7-7

LAB QUESTIONS

1. Before exchanging a hard disk drive what should be done first?
2. Name two configurations for HDD jumper settings used in this lab.
3. What is the default setting for a CD-ROM from the factory?
4. If you have two drives, one master and one slave, does it matter which device is plugged into the center or end of an IDE cable?
5. If two hard drives are both set to slave on one cable, what will happen?



Feedback

