HEWLETT®
PACKARD

User's Guide

HP Vectra VL
5/xxx

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User's Guide

Who this Manual is For

This manual is for anyone who wants to:

- Set up the PC for the first time
- Configure the PC
- Add accessories to the PC
- Troubleshoot problems on the PC
- Find out where to get more information and support.

Important Safety Information

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

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.

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.

WARNING   To avoid electric shock, do not open the power supply.

This HP PC is a class 1 laser product. Do not attempt to make any adjustment of the laser units.

Important Ergonomic Information

It is strongly recommended that you read the ergonomic information before using your PC.

For Windows 95 users, open the Start menu in the task bar and select Help. Then double-click on the help topic "Working in Comfort".

For Windows for Workgroups (Windows 3.11) users, open the Program Manager, open the program group "HPUtils", and double-click on the "HP User Tools" icon. Then click on "Working in Comfort" in the page tagged "Information".

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3 Troubleshooting Your PC

4 Hewlett Packard Support and Information Services

1

Setting Up and Using Your PC

Unpacking Your PC

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

Typical Display

Typical Computer
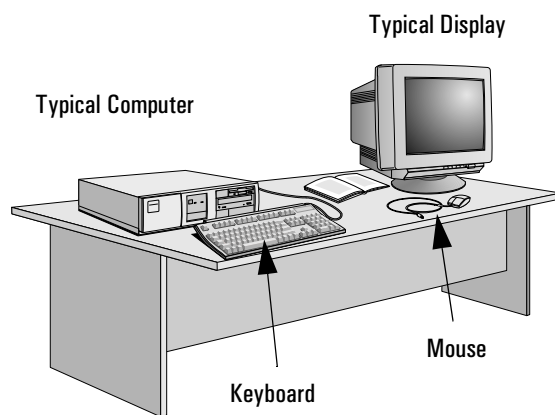
Mouse

Keyboard

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

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   Refer to the display's manual for information about the display.

Operating System   Your PC's operating system is preloaded on your PC's hard disk drive.

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, Display and Printer

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

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.

Connections for Models with Integrated Video Display

Mouse   Keyboard   Display

(USB—see note below)

Parallel Connector   Serial Connectors

NOTE   The Universal Serial Bus (USB) connectors are between the serial connectors and can be used for USB accessories. Most USB accessories are automatically configured as soon as they are physically attached to the PC. USB is not supported by all operating systems. If the USB drivers are not available on your PC, they can be obtained from HP's electronic services.

Connections for Models with MGA Millennium Video Board

If your PC has a MGA Millennium video board, use the following connectors.
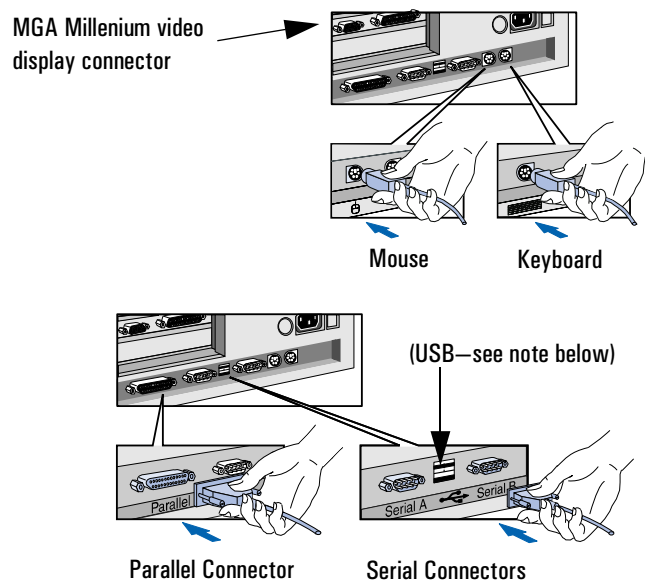
MGA Millenium video
display connector

Mouse   Keyboard

(USB—see note below)

Parallel Connector   Serial Connectors

NOTE   The Universal Serial Bus (USB) connectors are between the serial connectors and can be used for USB accessories. Most USB accessories are automatically configured as soon as they are physically attached to the PC. USB is not supported by all operating systems. If the USB drivers are not available on your PC, they can be obtained from HP's electronic services.

Connecting to a Network

If your PC comes with a network connector, let your Network Administrator know you are connecting your PC to the network. Connect the network cable to the RJ-45 UTP (Unshielded Twisted Pair) LAN connector.
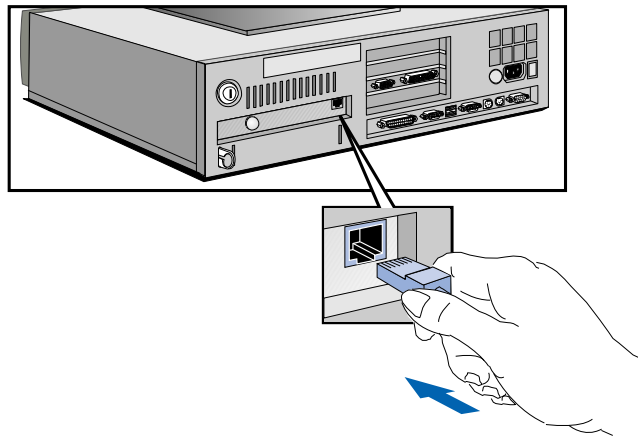
To enable your network connection, refer to the Integrated Network Interface Submenu in the Configuration Menu of the HP *Setup* program. (You can find additional information in the online *Network Administrator's Guide*.)

NOTE   If you need a BNC Coax connector to connect to the network, you can install an optional BNC coax adapter (order HP D3979A). Refer to "Installing a BNC Coax Adapter", on page 38.

Connecting Audio Accessories

If your PC has multimedia capabilities, it will have a Headphones jack and a Microphone jack on the rear panel. An audio Line In jack, an audio Line Out jack, and a MIDI interface connector ("SPK OUT") are also located on the rear panel.
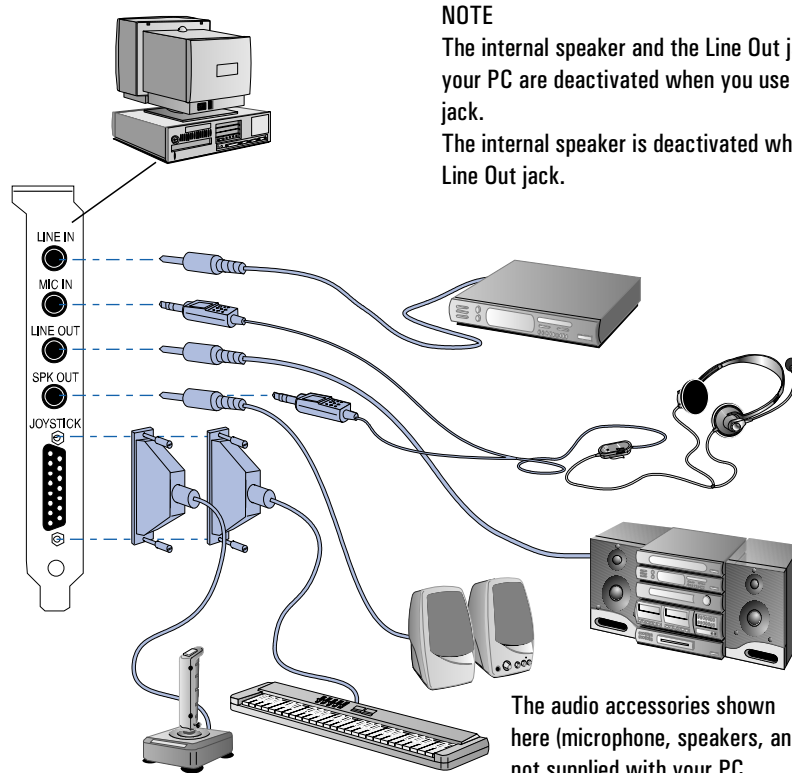
NOTE
The internal speaker and the Line Out jack on the rear of your PC are deactivated when you use the Headphones jack.
The internal speaker is deactivated when you use the Line Out jack.

The audio accessories shown here (microphone, speakers, and hifi system) are not supplied with your PC.

WARNING   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 around 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.

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Connecting the Power Cables

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

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

2   Connect the power cords to the display and the computer. (*The connectors are shaped to go in one way only*.)

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

Display
Power Cord

Computer
Power Cord

Grounded Outlet
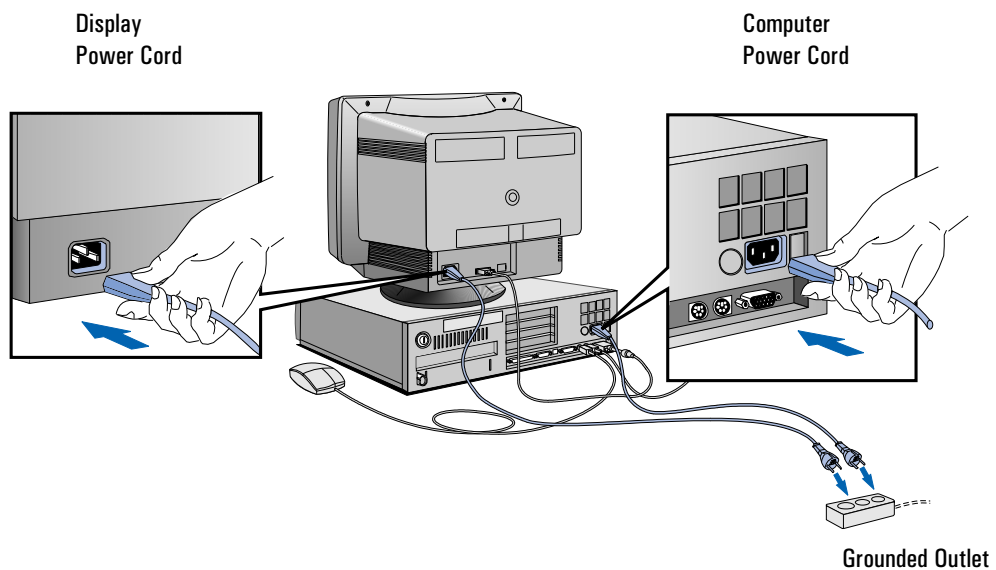
Your PC's Hardware Control Panel

Your PC's hardware control panel is on the front of your PC.

| Power on Status Light | Hard Disk Activity Light |

Power On/Off

Volume Control
(Optional—see note below)

Speaker Out for Headset
(Optional—see note below)
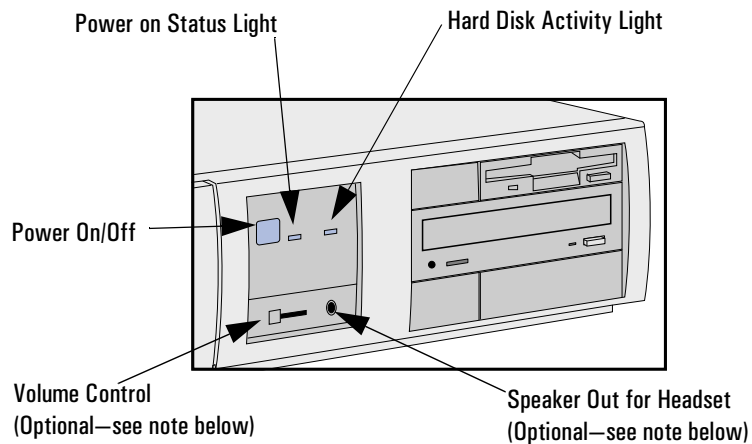
Power On/Off Button	Press this button to turn the power on or off to your PC.
Hard Disk Activity Light	This light glows/flickers when your hard disk drive is being accessed. The hard disk activity light only works if you have an IDE hard disk drive, which comes with your Vectra PC. If you replace this drive with a SCSI hard disk drive, this light will not work.
NOTE	If your PC comes with an audio board, the front panel will have controls for the audio board.

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Starting and Stopping Your PC

NOTE   If you are starting your PC for the first time, refer to "Starting the PC for the First Time", on page 10. To stop your PC, refer to "Stopping Your PC", on page 12.

Starting Your PC

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

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] to get the HP Summary Screen. If there is an error in the POST, the error will automatically be displayed. For details, refer to "If a POST Error Message is Displayed", on page 47.

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.

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

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

Initializing Your Software

NOTE

Do NOT switch OFF the PC while the software is being initialized—this could cause unexpected results.

To initialize your software:

1   Turn on the display first, and then the PC.

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 details in the HP Summary Screen (refer to the "HP Setup Program", on page 66.

If an error is detected during the Power-On-Self-Test, the PC will automatically display the error. You may be prompted to press [F2] to start the *Setup* program to correct the error.

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.

- Depending on which model PC you have, 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.

After 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

It is very important that you create master diskettes for your preloaded software as soon as possible. HP recommends that you use new diskettes. If you need to restore the preloaded software on your PC, you can use these diskettes to do so.

For details on how to create these diskettes, refer to the documentation for your operating system.

Stopping Your PC

To stop the PC, make sure that you have exited all programs and the operating system (if necessary), and then press the power button on the control panel.

Refer to the operating system manual for details of how to exit the operating system.

Setting Passwords

You can set two passwords, the administrator password and the user password, to provide two levels of protection for your PC. You set both passwords in the Security menu group of the *Setup* program.

Setting an Administrator Password

Set the Administrator Password to protect the PC's configuration in *Setup*. An Administrator Password can provide a power-on password prompt to prevent your PC being started or used in your absence. You can also use this password to start the PC when the keyboard (and mouse) are locked—you must type the password and press ⏎ Enter to unlock the keyboard (refer to "Power-On Password", in the HP *Setup* program—refer to "HP Setup Program", on page 66).

If you have set both an Administrator Password and a User Password, and you enter the *Setup* program by using the User Password, you will be restricted in your ability to change setup items. If you enter the *Setup* program with an Administrator Password, you will have no restrictions.

To set an Administrator Password:

1 Start the Setup Program. Refer to "HP Setup Program", on page 66.

2 Select the Security menu group.

3 Select the "Administrator Password" submenu.

4 Choose the "Set Administrator Password" setup item. You will be asked to enter your password twice. Be sure to save your changes before you exit the *Setup* program.

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

NOTE   If you forget your password, refer to "If You Have Forgotten Your Password", on page 57.

Setting a User Password

A user password can only be set if an Administrator Password has already been set.

Set a User Password to:

- provide a power-on password prompt to prevent your PC being started or used in your absence

- start the PC when the keyboard (and mouse) are locked—you must type the password and press ⏎ Enter to unlock the keyboard (refer to "Power-On Password", in the HP *Setup* program—refer to "HP Setup Program", on page 66).

If you have set both an Administrator Password and a User Password, and you enter the *Setup* program by using the User Password, you will be restricted in your ability to change setup items. If you enter the *Setup* program with an Administrator Password, you will have no restrictions.

To set a User Password:

1 Start the Setup Program. Refer to "HP Setup Program", on page 66.

2 Select the Security menu group.

3 Select the "User Password" submenu.

4 Choose the "Set User Password" setup item. You will be asked to enter your password twice. Be sure to save your changes before you exit the *Setup* program.

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

NOTE

If you forget your password, refer to "If You Have Forgotten Your Password", on page 57.

Using Power Management

Power management enables you to reduce the PC's power consumption when you are not using the PC. To configure power management, refer to "Power Menu Items" in the HP Setup program (refer to "HP Setup Program", on page 66).

Refer to your operating system documentation for detailed information about the capabilities of your operating system to implement power management.

This PC's power management complies with the Energy Star Computers Program initiated by the United States Environmental Protection Agency.

Additional Information and Help

Additional information about your PC is preloaded on your PC's hard disk drive. This information includes:

- New features—what is new and special about your PC

- Using your PC—simple, "how-to-use" guidelines about using your PC

- Working in comfort—guidance on ergonomic issues

- Inside your PC—describes the basic parts of your PC, how to upgrade, and how to optimize performance

- HP support—similar to chapter 4 in this User's Guide

- Glossary.

2

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.

Accessories You Can Install

Video Memory

Up to Four Accessory Boards
(Some slots may come with pre-installed boards.)

Front-Access Device Shelf
5.25-inch 1.2-MB flexible disk drive
Tape Drive

Processor

Main Memory Modules (32-bit EDO):
8 MB kit (2 x 4 MB modules)
16 MB kit (2 x 8MB modules)
32 MB kit (2 x 16 MB modules)
64 MB kit (2 x 32 MB modules)
(Pairs of identical modules must be installed.)

Cache Memory

One internal mass storage device

Network LAN Board (UTP)
(on some models)

Removing and Replacing the Cover

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, video memory, processor, battery, or accessory board slots.

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

2   Lift the front of the power supply to disengage the hinge on the rear. Lift the power supply clear and lay it upside down on the frame above the disk drives.
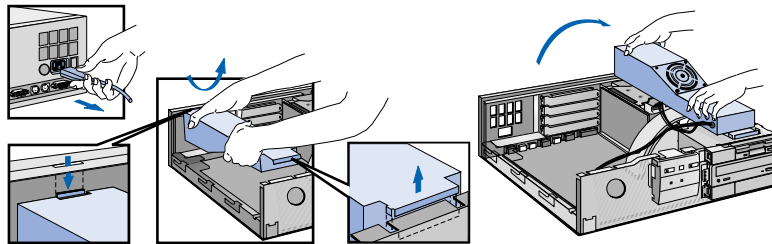
3   Before replacing the power supply, ensure that you have installed all your accessories in the PC. Replace the power supply on the left-hand side of the PC, and ensure that the cables are neatly routed around any accessory boards.

4   Raise the front of the power supply and engage the hinge on the rear. Lower the front of the power supply into position so that it rests on the front panel
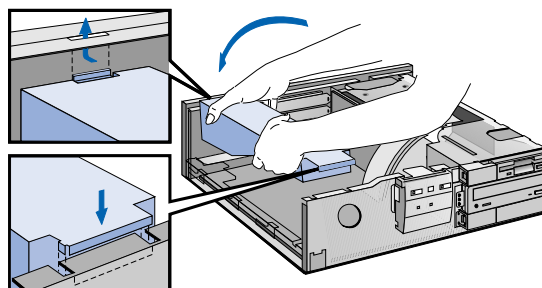
Installing Memory

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 PC while you are removing the accessory from the bag. Handle the accessory as little as possible and with care.

Installing Main Memory

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 192 MB (6 x 32 MB).

Main memory is available in modules of 4 MB, 8 MB, 16 MB, or 32 MB. There are three memory "banks", with each bank requiring two memory modules. You must install identical modules as pairs in each bank.

Bank[1]	Memory Modules You can Install
A1 and A2	Comes preloaded with either 16 MB (2 x 8 MB) or 32 MB (2 x 16 MB).
B1 and B2	Any pair of identical modules.
C1 and C2	Any pair of identical modules.

1. The letters "A", "B", and "C" are used for reference only in this manual. These letters do not appear on the system board. The bank identified here as "C" is the one closest to the processor.

NOTE	Best performance is achieved if you install memory in bank "A" first, then bank "B", and in bank "C" last.

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 the power supply (refer to page 20).

3 Align the memory module with the slot, with the notch on the right hand side. For each memory module, slide it into the slot at 45°. Pivot the memory module to a perpendicular position and click into place.
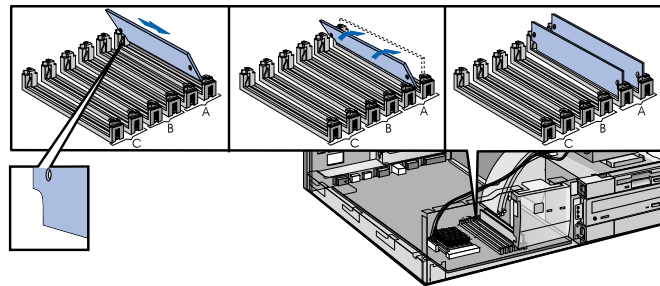
The letters "A", "B", and "C" are used for reference only in the above illustration. These letters do not appear on the system board. The bank identified here as "C" is the one closest to the processor.

4 If you need to remove a main memory module, release the retaining clip and pull the module forward and out of the socket.

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

6 Check the HP Summary Screen to verify the new configuration. Refer to page 66.

Installing an Optional Cache Memory Module

Your PC comes with a 256 KB level 2 cache memory module. You can upgrade this to 512 KB.

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   Remove the 256 KB cache module.

4   Align the 512 KB cache memory module directly over the socket. Press the memory module completely into the connector.

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

6   Check the HP Summary Screen to verify the new configuration. Refer to page 66.
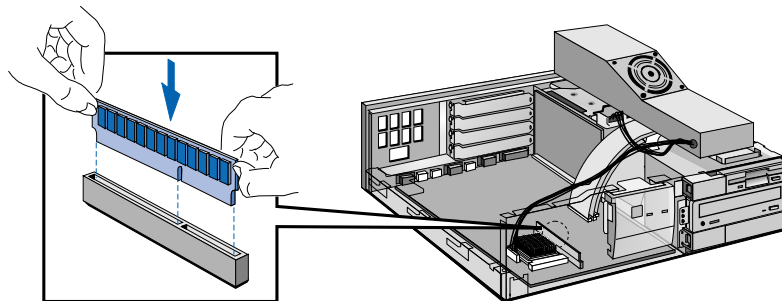
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Installing a Video Memory Upgrade (Integrated Video Models)

If you have an integrated video display, your PC is supplied with 1 MB of video memory on the system board. You can install a pair of video memory modules to increase your available video memory to 2 MB.

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 Video Memory Modules

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

2   Remove the computer's cover.

3   Remove the power supply.

4   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. Press the memory module *completely* into the connector
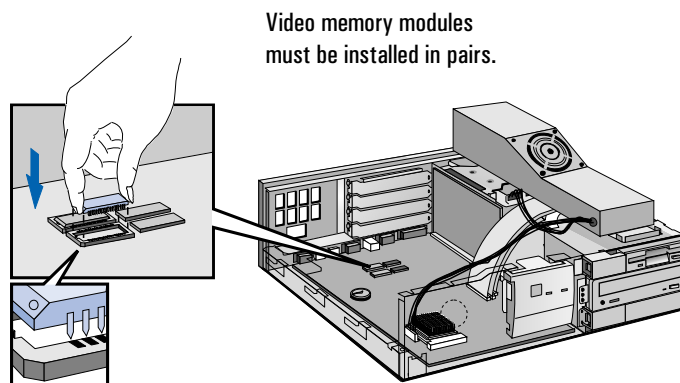
Video memory modules
must be installed in pairs.

5   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   Follow the instructions that come with your video memory upgrade or that are in your operating system manual to configure the new video memory upgrade.

3   You may be asked to insert a diskette containing an appropriate video driver in drive A. For the latest version of a required driver, refer to page 73.

Upgrading the MGA Millennium Board Memory

If your PC has the MGA Millennium video board instead of integrated video memory, you can increase its memory from 2 MB to 4 MB to get more colors and better video resolution.

1   Switch off the display and computer, and disconnect the power supply cables and any telecommunications cables. Remove the computer's cover.

2   Unscrew and remove the screw securing the MGA Millennium board. Put the screw to one side. Note which slot the board is in.

3   Carefully remove the board from its slot, holding the board at each end by its top edge. Do not bend the board. With its components facing up, place the board on a clean, flat, solid, static-free surface. Handle the board by its edges.

4   Install the memory module on the video board. Carefully slide the board back into its slot. Firmly press the board into the socket. Make sure that the board's connector engages completely with the socket and does not touch components on other boards you may have installed. Secure the board by replacing the screw.

Carefully install the video
memory module
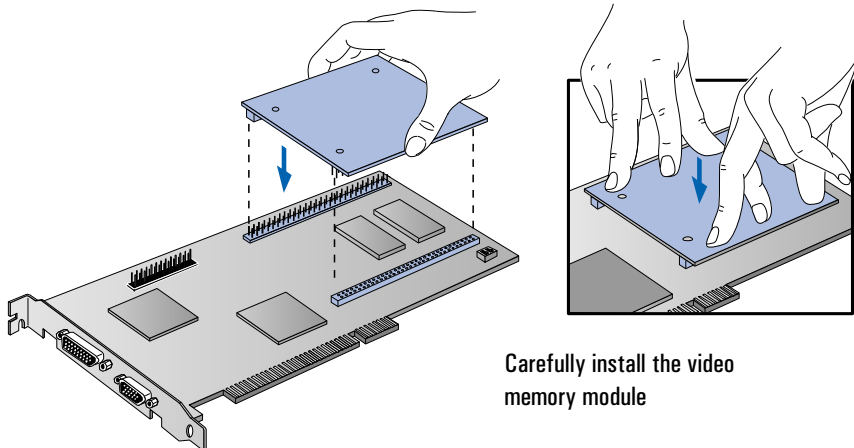
5   Install any other accessories before replacing the cover and
    reconnecting the cables.

6   After switching on the PC, change the video resolution and the
    number of colors displayed. Alternatively, use utilities supplied with
    the operating system. See your operating system documentation and
    online help for more information.

Two configuration switches are on the Matrox video adapter board.

Switch	Use Switch Block to:
1	Flash EEPROM Switch for VGA BIOS: • OFF to prevent Video BIOS upgrades — DEFAULT • ON to allow Video BIOS upgrades.
2	Enable or disable VGA for single-screen or dual-screen operation (with a second VGA controller): • OFF for single-screen operation — DEFAULT • ON for dual-screen operation (with a second VGA controller).

Contact your HP representative for further information about
upgrading the VGA BIOS.
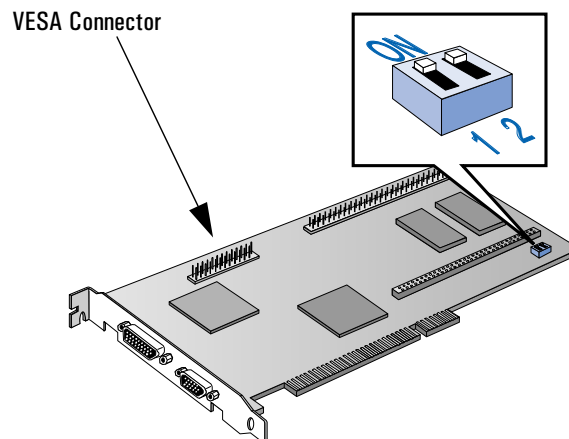
Installing Mass Storage Devices

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

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.

Connecting IDE Devices

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

- The first is marked "Primary IDE" 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 marked "Secondary IDE" next to the system board attachment.

Primary IDE cable
Second connector

Secondary IDE cable

Flexible Disk Drive
data cable (non-IDE)

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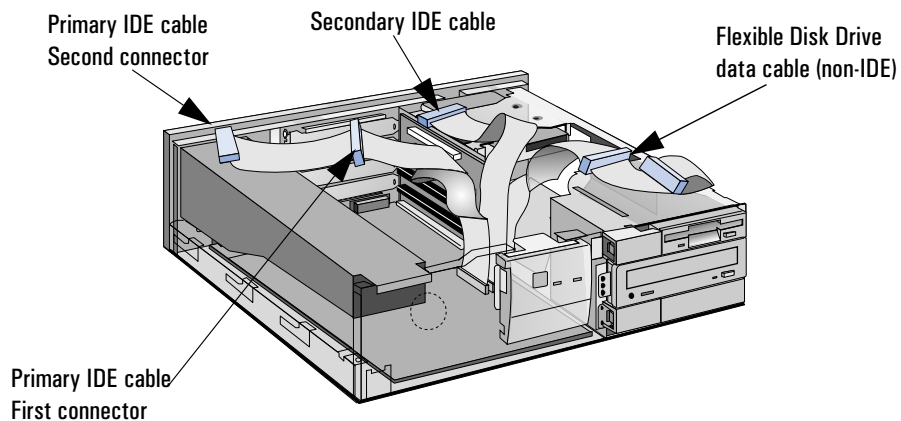
Up to three IDE devices can be connected to the system board using these data cables.(Refer to the storage device's manual to check whether you need to set jumpers, or if there are any special installation procedures.)

Examples of multiple IDE drive combinations		
Configuration	**Connections to data cables**	
1 Hard disk drive	1. Bootable hard disk drive:	First connector, Primary IDE Cable
2 Hard disk drives	1. Bootable hard disk drive:	First connector, Primary IDE Cable
	2. Second hard disk drive:	Second connector, Primary IDE Cable
3 Hard disk drives	1. Bootable hard disk drive:	First connector, Primary IDE Cable
	2. Second hard disk drive:	Second connector, Primary IDE Cable
	3. Third hard disk drive:	Secondary IDE Cable
1 Hard disk drive 1 CD-ROM	1. Bootable hard disk drive:	First connector, Primary IDE Cable
	2. CD-ROM:	Secondary IDE Cable
2 Hard disk drives 1 CD-ROM	1. Bootable hard disk drive:	First connector, Primary IDE Cable
	2. Second hard disk drive:	Second connector, Primary IDE Cable
	3. CD-ROM:	Secondary IDE Cable

Jumper Settings

Refer to the IDE drive's manual to see if you must set jumpers. The drive jumper should be set to "cable select".

Configuring an IDE Device After Installation

After installing a second IDE drive, or after installing any flexible disk drive, you will need to verify that your PC has correctly identified the new configuration, by viewing the HP Summary Screen. Refer to the page 66. If the configuration is not correct, run the *Setup* program to configure the device. Refer to "HP Setup Program" on page 66.

IDE drives are automatically detected by the *Setup* program. However, 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 page 73.

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.

Step 3: Slide drive into rear shelf.
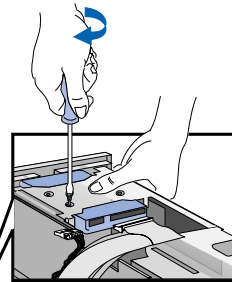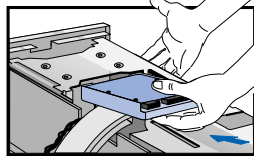
Step 4: Align and secure the drive.

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.*

Data cable
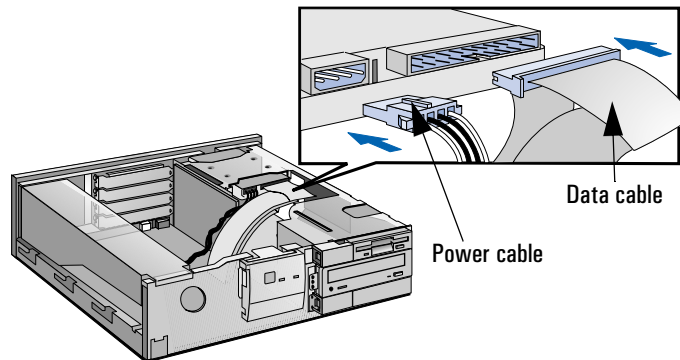
Power cable

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

7 Verify the new configuration by checking the HP Summary Screen. Refer to the page 66.
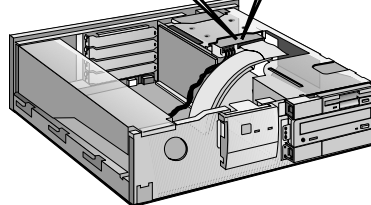
Installing an IDE Hard Disk Drive in the Bottom Shelf

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, and disconnect the PC from any telecommunications network.

2 Remove the computer's cover.

3 Remove the CD-ROM from the middle shelf.

4   Remove the two bezels from the bottom shelf. The bezels snap in and out, and can be removed without any tools.
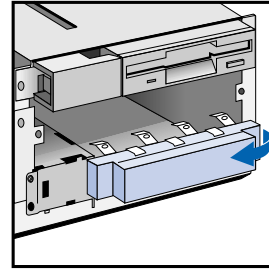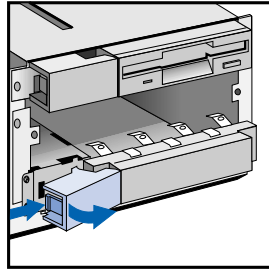
5   Support the power supply with your hand (to prevent it falling out) and carefully turn the PC onto its side.

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

7   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.
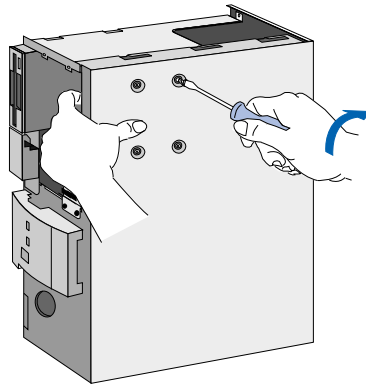
8   Support the power supply with your hand and very carefully return the PC to the upright position.

9   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", on page 28.

Data cable ⎯ Power cable
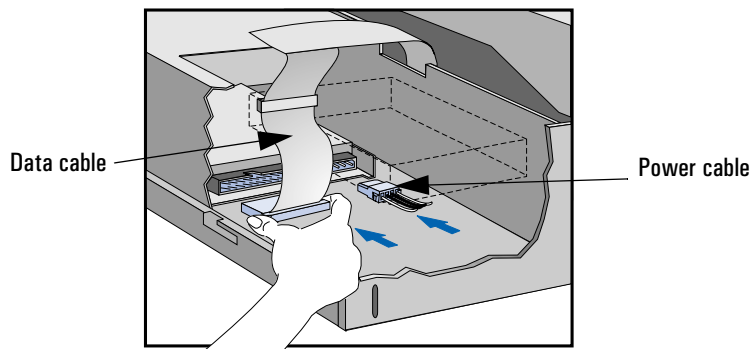
10 Replace the CD-ROM in the middle shelf.

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

12 Verify the new configuration by checking the HP Summary Screen. Refer to page 66.

Installing a Tape Drive in the Bottom Shelf

A tape drive can be installed in the bottom shelf.

1   Disconnect the computer's power supply cord from the power outlet, and disconnect the PC from any telecommunications network.

2   Remove the computer's cover.

3   Remove the CD-ROM from the middle shelf.

4   Remove the two bezels from the bottom shelf. The bezels snap in and out, and can be removed without any tools.

5   Slide the drive completely into the bottom shelf and secure it with the screws provided with the device. Replace the side bezel.
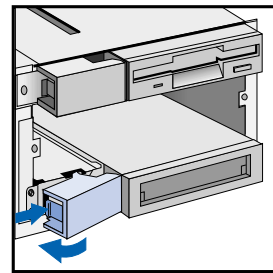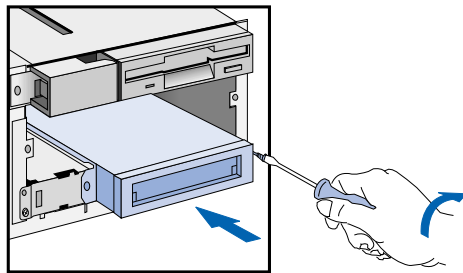
6   Connect the data and power cables to the rear of the drive and to the PC (refer to the cables and instructions that come with the tape drive).

7   Replace the CD-ROM in the middle shelf.

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

9   Verify the new configuration by checking the HP Summary Screen. Refer to page 66.
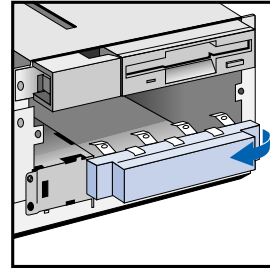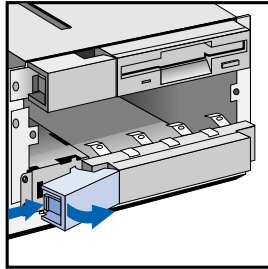
Installing Accessory Boards

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 computer while you are removing the accessory from the bag. Handle the accessory as little as possible and with care.

The PC has four accessory board slots:

- Slot 1 (the top slot) can be used for a full-length 32-bit PCI board
- Slot 2 can be used for full-length 32-bit PCI boards
- Slot 3 can be used for either a full-length 32-bit PCI or a full-length 16-bit ISA board
- Slot 4 (the bottom slot) can be used for 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. If your operating system supports Plug and Play, your PC has configurable support for Plug and Play in the BIOS.

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.

Refer to the documentation supplied with the operating system for details on your operating system's capabilities and restrictions concerning 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.

NOTE Your PC may have a small terminator board installed in a PCI slot. You must remove this board before installing any PCI accessory boards.

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. (See diagram on facing page.)

5 Hold the board horizontally by its "top" edge. Slide it into the board guide of the chosen slot. Do not bend the board. (See diagram on facing page.)

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. (See diagram on facing page.)

8 If you install a VESA-standard video adapter board, connect the accessory board's cable to the VESA pass-through connector on the system board. If you have a Matrox Millennium video board, connect the cable to the VESA connector on the Matrox board (refer to page 27). You may also need to update the Video Submenu (Configuration group) of the HP *Setup* program (refer to page 66).

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

Installing an Accessory Board (refer to facing page)

Step 4: Unscrew and remove the slot cover.
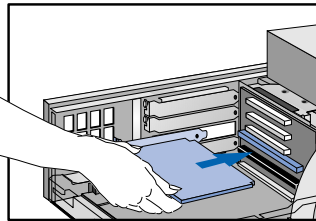
Step 5: Slide board into the slot.
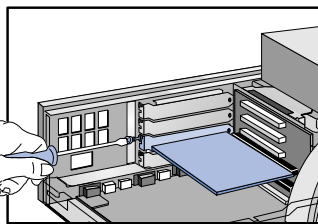
Step 7: Secure the board.
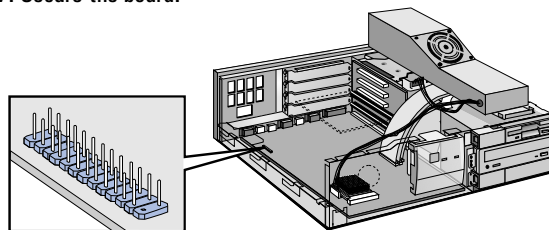
Step 8: Installing a VESA-standard video adapter board.

Installing a BNC Coax Adapter

If your PC is supplied with an pre-installed network board with a UTP (Unshielded Twisted Pair) connector, you can install a BNC Coax connector onto this board. Order HP part number D3979A.

Network Board

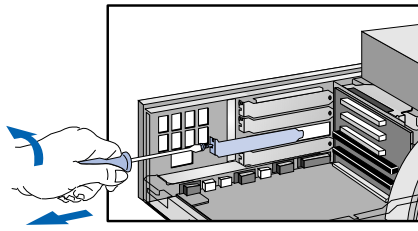BNC Coax Connector
Installed Here
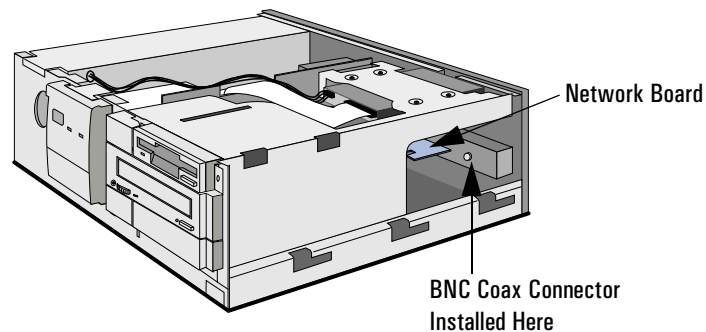
Follow this procedure to install a coax adapter connector:

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

2   Remove the PC's cover.

3   From inside the PC, push out and remove the metal plug on the network board to expose the hole for the coax connector.

4   Remove the nut from the coax connector.

5   Attach the coax adapter board to the network board and at the same time insert the coax connector through the hole in the network board's back metal plate.

6   From outside the PC, screw the nut back onto the coax connector until it is secured tightly on the network board.

7   Replace the PC's cover.

8   Reconnect all cables and then the power supply cord.

To Install a BNC Coax Adapter
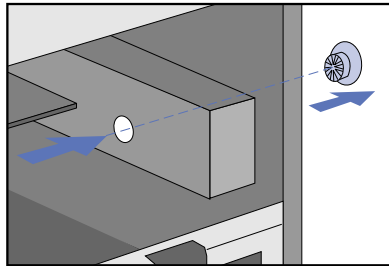
Step 3: Remove the metal plug.
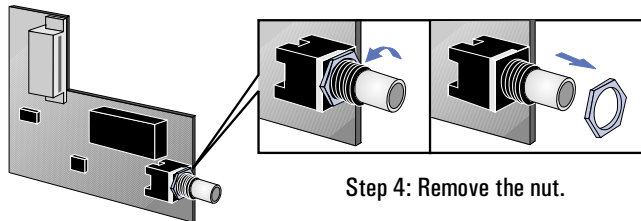
Step 4: Remove the nut.
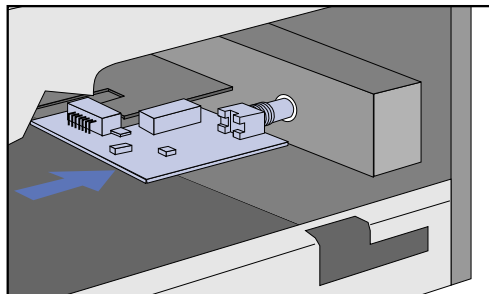
Step 5: Attach the coax adapter board to the network board.

Step 6: Screw the nut back onto the coax connector.
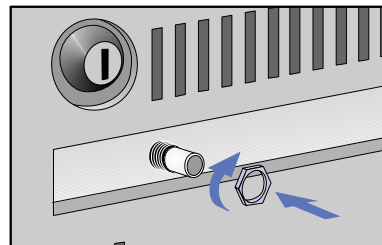
Installing an OverDrive Processor

You can install an Intel OverDrive^{TM} processor in your PC. Contact your authorized reseller for more details about the availability of the Intel OverDrive processor for your PC.

1   Disconnect the computer power cords from the power outlets, and disconnect the PC from any 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" on page 20.

3   If the heat sink is not directly attached to the processor, unclip the heat sink.

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

Heat Sink
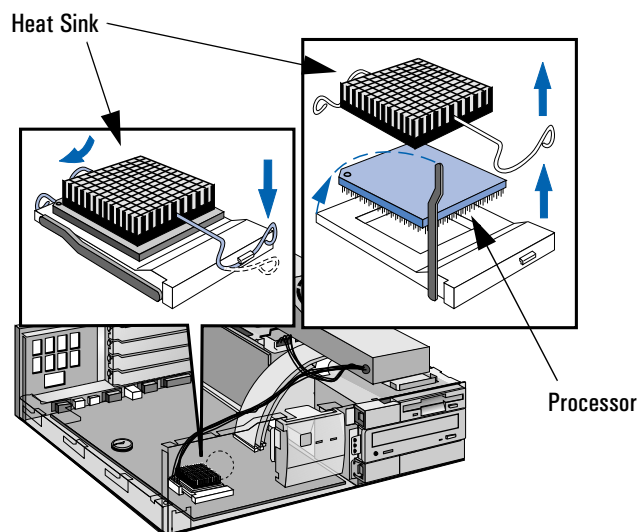
Processor

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 directly attached to the processor.

CAUTION   Do not change the system board switches after you install an OverDrive processor.

6 Replace the computer's power supply and cover. Reconnect all cables and power cords.

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 page 19).

2   Remove the security bracket from the storage position.

Remove the
bracket from the
storage position

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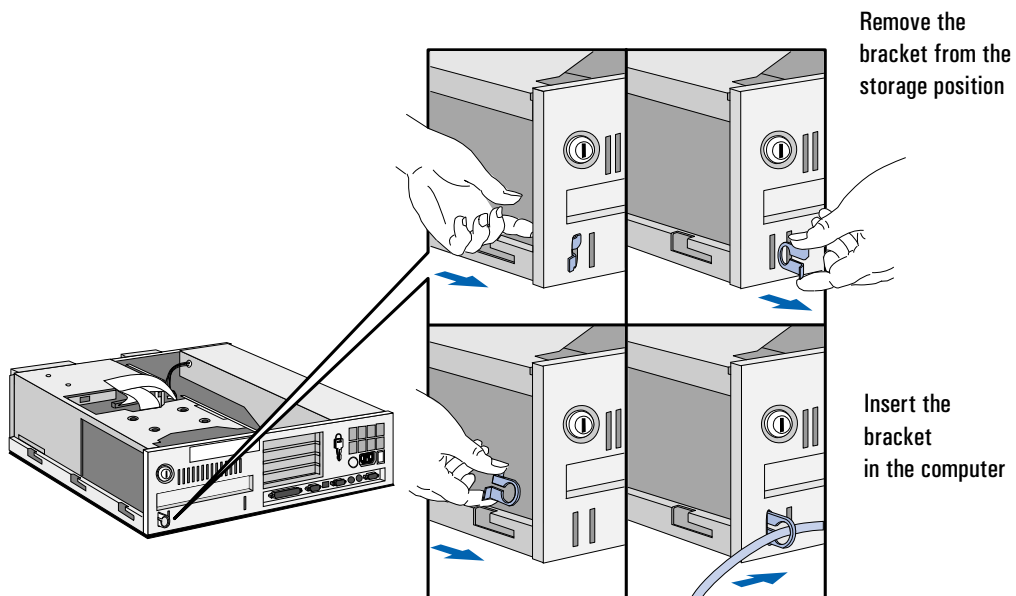
3   Insert the security bracket, from inside the computer, into the slot shown in the diagram above.

4   Press it firmly until it snaps into place.

5   Install any other accessories before replacing the cover.

3

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 "Hewlett Packard Support and Information Services", on page 67.

HP Summary Screen

The HP Summary Screen provides information about your PC's current configuration. To view the Summary Screen, press Esc just after your PC is switched on and while the Vectra Logo appears during the Power-on-Self-Test (POST). Refer to "HP Setup Program", on page 66.

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 start your PC from a modem.

- 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 Rebuild 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 OverDrive Processor" on page 40.
Check that the processor speed switches have been set correctly.	Refer to "System Board Switches" on page 63.
Check that the memory modules are correctly installed.	Refer to "Installing Memory" on page 21.
Check that accessory boards are firmly seated in their slots.	Refer to "Installing Accessory Boards" on page 35.
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 Switches" on page 63.

5   Replace the cover.
6   Reconnect all cables and power cords.
7   Turn on the display and computer.

Rebuild 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 Cannot Start Your PC from a Modem

If you are running Windows 95 and you have chosen the option to start your PC from a modem, and this option does not work, then you need to change the IRQ setting in the HP *Setup* program.

In the Setup program, go to the Security group, and the "Start-up Center" submenu. Change the IRQ setting for the setup item "Start from Modem". (Refer to "HP Setup Program", on page 66.)

If a POST Error Message is Displayed

The Power-On-System-Test (POST) can detect both an error and a change to the configuration. In either case, an error code and short description is displayed. Depending on the kind of error, you will have one or more of these choices available on screen:

- Press F1 to ignore the message and continue.

- Press F2 to run *Setup* and correct a system configuration *error*. HP recommends that you correct the error before proceeding, even if the PC appears to start successfully.

- Press F4 to accept (validate) the change and update *Setup's* configuration information.

- Press ⏎ Enter to see more details about the message. After viewing these details, you will be returned to the original POST display screen. If the message is actually a change to the configuration you have made (for example, you have just removed some memory), you can then press F4 to accept the change and update *Setup's* configuration information. Otherwise, press F1 to ignore the message and continue, or press F2 to run *Setup* and correct a system configuration *error*. (The number of choices you will have available are dependent on the kind of error.)

Clearing the PC's Configuration Memory

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

1 Turn off the PC, disconnect the power and cables, and remove the cover. Disconnect the PC from any telecommunications network.

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

   b Replace the cover, and reconnect the power cable only.

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

   d Wait until the PC has started. A message will be displayed similar to this:

      "Configuration has been cleared, set switch 6 to the OPEN position before rebooting."

     Turn off the PC, disconnect the power cable, 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:

   "Incorrect PC configuration"

   The PC will stop. Press any key to continue. A "pop-up" screen will appear stating that the:

     "CMOS checksum is invalid.

     Default values will be loaded.

     Press any key to continue".

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*.

If You Cannot Turn Off Your PC

Use this section if you cannot turn off your PC, the power indication light is red, and you hear a "buzzing" sound.

- Check if your PC is locked, whereby "power-off" is not allowed. You will need to enter a password to unlock the PC (refer to "Power-On Password", in the HP Setup program —refer to "HP Setup Program", on page 66—and to "Setting Passwords", on page 13).
- Check if you are in a suspend/sleep mode, where by a "power-off" would risk a loss of information/data (refer to "Power Menu Items", in the HP Setup program —refer to "HP Setup Program", on page 66).

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 Your Display is Blurred or Unreadable

If you have selected the wrong display, the display screen may become blurred or unreadable. To correct this problem:

- Select the correct display by refering to the display options section in the HP-provided online user setup information that came with your PC.

- Alternatively, select the correct display by using the procedures in the operating system on your PC. Refer to your PC's operating system documentation for details.

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 you have entered a password if you have set the keyboard and mouse to "locked". You can change this setting in the *Setup* program. Refer to "Security Menu Items" (refer to "HP Setup Program", on page 66).
- 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 screen's refresh rate is set too high, the screen might be blank. Check the refresh settings to ensure they are not too high.

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,* or your operating system's procedures, to select the correct refresh rate.

If Your Keyboard Does Not Work

- Ensure that the keyboard is correctly connected.
- If you turn on your PC, the operating system boots, the keyboard is correctly connected, but your keyboard is still not available, the power-on password may be set to "keyboard locked". You will need to enter a password to unlock the keyboard (and mouse). You can change this setting in the *Setup* program. Refer to "Security Menu Items" (refer to "HP Setup Program", on page 66).

If Your Mouse Does Not Work

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

Cleaning the mouse ball

Cleaning the mouse rollers
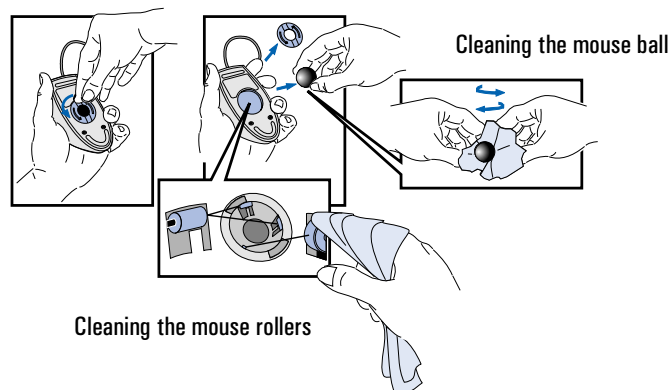
If Your Printer Does Not Work

- 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 is correctly configured in the *Setup* **Configuration** menu.
- Check the option on the *Setup* **Configuration** menu which enables or disables the on-board flexible disk controller.
- Clean the flexible disk drive using a diskette cleaning kit.
- Check that the flexible disk drive has been enabled in *Setup*.
    - Flexible disk drive (refer to "Hardware Protection Submenu (Security group)" in the HP Setup program—see "HP Setup Program", on page 66)
    - Boot on flexible disk drive (refer to "Start-up Center Submenu (Security group)" in the HP Setup program—see "HP Setup Program", on page 66)
    - Write on flexible disk drives (refer to "Start-up Center Submenu (Security group)" in the HP Setup program—see "HP Setup Program", on page 66)
- Check that the disk power and data cables are correctly connected.

If the Hard Disk Does Not Work

- Check that the disk power and data cables are correctly connected (refer to "Connecting IDE Devices", on page 28).
- Check that the hard disk drive has been "enabled" (refer to "Hardware Protection Submenu (Security group) in the HP Setup program—see "HP Setup Program", on page 66). There is also an option in the *Setup* program that lets you disable or enable boot on hard disk drive (refer to "Start-up Center Submenu (Security group)" in the HP Setup program—see "HP Setup Program", on page 66).
- Check that the hard disk drive has been detected (refer to "IDE Devices Submenu (Configuration group)" in the HP Setup program—see "HP Setup Program", on page 66).
- Check that the on-board Bus IDE is enabled if you are using the integrated IDE controller (refer to "IDE Devices Submenu (Configuration group)" in the HP Setup program—see "HP Setup Program", on page 66).

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 Has a Problem

WARNING

Be sure to disconnect the power cord and any telecommunication cables from your computer before you remove the cover to check the cable connections or jumper settings.

To avoid electric shock and harm to your eyes by laser light, do not open the CD-ROM drive enclosure. The CD-ROM drive should be serviced by service personnel only. Refer to the label on the CD-ROM for power requirements and wavelength. This PC is a class 1 laser product. Do not attempt to make any adjustment of the laser unit.

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 (refer to "IDE Devices Submenu (Configuration group)" in the HP Setup program—see "HP Setup Program", on page 66).
- Verify that the **Bus IDE Adapters** item is set to **Both** in *Setup* (refer to "IDE Devices Submenu (Configuration group) in the HP Setup program—see "HP Setup Program", on page 66).
- If you intend to boot on CD-ROM, make sure that this option is enabled in *Setup* (refer to "Start-up Center Submenu (Security group)" in the HP Setup program—see "HP Setup Program", on page 66).
- For further information refer to the CD-ROM documentation.

CD-ROM Drive is Idle

If the CD-ROM drive does not appear to be working, try accessing the disk by clicking on the CD-ROM drive icon or drive letter assigned to the CD-ROM drive by your operating system.

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", on page 65. Refer to the board's manual for further details.
- Check that the PC has been configured correctly in *Setup*.

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 Switch off the PC.
2 Restart the PC. If the keyboard is locked, enter the administrator password.
3 Wait for **F2=Setup** to be displayed.
4 Press ⌷F2⌷ to start *Setup*.
5 Enter the Administrator Password to access the **Security/User Password** menu.
6 Move to the User Password field and set a new User Password. This will replace the old password which you had forgotten.
7 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 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 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:

- Refer to the operating system and application software manuals.
- If Windows does not run properly, refer to the Windows manual for guidance.

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 your operating system utilities or the *Setup* program.

If You Have a Network Problem

If you have a problem with your PC's network, run the HPIEDIAG utility (preloaded on your PC's hard disk drive):

1 Select drive C: to access the PC's hard disk drive.
2 Change to the DIAG directory by typing either:

>   **CD\LANDRV\DIAG**
>   **CD\LAN\DIAG**

3 Start the HPIEDIAG utility by typing: **HPIEDIAG** [↵ Enter]. Follow the instructions on the screen.

Then check the configuration of the integrated Ethernet interface using the *Setup* program (refer to "Integrated Network Interface Submenu (Configuration group)" in the HP Setup program—see "HP Setup Program", on page 66). Refer also to the online *Network Administrator's Guide*.

If Your PC Has an Audio Problem

No Sound When Running Any Applications

First, check that the output volume is not set to zero. Use the volume control on the front panel. Make sure the headphones are not connected directly to the CD-ROM drive (see the connection information in chapter 1).

Remember also that plugging the headphones into the front panel cuts out sound to the internal speaker and to external speakers connected to the audio Stereo Out jack.

When your PC starts up, the integrated audio interface may have no IRQ or DMA settings. These settings are initialized by software upon startup. Your system files may not have the necessary entries. Run the Setup program to configure the IRQ and DMA settings.

Absence of sound can also be caused by a hardware conflict. Hardware conflicts occur when two or more peripheral devices compete for the same signal lines or channels. Conflicts between your audio interface and another peripheral device might be due to the settings of the I/O addresses, IRQ channel, or DMA channel. To resolve the conflict, change the settings either of the audio interface or of any other ISA accessory in your system.

No Output from the 8-bit or 16-bit Digitized Sounds

This might be due to the DMA channel selected. If you hear no output from both the 8-bit and 16-bit digitized sounds, this might be due to an interrupt conflict. Use the HP Setup program or your operating system's audio control software to change the audio interface's DMA channel or IRQ setting.

The Volume is Too Low

The computer has two output jacks, Stereo Out on the rear of the computer and a headphones jack on the front panel, which provide the same output signal. This is a low-distortion output that cannot drive (without amplification) low-impedance devices such as speakers. If you plug devices with a low-impedance (less than 32 ohms) into the Stereo Out jack or the headphones jack, the volume will be low.

Audio Input from the Microphone is Too Low, or No Audio At All

Check that the microphone specifications meet the requirements of the 16-bit sound components. The microphone should be a 600-ohm dynamic type.

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Humming Noise

If the power grounding of your audio components is inadequate, a humming noise may be generated. This may happen if your PC is connected to a hifi system. Plug all devices into adjacent power outlets (outlets within 5 cm / 2 inches of each other), or use line filters.

Occasional Crackles When Playing Back Sounds

These crackles are usually the result of your PC being unable to transfer audio samples within the required time. A solution is to use a lower sampling rate. Recording and playing back at 22 kHz is less demanding upon system resources than recording audio at 44 kHz.

The PC Hangs While Recording

Uncompressed digital audio can eventually fill your hard disk. For example, one minute of stereo sound recorded at a resolution of 44 kHz will occupy about 10.5 MB. Before recording, check that there is enough free space on your hard disk.

Data compression can reduce the space required. The A-law and μ-law hardware compression used by the audio interface enables the sampling of sound at a resolution of 16-bits, but it generates the same quantity of data as an 8-bit sample.

MS-DOS Games Give "Not enough memory" Errors

Many games require a large amount of base memory and may not execute if many drivers or TSR (Terminate and Stay Resident) programs are installed. You may solve this problem by loading device drivers and TSRs into high memory. Refer to your MS-DOS manual for details of how to do this.
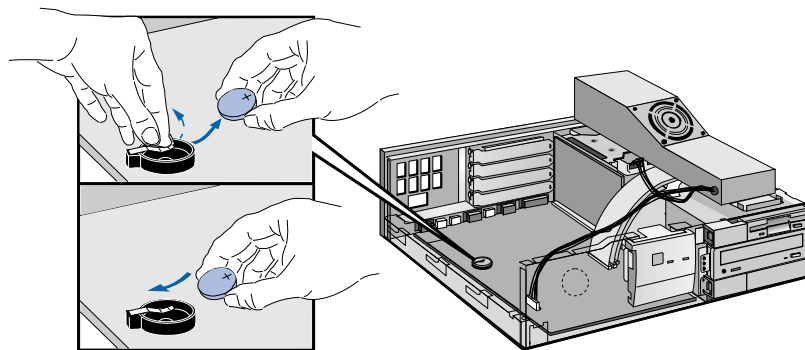
Changing the Battery

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.

You should order replacement battery HP 1420-0314 from your local Sales and Service office, or a "2325 type" battery, which is available from most local stores.

After removing the computer's cover:

1   Remove the old battery by sliding it from under the retaining clip (note the position of the cross).

2   Place the new battery in the battery holder, with the cross in the same position as the old battery, and ensure that it is properly seated. Ensure that the clip is in place and holds the battery firmly.
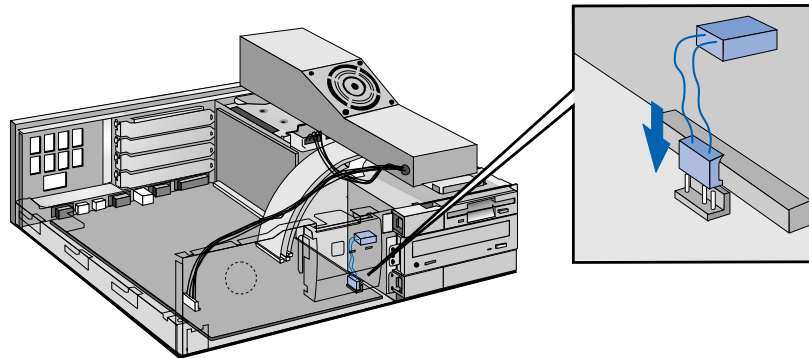
External Battery

You can also install an external battery in the PC (HP part number 1420-0513), which you can order from your authorized reseller. Install the external battery as follows:
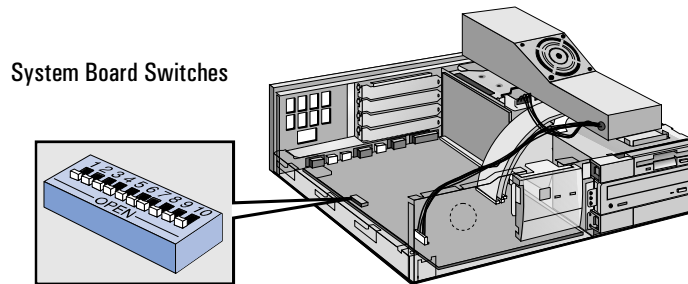
1   After removing the computer's cover, connect the external battery cable to the battery connector on the system board.
2   Mount the external battery as shown below, using the self-adhesive strip supplied.

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

Technical Information

System Board Switches

Switch	Switch function:
1 - 4, 7	Processor speed, see next table
5	Password: Open = enabled (default) Closed = disabled / clear User and Administrator passwords
6	Prevents changes to the PC's configuration (in CMOS) in the *Setup* program: Open = normal (default—you can change the configuration in the *Setup* program)) Closed = clear CMOS (to reload *Setup* defaults and prohibit changes to the *Setup* program)
9	Keyboard power-on: Open = disabled Closed = enabled (default)
8, 10	Not used

Processor Frequency	Bus Frequency	Switch1	Switch 2	Switch 3	Switch 4	Switch 7
133	66 MHz	Open	Closed	Closed	Open	Closed
150	60 MHz	Closed	Open	Closed	Closed	Closed
166	66 MHz	Open	Closed	Closed	Closed	Closed
180	60 MHz	Closed	Open	Open	Closed	Closed
200	66 MHz	Open	Closed	Open	Closed	Closed

Power Consumption

All measurements are in watts (rms).

Consumption by Model Number						
	D4555A	D4559A	D4560A	D4561A	D4562A	D4563A
Off	< 3	< 3	< 3	< 3	< 3	< 3
Windows 95 (without disk transfer)	24	27	30	27	27	31
Windows 95 (with disk transfer)	34	37	40	37	37	42
Suspend	21	24	27	24	24	28

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.

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.	IRQ0 IRQ1 IRQ2 IRQ3 IRQ4 IRQ5 IRQ6 IRQ7 IRQ8 IRQ9 IRQ10 IRQ11 IRQ12 IRQ13 IRQ14 IRQ15	system timer keyboard system cascade free if not used for serial port free if not used for serial port free if not used for parallel port flexible disk drive controller free if not used for parallel port real-time clock available for PCI devices, if not used by ISA board available for PCI devices, if not used by ISA board available for PCI devices, if not used by ISA board mouse co-processor integrated IDE hard disk drive controller free if not used by second IDE controller
DMAs used by PC	DMA 0 DMA 1 DMA 2 DMA 3 DMA 4 DMA 5 DMA 6 DMA 7	free free if not used for parallel port in *Setup* flexible disk drive controller free if not used for parallel port in *Setup* used to cascade DMA channels 0-3 free free free
I/O Addresses used by PC	170h - 177h, 376h IDE secondary channel 1F0h - 1F7h, 3F6h IDE primary channel 278h - 27Fh (and 3A8h) parallel port 2E8h - 2EFh serial port 2F8h - 2FFh serial port 370h - 371h integrated I/O controller 378h - 37Fh parallel port 3B0h - 3DFh (3B0-3BB,300-3DF) 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	

Integrated Video Graphic Information

The integrated video graphic chip is manufactured by S3 Inc. The graphic chip used is "TRIO 64V2 [IO775]".

These are the available video graphic resolutions:

> 640x480
>
> 800x600
>
> 1024x768
>
> 1280x1024
>
> 1600x1200

HP Setup Program

Check your PC's configuration when you first use the PC and each time after you install, remove, or upgrade accessories. Follow these instructions:

First, Turn Off Your PC 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 `Delete` to restart the PC (Windows 3.11). For Windows 95, use the **Shut Down** command.

To Go to the HP Summary Screen While the *Vectra* logo appears on your display, press `Esc`. This will take you to the HP Summary Screen. The Summary Screen will appear for only a short time. To retain the screen indefinitely (until you decide to leave it), press `F5`.

To Go to the *Setup* Program To go immediately into the *Setup* program while the *Vectra* logo appears on your display (and bypass the Summary Screen), press `F2` instead of `Esc`.

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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
HP 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 two CD-ROMs: one for software; and another one for support documentation.

The software CD-ROM is updated monthly and contains the latest HP drivers and utilities. The documentation CD-ROM is also updated monthly and contains:

- Product manuals and service manuals

- Installation and configuration information

- Troubleshooting information

- 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).

HP World Wide Web Site

The HP 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 bundled or 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.

HP does NOT provide support for Vectra PCs configured as network servers. We recommend HP NetServers for your network server requirements.

NOTE   Reloading the software bundled or pre-loaded on your PC is not covered by the HP three-year warranty.
For your bundled application, HP recommends that you keep the master CD-ROM.

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.

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

HP European Customer Support Center

Assistance from the HP European Customer Support Center is available Monday to Friday, 8:30 am to 6:00 pm Central European time.[1]

Country[1]	Language	Local Number
United Kingdom	English	0171 512 5202
Ireland	English	01 662 5525
Netherlands	Dutch	020 606 8751
Belgium	Dutch	02 626 8806
	French	02 626 8807
Switzerland	French	084 880 1111
	German	084 880 1111
Germany	German	0180 525 8143
France	French	04 50 43 9853
Austria	German	0660 6386
Norway	Norwegian	22 11 6299
Denmark	Danish	3929 4099
Sweden	Swedish	08 619 2170
Italy	Italian	02 26410350
Spain	Spanish	902 321 123
Portugal	Portuguese	01 441 7199

1. For non-listed European countries, support is available in English by calling +44 171 512 5202.

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

In Europe, please call the telephone support center (+44 171 512 5202).

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 on-site.	No charge.	At time of purchase.	HP.
HP SupportPack on-site 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, WWW, CompuServe, America Online.
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.

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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

Hewlett-Packard LATIN AMERICA
Prolongación Reforma No. 700
Col. Lomas de Santa Fe
Del. Alvaro Obregón
México
01210 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

4 Hewlett Packard Support and Information Services

Hewlett-Packard Marketing Headquarters

Glossary

100Base-T Refers to the 100 Mbit/s network technology over category 5 UTP (unshielded twisted pair) cable that is compatible with the proposed IEEE 802.3 standard. This technology, which takes the CSMA/CD protocol to 100 MBits/s operation, is also referred to as 802.3u or Fast Ethernet.

100VG-AnyLAN Refers to the 100 Mbit/s network technology over voice grade cable that is compatible with the proposed IEEE 802.12 standard. This technology guarantees access to any end node that requests to transmit, while ensuring priority access to end nodes that require consistent, continuous access for applications such as full-motion video or video conferencing.

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 and processor instructions.

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.

CMF Filename extension for sound files saved in the Creative Labs, Inc. music data file format.

CMOS Complementary Metal-Oxide Semiconductor memory requires very little power to operate. The contents of your computer's CMOS memory are preserved when you turn off the computer. It is used to store information that must be maintained, such as your computer's configuration.

Color map The color options in a graphics system, arranged by index number. Typically, the system has a default color map. The index of colors in the color map can be reallocated, depending on the application. There is one color map in the hardware (often called a color lookup table), but many color maps can be allocated in software and indexed as appropriate for separate applications.

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.

Glossary

Double buffering The process of using two frame buffers for smooth animation. Graphical contents of one frame buffer are displayed while updates occur on the other buffer. When the updates are complete, the buffers are switched. Only complete images are displayed, and the process of drawing is not shown. The result is the appearance of smooth animation.

DIMM Dual In-line Memory Module. These memory modules provide a 64-bit data path for improved system performance.

DSP Digital Signal Processor.

ECC Error Correcting Code can detect and correct data errors in memory modules.

Eight-bit color The color range possible with an eight-bit graphics system. Each pixel in an 8-bit system can display one of 256 colors (2^8) at any given time. These colors are typically obtained from a color map.

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.

Frame buffer Display memory that temporarily stores (buffers) a full frame of picture data at one time. Frame buffers are composed of arrays of bit values that correspond to the display's pixels. The number of bits per pixel in the frame buffer determines the complexity of images that can be displayed.

Graphical user interface (GUI) The graphical user interface (GUI) provides the user with a method of interacting with the computer and its special applications, usually via a mouse or another selection device. The GUI usually includes such things as windows, an intuitive method of manipulating directories and files, and icons.

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

IRQ Interrupt Request. A signal, that 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.

LAN Local Area Network. A general-purpose communications network that interconnects a variety of devices within a limited geographical area. A LAN might connect computers on adjacent desks, within a building, or within several buildings of a campus.

Mapping The transformation of one coordinate system into another. In the

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Glossary

3-D viewing pipeline, for instance, an object is defined by the application developer in model coordinates; these are mapped to world coordinates, the world coordinates are mapped to normalized device coordinates (NDCs); the NDCs are mapped to device coordinates; and the final picture is displayed. Also, an application for computer graphics systems. See geographic mapping, and geographic information systems.

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.

MID files Standard file format used to store MIDI sequence information.

MIDI Musical Instrument Digital Interface. An international hardware/ software standard that specifies the cable and hardware interface that allows several devices, instruments, and computers to interchange music codes and events.

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.

OLE Object Linking and Embedding. A Windows feature that allows different object types (such as speech clips or notes of music) to appear in a document. The objects can be linked, in which case they remain separate files, or embedded, where they become a part of the document.

OpenGL A distributed version (with license) of Silicon Graphics' Graphics Language (GL), which is a collection of program functions combined into an API.

pixel Picture element. The smallest addressable spot on the screen.

Plug and Play Plug and Play is an architecture designed to simplify installation and configuration of new devices in a PC.

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).

Glossary

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

SCAM SCSI Configured Automatically. A protocol which automatically assigns device IDs to SCSI devices which support SCAM.

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. These memory modules can provide a 32-bit data path.

Sound files Files containing sound data. Sound files are usually stored in one of four formats, with the extension .WAV, .MID, .VOC, or .CMF.

terminator A resistor at the end of a SCSI cable that prevents the signal

from reflecting back along the cable.

True color Also known as RGB color or 24-bit color. True color graphics systems are usually equipped with at least 24 bits per pixel. In the 24-bit system, for instance, three primary colors in the color graphics system—red, green and blue—are allotted 8 bits each. There are 28, or 256 intensities each for red, green and blue. This translates to a total palette range of 16.7 million colors (256 x 256 x 256). Because the human eye cannot detect the subtlety available in a palette of 16.7 million colors, this range makes it possible to compute what appears to be gradual shading.

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.

VOC files Proprietary digital audio format developed by Creative Labs, Inc. Most digital audio adheres to the Microsoft WAV format.

WAV files A Microsoft file format for storing digital audio data.

Windows RAM (WRAM) Dual-ported memory, which allows for simultaneous input of data from the graphics controller and output of data to the display.

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Regulatory Information and Warranty

Regulatory Information

Manufacturer's Name: HEWLETT-PACKARD

Manufacturer's Address: 5 Avenue raymond Chanas
38320 Eybens, FRANCE

Declares that the product:

    Product Name: Personal Computer
    Model Number: HP Vectra VL 5/xxx, Series 5
                      Models DT and MT

Conforms to the following Product Specifications:

<u>SAFETY</u>	International:	IEC 950: 1991 + A1 + A2 + A3
	Europe:	EN 60950: 1992 + A1 + A2
		EN 60825-1994

<u>EMC</u>	CISPR 22: 1993 /EN 55022: 1994 Class B
	EN 50082-1: 1992
	IEC 801-2: 1992 / prEN 55024-2: 1992 - 4 kV CD, 8 kV AD
	IEC 801-3: 1984 / prEN 55024-3: 1991 - 3 V/m
	IEC 801-4: 1988 / prEN 55024-4: 1992 - 0.5 kV Signal Lines,
	1 kV Power Lines

              IEC 555-2:1982 + A1:1985 / EN 60555-2:1987
              IEC 1000-3-3:1994 / EN 61000-3-3:1995

<u>Supplementary information:</u> The product herewith complies with the requirements of the EMC Directive 89/336/EEC amended by Directive 93/68/EEC and the Low Voltage Directive 73/23/EEC, and carries the CE marking accordingly.

Grenoble   Jean-Marc JULIA
January 1997   Product 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 FCC Compliance 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 or SJT 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.

Si le cordon secteur n'est pas livré avec votre ordinateur, utiliser un cordon secteur en accord avec votre code electrique national.

USA: utiliser un cordon secteur "UL listed", de type SVT ou SJT.

Canada: utiliser un cordon secteur certifié CSA.

Pour votre sécurité, ne jamais retirer le capot de l'ordinateur sans avoir préalablement débranché le cordon secteur et toute connection à un réseau de télecommunication. N'oubliez pas de replacer le capot avant de rebrancher le cordon secteur.

Changing a battery

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, 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 used batteries will be accepted free of charge.

Bij dit apparaat zijn batterijen geleverd. Wanneer deze leeg zijn, moet U ze niet weggooien maar inleveren als KCA.

Changement de la pile

Il y a danger d'explosion lorsque la pile n'est pas installeé correctement. Pour votre sécurité, ne jamais essayer de recharger, de démonter ou de brûler l'ancienne pile. Remplacer uniquement avec une pile du même type ou d'un type équivalent recommandé par HP. La pile de cet ordinateur est une pile au lithium qui ne contient pas de métaux lourds, néanmoins, afin de protéger l'environnement, il ne faut pas la jeter dans les ordures ménagères mais la rendre au magasin ou vous l'avez achetée, ou revendeur où vous avez achetéz l'ordinateur, ou à Hewlett Packard, pour qu'elle soit recyclée, ou stockée de manière qui ne nuit pas à l'environnement. Les piles usées seront acceptées gratuitement.

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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 EN27779: 11.92.

Notice for Japan

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Notice for Korea

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물론 모든 지역에서 사용할 수 있습니다.

HP Hardware Warranty

Important: This is your hardware product warranty statement. Please, 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 (free parts and labor), 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 (free parts only).

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. The customer must be prepared to supply proof of the purchase date.

This warranty is extended worldwide under certain conditions (please, check with your local HP office) 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. When available in the country of use, service is provided in the same manner as if the product was purchased in this country 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. Response time for on-site service, and turn-around time for return service, are subject to changes from standard conditions based upon non-local parts availability.

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 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 when necessary; 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.

Rev. 20/11/96

HP Software Product License Agreement and Software & Product Limited Warranty

Your HP Vectra PC contains preinstalled software programs. Please read the Software License Agreement before proceeding.

CAREFULLY READ THIS LICENSE AGREEMENT AND LIMITED WARRANTY STATEMENT 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 WITH THE TERMS OF 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.

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PRODUCT RECOVERY CD-ROM. If your computer was shipped with a product recovery CD-ROM: (i) The product recovery CD-ROM and/or support utility software may only be used for restoring the hard disk of the HP computer with which the product recovery CD-ROM was originally provided.(ii) The use of any operating system software by Microsoft contained in any such product recovery CD-ROM shall be governed by the Microsoft End User License Agreement (EULA).

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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 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 non removable 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.

(Rev. 19/11/96)

Your HP Vectra PC Physical Characteristics

Characteristic	Description
Weight (excluding display and keyboard)	9 kg (20 pounds)
Dimensions	Width: 42 cm (16.5"), Height: 12.5 cm (4.9"), Depth: 39 cm (15.3")
Footprint	0.17 m^2 (1.8 ft^2)
Storage temperature	-40 ºC to 70º (-40 ºF to 158 ºF)
Storage humidity	8% to 80% (relative)
Operating temperature	5 ºC to 40ºC (40 ºF to 104 ºF)
Operating humidity	15% to 80% (relative)
Acoustic noise emission:	LW < 40 dBA
Power supply	Input voltage: 100 - 127 & 200 - 240 V ac Input frequency: 50/60 Hz
Maximum output power	160 W continous

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