HEWLETT® PACKARD

HP Kayak XU PC Workstation

User's Guide

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User's Guide

Welcome to Your HP Kayak XU PC Workstation

Congratulations on the purchase of your new Hewlett-Packard Kayak XU PC Workstation. Your high-performance PC Workstation is equipped with:

- One or two Pentium™ II 266 or 300 MHz processors in slots for easy processor upgrading.
- Intel 440LX AGPset optimized for Pentium II for concurrent transactions through the processor bus, AGP bus, PCI bus, and memory.
- Processor-integrated level-two cache for improved performance.
- 32 MB, 64 MB, or 128 MB of SDRAM ECC (error correcting code) DIMM memory, upgradeable to 512 MB.
- A dedicated AGP (Accelerated Graphics Port) video controller with 4 MB of video memory (upgradeable to 8, 12, or 16 MB).
- An integrated Ultra ATA-33 controller on the PCI bus supporting the fastest IDE devices.
- An integrated Ultra wide 16-bit SCSI controller on the PCI bus (data transfer rate of up to 40 MB per second) dedicated to internal hard disk drives (HDDs).
- An integrated Ultra narrow 8-bit SCSI 8-bit controller on the PCI bus (data transfer rate of up to 20 MB per second) for internal and external peripherals.
- A RAID*port*™ connector for acceleration of Ultra wide 16-bit SCSI channel with one or two hard disks.
- A 32-bit PCI 10BT/100TX autosensing Ethernet LAN controller with remote power-on and wake-up capability.
- Seven mass storage shelves:
  - ❒ Five front-access shelves
  - ❒ Two internal shelves.
- Six slots for accessory boards:
  - ❒ One AGP (Accelerated Graphics Port) slot
  - ❒ Three 32-bit PCI (Peripheral Component Interconnect) slots
  - ❒ One 16-bit ISA (Industry Standard Architecture) slot
  - ❒ One combination ISA or PCI slot.
- A CD-ROM drive.
- An integrated 16-bit full duplex high fidelity audio interface.

- An HP enhanced keyboard.
- A Labtec stereo headset with boom microphone.
- Headphones jack, microphone jack, and volume control on the front panel.
- An HP UltraFlow cooling system with multiple temperature-regulated fans to optimize cooling.
- MIDI interface connector (one channel), audio Microphone IN jack, audio LINE IN jack, and audio LINE OUT jack on the rear panel.
- One 8-bit SCSI connector, one parallel port, two USB connections, two mini DIN connectors (keyboard and mouse), and two serial ports on the rear panel.
- System BIOS and Video BIOS stored in Flash ROMs (for easy upgrading).
- BIOS support for ISA “Plug and Play” accessory board configuration.

NOTE

The Pentium™ II processor installed in your HP Kayak XU PC Workstation provides the best performance when used with 32-bit operating systems and applications.

Who This Manual Is For

This manual is for anyone who wants to:

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

Important Safety Information

If you have any doubt that you can lift the PC Workstation 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 Workstation is disconnected from the power by removing the power cord from the power outlet. This means the PC Workstation must be located close to a power outlet that is easily accessible.

For your safety, never remove the PC Workstation'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 Workstation before switching it on again.

WARNING

To avoid electric shock, do not open the power supply. There are no user-serviceable parts inside.
This HP PC Workstation is a class 1 laser product. Do not attempt to make any adjustment to the laser units.

Important Ergonomic Information

It is strongly recommended that you read the ergonomic information before using your PC Workstation. If you are using Windows NT 4.0, open the Start menu in the task bar and select Help. Then double-click the help topic "Working in Comfort".

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2 How to Install Accessories Inside Your PC Workstation

3 Troubleshooting Your PC Workstation

4 Technical Information

5 Hewlett Packard Support and Information Services

1

Setting Up and Using Your PC Workstation

Unpacking Your PC Workstation

WARNING

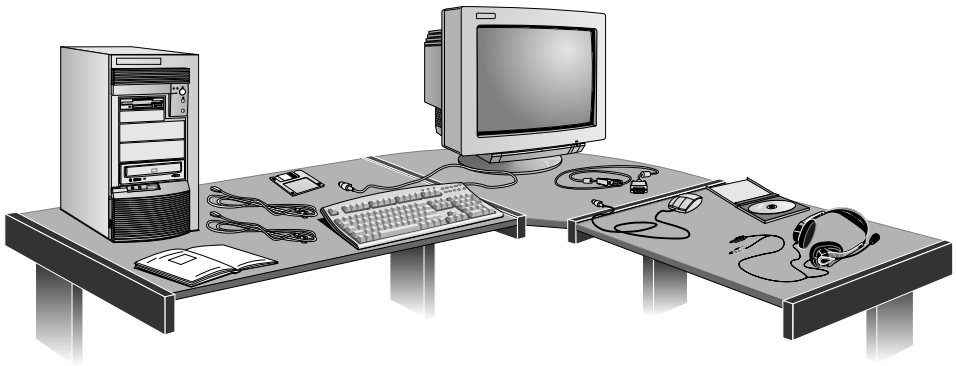
If you are in any doubt that you can lift the PC Workstation and the display safely, do not try to move them without help.

1 When you receive your PC Workstation, unpack all of the components:
   - Computer and power cords
   - Display and its video cable
   - HP enhanced keyboard, mouse, and Labtec® headphones
   - Manuals and driver kit.

NOTE

Device drivers, HP utilities, and an online Network Administrator Guide are preloaded on your system and provided in a driver kit.

2 Place the PC Workstation on (or under) a sturdy desk with easily accessible power outlets and enough space for the keyboard, mouse, and any other accessories.



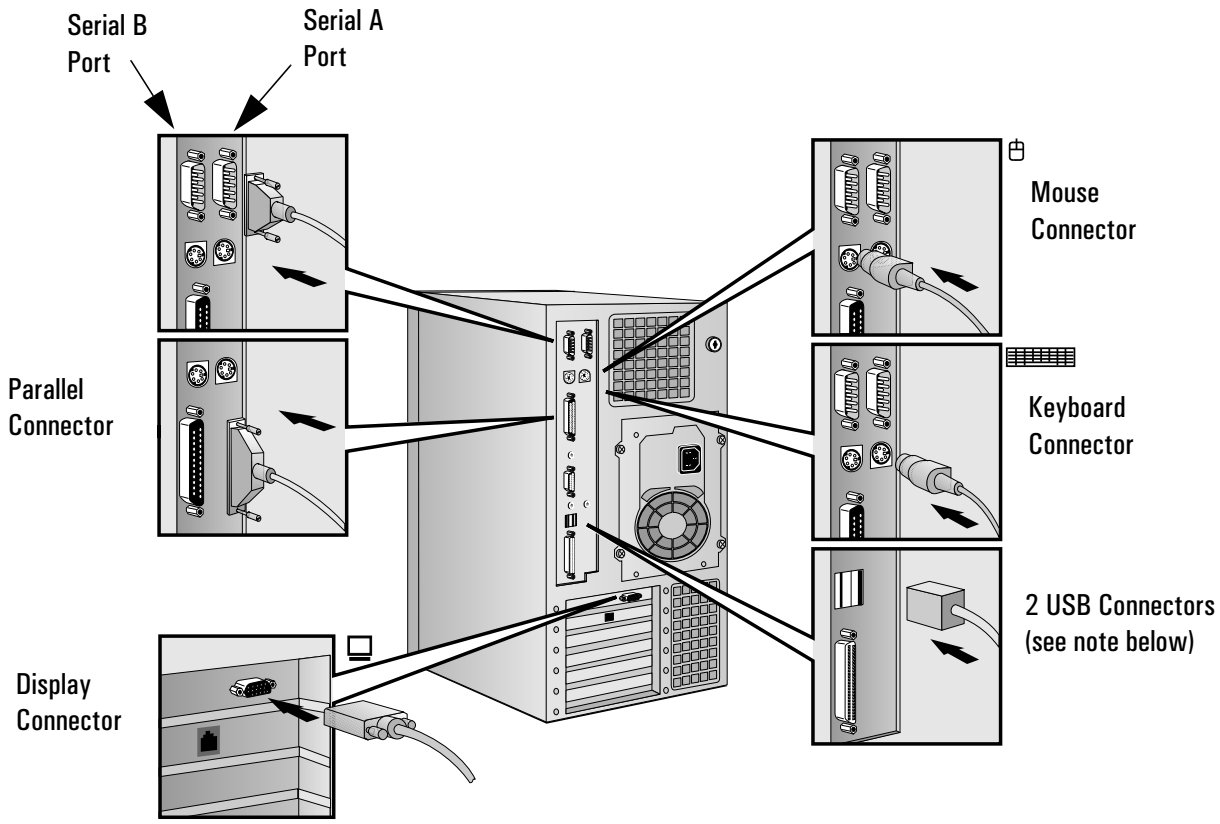
3 Position the PC Workstation so that its rear connectors are easily accessible.
4 Place the display next to the computer.

Installation Tools

No tools are required to install your PC Workstation. However, if you plan to install a disk drive or an accessory board inside your PC Workstation, you will need a flat-blade screwdriver. For more information on installing accessories, see chapter 2, How to Install Accessories Inside Your PC Workstation.

Connecting the Mouse, Keyboard, Display and Printer

Connect the mouse, keyboard, and display to the back of the PC workstation. *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.

NOTE

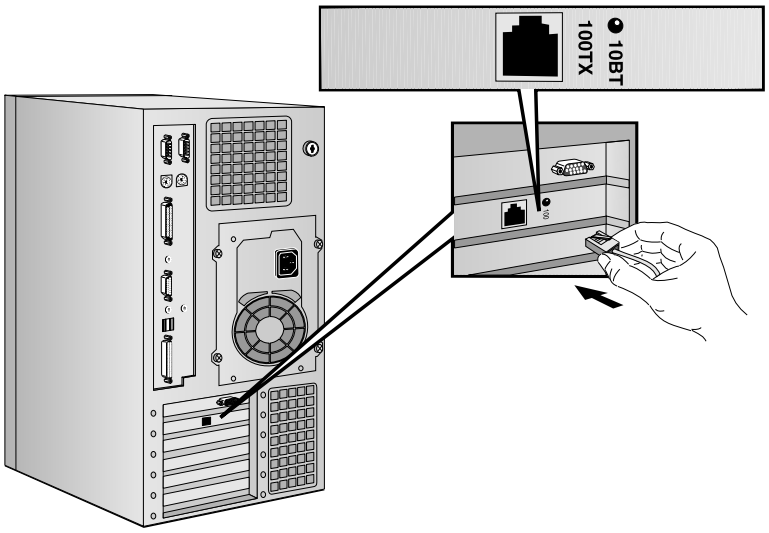
The Universal Serial Bus (USB) connectors can be used for USB accessories. Most USB accessories are automatically configured as soon as they are physically attached to the PC Workstation. USB accessories are not supported by all operating systems.

Connecting to a Network

Your PC Workstation has a 10BT/100TX LAN interface adapter.

The LAN adapter supports both 10 Mbit/s and 100 Mbit/s operations and automatically detects which network type is being used.

1 Connect the RJ-45 plug on your network cable to the LAN connector on the LAN Adapter. Push the plug into the connector until the plug clicks into place.

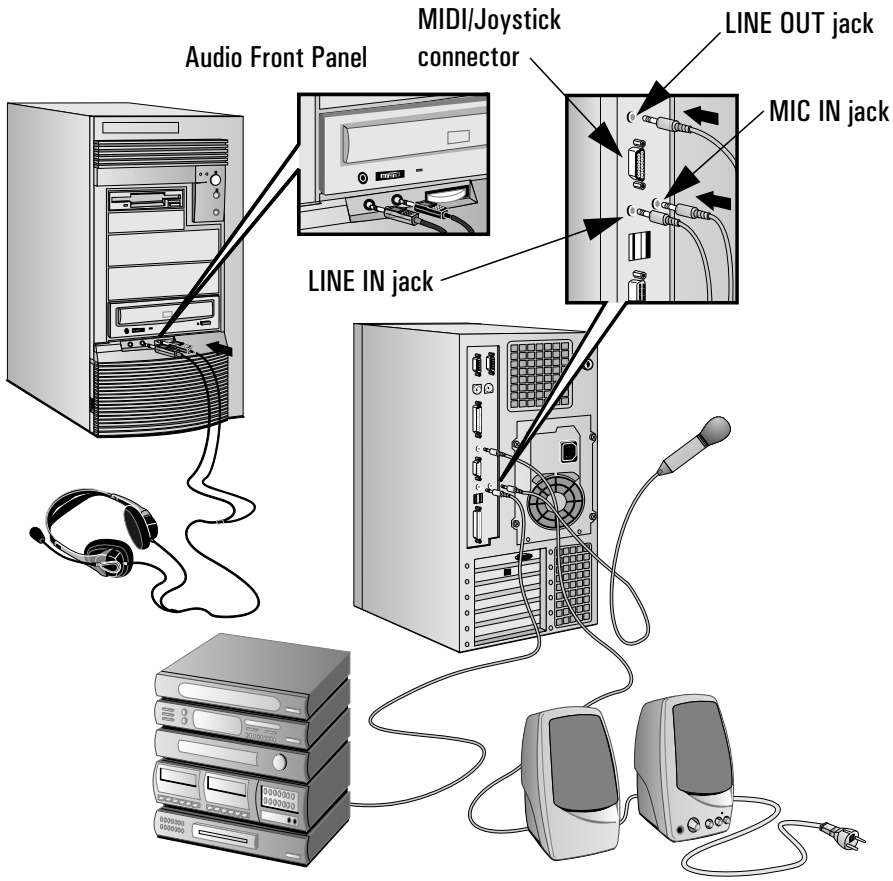


2 Attach the other end of the LAN cable to a hub (or into a wall socket that is connected to a hub).

Let your Network Administrator know that you are connecting your PC Workstation to the network. Enable the LAN connection through the Advanced menu of the HP *Setup* program (see page 92). Refer also to the online Network Administrator Guide (provided with the driver kit) for further instructions on setting up your PC Workstation for a LAN connection.

Connecting Audio Accessories

Your PC Workstation has a Headphone Out jack and a Microphone In jack on the Audio Front Panel (see page 89 for more information). A LINE IN jack, LINE OUT jack, MIC IN jack, and MIDI/Joystick connector are located on the rear panel (see page 86 for details).



NOTE
The internal speaker and LINE OUT jack on the rear panel of your PC Workstation are deactivated when you use the Headphones jack on the Audio Front Panel.
The internal speaker is deactivated when you use the LINE OUT jack.
External speakers you connect should have a built-in power supply.
The audio accessories shown here (microphone, speakers, and audio system) are not supplied with your PC Workstation.
Volume can be controlled through the Audio Front Panel, the HP enhanced keyboard, or the software volume control.

WARNING

To avoid discomfort from unexpected noise, always turn down the volume 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 down the volume. When you put on the headphones, slowly increase the volume until you find a comfortable listening level, then leave the volume control in that position.

Connecting an External SCSI Accessory

Your PC Workstation is equipped with Ultra wide 16-bit SCSI and Ultra narrow 8-bit connectors for internal devices and an Ultra narrow 8-bit SCSI connector for internal or external devices.

When an external SCSI device is connected, the Ultra narrow 8-bit SCSI controller automatically switches to non-Ultra mode (maximum capacity of 10 MBs per second).

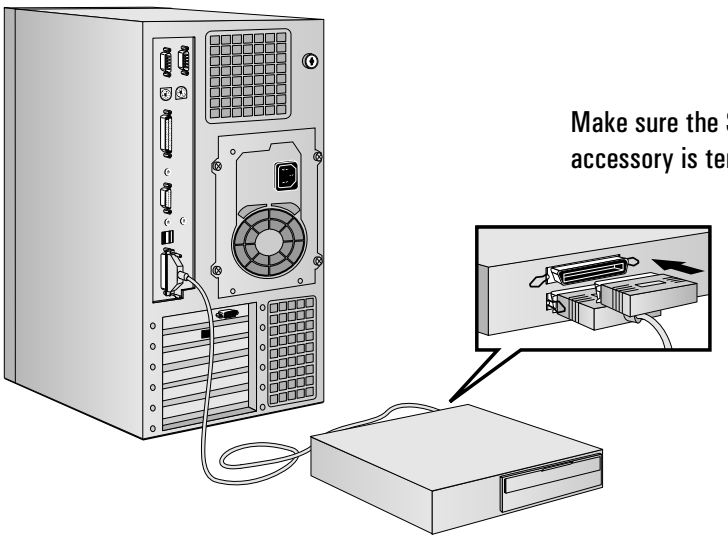
An external SCSI device is connected as follows:

1 You should assign an unused SCSI address to the accessory. SCSI addresses range from 0 to 7 for narrow 8-bit SCSI. The SCSI address 7 is reserved for the integrated SCSI controller (the default for narrow and wide SCSI devices).

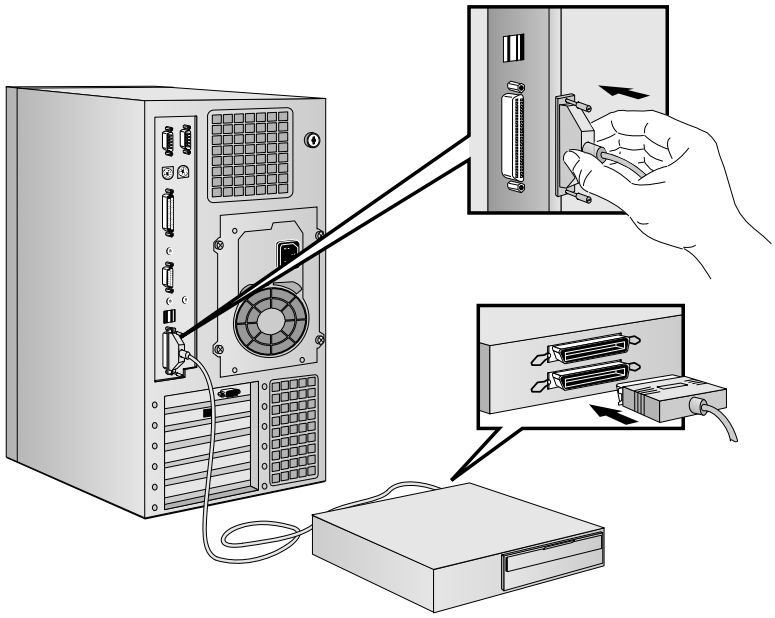
   Refer to the manual provided with the SCSI accessory for instructions on selecting a SCSI address.

NOTE You don't need to set a SCSI address for Plug and Play SCSI devices (SCSI devices which support the SCAM protocol).

2 Make sure the SCSI accessory is terminated correctly—either internally or by a terminating resistor (refer to the manual provided with the SCSI accessory).



3 Connect the SCSI accessory to your PC Workstation's external 8-bit SCSI connector with a shielded SCSI cable.



4 Refer to the manual provided with the SCSI accessory to learn how to install any software that may be necessary to use it.

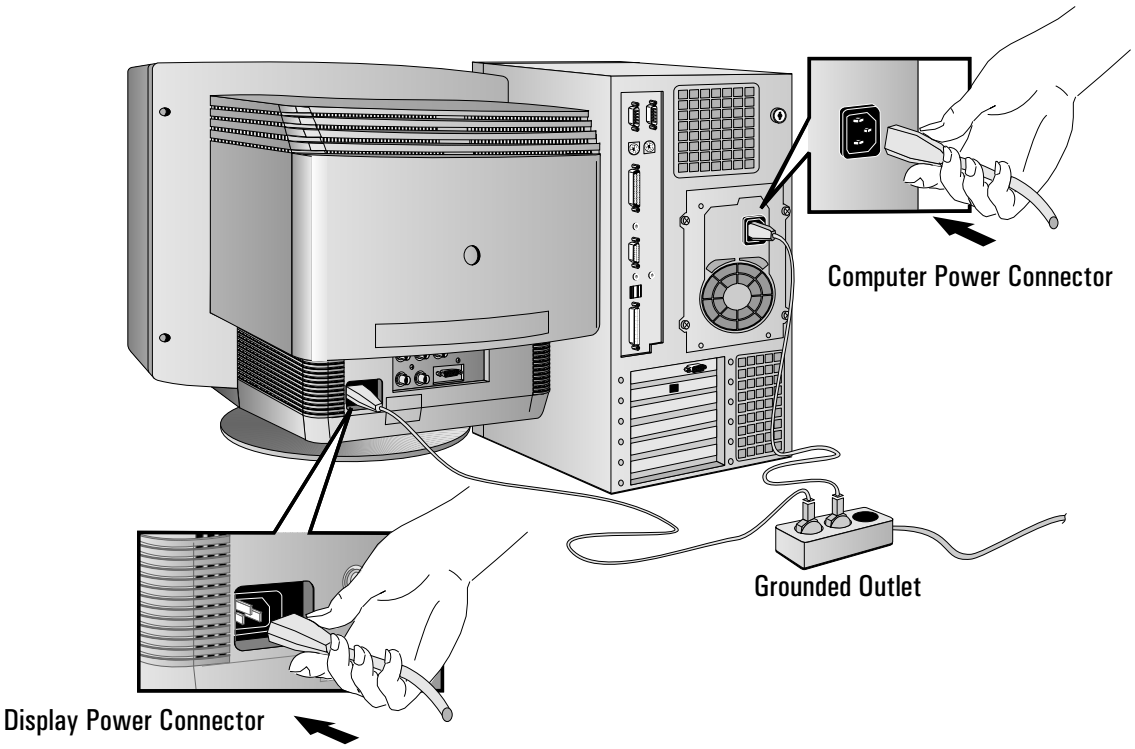
NOTE

The total length of the external SCSI cables should not exceed 3 meters (approximately 10 feet).
Contact your dealer to order shielded HP SCSI cables to connect external SCSI accessories.

See page 32 for information on how to connect internal SCSI devices.

Connecting the Power Cords

1 Remove any warning labels that may be covering the computer's power connector on the rear of the computer.
2 Connect the power cords to the display and the computer. (*The connectors are shaped to go in one way only.*)

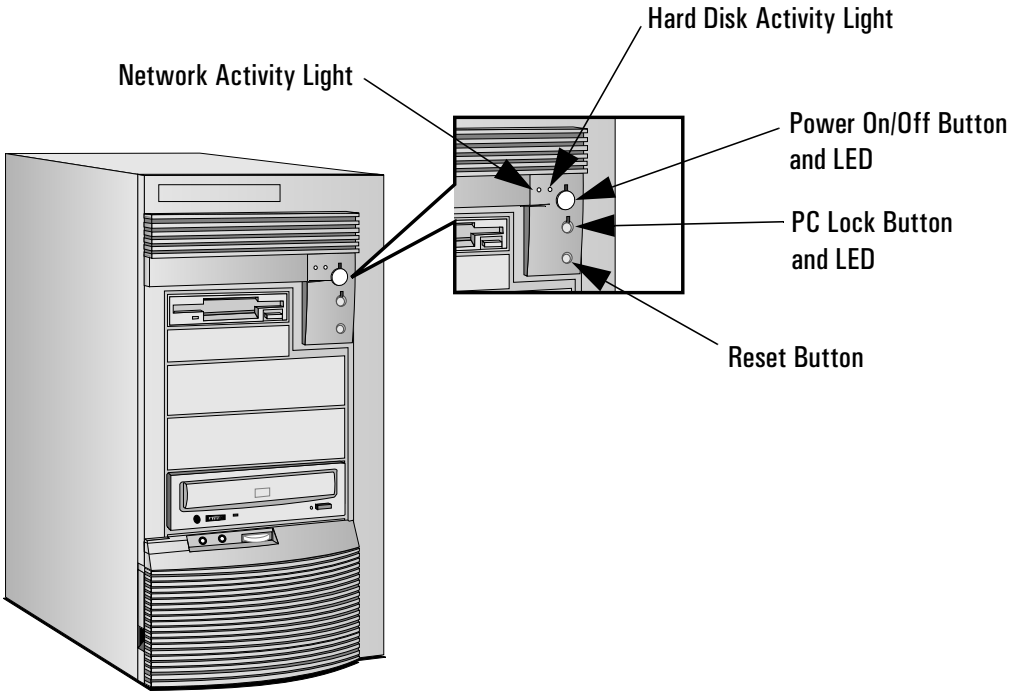


3 Connect the display's power cord and the computer's power cord to grounded outlets.

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

Your PC Workstation's Hardware Control Panel

The hardware control panel is located on the front of your PC Workstation.



PC Lock Button Press this button to lock your PC Workstation's keyboard and mouse while you are away from the PC Workstation for a short period of time. Your applications will remain active. You unlock the PC Workstation by entering a password (see "Setting Passwords" on page 16).

Network Activity Light This light glows/flickers when your PC Workstation is accessing the network.

Hard Disk Activity Light This light glows/flickers when your hard disk drive is being accessed.

Starting and Stopping Your PC Workstation

NOTE

If you are starting your PC Workstation for the first time, see "Starting Your PC Workstation for the First Time" on the next page.

Starting Your PC Workstation

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

2 Start your PC Workstation in one of these ways:

- Press the power button on the front panel.
- Press the keyboard space bar.
  The keyboard power-on feature will work only if Space-bar is enabled in the Power menu of the *Setup* program (refer to page 92) and the system board switch 8 (KEYB power) is DOWN (the default setting). Refer to page 90 for more information on system board switches.

When you switch on the computer, it carries out the Power-On-Self-Test (POST) while the PC Workstation's 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, see "If a POST Error Message is Displayed" on page 56.

3 If you have set a password in the PC Workstation'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 Workstation.

Starting Your PC Workstation for the First Time

If your PC Workstation has preinstalled software, it is initialized the first time you start the PC Workstation. The software initialization process takes a few 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).

Initializing Your Software

NOTE Do NOT switch OFF the PC Workstation 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 Workstation.

When the PC Workstation is switched on, the HP PC Workstation's logo is displayed. The PC Workstation performs a Power-On-Self-Test (POST). Press Esc if you want to view the POST details in the HP Summary Screen (see "The HP Summary Screen and Setup Program" on page 92).

If an error is detected during the Power-On-Self-Test, the PC Workstation 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 Workstation. For example:

- The name of the person who will use the PC Workstation 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 5L). This is shown on the front of the printer. You also need to enter the connection used by the printer.

3 While the initialization program is running, you can complete the Warranty Registration card that came with this manual.

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

Creating Back-up Diskettes

It is very important that you create master diskettes for your preloaded application software and an Emergency Repair Disk for the operating system as soon as possible. HP recommends that you use new diskettes. If you need to restore the preloaded application software on your PC Workstation, you can use these diskettes to do so.

For details on how to create these diskettes, refer to the documentation for your application software.

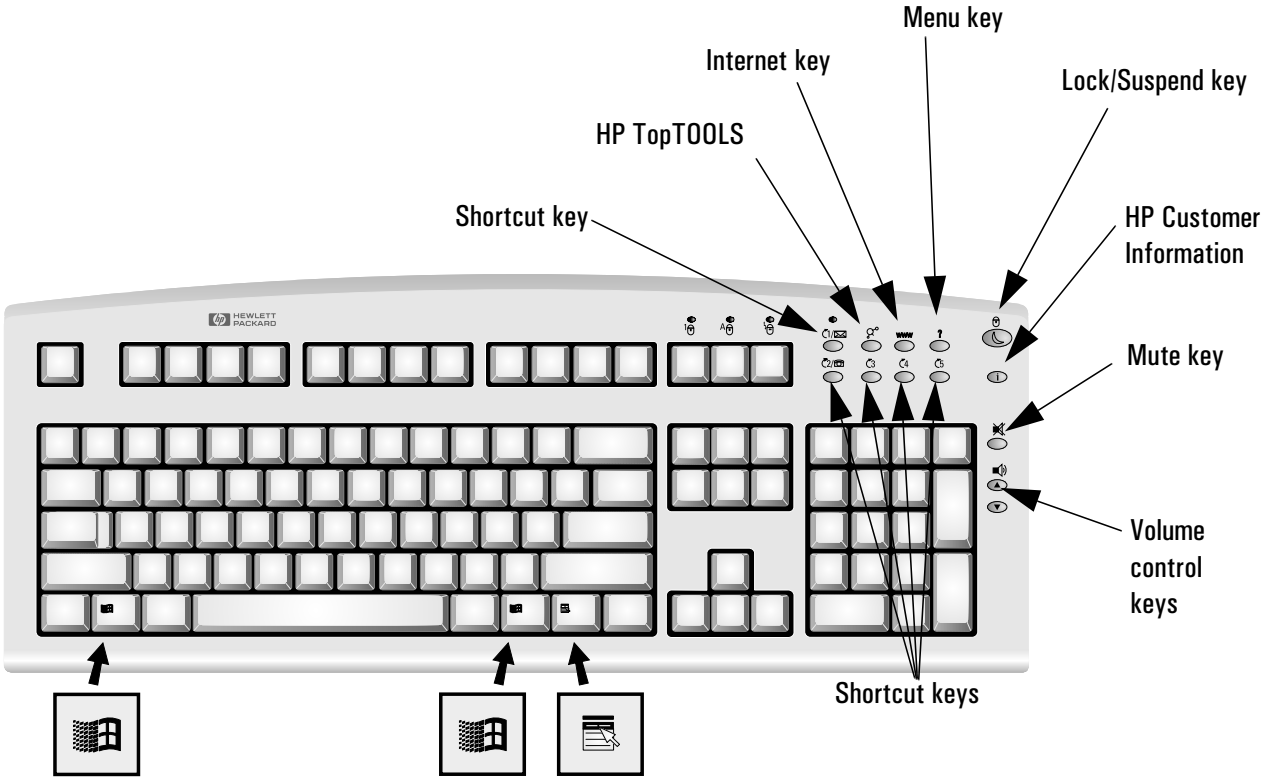
Stopping Your PC Workstation

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

Using Your HP Enhanced Keyboard

The HP enhanced keyboard includes soft keys you can use to:

- Display and configure the actions assigned to keys.
- Perform one-touch shortcuts to start applications, open files, or open URLs on the WWW.
- Launch the Internet browser supplied with your system.
- Lock or suspend your PC Workstation.
- Access HP TopTOOLS and customer information.
- Mute or adjust the volume of the audio system.



Menu Key

Pressing the Menu soft key displays the soft key section of the HP enhanced keyboard on your screen. Click any of the keys on the screen to display the action assigned to an individual key or to change or assign an action to a key. Shortcut keys are provided specifically for user-defined actions.

Shortcut Keys

The Shortcut soft keys can be used to start an application, open a document, or open a URL on the Internet. Actions can be assigned to the Shortcut keys by pressing the Menu key and clicking the key you want to configure in the keyboard displayed on your screen.

Internet Key

This soft key is used to start the Netscape™ Communicator 4.0 browser configured on the PC Workstation (default setting). The Microsoft® Internet Explorer 3.0 is also available.

Lock/Suspend Key

The action of the Lock/Suspend soft key is configured by pressing the Menu key then clicking the Lock/Suspend key on the keyboard displayed on your screen. The actions you can specify for the Lock/Suspend key are:

- Lock the keyboard and system
- Suspend

HP TopTOOLS

Pressing this soft key opens HP TopTOOLS. This application helps you manage and reduce overall ownership costs and provides advanced PC management tools that can, for example, be used for remote BIOS updates and security management.

NOTE

Before using HP TopTOOLS for the first time, you must install it as follows: From the Start menu, select Programs, then HP DMI, then Setup. The HP TopTOOLS application is installed automatically.

The System Health window of the HP TopTOOLS hardware monitoring facility provides information on:

- Fan Control in the HP UltraFlow cooling system
- System Temperature for PC Workstation components
- ECC Error Notification
- Voltage Monitoring for components

HP Customer Information

This soft key accesses HP Customer Information, which includes:

- Information on product features
- The preloaded software on the system
- Details on how to configure the HP enhanced keyboard
- Information on how to configure the WWW browser
- Detailed HP support information
- Links to the HP PC and PC Workstation website

Mute and Volume Keys

Pressing the Mute key mutes the audio, or restores the audio if it has been muted. The Volume keys can be used to control the volume level.

NOTE

By default, the volume on your system can be controlled with the Mute and Volume keys on the keyboard or through the HP Volume Control software. The volume control on the audio front panel is disabled.

For more information on controlling audio on your system, see the online guide *Using Sound on Your PC*.

Setting Passwords

You can set two passwords, the Administrator (or Supervisor) password and the User password, to provide two levels of protection for your PC Workstation. You set both passwords using the Security menu in the *Setup* program (see "The HP Summary Screen and Setup Program" on page 92).

Setting an Administrator Password

Set the Administrator (or Supervisor) password to protect the PC Workstation's configuration in *Setup*. An Administrator password can provide a power-on password prompt that prevents your PC Workstation from being started or used in your absence. You can also use this password to start the PC Workstation when the keyboard (and mouse) are locked—you must type the password and press Enter to unlock the keyboard.

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 (see "The HP Summary Screen and Setup Program" on page 92).

2 Select the Security menu.

3 Select the Administrator password submenu.

4 Choose the Set Supervisor password setup item. You will be asked to enter your password twice. Save your changes when you exit the *Setup* program by selecting Exit, then Exit Saving Changes.

To remove the password, follow the same procedure as to set a password. You will be asked to enter the existing password first. Then, for the new password, leave the password field blank and press Enter. To confirm your choice, press Enter a second time.

NOTE If you forget your password, see "If You Have Forgotten Your Password" on page 67.

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 Workstation being started or used in your absence.
- Start the PC Workstation when the keyboard (and mouse) are locked—you must type the password and press Enter to unlock the keyboard (see "The HP Summary Screen and Setup Program" on page 92).

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.

2 Select the Security menu.

3 Select the User password submenu.

4 Choose the Set User Password setup item. You will be asked to enter your password twice. Save your changes when you exit the *Setup* program by selecting Exit, then Exit Saving Changes.

To remove the password, follow the same procedure as to set a password. You will be asked to enter the existing password first. Then, for the new password, leave the password field blank and press Enter. To confirm your choice, press Enter a second time.

NOTE If you forget your password, see "If You Have Forgotten Your Password" on page 67.

Additional Information and Help

Additional information about your PC Workstation is supplied in the HP online help located on your PC Workstation's hard disk drive. It includes:

- *Working in comfort*—guidance on ergonomic issues.
- *HP support*—similar to chapter 5 in this User's Guide.
- *Using Sound on Your PC*—comprehensive online book describing how to use the multimedia features of your PC Workstation.
- *Network Administrator's Guide*—comprehensive online book describing how to set up and configure the network interface on your PC Workstation.
- *HTML welcome pages*—web pages introducing you to some of the special features that are incorporated in your PC Workstation.

Recycling an Old HP PC Workstation

HP has a strong commitment towards the environment. This HP PC Workstation has been designed to respect the environment as much as possible.

HP can take an old computer back for recycling when it reaches the end of its useful life.

In several countries, HP has a product take-back program. Collected equipment is sent to one of HP's recycling facilities in Europe or the USA. As many parts as possible are reused, the remainder are recycled. Special care is taken with batteries and other potentially toxic substances, which are reduced to non-harmful components through a special chemical process.

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

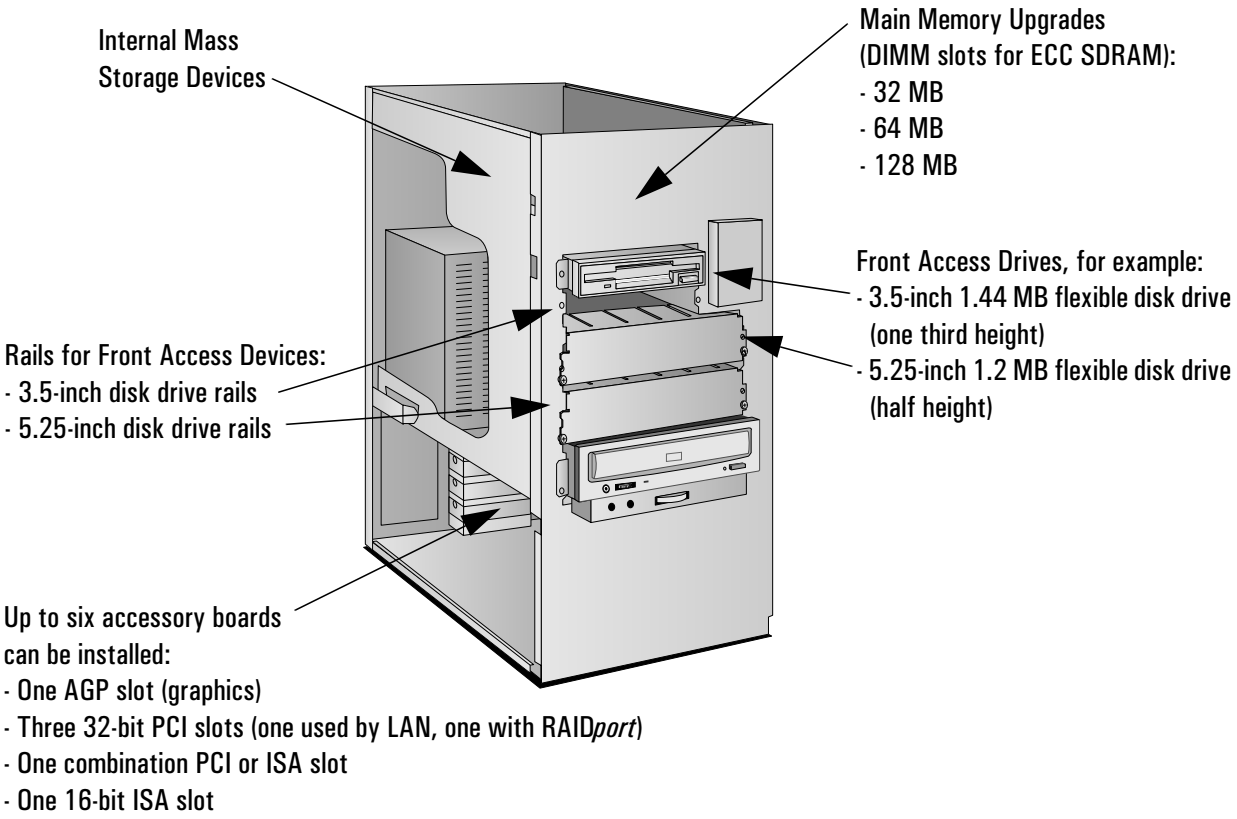
2

How to Install Accessories Inside Your PC Workstation

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

Supported HP Accessories

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



Contact your dealer for an up-to-date list of supported devices.

Removing and Replacing the Cover

WARNING

For your safety, never remove the PC Workstation'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 Workstation before switching it on again.

Removing the Cover

1 Switch off the display and computer.

2 Disconnect all power cables and any telecommunications cables.

3 If necessary, unlock the cover using the key on the back panel.

4 Lift the two latches on the front sides of the computer upwards.

5 Grasp the cover on the sides at the back of the computer and slide it forwards and off the computer.

Replacing the Cover

1 Ensure that you have installed all your accessories and that all internal cables are properly connected and safely routed.

2 Ensure that the two latches on the front sides of the cover are lifted up, and that the lock is unlocked.

3 Slide the cover onto the computer, making sure that the two guides at the bottom of the case slide into the two rails at the base of the computer. Firmly slide the cover backwards into position.

4 Lower the two latches on the front sides of the cover.

5 If required, lock the cover using the key provided.

6 Reconnect all the power cables.

Intrusion Monitor

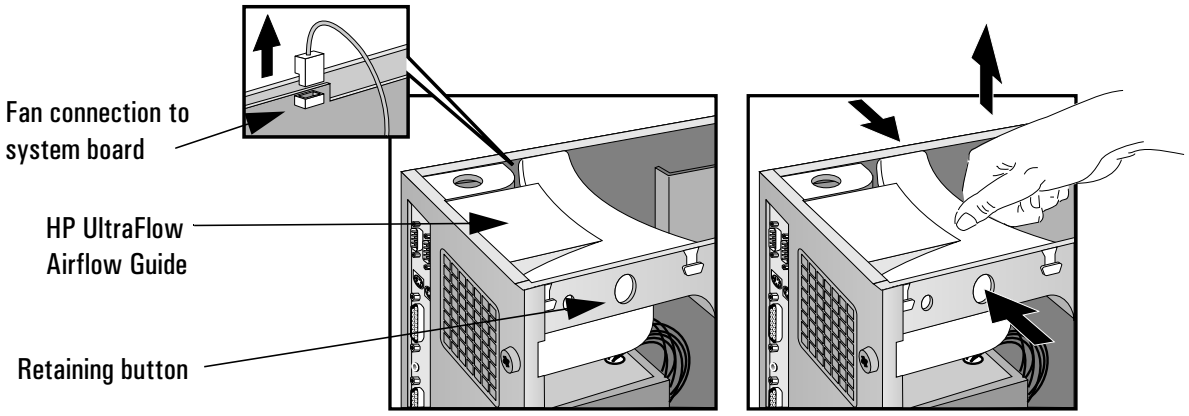
Your PC Workstation is equipped with an intrusion monitor located behind the Hardware Control Panel on the front case of the PC Workstation. The following occurs when the intrusion monitor detects that the PC Workstation has been opened:

- If the PC Workstation has not been opened between boots, a FastBOOT is performed when the cover is replaced.
- If the PC Workstation has been opened between boots, a full reboot is performed.

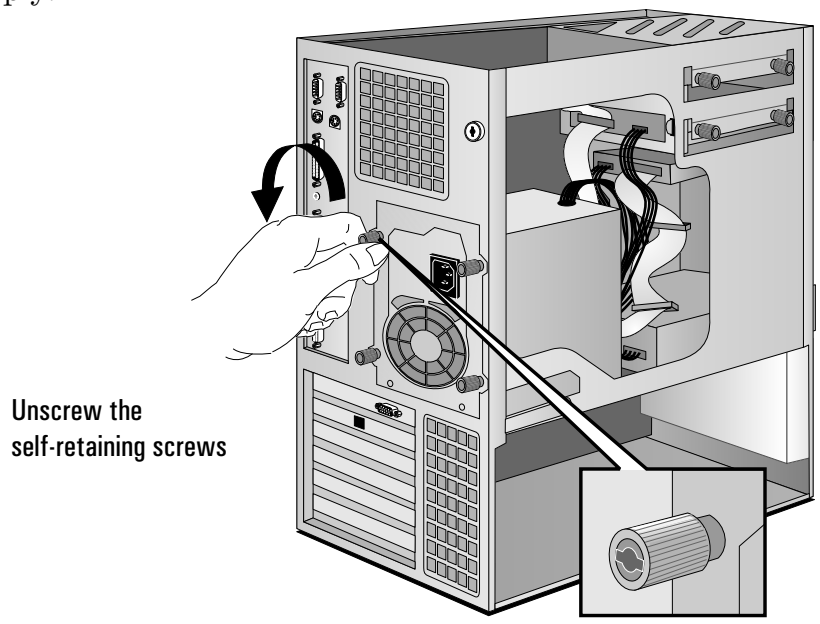
Moving the Power Supply

You can slide the power supply unit out of the computer to improve access to the system board and the cables at the rear of the disk drives.

1 Disconnect the computer's power cord and any telecommunications cable.
2 Remove the computer's cover (see page 23).
3 Remove the fan connection to the system board.

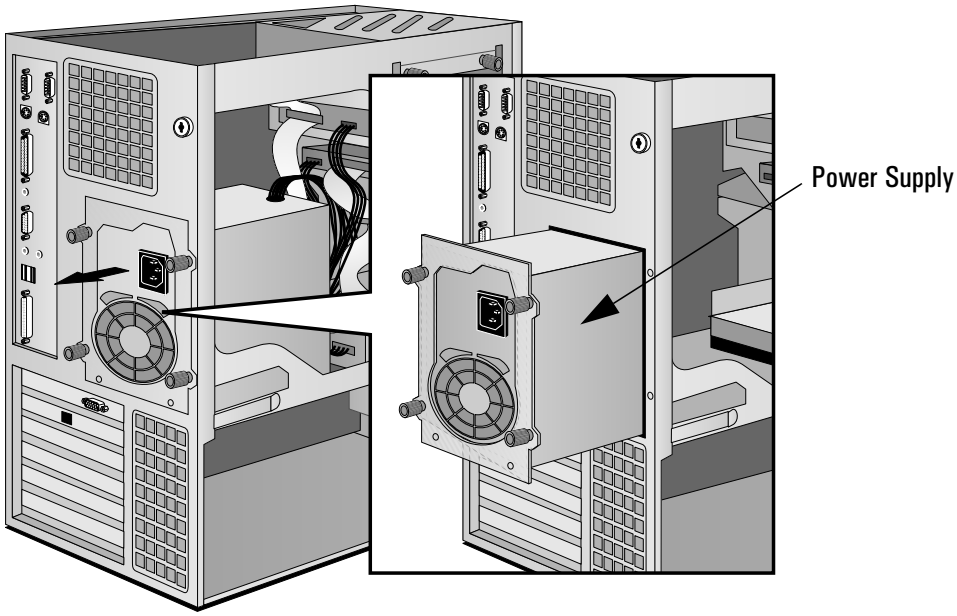


4 Press the retaining buttons on each side of the HP UltraFlow airflow guide and lift it out of the PC Workstation's case.
5 Unscrew the four self-retaining screws at the back of the power supply.



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

6 Slide the power supply out of the computer until it stops—the power supply unit remains connected to the computer.



Slide the power supply unit clear of the computer

Replacing the Power Supply after Installing Accessories

1 Check that all internal cables are safely routed.

2 Slide the power supply back into the computer.

3 Tighten the four self-retaining screws.

4 Replace the HP UltraFlow airflow guide.

5 Reconnect the fan to the system board.

Installing Memory

Main Memory Modules

Your PC Workstation is supplied with main memory. If you need more main memory to run your application software, you can install up to 512 MB of memory in four DIMM slots. Main memory upgrades are available in single 32 MB, 64 MB, or 128 MB ECC SDRAM memory modules.

CAUTION

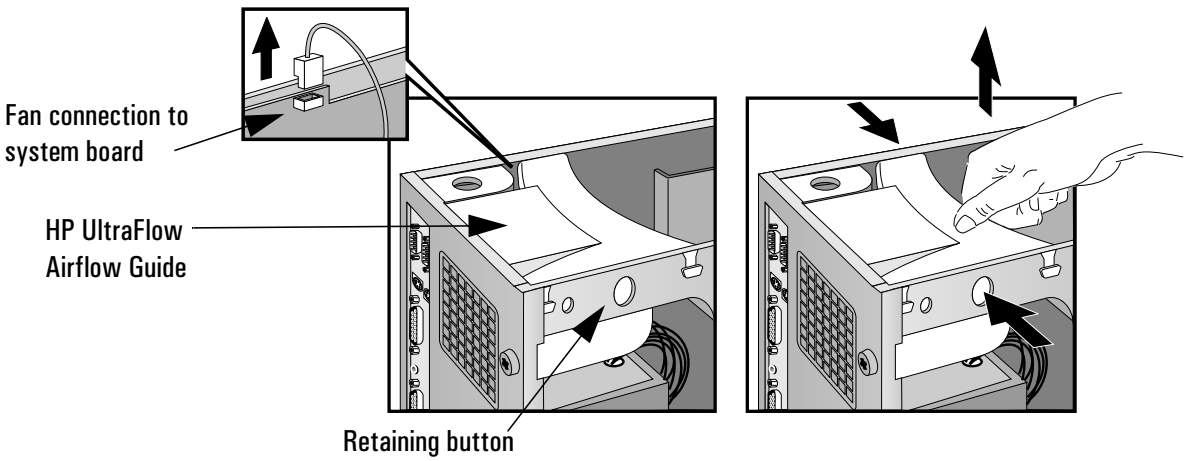
Static electricity can damage electronic components. Turn off all equipment. Do not let your clothes touch the accessory. To equalize the static electricity, rest the accessory bag on top of the power supply while you are removing the accessory from the bag. Handle the accessory as little as possible and with care.

To install a main memory module:

1 Disconnect the computer's power cord and any LAN or telecommunications cable.

2 Remove the computer's cover (see page 23).

3 Remove the fan connection to the system board.



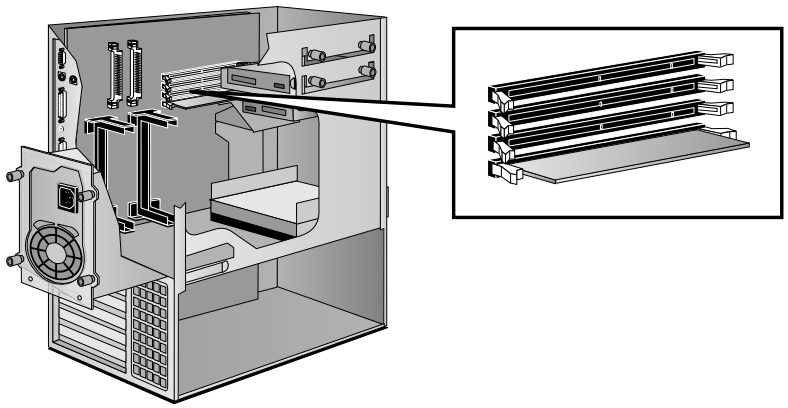
4 Press the retaining buttons on each side of the HP UltraFlow airflow guide and lift it out of the PC Workstation's case.

5 Remove the Ultra wide 16-bit SCSI cable from the system board and then from the (one or two) hard disk drives.

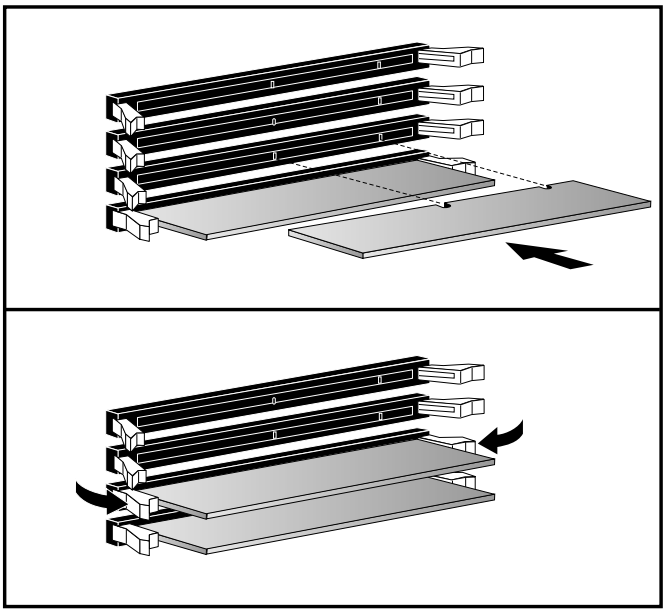
6 Remove the transparent airflow guide covering the processor sockets (if needed).

7 Remove the floppy disk drive data cable from the system board.

8 The location of the memory module slots is shown here.



9 Slide the memory module into the slot at 90° to the system board (hold the memory module with the cutouts closest to the processor).



Slide the memory module into the slot at 90° to the system board

Push the module until the retaining clips click into position

10 *Firmly* press the memory module *completely* into the connector until the retaining clips click into position.

11 Repeat this procedure for each additional memory module you want to install.

12 Install any other accessories if necessary, then replace all units and reconnect all cables and power cords. Replace the cover (see page 23).

13 Check the HP Summary Screen to verify the new configuration. (Refer to “The HP Summary Screen and Setup Program” on page 92.)

Installing More Memory on the Video Adapter

Your PC Workstation is equipped with a video adapter that supports 2D and 3D graphics. If you need to have more video memory to display more colors, higher resolutions, or for increased speed, you can install more video memory on the video adapter.

Refer to page 79 for information on video resolutions.

CAUTION

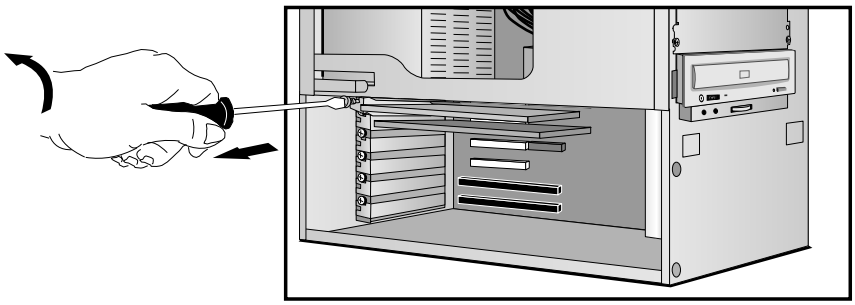
Static electricity can damage electronic components. Turn off all equipment. Do not let your clothes touch the accessory. Handle the accessory as little as possible and with care.

To install a video memory module:

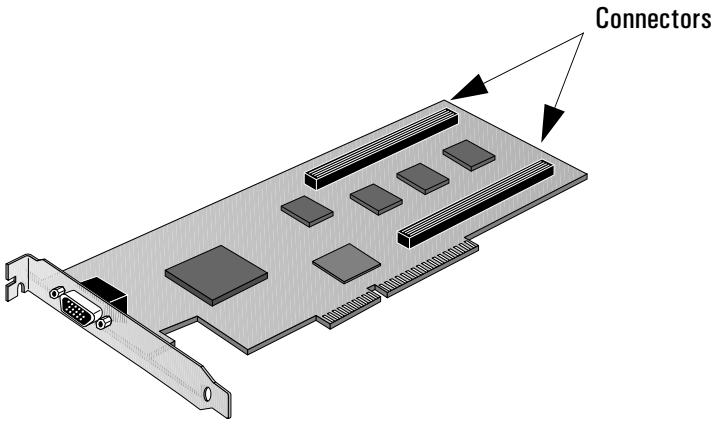
1 Switch off the display and computer, and disconnect the power supply cables and any telecommunications cables. Remove the computer's cover (see page 23) and carefully place the PC Workstation on its side.

2 Carefully remove the board from the accessory 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.

(The different accessory slots are identified in the illustration on page 87.)



3 Attach the memory module to the connectors on the video adapter.



4 Replace the video adapter in the computer. Carefully slide the board back into its accessory slot. Firmly press the board into the socket. Make sure that the board slides into the socket completely and does not touch components on other boards. Secure the video adapter.

5 Install any other accessories before replacing the cover (see page 23). Reconnect all cables and power cords.

Completing the Video Memory Installation Procedure

1 Switch on the PC Workstation.

2 Check that the *Setup* program has detected and configured the Video memory.

NOTE

If you need to use a special video driver for your application, you may be asked to insert the CD-ROM or diskette containing the driver.

Video Adapter Accessories Available from Other Sources

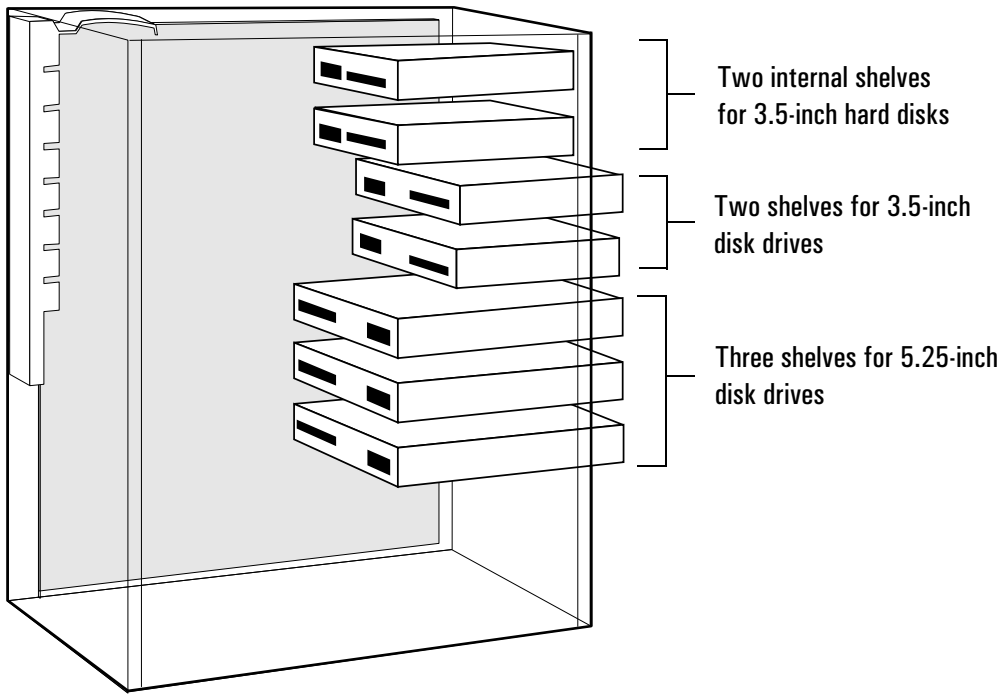
Additional accessories, including memory upgrades and a video MPEG module, are available for your video adapter. However, these accessories cannot be ordered from HP. Contact your dealer for more details about these accessories.

Installing Mass Storage Devices

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

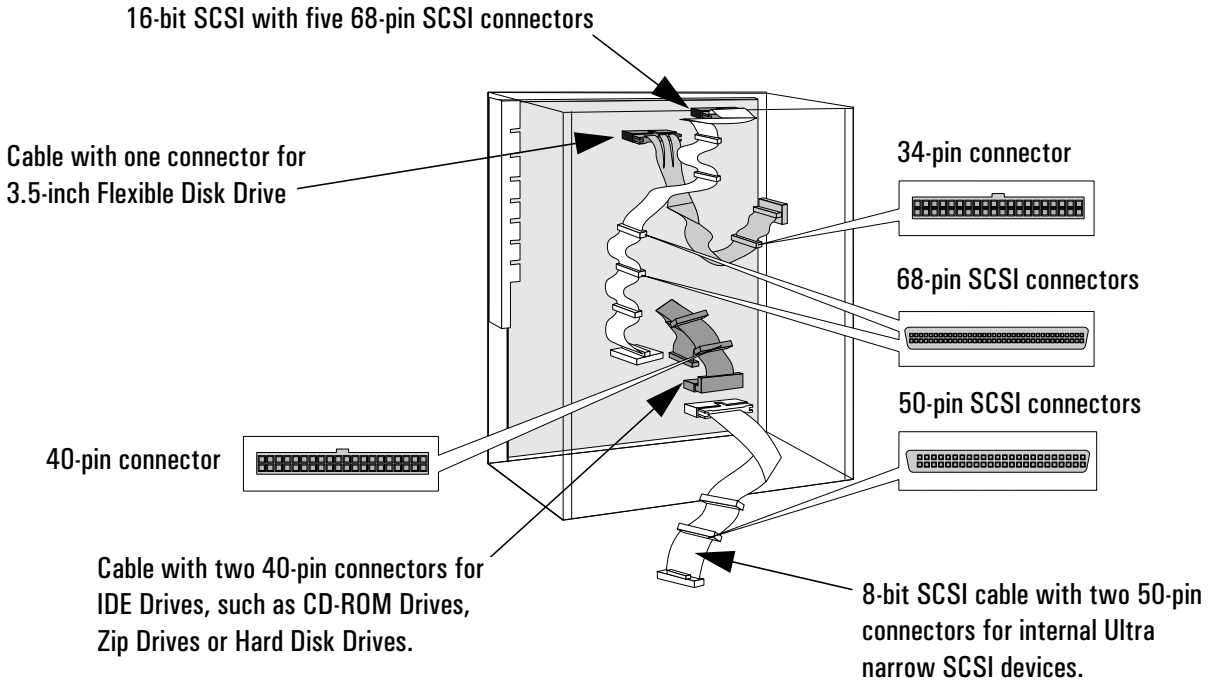
The computer has two internal shelves (for hard disk drives) and five front-access drive shelves (for front-access disk drives and hard disk drives).

Your computer is supplied with one 3.5-inch flexible disk drive and a CD-ROM drive. If your computer is supplied with a hard disk, the hard disk will be installed in the second internal shelf



Connecting Devices

If you add an IDE Zip drive, hard disk drive, CD-ROM drive, CD-RW drive, or tape drive, you need to connect it to power and data cables. The data cables and connectors provided are shown below:



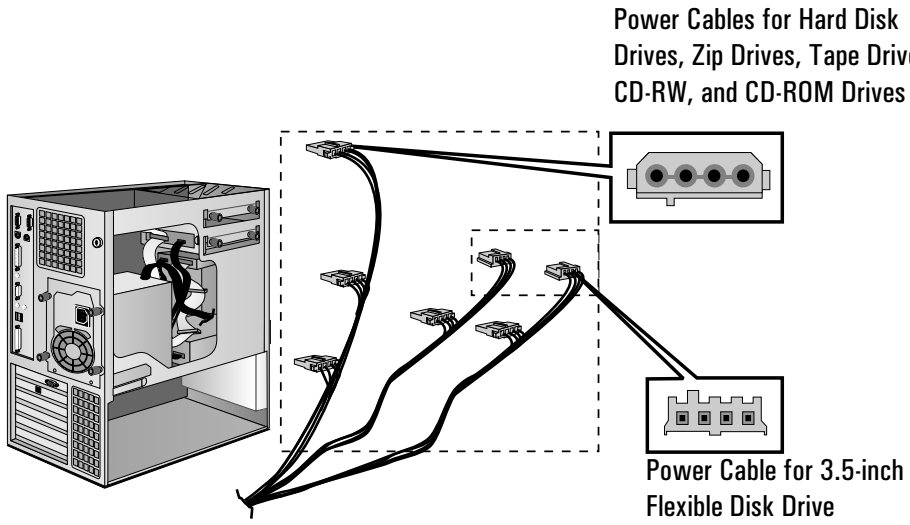
Which Data Connectors to Use

Your PC Workstation has the following cables and connectors on the system board which may be used by mass storage devices:

- A cable for Ultra wide 16-bit SCSI with five connectors.
- A flexible disk drive cable with a single connector. This supports a flexible disk drive (the connector is attached to the flexible disk drive supplied).
- An Enhanced IDE drive cable that supports two IDE devices. If you install a CD-ROM drive, CD-RW drive, a Zip drive, or a third hard disk drive, connect it to this cable.
- A cable for Ultra narrow 8-bit SCSI with two connectors for internal SCSI devices.

Which Power Connectors to Use

There are two different types of power connectors—these are shown below.



Some of the power connectors will already be connected to devices. If you install a device that requires a different connector, the connector converter should be supplied with the device.

Installing a Hard Disk Drive

The computer has two integrated SCSI controllers and an integrated Enhanced IDE controller.

- The Enhanced IDE controller with one channel supports up to two IDE devices. An integrated Ultra ATA-33 controller on the PCI bus supports the fastest IDE devices (33 MB per second).
- The Ultra wide 16-bit SCSI controller is dedicated to hard disk drives and supports up to five internal SCSI devices.
- The Ultra narrow 8-bit SCSI controller supports up to two internal or seven external SCSI devices. When an external device is connected to the system, the narrow SCSI controller automatically switches to non-Ultra, or standard mode (maximum capacity of 10 MB per second).

Disk Striping

To achieve top performance through disk striping, a RAID*port*™ is provided on the system board aligned with PCI socket 3.

When the Adaptec® RAID*port* adapter is installed in the PCI socket and RAID*port*, the adapter sets up and accelerates disk striping on hard disks connected to the Ultra wide 16-bit SCSI controller. The Adaptec® RAID*port* adapter should be used with two hard disks.

NOTE

Disk striping is supported only in Windows NT 4.0.

The Adaptec CI/O Array Manager software can be used to manage and view the performance of the adapter.

Although the RAID*port* adapter is normally set up to maximise disk performance (“RAID 0” configuration), it can instead be configured to provide mirroring for extra data security (“RAID 1” configuration).

For more information, refer to “The HP FastRAID Option” on page 84.

Before Installing an IDE Hard Disk

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

Before Installing a SCSI Hard Disk

If you are installing an additional SCSI drive, you should assign an unused SCSI address to the accessory. SCSI addresses range from 0 to 7 for Ultra narrow 8-bit SCSI and from 0 to 15 for Ultra wide 16-bit SCSI, with SCSI address 0 used by the first SCSI hard disk drive and SCSI address 7 reserved for the integrated SCSI controller (the default for narrow and wide SCSI devices).

NOTE

You do not need to select a SCSI address for Plug and Play SCSI hard disks (SCSI hard disks that support the SCAM protocol). SCAM is disabled if the RAID*port* adapter is installed.

You should assign an unused SCSI address to the second SCSI hard disk drive (for example, SCSI address 1).

The SCSI address is usually configured with jumpers on the SCSI hard disk drive. Refer to the installation guide supplied with the drive for information on selecting a SCSI address.

Some internal SCSI disk drives may have termination resistors that must be removed or disabled before installation in your computer. Refer to the drive's installation guide for more details and to see if there is a special installation procedure to follow.

Installing a Hard Disk Drive in an Internal Shelf

CAUTION

The upper internal shelf can house a hard disk drive up to one inch (1") in height. For a larger disk drive than this, install the drive in one of the front-access shelves as described on page 38.

1 Disconnect the computer's power cord and any telecommunications cable.

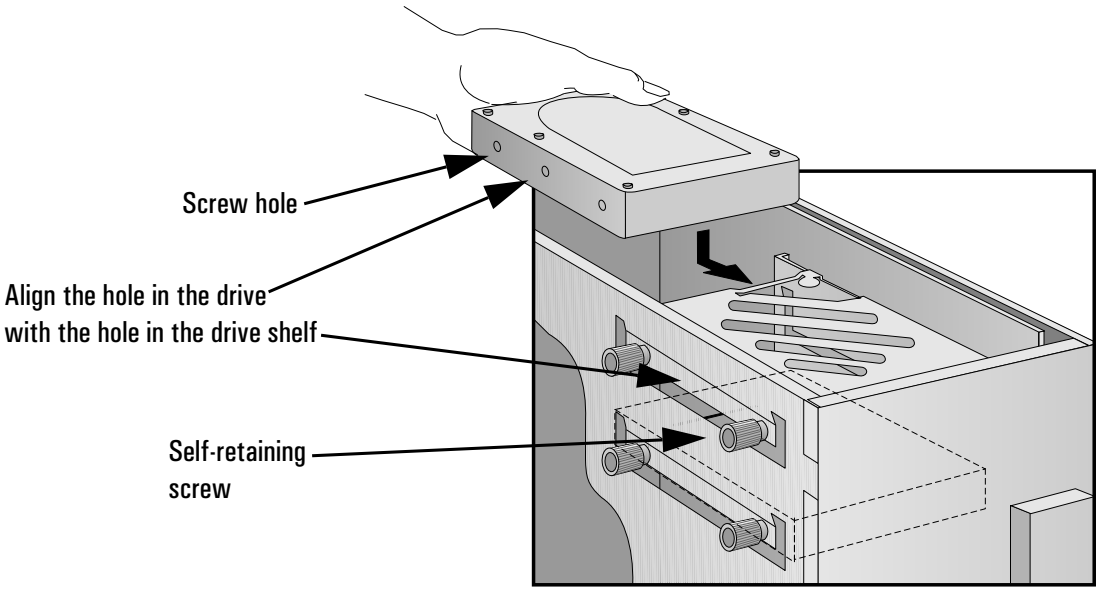
2 Remove the computer's cover (see page 23).

3 Remove the fan connection to the system board (see the illustration on page 24).

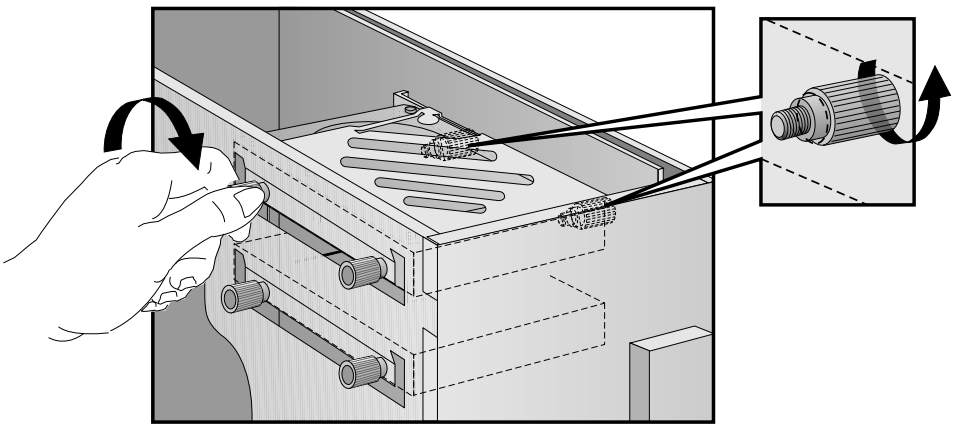
4 Press the retaining buttons on each side of the HP UltraFlow airflow guide and lift it out of the PC Workstation's case.

5 Slide the power supply out to improve access to the internal shelf (see page 24).

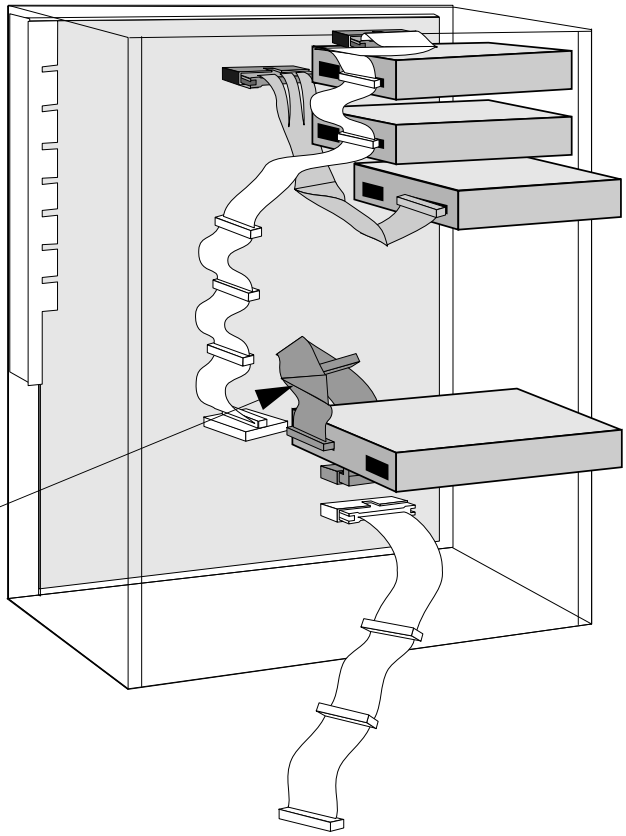
6 Slide the drive into position in the first internal shelf and align the screw holes in the drive with the four self-retaining screws in the drive shelf.



7 Secure the drive with the four self-retaining screws.

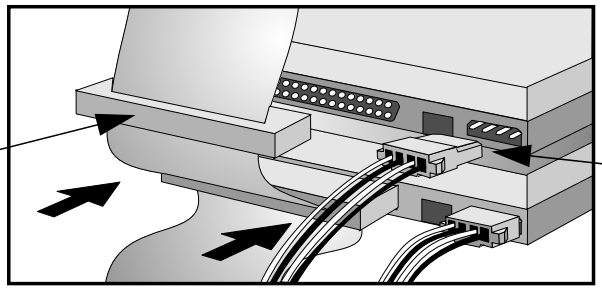


8 Locate the appropriate data cable for the hard disk drive.



IDE drives should be connected to a free IDE connector on the IDE cable (you can add up to two IDE devices).

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



10 Install any other accessories before completing the installation.

11 Turn to page 40 to complete the installation.

Installing a Hard Disk Drive in a Front-Access Shelf

1 Disconnect the computer's power cord and any telecommunications cable.

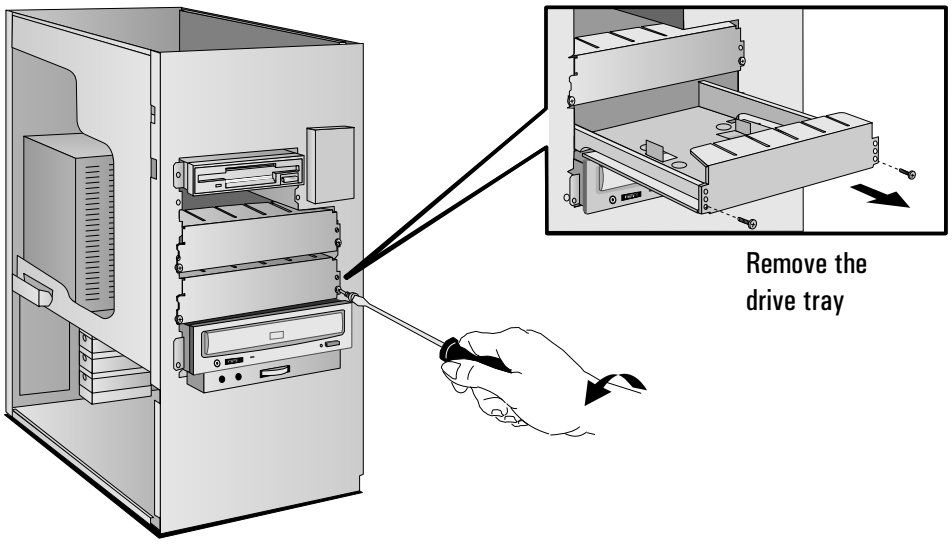
2 Remove the computer's cover (see page 23).

3 Remove the fan connection to the system board (see the illustration on page 24).

4 Press the retaining buttons on each side of the HP UltraFlow airflow guide and lift it out of the PC Workstation's case.

5 Slide out the power supply to provide better access to the disk drive cables (see page 24).

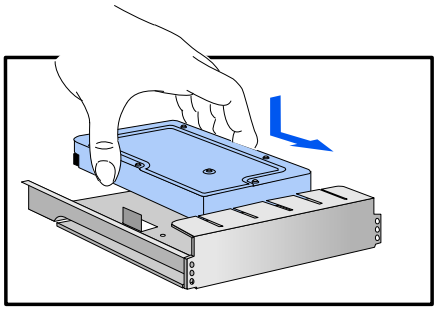
6 Unscrew and remove an unused drive tray.

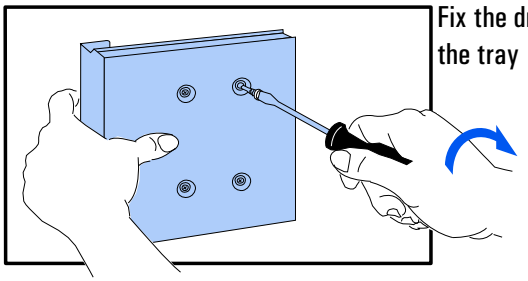


Remove the drive tray

7 Mount the drive on the tray as shown below.

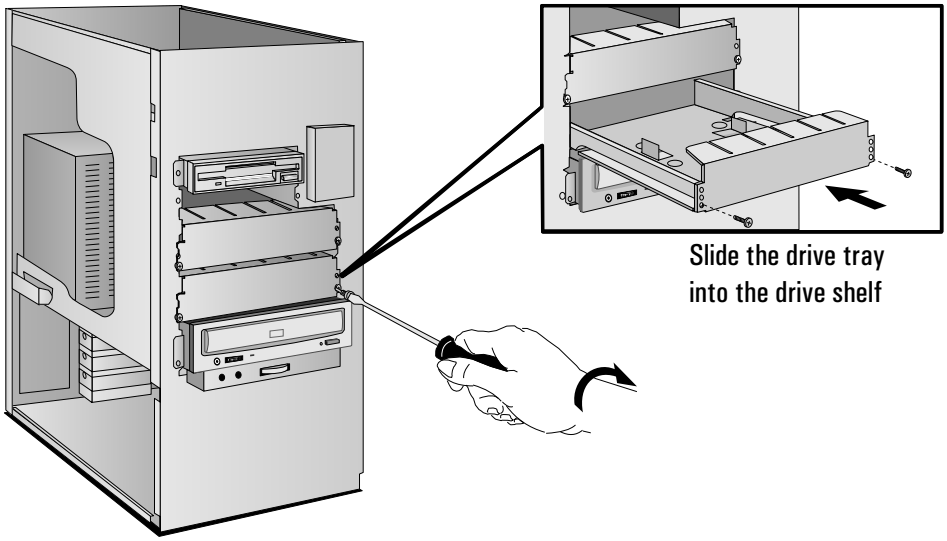
Set the drive on the tray





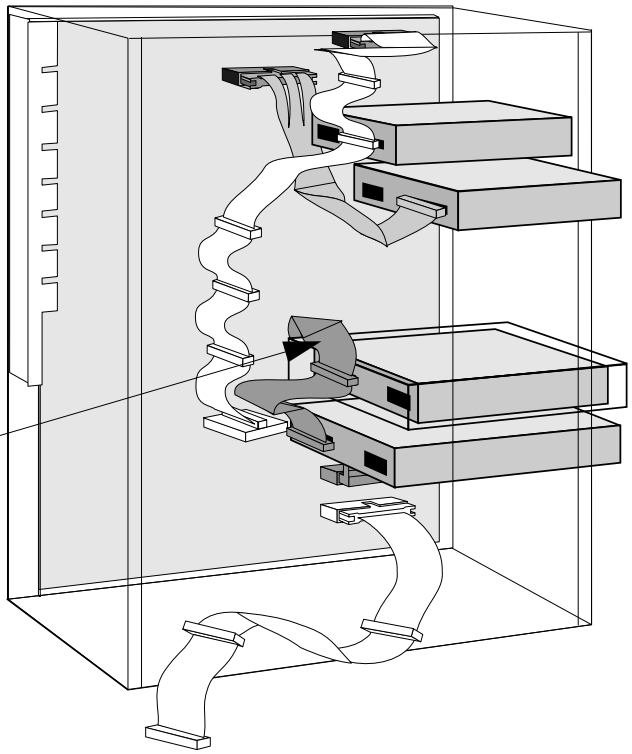
Fix the drive to the tray

8 Slide the drive tray into the drive shelf and secure it.



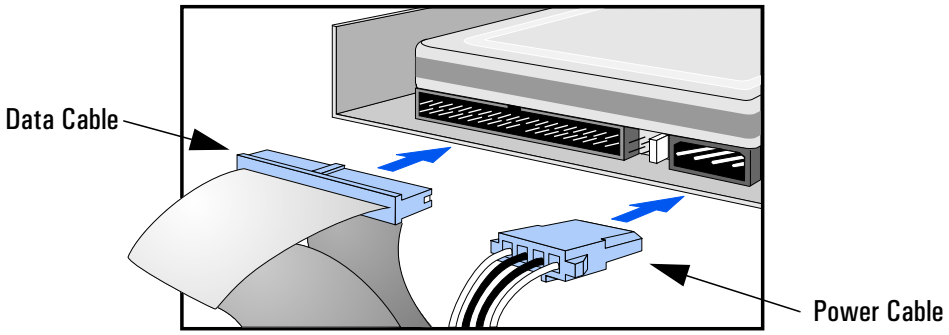
Slide the drive tray into the drive shelf

9 Locate the appropriate data cable for the disk drive.



IDE drives should be connected to a free IDE connector on the IDE cable (you can add up to two IDE devices).

10 Connect the data and power cables to the rear of the device. (*The connectors are shaped to go in one way only*.)



11 Slide the power supply back into position, and tighten the four self-retaining screws (see page 25).

12 Replace the HP UltraFlow airflow guide and reconnect the fan to the system board (see the illustration on page 24).

13 Install any other accessories before replacing the cover and completing the installation.

14 Follow the instructions below to complete the installation.

Completing the Installation of a Hard Disk Drive

When a SCSI Hard Disk Drive Is Installed

1 Switch on the computer.

2 To ensure compatibility, use the FDISK utility to delete any partitions on the new hard disk.

3 Reboot the computer.

Refer to the operating system documentation for information on formatting a drive.

When an IDE Drive Is Installed

1 Switch on the computer.

2 To display the device in POST, press Esc while the PC Workstation reboots.

3 If an error message appears, follow the instructions provided by the Error Message Utility. When prompted, press F2 to run the *Setup* program.

4 Select the Advanced menu, and the IDE Devices submenu. In the Primary Master item, check that the details for the device have been correctly detected by the *Setup* program.

5 Press F3 to save and exit *Setup*.

Refer to the operating system documentation for information on formatting a drive.

NOTE If an IDE drive is removed, switch on the computer. The system BIOS will detect that the device is missing. Press F4 to confirm that you want to remove the device. The system configuration will be updated automatically.

Installing a Drive in a Front-Access Shelf

These instructions explain how to install a drive (such as a flexible disk drive, a CD-ROM drive, CD-RW drive, or a tape drive) in one of the front-access drive shelves. You should also refer to the manual supplied with the drive for any additional installation instructions.

Before Installing an IDE Device

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

Before Installing a SCSI Device

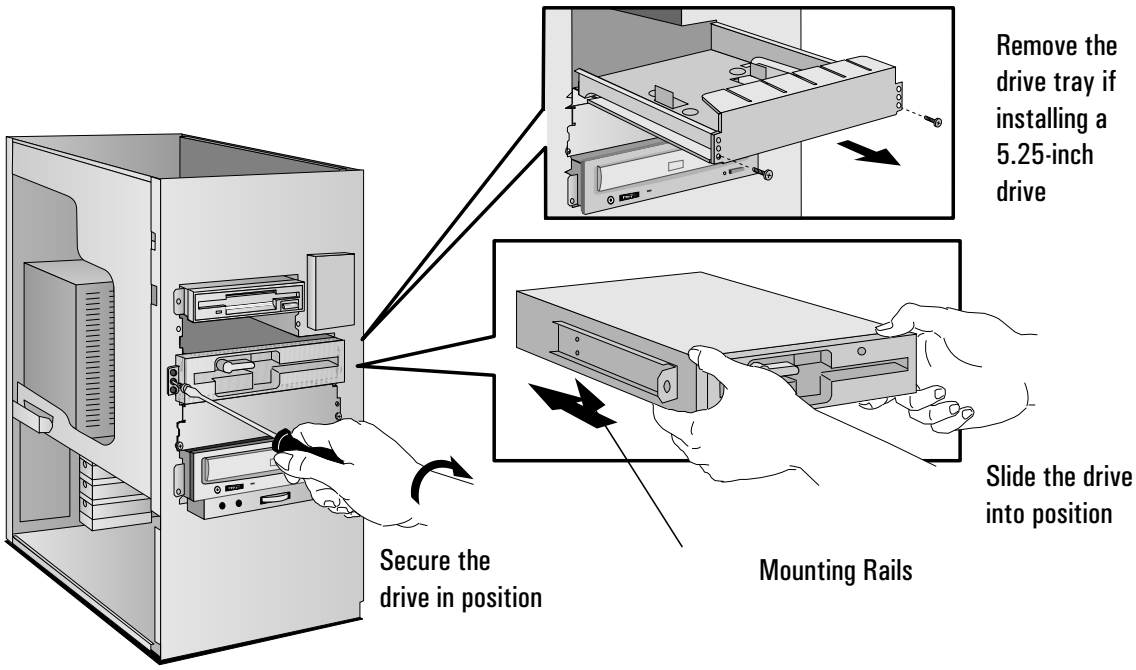
If you are installing a SCSI device, refer to the section "Before Installing a SCSI Hard Disk" on page 35 before using the following instructions.

1 Disconnect the computer's power cord and any telecommunications cable.

2 Remove the computer's cover (see page 23).

3 Slide out the power supply to provide better access to the disk drive cables (see page 24).

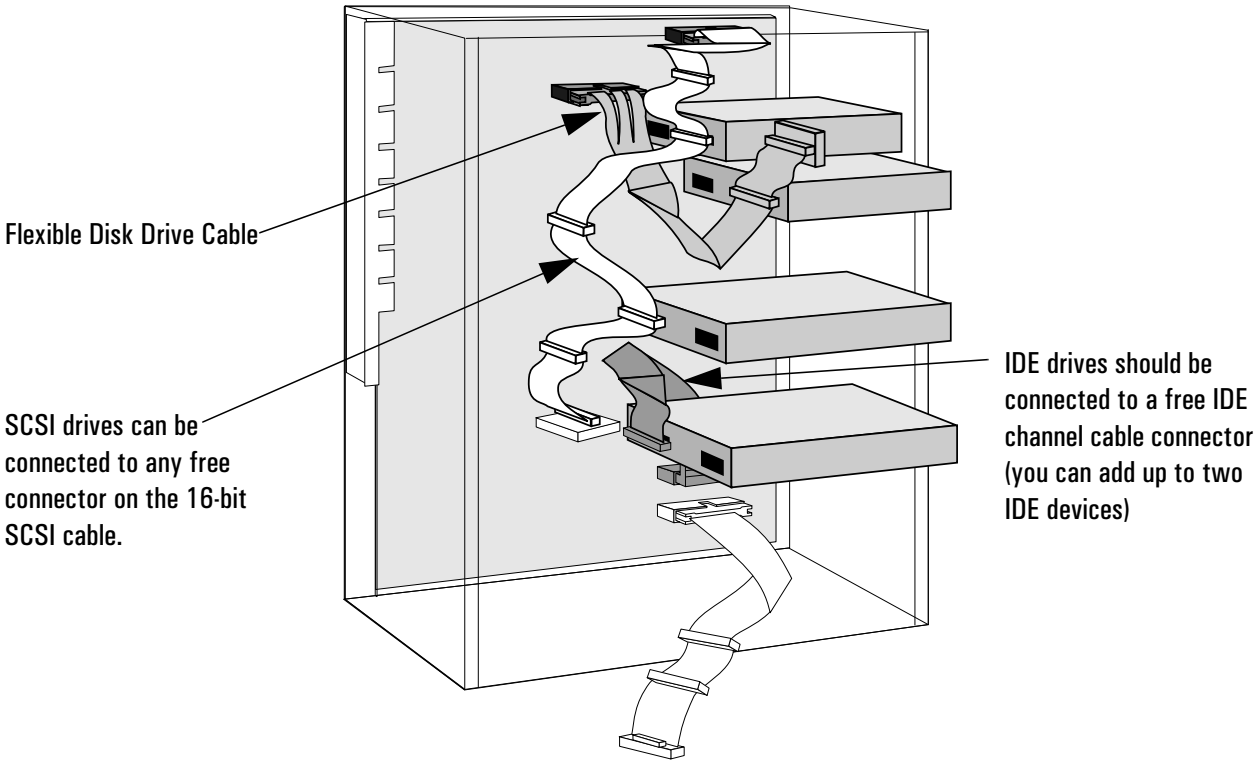
4 If installing a drive in a 5.25-inch wide shelf, remove the drive tray and put it in a safe place.



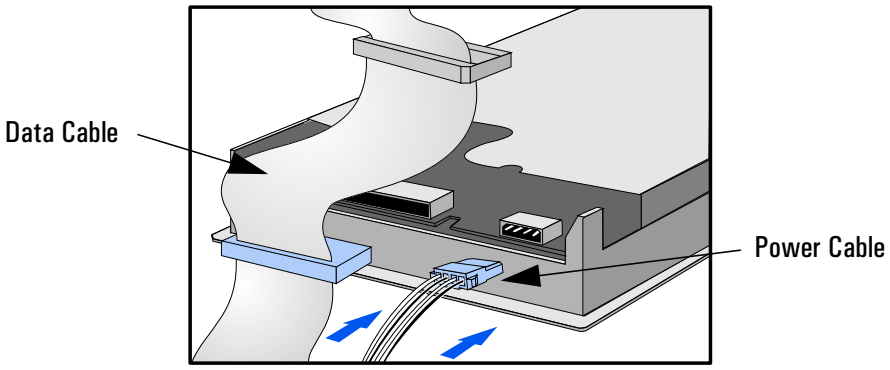
5 Slide the drive into the shelf.

6 Secure the drive in position using the screws provided with the drive.

7 Locate the appropriate data cable for the device.

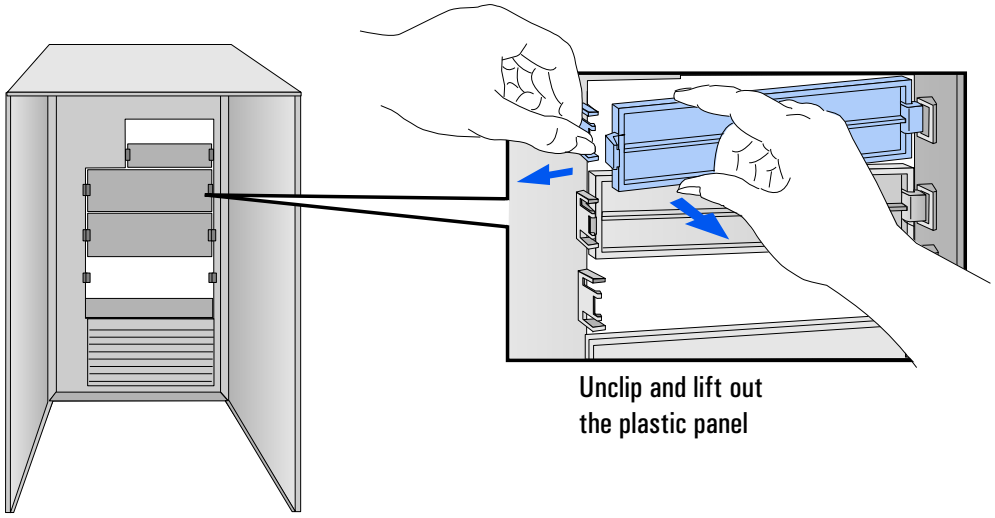


8 Connect the data and power cables to the rear of the device. (*The connectors are shaped to go in one way only.*)



9 Slide the power supply back into position, and tighten the four self-retaining screws (see page 25).

10 Remove the plastic panel from the cover by pulling the panel from the left and unhinging its right-hand side. Store the panel in a safe place.



11 Install any other accessories before replacing the cover and completing the installation.

Completing the Installation of a Drive

When an IDE CD-ROM Drive Is Installed

1 Switch on the computer and press F2 when F2 **Setup** appears.

2 In the *Setup* program, select the Advanced menu, the IDE Devices submenu. Check that the CD-ROM drive has been detected on the IDE channel.

3 Press F3 to save and exit the program.

When a Flexible Disk Drive Is Installed

1 Switch on the computer and press F2 when F2 **Setup** appears.

2 In the *Setup* program, select the Advanced menu, the Flexible Disk Drives submenu, and check that the drive has been detected.

3 Press F3 to save and exit the program.

Installing Accessory Boards

The PC Workstation has the following accessory board slots:

- Slot AT 2 (the bottom slot) for full-length 16-bit ISA boards
- Slot AT 1/PCI 4 for either a 16-bit ISA board or a full-length 32-bit PCI board
- Slot PCI 3 can be used for a full-length 32-bit PCI board (and also features the RAID*port*™ connector)
- Slot PCI 2 for a full-length 32-bit PCI board
- Slot PCI 1 for a full-length 32-bit PCI board
- Slot AGP for the video adapter board

Configuring Accessory Boards with Plug and Play (Windows 95)

Plug and Play is an industry standard for automatically configuring your PC Workstation's hardware resources and the accessory boards installed in it. Accessory boards which support the Plug and Play standard can be detected and configured automatically by your PC Workstation if you are running the Windows 95 operating system. Windows NT does not support Plug and Play.

Your PC Workstation supports configuration of Plug and Play in the system BIOS. When you start your PC Workstation, the Plug and Play system BIOS can detect automatically which hardware resources (IRQs, DMAs, memory ranges, and I/O addresses) are used by the system-based components.

If you install Windows 95 on your PC Workstation, you need to enable Plug and Play in the *Setup* program as described next.

Configuring Plug and Play with the *Setup* program (Windows 95 only)

You can use the *Setup* program to select the level of support provided by the system BIOS for Plug and Play-compatible accessory boards.

Configuring *Setup* for Plug and Play

1 Turn on the PC Workstation and press F2.

2 Specify **YES** for **Plug & Play O/S** (**NO** is specified for all operating systems other than Windows 95, such as Windows NT).

When **YES** is selected, the BIOS will automatically configure any bootable Plug and Play accessories, and the system will automatically configure all remaining Plug and Play accessories. However, if you install a non-Plug and Play accessory board, you must use the Add New Hardware wizard to determine a conflict-free setting for the board.

3 Press F3 to save your selection and exit from the *Setup* program.

Configuring Accessory Boards (Windows 95 only)

Plug and Play ISA Accessory Boards

The system can detect and automatically configure Plug and Play accessories when you specify **YES** for **Plug & Play O/S** in the *Setup* program.

Non-Plug and Play ISA Accessory Boards

You must run the Add New Hardware wizard to configure non-Plug and Play accessories. The Add New Hardware wizard can identify automatically many accessory boards.

If the Add New Hardware wizard does not recognize the accessory board, you can manually select the accessory board from a list of supported products. Your PC Workstation is preloaded with configuration details for many non-Plug and Play accessory boards.

The system will determine the recommended settings for each ISA non-Plug and Play board you want to install. These settings may be different from those recommended by the accessory board's manufacturer. In this case, the board's jumper settings and driver options must be altered.

To run the Add New Hardware wizard:

1 Click the Start button on the the task bar.

2 Point to Settings and Control Panel.

3 Double-click Add New Hardware.

4 Follow the instructions provided by the Add New Hardware wizard to configure the accessory board.

Installing the Board

1 Before installing the board, turn to page 45 for important Plug and Play configuration information.

NOTE

PCI boards are configured automatically when installed in the PC Workstation.

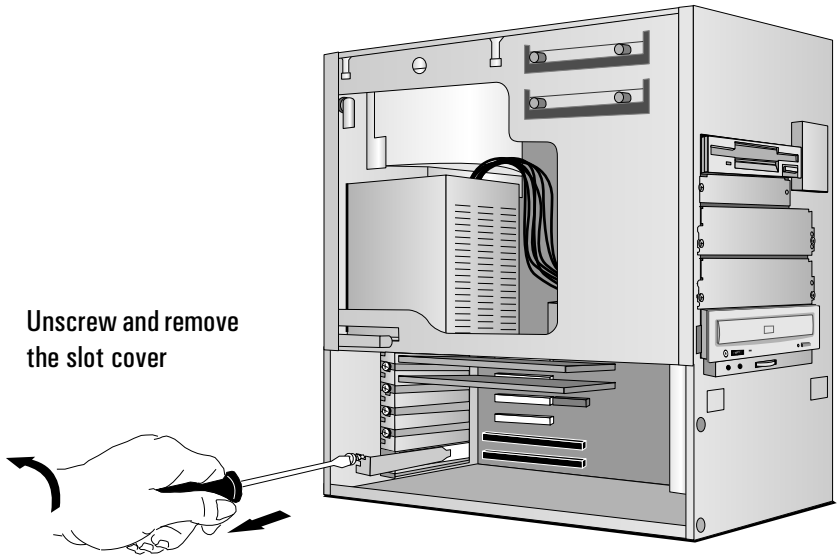
2 Disconnect the computer's power cord and any LAN connection or telecommunications cable.

3 Remove the computer's cover (see page 23) and carefully place the PC Workstation on its side.

4 Find an empty slot. You can refer to page 87 to identify the location of the slot type you want to use (ISA or PCI).

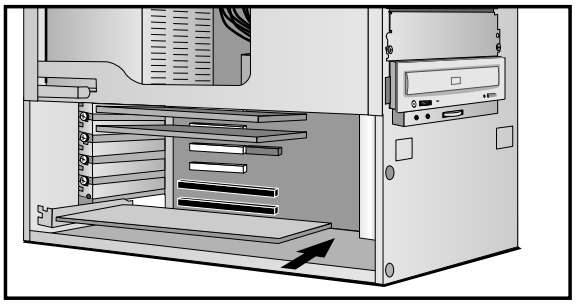
Some boards may have preferred locations and special installation instructions detailed in their manuals.

5 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.



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

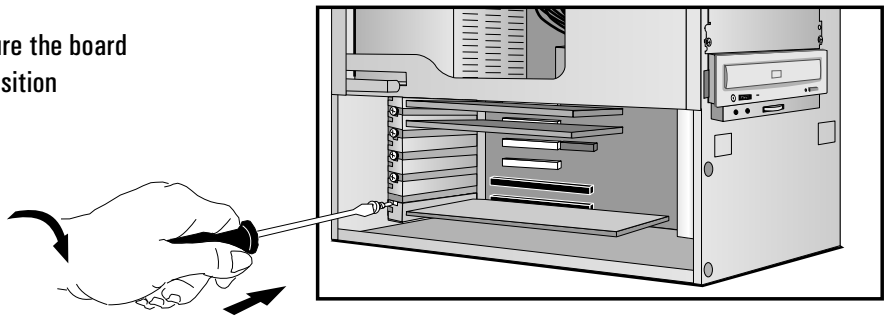
Slide the accessory board into position



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

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

Secure the board in position



9 Install any other accessories before replacing the cover (see page 23). Reconnect all cables and power cords.

Completing the Installation of an ISA Accessory Board

If you have installed an ISA accessory board that is not Plug and Play and uses any interrupt, you must run the *Setup* program and reserve the IRQ for the accessory board. This allows PCI devices to be automatically configured.

1 Turn on the PC Workstation and press F2 when F2 **Setup** appears.

2 In the *Setup* program, select the Advanced menu and the PCI Configuration submenu. A list of IRQs and the devices that use them are displayed. Highlight the IRQ field you want to change, for example **IRQ 11**.

3 You can use the space bar or press F7 or F8 to make the IRQ available for PCI (**Available**) or make it unavailable for PCI (**Reserved**).

4 Press F3 to save any changes you made and exit the *Setup* program.

NOTE You should always leave at least one IRQ available for use by the integrated PCI devices.

Installing a Processor

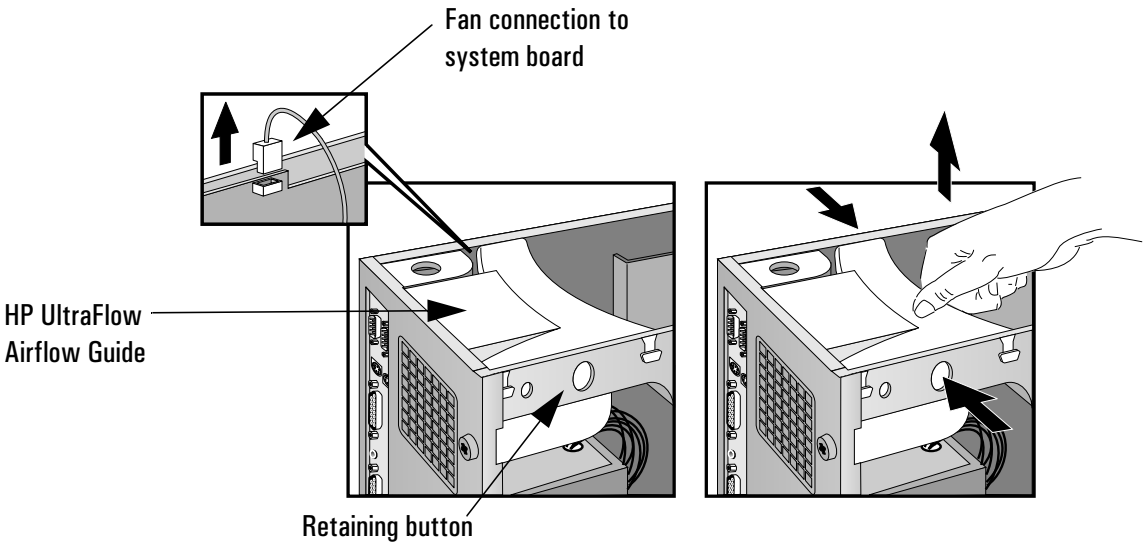
Some operating systems support a second processor for enhanced performance. Contact your authorized reseller for up-to-date information.

NOTE The *Setup* program provides an option to disable the second processor.

1 Disconnect the computer's power cord and any LAN or telecommunications cable.

2 Remove the computer's cover (see page 23).

3 Remove the fan connection to the system board.



4 Press the retaining buttons on each side of the HP UltraFlow airflow guide and lift it out of the PC Workstation's case.

5 Slide out the power supply to improve access to the processor sockets (see page 24) and carefully place the PC Workstation on its side.

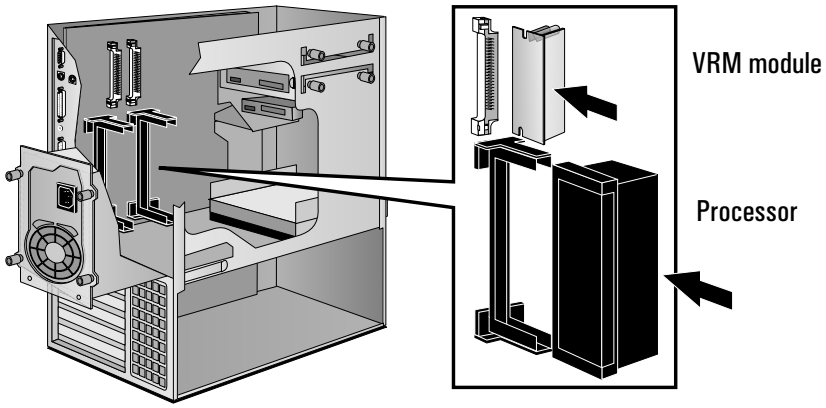
6 Remove the transparent airflow guide covering the processor sockets.

7 The system board has two processor sockets and a VRM slot for each processor. If you are changing the existing processor, remove it from the socket by squeezing the tabs at the top and bottom of the processor and gently pulling the processor away from the system board. Then remove the VRM for the processor.

   If you are installing a processor in the second socket, remove the terminator.

NOTE Installing a faster processor than the one supplied with your PC Workstation will void the warranty.

8 Slide the new processor into the processor socket and push gently until it snaps into place (*the processor can only go in one way*). If you are installing a second processor, remove the card in the second processor socket and slide the processor into the empty processor socket (next to the existing processor).



9 Insert the VRM for the processor in the VRM socket.

10 Replace the transparent section of the HP UltraFlow airflow guide covering the processor sockets.

11 Slide the power supply back into the computer and tighten the four self-retaining screws.

12 Turn the PC Workstation upright and replace the HP UltraFlow airflow guide.

13 Reconnect the fan to the system board.

Completing the Installation of a Processor

1 Verify that the system board bus speed switches are correctly configured for the processor.

Switch 1	Switch 2	Switch 3	Switch 4	Switch 5	Bus Speed	Processor Speed
UP[1]	DOWN	DOWN	UP	UP	66 MHz	233 MHz
UP	DOWN	UP	DOWN	DOWN	66 MHz	266 MHz
UP	DOWN	UP	DOWN	UP	66 MHz	300 MHz
UP	DOWN	UP	UP	DOWN	66 MHz	333 MHz

1. UP = OFF, DOWN = ON.

NOTE

If two processors are installed, both must operate at the same bus speed and processor speed. Refer to the manual supplied with the processor to verify which bus and processor speeds are supported.

2 Install any other accessories before completing the installation of the processor.

3 Replace the cover (see page 23).

4 Turn on the computer and check that the new processor is recognized by the power-on system-test.

3

Troubleshooting Your PC Workstation

This chapter deals with problems you may encounter when using your PC Workstation.

Solving Problems

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

If you are unable to solve your problem after following the advice in this chapter, see chapter 5, Hewlett Packard Support and Information Services.

HP Summary Screen

The HP Summary Screen provides information about your PC Workstation's current configuration. To view the Summary Screen, press Esc just after your PC Workstation is turned on and while the logo is displayed during the Power-on-Self-Test (POST). Refer to page 92 for more information.

HP Diagnostics

An HP Hardware Diagnostic utility is either preloaded on your hard disk drive or available on the World Wide Web.

With this utility, you can diagnose any hardware-related problems that may arise with your PC Workstation. For more information, refer to "The HP Hardware Diagnostics Utility" on page 59.

If Your PC Workstation Does Not Start Properly

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

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

If the 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 Workstation, follow this procedure:

1 Check external items.

2 Check internal items.

3 Rebuild your PC Workstation's components (see page 56).

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 Workstation 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 Workstation 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 a Processor" on page 50.
Check that the processor speed switches have been set correctly.	Refer to "System Board Switches" on page 90.
Check that the memory modules are correctly installed.	Refer to "Installing Memory" on page 26.
Check that accessory boards are firmly seated in their slots.	Refer to "Installing Accessory Boards" on page 45.
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 90.

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

Rebuild Your PC Workstation's Components

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

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 Workstation 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 Workstation's Configuration Memory

If the PC Workstation 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 Workstation, disconnect the power and cables, and remove the cover. Disconnect the PC Workstation from any telecommunications network.

   a Set the system board switch 6 (CONFG) DOWN to clear the configuration.
   b Replace the cover, and reconnect only the power cable.
   c Turn on the PC Workstation. This will erase the CMOS memory.
   d Wait until the PC Workstation has started. A message will be displayed similar to this:
   "Configuration has been cleared, set switch Clear CMOS to the open position before rebooting."
   e Turn off the PC Workstation, disconnect the power cable, and remove the cover.
   f Set the system board switch 6 (CONFG) UP to retain the configuration.

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

3 Switch on the PC Workstation. An error message will be displayed similar to this:
"Incorrect PC Configuration"
The PC Workstation will stop. Press Enter (to view the system errors) and then press CTRL-ALT-DEL to reboot.

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

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

If You Cannot Turn Off Your PC Workstation

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

- Check if your PC Workstation is locked, whereby “power-off” is not allowed. You will need to enter a password to unlock the PC Workstation (refer to Setting Passwords on page 16).
- Check if you are in a suspend/sleep mode, in which case a “power-off” would risk a loss of information/data (refer to the Power Menu in the HP *Setup* program).
- If you press the On/Off button for four seconds, the system will be automatically turned off. Note that this does not shut down the operating system properly.

If Your PC Workstation Has a Hardware Problem

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

The HP Hardware Diagnostics Utility

The HP Hardware Diagnostics utility helps you diagnose any hardware-related problems with your PC Workstation. The utility is either preloaded on your hard disk as part of the HP TopTOOLS application, or is available on the World Wide Web at:

`http://www.hp.com/go/pcsupport/`

The utility consists of a set of tools that help you to:

- Check the configuration of your system and verify that it is functioning correctly.
- Diagnose hardware-related problems.
- Provide precise information to HP-dedicated Support Agents so that they can solve any problems quickly and effectively.

To use the utility, you must first install it and then ensure that it is ready for use. Information on how to do this is given in the *Vectra Hardware Diagnostics* user's guide. You can download a PDF version of this guide from the HP World Wide Web site listed above.

It is important that you use the latest version of the utility to diagnose hardware-related problems. If you do not, HP-dedicated Support Agents may request that you do so before offering support.

The latest version of the utility can be obtained from HP Electronic Information Services, available 24 hours per day, 7 days per week. To access these services, connect to the HP World Wide Web site listed above.

Starting the Utility

To start the utility:

1 Quit all applications, shut down the operating system and restart the PC Workstation.

- If you want to run the utility from a diskette, insert it into the flexible disk drive before you restart the PC. On restarting, the utility runs automatically, displaying the Welcome screen.
- If you run the utility from the hard disk drive, the PC Workstation restarts with the option to choose between your usual operating system and the utility. Select the utility to run it.

2 After the Welcome screen is displayed, press F2 to continue, and then follow the on-screen instructions to carry out the diagnostic tests.

The utility automatically detects the complete hardware configuration of your system before any tests are performed.

Basic System Tests

To verify the correct operation of your system's hardware, you need to carry out the Basic System Tests.

Advanced System Tests

To perform more in-depth testing of your system's individual components, you need to carry out the Advanced System Tests.

NOTE

The advanced test phase is suitable for intermediate and advanced users only.

Support Ticket

To produce a complete record of your system's configuration and test results, you need to create a Support Ticket. You can then send this, via email or fax, to your local or HP-dedicated Support Agent.

If Your 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 referring to the display options section in the HP-provided online user setup information that came with your PC Workstation.
- Alternatively, select the correct display by using the procedures in the operating system on your PC Workstation. Refer to your PC Workstation's operating system documentation for details.

If Nothing Is Displayed On the Screen

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

- Make sure that the display is plugged in and switched ON.
- Check that the brightness and contrast controls are properly set.
- Ensure that the display video cable is correctly connected.
- Switch off the display, and unplug it from the power outlet.
- Disconnect the video cable and examine the video cable connector pins. If the pins are bent, carefully straighten them.
- Check that the video upgrade is properly installed if you have one.
- 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. Boot the operating system in VGA mode (available with some systems).
- 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

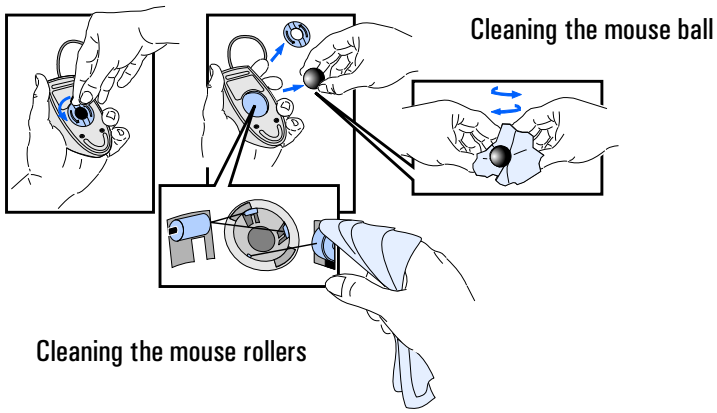
If the display image is not aligned with the screen, use the display's controls to center the image (refer to the display manual for instructions). If the screens generated by the applications do not appear to be correct, check the application's manual to find out which video standard is required. Also 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 (a keyboard icon will be displayed on your screen if the keyboard is not connected).
- If you turn on your PC Workstation, the operating system boots, and the keyboard is correctly connected but 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 the Power Menu in the HP *Setup* program.

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.
- Clean the mouse ball and rollers as shown in the figure below (use a non-residual contact cleaner).



If Your Printer Does Not Work

- Make sure the printer's power switch is ON.
- Verify that the power cord is plugged into the power outlet and the printer.
- Verify that you have the correct cable for the printer. Make sure that it is securely connected to the correct connector (port) on the PC Workstation 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 Workstation and for the application.
  - **a** Ensure the PC Workstation'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 Workstation'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 Your Disks Do Not Work

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 Advanced menu of the *Setup* program.
- In the *Setup* program, select the Advanced menu, the Flexible Disk Drives submenu, and check that the Floppy disk controller is **`Enabled`**.
- Clean the flexible disk drive using a diskette cleaning kit.
- Check that the flexible disk drive has been enabled in *Setup*.
  - Flexible disk drive (select the Security menu and the Hardware protection submenu and check that Flexible Disks is **`Unlocked`**)
  - Boot on flexible disk drive (select the Boot menu and the Boot Device Priority submenu and ensure that the device is in the

device priority list)
  - Write on flexible disk drives (select the Security menu and the Hardware protection submenu and check that Write on Flexible Disks is **`Unlocked`**).
- 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 Devices on page 32).
- Check that the hard disk drive has been **`Unlocked`** (in the *Setup* program, select the Security menu and refer to the Hardware Protection submenu). There is also an option in the *Setup* program that lets you enable or disable boot on the hard disk drive (refer to the Boot Devices Security submenu of the Security menu and check that Start from IDE HDD is **`Enabled`**).
- Check that all hard disk drives have been detected (in the *SCSISelect*™ utility, select SCSI Disk Utilities and check that each hard disk drive is listed with a SCSI ID).
- If you have installed an IDE hard disk and are using the integrated IDE controller, check that the Local Bus IDE is enabled (in the *Setup* program, select the Advanced menu, the IDE Devices submenu, and check that Local Bus IDE adapter is **`Primary`**).

If you have installed the Adaptec® RAID*port* adapter:

- In the *SCSISelect* utility, check that each disk drive has a unique SCSI ID.
- Run the Array*Config*™ utility to check the array configuration.
- Use the Array*Config* utility (and not HP *Setup*) to check that the array has been selected as the boot device.

For further details and troubleshooting advice, refer to “The HP FastRAID Option” on page 84.

If the Hard Disk Activity Light Does Not Work

If the hard disk activity light does not flicker when the PC Workstation 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.

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 drive should be serviced by qualified service personnel only. Refer to the label on the drive for power requirements and wavelength. Do not attempt to make any adjustment to the unit. This PC Workstation is a class 1 laser product.

No Sound from the CD-ROM Drive

If you are having problems with sound when playing a CD:

- Check that the volume control (if present) on the CD-ROM or CD-RW drive front panel is not set to the minimum.
- Ensure that the disk in the drive is an audio disk and not a photo CD or data CD.
- If using headphones or external speakers, check that they are properly connected to the Audio Front Panel (not to the audio jack for the CD-ROM).
- Check that the CD audio cable is correctly installed and is connected to the system board.

CD-ROM Drive Is Idle

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

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 in the *Setup* program (select the Advanced menu and the IDE Devices submenu).
- Verify that the Local Bus IDE adapter item is enabled in *Setup (*select the Advanced menu and the IDE Devices submenu and ensure that Local Bus IDE adapter is set to **`Primary`**).
- If you intend to boot on CD-ROM, make sure that this option is enabled in *Setup* (select the Boot menu and the Boot Devices Priority submenu and ensure that the device is in the boot list).
- For further information refer to the CD-ROM documentation.

If Your PC Workstation Has a Software Problem

If You Have Forgotten Your Password

❒ If you forget the User Password and the Administrator (or Supervisor) password is set and known:

1. Restart the PC Workstation. If the keyboard is locked, unplug the power cord and plug it in again.
2. Wait for the message F2 **Setup**.
3. Press F2 to start *Setup*.
4. Type the Administrator password to enter *Setup*.
5. Select Security, the User Password submenu, and set a new User password.
6. Press F3 to save the new User password and exit *Setup*.

❒ If you forget both the User password and the Administrator password:

1. Switch off the PC Workstation and remove the computer's cover (refer to page 23).
2. Set switch 7 (PSWRD) on the system board switch block to ON (DOWN). Refer to page 90 for the switch location.
3. Replace the PC Workstation's cover and switch on the PC Workstation. Allow it to complete its startup routine.
4. Switch off the PC Workstation and remove the cover.
5. Reset switch 7 (PSWRD) to OFF (UP).
6. Replace the computer's cover (refer to page 23).
7. Switch on the PC Workstation and allow it to complete its startup routine.
8. Press F2 when prompted to use *Setup*.
9. Set new User and Administrator passwords.
10. Press F3 to save the new passwords and exit *Setup*.

If You Can't Start the *Setup* Program

This may happen if the copy of the PC Workstation's configuration stored in memory is corrupted. You will need to erase this bad configuration.

To clear the configuration:

1 Switch off the PC Workstation and remove the cover (see page 23).
2 Set the system board switch 6 (CONFG) on the switch block DOWN to clear the configuration (refer to page 90 for the switch location).
3 Replace the cover and switch on the PC Workstation to erase the memory.
4 Check that error codes **0240** and **0130** are displayed, and wait until the PC Workstation has started.
5 Switch off the PC Workstation and remove the cover.
6 Set the system board switch 6 (CONFG) on the switch block to OFF to re-enable the configuration.
7 Replace the cover (refer to chapter 2).
8 Switch on the PC Workstation and run *Setup* by pressing F2 when F2 **Setup** appears. (Error code **0130** will appear when the PC Workstation starts.)
9 Press F3 to save the configuration and exit from *Setup*.

If the Date and Time Are Incorrect

The date and time can be incorrect because the time changed at the beginning or end of summer time, or because the PC Workstation has been unplugged from the power too long, and the Gold Capacitor which supplies power to the CMOS memory has discharged. To recharge the Gold Capacitor, plug the PC Workstation into the power for one hour (there is no need to start the PC Workstation).

You can install an external battery that will keep track of the date and time if the PC Workstation is unplugged for more than one week (the external battery connector is shown on page 87; the instructions are provided on page 70). Contact your HP dealer for complete information about installing an external battery.

Use the *Setup* program to change the date and time.

If Your Application Software Does Not Work

If the PC Workstation 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/or application software manuals.

If You Have a Network Problem

If you have a problem with your PC Workstation's network, run the HPIEDIAG utility provided on the HP CD-ROM that contains the LAN drivers, supplied with your PC Workstation. This utility should be run from a minimal DOS system, without any LAN drivers loaded—achieve this by booting from a system floppy disk. (If your PC Workstation is running Windows NT 4.0, you will need to create this system floppy disk on another PC.)

1 Insert the system floppy disk in the floppy disk drive and reboot your PC Workstation.

2 Insert the CD-ROM containing the HPIEDIAG utility in the CD-ROM drive.

3 Make the CD-ROM drive the current drive by typing, for example, **`D:`** Enter if D is the letter of your CD-ROM drive.

4 Change to the DIAG directory by typing: **`CD\LAN\DIAG`** Enter.

5 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 also to the online *Network Administrator's Guide* supplied with your PC Workstation.

If Your PC Workstation Has an Audio Problem

If you encounter problems with the audio on your PC Workstation, refer to the online guide *Using Sound on Your PC*.

Installing an External Battery

WARNING There is a danger of explosion if the battery is incorrectly installed. For your safety, never attempt to recharge, disassemble, or burn the old battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. The battery is a lithium battery which does not contain heavy metals; nevertheless, in order to protect the environment, do not dispose of the 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.

If the installed battery stops working, you can install an external battery in the PC Workstation. You can order this from your HP-authorized reseller.

The battery is not covered by the HP Warranty.

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 (see page 87 for the location of the external battery connector on the system board).

2 Mount the external battery to the upper disk drive support using the self-adhesive strip supplied.

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

4

Technical Information

This chapter provides technical information about your PC Workstation and includes information on the HP *Setup* program.

Features

Feature:	Description:
Processor (standard)	Pentium II (single or dual)
Cache Memory (integrated in processor package)	• Level-One: 16 KB code, 16 KB data • Level-Two: 512 KB
Main memory (size/speed)	Upgradeable to 512 MB (SDRAM)
Video	• Millennium II video adapter (4 MB) • AGP video controller with 4 MB of video memory (upgradeable to 16 MB)
LAN	Ethernet 10BT/100TX LAN controller on PCI accessory board
Audio	Integrated 16-bit high fidelity with high-end mixing capability and SigmaDelta converters
Disk drive controller	Integrated Ultra wide 16-bit SCSI and Ultra narrow 8-bit SCSI controller on the PCI bus (data transfer rate of up to 40 MB per second)
Rear connectors	• Mini-DIN mouse • Mini-DIN keyboard • 25-pin parallel • 9-pin serial (two, buffered) • Two USB connectors • Joystick/MIDI • LINE IN jack (3.5 mm) • LINE OUT jack (3.5 mm) • MIC IN jack (3.5 mm) • Ultra narrow 8-bit SCSI (high-density connector)
25-pin parallel connector	• Mode: Centronics or bidirectional modes (ECP/EPP) • Parallel port: 1 (378h, IRQ 7), 2 (278h, IRQ 5), or Off.
9-pin serial connectors	• Standard: Two UART 16550 buffered serial ports (both RS-232-C). • Serial Ports A and B: 2F8h (IRQ 3), 2E8h (IRQ 3), 3F8h (IRQ 4), 3E8h (IRQ 4), or Off— (if one port uses 2xxh, the other port must use 3xxh).

Feature:	Description:
Disk drive shelves	Seven mass storage shelves supporting: • Two front-access, third-height, 3.5-inch drives • Three front-access, half-height, 5.25-inch drives • Two internal 3.5-inch hard disk drives
System board connectors	• One flexible disk drive connector • One Enhanced IDE connector (for up to two IDE devices) • One Ultra wide SCSI 16-bit connector (for up to four internal SCSI devices) • One Ultra narrow SCSI 8-bit connector • One CD-ROM audio connector • AUX connector • Multimedia front panel connector • Front panel MIC connector • Internal speaker connector • One external start connector • External battery connector
Accessory slots	• One AGP (Accelerated Graphics Port) slot • Three 32-bit PCI slots (one with an HP RAID*port*) • One 16-bit ISA (Industry Standard Architecture) slot • One combination ISA or PCI slot
Keyboard/Mouse	• HP enhanced keyboard with mini-DIN connector • HP three-button mouse with mini-DIN connector
HP UltraFlow cooling system	Cooling system with multiple temperature-regulated fans to optimize cooling
Headset	Stereo headset with boom microphone

System Specifications

Power Consumption Information

Full power mode (maximum)	260 W
Typical consumption	One processor installed: approximately 100 W Two processors installed: approximately 150 W
Off	2.2 W (The power supply in your PC Workstation continues to supply power to the CMOS memory, even when switched off.)

NOTE

When the PC Workstation 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 Workstation considerably extends the lifetime of the power supply. To reach zero power consumption in “off” mode, either unplug the PC Workstation from the power outlet or use a power block with a switch. You should be aware that, in this case, the PC Workstation will lose its time settings within a few days.

Maximum Loads Allowed for Accessory Slots

The load limits for the ISA and PCI accessory slots are compliant with ISA and PCI specifications. More details of permitted loads are provided on the World Wide Web (refer to page 109 for access details) in the support documentation section for your PC Workstation.

IRQs, DMAs, and I/O Addresses Used by Your PC Workstation

The IRQ, DMA, and I/O address mappings shown here are for a basic configuration. The resources used by your PC Workstation may vary, depending on which accessory boards are bundled with the PC Workstation. Resources are allocated by the system BIOS or the Plug and Play operating system.

IRQs used by PC Workstation	IRQ0	System timer
	IRQ1	Keyboard controller
	IRQ2	Free
	IRQ3	COM2, COM4
	IRQ4	COM1, COM3
	IRQ5	AD1816, LPT2
	IRQ6	Flexible disk drive controller
	IRQ7	LPT1
	IRQ8	Real-time clock
	IRQ9	
	IRQ10	
	IRQ11	AD1816 MIDI
	IRQ12	Mouse
	IRQ13	Not connected
	IRQ14	Integrated IDE controller
	IRQ15	

DMAs used by PC Workstation	DMA 0	Capture
	DMA 1	Playback
	DMA 2	Flexible disk drive controller
	DMA 3	LPT ECP
	DMA 4	Cascade
	DMA 5	free
	DMA 6	free
	DMA 7	free

I/O Addresses used by PC Workstation	0000 - 000F	DMA controller 1
	0020 - 0021	Master interrupt controller
	002E - 002F	Configuration registers
	0040 - 0043	Timer 1
	0060, 0064	Keyboard controller
	0061	Port B (speaker, NMI status and control)
	0070	Bit 7: NMI mask register
	0070 - 0071	RTC and CMOS
	0080	Manufacturing port (POST card)
	0081 - 0083, 008F	DMA low page register
	0092	PS/2 reset and Fast A20
	0096 - 0097	Little Ben
	00A0 - 00A1	Slave interrupt controller
	00C0 - 00DF	DMA controller 2
	00F0 - 00FF	Coprocessor error
	0130 - 013F	AD1816 sound system
	0170 - 0177	Free (IDE secondary channel)
	01F0 - 01F7	IDE primary channel
	0200	AD1816 Joystick
	0220 - 0232	AD1816 Sound Blaster
	0278 - 027F	LPT 2
	02E8 - 02EF	Serial port 4 (COM4)
	02F8 - 02FF	Serial port 2 (COM2)
	0330 - 0331	AD1816 MIDI
	0372 - 0377	Free (Secondary flexible disk drive)
	0378 - 037A	LPT1
	0388 - 038B	AD1816 Adlib (FM)
	03B0 - 03DF	VGA
	03E8 - 03EF	COM3
	03F0 - 03F5	Flexible disk drive controller
	03F6	IDE primary channel
	03F7	Flexible disk drive controller
	03F8 - 03FF	COM1
	04D0 - 04D1	Interrupt edge/level control
	0678 - 067B	LPT2 ECP
	0778 - 077B	LPT1 ECP
	0CF8 - 0CFF	PCI configuration space
	8000	PIIX4 Power Management I/O space
	8400	NS317 ACPI Registers
	8800	PIIX4 SMBus I/O space

Audio Features

Feature:	Description:
Digitized Sounds	• SoundBlaster Pro • Compatible with AdLib • 16-bit and 8-bit stereo sampling from 4 kHz to 55.2 kHz • Programmable sample rates with 1 Hz resolution • Hardware Full Duplex Conversion • Up to six different simultaneous sample rates • 8-bit F DMA transfer on channel 0, 1, 2 or 3 • Advanced 16-bit software-based real-time audio compression/decompression system with the following standards: PCM, Microsoft ADPCM, SoundBlaster ADPCM in SB mode, CCITT A-Law, CCItt • 16-bit software-based real-time audio compression/decompression system with the following standards: Creative ADPCM (16:4), CCITT A-law (16:8), and CCITT μ-law. The standards are supported in mono or stereo, and Big-endian or Little-endian format • Automatic dynamic filtering for digital audio recording and playback
Music Synthesizer	• MPU401 compatible MIDI port • Support for Hardware and Software Wave table Synthesizer • Integrated OPL3 compatible music synthesizer • 24 operators in 4-operator mode allows six instruments • 36 operators in 2-operator mode allows 18 instruments or 15 instruments with five drums
Enhanced Stereo	• Built-in “Phat Stereo” for enlargement of Stereo Image

Feature:	Description:
Mixer	• AC'97 and MPC-3 audio mixer • Input mixing sources: MIDI, microphone, LINE IN, CD Audio, AUX Audio, and digitized sounds • Output mixing of all audio sources to the LINE OUT or integrated PC Workstation speaker • Multiple source recording and Left/Right channels swapping or mixing • 16-level microphone volume control • 64-level volume control for digitized sounds, MIDI music, CD-Audio, LINE In, and Aux1 Audio • 32-level master volume control • External hardware volume control for Master Volume
LINE IN	• Input impedance: 15 ohms • Input range: 0 to 2 Vpp
LINE OUT	• Stereo output of 5 mW a channel with headphone speakers (impedance > 600 ohms)
MIDI/Joystick Interface	• Built-in MIDI interface for connection to external MIDI devices • Sound Blaster and MPU-401 UART mode compatible • MIDI time-stamp for multimedia extension • Input buffer: 64-byte FIFO • Standard analog PC Workstation mono joystick port
Audio Front Panel	• Microphone In jack • Headphone Out jack • Master volume control potentiometer
Microphone In jack	• 20 dB gain preamplifier. The boost can be muted with software • 16-level programmable volume control • Input impedance: 600 ohms • Sensitivity: 30 mVpp to 200 mVpp
Headphone Out jack	• Impedance: 32 ohms

Video Features

2D Resolution and Pixel Depth		
Resolution	**Bits/Pixel 4 MB**	**Bits/Pixel 8, 12, 16 MB**
640x480	8, 16, 24, 32	8, 16, 24, 32
800x600	8, 16, 24, 32	8, 16, 24, 32
1024x768	8, 16, 24, 32	8, 16, 24, 32
1152x864	8, 16, 24, 32	8, 16, 24, 32
1280x1024	8, 16, 24	8, 16, 24, 32
1600x1024	8, 16	8, 16, 24, 32
1600x1200	8, 16	8, 16, 24
1920x1035	8, 16	8, 16, 24
1920x1080	8, 16	8, 16, 24
1920x1200	8	8, 16
1800x1440	8	8, 16

Maximum 3D Color Resolutions			
Memory	**Bits/Pixel**	**Fast 3D**	**Normal 3D**
4 MB	8	800 x 600	800 x 600
4 MB	16	800 x 600	800 x 600
4 MB	32	640 x 480	640 x 480
8 MB	8	1280x1024	1280x1024
8 MB	16	1152x864	1152x864
8 MB	32	800x600	800x600
12 MB	8	1920x1080	1920x1080

Maximum 3D Color Resolutions			
Memory	**Bits/Pixel**	**Fast 3D**	**Normal 3D**
12 MB	16	1280x1024	1280x1024
12 MB	32	1152x864	1152x864
16 MB	8	1800x1440	1800x1440
16 MB	16	1920x1080	1920x1080
16 MB	32	1152x864	1280x1024

Maximum Refresh Rates	
Resolution	**Maximum refresh rates**[1]
640x480	200 Hz
800x600	180 Hz
1024x768	140 Hz
1152x882[2]	110 Hz
1280x1024	100 Hz
1600x1200	90 Hz

1. Your display may not support the maximum refresh rates shown here. Refer to the *User's Guide* supplied with your display for details of the refresh rates supported by your display.
2. This resolution is not preset on the HP displays.

NOTE The video drivers and adapter card supplied for your operating system will determine the available video resolutions and the number of displayable colors.

SCSI Features

Feature:	Description:
Dual Controllers	• Ultra Wide 16-bit SCSI • Ultra Narrow 8-bit SCSI
Dedicated Controller	Ultra Wide 16-bit SCSI controller dedicated to hard disk drives for full-time top-speed performance
Ultra Wide 16-bit SCSI	• Based on Adaptec AIC7880 chip • 40 MB per second band width • Supports multiple internal SCSI devices • SCAM support
Ultra Narrow 8-bit SCSI	• Based on Adaptec AIC7860 chip • 20 MB per second bandwidth • Multiple internal and external SCSI devices • Automatic switching to non-Ultra for external SCSI devices (10 MB per second) • SCAM support
HP FastRAID	• Acceleration of Ultra Wide 16-bit SCSI only • Top performance with two superfast 4.5 GB 10,000 rpm hard disks • SCAM not supported

Disk Striping Features (FastRAID)

Feature:	Description:
Computer bus	32-bit PCI local bus and HP FastRAID socket connector
Host bus data transfer rate	Up to 133 MB per second
Device protocol	Ultra wide 16-bit SCSI
Advanced HP FastRAID features	• Hot spare and hot swap of drives (pool or dedicated) • User-defined rebuild priority • User-defined verify priority • Hot spare testing • Scheduler for rebuild, verify, and hot-spare testing • Array status monitoring and event notification • User-selected broadcast and monitoring • Adjustable stripe width
Device support	Up to 15 HDD/non-HDD SCSI devices per system board channel
Array support	• Drives can be configured for FastRAID levels 0 and 1 • Drives can also be supported in non-array environments
Operating system	Windows NT 4.0
Remote management	Windows NT 4.0
SCAM	Not supported; SCSI addresses must be set manually on Ultra wide 16-bit SCSI channel

Network Features

Feature:	Description:
LAN Controller	AMD AM79C971/Presidio 3
Physical Layer	Level One LXT970
RJ45 Connector	10BT/100TX autonegotiation
Option Flash	Support up to 256 KBs
Remote Boot	Protocols integrated in System BIOS
ExStart Connector	• Connection to CPU board • LAN Remote Wake Up or Remote Power On signals • Auxiliary power • Hardware Control Panel LAN LED signal
Remote Power On	• Full remote power on with Magic Packet • Power: Auxiliary power (during power off)
Remote Wake Up	• Wake Up from Suspend state with Magic Packet • Power: Main power

The HP FastRAID Option

HP FastRAID uses RAID technology to accelerate the performance of your PC's hard drives. Rather than focussing on data protection, as with server-based RAID technologies, HP FastRAID brings top performance to your computer.

If you purchased your computer with the HP FastRAID option, an Adaptec ARO-1130 PCI RAID*port*™ adapter will have been pre-installed in the RAID*port* connector slot of your PC's system board, and configured to provide maximum I/O throughput for your PC's two hard drives.

Although your ARO-1130 adapter and hard drives come preconfigured for maximum performance (caching and/or RAID 0, depending on your PC Workstation model), you can also configure the RAID*port* adapter and drives to provide protection against data loss (RAID 1).

The RAID 1 configuration provides software mirroring and caching. Data is mirrored (duplicated) using a disk pair. If one disk fails, the data is still available on the mirrored drive. The RAID 1 configuration also provides an improvement in performance using the cache on the ARO-1130 adapter. It does not, however, provide the same level of throughput as the RAID 0 configuration. Also, because data is mirrored, the storage capacity of your drives is only half of the physical capacity of the drives.

Note that configurations RAID5 and RAID10 are not supported.

CAUTION

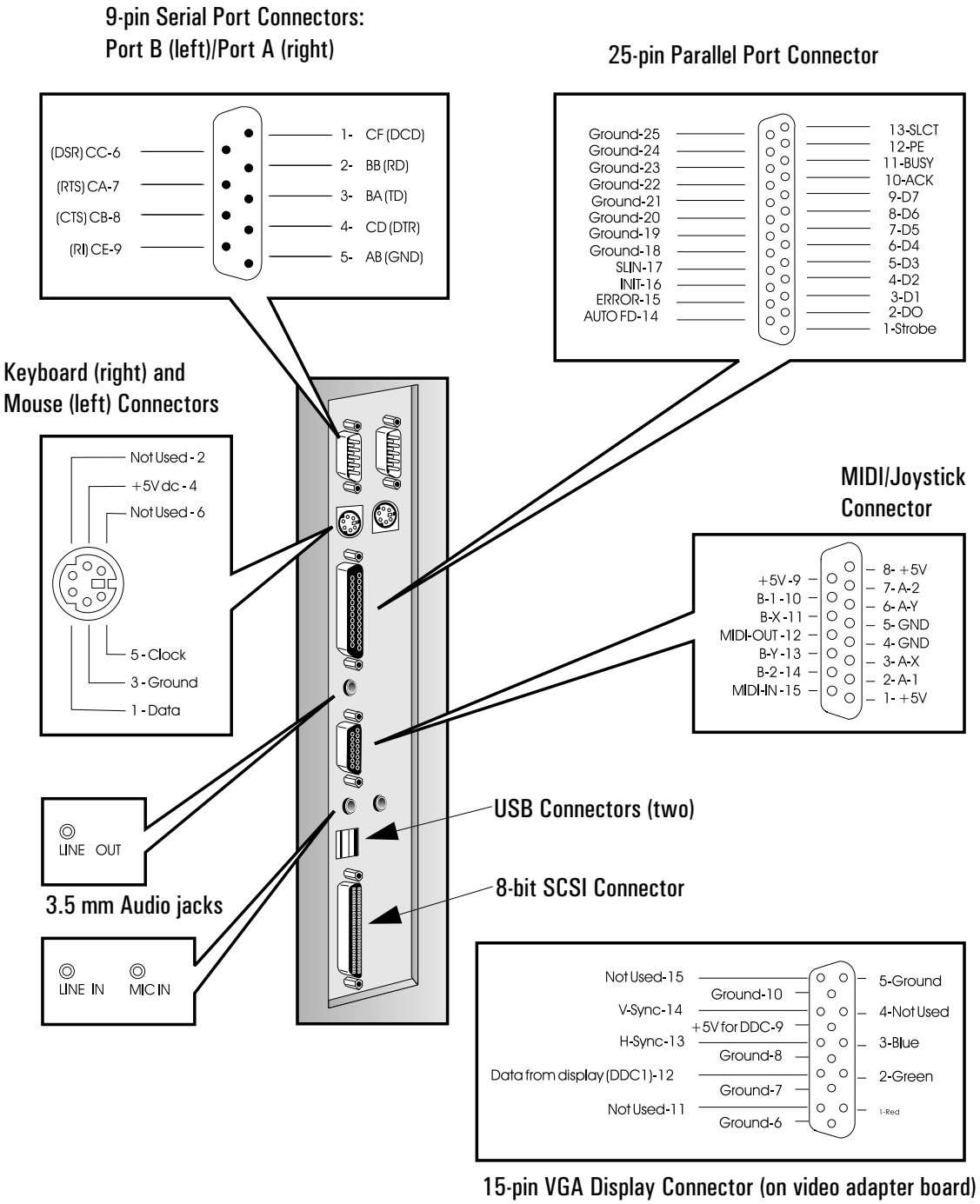
Before you reconfigure your drives, back up any existing data that you wish to keep. Reconfiguring an array using the Array*Config* utility erases all data and partitions from the drives. Once you have reconfigured the drives and have reinstalled the operating system you can restore the backed up data.

To reconfigure your ARO-1130 adapter and hard drives for use with RAID 1, use the Array*Config* utility contained on the Drivers CD-ROM. For instructions on how to use the Array*Config* utility, refer to *Installing the HP FastRAID Accessory Kit.* This guide is viewable on-screen—it is provided in PDF format—and can be found on the World Wide Web: refer to page 109 for access details, choose Drivers, and then locate the support documentation for your PC Workstation. (If you purchased the HP FastRAID option as an accessory, the guide is a separate paper booklet.)

Note that the Array*Config* utility must be run from a bootable diskette. For more information on creating a bootable Array*Config* diskette and configuring your ARO-1130 adapter, refer to the README file in the FastRAID section of the Drivers CD-ROM.

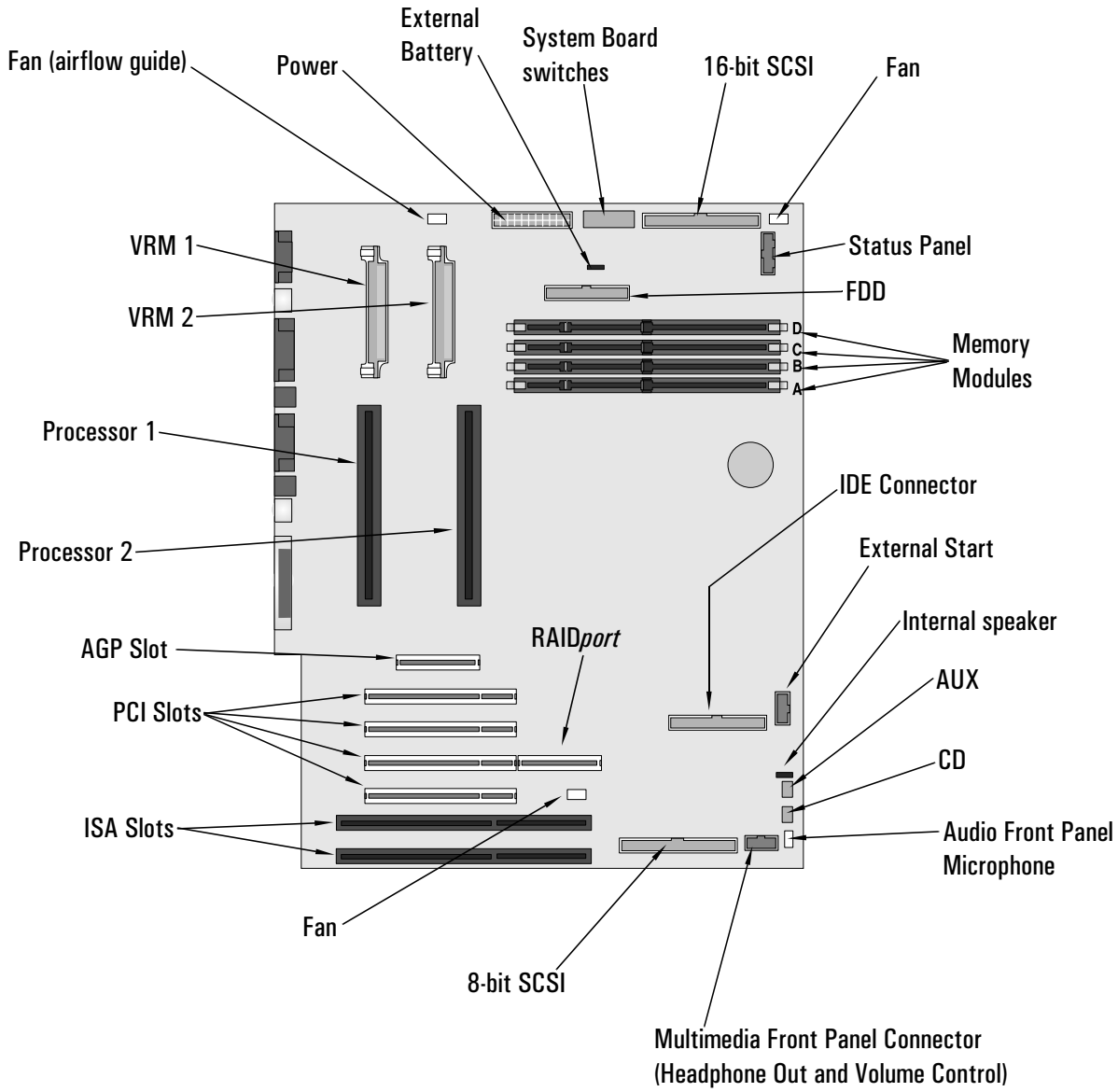
Once the array has been created, you can use the CI/O Array Manager utility (also contained on the Drivers CD-ROM) to manage and monitor it. For instructions on how to use the CI/O Array Manager, refer to its online documentation.

The PC Workstation's Rear Connectors



System Connectors and Switches

System Board Connectors



Internal Audio Connectors

The PC Workstation's system board has several connectors that allow you to internally connect to other devices. This includes:

- A CD audio connector
- An auxiliary (AUX) connector
- An Audio Front Panel connector
- A Front Panel Microphone connector

CD Audio Connector

The CD Audio Connector labeled "CD IN," is a 4-pin connector that is connected to the internal CD drive. This connector allows you to listen to audio from the CD-ROM drive.

The CD Audio Connector has the following pin assignments:

Pin	Signal	I/O
1	Analog Ground	
2	CD right channel	IN
3	Analog Ground	
4	CD left channel	IN

Auxiliary (AUX) Connector

The AUX Connector labeled "AUX IN," is a 4-pin connector that is connected to the internal AUX. This connector allows you to listen to audio from an auxiliary source.

The AUX Connector has the following pin assignments:

Pin	Signal	I/O
1	Analog Ground	
2	AUX right channel	IN
3	Analog Ground	
4	AUX left channel	IN

Audio Front Panel Connector

The Audio Front Panel Connector, labeled "Audio Front Panel," is a 10-pin connector that links the system board with the multimedia Front Panel. It has the following functions:

- Master volume adjustment from 0% (Mute) to 100% (Maximal Gain).
- Redirect stereo output to the front panel headphone jack, or the rear panel stereo jack, as follows:

  1 When the headphone jack on the Audio Front Panel of the PC Workstation is not being used, the audio signal is available on the rear panel (for example, speakers are active).

  2 When a headphone is plugged into the headphone jack, the audio is directed to it and no sound is available on the rear panel (speakers are muted).

The Audio Front Panel Connector has the following pin assignments:

Pin	Signal	I/O
1	Analog Ground	
2	Key Way	
3	Front Panel input left	IN
4	Front Panel return left	OUT
5	Front Panel input right	IN
6	Front Panel return right	OUT
7	Volume low limit	
8	Volume high limit	
9	Volume adjust left	
10	Volume adjust right	

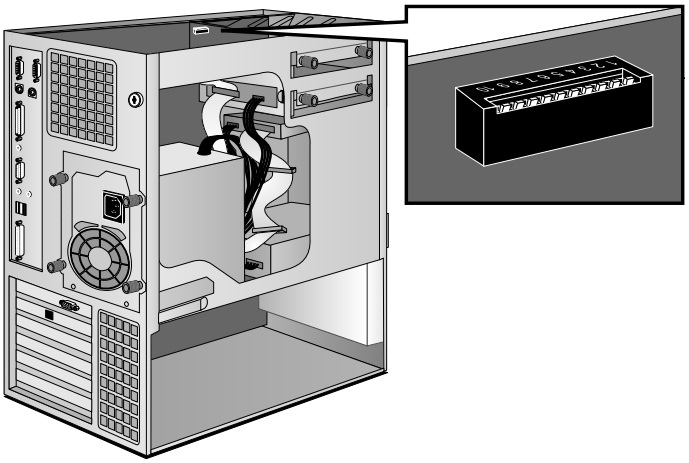
Refer to the online guide *Using Sound on Your PC* for more information about the Audio Front Panel.

Front Panel Microphone Connector

The Front Panel Microphone Connector, labeled “Front Panel Micro,” is a 3-pin connector. The Audio signal from this connector is directly mixed with the signal from the rear panel Microphone jack. The connector has the following pin assignments:

Pin	Signal	I/O
1	MIC signal + power (tip)	IN
2	Analog Ground	
3	MIC signal + power (ring)	

System Board Switches



Switches 1 through 5 are used for processor settings (see page 52) and should not be changed. Replacing the processor with a different processor is not supported by HP.

Switches 6 to 10 are used as shown in the following table:

Switch[1]	Use Switch to:
6 - CONFG	Retain or clear the configuration stored in EEPROM: • UP to retain configuration — DEFAULT • DOWN to clear configuration.
7 - PSWRD	Enable or clear (and disable) User and System Administrator Passwords stored in EEPROM: • UP to enable passwords — DEFAULT • DOWN to clear passwords.
8 - KEYB	Enable or disable power on using the keyboard: • UP to disable keyboard power on • DOWN to enable keyboard power on — DEFAULT.
9 - Reserved	UP — DEFAULT.
10 - Reserved	UP — DEFAULT.

1. On the switch, UP = OFF and DOWN = ON.

The HP Summary Screen and *Setup* Program

This section introduces the HP Summary Screen and the HP *Setup* program. You can use the Summary Screen and the *Setup* program to configure your PC Workstation and solve configuration problems with your PC Workstation.

Viewing the HP Summary Screen

Check your PC Workstation's configuration when you first use the PC Workstation and each time after you install, remove, or upgrade accessories. To check the configuration:

1 Turn on the display and then the PC Workstation. If the PC Workstation is already turned on, save your data and exit all programs, then restart the PC Workstation. Consult your operating system documentation for any special instructions concerning turning off and then restarting your PC Workstation.

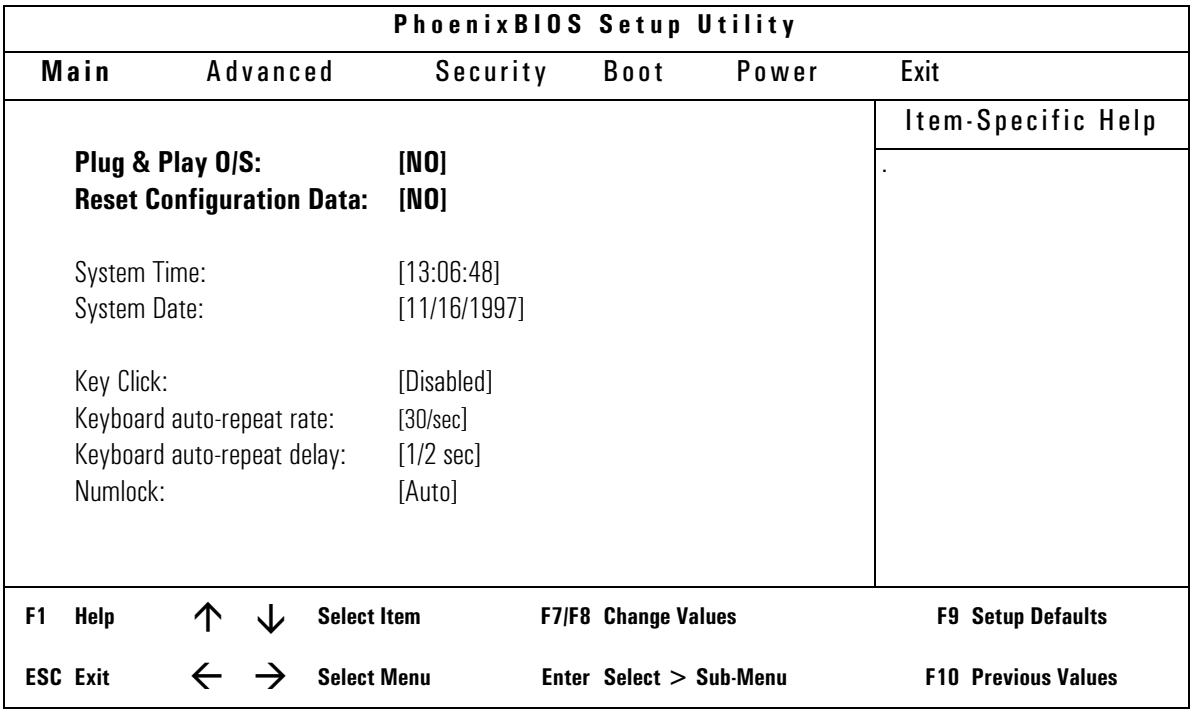
2 While the startup logo appears on your display, press Esc. This takes you to the HP Summary Screen. (To go immediately into the *Setup* program, and bypass the Summary Screen, press F2 instead of Esc). The Summary Screen is displayed for only a short time. To retain the screen (until you decide to leave it), press F5.

Starting the HP *Setup* Program

1 Turn on the display and then the computer. If the PC Workstation is already turned on, save your data and exit all programs, then restart the PC Workstation. Consult your operating system documentation for any special instructions concerning turning off and then restarting your PC Workstation.

2 Press F2 while F2 **`Setup`** is displayed at the bottom of the screen. If you fail to press F2 in time and the start-up process continues, you will need to restart your PC Workstation to go through the POST again so you can press F2.

3 The opening screen of the PC Workstation's *Setup* program is displayed, similar to the one on the next page. Note that the Main menu selection is highlighted.



NOTE

In addition to the Exit menu, you can also use the Esc key to save your settings and exit the *Setup* program. Use F12 to exit without saving any changes.

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

Use the △ and ▽ arrow keys to scroll through the items on the general help screen.

Saving Your Changes and Leaving *Setup*

When you have made all your changes, you must save them and exit *Setup*.

1 Press Esc (twice if necessary) to enter the Exit menu.

2 Select **`Exit Saving Changes`** to save your changes and exit *Setup*.

The PC Workstation will automatically restart. If you set a User Password, the PC Workstation will display the power-on prompt. Enter the User Password to use the PC Workstation.

Configuring Your Network Connection

Use the information in this section if your PC Workstation comes with an HP-supplied integrated network solution.

You must use the PC Workstation's *Setup* program (described on page 92) to change the integrated Ethernet interface settings. The following table summarizes which network options you can set using the *Setup* program.

Network Setup Items[1]	**Where to find in *Setup***
Enable the integrated network interface.	In the Advanced menu, go to the Integrated Network Interface submenu.
Enable your PC Workstation to be started (booted and logged on) from the network.	In the Security menu, go to the Boot Devices Security submenu (described below).
Enable remote power-on of your PC Workstation.	In the Power menu, enable the Integrated Network item.
From "Suspend Wakeup" mode, enable your PC Workstation to return to full power when a command is received by the integrated network interface.	In the Power menu, enable the Integrated Network item.
Determine boot device priority.	In the Boot menu, select the Boot Device Priority list item (described on the next page).

1. For full information on setting up your network, refer to the online *Network Administrator's Guide* which comes with your PC Workstation.

Controlling the Network Security Features

The Security Features allow you to enable starting from the network if you want the PC Workstation to start from a LAN server.

To enable starting from the network:

1 With the *Setup* program running (see page 92), use the ◁ or ▷ key to select the Security menu.

2 Press ▽ to highlight the line Boot Devices Security and press Enter to select the submenu.

3 Highlight the line Start from Network and press F7 or F8 to change the option to Enabled.

4 You can disable the other boot options to prevent the PC Workstation from booting if the network or server ever fails:

   a Press ▽ to go to the Start From Floppy line. Press F7 or F8 to change the option to Disabled.

   b Press ▽ to go to the Start From IDE CD-ROM line. Press F7 or F8 to change the option to Disabled.

   c Press ▽ to go to the Start From HDD line. Press F7 or F8 to change the option to Disabled.

5 Save your changes and exit.

Selecting the Boot Device Priority

You can determine the order in which your PC Workstation looks for boot devices, including boot devices on the network. To do this:

1 With the *Setup* program running, use the ◁ or ▷ key to select the Boot menu.

2 Press ▽ to highlight the line Boot Device Priority and press Enter to select the submenu.

3 Use the △ and ▽ keys to select a boot device, and then press the + or − key to move the device up or down the list.

You can also change the boot device order without entering *Setup*. Look for the prompting message when your PC Workstation first starts up after rebooting.

Configuring a SCSI Accessory Using *SCSISelect*

ATTENTION

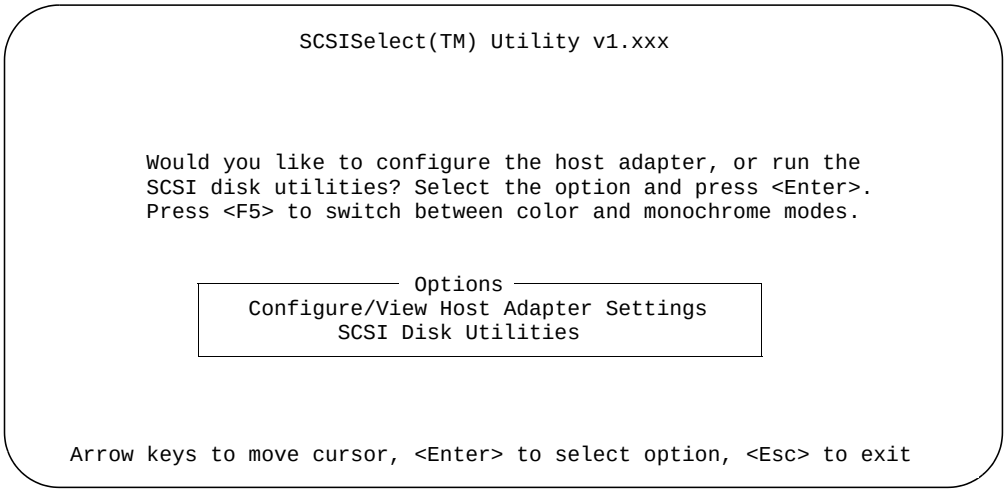
The *SCSISelect*™ utility is intended for advanced users only. Note that the *SCSISelect* options displayed on your screen may be different from those described here. Some options are not displayed if the HP FastRAID option is installed.

The *SCSISelect* utility is accessed by pressing F6 during the computer's start-up process when the message **`Press F6 for SCSISelect(TM) Utility!`** is displayed.

Viewing the Options menu

When you run the *SCSISelect* utility, you may first see a screen asking you to select a bus and device. Select either **`00:08h`** to configure Ultra-wide SCSI (16-bit) or **`00:09h`** to configure Ultra SCSI (8-bit), and then press Enter. This screen does not appear unless both SCSI channels are enabled through HP *Setup* (and does not appear if the FastRAID option is installed).

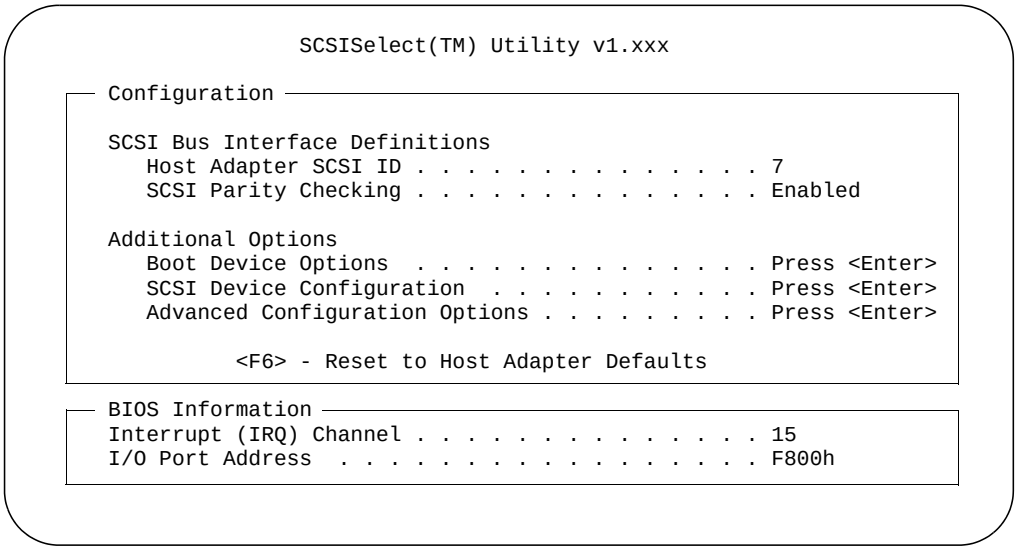
Next, the Options menu is displayed.



Use the △ and ▽ keys and the Enter key to make selections in the *SCSISelect* utility. Press Esc at any time to return to the previous menu.

Configure/View Interface Settings Menu

It is recommended that you do not change these settings.



SCSI Channel Interface Definitions:

- **Host Adapter SCSI ID**
  Changes the adapter SCSI ID from its default value of 7 (which has the highest priority on the SCSI bus).
- **SCSI Parity Checking**
  Enable or disable host adapter SCSI parity checking. Most currently available SCSI devices do support SCSI parity. You should disable SCSI Parity Checking if any of the attached SCSI devices do not support SCSI parity.

Additional Options:

- **Boot Device Options**
  Press Enter to display the Boot Device Configuration menu, described on the next page.
- **SCSI Device Configuration**
  Press Enter to display the SCSI Device Configuration menu.

- **Array 1000 BIOS** (only if HP FastRAID is installed)
  This option is enabled by default, and instructs the system to use the special BIOS for the FastRAID option. If you disable this option and reboot, the system will use its normal BIOS and FastRAID will be disabled.
- **Advanced Configuration Options**
  Press Enter to view the Advanced Configuration Options menu.

Boot Device Configuration Menu

This menu lets you configure the SCSI boot device. To find out the SCSI ID of a specific SCSI device, you can run the SCSI Disk Utilities (refer to page 102).

```
                    Boot Device Configuration
Select SCSI peripheral from which to boot
To view peripheral by ID# select “SCSI Disk Utilities” from previous menu
Boot SCSI ID ..................................................... 0

    Option Listed Below Has NO EFFECT if MULTI LUN Support is Disabled
Boot LUN Number .................................................. 0
```

Use the △ and ▽ keys to move between options. Press Enter to display a menu with a selection of values.

- **Boot SCSI ID**
  This parameter is the SCSI ID of the device to boot on. The default value is 0.
- **Boot Lun Number**
  More advanced SCSI devices can have several logical units. This option indicates the logical unit (or Lun) on which to boot for the drive chosen in the **Boot SCSI ID**. The default value is 0.

SCSI Device Configuration Menu

This menu lets you configure parameters for each SCSI device on the SCSI bus. To configure a specific SCSI device, you need to know which SCSI ID it uses. To know the SCSI ID of a specific SCSI device, you can run the SCSI Disk Utilities (refer to page 102).

```
                    SCSI Device Configuration
SCSI Device ID               #0   #1   #2   #3   #4   #5   #6   #7

Initiate Sync Negotiation... yes  yes  yes  yes  yes  yes  yes  yes
Maximum Sync Transfer Rate.. 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0
Enable Disconnection........ yes  yes  yes  yes  yes  yes  yes  yes
Initiate Wide Negotiation... no   no   no   no   no   no   no   no

   Options Listed Below Have NO EFFECT if the BIOS is Disabled
Send Start Unit Command....  no   no   no   no   no   no   no   no
BIOS Multiple LUN Support..  no   no   no   no   no   no   no   no
Include in BIOS Scan.......  yes  yes  yes  yes  yes  yes  yes  yes
```

Use the [△] and [▽] keys to move between options. Press [↵ Enter] to display a menu with a selection of values.

- **Initiate Sync Negotiation**
  Some older SCSI-1 devices do not support synchronous negotiation. Set Initiate Sync Negotiation to **No** for these devices.

- **Maximum Sync Transfer Rate**
  If the SCSI device is an Ultra wide SCSI device, you can use the maximum value of 40.0 MB per second. For Ultra narrow SCSI devices you can select a maximum transfer rate of 20.0 MB per second.

  Certain older SCSI-1 devices do not support Ultra wide SCSI (up to 40 MB per second) or Ultra narrow SCSI data transfer rates (up to 20 MB per second). Select a Maximum Sync Transfer Rate of 10.0 MB per second for these devices.

- **Enable Disconnection**
  To optimize SCSI bus performance, Enable Disconnection should be set to **Yes** when two or more SCSI devices are connected to the host adapter. Set Enable Disconnection to **No** to achieve slightly better performance when only one SCSI device is connected to the SCSI bus.

- **Initiate Wide Negotiation**
  This option determines whether the SCSI channel attempts 16-bit data transfer instead of 8-bit data transfer. By default, it is set to **No**, unless FastRAID is installed, when it is set to **Yes**.

- **Send Start Unit Command**
  When set to **Yes** this option reduces the load on your computer's power supply by allowing the interface to power-up SCSI devices one-at-a-time when you start your computer. When set to **No** each SCSI device powers up at the same time.

  This option is not supported by some SCSI devices. Some SCSI devices require a jumper to be changed before they can respond to this command.

- **BIOS Multiple LUN Support**
  More advanced SCSI devices can have several logical units (LUN). This option determines whether booting a SCSI device that has multiple LUNs is supported. Set this option to **Yes** if your boot device has multiple LUNs. It is set to no by default.

- **Include in BIOS Scan**
  This setting, when set to **Yes**, allows the SCSI device to be controlled by the host adapter with this SCSI ID. When set to **No**, the adapter does not control the SCSI device.

Advanced Configuration Options Menu

It is recommended that these settings are not changed.

```
                    Advanced Configuration Options
Plug and Play Scam Support ..................................... Enabled
Extended BIOS Translation for DOS Drives > 1 GByte ............. Enabled
Reset SCSI Bus at IC Initialization............................. Enabled

        Options Listed Below Have NO EFFECT if the BIOS is Disabled
Host Adapter BIOS (Configuration Utility Reserves BIOS Space).. Enabled
Support Removable Disks Under BIOS as Fixed Disks.............. Boot Only
Display F6 Message During BIOS Initialization.................. Enabled
BIOS Support for Bootable CD-ROM............................... Enabled
BIOS Support for Int13 Extensions.............................. Enabled
```

Use the △ and ▽ keys to move between options. Press Enter to display a menu with a selection of values.

- **Plug and Play Scam Support**
  When enabled, this option automatically configures Plug and Play compatible SCSI devices. For SCSI devices that do not support Plug and Play, set this option to **Disabled**. By default, it is enabled.

- **Extended BIOS Translation for DOS Drives >1 GByte**
  This option is no longer used (and is always "Enabled").

- **Reset SCSI Bus at IC Initialization**
  When the SCSI controller receives an IC Reset command from the central processor, it can reset either itself and the SCSI bus, or just itself. By default, it will reset both itself and the SCSI bus.

- **Host Adapter BIOS**
  This option enables or disables the SCSI Adapter BIOS. Several options in *SCSISelect* utility are only valid if the SCSI adapter BIOS is enabled. The SCSI adapter BIOS must be enabled if the computer boots from a SCSI hard disk drive. This option is enabled by default.

- **Support Removable Disks Under BIOS as Fixed Disks**
  When **Boot Only** is selected, only the removable media drive designated as the boot device is treated as a hard disk drive.
  If **All Disks** is selected, all removable-media drives supported by the BIOS are treated as hard disk drives. No removable-media drives are treated as hard disk drives when **Disabled** is selected. In this case, removable-media drives must be controlled through operating system drivers.

- **Display <F6> Message During BIOS Initialization**
  When enabled, this option displays the message **Press <F6> for SCSISelect(TM) Utility** during BIOS initialization. When disabled, this message is not displayed, although you can still press the F6 key for the *SCSISelect* utility. This option is enabled by default.

- **BIOS Support for Bootable CD-ROM**
  When enabled, this option provides BIOS support for booting from a CD-ROM drive. It is enabled by default.

- **BIOS Support for Int13 Extensions**
  When enabled, this option provides BIOS support for hard disk drives with more than 1024 cylinders. It is enabled by default.

SCSI Disk Utilities

When the SCSI Disk Utilities are selected from the initial Options menu, the *SCSISelect* utility scans the SCSI bus and lists all the SCSI devices on the SCSI bus. The list shows the SCSI ID and name of each SCSI device. You can use this list to discover the SCSI ID of any device on the SCSI bus.

Use the △ and ▽ keys to highlight a device and press Enter to display the **`Format Disk`**/**`Verify Media`** menu.

- **`Format Disk`**
  This utility can be used to perform a low-level format of a hard disk. Most SCSI disks are preformatted and do not need low-level formatting.
- **`Verify Disk Media`**
  This utility scans for media defects on the selected SCSI device. Press the Esc key to abort this utility.

5

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 PC Workstation 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 common for, the HP PC Workstation.

Authorized HP Resellers can also offer consulting services tailored to your specific needs regarding product development or custom installations. Similar support services are offered by third parties 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 PC Workstation.

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; the other for support documentation.

The software CD-ROM is updated monthly and contains the latest HP drivers and utilities. The documentation CD-ROM is updated quarterly 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 a day, 7 days a 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 Workstation, 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 PC Workstation, and HP products.

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

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 Workstation 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 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.

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

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 tables 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 Workstation, 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 PC Workstation 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 PC Workstation 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 PC Workstations configured as network servers. We recommend HP NetServers for your network server requirements.

NOTE

Reloading the software bundled or pre-loaded on your PC Workstation 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	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	01 43 62 34 34
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 PC Workstation 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 PC Workstations 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 Workstation, 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 Workstation 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 Workstation setup, configuration, start-up and hardware diagnosis.	After first year.	Business hours.	Per- call fee, no time limit.	Anytime after first year.	HP.
HP Network Phone-in support	Advanced remote technical support for multivendor networked environments.	Annual contract.	Business hours: 24-hour/ 7-day service also available.	Annual fee, or minimum fee per incident.	Anytime.	HP Authorized reseller.
Service Contracts	Technical Support.	Customer defined.	As required.	Annual fee, or fee per incident.	Anytime.	Reseller.

Hewlett-Packard Marketing Headquarters

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

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

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

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

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

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

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

Glossary

8-bit SCSI Also called narrow SCSI. Ultra narrow SCSI provides data transfer rates of up to 20 MB per second.

10/100BaseT Refers to the 100 Mbit/s network technology over category 5 UTP (unsheilded 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.

16-bit SCSI Also called wide SCSI. Ultra wide SCSI provides data transfer rates of up to 40 MB per second.

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

ADPCM Adaptive Differential Pulse Code Modulation. A data compression technique. See PCM.

A-law A method of data compression that enables sampling of sound at a resolution of 16 bits, but that generates the same quantity of data as an 8-bit sampling rate.

AVI files Audio-Video Interleaved file format used with Microsoft's Video for Windows.

Basic MIDI format Allows MIDI channels 13 to 16 of the General MIDI operation mode to be used when notes are played through MIDI.

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. ROM CDs can store data, but most cannot be written to.

Compression A technique for compacting data for more efficient storage or transmission. The sound quality of compressed audio data is greatly reduced. See entries for A-law and µ-law.

CD-RW Compact Disc Read Write. A mass storage device that uses compact disc technology to read data on CDs and write data to CDs.

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

Glossary

computer. It is used to store information that must be maintained, such as your computer's configuration.

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

DAT Digital Audio Tape.

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

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

Digital audio Digitally recorded sound such as speech and sound effects.

DMA channel Direct Memory Access channel. Speeds up I/O to and from the system's memory by avoiding CPU processing. However, the system limits the number of boards that can use DMA.

DVD player Digital Versatile Disk player. A standardized device to play digital audio and video sequences.

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

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.

Extended MIDI format Allows MIDI channels 1 to 10 of the General MIDI operation mode to be used when notes are played through MIDI.

FM synthesis A technique for synthesizing sound that uses a combination of modulated sine waves to produce different waves forms.

General MIDI format A standard set of 128 sounds. Allows 16 channels to be used when notes are played through MIDI.

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.

IRQ line The Interrupt Request line is the signal line used to notify the CPU that it wants to send or receive data for processing.

Glossary

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.

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.

MIDI mapper A Windows utility that lets you edit MIDI key maps, patch maps, and channel mappings.

Mixing Combining sounds from several sources.

MPEG Motion Picture Expert Group. A standard for video sequence compression. You can play back MPEG files from the WEB or a video CD-ROM.

MPU-401 MIDI interface hardware standard developed by the Roland Co.

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.

Patch A MIDI term referring to a particular sound or voice.

PCM Pulse Code Modulation. A method of storing uncompressed digital audio. The audio is represented by the amplitude of the audio signal sampled at regular intervals.

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

Glossary

Polyphonic More than one voice played simultaneously.

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.

Q-Sound Audio-processing technique to simulate reverb/ surround sound.

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

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

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

Sampling The process of converting an analog signal into digital data.

Sampling rate The rate of analyzing a sound. The more frequently a sound is sampled, the more closely it will match the original sound.

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 (see 8-bit SCSI and 16-bit SCSI).

SCSI chain Devices connected on a single SCSI bus.

Sequencer A device used to record note information from MIDI devices.

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 two formats, with the extension .WAV or .MID.

Synthesizer Hardware for generating audio from software. Typical methods used are FM synthesis and wave table synthesis.

Glossary

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

Total harmonic distortion A specification for quantifying the fidelity of audio processing equipment.

Tracks The virtual tracks used by MIDI sequencers.

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.

Voices The number of synthesized sounds that a device can generate simultaneously.

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

Wavesample A sample used in a wavetable or sampling synthesizer to reproduce a musical instrument.

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

µ-law A method of data compression that enables the sampling of sound at a resolution of 16 bits, but that generates the same quantity of data as an 8-bit sampling rate.

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Regulatory Statements and Warranty

Regulatory Statements

DECLARATION OF CONFORMITY
according to ISO/IEC Guide 22 and EN 4501 4

Manufacturer's Name and Address:

HEWLETT-PACKARD
5 Avenue Raymond Chanas
38320 Eybens
FRANCE

Declares that the product:

Product Name: HP Kayak XU PC Workstation
Model Number:

Conforms to the following Product Specifications:

SAFETY International: IEC 950: 1991 + A1 + A2 + A3 + A4
Europe: EN 60950: 1992 + A1 + A2 + A3

EMC 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

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

Grenoble
September 1997

Jean-Marc JULIA
Product Quality Manager

FCC Statement (for USA only)

Federal Communications Commission Radio Frequency Interference Statement

Warning:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one or more of the following measures:

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

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

Notice for Canada

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Class B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Notice for Japan

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

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

取扱説明書に従って正しい取り扱いをして下さい。

Notice for Korea

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

Safety Warning for the USA and Canada

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

USA: use a UL listed type SVT detachable power cord.

Canada: use a CSA certified detachable power cord.

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

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 list, de type SVT.

Canada: utiliser un cordon secteur certifié CSA.

Pour votre sécurité, ne pas enlever le capot de l'ordinateur avant de débrancher le cordon secteur et toute connexion au réseau de télécommunication. Remettez toujours le capot avant de mettre sous tension.

Notice for the United Kingdom

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

Hinweis für Deutschland: Geräuschemission

Lärmangabe nach Maschinenlärmverordnung - 3 GSGV (Deutschland)
LpA < 70 db am Arbeitsplatz normaler Betrieb nach EN27779: 11.92.

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 is a lithium battery which does not contain heavy metals; nevertheless, in order to protect the environment, do not dispose of the 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.

Lithium batterie

Il y a danger d'explosion lorsque la pile n'est pas installée correctement. Pour votre sécurité, ne jamais essayer de recharger, de démonter ou de bruler l'ancienne pile. Remplacer uniquement avec une pile du même type ou d'un type équivalent recommandé par le constructeur. La pile dan cet ordinateur est une pile au lithium qui ne contient pas de métaux lourds, néanmoins, afin de protéger l'environement, ne jetez pas les piles dans les ordures ménagères. Rendez les où vous les avez achetées, au revendeur où vous avez acheté votre ordinateur ou à Helwett Packard, pourqu'elles soient recyclées ou rangées de maniere qui ne nuit pas a l'environement. Les piles usées seront acceptées gratuitement.

Notice for Netherlands

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

HP Hardware Warranty

Important: This is your hardware product warranty statement. Read it carefully.

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

Three Year Limited Hardware Warranty

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

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

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

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

Limitation of Warranty

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

HP makes no other express warranty, whether written or oral, with respect to this product.

Any implied warranty of merchantability or fitness is limited to the three-year duration of this written warranty.

Some states or provinces do not allow limitations on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you.

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

Limitation of Liability and Remedies

The remedies provided above are the customer's sole and exclusive remedies.

In no event shall HP be liable for any direct, indirect, special, incidental, or consequential damages, whether based on warranty, contract, tort, or any other legal theory.

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

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

Obtaining On-Site Warranty Service

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

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

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

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

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

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

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

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

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

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

Customer Responsibilities

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

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

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

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

Obtaining Return Warranty Service

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

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

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

HP Software Product License Agreement and Software & Product Limited Warranty

Your HP PC Workstation 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.

PROCEEDING WITH CONFIGURATION SIGNIFIES YOUR ACCEPTANCE OF THE LICENSE TERMS.

HP Software Product License Agreement

UNLESS OTHERWISE STATED BELOW, THIS HP SOFTWARE PRODUCT LICENSE AGREEMENT SHALL GOVERN THE USE OF ALL SOFTWARE THAT IS PROVIDED TO YOU, THE CUSTOMER, AS PART OF THE HP COMPUTER PRODUCT. IT SHALL SUPERSEDE ANY NON-HP SOFTWARE LICENSE TERMS THAT MAY BE FOUND ON-LINE, OR IN ANY DOCUMENTATION OR OTHER MATERIALS CONTAINED IN THE COMPUTER PRODUCT PACKAGING.

Note: Operating System Software by Microsoft is licensed to you under the Microsoft End User License Agreement (EULA) contained in the Microsoft documentation. The following License Terms govern the use of the software:

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

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

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

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).

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

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

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

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

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

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

HP Software Product Limited Warranty

THIS HP SOFTWARE PRODUCT LIMITED WARRANTY SHALL COVER ALL SOFTWARE THAT IS PROVIDED TO YOU, THE CUSTOMER, AS PART OF THE HP COMPUTER PRODUCT, INCLUDING ANY OPERATING SYSTEM SOFTWARE. IT SHALL SUPERSEDE ANY NON-HP WARRANTY TERMS THAT MAY BE FOUND ON-LINE, OR IN ANY DOCUMENTATION OR OTHER MATERIALS CONTAINED IN THE COMPUTER PRODUCT PACKAGING.

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 PC Workstation's Physical Characteristics

Characteristics:	**Description:**
Weight (excl. keyboard and display)	11.34 kilograms (25.2 pounds).
Dimensions	42 cm (D) by 21.1 cm (W) by 41.5 cm (H) (16.48 inches by 8.29 inches by 16.27 inches).
Footprint	0.09 m^2 (0.95 sq ft).
Storage temperature	-40 °C to 70°C (-40 °F to 158 °F).
Storage humidity	8% to 80% (relative).
Operating temperature	5 °C to 40 °C (40 °F to 104 °F).
Operating humidity	15% to 80% (relative).
Acoustic noise emission: Sound Power Sound Pressure	(as defined ISO 7779) LwA < = 46 dB LpA < = 40 dB
Power supply	• Input voltage: 100 - 127, 200 - 240 Vac (selected automatically) • Input frequency: 45/66Hz • Maximum power: 260 W continuous

HEWLETT PACKARD

PC Workstation Documentation Roadmap

If you want to ...

Setup

Set up your computer →  →

HP User's Guide
Setting Up and Using Your PC Workstation

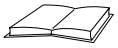
Reference

Learn how to use your HP PC Workstation's hardware and software →  →

HP Help
Start ☞ Help ☞ Contents

Learn how to use your operating system →  →

Operating System Online Help
Start ☞ Help ☞ Contents

→  →

Operating System User's Guide

Learn how to upgrade your computer by installing accessories →  →

HP User's Guide
How to Install Accessories Inside Your PC Workstation

Troubleshooting and Support

Find out about the different support options available, and how to troubleshoot your computer →  →

HP Help
Start ☞ Help ☞ Contents

→  →

HP User's Guide
HP Support and Information Services

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