



Hardware Reference Guide

Compaq Evo Desktop Family: Desktop Models

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January 2002

This book provides basic information for upgrading this series of computers.

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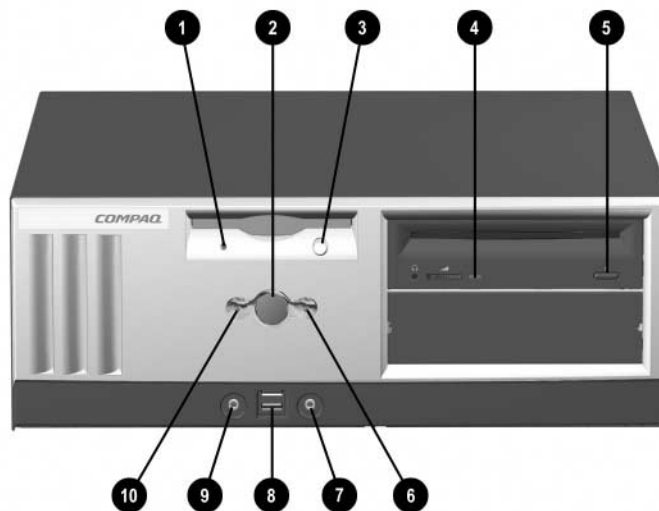
Product Features

Standard Configuration Features

The Compaq *Evo*™ Desktop features may vary depending on your model. For a complete listing of the hardware and software installed in your computer, run Compaq Diagnostics for Windows or the INSPECT utility (available on some models). Instructions for using these utilities are provided in the *Troubleshooting Guide* on the *Reference Library CD*.



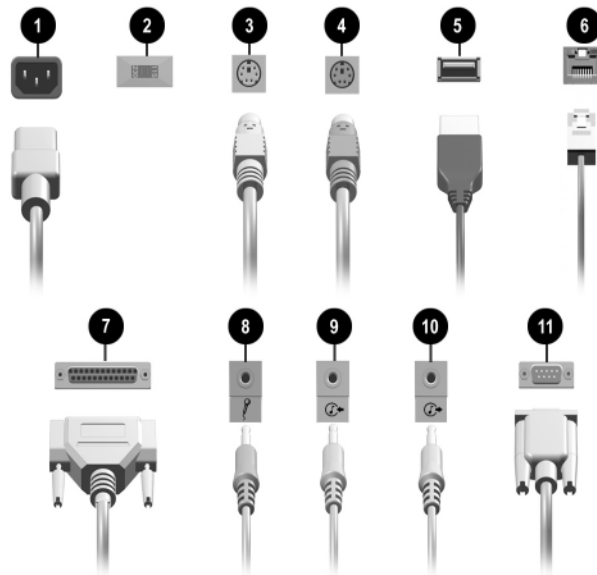
Front Panel Components



Front Panel Components

❶	Diskette Drive Activity Light	❹	Hard Drive Activity Light
❷	Power Button	❺	Microphone Connector (optional)
❸	Diskette Eject Button	❻	Universal Serial Bus (USB) (optional)
❹	CD-ROM Drive Busy Indicator	❼	Stereo Headphone Jack (optional)
❺	CD-ROM Eject Button	❽	Power On Light

Rear Panel Components



Rear Panel Components

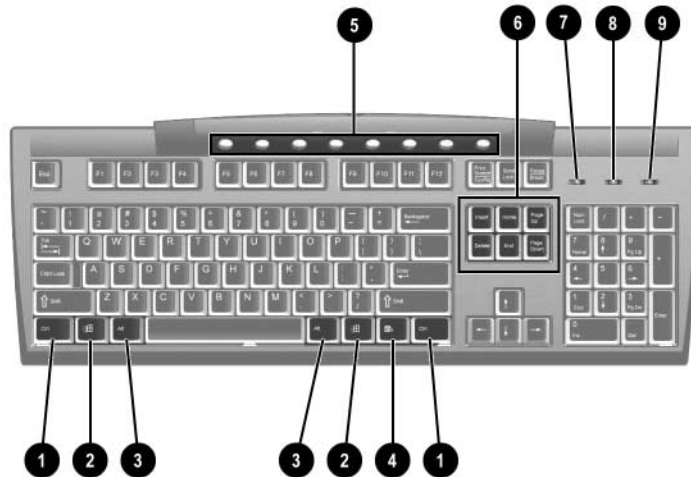
❶	Power Cord Connector	❷	Parallel Port Connector
❸	Keyboard Connector	❸	Microphone Connector
❹	Mouse Connector	❹	Line-In Audio
❺	Universal Serial Bus (USB)	❺	Line-Out Audio
❻	RJ-45 Connector	❻	Serial Connector



WARNING: To reduce the risk of electric shock or damage to the equipment:

- Do not disable the power supply cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Disconnect the power from the computer by unplugging the power cord from either the electrical outlet or the computer.

Easy Access Keyboard



Compaq Easy Access Keyboard Components

❶	Ctrl Key	Used in combination with another key; its effect depends on the application software you are using.
❷	Windows Logo Key*	Used to open the Start menu in Microsoft Windows. Used in combination with other keys to perform other functions.
❸	Alt Key	Used in combination with another key; its effect depends on the application software you are using.
❹	Application Key*	Used (like the right mouse button) to open pop-up menus in a Microsoft Office application. May perform other functions in other software applications.
❺	Internet Keys	Provides quick access to specific Internet destinations.

Compaq Easy Access Keyboard Components (*Continued*)

- | | | |
|---|--------------|----------------------------------------------------------------------------|
| ⑥ | Editing Keys | Includes the following: Insert, Home, Page Up, Delete, End, and Page Down. |
|---|--------------|----------------------------------------------------------------------------|



Holding down Ctrl and Alt while pressing Delete allows you to restart your computer.

- | | | |
|---|-------------------|---------------------------------------------------------|
| ⑦ | Num Lock light | Indicates whether the Num Lock feature is on or off. |
| ⑧ | Caps Lock light | Indicates whether the Caps Lock feature is on or off. |
| ⑨ | Scroll Lock light | Indicates whether the Scroll Lock feature is on or off. |

*Keys available in select geographic regions.

Easy Access Software

Your Easy Access Keyboard Buttons are programmed to default assignments. The pre installed Easy Access Software allows you to reprogram the Easy Access Buttons to reflect your personal preferences. The buttons can be reprogrammed to any program or service of your choice or to any Web site (URL).

Reprogramming the Easy Access Buttons

The Easy Access Keyboard icon is located on the Windows desktop status bar. Refer to the Readme-user.txt file for instructions about reprogramming the Easy Access Buttons.

Locking and Unlocking the Easy Access Buttons

The System Administrator can lock and unlock the Easy Access Buttons. Once locked, the buttons can only be reprogrammed by modifying the .bcf file. For administrative privileges, which require control of the Easy Access Button destinations, refer to the Readme-admin.txt file.

Easy Access Paper Icon Insert

The paper icon insert functions as a visual aid in identifying the programmed destination of each Easy Access Button. Whenever you reprogram an Easy Access Button, use the Paper Insert Template document to select and print an icon that reflects the new button assignment. The Paper Insert Template.doc is installed, by default, under C:\Program files\Compaq\Easy Access Keyboard.

For proper alignment, the spacing around the icons may require adjustment.

Windows Logo Key

Use the Windows Logo Key in combination with other keys to perform certain functions available in the Windows operating systems.

Windows Logo Key + F1	Displays a pop-up menu for the selected object
Windows Logo Key + Tab	Activates the next Taskbar button
Windows Logo Key + e	Launches Explore My Computer
Windows Logo Key + f	Launches Find Document
Windows Logo Key + Ctrl + f	Launches Find Computer
Windows Logo Key + m	Minimizes all open applications
Shift + Windows Logo Key + m	Undoes Minimize All
Windows Logo Key + r	Displays the Run dialog box

Special Mouse Functions

Most software applications support the use of a mouse. The functions assigned to each mouse button depend on the software applications you are using.

Serial Number Location

Each computer has a unique serial number which may be located on the cover top ❶ or the rear panel ❷ of the computer. Keep this number available for use when contacting Compaq customer service for assistance.



Serial Number Location

Hardware Upgrades

Serviceability Features

Your computer includes features that make it easier to upgrade and service.

Installation Sequence

It is very important that you follow this sequence of steps to ensure the proper installation of any optional equipment. For more information about Computer Setup, refer to the *Computer Setup Guide*.

1. If the computer is already on, turn it off and disconnect the power cord from the wall outlet.



WARNING: To reduce the risk of personal injury from electrical shock and/or hot surfaces, be sure to disconnect the power cord from the wall outlet, and allow the internal system components to cool before touching.



WARNING: To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telecommunications/telephone connectors into the network interface controller (NIC) receptacles.



CAUTION: Static electricity can damage the electrical components of the computer or optional equipment. Before beginning these procedures, ensure that you are discharged of static electricity by briefly touching a grounded metal object. See Appendix E, "Electrostatic Discharge," for more information.

2. Open the computer by removing its outside cover. See the procedures for removing the computer cover.

3. Install any optional equipment. See the applicable sections of this guide or to the documentation provided with the optional equipment for instructions.
4. Replace the computer cover.
5. Turn on the monitor, computer, and any devices you want to test.
6. Reconfigure the computer, if necessary. Refer to the *Computer Setup Guide* for instructions about using Computer Setup.

Removing the Computer Cover

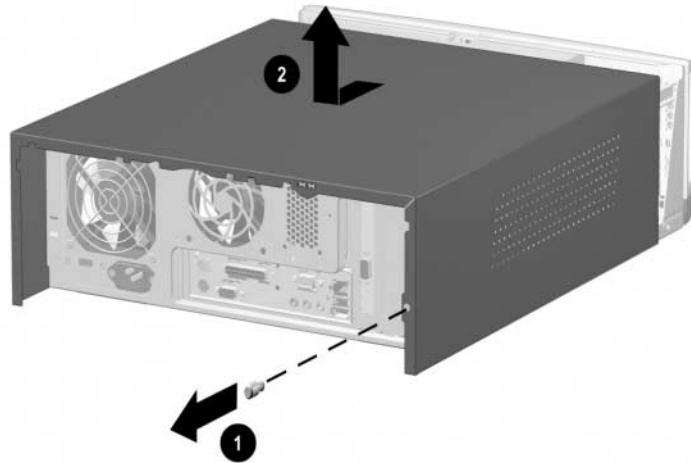
To remove the computer cover:

1. Shut down the operating system properly, then power off the computer and any external devices.
2. Disconnect the power cord from the power outlet, and disconnect any external devices.



CAUTION: Before removing the computer cover, ensure that the computer is turned off and that the power cord is disconnected from the electrical outlet.

3. Loosen the two captive thumbscrews that secure the cover to the computer chassis.
4. Slide the cover back about 1 inch (2.5 cm), then lift it up and off the unit.

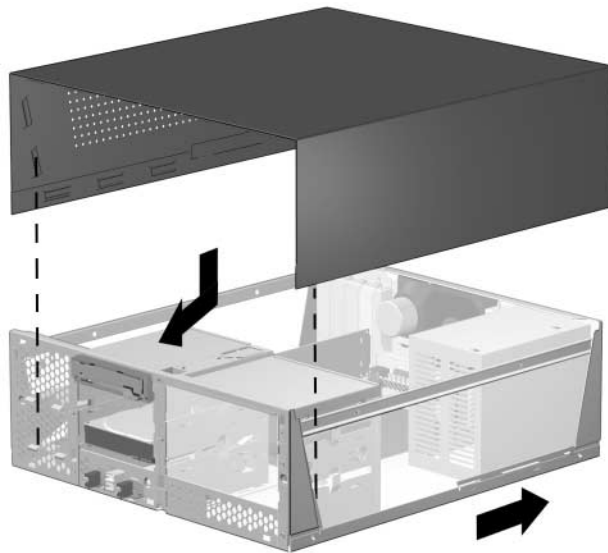


Removing the Computer Cover

Replacing the Computer Cover

To replace the computer cover:

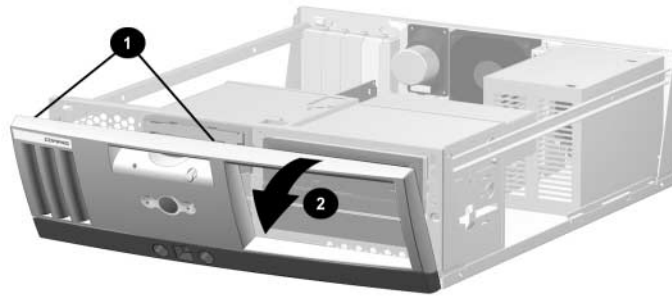
1. Hold the cover over the chassis, then rest the guide tabs located inside the cover on the diagonal ramps at the rear of the chassis.
2. Slide the cover along the ramps and into place on the chassis.
3. Tighten the two captive thumbscrews.



Replacing the Computer Cover

Removing the Front Bezel

1. Shut down the operating system properly, then power off the computer and any external devices. Disconnect the power cord from the power outlet and disconnect any external devices.
2. Remove the computer cover.
3. Pull up on the two release tabs, then rotate the front bezel away from the chassis to release it.



Removing the Front Bezel



When replacing the front bezel, ensure that the bottom hinge points are properly placed in the chassis before rotating the front bezel back into its original position.

Removing Bezel Blanks

1. Shut down the operating system properly, then power off the computer and any external devices. Disconnect the power cord from the power outlet and disconnect any external devices.
2. Remove the computer cover.
3. Remove the front bezel.
4. Gently pinch the release mechanism, then remove the desired bezel blank.

Installing Additional Memory

The computer comes with Synchronous dynamic random access memory (SDRAM) dual inline memory modules (DIMMs).

DIMMs

The memory sockets on the Intel 815E and 845 chipset-based system board can be populated with industry-standard DIMMs. These memory module slots are populated with at least one preinstalled memory module. To achieve the maximum memory support, you may be required to replace the preinstalled DIMM with a higher capacity DIMM.

For proper system operation, the DIMMs must be industry-standard 168-pin, PC133- compliant SDRAM DIMMs, depending on the model. The SDRAM DIMMs must support CAS Latency 2 or 3 (CL = 2 or CL = 3). They must also contain the mandatory Joint Electronic Device Engineering Council (JEDEC) Serial Presence Detect (SPD) information. DIMMs constructed with x4 SDRAM are not supported; the system will not start using unsupported DIMMs.



CAUTION: Some models support ECC memory and some support non-ECC memory. For those systems that do support ECC, Compaq does not support mixing ECC and non-ECC memory. Doing so will cause the system to blink the NUMLOCK LED on the keyboard continuously and, if a speaker is installed in the system, there will be a short beep followed by 2 long beeps. In addition, the system will not boot the operating system.

Installing DIMMs



CAUTION: Your memory module sockets have gold metal contacts. When upgrading your memory, it is important to use memory modules with gold metal contacts to prevent corrosion and/or oxidation resulting from having incompatible metals in contact with each other.



CAUTION: Static electricity can damage the electronic components of the computer or optional cards. Before beginning these procedures, ensure that you are discharged of static electricity by briefly touching a grounded metal object. Refer to Appendix E, "Electrostatic Discharge," for more information.



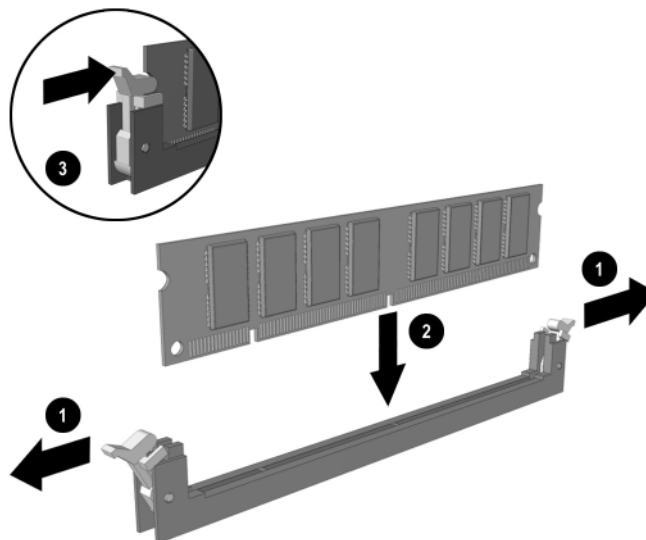
CAUTION: When handling a memory module, be careful not to touch any of the contacts. Doing so may damage the module.

1. Shut down the operating system properly, then power off the computer and any external devices, then disconnect the power cord from the power outlet.
 2. Remove the cover and locate the memory module sockets.
-



WARNING: To reduce risk of personal injury from hot surfaces, allow the internal system components to cool before touching.

3. Open both latches of the memory module socket ❶, and insert the memory module into the socket ❷.



Installing a DIMM

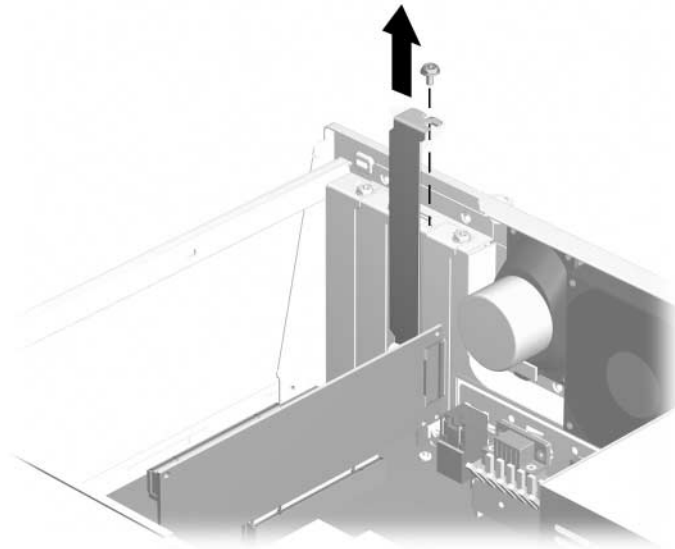
Begin by installing a module into the socket nearest the preinstalled module, and install the modules following the numerical order of the sockets.

A memory module can be installed in only one way. Match the notch on the module with the tab on the memory socket. Push the module down into the socket, ensuring that the module is fully inserted and properly seated ❸.

Installing or Removing an Expansion Card

Removing an Expansion Slot Cover

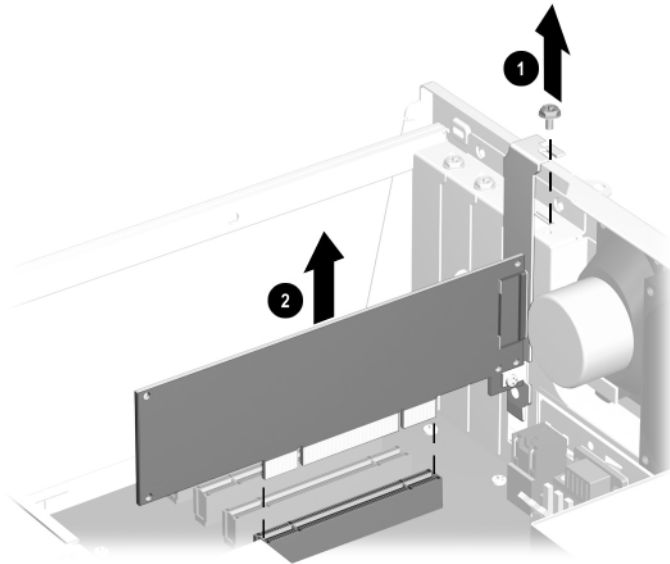
1. Shut down the operating system properly, then power off the computer and any external devices, then disconnect the power cord from the power outlet.
2. Remove the computer cover and locate the correct vacant slot in the computer chassis.
3. Remove the screw securing the slot cover, then remove the expansion slot cover from the slot as illustrated.



Removing an Expansion Slot Cover

Removing or Installing an Expansion Card

1. Shut down the operating system properly, then power off the computer and any external devices, then disconnect the power cord from the power outlet.
2. Remove the computer cover.
3. If installing an expansion card, skip to step 8.
4. To remove an installed expansion card, disconnect any cables attached to the expansion card.
5. Remove the screw at the side of the expansion slot.
6. Hold the card at each end and carefully rock it back and forth until the connectors pull free from the slot. Be sure not to scrape the card against other components.



Removing an Expansion Card

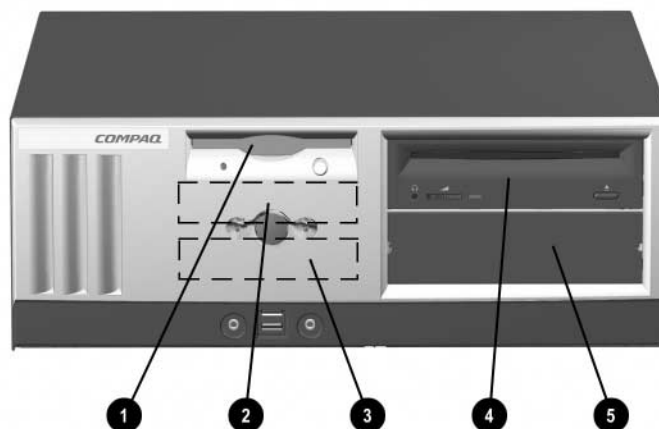
7. Store the card in anti-static packaging.
8. Install an expansion slot cover or new expansion card to close the open slot.
9. If not installing a new expansion card, skip to step 11.
10. To install a new expansion card in an open slot, remove the expansion slot cover.
11. Slide the expansion card into the expansion slot and press it firmly into place.



When you install an expansion card, make sure you press firmly on the card so that the whole connector seats properly in the expansion card slot.

12. Replace the screw at the side of the expansion slot.
13. Connect external cables to the installed card, if needed. Connect internal cables to the system board, if needed.
14. Replace the computer cover.
15. Reconfigure the computer, if necessary.

Drive Positions



- ❶ One standard 3.5-inch, 1.44-MB diskette drive mounted with a drive adapter in the 5.25-inch, one-third height bay (labeled as drive bay 3)
- ❷ ❸ Two internal 3.5-inch, one-third height bays for hard drives (labeled as drive bays 4 and 5)
- ❹ ❺ Two 5.25-inch, half-height bays for optional drives (labeled as drive bays 1 and 2)

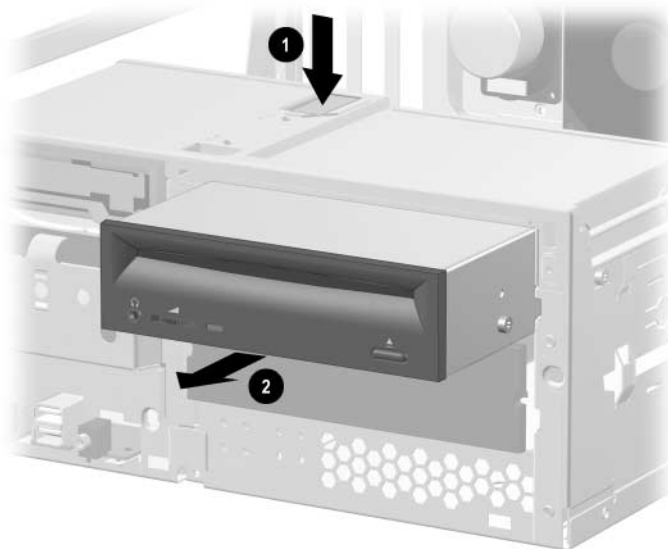
To verify the type and size of the storage devices installed in your computer, run Compaq Computer Setup. Refer to the *Computer Setup Guide* for more information.



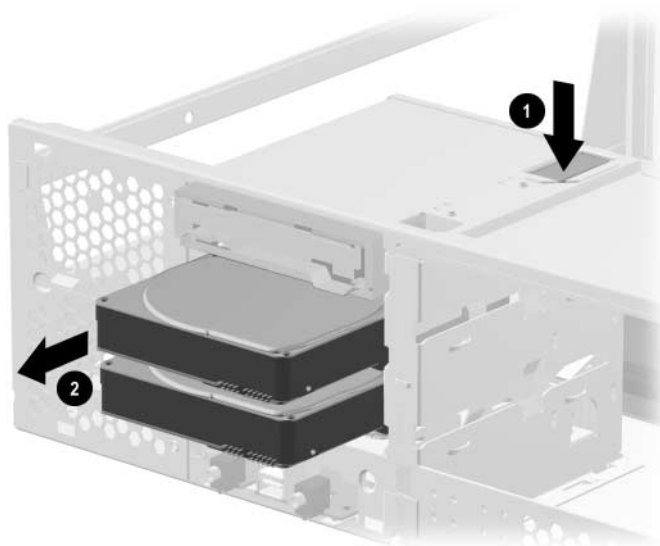
Drive bay numbers are stamped on the chassis, behind the front bezel.

Removing a Drive from the Drive Bay

1. Shut down the operating system properly, then power off the computer, disconnect the power cord from the power outlet, and remove the computer cover.
2. Remove the front bezel.
3. Disconnect the drive power and signal cables and, if it is a CD-ROM or DVD-ROM drive, disconnect the audio connector.
4. If removing a hard drive, lift up on the power switch bracket, then rotate down to gain access to the drive bay.
5. Press the drivelock mechanism to unlock the drive in the drive bay.
6. While pressing the drivelock ❶, pull the drive out of the drive bay ❷.



Removing a Drive from the Drive Bay



Removing a Drive from the Drive Bay

7. Remove the drive from the drive bay and store in anti-static packaging.

Installing Additional Drives

The computer supports up to five drives which may be installed in various configurations.

When installing additional drives, follow these guidelines:

- For optimal performance, connect hard drives to the primary controller. Connect expansion devices, such as CD-ROM, IDE tape, and diskette drives to the secondary controller.
- You may install either a third-height or a half-height drive into a half-height bay.
- You must install guide screws to ensure the drive will line up correctly in the drive cage. Compaq has provided extra guide screws, installed in the front of the computer chassis, behind the front bezel. Some options use metric hardware. The Compaq-supplied metric screws are black.



CAUTION: To prevent loss of work and damage to the computer or drive:

- If you are inserting or removing a hard drive, shut down the operating system properly, then turn off the computer. Do not remove a hard drive while the computer is on or in standby mode.
- Before handling a drive, ensure that you are discharged of static electricity. While handling a drive, avoid touching the connector. For more information about preventing electrostatic damage, refer to Appendix E, "Electrostatic Discharge."
- Handle a drive carefully, do not drop it.
- Do not use excessive force when inserting a drive.
- Avoid exposing a hard drive to liquids, temperature extremes, or products that have magnetic fields such as monitors or speakers.

Installing a CD-ROM, DVD-ROM, or other Removable Storage Device

1. Shut down the operating system properly, then turn off the computer and any external devices, disconnect the power cord from the power outlet, and remove the computer cover.
2. Remove the front bezel. See "Removing the Front Bezel."
3. Install four guide screws, two guide screws on each side of the drive.



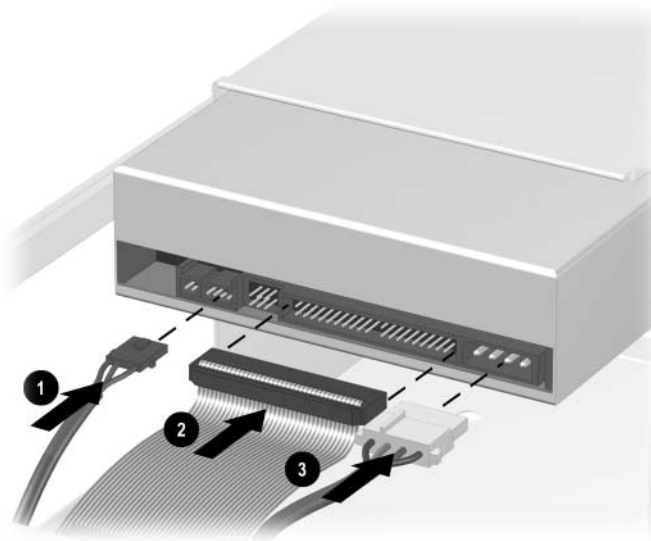
Some options use metric hardware. Extra guide screws are provided on the front of the chassis, under the front bezel. The Compaq-supplied metric screws are black.

4. Install the drive in the desired drive bay by sliding it into the front of the drive cage; the drivelock automatically secures the drive in the bay.



Be sure the guide screws line up with the guide slots in the drive cage.

5. If it is a CD-ROM or DVD-ROM drive and if analog audio is preferred to digital audio, connect the audio cable ❶. The other end of the audio cable ❶ should be connected to the embedded audio connector on the system board.
6. Connect the signal ❷ and drive power ❸ cables.



Connecting Cables

Remove the appropriate bezel blank from the front bezel. See the section “Removing Bezel Blanks” for more information.

7. Replace the front bezel.
8. Replace the computer cover.
9. Reconfigure the computer, if necessary.

Installing a Hard Drive into a 3.5-inch Drive Bay

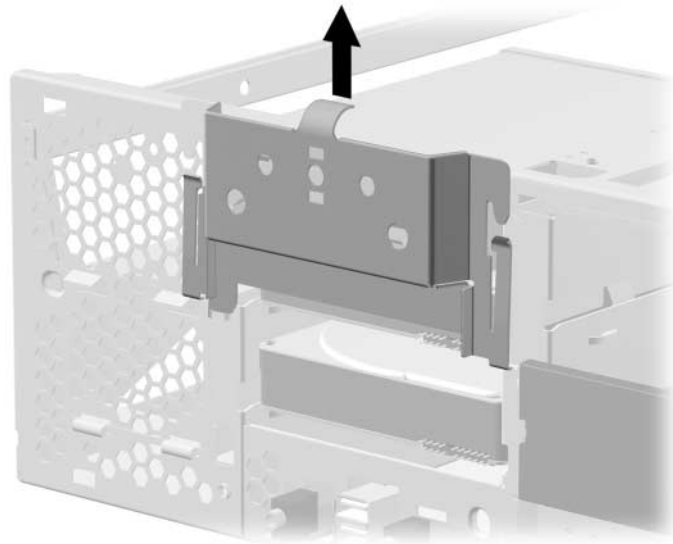


Compaq does not support mixing IDE and SCSI hard drives in the same system. If you are replacing a hard drive in bay 4 or bay 5, it should be of the same type.

To install a hard drive in a 3.5-inch drive bay:

1. Shut down the operating system properly, then power off the computer and any external drives, disconnect the power cord from the power outlet, and remove the computer cover.
2. Remove the front bezel. See, “Removing the Front Bezel.”

3. Lift up on the power switch bracket, then rotate down to gain access to the drive bay.



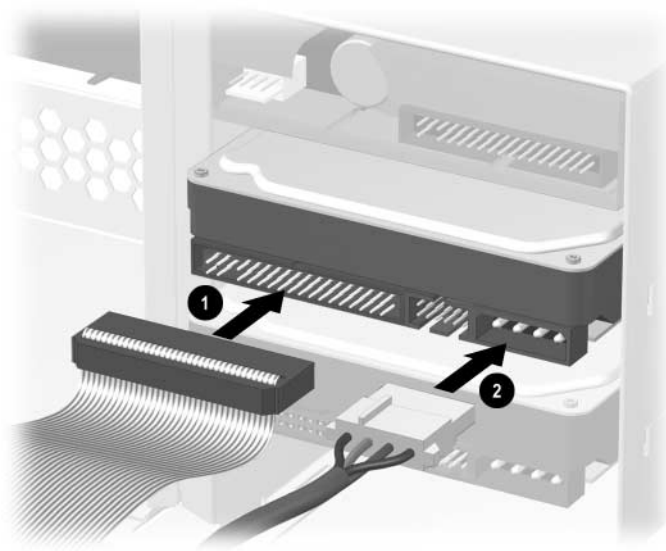
Removing the Power Switch Bracket

4. Insert the hard drive into the bay from the front of the chassis.
Push it in until it locks into place.



Be sure that the power switch LED cables remain under the hard drive.

5. Connect the signal ❶ and power ❷ cables to the hard drive.



Connecting Cables

6. Connect the opposite end of the cables to the appropriate system board connector.
7. Lift the power switch bracket up and into position on the front of the chassis.
8. Replace the front bezel.
9. Replace the computer cover.
10. Reconfigure the computer, if necessary.

Specifications

Compaq Evo Desktop (Intel Pentium 4)

Dimensions	5.72 in	14.53 cm
Height	15.25 in	38.74 cm
Width	17.90 in	45.47 cm
Depth		
Approximate Weight	25 lb	11.34 kg
Weight Supported (maximum distributed load)	100.0 lb	45.5 kg
Temperature Range	50° to 95°F	10° to 35°C
Operating	-4° to 140°F	-20° to 60°C
Nonoperating		
Relative Humidity (noncondensing)		
Operating	20% to 80%	20% to 80%
Nonoperating	10% to 90%	10% to 90%
Maximum Altitude (unpressurized)		
Operating	10,000 ft	3048 m
Nonoperating	30,000 ft	9144 m
Power Supply		
Operating Voltage Range	90-132 VAC	180-264 VAC
Rated Voltage Range*	100-127 VAC	200-240 VAC
Rated Line Frequency	50-60 Hz	50-60 Hz

Compaq Evo Desktop (Intel Pentium 4) (Continued)

Power Output	235 W	235 W
Rated Input Current (maximum)*	4 A	2 A
Heat Dissipation		
Maximum	1234 BTU/hr	311 kg-cal/hr
Nominal	617 BTU/hr	155 kg-cal/hr

*This system utilizes a full-ranging, active power factor corrected power supply to greatly reduce the input current amplitude and harmonics. No input voltage select switch is required.

Compaq Evo Desktop (Intel Pentium III/Celeron)

Dimensions	15.25 in	38.74 cm
Height	5.72 in	14.52 cm
Width	17.90 in	45.47 cm
Depth		
Approximate Weight	25 lb	11.34 kg
Weight Supported (maximum distributed load)	100.0 lb	45.5 kg
Temperature Range	50° to 95°F	10° to 35°C
Operating	-4° to 140°F	-20° to 60°C
Nonoperating		
Relative Humidity (noncondensing)		
Operating	20% to 80%	20% to 80%
Nonoperating	10% to 90%	10% to 90%
Maximum Altitude (unpressurized)		
Operating	10,000 ft	3048 m
Nonoperating	30,000 ft	9144 m

Compaq Evo Desktop (Intel Pentium III/Celeron) (Continued)

Power Supply

Operating Voltage Range	90-132 VAC	180-264 VAC
Rated Voltage Range*	100-127 VAC	200-240 VAC
Rated Line Frequency	50-60 Hz	50-60 Hz

Power Output

145 W 145 W

Rated Input Current (maximum)*

5 A 2.5 A

Heat Dissipation

Maximum	760 BTU/hr	192 kg-cal/hr
Nominal	380 BTU/hr	96 kg-cal/hr

*This system utilizes a full-ranging, active power factor corrected power supply to greatly reduce the input current amplitude and harmonics. No input voltage select switch is required.

Hard Drive Installation Guidelines

Using the Cable-Select Feature with Ultra ATA Devices

Optional drives are available from Compaq in kits that include a special drive cable. The configuration of the drive employs a cable-select feature that identifies the drive as device 0 (primary drive) or device 1 (secondary drive).

Device 1 is the drive connected to the cable's middle connector. Device 0 is the drive connected to the cable's end connector (applies only to 80-conductor ATA cables). See "Guidelines for Installing Ultra ATA Devices" in this appendix for an example of an Ultra ATA cable.

Compaq hard drives ship with jumpers preset to cable-select mode; therefore, no jumper setting changes on the existing or optional drives are required. If you purchase a third-party hard drive, refer to the documentation included with the kit to ensure proper installation and configuration of cables.



If installing a second device on the primary controller, you must use an 80-conductor Ultra ATA cable for optimal performance. This cable is standard on select models.

Guidelines for Installing Ultra ATA Devices

When installing additional Ultra ATA drives, follow these guidelines:

- If using multiple Ultra ATA devices, Compaq recommends that the devices be split between the primary and secondary Ultra ATA channels for optimum performance. Use an additional Ultra ATA cable to connect the additional device to the system board.
- 80-conductor Ultra ATA cable:
 - 18 inches maximum total length, 80-conductor cable with maximum spacing of 6 inches between Device 0 and Device 1.



80-Conductor Ultra ATA Cable

- ① Device 0 (master drive) connector
- ② Device 1 (slave drive) connector
- ③ System board connector
- For optimal performance, connect hard drives to the primary controller. Connect expansion devices, such as ATA CD-ROM and DVD-ROM drives, tape drives, and diskette drives, to the secondary controller.
- Install either a third-height or a half-height drive into a half-height bay.
- Install guide screws to ensure that the drive lines up correctly in the drive cage. Compaq has provided extra guide screws installed in the front of the computer chassis behind the front bezel. Some options use M3 metric hardware. Compaq supplied metric screws are black.
- If only one device is connected to a cable, that device must be attached to the end (Device 0) connector.

SCSI Devices

This section contains information relating to SCSI device guidelines and installation.

Guidelines for Using SCSI Devices

When installing and operating SCSI devices, you must follow these guidelines:

- A single Ultra SCSI controller supports up to seven SCSI devices per channel.
- Each Wide-Ultra SCSI, Ultra-Wide SCSI, Wide Ultra2 SCSI, Ultra 320 SCSI, or Ultra 160 SCSI controller supports up to 15 SCSI devices per channel.
- If using multiple SCSI devices, Compaq recommends that the devices be split between Channel A and Channel B, if available, for optimum performance.
- SCSI cable recommendation:
 - 53 inches maximum length twisted-pair, LVD cable with built-in terminator, maximum of 5 drives with a minimum driving spacing of 5.25 inches.
- The SCSI controller requires a unique SCSI ID (0-7 or 8-15) for each SCSI device installed. The controller identifies a SCSI device by its SCSI ID number rather than by its location. Moving a SCSI device from one position to another on the SCSI chain does not affect communication between the controller and the device. The reserved and available SCSI ID numbers for SCSI devices are:
 - 0—reserved for the primary hard drive
 - 7—reserved for the controller
 - 1 through 6 and 8 through 15—available for all other SCSI devices

- Every SCSI chain or circuit must be terminated (closed) at both ends. Termination can be accomplished through one of the following methods:
 - ❑ Using a cable with a built-in terminator. This cable was shipped with your computer.
 - ❑ Using a cable with a terminating resistor plug in the last connector.
 - ❑ Connecting a SCSI device with its termination enabled into the last connector.
 - ❑ Connecting an external SCSI device with its termination enabled to the external SCSI connector on the rear panel of the computer.
- Turn on all external SCSI devices before turning on the power to the computer. This action enables the SCSI controller to recognize the external devices.
- The system accommodates a combination of internal and external SCSI devices, such as hard drives, tape drives, and CD-ROM drives.
- Compaq does not recommend mixing different-width SCSI devices on the same SCSI chain or on the same SCSI channel. Mixing devices of different widths on the same chain or channel will always result in the data transfer rate of the slowest device in that chain. It is acceptable to mix Wide-Ultra2, Ultra 160, and Ultra 320 devices on a single channel. Do not put narrow devices on a channel with any device type other than another narrow device.

For additional information about optional SCSI devices, refer to the documentation included with the device or contact your Compaq authorized dealer, reseller, or service provider.



CAUTION: Do not route cables near the air intake to the power supply. Cables routed in this manner can block airflow to the power supply, causing it to overheat.

Guidelines for Installing Optional SCSI Devices



If you mix Ultra ATA and SCSI hard drives in the same system, the Ultra ATA drive will be the boot drive unless the boot order is changed in the F10 Setup.

When replacing a hard drive, the replacement drive should be of the same type as the drive being removed. If you are replacing an Ultra ATA hard drive with a SCSI hard drive, you will need a multimode Low Voltage Differential (LVD) SCSI cable option kit.

If only one SCSI hard drive is used, it should be installed in bay 4 if your computer has four or more bays.

Before installing a SCSI device:

- Verify the SCSI ID of the drive and, if necessary, set the SCSI ID to a unique number. See “Guidelines for Using SCSI Devices” in this appendix or refer to the documentation included with the device.
 - Determine if the device requires that termination be enabled or disabled. Set the termination if necessary. See “Using a SCSI Cable” in this appendix or refer to the documentation included with the device.
-



Some devices may not have terminating jumpers on the device. Termination on these devices must be achieved with terminated cable.

Turn on an external SCSI device before turning on power to the computer. This enables the system board controller to recognize the external SCSI device and automatically reset. When an external SCSI device is connected to the external SCSI connector on the rear panel of the computer, that device becomes the end of the SCSI chain and must be terminated.

SCSI Controllers

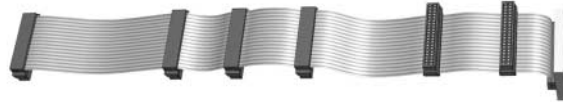
Select models such as workstations ship with an integrated single channel Ultra 160 SCSI controller with an internal connector on the system board.

SCSI Cables

The front drive bays are available for installing or connecting mass storage SCSI devices.

Using a SCSI Cable

Select models ship with a multimode SCSI cable that supports Low Voltage Differential (LVD) or single-ended devices. The cable accommodates up to three SCSI devices in the front drive bay area (UATA models do not have the SCSI cable).



Five-Device SCSI Cable with Terminator



The cable that shipped with your computer may look different than the one illustrated (a five-device cable).

For additional information about installing optional SCSI devices, refer to the documentation included with the device option kit or contact your Compaq authorized dealer, reseller, or service provider.

Using SCSI*Select* with SCSI Devices

The SCSI host adapter includes the SCSI*Select* utility to configure the host adapter and to run SCSI disk utilities. To run the SCSI*Select* utility:

- In Post Messages Enabled mode: Press **Ctrl+A** when the Press <Ctrl><A> for SCSI*Select* Utility message displays during POST.
- In Post Messages Disabled mode: When the Compaq logo screen displays, press any key to exit the logo screen. Immediately after exiting the logo screen, press **Ctrl+A** to access the SCSI*Select* utility.

A menu displays with the following options:

- **Configure/View Host Adapter Settings**
 - **SCSI Bus Interface Definitions**
 - ◆ Host Adapter SCSI ID
 - ◆ SCSI Parity Checking
 - ◆ Host Adapter SCSI Termination
 - **Additional Options**
 - ◆ Boot Device Options
 - ◆ SCSI Device Configuration
 - ◆ Advanced Configuration Options
- **SCSI Disk Utilities**

Lists all SCSI devices and SCSI ID numbers



For additional information about configuring POST message display status, refer to the *Computer Setup Guide* on the Reference Library CD.

Choosing the Quiet Drive Options



The Quiet Drive is an optional feature and may or may not be included on your computer.

If this computer is equipped with a Quiet Drive or, if you choose to install a Quiet Drive, you may configure the drive to operate in Quiet mode or Performance mode (default). When idle, the Quiet Drive produces an acoustic noise level approximately 4 decibels (dB) lower than that of a standard drive. When configured to operate in Quiet mode, the Quiet Drive reads and writes data at an acoustic noise level approximately 7 dB lower than that of a standard drive.



When configured to operate in Quiet mode, the drive will not operate at maximum performance levels. For maximum drive performance, set the drive to operate in Performance mode.

To determine if your computer contains a Quiet Drive or to activate Quiet mode, complete the following steps:

1. Turn on or restart the computer. If you are in Windows, click Start > Shut Down > Restart the Computer.
2. When the F10 = Setup message displays in the lower-right corner of the screen, press the **F10** key.



If you do not press the **F10** key while the message is displayed, you must restart the computer to access the utility.

3. Select your language from the list and press the **Enter** key.
4. A choice of five headings displays in the Computer Setup Utilities menu. Using the arrow keys or the Tab key, select Storage > Device Configuration.
5. Select the drive from the list of devices. Press the **Enter** key.
6. Select Quiet Drive > Quiet (Performance is the factory-set default.)



If the Quiet Drive option is not displayed, your computer does not contain a Quiet drive.

7. To apply and save changes, select File > Save Changes.

Battery Replacement

The battery that comes with your computer provides power to the real-time clock and has a minimum lifetime of about three years. When replacing the battery, use a battery equivalent to the battery originally installed on your computer. Your computer comes with a 3-volt lithium coin cell battery.



The lifetime of the lithium battery can be extended by plugging the computer into a live AC wall socket. The lithium battery is only used when the computer is NOT connected to AC power.



WARNING: Your computer contains an internal lithium manganese dioxide battery. There is a risk of fire and burns if the battery is not handled properly. To reduce the risk of personal injury:

- Do not attempt to recharge the battery.
 - Do not expose to temperatures higher than 60°C (140°F).
 - Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.
 - Replace the battery only with the Compaq spare designated for this product.
-



CAUTION: Before replacing the battery, it is important to back up the computer CMOS settings. When the battery is removed or replaced, the CMOS settings will be cleared. Refer to the *Troubleshooting Guide* for information on backing up the CMOS settings.



Batteries, battery packs, and accumulators should not be disposed of together with the general household waste. In order to forward them to recycling or proper disposal, please use the public collection system or return them to Compaq, their authorized partners, or their agents.



CAUTION: Static electricity can damage the electronic components of the computer or optional equipment. Before beginning these procedures, ensure that you are discharged of static electricity by briefly touching a grounded metal object.

1. If you have locked the Smart Cover Lock, use Computer Setup to unlock the lock and disable the Smart Cover Sensor.
 2. Shut down the operating system properly, turn off the computer and any external devices, disconnect the power cord from the electrical outlet, and remove the computer cover or access panel.
-

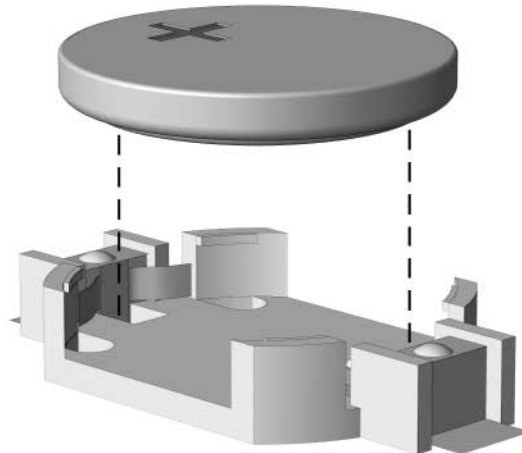


It may be necessary to remove an expansion card to gain access to the battery.

3. Locate the battery and battery holder on the system board.
4. Depending on the type of battery holder on your system board, complete the following instructions to replace the battery.

Type 1

- a. Lift the battery out of its holder.

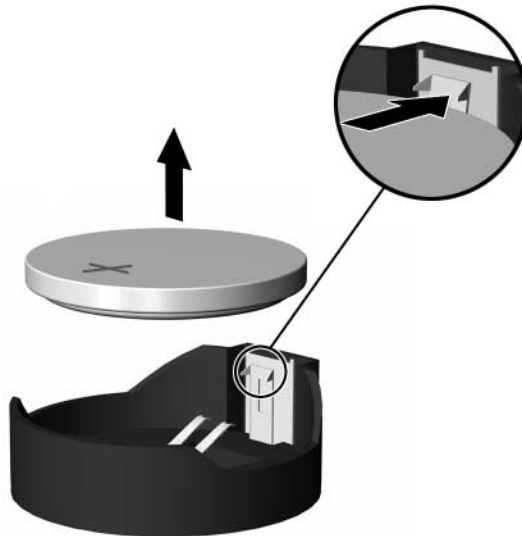


Removing a Coin Cell Battery (Type 1)

- b. Slide the replacement battery into position, positive side up.
The battery holder automatically secures the battery in the proper position.

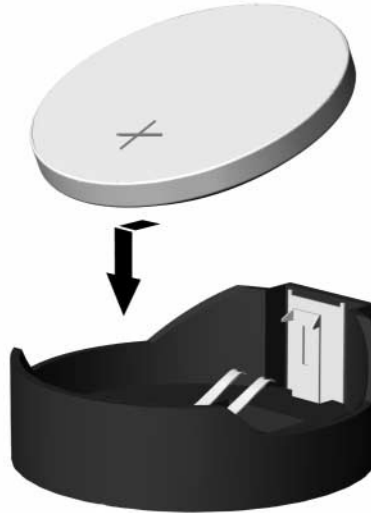
Type 2

- a. To release the battery from its holder, squeeze the metal clamp that extends above one edge of the battery.
- b. When the battery pops up, lift it out.



Removing a Coin Cell Battery (Type 2)

- c. To insert the new battery, slide one edge of the replacement battery under the holder's lip with the positive side up. Push the other edge down until the clamp snaps over the other edge of the battery.



Replacing a Coin Cell Battery (Type 2)



After the battery has been replaced, use the following steps to complete this procedure.

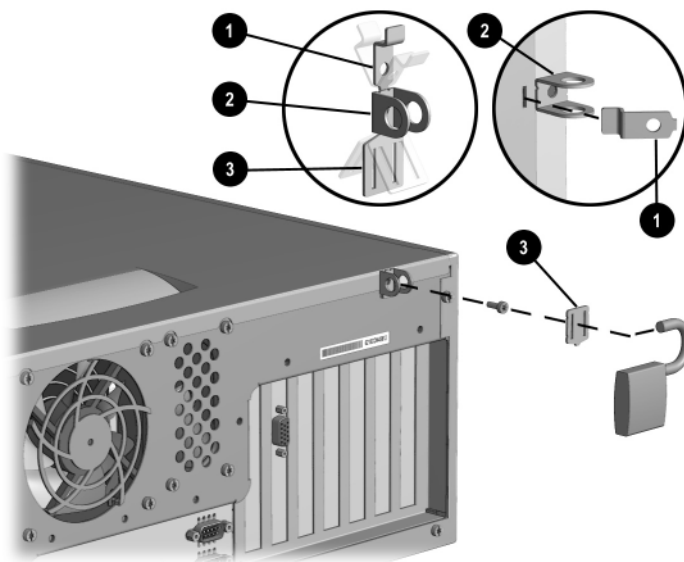
5. Replace the computer cover or access panel.
6. Plug in the computer and turn on power to the computer.
7. Reset the date and time, your passwords, and any special system setups, using Compaq Computer Setup. Refer to the *Computer Setup Guide*.

If you normally lock the Smart Cover Lock, use Computer Setup to relock the lock and enable the Smart Cover Sensor.

Security Lock Provisions

Installing a Security Lock

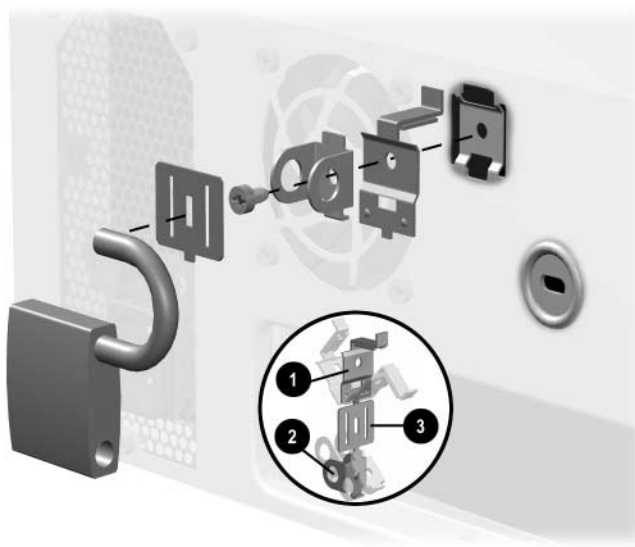
There are several different security locks that may be used to secure the computer. The following illustrations portray some of the available security provisions which vary by model. Because of chassis differences, the slots may be located in a different position than shown.



Installing Compaq Type 1 Security Bracket (may vary by model)



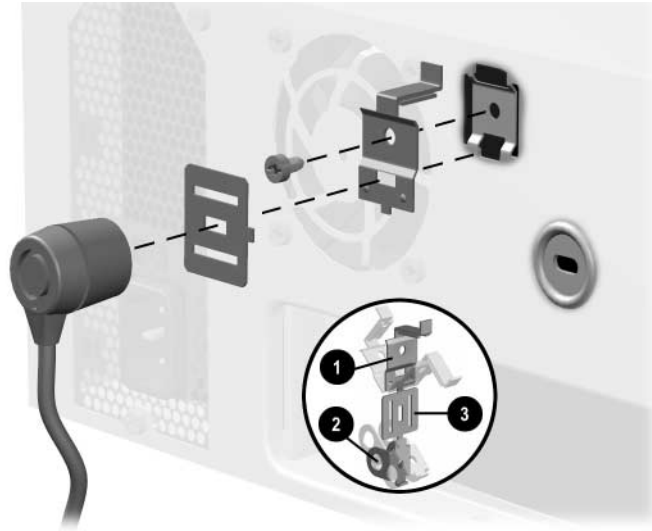
WARNING: To avoid injury, use care in handling the separated pieces of the security bracket; metal edges may be sharp. Be sure to install the bracket so that sharp edges do not extend from the edges of the computer chassis.



Installing Compaq Type 2 Security Bracket (may vary by model)



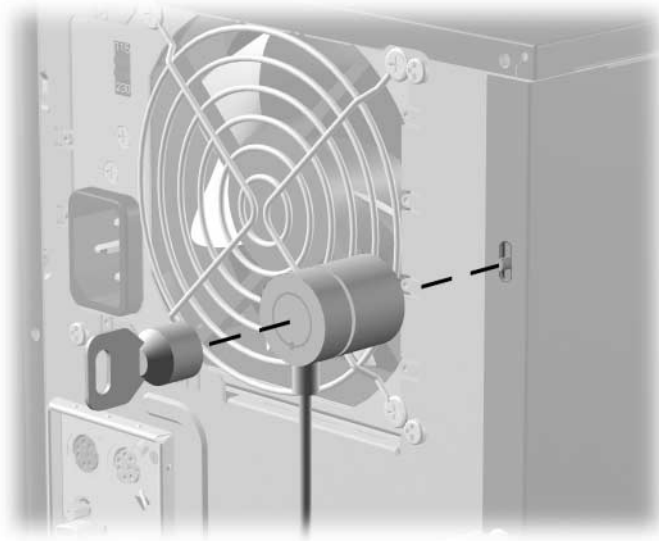
WARNING: To avoid injury, use care in handling the separated pieces of the security bracket; metal edges may be sharp. Be sure to install the bracket so that sharp edges do not extend from the edges of the computer chassis.



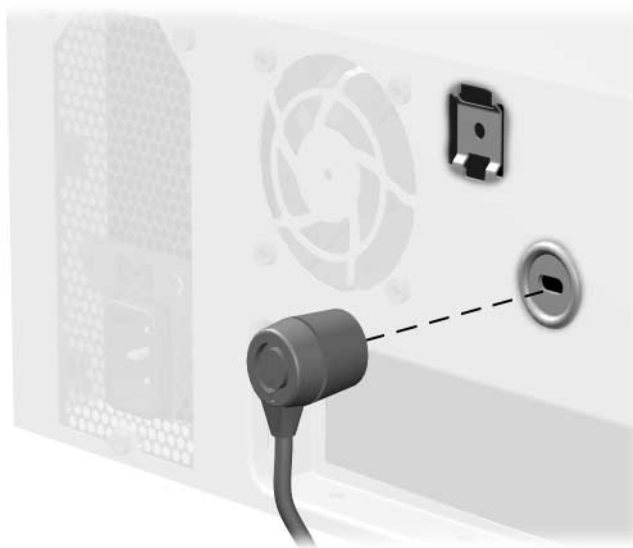
Installing a Kensington Cable Lock with a Compaq Type 2 Bracket (may vary by model)



WARNING: To avoid injury, use care in handling the separated pieces of the security bracket; metal edges may be sharp. Be sure to install the bracket so that sharp edges do not extend from the edges of the computer chassis.



Installing a Kensington Cable Lock (may vary by model)



Installing a Kensington Cable Lock (may vary by model)

Electrostatic Discharge

A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

Preventing Electrostatic Damage

To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

Grounding Methods

There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm +/- 10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.

- Use heelstraps, toestraps, or bootstraps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, contact your Compaq authorized dealer, reseller, or service provider.



For more information on static electricity, contact your Compaq authorized dealer, reseller, or service provider.

Routine Computer Care and Shipping Preparation

Routine Computer Care

Follow these suggestions to take care of your computer and monitor:

- Operate the computer on a sturdy, level surface. Leave a 3-inch (7.6-cm) clearance at the back of the system unit and above the monitor to permit the required airflow.
- Never operate the computer with the cover or side panel removed.
- Never restrict the airflow into the computer by blocking the front vents or air intake. Do not place the keyboard, with the keyboard feet down, directly against the front of the desktop unit as this also restricts airflow.
- Keep the computer away from excessive moisture, direct sunlight, and extremes of heat and cold. For information about the recommended temperature and humidity ranges for your computer, refer to Appendix A, “Specifications,” in this guide.
- Keep liquids away from the computer and keyboard.
- Never cover the ventilation slots on the monitor with any type of material.
- Turn off the computer before you do either of the following:
 - ❑ Wipe the exterior of the computer with a soft, damp cloth as needed. Using cleaning products may discolor or damage the finish.
 - ❑ Occasionally clean the air vents on the front and back of the computer. Lint and other foreign matter can block the vents and limit the airflow.

CD-ROM Drive Precautions

Be sure to observe the following guidelines while operating or cleaning your CD-ROM drive.

Operation

- Do not move the drive during operation. This may cause it to malfunction during reading.
- Avoid exposing the drive to sudden changes in temperature, as condensation may form inside the unit. If the temperature suddenly changes while the drive is on, wait at least one hour before you turn off the power. If you operate the unit immediately, it may malfunction while reading.
- Avoid placing the drive in a location that is subject to high humidity, extreme temperatures, mechanical vibration, or direct sunlight.

Cleaning

- Clean the panel and controls with a soft, dry cloth or a soft cloth lightly moistened with a mild detergent solution. Never spray cleaning fluids directly on the unit.
- Avoid using any type of solvent, such as alcohol or benzene, which may damage the finish.

Safety

If any object or liquid falls into the drive, immediately unplug the computer and have it checked by an authorized Compaq service provider.

Shipping Preparation

Follow these suggestions when preparing to ship your computer:

1. Back up the hard drive files on PD discs, tape cartridges, or diskettes. Be sure that the backup media is not exposed to electrical or magnetic impulses while stored or in transit.



The hard drive locks automatically when the system power is turned off.

2. Remove and store any program diskettes from the diskette drives.
3. Insert a blank diskette into the diskette drive to protect the drive while in transit. Do not use a diskette on which you have stored or plan to store data.
4. Turn off the computer and external devices.
5. Disconnect the power cord from the electrical outlet, then from the computer.
6. Disconnect the system components and external devices from their power sources, then from the computer.



Ensure that all boards are seated properly and secured in the board slots before shipping the computer.

7. Pack the system components and external devices in their original packing boxes or similar packaging with sufficient packing material to protect them.



For environmental nonoperating ranges, see Appendix A, “Specifications,” in this guide.

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