Hardware Reference Guide

HP Point of Sale System rp5000

Document Part Number: 337853-002

June 2005

This guide provides basic information for upgrading this computer model.

WARNING: Text set off in this manner indicates that failure to follow directions could result in bodily harm or loss of life.

CAUTION: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

Hardware Reference Guide

HP Point of Sale System rp5000

First Edition August 2003

Second Edition June 2005

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1

Product Features

Standard Configuration Features

The HP Point of Sale System rp5000 features may vary depending on the model. For a complete listing of the hardware and software installed in the computer, run the Diagnostics for Windows® utility. Instructions for using this utility are provided in the *Troubleshooting Guide* on the *Documentation CD*.

HP Point of Sale System rp5000

Front Panel Components

Drive configuration may vary by model.
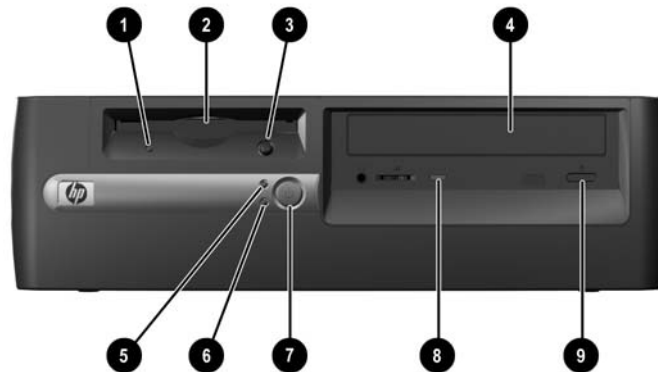
Front Panel Components

❶	Diskette Drive Activity Light (optional)	❻	Power On Light
❷	Diskette Drive (optional)	❼	Power Button
❸	Diskette Eject Button (optional)	❽	Optical Drive Activity Light (optional)
❹	Optical Drive (optional, CD-ROM or DVD-ROM)	❾	Optical Drive Eject Button (optional)
❺	Hard Drive Activity Light		

Rear Panel Components
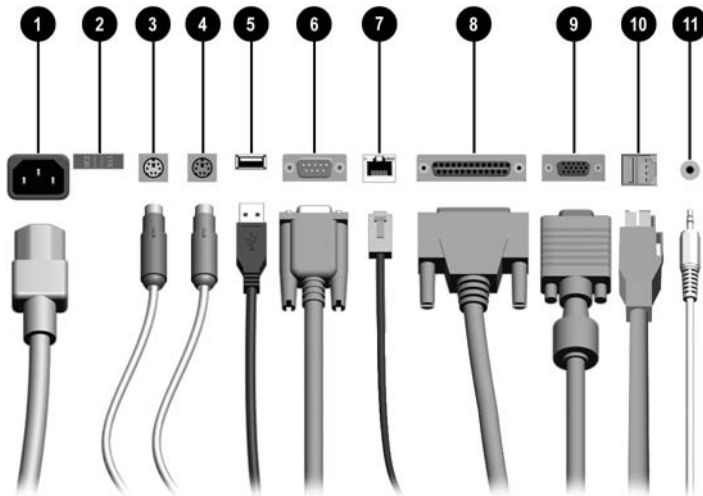
Rear Panel Components

❶		Power Cord Connector	❼	뫂뫂	RJ-45 Network Connector
❷		Voltage Select Switch	❽	🖹	Parallel Connector
❸	🖰	PS/2 Mouse Connector	❾	▯	Monitor Connector
❹	⌨	PS/2 Keyboard Connector	❿	⚡	USB+Power Connector
❺	⚡	Universal Serial Bus (USB)	⓫	⤙	Audio connector
❻	IOIOI	Serial Connector			

✎ Arrangement and number of connectors may vary by model.

Windows Logo Key

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

Windows Logo Key Functions

Windows Logo Key	Displays or hides the Start menu.
Windows Logo Key + **d**	Displays the Desktop.
Windows Logo Key + **m**	Minimizes all open applications.
Shift + Windows Logo Key + **m**	Undoes Minimize All.
Windows Logo Key + **e**	Launches My Computer.
Windows Logo Key + **f**	Launches Find Document.
Windows Logo Key + **Ctrl** + **f**	Launches Find Computer.
Windows Logo Key + **F1**	Launches Windows Help.
Windows Logo Key + **l**	Locks the computer if you are connected to a network domain, or allows you to switch users if you are not connected to a network domain.
Windows Logo Key + **r**	Launches the Run dialog box.
Windows Logo Key + **u**	Launches the Utility Manager.
Windows Logo Key + **Tab**	Activates the next Taskbar button.

Removing the Serial Port Cap

The powered serial ports have been protected with a plastic cap. Turn off the computer and remove the cap before connecting a powered serial Point of Sale device.
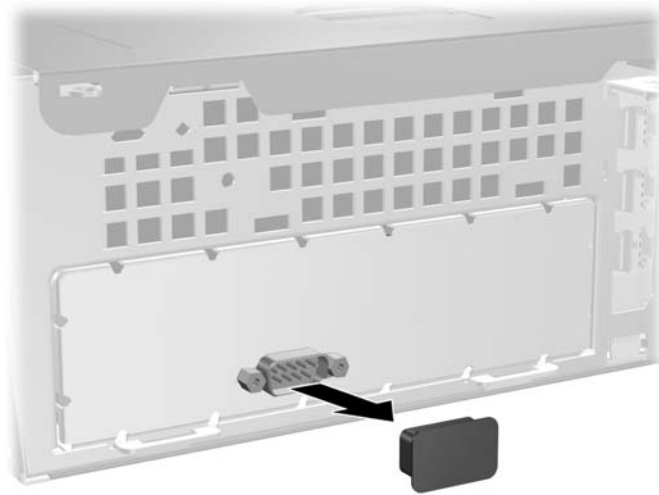
Removing the Serial Port Cap

Serial Number and Product Number Location

Each computer has a unique serial number and product number that are located on the top cover of the computer. Keep these numbers available for use when contacting customer service for assistance.

Serial Number and Product Number Location

2

Hardware Upgrades

Serviceability Features

This computer includes features that make it easy to upgrade and service. No tools are needed for most of the installation procedures described in this chapter.

Warnings and Cautions

Before performing upgrades be sure to carefully read all of the applicable instructions, cautions, and warnings in this guide.

⚠ **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 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. Refer to Appendix F, "Electrostatic Discharge" in this guide for additional information on preventing electrostatic discharge.

⚠ **CAUTION:** Before removing the computer access panel ensure that the computer is turned off and that the power cord is disconnected from the electrical outlet.

Removing the Computer Access Panel and Front Bezel

1. Turn off the computer properly through the operating system, then turn off any external devices.

2. Disconnect the power cord from the power outlet and the computer, and disconnect any external devices.

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

3. On the top of the computer, locate the cover latch. Pull up and hold the latch ❶ to release the computer access panel.

4. Slide the computer access panel back ❷ about 0.5 inch (1.25 cm), then lift the access panel up and off the chassis.

Removing the Computer Access Panel

5. To remove the front bezel, gently pull up all three tabs ❶ on the top of the bezel, then pull the bezel ❷ away from the chassis.
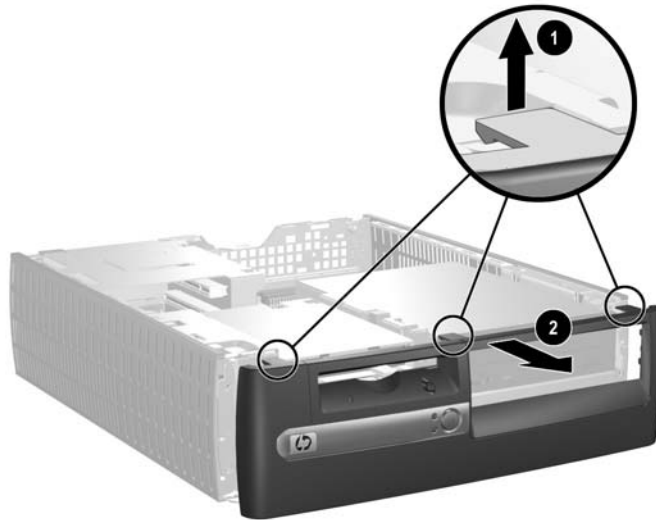
Removing the Front Bezel

To reassemble the computer, reverse the above procedure.

✎ To re-install the front bezel, insert the two bezel bottom tabs, then rotate the front bezel forward to snap the three tabs on the top of the bezel in place.

Installing Additional Memory

The computer comes with double data rate synchronous dynamic random access memory (DDR1-SDRAM) dual inline memory modules (DIMMs).

DIMMs

The memory sockets on the system board can be populated with up to two industry-standard DIMMs. These memory module slots are populated with at least one preinstalled memory module. To achieve the maximum memory support, you can populate the system board with up to 2 GB of memory.

DDR1-SDRAM DIMMs

For proper system operation, if the computer supports unregistered non-ECC DDR1-SDRAM DIMMs, the DIMMs must be:

■ industry-standard 184-pin

■ 2.5 volt DDR1-SDRAM DIMMs

■ unbuffered PC2100 266 MHz-, PC2700 333 MHz-, or PC3200 400 MHz-compliant

✎ Though a PC3200 400 MHz DIMM can be installed, a memory frequency of 400MHz is not supported; therefore, the PC3200 DIMM functions at 266MHz or 333MHz, depending on the frequency of the processor front side bus.

The DDR1-SDRAM DIMMs must also:

■ support CAS latency 2 or 2.5 (CL = 2 or CL = 2.5)

■ contain the mandatory JEDEC SPD information

In addition, the computer supports:

■ 64 Mbit, 128 Mbit, 256 Mbit, and 512 Mbit non-ECC memory technology

■ single-sided or double-sided DIMMS (does not support double-sided X16 DDR1 DIMMS)

■ DIMMs constructed with x8 and x16 DDR devices with four banks; DIMMs constructed with x4 SDRAM are not supported

✎ The system may not boot if you install unsupported DIMMs.

The following processor bus frequencies are required for the system to run at the supported memory frequencies.

DIMM	If Processor Bus Frequency is	Memory Frequency is
PC2100	400 MHz	266 MHz
PC2100	533 MHz	266 MHz
PC2700	400 MHz	266 MHz
PC2700	533 MHz	333 MHz
PC3200	400 MHz	266 MHz
PC3200	533 MHz	333 MHz

If a memory frequency is paired with an unsupported processor bus frequency, the system will run at the highest supported memory speed. For example, if a 333 MHz DIMM is paired with a 400 MHz processor bus, the system will run at 266 MHz, the highest supported memory speed.

Installing DDR1-SDRAM DIMMs

⚠ **CAUTION:** The memory module sockets have gold metal contacts. When upgrading the 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 F, "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. Turn off the computer properly through the operating system, then turn off any external devices.

2. Disconnect the power cord from the power outlet and disconnect any external devices.

3. Remove the computer access panel and front bezel (see "Removing the Computer Access Panel and Front Bezel" in this chapter).

△ **CAUTION:** Check the position of all cables and wires before raising or lowering the Easy Access drive bay to prevent damage.

4. Rotate the Easy Access drive bay to an upright position.
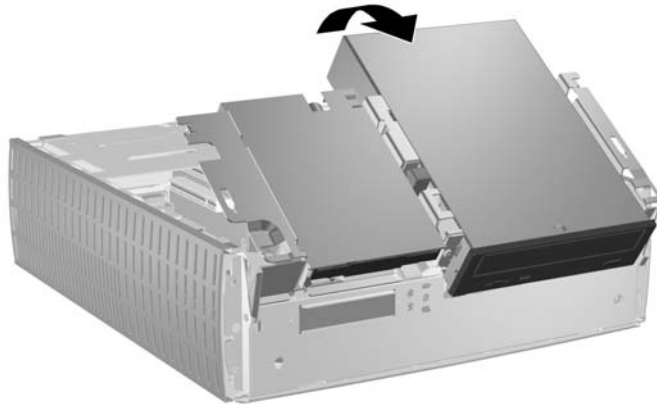
Rotating the Easy Access Drive Bay

5. Locate the memory module sockets.

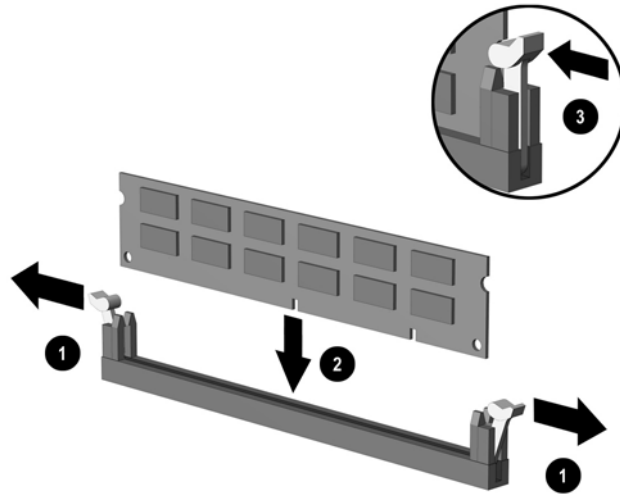⚠ **WARNING:** To reduce risk of personal injury from hot surfaces, allow the internal system components to cool before touching.

6. Open both latches of the memory module socket ❶, then insert the memory module into the socket ❷.

Installing a DIMM

✎ A memory module can be installed in only one way. Match the notch on the module with the tab on the memory socket.

7. Push the module down into the socket, ensuring that the module is fully inserted and properly seated. Make sure the latches are in the closed position ❸.

8. Repeat steps 6 and 7 for any additional modules that you want to install.

9. Return the Easy Access drive bay to the down position. Be sure not to pinch the cables in the chassis when lowering the Easy Access drive bay.

10. Replace the front bezel and computer access panel.

The computer automatically recognizes the additional memory the next time you power on the computer.

Removing the Expansion Card Cage

To remove the expansion card cage:

1. Turn off the computer properly through the operating system, then turn off any external devices.

2. Disconnect the power cord from the power outlet and disconnect any external devices.

3. Remove the computer access panel (see "Removing the Computer Access Panel and Front Bezel" in this chapter).

4. Disconnect all cables attached to the expansion cards.

5. Grasp the expansion card cage by the green labels and pull it straight up to remove it from the chassis.
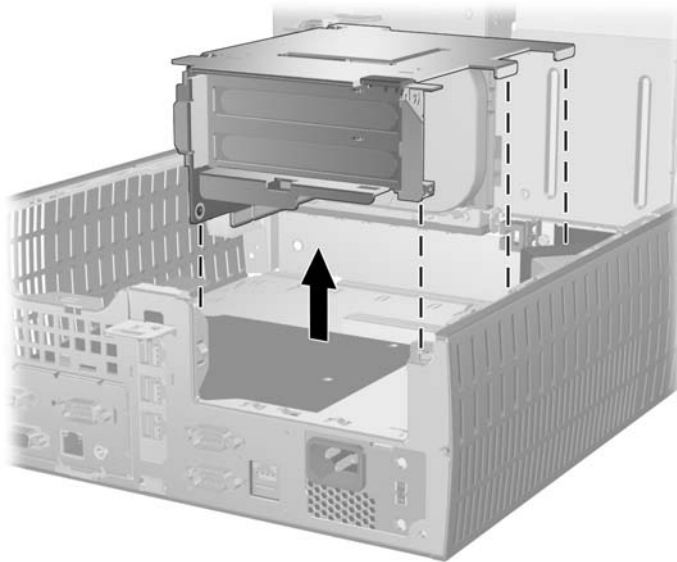
Removing the Expansion Card Cage

To replace the expansion card cage, reverse the above procedure.

✎ Ensure that the riser card seats properly into the PCI connector on the system board when reinstalling the expansion card cage.
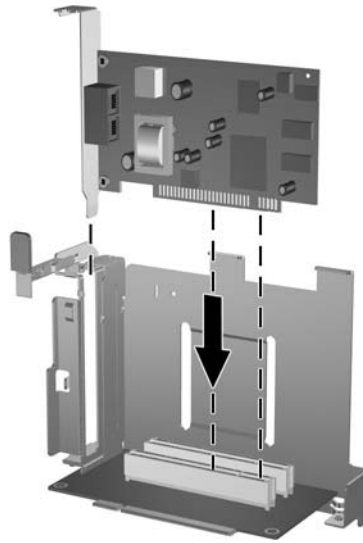
Installing an Expansion Card

The computer has two PCI expansion slots. Each slot can accommodate an expansion card up to 6.875 inches (17.46 cm) in length. To install an expansion card:

1. Turn off the computer properly through the operating system, then turn off any external devices.

2. Disconnect the power cord from the power outlet and disconnect any external devices.

3. Remove the computer access panel (see "Removing the Computer Access Panel and Front Bezel" in this chapter).

4. Remove the expansion card cage and identify the slot into which you want to insert the expansion card (see "Removing the Expansion Card Cage" in this chapter).

5. Release the slot cover retention latch ❶ that secures the PCI slot covers by rotating the latch outward.

6. Remove the slot cover by sliding it out ❷.
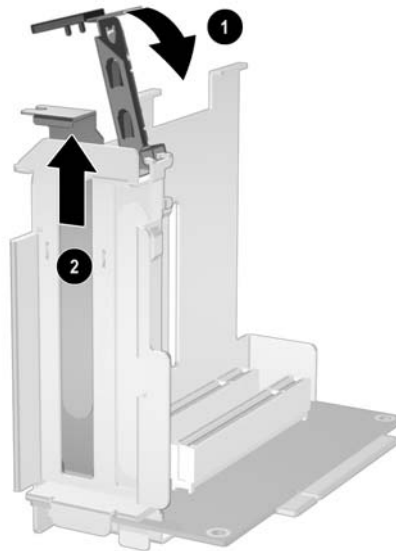
Removing the Expansion Slot Cover

7. Install the expansion card.

Installing an Expansion Card

8. Rotate the slot cover retention latch back in place to secure the expansion card.

✎ When you install an expansion card, make sure to line it up with the corner bracket, then press firmly on the card so that the whole connector seats properly in the expansion card slot.

9. Replace the expansion card cage.

⚠ **CAUTION:** If you remove an expansion card, you must replace it with a new card or cover the open slot (for example, with a metal slot cover) for proper air circulation to cool internal components during operation.

Removing the HP USB+Power Card

⚠ **CAUTION:** For the computer to operate properly, an HP USB+Power card must be installed in the Acclerated Graphics Port (AGP) slot.

✎ An AGP card will not work in the AGP slot.

To remove the card from the AGP slot:

1. Turn off the computer properly through the operating system, then turn off any external devices.

2. Disconnect the power cord from the power outlet and disconnect any external devices.

3. Remove the computer access panel (see "Removing the Computer Access Panel and Front Bezel" in this chapter).

4. Locate the USB+Power card on the system board.

5. Lift up the slot cover retention latch that secures the card.
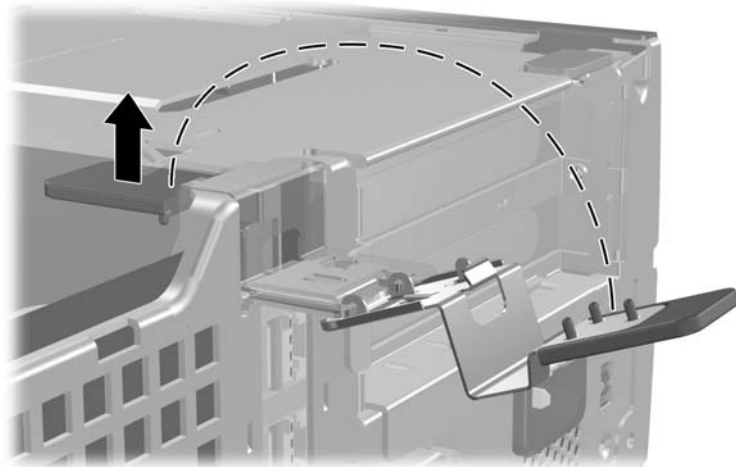
Releasing the Slot Cover Retention Latch

6. Remove the USB data cable ❶ and power cable ❷ connected to the card.

7. Pull the retention arm away from the socket ❸, then carefully rock the card back and forth until the connectors pull free from the socket. Lift the card straight up, then pull it in toward the center of the chassis to maneuver it around the chassis frame. Be sure not to scrape the card against other components.
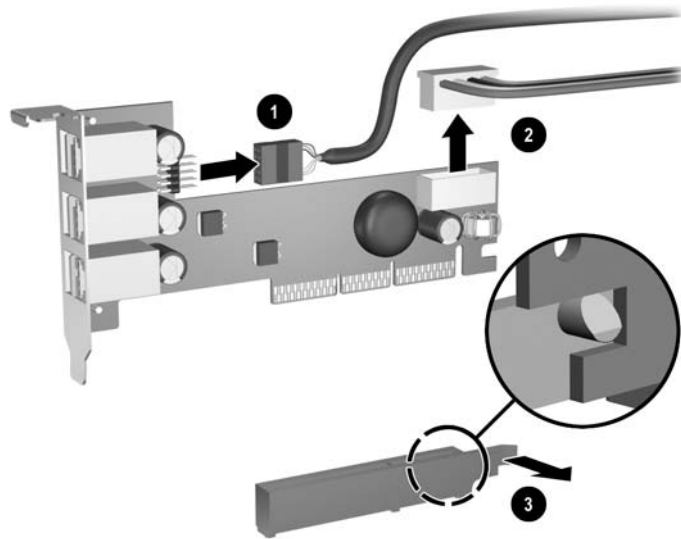
Removing the USB+Power Card

To replace the USB+Power card, reverse the above procedure.

Installing Additional Drives

The computer has two external drive bays. When installing additional drives, follow these guidelines:

■ For optimal performance, connect hard drives to the primary controller. Connect expansion devices, such as optical, IDE tape, and diskette drives, to the secondary controller using an 80-conductor IDE cable.

■ Install guide screws to ensure the drive will line up correctly in the drive cage and lock in place. HP has provided extra guide screws (four 6-32 standard screws and four M3 metric screws), installed in the front of the chassis, behind the bezel. The hard drive uses 6-32 standard screws. All other drives use M3 metric screws. The HP-supplied metric screws are black and the HP-supplied standard screws are silver.

△ **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, see Appendix F, "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.

■ If a drive must be mailed, place the drive in a bubble-pack mailer or other suitable protective packaging and label the package "Fragile: Handle With Care."

Locating Drive Positions
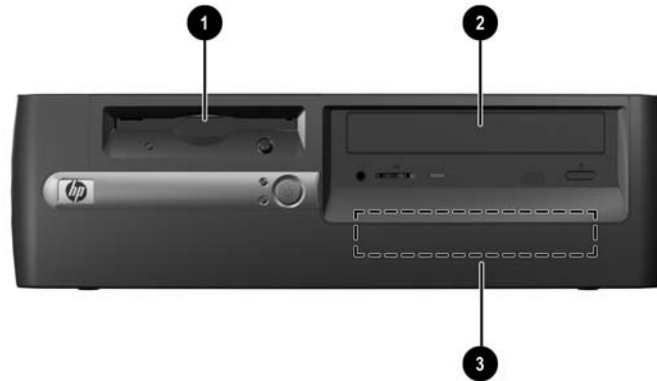
Desktop Drive Positions

❶	3.5-inch drive bay (1.44-MB diskette drive shown)*
❷	5.25-inch drive bay for optional drives*
❸	3.5-inch, internal, standard hard drive bay

*If the computer has a 1.44-MB diskette drive or 5.25-inch optical drive installed, it will be configured with a drive bezel as shown in the illustration. If the computer contains an empty 3.5-inch or 5.25-inch drive bay, then a bezel blank will be installed on the computer instead. If you do not have a drive in this slot, you may choose to install a device later on. However, to install a 3.5-inch device other than a diskette drive or hard drive, you must order the 3.5-inch device bezel.

To verify the type, size, and capacity of the storage devices installed in the computer, run Computer Setup. Refer to the *Computer Setup (F10) Utility Guide* on the *Documentation CD* for more information.

Removing an Optical Drive or Diskette Drive

$\triangle$ **CAUTION:** All removable media should be taken out of the drives before removing the drive from the computer.

✎ An optical drive is a CD-ROM or DVD-ROM drive.

1. Turn off the computer properly through the operating system, then turn off any external devices.

2. Disconnect the power cord from the power outlet and disconnect any external devices.

3. Remove the computer access panel and front bezel (see "Removing the Computer Access Panel and Front Bezel" in this chapter).

4. Raise the Easy Access drive bay to the upright position.

5. Disconnect the signal and drive power cables.

6. Return the Easy Access drive bay to the down position.

7. Push the drive release latch ❶ toward the rear of the chassis and hold.

8. Slide the drive ❷ toward the front of the drive cage, then lift the drive out of the computer.
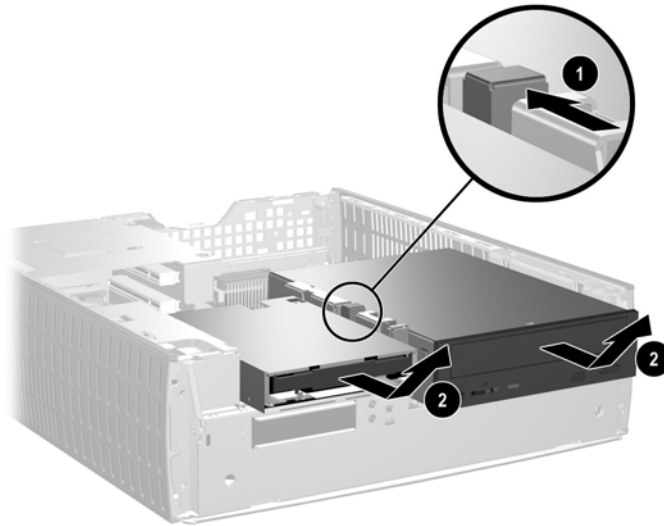
Removing the Optical Drive or Diskette Drive

To replace the drive, reverse the removal procedures.

✎ When replacing the drive, transfer the four screws from the old drive to the new one. The screws take the place of drive rails.

⚠ **CAUTION:** If you do not replace the optical drive, you must install a 5.25-inch bezel blank for proper air circulation to cool internal components during operation. Contact an authorized HP reseller or service provider to order the appropriate bezel when reconfiguring the computer.

To install the 5.25-inch bezel blank, align the bezel blank as shown in the following illustration and snap it into place.
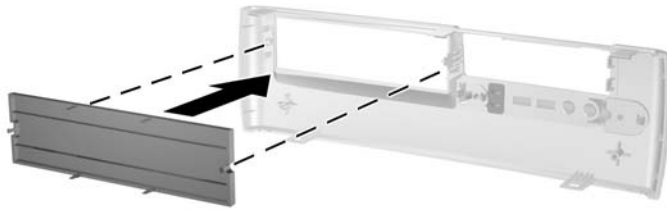
Installing a 5.25-inch Bezel Blank

Installing an Optional Optical Drive

⚠ **CAUTION:** If an optical drive is installed, you cannot install a secondary hard drive. There are not enough power supply connectors to support this configuration. Doing so could result in damage to the computer.

To install an optional optical drive:

1. Turn off the computer properly through the operating system, then turn off any external devices.

2. Disconnect the power cord from the power outlet and disconnect any external devices.

3. Remove the computer access panel and front bezel (see "Removing the Computer Access Panel and Front Bezel" in this chapter).

4. Remove the optical drive if present (see "Removing an Optical Drive or Diskette Drive" in this chapter).

5. Install two M3 metric guide screws in the lower holes on each side of the drive.

⚠ **CAUTION:** Use only 3/16-inch or 5-mm long screws as guide screws. Longer screws can damage the internal components of the drive.

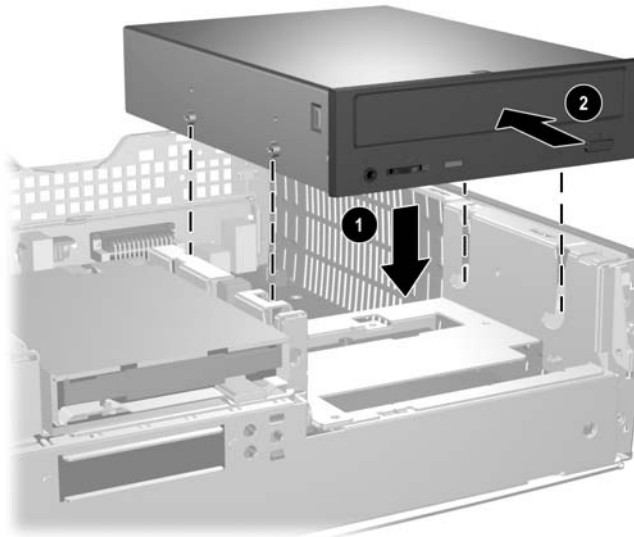✎ When replacing the drive, transfer the four screws from the old drive to the new one. The screws take the place of drive rails.

Installing Guide Screws in the Optical Drive

6. Position the guide screws on the drive into the J-slots in the drive bay ❶. Then, slide the drive toward the rear of the computer ❷.

Installing the Optical Drive

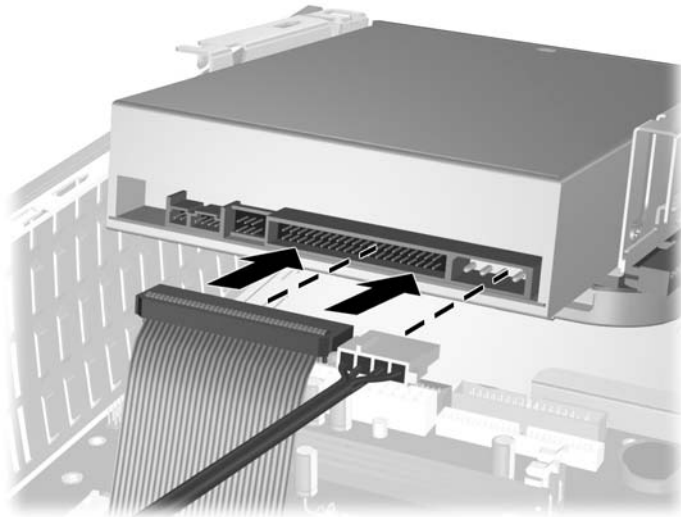✎ The drive release latch automatically locks in place when installing a drive.

7. Raise the Easy Access drive bay to the upright position and connect the flat ribbon cable and audio cable to the system board.

8. Connect the power cable and flat ribbon cable to the rear of the optical drive.

Connecting the Power and Flat Ribbon Cable

9. Return the Easy Access drive bay to the down position. Be sure not to pinch the cables in the chassis when lowering the Easy Access drive bay.

10. Replace the front bezel and computer access panel.

The system automatically recognizes the drive and reconfigures the computer.

⚠️ **CAUTION:** When servicing the computer, ensure that cables are placed in their proper locations during the reassembly process. Improper cable placement can damage the computer.
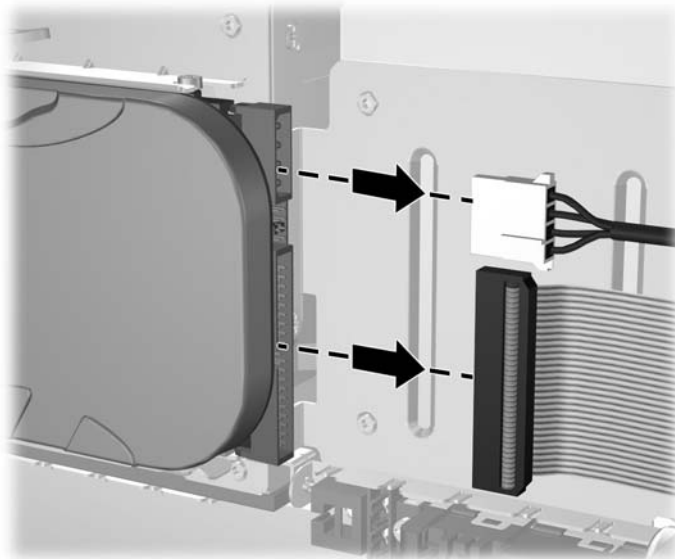
Upgrading the Hard Drive
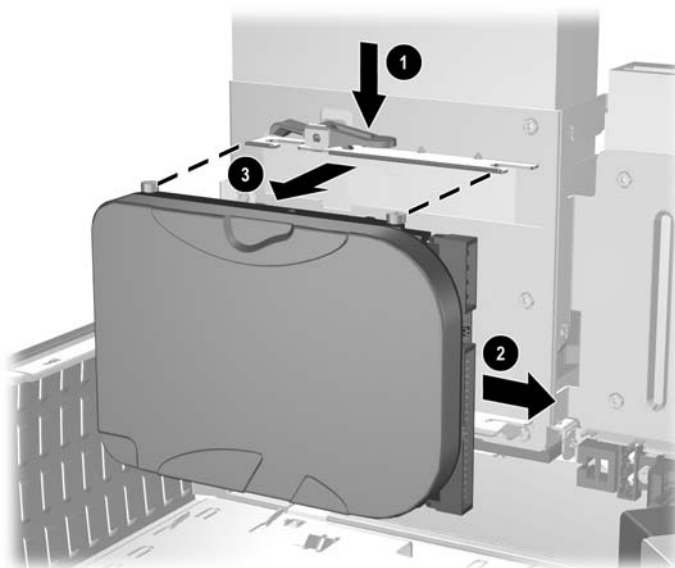
Removing and Replacing the Hard Drive

The preinstalled 3.5-inch hard drive is located beneath the optical drive bay. To remove and replace the hard drive:

1. Turn off the computer properly through the operating system, then turn off any external devices.

2. Disconnect the power cord from the power outlet and disconnect any external devices.

3. Remove the computer access panel and front bezel (see "Removing the Computer Access Panel and Front Bezel" in this chapter).

4. Raise the Easy Access drive bay to the upright position.

5. Disconnect the power cable and data cable from the back of the drive.

Disconnecting Cables from the Hard Drive

6. Press and hold the drive release latch ❶.

7. Slide the drive to the right of the bay ❷, then pull the drive from the bay ❸.

Removing the Hard Drive

To replace the hard drive, reverse the above procedure.

✎ When replacing the hard drive, transfer the four screws from the old drive to the new one. The screws take the place of drive rails. You will need a Torx T-15 screwdriver to remove and re-install the guide screws.

✎ If you have installed a hard drive that is not automatically recognized by the computer, see Appendix C, "Hard Drive Installation Guidelines."

Installing a Drive into the 3.5-inch Drive Bay

Depending on the computer configuration, the 3.5-inch drive bay on the left side of the computer may be configured with a diskette drive or it may be an empty drive bay. The type of bezel covering the drive bay will vary depending on the original computer configuration.

If the computer was not configured with the optional diskette drive, you can install a 3.5-inch device, such as a diskette drive or hard drive, into the drive bay at any time.

⚠ **CAUTION:** For proper air circulation to cool internal components during operation, you must install a 3.5-inch bezel. The type of bezel you need will depend on the type of device you plan to install. If you are installing a diskette drive, you must install a diskette drive bezel. If you are installing a hard drive, you must install a bezel blank. If you are installing a 3.5-inch device other than a diskette drive or hard drive, you must install the 3.5-inch device bezel. Contact an authorized HP reseller or service provider to order the appropriate bezel when reconfiguring the computer.
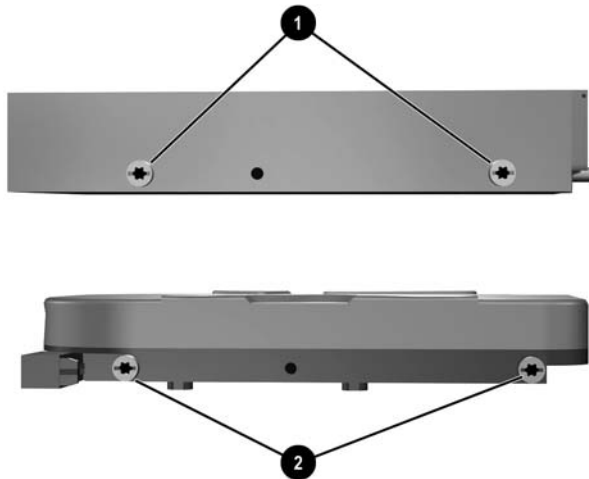
✎ The guide screws on a 3.5-inch diskette drive ❶ are placed closer together than on the hard drive ❷.

Guide Screw Locations

To install a drive into the bay:

1. Turn off the computer properly through the operating system, then turn off any external devices.

2. Disconnect the power cord from the power outlet and disconnect any external devices.

3. Remove the computer access panel and front bezel (see "Removing the Computer Access Panel and Front Bezel" in this chapter).
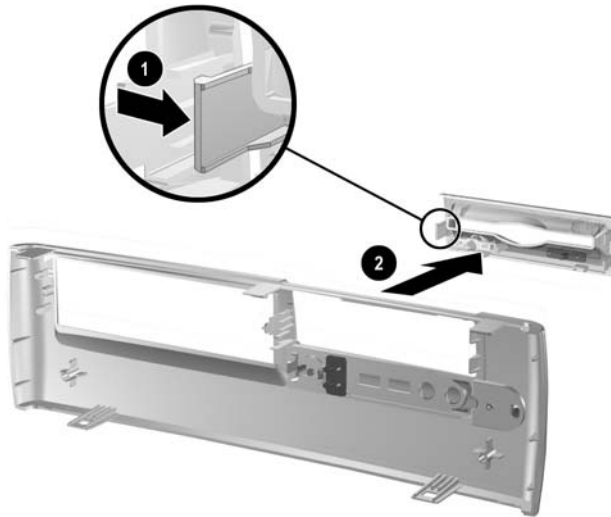
4. Remove the diskette drive bezel by pushing the tab inward ❶ and pulling the diskette drive bezel ❷ away from the front bezel.

✎ The type of bezel will vary depending on the computer configuration.


Removing the Diskette Drive Bezel

5. Insert the rear screws of the hard drive ❶ into the rear J-slots. Slide the drive ❷ toward the back of the drive cage until the front screws are aligned with the front J-slots. Then lower the front of the drive. Continue to slide the drive all the way back until it locks into place.

> △ **CAUTION:** You cannot install a secondary hard drive if an optical drive is installed. There are not enough power supply connectors to support this configuration. Doing so could result in damage to the computer. See "Removing an Optical Drive or Diskette Drive" for instructions on removing an optical drive and installing a bezel blank.

> ✎ If replacing a diskette drive, the guide screws (front and rear) will line up on the J-slots. Insert the guide screws into the J-slots, then slide the drive toward the back of the drive cage until it locks into place.
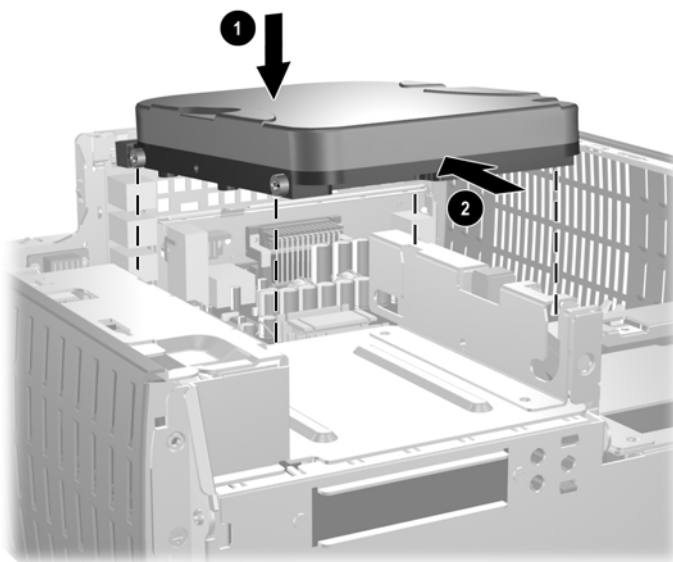

Installing a Hard Drive into the 3.5-inch Drive Bay

6. Replace with the appropriate bezel by pushing the bezel into place.

△ **CAUTION:** For proper air circulation to cool internal components during operation, you must install a 3.5-inch bezel. The type of bezel you need will depend on the type of device you are installing. If you are installing a diskette drive, you must install a diskette drive bezel. If you are installing a hard drive, you must install a bezel blank as shown in the illustration below. If you are installing a 3.5-inch device other than a diskette drive or hard drive, you must install the 3.5-inch device bezel. Contact an authorized HP reseller or service provider to order the appropriate bezel when reconfiguring the computer.
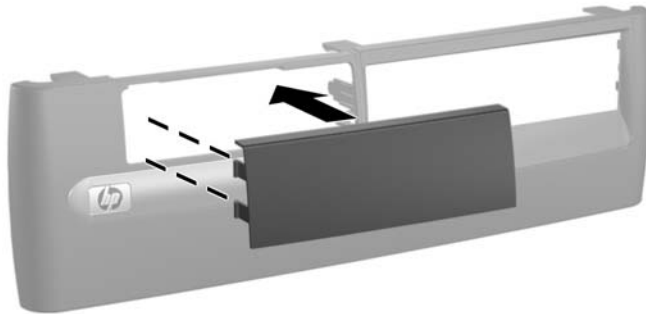
Replacing the 3.5-inch Bezel

7. Connect the power and data cables.

8. Replace the front bezel and computer access panel.

✎ If you have installed a hard drive that is not automatically recognized by the computer, see Appendix C, "Hard Drive Installation Guidelines."

A

Specifications

HP Point of Sale System rp5000

Desktop Dimensions

Height	3.95 inches	10.3 cm
Width	13.3 inches	33.78 cm
Depth (depth will increase if the computer is equipped with a port security bracket)	15.1 inches	38.35 cm
Approximate Weight	21 lb	9.53 kg
Temperature Range		
Operating	50° to 95° F	10° to 35° C
Nonoperating	-22° to 140° F	-30° to 60° C
Relative Humidity (noncondensing)		
Operating	10–90%	10–90%
Nonoperating (38.7° C max wet bulb)	5–95%	5–95%
Maximum Altitude (unpressurized)		
Operating	10,000 ft	3048 m
Nonoperating	30,000 ft	9144 m

✎ Operating temperature is derated 1.0° C per 300 m (1000 ft) to 3000 m (10,000 ft) above sea level, no direct sustained sunlight. Maximum rate of change is 10° C/Hr. The upper limit may be limited by the type and number of options installed.

HP Point of Sale System rp5000

Power Supply	115 V	230 V
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	185 W	185 W
Rated Input Current (maximum)	5 A @ 100 VAC	2.5 A @ 200 VAC
Heat Dissipation		
Maximum	971 BTU/hr	245 kg-cal/hr
Typical (idle)	256 BTU/hr	65 kg-cal/hr

✎ This system utilizes a passive power factor corrected power supply when used in the 230V mode. This allows the system to pass the CE mark requirements for use in the countries of the European Union.

B

Powered Serial Port Configuration

The four serial ports on the HP Point of Sale System rp5000 can be configured as either standard (non-powered) serial ports or powered serial ports. Some Point of Sale devices use a powered serial port. If the serial port is configured as a powered port, devices that support a powered serial interface do not require an external power source.

✎ The computer ships with the serial ports configured in standard mode.

Each serial port has two red jumpers. In powered serial port mode, one jumper provides 5 volts to the Ring Indicate (RI) pin on the serial connector. The other jumper provides 12 volts to the Data Carrier Detect (DCD) serial connector pin. When configuring the port, both jumpers must be moved to either the powered or standard configuration position.

To configure the serial ports:

1. Turn off the computer properly through the operating system, then turn off any external devices.

2. Disconnect the power cord from the power outlet and disconnect any external devices.

3. Remove the computer access panel and front bezel (see Chapter 2, "Removing the Computer Access Panel and Front Bezel").

4. Raise the Easy Access drive bay to the upright position to access the system board.

5. If you are changing the COM 2 serial port configuration, remove the HP USB+Power card. For more information, see Chapter 2, "Removing the HP USB+Power Card."

   If you are changing the COM 3 or COM 4 serial port configuration, remove the Expansion Card Cage. For more information, see Chapter 2, "Removing the Expansion Card Cage."

✎ When configuring the serial port, both of the jumpers must be in the standard configuration position (both jumpers on pins 2 and 3), or powered configuration position (both jumpers on pins 1 and 2).

6. Place the jumpers on the appropriate pins (see the illustration on page 3 of this appendix for jumper locations).

   When the jumpers are on pins 2 and 3 (as shown in the top illustration), the port is in standard (non-powered) mode.

   When the jumpers are on pins 1 and 2 (as shown in the bottom illustration), the port is in powered mode.
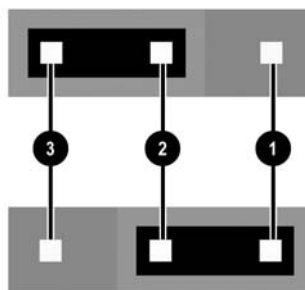
Serial Port Jumper Positions

7. Replace the Expansion Card Cage, if you removed it.

8. Replace the USB+Power card, if you removed it

9. Return the Easy Access drive bay to the down position.

10. Replace the front bezel and computer access panel.

11. If the serial ports are configured in powered mode, connect the powered Point of Sale device.

The serial port jumpers are located as shown in the illustration below:
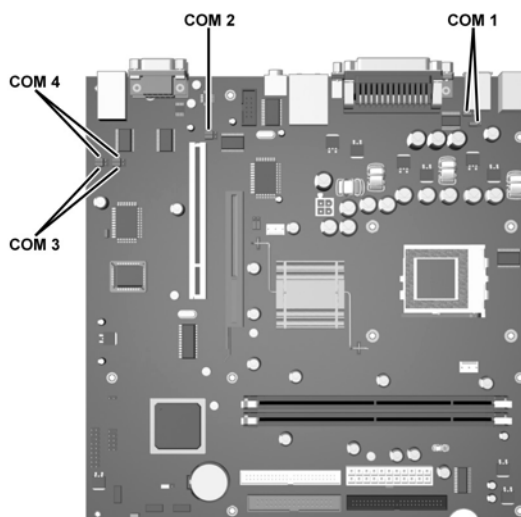
Serial Port Jumper Locations

C

Hard Drive Installation Guidelines

Using the Cable-Select Feature with Ultra ATA Devices

Optional drives are available from HP in kits. The configuration of the drive employs a cable-select feature that identifies the drive as device 0 (master drive) or device 1 (slave 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.

HP 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 some models.

Guidelines for Installing Ultra ATA Devices

When installing additional Ultra ATA drives, follow these guidelines:

■ If using multiple Ultra ATA devices, HP 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

❶	Device 0 (master drive) connector
❷	Device 1 (slave drive) connector
❸	System board connector

■ For optimal performance, connect hard drives to the primary controller. Connect expansion devices, such as ATA optical 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. HP has provided extra guide screws installed in the front of the computer chassis behind the front bezel. Some options use M3 metric hardware. HP-supplied metric screws are black. HP-supplied standard screws are silver.

■ If only one device is connected to a cable, that device must be attached to the end (Device 0) connector.

✎ If you have only one device, make sure to connect it to the Device 0 connector. If you connect it to the Device 1 connector, the system will not recognize the device and you may get a "no fixed disk found" error message.

D

Battery Replacement

The battery that comes with the computer provides power to the real-time clock. When replacing the battery, use a battery equivalent to the battery originally installed in the computer. The 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:** The 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 HP 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* on the *Documentation CD* 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 HP, 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. Turn off the computer properly through the operating system, then turn off any external devices. Disconnect the power cord from the power outlet and disconnect any external devices. Remove the computer access panel (see Chapter 2, "Removing the Computer Access Panel and Front Bezel").

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

2. Locate the battery and battery holder on the system board.

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

Type 1

a. Lift the battery out of its holder.
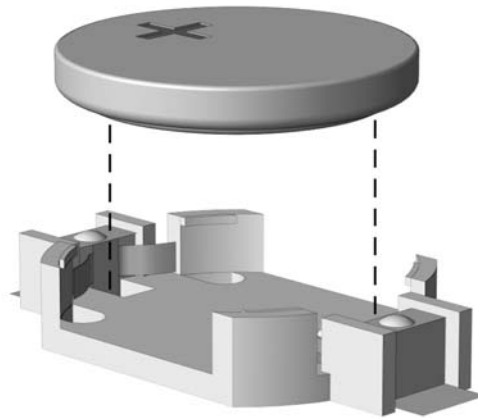
Removing a Coin Cell Battery (Type 1)

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.
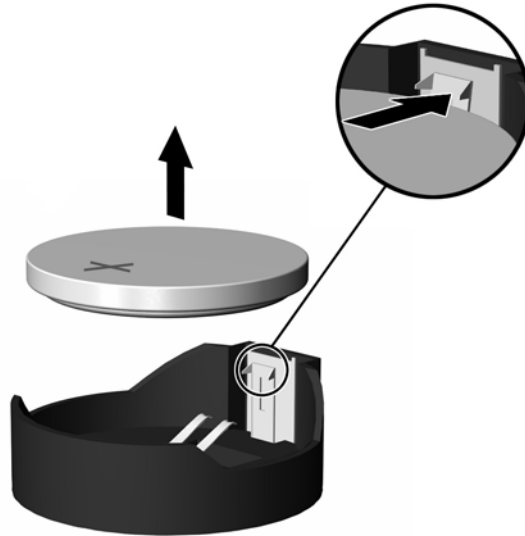
Removing a Coin Cell Battery (Type 2)

    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.
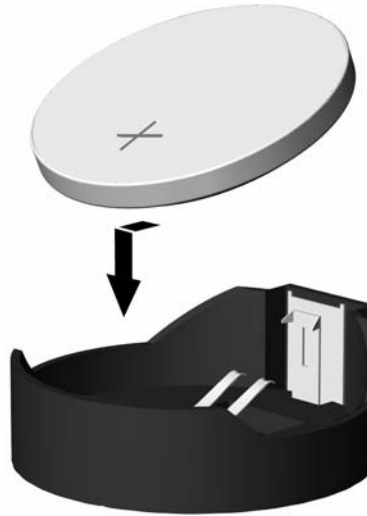
Replacing a Coin Cell Battery (Type 2)

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

4. Replace the computer access panel.

5. Plug in the computer and turn on power to the computer.

6. Reset the date and time, your passwords, and any special system setups, using Computer Setup. Refer to the *Computer Setup (F10) Utility Guide* on the *Documentation CD*.

E

Security Lock Provisions

Installing a Security Lock

The security locks displayed below and on the following page can be used to secure the computer.
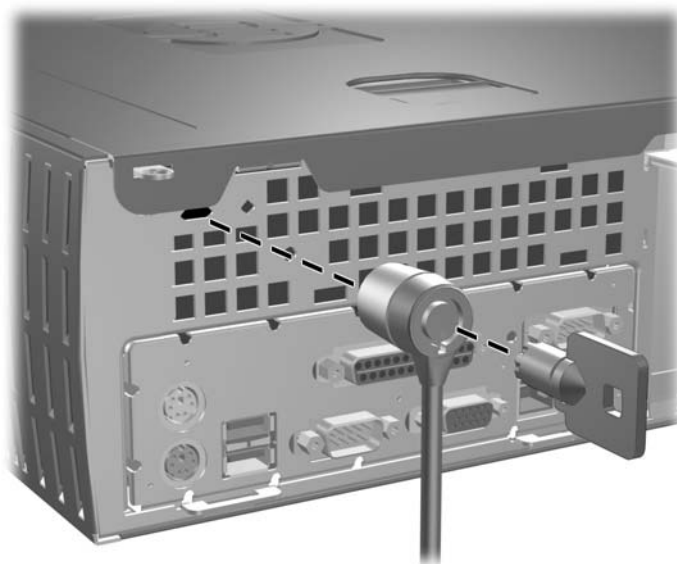
Installing a Cable Lock

Installing a Padlock

F

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 an HP authorized dealer, reseller, or service provider.

✎ For more information on static electricity, contact an HP authorized dealer, reseller, or service provider.

G

Routine Computer Care and Shipping Preparation

Routine Computer Care

Follow these suggestions to take care of the 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 the 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.

Optical Drive Precautions

Be sure to observe the following guidelines while operating or cleaning the optical 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 HP service provider.

Shipping Preparation

Follow these suggestions when preparing to ship the computer:

1. Back up the hard drive files on PD discs, tape cartridges, CDs, 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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