Setting Up Your HP Vectra 386/N-Series PC

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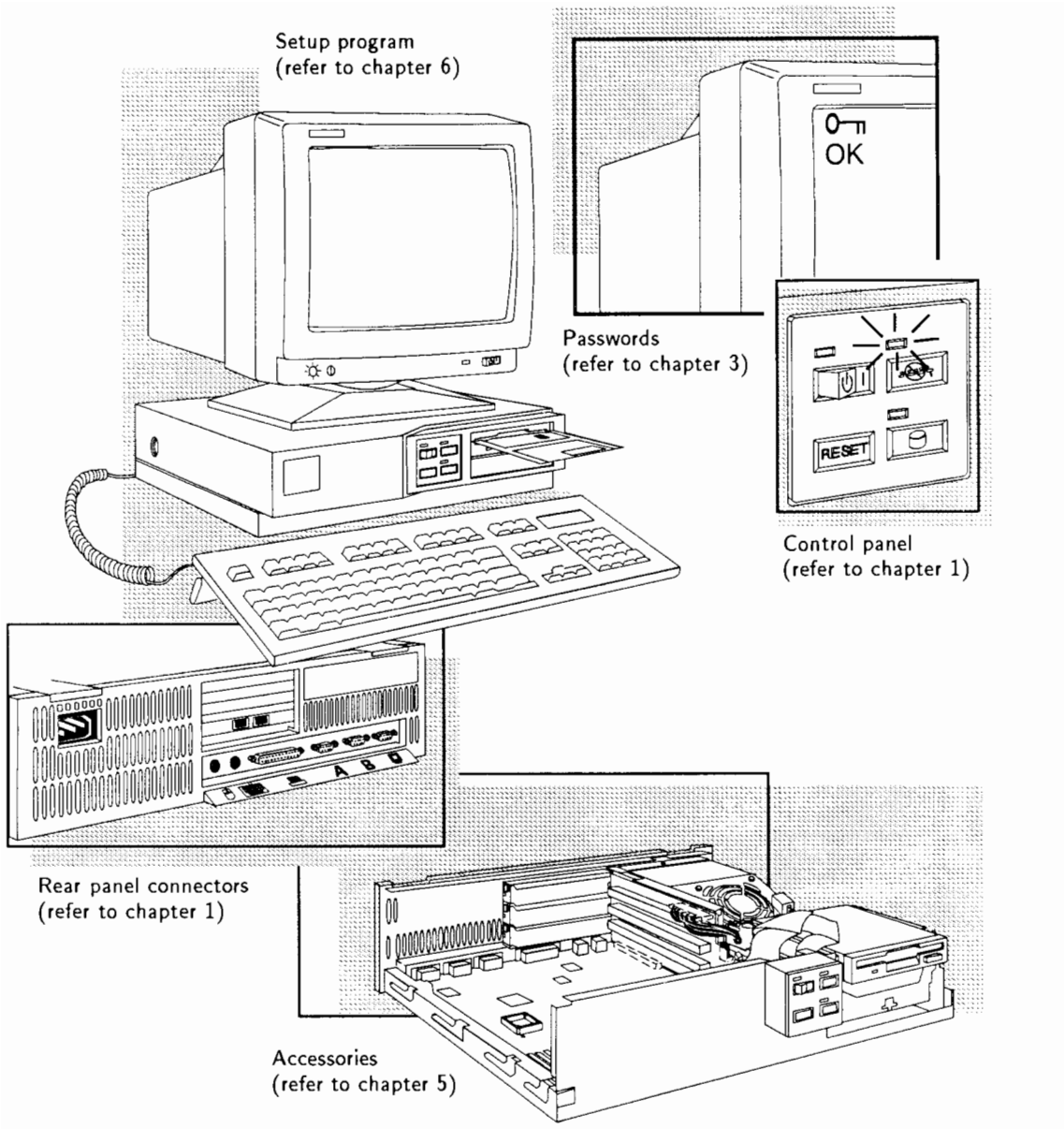
Introducing the HP Vectra PC

Welcome to your HP Vectra personal computer.

Your computer features a 386SX microprocessor—16 MHz on the HP Vectra 386/16N, 20 MHz on the HP Vectra 386/20N, and 25 MHz on the HP Vectra 386/25N. The Vectra 386/20N and Vectra 386/25N also have a cache memory.

In addition, your computer has:

- a front control panel containing a power switch (⏻), a reset switch (RESET), a keyboard and mouse lock (🔒), and a hard disk activity light (⛁)
- a built-in super VGA video controller that supports ergonomic video modes
- two connectors for attaching your keyboard and mouse
- three connectors—two serial and one parallel—for attaching your printers and plotters, or other devices
- four sockets inside the computer for memory modules—up to a maximum of 16 MB—for running your software applications
- a socket for a coprocessor (you can install a math coprocessor to increase the performance of mathematical programs, like spreadsheets)
- a socket for an HP Vectra boot ROM chip—to start from the LAN server (some computer models have a LAN adapter board and a boot ROM chip; or you can install an HP LAN adapter board and an HP Vectra boot ROM chip)
- three 16-bit industry-standard slots for accessory boards (one may be used for a LAN adapter board)
- a built-in controller for your flexible and hard disk drives
- two shelves for disk drives—one flexible disk and one hard disk drive (some computer models have a flexible disk drive and a hard disk drive; or you can install your own disk drives)
- a Setup Program with context sensitive help to configure your computer
- comprehensive security features to prevent unauthorized access to your computer and your data
- software utilities and drivers to configure the computer, control the speed and memory, and control extended video features


Setup program
(refer to chapter 6)
OK
Passwords
(refer to chapter 3)
RESET
Control panel
(refer to chapter 1)
Rear panel connectors
(refer to chapter 1)
Accessories
(refer to chapter 5)

In This Book

This manual explains how to install (set up) your computer.

Once you have installed your computer, you can use it to run your application programs (as described in your applications' manuals).

Setting Up	Chapter 1 explains how to prepare your computer for use.
	Chapter 2 describes how to install the HP utilities and video drivers supplied with the computer.
	If you want to optimize your computer's security features and user preferences, refer to chapter 3.
	Read chapter 4 if you want to optimize the HP utilities to maximize your computer's performance.
Installing and Configuring Accessories	Chapter 5 explains how to install any accessories you purchased.
	Once you have installed your accessories, you should configure your computer to use them as described in chapter 6.
	Chapter 7 explains how to configure your computer to operate on a LAN (local area network).
Troubleshooting and Technical Information	Chapter 8 explains how to correct problems with your computer.
	Chapter 9 has technical information about your computer, and appendix A contains your warranty information.
Glossary and Index	The glossary and index are at the end of the manual.

Now go to chapter 1 to start setting up your computer.

Contents

4. Using EXMODE, DELDISK, and Your HP Super VGA Utilities

5. Installing and Removing Accessories

6. Configuring Your Computer Using Setup

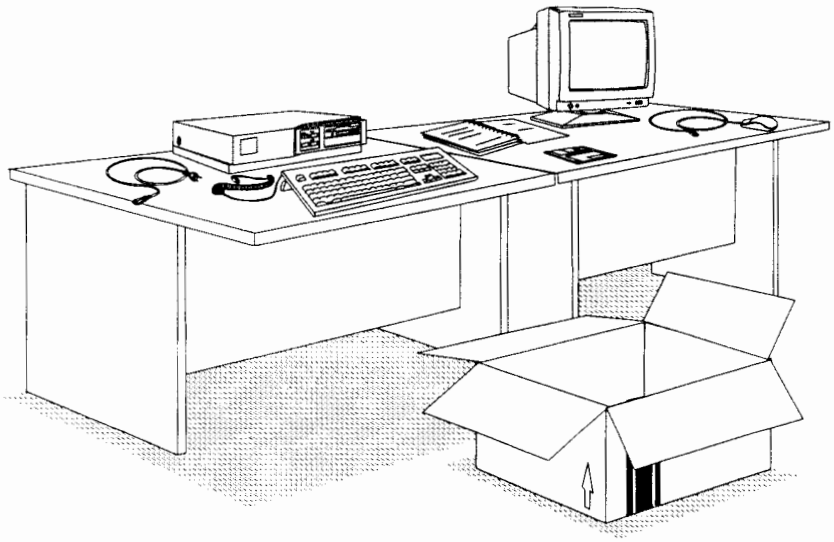
1

Preparing Your Computer for Use

Preparing Your Computer for Use

When you first receive your computer, unpack and gather all the components:

- □ this manual
- □ diskettes
- □ computer and power cord
- □ keyboard and keyboard cable
- □ your display and cables (purchased separately)
- □ your mouse (purchased separately)

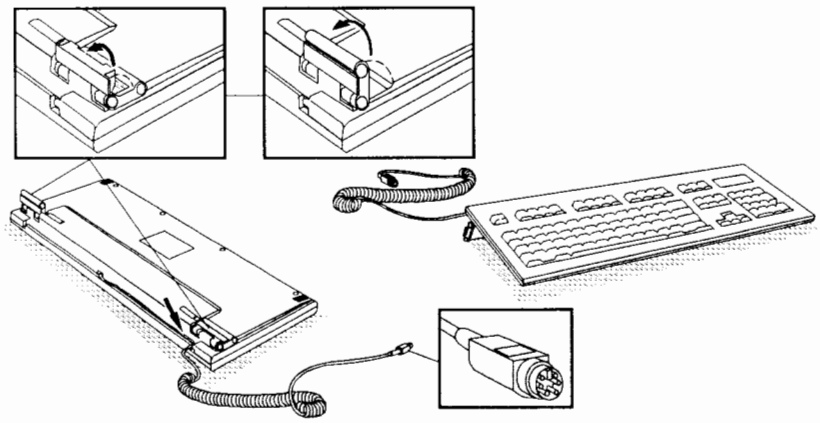


WARNING

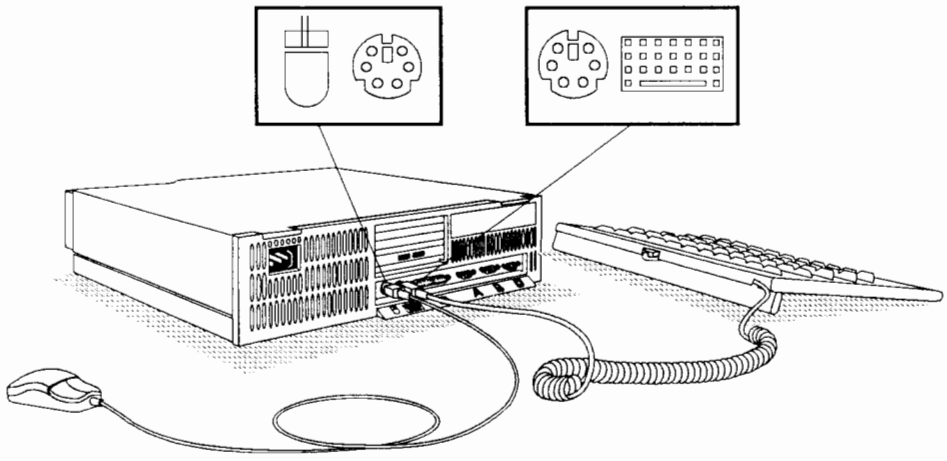
Always use the power cords with properly grounded wall outlets to avoid electrical shock.

If the power cord is not supplied with your computer, select the proper power cord according to your local national electric code.

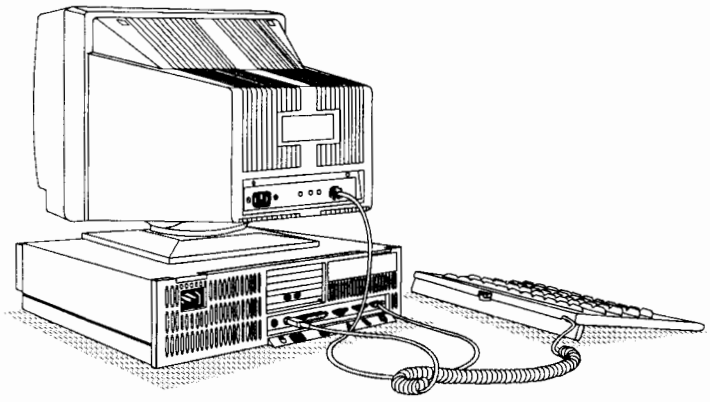
1. Slide the keyboard cable into the keyboard's cable retainer. Tilt the keyboard to a comfortable angle.



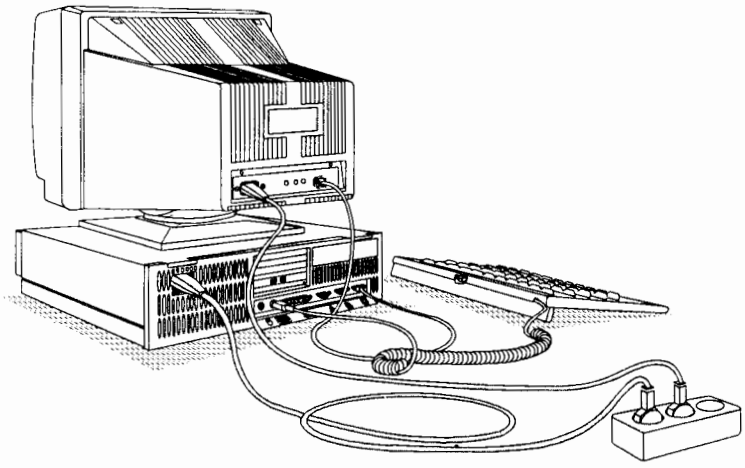
2. Connect the keyboard cable to the back of the computer. Connect the mouse if you have one.



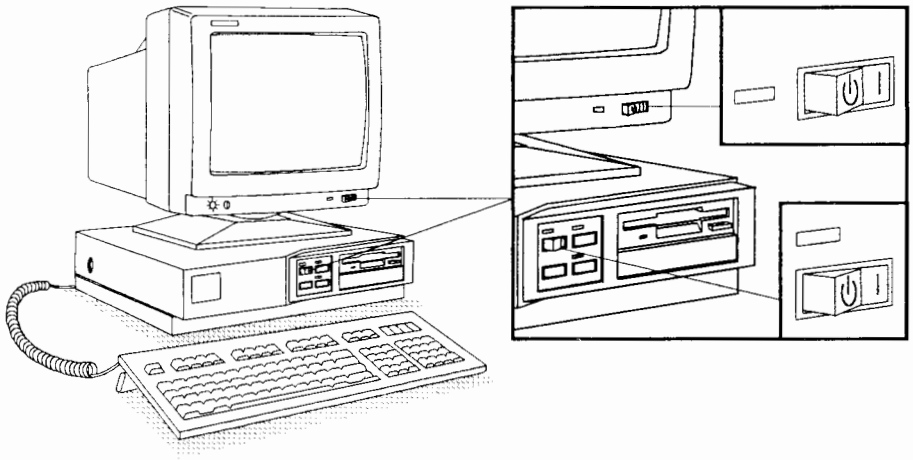
3. Place the display on top of the computer.
   Connect the display's video cable to the computer.



4. Connect the display's power cord and the computer's power cord to a grounded outlet.



5. Switch on the display and then the computer.



6. Check that the computer beeps, a memory count is displayed, and the following text appears at the top of the screen.

```
ROM BIOS (C)Copyright Hewlett-Packard 1985-1992
Compatibility Software (C)Copyright 1985,1986,1987 Phoenix Technologies. Ltd
Version x.xx.xx
```

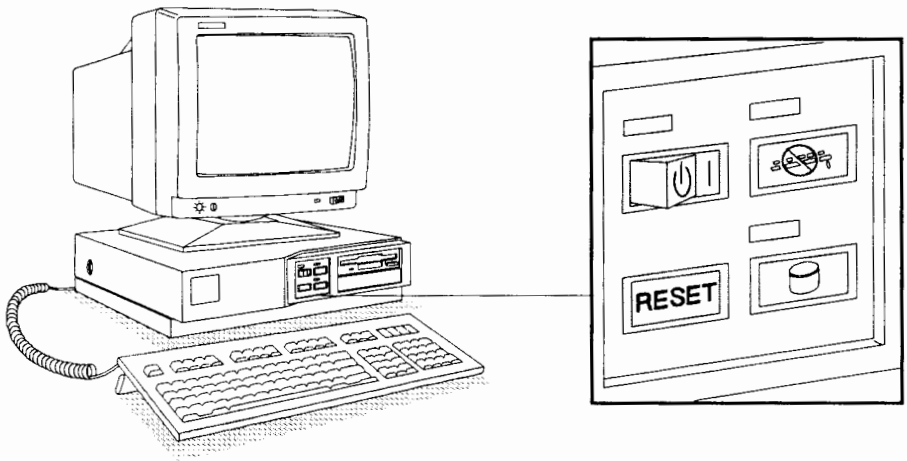
If your computer has the operating system and application software installed, your program will then start. (If the computer doesn't beep or an error message appears, refer to chapter 8.)

Your computer is working correctly.

Read the next section "Identifying the Parts of Your Computer", before connecting your peripheral devices.

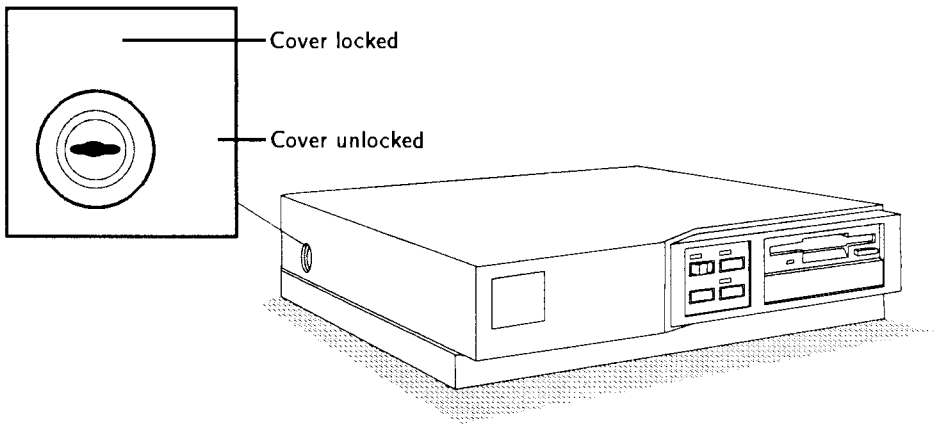
Identifying the Parts of Your Computer

Your computer's control panel has three switches and three lights.

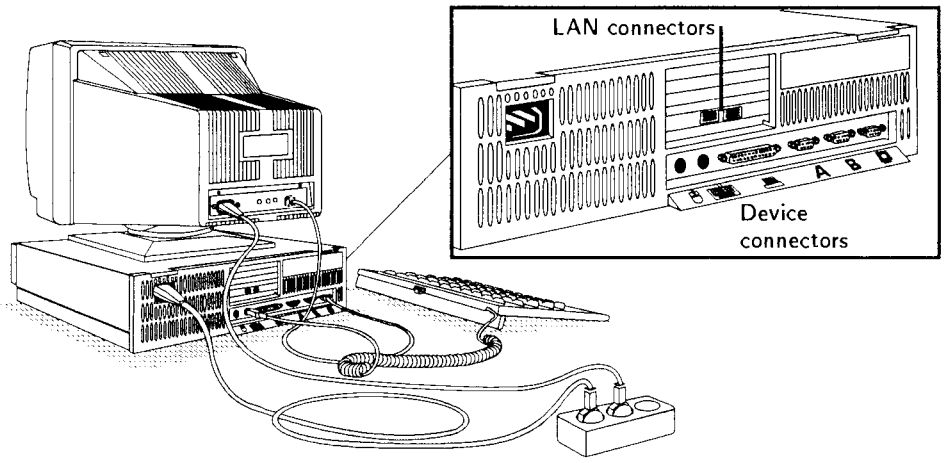


(⏻ |) Power switch:	To switch your computer ON, press the power "rocker" switch to the "|" (on) position. The light above the switch illuminates. To switch your computer OFF, press the power switch to the "⏻" (off) position.
(RESET) Reset switch:	To reset your computer, press the (RESET) push-button switch. Resetting your computer restarts it without you having to switch it off then on.
(🔒) Keyboard lock:	When you have set a User Password, you can use this switch to lock your keyboard and mouse when you are away from your desk. The light above the switch illuminates. (You enter the User Password to unlock the keyboard and mouse.) Chapter 3 describes how to set a User Password.
(💾) Disk light:	Illuminates when your hard disk drive is being used.

The side of your computer is fitted with a cover security lock to prevent unauthorized removal of the cover.

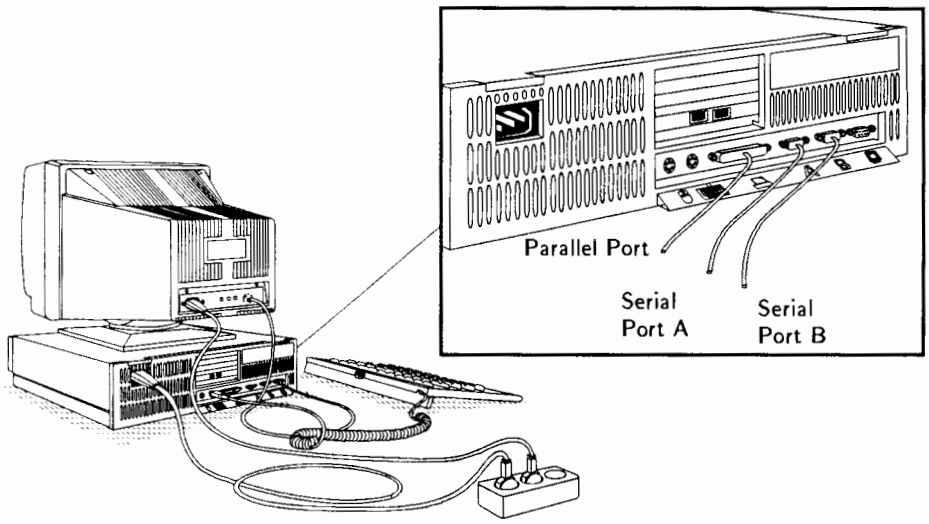


The rear of your computer has connectors for your devices.



Connecting a Printer or Plotter

1. Switch off the computer, printer and plotter.
2. If fitted, remove the plastic covers from the computer's connectors.
3. Attach any printer, plotter or other devices to the computer.
   The computer has three connectors for your devices:
   - two 9-pin serial connectors—serial port A and serial port B—for serial devices (printers, plotters, modem and so on)
   - a 25-pin parallel connector—parallel port—for a parallel device (printer)
4. Tighten all cable attachment screws.

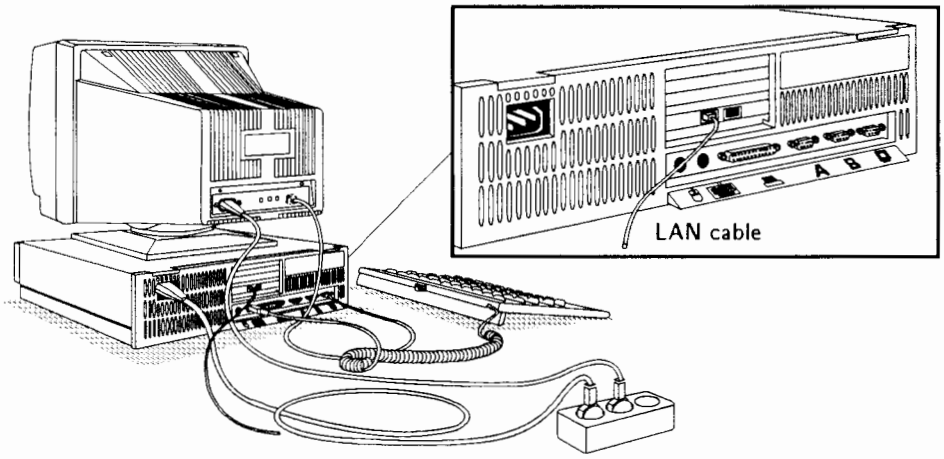


Connecting a LAN Cable

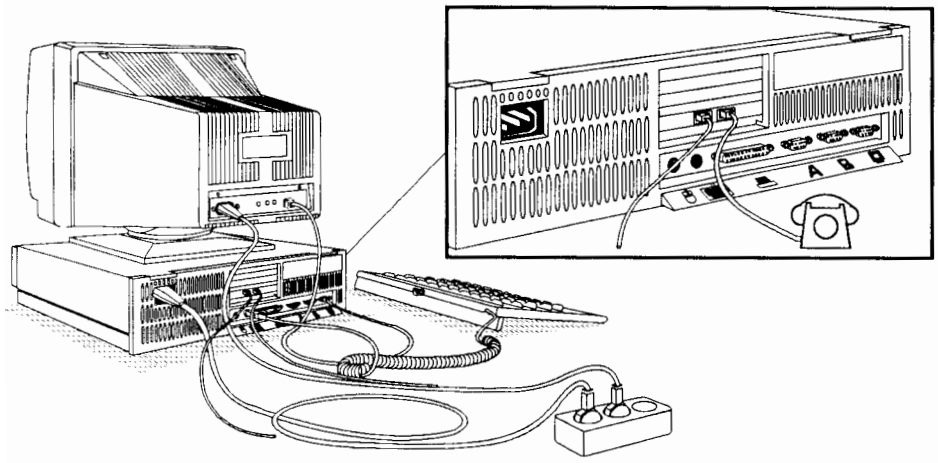
NOTE

Contact your System Administrator before connecting your computer to a local area network as your administrator must install drivers for your LAN adapter board. Chapter 7 provides information on configuring your LAN.

1. If you are using a 10BASE-T network and your computer has a LAN (Local Area Network) adapter board, connect the LAN cable to the LAN connector on the LAN adapter board.



2. If you are using a 10BASE-T network with integrated telephone, connect the telephone cable to the PHONE connector on the LAN adapter board.



If you have purchased the computer with the operating system and accessories and application software already installed, your computer is now ready to use.

If you need to install the operating system and application software, refer to chapter 2 for details.

Read chapter 3 for information on optimizing your computer's security features and setting user preferences.

If you need to install accessories you have purchased, refer to chapter 5 for installation instructions and chapter 6 for configuration instructions.

If your computer has a LAN adapter board, refer to chapter 7 for configuring the LAN.

2

Installing Your Software and HP Utilities

Installing Your Software and HP Utilities

This chapter explains how to install your software and HP utilities:

- To install your operating system, refer to the operating system manuals.
- To install the HP utilities, read "Installing Your HP Utilities".
- To install the HP VGA utilities, read "Installing Your HP Super VGA Utilities".
- If you need to install any utilities and drivers provided with your mouse, printers and plotters and application software, read "Installing Your Other Software".
- If you need to install LAN drivers, refer to chapter 7.
- If you need to install your application software, refer to the application manuals.

NOTE

Your operating system must be installed before you can copy the HP utilities to your hard disk.

If you have purchased accessories to install in the computer, and these accessories have their own utilities and drivers, install the drivers after you have installed your accessories.

Installing Your HP Utilities

The HP utilities are DELDISK, EXMODE and SETUP.

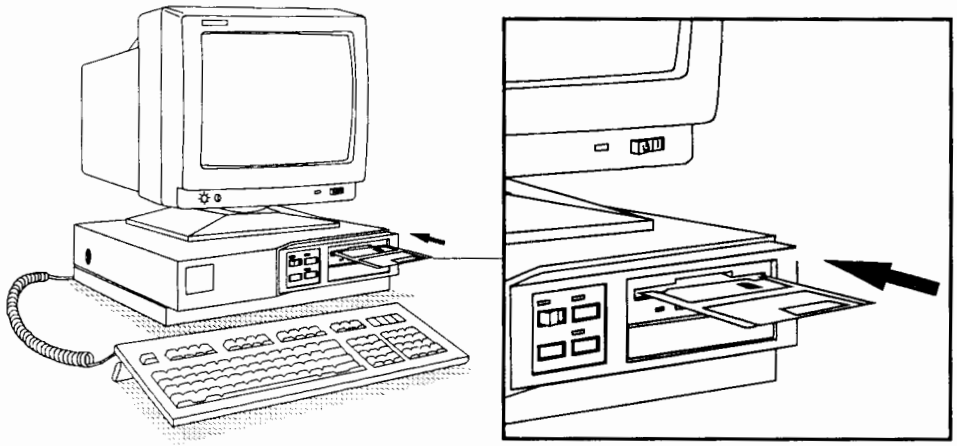
DELDISK is a utility that allows you to delete hard disk partitions.

EXMODE is a utility that allows you to temporarily change the volume of your keyboard click and the processing speed of your computer, and to turn memory cache on and off (if memory cache is available on your computer).

SETUP is the disk-based Setup Program. It has the same functionality as the ROM-based Setup Program, but with context sensitive help and assistance to configure non-HP hard disk drives.

Copying the HP Utilities to Your Hard Disk Drive

1. Insert the Setup Program diskette in drive A.



2. Display the README file on the Setup Program diskette for the latest information about the HP utilities:

   a. Make A (your flexible disk) your current drive, enter:

      `A:` Enter

   b. Display the README file, enter:

      `README` Enter

      Follow the instructions on the screen.

3. Create a directory for the HP utilities on your hard disk:

   a. Make C (your hard disk) your current drive, enter:

      `C:` Enter

   b. Change to your root directory, enter:

      `CD C:\` Enter

   c. Make a directory, enter:

      `MD C:\HPUTIL` Enter

      where `C:\HPUTIL` is the directory where you want to install the HP utilities.

4. Copy the HP utilities to your hard disk:

   a. Make A your current drive, enter:

      `A:` Enter

   b. With the Setup Program diskette in drive A, enter:

      `INSTALL C:\HPUTIL` Enter

   To learn how to use the Setup Program, refer to chapter 3.
   To use EXMODE, refer to chapter 4.

5. Make C your current drive, enter:

   `C:` Enter

6. Remove the Setup Program diskette from drive A. Store it in a safe place.

7. Now install your HP Super VGA utilities.

Installing Your HP Super VGA Utilities

NOTE

You need a hard disk drive (preferably with a minimum of 2 MB of free disk space) to install your Super VGA utilities and drivers.

Seven video utility programs are provided with your computer:

HPVGAII.COM sets Screen Saver options and compatibility modes.

HPANSI.SYS for use with MS-DOS 4.x and earlier, provides support for both extended and standard text modes.

ESU.COM (Enhancement Selection Utility) sets extended text and graphics modes.

ALTPARM.COM (Alternate Display Parameter Utility) allows you to improve the quality of your display.

DIAG.EXE diagnoses problems that may occur with your video.

CLR.COM for use with MS-DOS 4.x and earlier, clears the entire screen when you are using extended modes.

DU.COM (Directory Listing Utility) displays directory information.

High resolution video drivers are also supplied for many applications. These drivers allow an application to take full advantage of your computer's Super VGA video. To display the list of available drivers:

1. Insert the HP Super VGA Utilities and Drivers diskette in drive A.
2. Type: A:\README (Enter)

   and follow the instructions on the screen.

Copying Your HP Super VGA Utilities and Drivers to Your Hard Disk Drive

1. Create a directory for the utilities and drivers on your hard disk:
   a. Make C (your hard disk) your current drive, enter:

      `C:` Enter

   b. Change to your root directory, enter

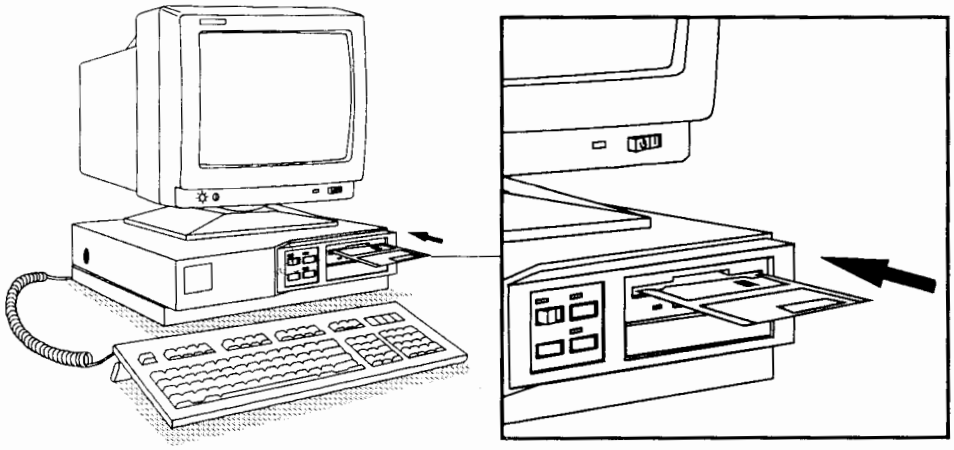
      `CD C:\` Enter

   c. Make a directory, enter:

      `MD C:\HPVGA` Enter

      Where `C:\HPVGA` is the directory where you want to install the HP utilities and drivers.
2. Copy the utilities and drivers to your hard disk:
   a. Insert the HP Super VGA Utilities and Drivers diskette in drive A.
   b. Make drive A the current drive, enter:

      `A:` Enter



c. Unpack the video drivers.

- If you want to unpack the utilities and all the video drivers, enter:

  `UNPACK C:\HPVGA 0` (Enter)

  where `C:\HPVGA` is the directory you created in step 1 and `0` is zero

  This automatically copies all the utility files to the directory you specified. The software driver files are copied to subdirectories of the directory you specified.

  Note that some applications need the driver files to be on drive A during setup. Consequently, these files are not copied by the UNPACK program. You will have to insert the HP Super VGA Utilities and Drivers diskette in drive A when you install these applications.

- If you want to unpack all the utilities but only some of the video drivers, first enter:

  `UNPACK C:\HPVGA 1` (Enter)

  This will copy the utilities. Then enter:

  `UNPACK C:\HPVGA` (Enter)

  This will display a menu of the drivers you can copy. Follow the instructions on the screen to select the drivers you need.

d. Make drive C the current drive, enter:

`C:` (Enter)

3. Remove the HP Super VGA Utilities and Drivers diskette from drive A. Store it in a safe place.

4. Display the README file to read the latest information on the HP Super VGA Utilities.

   Change to the `HPVGA` sub-directory by entering: `CD C:\HPVGA` (Enter)

   Display the contents of the file by entering: `README` (Enter)

   Press (Enter) to "page through" the information on the screen.

   To learn how to use the video drivers and utilities, refer to chapter 4.

5. Now install your other software.

Installing Your Other Software

If your computer has a LAN adapter board, you need to install LAN drivers. Refer to chapter 7 for details.

If your mouse, printers, plotters or other devices have drivers or utilities, install them as described in the device manuals.

If you have purchased accessories to install in the computer, and these accessories have their own utilities and drivers, install them after you have installed your accessories. (Chapter 5 describes how to install accessories.)

If you have application software to install, install it as described in your applications' manuals.

3

Setting Security Features and User Preferences Using Setup

Setting Security Features and User Preferences Using Setup

This chapter explains how to use the Setup Program to:

- use the computer's security features to:
  - set passwords to lock your computer
  - prevent access to your disk drives
  - prevent access to serial and parallel ports
- select user preferences:
  - key click volume
  - key repeat rate/delay
  - default setting of the (Num Lock) key

NOTE

If you want to configure your computer using the Setup Program, refer to chapter 6 for details. The Setup help information is only available using the disk-based Setup Program.

Starting the Setup Program

1. If you installed your HP utilities in the C:\HPUTIL directory on your hard disk (as described in chapter 2):

   a. Make C your current drive, enter:

      `C:` (Enter)

   b. Change to the directory where you installed the HP utilities, enter:

      `CD C:\HPUTIL` (Enter)

   c. Start the Setup program, enter:

      `SETUP` (Enter)

      A screen appears:

      - Select your language for screen messages.
      - If you are prompted to enter your password, do so.

      The Setup Program menu will appear.

2. If you didn't install the HP utilities on your hard disk, start Setup from the flexible diskette:

   a. Insert the Setup Program diskette into drive A.

   b. Turn on the display and computer. (If the computer is already turned on, press the (RESET) switch on the front panel.)

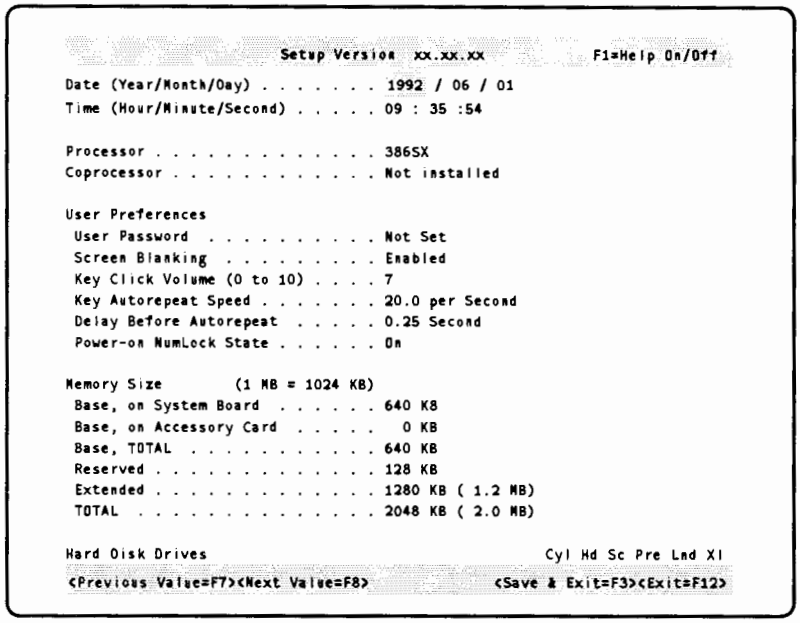
      The computer performs its self-test and memory count and will beep. (If there are any errors in your computer's configuration, error messages appear.)

      A screen appears:

      - Select your language for screen messages.
      - If you are prompted to enter your password, do so.

      The Setup Program menu will appear.

Note: The information displayed on your version of the Setup Program may be different from that shown on the screens below.



- To move the **highlight** to a field, press an arrow key (▲, ▼, ◀ or ▶).
- The bottom of the screen tells you how to change the highlighted field.
- To display the next screen of information, press the Page Down key.

Try out the screen. Press the F1 key. A help window will appear explaining the highlighted field.

Press an arrow key (▲ or ▼). As you move the highlight, the contents of the help window changes.

Press F1 again to exit the help information.

The rest of this chapter describes the security and user preference features.

Note that if this is the first time you have used your computer, you should set the date and time and check the configuration as described in chapter 6.

Controlling Your Computer's Security

Your computer has a comprehensive set of security features to prevent accidental or unauthorized access to the configuration settings, and to maintain confidentiality of the data stored on your disk drives or network, or displayed on the screen.

To maintain the confidentiality of the data on the computer, you can set a User Password:

- The User Password protects the user preference configuration settings (keyboard click volume, and so on).
- If the User Password is set, pressing  on the front panel will lock the keyboard and mouse. (Typing the User Password will unlock them.)

The System Administrator has two security features:

- The cover lock—on the side of the computer—prevents unauthorized access to the computer's switches and accessories.
- The System Administrator Password protects all the configuration settings, except those available via the User Password (user preferences)—this prevents the user from changing the computer's configuration.

  If only the System Administrator Password is set, the power-on password prompt does not appear, and anyone can change the user preference settings.

  If only the User Password is set, then it also protects the settings normally protected by the System Administrator Password.

If the computer is operating as a server, and you want it to be able to restart automatically after a power failure with the keyboard and mouse locked, you can enable Network Server Mode.

If the computer is operating on a network and you want it to start from the LAN server, you can disable starting from the disk drives.

If you don't want anyone to be able to copy data to a diskette when you are absent, you can disable writing on flexible disks.

To prevent anyone from changing the configuration, you can set security mode using a switch on the system board. (Refer to chapter 9.)

Locking Your Computer Using Passwords

When to Set a User Password

Set the User Password to prevent:

- Unauthorized use of your computer when it is started through a power-on password prompt, o¬.

  You must enter the password (User Password or System Administrator Password) to start the computer.

- Unauthorized use of your keyboard and mouse when you press the (PWR) switch. (Set the Screen Blanking to prevent anyone reading the information on the screen when (PWR) is pressed.)

  You must enter the User Password to unlock the keyboard and mouse.

- Unauthorized changes to your user preference settings (with the Setup Program).

When to Set the System Administrator Password

The System Administrator Password is useful in an organization where the person who manages the computer's configuration is not the same as the person who uses the computer.

Set the System Administrator Password to prevent unauthorized changes to the computer's configuration—except to the user preferences and date and time.

Note that when you enter the System Administrator Password, you can change any configuration parameters, including User Preferences and the User Password.

When to Enable Network Server Mode

Enable Network Server Mode—and set a User Password—when the computer is operating as a LAN server or bulletin board server.

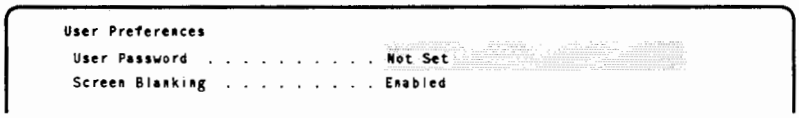
Network Server Mode allows your computer to restart automatically after a power failure but with the keyboard and mouse locked (the screen will also be blank if Screen Blanking is enabled).

The keyboard and mouse cannot be used until the User Password is entered.

If you don't set Network Server Mode, then the computer will wait for you to enter the User Password before starting.

How to Set Passwords and Network Server Mode

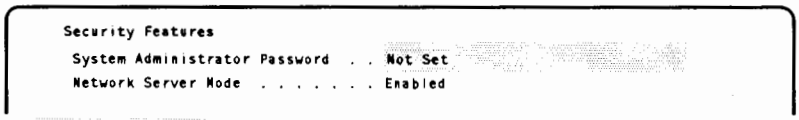
1. Start the Setup Program (refer to page 3-3).
2. Press an arrow key (▲, ▼) to highlight the **User Password** field.



3. Press F1 to display a help window about the field.
4. Follow the messages at the bottom of the screen to enter your password. (Your password does not appear on the screen.)

   The password is not case sensitive—you can use upper or lower-case characters. However, the numeric keys on the top of the keyboard are *not* the same as the numeric keys on the numeric keypad.

   You can also set the Screen Blanking to prevent anyone reading the information on the screen when Ctrl-Alt-Del is pressed.
5. If you want to set a System Administrator Password, press Page Down and an arrow key to highlight the **System Administrator Password** field. Read about the field in the help window. Follow the messages at the bottom of the screen to set the password.
6. If your computer is a server, you can enable Network Server Mode to prevent anyone using the keyboard when the computer restarts after a power failure.



7. Select **Save and Exit**. The computer will automatically restart (remember to remove the Setup Program diskette from drive A).

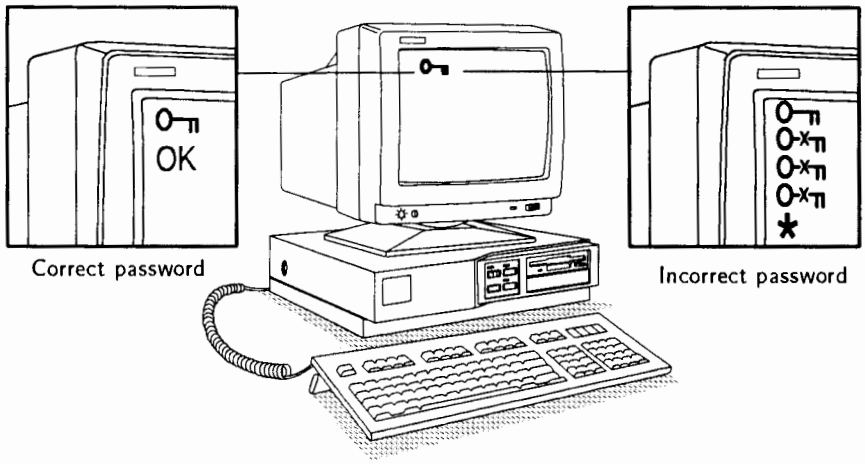
   If you set a User Password, the power-on password prompt (🔑) will appear. Enter your User Password or System Administrator Password to use the computer.

Preventing Unauthorized Access to Your Computer When it Starts (Power-on Password)

Setting a User Password prevents unauthorized access to your computer when it is started.

When you switch on the computer—or restart it using the (RESET) switch on the computer's front panel—the power-on password prompt (o-n) will ask you to enter the password.

(Note that if you are using the computer as a LAN server and you have enabled Network Server Mode, the computer continues to start normally—but the screen will be blank if you selected Screen Blanking in the Setup Program. However, the keyboard and mouse are locked until you enter your password.)



To start your computer, enter:

`User Password` (Enter)

or

`System Administrator Password` (Enter)

If you enter an incorrect password, the "o-n" prompt appears.

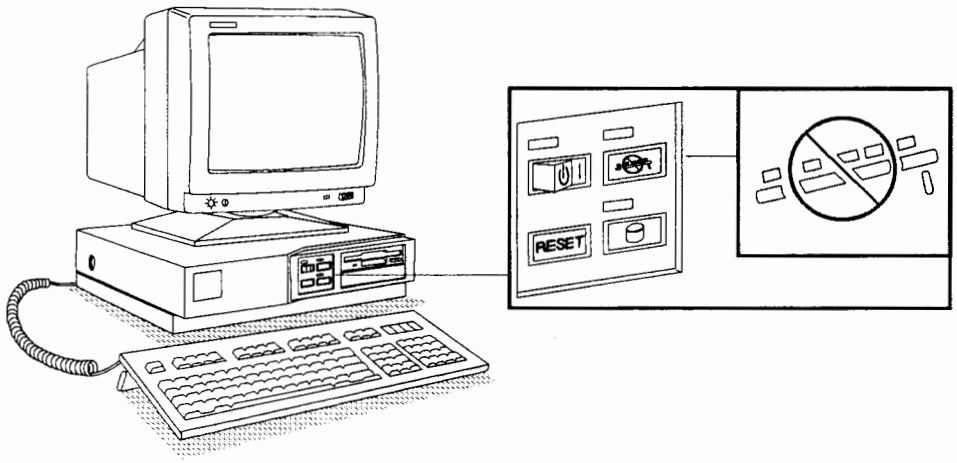
You have three chances to enter the password. After three unsuccessful tries, the "*" prompt appears and you must restart the computer before you can try again.

Preventing Unauthorized Use of the Keyboard and Mouse (Keyboard Lock Switch)

Setting a User Password allows you to use the keyboard lock switch (🔒) to prevent unauthorized use of your keyboard and mouse when you're away from your desk.

To lock the keyboard and mouse, press the (🔒) switch on the computer's front panel.

The light next to the switch illuminates. In addition, if you selected Screen Blanking in the Setup Program, the screen will go blank.



To unlock your keyboard and mouse, enter: **`User Password`** (Enter)

You cannot use the computer until you type in the correct User Password. (The System Administrator Password will not work.)

If you restart the computer, the power-on password prompt (🔑) appears.

If you forget the User Password, restart the computer and enter the System Administrator Password when the power-on password prompt is displayed. Then set a new User Password using Setup.

If you forget both the User Password and the System Administrator Password, you must clear the passwords from your computer's memory. You do this with a switch on the system board. Refer to chapter 9 for details.

Preventing Access to Your Disk Drives and Ports

When to Disable Starting From Your Disk Drives

Disable starting from the hard disk drive to prevent unauthorized starting of your computer from the operating system on your hard disk drive. You can still gain access to the data on your disk drives once you have started your computer.

(You can only disable starting from the hard disk drive if the drive does not have its own BIOS ROM.)

When you disable starting from your hard disk drive, your computer can still be started from a diskette (in drive A) containing the operating system or from the LAN server (if you have a boot ROM).

You can also disable starting from your flexible disk drive, but you need a disk drive or the LAN server to be able to start your computer.

For example, you must disable starting from your hard disk drive if you want to start from the LAN server. You can do this if:

- your computer is connected to a LAN
- your computer has a boot ROM
- you have enabled "Remote Start" in the Setup Program (described in chapter 6)

When to Disable Your Flexible or Hard Disk Drive

To prevent unauthorized use of your disks or unauthorized access to the information on them, disable your disk drives (flexible and/or hard disk connected to your built-in disk controller).

When to Prevent Writing to Your Flexible Disk Drive

To prevent data being copied to the flexible diskette (connected to your built-in disk controller), disable writing on your flexible disk drive.

When to Disable Your Ports (Connectors)

Disable your ports if you install an accessory board that needs to use the same Parallel 1, Serial 1, or Serial 2 used by your computer's ports.

You can also disable your computer's ports if you don't want anyone to be able to use the devices connected to your serial and parallel connectors when you are absent.

How to Disable Your Disks and Ports

1. Start the Setup Program (refer to page 3-3).
2. Press an arrow key (▲, ▼) to highlight the appropriate disk drive or port field.

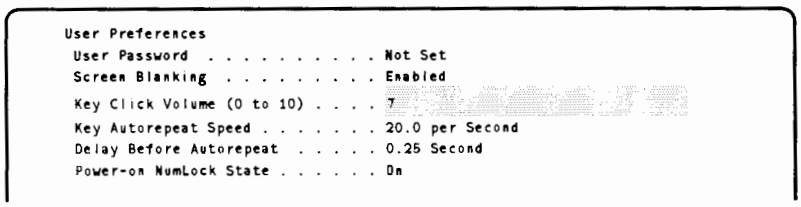
```
Security Features
 System Administrator Password  . . Not Set
 Network Server Mode  . . . . . . . Disabled
 Start From Flexible Disk . . . .   Enabled
 Start From Hard Disk . . . . . . . Enabled
 Flexible Disk Drives . . . . . . . Enabled
 Hard Disk Drives . . . . . . . . . Enabled
 Writing on Flexible Disks  . . . . Allowed

Parallel Port . . . . . . . . . . . Parallel 1 (378H, IRQ7)

Serial Ports
 Serial A . . . . . . . . . . . . . Serial 1 (3F8H, IRQ4)
 Serial B . . . . . . . . . . . . . Serial 2 (2F8H, IRQ3)
```

3. Press F1 to display a help window about the field.
4. Follow the messages at the bottom of the screen to:
   - enable/disable starting from your flexible and hard disk drive
   - enable/disable your flexible and hard disk drives
   - allow/not allow writing to your flexible disk drive
   - enable/disable your parallel port
   - enable/disable your serial ports
5. Select **Save and Exit**. The computer will automatically restart (remember to remove the Setup Program diskette from drive A).

Selecting User Preferences

1. Start the Setup Program (refer to page 3-3).
2. Press an arrow key (▲, ▼) to highlight the appropriate field.
   - **Key Click Volume**—sets the volume of the click you hear when you press a key. (0 is inaudible and 10 is maximum volume.)
   - **Key Autorepeat Speed**—sets the speed at which characters repeat themselves on the screen when you hold a key down.
   - **Delay Before Autorepeat**—sets the delay before a character is repeated when you hold a key down.
   - **Power-on Numlock State**—sets the operation of the Num Lock key when you start the computer (this key controls the numeric keypad on the right-hand side of the keyboard).

     NumLock On means the keys generate numeric characters
     NumLock Off means the keys control the cursor.
   - **Screen Blanking**—sets the screen to go blank when the keyboard is locked using the switch or Network Server Mode.



3. Press F1 to display a help window about the field.
4. Follow the messages at the bottom of the screen to make your selection.
5. Select **Save and Exit**. The computer will automatically restart (remember to remove the Setup Program diskette from drive A and store it in a safe place when you have finished using Setup).

4

Using EXMODE, DELDISK, and Your HP Super VGA Utilities

Using EXMODE, DELDISK, and Your HP Super VGA Utilities

This chapter explains how to:

- use EXMODE to *temporarily*:
  - change the volume of the keyboard click
  - enable/disable cache memory
  - change your computer's processing speed
- use DELDISK to delete hard disk partitions
- use the HP Super VGA Utilities:
  - to control your display
  - with applications to display characters with different resolutions

Using EXMODE

After copying the HP utilities to the `C:\HPUTIL` subdirectory on your hard disk as described in chapter 2, you can use EXMODE to *temporarily* change the volume of the keyboard click and your computer's processing speed, and *temporarily* enable/disable cache memory.

(Note that the Setup Program allows you to *permanently* change the volume of the keyboard click and your computer's processing speed, and *permanently* enable/disable cache memory. Refer to chapter 6.)

There are two ways to use the EXMODE command:

1. Type the EXMODE command at the MS-DOS prompt. The selected command remains in effect until you restart your computer.

   (If you add the drive and path `C:\HPUTIL` to the MS-DOS PATH command in your AUTOEXEC.BAT file, you don't need to type `C:\HPUTIL` to use the EXMODE command.)

2. Or, create a batch file containing the EXMODE command.

   (Refer to your MS-DOS documentation for more information about the PATH command and batch files.)

The syntax for the EXMODE command is described below.

Changing the Keyboard's Click Volume Using EXMODE

The syntax of the EXMODE command to change the click volume is:

`drive:\path\EXMODE CLICK` *volume*

where:

`drive`	is the drive that contains the EXMODE command (C:)
`path`	is the path to the EXMODE command (HPUTIL)
`EXMODE CLICK`	is the command to control the volume
volume	is a number between 0 and 15 for the click volume (0 is inaudible and 15 is maximum volume)

For example, to set the click to maximum: `C:\HPUTIL\EXMODE CLICK 15`

Enabling/Disabling Cache Memory Using EXMODE

The syntax of the EXMODE command to control cache memory is:

`drive:\path\EXMODE MEM` *parameter*

`drive`	is the drive that contains the EXMODE command (C:)
`path`	is the path to the EXMODE command (HPUTIL)
`EXMODE MEM`	is the command to control the cache memory
parameter	enables and disables the cache memory ON enables cache memory OFF disables cache memory

The command is ignored if your computer does not have cache memory.

For example, to enable cache memory: `C:\HPUTIL\EXMODE MEM ON`

Changing Your Computer's Processing Speed Using EXMODE

The syntax of the EXMODE command to change the processing speed is:

`drive:\path\EXMODE SPEED` *speed*

`drive`	is the drive that contains the EXMODE command (C:)
`path`	is the path to the EXMODE command (HPUTIL)
`EXMODE SPEED`	is the command to control the speed
speed	is the computer's processing speed—possible values are:

- `HIGH`—the highest speed of your computer (indicated on the HP nameplate on the front of the computer)
- `LOW`—for 8 MHz
- `AUTO`—this means HIGH speed with automatic switch to LOW for diskette access

If you do not specify a speed, the current setting is displayed.

For example, to set the speed to AUTO: `C:\HPUTIL\EXMODE SPEED AUTO`

If all your applications can run at the highest speed of your computer, use the Setup Program to select `HIGH`. (Refer to chapter 6.)

If you have one application only that needs to run at a lower speed to access the flexible disk, then set the computer to run at the LOW speed only for this application:

- select `HIGH` in the Setup Program
- add the `EXMODE SPEED LOW` command to the batch file that starts your application from the flexible diskette, for example:

```
C:\HPUTIL\EXMODE SPEED LOW
APPLIC.EXE                  <-- use your application's run command
C:\HPUTIL\EXMODE SPEED HIGH
```

Using DELDISK

DELDISK is a utility that allows you to delete all the partitions on the hard disk drive. It is useful if you are installing a hard disk drive that has previously been used and you want to discard all the information contained on it.

The syntax of the DELDISK command is:

```
drive:\path\DELDISK 1
```

`drive`	is the drive that contains the DELDISK utility (A:)
`path`	is the path to the DELDISK command
`DELDISK`	is the command to control the utility
1	is to delete partitions from the internal hard disk drive.

To use DELDISK:

1. Insert the Setup Program diskette in drive A.
2. Enter:

   `A:\DELDISK 1` Enter

Note that DELDISK does not delete the data from the disk, it just erases the partition table in the master boot record. Do not use DELDISK to delete sensitive data from a hard disk.

Using the HP Super VGA Utilities and Drivers

Chapter 2 explained how to install the HP Super VGA utilities.

The utility programs include:

Utility:	Description:
HPVGAII.COM	sets Screen Saver options and compatibility modes
HPANSI.SYS	for use with MS-DOS 4.x and earlier, provides support for both extended and standard text modes
ESU.COM	(Enhancement Selection Utility) sets extended text and graphics modes
ALTPARM.COM	(Alternate Display Parameter) allows you to improve the quality of your display
DIAG.EXE	diagnoses problems that may occur with your video
CLR.COM	for use with MS-DOS 4.x and earlier, clears the entire screen when you are using extended modes
DU.COM	(Directory Listing Utility) displays directory information

If you add the drive and path `C:\HPVGA` to the MS-DOS PATH command in your AUTOEXEC.BAT file, you don't need to type `C:\HPVGA` to use the HPVGA utilities. (Refer to your MS-DOS documentation for more information about the PATH command.)

Using the HPVGAII.COM Emulator and Screen Saver

HPVGAII.COM provides the following:

- a screen saver to extend the life of your display
- an emulator that makes the built-in Super VGA video compatible with software written for CGA and Hercules monochrome display systems
- a means of turning off the Super VGA features built into your computer's video subsystem.

HPVGAII functions can be activated as described in the following subsections, either by entering the appropriate parameters on the HPVGAII command line or by typing:

`HPVGAII` (Enter)

to display a screen similar to the following:

```
Screen Saver is OFF. Current Screen Saver Time-out is 5 minutes
CGA/Hercules Emulation is OFF
Display is in COLOR mode
Standard VGA mode is ON and VGA Extensions are ON

Options Available:

1. Install Screen Saver

2. Select Standard VGA or Extended VGA Modes

3. Select Emulation Mode

4. Select Monitor Type (Color/Mono)

5. Exit

Enter option number:

Note: Most of these "OPTIONS" may be configured automatically at power-on
      if included in an AUTOEXEC.BAT file. Check with your system manual.
```

Using Screen Saver to Extend the Life of Your Display

Screen Saver is a utility included in the Utility Program HPVGAII.COM that prevents permanent damage to your screen by shutting it off after a specified period of inactivity. This prevents characters and images from being "burned" onto your screen. You can reactivate the screen by pressing any key (the Shift key is recommended).

The Screen Saver *should not* be used if you plan to use:

- a mouse on a regular basis
- Microsoft Windows
- application software with which you use a joystick
- application software that shuts the screen off even when you are using the mouse

If you experience any display-related problems, turn off Screen Saver.

Turning on Screen Saver from the HPVGAII Menu. You can turn on the Screen Saver by selecting the second option on the HPVGAII main menu.

Turning on Screen Saver from the MS-DOS Prompt. From the MS-DOS prompt, turn on the Screen Saver by typing the command line below:

`C:\HPVGA\HPVGAII` *parameter* Enter

where *parameter* can be any of the following choices:

Parameter:	Description:
SAVE:ON	enables the Screen Saver feature
SAVE:OFF	disables the Screen Saver feature
SAVE:[*n*]	enables the Screen Saver feature after *n* minutes. The default setting for time elapsed is five minutes.
NOSAVE	disables the Screen Saver feature

You may also place the Screen Saver command in your AUTOEXEC.BAT file so that it is executed every time you turn on your computer.

Selecting an Emulation Mode with HPVGAII.COM

The default video mode for your PC is the VGA standard. Most application programs accept this mode, which means you usually won't have to think about it when using your programs.

However, some programs are compatible only with the Hercules monochrome standard or the CGA color standard (that is, they require a video subsystem using that standard). Such programs won't run unless you use the HPVGAII.COM software to set up your video subsystem to emulate the appropriate video mode.

You should select another video mode for your PC *only* if an application doesn't run.

Notes

1. Remember HPVGAII.COM sets up an emulator. This means that even if you have a color display, you can still set up your video subsystem to be compatible with the Hercules monochrome standard; or if you have a monochrome display, you can still set up your video subsystem to be compatible with the CGA color standard.
2. With the exception of applications using the Hercules monochrome standard, most programs written since the introduction of color standards higher than CGA do not require compatibility with a particular standard in order to run. (This is because they do not directly access the registers for the standard but go through the proper BIOS routines.)

   Just because an application will run, however, does not mean that it will take advantage of the capabilities of your video subsystem. To allow an application to take fullest advantage of your Super VGA video subsystem, you should use the video drivers supplied on your Super VGA Utilities and Drivers diskette.

Selecting an Emulation Mode from the HPVGAII Menu. To set the emulation mode from the HPVGAII menu, first select **Monitor Type** (option 4); then select **Emulation Mode** (option 3).

The choices available under option 3 depend on the selection you have made in option 4.

Do Not Select Hercules Emulation Half Mode

Under option 4, do not select the **Monochrome Hercules Emulation Half Mode**. This mode is for video systems that have less video memory than required by the full Hercules emulation. However, there is more than enough video memory in your PC for full Hercules emulation.

Selecting an Emulation Mode from the MS-DOS Prompt. From the MS-DOS prompt, select a video mode to emulate by typing:

`C:\HPVGA\HPVGAII` *parameter* (Enter)

where *parameter* can be any of the following choices:

Parameter:	Description:
CGA:ON	selects color graphics emulation
CGA:OFF	turns off color graphics emulation (return to VGA)
MONO:ON	selects monochrome Hercules emulation
MONO:OFF	disables monochrome Hercules emulation (return to VGA)

Turning Off Extended VGA Features With HPVGAII.COM

Your PC supports several video modes that are enhancements or extensions to the VGA standard. These modes include the ability to display 132 columns of text and up to 1024×768 dot resolution graphics on appropriate displays.

However, some application software may not run correctly if it detects any of these extended modes. In this case, you can use the HPVGAII.COM utility to turn these extended modes off.

Turning off Extended VGA Modes from the HPVGAII Menu. You can turn off extended video modes by selecting the first option on the HPVGAII main menu.

Turning off Extended VGA Modes from the MS-DOS Prompt. From the MS-DOS prompt, turn off extended video modes by typing:

`C:\HPVGA\HPVGAII` *parameter* Enter

where *parameter* can be any of the following choices:

PURE:ON	enables pure IBM VGA standard modes, disables extensions
PURE:OFF	enables both VGA pure mode and extensions

Supporting Video Modes with HPANSI.SYS

If you are using MS-DOS 4.x or earlier, you must load HPANSI.SYS if you will be using any of the extended video modes.

> **NOTE**
>
> Support for extended video modes is built into MS-DOS 5.0. However, support for ANSI calls to these modes is not. Hence, even if you have MS-DOS 5.0, you may still want to install HPANSI.SYS if your application makes ANSI calls to extended video modes.

When you unpacked your HP Super VGA Utilities and Drivers diskette, the HPANSI.SYS file was copied to the directory you specified (`C:\HPVGA`).

To use HPANSI.SYS, you need to modify your CONFIG.SYS file as follows:

1. Change to your root directory. At the MS-DOS prompt type:

   `CD C:\` (Enter)

2. Display the contents of the CONFIG.SYS file. At the MS-DOS prompt type:

   `TYPE CONFIG.SYS` (Enter)

3. Check to see if the CONFIG.SYS file contains the line:

   `DEVICE=`*path*`\ANSI.SYS`

   If it does, delete this line. (Use an ASCII word processor or the MS-DOS line editor, EDLIN, for example.)

4. Add the following line to the CONFIG.SYS file:

   `DEVICE=C:\HPVGA\HPANSI.SYS`

   where **HPVGA** is the directory containing HPANSI.SYS

5. Restart your computer. (Press the (RESET) switch on the front panel.)

Setting Text Display Modes with ESU.COM

The Enhancement Selection Utility (ESU.COM) allows you to select different text display modes from a menu or from the MS-DOS prompt. By using ESU.COM you can change the size of text displayed by applications that do not reset the video mode (such as the WordPerfect and WordStar text editors).

Before ESU.COM will work, the enhanced VGA modes must be on (which is the default). Enhanced modes can be turned off or on using the HPVGAII.COM utility. Refer to "Turning Off Extended VGA Features With HPVGAII.COM" earlier in this chapter.

Selecting Text Display Mode from a Menu

To select the video display mode from a menu:

1. Start the utility program. At the MS-DOS prompt type:

   `C:\HPVGA\ESU` Enter

2. Select the text display mode that you want from the list displayed on your screen.

Selecting Text Display Mode from the MS-DOS Prompt

To select the text display mode from the MS-DOS prompt:

Type `C:\HPVGA\ESU` *mode number* Enter

where *mode number* is one of the values from the following table (the values are in hexadecimal).

You can also create a batch file to start ESU when you start your application. Refer to your MS-DOS documentation for more information about batch files.

Supported Text Display Modes

Mode Number	Resolution	Mode Number	Resolution
2, 3	80×25	43	80×60
40	80×43	44	100×60
41	132×25	45	100×60
42	132×43		

Sizing and Centering the Display Image Using ALTPARM.COM

If the image on your display is too small or shifted to the right or left, you can use the Alternate Display Parameter (ALTPARM.COM) utility to improve the quality of your display image.

You will have to use the Alternate Display Parameter Utility every time you start or restart your computer. Therefore, you may want to place the ALTPARM command in your AUTOEXEC.BAT file.

Available ALTPARM commands are listed below:

1. `C:\HPVGA\ALTPARM` Enter

   gives instructions on the use of the utility program and displays a list of supported monitors.

2. `C:\HPVGA\ALTPARM` *monitor* Enter

   loads the display parameters for the monitor of your choice. The monitor must be in the list of supported monitors (refer to list item 1).

3. `C:\HPVGA\ALTPARM SETUP` Enter

   allows you to modify the display parameters starting from a monitor that is in the list of supported monitors (refer to list item 1). The modifications are saved to a user-defined file.

4. `C:\HPVGA\ALTPARM USER` *file* Enter

   allows you to load a user-defined file.

Using DIAG.EXE to Identify Problems

To help you identify problems that may occur with your video controller, run the Diagnostics Program (DIAG.EXE).

Before DIAG.EXE will work, the enhanced VGA modes must be on, which is the default. Enhanced modes can be turned off or on using the HPVGAII.COM utility. Refer to "Turning Off Extended VGA Features With HPVGAII.COM" earlier in this chapter.

To start the utility program, at the MS-DOS prompt type:

```
C:\HPVGA\DIAG (Enter)
```

The program displays the amount of installed video memory (DRAM) and a number of other parameters.

It also allows you to run a series of self-explanatory tests on the various attributes and capabilities of the HP Super VGA video subsystem.

Using CLR.COM to Clear the Display Screen

With MS-DOS 4.x or earlier, the DOS command CLS clears only the portion of the screen used by standard video modes. Hence, you must CLR.COM to clear the screen when you are using extended video modes.

To clear the entire screen, at the MS-DOS prompt type:

```
C:\HPVGA\CLR (Enter)
```

NOTE

CLR.COM is not needed with MS-DOS 5.0 because support for extended video modes is built into the CLS command.

Using DU.COM to Display a Directory Listing

This utility takes advantage of extended resolution and displays a directory listing in two or three columns, depending on your chosen resolution—whereas the MS-DOS DIR command displays a listing in one column.

The syntax of the DU command is:

`DU` *drive:\path\file* `/D /H /S`

Parameter	Description
drive:	drive that contains the files to be displayed
path	path to the files to be displayed
file	files to be displayed
/D	display subdirectories only
/H	display hidden files only
/S	display system files only

To *stop* the display of the directory entries, press Esc.

To stop the display of the directory entries *temporarily*, press any key *except* Esc. To resume scrolling, press any key.

Setting Up Your Video Drivers

High resolution video drivers are supplied on the HP Super VGA Utilities and Drivers diskette for many applications. These drivers allow an application to take full advantage of your computer's Super VGA video. To display the list of available drivers:

1. Insert the HP Super VGA Utilities and Drivers diskette in drive A.
2. Type: A:\README Enter

   and follow the instructions on the screen.

5

Installing and Removing Accessories

Installing and Removing Accessories

CAUTION

Leave the accessory in its anti-static bag until you are ready to install it. Before installing the accessory, hold the accessory in one hand and touch the metal case of the computer with the other hand to equalize the static electricity. Do not drop the accessory.

If you do not feel confident installing the accessory yourself, contact your HP dealer for assistance.

This chapter explains how to install and remove the accessories you purchased:

- flexible disk drive
- hard disk drive
- memory modules
- coprocessor
- boot ROM
- accessory boards

Before you can install or remove an accessory, you must:

1. Switch off the computer and disconnect the power cord.
2. Remove the cover.

After you install or remove an accessory, you must:

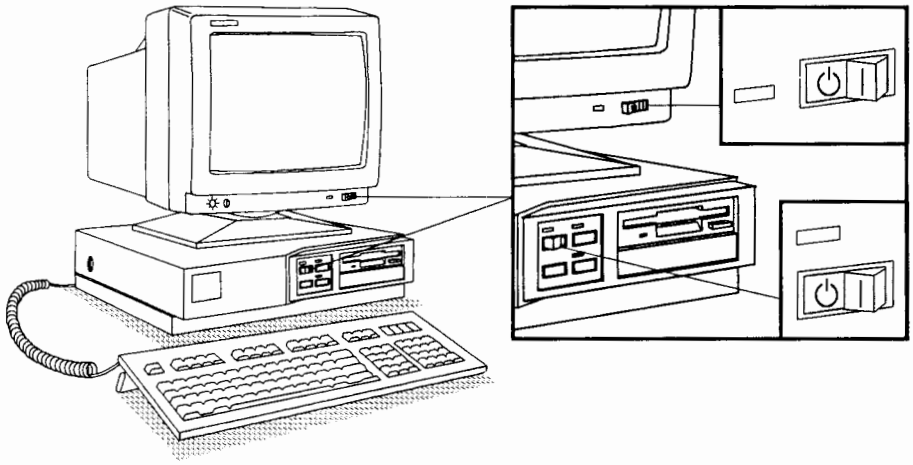
1. Replace the cover and reconnect the power cords.
2. Record the type of accessory in "Additional Items Installed" at the end of this chapter.
3. Run the Setup Program to declare the accessory. (Refer to chapter 6 for details.)

WARNING

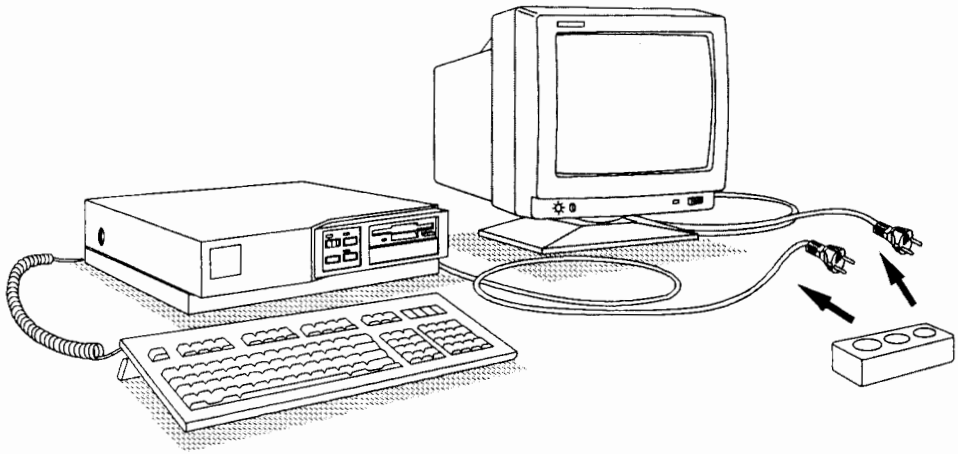
Always unplug the computer power cord before removing the cover.

Removing the Cover

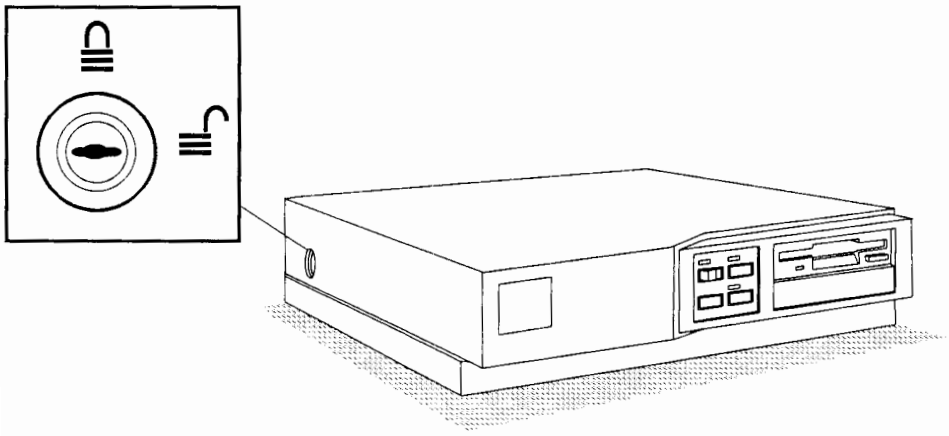
1. Ensure the display and computer are switched off.



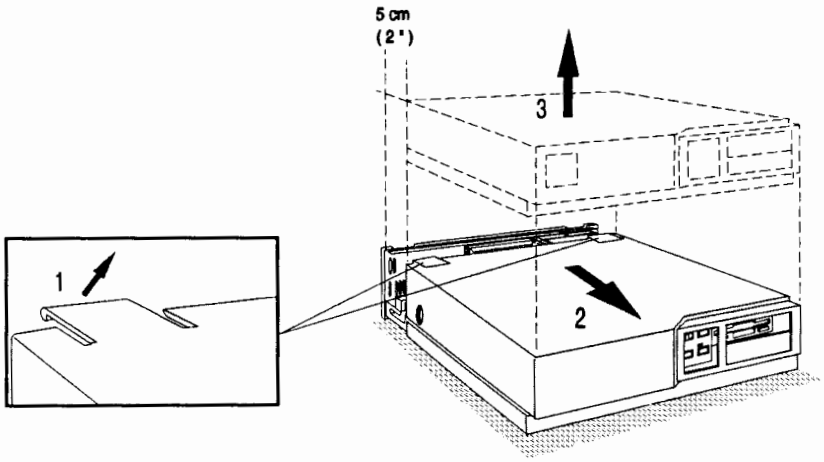
2. Disconnect the power cords and remove the display.

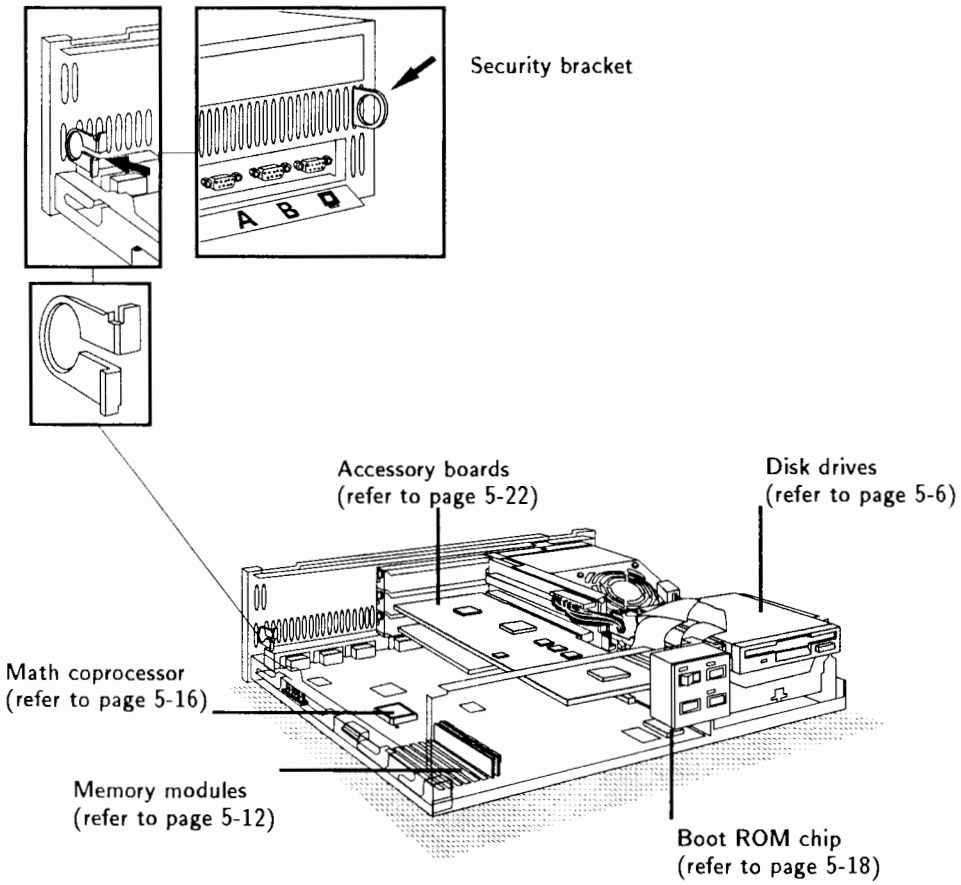


3. Set the cover lock to the "cover unlocked" position.



4. Unclip the tabs at the top rear of the computer. Firmly slide the cover forward 5 cm (2 inches). Lift it up and off the computer.





The security bracket clips into the last ventilation slot on the rear of the computer. You can use it to secure your computer to your desk.

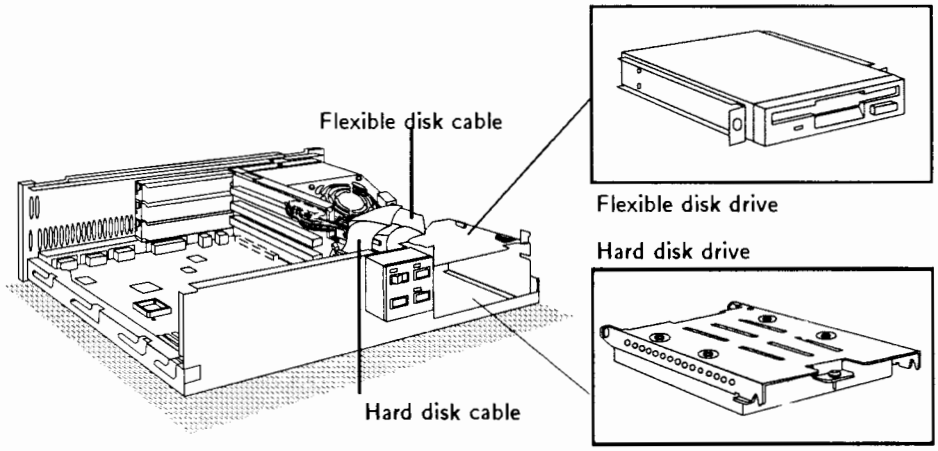
Insert the security bracket into the slot. Press it firmly until it snaps into place.

Installing and Removing a Disk Drive

The computer has two shelves for disk drives:

- the top shelf can be used for a 3.5-inch flexible disk drive
- the bottom shelf can be used for a hard disk drive

Some computer models have a flexible disk drive and hard disk drive already installed. Certain models don't have disk drive(s), and you can install your own disk drive(s) in the computer.

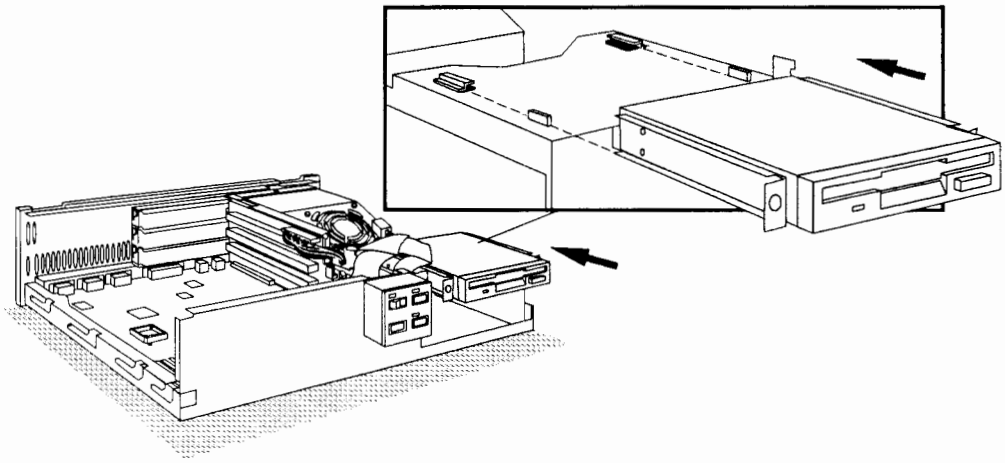


CAUTION

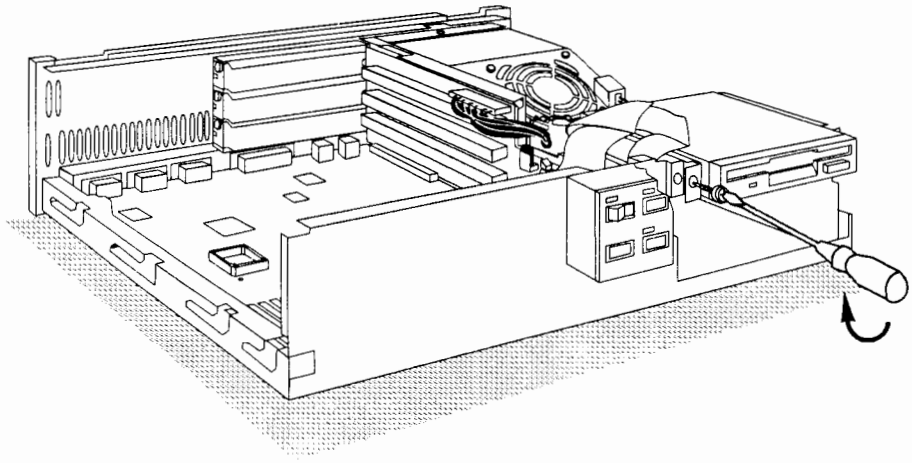
Before installing the accessory, hold the accessory in one hand and touch the metal case of the computer with the other hand to equalize the static electricity.

Installing a Flexible Disk Drive

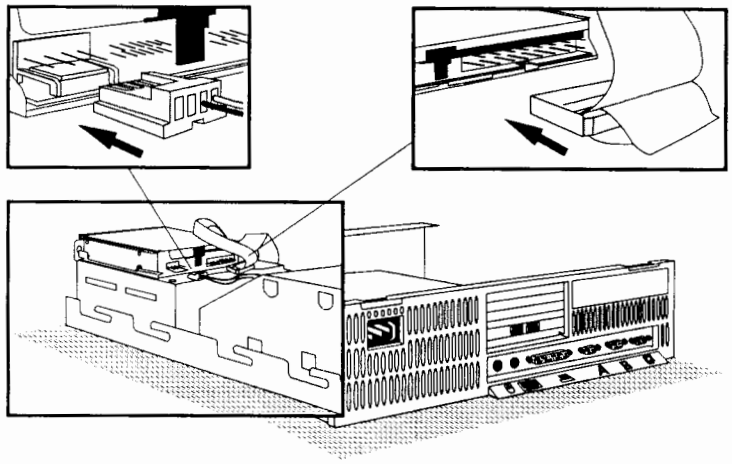
1. Slide the flexible disk drive onto the top the top shelf.



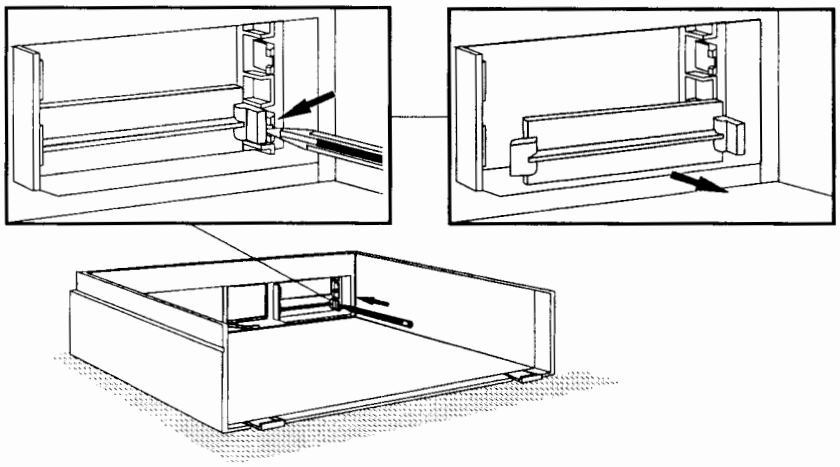
2. Secure the flexible disk drive in position using the screw provided with the drive.



3. Connect the power and data cables to the rear of the flexible disk drive. (The connectors are shaped to go in one way only.)



4. Remove the panel that covers the drive shelf in the computer's cover. Turn the cover upside down. Unclip the locking tab, and lift the panel out.

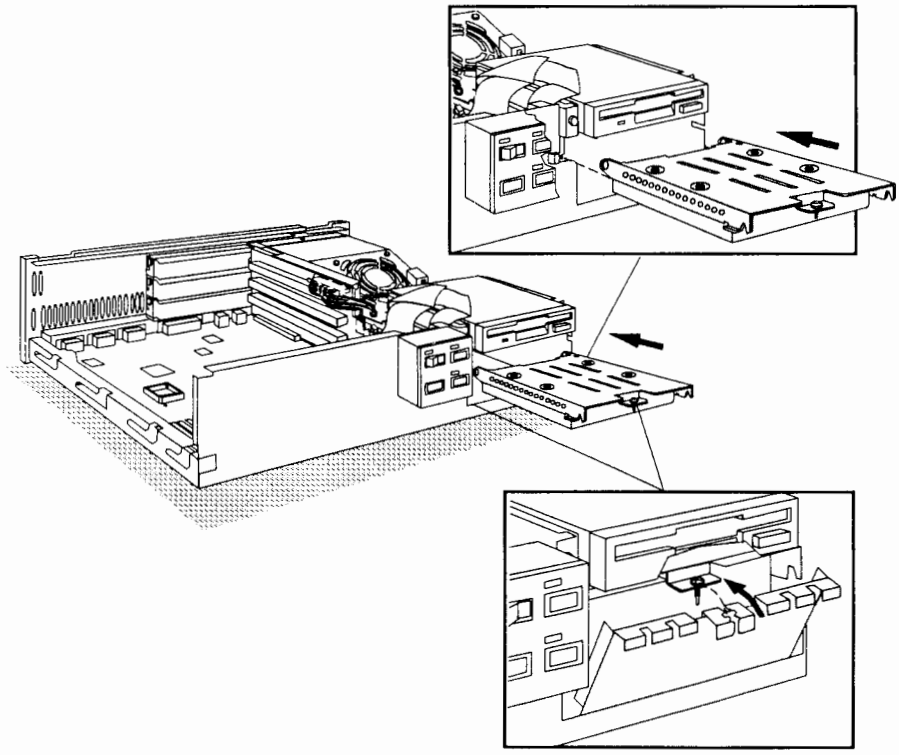


5. Install any other accessories before replacing the cover and running Setup (as described in chapter 6).

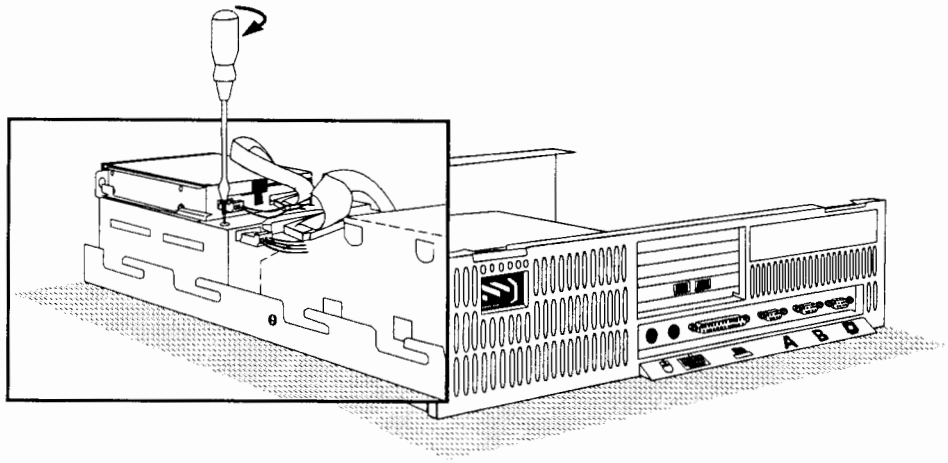
Installing a Hard Disk Drive

Your computer is prepared for you to install an embedded-AT hard disk drive—also known as an IDE (Integrated Drive Electronics) hard disk drive.

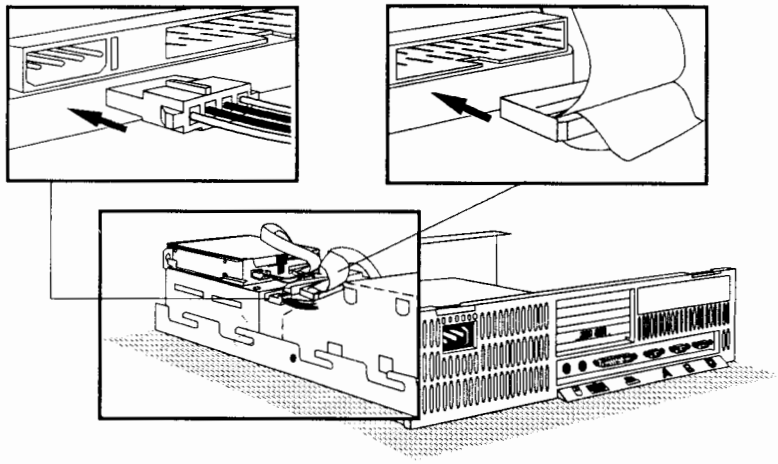
1. **Configure the hard disk drive.** Refer to the drive's manual to see if you must set jumpers or terminating resistors, or if it has a special installation procedure.
2. **Slide the hard disk drive into the bottom shelf.** Ensure the mounting brackets on the disk drive slide over the metal tabs in the bottom shelf.
3. **If the computer is supplied with a metal cover, insert the cover into the bottom shelf. Press it firmly until it snaps into place.**



4. Secure the hard disk drive in position using the screw provided.



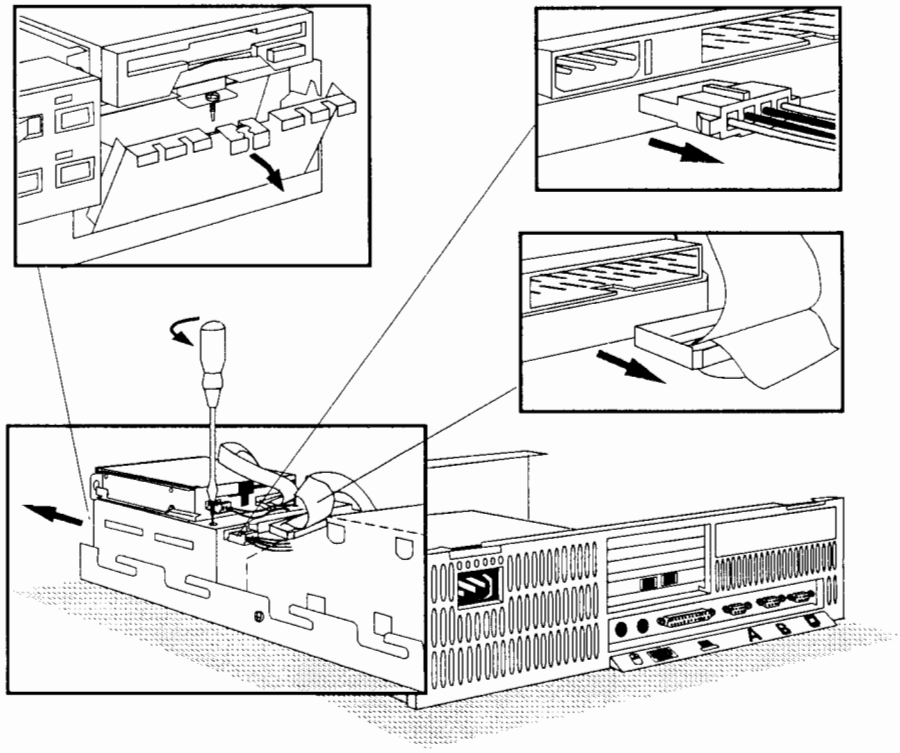
5. Connect the power and data cables to the rear of the hard disk drive. (The connectors are shaped to go in one way only.)



6. Install any other accessories before replacing the cover and running Setup (as described in chapter 6).

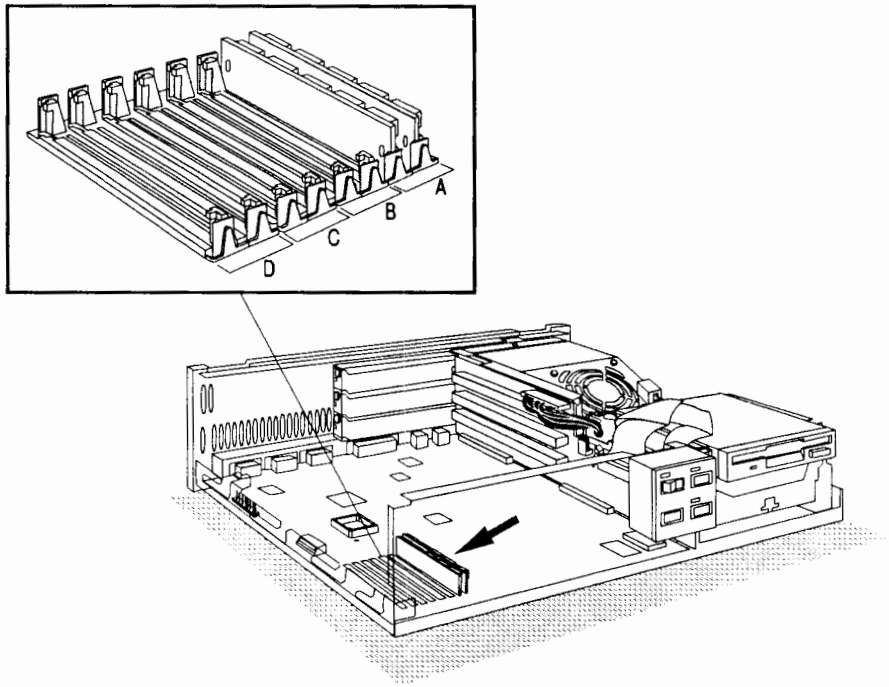
Removing Disk Drives

1. If you are removing the hard disk drive and it has a metal cover, unclip and remove the cover.
2. Remove the screw securing the disk drive.
3. Disconnect the cables from the rear of the drive that you are removing.
4. Slide the disk drive out of the shelf.



Installing and Removing Memory Modules

The computer has eight sockets for memory modules. Each pair of sockets (labeled A, B, C and D) forms a "bank".



- For the 2 MB memory kit, order D2406A (contains two 1 MB memory modules).
- For the 8 MB memory kit, order D2404A (contains two 4 MB memory modules).

CAUTION

Before installing the accessory, hold the accessory in one hand and touch the metal case of the computer with the other hand to equalize the static electricity.

Installing Memory Modules

1. Identify where to install the memory modules.

Where to install memory modules if your computer already has 2 MB

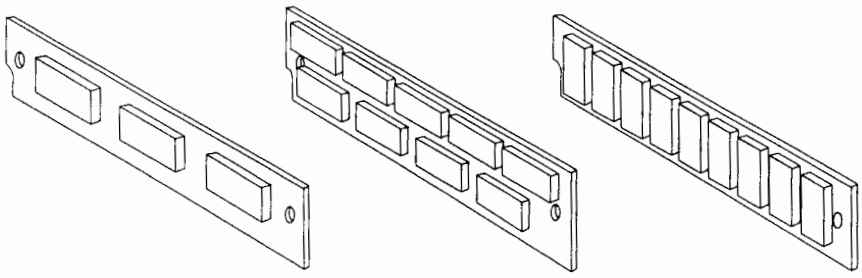
For a TOTAL Memory of:	Install Memory Modules in These Banks (each bank has two sockets):								Using This Upgrade Kit(s)
	A	A	B	B	C	C	D	D	
2 MB	**1 MB**	**1 MB**							No kit required
4 MB	**1 MB**	**1 MB**	1 MB	1 MB					One 2 MB kit
6 MB	**1 MB**	**1 MB**	1 MB	1 MB	1 MB	1 MB			Two 2 MB kits
8 MB	**1 MB**	**1 MB**	1 MB	1 MB	1 MB	1 MB	1 MB	1 MB	Three 2 MB kits
10 MB	**1 MB**	**1 MB**	4 MB	4 MB					One 8 MB kit
12 MB	**1 MB**	**1 MB**	1 MB	1 MB	4 MB	4 MB			One 2 MB kit and one 8 MB kit
14 MB	**1 MB**	**1 MB**	1 MB	1 MB	1 MB	1 MB	4 MB	4 MB	Two 2 MB kits and one 8 MB kit
16 MB	4 MB	4 MB	4 MB	4 MB					Two 8 MB kits[1]

Where to install memory modules if your computer already has 4 MB

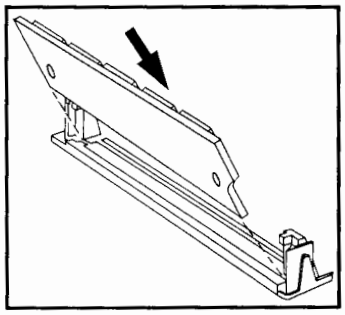
For a TOTAL Memory of:	Install Memory Modules in These Banks (each bank has two sockets):								Using This Upgrade Kit(s)
	A	A	B	B	C	C	D	D	
4 MB	**1 MB**	**1 MB**	**1 MB**	**1 MB**					No kit required
6 MB	**1 MB**	**1 MB**	**1 MB**	**1 MB**	1 MB	1 MB			One 2 MB kit
8 MB	**1 MB**	**1 MB**	**1 MB**	**1 MB**	1 MB	1 MB	1 MB	1 MB	Two 2 MB kits
12 MB	**1 MB**	**1 MB**	**1 MB**	**1 MB**	4 MB	4 MB			One 8 MB kit
14 MB	**1 MB**	**1 MB**	**1 MB**	**1 MB**	1 MB	1 MB	4 MB	4 MB	One 2 MB kit and one 8 MB kit
16 MB	4 MB	4 MB	4 MB	4 MB					Two 8 MB kits[1]

1 For 16 MB, the original 1 MB memory modules are not used—they can be used in another HP Vectra 386/N or discarded.

2. Identify the memory modules to use. The following drawing shows typical modules.



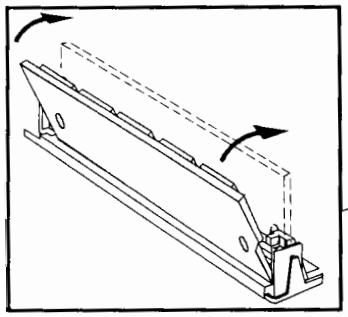
3. Install the memory modules in the sockets listed in the table on the previous page, starting with the module closest to socket A.

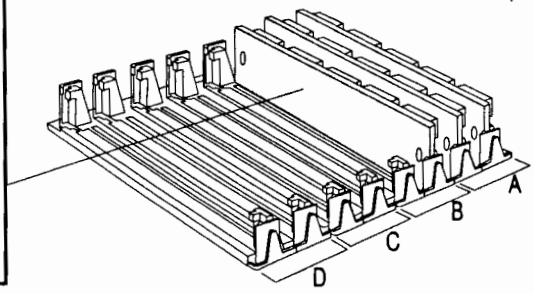


a. Slide the memory module into the *first free* slot at 45°.

b. *Firmly* press the memory module *completely* into the connector.

c. Pivot the memory module to the vertical position.



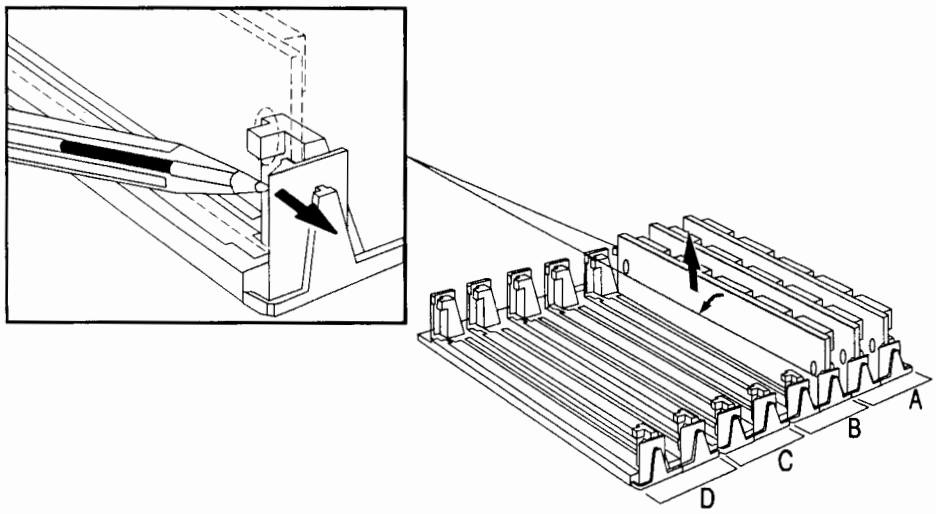


4. Install any other accessories before replacing the cover and running Setup (as described in chapter 6).

Removing Memory Modules

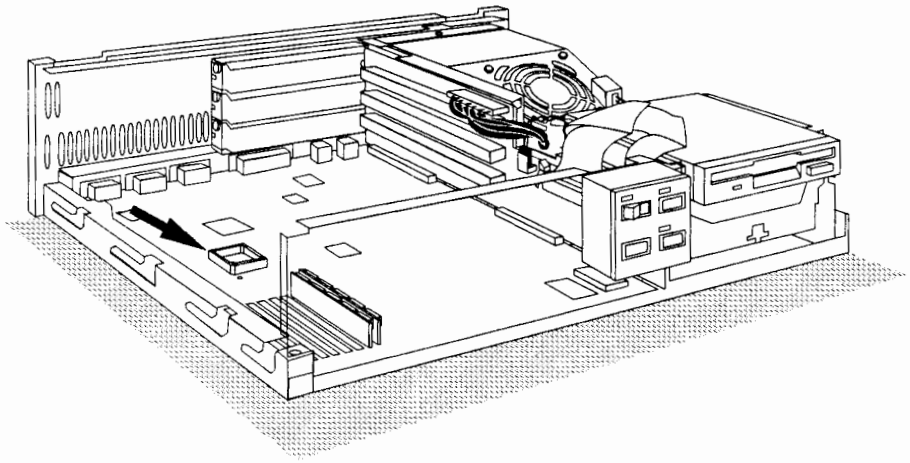
Remove the memory modules one at a time, starting with the last module (closest to socket D).

1. With one hand gently pulling the top of the memory module:
   a. Firmly press against the right-hand clip that holds the memory module. Disengage the module from the clip.
   b. Repeat for the other side of the memory module.
2. Pivot the top of the memory module forward.
3. Lift the memory module out of the socket.



Installing and Removing a Math Coprocessor

The computer has a socket for a math coprocessor.



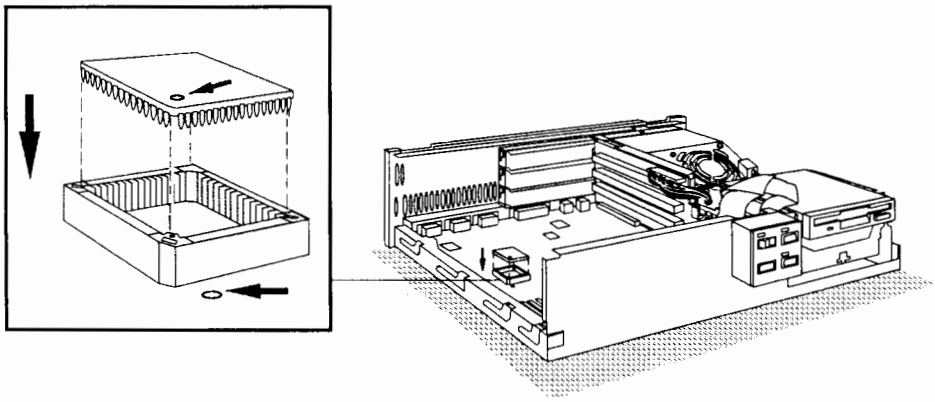
Your math coprocessor must use the same speed as your computer—the speed is indicated on the HP nameplate on the front of the computer.

- For the Vectra 386/16N, order D1453A
- For the Vectra 386/20N, order D2403A
- For the Vectra 386/25N, order D2408A

CAUTION Before installing the accessory, hold the accessory in one hand and touch the metal case of the computer with the other hand to equalize the static electricity.

Installing a Math Coprocessor

1. Locate the corner marker on the math coprocessor—a dot or notch ("broken" corner).
2. Locate the socket corner marker on the board—a white dot.
3. Position the coprocessor over the coprocessor socket with the coprocessor's corner marker over the socket's corner marker.
   a. Align the coprocessor with the socket.
   b. *Firmly* press the coprocessor evenly into the socket.



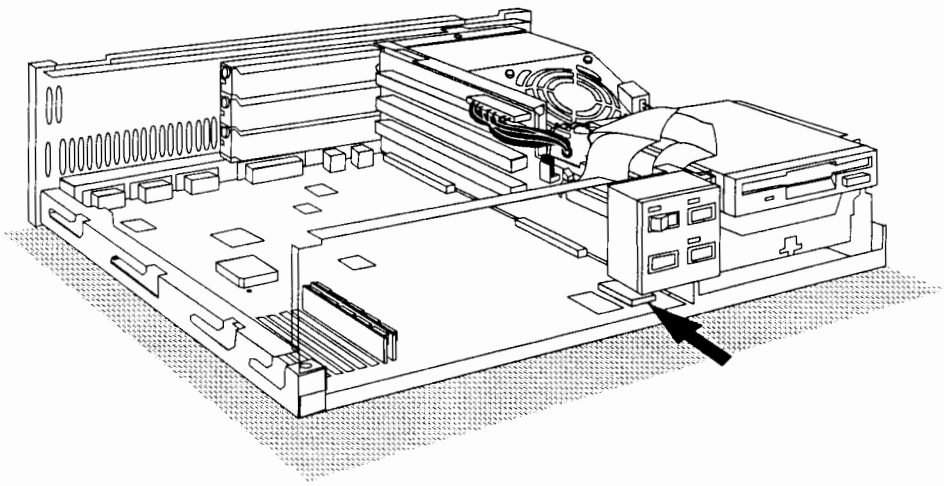
4. Install any other accessories before replacing the cover and running Setup (as described in chapter 6).

Removing the Math Coprocessor

You need a special IC removal tool to lever the coprocessor from the socket. Contact your HP dealer or HP service office for assistance.

Installing and Removing an HP Vectra Boot ROM Chip

The computer has a socket for an HP Vectra boot ROM (Read Only Memory) chip. The boot ROM chip allows you to start the computer using the operating system on your LAN server.



If you ordered a computer model with an HP LAN adapter board, the computer is also supplied with an HP Vectra boot ROM chip.

If you install an HP LAN adapter board, then you can also install and use the HP Vectra boot ROM chip.

Order D2407A for a pack of six HP Vectra boot ROMs.

CAUTION

Before installing the accessory, hold the accessory in one hand and touch the metal case of the computer with the other hand to equalize the static electricity.

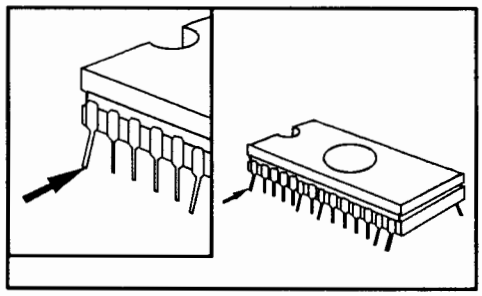
Installing a Boot ROM Chip

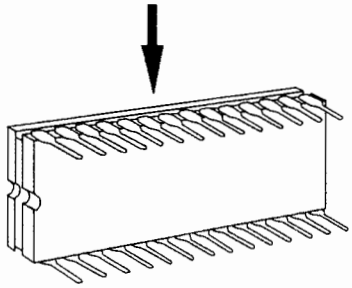
1. For ease of access, if your computer has any full-length accessory boards, unscrew and remove them. (Refer to page 5-27.)
2. Ensure the pins on the boot ROM chip are straight (vertical).

   If you need to straighten the pins:

   a. Lay the boot ROM chip on its side and roll it carefully onto the pins to straighten them.

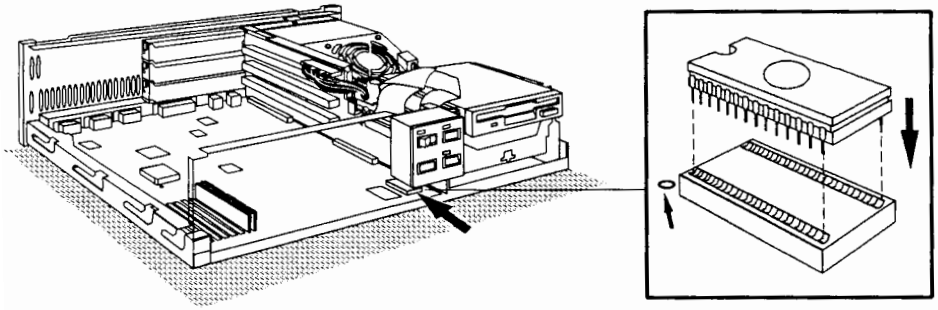
   b. Repeat for the other side.





3. Install the boot ROM chip in the socket.
   a. Position the boot ROM chip over the socket, with the boot ROM chip's notch over the white dot on the socket.
   b. Align the boot ROM chip's pins with the holes on the socket.
   c. *Firmly* press the boot ROM chip evenly into the socket.

      Ensure that the pins are correctly seated in the socket, and none of the pins are bent. (If necessary, remove and re-install the boot ROM chip.)

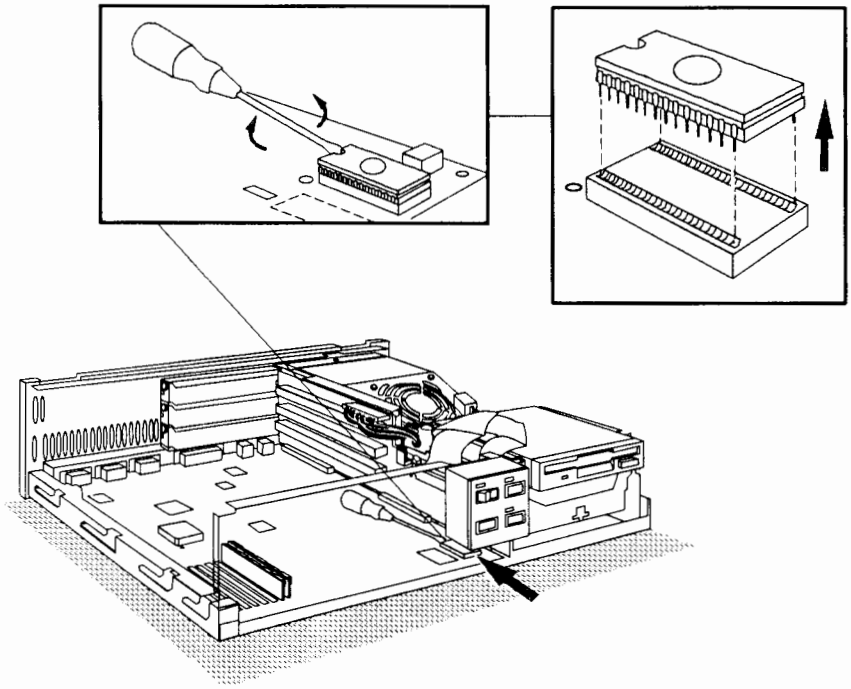


4. Replace any accessory boards you removed. (Refer to page 5-23.)
5. Install any other accessories before replacing the cover and running Setup (as described in chapter 6).

Removing the Boot ROM Chip

1. Remove any accessory boards. (Refer to page 5-27.)
2. Gently lever up one side of the boot ROM chip from the socket using a flatblade screwdriver.

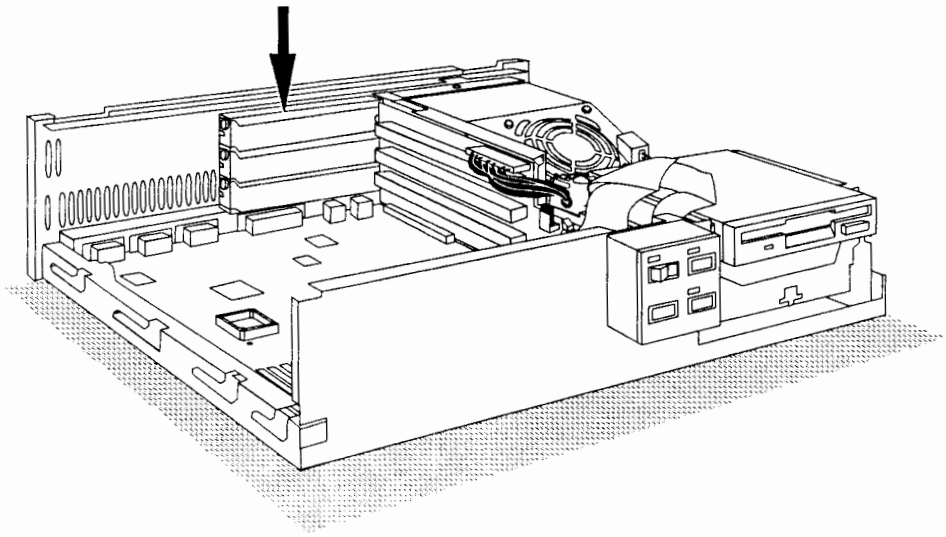
   Ensure you insert the blade of the screwdriver between the socket and boot ROM chip.
3. Firmly pull the boot ROM chip out of the socket.
4. Replace any accessory boards you removed.



The computer has three slots for 8- or 16-bit accessory boards:

- slot 3 is the top slot
- slot 1 is the bottom slot

If you ordered a computer model with an HP LAN adapter board, this board is installed in slot 1 (this board is described in chapter 7).



CAUTION Before installing the accessory, hold the accessory in one hand and touch the metal case of the computer with the other hand to equalize the static electricity.

Installing an Accessory Board

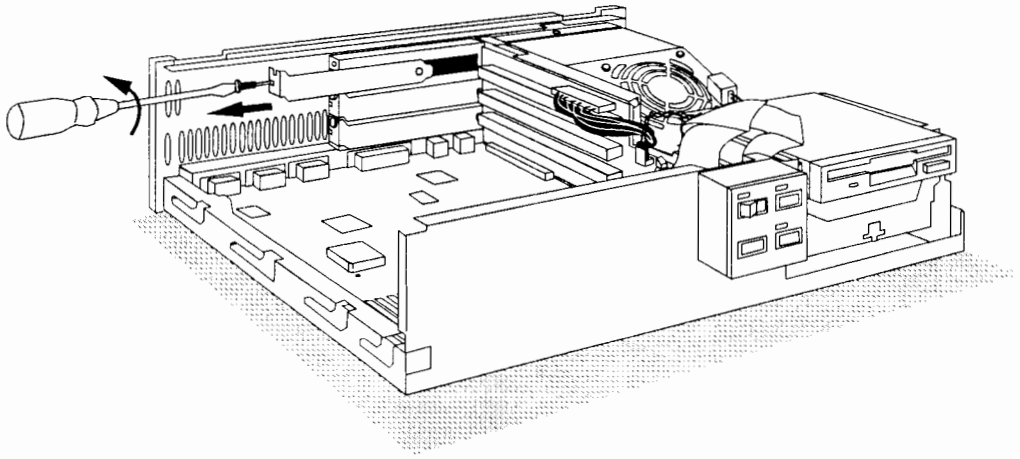
1. Identify a free slot to use.

   If you are installing one board only, use the top slot.

   If you are installing several boards, start at the lowest slot.

2. Unscrew and remove the slot cover. Store it in a safe place.

   If the slot cover is tight, loosen the screws on the adjacent slots. Then try again.



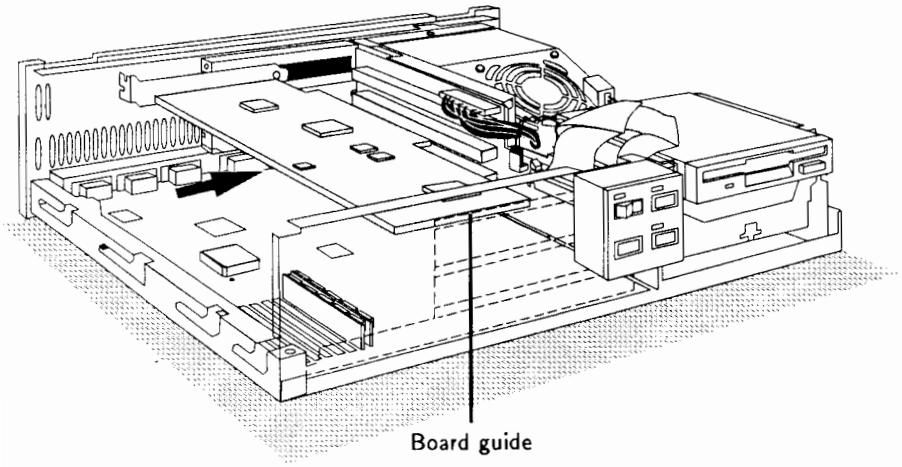
3. Configure the accessory board. Refer to the board's manual to see if you must set any switches or jumpers, or if it has a special installation procedure.

   Make sure that the board does not use the same configuration as any other board installed in the computer. If you are installing a board that uses:

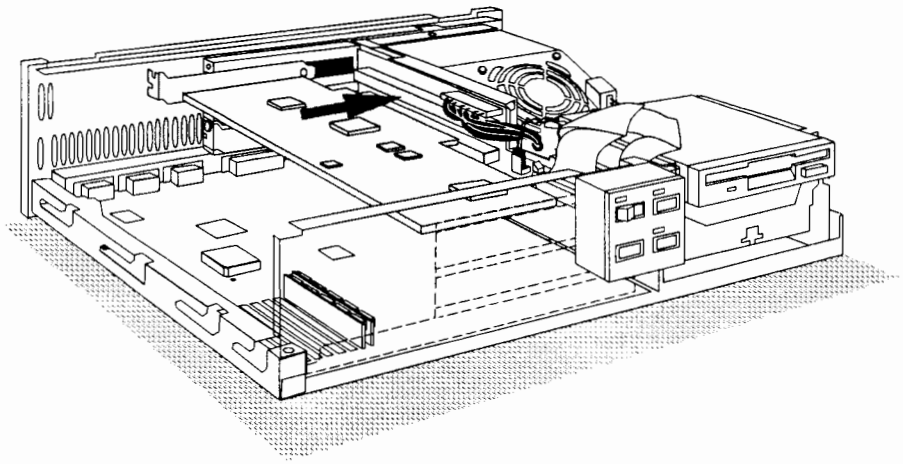
   - a serial or parallel port, make sure they do not use serial 1 (COM1), serial 2 (COM2) or parallel 1 (LPT1) ports; alternatively, change the setting of the computer's ports (refer to chapter 6)
   - I/O base address of hexadecimal 300 to 31F and you have a LAN adapter board, change the accessory board's address; alternatively, change the LAN adapter board's I/O base address (refer to chapter 7)
   - device interrupt IRQ 12, disable the computer's mouse (refer to chapter 9)

4. Hold the board horizontally by the top edge. Slide it into the board guide of the chosen slot. Do *not* bend the board.

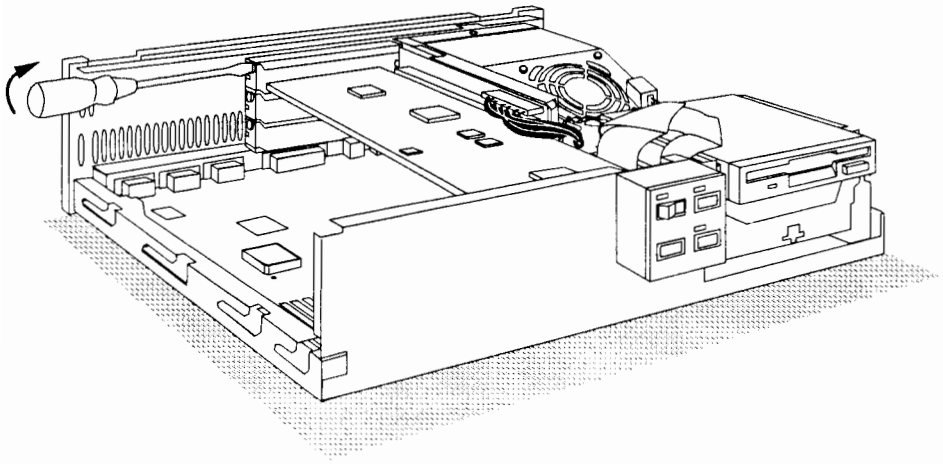
   If you insert a full-length board in the bottom slot, ensure the board correctly engages with the board guide at the end of the slot, and does not touch the memory modules.



5. Align the board's connector with the socket. Firmly press the board into the socket. Ensure the board's connector engages *completely* with the socket.

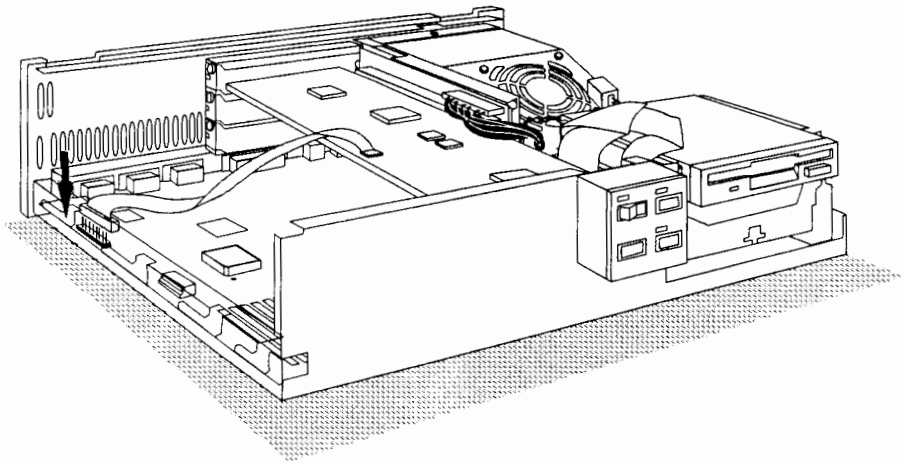


6. Secure the board by replacing the slot cover screw. If you loosened the screws on adjacent slots, tighten them.



7. If you have installed a video board:

   If the video board uses a VESA (Video Electronics Standards Association) video pass-through connection, connect your video board's pass-through cable to the pass-through connector on your computer's system board. (Refer to your video board's manual for details.)



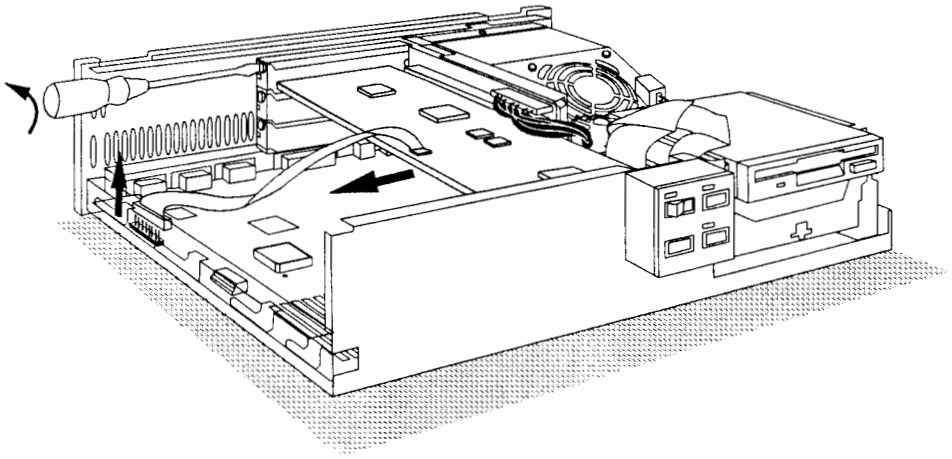
8. Install any other accessories before replacing the cover and running Setup (as described in chapter 6).

   If you installed a board containing base memory, use Setup to configure the computer to use the board's base memory.

   If you installed a video board to replace the computer's built-in Super VGA controller, you must disable the built-in video controller using switch 3 on the system board (refer to chapter 9) and select your video board as the primary video adapter in the Setup Program.

Removing Accessory Boards

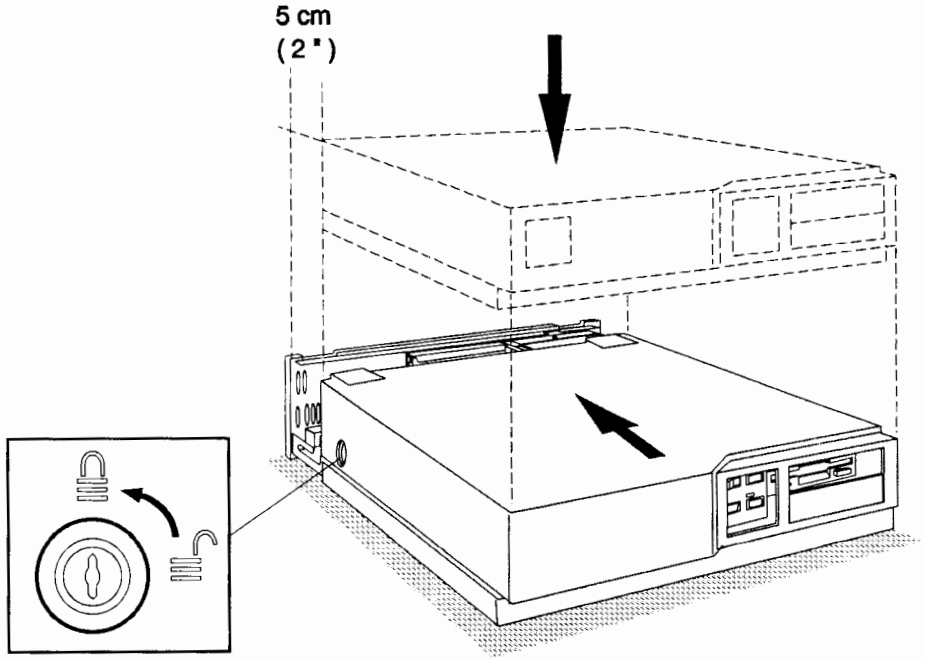
1. Disconnect all cables from the board.
2. Unscrew and remove the board's slot cover screw.
3. Firmly pull the board out of the socket.



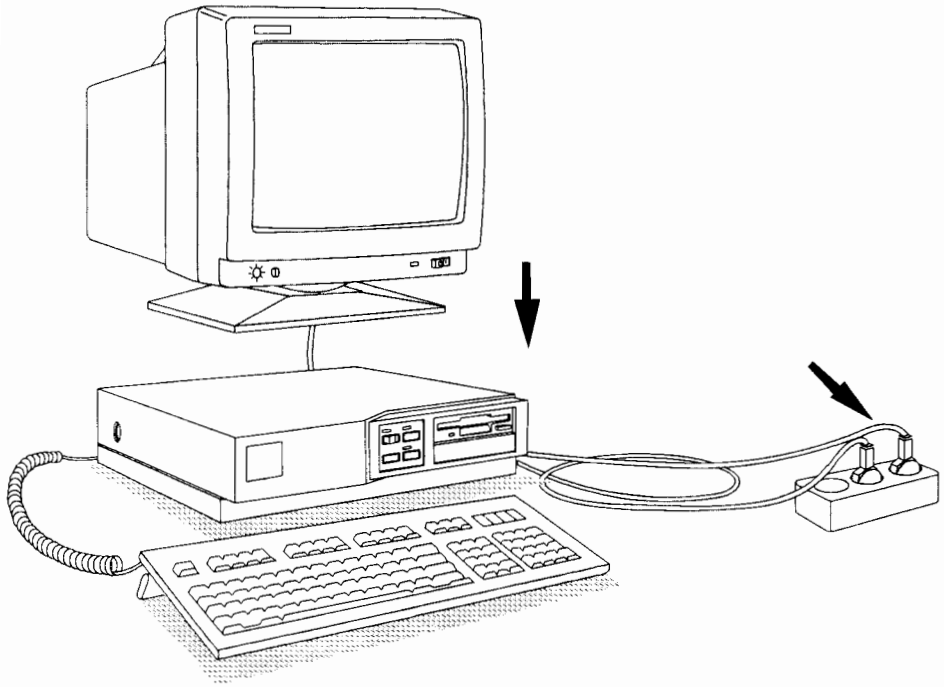
4. If you will not re-use the socket for another board, replace the slot cover (blank panel) over the empty slot.

Replacing the Cover

1. Ensure you have installed all your accessories.
2. Ensure all cables are properly connected and safely routed.
3. Ensure the cover lock is set to the "cover unlocked" position.
4. Lower the cover onto the computer. Firmly slide it into position—ensure the tabs click into place.
5. Set the cover lock to the "cover locked" position.



6. Place the display on top of the computer and reconnect all cables and power cords.



Completing Your Installation Procedure

After you have installed or removed an accessory, you must:

1. Record the type of accessory in "Additional Items Installed" on the next page.
2. Switch on the computer and run the Setup Program to declare the accessory. (Refer to chapter 6 for details.)

   Check that your computer has correctly recognized and configured:

   - the math coprocessor (if you installed one)
   - memory capacity (for example if you have 4 MB, base=640 KB, reserved=128 KB, extended=3328 KB, and total=4096 KB)
   - hard disk drives (for example, drive 1 = autodetected 52 MB, with built-in interface)
   - flexible disk drives (for example, drive 1 = 3.5 inch, 1.44 MB, with built-in interface)

If your computer displays an error message, refer to chapter 8 for details.

Additional Items Installed

If you installed accessories in the computer, list them below for future reference.

Shelf:	**Disk Drive:**	**Capacity or Type:**
Top	*Flexible*	
Bottom	*Hard*	

Slot #	**Board Description:**	**Configuration or Switch Settings:**
3 (top)		
2		
1		

Connector:	**Device:**	**Configuration using Setup: (circle your setting)**
Serial A		COM1 (IRQ 4) COM2 (IRQ 3) OFF
Serial B		COM1 (IRQ 4) COM2 (IRQ 3) OFF
Parallel		LPT1 (IRQ 7) OFF

(circle your setting)

Total Memory (MB): 2 4 6 8 10 14 16 **Math Coprocessor:** YES NO

LAN Board IRQ: IRQ 3 IRQ 4 IRQ 5 IRQ 7 **LAN Board Base Address (Hex):** 200 240 300 340

Boot ROM Chip: YES NO **Other Items:** _____

6

Configuring Your Computer Using Setup

Configuring Your Computer Using Setup

This chapter explains how to set the computer's configuration—that is, give your computer information about items installed in it.

You can configure your computer using *either* the built-in Setup in ROM *or* the Setup Program located on the Setup Program diskette—this version of the program contains help screens and assistance to configure non-HP disk drives.

Run the Setup Program when:

- you install or remove anything from your computer, such as disk drives, memory modules, a math coprocessor, a boot ROM chip, or video board
- your computer displays an error message, such as:

```
System tests report errors.
For Setup press F2 now.
```

- you want to change user preferences, such as the keyboard click volume and the key repeat rate
- you want to change security features such as:
  - passwords (User Password and System Administrator Password)
  - preventing unauthorized access to your ports and disks

The items you can change in the Setup Program depend on the passwords you have set.

If only the System Administrator Password is set, anyone can change the user preference settings and the User Password.

If only the User Password is set, then it also protects the settings normally protected by the System Administrator Password.

If both the User Password and System Administrator Password are set and you only enter the User Password when you start Setup, you will only be able to change the date and time and user preferences, or change the User Password.

If the configuration is protected using the security mode switch (described in chapter 9), then you cannot change the configuration using Setup.

Starting the Setup Program

Starting the Setup Program from your hard disk

1. Make C your current drive, enter:

   `C:` (Enter)

2. Change to the directory where you installed the HP utilities, enter:

   `CD C:\HPUTIL` (Enter)

   (`C:\HPUTIL` is the directory where you installed SETUP in chapter 2)

3. Start the Setup program, enter:

   `SETUP` (Enter)

   A screen appears:

   - Select your language for screen messages.
   - If you are prompted to enter your password, do so.

   The Setup Program menu will appear.

Starting the Setup Program on the Setup Diskette

1. Insert the Setup Program and HP Utilities diskette into drive A.
2. Turn on the display and computer. (If the computer is already turned on, press the (RESET) switch on the front panel.)

   The computer performs its self-test and memory count. It will beep once if it is set to its automatic speed, and twice if it is set to its fast speed. (If there are any errors in your computer's configuration, error messages appear.)

   A screen appears:

   - Select your language for screen messages.
   - If you are prompted to enter your password, do so.

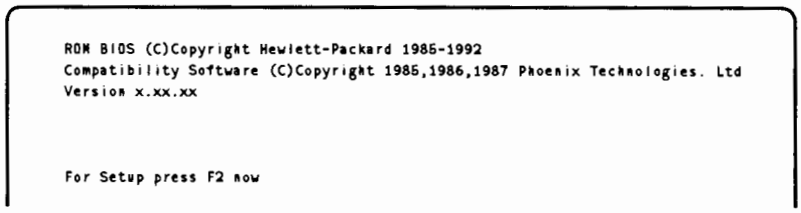
   The Setup Program menu will appear.

Starting the Setup in ROM

1. Turn on the display and computer. (If the computer is already turned on, press the (RESET) switch on the front panel.)

   The computer performs its self-test and memory count. It will beep once if it is set to its automatic speed, and twice if it is set to its fast speed.

2. Check that this message appears.



   If an error message appears, refer to chapter 8.

3. Press (F2) to start Setup while "**For Setup press F2 now**" is displayed—this message appears for only a couple of seconds, just after the beeps signaling the end of the self-test.

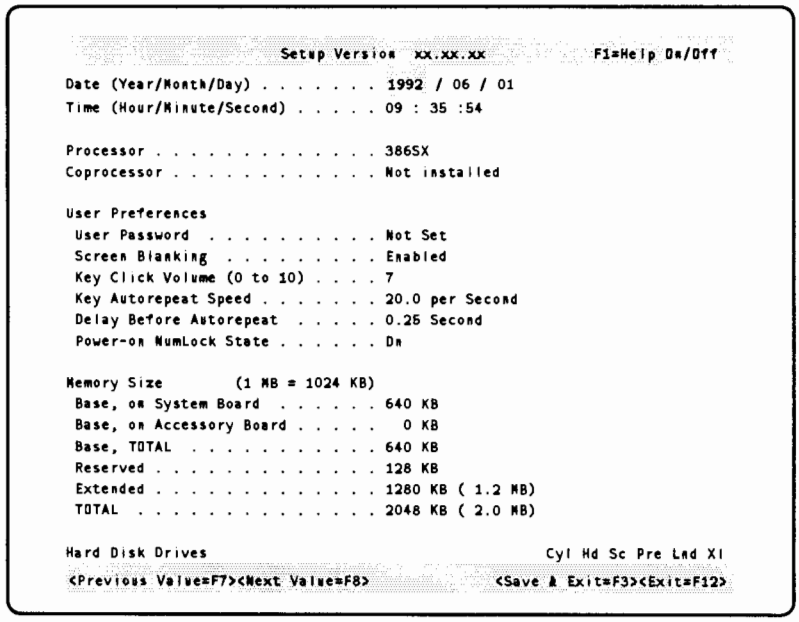
   A screen appears:

   - Select your language for screen messages.
   - If you are prompted to enter your password, do so.

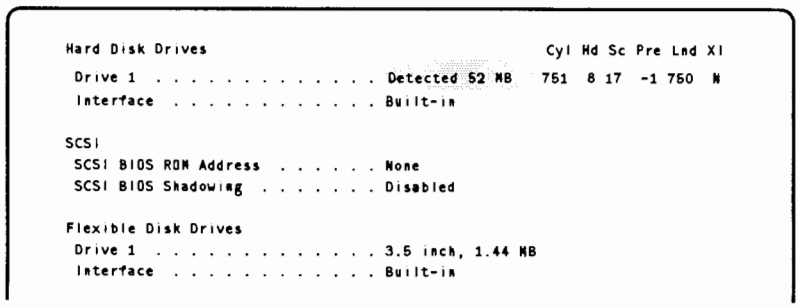
   The Setup Program menu will appear.

Setup Program Menu

Note: The information displayed on your version of the Setup Program may be different from that shown on the screens below.



Press the Page Down key to display the next screen of information.



The Setup Program menu lists all the computer's configurable items. There are two types of items:

- items that provide information—Setup automatically recognizes the presence of your disk drives, memory, coprocessor, built-in video controller, and boot ROM chip
- items that you can change on the Setup screen, like the date and time or which connector is used for your devices
  - if no password was set beforehand, you can change all items
  - if a password was set, you can only change an item if you entered the appropriate password (User or System Administrator) when you started Setup

To change the configuration:

1. Press [Page Down] or [Page Up] to display the screen you need.
2. Press an arrow key ([▲], [▼] [◀] or [▶]) to `highlight` the field you want to change. The computer will beep when you reach the end of the list.
3. Press [F1] to display a help window about the field. (Not available using Setup in ROM.) Press [F1] again to remove the help information.
4. Follow the messages at the bottom of the screen to make your selection.

   If you try to change an unmodifiable item, the computer will beep.

To save your settings and exit Setup:

1. When you have made all your choices, select **`Save and Exit`**. Your choices will be saved and the computer will automatically restart.
2. Remove the Setup Program and HP Utilities diskette from drive A. Store it in a safe place.
3. If you set a User Password, the power-on password prompt (o-) will appear. Enter your User Password or System Administrator Password to use the computer.

   If you set an incorrect value in Setup, an error message appears and you should re-use Setup to set the correct value.

The First Time You Use Your Computer

Complete these steps if you are setting up your computer for the *first* time:

1. Set the correct date and time—press ▶ or ◀ to **highlight** the field. Press F1 for help. Press F7 or F8 to change the setting, or type in the new value.

```
Date (Year/Month/Day) . . . . . 1992 / 06 / 01
Time (Hour/Minute/Second) . . . . . 09 : 35 :54
```

2. If you installed a math coprocessor, ensure the computer has automatically detected it.

   If it is not detected, check that you have correctly installed the math coprocessor. (Refer to chapter 5.)

```
Processor . . . . . 386SX
Coprocessor . . . . . 387SX
```

3. Select the user preferences—User Password, click volume and repeat rate—you need. (Chapter 3 describes the user preferences.)

   When the User Password is set, enable Screen Blanking if you want the screen to go blank when the keyboard is locked using the Ctrl switch or Network Server Mode.

```
User Preferences
 User Password . . . . . Not Set
 Screen Blanking . . . . . Enabled
 Key Click Volume (0 to 10) . . . . 7
 Key Autorepeat Speed . . . . . 20.0 per Second
 Delay Before Autorepeat . . . . . 0.25 Second
 Power-on NumLock State . . . . . On
```

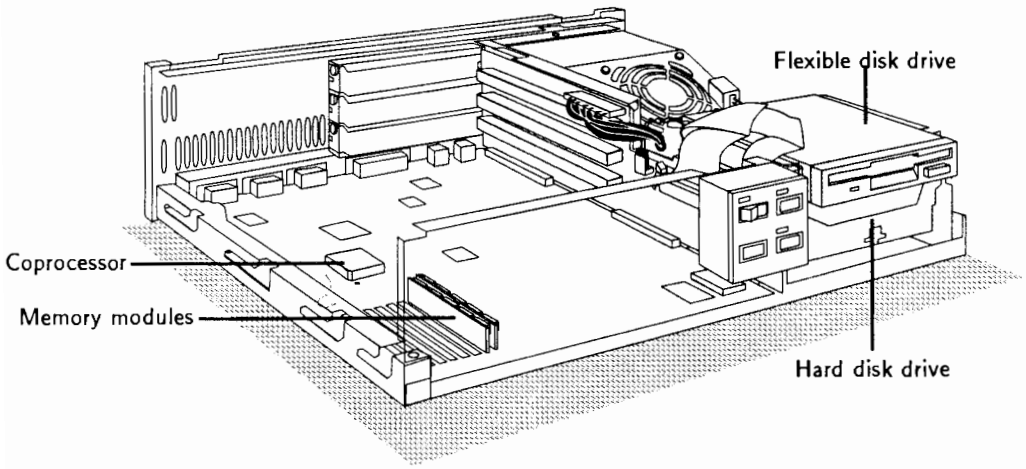
4. Check that the computer has automatically detected and configured:
   a. `Memory Size`. For example, if you have 2 MB:

```
Memory Size (1 MB = 1024 KB)
 Base, on System Board  . . . . . 640 KB
 Base, on Accessory Board . . . . .  0 KB
 Base, TOTAL  . . . . . 640 KB
 Reserved . . . . . 128 KB
 Extended . . . . . 1024 KB ( 1 MB)
 TOTAL  . . . . . 2048 KB ( 2 MB)
```

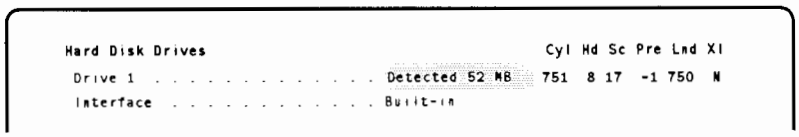
   - If you installed additional memory, ensure the "TOTAL" memory is correct.

     If it is incorrect, check that you have correctly installed the memory modules. (Refer to chapter 5.)

   - If you installed an accessory board containing base memory, reduce the value in "Base, on System Board" before setting the value in "Base, on Accessory Board".

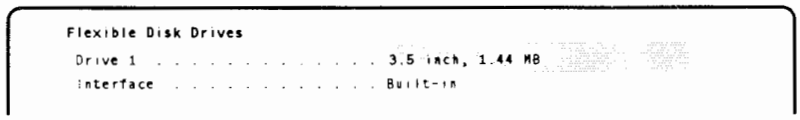


b. **Hard Disk Drives**. For example, if you have a 52 MB IDE hard disk drive that uses the built-in interface:

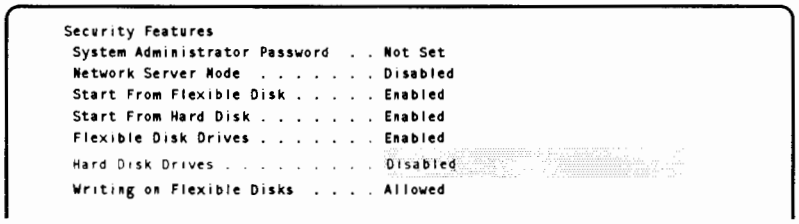


- If you installed a non-HP hard disk drive and it is not automatically detected and configured, refer to "Configuring a Non-HP Hard Disk Drive" later in this chapter for details on how to configure it in Setup.
- If you installed a SCSI hard disk drive and host adapter, set **Drive 1** to **None or SCSI**, **Interface** to **Built-in**, **SCSI BIOS ROM Address** to the value shown in your SCSI manual, and **SCSI BIOS ROM Shadowing** to **Enabled**.

c. **Flexible Disk Drives**. For example, if you have a 3.5 inch, 1.44 MB that uses the built-in interface:



5. If you don't want anyone to be able to use your computer's disk drives when you are absent, disable access to your drives. (Chapter 3 describes how to prevent access to your disk drives.)



6. If you connected a parallel device (printer/plotter), ensure `Parallel Port` is set to **`Parallel 1 (378H, IRQ7)`**.

7. If you connected a serial device to:

   Serial Port A, ensure **`Serial A`** is set to **`Serial 1 (3F8H, IRQ4)`**.

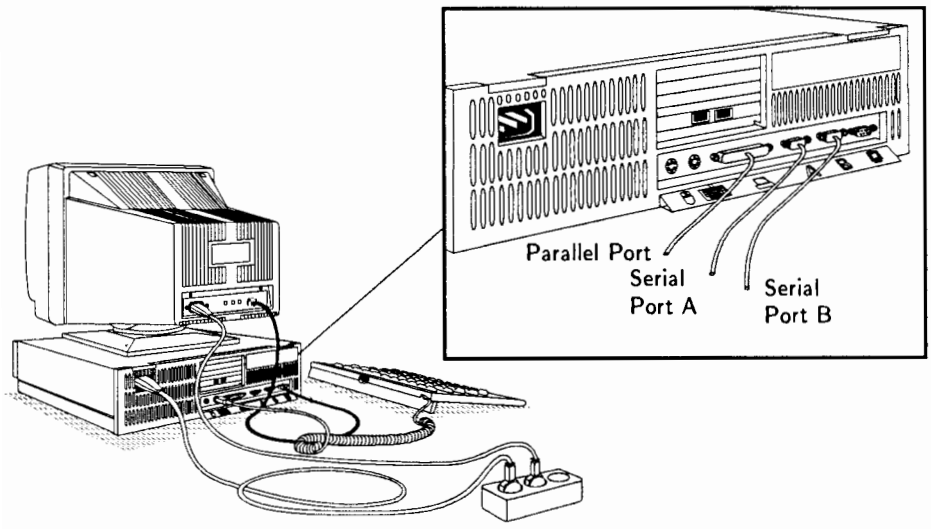
   Serial Port B, ensure **`Serial B`** is set to **`Serial 2 (2F8H, IRQ3)`**.

```
Parallel Port . . . . . . . . . . Parallel 1 (378H, IRQ7)

Serial Ports
 Serial A . . . . . . . . . . . . Serial 1 (3F8H, IRQ4)
 Serial B . . . . . . . . . . . . Serial 2 (2F8H, IRQ3)
```

8. If you installed accessory boards that need to use Parallel 1, Serial 1 or Serial 2, disable the corresponding port on your computer.

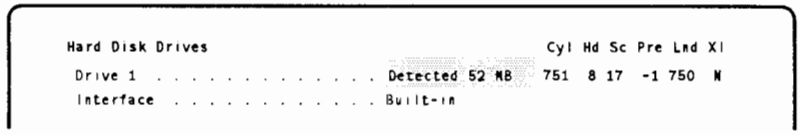
   You can also disable your computer's ports if you don't want anyone to be able to use the devices connected to your computer when you are absent.

```
Parallel Port . . . . . . . . . . Off
```



Configuring a Non-HP Hard Disk Drive

If you install a supported HP hard disk drive, it will be automatically detected and configured in Setup.

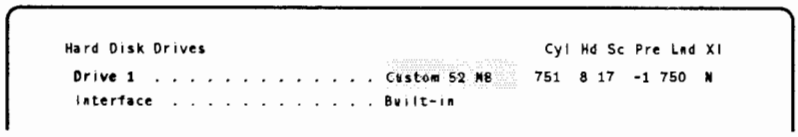


If you installed a non-HP hard disk drive, it will normally be automatically detected and configured. If it is not, the hard disk drive information on the Setup screen will be incorrect or missing.

Note: You need to use the Setup Program from the Setup Program and HP Utilities diskette to display the custom configuration menu.

To change the hard disk drive information:

1. Use the (▶) key to highlight the **Detected** field.
2. Press (F8) to change the setting to **Custom**.



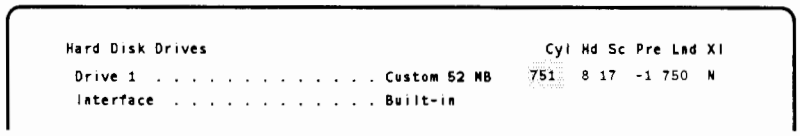
3. Press (Enter). A table appears listing hard disk drives.
4. Use the (▲) and (▼) keys to highlight your drive, and press (Enter) to select it.

If the drive is not listed in the table, exit from the table. You will have to manually enter the drive parameters using the information supplied by the hard disk manufacturer.

To manually change the hard disk drive information:

1. Use the ▶ key to highlight the drive parameter you want to change.
2. Change the "Cyl", "Hd", "Sc", "Pre", "Lnd" and "Xl" settings to the values required by your hard disk drive.

   You can also type in the correct values. (Note that you can only set the value to "-1" by typing "0" then pressing F7.)



where:

Cyl	is the number of cylinders (or "track")
Hd	is the number of heads (or "sides")
Sc	is the number of sectors per cylinder
Pre	is the write precompensation—usually -1
Lnd	is the landing zone—usually (the number of cylinders) -1
Xl	is the logical translation of cylinders on a hard disk drive with more than 1024 cylinders—set to:

- "Y" if you use the MS-DOS or OS/2 operating system
- "N" if you use the UNIX operating system

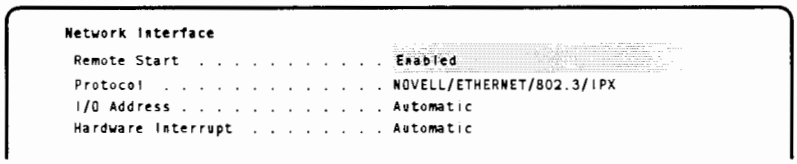
If Xl is incorrect, the operating system won't load from the hard disk. If the other values are incorrect, the conditions listed below may occur—if a hard disk error occurs, an error message is displayed (as described in chapter 8).

Value	Cyl	Hd	Sc	Pre	Lnd
Too large	Hard disk errors will occur	Operating system and applications will not work	Operating system and applications will not work	Hard disk errors may occur	Hard disk errors will occur when parking the heads
Too small	Operating system and applications will work, but disk space will be wasted	Operating system and applications will not work	Operating system and applications will not work	Hard disk errors may occur	Data may be lost because heads park in the wrong place

Configuring the Network Interface

If your computer has an HP LAN adapter board and an HP Vectra boot ROM chip, you can configure the network interface features.

(If your computer does not have a boot ROM chip, **Remote Start** is set to **None** and the other network interface features do not appear.)



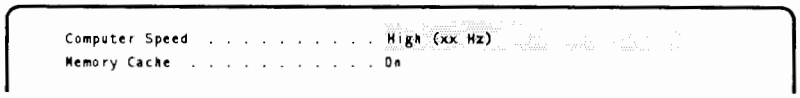
1. **Remote Start**. Enable Remote Start to allow your computer to start from the operating system on your LAN server. You should also disable starting from your hard disk drive under **Security features**.
2. **Protocol**. Select the network operating system used on your LAN server. This allows your computer to start from the correct LAN operating system.
3. **I/O Address**. Set the I/O base address to the value used on the LAN adapter board (default: 300 hex)--this address is used by your boot ROM chip when you start the computer.

   Select **Automatic** if you want the boot ROM chip to make an automatic selection.
4. **Hardware Interrupt**. Set the IRQ number to the value used on the LAN adapter board—this IRQ is used by your boot ROM chip when you start the computer. (After the computer is started, the LAN adapter board uses the IRQ programmed by the LAN drivers.)

   Select **Automatic** if you want the boot ROM chip to make an automatic selection.

Configuring Computer Speed and Cache Memory

You can select the computer's speed and enable cache memory:



1. **Computer Speed**. Select your computer's processing speed.

   Set to **High** for maximum performance.

   Only select **Automatic** if your software needs to run at a lower computer processing speed (8 MHz) to access the flexible disk drive. (This is required by some older copy-protected software. Refer to your software application manual for details.)

   The EXMODE command can be used to *temporarily* change your computer's speed (refer to chapter 4).

   For example, if you have one application only that needs to run at a lower speed to access the flexible disk: Select **High** in the Setup Program, and add the **EXMODE SPEED LOW** command at the beginning of the batch file that starts your application from the diskette and **EXMODE SPEED HIGH** to the end of the batch file.

2. **Memory Cache**. If your computer has cache memory, select **On** to improve the speed of your applications.

   The EXMODE command can be used to *temporarily* enable/disable the cache memory. (Refer to chapter 4.)

   Note that cache memory is automatically turned off when your computer is *not* running at HIGH speed or when it is reading from a flexible disk drive using AUTOMATIC speed.

Configuring Your Video

The Setup program shows the configuration of your computer's video.

If you are using the computer's built-in Super VGA controller, the following fields appear:

```
Video
 Primary Adapter . . . . . . . . . EGA/VGA or Similar
 Video BIOS Shadowing . . . . . . . Enabled
 Video BIOS Version . . . . . . . . xx.xx.xx

VGA Enhanced/Ergonomic Modes
 640x480 Mode . . . . . . . . . . . 60 Hz Standard
 800x600 Mode . . . . . . . . . . . 60 Hz Standard
```

If you install an ultra VGA board in place of the built-in Super VGA controller, the following fields appear (**1024x768 Mode** appears because the board has 512 KB or more of video memory):

```
Video
 Primary Adapter . . . . . . . . . EGA/VGA or Similar
 Video BIOS Shadowing . . . . . . . Disabled

VGA Enhanced/Ergonomic Modes
 640x480 Mode . . . . . . . . . . . 60 Hz Standard
 800x600 Mode . . . . . . . . . . . 60 Hz Standard
 1024x768 Mode  . . . . . . . . . . 60 Hz VESA
```

1. **Primary Video Adapter**. Select the video adapter used by the computer. If you use the built-in Super VGA controller, set **Primary Video Adapter** to **EGA/VGA or Similar**.

   If you have installed a video board:

   - If the video board uses a VESA video pass-through connection to your built-in Super VGA controller, your "Primary Video Adapter" is your computer's built-in Super VGA. Set **Primary Video Adapter** to **EGA/VGA or Similar**.

- If you install a video adapter board in place of the built-in Super VGA controller, disable the built-in video using a switch on the system board. (Refer to chapter 9.) The primary video is the video board you install. Set **Primary Video Adapter** to the characteristics of the board you installed.

2. **Video BIOS Shadowing.** Select **Enabled** if you use the built-in Super VGA controller. This copies a "shadow image" of your video BIOS ROMs into your computers reserved memory. This increases the speed of your video functions because your computer's memory can be accessed faster than the BIOS ROMs.

   Not all video boards can be shadowed. If you installed a video board in place of the built-in Super VGA controller and you have a problem with an application after shadowing the video BIOS, disable shadowing.

3. **Video BIOS Version.** Lists the version number of your computer's built-in video BIOS.

4. **VGA Enhanced/Ergonomic Modes.** Select the refresh rate—60 Hz or 72 Hz—of your display when using a resolution of either 640×480 or 800×600. All other resolutions use 60 Hz. (60 Hz is known as "standard mode", and 72 Hz as "ergonomic mode".)

   This setting does not set your display to operate at 640×480 or 800×600; it just selects the refresh rate used at these resolutions. You must install video drivers to set the video mode. Refer to the README file on the Super VGA Utilities and Drivers diskette for details on installing and using video drivers.

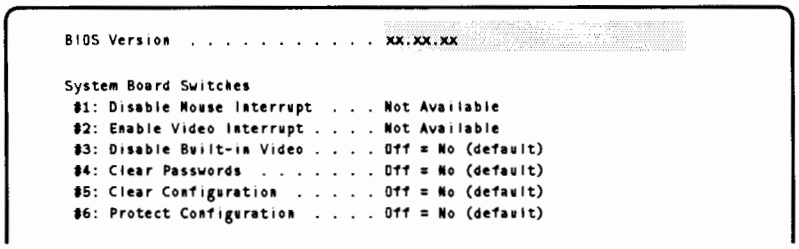
   To obtain the best, flicker-free, video display, select the highest refresh rate supported by your display for each video mode. Do NOT set a refresh rate that is not supported by your display, otherwise the display will be unreadable for applications that use the unsupported video modes.

Resolution	Supported Refresh Rates for HP Displays			
	D1192	D1193	D1194	D1195
640×480	60 Hz Standard	60 Hz Standard or 72 Hz Ergonomic	60 Hz Standard or 72 Hz Ergonomic	60 Hz Standard
800×600	not supported	60 Hz Standard or 72 Hz Ergonomic	60 Hz Standard	72 Hz Ergonomic
1024×768	not supported	60 Hz VESA	not supported	60 Hz VESA

Displaying Information Fields

Note: You need to use the Setup Program from the Setup Program and HP Utilities diskette to display the settings of the system board switches.

The information fields show the BIOS version and the settings of the system board switches:



1. **BIOS Version**. Lists the version number of your computer's BIOS. (Refer to the Glossary for an explanation of BIOS.)
2. **System Board Switches**. Shows the settings of the computer's switches. (These settings cannot be changed by the Setup Program.)

   Switches marked **Not available** cannot be read by the Setup Program.

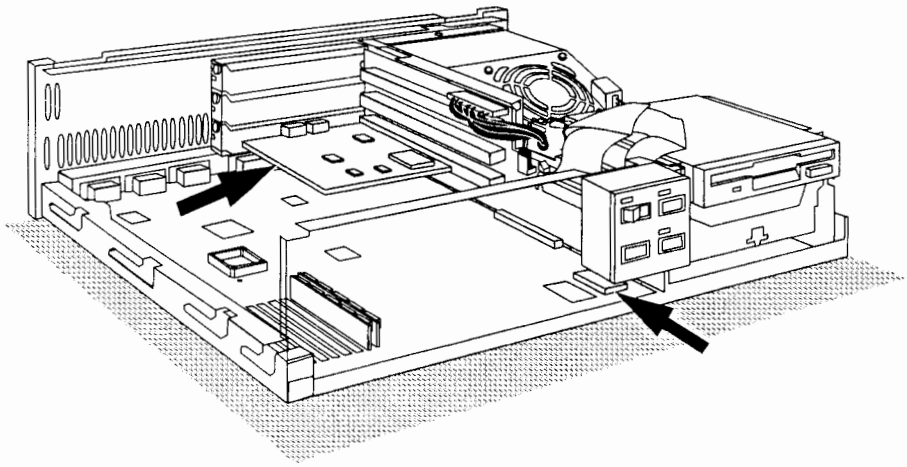
   For more information on the switch settings, refer to chapter 9.

7

Configuring Your LAN

Configuring Your LAN

Some computer models are delivered with an HP Vectra boot ROM chip, and a LAN (local area network) adapter board installed in the bottom accessory slot (slot 1).



The HP LAN adapter board allows your computer to be connected to a Type 10BASE-T network via a twisted-pair LAN cable. The boot ROM chip allows the computer to be started from the operating system on a LAN server.

The board also has a telephone connector for a 10BASE-T network with integrated telephone system.

This chapter explains how to check the configuration of your LAN adapter board.

If you want to install the drivers required to use your LAN adapter board, or to configure the computer to work with the LAN server, read "Installing Your LAN Drivers and Configuring the Network".

If you want to install a LAN adapter board or an HP Vectra boot ROM chip, refer to chapter 5.

Checking the Configuration of the HP LAN Adapter Board

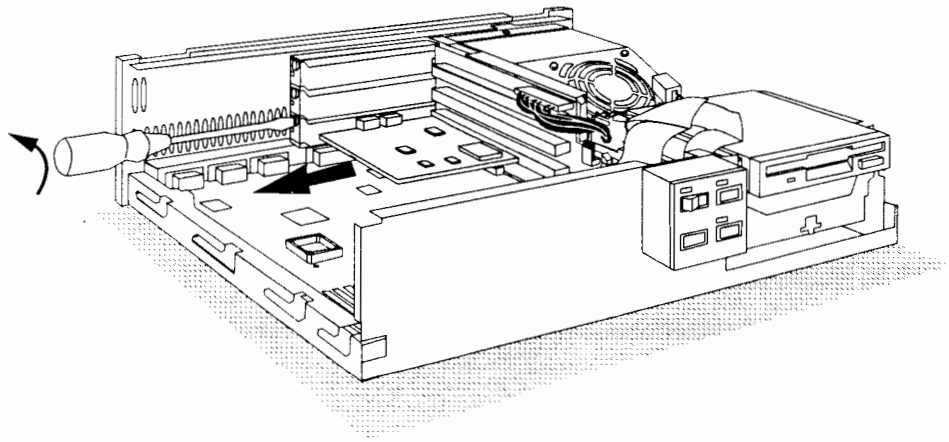
The LAN adapter board's I/O base address and link beat is configured using switches on the board.

I/O Base Address. The LAN adapter board is pre-configured to use an I/O address of 300 to 31F hex. If another accessory board in your computer needs to use I/O address 300 to 31F hex, you can re-configure the LAN adapter board.

Link Beat. This is a signal used over the twisted-pair connection to inform one device of the presence of another. The LAN adapter board is pre-configured to use the link beat. If you are using the board on a system that is not compatible with 10BASE-T networks, disable the link beat.

Configuring the I/O Base Address and Link Beat

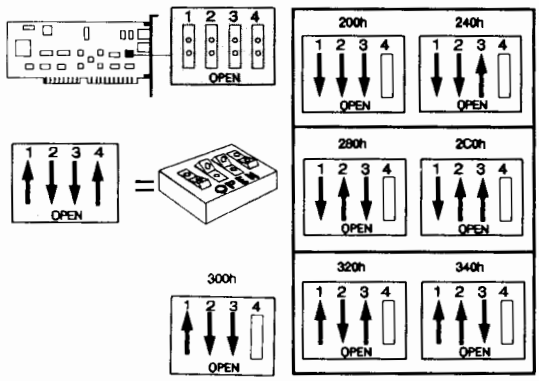
1. Switch off the computer. Disconnect the power cord and LAN cable.
2. Remove the cover. (Refer to chapter 5.)
3. If access to the LAN adapter board is prevented by an accessory board in slot 2 or 3, remove the LAN adapter board:
   a. Unscrew and remove the LAN adapter board's slot cover screw.
   b. Firmly pull the LAN adapter board out of the socket.



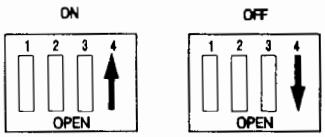
4. Select the I/O base address and link beat. Choose an address that is not used by another accessory. Enable the link beat if you are using the LAN adapter board on a 10BASE-T network.

If your board has DIP switches—HP 27245A and HP 27247A—select:

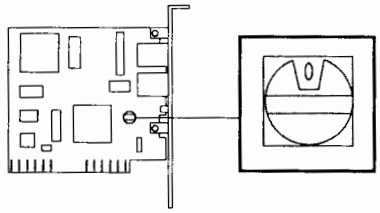
- The I/O base address on switches 1, 2 and 3 (default: 300 hex).



- The link beat on switch 4 (default: ON).



If your board has a rotary switch—HP 27245A—select the I/O base address and link beat as shown below:



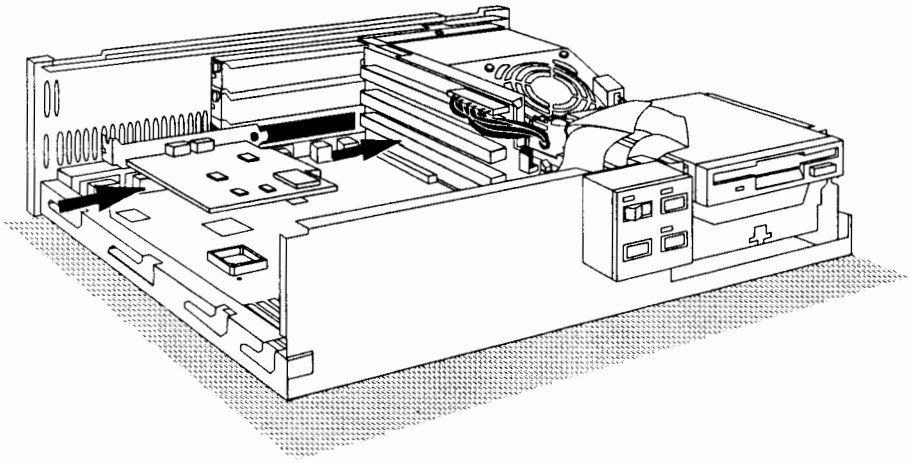
Switch Position:	**Link Beat ON using I/O Base Address:**
0	300 hex (default)
1	340 hex
2	320 hex
3	300 hex
4	2C0 hex
5	280 hex
6	240 hex
7	200 hex
Switch Position:	**Link Beat OFF using I/O Base Address:**
8	300 hex
9	340 hex
A	320 hex
B	300 hex
C	2C0 hex
D	280 hex
E	240 hex
F	200 hex

5. Record the LAN adapter board's I/O base address and IRQ in "Additional Items Installed" in chapter 5.

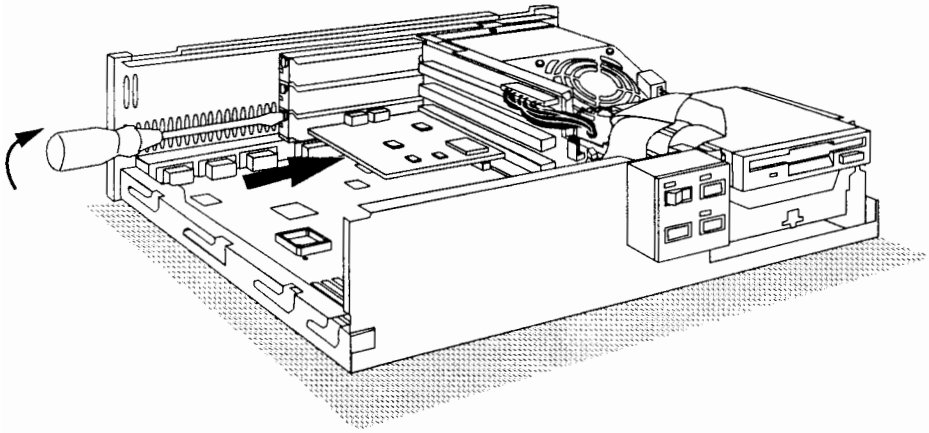
6. If you removed the LAN adapter board, re-install it:

   a. Hold the board horizontally by the top edge. Slide it into the board guide of the bottom slot. Do *not* bend the board.

   b. Align the board's connector with the socket. Firmly press the board completely into the socket.



   c. Secure the board by replacing the slot cover screw.



7. Replace the cover and reconnect the LAN cable and power cords.

Prior to installing the LAN cable, check that the building power installation is in accordance with IEC364 or the equivalent local code.

The twisted-pair LAN cable should not come into contact with the outside of buildings or roofing.

The twisted-pair LAN cable must not come into contact with lightning conductors.

No maintenance should be undertaken if there is a likelihood of the outside section of the twisted-pair LAN cable being struck by lightning (during a storm).

The telephone interface should only be used in the USA.

Installing Your LAN Drivers and Configuring the Network

If your computer has an HP LAN adapter board and you connected the computer to a local area network, LAN drivers must be installed. These drivers allow your computer to communicate with the local area network.

In addition, you can use the HP Vectra boot ROM chip to start your computer from the operating system on the LAN server.

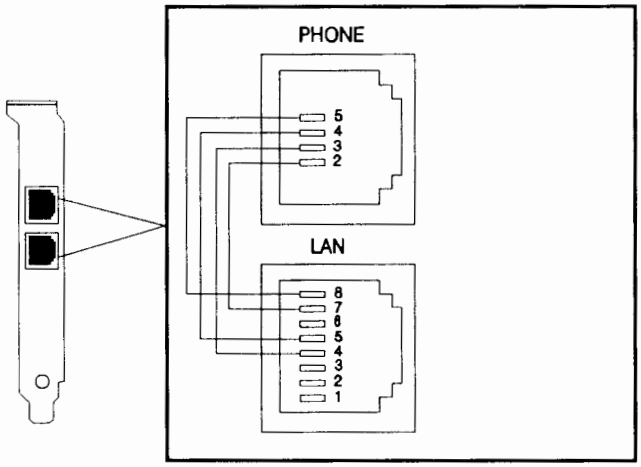
Your network's System Administrator must install the LAN driver in your computer and configure it to start from the LAN server.

Contact your System Administrator. Tell the administrator that you will be connecting a PC to the network and LAN drivers need to be installed. Provide the administrator with:

- the *HP LAN Administrator Manual* supplied with your computer
- the LAN Disk supplied with your computer

Your LAN Adapter Board's Connectors

Your HP LAN adapter board has a connector for the LAN cable and a connector for a telephone cable.



Pin	PHONE Connector 6-pin connector (four-pins wired)	LAN Connector 8-pin connector
8	Not Available	Telephone Digital Tip (to PHONE Connector)
7	Not Available	Telephone Digital Ring (to PHONE Connector)
6	Not Used	Network Data In (-)
5	Digital Tip (to pin 8 of LAN Connector)	Telephone Voice Tip (to PHONE Connector)
4	Voice Tip (to pin 5 of LAN Connector)	Telephone Voice Ring (to PHONE Connector)
3	Voice Ring (to pin 4 of LAN Connector)	Network Data In (+)
2	Digital Ring (to pin 7 of LAN Connector)	Network Data Out (-)
1	Not Used	Network Data Out (+)

FCC Statement (for USA only)
Federal Communications Commission Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits of a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

If this equipment causes interference to radio reception (which can be determined by turning the equipment off and on) try these measures: Re-orient the receiving antenna. Relocate the computer with respect to the receiver. Move the equipment away from the receiver. Plug the computer and receiver into different branch circuits. Consult your dealer or an experienced technician for additional suggestions.

VCCI Class 1 (for Japan only)

この装置は，第一種情報装置(商工業地域において使用されるべき情報装置)で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。

従って，住宅地域またはその隣接した地域で使用すると，ラジオ，テレビジョン受信機等に受信障害を与えることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

8

Troubleshooting and Error Messages

Troubleshooting and Error Messages

If You Need to Clean Your Computer

The most common problem experienced with electronic equipment of any kind is dust that builds up over a long period of time. Occasionally, you may want to wipe dust and fingerprints off the cover and display screen. Use the following suggestions to clean your computer. Any cleaning that cannot be done following these suggestions should be left to your dealer or HP service office.

- Before cleaning the computer, make sure the power is off and the power cord is disconnected.
- Use a cloth that has been only slightly dampened with water or a non-detergent cleaning solution (do not use spray liquids or a soaking-wet cloth).
- After cleaning the computer, make sure everything is dry before turning it back on.
- Do not attempt to clean diskettes.

If You Lose Your Key

If you lose the key to your computer, you need to order a replacement lock (HP part number 5062-5590) from your HP dealer or HP Sales and Service Office. The new lock is delivered with two keys.

Contact your HP dealer for installing the new lock.

If Your Computer Does Not Work: No Error Messages

1. The computer may be locked with Screen Blanking enabled. Enter your password. (The light next to the switch may be illuminated.)
2. Check that the computer and display are turned on. (The light next to the switch should be illuminated.)
3. Check the display's contrast and brightness settings.
4. Make sure that all cables and power cords are firmly plugged in.
5. Make sure the power outlet is working.
6. If the computer still does not work:
   a. Turn off the display, the computer, and all external devices.
   b. Unplug all power cords and cables, noting their positions.
   c. Remove the cover. (Refer to chapter 5.)
   d. Check that the memory modules are correctly installed. (Refer to chapter 5.)
   e. Check that the math coprocessor (if used) is correctly installed. (Refer to chapter 5.)
   f. Check that all accessory boards (if installed) are firmly seated in their slots. (Refer to chapter 5.)
   g. Verify that any switches and jumpers on the accessory boards are properly set. (Refer to the manuals that came with each board.)
   h. Check that the switches on the system board are properly set. (Refer to chapter 9.)
   i. Replace the cover. (Refer to chapter 5.)
   j. Connect all cables and power cords. (Refer to chapter 1.)
   k. Turn on the display and computer.
7. If your computer still does not work, remove all boards and accessories except the hard disk drive. Start your computer. If your computer now works, add your boards and accessories one at a time to determine which one is causing the problem.

If Your Application Does Not Work

1. Check to see at which speed your application needs to run; adjust your computer's speed if necessary. (Refer to chapters 4 and 6 for more information about changing the processing speed.)
2. Refer to your application's user manual for application-specific troubleshooting details.

If Your Printer Does Not Work

1. Verify that the AC power cord is plugged into the power source and the printer.
2. Make sure the printer's power switch is ON.
3. Check that the printer is online.
4. Examine the paper feed for a paper jam.
5. Verify that you have the correct cable for your printer. Make sure that it is connected to the correct connector (port), and that it is securely connected at both ends.
6. Make sure that your printer is configured correctly for your computer and for your application.
   a. Ensure that the computer's port has been correctly configured using the Setup Program. (Refer to chapter 6.)
   b. Ensure the computer's port has been correctly configured in the operating system and application program. (Refer to your application manuals.)
7. Check that your computer's port is working properly by running another peripheral connected to the port.
8. If you receive an error message on your display, go to your printer's manual for help.

If Your Display Does Not Work

If nothing is displayed on the screen, but the computer starts and the keyboard, disk drives and other peripheral devices seem to operate properly:

1. The computer may be locked with Screen Blanking enabled. Enter your password. (If the switch has been pressed, the light next to it will be illuminated. If Network Server Mode is in operation, there is no visible indication.)
2. Make sure that your display is plugged in and switched ON.
3. Check that the brightness and contrast controls are properly set.
4. Ensure that the display video cable is correctly connected.
5. Turn off the display, unplug it from its power source, and examine the video cable pins to see if they are bent. If they are, carefully straighten them.
6. If you use the built-in HP Super VGA, make sure it has not been disabled by switch 3 on the system board. (Refer to chapter 9.)
7. Verify that your video mode is properly configured for your display. (Refer to chapter 4.)
8. If you are using the HP Super VGA utility Screen Saver and your screen goes blank while you are using the keyboard, you may be using an application that turns off the screen even when you are using the keyboard. To disable Screen Saver, refer to chapter 4.
9. Make sure that no other boards use the same memory address as your Super VGA (3C0-3DF hex).
10. If the screens generated by your applications don't look right:
    a. Your application may not automatically adapt to the VGA standard if you are using a monochrome monitor. Run the HPVGAII.COM program and select the video mode manually. (Refer to chapter 4.)
    b. Check your application manual to find out which video standard is required. Use the HPVGAII.COM program to select this standard. (Refer to chapter 4.)

If Your Flexible Disk Drive Does Not Work

1. Ensure you are using a diskette that works.
2. Check that the flexible disk drive has not been disabled via the Setup program.
3. Clean the flexible disk drive using a cleaning diskette. Contact your HP dealer for assistance.

If your Hard Disk Activity Light Does Not Work

If the hard disk activity light does not flicker when the computer is accessing the hard disk drive:

1. Check that a power connector is firmly attached to the hard disk drive.
2. Check that the data/control cable is firmly attached to the disk drive and to the system board.
3. Check that the control panel cable is firmly attached to the system board.
4. Check that the hard disk drive has not been disabled via the Setup program.

If Your Mouse Does Not Work

1. Ensure that the mouse cable is correctly connected.
2. Make sure that the mouse has not been disabled by switch 1 on the system board. (Refer to chapter 9.)
3. Ensure that you installed the correct mouse driver.

If You Can't Use the Setup Program

If you can't use Setup to change your computer's configuration, either you didn't enter the correct password, or the configuration is protected using the switch 6 (security mode) on the system board. (Refer to chapter 9.)

If You Forget Your Password

If you forget your password, you must clear the passwords from your computer's memory. You do this via switch 4 on the system board. Refer to chapter 9 for details.

If an Error Message Appears

If an error occurs when you start the computer, an error message is displayed:

```
System tests report errors.
    For more information refer to your manual.
    To continue press F1.

For Setup press F2 now.

error codes: xxxx xxxx
```

If you want to use the Setup program to correct the error, press (F2). Then refer to chapter 6 for information on using Setup.

If you want to continue, press (F1). Then refer to the following:

- If the error is a four digit code, refer to "Diagnosing Power-On Self Test (POST) Error Codes Using WHATIS" in this chapter and follow the suggested action.
- If the error is a message, refer to "Error Messages" in this chapter and follow the suggested action.
- If the error message is not listed in this manual, it may be an operating system or application error message. Refer to your operating system and application manuals for descriptions of these messages.

Diagnosing Power-On Self Test (POST) Error Codes Using WHATIS

If a four digit error code appears when you start the computer, use the WHATIS utility to obtain a clear explanation of the POST error.

To use the WHATIS utility:

1. Insert the Setup disk in drive A of a working computer.
2. Select drive A, type **A:** (Enter).
3. Go to the EU directory, type **CD EU** (Enter).
4. Run WHATIS, type **WHATIS xxxx** (Enter) (where **xxxx** is the four digit error code).

Follow the screen messages for an explanation of how to correct the error.

POST Error Messages

If an error message appears when you start the computer:

```
Keyboard is not connected
```

Explanation: Connect the keyboard (see chapter 1).

```
Keyboard test failed
```

Explanation: An error has been found in your keyboard. Ensure it is connected correctly. Contact your HP dealer for assistance.

```
FATAL ERROR ROM BIOS CHECKSUM is bad

FATAL ERROR MPU is not functioning correctly
```

Explanation: A fatal error has been found in your computer. Contact your HP dealer for assistance.

Error Messages When Using the Computer

If an error message appears when you are using your computer:

```
System boot process failed. Press any key to try again
```

Explanation: You tried to start the computer but the computer could not find the operating system. This could occur if:

- your flexible disk drive does not contain the operating system
- your hard disk drive does not contain the operating system
- you disabled starting from your disk drives
- you want to start from the LAN server and have disabled remote start

```
Insert system diskette in drive. Then press any key
```

Explanation: There is no diskette containing the operating system in drive A. Or the hard disk drive is disabled, or not present. Insert a diskette with the proper operating system, and press any alphanumeric key to continue.

```
Boot program is invalid. Cannot start from this diskette

Boot program is invalid. Cannot start from hard disk
```

Explanation: There is a problem with the disk drive, or the disk drive is disabled, or not properly formatted, or the operating system is not installed. Insert a diskette with the proper operating system, and press any alphanumeric key to continue.

Operating System Error Messages

```
Non-system disk or disk error
```

Explanation: Remove the diskette, or replace it with the proper operating system diskette, and press any alphanumeric key to continue.

```
Not ready error reading (or writing) drive x:
```

Explanation: The device (usually a drive or printer) specified in the error message is not ready to accept or transmit data. This could occur if:

- The diskette has not been inserted correctly. If this is the problem, re-insert the diskette and type **R** (for Retry).
- The printer is not working—check to see if the printer is on and ready to print.
- The device has been disabled using the Setup program.

Boot ROM Error Messages

If an error message appears when you are starting the computer from the operating system on a LAN server:

```
Error initializing Network Interface Board
```

Explanation: Before starting (booting) from the LAN server, the software tries to locate, test and initialize the LAN adapter board. Failure to perform these functions will display this message.

A message preceded by asterisks will be displayed explaining what failed during this stage.

```
**** Cannot find HP PC LAN card
```

Explanation: Either you didn't install an HP LAN adapter board or the Network Interface I/O address you set in Setup does not correspond to the I/O base address on the LAN adapter board.

Ensure the Network Interface I/O address you set in Setup corresponds to the I/O base address on the LAN adapter board. (Refer to chapters 6 and 7.)

```
**** Unable to initialize HP PC LAN card
```

Explanation: A board has been found at the I/O base specified in Setup, but a hardware error occurred while trying to initialize the board.

Ensure the Network Interface I/O address you set in Setup corresponds to the I/O base address on the LAN adapter board. (Refer to chapters 6 and 7.)

Ensure the LAN adapter board does not use the same I/O base address as another board in the computer.

```
**** HP PC LAN card buffer memory failure
```

Explanation: The LAN board failed its self test. Contact your HP dealer for assistance.

```
**** HP PC LAN card hardware failure
```

Explanation: The LAN board failed. Contact your HP dealer for assistance.

```
Waiting for a server ....
A server could not be found
```

Explanation: When starting (booting) from the LAN server, the software tries to get the programs necessary to load the network operating system. This message will appear if the network is busy.

If the computer fails to start from the LAN server, an error may have occurred (for example, the server is not running or the network cable is not connected). Contact your System or Network Administrator.

```
Error opening boot disk image file
```

Explanation: Your computer requested some files from the server but they were either not present, or the access rights to the files were too restrictive, or they included wrong information. Contact your System or Network Administrator.

`Error reading boot disk image file`

Explanation: While the program was being copied (downloaded) from the server to your computer, an error was detected.

Restart your computer. If the error occurs again, contact your System or Network Administrator.

`Error reading configuration file`

Explanation: An error was detected in one of the files needed to start your computer.

Restart your computer. If the error occurs again, contact your System or Network Administrator.

If You Need to Change the Battery

WARNING

Batteries can be dangerous if you mishandle them. *DO NOT* recharge or disassemble them, and *DO NOT* dispose of them by burning. When the batteries need replacement, use only compatible batteries HP part number 1420-0513 available from your dealer or HP Sales and Service Office (or equivalent from another company). Use of any other batteries may be dangerous

The battery pack in your computer maintains the correct date and time when your computer is turned off. When the battery pack wears out (every three to five years), you will see this message when you turn on the computer:

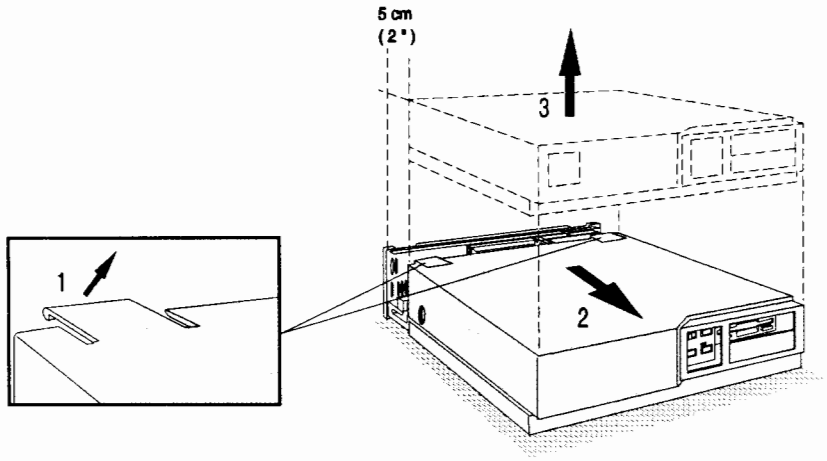
0240

You should replace the battery pack as soon as it wears out because the files created by your application programs use the time and date from your computer's clock.

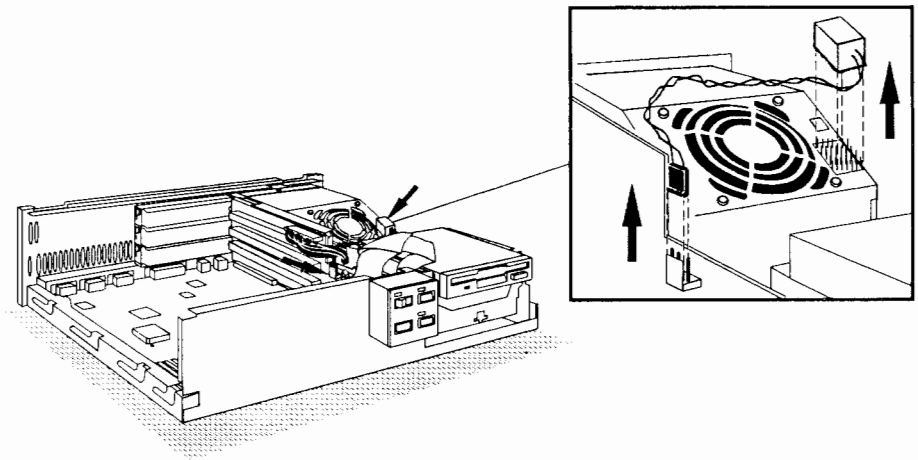
To change the battery pack, follow the steps below.

1. Switch off your computer and disconnect the power cord. (This will not affect your computer's configuration, only the time and date.)

2. Remove the cover. (Refer to chapter 5.)



3. Disconnect the battery wire from its connector on the computer.
4. Pull the battery off the fastening strip.



5. Attach the new battery to the fastening strip on the power supply. Reconnect the battery wires to its connector on the computer.
6. Replace the cover and reconnect the power cord. (Refer to chapter 5.)
7. Run the Setup program to set the time and date. (Refer to chapter 6.)

HP PC Forum on CompuServe

The HP PC Forum is an easy way to obtain up-to-date information and answers to your questions about HP personal computers. The HP PC Forum is an online bulletin board messaging system maintained jointly by Hewlett-Packard and HP PC users. HP system operators answer questions and maintain libraries which contain contributed articles and software. Conferences are scheduled periodically for online discussions of selected topics.

The HP PC Forum is available through the CompuServe Information Service, the largest electronic information service in the world. To access the HP PC Forum, you must have an account with CompuServe and a PC with a 300, 1200, or 2400 baud modem. As a preferred Hewlett-Packard customer, you are invited to join the Hewlett-Packard forum on CompuServe at no charge. Simply call the number for your area and ask for Representative #133. Numbers are as follows:

USA	(1) 800-848-8199 or 1-614-457-0802 (from outside USA and Canada)
UK	Freephone 0800 289 458
Switzerland (for Continental Europe)	(41) (031) 509 800

CompuServe will send you a free introductory membership immediately.

Getting Software Support

As part of the purchase of your computer, arrangements were made to provide after-sale software assistance.

- If you purchased your computer from an Authorized Hewlett-Packard Dealer, they are committed to provide full after-sale support. Your dealer has worked with you to define your application and configuration—perhaps selecting hardware or software not supplied by HP—and is able to provide local, personal, and uniquely-responsive support. Authorized Dealers are backed by the full resources of Hewlett-Packard.

  To locate an Authorized Hewlett-Packard Dealer, call (800) 752-0900 in the U.S., or contact your local HP Sales and Service Office.

- If you purchased your computer directly from Hewlett-Packard, arrangements for after-sale support were made as part of the sale. You may elect to purchase a Response Center contract from HP or to obtain your assistance from a support group within your own organization. Your internal support group has knowledge of your unique operating procedures and specific configuration, including any non-HP components, and is normally backed by a Response Center contract from HP.

If You Need to Contact Hewlett-Packard

Should you need to contact Hewlett-Packard, check your local telephone directory for the HP Sales and Service Office near you. If you cannot locate an HP office, contact one of the major HP Sales and Service Offices or one of the Worldwide HP Marketing Headquarters listed here.

Worldwide HP Marketing Headquarters

ASIA
Far East Sales Region Hdqtrs
Hewlett-Packard Asia Ltd.
22nd Floor
West Tower, Bond Centre
89 Queensway, Central
GPO Box 863
Hong Kong

EUROPE
European Operations Hdqtrs
Hewlett-Packard S.A.
150, route du Nant-d'Avril
P.O. Box
1217 Meyrin 2/Geneva
Switzerland

LATIN AMERICA
Hewlett-Packard Latin Am. Hdqtrs
Monte Pelvoux 111
Lomas de Chapultepec
11000 Mexico D.F.
Tel: 2-02-01-55

OTHER AREAS
Intercon Operations Hdqtrs
Hewlett-Packard Company
3495 Deer Creek Road
P.O. Box 10495
Palo Alto, CA 94303-0896
USA

9

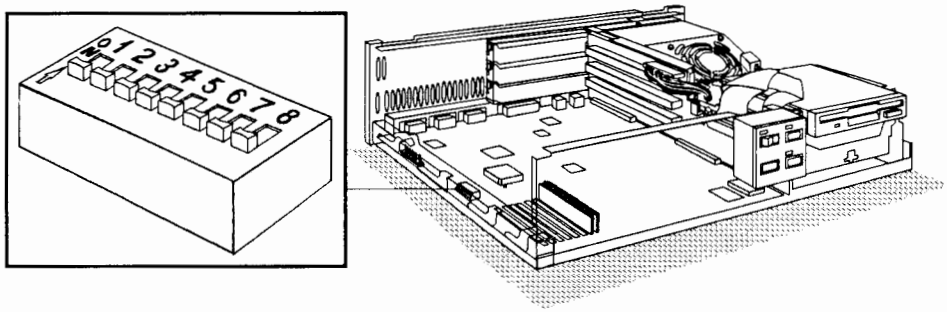
Computer Specifications

Computer Specifications

Your Computer's Switches

There are six operational switches on your computer's system board:

Switch	Description	Settings	Default
1	IRQ 12 (mouse) M.IRQ	**OFF** - enable **ON** - disable	**OFF** - enable
2	IRQ 9 (video) V.IRQ	**OFF** - disable **ON** - enable	**OFF** - disable
3	Built-in video VGAEN	**OFF** - enable **ON** - disable	**OFF** - enable
4	Password PSWRD	**OFF** - enable (user can set passwords) **ON** - erase passwords	**OFF** - enable
5	Erase the configuration from memory CONFG	**OFF** - not erase **ON** - erase configuration	**OFF** - not erase
6	Security mode SECUR	**OFF** - disable **ON** - enable	**OFF** - disable
7 and 8	Not used	Do not change	**OFF**



1. Switch 1: Enables/disables IRQ 12 interrupt (used by the mouse device). Default: enable.

   IRQ 12 is used by the optional mouse device. However, it could also be used by an accessory board. (Refer to your board's manual for details.)

   Disable IRQ 12 (this disables the mouse) if the computer has an accessory board that uses IRQ 12.

2. Switch 2: Enables/disables IRQ 9 synchronization (used by some application software). Default: disable.

   Some older video applications need to use IRQ 9 in order to be synchronized with the screen refresh. (Refer to your application's manual for details.)

   Enable IRQ 9 if your software needs to use IRQ 9.

3. Switch 3: Enables/disables the built-in HP Super VGA controller. Default: enable.

   Disable the built-in HP Super VGA controller if you install a video adapter board to replace your built-in HP Super VGA. (You should also run the Setup Program to select your board as the primary video adapter. Refer to chapter 6.)

4. Switch 4: Enables/erases the User and System Administrator Passwords. Default: enable.

   When the passwords are enabled, you can set (or clear) the passwords using the Setup Program. When a password is set, you must type in the correct password to use the computer.

   If you need to erase the password from the computer's memory (for example, if you forgot your password):

   a. Switch off the computer.
   b. Remove the cover (refer to chapter 5).
   c. Set switch 4 to disable the password.
   d. Switch on the computer and wait until it has started (booted).
   e. Switch off the computer.
   f. Set switch 4 to enable the password.
   g. Replace the cover.
   h. Switch on the computer.
   i. If required, run the Setup Program to select a password. (Refer to chapter 3.)

5. Switch 5: Erase/not erase bad configuration from memory.
   Default: not erase.

   When you start your computer, the configuration information is copied into your computer's memory. However, if this information is corrupted by a program, it may stop your computer from operating.

   If you need to erase (purge) the configuration information from the computer's memory (for example, if your computer stops because the configuration is corrupt and you can't run the Setup Program):

   a. Switch off the computer.
   b. Remove the cover (refer to chapter 5).
   c. Set switch 5 to erase the memory (ON).
   d. Switch on the computer.
   e. Check that error messages **0240** and **02C0** are displayed, and wait until the computer has started (booted).
   f. Switch off the computer.
   g. Set switch 5 to "not erase" the memory (OFF).
   h. Replace the cover.
   i. Switch on the computer.
   j. Run the Setup Program. (Refer to chapter 6.)

6. Switch 6: Enables/disables the security mode. Default: disable.

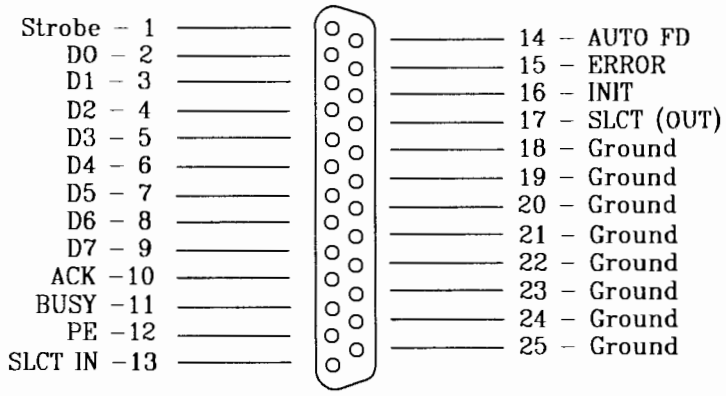
   When you enable security mode, you cannot change your computer's configuration (even if you use the Setup program and have the appropriate passwords).

   When you disable security mode, you can change your computer's configuration using the Setup Program.

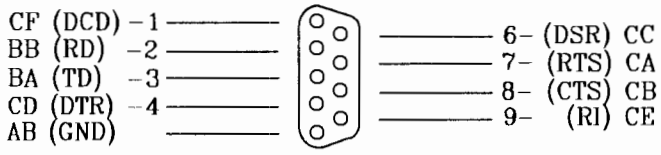
Your computer is equipped with:

- one 25-pin parallel connector
- two 9-pin serial connectors
- one 15-pin video connector
- one 6-pin keyboard connector
- one 6-pin mouse connector

The connector pinouts are as follows:



25-pin Parallel Connector Pins



9-pin Serial Connector Pins

Video Connector Pins

Pin #:	Function:
1	Red
2	Green
3	Blue
4	Not used
5	Ground
6	Ground
7	Ground
8	Ground
9	Not used
10	Ground
11	Not used
12	Not used
13	H-Sync
14	V-Sync
15	Not used

Keyboard and Mouse Connector Pins

Pin #	Signal
1	Data
2	Not used
3	Ground
4	+5V dc
5	Clock
6	Not used

Your Computer's Physical, Environmental and Electrical Specifications

Physical Characteristics:	
Weight:	9 kilograms (20 pounds)
Dimensions:	39.5 cm (D) by 38 cm (W) by 10 cm (H) (18 inches by 15 inches by 4 inches)
Footprint:	0.15 m^2 (1.8 sq ft)
Storage temperature:	-40 °C to 70 °C (-40 °F to 158 °F)
Storage humidity:	8% to 80% (relative)
Operating temperature:	5 °C to 40 °C (41 °F to 104 °F)
Operating humidity:	15% to 80% (relative)
Electrical Characteristics:	
Input voltage:	90-132 V or 198-264 V
Input frequency:	50 Hz or 60 Hz
Power consumption:	75 W

The 386SX Microprocessor, I/O Addresses and IRQs

Your PC is a 16-bit ISA (Industry Standard Architecture) computer that uses the 386SX microprocessor. The 386SX microprocessor is a 32-bit microprocessor (like the 386DX microprocessor).

- It has a 24-bit external address, which means it can address up to 16 MB of memory.

  The 386SX will run application programs developed for computers based on the 8086, or 8088, or 286 or 386 microprocessor.

- It has a 16-bit external data bus, which means access to the data bus is slower for programs that use 32-bit instructions.

The following table lists the Interrupts, IRQ numbers and I/O addresses used by your computer. Use this table if you need to resolve IRQ and address conflicts between accessories.

Interrupts, IRQ Numbers and I/O Addresses

Interrupt Vector[1] Number Hex[2]	IRQ[3]	I/O Address[4] Hex	Item Description
08	IRQ 0	40 - 43	Timer
09	IRQ 1	60, 64	Keyboard
0B	IRQ 3	2F8 - 2FF	Serial Port 2 (COM2)
0B	IRQ 3[5]	300 - 31F	HP LAN adapter board default settings
0C	IRQ 4	3F8 - 3FF	Serial Port 1 (COM1)
0E	IRQ 6	3F0 - 3F7	Flexible Disk Controller
0F	IRQ 7	378 - 37A	Parallel Port 1 (LPT1)
70	IRQ 8	70 - 71	Real-time Clock
74	IRQ 12	60, 64	Mouse
75	IRQ 13	F0 - FF	Math coprocessor
76	IRQ 14	1F0 - 1F7	Hard Disk Controller
If you have installed accessory boards, refer to their manuals for the Interrupt, IRQ and I/O addresses. For example:			
0D	IRQ 5	278-27F	Parallel Port 2
71	IRQ 9	3C0-3DF	VGA
72	IRQ 10	3E8-3EF	Serial Port 3
73	IRQ 11	2E8-2EF	Serial Port 4

1 The Interrupt Vector points to the interrupt service routine used by the computer.

2 Hex is the hexadecimal address—hexadecimal is a numbering system which has a base of 16.

3 The IRQ is a signal used by the internal device to obtain the microprocessor's attention.

4 The I/O—input/output—address are addresses in the computer that the microprocessor uses to communicate with internal devices, like the LAN adapter board or your disk drives.

5 IRQ 3 is the default setting for most network software. If you use the computer's serial port 2 for a device, set the LAN adapter board to IRQ 5 using the network software. (Refer to chapter 7.)

A

Warranty Information

Warranty Information

Important: This appendix contains your hardware and software warranty statements.

Warranty terms may be different in your country. If so, your Authorized HP Dealer or Hewlett-Packard Sales and Service Office can give you details.

One-Year Limited Hardware Warranty

Hewlett-Packard (HP) warrants this hardware product against defects in materials and workmanship for a period of one year from receipt by the origimal end-user purchaser.

If HP receives notice of such defects during the warranty period, HP will either, at its option, repair or replace products which prove to be defective.

Should HP be unable to repair or replace the product within a reasonable amount of time, the customer's alternate exclusive remedy shall be a refund of the purchase price upon return of the product.

Limitation of Warranty

The above warranty shall not apply to defects resulting from: misuse; unauthorized modification; operation outside the environmental specifications for the product; in-transit damage; improper maintenance; or defects resulting from use of non-HP software, accessories, media, supplies, consumables, or such items not designed for use with the product.

HP makes no other express warranty, whether written or oral, with respect to this product. Any implied warranty of merchantability or fitness is limited to the one-year duration of this written warranty. Some states or provinces do not allow limitations on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state, or province to province.

Limitation of Liability and Remedies

The remedies provided above are the customer's sole and exclusive remedies. In no event shall HP be liable for any direct, indirect, special, incidental, or consequential damages, whether based on warranty, contract, tort, or any other legal theory.

The foregoing limitation of liability shall not apply in the event that any HP product sold hereunder is determined by a court of competent jurisdiction to be defective and to have directly caused bodily injury, death, or property damage; provided, that in no event shall HP's liability for property damage exceed the greater of $50,000 or the purchase price of the specific product that caused such damage.

Some states or provinces do not allow the exclusion or limitation of incidental or consequential damages—including lost profit—so the above limitation or exclusion may not apply to you.

Obtaining Warranty Service

To obtain warranty service, the product must be returned to a service facility designated by HP.

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HP warrants the media upon which this product is recorded to be free from defects in materials and workmanship under normal use for a period of ninety days from the date of purchase. In the event any media prove to be defective during the warranty period, customer's remedy shall be to return the media to HP for replacement. Should HP be unable to replace the media within a reasonable amount of time, customer's alternate remedy shall be a refund of the purchase price upon return of the software product and all copies.

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Some states or provinces do not allow the exclusion or limitation of incidental or consequential damages—including lost profit—so the above limitation or exclusion may not apply to you.

Obtaining Warranty Service

You may obtain Warranty service from your Authorized HP Dealer or HP Sales and Service Office.

Glossary

Glossary

analog display
A display that uses variable color control voltages to display a very large number of colors, but requires very few inputs. A VGA monitor is an example of such a display.

automatic speed switching
A mode of operation available through the HP Utility EXMODE or the Setup Program that instructs the computer to run at its highest speed, switch automatically to 8 MHz when reading from a diskette, then switch back to its highest speed.

ASCII
American Standards Committee on Information Interchange. A standard used by IBM and compatible computers to convert numbers to characters.

base memory
0 KB to 640 KB of address space in the standard memory (0 KB to 1 MB). MS-DOS resides in base memory. Also called conventional memory.

BIOS (ROM BIOS)
Basic Input Output System. Code in your computer's ROM (Read Only Memory) that provides basic operating functions.

boot ROM chip
A ROM (Read Only Memory) chip used to start the computer from the operating system on a LAN server. A socket is available on the system board for insertion of such a chip.

conventional memory
0 KB to 640 KB of address space in standard memory (0 KB to 1 MB). MS-DOS resides in conventional memory. Also called base memory.

driver
Part of a software program that interacts with a particular piece of equipment in your computer system (for example, video boards, host adapters, printers, and keyboards).

EEPROM

Electrically Erasable Programmable Read-Only Memory. A type of read-only memory (ROM) where the data pattern may be changed when a higher than normal electrical signal is applied.

embedded controller (also called IDE controller)

A disk drive controller board which is built into a disk drive. Other flexible disk drives and hard disk drives have separate controller boards which are installed in slots and are connected to the drive by cables. (IDE = Integrated Drive Electronics.)

embedded-AT hard disk drive (also called IDE disk drive)

A hard disk drive with the controller embedded into the drive electronics. An embedded-AT drive connects directly to a compatible AT system board without a separate controller board. Other drives have separate controller boards that are installed in slots and are connected to the drive by cables. (IDE = Integrated Drive Electronics.)

ergonomic mode

Normally the display is refreshed vertically at a rate of 60 Hz. This refresh rate can result in flicker, especially in countries that use 50 Hz electrical power. To guarantee flicker-free video display, some displays support a vertical refresh rate of 72 Hz. This higher refresh rate is known as "ergonomic mode."

EXMODE

An HP Utility for MS-DOS users that lets you change the processor speed and the volume of the keyboard click, as well as turn memory cache on and off.

expanded memory manager

A utility that creates expanded memory (which is usable by MS-DOS) from portions of base, reserve, and extended memory. Expanded memory managers will increase the performance of your computer.

expanded memory

Expanded memory is memory above 1 MB that an expanded memory manager makes accessible to MS-DOS by means of bank switching. Using this technique, blocks of expanded memory are traded with blocks or pages of base memory. The expanded memory manager keeps track of the traded blocks in a database. Since MS-DOS applications can only use base memory, memory expansion makes more memory available

for them. Programs cannot run in expanded memory but expanded memory is useful for applications that require a lot of data space, such as spreadsheets, CAD programs, network drivers, disk caches, and RAM disks.

extended memory
Memory above 1 MB that is directly addressed by the operating system. No memory manager is needed. The OS/2 and SCO UNIX operating systems use extended memory.

expansion slot
An electrical connection within the computer used for the addition of expansion boards.

hardware cursor
The ability of some video subsystems (such as the one built into the computer) to take over the task of blinking the cursor. This frees the CPU from performing this task and allows speed enhancement during multi-tasking operations.

Hercules Graphics Card (HGC)
A video adapter that provides bit-mapped, single-color graphics. HP Super VGA can emulate HGC text and graphics modes.

hexadecimal notation
A base-16 numbering system that uses numbers and letters. The hexadecimal sequence begins: 1 2 3 4 5 6 7 8 9 A B C D E F, then continues 10, 11, and so on.

horizontal frequency
The rate at which a display shows each scan line. Usually measured in kilohertz (kHz).

IDE hard disk drive
See embedded-AT hard disk drive.

Interlaced display (ID)
A display that refreshes every other scan line every other pass of the screen.

IRQ
Interrupt request. A signal used by a device such as a mouse to inform the microprocessor that it is present and functioning.

I/O port
A special communications address through which input and output devices (such as the mouse and the keyboard and peripheral devices) can communicate with the computer.

ISA
Industry Standard Architecture. An architecture once used by all IBM-compatible personal computers.

jumper
A small cap-like device used to connect two pins on a circuit board. It is one way of defining the configuration of the board.

LAN server
Computer that controls the operation of a LAN (local area network).

Lotus-Intel-Microsoft Expanded Memory Specification (LIM EMS)
A standard for expanded memory to which many programs comply.

math coprocessor
A chip that performs numeric operations, extending the power of the main processor. A math coprocessor will enhance the performance of any application that does floating point calculations, such as CAD and spreadsheet programs. Also known as an arithmetic coprocessor.

memory cache
A memory management system that copies a portion of your computer's memory into very high speed memory. This allows the processor to access frequently used pieces of information more quickly and efficiently.

memory modules
Miniature boards containing memory chips. You add memory modules to your existing system board to increase the amount of available memory.

multitasking
The act of running several programs simultaneously. For example, a user can be entering data on a spreadsheet program while an electronic mail program is transmitting messages in the background.

Network Server Mode
A security measure that prevents unauthorized use of an input device (like a keyboard or mouse) while your computer is running as an

unattended network server. The computer will start, but no data is received from the keyboard until you enter a password.

noninterlaced display
A noninterlaced display refreshes the entire screen (that is, every scan line) every pass of the screen.

nonvolatile memory
A separate portion of your computer's memory, the contents of which are preserved when you turn off the computer. Nonvolatile memory stores information that must be maintained, such as your computer's configuration. Also called CMOS memory, nonvolatile RAM (NVRAM), or battery backed-up CMOS.

(Num Lock) key
The state of the (Num Lock) key determines whether or not the cursor keys on the numeric keypad function as cursor control keys (Num Lock off) or as numeric entry keys (Num Lock on). The power-on Num Lock state is controlled by a parameter under the **User Preferences** heading in the Setup Program. By default, Num Lock is on.

palette
Total number of display colors available to choose from. With VGA, the palette is 262,144 colors.

parallel printer
A printer that accepts data transmitted from the computer through a parallel interface. A parallel interface transfers bits of information down a number of wires simultaneously.

pixel
Short for picture element. The smallest field shown on the display. Could be compared to the dots which form images in photos printed in newspapers. Also called "pel".

Power-On Self-Test (POST)
Also known as a system test. A series of tests your computer performs when you turn on the power. If any of the power-on self-tests fail, a beep will sound and an error code will appear on your screen as a number. (Fatal errors will not be displayed on your screen.)

primary adapter
The video adapter that drives the display on startup. A secondary video adapter can be used by some programs and must be located on an accessory board. The primary video adapter is built into the system board. It can be disabled by a switch on the system board.

RAM
Random-access memory. Standard memory that you can read and write to. It is volatile; that is, the data will be preserved only as long as the computer is on.

reserved memory
640 KB to 1 MB of address space. It is usually reserved for ROM, video, and expanded memory.

resolution
Number of pixels shown on the display. The higher the resolution, the crisper and sharper the images appear.

ROM
Read-only-memory. Memory on a chip that contains permanent data (firmware). You can execute and read it, but you cannot write to it or change it with application programs. It is permanent; that is, turning off the computer does not alter it.

SCSI
Small Computer Systems Interface. A standard that allows up to seven mass storage devices with built-in controllers to be connected on a high-speed 8-bit data bus.

shadowing
A technique where you copy the contents of a BIOS ROM from the board where it is located to your computer's RAM. This creates a "shadow image" in RAM of the BIOS ROM. After the BIOS is copied, the BIOS ROM on the board is turned off. When your computer executes a video function, it executes the function from your computer's RAM which is much faster than executing code from the BIOS ROM on the board.

slots
The openings on the system board into which you can install boards.

switch
A small two-position switch on a board that you set to define the configuration of the board. There are two types of switches: rocker switches and sliding tab switches.

System Administrator Password
A password that protects all the computer's configuration settings, except the date and time, user preferences and User Password.

system board
The main circuit board into which all accessory boards are connected. Also called the motherboard.

Terminate-and-Stay-Resident-programs (TSR)
A program that sits invisibly in memory and comes forward when you press a specific combination of keys.

terminator
A resistor network used to ensure a transmission line or bus is maintained at its characteristic impedance.

TSR
See terminate-and-stay-resident (TSR) programs.

User Password
A password that protects the computer's user preferences configuration settings. Once set, it also locks the keyboard and mouse after the computer is restarted or the switch is pressed.

Variable Frequency Display (VFD)
A display that is capable of showing a wide range of resolutions due to its ability to scan at various horizontal and vertical frequencies.

vertical frequency rate
The rate at which the display screen is refreshed. Usually measured in hertz (Hz).

VESA
VESA stands for Video Electronics Standards Association. This association sets standards for the electronic signals used to drive video displays.

Many displays are designed to accept signals that conform to VESA standards. Some, however (like the HP D1195 in 1024×768 mode) do not, and require special signals.

There is also a VESA connector on the system board. By using an external video board that picks up the signals available on this connector, it is possible to drive the display with a primary video adapter that has features not provided by the primary adapter built into the system board.

See also **VGA** and **primary** video adapter.

VGA (Video Graphics Array)

A standard for analog video display; that is, video display driven by analog rather than digital signals. The analog signals make many more color combinations possible.

- The VGA standard is for a graphics display resolution of up to 640×480 pixels.
- The extended VGA standard is for a resolution of up to 800×600 pixels.
- The super VGA standard is for a resolution of up to 1024×768 pixels.

See also **analog display**, palette, and **primary adapter**.

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DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN 45014

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declares that the products:

Product Name Personal Computer
Model Numbers HP Vectra 386/16N, 386/20N and 386/25N

conform to the following Product Specifications:

Safety IEC 950 / EN 60950
EMC EN 55022 class B
FTZ 1046/84
Pr EN55101-2
Pr EN55101-3
IEC 801.2 Level 3
IEC 801.3 Level 2

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