HP Vectra VE 5/xx Series 2

User's Guide

NOTICE

Information contained in this document is subject to change without notice.

Hewlett-Packard makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Hewlett-Packard shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

Hewlett-Packard assumes no responsibility for the use or reliability of its software on equipment that is not furnished by Hewlett-Packard.

Table of Contents

WELCOME TO YOUR HP VECTRA PC

Congratulations on the purchase of your new Hewlett-Packard desktop PC. Your high-performance PC provides:

- a Pentium™ processor in a Zero Insertion Force (ZIF) socket for easy processor upgrades
- an optional level-two cache of 256 KB for high performance
- a main memory of 8 MB, upgradeable to 128 MB
- an Ultra VGA PCI (Peripheral Component Interconnect) video controller with 1 MB of video memory (upgradeable to 2 MB)
- an integrated Enhanced IDE (Integrated Drive Electronics) controller on the PCI bus supporting Fast IDE and Standard IDE
- three front-access drive shelves (one can be used as an internal shelf)
- one internal drive shelf
- four free slots for accessory boards:
  - one 32-bit PCI (Peripheral Component Interconnect) slot
  - one 16-bit ISA (Industry Standard Architecture) full length slot
  - one 16-bit ISA short slot (16 cm/6.3 inch maximum length)
  - one combination ISA or PCI slot
- one parallel port and two serial ports
- preloaded HP utilities to ease system configuration tasks
- BIOS stored in Flash ROM
- BIOS support for ISA “Plug and Play”
- pre-installed Operating system and Software.

Your HP Vectra has other important attributes:

- DMI compliant
- designed for Windows® 95
- Vectra Ergonomic Power Solution — Windows 95 soft power-down using the mouse, and keyboard power-on
- Energy Star compliant power management
  The PC range described in this manual has a power saving capability which complies with the Environment Protection Agency's (EPA) 30 watt maximum power consumption in sleep mode, with the exception of those models which are fully loaded multimedia PCs. The fully loaded multimedia PCs also have energy saving capabilities, but use slightly more than the maximum 30 watt limit in power saving mode, required for the Energy Star label approval.

1 SETTING UP YOUR PC

This chapter leads you through the first time installation of your HP Vectra PC.

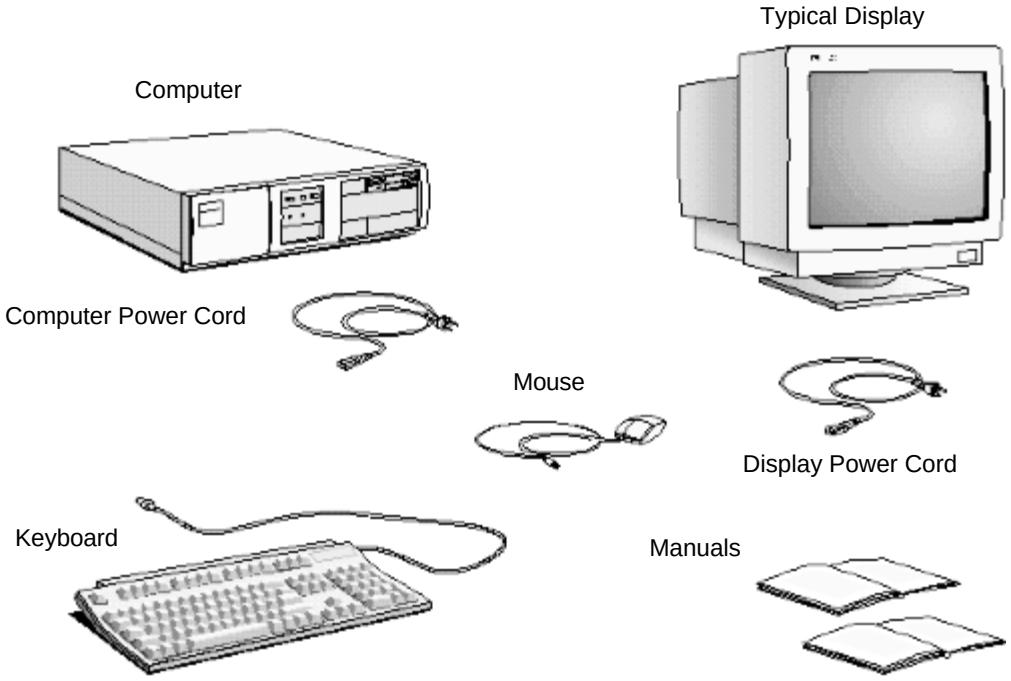
UNPACKING YOUR PC

1 When you receive your PC, unpack all the components:

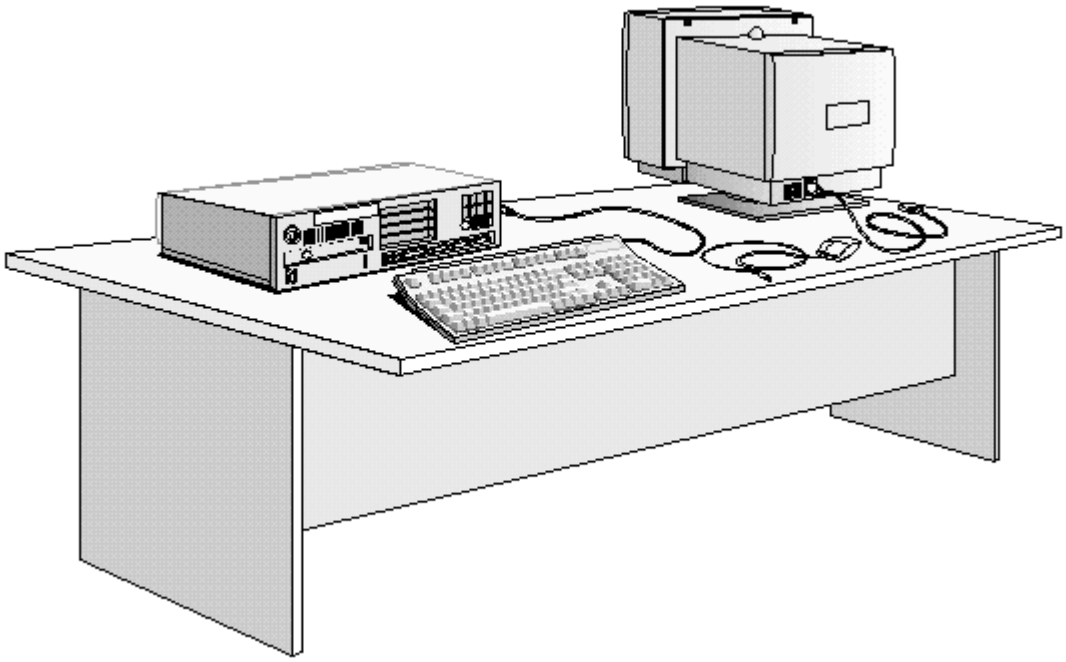
- the computer and power cord
- the display and its cables
- the keyboard and mouse
- the manuals.

On some models, the operating system software, drivers, and HP User Tools are preloaded on the hard disk.

WARNING:	If you have any doubt that you can lift the PC or display safely, do not try to move it without help.



2 Place the PC on a sturdy desk near to easily accessible power outlets, with enough space for the keyboard, mouse, and any other accessories.



3 Position the PC so that its rear connectors are easily accessible.

4 Place the display on top of the computer. If you have a large display, place it next to the computer. Refer to the display's manual for information about the display.

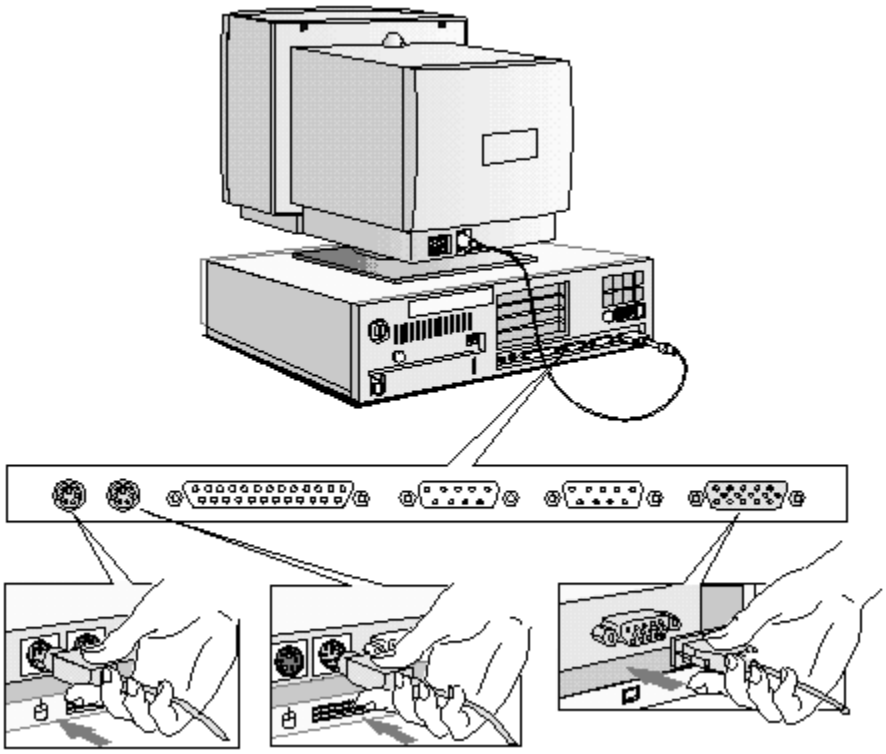
Installation Tools

No tools are required to set up your PC. However, if you plan to install a disk drive or an accessory board in your PC, you will need a flat-blade screwdriver. For further information about installing accessories, refer to chapter 3, "*How to Install Accessories In Your PC*".

CONNECTING THE MOUSE, KEYBOARD, AND DISPLAY

1 Connect the mouse, keyboard, and display to the back of the computer. *The connectors are shaped to go in one way only*.

2 Tighten the display cable attachment screws.

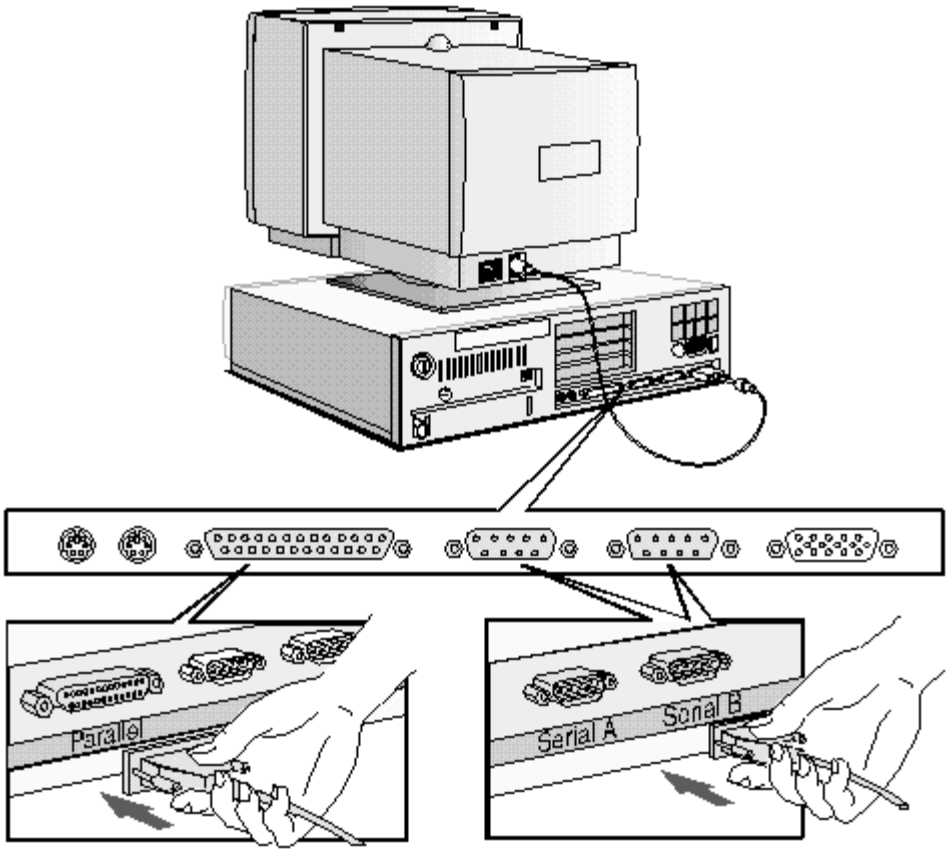


Mouse Keyboard Display

CONNECTING A PRINTER

Connect the printer cable to the back of the computer and tighten the attachment screws. Use the connector labeled:

- Parallel (25-pin parallel connector) for a parallel device
- Serial A (9-pin serial connector) for a serial device
- Serial B (9-pin serial connector) for a second serial device.



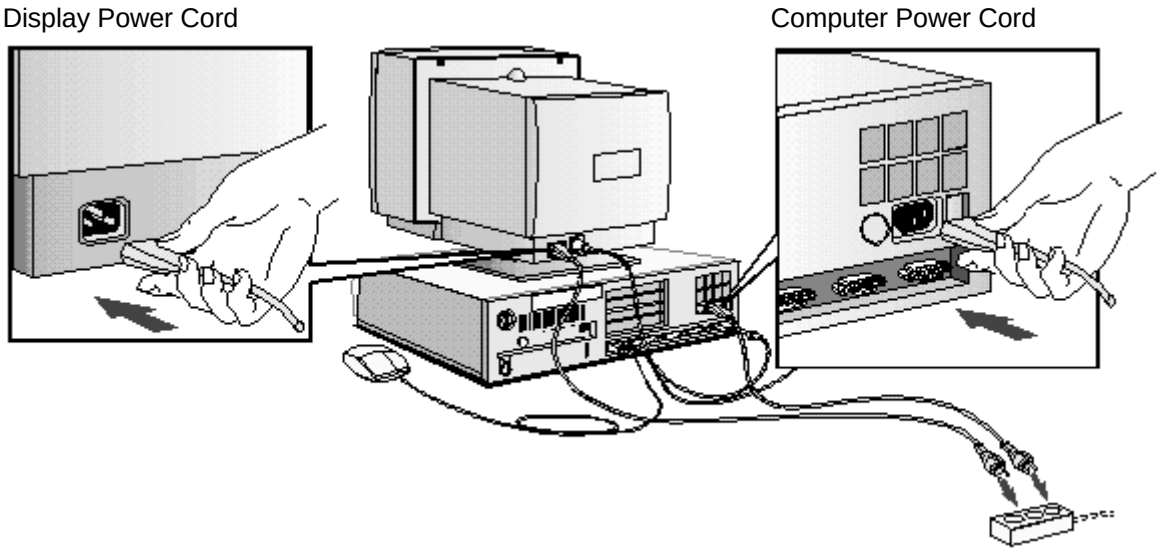
Parallel Connector Serial Connector

CONNECTING THE POWER CORDS

1 If fitted, remove the label covering the computer's power connector.

2 Connect the power cords to the display and the computer.

3 Connect the display's power cord and the computer's power cord to a grounded outlet. (*The connectors are shaped to go in one way only.*)



WARNING:	**For your safety, always connect the equipment to a grounded wall outlet. Always use a power cord with a properly grounded plug, such as the one provided with this equipment, or one in compliance with your national regulations.** **This PC is disconnected from the power by removing the power cord from the power outlet. This means the PC must be located close to a power outlet that is easily accessible.**

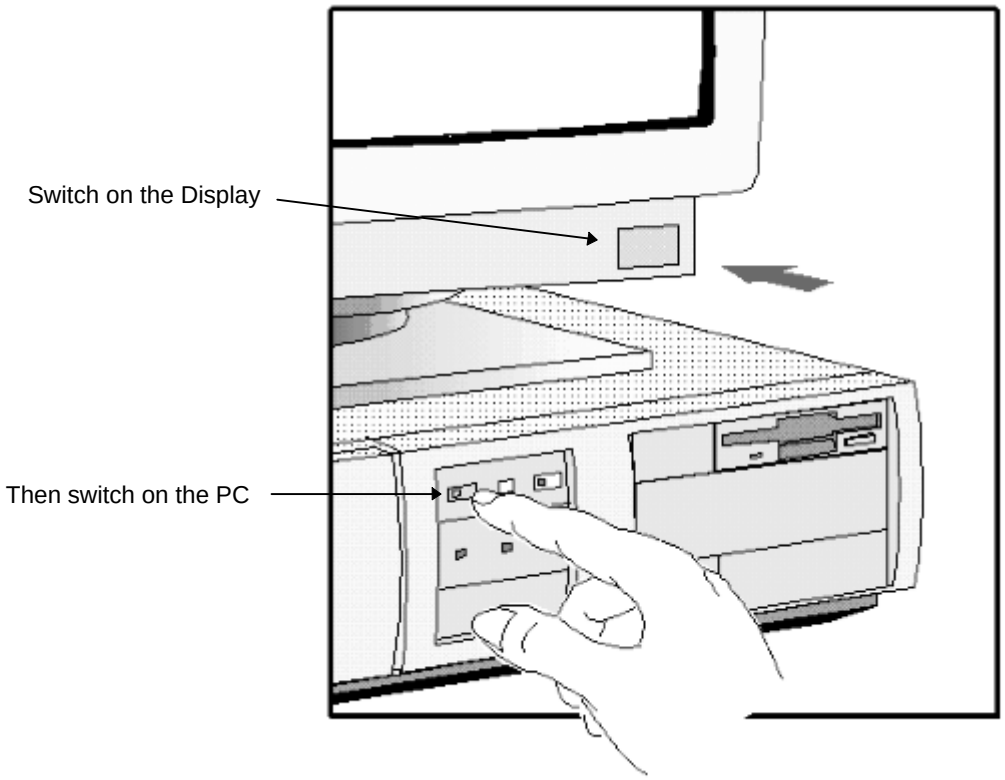
STARTING THE PC FOR THE FIRST TIME

If your PC has preinstalled software, it is initialized the first time you start the PC. The software initialization process takes approximately three minutes. This process sets up the software in your language and sets up your software to use the hardware installed in your computer (you can change the settings after the software has been initialized).

CAUTION:	Depending on which model PC you have, you may also be asked to select which operating system you want to use, for example Windows 3.11 or Windows 95. Once you have confirmed your selection of the operating system, you **cannot** change that selection. The operating system that you have **NOT** chosen will be deleted from the computer's hard disk.

To initialize your software

1 Switch on the display first, and then the PC (this will allow your PC to recognize the type of display you have).



NOTE	Do NOT switch OFF the PC while the software is being initialized for the first time as this could cause unexpected results.

When the PC is switched on, the Vectra Logo is displayed. The PC performs a Power-On-Self-Test (POST). Press [ESC] if you want to view the POST information.

If an error is detected during the Power-On-Self-Test, the PC will automatically display the error. If this occurs, refer to "If a POST Message is Displayed" in chaper 5.

2 The software initialization routine starts. It displays the software license agreement, gives you an opportunity to read Working in Comfort (ergonomic advice for computer users), and then asks questions about the PC. For example:

- The name of the person who will use the PC and your company name. (If necessary, the name of the user can be modified later.)
- The current date and time.
- The type of printer (for example, HP LaserJet 4M). This is shown on the front of the printer. You also need to enter the connection used by the printer.

- The model number of your display. The display's model number is shown on the cover of the manual supplied with the display and on a label on the rear of the display.

- You may also be asked to select which operating system you want to use, Windows 3.11 or Windows 95. Once you have confirmed your selection of the operating system, you **cannot** change that selection. The operating system that you have **NOT** chosen will be deleted from the computer's hard disk

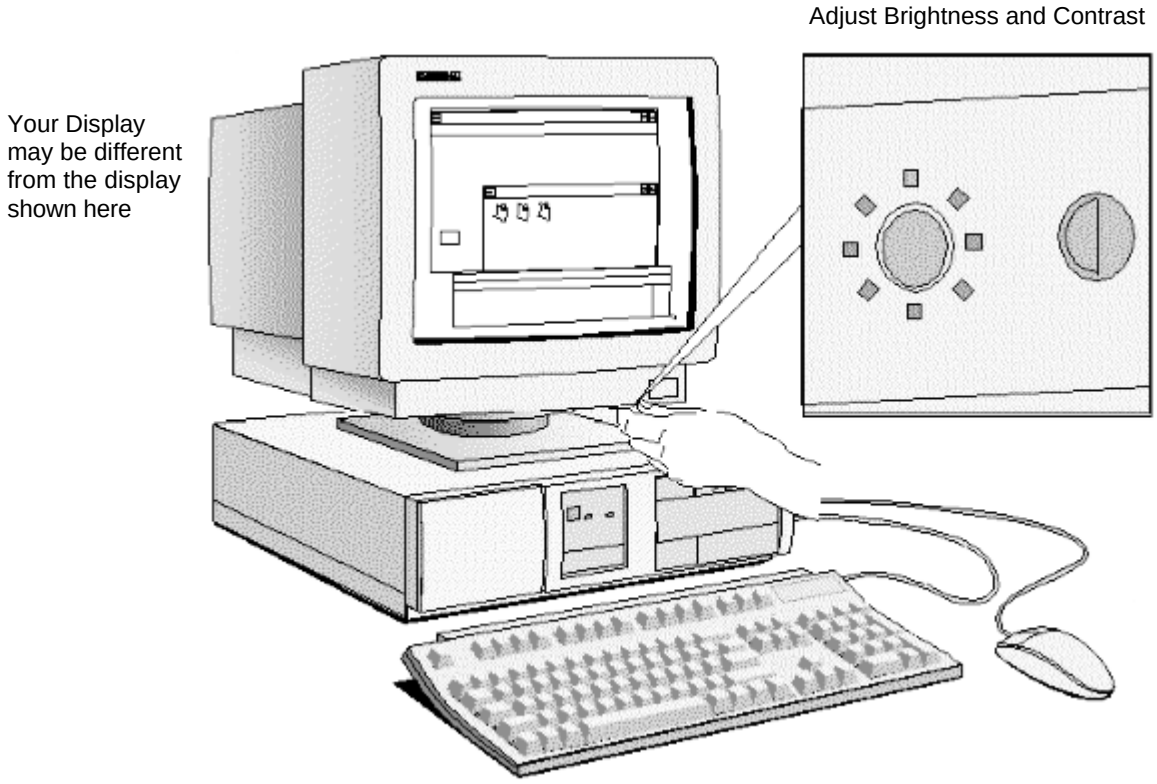
3 While the initialization program is running, you can complete the Warranty Registration card that you will find inside the back of this manual.

When the initialization routine has finished, click on OK and the PC will restart.

4 When Your PC has restarted:

- Set the keyboard to a comfortable position.

- Adjust the display screen's brightness and contrast to suit your needs. If the picture does not fill the screen or is not centered, adjust it using the controls on the display. Refer to the display's manual for details.



CREATING MASTER DISKETTES

NOTE	It is very important that you create master diskettes for your preloaded software as soon as possible.These diskettes will be your unique means of regenerating your system if you need to restore the preloaded software onto your PC. Use new diskettes to create master diskettes.

Windows 3.11

Choose this utility in the HP User Tools group in Program Manager and follow the screen messages, which will tell you how many diskettes you need.

Windows 95

Use the Microsoft Create System Disk utility. Refer to the Windows 95 documentation for further information.

Other Operating Systems

Refer to the documentation for your operating system.

2 USING YOUR PC

This chapter explains how to use the HP Vectra PC to increase your productivity.

STARTING AND STOPPING YOUR PC

STARTING YOUR PC

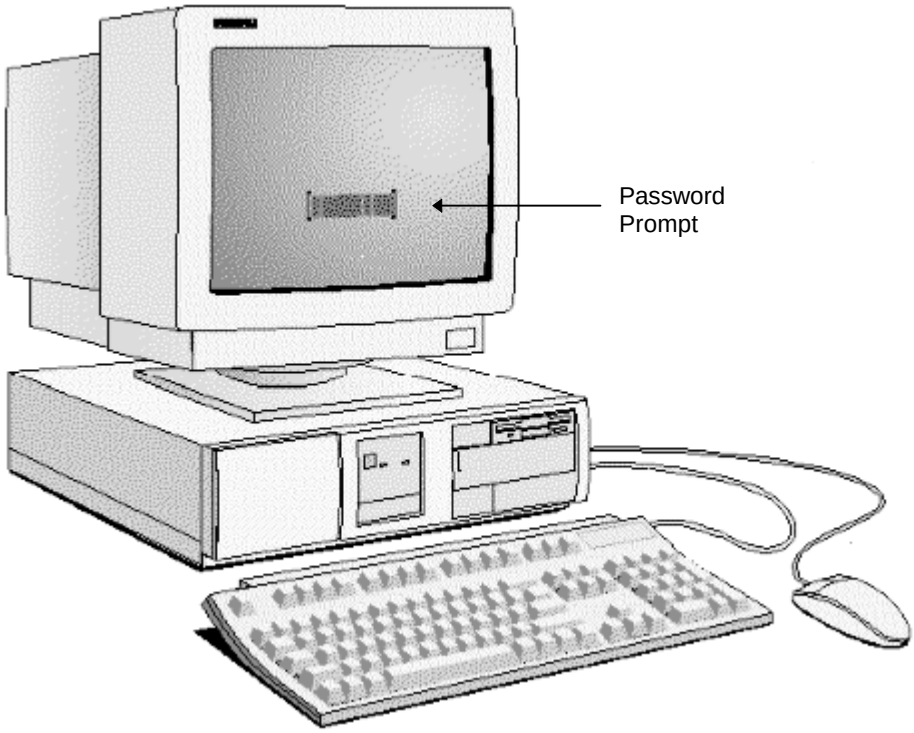
1 Before you start your PC, always switch on the display first.

2 Start your PC in one of these ways:

- press the power button on the front panel
- press the space bar.

When you switch on the computer, the computer carries out the Power-On-Self-Test (POST) while the Vectra logo is displayed. If you wish to view the POST details, press [ESC]. If there is an error in the POST, the error will automatically be displayed.

3 If you have set a password in the PC's Setup program, the password prompt displays after the POST has completed. If the Password prompt is displayed, type your password and press [ENTER] to be able to use the PC.



STOPPING YOUR PC

Stopping the PC when using Windows 3.11

To stop the PC, make sure that you have exited all programs and then exited Windows before pressing the power button on the control panel.

Stopping the PC when using Windows 95

To stop or shut down the PC:

1 Click on **Start**.
2 Click on **Shut Down**.
3 Click on **Shut down the computer**.

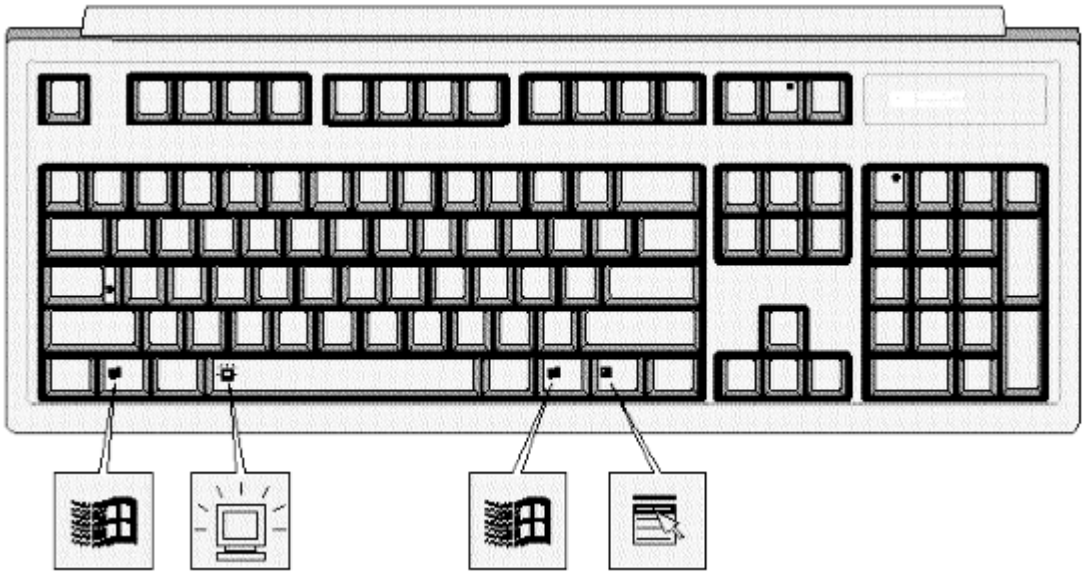
You can return the PC to full power mode by pressing the space bar.

Other Operating Systems

For other operating systems refer to the operating system manual for details of how to exit the operating system.

THE HP VECTRA KEYBOARD

The HP Vectra keyboard has three keys that give speedy access to Windows 95 functions. These keys have icons indicating what these functions are. The space bar also has an additional function, the Power-On function, which is not specific to Windows 95.



The Windows Icon

You can display the Windows 95 **Start** menu by pressing either of the two Windows keys, which are on either side of the space bar. Refer to Windows 95 documentation for further information about Windows 95.

The Application Key

The Application key allows you to access all the same functions as the right mouse button. It can be used to copy and move files, to access shortcut menus and get Help information. The Application key can also be programmed by your software.

The Power-On Icon on the Space Bar

The Power-On function enables you to start your PC by pressing the space bar. This function is not specific to Windows 95, but is available whatever your operating system. The option can be enabled or disabled in *Setup* (default is “enabled”). You can also enable or disable this function with system board switch 9 (refer to "System Board Connectors and Switches" in chapter 6).

ADVANCED POWER MANAGEMENT

Power management enables you to reduce the PC’s power consumption when you are not using it.

The following two power management modes are supported in Windows 3.11 and Windows 95:

- Standby Mode, which significantly reduces power consumption. In this mode, the display is suspended. The system remains fully working, but runs slower. Any user event, such as from the mouse or keyboard, will instantly cause the system to resume.

- Sleep Mode, which reduces power consumption to a minimum. Graphics, the processor, and hard disks (IDE and SCSI) are stopped (placed in their respective off modes). While the system is in this mode, the modem will still operate and the PC can receive faxes. A key press will cause the system to resume to full mode within a few seconds.

Windows 95 supports a third mode, Shut Off Monitor.

Refer to your operating system documentation for detailed information about how to implement power management. Also refer to "If Power Management Does Not Work", on page 89.

HP USER TOOLS

If your PC has preinstalled software, you will find HP User Tools on your system. These tools help you to both configure your system and improve the functionality of your PC. They include such items as configuring printers and setting video modes.

DESKTOP MANAGEMENT INTERFACE

Your PC supports the Desktop Management Interface (DMI). The DMI lets an application request information about your computer. For example, an application can use the DMI to view:

- the hardware and software components installed in your PC

- the operating system used by your PC

- the number of available accessory board slots.

3 HOW TO INSTALL ACCESSORIES IN YOUR PC

This chapter explains how to install accessories, such as extra memory, accessory boards, and additional disk drives, in your PC.

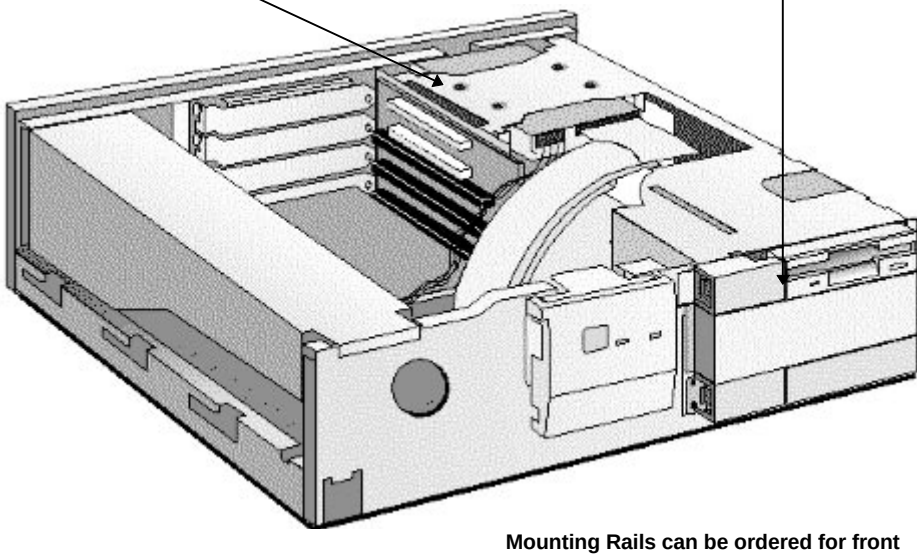
SUPPORTED HP ACCESSORIES

This chapter describes how to install memory, mass storage devices, and accessory boards in your PC.

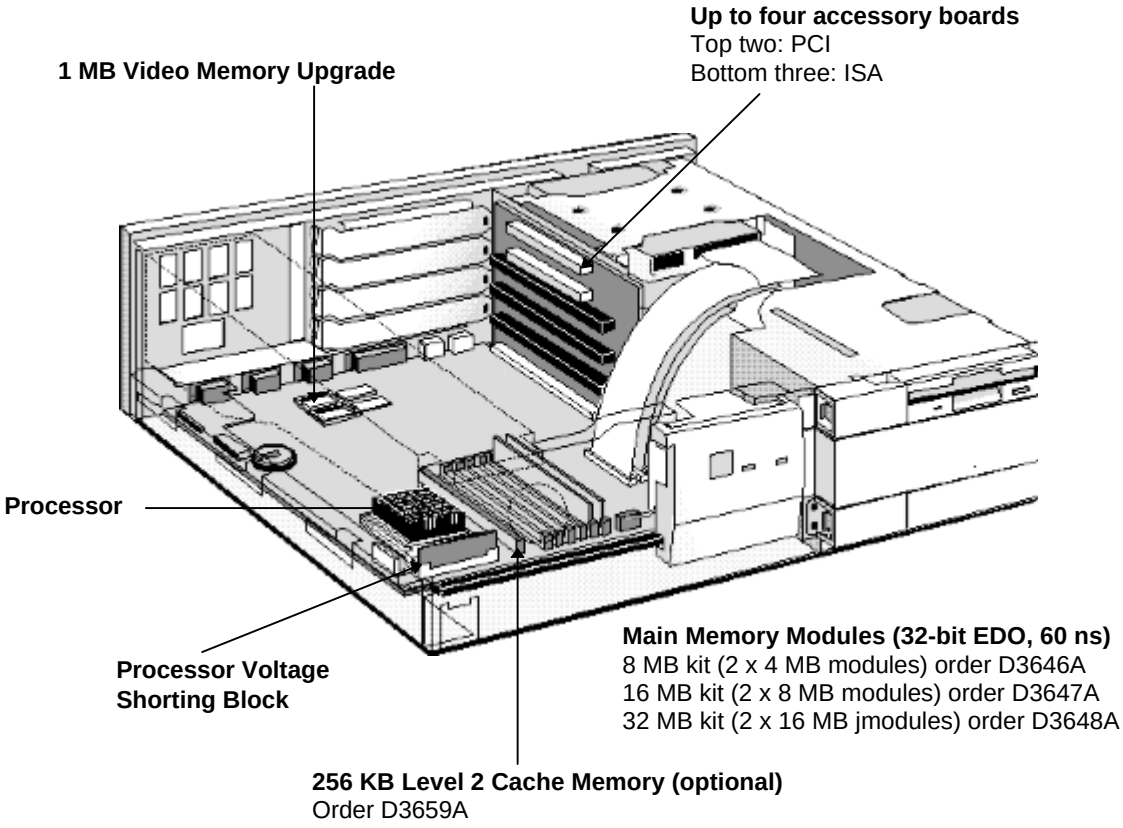
Refer to "Hewlett Packard Support and Information Services" (chapter 7) for information about how to obtain an up-to-date list of supported devices.

One internal mass storage device
630 MB IDE, order D2929A or
1.2 GB IDE, order D2930A

Up to three front access drives, for accessories such as:
5.25 inch 1.2 MB flexible disk drive, (half height) order D2881B
3.5 inch 1.44 MB flexible disk drive, (one third height) order D2035B



Mounting Rails can be ordered for front access devices:
5.25 inch disk drive rails, order D2880A
3.5 inch disk drive rails, order D3566A

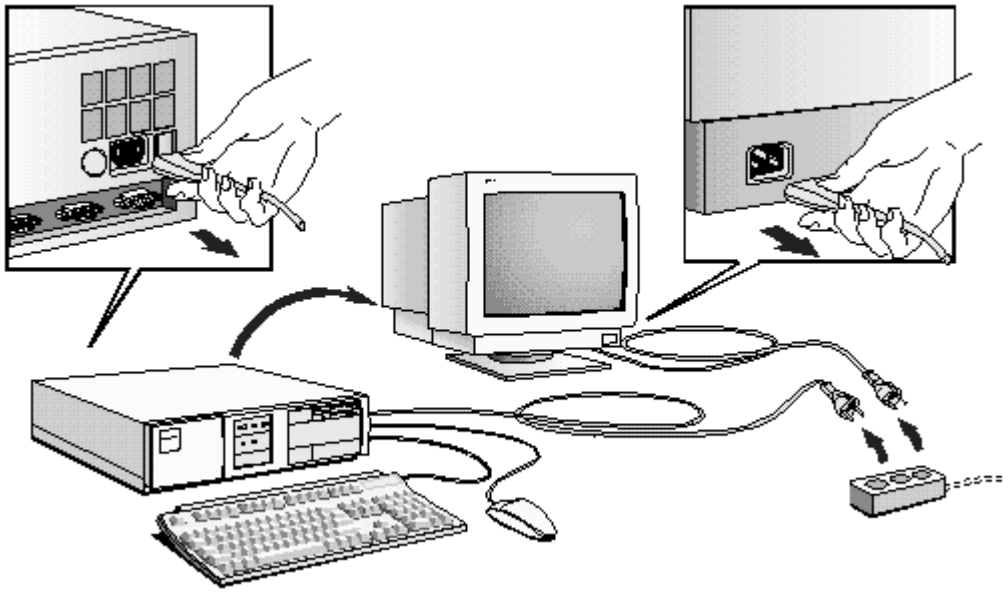


WARNING:	**For your safety, never remove the PC's cover without first removing the power cord from the power outlet, and any connection to a telecommunications network. Always replace the cover on the PC before switching it on again.**

REMOVING THE COVER

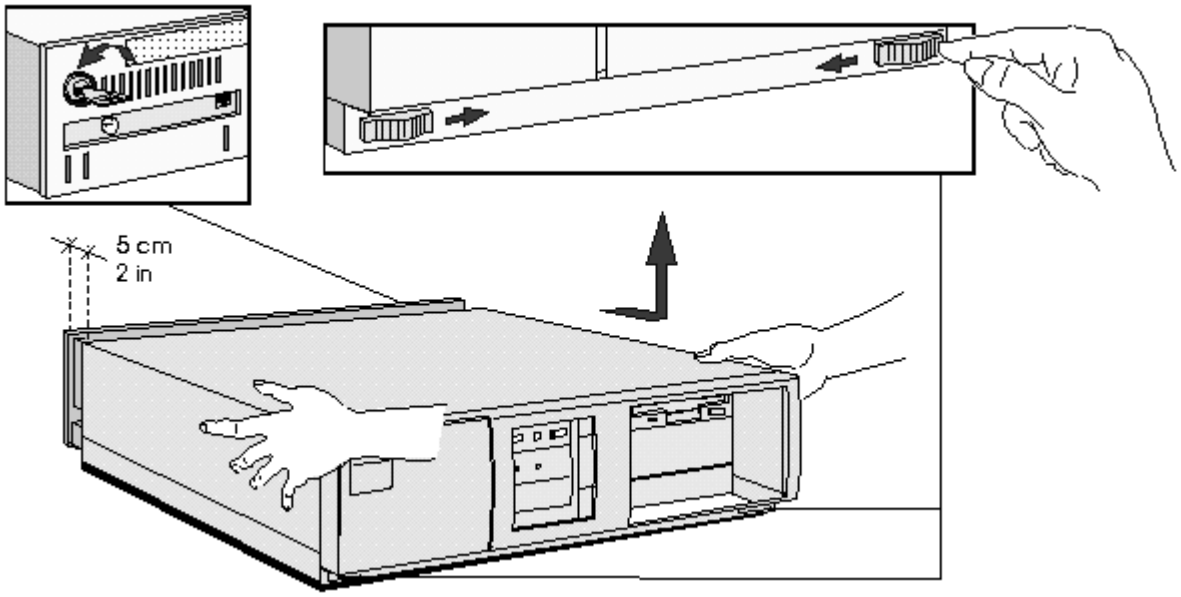
1 Switch off the display and the PC.

2 Disconnect the power cords from the power outlets, the PC, and the display. Disconnect any connection to a telecommunications network. Then remove the display.



3 If necessary, unlock the cover using the key provided with the PC.

4 Slide the two tabs on the front of the computer inwards. Firmly slide the cover forward 5 cm (2 inches), and lift it up and off the computer.



REPLACING THE COVER AFTER INSTALLING ACCESSORIES

1 Check that you have installed all your accessories.

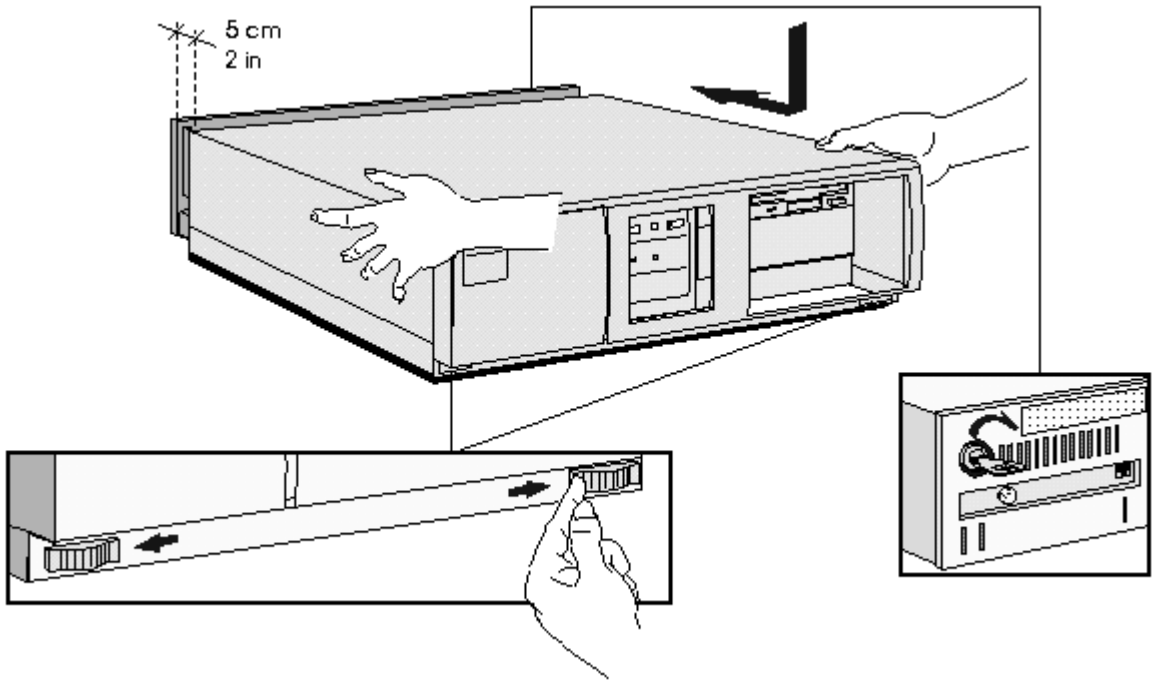
2 Make sure that all internal cables are properly connected and safely routed so they will not be entangled when you replace the cover.

3 Ensure the cover lock is unlocked and the tabs are inwards.

4 Lower the cover onto the computer, and firmly slide it into position.

5 Slide the two tabs on the front of the cover outwards.

6 If a keylock is fitted, lock the cover using the key.



7 Place the display on top of the computer. Reconnect all cables and power cords.

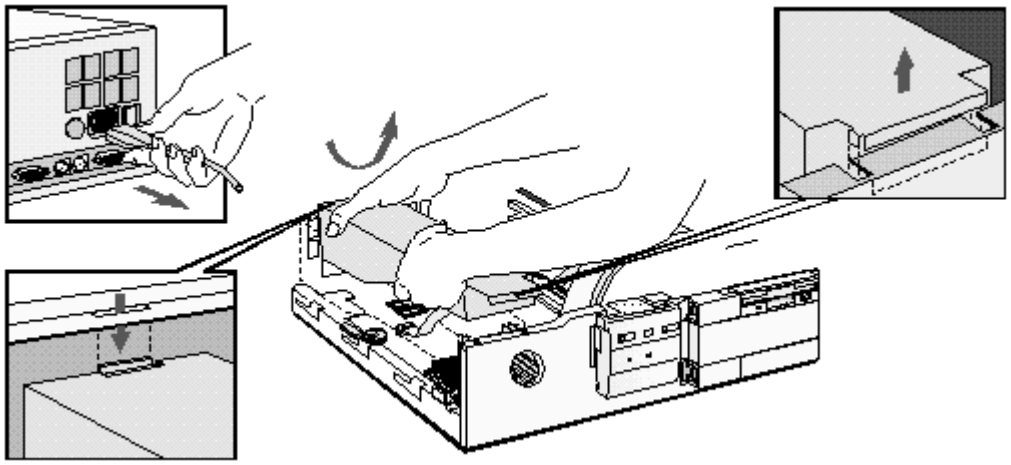
MOVING AND REPLACING THE POWER SUPPLY

You must move the power supply to access the sockets for the main memory, cache memory, video memory, processor, battery, or accessory board slots.

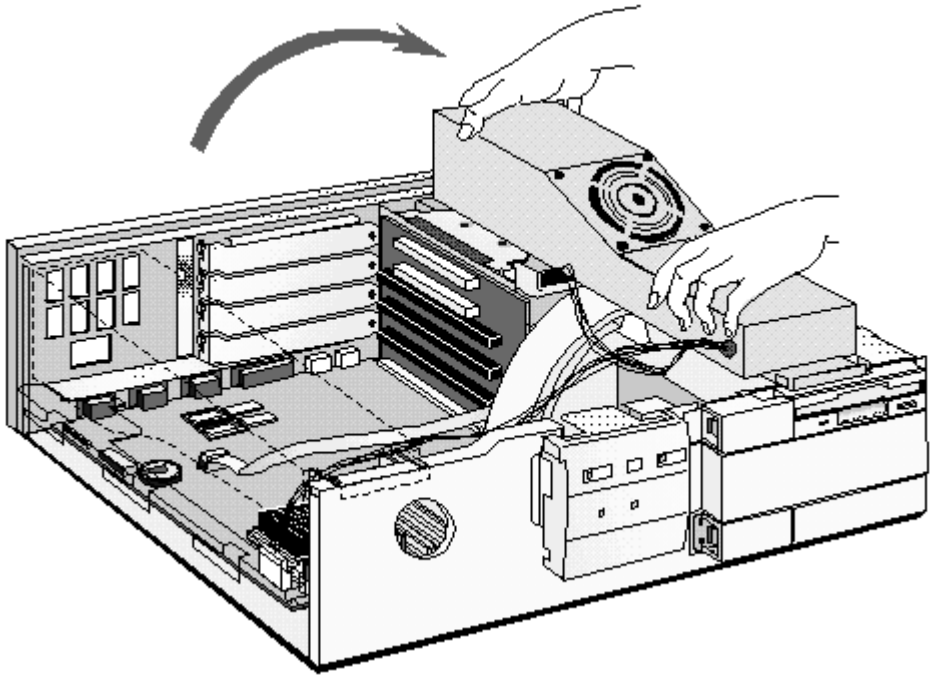
1 Disconnect the computer's power supply cord and any connection to a telecommunications network.

2 Remove the computer's cover.

3 Lift the front of the power supply to disengage the hinge on the rear.



4 Lift the power supply clear and lay it upside down on the frame above the disk drives.

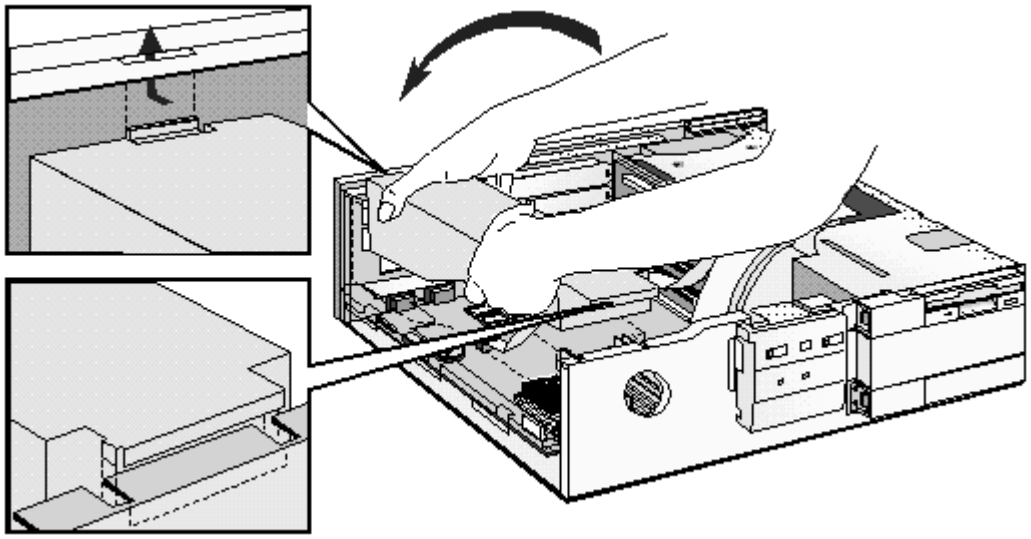


REPLACING THE POWER SUPPLY AFTER INSTALLING ACCESSORIES

1 Ensure that you have installed all your accessories in the PC.

2 Replace the power supply on the left-hand side of the PC, and ensure that the cables are neatly routed around any accessory boards.

3 Raise the front of the power supply and engage the hinge on the rear.



4 Lower the front of the power supply into position so that it rests on the front panel.

INSTALLING MEMORY

MAIN MEMORY MODULES

Your PC is supplied with main memory. If you need more main memory to run your application software, you can install up to a total of 128 MB.

Main memory is available in modules of 4 MB, 8 MB, 16 MB, or 32 MB. You must install identical modules in pairs in each bank.

Banks A and B will take 4 MB, 8 MB, 16 MB or 32 MB modules. Use only 4 MB and 16 MB modules in bank C, as 8 MB and 32 MB modules are not fully detected in this bank. 32 MB modules are not available from HP. You can obtain 32 MB modules from your HP reseller.

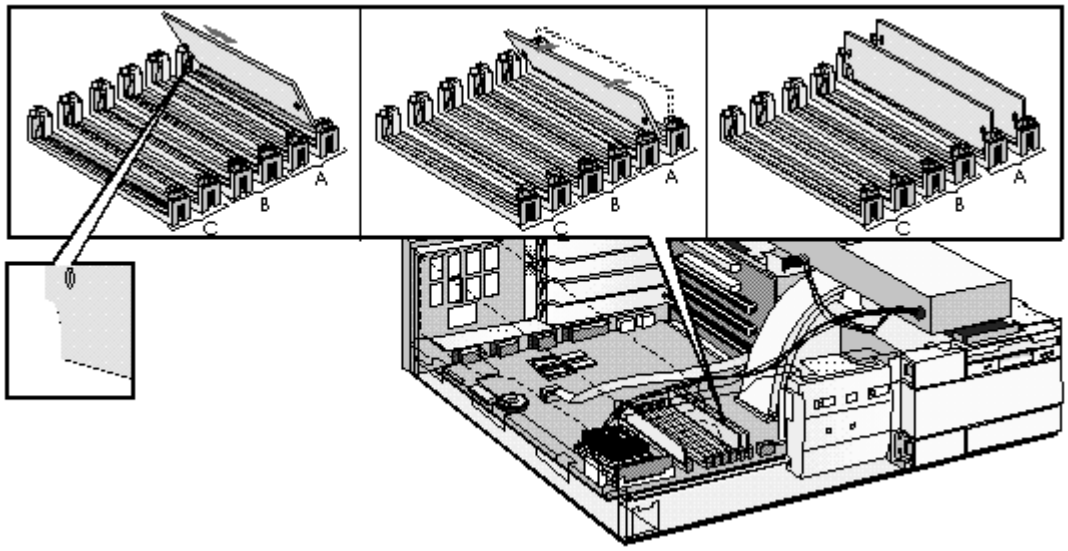
CAUTION:	**Static electricity can damage electronic components. Turn all equipment OFF. Don't let your clothes touch the accessory.To equalize the static electricity, rest the accessory bag on top of the power supply while you are removing the accessory from the bag. Handle the accessory as little as possible and with care.**

To install a main memory module:

1 Disconnect the computer's power supply cord and any connection to a telecommunications network.

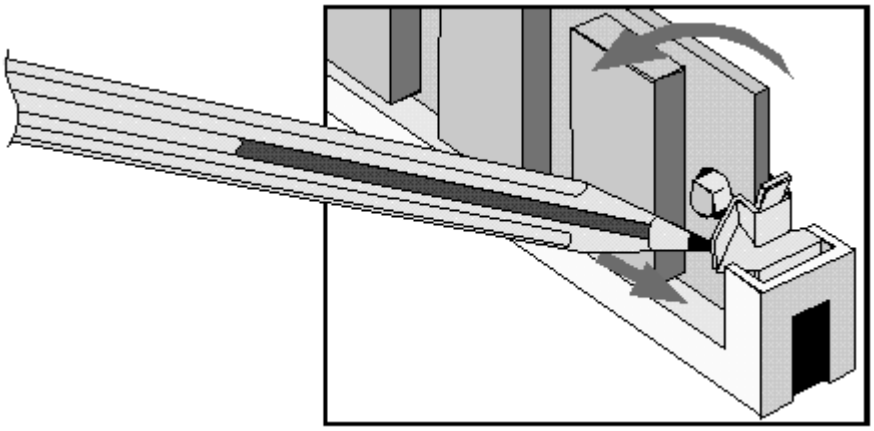
2 Remove the computer's cover and power supply.

3 Align the main memory module directly over the socket. Slide the memory module into the slot at 45°. Firmly press the memory module completely into the connector.



4 Pivot the memory module to the vertical position and click into place.

5 Repeat this procedure for each memory module you are installing.If you need to remove a main memory module:



Release the retaining clip and pull the module forward and out of the socket

6 Install any other accessories before replacing the cover and power supply. Reconnect all cables and power cords.

INSTALLING AN OPTIONAL CACHE MEMORY MODULE

You can install a 256 KB level 2 cache memory module. Order HP D3659A.

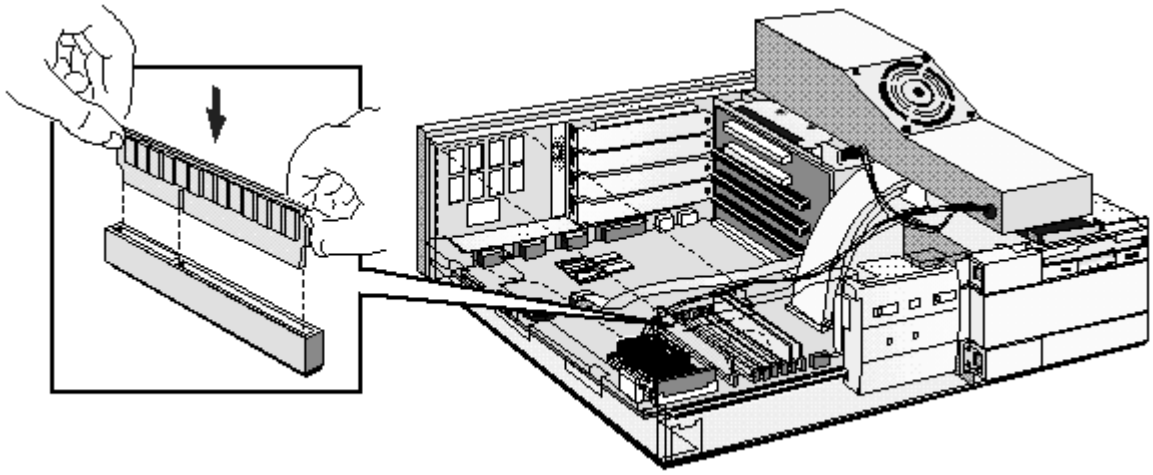
CAUTION:	**Static electricity can damage electronic components. Turn all equipment OFF. Don't let your clothes touch the accessory.To equalize the static electricity, rest the accessory bag on top of the power supply while you are removing the accessory from the bag. Handle the accessory as little as possible and with care.**

To install a cache memory module:

1 Disconnect the computer's power supply cord and any connection to a telecommunications network.

2 Remove the computer's cover and power supply.

3 Align the cache memory module directly over the socket. Firmly press the memory module completely into the connector.



4 Install any other accessories before replacing the cover and power supply. Reconnect all cables and power cords.

INSTALLING A VIDEO MEMORY UPGRADE

Your PC is supplied with 1 MB of video memory on the system board. If you want better performance, higher resolutions or more colors, you can install a pair of video memory modules to increase your available video memory to 2 MB. Detailed information about available video resolutions is given in chapter 5, Technical Information.

CAUTION:	**Static electricity can damage electronic components. Turn all equipment OFF. Don't let your clothes touch the accessory.To equalize the static electricity, rest the accessory bag on top of the power supply while you are removing the accessory from the bag. Handle the accessory as little as possible and with care.**

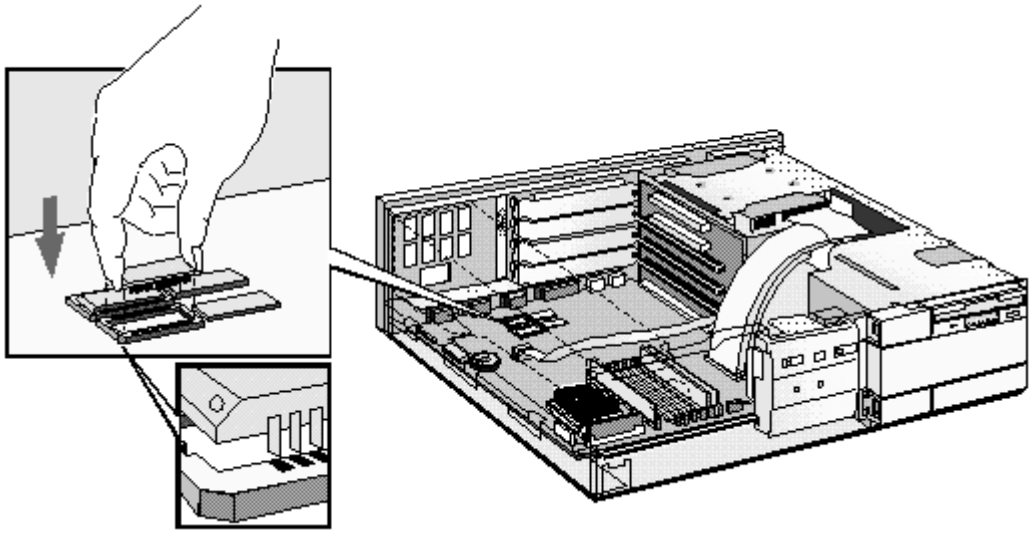
Installing Video Memory Modules

To install a pair of video memory modules on the system board, follow this procedure:

1 Disconnect the power supply cord and any connection to a telecommunications network.

2 Remove the computer's cover and power supply. Refer to "Removing the Cover" and "Moving and Replacing the Power Supply" earlier in this chapter.

3 Align the video memory module directly over the socket taking care to align the dot on the module with the corner notch on the socket as illustrated in the diagram. *Firmly* press the memory module *completely* into the connector. Video memory modules must be installed in pairs.



4 Install any other accessories before replacing the cover and power supply. Reconnect all cables and power cords.

After Installing a Video Memory Upgrade

1 Switch on the PC.

2 Select HP User Tools.

3 Click on the Video Mode button and follow the screen messages. You may be asked to insert a diskette containing an appropriate video driver in drive A. For the latest available version of a required driver, refer to the "HP BBS Library" in chapter 7.

INSTALLING ACCESSORY BOARDS

The PC has four accessory board slots:

- Slot 1 (the top slot) can be used for a 32-bit PCI board
- Slot 2 can be used for either a 32-bit PCI or a full-length 16-bit ISA board
- Slot 3 can be used for full-length 16-bit ISA boards
- Slot 4 (the bottom slot) can be used for short-length 16-bit ISA boards (16 cm/6.3-inch maximum length).

CONFIGURING ACCESSORY BOARDS WITH PLUG AND PLAY

Plug and Play is an industry standard for automatically configuring your PC's hardware resources and the accessory boards installed in it. Your PC has configurable support for Plug and Play in the BIOS.

NOTE	All PCI accessory boards are Plug and Play, although not all ISA boards are. Check the accessory board's documentation if you are unsure.

When you start your PC after installing an accessory board, the Plug and Play BIOS automatically detects which hardware resources (IRQs, DMAs, memory ranges, and I/O addresses) are used by the system-based components.

CONFIGURING NON-PLUG AND PLAY ISA ACCESSORY BOARDS

If you install an ISA accessory board that is not Plug and Play you will need to configure the board before your PC can use it.

Windows 3.11

For Windows 3.11 you must run the ISA Configuration Utility (ICU) program to declare the resources used by the board:

1 Double-click on the Plug and Play group icon in the Windows Program Manager.

2 Double-click on the ICU Notes icon for up-to-date information about the Plug and Play support for your PC.

3 Double-click on the ICU User Guide icon for detailed information about using the ICU.

4 Double-click on the ICU icon to launch the ISA Configuration Utility and configure system resources for the accessory board.

The ICU is preloaded with configuration details for many non-Plug and Play accessory boards. If your accessory board is not listed by the ICU, you have two options:

a Some non-Plug and Play accessory boards are supplied with a configuration file, which can be used by the ICU to determine which resources are required by the board. Insert the disk containing the configuration file when prompted by the ICU.

b If you do not have a configuration file for your accessory board, you will need to enter the configuration details manually when prompted by the ICU. Refer to the documentation supplied with your accessory board for information on the resources required by the board.

Windows 95

For Windows 95 you will need to run the **Add New Hardware** wizard to configure the accessory board. The settings selected by Windows 95 may be different from those recommended by the board's manufacturer. Should this be the case, it might be necessary to alter the board's jumpers. Refer to the documentation supplied with Windows 95 for further details.

Other Operating Systems

For other operating systems, refer to the documentation supplied with the operating system for details on how to configure non-Plug and Play accessory boards.

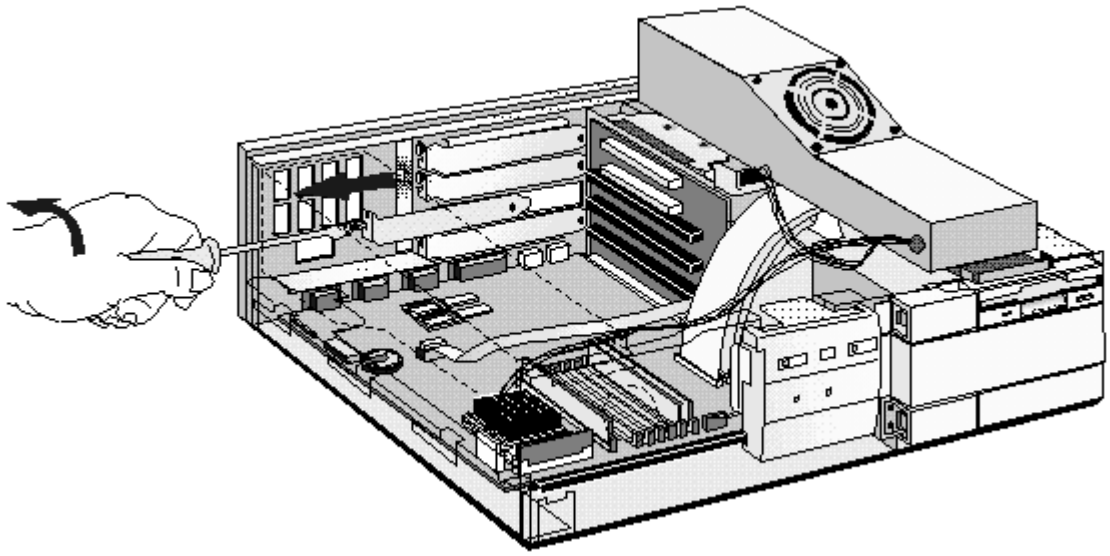
INSTALLING THE BOARD

1 Disconnect the computer's power supply cord and any connection to a telecommunications network.

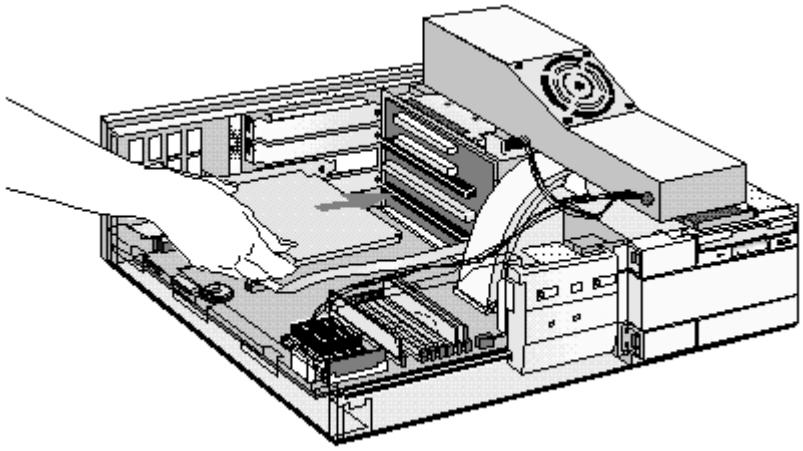
2 Remove the computer's cover and power supply.

3 Find a free slot. Some boards may have preferred locations and special installation instructions detailed in their manuals.

4 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.

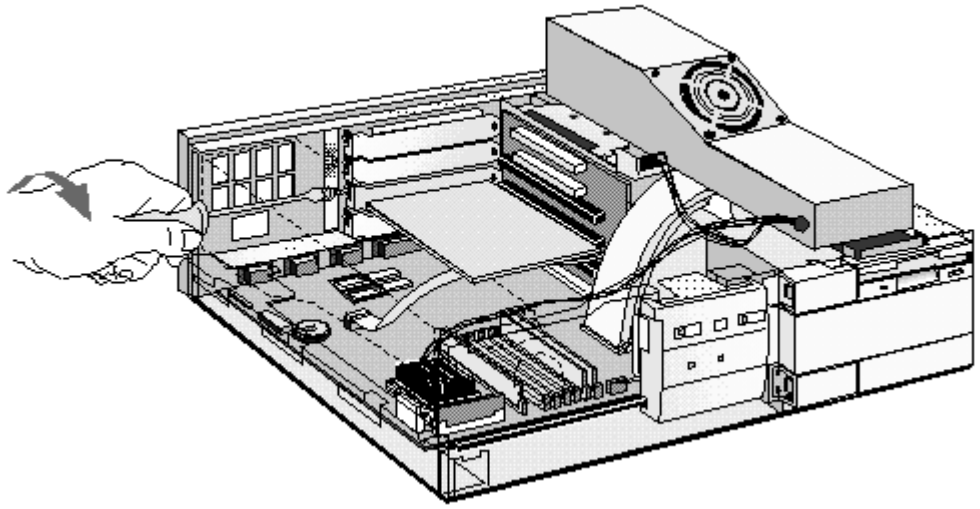


5 Hold the board horizontally by its “top” edge. Slide it into the board guide of the chosen slot. Do not bend the board.

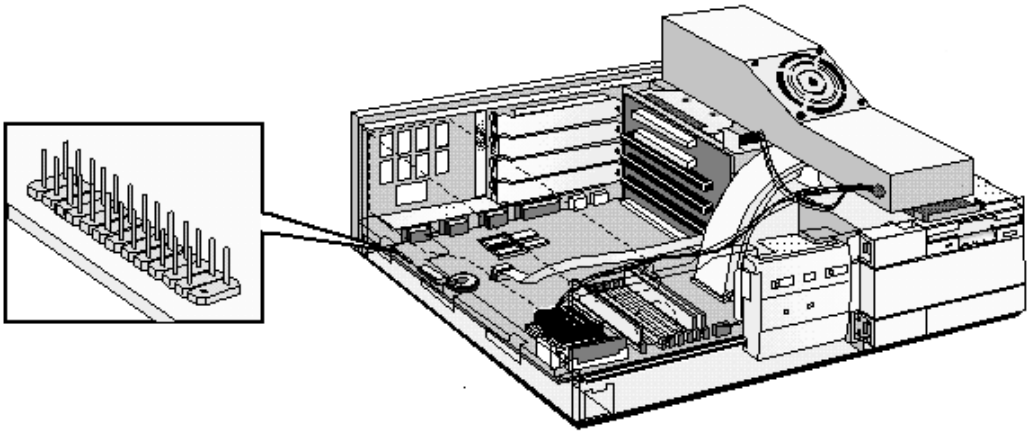


6 Align the board’s connector with the slot’s socket and firmly press into the socket. Ensure the board’s connector engages completely with the socket and does not touch components on other boards.

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



8 If you install a VESA-standard video adapter board which uses the integrated video graphics controller, connect the accessory board's cable to the VESA pass-through connector on the system board.



9 Install any other accessories before replacing the power supply and the cover. Reconnect all cables and power cords.

INSTALLING MASS STORAGE DEVICES

You can install additional mass storage devices, if you need extra mass storage space for your application software.

The PC has one internal drive shelf for a hard disk drive. If your PC already has a hard disk drive, this shelf will be occupied.

There are three front access drive shelves. The top shelf is occupied by a 3.5-inch flexible disk drive. The middle shelf can be used to install a 5.25-inch flexible disk drive or a CD-ROM drive. The bottom shelf can be used to install a 1-inch high, 5.25-inch or 3.5-inch front access device, or to install a second hard disk drive internally.

Your PC has the following connectors on the system board which can be used by mass storage devices:

- a flexible disk drive connector, which supports up to two flexible disk drives
- two Enhanced IDE device connectors.

NOTE	You can install a non-IDE hard disk drive or CD-ROM device, but it will need an accessory board and driver software (usually supplied with the device). Contact the product vendor for further information.

CONFIGURING A DEVICE AFTER INSTALLATION

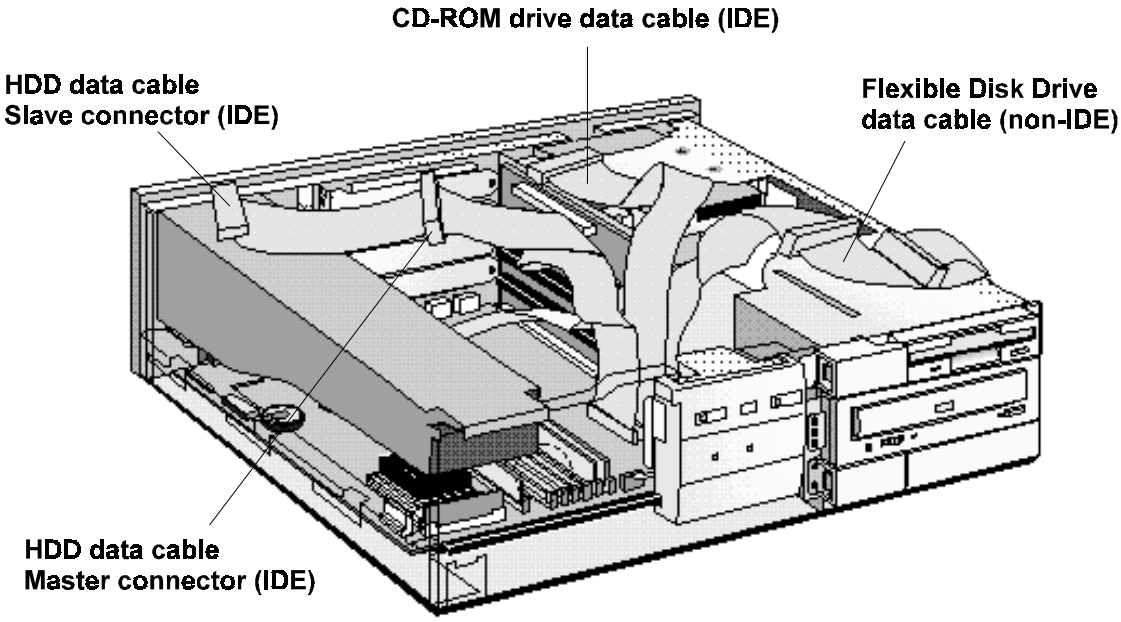
After installing a second IDE drive or a flexible disk drive, you will need to run the *Setup* program to configure the device. Refer to “The HP Setup Program” (chapter 4) for details of how to do this.

CONNECTING IDE DEVICES

There are three data cables inside your PC. Two of these are for IDE devices:

- The first cable is marked “HDD” next to the system board attachment. It has two drive connectors. The middle connector of this data cable must be connected to the bootable or master hard disk drive.

- The second data cable has only one drive connector. It is red and marked “CD-ROM” next to the system board attachment.



Up to three IDE devices can be connected to the system board using these data cables.(Refer to the storage device's manual to check whether you need to set jumpers, or if there are any special installation procedures.)

Before Installing an Additional IDE Drive

Create a bootable diskette before installing an additional IDE drive. Refer to the operating system documentation for information on how to create a bootable diskette, format a drive, and install the operating system.

Examples of multiple IDE drive combinations

Configuration	Connections to data cables	
1 Hard disk drive	1. Bootable hard disk drive:	Master connector, HDD data cable
2 Hard disk drives	1. Bootable hard disk drive:	Master connector, HDD data cable
	2. Second hard disk drive:	Slave connector, HDD data cable
3 Hard disk drives	1. Bootable hard disk drive:	Master connector, HDD data cable
	2. Second hard disk drive:	Slave connector, HDD data cable
	3. Third hard disk drive:	CD-ROM data cable connector
1 Hard disk drive	1. Bootable hard disk drive:	Master connector, HDD data cable
1 CD-ROM	2. CD-ROM:	CD-ROM data cable connector
2 Hard disk drives	1. Bootable hard disk drive:	Master connector, HDD data cable
1 CD-ROM	2. Second hard disk drive:	Slave connector, HDD data cable
	3. CD-ROM:	CD-ROM data cable connector

Data Transfer Rates

If you install two IDE devices with different data transfer rates on the same data cable, the data transfer rate of the faster IDE device will be reduced to match the rate of the slower IDE device.

After Installing an IDE Device

After installing a second IDE drive, you will need to run *Setup* to confirm that the drive has been detected by the PC. Refer to “After Installing an IDE Drive” in chapter 4.

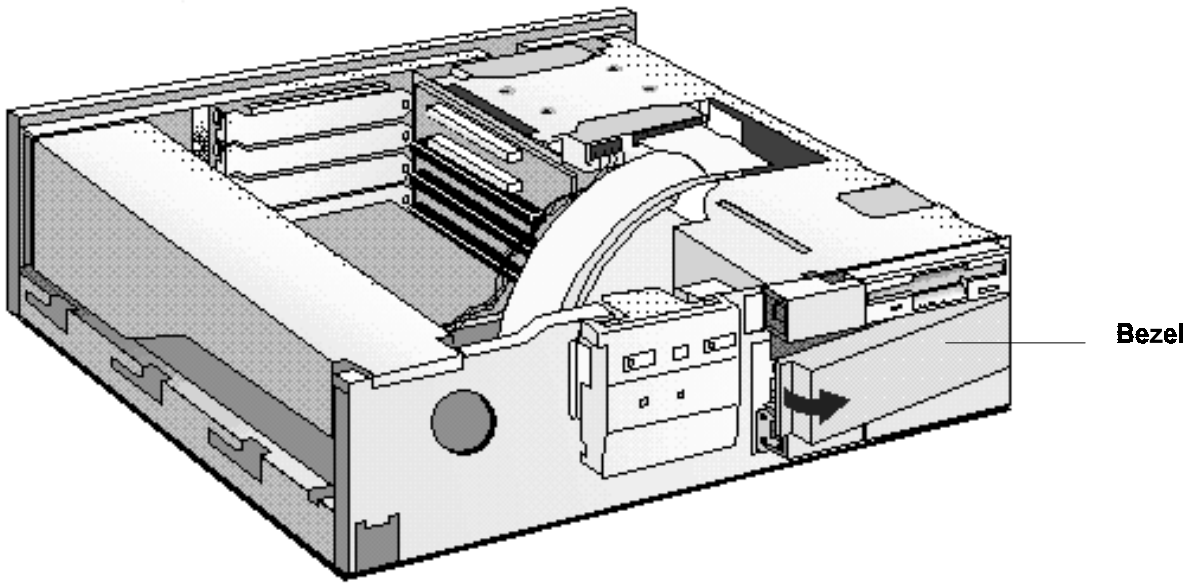
In addition, a newly installed CD-ROM may require that you install an appropriate device driver. Refer to your operating system documentation for details. For information on how to obtain the latest available drivers from HP, refer to the "HP BBS Library" in chapter 7.

INSTALLING A FLEXIBLE DISK DRIVE OR A CD-ROM DRIVE IN THE MIDDLE SHELF

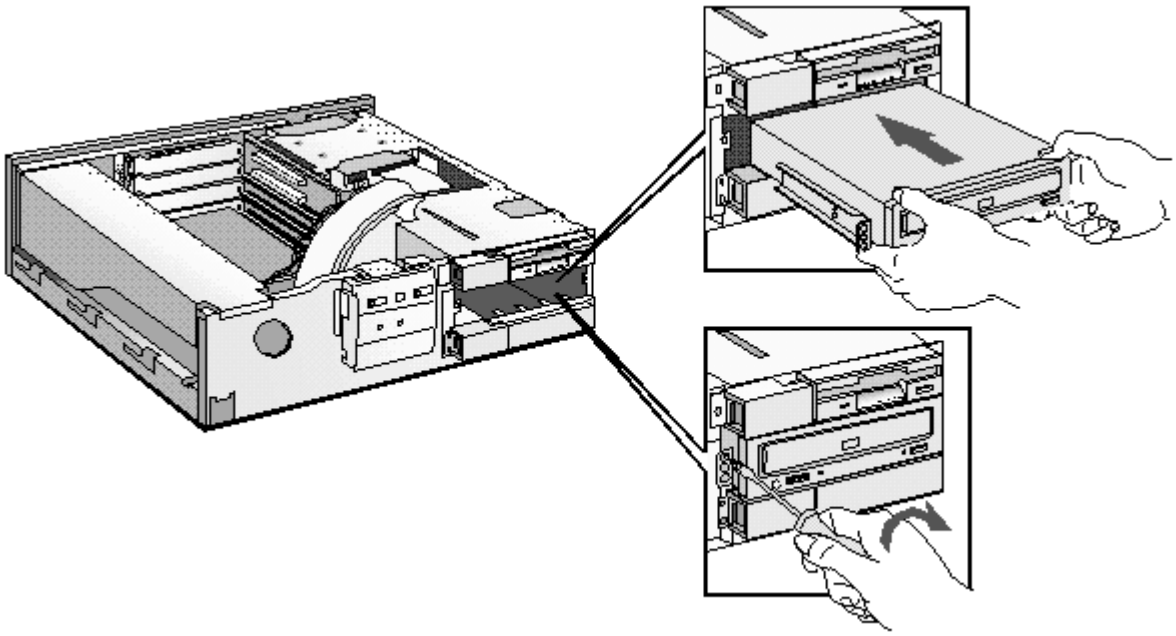
1 Disconnect the computer’s power supply cord and any connection to a telecommunications network.

2 Remove the computer’s cover.

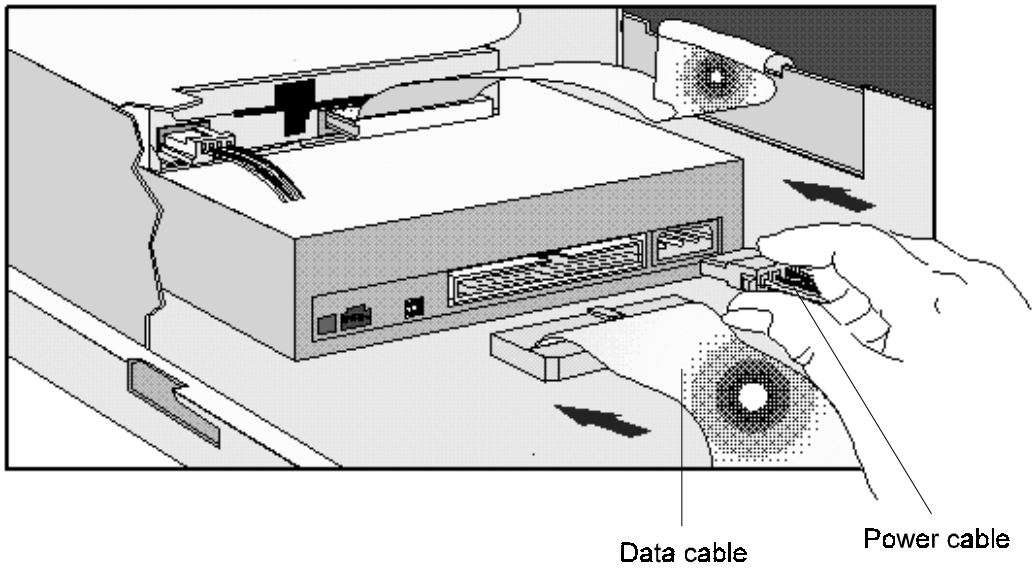
3 Remove the bezel from the middle shelf. The bezel snaps in and out, and can be removed without any tools. Put it in a safe place in case you remove the drive at a later time and need to cover this shelf.



4 Slide the device into the middle shelf using mounting rails, and secure the device in position using the screws provided.



5 Connect the data and power cables to the rear of the device installed in the middle shelf. The connectors are shaped to go in one way only. If you are installing an IDE CD-ROM drive, connect the drive to the CD-ROM data cable. This data cable should be connected to the connector marked “CD-ROM” on the system board. If you are not sure which connector to use, refer to "Connecting IDE Devices" earlier in this chapter.



6 Install any other accessories before replacing the cover. Reconnect all cables and power cords.

WARNING:	**Do not open the CD-ROM drive enclosure as there is a danger of electric shock, and the laser beam light could harm your eyes. Service should be carried out by qualified personnel.**
	This PC is a class 1 laser product. To avoid discomfort from unexpected noise, always turn the volume down before connecting headphones or speakers. Listening to loud sounds for prolonged periods may permanently damage your hearing.
	Before putting on headphones, place them round your neck and turn the volume down. When you put on the headphones, slowly increase the volume until you find a comfortable listening level and leave the volume control in that position.

INSTALLING AN IDE HARD DISK DRIVE IN THE REAR SHELF

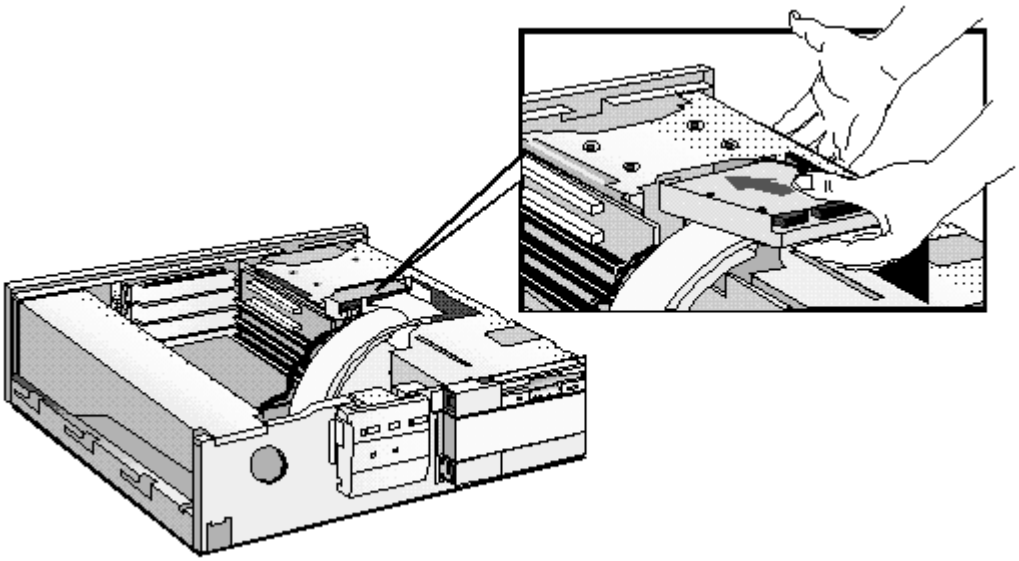
The PC has an integrated Enhanced IDE controller which supports two Fast IDE hard disk drives.

Refer to the drive's manuals to see if you must set jumpers or if there is a special installation procedure to follow.

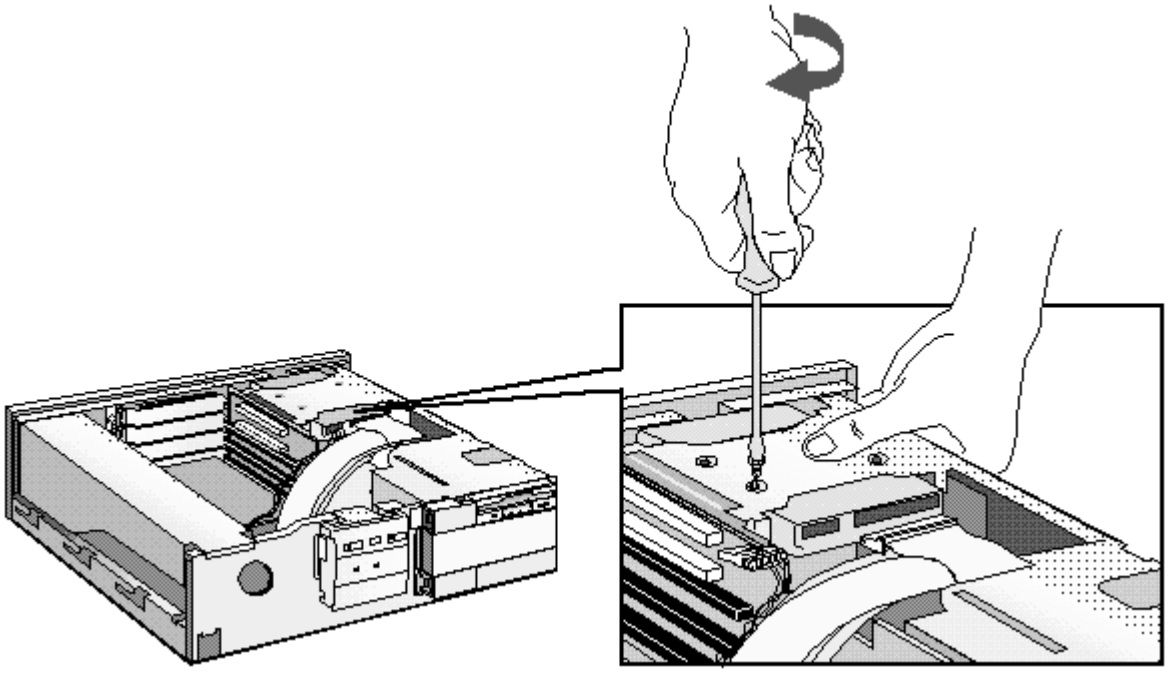
1 Disconnect the computer's power supply cord and any connection to a telecommunications network.

2 Remove the computer's cover.

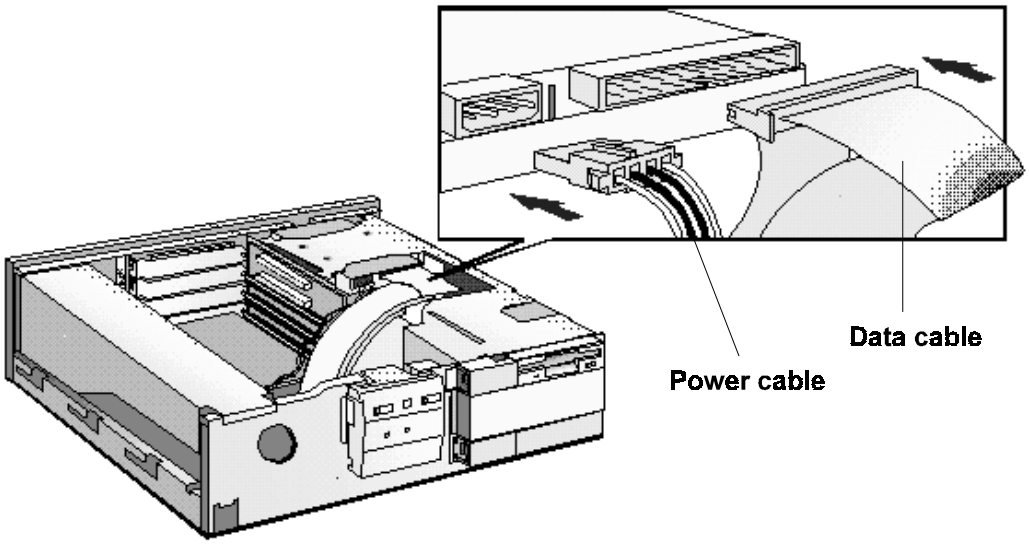
3 Slide the drive into the rear drive shelf, supporting the drive with your hand.



4 Align the drive with the holes in the rear drive shelf. Then secure the drive with the screws provided with it.



5 Connect the power cable and the data cable to the rear of the drive. *The connectors are shaped to go in one way only*.



6 Install any other accessories before replacing the cover. Reconnect all cables and power cords.

INSTALLING AN IDE HARD DISK DRIVE IN THE BOTTOM SHELF

The PC has an integrated Enhanced IDE controller which supports two Fast IDE hard disk drives.

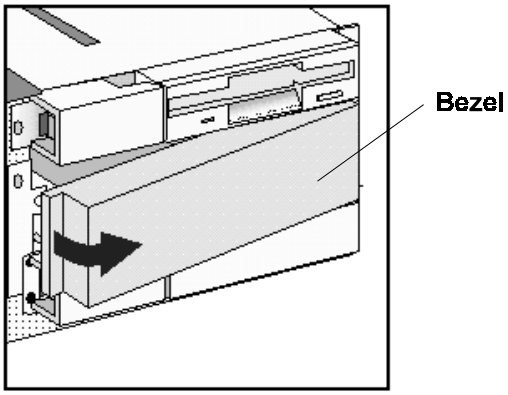
Refer to the drive's manual to see if you must set jumpers or if there is a special installation procedure to follow.

1 Disconnect the computer's power supply cord from the power outlet. Disconnect any connection to a telecommunications network.

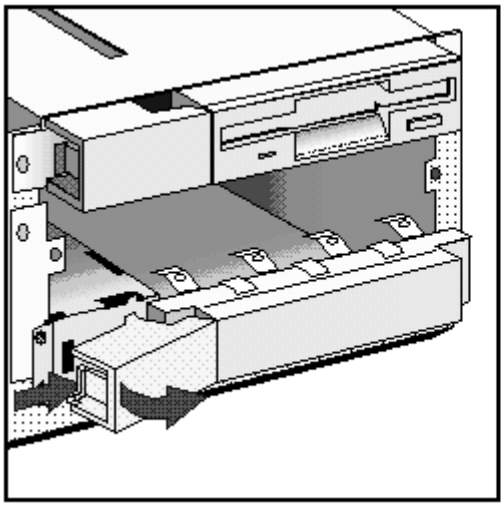
2 Remove the computer's cover.

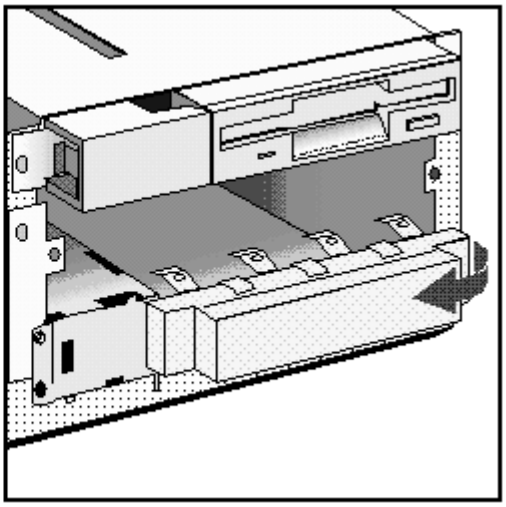
3 If there is a device in the middle shelf, remove it.

4 If there is no device in the middle shelf, remove the bezel. The bezel snaps in and out, and can be removed without any tools.

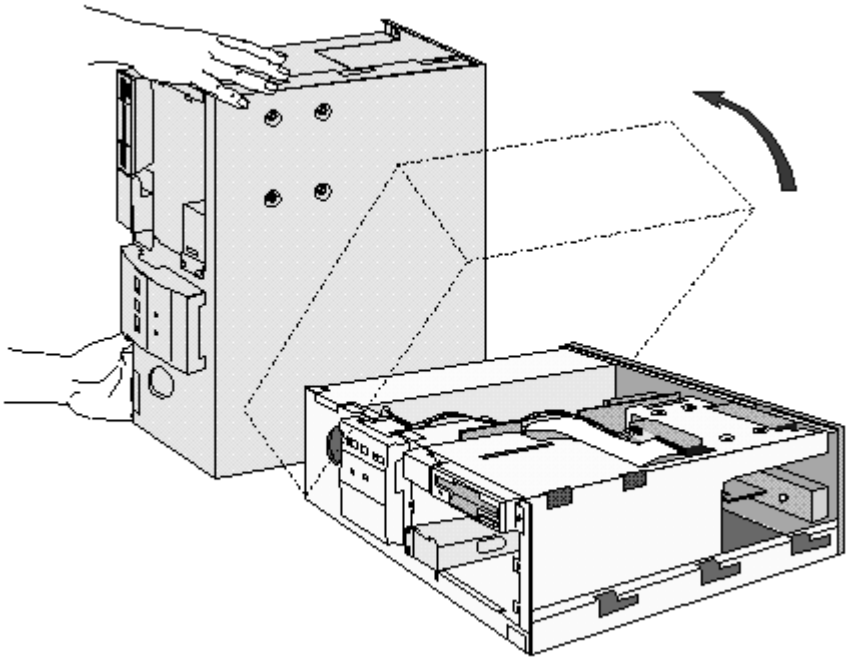


5 Remove the two bezels from the bottom shelf.

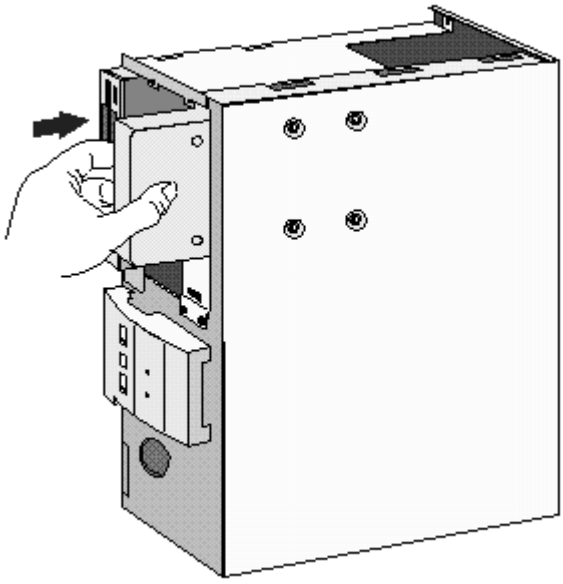




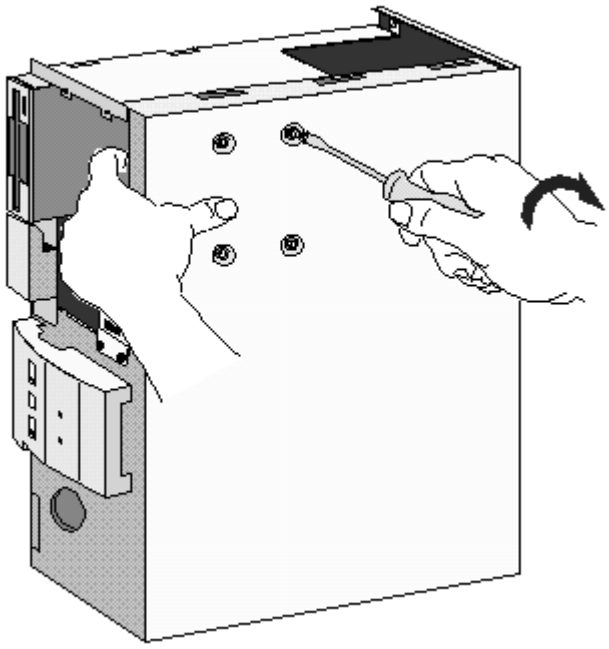
6 Support the power supply with your hand (to prevent it falling out) and carefully turn the PC onto its side.



7 Slide the hard disk into the bottom shelf, supporting the disk with your hand.

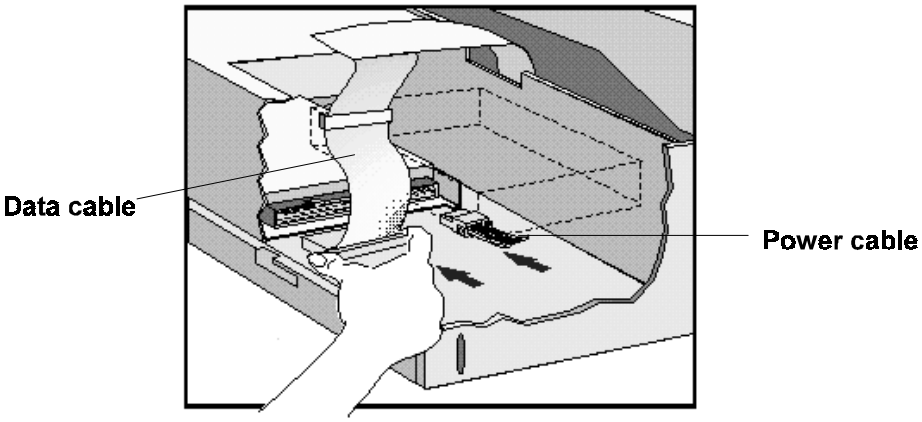


8 Align the drive with the holes in the bottom of the PC. Support the drive with your hand while securing the drive with the four screws provided.



9 Support the power supply with your hand and very carefully return the PC to the upright position.

10 Connect the data and power cables to the rear of the drive. *The connectors are shaped to fit one way only*. If you are not sure which connector to use, refer to "Connecting IDE Devices" earlier in this chapter.



11 If a device was removed from the middle shelf, replace it.

12 If no device was removed from the middle shelf, replace the bezel.

13 Install any other accessories before replacing the cover. Replace the side bezel. Reconnect all cables and power cords.

INSTALLING A 5.25-INCH DISK DRIVE IN THE BOTTOM SHELF

A slim (1-inch high) 5.25-inch front access drive can be installed in the bottom shelf.

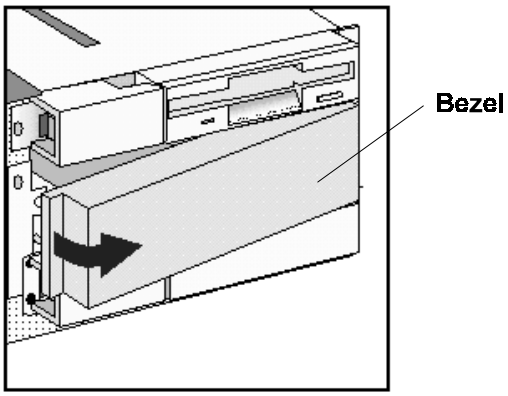
NOTE	Disk drives ordered from HP are supplied with mounting rails. If you order your drive from another supplier, you will need to order drive mounting rails from HP (refer to "Supported HP Accessories", in chapter 1.

1 Disconnect the computer's power supply cord from the power outlet. Disconnect any connection to a telecommunications network.

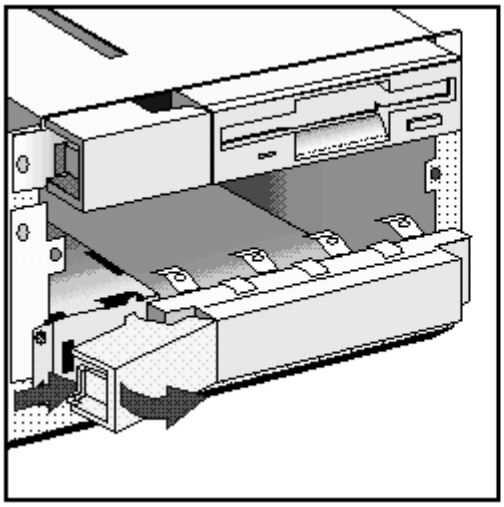
2 Remove the computer's cover.

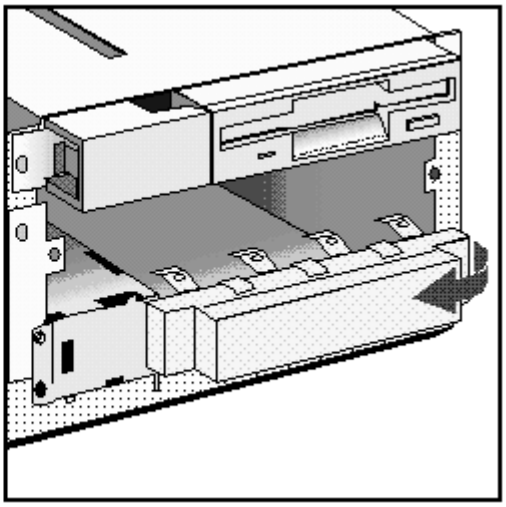
3 If there is a device in the middle shelf, remove it.

4 If there is no device in the middle shelf, remove the bezel. The bezel snaps in and out, and can be removed without any tools.

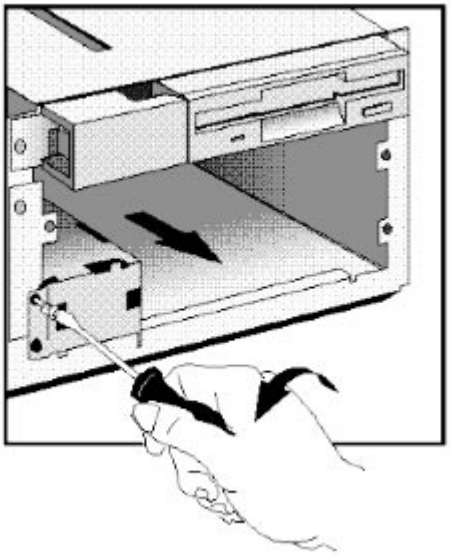


5 Remove the two bezels from the bottom shelf.

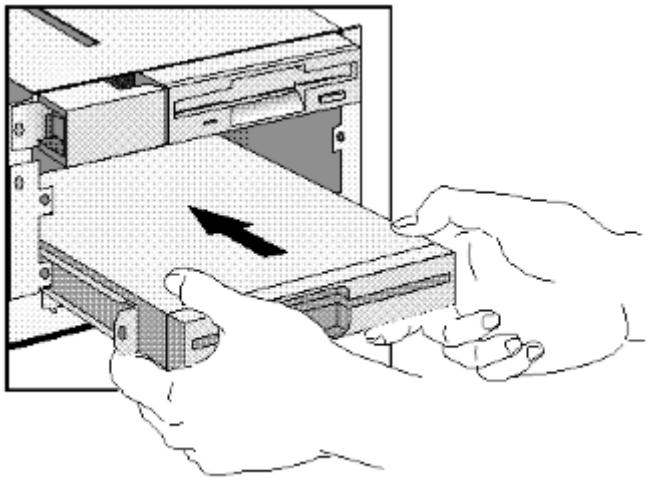




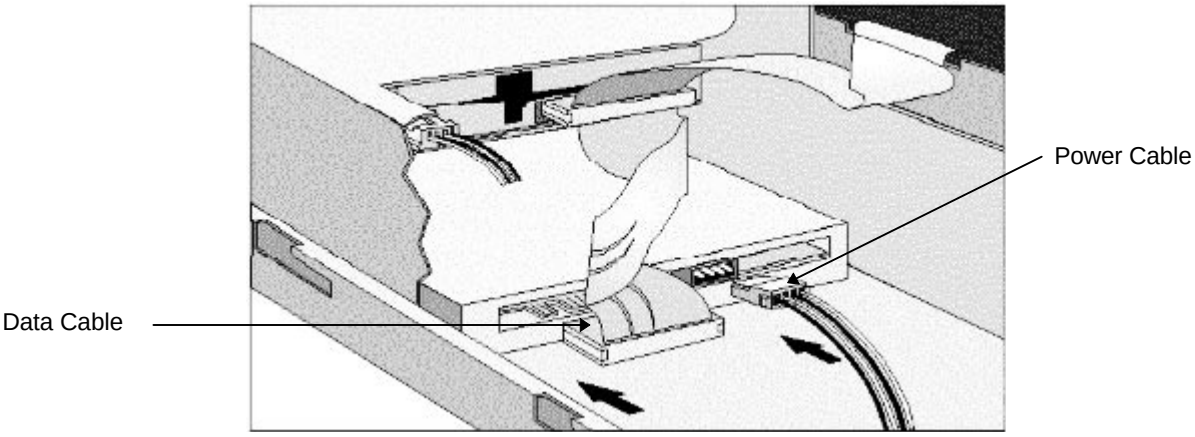
6 Remove the side bracket from the bottom shelf and store it in a safe place.



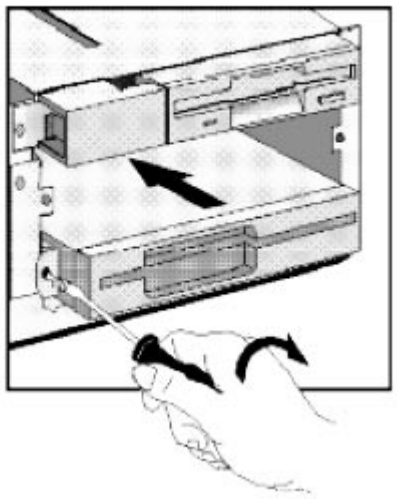
7 Slide the drive mid-way into the bottom shelf.



8 Connect the data and power cables to the rear of the drive.



9 Slide the drive completely into the bottom shelf and secure it with the screws provided with the device.



10 If a device was removed from the middle shelf, replace it.

11 If no device was removed from the middle shelf, replace the bezel.

12 Install any other accessories before replacing the cover. Reconnect all cables and power cords.

INSTALLING A 3.5-INCH DISK DRIVE IN THE BOTTOM SHELF

A slim (1-inch high) 5.25-inch front access drive can be installed in the bottom shelf.

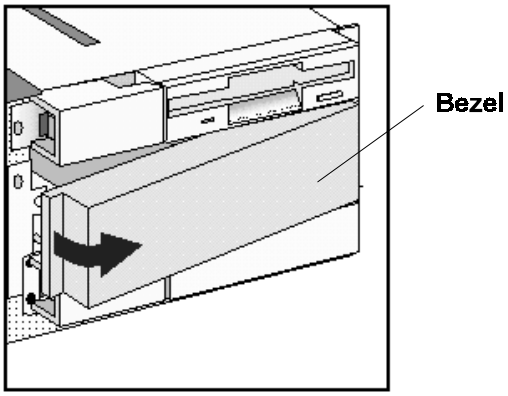
Disk drives ordered from HP are delivered with mounting rails. You will need to order drive mounting rails from HP if you order your disk drive from another supplier.

1 Disconnect the computer's power supply cord from the power outlet. Disconnect any connection to a telecommunications network.

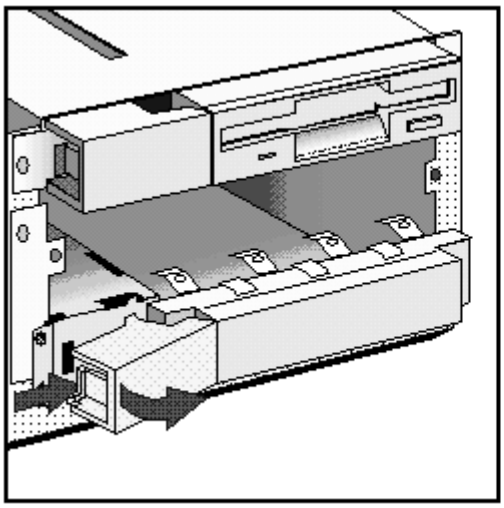
2 Remove the computer's cover.

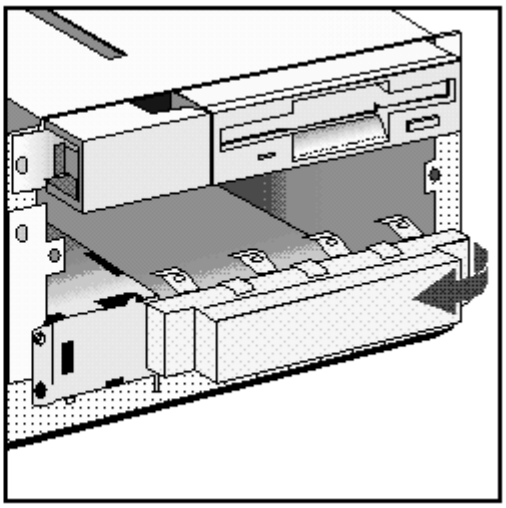
3 If there is a device in the middle shelf, remove it.

4 If there is no device in the middle shelf, remove the bezel. The bezel snaps in and out, and can be removed without any tools.

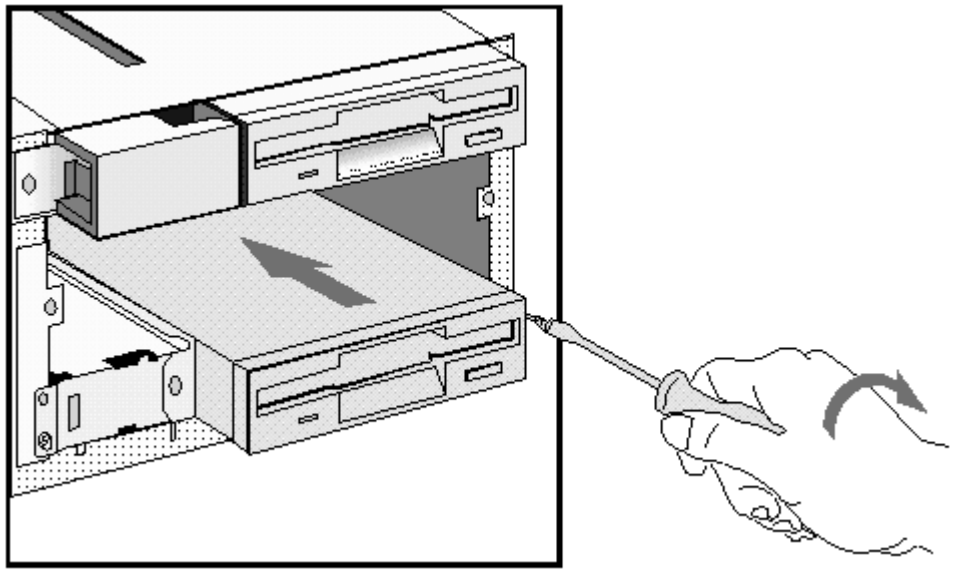


5 Remove the two bezels from the bottom shelf.

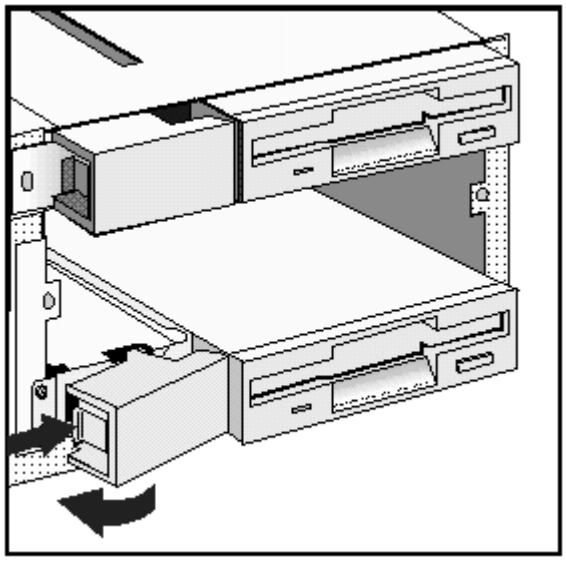




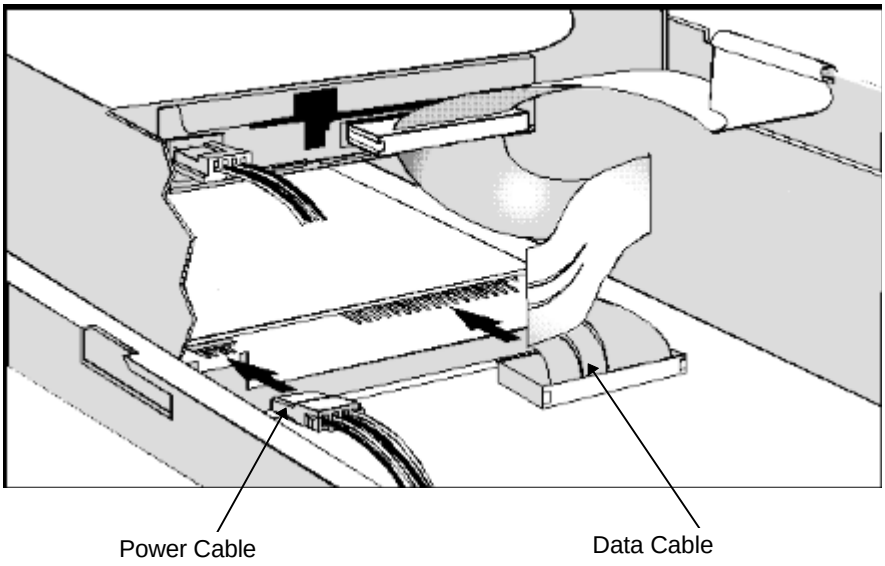
6 Slide the drive completely into the bottom shelf and secure it with the screws provided with the device.



7 Replace the side bezel.



8 Connect the data and power cables to the rear of the drive. *The connectors are shaped to fit one way only*.



9 If a device was removed from the middle shelf, replace it.

10 If no device was removed from the middle shelf, replace the bezel.

11 Install any other accessories before replacing the cover. Reconnect all cables and power cords.

INSTALLING AN UPGRADE PROCESSOR

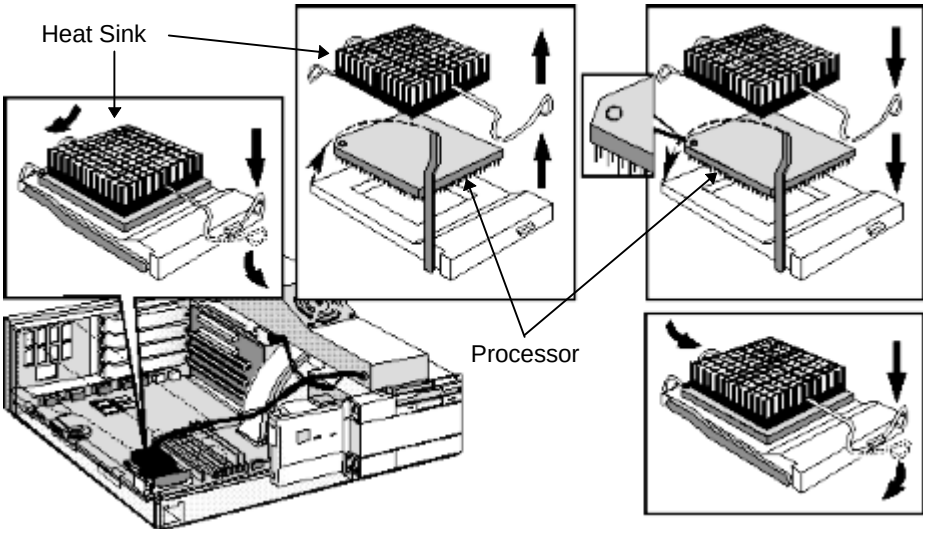
As more powerful upgrade processors become available, you can replace your main processor with a more powerful one.

1 Disconnect the computer power cords from the power outlets,. Disconnect any connection to a telecommunications network.

2 Remove the computer's cover and lift the power supply from it's seating as described in "Moving and Replacing the Power Supply" earlier in this chapter.

3 If the heatsink is not attached to the processor, unclip and remove the heatsink.

4 Raise the lever on the socket to unlock the processor and lift out the processor.



5 To install the new processor:

a Locate the corner markers:
- on the processor—a dot or notch (“broken” corner)
- on the processor socket—a dot.

b Position the processor over the socket, with it’s corner marker facing the corner marker on the socket.
c Place the processor into the socket.
d Lower the lever to lock the processor into place.
e Replace the heatsink and fasten the clip, if the heatsink is not attached to the processor.

6 Set the switches on the system board for the correct processor speed. Refer to the section “System Board Connectors and Switches” in chapter 6. If you use an Intel Overdrive processor, refer to the instruction leaflet supplied with the processor to see whether you should change the position of any switches on the system board.

7 Replace the computer’s power supply and cover. Reconnect all cables and power cords.

After Installing an Upgrade Processor

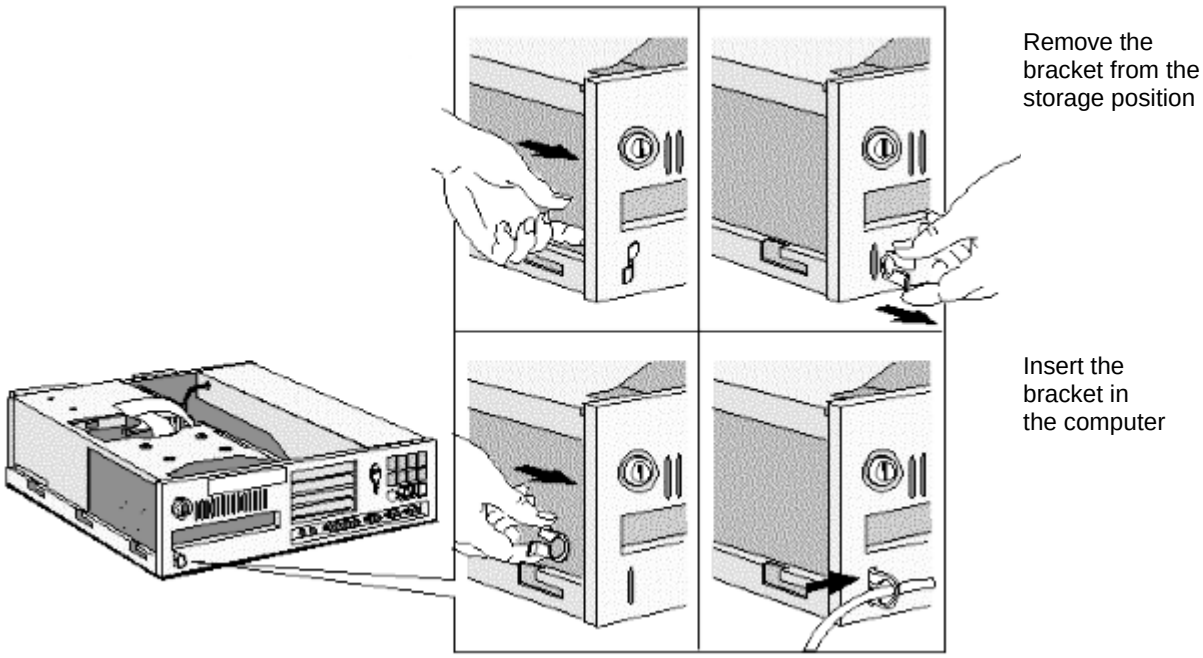
Switch on the PC and verify that the new processor is recognized by the Power-On-Self-Test.

INSTALLING THE SECURITY BRACKET

The security bracket supplied with the computer can be used to fasten the computer to your desk.

1 Remove the computer’s cover (refer to "Removing the Cover" earlier in this chapter).

2 Remove the security bracket from the storage position.



3 Insert the security bracket, from inside the computer, into the slot shown in the diagram above.

4 Press it firmly until it snaps into place.

5 Install any other accessories before replacing the cover.

4 THE HP SETUP PROGRAM

This chapter describes how to use the HP *Setup* program.

USING THE HP SETUP PROGRAM

Setup is an integrated (ROM-based) program that displays the PC's configuration and allows you to set parameters.

Check the configuration when you first use the PC and each time after you install, remove, or upgrade accessories.

If an error message is displayed, see chapter 5, Troubleshooting Your PC.

NOTE	If you are unable to change the PC's configuration, check that you entered the correct password when you started *Setup* and whether the Secure switch (system board switch 8) is set to the OPEN position. For further information on switches refer to "System Board Connectors and Switches" in chapter 7.

The BIOS *Setup* is menu-driven, enabling you to easily access all the options which are grouped in the following categories:

- Main
- Preferences
- Configuration
- Security
- Power, and
- Exit

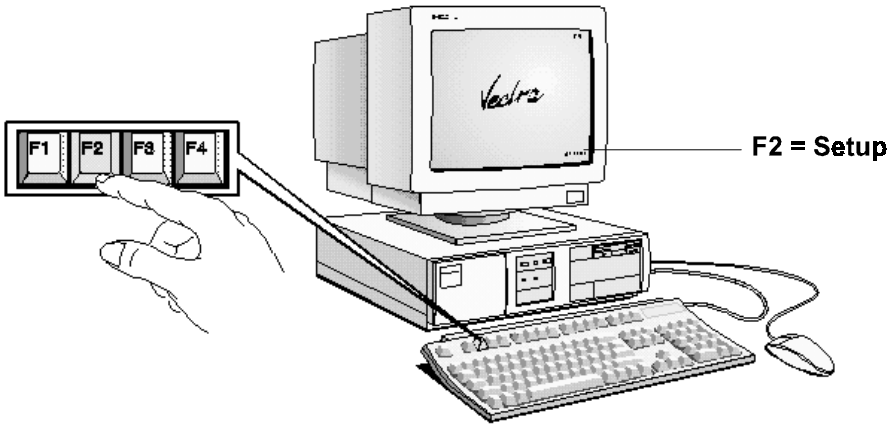
A solid right arrow indicates categories which have sub-menus.

STARTING THE SETUP PROGRAM

1 Turn on the display and then the PC.

If the PC is already turned on, save your data and exit all programs, then press [CTRL] [ALT] and [DEL] to restart the PC (Windows 3.11). For Windows 95, use the `Shut Down` command.

2 Press [F2] while F2=Setup is displayed at the bottom of the screen. F2=Setup appears for a short period, during the POST (Power-On-Self-Test).



NOTE	If you fail to press [F2] in time and the start-up process continues, you will need to restart your PC to go through the POST again so you can press [F2].

3 The PC's *Setup* program will display.

PhoenixBIOS Setup Copyright 1985-95 Phoenix Technologies Ltd.
Copyright 1995 Hewlett-Packard Rev. GW.O5.xx

Main	**Preferences**	**Configuration**	**Security**	**Power**	**Exit**	**Item-Specific Help**
System Time :		[7:24:06]				If you are not running Windows 95, the BIOS setup program will offer you some of the Windows 95 features and optimize the use of hardware resources.
System Date :		[05/24/1995]				
System Memory :		640 Kb				
Extended Memory :		7 Kb				
Running Windows 95		[No]				

F1	**Help**	↑ ↓	**Select Item**	**F7/F8**	**Change Value**	**F9**	**Setup Defaults**
ESC	**Exit**	← →	**Select Menu**	**Enter**	**Select > Sub-Menu**	**F10**	**Previous Values**

- The ↑ or ↓ arrows, [TAB] and [SHIFT] or [TAB] keys can be used to select fields in the current menu.
- The [PAGE UP] key moves to the previous page and the [PAGE DOWN] key moves to the next page in a scrollable menu.
- The [HOME] key moves to the top item, and the [END] key moves to the bottom item, of the current menu.
- Within a field [F7] selects the next lower value and [F8] selects the next higher value.
- [ENTER] displays a sub-menu for menu items marked with a solid right arrow.

- [ESC] or [ALT] + [X] allows you to exit from a sub-menu.
- The ← and → arrows select menus from the menu bar.
- [F9] loads factory-installed default values.
- [F10] restores previous values from CMOS.
- [F1] or [ALT] + H displays the general help screen.
- [ESC] exits from the general help screen.
- Use the [F12] key to exit *Setup* without saving any changes.
- Use the [F3] key to save your settings and exit Setup.

Pressing the ← or → arrow keys while you are on a main menu screen will take you to the next menu option. If, however, you are on a sub-menu screen and you press these arrows, you will stay on that screen.

Use the ↑ and ↓ arrow keys to scroll through the items on the general help screen.

The Setup Configuration Summary

You can view a summary of the PC's configuration if you have chosen to view the POST tests. A summary screen is displayed when the POST has completed. It is displayed for a few seconds only, but you can "freeze" it so that you can verify the configuration. Press the [ESC] key to "freeze" the summary screen. When you have finished reading the summary, press any key to continue.

Setup changes system behavior by modifying the power-on initialization parameters. Setting incorrect values may cause system boot failure. Should this occur, press [F9]. This will load *Setup* default values to recover.

UNDERSTANDING THE SETUP PROGRAM

The built-in *Setup* program is accessed by pressing [F2] during the PC's Power-On-Self-Test. Online help is provided at the right hand side of the *Setup* screen for each item on the *Setup* screens. When you highlight an item, the help for that item is displayed.

The *Setup* items displayed on your screen may differ from those shown in the following tables.

Setup Items	Defaults	Action
Main		
System Time System Date		Allows you to set the system time and date. Select the field you want to change with Tab, shift Tab, or Enter.
System memory Extended memory	640 KB 15MB*	Allows you to view the system memory and extended memory. Value is typical value, real value depends on your configuration.
Running Windows 95	[No]	Allows you to enable/disable Windows 95. If you are not running Windows 95, the BIOS *Setup* program will offer you some of the Windows 95 features and optimize the use of hardware resources
Preferences		
User Password is	Disabled	Indicates if a user password has been sent.
Set User Pasword		Allows you to set a password to prevent unauthorized access to your PC. You cannot set a user password if an administrator password HAS NOT been set. Setting a user password prevents unauthorized use of your computer, protects the data stored in it, and preserves the preferences you set.
Key Click	On	Turns the audible key click On or Off.
Key auto-repeat speed	21.8 per Second	Determines the number of times per second a keystroke will be repeated when a key is held down.
Delay before auto-repeat*	.50 Second	Allows you to specify the length of the delay before a character is repeated when a key is held down. If you generally press keys slowly and heavily, set the delay to a higher number to make your keyboard less sensitive and avoid letters being displaced more than once.
Numlock at POWER-ON	On	Use this field to specify whether the number keys on the numeric keypad are enabled when your computer starts. Otherwise, the keypad keys act as cursor control keys.

Setup Item	Default*	Action
Configuration		
Integrated Peripherals		
Parallel port	378h IRQ7	Enables or disables the on-board parallel port at the specified address. 'Disabled' frees resources used by the port.
Parallel port node	Centronics™	Sets the operating mode of the parallel port. Other options are: B-Directional; ECP DMA1; or ECP DMA3.
Serial port A	3F8h IRQ4	Enables or disables the on-board serial port A at the specified address. 'Disabled' frees resources used by the port.
Serial port B	2F8h IRQ3	Enables or disables the on-board serial port B at the specified address. 'Disabled' frees resources used by the port.
Flexible disk controller	Enabled	Enables or disables the on-board flexible disk controller.
Flexible disk drive A	1.44 MB, 3½"	Selects flexible disk drive type.
Flexible disk drive B	Not Installed	Selects flexible disk drive type.
A & B flexible disk swap	Disabled	Enable this option only if you need to boot on flexible disk B. Flexible disks A & B will be swapped.

Setup Item	Default*	Action
Video		
Video system	EGA/VGA	Selects video display type.
Video BIOS shadowing	Enabled	Enables or disables video BIOS shadowing for AT external video boards only. Enabling the BIOS shadowing improves performance.
Video Plug & Play display	Enabled	This feature will automatically set the best ergonomic refresh rates supported by your DDC display. Switch on the display **before** the PC to enable this feature. If the display does not support DDC, the BIOS might automatically disable the option.
640x480 mode 800x600 mode 1024x768 mode 1280x1024 mode	60Hz 60Hz 60Hz i43Hz	Set your preferred refresh rate for each graphic mode. All refresh rates may not be available for certain color depths. The video BIOS will automatically choose the best fit should this be the case. The higher the refresh rate, the better the ergonomic performance. The lower the refresh rate, the better the video performance. Your display must be able to support the refresh rates (vertical frequencies) you set.

Setup Item	Default*	Action
Memory and Cache		
Memory caching	Both	Controls internal (L1) and external (L2) memory caching.
Memory hole	Disabled	Sets a 1 MB memory hole between 15 MB and 16 MB if needed. You need at least 16 MB for this option to be available.
Shadow/Cache ISA Option ROMs	Disabled	Enables shadowing and caching for ISA "Non PnP" Option ROMs for region X-Y, in order to improve performance. Note that some Option ROMs cannot be shadowed.

Hard Disk Drives		
Hard disk drive 0 (xxxx MB)	642 MB	Configure IDE drive 0. It is not recommended to connect a CD-ROM on a channel which already has an IDE hard disk drive.
Hard disk drive 1 (xxxx MB)	xxx MB	S*ub-menu items for each of these fields are given after "On-board Bus IDE adapters" in this table.*
Hard disk drive 2 (xxxx MB)	xxx MB	
Hard disk drive 3 (xxxx MB)	xxx MB	
Translation method	Extended	Select "Standard" only if you are running a UNIX Operating System.
On-board Bus IDE adapters	Both	Enable or disable the on-board IDE adapters."Primary" enables only the HDD data cable (marked "HDD" next to the system board attachment). "Both" enables the HDD data cable and the CD-ROM data cable (marked "CD-ROM" next to the system board attachment).
Autotype fixed disk		Automatically attempts to detect and identify the IDE drive when you press the Enter key.
Type	User 642 MB	Select "Auto" for automatic hard disk drive detection. (To initiate automatic hard disk detection, press the Enter key at the "Autotype fixed disk" item). "User" allows you to edit all the detected parameters. Select "CD" if drive is an IDE CD-ROM, and "None" if there is no drive.
Cylinders*	944	Sets the number of hard disk drive cylinders.
Heads*	14	Sets the number of hard disk drive heads.
Sectors/Track*	40	Sets the number of hard disk drive sectors per track.
Multi-sector transfers*	8 sectors	Determines the number of sectors per block for multiple sector transfers.
LBA mode control*	Enabled	Enable or disable Logical Block Addressing mode in place of Cylinder Heads Sectors.
32 bit I/O	Enabled	Enable or disable 32 bit data transfer.
Transfer mode*	PI0 mode 3	Selects the hard disk drive transfer mode and data transfer rate.
* Only available if "User" mode has been selected as "Type".		

PC I Devices		
Slot #1 Bus Master	Enabled	Enable this option if you need the BIOS to set the PCI Bus Master bit. This could be necessary for some old PCI cards.
Slot #2 Bus Master	Enabled	
Slot #3 Bus Master	Enabled	
PCI IRQ line 1	Auto	Select an IRQ number only if necessary (for example for SCO-UNIX).
PCI IRQ line 2	Auto	
PCI IRQ line 3	Auto	
PCI IRQ line 4	Auto	

Setup Item	**Default***	**Action**
Security		
Administrator Password is	Disabled	Indicates whether administrator password is enabled.
Set Administrator Password*		Allows you to set the administrator password. This password prevents unauthorized access to the PC's configuration and can also be used to start the PC.
Password on boot	Enabled	Enable or disable password prompt on boot.
Start with keyboard locked	Disabled	This feature allows the PC to start automatically, without waiting for a password to be typed in, but the keyboard will be locked. Only the user password can unlock the keyboard. This option is only displayed if a user password has been set and is not available if you are running Windows 95. When the PC is started with the keyboard locked, the Caps Lock LED flickers until the keyboard is unlocked.
Boot on flexible disk drive	Enabled	Enables or disables boot on flexible disk drive.
Write on flexible disk drives	Enabled	Enables or disables writes on flexible disk drives. Disabling prevents data being copied in your absence.
Use of flexible disk drive	User	Limits the use of flexible disk drive(s) to the user or the administrator, depending on the boot password. Password on boot must be enabled for this option to be set.
Boot on hard disk drive	Enabled	Enables or disables boot on hard disk drive.
Fixed disk boot sector	Not protected	Write-protects boot sector on hard disk to protect against viruses.
Boot on CD-ROM	Enabled	Enables or disables boot on CD-ROM.
Space-bar POWER-ON	Enabled	Enables or disables the space-bar to power-on the PC.

Setup Item	Default*	Action
Power		
Standby Delay	30 minutes	Sets the period of inactivity before the system runs in Standby mode. Standby mode slows down the processor. The delay is an approximate time, depending on the CPU speed.
Standby Wakeup		
Mouse PS2/IRQ12	Enabled	Enables or disables the system to return to full speed when the mouse is moved.
Suspend Wakeup		
IRQ3 (Serial Port)	Enabled	Enables or disables the system to return to full speed when an IRQ is generated.
IRQ4 (Serial Port)	Enabled	
Save changes and Exit		
Exit without saving changes.		

SETTING PASSWORDS

You can set two passwords, the administrator password and the user password, to provide two levels of protection for your PC.

Administrator Password

Set the Administrator Password to protect the PC's configuration in *Setup*. The Administrator Password must be entered before any *Setup* options, except Preferences, can be modified.

User Password

Setting a User or Administrator Password can provide a power-on password prompt to prevent your PC being started or used in your absence. A user password can only be set if an administrator password has been set. The user password also allows the possibility of starting the PC with the keyboard locked. You must then type the password and press

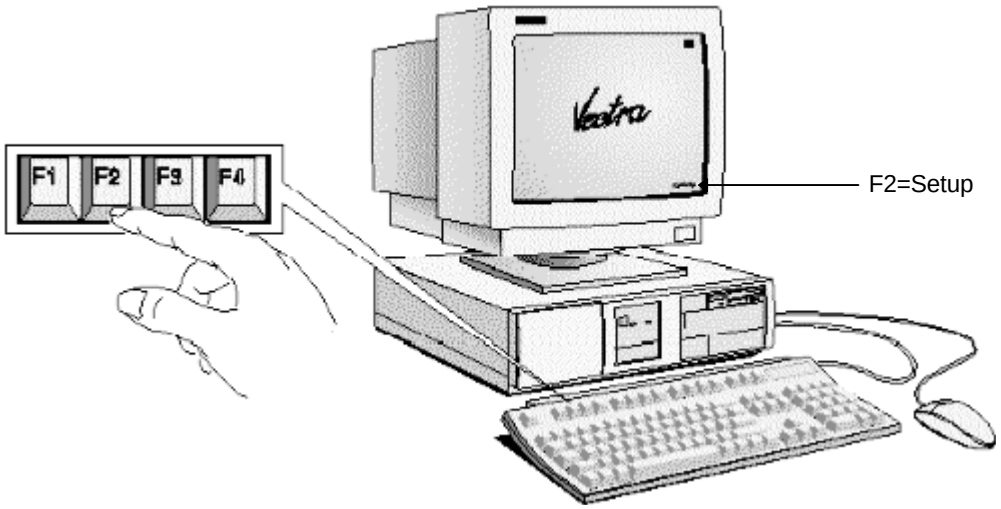
SETTING PASSWORDS

1 Turn on the PC and the display.

If the PC is already turned on, save your data, exit all applications and then press [CTRL] [ALT] and [DELETE] to restart the PC (Windows 3.11). For Windows 95, use the **Shut Down** command.

NOTE	If you forget your password, refer to "If You Have Forgotten Your Password" in chapter 5.

2 When F2=Setup is displayed, press [F2].



3. The PC's *Setup* program will display.

Setting an Administrator Password

- Use the ← or → key to select the **Security** menu item.
- Use the ↑ or ↓ arrow keys to highlight the **Set Administrator Password** field.
- Type the *password* twice and press [ENTER].

4 If you do not set an Administrator password you cannot set a user password.

5 If that is all you want to change in *Setup*, press [F3] to save your password and exit *Setup*.

Setting a User Password

- Start *Setup* as described for setting an administrator password.
- You cannot set a User Password if an Administrator password has not been set.
    - Use the ← or → key to select the **Preferences** menu item.
    - Use the ↑ or ↓ arrow keys to highlight the **Set User Password** field.
    - Type your *password* twice and press [ENTER].

6 If that is all you want to change in *Setup*, press [F3] to save your password and exit *Setup*.

Passwords become effective after you have exited *Setup* and re-booted the PC.

Clearing Passwords

To remove either password, follow the same procedure as to set a password, but do not enter anything in the password field, press return and then press return a second time to confirm your action.

AFTER INSTALLING AN IDE DRIVE

After installing a second IDE drive you will need to run the *Setup* program to confirm that the drive has been detected by the PC.

When an Additional IDE Drive is installed

1 Switch on the PC.

2 When F2=Setup is displayed, press [F2] to run the *Setup* program.

3 From the “Configuration” menu, choose “Hard disk drive”.

4 Select the disk you have just installed.

5 Select **Auto** in the **Type** field.

6 Select **Autotype fixed disk** and press [ENTER].

7 Press [F3] to save your choice and exit *Setup*.

Refer to the operating system documentation for information about formatting a drive and installing the operating system.

If the SCSI Hard Disk Stops Working

If the SCSI subsystem has been operating properly for a reasonable length of time, and if no specific errors appear on the display, the problem may be due to equipment failure. The problem may also be due to some recent change you have made to the system.

1 If you have made recent changes to the software, such as changes to configuration files or drivers, this could cause the problem. Refer to the software documentation for more information.

2 If you have installed a board, ensure there is not a resource conflict between the new board you have added and existing boards. If you have changed the options on an existing board there may be a resource conflict:

   a Remove the new board and restart the computer. If this corrects the problem, the board is either defective, or it is trying to use a system resource used by the SCSI subsystem. Change the board’s settings as needed.

   b Check that the new board is not using memory, I/O addresses, an IRQ, or DMA also used by the SCSI subsystem. Refer to the board’s and SCSI subsystem manuals for more information.

3 Check the SCSI cable for problems that may have been caused by recent computer maintenance, hardware upgrades, or physical damage.

4 If you suspect hardware failure and there are no system error messages, check each component associated with the failure. Equipment failure, however, is the most unlikely reason for a SCSI subsystem failure.

IF YOU LOSE THE KEY

If you lose the key to the PC, you need to order a replacement lock (HP part number 5062-5590) from the 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.

5 TROUBLESHOOTING YOUR PC

This chapter can help you solve problems that you may encounter when using your PC.

SOLVING PROBLEMS

This chapter can help you solve most problems you might have with your PC.

If you are unable to solve your problem after following the advice in this chapter, refer to chapter 7, Hewlett Packard Support and Information Services.

IF YOUR PC DOES NOT START PROPERLY

Use this section if your PC does not start properly when you turn it on, and you experience one of the following symptoms:

- Your PC's display is blank and there are no error messages.
- You cannot change any values in the *Setup* program.
- A POST error message is displayed.

DISPLAY IS BLANK AND THERE ARE NO ERROR MESSAGES

If your display is blank and there are no error messages when you turn on your PC, follow this procedure:

1 Check external items.
2 Check internal items.
3 Reconstruct your PC's components.

Check External Items

Be sure the following external items are functioning properly:

- Check that the computer and display are turned on. (The power light should be illuminated.)

- Check the display's contrast and brightness settings.

- Make sure that all cables and power cords are firmly plugged in.

- Make sure the power outlet is working.

Check Internal Items

If the PC still does not start properly, follow this procedure to check the internal items:

1 Turn off the display, the computer, and all external devices.

2 Unplug all power cords and cables, noting their positions. Disconnect the PC from any telecommunications network.

3 Remove the cover.

4 Check the following items:

Action	Reference
Check all internal cables.	Ensure they are correctly attached and firmly in place.
Check that the processor is correctly installed.	Refer to “Installing an Upgrade Processor” in chapter 3.
Check that the processor speed switches have been set correctly.	Refer to “System Board Connectors and Switches” in chapter 6.
Check that the memory modules are correctly installed.	Refer to “Installing Memory” in chapter 3.
Check that accessory boards are firmly seated in their slots.	Refer to “Installing Accessory Boards” in chapter 3.
Verify that any switches and jumpers on the accessory boards are properly set.	Refer to the manuals that came with each board.
Check that the switches on the system board are properly set.	Refer to “System Board Connectors and Switches” in chapter 6.

5 Replace the cover.

6 Reconnect all cables and power cords.

7 Turn on the display and computer.

Reconstruct Your PC’s Components

If your PC still does not start properly, remove all boards and accessories, except the hard disk drive. Start the PC. If the PC now works, add the boards and accessories one at a time to determine which one is causing the problem.

IF YOU ARE UNABLE TO CHANGE ANY VALUES IN *SETUP*

If the Secure Switch on the system board is set to “closed”, you cannot change any of the values in *Setup.*

1 Turn off the display, the computer, and all external devices.

2 Unplug all power cords and cables, noting their positions. Disconnect the PC from any telecommunications network.

3 Remove the cover.

4 Check the system board switches. Refer to “System Board Connectors and Switches” in chapter 6. Be sure the Secure Switch is set to “open”.

5 Replace the cover.

6 Reconnect all cables and power cords.

7 Turn on the display and computer.

IF A POST ERROR MESSAGE IS DISPLAYED

If a POST error is detected when the PC starts, details of the error are displayed. The BIOS offers two possibilities,

- you can press [F1] to ignore the error and continue, or
- you can press [F2] to run *Setup* and correct the system configuration error.

It is recommended that you correct the error before proceeding, even if the PC appears to start successfully. You should start *Setup* to verify that the accessory which caused the error has been correctly configured.

If the PC then starts, but POST still reports an error, clear the battery backed-up memory (CMOS memory).

Clearing the Battery Backed-Up Memory (CMOS Memory)

If the PC then starts, but POST still persists in reporting an error, clear the current CMOS memory values and reinstall the built-in default values:

1 Turn off the PC, disconnect the power and cables, and remove the cover.

   a Set the system board switch 6 (CMOS STATUS) to CLOSED to clear the configuration.

   b Replace the cover, and reconnect the power and cables.

   c Turn on the PC. This will erase the CMOS memory

   d Wait until the PC has started. The screen will flash with a message similar to this:

   ```
   “Configuration has been cleared, set switch 6 to the OPEN position before rebooting.”
   ```

   Turn off the PC, disconnect the power and cables, and remove the cover.

   e Set the system board switch 6 (CMOS STATUS) on the switch block to OPEN to re-enable the configuration.

2 Replace the cover, and reconnect the power and cables.

3 Switch on the PC. An error message will be displayed similar to this:

   ```
   “System CMOS checksum bad - run SETUP”
   ```

   The PC will stop.

4 Run *Setup* by pressing [F2]. CMOS default values will be automatically downloaded and saved.

5 Make any other changes you want and press [F3] to save the configuration and exit from *Setup*.

Power-On-Self-Test Errors that May Prevent Your PC From Starting

Message	Corrective Action and/or Explanation
Operating system not found	Check whether the disk, HDD, FDD or CD-ROM disk drive is connected.If it is connected, check that it is detected by *Setup*, “After Installing an IDE Drive” on page 71.Check that your boot device is enabled on the *Setup* Security menu.If the problem persists, check that the boot device contains the operating system.
Missing operating system	If you have configured HDD user parameters, check that they are correct. Otherwise, use HDD type “Auto” parameters.
Failure fixed disk (preceeded by a 30” time-out)	Check that HDD is connected.Check that HDD is detected in *Setup*.Check that boot on hard disk drive is enabled in *Setup*, “The HP Setup Program” (chapte 4).
Diskette Drive A (or B) error	Check whether the diskette drive is connected. Check *Setup* for the configuration, “The HP Setup Program” (chapte 4).
System battery is dead	You may get this message if the PC is disconnected for a few days. When you Power-on the PC, run *Setup* to update the configuration information. The message should no longer be displayed. Should the problem persist, replace the battery “Changing the Battery” on page 90.
Keyboard error	Check that the keyboard is connected.
Resource Allocation Conflict -PCI device 0079 on motherboard	Clear CMOS. Refer to “Clearing the Battery Backed-Up Memory (CMOS Memory)” earlier in this chapter.
Video Plug and Play interrupted or failed Re-enable in Setup and try again	You may have powered your PC Off/On too quickly and the PC turned off Video plug and play as a protection.
System CMOS checksum bad - run Setup	CMOS contents have changed between 2 power-on sessions. Run *Setup* for configuration.
I/O device IRQ conflict	Serial ports A and B may have been assigned the same IRQ. Assign a different IRQ to each serial port and save the configuration.
No message, system “hangs” after POST	Check that cache memory and main memory are correctly set in their sockets.
Other	An error message may be displayed and the PC may “hang” for 20 seconds and then beep. The POST is probably checking for a mass storage device which it cannot find and the PC is in Timeout Mode. After Timeout, run *Setup* to check the configuration.

IF YOUR PC HAS A HARDWARE PROBLEM

This section describes what to do if you have problems with your display, disk drives, printer, accessory board, keyboard, or mouse.

DISPLAY DOES NOT WORK PROPERLY

If Nothing is Displayed on the Screen

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

- Make sure that the display is plugged in and switched ON.
- Check that the brightness and contrast controls are properly set.
- Ensure that the display video cable is correctly connected.
- Switch off the display, and unplug it from the power outlet. Disconnect the video cable and examine the video cable connector pins. If the pins are bent, carefully straighten them.
- Check that the video upgrade is properly installed if you have one.
- Check that an accessory board doesn't use the same I/O address as the integrated video interface (03B0h to 03DFh). Refer to the manual supplied with the accessory for further information.
- If the display works correctly during the Power-On-Self-Test (POST), but goes blank when Windows starts, check that you have enough memory for the video mode you have selected.

If Your Display is Blurred or Unreadable

If you select the wrong display in the HP User Tools menu, the display screen may become blurred or unreadable. To correct this problem:

Windows 3.11

1 Restart the PC — either switch the PC off then on, or press [CTRL] [ALT] and [DEL]. The PC will perform its Power-On-Self-Test (POST).

2 When the POST is finished, press [F5] to bypass the startup files and display the MS-DOS prompt (**C:**).

3 Type **CD C:\WINDOWS** [ENTER].

4 Type **SETUP** [ENTER].

5 Press the up-arrow key to select the **Display** line, and press [ENTER].

6 Select the **VGA** line, and press [ENTER].

7 Press [ENTER] again to accept the configuration.

8 Press [CTRL] [ALT] and [DEL] to restart the PC.

9 If necessary, type **WIN** [ENTER] to restart Windows.

10 When Windows starts, select the correct display with HP User Tools.

Windows 95

When you change the display type when using Windows 95, a confirmation box is displayed prompting you to confirm the selection. However, if you have selected the wrong display type and cannot read the screen message because the screen is blurred, the display type will automatically return to the previous selection after approximately 15 seconds.

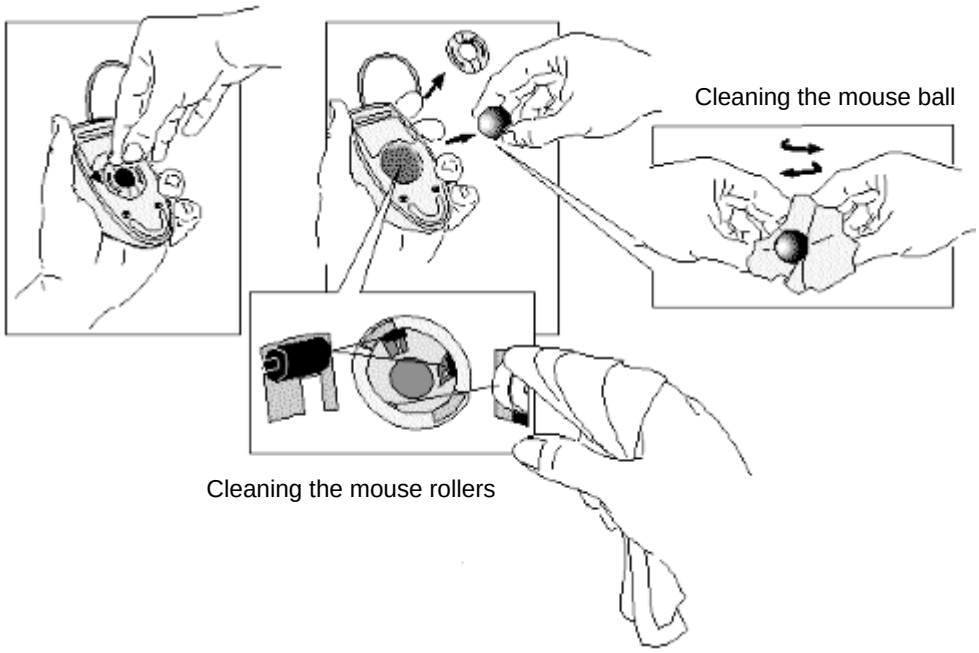
Other Display Problems

If the display image is not aligned with the screen, use the display's controls to center the image. Refer to the display manual for instructions.

If the screens generated by the applications do not appear to be correct, check the application's manual to find out which video standard is required. Also check your display manual to find out which refresh rate is required. Use *Setup,* HP User Tools, or your operating system's procedures to select the correct refresh rate.

IF YOUR KEYBOARD OR MOUSE DOES NOT WORK

- Ensure that the keyboard or mouse is correctly connected.
- Ensure that the mouse driver supplied with the preloaded software is installed correctly. (Choose a Logitech® mouse driver in Windows SETUP.)
- Clean the mouse ball and rollers as shown in the figure below (use a non-residual contact cleaner).



IF YOUR PRINTER DOES NOT WORK

- Make sure the printer's power switch is ON.
- Verify that the power cord is plugged into the power outlet and the printer.

- Verify that you have the correct cable for the printer. Make sure that it is securely connected to the correct connector (port) on the PC and printer.
- Check that the printer is online.
- Examine the paper feed mechanism for a paper jam.
- Make sure that the printer is configured correctly for the PC and for the application.

  a Ensure the PC's port has been correctly configured using *Setup*.

  b Make sure the printer is correctly set up in your operating system's configuration.

  c Ensure the application program's "print" menu has been correctly set up. (Refer to the manual supplied with the application software.)
- Check that the PC's port is working properly by running another peripheral connected to the port.
- If you receive an error message, refer to the printer's manual for help.

IF THE FLEXIBLE DISK DRIVE DOES NOT WORK

- Ensure you are using a formatted diskette and it is inserted correctly.
- Check you are using a diskette that is the right density.
- Check that your flexible disk drive (FDD) is correctly declared in the *Setup* **Configuration** menu.
- Check that the correct diskette type has been configured in *Setup*.
- Check that the flexible disk drive has been enabled in *Setup*. There are three options in the *Setup* Security menu that you can use to disable or enable:

  - Boot on flexible disk drive
  - Write on flexible disk drives
  - Use of flexible disk drive
- Check the option on the *Setup* **Configuration** menu which enables or disables the on-board flexible disk controller.
- Check that the disk power and data cables are correctly connected.
- Clean the flexible disk drive using a diskette cleaning kit.

IF THE HARD DISK DOES NOT WORK

- Check that the disk power and data cables are correctly connected.
- Check that the hard disk drive has been enabled and detected on the **Hard Disk** menu in *Setup*. There is also an option on the *Setup* Security program which allows you to disable or enable boot on hard disk drive.
- Check that the on-board Bus IDE is enabled if you are using the integrated IDE controller.

If the Hard Disk Activity Light Does Not Work

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

- Check that the control panel connector is firmly attached to the system board.
- Check that the disk power and data cables are correctly connected.

NOTE	If you are using a hard disk drive with a controller board (a SCSI hard disk, for example), the activity light does **not** flicker when the PC is accessing the hard disk drive

IF THE CD-ROM DRIVE DOES NOT WORK

- Check that the cables have been properly connected.
- Check that a CD is inserted in the drive.
- Verify that the CD-ROM is declared as “CD” in the *Setup* program on the **Hard Disk Drives** menu.
- Verify that the **On-board Bus IDE Adapters** item is set to **Both** in *Setup*.
- If you intend to boot on CD-ROM, make sure that this option is enabled in *Setup* on the **Security** menu.
- For further information refer to the CD-ROM documentation.

IF AN ACCESSORY BOARD DOES NOT WORK

Carry out the following checks:

- Ensure the board has been firmly installed in the accessory board slot.
- Check that the accessory board has been correctly configured with the ISA Configuration Utility if necessary.
- Ensure the board is not using memory, I/O addresses, an IRQ, or DMA also used by the PC. Refer to “IRQs, DMAs, and I/O Addresses Used by Your PC” in chapter 6. Refer to the board’s manual for further details.

  When using Windows 3.11, you can obtain information about the current use of IRQs by the PC by typing **MSD** at the MS-DOS prompt, and pressing [ENTER]. If you are using Windows 95, use the Device Manager.
- Check that the PC has been configured correctly in *Setup*.
- If the problem persists, refer to chapter 7, Hewlett Packard Support and Information Services, for information about where to obtain support.

IF YOUR PC HAS A SOFTWARE PROBLEM

If You Have Forgotten Your Password

- If you forget the User Password, but not the Administrator password, carry out the following procedure:

  1 Restart the PC. If the keyboard is locked, unplug the power cord and plug it in again.

  2 Wait for **F2=Setup** to be displayed.

  3 Press [F2] to start *Setup*.

  4 Enter the Administrator Password to access the **Preferences** menu.

  5 Move to the User Password field and set a new User Password. This will replace the old password which you had forgotten.

  6 Press [F3] to save the new Password and exit *Setup*.

- If you forget both the User Password and the Administrator Password:

  1 Switch off the PC.

  2 Remove the computer's cover.

  3 Set switch 5 (PASWD EN) on the system board switch block to CLOSED.

  4 Switch on the PC and allow it to complete its startup routine.

  The message "`Passwords have been cleared, power-off your PC and set switch 5 to open position before restarting`" will be displayed.

  5 Switch off the computer.

  6 Reset switch 5 (PASWD EN) to OPEN.

  7 Replace the computer's cover.

  8 Switch on the PC and allow it to complete its startup routine.

  9 After the Power-On Self-Test has completed, press [F2] when prompted to use *Setup*.

  10 Set new User and System Administrator Passwords.

  11 Press [F3] to save the new passwords and exit *Setup*.

IF YOUR APPLICATION SOFTWARE DOES NOT WORK

If the PC reports the system is OK and the indicator light over the power switch is illuminated, but some software won't run:

- Check to see if the **AUTOEXEC.BAT** file is present with the correct settings (Windows 3.11 only). Refer to the operating system and application software manuals.

- If Windows does not run properly, refer to the Windows manual for guidance.

IF POWER MANAGEMENT DOES NOT WORK

Power Management in Windows 3.11

Check that the Sleep icon appears in the StartUp Windows group. If it is absent, click on the File menu in the Program Manager and select the New option to install **SLEEP.EXE** from the **C:\WINDOWS** directory in the StartUp group.

Check that Power Management is enabled using the Power icon in the Windows Control Panel:

1 Double-click on the Power icon in the Windows Control Panel.

2 Check that **Advanced** is selected in the Power dialog box.

If the Power icon does not appear in the Windows Control Panel:

3 Exit from Windows.

4 At the MS-DOS prompt, change to the **C:\WINDOWS** directory.

5 Type **SETUP** [ENTER] to run Windows SETUP and set the **Computer** field to **MS-DOS with APM**. Follow the instructions displayed by the SETUP program to return to the MS-DOS prompt.

Power Management in Windows 95

- Check that Power Management is enabled using the Power icon in the Windows Control Panel.

- Check that **Advanced** is selected in the Power dialog box.

If your PC supports power management features, but no power management settings are displayed, make sure that the Energy Star Compliant box is selected in the display's settings. See the Windows 95 online help for further information.

Power Management in DOS

Use a text editor to check that **DEVICE=C:\DOS\POWER.EXE ADV:MAX** is present in the CONFIG.SYS file.

IF THE DATE AND TIME ARE INCORRECT

The date and time can be incorrect for the following reasons:

- the time has changed for the seasons

- the PC has been unplugged from the power too long, and the battery is discharged.

To change the date and time use the HP User Tools program for Windows 3.11 and Windows 95. You can also use the *Setup* program to change the date and time.

CHANGING THE BATTERY

Special care is needed in changing the battery. Instructions for changing the battery are given below.

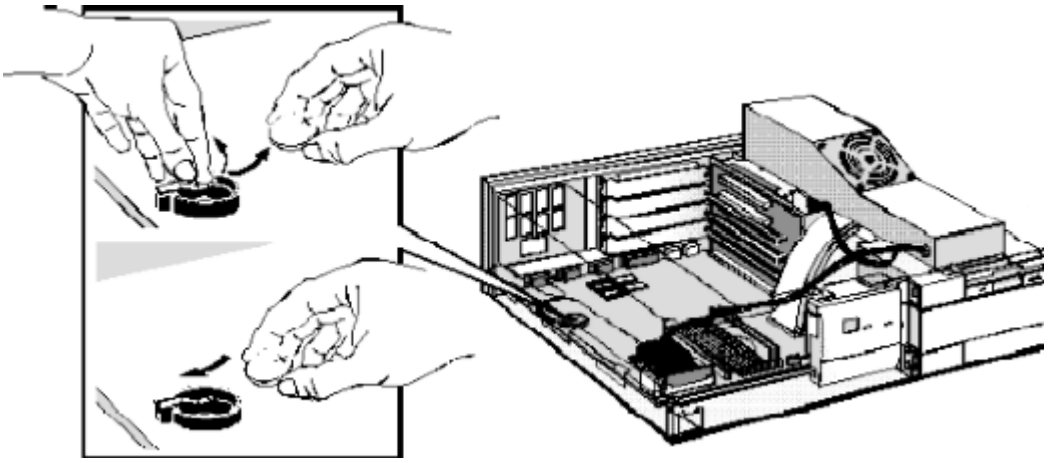
You should order replacement battery HP 1420-0314 from your local Sales and Service office, or a Rayovac 2325/2335 or Mitsubishi BR2325/BR2335, either of which is available from most local stores.

After removing the computer's cover:

1 Remove the old battery by gently sliding it from under the retaining clip.

2 Place the new battery in the battery holder, with the cross uppermost, and ensure that it is properly seated.

3 Ensure that the clip is in place and holds the battery firmly.



You can also install an external battery (HP part number 1420-0513), which you can order from your authorized reseller.

Install the external battery as follows:

1 After removing the computer's cover, connect the external battery cable to the battery connector on the system board.

2 Mount the external battery on the backplane, using the self-adhesive strip supplied.

After installing either a replacement or an external battery, replace the computer's cover and run the *Setup* program to reconfigure the computer.

WARNING: **There is a danger of explosion if the battery is incorrectly installed. For your safety, never attempt to recharge, disassemble, or burn the old battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. The battery in this PC is a lithium battery which does not contain heavy metals, nevertheless, in order to protect the environment, do not dispose of batteries in household waste. Please return used batteries to the shop from which you bought them, or to the dealer from whom you purchased your PC, or to HP, so that they can either be recycled or disposed of in an environmentally sound way. Returned used batteries will be accepted free of charge.**

IF THE SCSI HARD DISK STOPS WORKING

If the SCSI subsystem has been operating properly for a reasonable length of time, and if no specific errors appear on the display, the problem may be due to equipment failure. The problem may also be due to some recent change you have made to the system.

1 If you have made recent changes to the software, such as changes to configuration files or drivers, this could cause the problem. Refer to the software documentation for more information.

2 If you have installed a board, ensure there is not a resource conflict between the new board you have added and existing boards. If you have changed the options on an existing board there may be a resource conflict:

   a Remove the new board and restart the computer. If this corrects the problem, the board is either defective, or it is trying to use a system resource used by the SCSI subsystem. Change the board's settings as needed.

   b Check that the new board is not using memory, I/O addresses, an IRQ, or DMA also used by the SCSI subsystem. Refer to the board's and SCSI subsystem manuals for more information.

3 Check the SCSI cable for problems that may have been caused by recent computer maintenance, hardware upgrades, or physical damage.

4 If you suspect hardware failure and there are no system error messages, check each component associated with the failure. Equipment failure, however, is the most unlikely reason for a SCSI subsystem failure.

IF YOU LOSE THE KEY

If you lose the key to the PC, you need to order a replacement lock (HP part number 5062-5590) from the 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.

6 TECHNICAL INFORMATION

This chapter provides technical information about your PC.

SPECIFICATIONS

Feature	Description
Processor (standard)	Pentium™
Level-one cache	8 KB code, 8 KB write-back data
Level-two cache	256 KB synchronous or pipeline burst cache
Main memory (size/speed)	Upgradable to 128 MB (60 ns, 32-bit)
Video	Integrated 64-bit Ultra VGA Controller on PCI bus 1 MB standard, upgradable to 2 MB, DDC 2 B compliant
Disk drive controller	Master Enhanced IDE controller on PCI bus
Rear connectors	• mini-DIN mous • mini-DIN keyboard • 25-pin parallel • 9-pin serial (two, buffered) • 15-pin VGA
25-pin parallel connector	• Mode: Centronics, bidirectional, EPP or ECP • Parallel port: 278h (IRQ 5), 378h (IRQ7), or Disabled
9-pin serial connectors	• Standard: Two UART 16550 buffered serial ports (both RS-232-C) • Serial Port A or B: 238h (IRQ 3), 2E8h (IRQ3), 2F8h (IRQ 3), 228h (IRQ4), 338h (IRQ4), 3E8h (IRQ 4), 3F8h (IRQ 4), or Disabled
Disk drive shelves	Four internal mass storage shelves supporting: • one internal 3.5-inch hard disk drive • three front-access devices: a 3.5-inch drive, a full-height 5.25-inch drive, and a 3.5-inch or 5.25-inch slim-line drive. If you want to install a second hard disk drive, it can be installed internally in the bottom shelf and the space on the front of the PC is blocked by a bezel.
System board connectors	• VESA internal video pass-trhough connector • One flexible disk drive connector • Two Fast IDE connectors (for up to 3 IDE hard disk drives, or 2 hard disk drives and 1 CD-ROM)
Accessory slots	One PCI slot, one full-length combo ISA/PCI slot, one full-length 16-bit ISA slot, and one short-length 16-bit ISA slot
Keyboard/Mouse	HP keyboard with mini-DIN connector HP mouse with mini-DIN connector

FEATURES

Characteristics	Description
Weight (excluding keyboard and display)	9 kilograms (20 pounds)
Dimensions	39 cm (D) by 42 cm (W) by 12.5 cm (H) (15.3 inches by 16.5 inches by 4.9 inches)
Footprint	0.17m2 (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 (40°F to 104°F)
Operating humidity	15% to 80% (relative)
Acoustic noise emission	LW $\leq$ 40 dBa
Power supply	• Input voltage: 100-127 + 200-240 V ac wide ranging • Input frequency: 50/60 Hz • Maximum power: 100 W continuous

POWER CONSUMPTION, WINDOWS 3.11

All measurements are in watts (rms).

Consumption at 115V / 60Hz			
	75 MHz	100 MHz	133 MHz
Off	1.9 w	9 w	9 w
Sleep*	1.65 w	17.8 w	17.4 w
Windows*	21.1 w	22.4 w	22.2 w
WIN + HDD*	30 w	32 w	32.8 w

*Loading a CD-ROM in the CD-ROM drive will increase these values by 10w.

Consumption at 230V / 50Hz			
	75 MHz	100 MHz	133 MHz
Off	2.7 w	2.7 w	2.7 w
Sleep*	16.5 w	19.7 w	19.4 w
Windows*	21.1 w	24.3 w	24 w
WIN + H DD*	30 w	34 w	32 w

*Loading a CD-ROM in the CD-ROM drive will increase these values by 10w.

NOTE	When the PC is turned off with the power button on the front panel, the power consumption falls below 5 Watts, but is not zero. The special on/off method used by this PC considerably extends the lifetime of the power supply. To reach zero power consumption in "off" mode, either unplug the PC from the power outlet or use a power block with a switch. You should be aware that the PC will lose its time settings within a few days if you unplug the PC, or switch off the PC at the power block.

Typical Power Consumption/Availability for ISA Accessory Slots

+ 5 V	4.5A limit per slot (limited by system board)
+ 12 V	1.5A limit per slot (limited by system board)
-5 V	0.1A total power limit (limited by power supply)
-12 V	0.3A total power limit (limited by power supply)

Typical Power Consumption/Availability for PCI Accessory Slots

+ 5 V	4.5A maximum per slot
+ 12 V	0.5A maximum per slot
-12 V	0.1A maximum per slot

There is a maximum per-slot limit of 25 W between all supply rails.

POWER CONSUMPTION, WINDOWS 95

All measurements are in watts (rms).

Consumption at 115V / 60Hz			
	75 MHz	100 MHz	133 MHz
Off	1.9 w	9 w	9 w
Sleep*	1.65 w	17.7 w	17 w
Windows*	20.6 w	21.7 w	21 w
WIN + HDD*	28 w	30 w	31 w

*Loading a CD-ROM in the CD-ROM drive will increase these values by 10w.

Consumption at 230V / 50Hz			
	75 MHz	100 MHz	133 MHz
Off	2.7 w	2.7 w	2.7 w
Sleep*	22.6 w	23.6 w	23.4 w
Windows*	18.5 w	19.6 w	19.4 w
WIN + H DD*	30 w	33 w	34 w

*Loading a CD-ROM in the CD-ROM drive will increase these values by 10w.

NOTE	When the PC is turned off with the power button on the front panel, the power consumption falls below 5 Watts, but is not zero. The special on/off method used by this PC considerably extends the lifetime of the power supply. To reach zero power consumption in "off" mode, either unplug the PC from the power outlet or use a power block with a switch. You should be aware that the PC will lose its time settings within a few days if you unplug the PC, or switch off the PC at the power block.

Typical Power Consumption/Availability for ISA Accessory Slots

+ 5 V	4.5A limit per slot (limited by system board)
+ 12 V	1.5A limit per slot (limited by system board)
-5 V	0.1A total power limit (limited by power supply)
-12 V	0.3A total power limit (limited by power supply)

Typical Power Consumption/Availability for PCI Accessory Slots

+ 5 V	4.5A maximum per slot
+ 12 V	0.5A maximum per slot
-12 V	0.1A maximum per slot

There is a maximum per-slot limit of 25 W between all supply rails.

IRQS, DMAS, AND I/O ADDRESSES USED BY YOUR PC

IRQs used by PC The IRQ, DMA and I/O address mappings shown here are for a PC with a basic configuration. The resources used by your PC may vary, depending upon which accessory boards are bundled with the PC. For information on current use of IRQs, DMAs,and I/O addressed by your PC, type MSD at the MS-DOS prompt (Windows 3.11), or use the Device Manager (Windows 95)	IRQ0 system timer IRQ1 keyboard IRQ2 system cascade IRQ3 free if not used for serial port IRQ4 free if not used for serial port IRQ5 free if not used for parallel port IRQ6 flexible disk drive controller IRQ7 free if not used for parallel port IRQ8 real-time clock IRQ9 available for PCI devices, if not used by ISA board IRQ10 available for PCI devices, if not used by ISA board IRQ11 available for PCI devices, if not used by ISA board IRQ12 mouse IRQ13 processor IRQ14 integrated IDE hard disk drive controller IRQ15 free if not used by second IDE controller
DMAs used by PC	DMA0 free DMA1 free if not used for ECP parallel port in *Setup* DMA2 flexible disk drive controller DMA3 free DMA4 used to cascade DMA channels 0-3 DMA5 free DMA6 free DMA7 free

I/O Addressed used by PC	170h 177h, 376h IDE secondary channel 1F0h 1F7h, 3F6h IDE primary channel 278h 27Fh parallel port 2E8h 2EFh serial port 2F8h 2FFh serial port 370h 371h integrated I/O controller 378h 37Fh parallel port 3B0h 3DFh integrated video graphics controller 3E8h 3EFh serial port 3F0h 3F5h, 3F7h integrated flexible disk controller 3F8h 3FFh serial port 496h 497h HP reserved 678h 67Bh parallel port if ECP mode is selected 778h 77Bh parallel port if ECP mode is selected

AVAILABLE VIDEO RESOLUTIONS

Your PC has an integrated 64-bit Ultra VGA controller on a PCI bus with 1 MB of memory as standard,. The memory can be upgraded to 2 MB

The video resolutions available for your PC depend on the operating system you have installed and the amount of memory. The following tables give the typical resolutions for Windows 3.11 and Windows 95 operating systems.

For details of how to obtain further information, see chapter 7, Hewlett Packard Support and Information Services.

Typical Windows 3.1x Video Resolutions

Resolution	**Number of colors**	**Refresh Rate**	**Memory**
640 x 480	16, 256, 32K, 64K 16M	60, 72, 75	1 MB
800 x 600	16, 256	56, 60, 72, 75	
800 x 600	64K	56, 60	
1024 x 768	16, 256	i43, 60, 70, 75	
1280 x 1024	16	i43	

640 x 480	16, 256, 64K 16M	60, 72, 75	2 MB
800 x 600	16, 256, 64K, 16M	56, 60, 72, 75	
1024 x 768	16, 256, 64K	i43i, 60, 70, 75	
1280 x 1024	16	i43i	
1280 x 1024	256	43i, 60, 72, 75	

Typical Windows 95 Video Resolutions

Resolution	Number of colors	Refresh Rate	Memory
640 x 480	16, 256,64K, 16M	60, 72, 75	1 MB
800 x 600	16, 256	56, 60, 72, 75	
800 x 600	64K	56, 60	
1024 x 768	256	43i, 60, 70, 75	

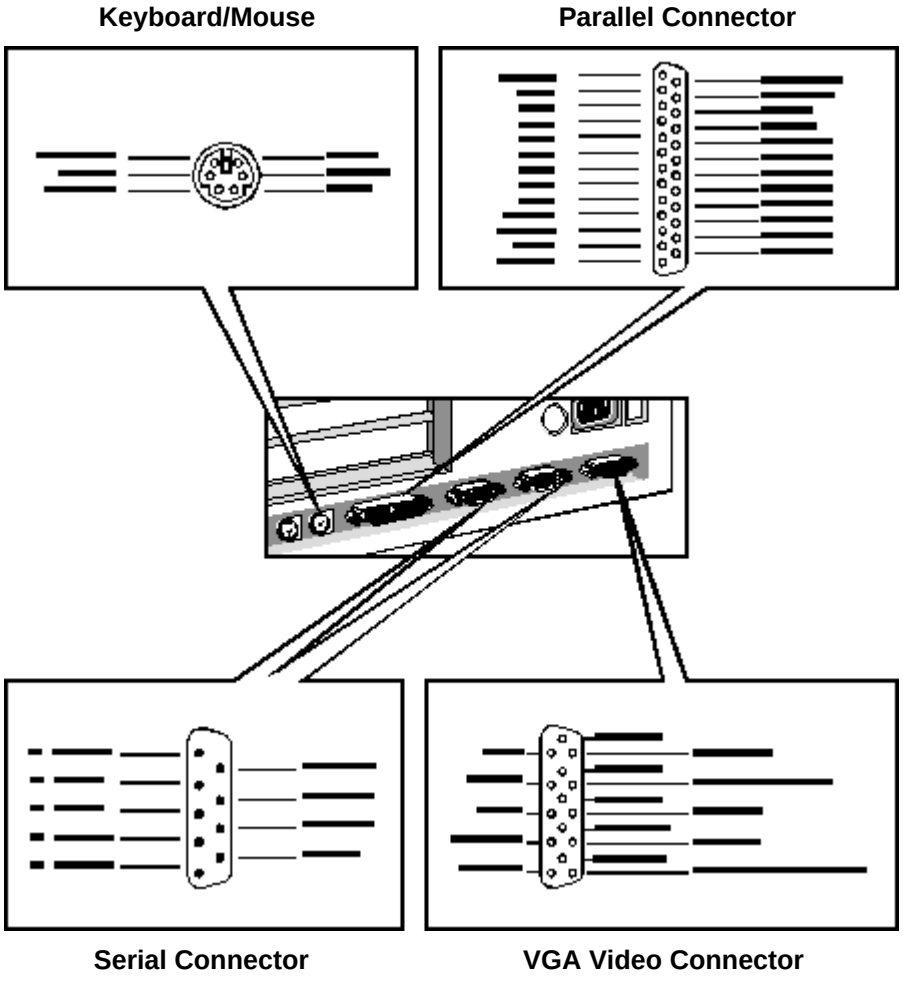
640 x 480	16, 256, 64K, 16M	60, 72, 75	2 MB
800 x 600	16, 256,64K, 16M	56, 60, 72, 75	
1024 x 768	256, 32K, 64K	43i, 60, 70, 75	
1280 x 1024	16, 256	43i, 60, 72, 75	

THE PC'S MEMORY MAP

Memory Area	Memory Range	Hexadecimal Address Range	Used By
Extended Memory: 1 MB upward			
Extended Memory:	1024 KB upward	100000 upward	Windows Applications
Conventional Memory: 0 KB to 1024 KB (1 MB)			
384 KB Reserved Memory Area*	960 KB to 1024 KB	0F0000 to 100000	64 KB BIOS area
	896 KB to 960 KB	0E0000 to 0E7FFFF	64 KB (available)
	800 KB to 896 KB	0C8000 to 0EFFFF	96 KB available for accessory boards
	768 KB to 800 KB	0C0000 to 0C8000	32 KB Video BIOS Area
	640 KB to 768 KB	0A0000 to 0C0000	128 KB Video Memory Area
640 KB Base Memory Area	0 KB to 640 KB	09F000 to 0A0000	Extended BIOS Data Area
		—	User Application Program Area
		—	MS-DOS Operating System
		0500 to 0700	MS-DOS Temp Buffer
		0400 to 04FF	BIOS Data Area
		0000 to 03FF	Interrupt Vector Table

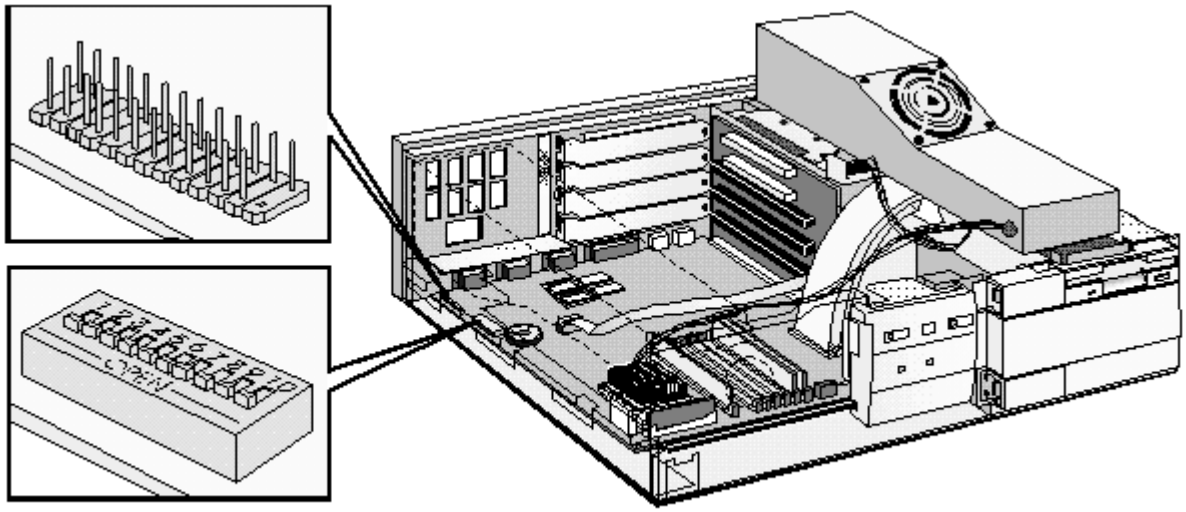
*E8 - EF is Reserved

THE PC'S REAR CONNECTORS



SYSTEM BOARD CONNECTORS AND SWITCHES

VESA Connector



System Board Switches

System Board Switches

Switch	Switch function:
1 - 4	Processor speed, see table on next page
5	Password: Open = enabled [default] Closed = disabled / clear passwords
6	CMOS: Open = normal [default] Closed = clear CMOS
7	Processor speed, see table on next page
8	Secure mode selection: Open = normal [default] Closed = Super secure mode (no BIOS flashing and no *Setup* changes allowed)
9	Keyboard (space bar) power on: Open = disabled Closed = enabled
10	Not used

The settings for different processors at different speeds are a combination of the settings of switches 1, 2, 3, 4 and 7.

Pentium processor	Switch 1	Switch 2	Switch 3	Switch 4	Switch 7
CPU Frequency 75 MHz CPU bus Frequency 50 MHz PCI Frequency 25 MHz **AT Frequency 8.33 MHz**	Closed	Closed	Open	Open	Open
CPU Frequency 100 MHz CPU bus Frequency 66 MHz PCI Frequency 33 MHz **AT Frequency 8.25 MHz**	Open	Closed	Open	Open	Closed
CPU Frequency 133 MHz CPU bus Frequency 66 MHz PCI Frequency 33 MHz **AT Frequency 8.25 MHz**	Open	Closed	Closed	Open	Closed

NOTE 120 MHz processors are not supported.

RECYCLING YOUR PC

HP has a strong commitment toward the environment. Your HP Personal Computer has been designed to respect the environment as much as possible.

HP can also take back your old PC for recycling when it reaches the end of its useful life.

HP has a product take-back program in several countries. The collected equipment is sent to one of HP's recycling facilities in Europe or the USA. As many parts as possible are re-used. The remainder is recycled. Special care is taken of batteries and other potentially toxic substances, which are reduced into non-harmful elements by means of a special chemical process.

If you require more information about HP's product take-back program, contact your dealer or your nearst HP Sales Office.

7 HEWLETT PACKARD SUPPORT AND INFORMATION SERVICES

INTRODUCTION

Hewlett Packard computers are engineered for quality and reliability to give you many years of trouble-free service. To ensure that your desktop system maintains its reliability and to keep you up-to-date with the latest developments, HP and a worldwide network of trained and authorized resellers provide a comprehensive range of service and support options which are listed below:

- HP Authorized Reseller
- HP SupportPack
- HP Support Assistant CD-ROM
- HP Information Services

Service	Means of Access
HP Forum on CompuServe	Modem
HP Forum on America Online (US only)	Modem
HP BBS Library	Modem
Internet FTP Library Service	FTP access to the Internet
HP Access World Wide Web Site	World Wide Web Access
HP FIRST Faxback	Phone and Fax
Audio Tips (US only)	Phone
HP Drivers/BIOS diskettes	Delivered by mail

- HP Support Services
  Technical phone support
  Lifeline phone support
  Network phone-in support.

NOTE	When calling any of the international telephone numbers listed in this chapter, replace the '+' with your international telephone access code.

YOUR HP AUTHORIZED RESELLER

HP Authorized Resellers have been trained on HP Vectra equipment and are familiar with its configuration and environment. Authorized Resellers can also answer questions regarding non-HP hardware, software and systems as well as answer queries about usage not intended for, or not commonly used with the HP Vectra.

Authorized HP Resellers can also offer consulting services tailored to your specific needs regarding product development or custom installations, as will third party support services, or the HP Customer Support organization in your country.

HP SUPPORTPACK

HP's three-year SupportPack is available from your local reseller. It must be purchased within 30 days of purchasing your HP Vectra.

The concept of SupportPack is simple. It allows you to extend your one-year on-site hardware warranty to a three-year on-site hardware warranty, offering next day on-site response.

SupportPack is valid for the piece of equipment for which it was bought, but is not transferable from one piece of equipment to another.

HP SUPPORT ASSISTANT CD-ROM

HP Support Assistant is a yearly subscription service on CD-ROM. It is published four times a year.

Each CD-ROM contains information about Vectra PCs as well as other HP computing products. The types of information you can find include:

- Product manuals and service manuals
- Installation and configuration information
- Troubleshooting information
- Drivers and utilities
- Technical reference manuals.

Subscriptions to HP Support Assistant can be obtained with an order form which is available from the HP FIRST Faxback system. Request document number 9025 (US and Asia Pacific) or 19025 (Europe). Subscriptions can also be obtained by contacting the following numbers:

Region	Phone Number	Fax Number
Asia-Pacific	+65 740-4477	+65 740-4499
Europe	+31 (55) 384279	+31 (55) 434455
Latin America	+1 (317) 364-8882	+1 (317) 364-8888
US/Canada	1 (800) 457-1762	+1 (317) 364-8888

HEWLETT-PACKARD INFORMATION SERVICES

Hewlett Packard Electronic Information Services are available 24 hours per day, 7 days per week, ensuring that the most up-to-date information is always available.

HP FORUM ON COMPUSERVE

The HP Systems Forum on CompuServe is an on-line service, accessible via modem. This service provides information about your HP PC, and allows you to communicate with other HP users through an on-line user forum. HP users share their knowledge and experience with you, and you will be able to ask, or answer, technical questions about your HP Vectra PC, and HP products.

You can also download the latest versions of drivers, BIOS and software utilities for HP Vectra PCs.

As a preferred Hewlett Packard customer, you are invited to join CompuServe at no initial charge.

For the United States and the United Kingdom, call the number shown below and ask for representative 51. For all other locations, first call the worldwide number to obtain the number of your local sales office, then call your local sales office and ask for representative 51.

Country	Local Call / Freephone Number	Direct Number
United States	1 (800) 848-8199	+1 (614) 529-1349
United Kingdom	(0800) 289378	+44 (1272) 760680
Worldwide		+1 (614) 529-1349

CompuServe will send you a free introductory membership immediately, including information on how to access CompuServe.

At the CompuServe ! prompt, type **GO HP**.

HP FORUM ON AMERICA ONLINE

The HP Forum on America Online is an electronic information and communication service which can be accessed via modem.

To access the HP Forum:

- select **Keyword Search** from the menu,
- type **HP**,
- press ENTER]

This will load the HP Home Page directly onto your screen.

In the HP Forum you can ask and answer questions about HP products and you can also download drivers, software application notes, or utilities for HP products.

Membership information can be obtained by calling 1(800) 827-6364, giving the preferred customer number 1118.

HP BBS LIBRARY

The HP electronic bulletin board library service contains the latest versions of drivers, BIOS, and utilities, which you can download to your PC using a modem. Support documentation is also available.

Country	Number	Baud Rate
United States	+1 (208) 344-1691	300, 1200, 2400, 4800, 9600, 14400
United Kingdom	+44 (1344) 3600880	up to 14400
Worldwide	+1 (208) 344-1691	300, 1200, 2400, 4800, 9600, 14400

Set your modem for no parity, 8 data bits, and 1 stop bit (N, 8, 1).

INTERNET—FTP LIBRARY SERVICE

Hewlett-Packard provides a library service which offers the latest versions of drivers, BIOS and utilities and other information about HP products. This library service is available if you have FTP access to the Internet, whatever your location.

Alias	ftp-boi.external.hp.com
Name	anonymous
Password	Enter your E-mail address

ACCESS HP WORLD WIDE WEB SITE

Access HP, HP's World Wide Web site gives you access to information about HP, its products, including product data sheets, service and support information, electronic newsletters and technical tips. You can also download the latest versions of drivers, BIOS and software utilities.

The Access Guide Directory guides you through the information and services available.

World-Wide Web URL http://www.hp.com

HP FAXBACK ON DEMAND—HP FIRST

HP FIRST is a service where you can select documents, support and technical information, data sheets and pre-sales information, which are then faxed to you. To access this service, you can use a touch-tone phone and have the fax sent to the fax machine of your choice, or use the handset on your fax machine and dial one of the numbers given below:

Country/Region	Number	Access Method
United States	1 (800) 333-1917	Phone or fax
U.K.	(0800) 960271	Phone or fax
Australia	+61 (3) 9272-2627	Phone or fax
Singapore	+ 65 291-7951	Phone or fax
Hong Kong	+ 852 2506-2422	Phone or fax
New Zealand	+ 64 (9) 356-6642	Phone or fax
Europe	+ 31 (20) 681-5792	Phone or fax
Worldwide	+ 1 (208) 344-4809	Fax

A complete description of Hewlett-Packard electronic services is provided in document #9020.

HP AUDIO TIPS (USA ONLY) HP AUTOMATED SUPPORT DIRECTORY

HP Audio Tips is an automated system containing recordings which can direct you to Hewlett Packard support services. Live support is not available through this service.

Dial 1 (800) 333-1917 and press 3, to access HP Audio Tips.

ORDERING DRIVERS AND BIOS ON DISKETTE

You can order diskettes from HP, with the latest versions of drivers, BIOS and software utilities. The diskettes will be delivered by mail.

Information for ordering diskettes is set out in the table below:

North and Latin America	**Europe**
Phone +1 (970) 339 7009 Monday - Saturday 24 hours per day	**Phone** +44 (1429) 865511 Monday - Friday 8.30 a.m. - 6.00 p.m. Central European Time
Fax +1 (970) 330 7655	**Fax** +44 (1429) 866000
Mail US Driver Fulfillment for Hewlett-Packard PO Box 1754, Greeley, Colorado 80632 USA	**Mail** European Fulfillment for Hewlett-Packard c/o StarPak International, Ltd., Hartlepool, Cleveland,TS25 2YP United Kingdom
Australia	**Asia - Pacific**
Phone + 61 (2) 565 6099 Monday - Friday 8.30 a.m. - 5.30 p.m. Australian Eastern Time	**Phone** + 65 740 4477 Monday - Friday 8.30 a.m. - 5.30 p.m. Singapore Time
Fax + 61 (2) 519 5631	**Fax** + 65 740 4499
Mail Fulfill: Plus Pty Ltd., Private Bag 75, Alexandria NSW Australia 2015	**Mail** Fulfill: Plus Pte Ltd., No 51, Ubi Ave. 3, Singapore 1440

To identify a specific BIOS, driver or utility for your PC, please follow the steps listed below prior to placing your order.

- Contact your authorized HP reseller for assistance in selecting the appropriate driver.
- If your reseller is unable to help you, call HP FIRST for the most up-to-date list of drivers.

HP SUPPORT SERVICES

Hewlett-Packard provides a three year hardware warranty which includes on-site service during the first year after purchase, and a return service during the second and third years after purchase. This warranty coverage will apply from the nearest HP or HP authorized service outlet.

HP telephone support for your Vectra PC is available during the first year of your hardware warranty. This service will also provide technical assistance with the basic configuration and setup of your Vectra PC and for the pre-loaded operating system.

Lifeline Telephone support is available during the second and third years of hardware warranty, via the Lifeline program, which is a fee-based service.

The HP telephone support service does NOT provide free telephone support for PCs configured as network servers. If you do configure your PC as a network server, you are advised to contact your HP reseller to purchase a network phone-in support contract, which will provide you with a fee-based telephone support service.

NOTE	Reloading the software pre-loaded on your PC is not covered by your HP three-year warranty. HP strongly recommends that you make a set of master diskettes of this software as soon as possible after receiving your PC. To make the master diskettes, use the Master Diskette Creation Utility, which can be accessed from HP Utilities.

Your HP authorized reseller offers various service contracts which can be tailored to your particular support needs.

HEWLETT-PACKARD TELEPHONE SUPPORT

HP North American Customer Support Center

Assistance from the HP North American Customer Support Center is available Monday to Friday, 7:00 am to 6:00 pm Mountain time, except Wednesday when the hours are 7.00 am to 4:00 pm.

The number is: +1 (970) 635-1000

HP European Customer Support Center

Assistance from the HP European Customer Support Center is available in English, Monday to Friday, 8:30 am to 6:00 pm Central European time, except Wednesday when the hours are 8.30 am to 4:00 pm.

The number is: +31 (20) 581-3330

Other Regions

Contact your reseller who will be able to help you, or direct you to the appropriate HP telephone support service.

Please have the following information ready when you call so that your enquiry can be dealt with quickly:

- your HP Vectra model number and serial number
- the operating system version and the configuration
- a description of the software installed and the accessories used.

LIFELINE TELEPHONE SUPPORT

Lifeline is a fee-based telephone support program for Vectra PCs available after the one-year telephone support provided as part of the hardware warranty has expired.

Your call can either be charged to your phone bill at a per minute rate or to your credit card (Visa, Mastercard or American Express) at a flat fee.

The charge begins AFTER you have been put in contact with a support technician. If your problem is found to be covered by the HP Hardware Warranty, no charge will be applied.

In the US please call the appropriate number listed below.

Number	Method of Payment	Charge Type
1 (900) 555-1500	Charged to phone bill	per minute rate
1 (800) 999-1148	Charged to credit card	Flat fee

Free access to HP information services is not affected by this service. You are encouraged to access HP Information Services throughout the life of your PC, whether in or out of warranty.

HP NETWORK PHONE-IN SUPPORT SERVICE (NPS)

The HP Network Phone-in Support Service (NPS) provides fast access to HP experts in networked Multivendor environments.

It can help you to:

- resolve complex network problems,
- leverage HP's alliances with leading Network Operating Systems and Network manufacturers,
- support your HP and non-HP products with a single telephone call,
- increase network uptime.

You can purchase the HP NPS service as an annual contract, billable in advance annually, bi-annually, quarterly, or at an hourly rate. This contract service provides unlimited toll-free access to HP Response Center Engineers (RCEs).

To obtain an HP NPS contract, contact your HP authorized reseller, or if you are in the US call (800) 437-9140.

SUMMARY

The table below summarizes the services and support available from HP or authorized resellers.

Service	Covers	Period Covered	Response Time	Fee	When Available	Purchase From
Basic Warranty	Parts and labor for HP products: first year on-site, second and third year return to HP	Three years from date of purchase	Next working day for onsite	No charge	At time of purchase	HP
HP SupportPack Onsite Service	Parts and labor for HP products	First three years	Next working day	One fee which covers the three years	Within 30 days of purchase	HP Authorized reseller
HP Support Assistant	CD-ROM containing: Product Manuals, Technical Information and Product features	Released quarterly	N/A	Annual subscription	Anytime	HP
Electronic Services	Technical information, drivers, utilities, tools and diagnostics	Anytime	24-hour access	No charge	Anytime	HP BBS, Internet-FTP, WWW, CompuServe
Technical Phone Support	Basic assistance for PC setup, configuration, start-up and hardware diagnosis	First year	Business hours	No charge	At time of purchase	HP
Lifeline Phone Support	Basic assistance for PC setup, configuration, start-up and hardware diagnosis	After first year	Business hours	Per-call fee, no time limit	Anytime after first year	HP
HP Network Phone-in Support	Advanced remote technical support for multivendor networked environments	Annual contract	Business hours: 24-hour/ 7-day service also available	Annual fee, or minimum fee per incident	Anytime	HP Authorized reseller
Service Contracts	Technical Support	Customer defined	As required	Annual fee, or fee per incident	Anytime	Reseller

HEWLETT-PACKARD MARKETING HEADQUARTERS

Should you wish to contact Hewlett-Packard, check your local telephone directory for the HP Sales and Service Office near you. If you cannot find a convenient HP office, you can write to one of the major HP Sales and Service Offices or one of the Worldwide Marketing Headquarters listed here.

ASIA
Far East Sales Region Hdqtrs
Hewlett-Packard Asia Ltd.
22/F Peregrine Tower
Lipp Centre
89 Queensway, Central
Hong Kong

LATIN AMERICA
Hewlett-Packard Latin Am. Hdqtrs
Monte Pelvoux 111
Lomas de Chapultepec
11000 Mexico D.F.

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

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

MIDDLE EAST / AFRICA
Middle East / Central Africa Sales Hdqtrs
Hewlett-Packard S.A.
Rue de Veyrot 39
CH-1217 Meyrin 1/Geneva
Switzerland

CANADA
Hewlett-Packard Ltd.
6877 Goreway Drive
Mississauga
Ontario L4V 1M8
Canada

HP WORLD WIDE WEB SERVER

Access the HP World Wide Web server for technical information, to download new drivers, utilities, and flash BIOS upgrades.

Point your WWW browser at: http://www.hp.com

HP ANONYMOUS FTP SERVER

Access the HP Anonymous FTP server to download new drivers, utilities, and flash BIOS upgrades.

FTP to IP address: xxx.x.xx.x

EUROPEAN CUSTOMER SUPPORT CENTER

For assistance from the HP European Customer Support Center, the number is: +00 000 0000.

HP WORLD WIDE WEB SERVER

Access the HP World Wide Web server for technical information, to download new drivers, utilities, and flash BIOS upgrades.

Point your WWW browser at: http://www.hp.com

HP ANONYMOUS FTP SERVER

Access the HP Anonymous FTP server to download new drivers, utilities, and flash BIOS upgrades.

FTP to IP address: xxx.x.xx.x

EUROPEAN CUSTOMER SUPPORT CENTER

For assistance from the HP European Customer Support Center, the number is: +00 000 0000.

GLOSSARY

adapter

An accessory board, that connects to the system board via an accessory board slot.

BBS

Bulletin Board System. A computer that uses a modem and software to serve as an information source for other computers equipped with a modem. Hewlett-Packard has a BBS that can be reached at +1 (408) 553-3500.

BIOS

Basic Input-Output System. Software that provides an interface between the computer hardware and the operating system.

bus

An electrical connection over which information is transported.

cache

A block of high-speed memory used for the temporary storage of data.

CD-ROM

Compact Disc Read Only Memory. A mass storage device that uses compact disc technology. CDs can store data, but most cannot be written to.

CMOS memory

An area of your computer's memory whose contents are preserved when you turn off the computer. CMOS memory stores information that must be maintained, such as your computer's configuration.

controller

A device that enables another device (such as a hard disk) to communicate with the computer.

device driver

Software that enables the computer to interface with a specific peripheral, such as a printer or display.

EPA energy star program

A standard for power management which requires automatic power-down to less than 30 W.

expansion slot

A slot inside the computer, connected to the system board, that can be used for accessory boards.

extended memory

Memory which can be addressed by the processor in the area of memory above the first 1 MB.

HP Utilities

Software provided by Hewlett-Packard to perform certain tasks, for example, changing the date and time.

IDE

Integrated Device Electronics. An interface standard for communications between the computer and a hard disk or CD-ROM.

IRQ

Interrupt Request. A signal, which, when received by the processor, halts the current process and allows a different task to be undertaken.

jumper

An electrically-conductive part that is used to connect two or more points on a circuit board. Commonly used to select configuration options.

mass storage

Any device used to store large amounts of data. Usually refers to hard disks and tape backup units.

memory modules

Miniature boards containing memory chips. Used for increasing the amount of memory available in the computer.

multimedia

Combining static media (such as text and pictures) with dynamic data (such as sound, video, and animation) on the same system.

network server mode

A security feature that prevents unauthorized use of an input device (like a keyboard or mouse) while your computer is running as an unattended network server.

pixel

Picture element. The smallest addressable spot on the screen.

POST

Power-On-Self-Test. A series of tests your computer performs when you switch the computer on.

RAM

Random Access Memory. This memory is used to hold programs and data temporarily.

resolution

A measure of the visible detail on a screen or printout. Screen resolution is measured in ‘pixels across’ by ‘pixels down’ by ‘number of colors’. Printer resolution is measured in dpi (dots-per-inch).

ROM

Read-Only Memory. Computer memory used to store parts of the computer’s operating system permanently. ROM chips can contain instructions and data.

SCSI

Small Computer System Interface. A high-speed data bus used for connecting hard disks, tape drives, and other accessories to your computer.

SCSI chain

Devices connected on a single SCSI bus.

***Setup* program**

Used to inform the computer about its configuration, for example the amount of memory installed. The setup program is stored in ROM on the system board.

shadow RAM

A method of relocating the system and/or video BIOS from slower ROM chips to faster RAM to improve system performance.

SIMM

Single In-line Memory Module. A small board containing several RAM chips.

terminator

A resistor at the end of a SCSI cable that prevents the signal from reflecting back along the cable.

video controller

A chip or expansion card which converts signals in the computer into displayable signals.

video RAM

Memory that enables or speeds up drawing to the screen or increases resolution or color options.

7 REGULATORY INFORMATION AND WARRANTY

REGULATORY INFORMATION

DECLARATION OF CONFORMITY
according to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name and Address:

HEWLETT-PACKARD
Boulevard Steve Biko
38090 Villefontaine
FRANCE

Declares that the product:

Product Name: Personal Computer

Model Number: HP Vectra VE 5/series 2

Conforms to the following Product Specifications:

SAFETY **International:** IEC 950: 1991+A1+A2
IEC 825-1: 1993 (*)
Europe: EN 60950: 1992+A1+A2
EN 60825-1:1994 (*)

(*) applicable when the product has a built-in CD-ROM Drive

EMC International: CISPR 22: 1985 Class B

Europe: EN 50082-1: 1992
IEC 555-2:1982 + AI:1985 / EN 60555-2:1987
IEC 1000-3:1994 / EN 61000-3:1995
IEC 801-2: 1991 / prEN 55024-2: 1992 - 3 kV CD, 8 k V AD
IEC 801-2: 1991 / prEN 55024-3: - 3 V/m
IEC 801-4: 1988 / prEN 55024-4: 1992 / - 0.5 kV Signal Lines, 1 kV Power Lines

Supplementary information: The product complies with the requirements of the Low Voltage Directive 73/23/EEC and of the EMC Directive 89/336/EEC.

Grenoble
January 1996

Gilbert BERTHET
Quality Manager

FCC (FOR USA ONLY)

Federal Communications Commission Radio Frequency Interference Statement

Warning:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates

and uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one or more of the following measures:

- reorient or relocate the receiving antenna
- increase the separation between the equipment and the receiver
- connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- consult the dealer or an experienced radio/TV technician for help.

Hewlett-Packard's system certification tests were conducted with HP-supported peripheral devices and HP shielded cables, such as those you receive with your system. Changes or modifications not expressly approved by Hewlett-Packard could void the user's authority to operate the equipment.

Notice for Canada

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.
Cet appareil numérique de la Class B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Safety Warning for the USA and Canada

If the power cord is not supplied with the computer, select the proper power cord according to your local national electric code.
USA: use a UL listed type SVT detachable power cord.
Canada: use a CSA certified detachable power cord.

For your safety, never remove the PC's cover without first removing the power cord and any connection to a telecommunication network. Always replace the cover before switching on again.

Changing a battery

There is a danger of explosion if the battery is incorrectlyinstalled. The old battery must be removed before installing a replacement battery. Replace only with the same or equivalent type recommended by the manufacturer.
For your safety, never attempt to recharge, disassemble or burn the old battery.
The battery in this PC is a lithium battery which does not contain heavy metals, nevertheless, in order to protect the environment, do not dispose of batteries in household waste.
Used batteries should be returned to the shop from which you bought them, to the dealer from whom you purchased the PC, or to Hewlett-Packard, so that they can either be recycled or disposed of in an environmentally sound way. Returned batteries will be accepted free of charge.

Notice for the United Kingdom

The HP Vectra PC is approved under approval number NS/G/1234/J/100003 for indirect connection to Public Telecommunication Systems within the United Kingdom.

Noise Declaration for Germany

Lärmangabe nach Maschinenlärmverordnung - 3 GSGV (Deutschland)
LpA < 70 db am Arbeitsplatz normaler Betrieb nach EN 27779:11.91

Notice for Japan

この装置は，第二種情報装置（住宅地域又はその隣接した地域において使用されるべき情報装置）で住宅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。

しかし，本装置をラジオ，テレビジョン受信機に近接してご使用になると，受信障害の原因となることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

Notice for Korea

이 기기는 비업무용으로 전자파장해검정을 받은 기기로서 주거지역에서는 물론 모든 지역에서 사용할 수 있습니다.

HP HARDWARE WARRANTY

IMPORTANT This is your hardware product warranty statement. Read it carefully.

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.

Three Year Limited Hardware Warranty

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

The three year warranty includes on-site service during the first year of use, and return service provided by an HP Service Center or a participating Authorized HP Personal Computer Dealer Repair Center, during the second and third years of use.

If HP receives notice of above defined 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 or storage 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 three-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 On-Site Warranty Service

To obtain on-site warranty service, the customer must contact an HP Sales and Service Office (in the US, call the HP Customer Support Center at (303) 635-1000) or a participating Authorized HP Personal Computer Dealer Repair Center and arrange for on-site repair of the product. The customer must be prepared to supply proof of the purchase date.

This warranty is extended worldwide to products purchased from HP or an Authorized HP Personal Computer Dealer which are reshipped by the original purchaser either for use by the original purchaser or provided as an incidental part of systems integrated by the original purchaser. Service is provided in the same manner as if the product was purchased in the country of use and can only be provided in countries where the product is designed to operate. If the product is not normally sold by HP in the country of use, it must be returned to the country of purchase for service.

The system processor unit, keyboard, mouse, and Hewlett-Packard accessories inside the system processor unit–such as video adapters, mass storage devices, and interface controllers–are covered by this warranty.

Customer-replaceable components–such as the keyboard or mouse–may be serviced through expedited part shipment. In this event, HP will prepay shipping charges, duty, and taxes; provide telephone assistance on replacement of the component; and pay shipping charges, duty, and taxes for any part that HP asks to be returned.

HP products external to the system processor unit–such as external storage subsystems, displays, printers, and other peripherals–are covered by the applicable warranties for those products; HP software is covered by the HP Software Product Limited Warranty.

On-site visits caused by non-Hewlett-Packard products–whether internal or external to the system processor unit–are subject to standard per-incident travel and labor charges.

On-site service for this product is restricted or unavailable in certain locations. In HP Excluded Travel Areas–areas where geographical obstacles, undeveloped roads, or unsuitable public transportation prohibit routine travel–service is provided on a negotiated basis at extra charge.

Response time for HP on-site service in an HP Service Travel Area is normally next business day (excluding HP holidays) for HP Travel Zones 1-3 (generally 100 miles or 160 Km from the HP office). Response time is second business day for Zones 4 and 5 (200 miles, 320 Km); third business day for Zone 6 (300 miles, 480 Km); and negotiated beyond Zone 6. Worldwide Customer Support Travel information is available from any HP Sales and Service Office.

Travel restrictions and response time for dealer or distributor service are defined by the participating dealer or distributor.

Service contracts which provide after-hour or weekend coverage, faster response time, or service in an Excluded Travel Area are often available from HP, an authorized dealer, or authorized distributor at additional charge.

Customer Responsibilities

The customer may be required to run HP-supplied diagnostic programs before an on-site visit or replacement part will be dispatched.

The customer is responsible for the security of its proprietary and confidential information and for maintaining a procedure external to the products for reconstruction of lost or altered files, data, or programs.

For on-site service, the customer must provide: access to the product; adequate working space and facilities within a reasonable distance of the product; access to and use of all information and facilities determined necessary by HP to service the product; and operating supplies and consumables such as the customer would use during normal operation.

When service is being performed on-site, a representative of the customer must be present at all times. The customer must state if the product is being used in an environment which poses a potential health hazard to repair personnel; HP or the servicing dealer may require that the product be maintained by customer personnel under direct HP or dealer supervision.

Obtaining Return Warranty Service

When return warranty service applies, the product must be returned to a service facility designated by HP. Customer must enclose a copy of a document proving date of purchase.

The customer shall prepay shipping charges (and shall pay all duty and taxes) for products returned to HP for warranty service. HP shall pay for return of products to the customer except for products returned to the customer from another country.

HP products may contain remanufactured parts equivalent to new in performance or may have been subject to incidental use.

HP SOFTWARE PRODUCT LICENSE AGREEMENT AND SOFTWARE & PRODUCT LIMITED WARRANTY

The HP Software Product License Agreement and Product Limited Warranty shall govern all Software which is provided to you, the Customer, as part of the HP computer product. This HP Software Product Agreement and Product Limited Warranty shall supersede any non-HP software license or warranty terms which may be found in any documentation or other materials contained in the computer product packaging.

CAREFULLY READ THIS LICENSE AGREEMENT BEFORE PROCEEDING TO OPERATE THIS EQUIPMENT. RIGHTS IN THE SOFTWARE ARE OFFERED ONLY ON THE CONDITION THAT THE CUSTOMER AGREES TO ALL TERMS AND CONDITIONS OF THE

LICENSE AGREEMENT. PROCEEDING TO OPERATE THE EQUIPMENT INDICATES YOUR ACCEPTANCE OF THESE TERMS AND CONDITIONS. IF YOU DO NOT AGREE TO THE LICENSE AGREEMENT, YOU MUST NOW EITHER REMOVE THE SOFTWARE FROM YOUR HARD DISK DRIVE AND DESTROY THE MASTER DISKETTES, OR RETURN THE COMPLETE COMPUTER AND SOFTWARE FOR A FULL REFUND.

Software License Agreement

In return for payment of the applicable fee, Hewlett-Packard grants the Customer a license in the software, subject to the following:

1. USE. Customer may use the software on any one computer. Customer may not network the software or otherwise use it on more than one computer. Customer may not reverse assemble or decompile the software unless authorized by law.

2. COPIES AND ADAPTATIONS. Customer may make copies or adaptations of the software (a) for archival purposes or (b) when copying or adaptation is an essential step in the use of the software with a computer so long as the copies and adaptations are used in no other manner.

3. OWNERSHIP. Customer agrees that he/she does not have any title or ownership of the software, other than ownership of the physical media. Customer acknowledges and agrees that the software is copyrighted and protected under the copyright laws. Customer acknowledges and agrees that the software may have been developed by a third party software supplier named in the copyright notices included with the software, who shall be authorized to hold the Customer responsible for any copyright infringement or violation of this Agreement.

4. TRANSFER OF RIGHTS IN SOFTWARE. Customer may transfer rights in the software to a third party only as part of the transfer of all rights and only if Customer obtains the prior agreement of the third party to be bound by the terms of this License Agreement. Upon such a transfer, Customer agrees that his/her rights in the software are terminated and that he/she will either destroy his/her copies and adaptations or deliver them to the third party.

5. SUBLICENSING AND DISTRIBUTION. Customer may not lease, sublicense the software or distribute copies or adaptations of the software to the public in physical media or by telecommunication without the prior written consent of Hewlett-Packard.

6. TERMINATION. Hewlett-Packard may terminate this software license for failure to comply with any of these terms provided Hewlett-Packard has requested Customer to cure the failure and Customer has failed to do so within thirty (30) days of such notice.

7. UPDATES AND UPGRADES. Customer agrees that the software does not include updates and upgrades which may be available from Hewlett-Packard under a separate support agreement.

8. EXPORT CLAUSE. Customer agrees not to export or re-export the software or any copy or adaptation in violation of the U.S. Export Administration regulations or other applicable regulation.

9. GOVERNMENT RESTRICTED RIGHTS. Use, duplication, or disclosure by the U.S. Government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause in DFARS 252.227-7013. Hewlett-Packard Company. 3000 Hanover Street, Palo Alto, CA 94304 U.S.A. Rights for non-DOD U.S. Government Departments and Agencies are as set forth in FAR 52.227-19(c)(1,2).

Software Product Limited Warranty

Ninety-Day Limited Software Warranty

HP warrants for a period of NINETY (90) DAYS from the date of the purchase that the software product will execute its programming instructions when all files are properly installed. HP does not warrant that the operation of the software will be uninterrupted or error free. In the event that this software product fails to execute its programming instructions during the warranty period, Customer's remedy shall be a refund or repair. 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 product and all copies.

Removable Media (If supplied)

HP warrants the removable media, if supplied, upon which this product is recorded to be free from defects in materials and workmanship under normal use for a period of NINETY (90) DAYS from the date of purchase. In the event the media proves 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 product and destruction of all other nonremovable media copies of the software product.

Notice of Warranty Claims

Customer must notify HP in writing of any warranty claim not later than thirty (30) days after the expiration of the warranty period.

Limitation of Warranty

HP makes no other express warranty, whether written or oral with respect to this product. Any implied warranty of merchantability or fitness for a particular purpose is limited to the 90-day 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 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 CUSTOMER'S SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL HP BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFIT) WHETHER BASED ON WARRANTY, CONTRACT, TORT OR ANY OTHER LEGAL THEORY. Some states or provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Obtaining Warranty Service

Warranty service may be obtained from the nearest HP sales office or other location indicated in the owner's manual or service booklet.

Consumer transactions in Australia and the United Kingdom: The disclaimers and limitations above shall not apply and shall not affect the statutory rights of a Consumer.