

Upgrading and Servicing Guide

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Upgrading and Servicing Guide

Safety Information

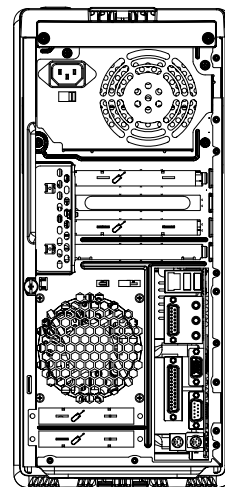
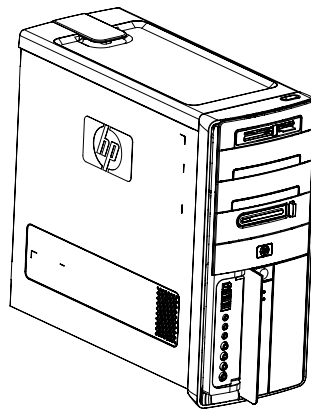
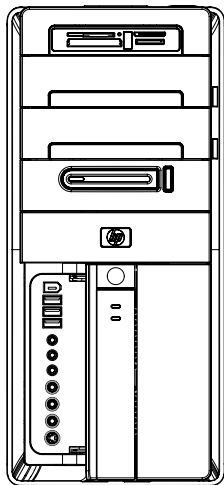
This product has not been evaluated for connection to an "IT" power system (an AC distribution system with no direct connection to the earth, according to IEC 60950).



WARNING: Before you install and connect your system to the electrical power system, please read "Safety Information" in the *Limited Warranty and Support Guide*.

This *Upgrading and Servicing Guide* provides instructions for removing and replacing the hardware components of your computer.

Opening and Closing the Computer



Preparing the computer

Before you upgrade any component in your computer, you must prepare it so that you can safely handle it and the components.

Read the following items before attempting to upgrade or service the computer:

- 1 These procedures assume familiarity with the general terminology associated with personal computers, and with the safety practices and regulatory compliance required for using and modifying electronic equipment.
- 2 Write down and save the system model and serial numbers, all installed options, and other information about the system. It is easier to consult this information than to open and examine the computer.
- 3 It is recommended that you use an antistatic wrist strap and a conductive foam pad when working on the system.



WARNING: Before you remove the front and side panels of the computer, always disconnect the modem cord from the telephone system, and then disconnect the computer from the power source. Failure to do so can result in personal injury or equipment damage.

Before opening the computer

To avoid injury and equipment damage, always complete the following steps in this order before opening the computer:

- 1 Remove any optical disc (CD or DVD) from the computer.
- 2 Shut down the computer.
- 3 Disconnect the modem/telephone cable, if present.



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

- 4 Disconnect the power cord from the electrical outlet, and then from the computer.
- 5 Disconnect all other attached cables (such as the keyboard, mouse, and monitor cables).
- 6 Disconnect all external devices.



CAUTION: Static electricity can damage the electronic components of the computer or optional equipment. Ensure that you are discharged of static electricity by briefly touching a grounded metal object.

After closing the computer

To avoid injury and equipment damage, always complete the following steps, in this order, after closing the computer:

- 1 Reconnect the power cord to the computer and to the electrical outlet.

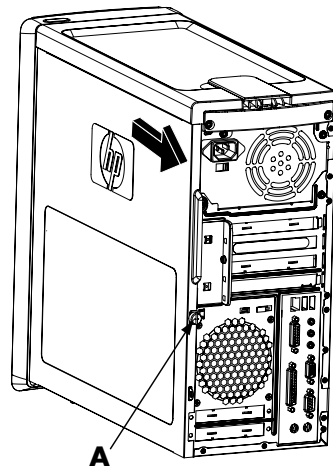


WARNING: To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telecommunications or telephone connectors into the network interface card (NIC) (labeled as an Ethernet connector).

- 2 Reconnect the modem/telephone cable and all other cables (such as the keyboard, mouse, and monitor cables).
- 3 Reconnect the external devices.
- 4 Turn on the computer and all peripherals, such as the monitor.
- 5 If you installed an add-in card, install any software drivers supplied by the card manufacturer.

Removing the side panel

- 1 See "Before opening the computer" on page 2.
- 2 Loosen the thumbscrew (A) that secures the side panel to the computer chassis. You may need to use a screwdriver the first time you loosen the screw.



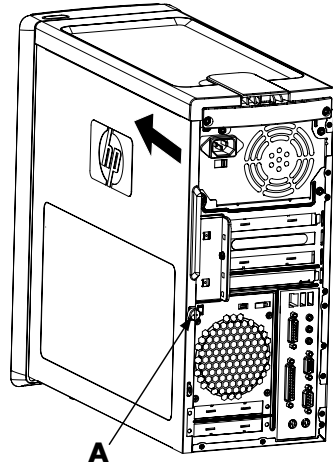
- 3 Use the handle to slide the side panel back about 1 inch (2.5 centimeters), and then lift it off the chassis.



WARNING: Beware of sharp edges inside the chassis.

Replacing the side panel

- 1 Align the tabs at the bottom of the side panel with the ridge on the bottom of the chassis. Place the side panel in the proper position on the chassis, and then slide it toward the front of the chassis.



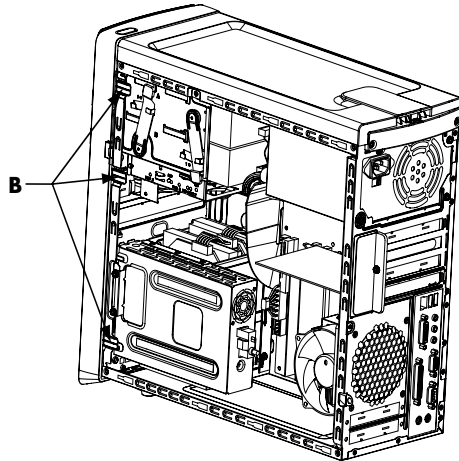
NOTE: There is a 3mm gap between the top of the side panel and the top of the chassis when the side panel is attached properly.

- 2 Ensure that the hole for the thumbscrew is aligned with the hole in the chassis, and then replace the thumbscrew (**A**).
- 3 See "After closing the computer" on page 3.

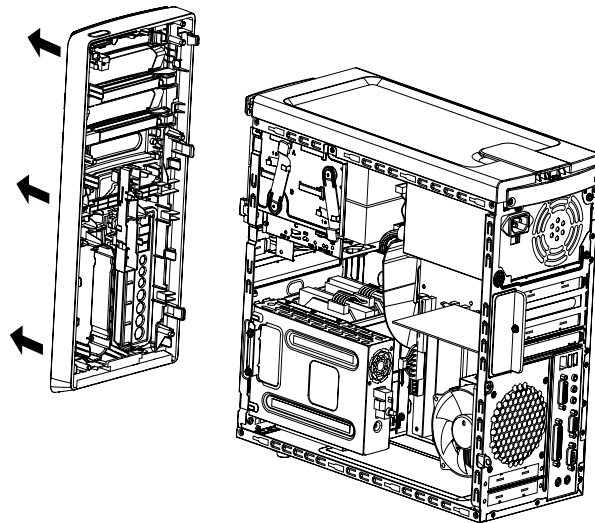
Removing the front panel

This procedure is necessary only when removing or replacing an optical drive, memory card reader, HP Pocket Media Drive, or the hard disk drive.

- 1 Remove the HP Personal Media Drive, if present.
- 2 Pull the three tabs (**B**) away from the outside edge of the chassis.

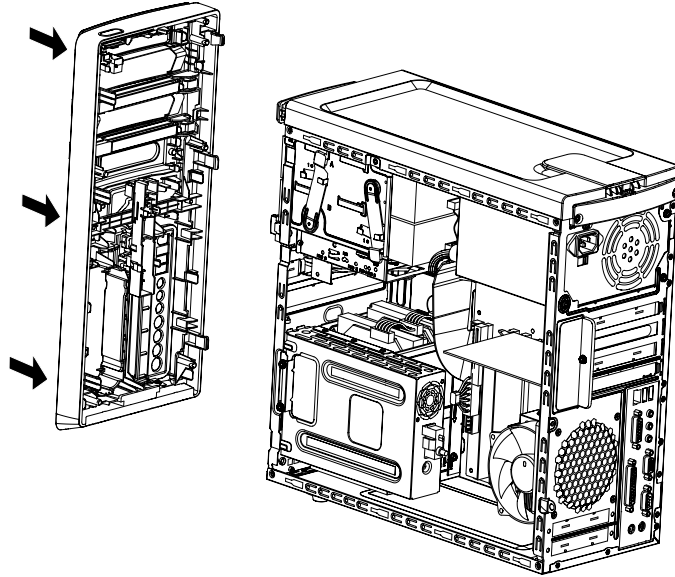


- 3 Swing the front panel to the left (away from the chassis) to remove it.



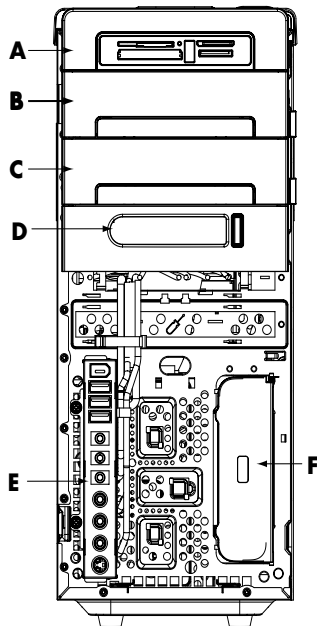
Replacing the front panel

- 1 Align the three hooks on the left side of the front panel with the three holes on the left side of the chassis, and then insert the hooks into the holes.
- 2 Swing the front panel to the right (toward the chassis), and then press the three hooks on the right side of the front panel into the three holes on the right side of the chassis until the panel snaps into place.



- 3 Replace the HP Personal Media Drive.

Locating Components Inside the Computer



- A** Memory card reader
- B** Upper 5.25-inch optical drive bay, which may be a CD-ROM, CD-RW, DVD-ROM, DVD+RW/+R, or combination drive
- C** Lower 5.25-inch optical drive bay, may be empty (knockout plate) or a CD-ROM, CD-RW, DVD-ROM, DVD+RW/+R, or combination drive
- D** HP Pocket Media Drive bay (select models)
- E** Front connector panel (no replacement instructions)
- F** HP Personal Media Drive bay (select models)

NOTE: The connectors and components of your chassis model may vary from the illustration.

Removing and Replacing Drives

Your computer has several drives that you can replace or upgrade. See “Locating Components Inside the Computer” on page 7 for the drive types and locations.

The hard disk drive is either a Serial ATA (advanced technology attachment) drive, which uses a narrow data cable, or a Parallel ATA drive, which uses a wide data cable.

Select models have a second hard disk drive.



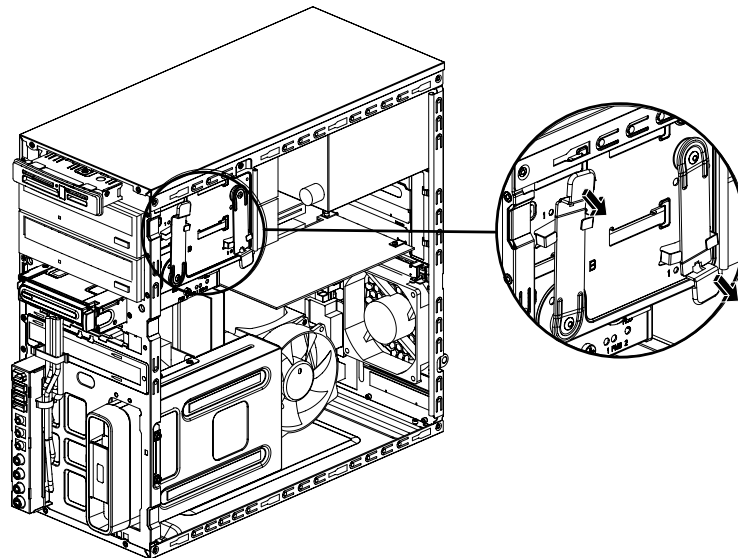
CAUTION: Before you remove the hard disk drive, back up your personal files on the hard disk drive to an external storage device, such as a CD. Failure to do so will result in data loss. After replacing the hard disk drive, you must run System Recovery using the recovery discs to load the factory-installed files. For details about the recovery procedure, see the user documentation that came with your computer.

You can add an optical drive into an empty lower optical drive bay.

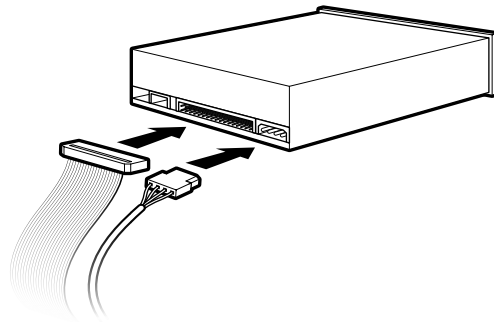
IMPORTANT: Before adding a new optical drive, make sure that it is compatible with the operating system. Also, make sure you have the correct software and drivers for the optical drive to work with the operating system.

Removing an optical drive

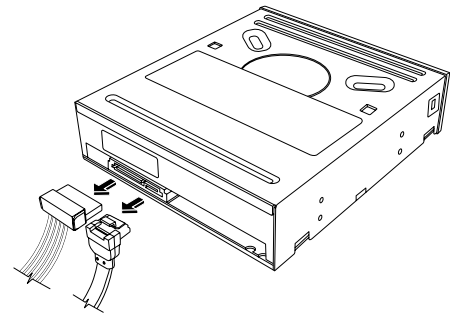
- 1 Complete the procedures to prepare the computer to remove the side and front panels. See “Opening and Closing the Computer” on page 1.
- 2 Release the drive by pulling the latch out, away from the chassis, and then pulling the drive partway out of the front of the chassis. (The latch drive brackets secure the drives in their respective positions in the chassis.)



- 3 Disconnect the power cable, data cable, and the sound cable, if present, from the back of the optical drive that you want to remove.
 - For most drive cables, use a gentle rocking motion to remove the plug.
 - For Serial ATA drive cables, press the latch (select models only) in the center of each plug, and then pull the plug out of the drive connector.



Parallel ATA drive

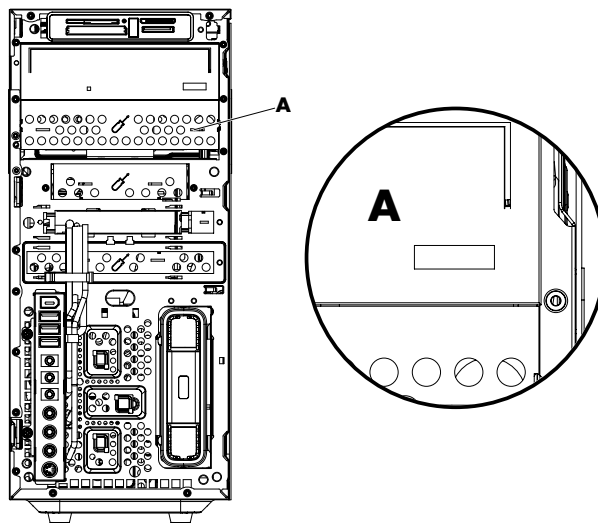


Serial ATA drive

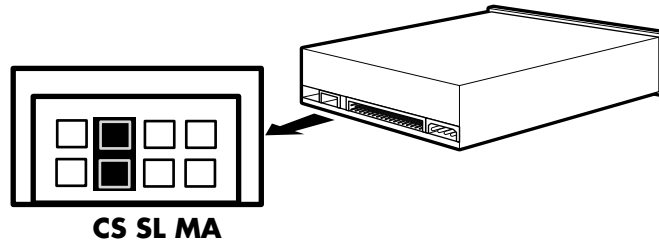
- 4 Pull the drive out through the front of the chassis.

Adding or replacing an optical drive

- 1 If you are replacing an existing drive, remove it. See “Removing an optical drive” on page 8.
- 2 If you are adding a drive to an empty lower optical drive bay, you must remove the knockout plate from the bay. To do this, insert a flat-head screwdriver into the knockout plate slot (**A**), and then rotate the screwdriver to break the knockout plate out of the chassis. Discard the knockout plate.

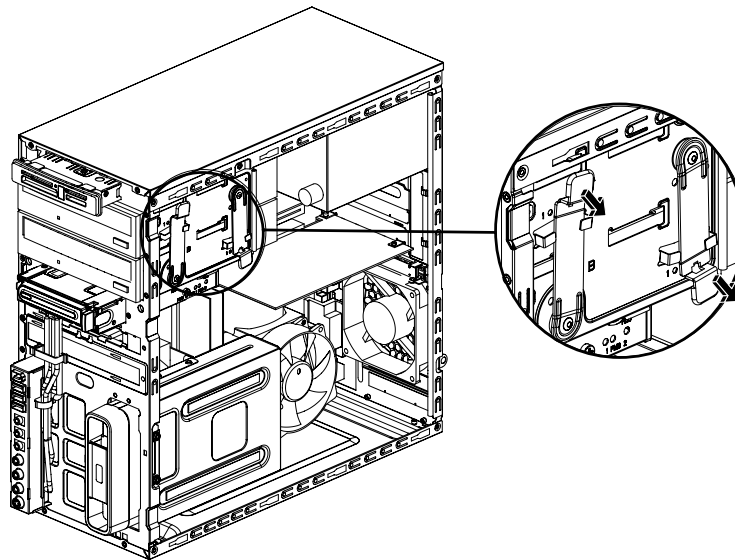


- 3 Make sure the jumper on the new optical drive is in the CS (Cable Select) position. Your drive may vary from the illustration.

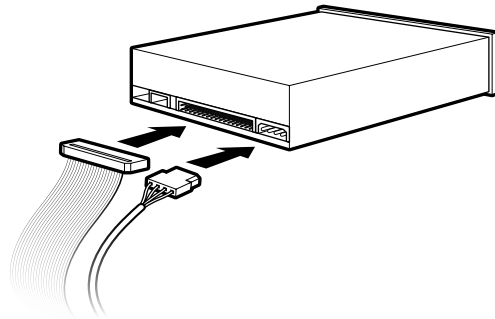


Cable Select jumper

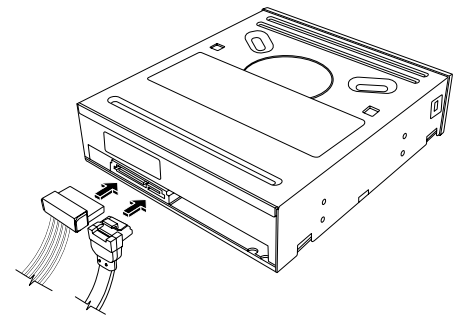
- 4 Release the drive bay by pulling the latch out, away from the chassis, and then sliding the drive partway into the front of the chassis. (The latch drive brackets secure the drives in their respective positions in the chassis.)



- 5 Connect the power and data cables to the back of the optical drive that you want to add. Reconnect the sound cable, if present.



Parallel ATA drive



Serial ATA drive

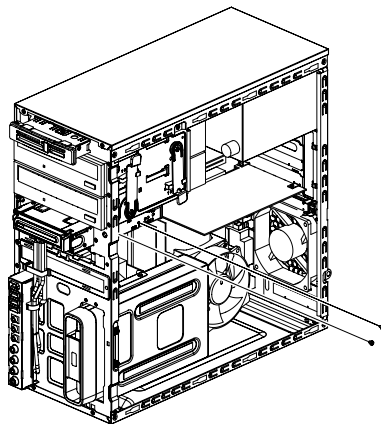


WARNING: If you are connecting a second Parallel ATA drive, make sure to connect the data cable labeled **Master** to the primary hard disk drive, and the data cable labeled **Slave** to the secondary hard disk drive. If the data cable is not connected correctly, the computer is unable to locate the hard disk drive and data may be lost.

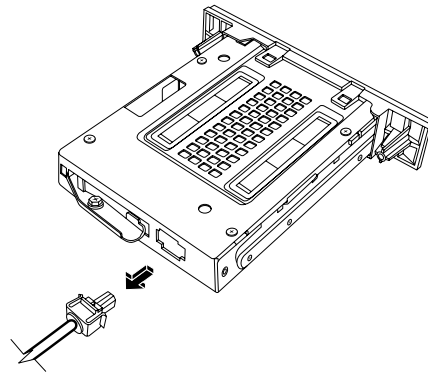
- 6 Push the drive all the way in through the front of the chassis until it locks into place.
- 7 Insert the drive latch pin fully into the hole labeled (2).
- 8 Replace the front and side panels, and then close the computer. See "Opening and Closing the Computer" on page 1.

Removing the HP Pocket Media Drive bay or hard disk drive

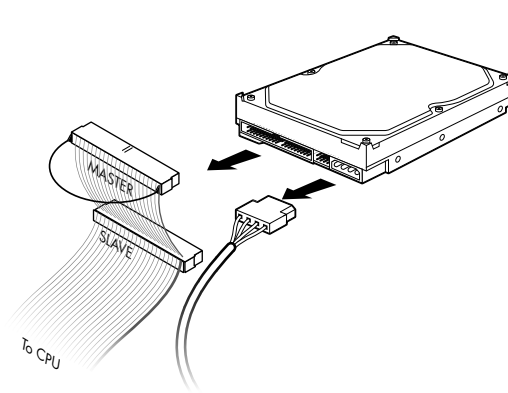
- 1 Prepare the computer to be opened, and then remove the side and front panels. See "Opening and Closing the Computer" on page 1.
- 2 Release the HP Pocket Media Drive bay or hard disk drive by removing the two screws on the side of the drive. Then slide the drive partway out of the front of the chassis.



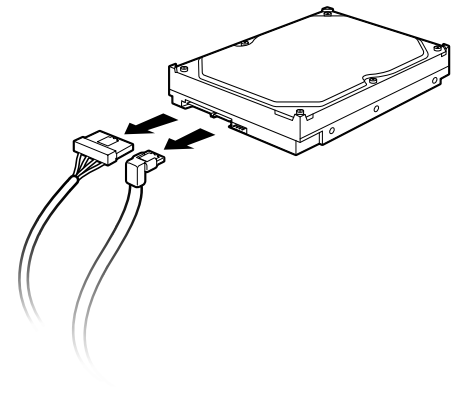
- 3** Disconnect the power and data cables from the back of the drive by squeezing the two latches on each and pulling the cable.



Pocket Media Drive



Parallel ATA drive

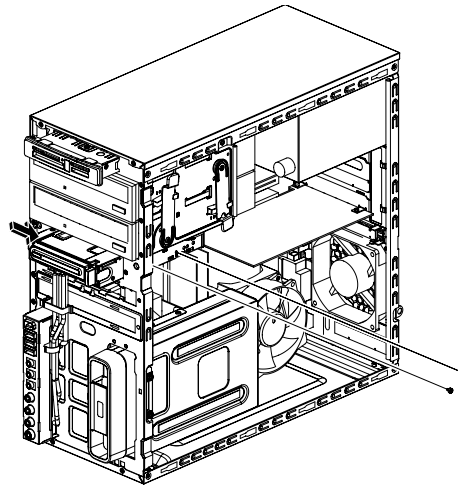


Serial ATA drive

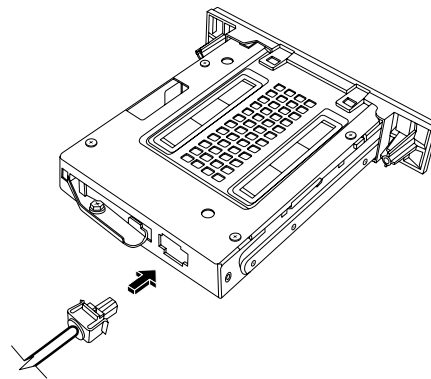
- 4** Pull the drive out through the front of the chassis.

Adding or replacing the HP Pocket Media drive bay or hard disk drive

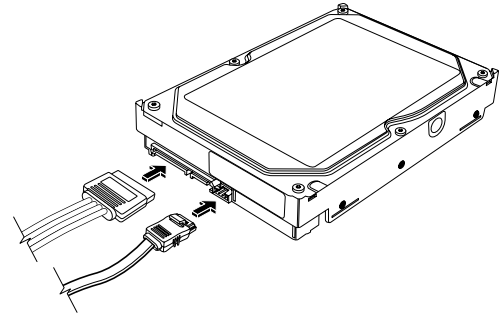
- 1 If replacing an existing HP Pocket Media Drive bay or hard disk drive, remove it. See “Removing the HP Pocket Media Drive bay or hard disk drive” on page 11.
- 2 Slide the new HP Pocket Media Drive bay or hard disk drive into the front of the chassis until it locks into place.
- 3 Align the two screw holes on the chassis with the two screw holes on the side of the drive, and then attach the two screws.
 - For an HP Pocket Media Drive bay, make sure to insert the screws into the holes labeled (2).
 - For a hard disk drive, make sure to insert the screws into the holes labeled HDD.



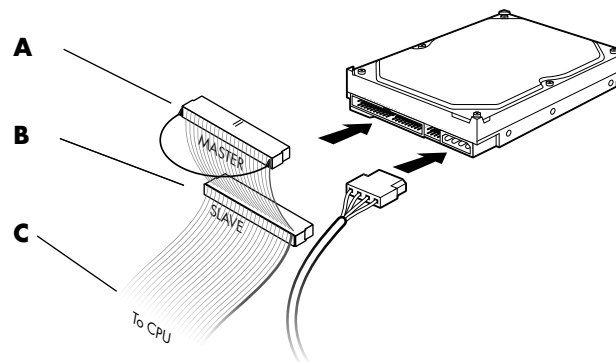
- 4 Connect the power and data cables to the back of the HP Pocket Media Drive bay or hard disk drive.



Pocket Media Drive



Serial ATA drive



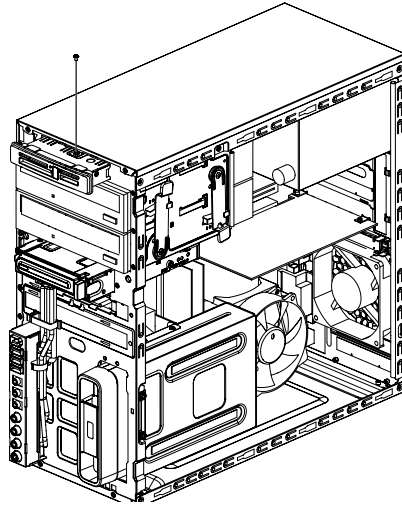
Parallel ATA drive

- A** — Connect to a primary hard disk drive.
B — Connect to a secondary hard disk drive (select models only).
C — Connect to the computer motherboard.

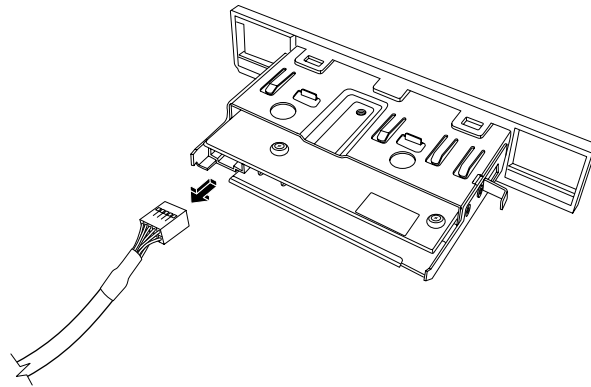
- 5 Replace the front and side panels, and close the computer. See "Opening and Closing the Computer" on page 1.

Removing the memory card reader

- 1 Prepare the computer to be opened, and then remove the side and front panels. See “Opening and Closing the Computer” on page 1.
- 2 Release the drive by removing the screw on the top of the memory card reader, sliding the memory card reader to the left to loosen it, and then pulling it partway out of the front of the chassis.



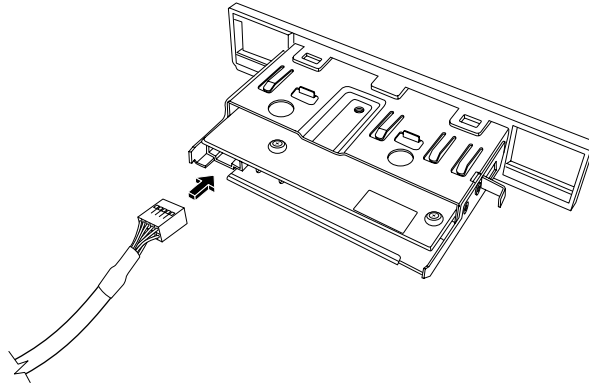
- 3 Disconnect the cables from the back of the memory card reader.



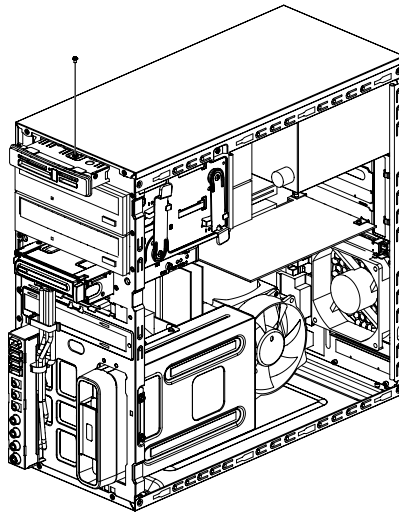
- 4 Pull the memory card reader out of the front of the chassis.

Adding or replacing the memory card reader

- 1 Complete the procedures to remove the memory card reader, if necessary. See “Removing the memory card reader” on page 15.
- 2 Slide the memory card reader partway into the front of the chassis.
- 3 Attach the cables to the back of the memory card reader.



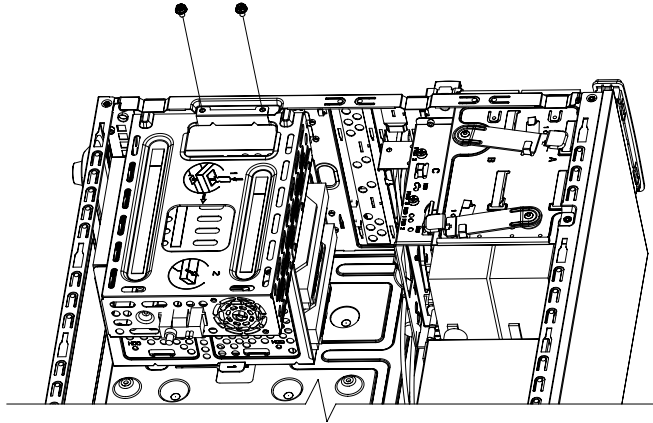
- 4 Push the memory card reader into the chassis until the screw hole on the chassis is aligned with the screw hole on the top of the memory card reader, and then insert the short screw to secure the memory card reader to the chassis.



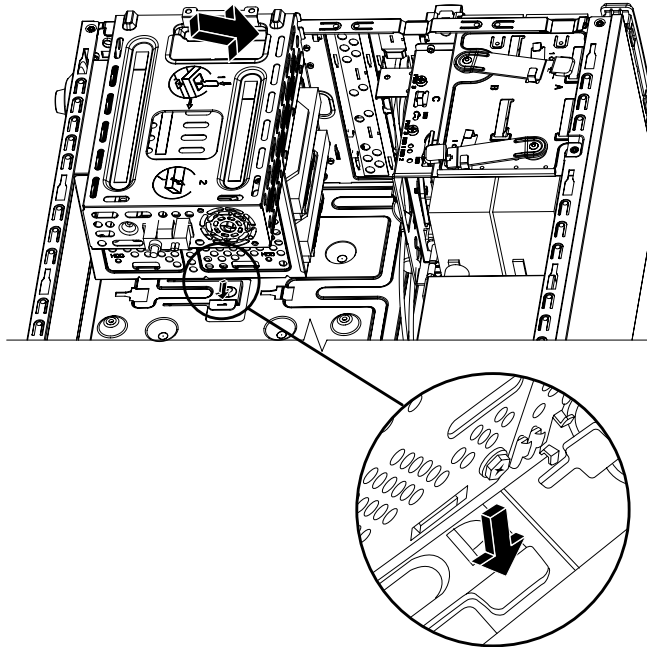
- 5 Replace the front and side panels, and close the computer. See “Opening and Closing the Computer” on page 1.

Removing the hard disk drive

- 1 Prepare the computer to be opened, and then remove the side and front panels. See “Opening and Closing the Computer” on page 1.
- 2 Gently lay the computer on its side.
- 3 Remove the two screws that secure the hard disk drive cage to the chassis.

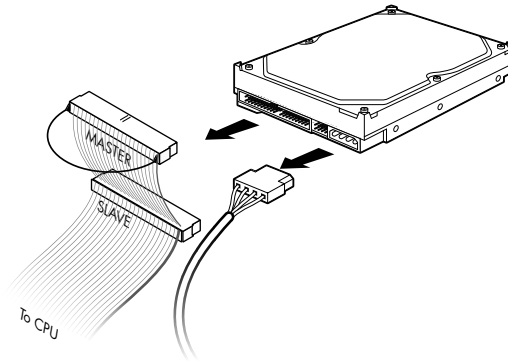
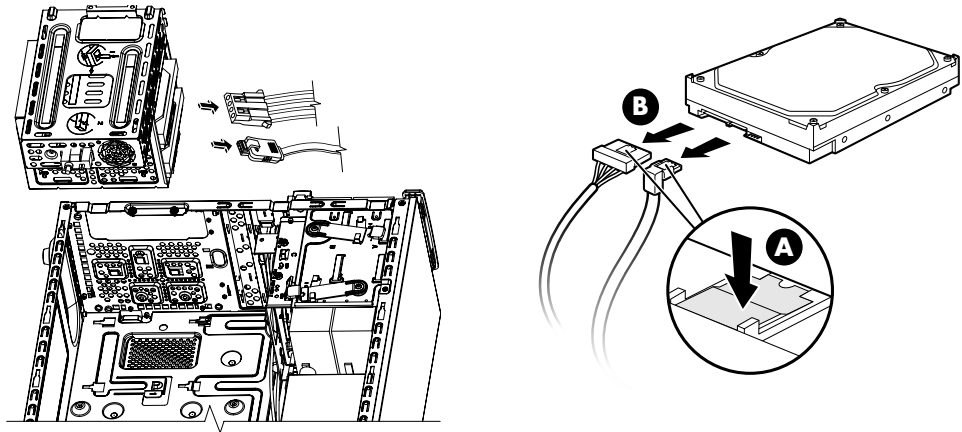


- 4 Use a screwdriver to push down the latch on the side of the hard disk drive cage, and then slide the hard disk drive cage away from the bottom of the chassis.

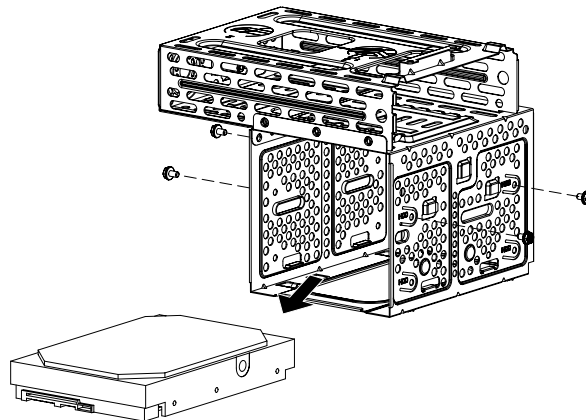


5 Lift the hard disk drive cage out of the chassis, and then remove the hard disk drive cables.

- For most drive cables, use a gentle rocking motion to remove the plug.
- For Serial ATA hard disk drive cables, press the latch **(A)** (select models only) in the center of each plug **(B)**, and then pull the plug out of the drive connector.



6 Remove the four screws that secure the hard disk drive cage to the hard disk drive cage, and then slide the hard disk drive out of the hard disk drive cage.



Adding or replacing a hard disk drive

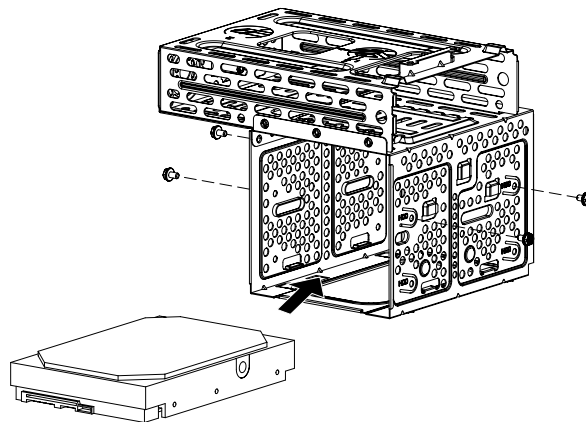
- 1 If you are replacing an existing hard disk drive, remove it. See "Removing the hard disk drive" on page 17.
- 2 Slide the new hard disk drive into the hard disk drive cage, making sure that the hard disk drive cables are facing the top of the drive cage.

NOTE: The hard disk drive cage may have slots for two (2) or three (3) hard disk drives. If you are replacing more than one drive or adding drives, place the primary drive in the lowest slot of the cage.

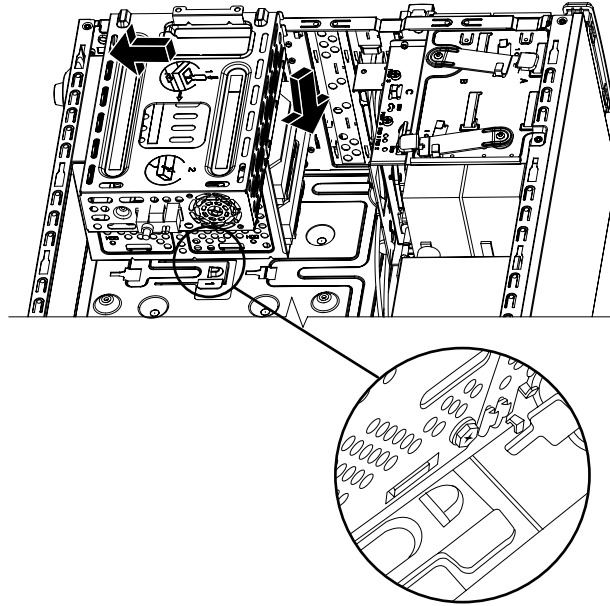
- 3 Align the hard disk drive with the four screw holes on the hard disk drive cage, and then install the four screws that secure the drive to the cage.

NOTE: If you are replacing an old drive with a new drive, remove the four guide screws from the old drive and use them to install the new drive.

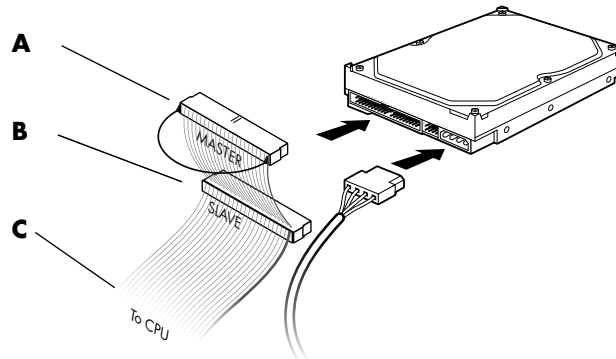
If you are installing additional hard disk drives, use four standard 6-32 screws that you purchase separately.



- 4 Align the four guides on the bottom of the hard disk drive cage with the four holes on the back of the chassis, and then slide the cage down toward the bottom of the chassis until it locks into place.

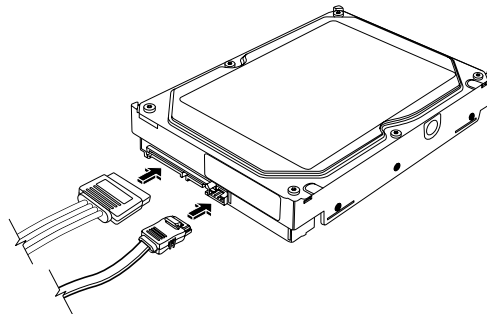


- 5 Attach the hard disk drive cables.



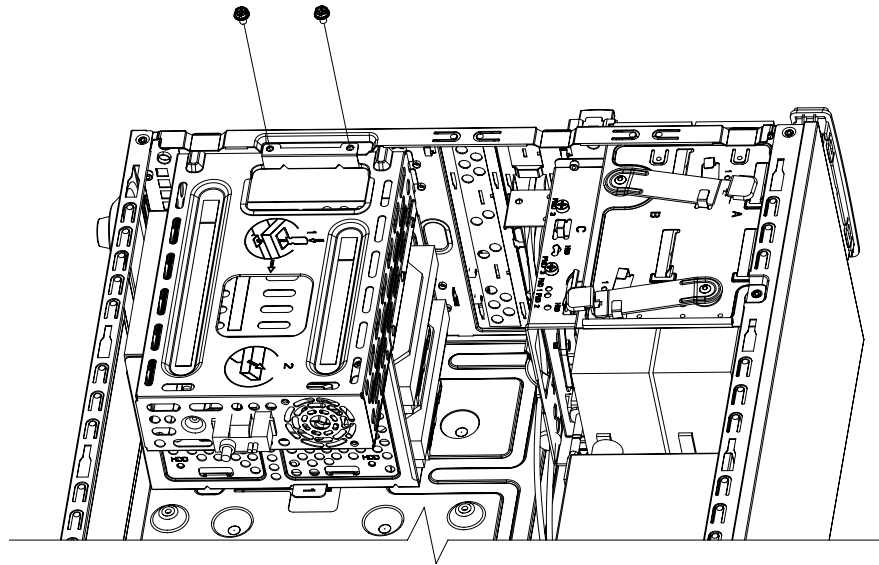
- A** — Connect to a primary hard disk drive.
B — Connect to a secondary hard disk drive (select models only).
C — Connect to the computer motherboard.

Parallel ATA drive



Serial ATA drive

- 6 Attach the two screws that secure the hard disk drive cage to the chassis.

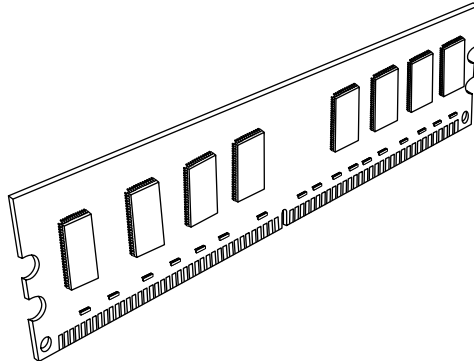


- 7 Replace the front and side panels, and then close the computer. See "Opening and Closing the Computer" on page 1.

Adding Memory

Your computer comes with random access memory (RAM), which temporarily stores data and instructions on your computer. The computer is shipped with one or more memory modules installed, but you can replace the existing memory module(s) with higher-capacity modules.

The motherboard contains sockets for DDR DIMMs (double data rate dual in-line memory modules). The exact number of sockets and the type of DDR memory module depends on the model of computer that you have.



DDR DIMM memory module

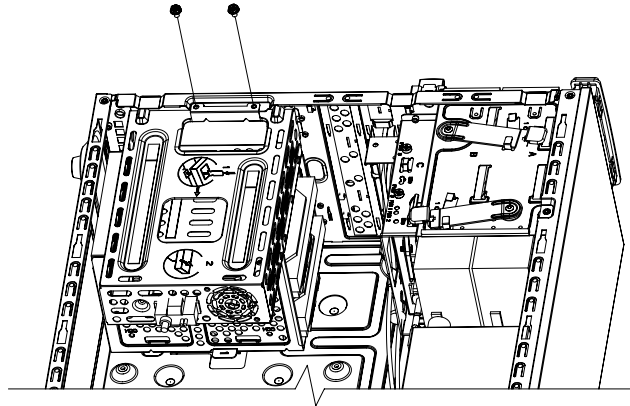
To determine the type and speed of memory module that your computer uses, and for specific memory module information and specifications, go to the Web site listed in your *Limited Warranty and Support Guide*, and click the **Support** link.



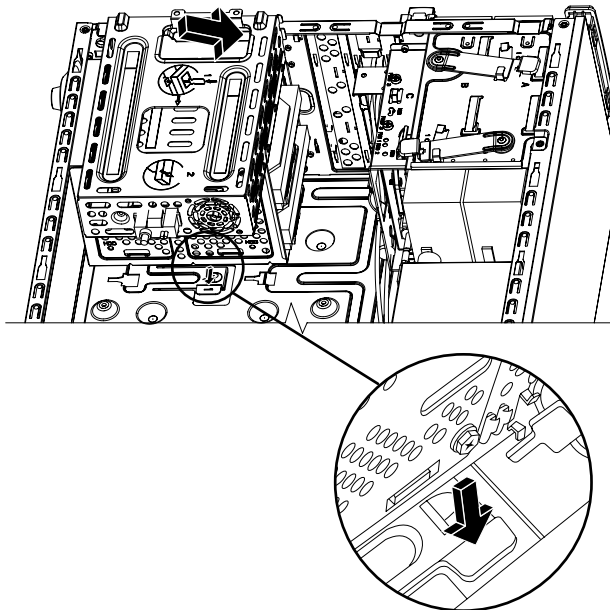
WARNING: Using the wrong type of memory module could damage your computer.

Removing a memory module

- 1 Prepare the computer to be opened, and then remove the side and front panels. See “Opening and Closing the Computer” on page 1.
- 2 Gently lay the computer on its side.
- 3 Remove the two screws that secure the hard disk drive cage to the chassis.



- 4 Use a screwdriver to push down the latch on the side of the hard disk drive cage, and then slide the hard disk drive cage away from the bottom of the chassis.

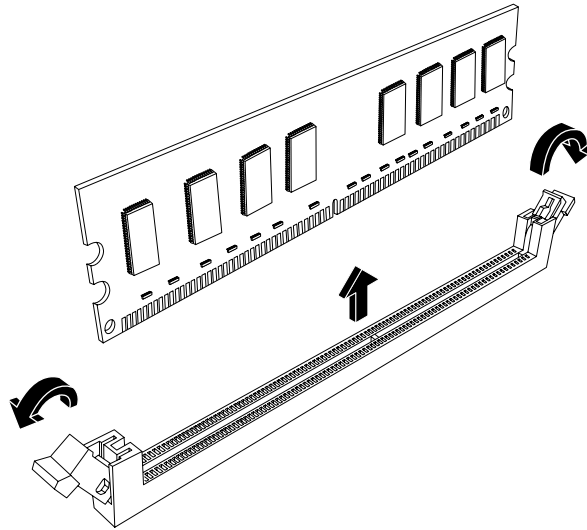


- 5 Locate the memory sockets on the motherboard.



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

- 6 Move any cabling out of the way, if necessary.
- 7 Push down the retaining clip on each end of the memory socket until the module pops out of the socket.



WARNING: Do not pull the memory module out of the memory socket. Always use the retaining clips to remove the module.

- 8 Lift the memory module out of the memory socket.

Installing a memory module

Upgrade the memory in your computer with a memory module of the same type and speed as the memory originally installed in your computer.



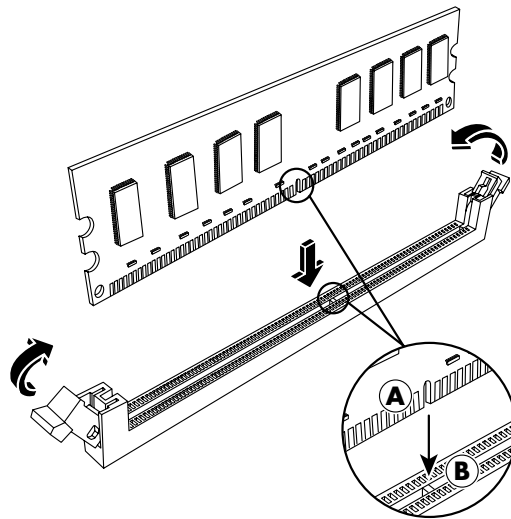
CAUTION: When handling a memory module, be careful not to touch any of the contacts. Doing so may damage the module.

- 1 You can install the memory module in only one position. Align the notch **(A)** on the memory module with the tab **(B)** on the memory socket, and then push the module carefully and firmly into the slot, ensuring that the latches on both ends of the slot snap into place.

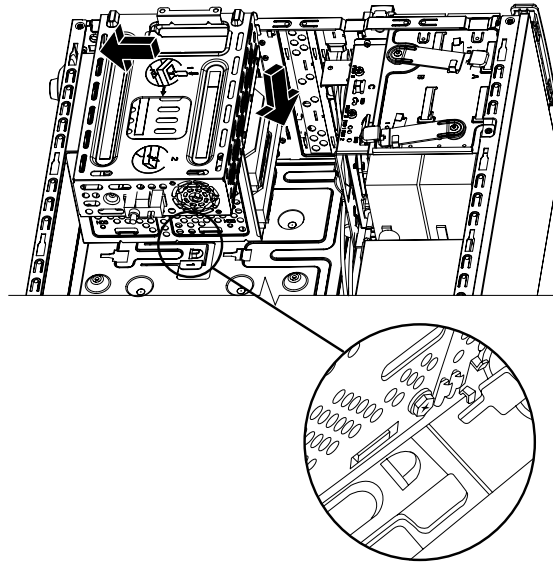
If you are *replacing* a memory module, install the new memory module into the same memory slot from which you removed the old memory module.

Or

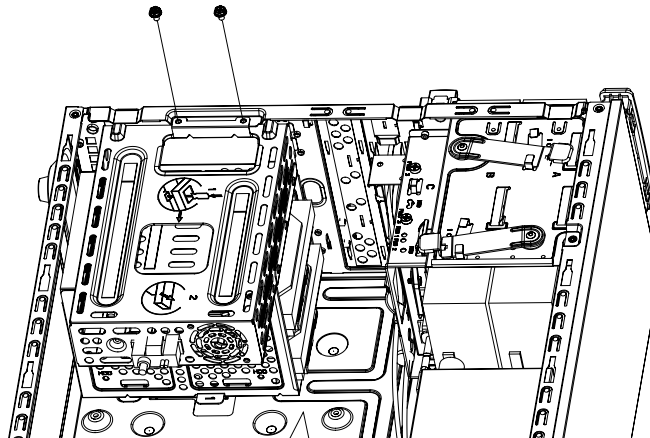
If you are *adding* a memory module, install the new module in the memory socket nearest to the preinstalled module, and then install any additional modules in the next available sockets.



- 2 Align the four guides on the bottom of the hard disk drive cage with the holes on the back of the chassis, and then slide it down toward the bottom of the chassis until it locks into place.



- 3 Attach the two screws that secure the hard disk drive cage to the chassis.



- 4 Place the chassis upright.
- 5 Replace the side panel, and then close the computer. See "Opening and Closing the Computer" on page 1.

NOTE: If a blank screen is displayed after you replace or add a memory module, the module is installed incorrectly or it is the wrong type of memory. Remove and reinstall the memory module.

Removing or Installing an Add-in Card

An add-in card is a circuit board, such as a PCI, PCI-E, or AGP card, that fits into a computer add-in card slot. Your computer contains several add-in card slots that can be used to add components to your computer. The computer component configurations vary by model.



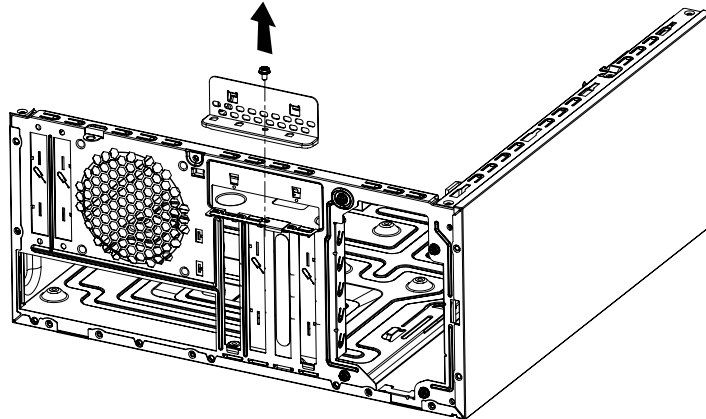
WARNING: Do not overload the computer by installing add-in cards that draw excessive current. The computer is designed to provide two amps (average) of +5 V[Ⓝ] power for each board/card in it. The total +5 V[Ⓝ] current draw in a fully loaded system (one with all add-in card slots filled) must not exceed the total number of slots multiplied by two amps.

You need a flat-head screwdriver and a Phillips screwdriver to remove, replace, or add an add-in card.

NOTE: A power supply upgrade may be required for certain graphics card upgrades. Check with the graphics card supplier for more information about power supply requirements.

Removing an add-in card

- 1 Prepare the computer to be opened, and then remove the side and front panels. See “Opening and Closing the Computer” on page 1.
- 2 Gently lay the computer on its side.
- 3 On the back of the computer, remove the screw from the bracket cover for the add-in card slots, and then remove the bracket cover.



- 4 Inside the computer, locate the add-in card slots on the motherboard.

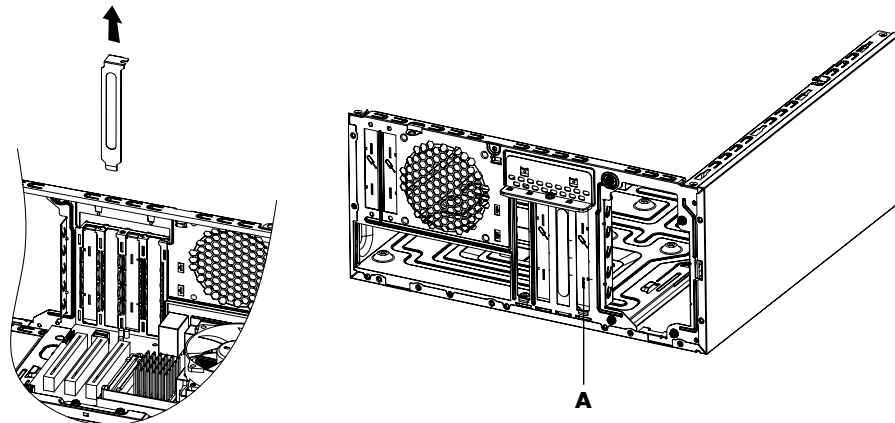


WARNING: Beware of the sharp edges on the add-in card slot cover.

- 5 Remove the metal slot cover.

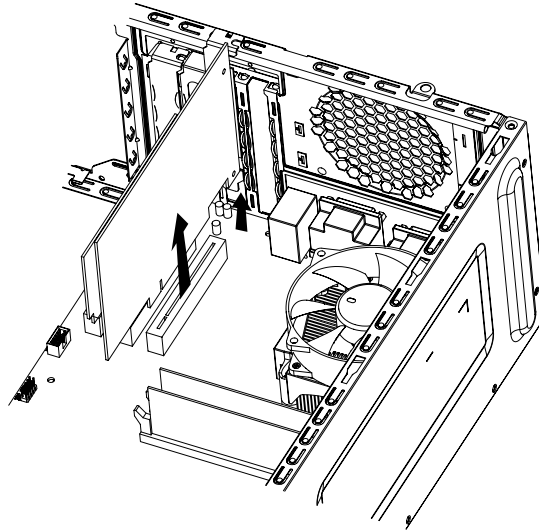
Or

Insert a flat-head screwdriver into the knockout plate slot **(A)**, and then gently rotate the screwdriver to break the knockout plate.



- 6 Hold the add-in card at each end, and carefully rock it back and forth until the connectors pull free of the socket, and then remove the card.

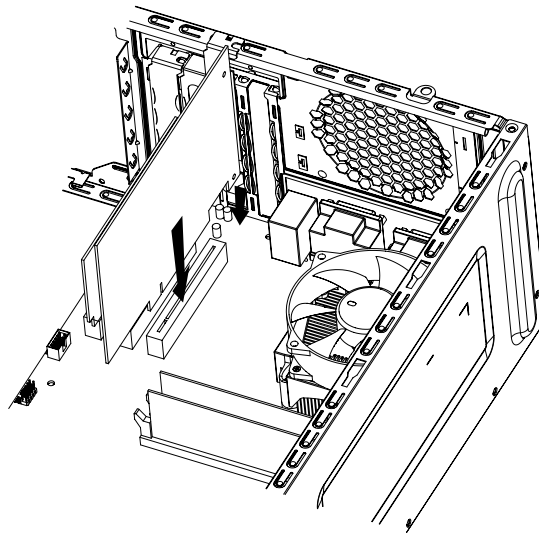
Be sure to not scrape the card against the other components. Store the old card in the antistatic packaging that contained your new card.



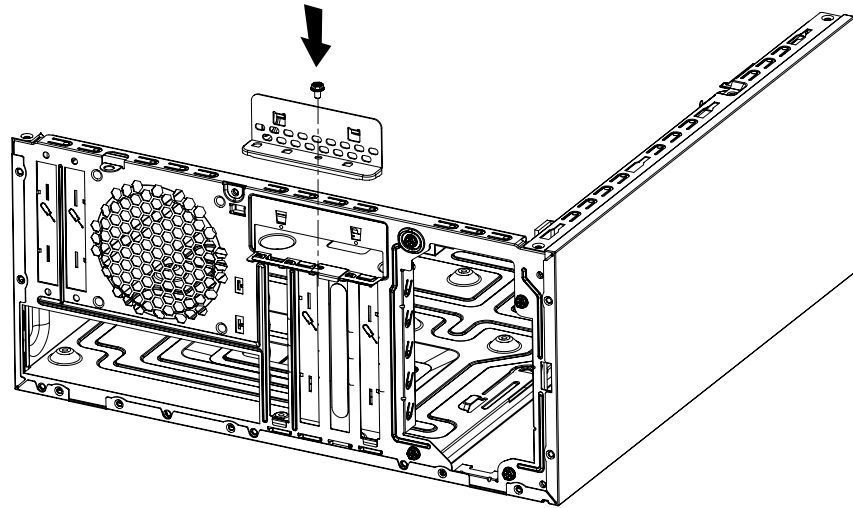
- 7 If you are not replacing the old add-in card with a new add-in card, insert the metal slot cover into the open slot.

Installing an add-in card

- 1 Align the edge of the add-in card with the add-in slot on the chassis, and gently but firmly press the card straight down into the slot. The whole connector should be seated properly in the card slot.



- 2 On the back of the computer, replace the bracket cover for the add-in card slots, and then install the screw.



- 3 Place the chassis upright.
- 4 Replace the side panel and close the computer. See "Opening and Closing the Computer" on page 1.

NOTE: If the new card or device does not work, read the card manufacturer's installation instructions and recheck all connections, including those to the card, power supply, keyboard, and monitor.

Replacing the Battery

A lithium battery on the motherboard provides backup power for the computer timekeeping capability. The battery has an estimated life expectancy of seven years.

When the battery starts to weaken, the date and time may become incorrect. If the battery runs out of power, replace it with a CR2032 lithium battery (3 volt, 220mAH rating) or an equivalent battery.



WARNING: There is danger of explosion if the battery is incorrectly replaced. Replace it only with a battery of the same or of an equivalent type. Discard used batteries according to the manufacturer's instructions.

- 1 Prepare the computer to be opened, and then remove the side and front panels. See "Opening and Closing the Computer" on page 1.
- 2 Gently lay the computer on its side.
- 3 Remove any cabling, if necessary, so that you can reach the battery.
- 4 Remove any memory modules, if necessary, so that you can reach the battery. See "Adding Memory" on page 22.
- 5 To remove the battery, push the latch away from the battery, and then lift the battery out of the socket.
- 6 Install the new CR2032 battery in the socket, with the positive (+) side facing the latch.
- 7 Replace any memory modules or cables that you removed.
- 8 Place the chassis upright.
- 9 Replace the side panel and close the computer. See "Opening and Closing the Computer" on page 1.

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