Setting Up Your HP Vectra 386/16N PC and HP Vectra 386/20N PC

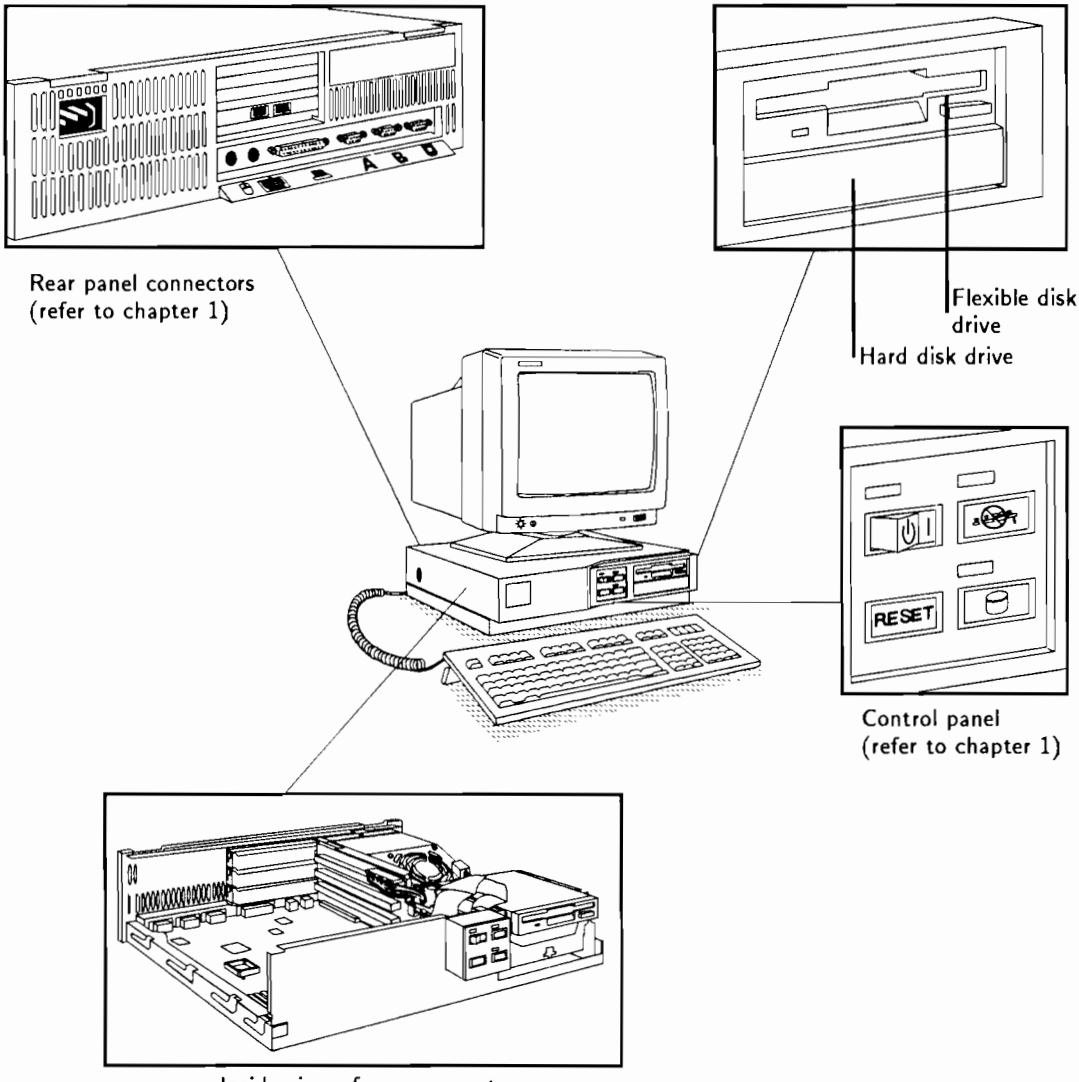
Introducing the HP Vectra 386/N PC

Welcome to your HP Vectra 386/N desktop personal computer.

The HP Vectra 386/16N PC features a 16 MHz Intel 80386SX microprocessor. The HP Vectra 386/20N PC has a 20 MHz Intel 80386SX microprocessor and a cache memory.

In addition, your computer has:

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


Rear panel connectors
(refer to chapter 1)
Flexible disk
drive
Hard disk drive
RESET
Control panel
(refer to chapter 1)
Inside view of your computer
(refer to chapter 5)

In This Book

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

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

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

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

Contents

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4. Using EXMODE and Your HP Super VGA Utilities

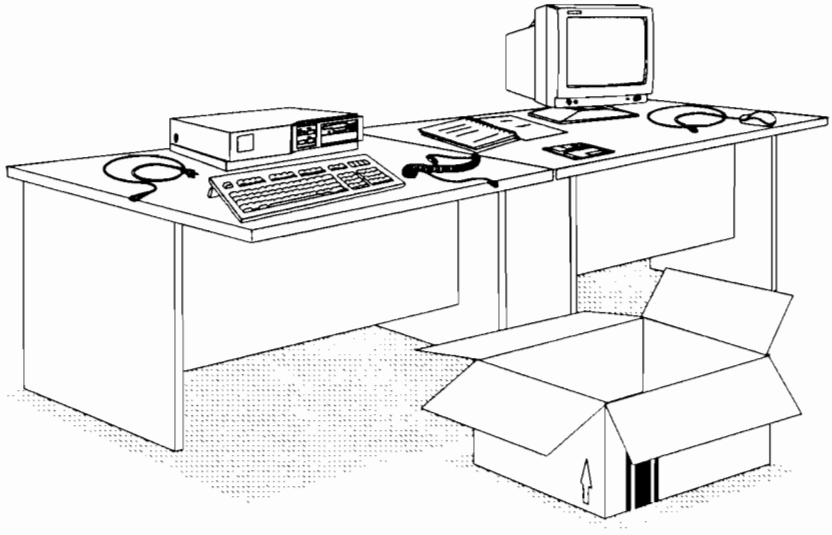
1

Preparing Your Computer for Use

Preparing Your Computer for Use

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

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

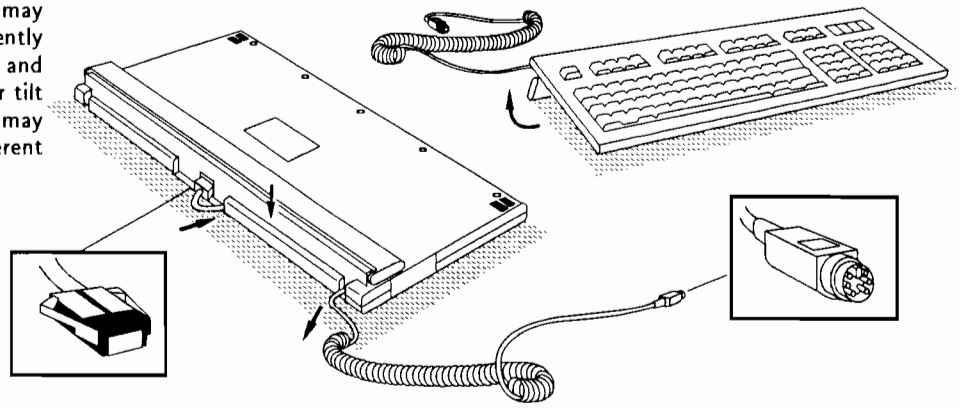


WARNING

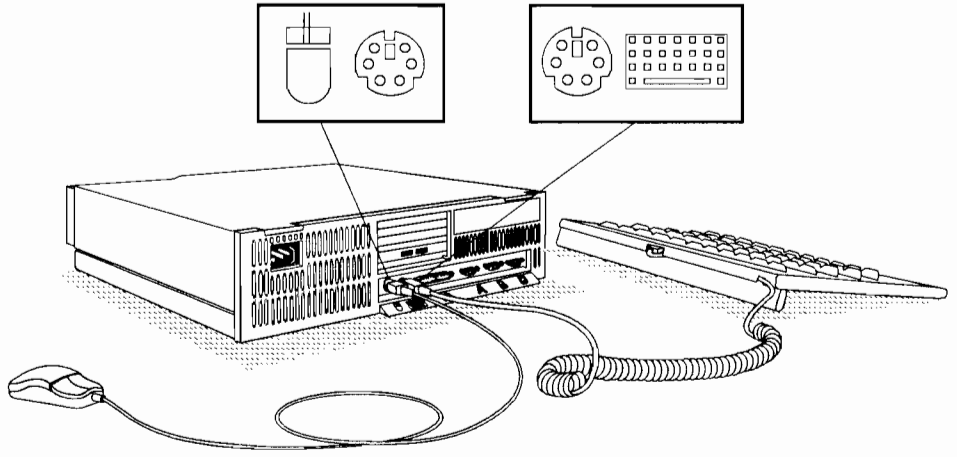
For your safety, the power cords supplied with your computer have grounded plugs. Always use the power cords with properly grounded wall outlets to avoid electrical shock. (You can also use multiple-outlet strips that have their own circuit breakers.)

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

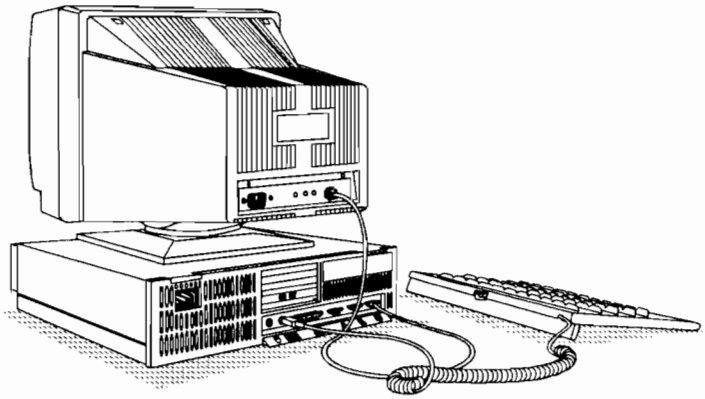
Your cable may be permanently connected and your tilt mechanism may be different



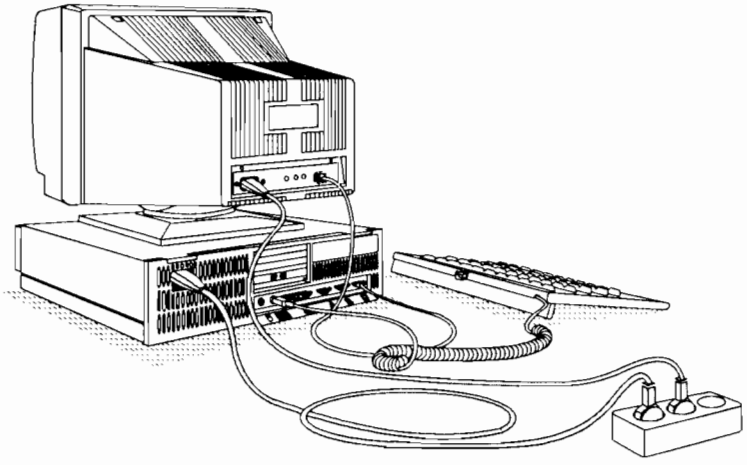
2. Connect the keyboard cable to the back of the computer. Connect the mouse if you have one.



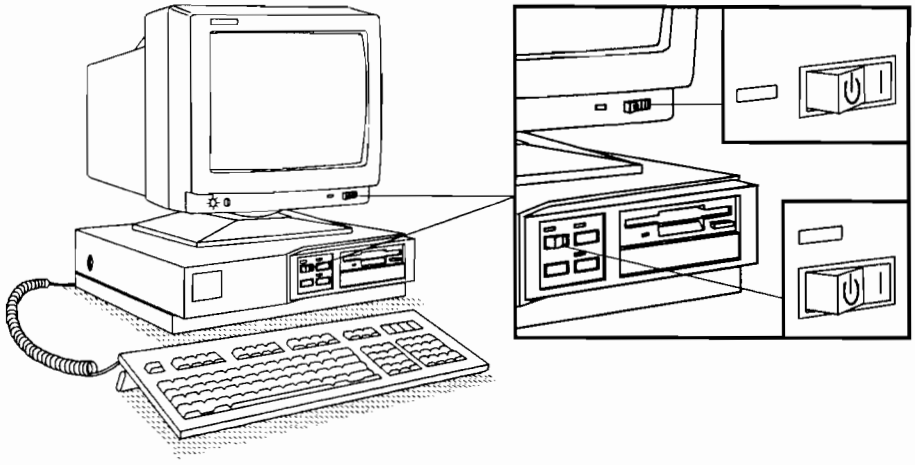
3. Place the display on top of the computer.
   Connect the display's video cable to the computer.



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



5. Turn on the display and then the computer.



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

```
ROM BIOS (C)Copyright Hewlett-Packard 1985-1991
Compatibility Software (C)Copyright 1985,1986,1987 Phoenix Technologies. Ltd
Version x.xx.xx
```

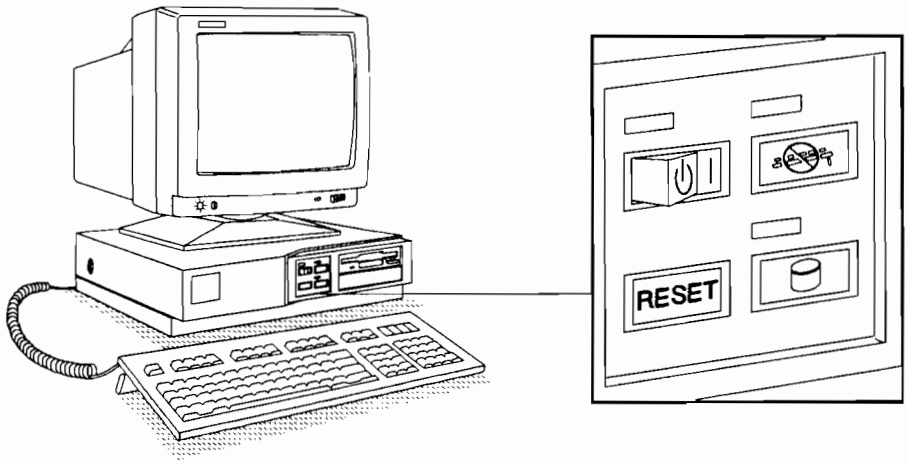
If your computer has the operating system and application software installed, your program will then start. (If the computer doesn't beep or an error message appears, refer to chapter 8.)

Your computer is working correctly.

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

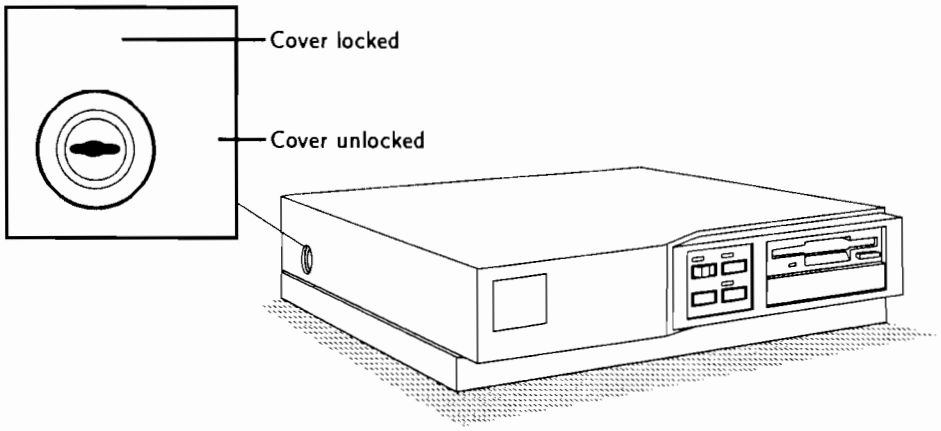
Identifying the Parts of Your Computer

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

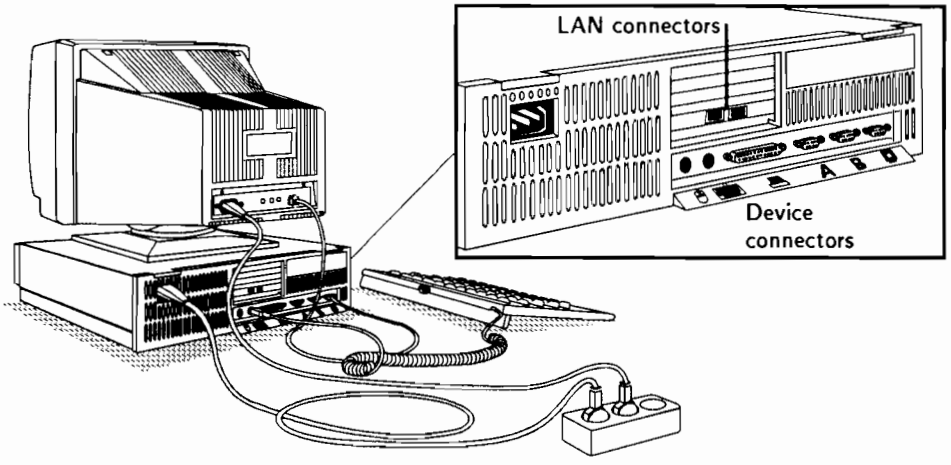


(⏻|) Power switch:	To switch your computer ON, press the power "rocker" switch to the "|" (on) position. The light above the switch illuminates. To switch your computer OFF, press the power switch to the "⏻" (off) position.
(RESET) Reset switch:	To reset your computer, press the (RESET) push-button switch.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

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

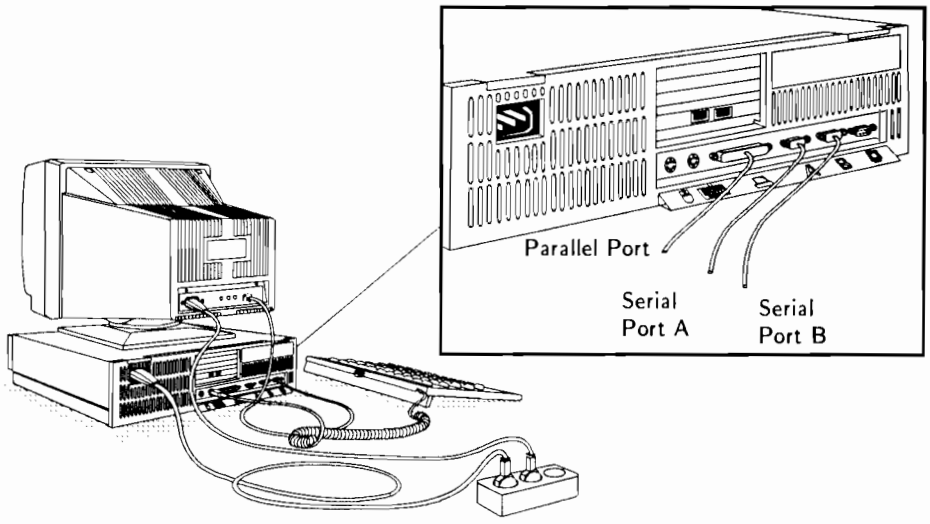


The rear of your computer has connectors for your devices.



Connecting a Printer or Plotter

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

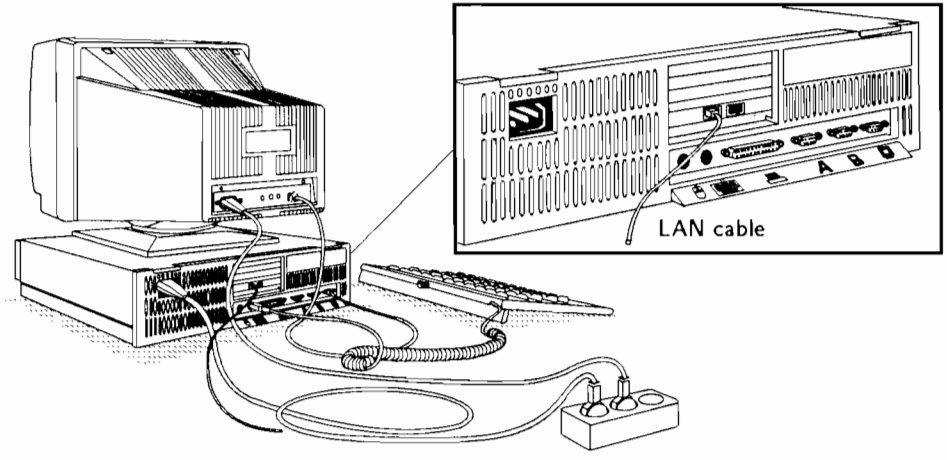


Connecting a LAN Cable

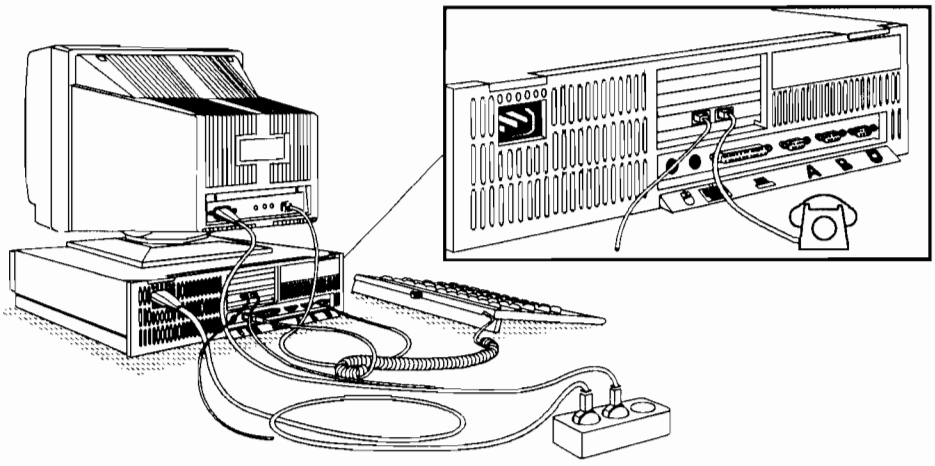
NOTE

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

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



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



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

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

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

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

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

2

Installing Your Software and HP Utilities

Installing Your Software and HP Utilities

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

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

NOTE

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

Installing Your HP Utilities

The HP utilities are EXMODE and SETUP.

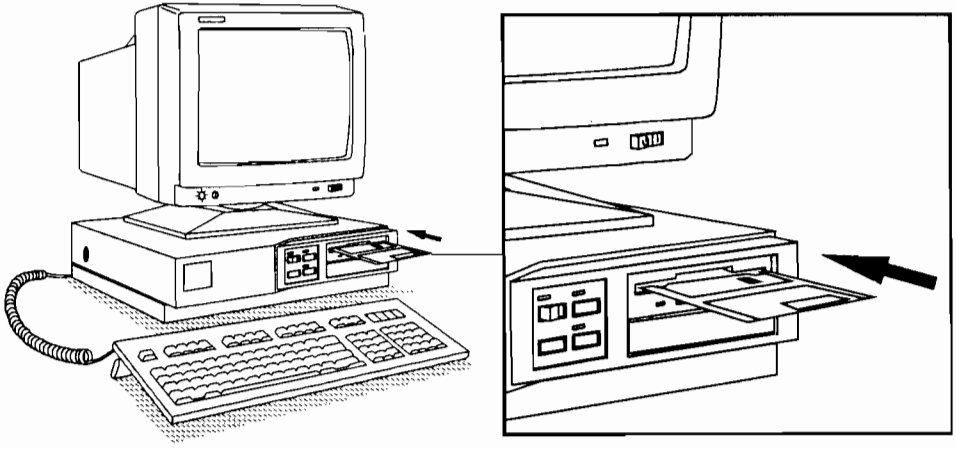
EXMODE is a utility that allows you to temporarily change the volume of your keyboard click, to change the processing speed of your computer, and to turn memory cache on and off (if memory cache is available on your computer).

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

Copying the HP Utilities to Your Hard Disk Drive

Your operating system should be installed before you copy the utilities.

1. Insert the Setup Program diskette in drive A.



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

   a. Make A your current drive, enter:

      `A:` (Enter)

   b. Display the README file, enter:

      `README` (Enter)

      Follow the instructions on the screen.

3. To copy your utilities, make C (your hard disk) your current drive, enter:

   `C:` (Enter)

4. Change to your root directory, enter:

   `CD C:\` (Enter)

5. Make a directory for the HP utilities, enter:

   `MD C:\HPUTIL` (Enter)

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

6. Copy the HP utilities to your hard disk. With the Setup Program diskette in drive A, enter:

   `A:INSTALL C:\HPUTIL` (Enter)

   You have now copied all the HP utilities onto the `C:\HPUTIL` directory on your hard disk.

   To learn how to use the Setup Program, refer to chapter 3 to set security features and user preferences, or refer to chapter 6 to configure your computer.

   To use EXMODE, refer to chapter 4.

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

8. Now install your HP Super VGA utilities.

Installing Your HP Super VGA Utilities

NOTE

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

Seven video utility programs are provided with your computer:

HPVGAII.COM sets Screen Saver options and compatibility modes.

HPANSI.SYS provides support for both extended and standard text modes.

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

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

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

CLR.COM clears the entire screen when you are using extended modes.

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

High resolution video drivers support the following applications:

- AutoCAD Release 9, 10 and 11 (includes AutoShade)
- GEM/3 versions 3.1 and 3.0
- Generic CADD Level 3
- Lotus 1-2-3 versions 2.x and Symphony
- P-CAD versions 3.0 and 4.0
- Ventura Publisher versions 1.x and 2.0
- VersaCAD Design versions 5.3 and 5.4
- Microsoft Windows/286 version 2.x
- Microsoft Windows/386 version 2.x
- Microsoft Windows 3.0
- WordPerfect 4.2 and 5.0
- WordStar 3.3 (4.0 and 5.x include drivers)

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

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

   `C:` Enter

2. Change to your root directory. At the MS-DOS C> prompt enter:

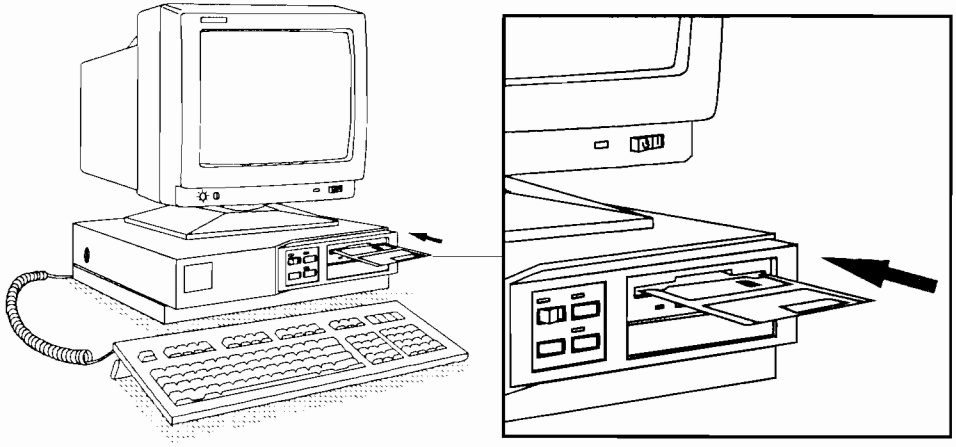
   `CD C:\` Enter

3. Make a directory for your HP Super VGA utilities and drivers, enter:

   `MD C:\HPVGA` Enter

   Where `C:\HPVGA` is the directory where you want to install the utilities and drivers.

4. Insert the HP Super VGA Utilities and Drivers diskette in drive A.



5. Make drive A the current drive, enter:

   `A:` Enter

6. If you want to unpack all the video drivers, enter:

   `UNPACK C:\HPVGA 0` (Enter)

   where:

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

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

7. If you want to unpack only one of the application drivers, enter:

   `UNPACK C:\HPVGA` (Enter)

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

   This command executes the UNPACK.BAT file and displays a menu of available drivers. Follow the instructions on the screen to select the drivers you need.

8. Make drive C the current drive, enter:

   `C:` (Enter)

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

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

    Change to the `HPVGA` sub-directory by entering:

    `CD C:\HPVGA` (Enter)

    Display the contents of the file by entering:

    `README` (Enter)

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

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

11. Now install your other software.

Installing Your Other Software

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

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

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

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

3

Setting Security Features and User Preferences Using Setup

Setting Security Features and User Preferences Using Setup

This chapter explains how to use the Setup Program to:

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

NOTE

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

Starting the Setup Program

1. If you installed your HP utilities in the C\HPUTIL directory as described in chapter 2:

   a. Make C your current drive, enter:

      `C:` (Enter)

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

      `CD C:\HPUTIL` (Enter)

   c. Start the Setup program, enter:

      `SETUP` (Enter)

      A screen appears:

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

      The Setup Program menu will appear.

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

   a. Insert the Setup Program diskette into drive A.

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

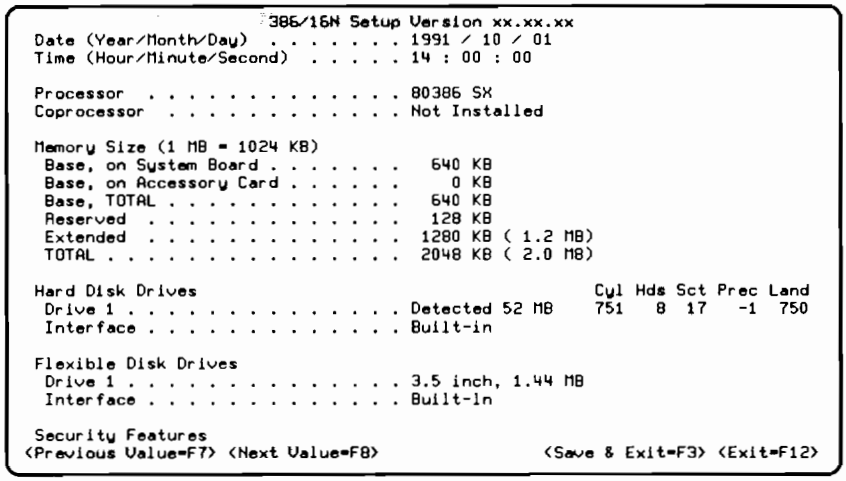
      The computer performs its self-test and memory count and will beep. (If there are any errors in your computer's configuration, error messages appear.)

      A screen appears:

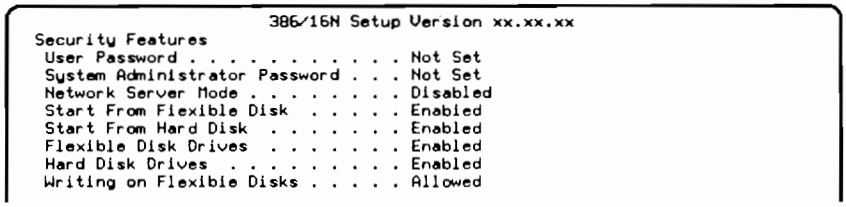
      - Select your language for screen messages.
      - If you are prompted to enter your password, do so.

      The Setup Program menu will appear.

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



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



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

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

Press F1 again to exit the help information.

Controlling Your Computer's Security

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

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

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

The System Administrator has two security features:

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

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

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

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

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

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

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

Locking Your Computer Using Passwords

When to Set a User Password

Set the User Password to prevent:

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

  You must enter the password to start the computer.

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

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

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

When to Set the System Administrator Password

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

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

When to Enable Network Server Mode

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

Network Server Mode allows your computer to restart automatically after a power failure but with the keyboard and mouse locked—the screen will also be blank if Screen Blanking is enabled. (If a disk with the operating system is inserted in drive A and the computer restarted, the power-on password prompt appears.)

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

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

How to Set Passwords and Network Server Mode

```
                    386/16N Setup Version xx.xx.xx
Security Features
 User Password . . . . . . . . . . . Not Set
 System Administrator Password . . . Not Set
 Network Server Mode . . . . . . . . Disabled
```

1. Press (Page Down) and an arrow key ((▲), (▼)) to highlight the field `User Password` or `System Administrator Password`.
2. Press (F1) to display a help window about the field.
3. Follow the messages at the bottom of the screen to enter your password. (Your password does not appear on the screen.)

   The password is not case sensitive—you can use upper or lower-case characters. However, the numeric keys on the top of the keyboard are *not* the same as the numeric keys on the numeric keypad.
4. If your computer is a server, enable Network Server Mode:

   a. Use the arrow keys to highlight the **`Network Server Mode`** field.
   b. Read about the field in the help window.
   c. Follow the messages at the bottom of the screen to enable the field.
5. If you set a User Password, you can also enable Screen Blanking.

```
                    386/16N Setup Version xx.xx.xx
User Preferences
 Key Click Volume (0 to 15)  . . . . 7
 Key Autorepeat Speed  . . . . . . . 20.0 per Second
 Delay Before Autorepeat . . . . . . 0.50 Second
 Power-on NumLock State  . . . . . . On
 Screen Blanking . . . . . . . . . . Enabled
```

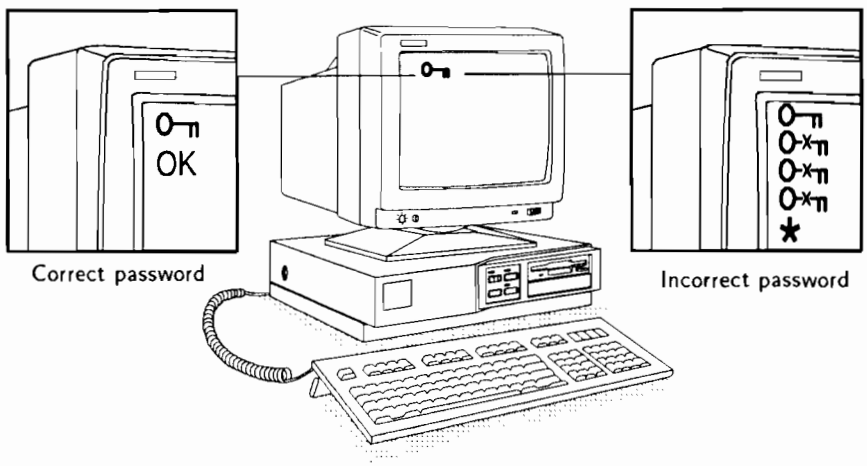
6. Select **`Save and Exit`**. The computer will automatically restart.
7. Remove the Setup Program diskette from drive A.
8. If you set a User Password, the power-on password prompt (🔑) will appear. Enter your User Password or System Administrator Password to use the computer.

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

When you have set a User Password, you can prevent unauthorized access to your computer when it is started.

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

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



To start your computer, enter:

```
User Password (Enter)
```

or

```
System Administrator Password (Enter)
```

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

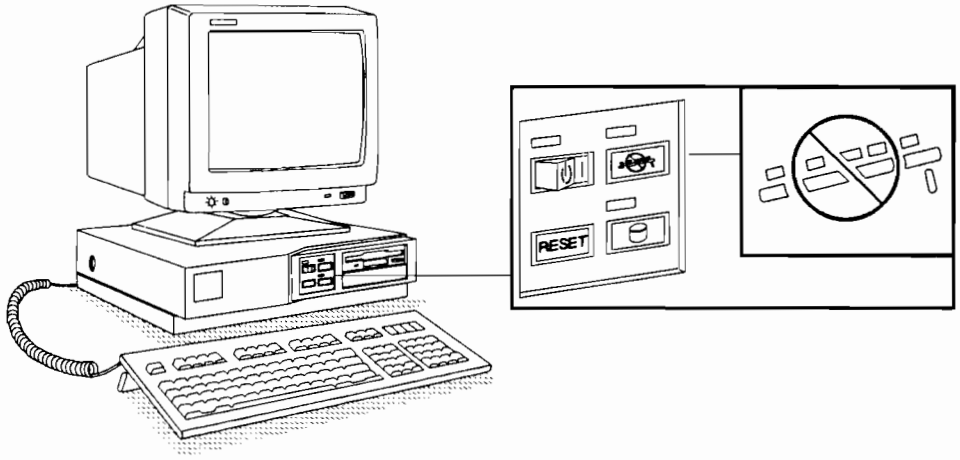
You have three chances to enter the password. After three unsuccessful tries, the "*" prompt appears and you must restart the computer before you can try again.

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

If you have set a User Password, you can prevent unauthorized use of your keyboard when you're away from your desk using the keyboard lock switch, (🔒), on the front of the computer.

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

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



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

You cannot use the computer until you type in the correct User Password.

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

If You Forget Your Passwords

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

Preventing Access to Your Disk Drives and Ports

When to Disable Starting From Your Disk Drives

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

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

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

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

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

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

When to Disable Your Flexible or Hard Disk Drive

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

When to Prevent Writing to Your Flexible Disk Drive

To prevent data being copied to the flexible diskette (connected to your built-in disk controller), you should prohibit the writing on flexible disks feature.

When to Disable Your Ports (Connectors)

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

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

How to Disable Your Disks and Ports

```
                    386/16N Setup Version xx.xx.xx
Security Features
 User Password . . . . . . . . . . . . Not Set
 System Administrator Password . . . . Not Set
 Network Server Mode . . . . . . . . . Disabled
 Start From Flexible Disk  . . . . . . Enabled
 Start From Hard Disk  . . . . . . . . Enabled
 Flexible Disk Drives  . . . . . . . . Enabled
 Hard Disk Drives  . . . . . . . . . . Enabled
 Writing on Flexible Disks . . . . . . Allowed

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

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

1. Press an arrow key (▲, ▼) to highlight the appropriate disk drive or port field.
2. Press F1 to display a help window about the field.
3. Follow the messages at the bottom of the screen to:
   - enable/disable starting from your flexible and hard disk drive
   - enable/disable your flexible and hard disk drives
   - allow/prevent writing to your flexible disk drive
   - enable/disable your parallel port
   - enable/disable your serial ports
4. Select **Save and Exit**. The computer will automatically restart.
5. Remove the Setup Program diskette from drive A.

Selecting User Preferences

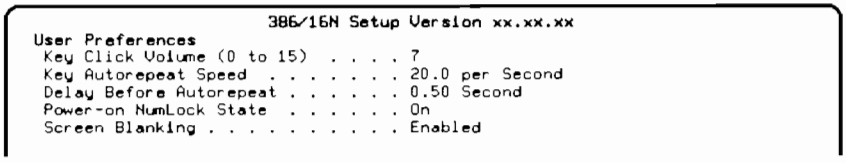
Use Setup to set optional user preferences for your keyboard:

- **Key Click Volume**—sets the volume of the click you hear when you press a key. (0 is inaudible and 15 is maximum volume.)
- **Key Autorepeat Speed**—sets the speed at which characters repeat themselves on the screen when you hold a key down.
- **Delay Before Autorepeat**—sets the delay before a character is repeated when you hold a key down.
- **Power-on Numlock State**—sets the operation of the (Num Lock) key when you start the computer (this key controls the numeric keypad on the right-hand side of the keyboard).

  NumLock **On** means the keys generate numeric characters

  NumLock **Off** means the keys control the cursor.

- **Screen Blanking**—enable if you want the screen to go blank when the keyboard is locked using the (Ctrl) switch or Network Server Mode.



1. Press an arrow key ((▲), (▼)) to highlight the appropriate preference field.
2. Press (F1) to display a help window about the field.
3. Follow the messages at the bottom of the screen to make your selection.
4. Select **Save and Exit**. The computer will automatically restart.
5. Remove the Setup Program diskette from drive A. Store it in a safe place.

4

Using EXMODE and Your HP Super VGA Utilities

Using EXMODE and Your HP Super VGA Utilities

This chapter explains how to:

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

Using EXMODE

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

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

There are two ways to use the EXMODE command:

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

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

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

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

The syntax for the EXMODE command is described below.

Changing the Keyboard's Click Volume Using EXMODE

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

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

where:

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

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

Enabling/Disabling Cache Memory Using EXMODE

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

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

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

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

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

Changing Your Computer's Processing Speed Using EXMODE

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

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

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

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

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

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

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

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

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

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

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

The utility programs include:

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

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

Using HPVGAII.COM to Set Modes

Using Screen Saver to Extend the Life of Your Display

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

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

- a mouse on a regular basis
- Microsoft® Windows/286 or Windows/386 or Windows 3.0
- application software with which you use a joystick; or
- application software that shuts the screen off even when you are using the keyboard

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

Setting Screen Saver Options. Select a screen saver option by entering:

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

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

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

Note that you may also place the Screen Saver commands in your AUTOEXEC.BAT file so that they are executed every time you turn on your computer.

Selecting a Compatibility Mode with HPVGAII.COM

If you find that an application does not run correctly, you may need to use the Utility Program HPVGAII.COM to make your video emulate the type of board required by your application.

HPVGAII.COM allows you to emulate either a Color Graphics Adapter (CGA) or a Hercules Graphics Card (HGC). You can select the video mode to emulate either by using a menu or by entering commands at the MS-DOS prompt.

Selecting a Compatibility Mode from the HPVGAII Menu. Start the utility program by entering:

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

Follow the instructions on the screen to select a video mode to emulate and to return to the MS-DOS system prompt.

Selecting a Compatibility Mode from the MS-DOS Prompt. Select a video mode to emulate by entering:

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

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

Parameter:	Description:
CGA:ON	selects color graphics emulation
CGA:OFF	turns off color graphics emulation (return to VGA)
MONO:ON	selects monochrome Hercules emulation
MONO:OFF	disables monochrome Hercules emulation (return to VGA)
MONO:HALF	selects 32 KB (one graphics page) monochrome emulation
MONO:FULL	selects 64 KB (two graphics pages) monochrome emulation

PURE:ON	enables *pure* IBM VGA standard modes, disables extensions. The HP Super VGA controller implements additional functions that go beyond the standard VGA functions. Some application software may not run correctly if it detects these additional functions. The PURE option allows such software to run correctly with the HP Super VGA.
PURE:OFF	enables both VGA *pure* mode and extensions

Placing Compatibility Mode and Screen Saver in AUTOEXEC.BAT. The AUTOEXEC.BAT file is run when you start the computer. The HPVGAII program can be run to set compatibility mode from within the batch file.

Add the desired command or commands (using the syntax described above for the command line) to the batch file.

For example, to set Screen Saver for 10 minute delays before dimming the screen and also set CGA mode to ON:

```
C:\HPVGA\HPVGA SAVE:10
C:\HPVGA\HPVGA CGA:ON
```

NOTE

Before adding Screen Saver to your AUTOEXEC.BAT file, refer to the restrictions in "Using Screen Saver to Extend the Life of Your Display" earlier in this chapter.

Using HP Super VGA with a Monochrome Display

If you have a monochrome display, you may have difficulty with some color-only applications.

Your HP Super VGA controller automatically senses the type of display you are using. If you are using a monochrome display, the HP Super VGA automatically emulates a monochrome board.

Some color-only application programs may have problems since all colors are displayed as shades of gray, and two colors may appear as the same shade of gray.

To reduce or eliminate these problems, use the HPVGAII program.

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

   `C:\HPVGA\HPVGAII` (Enter)

2. On the Select Monitor Type menu, select:

   `Switch to Color Display Mode`

   This resets the HP Super VGA circuitry to emulate color operation. The colors used by the application program should produce different shades of gray.

3. When you finish using the color-only application, on the Select Monitor Type menu select:

   `Switch to Monochrome Display Mode`

   This returns to standard monochrome display operation.

Using HPANSI.SYS to Support Video Modes

You must use HPANSI.SYS if you will be using any of the extended video modes or any of the HP Super VGA utilities.

The HPANSI.SYS utility provides support for extended as well as standard text modes, whereas the MS-DOS ANSI.SYS device driver only works with standard text modes (40 by 25 and 80 by 25).

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

You now need to modify your CONFIG.SYS file as follows:

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

   `CD C:\` (Enter)

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

   `TYPE CONFIG.SYS` (Enter)

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

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

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

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

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

   Where `HPVGA` is the directory containing HPANSI.SYS.

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

Using ESU.COM to Set Video Modes

The Enhancement Selection Utility (ESU.COM) allows you to select different text and graphics modes from a menu or from the MS-DOS prompt.

Do not choose a video mode that your display is not capable of supporting. If you attempt to install a driver at a resolution higher than your display supports, you may cause damage to your display.

Selecting Text Mode from a Menu

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

   `C:\HPVGA\ESU` (Enter)

2. **Select the video mode that you want from the list displayed on your screen.** All HP VGA displays support all text modes selectable in the ESU.COM utility (0 to 45).

3. **Your particular software may not work in all text modes.** Read the instructions that came with your software for more information on supported text modes. Consult the documentation that came with your display for information on supported video modes.

Selecting a Text or Graphics Mode from the MS-DOS Prompt

At the MS-DOS prompt enter:

`C:\HPVGA\ESU /` *mode number* (Enter)

where *mode number* can be one of the values from the following table. (The values are in hexadecimal.) Modes 0 to 13 are standard modes, modes above 40 are extended modes and require HPANSI.SYS.

(You can include the `C:\HPVGA\ESU /` *mode number* command in your AUTOEXEC.BAT file, so it is executed when you start your computer.)

Mode Configurations (256 KB DRAM)

Mode Number	Resolution	Colors	Monitors	Type	Mode
0, 1	40×25	16	VFD[1], AD[2]	Text	S[3]
2, 3	80×25	16	VFD, AD	Text	S
4, 5	320×200	4	VFD, AD	Graphics	S
6	640×200	2	VFD, AD	Graphics	S
7	80×25	4	VFD, AD	Text	S
0D	320×200	16	VFD, AD	Graphics	S
0E	640×200	16	VFD, AD	Graphics	S
0F	640×350	4	VFD, AD	Graphics	S
10	640×350	16	VFD, AD	Graphics	S
11	640×480	2	VFD, AD	Graphics	S
12	640×480	16	VFD, AD	Graphics	S
13	320×200	256	VFD, AD	Graphics	S
40	80×43	16	VFD, AD	Text	E[4]
41	132×25	16	VFD, AD	Text	E
42	132×43	16	VFD, AD	Text	E
43	80×60	16	VFD, AD	Text	E
44	100×60	16	VFD, AD	Text	E
45	132×28	16	VFD, AD	Text	E
60	752×410	16	VFD	Graphics	E
61	720×540	16	VFD	Graphics	E
62	800×600	16	VFD	Graphics	E
63	1024×768	2	ID[5]	Graphics	E
64	1024×768	4	ID	Graphics	E
66	640×400	256	VFD, AD	Graphics	E

1 VFD - Variable Frequency (multi-frequency) VGA Display

2 AD - Standard Analog VGA Display (the standard HP Video Graphics Color or Monochrome Display)

3 S - Standard Mode

4 E - Extended Mode

5 ID - Interlaced (multi-frequency) VGA Display

Using ALTPARM.COM to Improve Display Quality

If any of the extended modes cause your screen to shift or change size, you can use the Alternate Display Parameter Utility to improve the quality of your display.

The extended modes are the mode numbers greater than 40 (listed in the section "Selecting a Text or Graphics Mode from the MS-DOS Prompt").

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

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

   `C:\HPVGA\ALTPARM` Enter

   Look at the list of available display parameters.

   If your display is not listed, experimenting with the available parameters may improve your display quality.

2. To load the display parameter of your choice enter:

   `ALTPARM` *monitor-type* Enter

3. To modify an existing setting enter:

   `ALTPARM SETUP` Enter

   This option allows you to select a display, choose a resolution, modify the screen size, and save the modified version to a user-defined *filename*.

4. To load the user-defined file enter:

   `ALTPARM USER` *filename* Enter

   where *filename* is the user-defined file.

Using DIAG.EXE to Identify Problems

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

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

```
C:\HPVGA\DIAG Enter
```

The program displays:

- amount of video memory available to the HP Super VGA
- HP Super VGA BIOS date/version
- switch settings
- co-resident graphics adapter (if installed)

It also displays a series of self-explanatory screens demonstrating and testing various attributes and capabilities of the HP Super VGA.

If the Diagnostics Program indicates a problem, or if any of the screens appear to be incorrect, refer to chapter 8.

Using CLR.COM to Clear the Display Screen

The Enhanced Mode Clear Screen Utility allows you to clear your entire screen in any text mode.

Some enhanced video modes display information on as much of the screen as possible. The MS-DOS CLS command only clears a portion of this area, while the Enhanced Mode Clear Screen Utility clears the entire screen.

For modes greater than 40, HPANSI.SYS must be installed. (Refer to "Using HPANSI.SYS to Support Video Modes".)

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

```
C:\HPVGA\CLR Enter
```

Using DU.COM Utility to Display Directory Listing

This utility takes advantage of extended resolution and displays from 50 to 129 entries at a time, depending on your chosen resolution—whereas the MS-DOS DIR command displays 25 entries at a time.

You can use DU.COM in any video mode; modes 40 and above, however, require HPANSI.SYS.

To display directory information, at the MS-DOS prompt enter:

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

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

Parameter	Description
DU	all files in the current directory
DU *myfile**.*	all files in the directory *myfile*
DU /D	all sub-directories
DU /H	files including hidden files
DU /S	files including system files

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

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

Setting Up Your Video Drivers

Video Resolutions Supported by Your HP Super VGA Controller

Video Standard:	Graphics Mode, Display:		Text Mode, Display:	
	Pixels H by V[1]	Colors out of 256 K[2]	Characters C by R[1]	Colors out of 256 K[2]
MDA[3]	-	-	80×25	Mono[3]
CGA[4]	320×200	4, VGA	40×25	16, VGA
	640×200	2, VGA	80×25	16, VGA
HGC[5]	720×348	Mono, VGA	80×25	Mono, VGA
EGA[6]	320×200	16, VGA	40×25	16, VGA
	640×200	16, VGA	80×25	16, VGA
	640×350	16, VGA		
VGA[7]	320×200	256, VGA	80×25	16, VGA
	640×480	16, VGA	40×25	16, VGA
Extended VGA	640×400	256, VGA	132×25	16, VGA
	640×480	16, VGA	132×43	16, VGA
	800×600	16, VGA		
Super VGA	640×400	256, VFD[8]	132×28	16, AD[9]
	640×480	16, AD	80×60	16, AD
	720×540	16, VFD	132×25	16, AD
	752×410	16, VFD	80×43	16, AD
	800×600	16, VFD	132×43	16, AD
	1024×768	4, ID[10]	100×60	16, AD

1 H by V - Horizontal by Vertical; C by R - Columns by Rows

2 256 K - Color palette of 256×1024 - 262 000 colors

3 MDA - Monochrome Display Adapter; Mono - Monochrome

4 CGA - Color Graphics Adapter

5 HGC - Hercules Graphics Card

6 EGA - Enhanced Graphics Adapter

7 VGA - Video Graphics Array

8 VFD - Variable Frequency (multi-frequency) VGA Display

9 AD - Standard Analog VGA Display

10 ID - Interlaced (multi-frequency) VGA Display

NOTE

When using video drivers, your display must be able to support the resolution you choose. If you attempt to use a driver at a resolution higher than your display supports, you may cause damage to your display.

If your application software needs to use any of the extended modes, you must first install a video driver.

You can create a batch file to install your video driver. Refer to your MS-DOS documentation for more information about batch files.

When you unpacked your HP Super VGA Utilities and Drivers diskette, the drivers were copied to subdirectories of the `C:\HPVGA` directory.

AutoCAD Releases 9, 10 and 11

AutoCAD allows you to use the following resolutions:

Resolution	Colors
640×350	16 colors
752×410	16 colors
640×480	16 colors
720×540	16 colors
800×600	16 colors
1024×768	4 colors

Two drivers, REL10.COM and ADIDISP.EXP, are supplied on the HP Super VGA Utilities and Drivers diskette:

	REL10.COM	ADIDISP.EXP
Supports ADI version	3.1, 4.0	4.01
Supports AutoCAD releases	9, 10c7, 10c10, 11	10c10, 11
Mode	Real	Protected

Installing AutoCAD ADI. AutoCAD ADI comes with one AutoCAD display driver and an installation program. Load the driver each time you start the computer.

1. Change to the directory containing AutoCAD. At the MS-DOS prompt enter:

   `CD C:\HPVGA\AUTOCAD` (Enter)

2. Load the AutoCAD driver by entering:

   `REL10` (Enter)

Configuring AutoCAD ADI. You need only configure AutoCAD for the ADI General Display Driver once. AutoCAD remembers that it has been installed.

1. Start AutoCAD. (Refer to the AutoCAD documentation.)
2. On the main menu, select `Configure AutoCAD`.
3. Review your current configuration. Then press (Enter).
4. Select `Configure Video Display`.
5. Select ADI. Press `Y`, and then press `1`.

   AutoCAD asks you a series of questions on options. Answer the questions, referring to the *AutoCAD Installation and Performance Guide* for more information, if necessary.

6. Save the configuration. Press `Y`.

Using AutoCAD ADI Installation Program (INST.EXE). Use the installation program, INST.EXE, to:

- change the currently selected resolution of AutoCAD's graphics screen
- modify the software interrupt vector used by AutoCAD to communicate with the ADI display driver
- modify the colors used in several areas of the AutoCAD graphics screen

1. Start the Install Program. Enter:

   `CD C:\HPVGA\AUTOCAD` (Enter)

   To run the Install Program enter:

   `INST` (Enter)

2. Select the default driver `REL10.COM`.
3. Select the default interrupt vector number `7Ah`. (You only need to change the interrupt vector if the default value conflicts with other software you are using.)
4. Select the AutoCAD resolution you want. (For details, refer to the ESU.COM utility.)
5. Select the AutoShade rendering resolution you want. (For details, refer to the ESU.COM utility.)
6. Select the AUTOCAD color model you want (either release 9, 10 or 11).
7. Select the configuration data. (You can change the number of command lines, the screen colors, the palette colors, and the 256 color settings.)

Configuring AutoShade ADI. The HP Super VGA supports 320×200 and 640×400, both with 256 colors.

1. Run AutoShade. (Refer to the AutoShade documentation and follow the instructions on the screen.)
2. On the the Display Devices selection, select `AutoDesk Device Interface Rendering Driver`

   You should initially use the interrupt vector `7Ah`, and it should be the same as the interrupt vector you configured for the ADI driver.
3. On the Rendering Display Devices selection, select `AutoDesk Device Interface Rendering Driver`.

   Use the default `7Ah` interrupt driver as described above.
4. Select `YES` to the question: "Do display and rendering devices share a single screen?"
5. Select `NO` to the question: "Does the FLIPSCREEN require a redraw?"

Using AutoCAD in Dual Screen Mode. You can use AutoCAD in dual screen mode if you have a monochrome display and video board in your computer, in addition to the HP Super VGA.

To use the dual screen mode, your monochrome display and video board must be active before starting AutoCAD. If it is not already active, at the MS-DOS prompt enter:

`MODE MONO` (Enter)

The REL10.COM driver will automatically configure AutoCAD for dual screen mode.

NOTE

In dual screen mode, the HP Super VGA must be configured for a resolution other than 1024×768 with 2 colors. You cannot have a monochrome video board co-resident when the HP Super VGA is configured for this mode.

GEM/3 Versions 3.1 and 3.0

GEM/3 allows you to use the following resolutions:

Resolution	Colors
640×480	16 colors
720×540	16 colors
800×600	16 colors
1024×768	16 colors (not supported)

These instructions assume that you have already installed GEM/3.

1. Insert the GEM/3 System Master Diskette in drive A.
2. Start the GEM/3 Setup Program, enter:

   `A: GEMSETUP` (Enter)
3. Select `Change Existing Configuration`. Your current configuration will be displayed.
4. Select `Continue` and then select `Change Your Current Setup.`
5. When you are asked for the Graphic Board and Display installed in your system, select `Other (Driver Pack)`.
6. When asked for the GEM Driver Pack Diskette, insert the HP Super VGA Utilities and Drivers diskette and select `Continue`.

   You will first see a `Busy` message, and then a list of Graphics Boards and Displays including the HP Super VGA drivers.
7. Select the mode you wish to install. Your new configuration will be displayed.
8. Select `Save and Exit`. Follow the instructions on the screen.

Generic CADD Level 3

The Generic CADD program allows you to use 800×600 16-color mode. (Your HP Super VGA does not support Generic CADD in the 1024×768 16-color resolution as it requires 512 KB of memory.)

1. Change to the directory containing the Generic CADD driver, enter:

   `CD C:\HPVGA\GENCAD` (Enter)

2. Copy the GCAD1024.VGD file from the GENCAD subdirectory to the directory containing the Generic CADD program files.
3. Change to the directory containing the Generic CADD program.
4. Start the Generic CADD CONFIG program, enter:

   `CONFIG` (Enter)

5. Follow the instructions on the screen to select the `HP Super VGA 800×600 16-color` driver.
6. Exit CADD CONFIG and run Generic CADD as usual (refer to the Generic CADD documentation).

Lotus 1-2-3 Versions 2.x and Symphony Version 1.2

Lotus 1-2-3 allows you to use the following resolutions:

File Name	Resolution	Colors	Monitors	Type
VD132×25.DRV	132×25	16	VFD[1], AD[2]	Text
VD132×43.DRV	132×43	16	VFD,AD	Text
VD100×60.DRV	100×60	16	VFD,AD	Text
VD80×60.DRV	80×60	16	VFD,AD	Text
GD720V20.DRV	720×540	16	VFD	Graphics
GD800V20.DRV	800×600	16	VFD	Graphics

1 VFD - Variable Frequency (multi-frequency) VGA Display

2 AD - Standard Analog VGA Display

1. Change to the directory containing the Lotus driver, enter:

   `CD C:\HPVGA\LOTUS` (Enter)

2. Copy the Lotus drivers to the directory containing your Lotus application.
3. Change to the directory containing the Lotus application.
4. Start the install program, enter:

   `INSTALL` (Enter)

5. Follow the instructions on the screen to go to the Main Menu.
6. Select `Advanced Options`. Then select `Add New Drivers to Library`.

   Follow the instructions on the screen to add drivers.
7. Return to the menu `Advanced Options`.
8. Select `Modify Current Driver Set`. Then select `Graphics Display`.
9. Select the driver that you wish to install from the list.
10. Select `Save Changes`.
11. Follow the instructions on the screen to name the new driver or to make it the default driver, and complete the installation.

P-CAD Versions 3.0 and 4.0

PC-CAD allows you to use the following resolutions:

File name	Resolution	Colors
DPCAD640.DRV	640×480	16 colors
DPCAD720.DRV	720×540	16 colors
DPCAD800.DRV	800×600	16 colors
DPCAD1K.DRV	1024×768	16 colors (not supported)

1. Install P-CAD (refer to the documentation that came with it), and select the display adapter `IBM VGA`.
2. Change to the P-CAD driver sub-directory, enter:

   `CD C:\HPVGA\PCAD\DRV` (Enter)

   where `C:\HPVGA\PCAD\DRV` contains the P-CAD drivers
3. *Either* rename the IBM VGA driver to save it for future use, enter:

   `RENAME DIBMVGA.DRV` *newfile* (Enter)

   where *newfile* is the name of your new IBM VGA driver file

   Or delete the IBM VGA driver, enter:

   `DEL DIBMVGA.DRV` (Enter)
4. Copy the P-CAD driver for the resolution you wish to install to the directory containing your P-CAD application (PCAD\DRV).
5. Use an ASCII word processor or text editor to modify the P-CAD configuration file PCADDRV.SYS.

   Delete the line `DIBMVGA.DRV` and replace it with the name of the file for the resolution you are installing.

   For example, if you are installing the 800×600 resolution mode, delete `DIBMVGA.DRV` and replace it with `DPCAD800.DRV`.
6. Restart your computer for the changes to take effect.

Ventura Publisher Versions 1.x and 2.0

Ventura Publisher allows you to use the following resolutions:

Resolution	Colors
640×480	2 or 16 colors
720×540	2 or 16 colors
800×600	2 or 16 colors
1024×768	16 colors (not supported)

The Ventura Publisher driver files are located on the HP Super VGA Utilities and Drivers diskette.

1. Install Ventura Publisher. (Refer to the documentation that came with it.)
2. Select the VGA display device driver.
3. Insert the HP Super VGA Utilities and Drivers diskette in drive A.
4. Make A the current drive, enter:

   `A:` (Enter)

5. For Ventura Publisher Versions 1.x, enter:

   `VPINST_1`

   For Ventura Publisher Version 2.0 enter:

   `VPINST_2`

6. Follow the instructions on your screen.

VersaCAD Design Versions 5.3 and 5.4

VersaCAD allows you to use the following resolutions:

File Name	Resolution	Colors
VCAD800.EXE	640×480	16 colors
VCAD800.EXE	720×540	16 colors
VCAD800.EXE	800×600	16 colors
VCAD1024.EXE	1024×768	16 colors (not supported)

There are two configuration files:

- VCAD53.CFG is for VersaCAD Design Version 5.3
- VCAD54.CFG is for VersaCAD Design Version 5.4.

The following instructions assume you have already installed VersaCAD Design Version 5.3 on your hard disk in a directory called VCAD53. If you have VersaCAD Design Version 5.4, replace all references to VCAD53.CFG with VCAD54.CFG.

1. Change to the directory containing the VersaCAD driver, enter:

   ```
   CD C:\HPVGA\VERSACAD Enter
   ```

2. Copy the resolution file that you wish to install to the directory containing the VersaCAD application.

   For example, to install the 640×480 resolution driver, enter:

   ```
   COPY VCAD800.EXE \VERSACAD Enter
   ```

3. Copy the configuration file to the VERSACAD directory. Enter:

   ```
   COPY VCAD53.CFG \VERSACAD Enter
   ```

4. Change to the directory containing the VersaCAD batch file VCAD53.BAT. VCAD53.BAT is usually in the root directory of your hard disk.

5. Use an ASCII word processor to modify the VersaCAD batch file VCAD53.BAT to include the resolution file name you used in step 2.

   For example, modify your VersaCAD batch file to look like this:

   ```
   CD \VCAD53
   VCAD800
   VRUN
   ```

6. Change to the VCAD53 directory and start VersaCAD.

7. Select E to change the screen configuration.

8. Select the desired resolution.

Windows/286 Version 2.x

Windows/286 allows you to use the following resolutions:

Resolution	Colors
640×400	256 colors
640×480	16 colors
720×540	16 colors
800×600	16 colors
1024×768	2 colors
640×480	256 colors (not supported)
1024×768	16 colors (not supported)

1. Run the Windows/286 setup program. (Refer to the Windows/286 documentation.)

   The Windows/286 setup program automatically detects your system configuration.

2. Select `VGA`. Then select `Other` to install the HP Super VGA drivers.
3. Follow the instructions on the screen.

   When prompted, specify the path to the directory and subdirectory where you unpacked the utilities and drivers. The drivers are in the `C:\HPVGA\WIN286` subdirectory.

   The more colors you use, the slower the screen updates will be. If you do not require 256 colors, install the 16-color driver for best performance. Higher screen resolutions also slow down screen updates.

   Windows automatically loads the available drivers.

4. Select the driver you wish to be active from the list on the screen.
5. Select the fonts you wish to use. The VGA fonts should be used for all of the HP Super VGA drivers.
6. Complete the installation by following the Windows setup instructions.

Windows/386 Version 2.x

Windows/386 allows you to use the following resolutions:

Resolution	Colors
640×400	256 colors
640×480	16 colors
720×540	16 colors
800×600	16 colors
1024×768	2 colors
640×480	256 colors (not supported)
1024×768	16 colors (not supported)

You can select up to four drivers to be available when you install Windows/386. You can change or select which four of the available drivers you want at any time before installing Windows/386.

1. Change to the directory containing the WIN386 driver, enter:

   `CD C:\HPVGA\WIN386` (Enter)

2. Start the selection menu, enter:

   `SELECT` (Enter)

   Follow the instructions on the screen to select the drivers you want to install.

3. Insert the Windows/386 setup diskette in drive A.

4. Run the setup program as described in the Windows/386 documentation. The Windows/386 setup program automatically detects your system configuration.

5. Select `VGA`. Then select `Other` to install the HP Super VGA drivers.

6. Follow the instructions on the screen.

   When prompted, specify the path to the directory and subdirectory where you unpacked the utilities and drivers. The drivers are in the WIN386 subdirectory.

   The more colors you use, the slower the screen updates will be. If you do not require 256 colors, install the 16-color driver for best performance. Higher screen resolutions also slow down screen updates.

   Windows automatically loads the available drivers.

7. Select the driver you wish to be active from the list on the screen.
8. Select the fonts you wish to use. The VGA fonts should be used for all of the HP Super VGA drivers.
9. Complete the installation by following the Windows setup instructions.

Windows 3.0

For the latest information on Windows 3.0 drivers, refer to the README file.

1. Change to the HPVGA sub-directory, enter:

   `CD C:\HPVGA` (Enter)

2. Display the contents of the file, enter:

   `README` (Enter)

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

WordPerfect Version 4.2 and 5.0

WordPerfect allows you to use the following resolutions:

Resolution	Colors	Type	Version
132×25	16 colors	text	4.2, 5.0
132×43	16 colors	text	4.2, 5.0
100×60	16 colors	text	4.2, 5.0
800×600	16 colors	graphics	5.0
1024×768	16 colors (not supported)	graphics	5.0

Installing Text Drivers for Version 4.2. Before you run WordPerfect, you must run ESU.COM to select the text mode for which you have configured WordPerfect. Refer to the ESU.COM utility.

1. Change to the directory containing the WordPerfect text driver, enter:

   `CD C:\HPVGA\WRDPERF` (Enter)

2. Copy the WordPerfect text drivers to the directory containing your WordPerfect application.

3. Change to the WordPerfect directory.
4. Display the WordPerfect SETUP menu, enter:

   `WP/S` (Enter)
5. Select `Display`
6. Select `Set screen and beep options`
7. Follow the instructions on the screen to enter the number of rows and columns you want. Press (Enter) until you return to the SETUP menu.
8. Press (Enter) twice.

Installing Text and Graphics Drivers for Version 5.0.

1. Change to the directory containing the WordPerfect graphics driver, enter:

   `CD C:\HPVGA\WRDPERF` (Enter)
2. Copy the WordPerfect graphics drivers to the directory containing your WordPerfect application.
3. Change to the WordPerfect directory.
4. Display the WordPerfect SETUP menu, enter:

   `WP` (Enter)
5. Hold down the (Shift) key and press (F1).
6. Select `Display`. Then select `Graphics Screen Type`.
7. Select the resolution you wish to use. First highlight the resolution, then mark it with an asterisk (*).
8. Press (Enter) twice.

WordStar 3.3

These instructions assume you have already installed WordStar 3.3 on your computer.

When you use the WSSETUP command, as described below, to select a resolution, you modify your WordStar program. We therefore recommend that you first make a copy of your WordStar program.

For example, to make a copy of your WordStar program called WS132.COM, from your original WordStar directory, enter:

```
COPY WS.COM WS132.COM (Enter)
```

To select the drivers for WordStar:

1. Change to the directory containing the WordStar driver, enter:

   ```
   CD C:\HPVGA\WS33F (Enter)
   ```

2. Start the WordStar setup utility, enter:

   ```
   WSSETUP (Enter)
   ```

3. Select the resolution you want from the list on the screen, enter:

   ```
   WSSETUP resolution path\WS132.COM
   ```

   where *resolution* is the resolution number from the list displayed on the screen and *path* is the path to your new WordStar program, WS132.COM.

   For example, in the following command

   ```
   WSSETUP 1 \WORDSTAR\WS132.COM
   ```

   1 is the resolution number of the resolution you want, **WORDSTAR** is the path to your WordStar program, and **WS132.COM** is your new WordStar program.

   If you are using WordStar in 43 line mode, do not select **EGA 43** line mode from the WordStar Monitor Selection menu. Use the Console Screen Size menu to set the number of rows and columns instead.

4. Use the Enhancement Selection Utility (ESU.COM) to choose the text mode that you want. (Refer to the ESU.COM Utility.)

WordStar Professional Versions 4.0 and 5.x

1. Use the WordStar documentation and the WSCHANGE program to configure WordStar 4.0 or 5.x for use with the HP Super VGA extended modes.
2. Use the Enhancement Selection Utility (ESU.COM) to select the mode you set in step 1. (Refer to the ESU.COM Utility.)

5

Installing and Removing Accessories

Installing and Removing Accessories

CAUTION

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

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

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

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

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

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

After you install or remove an accessory, you must:

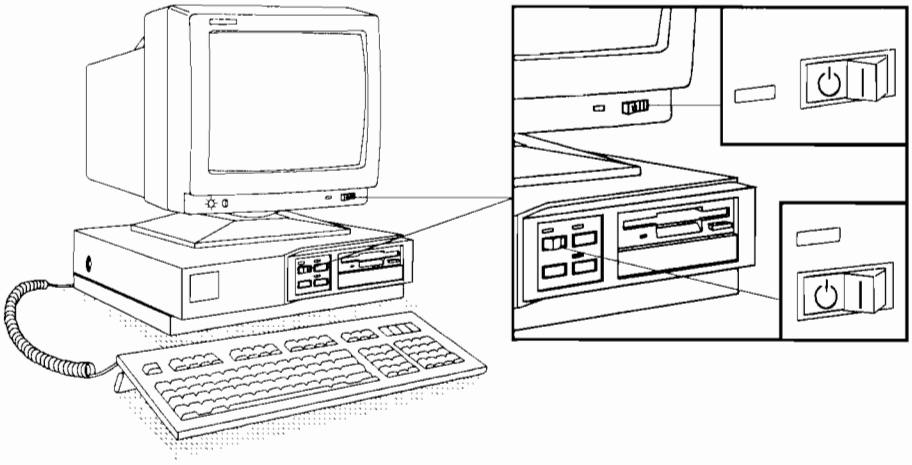
1. Replace the cover and reconnect the power cords.
2. Record the type of accessory in "Additional Items Installed" at the end of this chapter.
3. Run the Setup Program to declare the accessory. (Refer to chapter 6 for details.)

WARNING

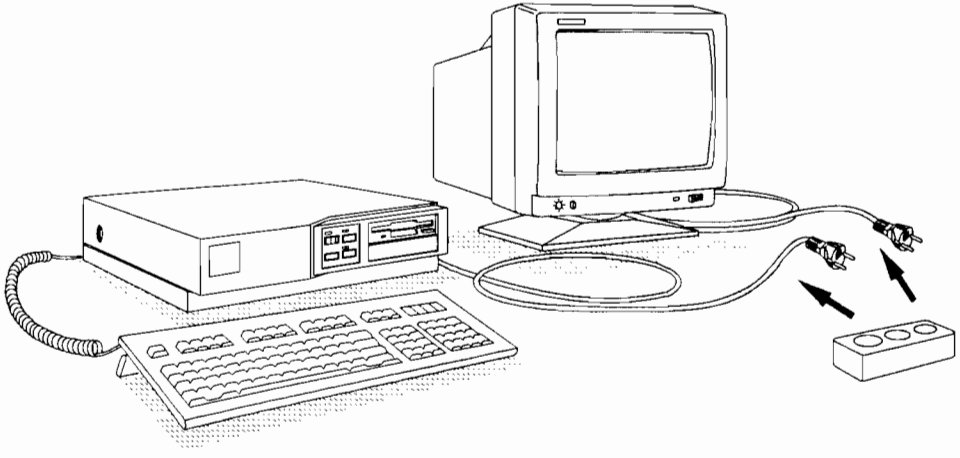
Always unplug the computer power cord before removing the cover.

Removing the Cover

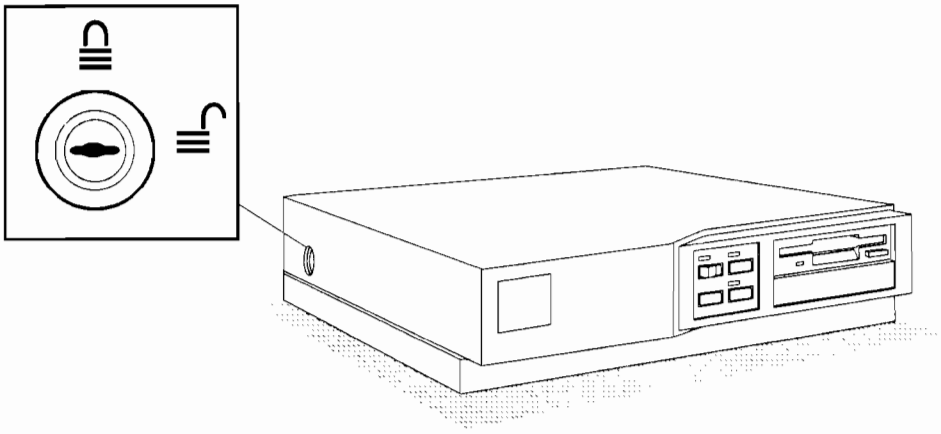
1. Ensure the display and computer are switched off.



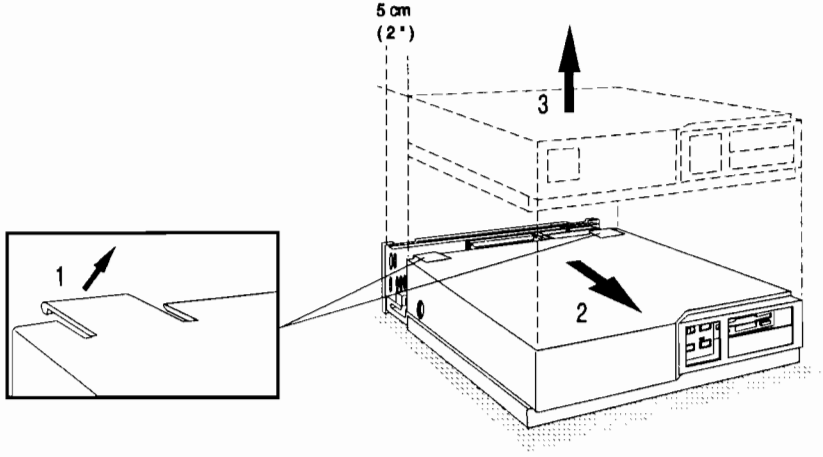
2. Disconnect the power cords and remove the display.

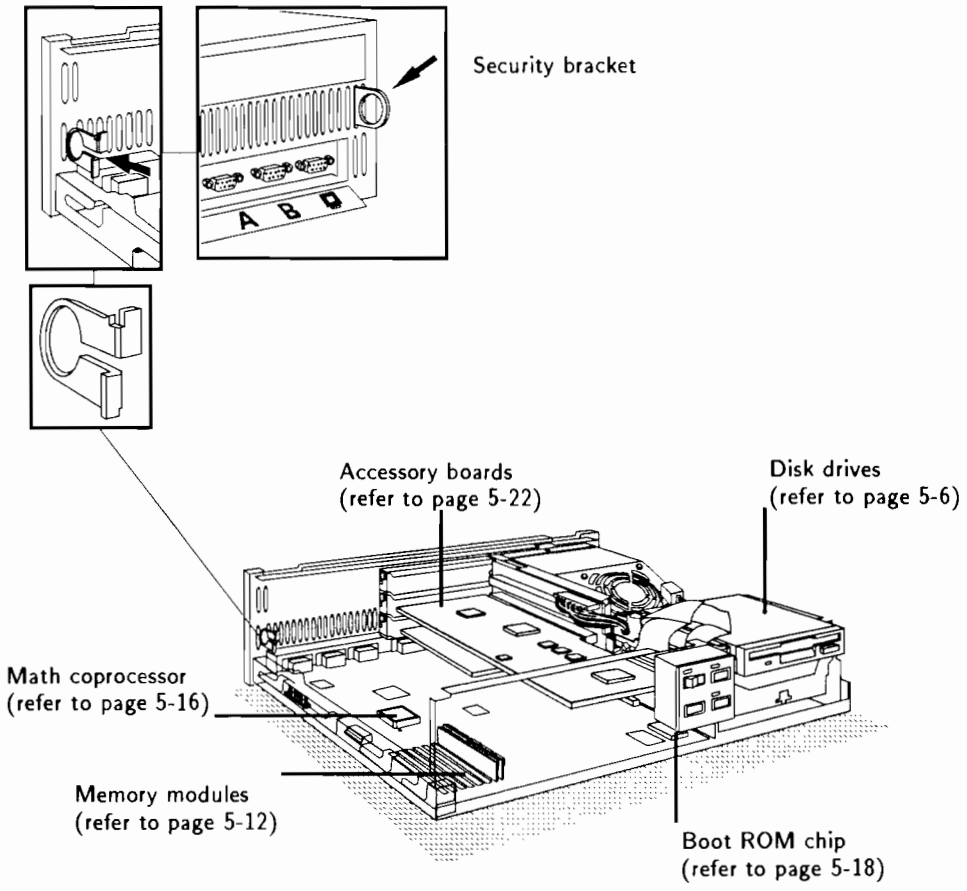


3. Set the cover lock to the "cover unlocked" position.



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





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

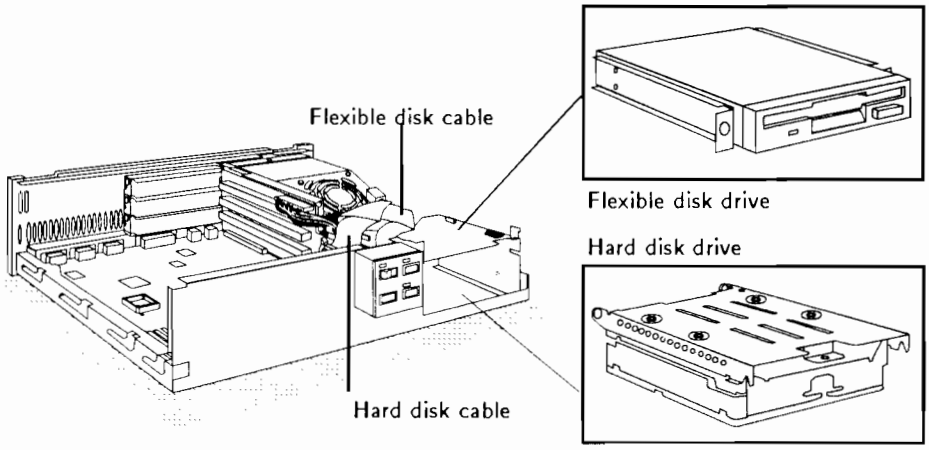
Insert the security bracket into the slot. Press it firmly until it snaps into place.

Installing and Removing a Disk Drive

The computer has two shelves for disk drives:

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

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

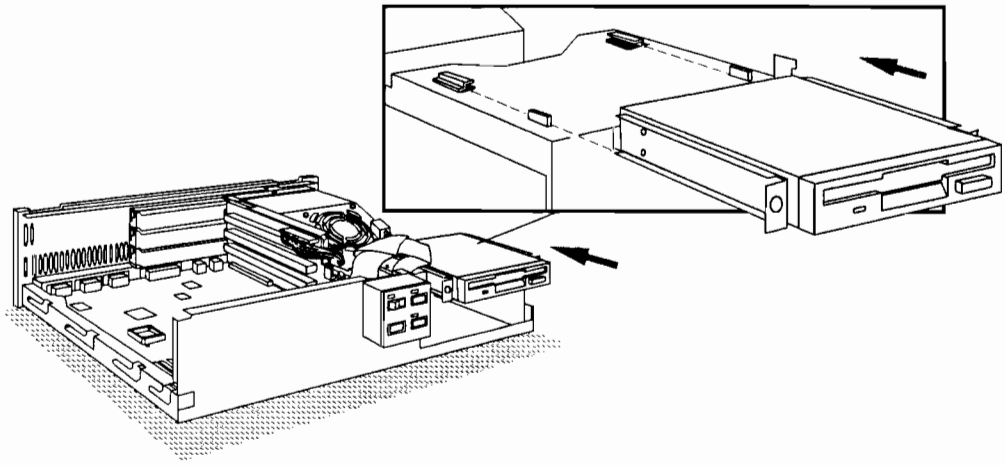


CAUTION

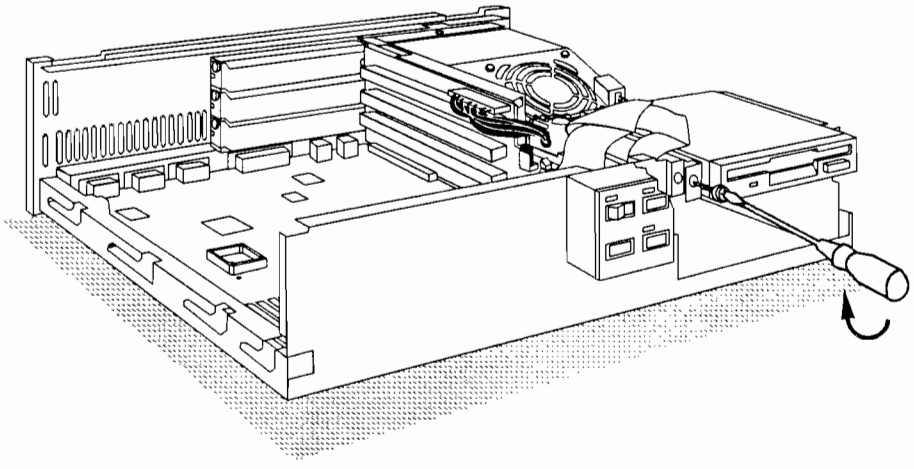
Before installing the accessory, hold the accessory in one hand and touch the metal case of the computer with the other hand to equalize the static electricity.

Installing a Flexible Disk Drive

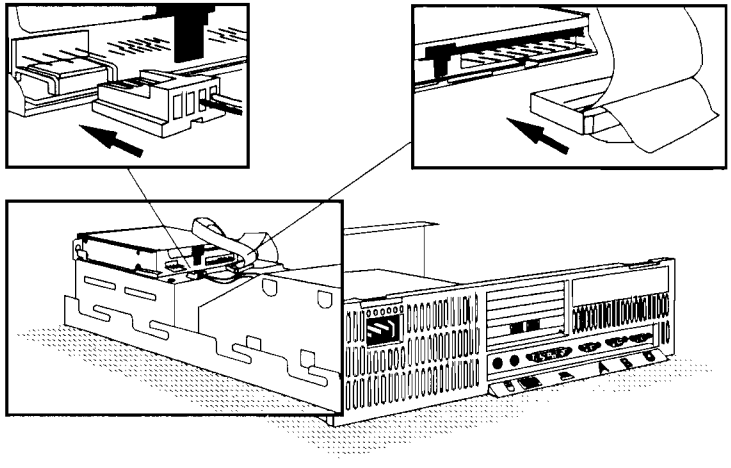
1. Slide the flexible disk drive on top of the top shelf.



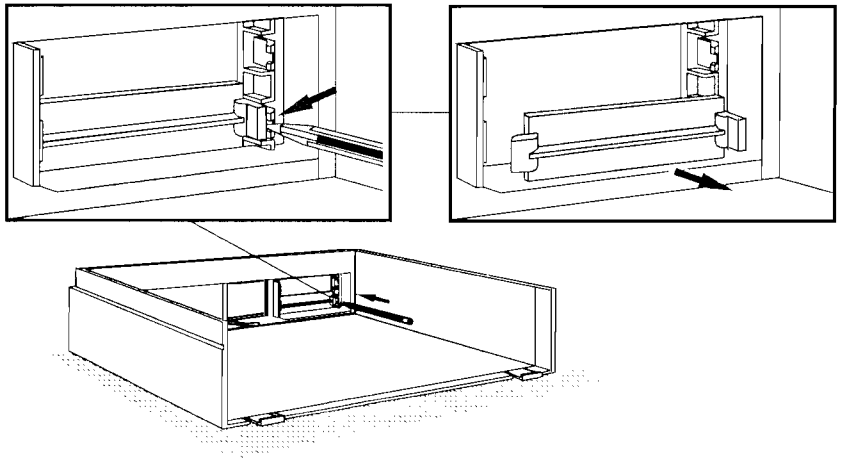
2. Secure the flexible disk drive in position using the screw provided with the drive.



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



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

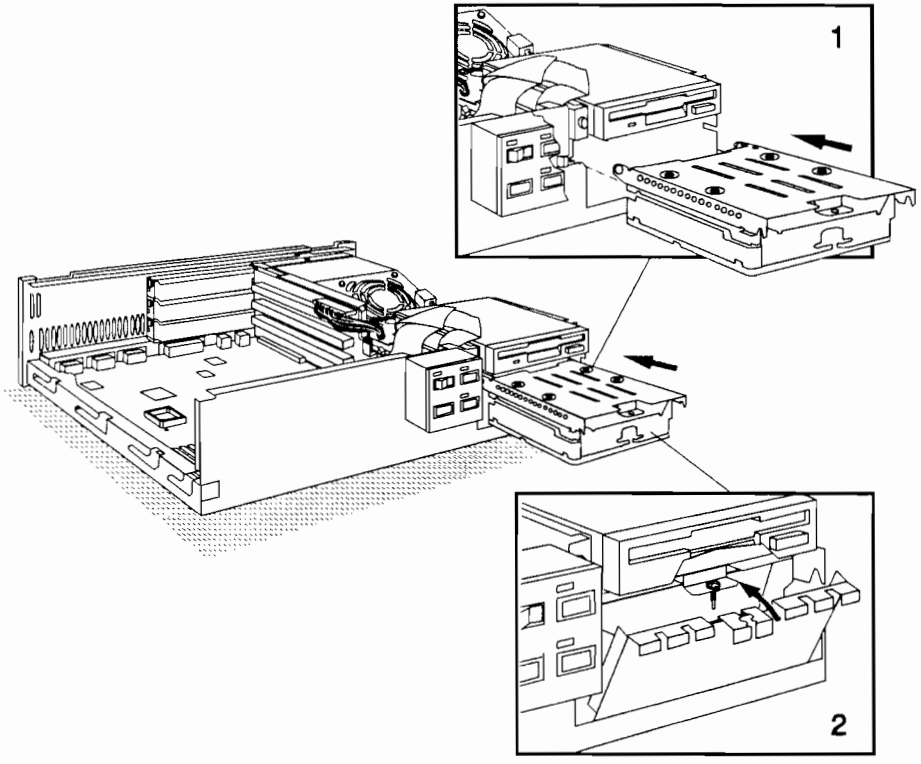


5. Install any other accessories before replacing the cover and running Setup (as described in chapter 6).

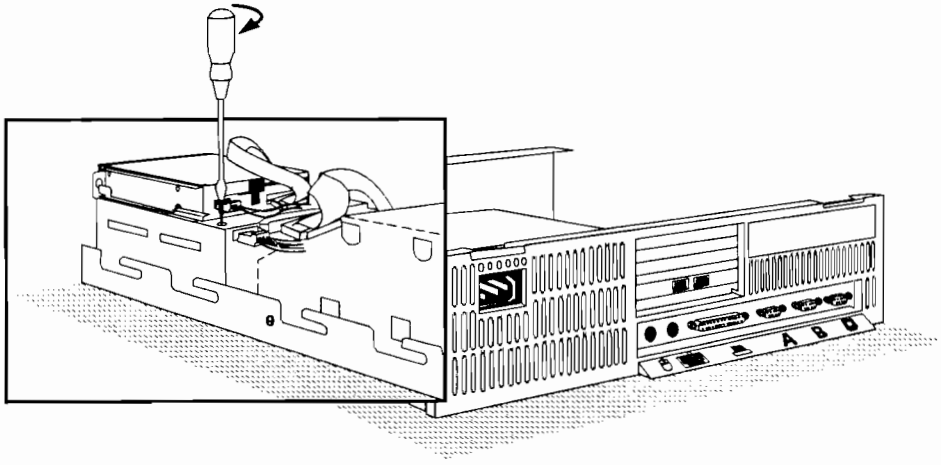
Installing a Hard Disk Drive

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

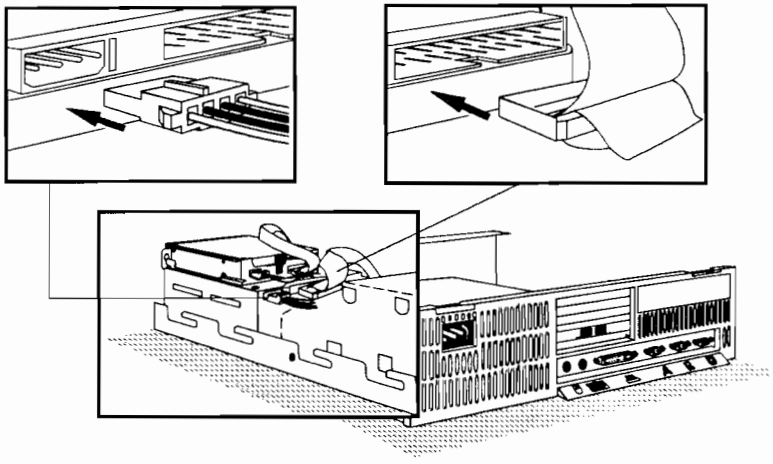
1. Configure the hard disk drive. Refer to the drive's manual to see if you must set jumpers or terminating resistors, or if it has a special installation procedure.
2. Slide the hard disk drive into the bottom shelf. Ensure the mounting brackets on the disk drive slide over the metal tabs in the bottom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



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



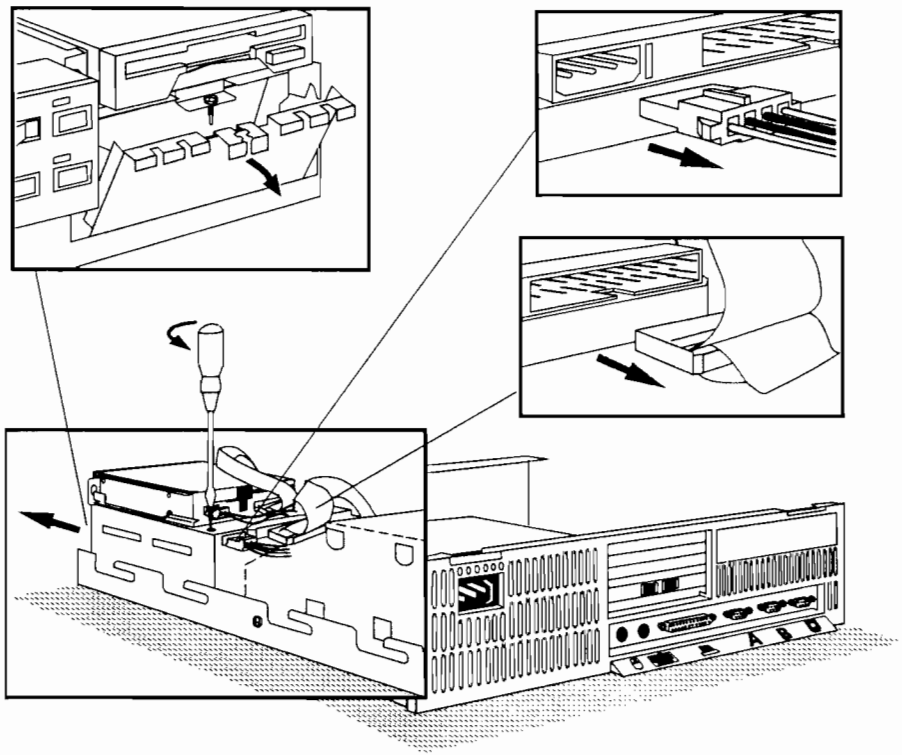
5. Connect the power and data cables to the rear of the hard disk drive. (The connectors are shaped to go in one way only.)



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

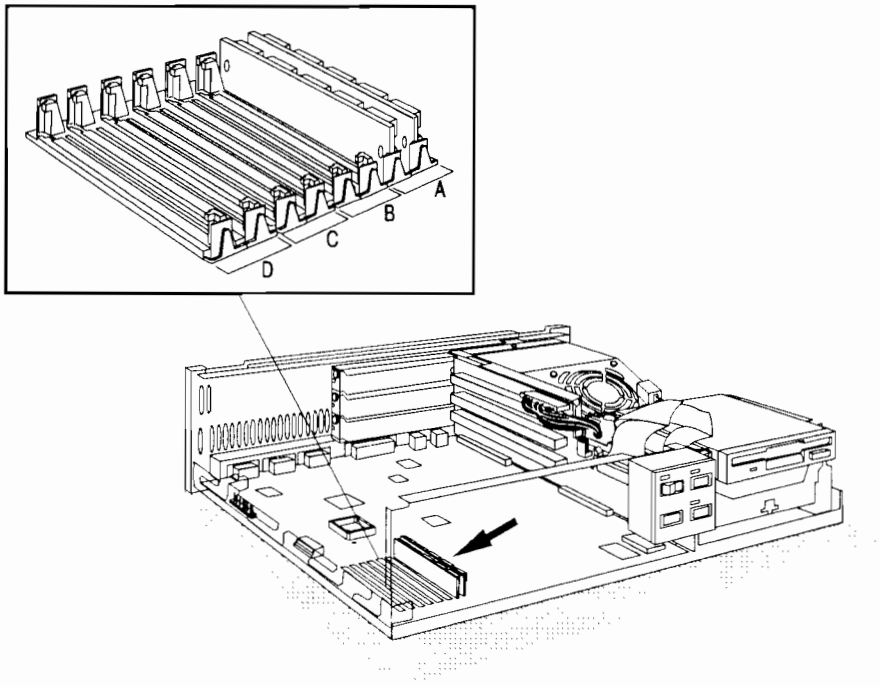
Removing Disk Drives

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



Installing and Removing Memory Modules

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



CAUTION

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

Installing Memory Modules

1. Identify where to install the memory modules. Refer to the following table.

Where to Install Memory Modules

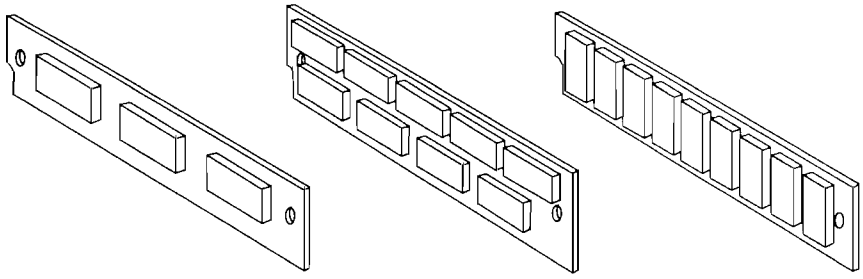
For a TOTAL MEMORY of:	Install Memory Modules in These Banks (each bank has two sockets):								Using This Upgrade Kit(s)
	A	A	B	B	C	C	D	D	
2 MB	**1 MB**	**1 MB**							No kit required
4 MB	**1 MB**	**1 MB**	1 MB	1 MB					One 2 MB kit[1]
6 MB	**1 MB**	**1 MB**	1 MB	1 MB	1 MB	1 MB			Two 2 MB kits
8 MB	**1 MB**	**1 MB**	1 MB	1 MB	1 MB	1 MB	1 MB	1 MB	Three 2 MB kits
10 MB	**1 MB**	**1 MB**	4 MB	4 MB					One 8 MB kit[2]
12 MB	**1 MB**	**1 MB**	1 MB	1 MB	4 MB	4 MB			One 2 MB kit and one 8 MB kit
14 MB	**1 MB**	**1 MB**	1 MB	1 MB	1 MB	1 MB	4 MB	4 MB	Two 2 MB kits and one 8 MB kit
16 MB	4 MB	4 MB	4 MB	4 MB					Two 8 MB kits[3]

1 For the 2 MB kit: order D2406A (contains two 1 MB memory modules)

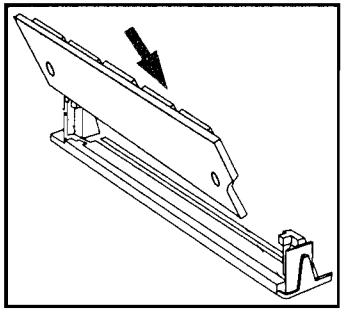
2 For the 8 MB kit: order D2404A (contains two 4 MB memory modules)

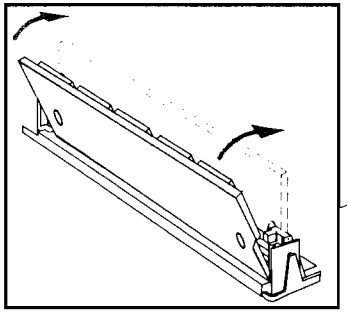
3 The original 2 MB (two 1 MB memory modules) are not used—they can be used in another HP Vectra 386/N or discarded

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



3. Install the memory modules in the sockets listed in the table on the previous page.

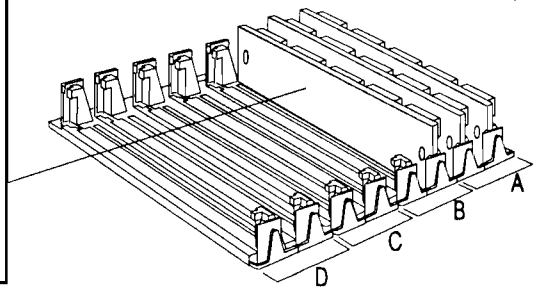




a. Slide the memory module into the *first free* slot at 45°.

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

c. Pivot the memory module to the vertical position.

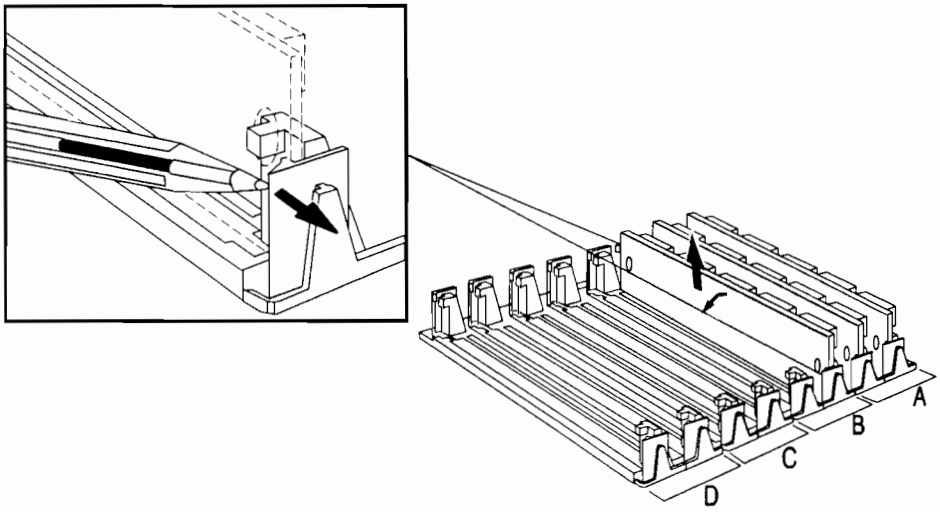


4. Install any other accessories before replacing the cover and running Setup (as described in chapter 6).

Removing Memory Modules

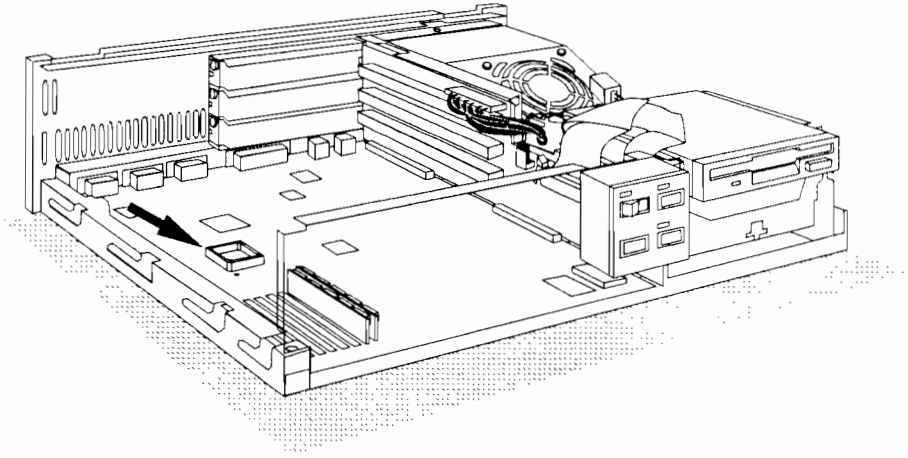
Remove the memory modules one at a time, starting with the last module (closest to socket D).

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



Installing and Removing a Math Coprocessor

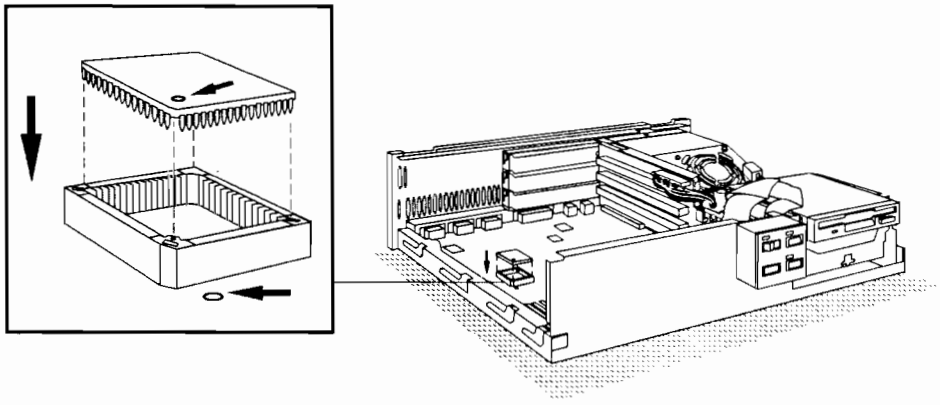
The computer has a socket for an Intel 80387SX math coprocessor (D1453A on the Vectra 386/16N or D2403A on the Vectra 386/20N). Your math coprocessor must use the same speed as your computer—the speed is indicated on the HP nameplate at the front of the computer.



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

Installing a Math Coprocessor

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



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

Removing the Math Coprocessor

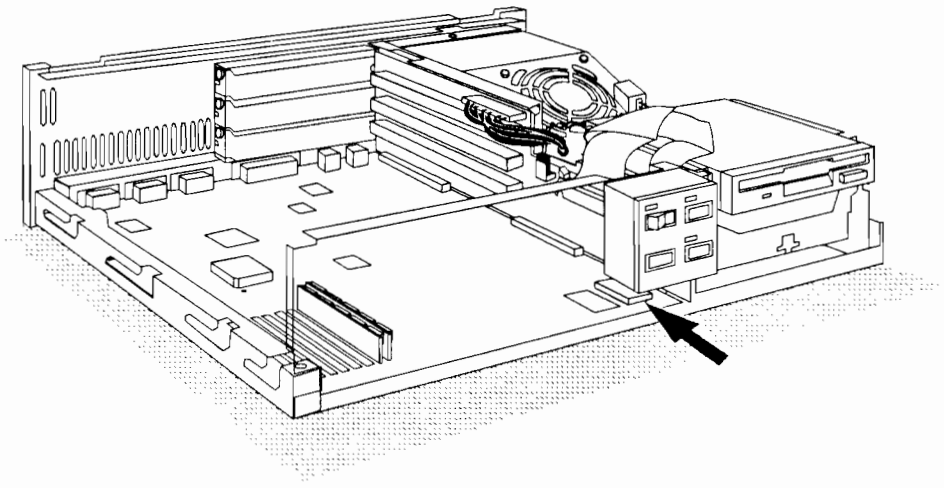
You need a special IC removal tool to lever the coprocessor from the socket. Contact your HP dealer or HP service office for assistance.

Installing and Removing a Boot ROM Chip

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

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

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



CAUTION

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

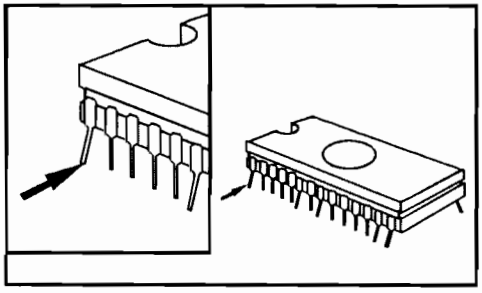
Installing a Boot ROM Chip

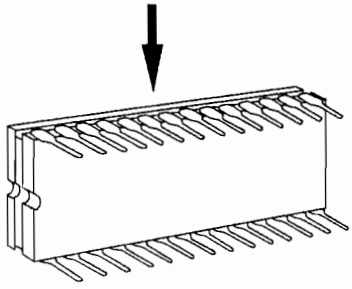
1. For ease of access, if your computer has any full-length accessory boards, unscrew and remove them. (Refer to page 5-27.)
2. Ensure the pins on the boot ROM chip are straight (vertical).

   If you need to straighten the pins:

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

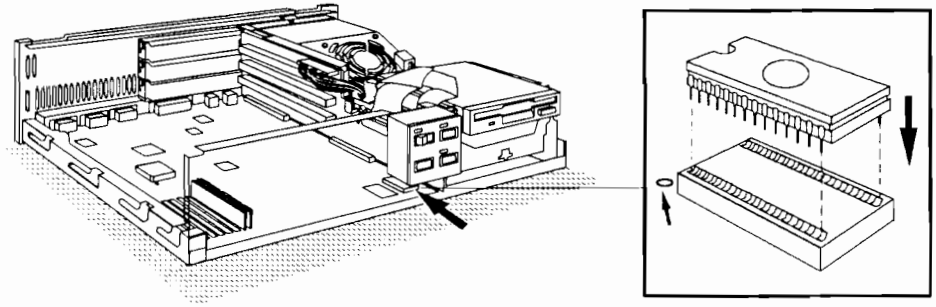
   b. Repeat for the other side.





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

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

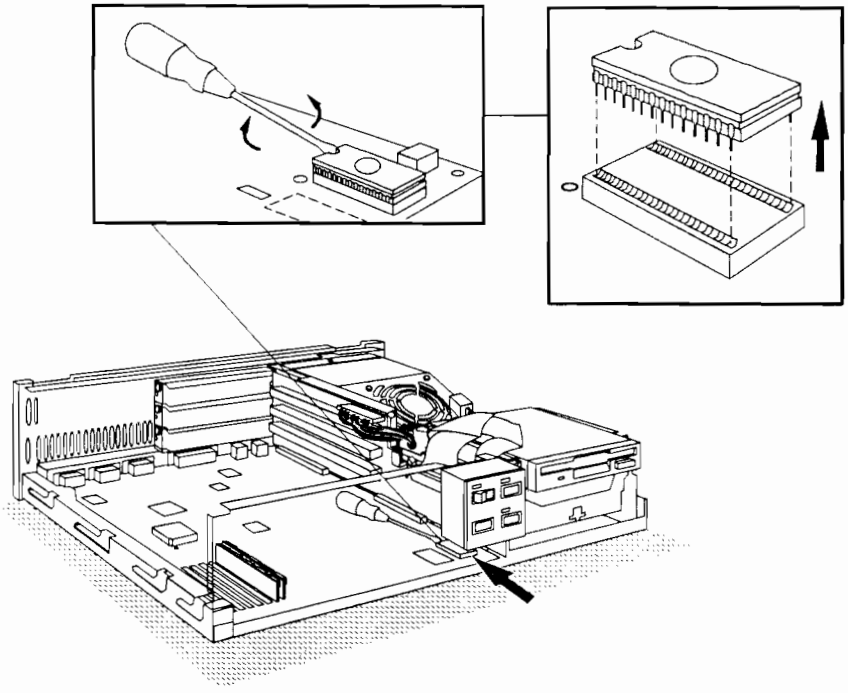


4. Replace any accessory boards you removed. (Refer to page 5-23.)
5. Install any other accessories before replacing the cover and running Setup (as described in chapter 6).

Removing the Boot ROM Chip

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

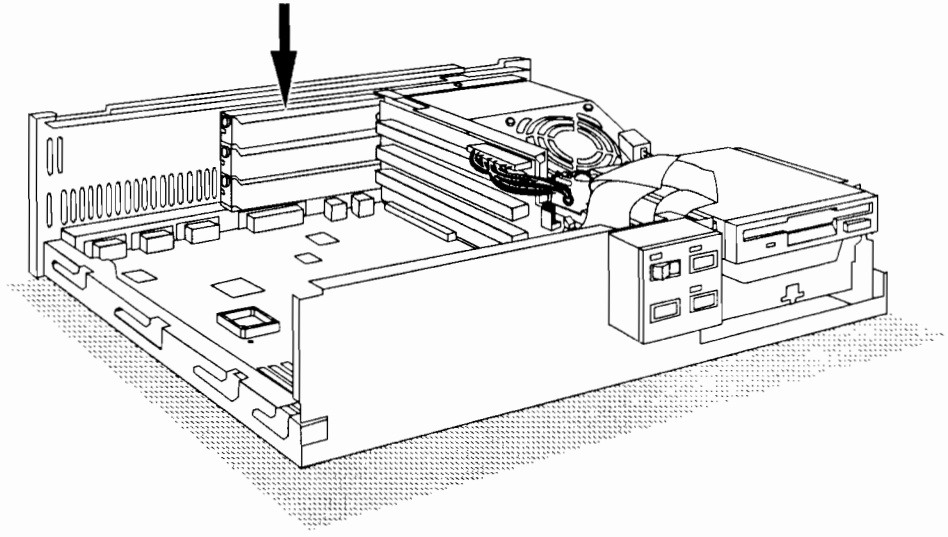
   Ensure you insert the blade of the screwdriver between the socket and boot ROM chip.
3. Firmly pull the boot ROM chip out of the socket.
4. Replace any accessory boards you removed.



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

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

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



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

Installing an Accessory Board

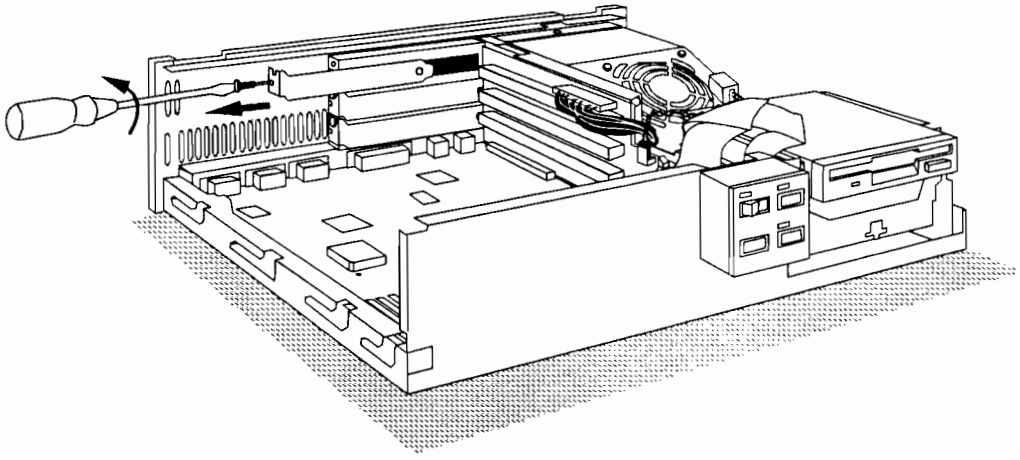
1. **Identify a free slot to use.**

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

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

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

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



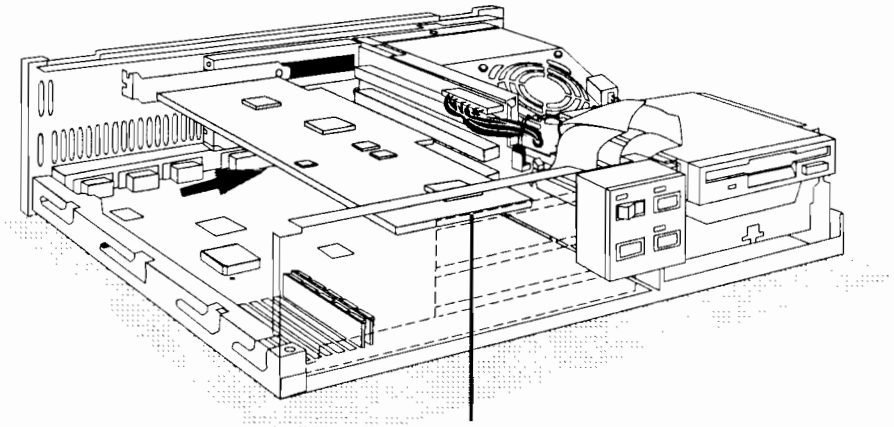
3. **Configure the accessory board.** Refer to the board's manual to see if you must set any switches or jumpers, or if it has a special installation procedure.

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

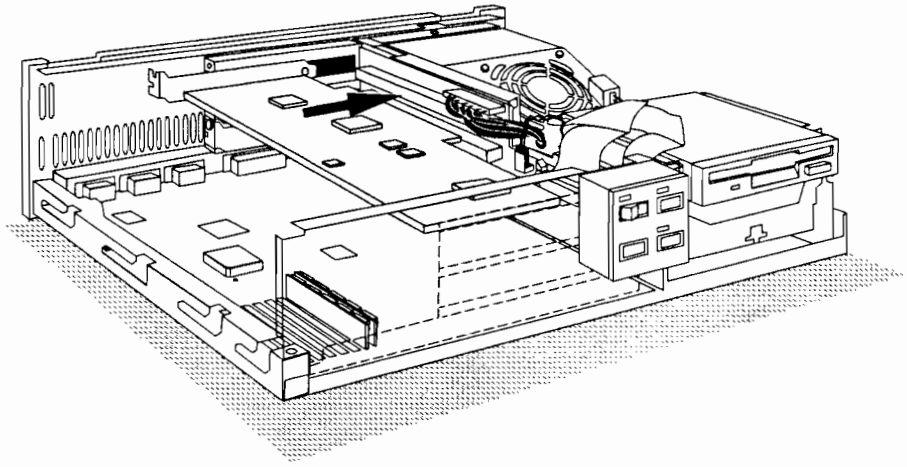
   - a serial or parallel port, make sure they do not use serial 1 (COM1), serial 2 (COM2) or parallel 1 (LPT1) ports; alternatively, change the setting of the computer's ports (refer to chapter 6)
   - I/O base address of hexadecimal 300 to 31F and you have a LAN adapter board, change the accessory board's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

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

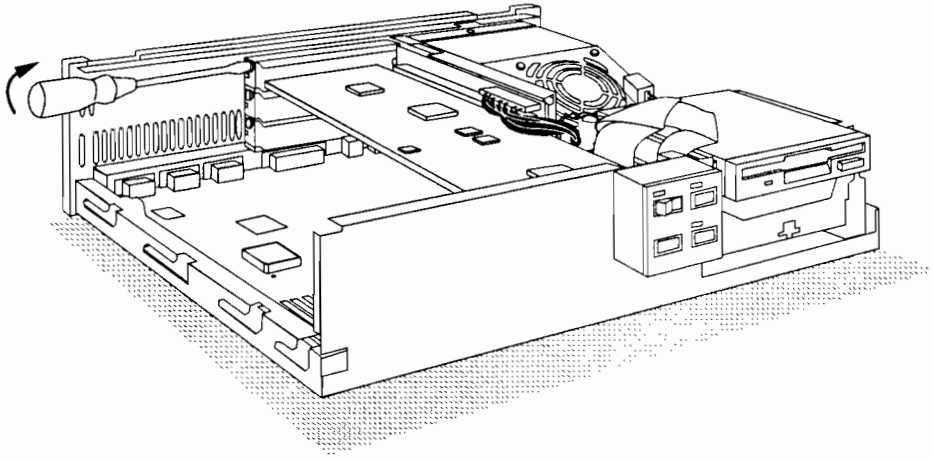
   If you insert a full-length board in the bottom slot, ensure the board correctly engages with the board guide at the end of the slot, and does not touch the memory modules.



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

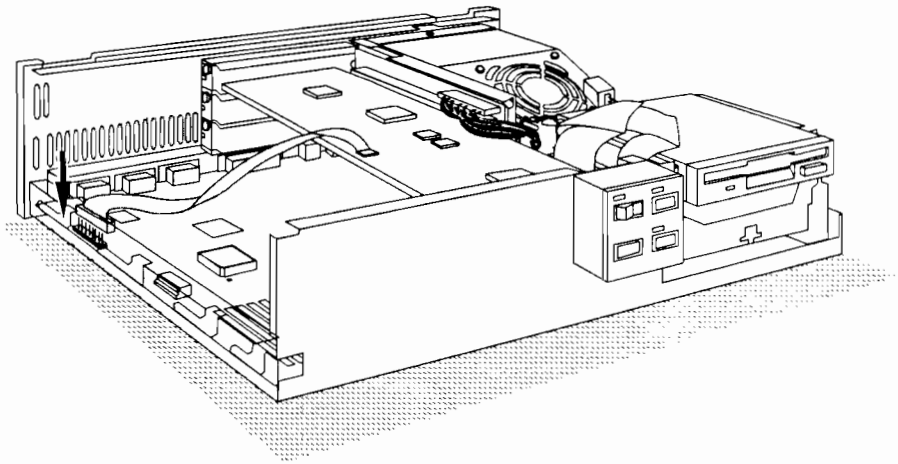


6. Secure the board by replacing the slot cover screw. If you loosened the screws on adjacent slots, tighten them.



7. If you have installed a video board:

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

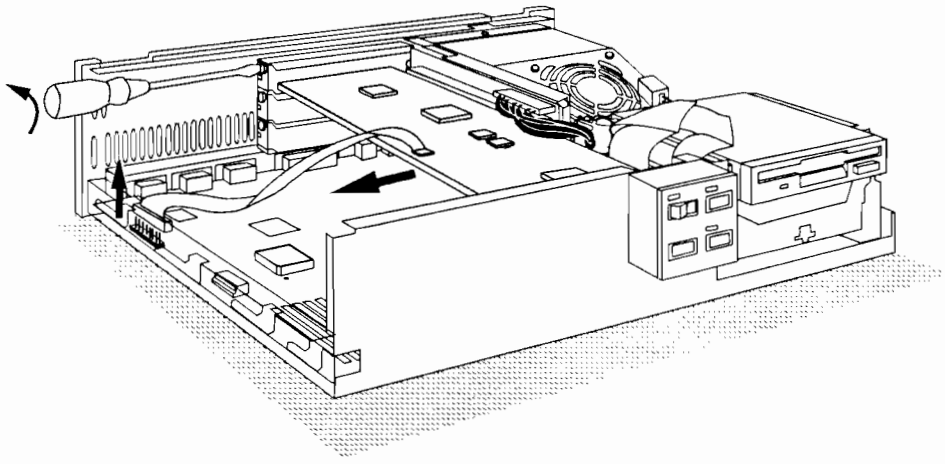


8. Install any other accessories before replacing the cover and running Setup (as described in chapter 6).

   If you installed a video board to replace the computer's built-in Super VGA controller, you must disable the built-in video controller using switch 2 on the system board (refer to chapter 9) and select your video board as the primary video adapter in the Setup Program (refer to chapter 6).

Removing Accessory Boards

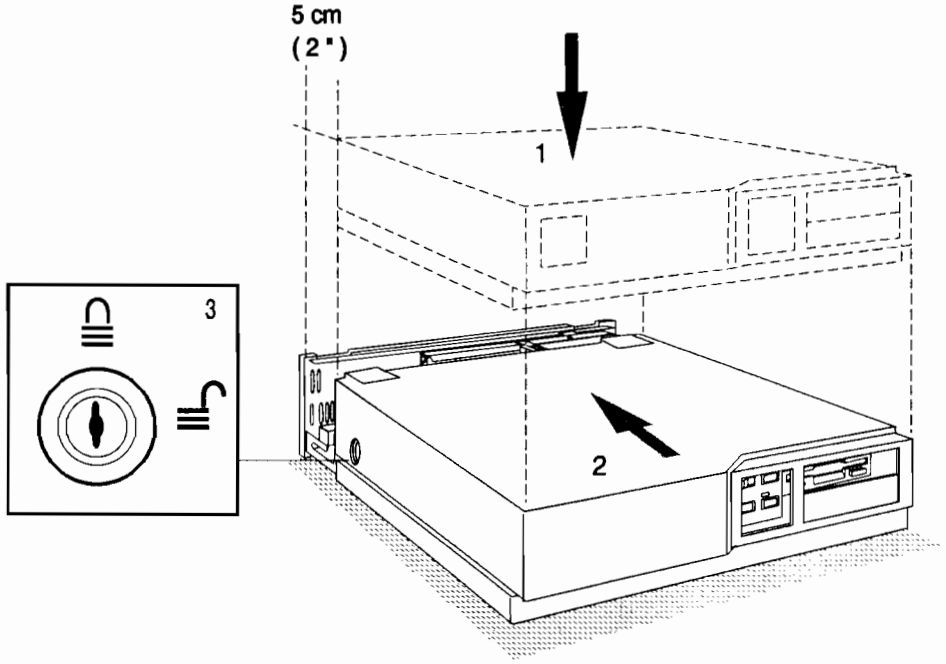
1. Disconnect all cables from the board.
2. Unscrew and remove the board's slot cover screw.
3. Firmly pull the board out of the socket.



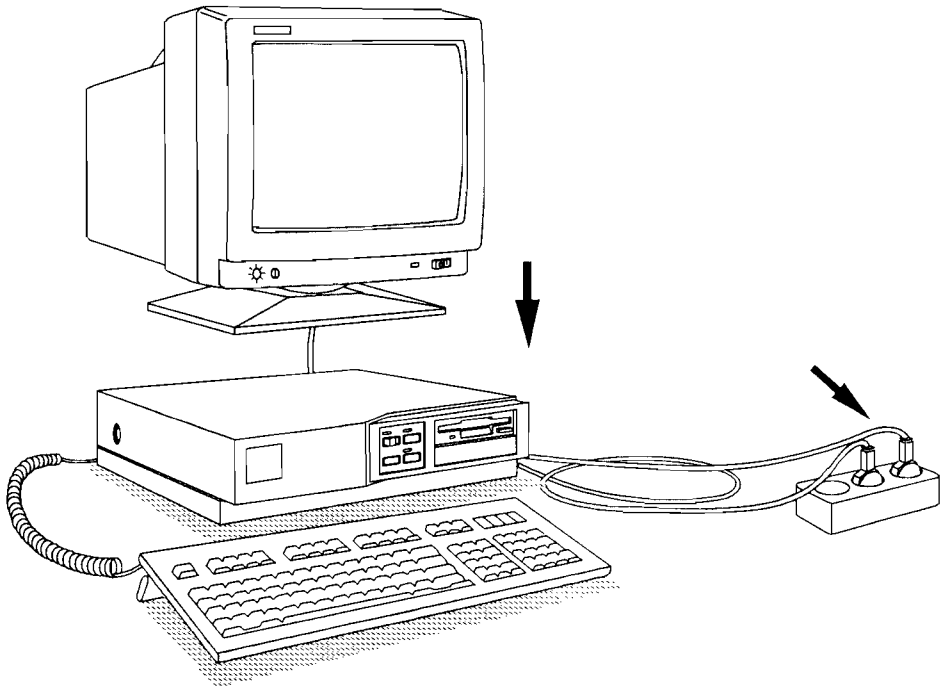
4. If you will not re-use the socket for another board, replace the slot cover (blank panel) over the empty slot.

Replacing the Cover

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



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



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

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

   Check that your computer has correctly recognized and configured:

   - the math coprocessor (if you installed one)
   - memory capacity (for example if you have 2 MB, base = 640 KB, reserved = 128 KB, extended = 1280 KB, and total = 2048 KB)
   - hard disk drives (for example, drive 1 = autodetected 52 MB, with built-in interface)
   - flexible disk drives (for example, drive 1 = 3.5 inch, 1.44 MB, with built-in interface)

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

Additional Items Installed

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

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

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

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

(circle your setting)

Total Memory (MB): 2 4 6 8 10 14 16

Math Coprocessor: YES NO

LAN Board IRQ: IRQ 3 IRQ 4 IRQ 5 IRQ 7

LAN Board Base Address (Hex): 200 240 300 340

Boot ROM Chip: YES NO

Other Items: _____

6

Configuring Your Computer Using Setup

Configuring Your Computer Using Setup

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

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

Run the Setup Program when:

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

```
Invalid configuration information - Run configuration utility
(Setup) Strike F1 to continue or F2 to run Setup
```

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

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

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

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

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

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

Starting the Setup Program

Starting the Setup Program from your hard disk

1. Make C your current drive, enter:

   `C:` (Enter)

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

   `CD C:\HPUTIL` (Enter)

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

3. Start the Setup program, enter:

   `SETUP` (Enter)

   A screen appears:

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

   The Setup Program menu will appear.

Starting the Setup Program on the Setup Diskette

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

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

   A screen appears:

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

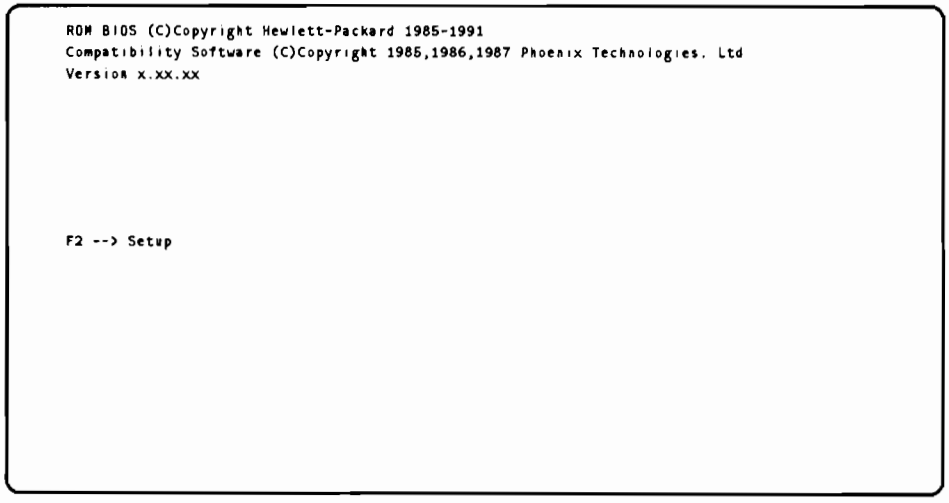
   The Setup Program menu will appear.

Starting the Setup in ROM

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

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

2. Check that this message appears.



   If an error message appears, refer to chapter 8.

3. When **F2-->Setup** is displayed, press (F2) to start Setup—this message appears for only a couple of seconds.

   A screen appears:

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

   The Setup Program menu will appear.

Setup Program Menu

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

```
                    386/16N Setup Version xx.xx.xx
 Date (Year/Month/Day)  . . . . . . . 1991 / 10 / 01
 Time (Hour/Minute/Second)  . . . . . 14 : 00 : 00

 Processor  . . . . . . . . . . . . . 80386 SX
 Coprocessor  . . . . . . . . . . . . Not Installed

 Memory Size (1 MB = 1024 KB)
  Base, on System Board . . . . . .   640 KB
  Base, on Accessory Card . . . . .     0 KB
  Base, TOTAL . . . . . . . . . . .   640 KB
  Reserved  . . . . . . . . . . . .   128 KB
  Extended  . . . . . . . . . . . .  1280 KB ( 1.2 MB)
  TOTAL . . . . . . . . . . . . . .  2048 KB ( 2.0 MB)

 Hard Disk Drives                                  Cyl Hds Sct Prec Land
  Drive 1 . . . . . . . . . . . . . Detected 52 MB  751   8  17   -1  750
  Interface . . . . . . . . . . . . Built-in

 Flexible Disk Drives
  Drive 1 . . . . . . . . . . . . . 3.5 inch, 1.44 MB
  Interface . . . . . . . . . . . . Built-in

 Security Features
<Previous Value=F7> <Next Value=F8>              <Save & Exit=F3> <Exit=F12>
```

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

```
                    386/16N Setup Version xx.xx.xx
 Security Features
  User Password . . . . . . . . . . . Not Set
  System Administrator Password . . . Not Set
  Network Server Mode . . . . . . . . Disabled
  Start From Flexible Disk  . . . . . Enabled
  Start From Hard Disk  . . . . . . . Enabled
  Flexible Disk Drives  . . . . . . . Enabled
  Hard Disk Drives  . . . . . . . . . Enabled
  Writing on Flexible Disks . . . . . Allowed

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

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

 Network Interface
  Remote start  . . . . . . . . . . . None

 User Preferences
  Key Click Volume (0 to 15)  . . . . 7
  Key Autorepeat Speed  . . . . . . . 20.0 per Second
  Delay Before Autorepeat . . . . . . 0.50 Second
        <Change Value=Enter>                <Save & Exit=F3> <Exit=F12>
```

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

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

To change the configuration:

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

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

To save your settings and exit Setup:

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

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

The First Time You Use Your Computer

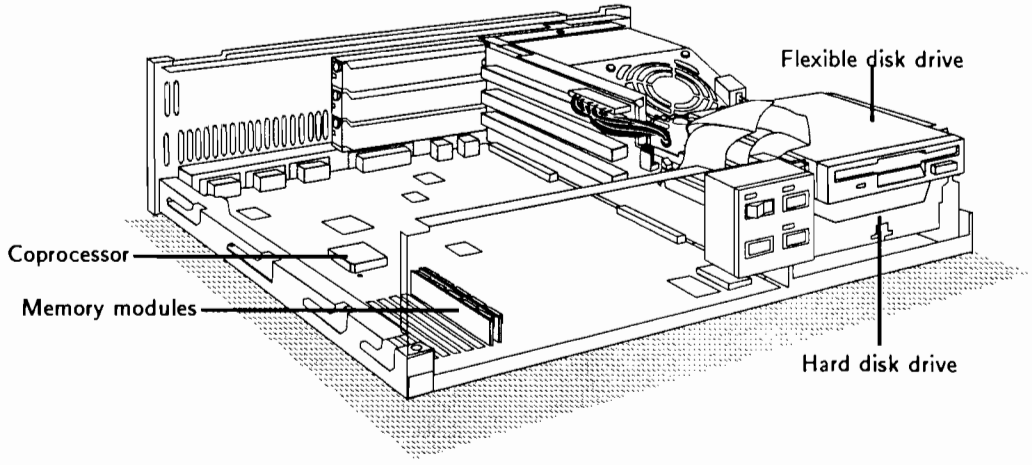
```
                    386/16N Setup Version xx.xx.xx
Date (Year/Month/Day) . . . . . 1991 / 10 / 01
Time (Hour/Minute/Second) . . . . . 14 : 00 : 00

Processor . . . . . 80386 SX
Coprocessor . . . . . Not Installed

Memory Size (1 MB = 1024 KB)
 Base, on System Board . . . . . 640 KB
 Base, on Accessory Card . . . . . 0 KB
 Base, TOTAL . . . . . 640 KB
 Reserved . . . . . 128 KB
 Extended . . . . . 1280 KB ( 1.2 MB)
 TOTAL . . . . . 2048 KB ( 2.0 MB)

Hard Disk Drives                                  Cyl Hds Sct Prec Land
 Drive 1 . . . . . Detected 52 MB    751   8  17   -1  750
 Interface . . . . . Built-in

Flexible Disk Drives
 Drive 1 . . . . . 3.5 inch, 1.44 MB
 Interface . . . . . Built-in
```



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

1. Set the correct date and time. (Press ▶ or ◀ to **highlight** the field. Press F1 for help, and F7 or F8 to change the setting.)

2. Check that your computer has automatically detected and configured:

   a. `Coprocessor`. (If you installed one.)

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

   b. `Memory Size`. For example if you have 2 MB:

```
Base, on System Board..   640 KB
Reserved..............    128 KB
Extended..............   1280 KB
TOTAL.................   2048 KB
```

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

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

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

   c. `Hard Disk Drives`. For example, drive 1 = autodetected 52 MB, with built-in interface.

      Note:

      - The capacity of the hard disk drive displayed in Setup may vary by up to 5% from the advertised capacity of the drive.
      - If you installed a non-HP hard disk drive, it may not be automatically detected and configured. Refer to "Configuring a Non-HP Hard Disk Drive" later in this chapter for details on how to configure it in Setup.

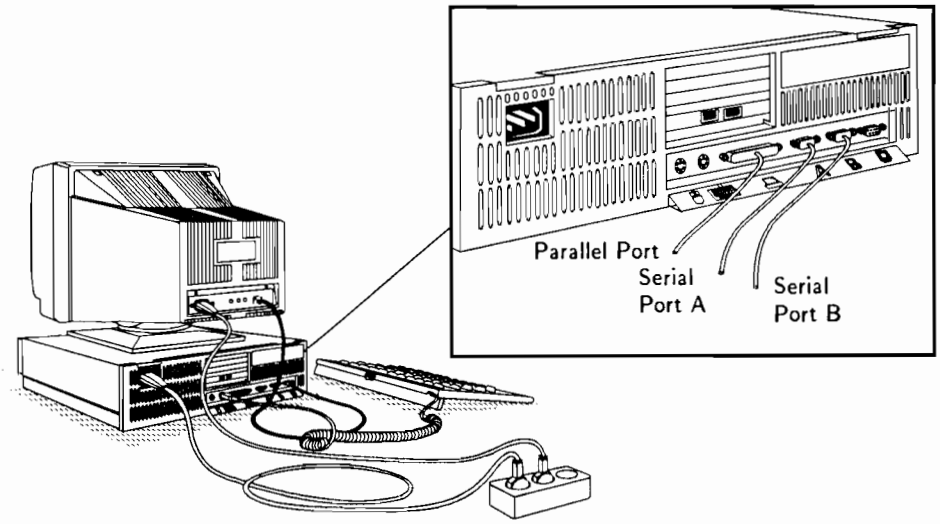
   d. `Flexible Disk Drives`. For example, drive 1 = 3.5 inch, 1.44 MB, with built-in interface.

3. If you connected a parallel device, set
   `Parallel Port` to **`Parallel 1 (378H, IRQ7)`** .
4. If you connected a serial device:
   a. If you used serial port A, set
      `Port A` to **`Serial 1 (3F8H, IRQ4)`** .
   b. If you used serial port B, set
      `Port B` to **`Serial 2 (2F8H, IRQ3)`** .
5. If you installed accessory boards that need to use Parallel 1, Serial 1 or Serial 2, disable the corresponding port on your computer.

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

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

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



6. Select your User Password and System Administrator Password. If your computer is operating as a server, enable Network Server Mode.

   (The operation of the passwords and Network Server Mode is described in chapter 3.)

```
                    386/16N Setup Version xx.xx.xx
Security Features
 User Password . . . . . . . . . . . Not Set
 System Administrator Password . . . Not Set
 Network Server Mode . . . . . . . . Disabled
```

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

```
 Start From Flexible Disk  . . . . . Enabled
 Start From Hard Disk  . . . . . . . Enabled
 Flexible Disk Drives  . . . . . . . Enabled
 Hard Disk Drives  . . . . . . . . . Enabled
 Writing on Flexible Disks . . . . . Allowed
```

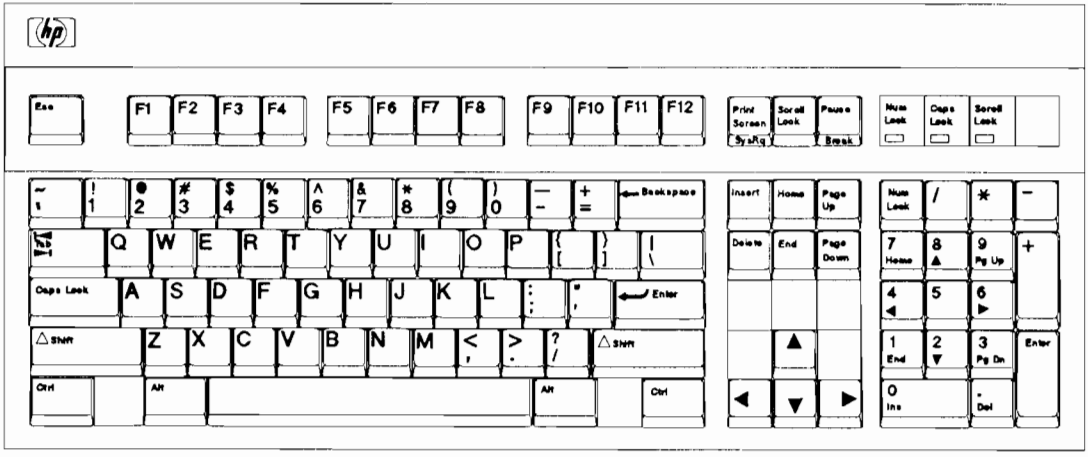
8. Select the user preferences—key repeat rate and click volume—you need. (Chapter 3 describes the user preferences.)

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

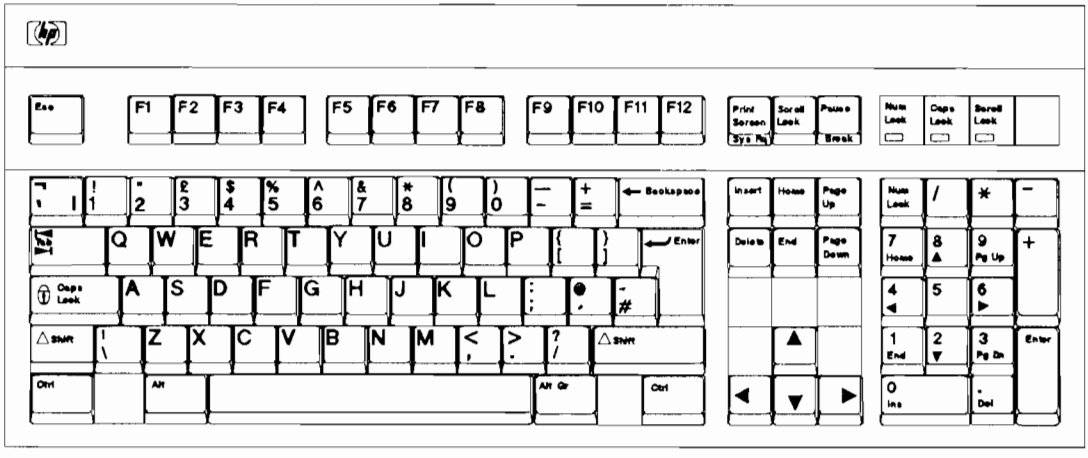
```
                    386/16N Setup Version xx.xx.xx
User Preferences
 Key Click Volume (0 to 15)  . . . . 7
 Key Autorepeat Speed  . . . . . . . 20.0 per Second
 Delay Before Autorepeat . . . . . . 0.50 Second
 Power-on NumLock State  . . . . . . On
 Screen Blanking . . . . . . . . . . Enabled
```

The remainder of this chapter describes other items in the Setup Program that you can change.

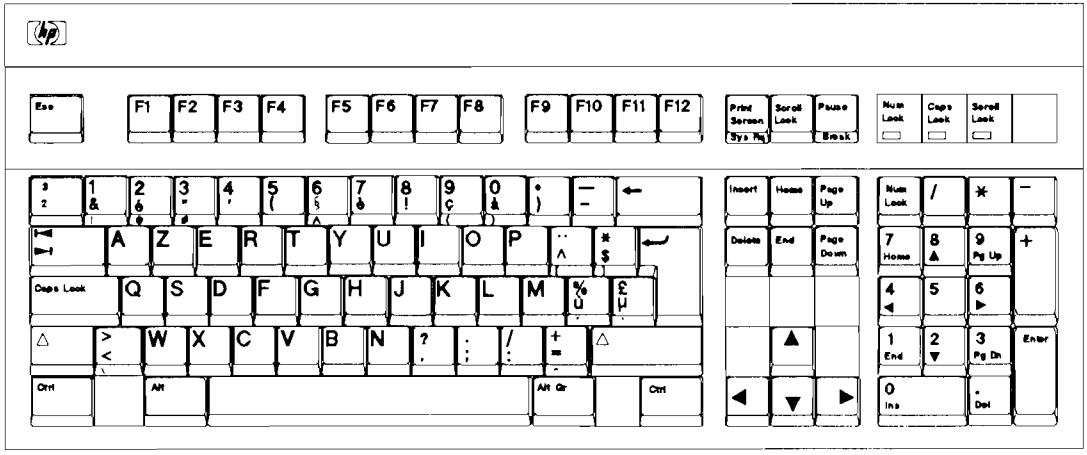
If you have re-mapped your keyboard using MS-DOS commands, refer to the following illustrations for the keyboard layouts.



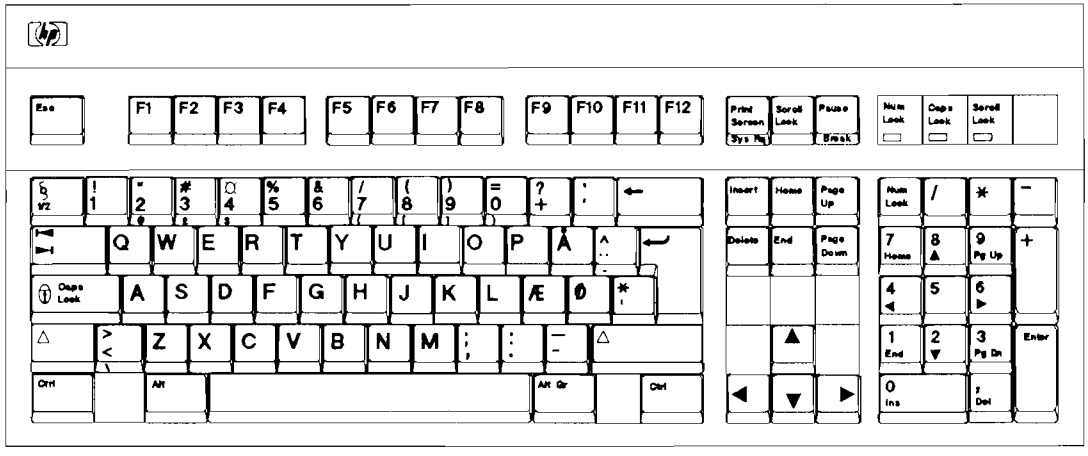
U.S.



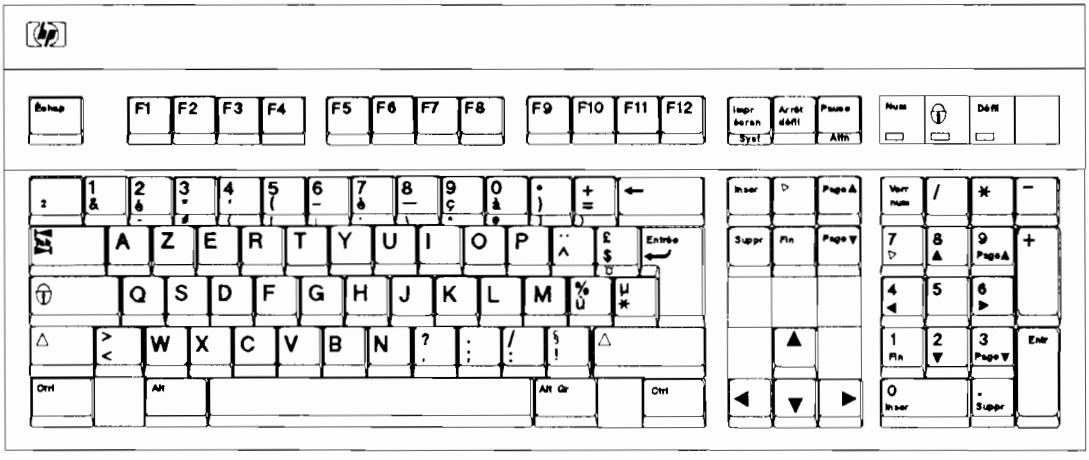
U.K./English



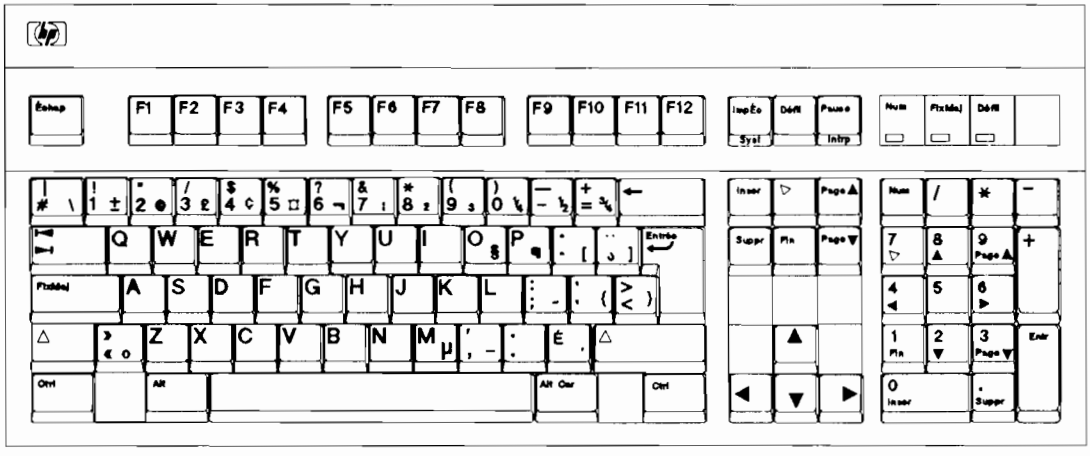
Belgian



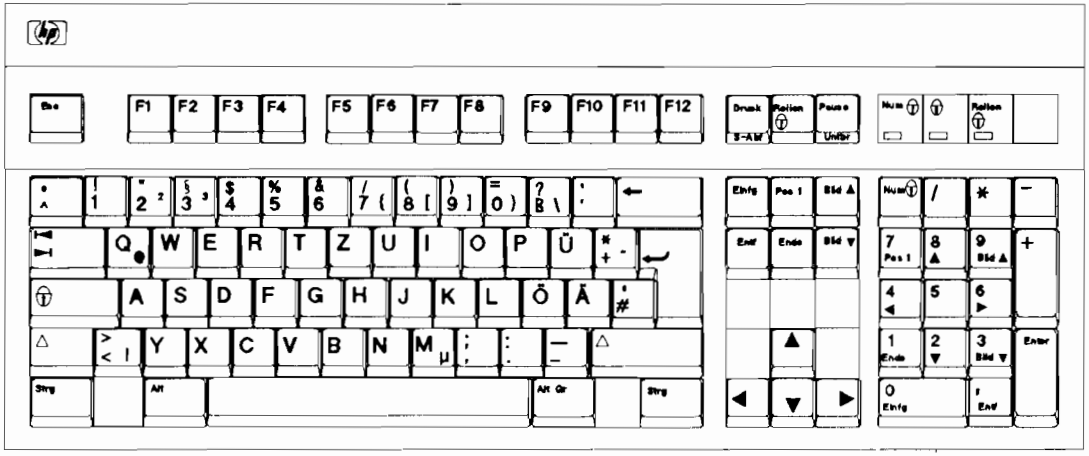
Danish



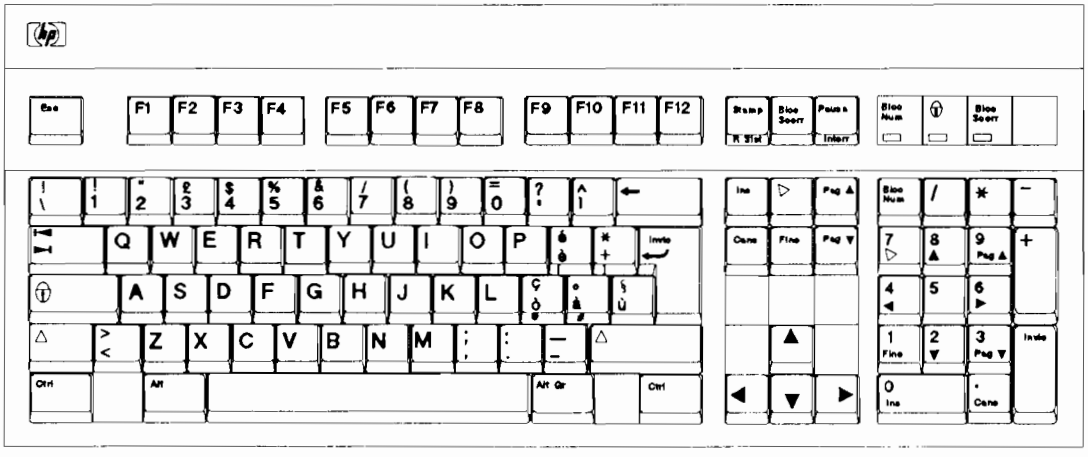
French



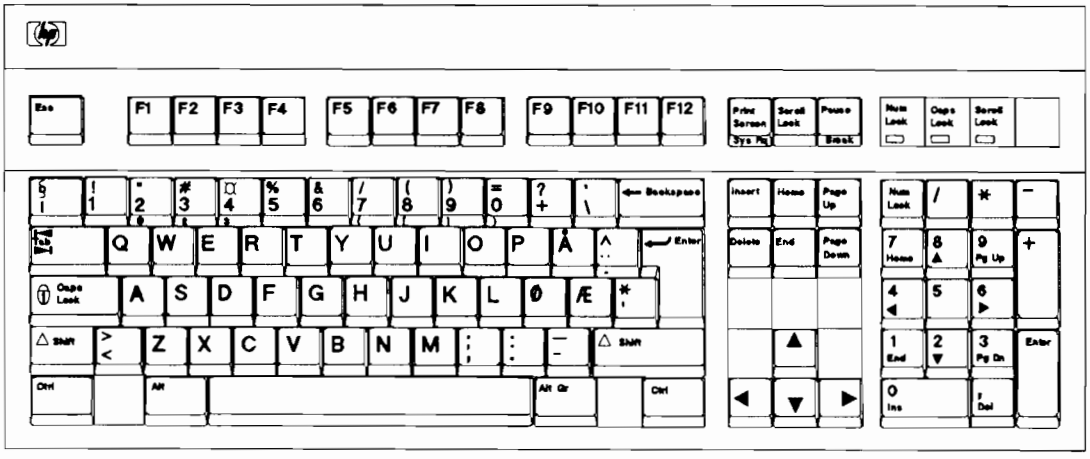
French Canadian



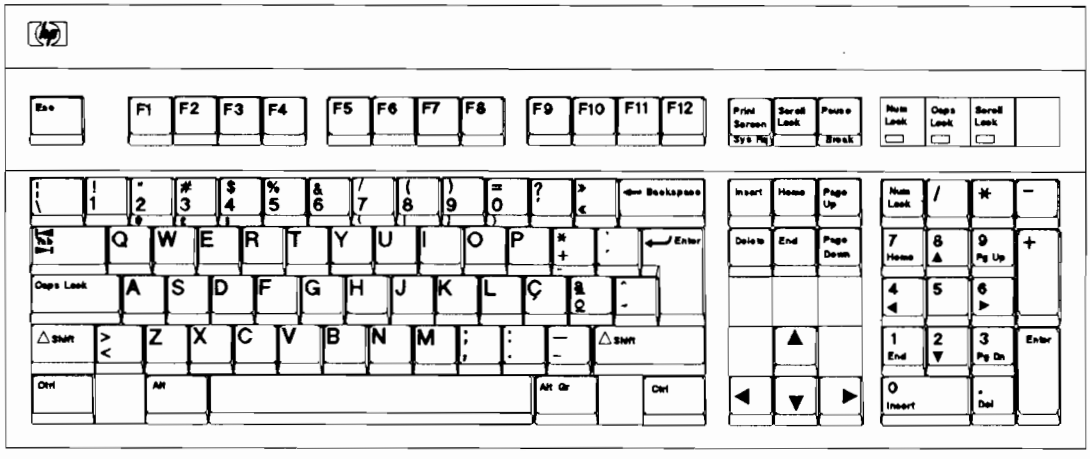
German



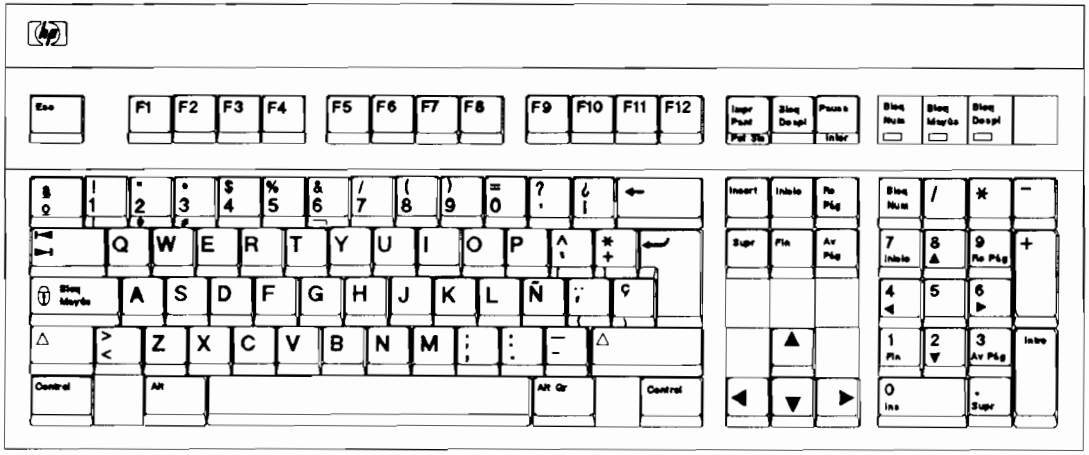
Italian



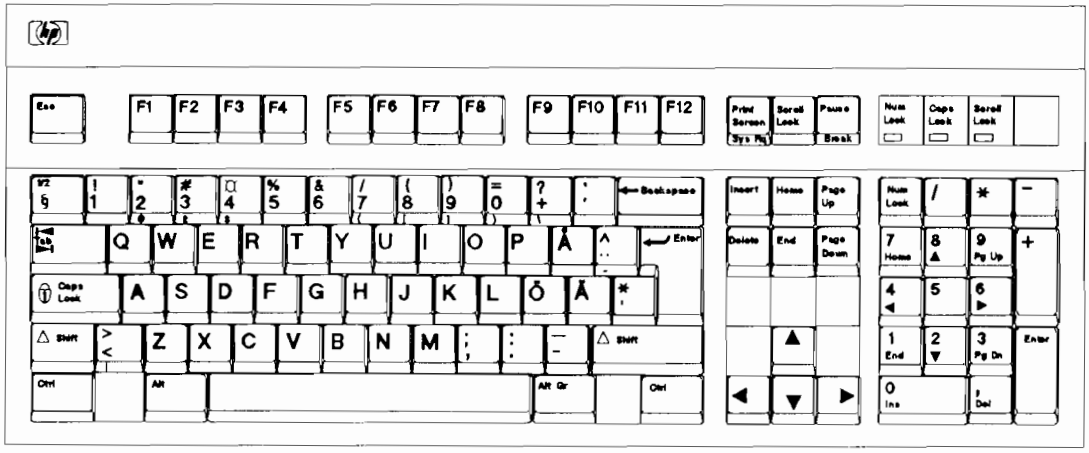
Norwegian



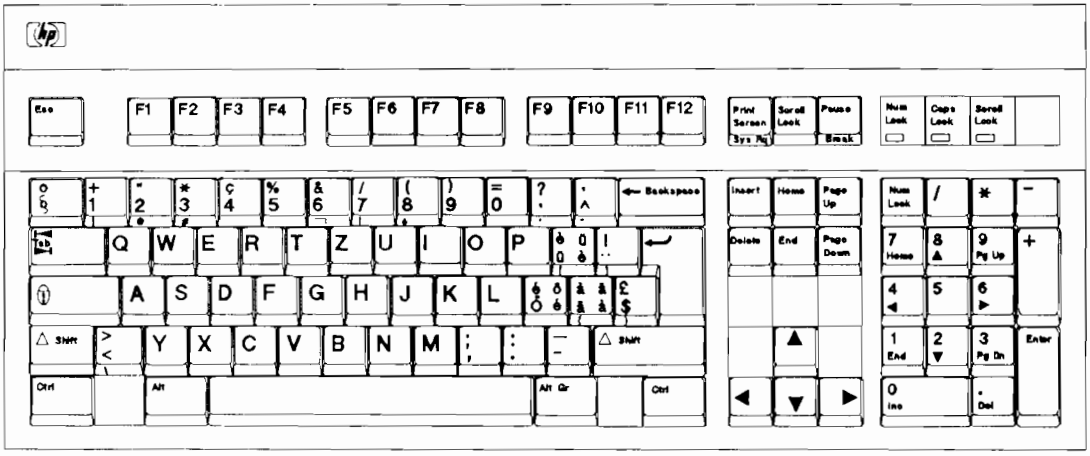
Portuguese



Spanish



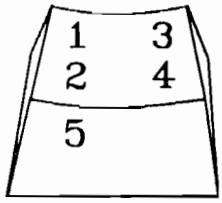
Swedish



Swiss French/Swiss German

Special Keys on European Keyboards

Some keycaps on non-US keyboards can have up to five symbols on them. This section explains how to access these symbols. The following explanation refers to the illustration below.



Positions 1 and 2

These positions are common to most keyboards.

To type the symbols at *position 1* you must hold down one of the Shift keys while pressing the key with the symbol you require.

To type the symbols at *position 2* you simply press the key with the symbol you require.

Positions 3 and 4

These positions are only used on the *Swiss/French keyboard*.

To type the symbol at *position 3* you must hold down one of the Shift keys while pressing the key with the symbol you require.

To type the symbol at *position 4* you simply press the key with the symbol you require.

Position 5

This position is common to most European keyboards.

To type symbols at *position 5* you must hold down the AltGr key while pressing the key with the symbol you require.

Your Computer's Physical, Environmental and Electrical Specifications

Physical Characteristics:	
Weight:	9 kilograms (20 pounds)
Dimensions:	39.5 cm (D) by 38 cm (W) by 10 cm (H) (18 inches by 15 inches by 4 inches)
Footprint:	0.15 m^2 (1.8 sq ft)
Storage temperature:	-40 °C to 70 °C (-40 °F to 158 °F)
Storage humidity:	8% to 80% (relative)
Operating temperature:	5 °C to 40 °C (41 °F to 104 °F)
Operating humidity:	15% to 80% (relative)
Electrical Characteristics:	
Input voltage:	110 V or 220 V
Input frequency:	50 Hz or 60 Hz
Power consumption:	160 W

The 80386SX Microprocessor, I/O Addresses and IRQs

The Vectra 386/N is a 16-bit ISA (Industry Standard Architecture) computer that uses the Intel 80386SX microprocessor. The 80386SX microprocessor is a 32-bit microprocessor (like the 80386 microprocessor).

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

  The 80386SX will run application programs developed for computers based on the 8086, or 8088, or 80286 or 80386 microprocessor.

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

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

Interrupts, IRQ Numbers and I/O Addresses

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

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

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

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

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

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

A

Warranty Information

Warranty Information

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

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

One-Year Limited Hardware Warranty

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

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

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

Limitation of Warranty

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

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

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

Limitation of Liability and Remedies

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

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

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

Obtaining Warranty Service

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

The product must be returned to one of the authorized service facilities within the country of original purchase. The customer must be prepared to provide proof of the purchase date. 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 the return of products to the customer, except for products returned to the customer from another country.

Under separate contractual agreement for onsite support with the customer, HP will repair at the customer's site. If no contractual agreement exists, HP may still repair onsite if requested by the customer. In that case, the customer is responsible for travel charges.

HP Software Product License Agreement and Warranty

Important: This section contains your software product license agreement and warranty statement. Please read it carefully before opening the media envelope. The right to use this HP software product is sold only on the condition that the customer agrees to the following License. If you do not agree to the terms of the License, you may return the unopened package for a full refund. HOWEVER, OPENING THE MEDIA ENVELOPE INDICATES YOUR ACCEPTANCE OF THESE TERMS AND CONDITIONS.

Software License Agreement

In return for the payment of the one-time fee for this software product, customer receives from Hewlett-Packard (HP) a license to use the software product subject to the following terms and conditions:

- The product may be used without time limit on one personal computer or workstation.
- A separate license agreement and fee is required for each personal computer or workstation on which the product is used.
- The software product may not be duplicated or copied except for archive purposes, program error verification, or to replace defective media, and all copies made must bear the copyright notices contained in the original.
- This license and the software product may be transferred to a third party, provided the third party agrees to all the terms of this License Agreement and customer does not retain any copies of the software product.
- The customer may not reverse engineer, disassemble, or decompile the software.
- Purchase of this license does not transfer any right, title, or interest in the software product to customer except as specifically set forth in this License Agreement. Customer is on notice that the software product is protected under the copyright laws. This software product may have been developed by an independent third party software supplier named in this package,

which holds copyright or other proprietary rights to the software product. Customer may be held responsible by this supplier for any infringement of such rights by customer.

- HP reserves the right to terminate this license upon breach. In the event of termination, customer will either return all copies of the product to HP or, with HP's prior consent, provide HP with a certificate of destruction of all copies.
- In the event customer modifies the software product or includes it in any other software program, upon termination of this license customer agrees either to remove the software product or any portion thereof from the modified program and return it to HP or to provide HP with a certificate of destruction therefor.

Software Product Limited Warranty

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

Ninety-Day Limited Software Warranty

HP warrants for a period of ninety days from the date of purchase that the software product will execute its programming instructions when properly installed on the personal computer or workstation indicated on this package. HP does not warrant that the operation of the software will be uninterrupted or error free. In the event that this software product fails to execute its programming instructions during the warranty period, customer's remedy shall be to return the diskettes or tape cartridges ("media") to HP for replacement. Should HP be unable to replace the media within a reasonable amount of time, customer's alternate remedy shall be a refund of the purchase price upon return of the software product and all copies.

Media

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

Limitation of Warranty

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

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

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

Limitation of Liability and Remedies

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

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

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

Obtaining Warranty Service

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

Glossary

Glossary

Analog display (AD)
A display that uses variable color control voltages to display a very large number of colors, but requires very few inputs.

automatic speed switching
An optional parameter in the HP Utility EXMODE which instructs the computer to run at its highest speed, switch automatically to 8 MHz when reading from a diskette, then switch back to its highest speed.

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

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

BIOS (ROM BIOS)
Basic Input Output System. Code in your computer's ROM (Read Only Memory) that provides the power-on self-test and other operating functions.

board
A printed circuit assembly (PCA). Also called a card or adapter.

boot ROM chip
A ROM (Read Only Memory) chip used to start the computer from the operating system on a LAN server

bus
A common data path (electrical connection) over which information is transported.

CAD
Computer-aided design. The capability of a computer to be used for automated design through visual devices.

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

configuration
The hardware you have connected to form your computer, and the way you have instructed your computer to use the hardware. Hardware can include drives, boards, printers, displays, and so on.

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

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

digital display
Also called TTL. A type of display that switches signals on or off to determine display color. Types of digital displays include the Enhanced Color Display or Monochrome Display. The HP Super VGA does not support digital displays, it only supports analog displays.

DIP switch
Dual Inline Package switch. A series of small, two-position switches which allow users to select and change options on computer boards, printers, and other peripherals.

DMA channel
Direct Memory Access channel. A circuit that facilitates high-speed transfer of information between a device and the system memory. DMA channels may work simultaneously.

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

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

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

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

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

expanded memory
Memory that an expanded memory manager brings from extended memory above 1 MB into reserved memory below 1 MB for applications that can only access memory below 1 MB. This makes more memory available for large MS-DOS applications (such as spreadsheets), CAD programs, network drivers, disk caching, and RAM disk.

extended memory
Memory above 1 MB. It is typically used for print spoolers, RAM disk, and disk caching. Operating System/2, UNIX, and XENIX operating systems use extended memory.

eXtended Memory Specification (XMS)
A software specification for managing memory above 640 KB that is not managed by MS-DOS or an expanded memory manager.

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

function
The work that a board performs. For example, one function of the HP Vectra PC system board is controlling video BIOS shadowing. A function of the keyboard/mouse/serial port board is determining the keyboard language. Boards can have more than one function.

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

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

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

HP utilities
These are utilities for use with MS-DOS. The HP Utilities are: EXMODE and SETUP.

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

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

initialization
When referring to a hard disk drive, initialization is the process of applying a low-level format to the drive. Initialization is the process that must be completed prior to doing a standard drive format (sometimes called a high-level format).

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

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

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

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

LAN node
Computer connected to a LAN (local area network).

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

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

memory
The computer's activity center, where programs and data are kept temporarily while the microprocessor does its assigned task. Memory does not distinguish between programs and data.

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

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

MS-DOS prompt
Your MS-DOS operating system's `C>` symbol that appears on your screen when you type `C:` Enter

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

Network Server Mode
A security measure that prevents unauthorized use of an input device (like a keyboard or mouse) while your computer is running as an unattended network server. The computer will start, but no data is received from the keyboard until you enter a password.

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

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

option
An accessory (other than a board) used with your computer. For example, a flexible disk drive and a mouse are both options. Note that some options connect to a board, while others do not.

pages
Blocks of memory (16 KB each) stored in extended memory above 1 MB which an expanded memory manager brings into memory below 1 MB so that MS-DOS applications can access it.

page frame
An unused block of addresses under 1 MB to which your expanded memory manager remaps pages of information stored in expanded memory. This swapping is done because MS-DOS applications can only use information that has a logical address under 1 MB.

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

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

peripheral equipment
Auxiliary equipment connected to a computer (for example, display, printer, keyboard).

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

power-on password
A security measure that you can use to prevent unauthorized use of your computer. After setting the User Password using Setup, you will be prompted for it with a key symbol (o-n) every time you start your computer.

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

primary display
The display monitor that is active when you switch on your system.

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

reserved memory
640 KB to 1 MB of address space. It is usually reserved for ROM, video, and expanded memory. Applications cannot directly use these addresses.

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

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

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

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

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

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

system board
The main circuit board into which all other boards, such as the memory board and video board, are connected. Also called the mother board.

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

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

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

User Password
A password that protects the computer's user preferences configuration settings. It allows the keyboard and mouse to be locked using the  switch, and the computer to be locked by the power-on password when it is started.

utility
A program that carries out routine procedures to make computer use easier.

A display that is capable of showing a wide range of resolutions due to its ability to scan at various horizontal and vertical frequencies.

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

VGA (Video Graphics Array)
A standard for the video display. The VGA standard is for a graphics display resolution of up to 640 by 480 pixels. The extended VGA standard if for a resolution of up to 800 by 600 pixels. The super VGA standard is for a resolution of up to 1024 by 768 pixels.

Virtual Control Program Interface specification (VCPI)
A software interface standard that specifies how 80386SX control programs and MS-DOS extenders communicate with each other.

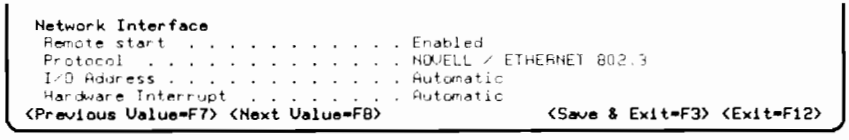
Index

Index

Configuring the Network Interface

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

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



1. **Remote Start**. Enable Remote Start to allow your computer to start from the operating system on your LAN server. You should also disable starting from your hard and flexible disk drives.
2. **Protocol**. Select the network operating system used on your LAN server. This allows your computer to start from the correct LAN operating system.
3. **I/O Address**. Set the I/O base address to be used by your boot ROM chip when you start the computer. Select the same I/O base address as the LAN adapter board (default: 300 hex). Or select **Automatic** if you want the boot ROM chip to make an automatic selection.
4. **Hardware Interrupt**. Set the IRQ number to be used by the LAN adapter board when you start the computer. (After the computer is started, the LAN adapter board uses the IRQ programmed by the LAN drivers.)

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

Configuring Computer Speed and Cache Memory

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

```
Computer Speed . . . . . High (16 Mhz)
Memory Cache . . . . . On
```

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

   Set to **High** for maximum performance.

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

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

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

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

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

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

Configuring Your Video

You can configure your computer's video:

```
Primary Video Adapter  . . . . . EGA/VGA or Similar

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

1. **Primary Video Adapter**. Select the video adapter used by the computer.

   If you use the built-in Super VGA controller, select **EGA/VGA or Similar**.

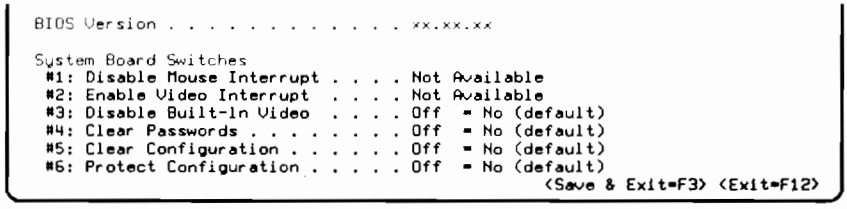
   If you have installed a video board:

   - If the video board uses a VESA video pass-through connection to your built-in Super VGA controller, your "Primary Video Adapter" is your computer's built-in Super VGA.
   - If you install a video adapter board in place of the built-in Super VGA controller, disable the built-in video using a switch on the system board. (Refer to chapter 9.) The primary video is the video board you install. Set **Primary Video Adapter** to the characteristics of the board you installed.

2. **VGA Enhanced/Ergonomic Modes**. To obtain the best, flicker-free, video display, select the highest refresh rate supported by your display for each video mode. (Refer to your display's manual.) Do NOT set a mode higher than your display supports, as you may cause damage to the display.

Displaying Information Fields

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



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

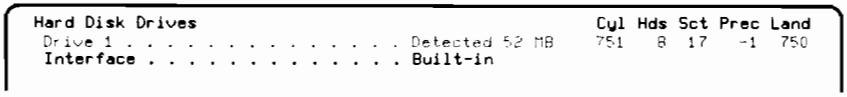
   Switches marked **Not available** cannot be read by the Setup Program.

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

Configuring a Non-HP Hard Disk Drive

Note: You need to use the Setup Program from the Setup Program and HP Utilities diskette to configure non-supported disk drives.

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



If you installed a non-HP hard disk drive, it may not be automatically detected and configured. In this case, the hard disk drive information on the Setup Program be incorrect or missing.

You will need to change:

- "Drive 1" field to **Custom**
- "Cyl", "Hds", "Sct", "Prec" and "Land" to your hard disk settings

where:

Cyl	is the number of cylinders (or "track")
Hds	is the number of heads (or "sides")
Sct	is the number of sectors per cylinder
Prec	is the write precompensation
Land	is the landing zone

You can obtain this information from:

- The drive table supplied with the Setup Program: Change the "Drive 1" field to **Custom** and press (Enter), a drive table appears. Select the hard disk and press (Enter).
- The manual or data sheet supplied with the disk drive.
- The hard disk drive manufacturer.

If the values you configure are incorrect, then the following conditions may occur.

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

Notes:

1. Current hard disk drives usually have:
   - write precompensation = -1
   - landing zone = (number of cylinders) -1
2. If you install a hard disk drive with more than 1023 cylinders, these drives cannot be used by your MS-DOS or OS/2 operating system (even if they are correctly detected and configured by Setup).

   In certain cases, it is possible to work around this limitation by configuring "Custom" parameters that differ from the detected physical parameters.

   - If the drive is listed in the drive table displayed when you select **Custom** and press (Enter), it will be listed twice: once with the physical parameters you must set for use with the UNIX operating system, and once with the parameters you must set for use with MS-DOS and OS/2.
   - If the drive is not listed in the drive table, set the Cyl (cylinders) and Hds (heads) as follows:

$$Cyl = \left(\frac{cylinders}{2^n}\right)$$

$$Hds = (heads)(2^n)$$

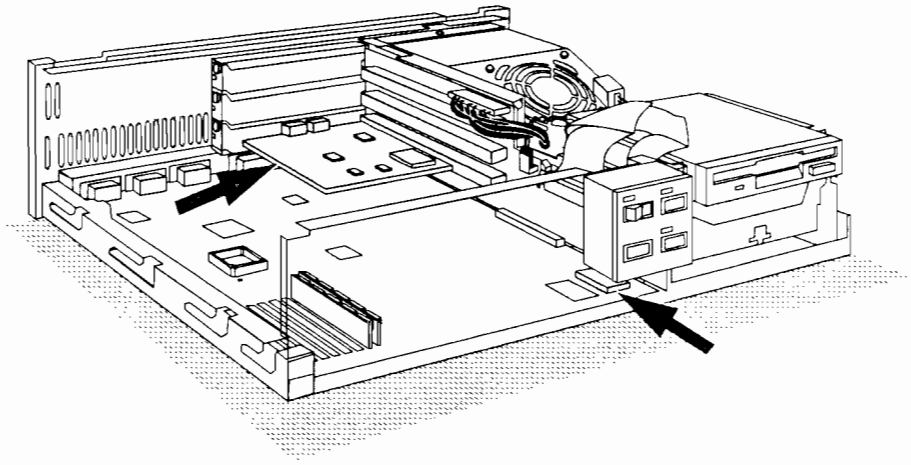
   Select a value for 2^n to get the number of cylinders below 1023.

7

Configuring Your LAN

Configuring Your LAN

Some computer models are delivered with a boot ROM chip, and a LAN (local area network) adapter board—the HP 27245 PC Link Adapter Board—installed in the bottom accessory slot (slot 1).



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

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

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

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

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

Checking the Configuration of the HP LAN Adapter Board

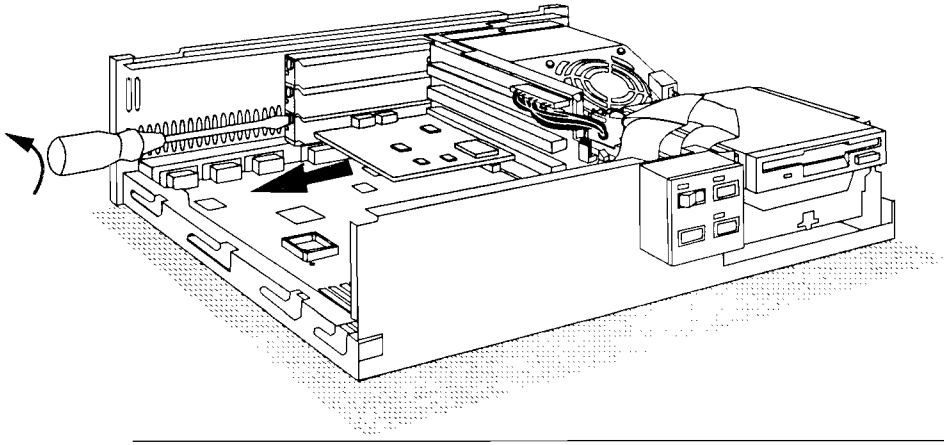
The LAN adapter board's I/O base address and link beat is configured using switches on the board.

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

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

Configuring the I/O Base Address and Link Beat

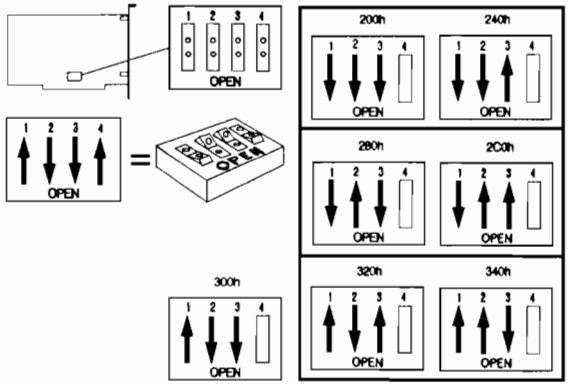
1. Switch off the computer. Disconnect the power cord and LAN cable.
2. Remove the cover. (Refer to chapter 5.)
3. If access to the LAN adapter board is prevented by an accessory board in slot 2 or 3, remove the LAN adapter board:
   a. Unscrew and remove the LAN adapter board's slot cover screw.
  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



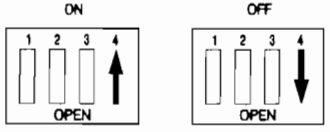
4. Select the I/O base address and link beat. Choose an address that is not used by another accessory. Enable the link beat if you are using the LAN adapter board on a 10BASE-T network.

If your board has DIP switches, select:

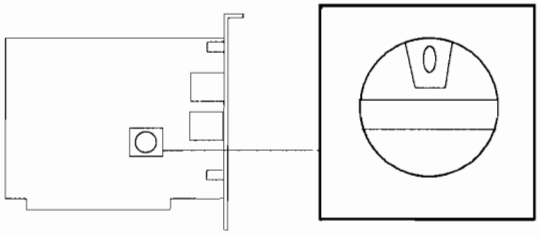
- I/O base address on switches 1, 2 and 3 (default: 300 hex)



- Link beat on switch 4 (default: ON)



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



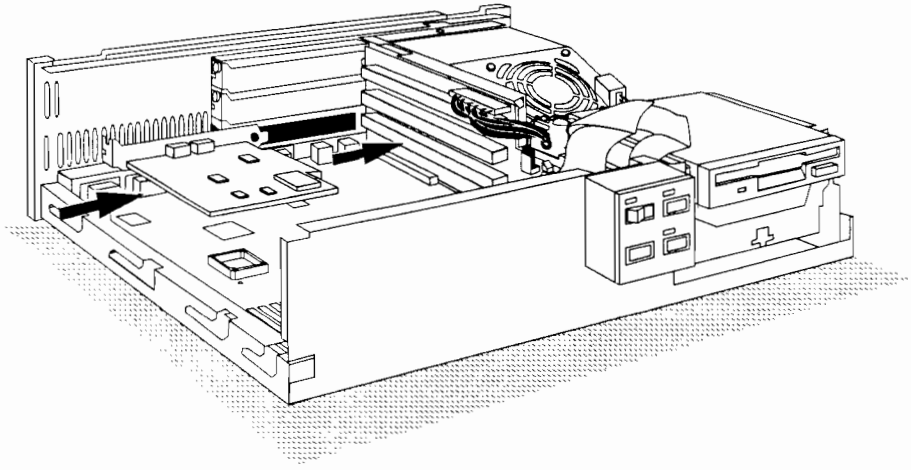
Switch Position	Link Beat	I/O Base Address
0	ON	300 hex (default)
1		340 hex
2		320 hex
3		300 hex
4		2C0 hex
5		280 hex
6		240 hex
7		200 hex
8	OFF	300 hex
9		340 hex
A		320 hex
B		300 hex
C		2C0 hex
D		280 hex
E		240 hex
F		200 hex

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

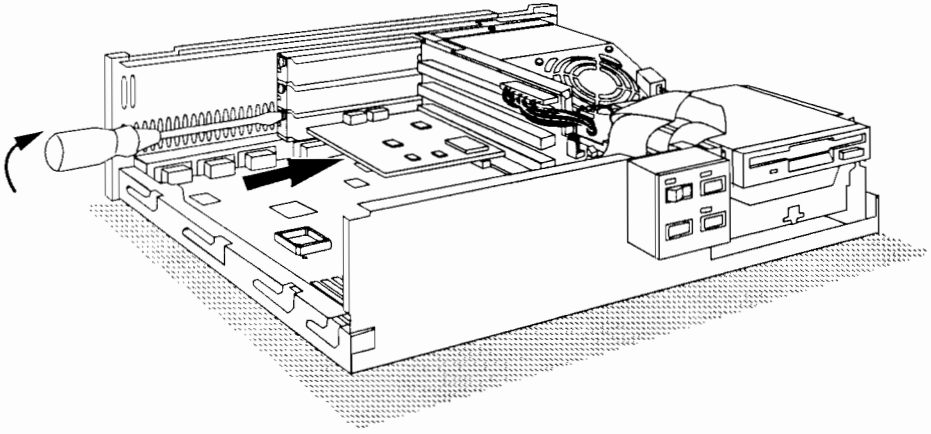
6. If you removed the LAN adapter board, re-install it:

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

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



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



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

Installing Your LAN Drivers and Configuring the Network

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

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

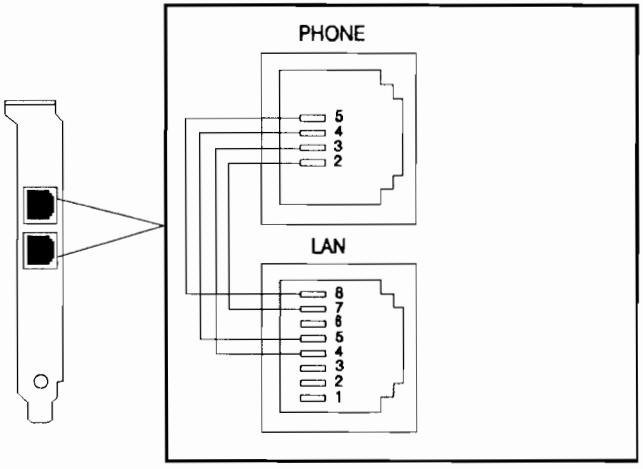
Your network's System Administrator must install the LAN driver in your computer and configure it to start from the LAN server.

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

- the *HP LAN System Administrator Manual for the HP Vectra 386/N PC* supplied with your computer
- the Support Disk supplied with your computer

Your LAN Adapter Board's Connectors

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



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

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

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

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

For the German Federal Republic.
Funkentströrung Deutschland (German EMI Compliance)
Herstellerbescheinigung

Hiermit wird bescheinigt, daß dieses Gerät 27245A in Übereinstimmung mit den Bestimmungen von Postverfügung 1046/84 funkentstört ist.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

VCCI Class 1 (for Japan only)

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取扱説明書に従って正しい取り扱いをして下さい。

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

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

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

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

The telephone interface should only be used in the USA.

8

Troubleshooting and Error Messages

Troubleshooting and Error Messages

If You Need to Clean Your Computer

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

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

If You Lose Your Key

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

Contact your HP dealer for installing the new lock.

If Your Computer Does Not Work: No Error Messages

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

If Your Application Does Not Work

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

If Your Printer Does Not Work

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

If Your Display Does Not Work

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

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

If Your Flexible Disk Drive Does Not Work

1. Ensure you are using a diskette that works.
2. Clean the flexible disk drive using a cleaning diskette. Contact your HP dealer for assistance.

If Your Mouse Does Not Work

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

If You Can't Use the Setup Program

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

If You Forget Your Password

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

If an Error Message Appears

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

Power-On Self Test (POST) Error Messages

If an error occurs when you start the computer, an error code appears at the top of the screen indicating the type of error:

```
8310
```

Error Code	Meaning
000F	80386 error
0010	Bad checksum on BIOS ROM 0
0011	Bad checksum on BIOS ROM 1
011X	RTC problem (Real Time Clock)
0120	RTC failed to tick
0240	CMOS/RTC has lost power—replace the battery
0241/0280	Invalid checksum on CMOS
02C0/02C1	Invalid checksum on EEPROM
0300/033F	8042 error
0340/03FF	Keyboard or mouse error
050X/054X	Serial/parallel port error
06XX	Key stuck error
4XXX 61XX 62XX 63XX CXXX	Memory errors—check that the memory modules are correctly installed

Error Code	Meaning
65XX	Reserved memory error—check that the memory modules are correctly installed
6510	Video ROMs failed to be shadowed
800/801	Boot ROM error—check that the boot ROM is correctly installed
8XXX	Hard disk error—check that the hard disk drive is correctly installed and configured in Setup
9XXX	Flexible disk (or Setup) error—check that the flexible disk drive is correctly installed and configured in Setup
1100/1201	Timer chip error
20XX	Memory error—check that the memory modules are correctly installed
21XX-22XX	DMA error
7XXX	8259 interrupt controller error
A0XX	Math coprocessor error—check that the coprocessor is correctly installed
B300	Cache memory error
X is any hex digit.	

Error Messages

If an error occurs when you are using the computer, a message appears:

```
Invalid configuration information - Run configuration utility
(Setup)  Strike F1 to continue or F2 to run Setup
```

Explanation: The configuration of your computer (number and type of disk drives, for example) is stored in the computer's CMOS memory. When the computer is restarted, the actual configuration found is compared with the information in the CMOS memory. If the two do not match, the above error message is displayed.

Press F1 to continue operation and then insert the Setup Program diskette and run Setup to verify the configuration. (Refer to chapter 6.)

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

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

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

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

This can occur if the diskette has not been inserted correctly. If this is the problem, re-insert the diskette and type R (for Retry).

It can also occur if the printer is not working—check to see if the printer is on and ready to print.

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

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

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

Boot ROM Error Messages

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

```
Error initializing Network Interface Board
```

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

```
Error reading boot disk image file
```

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

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

```
Error reading configuration file
```

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

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

If You Need to Change the Battery

WARNING

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

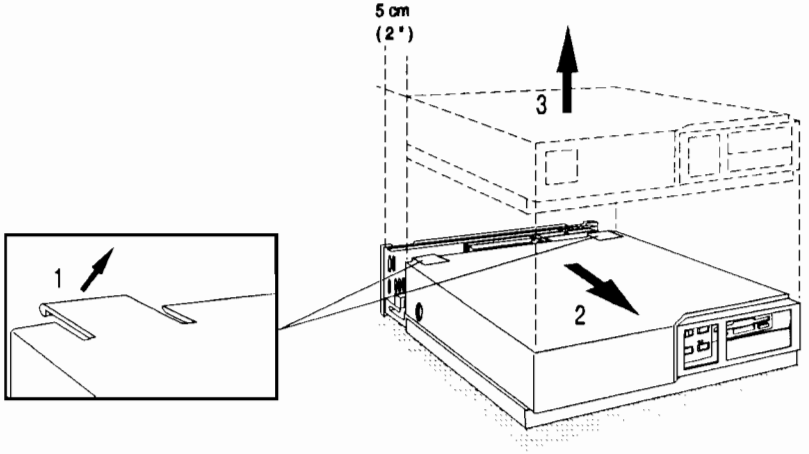
The battery pack in your computer maintains the correct date and time when your computer is turned off. When the battery pack wears out (every three to five years), you will see this message when you turn on the computer:

0240

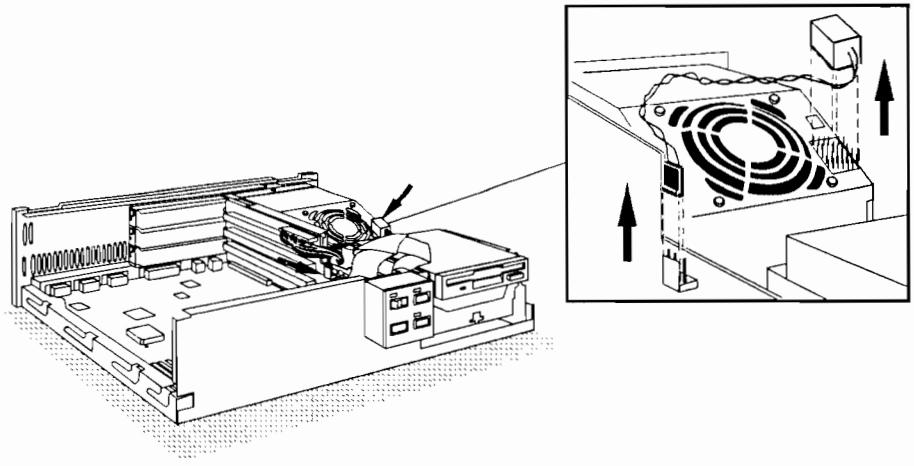
You should replace the battery pack as soon as it wears out because the files created by your application programs use the time and date from your computer's clock.

To change the battery pack, follow the steps below.

1. Switch off your computer and disconnect the power cords. (This will not affect your computer's configuration, only the time and date.)
2. Remove the cover. (Refer to chapter 5.)



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



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

HP PC Forum on CompuServe

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

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

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

CompuServe will send you a free introductory membership immediately.

Getting Software Support

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

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

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

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

If You Need to Contact Hewlett-Packard

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

Major HP Sales and Service Offices

AUSTRALIA
Hewlett-Packard Australia Ltd.
31-41 Joseph Street
Blackburn, Victoria 3130
Melbourne, Australia

AUSTRIA, EASTERN EUROPE, and YUGOSLAVIA
Hewlett-Packard Ges.m.b.H.
Lieblgasse 1
P.O. Box 72
A-1222 Vienna

BELGIUM
Hewlett-Packard Belgium SA/NV
Blvd. de la Woluwe 100
Woluwedal
B-1200 Brussels

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

DENMARK
Hewlett-Packard A/S
Kongevejen 25
DK-3460 Birkerod

FINLAND
Hewlett-Packard OY,
Piispankalliontie 17
SF-02200 Espoo

FRANCE
Hewlett-Packard France
P.A. du Bois Briard
2, avenue du Lac
F-91040 Evry Cedex

GERMANY
Hewlett-Packard GmbH
Hewlett-Packard Strasse
D-6380 Bad Homburg

HONG KONG
Hewlett-Packard Hong Kong Ltd.
22nd Floor
West Tower, Bond Centre
89 Queensway, Central
Hong Kong

ITALY
Hewlett-Packard Italiana S.p.A.
Via G. di Vittorio, 9
I-20063 Cernusco S/N (MI)

JAPAN
Yokogawa-Hewlett-Packard Ltd.
29-21 Takaido-Higashi 3-chome
Suginami-ku
Tokyo 168 Japan

MEXICO
Hewlett-Packard de México, SA
(Latin American HQ)
Monte Pelvoux 111
Lomas de Chapultepec
11000 México D.F.
Tel: 5-40-76-82

NETHERLANDS
Hewlett-Packard Nederland B.V.
Startbaan 16
1187 XR Amstelveen
PO Box 170
NL-1180 AR Amstelveen

UNITED STATES (EASTERN)
Hewlett-Packard Company
#4 Choke Cherry Road
Rockville, MD 20850

UNITED STATES (MIDWEST)
Hewlett-Packard Company
5201 Tollview Drive
Rolling Meadows, IL 60008

NORWAY
Hewlett-Packard Norge A.S.
PO Box 34
Osterndalen 16-18
N-1345 Osteras

SPAIN
Hewlett-Packard Espanola S.A.
Crta. de la Coruna, km 16,500
E-Madrid
E-28230 Las Rozas

SWEDEN
Hewlett-Packard Sverige AB
Skalholtsgatan 9, Kista
Box 19
S-164 93 Kista

SWITZERLAND
Hewlett-Packard (Schweiz) AG
Allmend 2
CH-8967 Widen

UNITED KINGDOM
Hewlett-Packard Ltd.
King Street Lane
Winnersh, Wokingham
GB-Berkshire RG11 5AR

UNITED STATES (WESTERN)
Hewlett-Packard Company
5161 Lankershim Blvd.
North Hollywood, CA 91601

UNITED STATES (SOUTHERN)
Hewlett-Packard Company
2000 S. Park Place
Atlanta, GA 30339

Worldwide HP Marketing Headquarters

For countries not listed above, contact one of the following HP Marketing Headquarters.

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

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

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

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

9

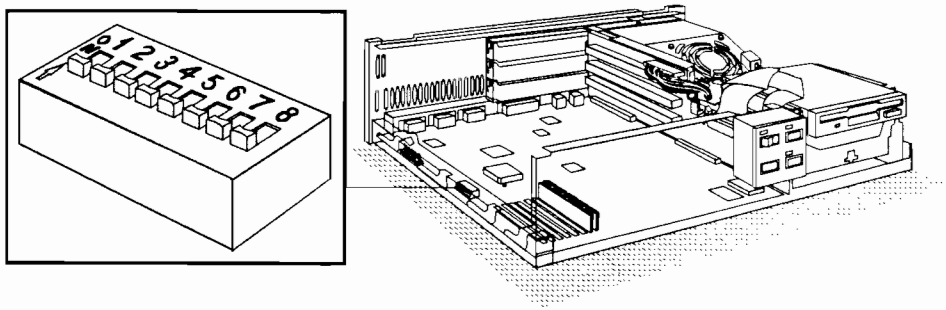
Computer Specifications

Computer Specifications

Your Computer's Switches

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

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



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

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

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

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

   Some older video applications need to use IRQ 9 to synchronize the screen refresh. (Refer to your application's manual for details.)

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

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

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

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

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

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

   a. Switch off the computer.
   b. Remove the cover (refer to chapter 5).
   c. Set switch 4 to disable the password.
   d. Switch on the computer, make sure it starts.
   e. Switch off the computer.
   f. Set switch 4 to enable the password.
   g. Replace the cover.
   h. Switch on the computer.
   i. Run the Setup Program to select a password. (Refer to chapter 3.)

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

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

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

   a. Switch off the computer.
   b. Remove the cover (refer to chapter 5).
   c. Set switch 5 to erase the memory.
   d. Switch on the computer.
   e. Check that error message **0240** is displayed.
   f. Switch off the computer.
   g. Set switch 5 to "not erase" the memory.
   h. Replace the cover.
   i. Switch on the computer.
   j. Run the Setup Program. (Refer to chapter 6.)

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

   When you enable security mode, you cannot change your computer's configuration.

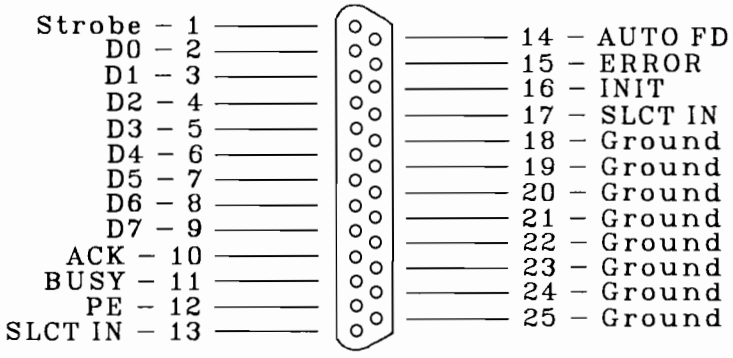
   When you disable security mode, you can change your computer's configuration using the Setup Program.

Your Computer's Connectors (Ports)

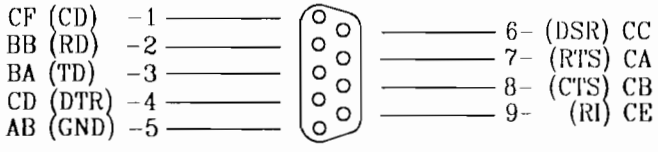
Your computer is equipped with:

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

The connector pinouts are as follows:



25-pin Parallel Connector Pins



9-pin Serial Connector Pins

Video Connector Pins

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

Keyboard and Mouse Connector Pins

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