Dell™ OptiPlex™ GX240

SERVICE MANUAL

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Notes, Notices, and Cautions

NOTE: A NOTE indicates important information that helps you make better use of your computer.

NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

CAUTION: A CAUTION indicates a potential for property damage, personal injury, or death.

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SECTION 1

Before You Begin

Getting Started

Precautionary Measures

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Getting Started

This section provides procedures for removing and replacing the components, assemblies, and subassemblies in the Dell™ OptiPlex™ GX240 small form-factor, small desktop, and small mini-tower computers. Unless otherwise noted, each procedure assumes that the following conditions exist:

- You have performed the steps in "Precautionary Measures."
- You have opened the computer cover.

Recommended Tools

The GX240 computer is primarily a tool-less one, but certain procedures (such as removing the heat sink blower or the control panel) require the use of one or more of the following tools:

- Small flat-blade screwdriver
- #1 and #2 Phillips-head screwdrivers
- An 8-inch, #2 Phillips-head screwdriver

Also, Dell recommends that you use a wrist grounding strap as explained in "Precautionary Measures."

Precautionary Measures

Before you perform any procedure in this section, read the following caution for your personal safety and to prevent damage to the computer from electrostatic discharge (ESD).

⚠ CAUTION: FOR YOUR PERSONAL SAFETY AND PROTECTION OF THE EQUIPMENT

Before you start to work on the computer, perform the following steps in the sequence listed:

1. Perform an orderly computer shutdown using the operating system menu.
2. Turn off the computer and all attached devices.

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3 Disconnect the computer and devices from their AC power sources. Also, disconnect any telephone or telecommunication lines from the computer. Doing so reduces the potential for personal injury or shock.

   If you are disconnecting a device from the computer or are removing a component from the system board, wait 15 to 30 seconds after disconnecting the computer from AC power before disconnecting the device or removing the component to avoid possible damage to the system board.

   Verify that the auxiliary power light on the system board is not on. If it is on, you may need to wait 15 to 30 seconds for it to go out (see "System Board Components" for the location of this light).

4 Wear a wrist grounding strap, and clip it to an unpainted metal surface, such as the padlock ring on the back of the computer. If a wrist grounding strap is not available, touch an unpainted metal surface on the computer, such as the power supply, to discharge static charge from your body before touching anything inside the computer. While you work, periodically touch an unpainted metal surface on the computer to dissipate static electricity that might harm internal components.

In addition, take note of the following safety guideline when appropriate:

- Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by it edges or by its metal mounting bracket. Hold a component such as a microprocessor by its edges, not by its pins.

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SECTION 2

Computer Cover

Opening the Computer Cover
Closing the Computer Cover

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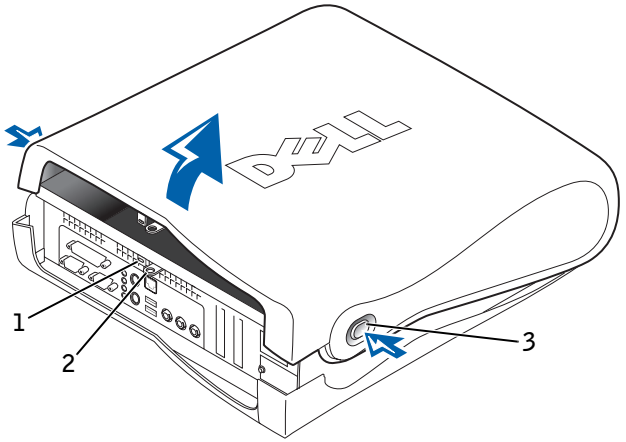
Opening the Computer Cover

NOTE: If your computer is on a stand, remove the stand before you open the computer cover.

Small Form-Factor Computer



1 Security cable slot
2 Padlock ring
3 Release buttons (one on each side)

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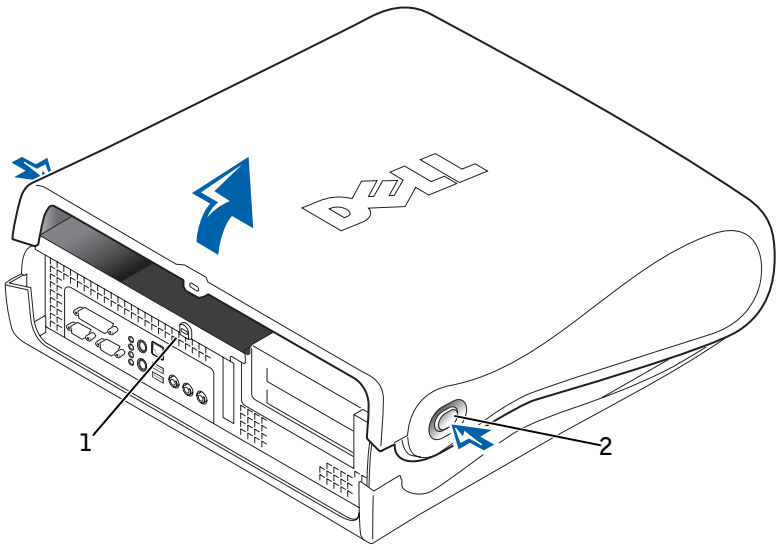
Small Desktop Computer



1 Padlock ring

2 Release buttons (one on each side)

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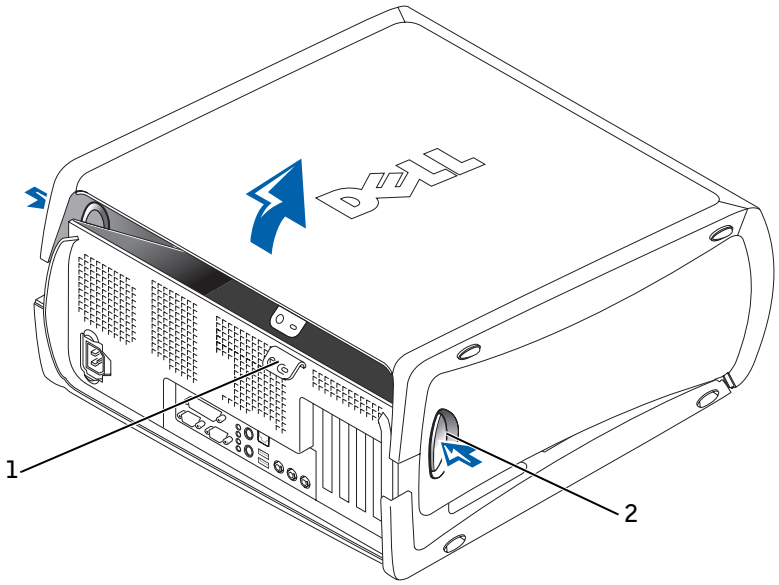
Small Mini-Tower Computer



1 Padlock ring

2 Release buttons (one on each side)

1. Remove the padlock from the padlock ring, if present.

NOTICE: Do not open the cover if the computer is on the edge of a desk or table. Doing so may cause the computer to tip over and fall. Make sure that the computer is situated so that there is at least 12 inches of desk- or table-top for the cover to rest on.

NOTICE: Open the computer cover slowly to prevent damage to the system cables.

2. Press in on the two securing buttons until the cover is free to swing up.

NOTICE: On the small mini-tower computer, to prevent damage to the system board, open the cover until it catches at a 45-degree angle. Then remove the drive data cables from the system board and open the cover to a 90-degree angle.

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Closing the Computer Cover

1. Check all cable connections, especially those that might have come loose during your work. Fold cables out of the way so that they do not catch on the computer cover. Make sure cables are not routed over the drive cage—they will prevent the cover from closing properly.
2. Check to see that no tools or extra parts (including screws) are left inside the computer.
3. On the small mini-tower computer, close the cover to a 45-degree angle and connect the drive data cables to the system board.
4. Close the computer cover by pivoting the cover down toward the back of the computer and into position. Make sure that the securing buttons click into place.
5. Replace the padlock, if required.

NOTE: After you open and close the cover, the chassis intrusion detector causes the following message to be displayed at the next computer start-up:

```
ALERT! Cover was previously removed.
```

See "Resetting the Chassis Intrusion Detector" for instructions.

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SECTION 3

Inside the Computer

Key Components

Computer Cables

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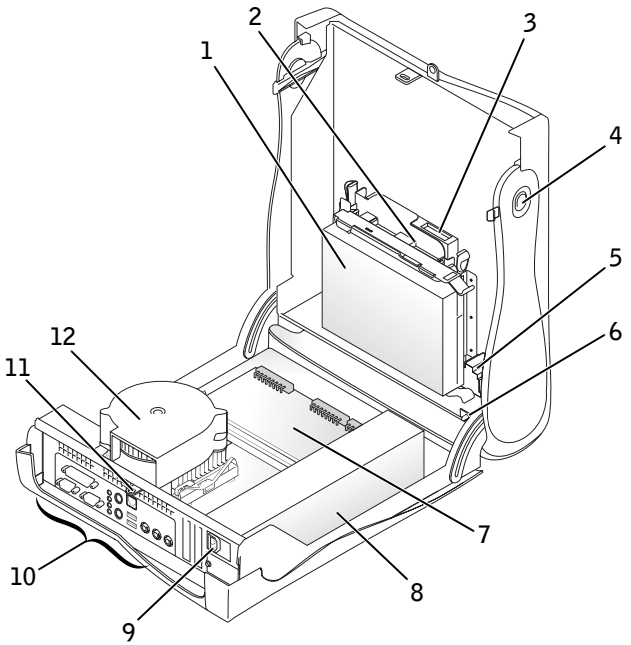
Key Components

NOTE: User service access points are color-coded green.

Small Form-Factor Computer



1	Hard drive	7	System board
2	3.5-inch floppy drive	8	Power supply
3	CD/DVD drive	9	AC power connector
4	Cover release buttons (2)	10	I/O ports and connectors
5	Internal speaker	11	Padlock ring
6	Chassis intrusion switch	12	Heat sink and blower assembly

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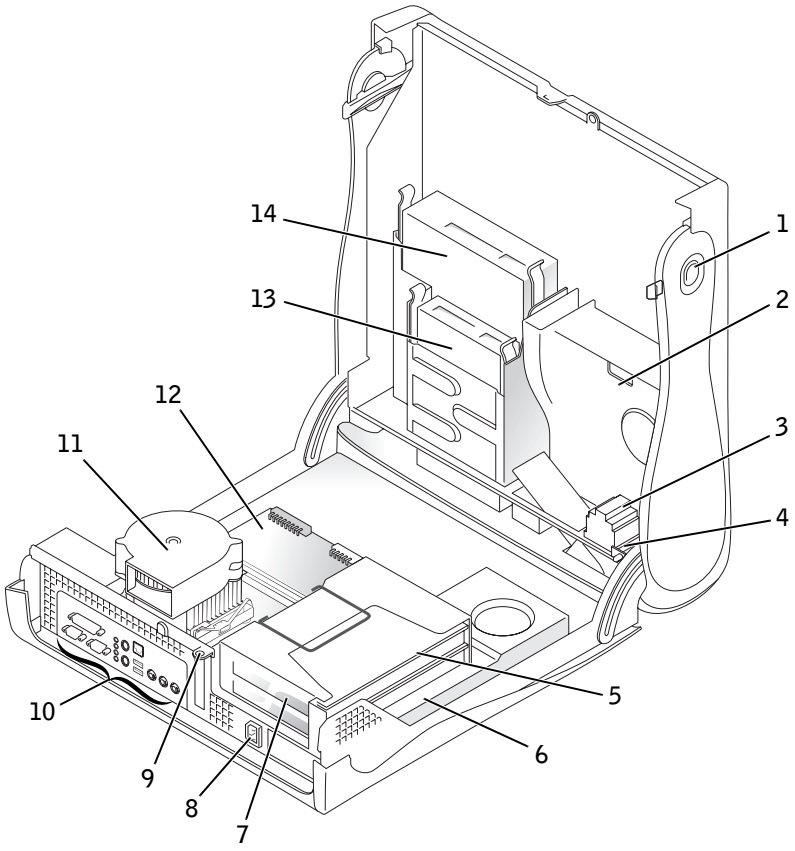
Small Desktop Computer



1	Cover release buttons (2)	8	AC power connector
2	Hard drive	9	Padlock ring
3	Internal speaker	10	I/O ports and connectors
4	Chassis intrusion switch	11	Heat sink and blower assembly
5	Expansion-card cage	12	System board
6	Power supply	13	3.5-inch floppy drive
7	Expansion-card slots	14	CD/DVD drive

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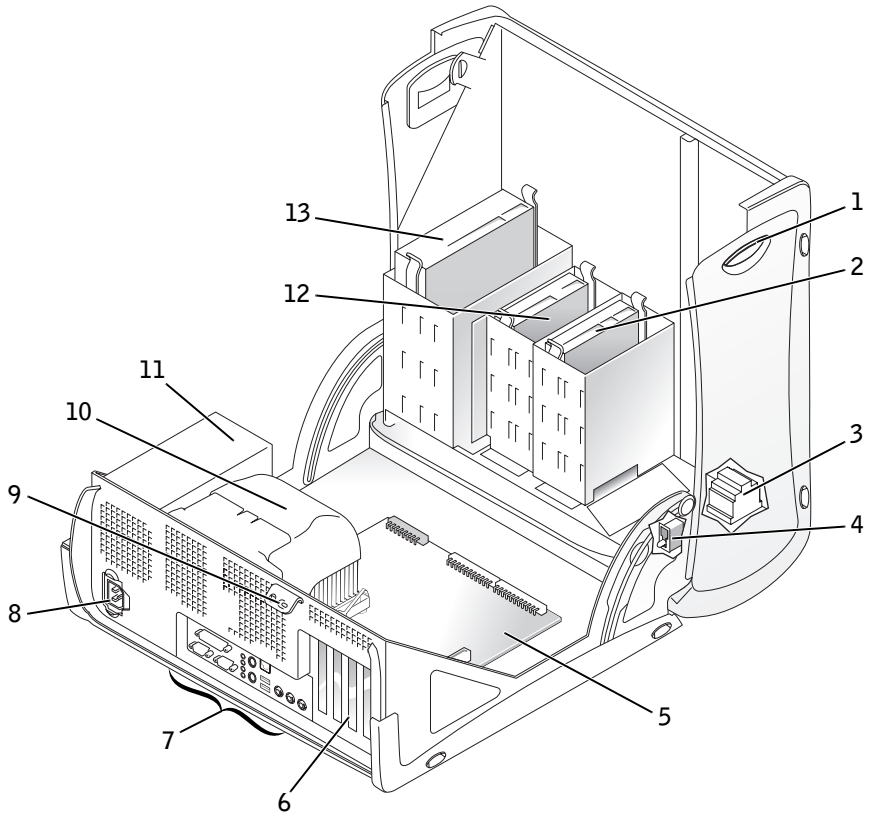
Small Mini-Tower Computer



1	Cover release buttons (2)	8	AC power connector
2	Hard drive	9	Padlock ring
3	Internal speaker	10	Microprocessor and airflow shroud
4	Chassis intrusion switch	11	Power supply
5	System board	12	3.5-inch floppy drive
6	Expansion-card slots	13	CD/DVD drive
7	I/O ports and connectors		

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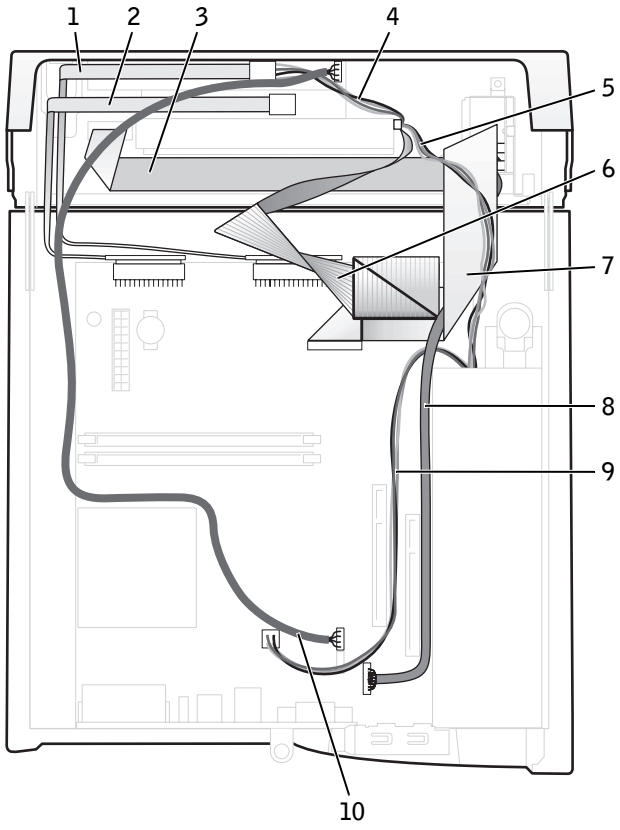
Computer Cables

Small Form-Factor Computer



1	CD/DVD drive data cable	6	IDE data cable (hard drive)
2	Floppy drive data cable	7	Input/output cable
3	Control panel cable	8	Input/output audio cable
4	CD/DVD drive power cable	9	Microprocessor power cable
5	IDE drive power cable (hard drive)	10	CD/DVD audio cable

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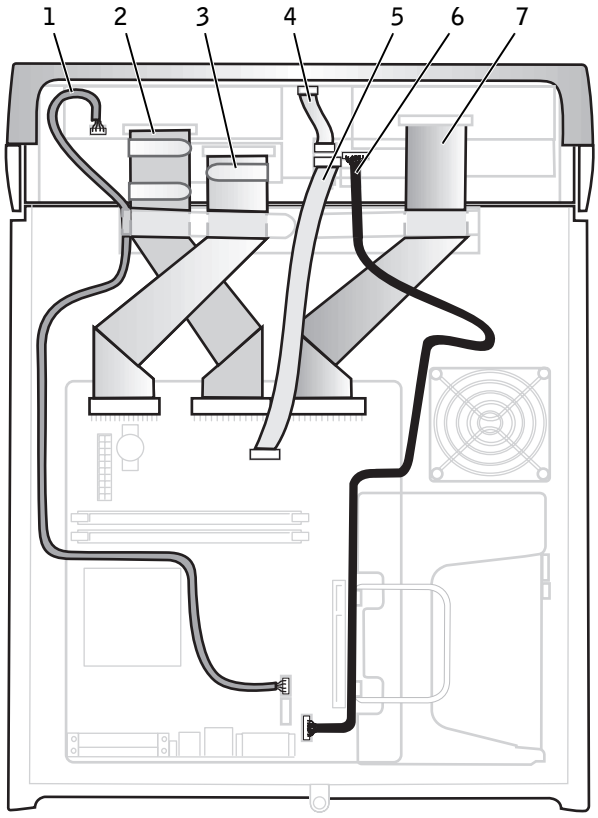
Small Desktop Computer



1 CD/DVD drive audio cable
2 CD/DVD drive data cable
3 Floppy drive data cable
4 Control panel cable
5 Input/output cable
6 Input/output audio cable
7 IDE data cable (hard drive)

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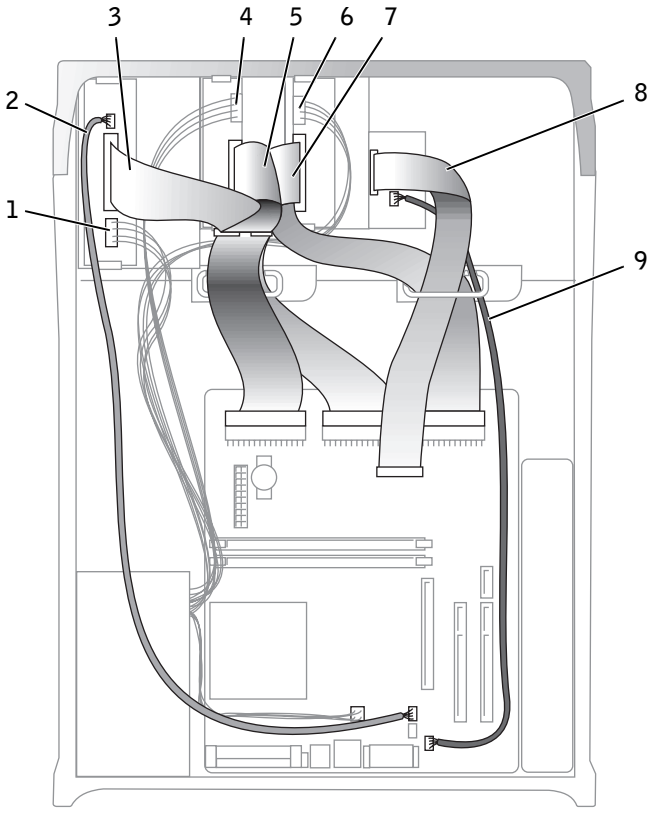
Small Mini-Tower Computer



1	CD/DVD drive power cable	6	IDE drive power cable (hard drive)
2	CD/DVD drive audio cable	7	IDE drive data cable (hard drive)
3	CD/DVD drive data cable	8	Input/output cable
4	Floppy drive power cable	9	Input/output audio cable
5	Floppy drive data cable		

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Cable Colors

Device	Color
Hard drive	Blue
Floppy drive	Black
CD/DVD drive	Orange
USB	Gray
ATA, IDE, or EIDE drive	Green
Control panel	Yellow
CD/DVD audio	Blue
Computer audio	Black

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SECTION 4

Battery

Removing the Battery
Replacing the Battery

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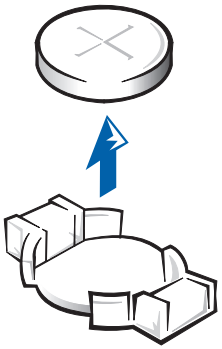
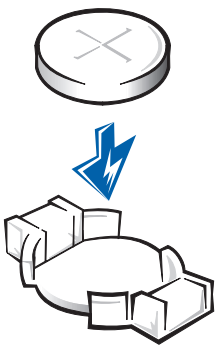
Removing the Battery



CAUTION: There is a danger of the new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

1. If possible, enter system setup and print the system setup screens.
2. Remove the system battery by carefully prying it out of its socket with your fingers or with a blunt, nonconducting object such as a plastic screwdriver.

Replacing the Battery



1. Orient the new battery with the "+" facing up.
2. Insert the battery into its socket and snap it into place.

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SECTION 5

Badge

Removing the Badge
Replacing the Badge

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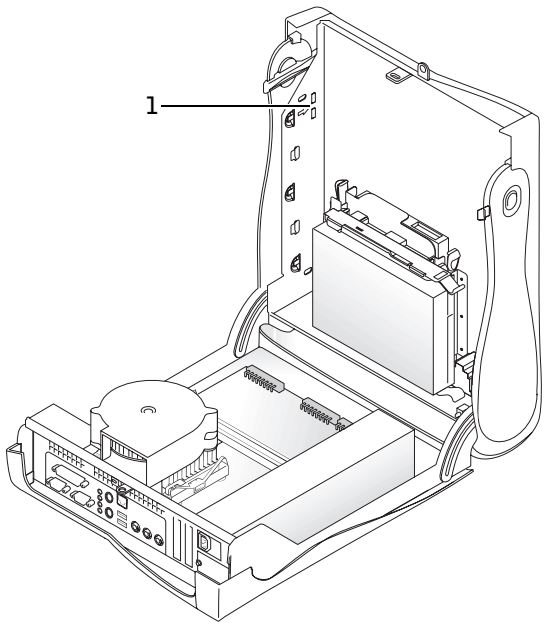
Removing the Badge

Small Form-Factor Computer

1. Open the computer cover.
2. Using a flat-blade screwdriver, release the tabs from the inside of the computer and remove the plastic computer cover from the metal component.

Computer Cover Removal



1 Tabs (2 on each side)

3. Remove the accent door by pressing the middle of the door while lifting away the sides of the door.
4. From inside the front bezel, push in on the two tabs on either side of the badge to release the badge.
5. Press on the badge until it is freed.

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Small Desktop and Small Mini-Tower Computers

1. Open the front USB door.
2. From inside the door, push in the two tabs on either side of the badge to release the badge.
3. Press on the badge until it is freed.

Replacing the Badge

Small Form-Factor Computer

1. Replace the plastic computer cover. Make sure that the two metal hooks and tabs are securely in place.

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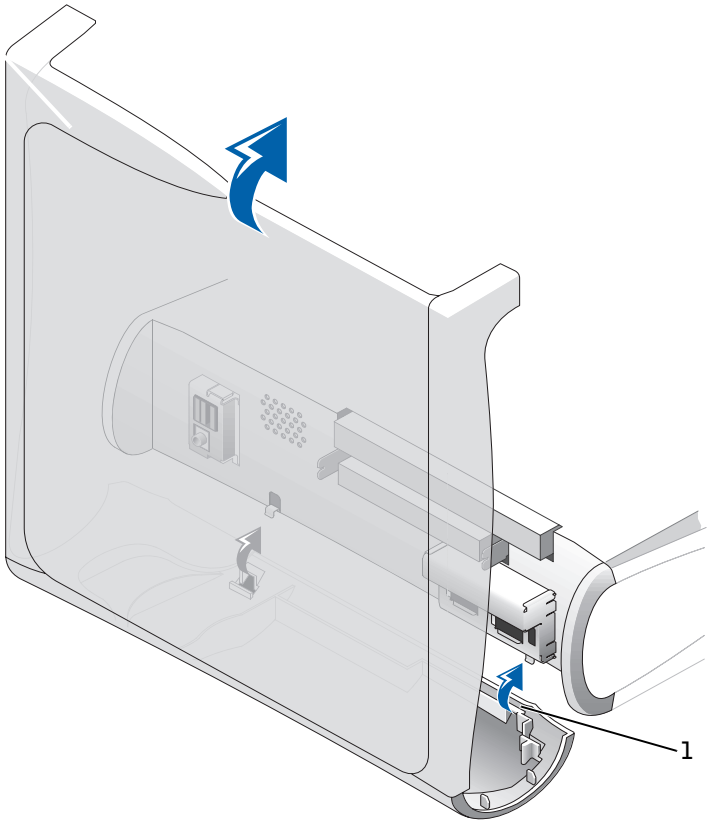
Computer Cover Replacement



1 Metal hooks (2)

To help replace the plastic computer cover, remove the accent door and front mask from the plastic computer cover:

- **a** Remove the front mask by releasing the tabs on the inside of the plastic computer cover.
- **b** Remove the accent door by pressing the middle of the door while lifting away the sides of the door.
- **c** After replacing the plastic computer cover, snap the front mask and accent door into place.

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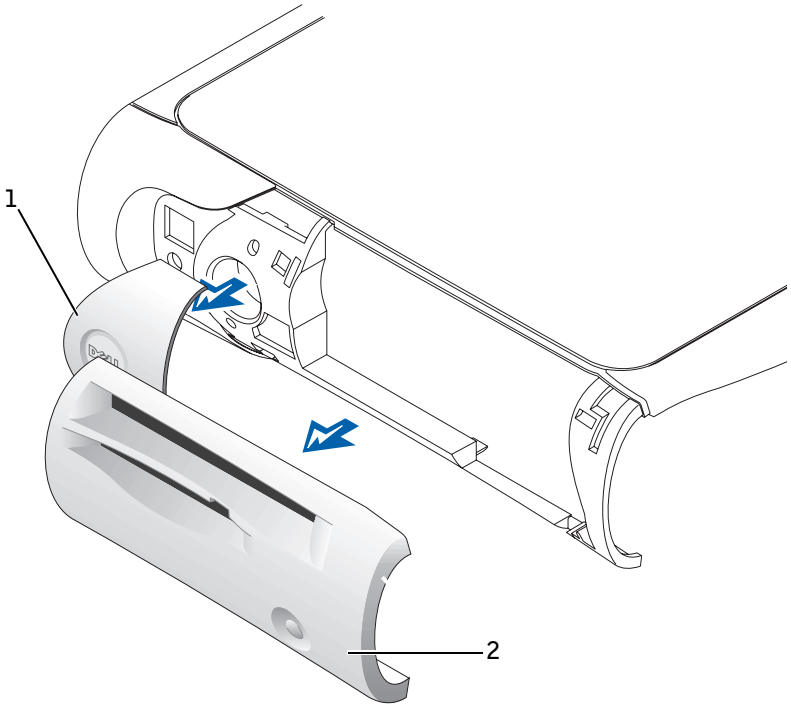

1 Accent door

2 Front mask

2 Replace the badge by pressing it into place, ensuring that the two tabs click, securing it into position.

Small Desktop and Small Mini-Tower Computers

Replace the badge by pressing it into place, ensuring that the two tabs click, securing it into position.

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SECTION 6

Chassis Intrusion Switch

Removing the Chassis Intrusion Switch
Replacing the Chassis Intrusion Switch
Resetting the Chassis Intrusion Detector

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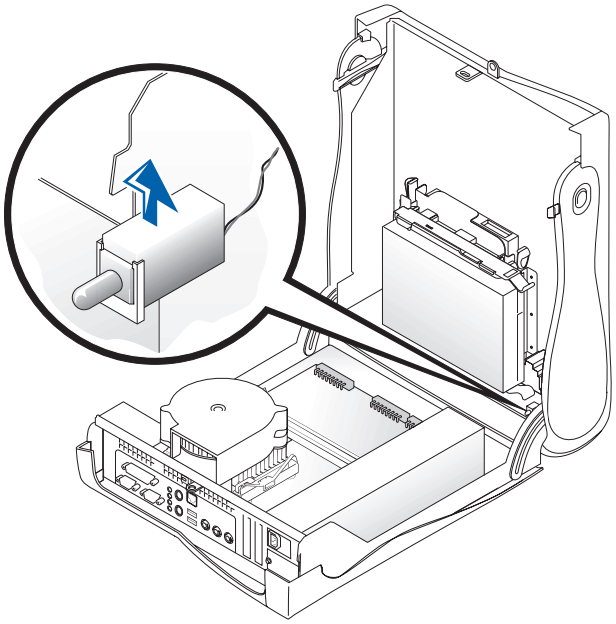
Removing the Chassis Intrusion Switch

Small Form-Factor Computer



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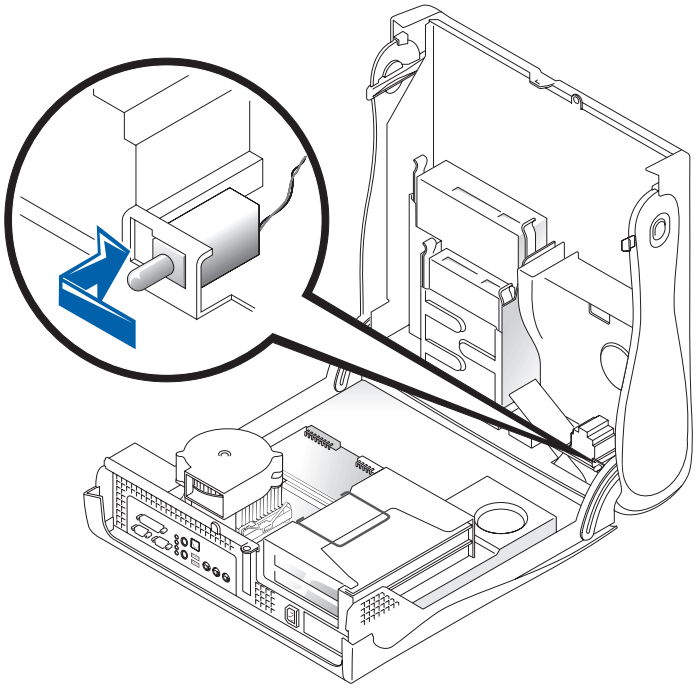
Small Desktop Computer



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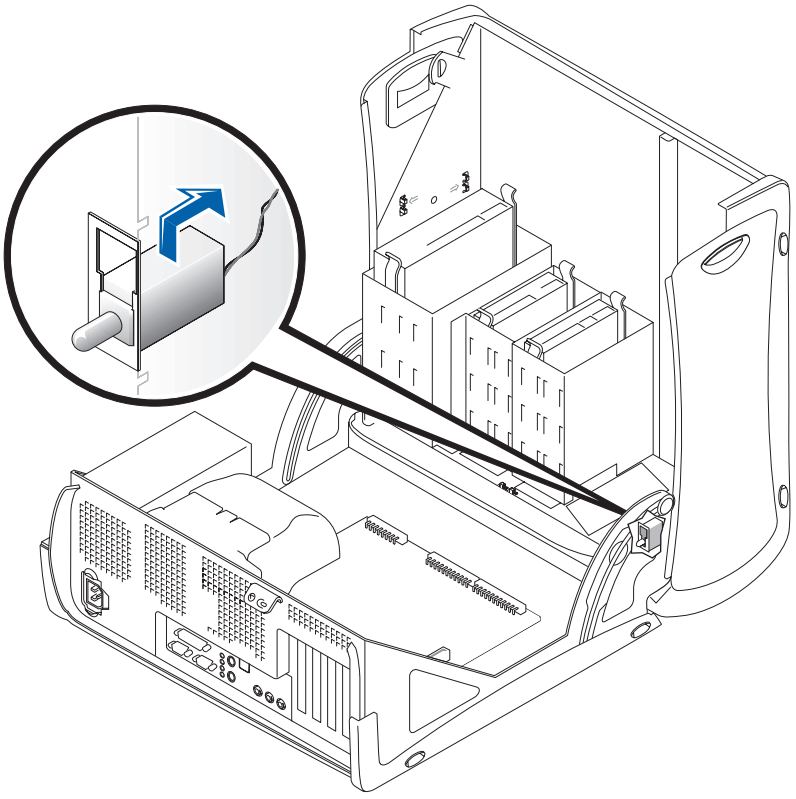
Small Mini-Tower Computer



1. Disconnect the chassis intrusion switch cable connector from the control panel on the front of the chassis.

   Note the routing of the chassis intrusion cable as you remove it from the chassis. Chassis hooks may hold the cable in place inside the chassis.

2. Slide the chassis intrusion switch out of its slot and remove the switch and its attached cable from the chassis.

Replacing the Chassis Intrusion Switch

To replace the chassis intrusion switch, follow the "Removing the Chassis Intrusion Switch" procedures in reverse order.

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Resetting the Chassis Intrusion Detector

1. Enter system setup by pressing <F2> during the computer's POST.

NOTE: For instructions on using system setup, see the *User's Guide*.

2. Under the **System Security** tab, reset the **Chassis Intrusion** option by pressing the left- or right-arrow key to select **Reset**. Change the setting to **Enabled**, **Enabled-Silent**, or **Disabled**.

NOTE: The default is **Enabled-Silent**.

3. Press <Alt><B> to restart the computer and implement your changes.

NOTE: If a setup password has been assigned by someone else, contact the network administrator for information on resetting the chassis intrusion detector.

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SECTION 7

Control Panel

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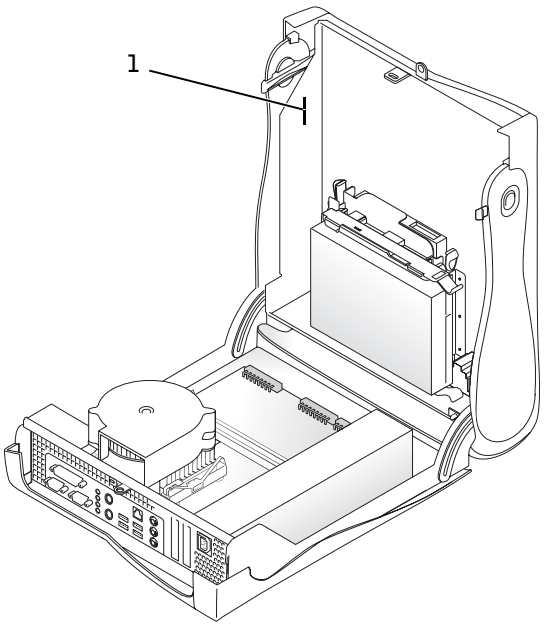
Removing the Control Panel

Small Form-Factor Computer

1. Open the computer cover.
2. Using a flat-blade screwdriver, release the tabs from the inside of the computer and remove the plastic computer cover from the metal component.

Computer Cover Removal



1 Tabs (two on each side)

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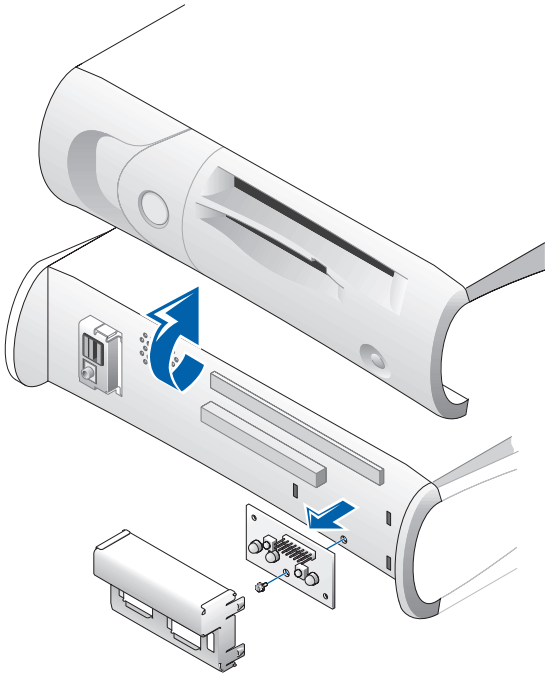

3 Remove the metal control-panel shield.

4 Remove the screw that holds the control panel to the computer.

Small Desktop Computer

1 Remove the front I/O panel.

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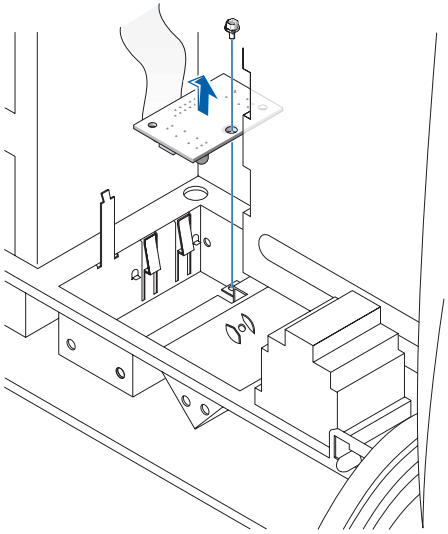
Control Panel Removal



2 Remove the screw holding the control panel to the computer, and pull the panel up and away from the computer.

Small Mini-Tower Computer

1 Lay the computer on its right side and open the cover.

2 Remove the top and bottom panels of the computer by releasing the eight tabs on each panel.

3 Remove the front bezel:

a Release the three tabs located on the front bezel: one tab is located by the CD/DVD drive and two tabs are located by the I/O panel.

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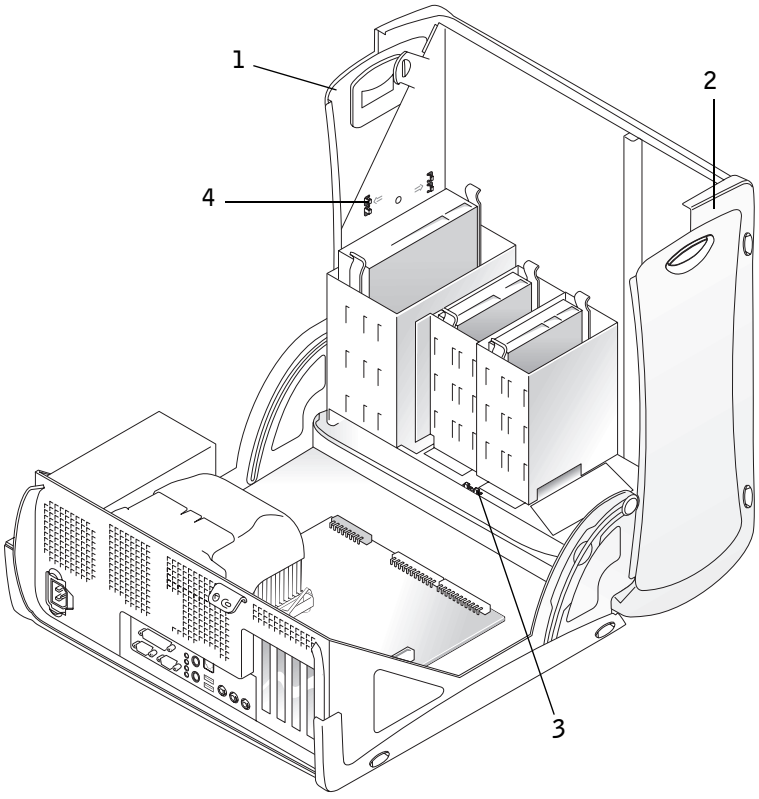
Front Bezel Tabs—Small Mini-Tower Computer



1 Top panel
2 Bottom panel
3 Front-panel tabs (3)
4 Top-panel tabs (8)

b Close the cover and remove the front bezel.

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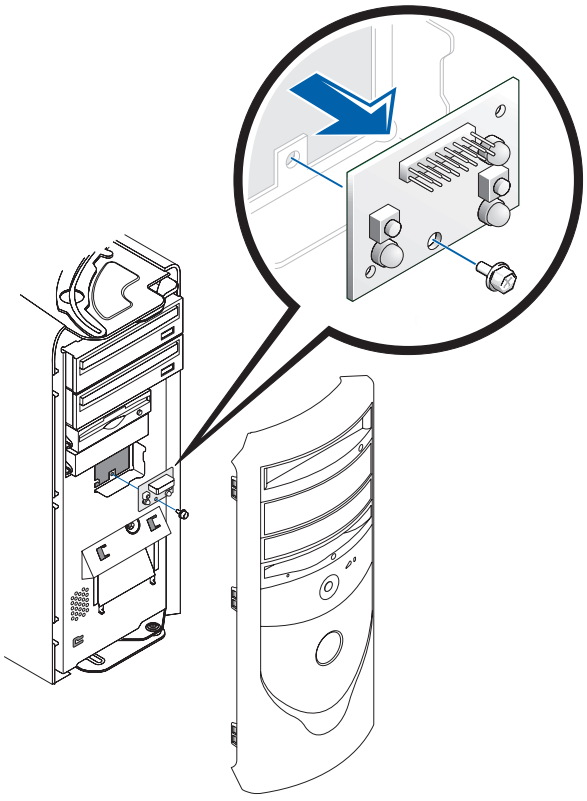
Control Panel Removal



4 Remove the screw holding the control panel to the chassis, and pull the panel up and away from the chassis.

Replacing the Control Panel

Small Form-Factor Computer

1 Replace the control panel and the control-panel shield.

2 Replace the plastic computer cover. Make sure that the two metal hooks and tabs are securely in place.

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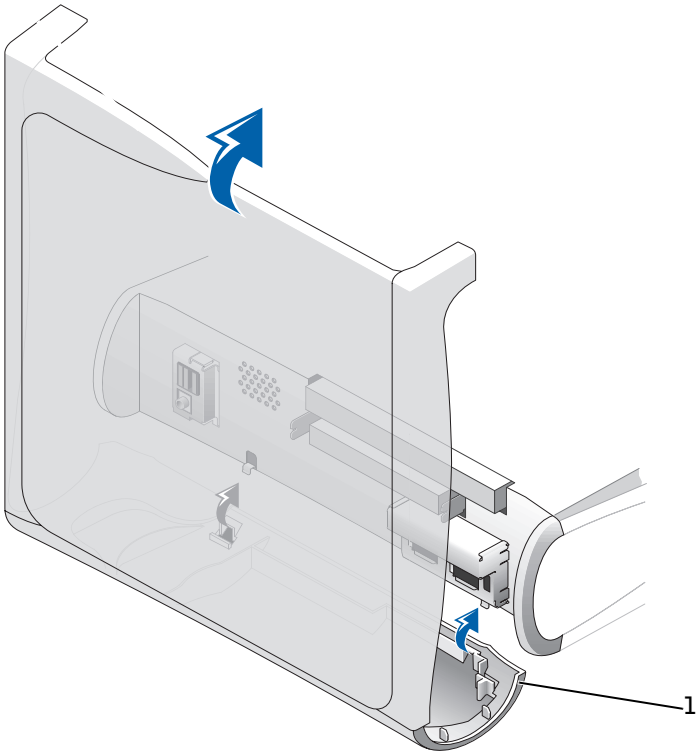

1 Metal hooks (2)

To help replace the plastic computer cover, remove the accent door and front mask from the plastic computer cover:

a Remove the front mask by releasing the tabs on the inside of the plastic computer cover.

b Remove the accent door by pressing the middle of the door while lifting away the sides of the door.

c After replacing the plastic computer cover, snap the front mask and accent door into place.

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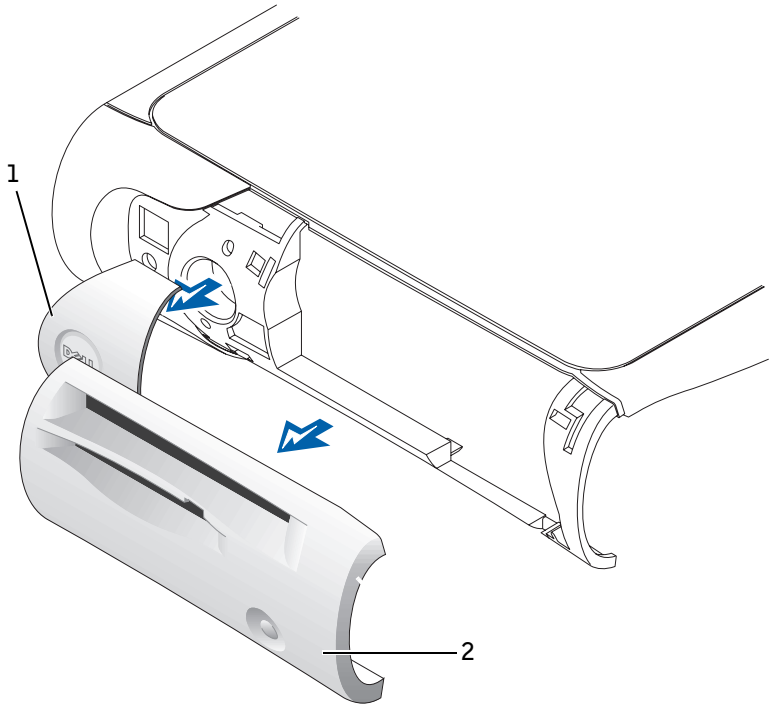
Front Mask and Accent Door Removal—Small Form-Factor Computer



1 Accent door
2 Front mask

Small Desktop Computer

1. Replace the control panel and secure it to the computer by replacing the screw you removed in step 2 of the removal procedure.
2. Replace the front I/O panel.

Small Mini-Tower Computer

Follow the "Removing the Control Panel" procedure in reverse, ensuring that the tabs on the top panel, bottom panel, and front panel are secure.

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SECTION 7

Drives

Removing the Floppy Drive

Replacing the Floppy Drive

Removing the CD/DVD Drive

Replacing the CD/DVD Drive

Removing the Hard Drive

Replacing the Hard Drive

Adding a Second Hard Drive — Small Mini-Tower Computer

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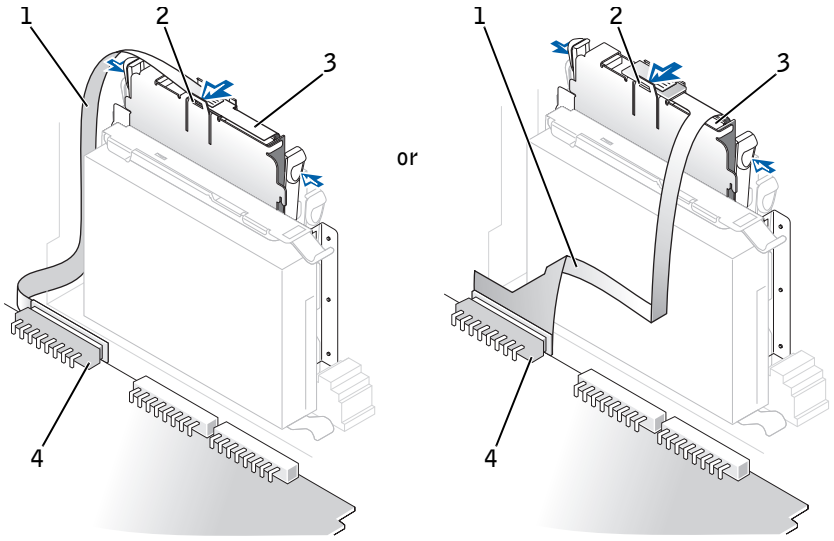
Removing the Floppy Drive

Small Form-Factor Computer

1. Disconnect the floppy-drive cable from the system board.
2. Remove the power cable from the interposer board.
3. Disconnect the CD/DVD drive cable and the power cable from the CD/DVD drive.
4. Remove or raise the drive by pressing the green tabs on either side of the drive and lifting the drive up.
5. Remove the floppy-drive cable from the floppy drive.
   a. Remove the interposer board from the floppy drive by pressing the tab and rotating the interposer board.

Removing the Interposer Board—Small Form-Factor Computer



1 Floppy-drive cable
2 Tab
3 Interposer board
4 System board floppy-drive connector (DSKT)

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b To release the floppy-drive cable from the connector, slide the lever until it is fully extended, and then lift the cable away.

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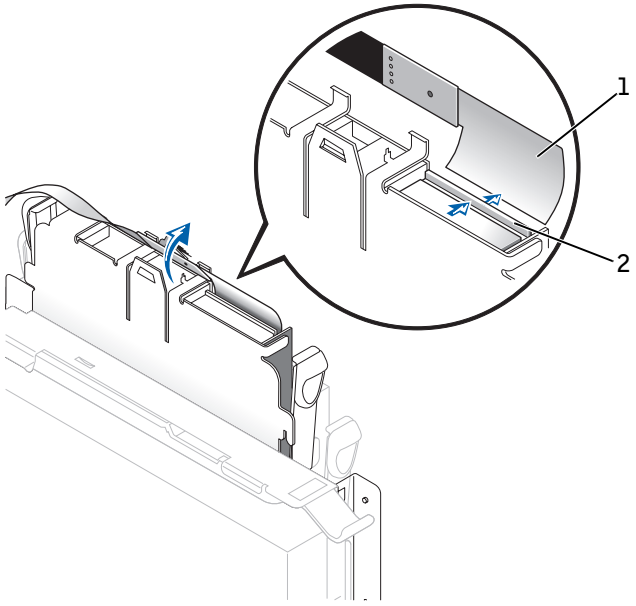
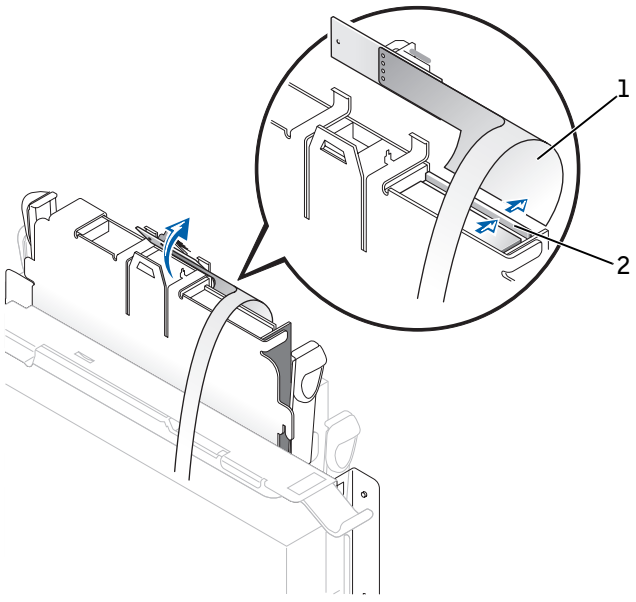
Removing the Floppy-Drive Cable



or



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1 Floppy-drive cable

2 Lever

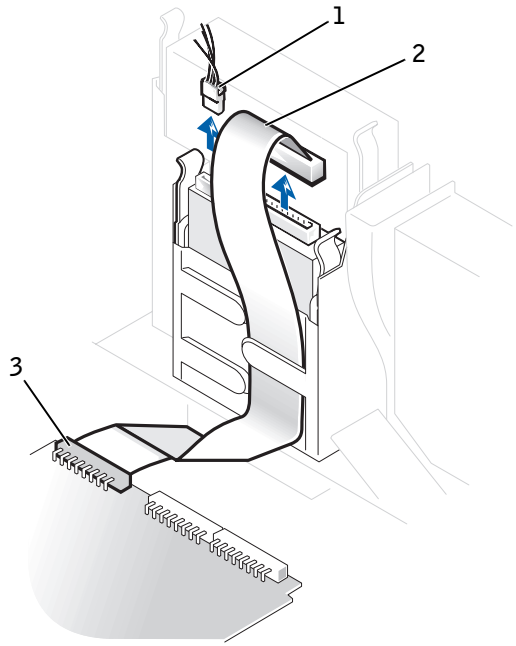
6 Remove the floppy drive from its sled by pulling the sled tab out while pushing the drive up, and then sliding the drive out of the sled.

Small Desktop Computer

1 Disconnect the power cable and the floppy-drive data cable from the drive.

2 Disconnect the data cable from the floppy-drive connector on the system board.

Cable Removal



1 Power cable

2 Floppy-drive data cable

3 Floppy-drive connector

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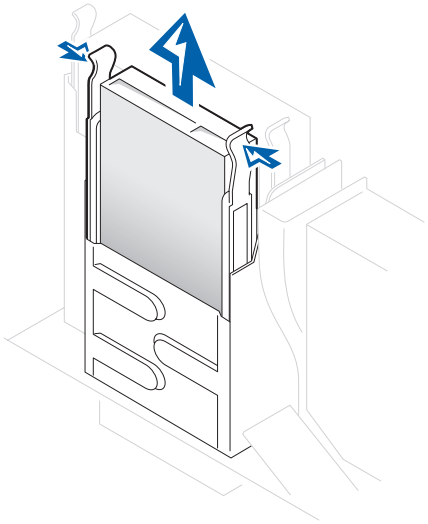
3 Press inward on the two tabs on the sides of the drive bay to disengage the drive from the computer.

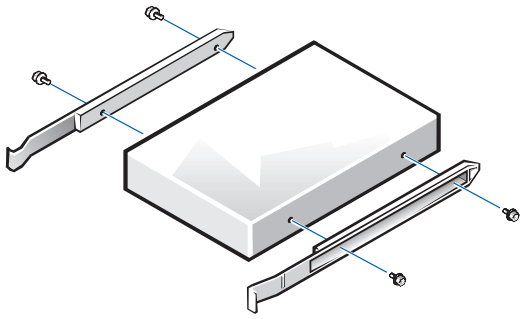
4 Slide the drive upward and remove it from the computer.

Floppy-Drive Removal



5 If the replacement drive does not have the bracket rails attached, remove the rails from the old drive by removing the two screws that secure each rail to the drive.

Drive Bracket Rail Removal



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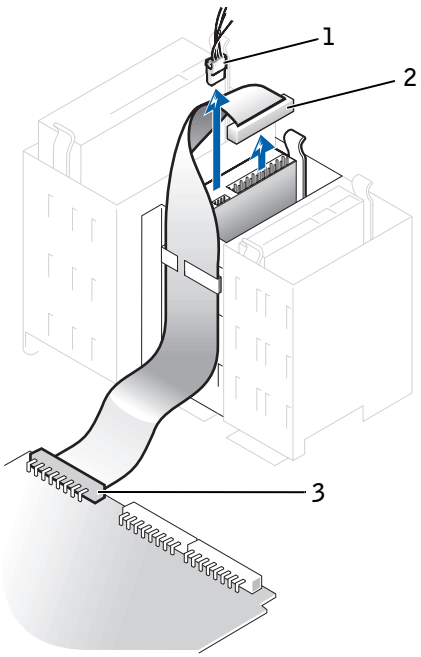
Small Mini-Tower Computer

1. Disconnect the power cable and the floppy-drive data cable from the drive.
2. Disconnect the data cable from the floppy-drive connector on the system board.

Cable Removal



1 Power cable
2 Floppy-drive data cable
3 Floppy-drive connector

Replacing the Floppy Drive

Small Form-Factor Computer

1. Snap the replacement drive into the sled and ensure that it is secure.

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2. Connect the interposer board to the floppy drive.
   a. Slide the floppy-drive cable into the connector.
   b. Close the lever so that the cable is secure in the connector.
   c. Line up the hole on the bottom of the interposer board with the notch on the connector, and snap the interposer board onto the drive.
3. Gently slide the floppy drive into the computer until the tabs securely click into position.

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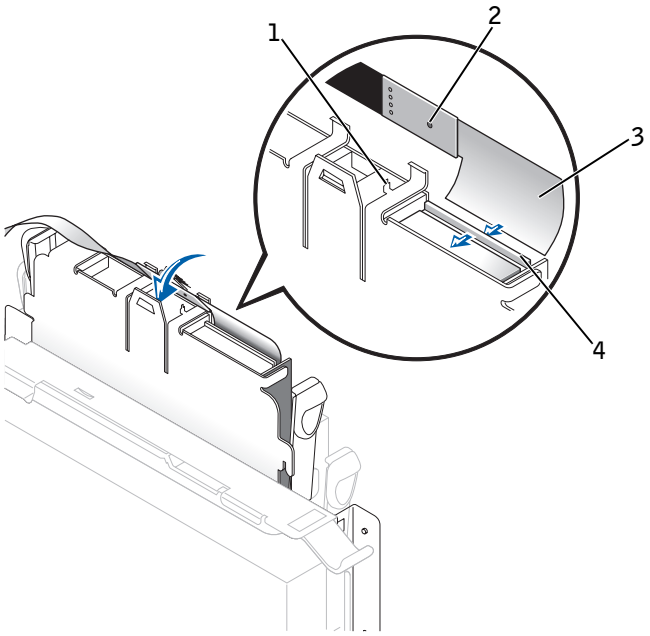
Attaching the Floppy-Drive Data Cable



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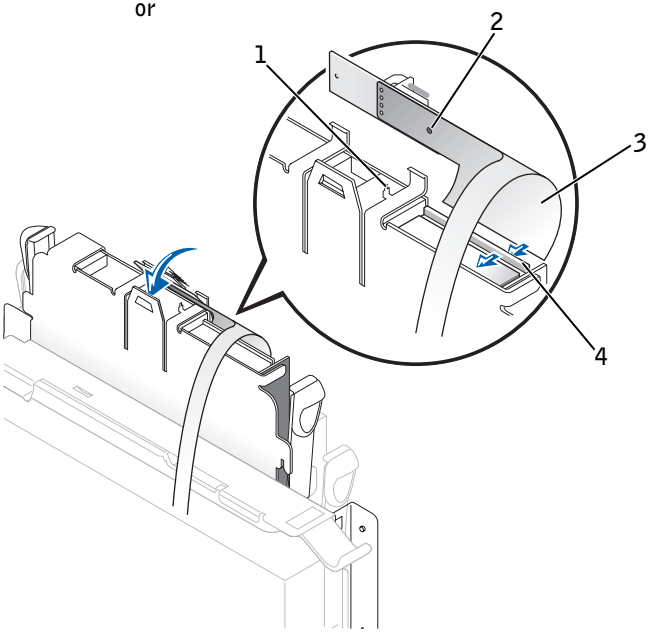

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1 Connector notch
2 Interposer board alignment hole
3 Floppy-drive cable
4 Lever

4. Attach the power cable to the interposer board on the floppy drive.
5. Attach the CD/DVD drive cable and the power cable to the CD/DVD drive.
6. Connect the floppy-drive cable to the DSKT connector on the system board.
7. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
8. Close the computer cover, reconnect your computer and devices to their electrical outlets, and turn them on.
9. Enter system setup and update the appropriate **Diskette Drive A** option to reflect the size and capacity of your new floppy drive.
10. Verify that your computer works correctly by running the Dell Diagnostics.

Small Desktop Computer

1. If the replacement drive does not have the bracket rails attached, remove the rails from the old drive by removing the two screws that secure each rail to the drive. Attach the bracket to the new drive by aligning the screw holes on the drive with the screw holes on the bracket rails and tightening all four screws (two screws on each rail).
2. Gently slide the floppy drive into place until the tabs click securely into position.
3. Attach the power and floppy-drive data cables to the floppy drive, and connect the other end of the data cable to the connector on the system board.

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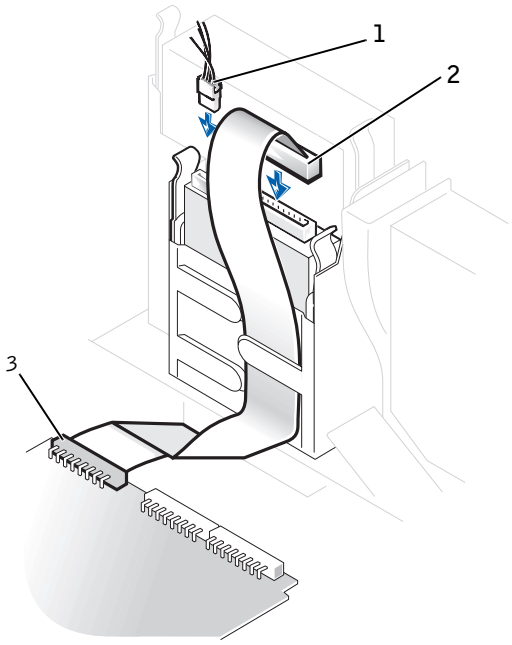

1 Power cable
2 Floppy-drive data cable
3 Floppy-drive connector

Small Mini-Tower Computer

1. If the replacement drive does not have the bracket rails attached, remove the rails from the old drive by removing the two screws that secure each rail to the drive. Attach the bracket to the new drive by aligning the screw holes on the drive with the screw holes on the bracket rails and tightening all four screws (two screws on each rail).
2. Gently slide the floppy drive into place until the tabs click securely into position.
3. Attach the power and floppy-drive data cables to the floppy drive, and connect the other end of the data cable to the connector on the system board.

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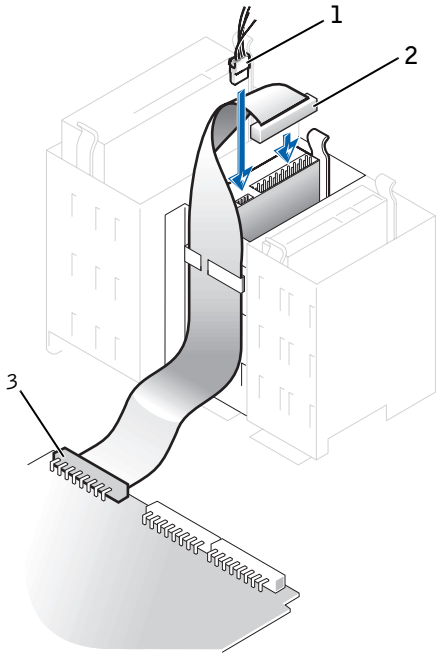

1 Power cable
2 Floppy-drive data cable
3 Floppy-drive connector

Removing the CD/DVD Drive

Small Form-Factor Computer

1 Remove the interposer board from the CD/DVD drive.

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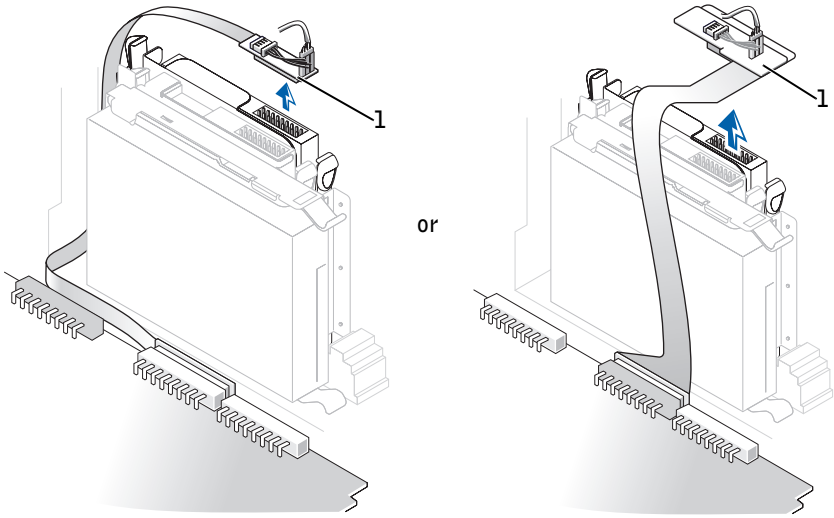
Interposer Board Removal



1 Interposer board

2. Press inward on the two tabs on the sides of the drive to disengage the drive from the computer.
3. Slide the drive upward and remove it from the computer.

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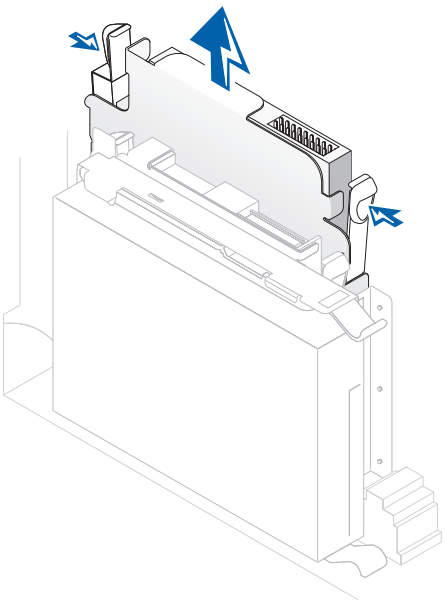

Small Desktop Computer

1 Remove the data, power, and audio cables from the drive.

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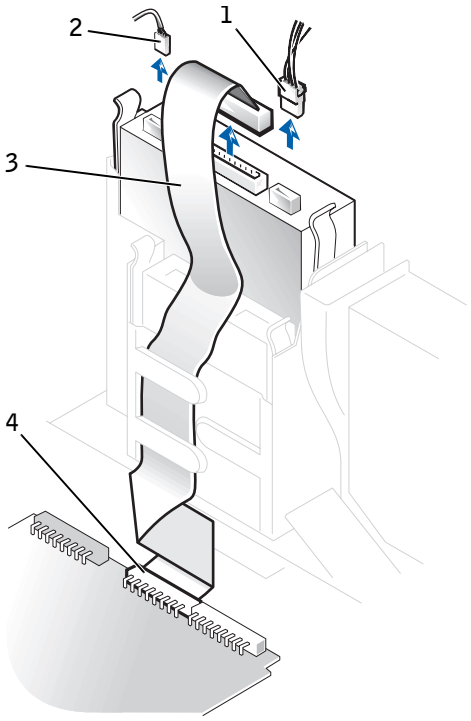
Cable Removal



1 Power cable
2 Audio cable
3 Data cable
4 Drive connector

2. Press inward on the two tabs on the sides of the drive bay to disengage the drive from the computer.
3. Slide the drive upward and remove it from the computer.
4. If the replacement drive does not have the bracket rails attached, remove the rails from the old drive by removing the two screws that secure each rail to the drive.

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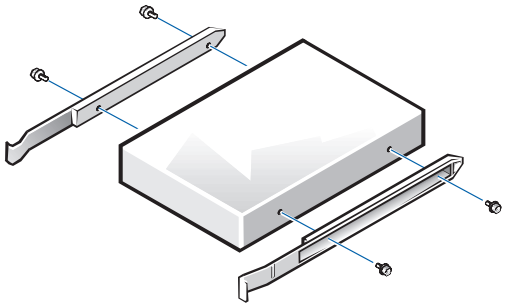
Drive Bracket Rail Removal



Small Mini-Tower Computer

1 Remove the data, power, and audio cables from the drive.

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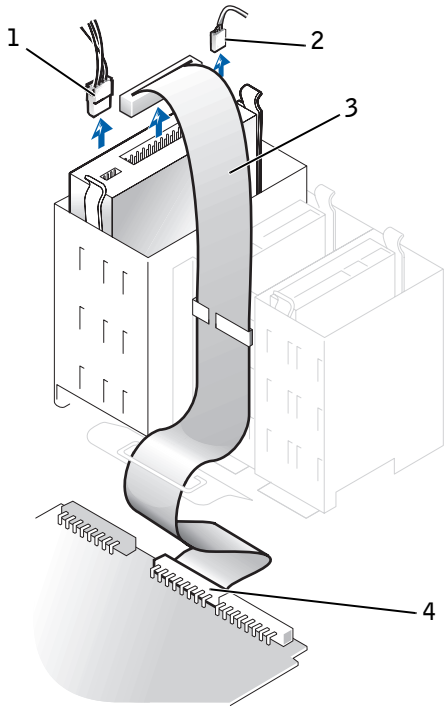
Cable Removal



1 Power cable
2 Audio cable
3 Data cable
4 Drive connector

2 Press inward on the two tabs on the sides of the drive bay to disengage the drive from the computer.

3 Slide the drive upward and remove it from the computer.

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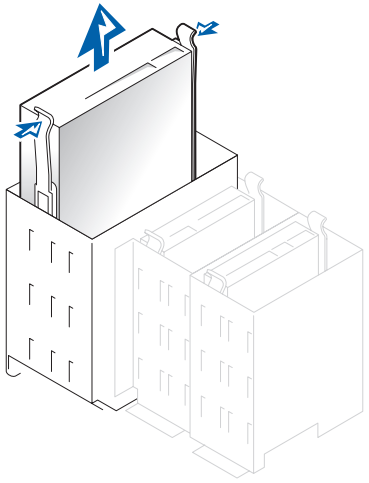
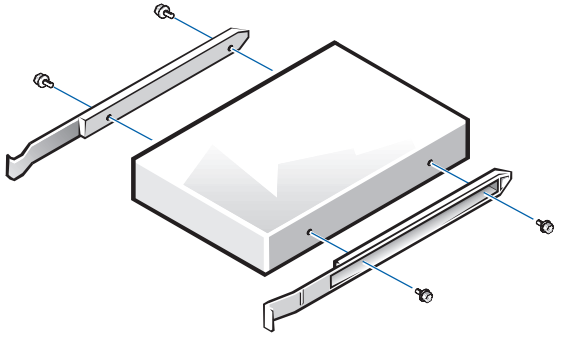
CD/DVD Drive Removal



4 If the replacement drive does not have the bracket rails attached, remove the rails from the old drive by removing the two screws that secure each rail to the drive.

Drive Bracket Rail Removal



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Replacing the CD/DVD Drive

Small Form-Factor Computer

1. Gently slide the drive into place until the tabs securely click into position.
2. Connect the interposer board to the CD/DVD drive.
   a. Ensure that the interposer board tab fits securely under the notch on the inside of the cover.
   b. Attach the power and audio cables to the interposer board.

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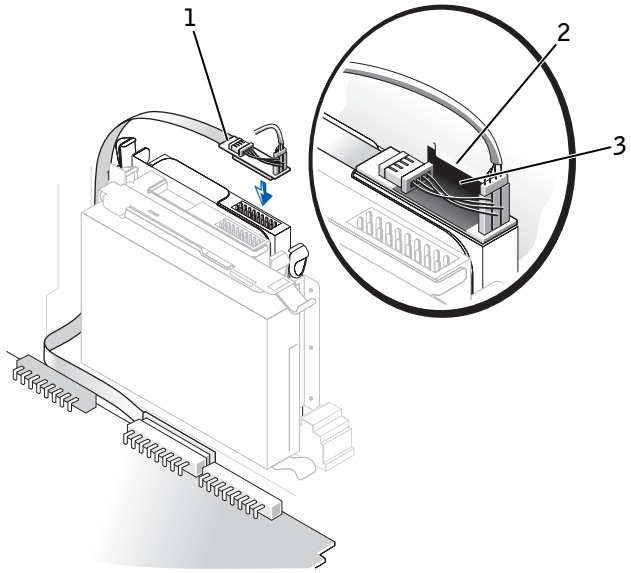
Interposer Board Replacement



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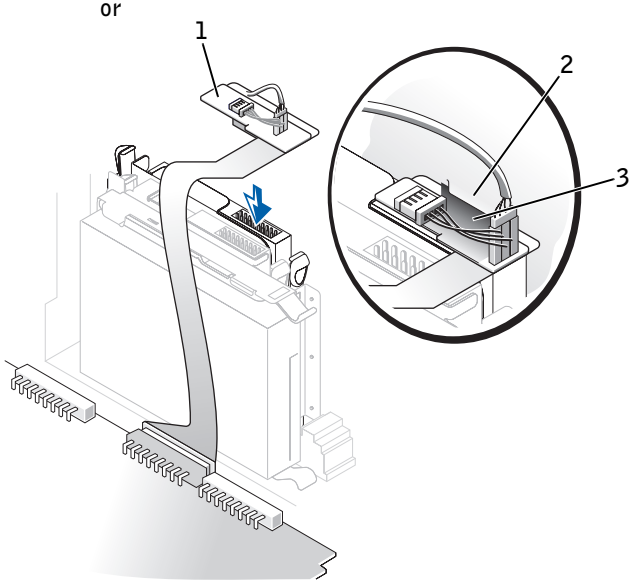

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1 Interposer board

2 Notch on inside of cover

3 Interposer board tab

If your computer came with a CD drive, use the spare connector on the existing interface cable. Otherwise, use the IDE interface cable provided in the drive kit.

3. Connect the data, power, and audio cables to the drive.
4. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
5. If the drive bay was previously empty, remove the front-panel insert from the front panel.
   a. Remove the front-panel cover with your fingers.
   b. Remove the insert by pressing it until it pops free.
   c. Replace the front-panel piece by snapping it into place.

Small Desktop Computer

1. Gently slide the drive into place until the tabs securely click into position.
2. Connect the data, power, and audio cables to the drive.

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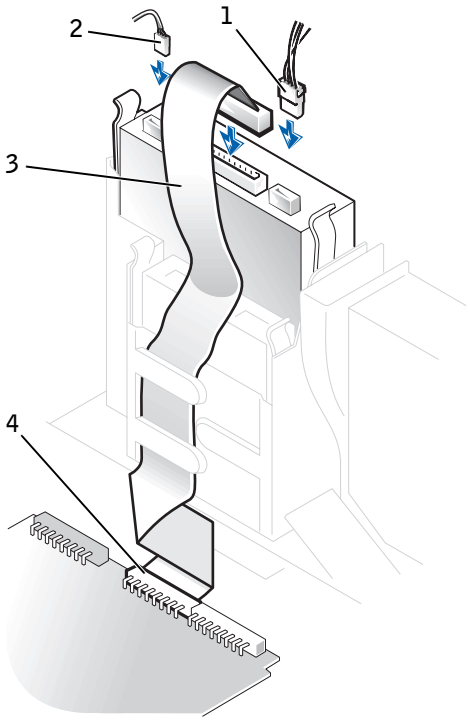
Cable Replacement



1 Power cable
2 Audio cable
3 Data cable
4 Drive connector

If your computer came with an IDE CD drive, use the spare connector on the existing interface cable. Otherwise, use the IDE interface cable provided in the drive kit.

3 If you are installing a drive that has its own controller card, install the controller card in an expansion slot.

4 Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.

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5 If the drive bay was previously empty, remove the front-panel insert from the front panel.

a Release the insert tabs from inside the chassis.

b Remove the insert by pressing it until it pops free.

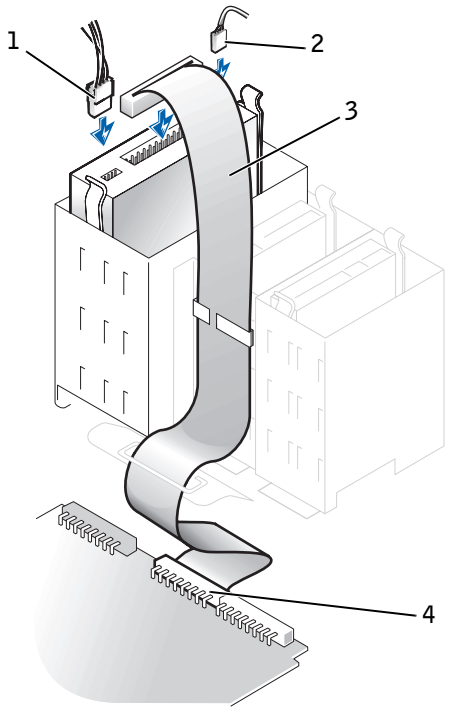
c Replace the front-panel piece by snapping it into place.

Small Mini-Tower Computer

1 Gently slide the drive into place until the tabs securely click into position.

2 Connect the data, power, and audio cables to the drive.

Cable Replacement



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1 Power cable
2 Audio cable
3 Data cable
4 Drive connector

If your computer came with an IDE CD drive, use the spare connector on the existing interface cable. Otherwise, use the IDE interface cable provided in the drive kit.

3. If you are installing a drive that has its own controller card, install the controller card in an expansion slot.
4. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
5. If the drive bay was previously empty, remove the front-panel insert from the front panel.
   a. Release the insert tabs from inside the chassis.
   b. Remove the insert by pressing it until it pops free.
   c. Replace the front-panel piece by snapping it into place.

Removing the Hard Drive

Small Form-Factor Computer

1. Disconnect the power cable and hard-drive cable from the drive.

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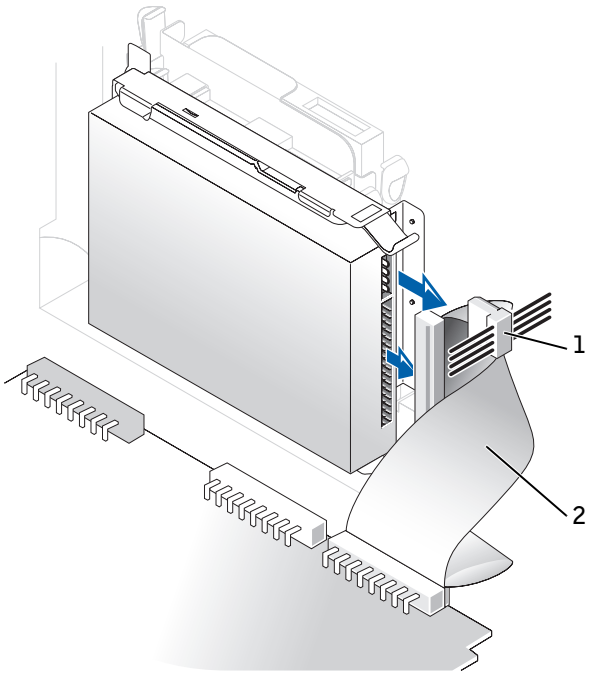
Cable Removal



1 Power cable

2 Hard-drive cable

2 Press in on the tabs on each side of the drive, and slide the drive toward the I/O panel until the notch in the drive rail allows the drive to be removed from the computer.

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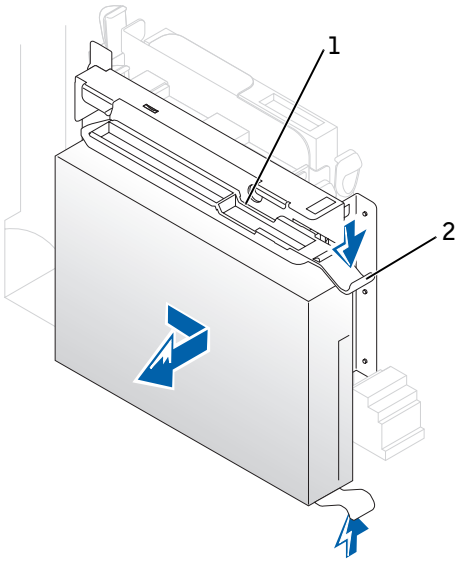

1 Notch in drive rail

2 Tabs (2)

3 If the replacement drive does not have the bracket rails attached, remove the rails from the old drive by removing the two screws that secure each rail to the drive.

Small Desktop Computer

1 The hard drive may or may not have a plastic shroud cover. (Operating the computer without a hard-drive shroud does not affect its performance.) If your computer's hard drive does not have a shroud, proceed to the next step. If your computer's hard drive does have a shroud, remove it by pressing in on the indented tab at the top of the shroud and lifting the shroud away.

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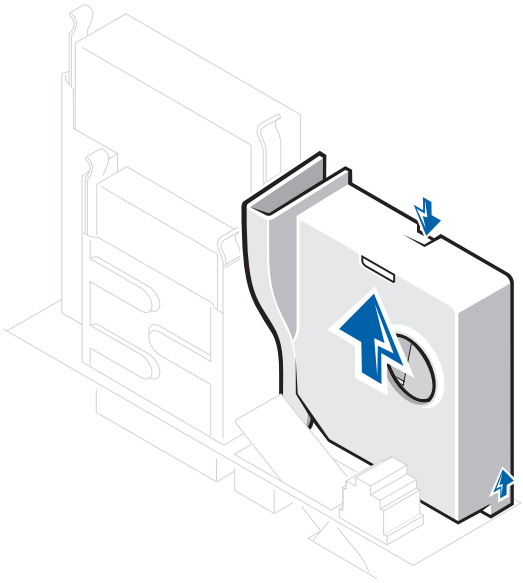
Hard-Drive Shroud Removal



NOTE: Your computer's hard drive may or may not have a plastic shroud cover. Operating the computer without a hard-drive shroud does not affect its performance.

2 Disconnect the power and hard-drive data cables from the drive.

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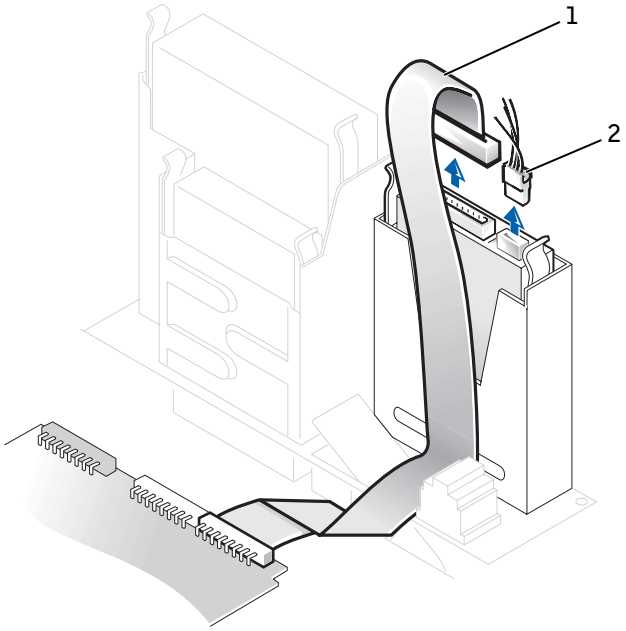
Cable Removal



1 Hard-drive cable
2 Power cable

3 Press in on the tabs on each side of the drive and slide it up and out.

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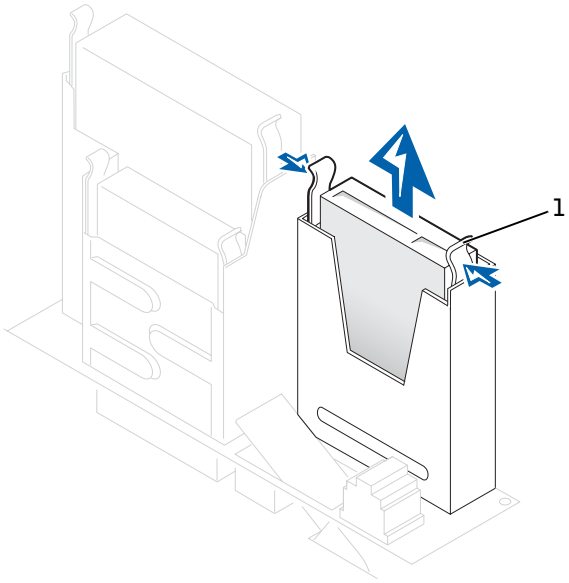

1 Tabs (2)

4 If the replacement drive does not have the bracket rails attached, remove the rails from the old drive by removing the two screws that secure each rail to the drive.

Small Mini-Tower Computer

1 Disconnect the power and hard-drive data cables from the drive.

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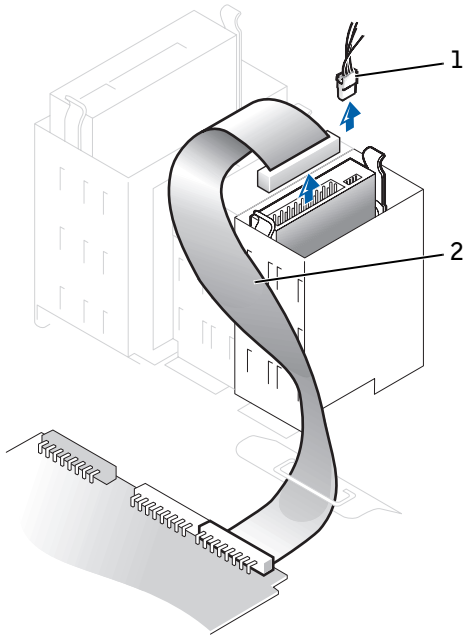
Cable Removal



1 Power cable
2 Hard-drive cable

2 Press in on the tabs on each side of the drive and slide it up and out.

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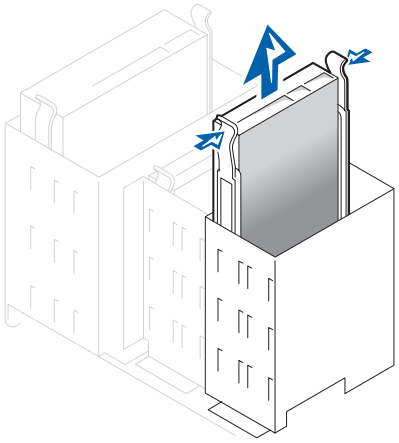

3 If the replacement drive does not have the bracket rails attached, remove the rails from the old drive by removing the two screws that secure each rail to the drive.

Replacing the Hard Drive

NOTICE: To avoid possibly damaging the drive by ESD, ground yourself by touching an unpainted metal surface on the back of the computer.

NOTICE: When you unpack the drive, do not set it on a hard surface, which may damage the drive. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

1 Gently slide the drive into place until you hear it securely click.

2 Connect the power cable to the drive, and connect the IDE data cable to the drive and the IDE1 connector on the system board.

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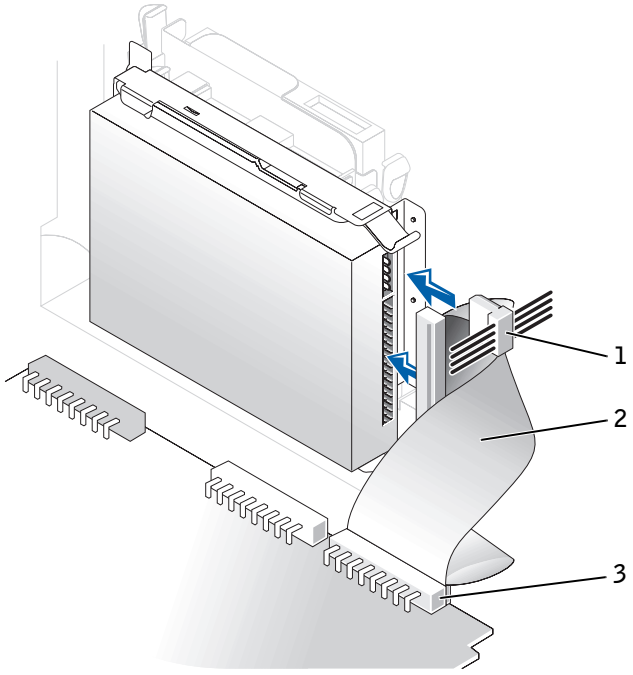
Small Form-Factor Computer

Hard Drive Replacement



1 Power cable
2 IDE data cable
3 IDE1 connector

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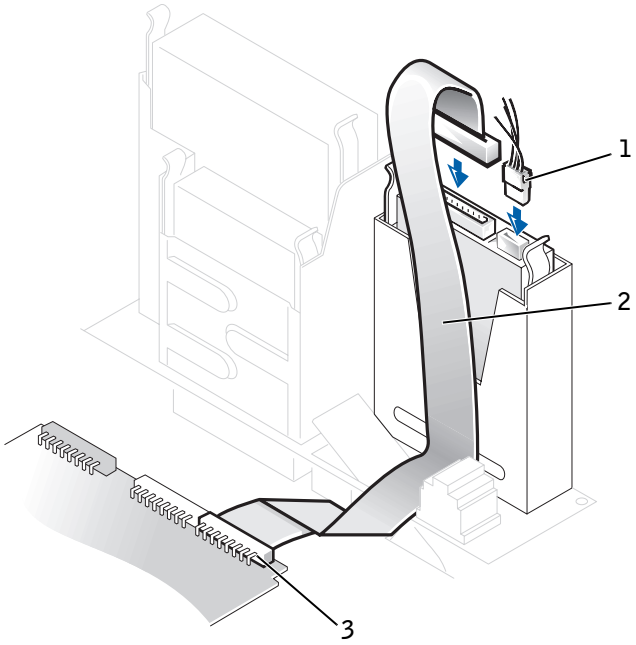
Small Desktop Computer

Hard Drive Replacement



1 Power cable
2 IDE data cable
3 IDE1 connector

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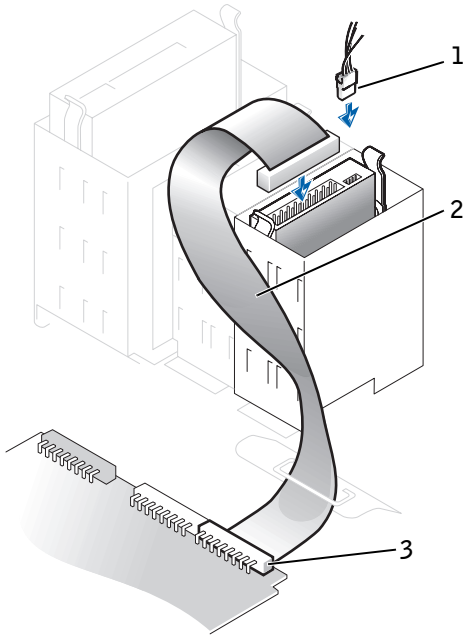
Small Mini-Tower Computer

Hard Drive Replacement



1 Power cable
2 IDE data cable
3 IDE1 connector

3 On the small desktop computer, if your computer has a hard-drive shroud, replace the shroud by inserting the two tabs on the bottom into the holes in the computer and snapping the top into place. (Operating the computer without a hard-drive shroud does not affect its performance.).

4 Check all connectors to be certain that they are properly cabled and firmly seated.

NOTICE: To avoid possible damage to the computer, you must match the colored stripe on the hard-drive data cable with pin 1 on the hard-drive (IDE1) connector and with the system board interface connector (IDE1).

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To locate the system board interface connector (IDE1), see "System Board Components."

5 If the drive you just installed is the primary drive, insert a bootable floppy disk into the floppy drive.

6 Turn on the computer.

7 Enter system setup and update the appropriate **Primary Drive** option, 0 or 1.

See the *User's Guide* for complete information on system setup.

8 Reset the chassis intrusion detector.

9 Restart the computer.

10 Partition and logically format the computer's hard drive before proceeding to the next step.

For partition and format instructions, see the documentation that came with the operating system.

11 Test the hard drive by running the Dell Diagnostics.

See "Solving Problems" in the *User's Guide* for complete information.

12 If the drive you just installed is the primary drive, install the operating system on the hard drive.

For instructions, see the documentation that came with the operating system.

Adding a Second Hard Drive — Small Mini-Tower Computer

NOTICE: Ground yourself by touching an unpainted metal surface on the back of the chassis.

NOTICE: When you unpack the drive, do not set it on a hard surface, which may damage the drive. Instead, set the drive on a surface such as a foam pad that will sufficiently cushion it.

1 Unpack the drive, and prepare it for installation.

2 Check the documentation for the drive to verify that it is configured for your computer.

3 Open the computer cover.

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4 Remove the two green plastic drive rails inside the lower hard-drive bay.

These rails are not attached with screws to the inside of the hard-drive bay. To remove the rails, gently pull the rails up and out of the bay.

5 Attach the rails to the hard drive using the two screws attached to the rails.

Ensure that the rail tabs are positioned at the back of the hard drive.

NOTICE: Do not install a drive into the lower hard-drive bay until you remove the green drive rails from inside the lower hard-drive bay.

6 Remove the first hard drive from the upper bay and install it in the lower bay.

a Disconnect the power cable and the data cable from the back of the first hard drive.

b Press in the two green rail tabs and pull the first hard drive out of the upper bay.

c Gently slide the first hard drive into the lower bay until you hear a click.

d Reconnect the power cable and the data cable to the back of the hard drive.

7 Gently slide the new hard drive into the upper bay until you hear a click.

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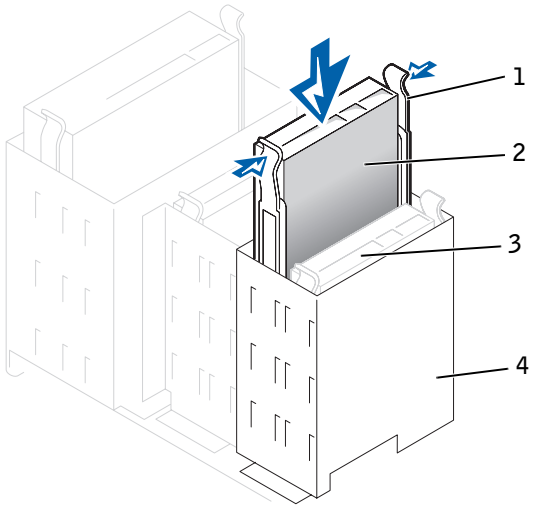
Second Hard Drive Installed



1	Rail tabs (2)
2	Second hard drive in upper bay
3	First hard drive in lower bay
4	Hard drive cage

NOTICE: Match the colored strip on the cable with pin 1 on the drive.

Locate the extra connector on the drive cable that is attached to the first hard drive and attach the connector to the second hard drive.

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SECTION 8

Expansion Card

Expansion Card Types
Removing an Expansion Card
Replacing an Expansion Card
Removing an AGP Graphics Card
Replacing an AGP Graphics Card

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Expansion Card Types

Your computer provides expansion slots for the following cards:

- In the small form-factor computer, one low-profile, 32-bit, 33-MHz PCI card.
- In the small desktop computer, up to two 32-bit, 33-MHz PCI cards.
- In the small mini-tower computer, up to four 32-bit, 33-MHz PCI cards.

All of the form factors provide an expansion slot for one 32-bit, AGP 4x card (low-profile in the small form-factor and small desktop computers) operating at 1.5 V.

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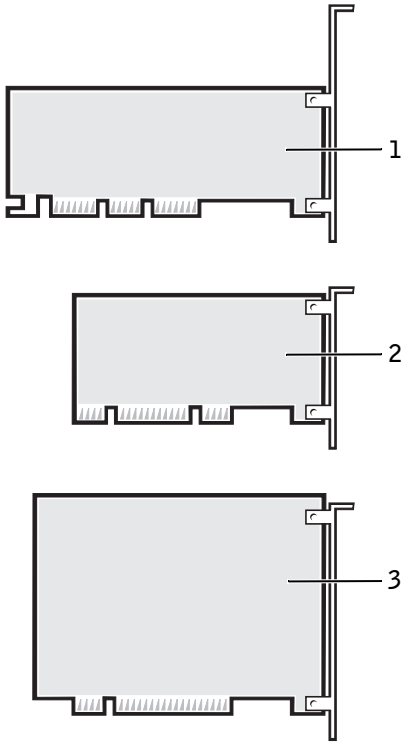

1 AGP 4x card
2 Low-profile 32-bit PCI card
3 32-bit PCI card

NOTE: Before disconnecting a device from the computer or removing a component from the system board, verify that the auxiliary power light on the system board is off. For the location of this light, see "System Board Components."

Removing an Expansion Card

CAUTION: Use a wrist grounding strap as explained in "Precautionary Measures."

Small Form-Factor Computer

1 If necessary, disconnect any cables connected to the card.

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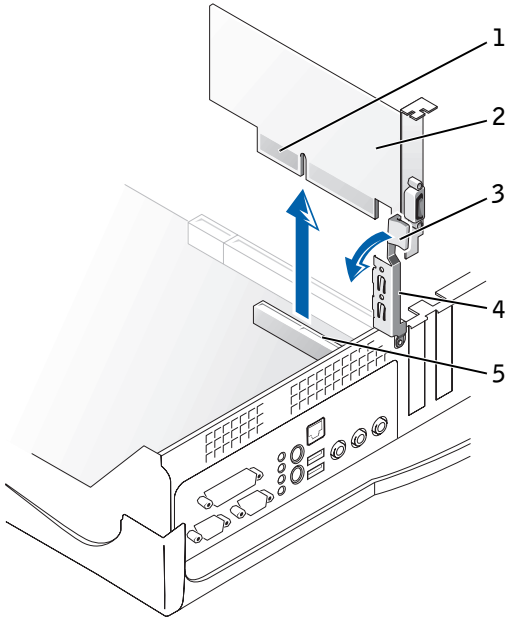
2 Press the hinged lever on the expansion card retention arm and raise the retention arm.

3 Grasp the card by its outside corners and ease it out of its connector on the riser board.

4 If you are removing the card permanently, install a metal filler bracket over the empty card-slot opening.

Expansion Card Removal



1 Card-edge connector
2 Expansion card
3 Hinged lever
4 Retention arm
5 Expansion-card connector

Small Desktop Computer

1 Remove the expansion-card cage.

2 If necessary, disconnect any cables connected to the card.

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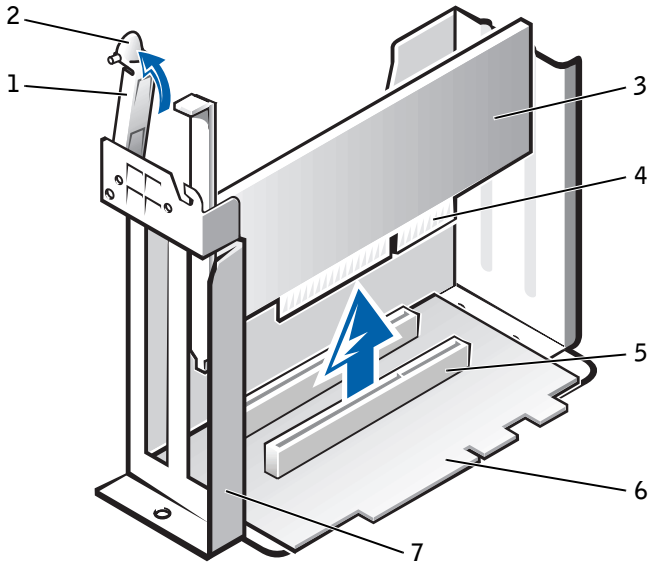
3 Press the lever on the expansion card retention arm and raise the retention arm.

Expansion Card Removal



1	Retention arm	5	Expansion-card connector
2	Lever	6	Riser board
3	Expansion card	7	Expansion-card cage
4	Card-edge connector		

4 Grasp the card by its outside corners and ease it out of its connector on the riser board.

5 If you are removing the card permanently, install a metal filler bracket over the empty card-slot opening.

Small Mini-Tower Computer

1 If necessary, disconnect any cables connected to the card.

2 Press the lever on the expansion card retention arm and raise the retention arm.

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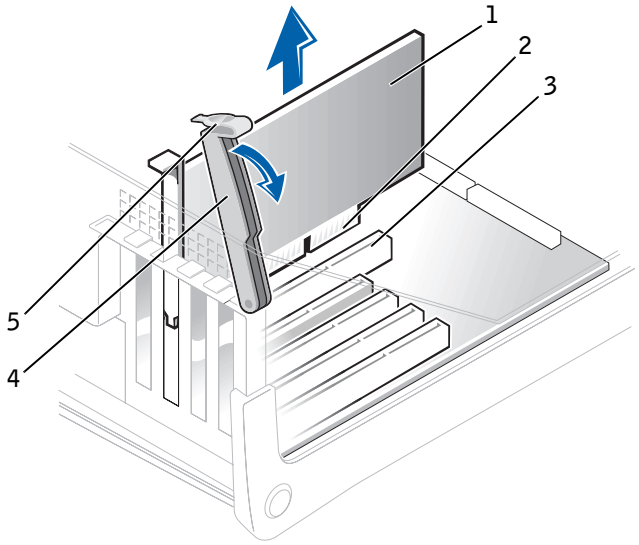
Small Mini-Tower Computer



1 Expansion card
2 Card-edge connector
3 Expansion-card connector
4 Retention arm
5 Lever

3 Grasp the card by its outside corners and ease it out of its connector on the riser board.

4 If you are removing the card permanently, install a metal filler bracket over the empty card-slot opening.

Replacing an Expansion Card

Small Form-Factor, Desktop, and Mini-Tower Computers

⚠ **CAUTION: Use a wrist grounding strap as explained in "Precautionary Measures."**

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CAUTION: Some network cards automatically start the computer when they are connected. To guard against electrical shock, be sure to unplug the computer from its electrical outlet before installing any expansion cards.

1. Prepare the expansion card for installation.

   See the documentation that came with the expansion card for information on configuring the card, making internal connections, or otherwise customizing it for your computer.

2. Follow the procedures, in reverse order, for your particular computer in "Removing an Expansion Card."

3. Place the expansion card on the connector and press down firmly. Make sure that the card is fully seated in the slot.

   If the expansion card is full-length, insert the end of the card into the expansion-card guide bracket as you lower the card toward its connector on the system board. Insert the card firmly into the expansion-card connector on the system board.

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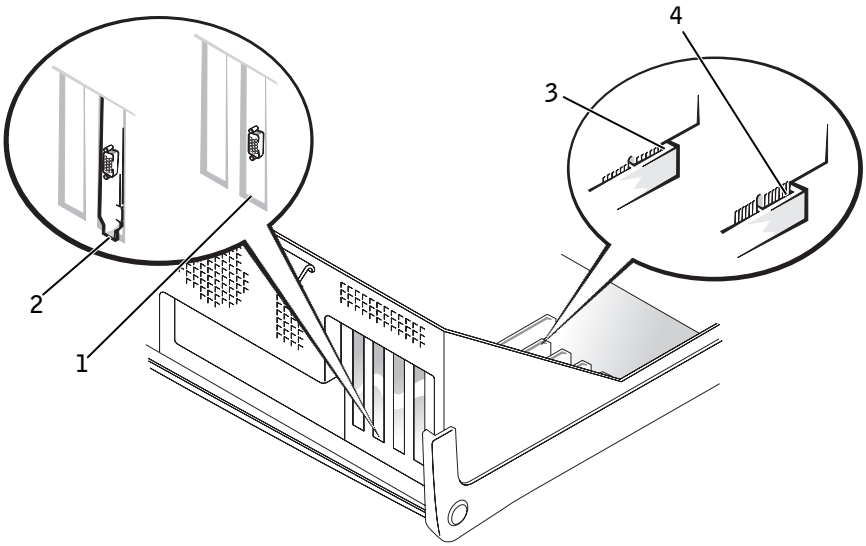
Expansion Card Connection



1 Bracket within slot
2 Bracket caught outside of slot
3 Fully seated card
4 Not fully seated card

4 Before lowering the retention arm, make sure of the following:

- Tops of all expansion cards and filler brackets are flush with the alignment bar.
- Notch in the top of the card or filler bracket fits around the alignment guide.

Press the arm into place, securing the expansion card(s) in the computer.

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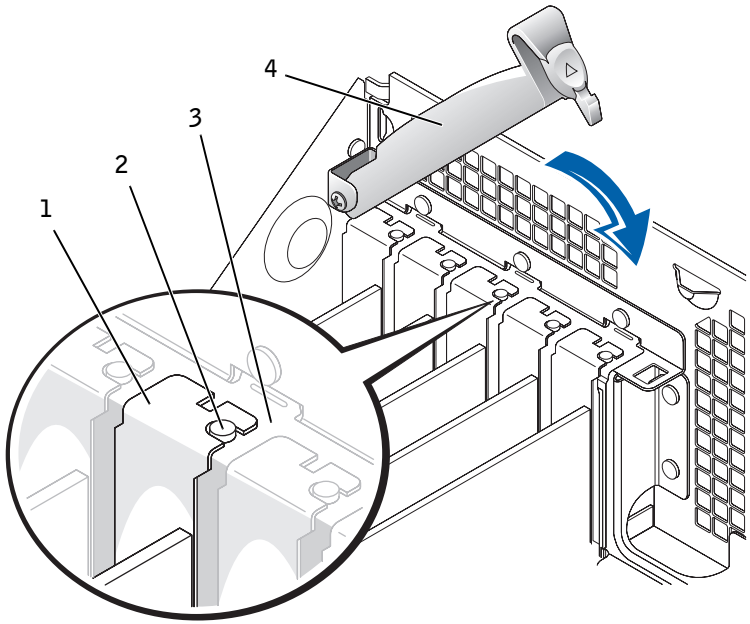
Retention Arm Closure



1 Filler bracket
2 Alignment guide
3 Alignment bar
4 Retention arm

5 Reconnect the computer and devices to their electrical outlets and turn them on.

NOTE: After you open and close the cover, the chassis intrusion detector causes the following message to be displayed at the next computer start-up:

```
ALERT! Cover was previously removed.
```

See "Resetting the Chassis Intrusion Detector" for instructions.

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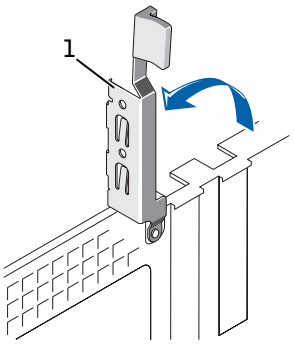
Removing an AGP Graphics Card

Small Form-Factor Computer

1. Remove the filler bracket by raising the hinged lever and then sliding the bracket up.

AGP Slot Filler Bracket Removal



1 Hinged lever

2. On the AGP card clip, press the lever toward the PCI slot 1.
3. Pull the AGP card up and out of the AGP card clip.

Small Desktop Computer

1. On the hinged lever, press the indentation with your thumb at an angle toward the system board until you release the tab. Continue holding the lever and pull the lever up.
2. Slide the filler bracket up.

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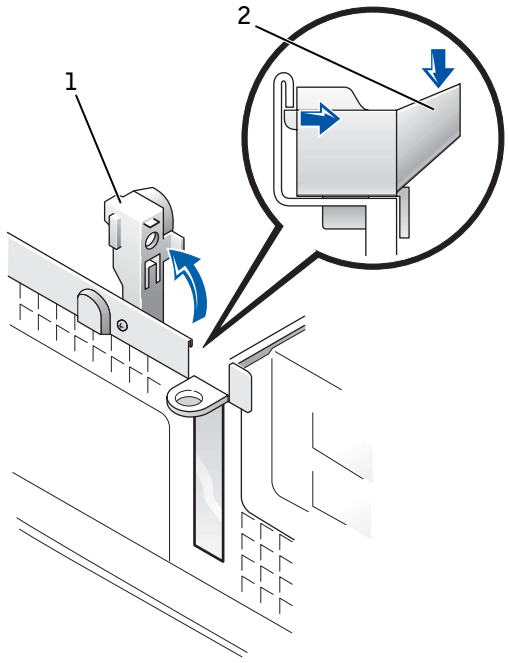
AGP Slot Filler Bracket Removal



1 Hinged lever
2 Indented tab

3 On the AGP card clip, press the lever toward the PCI slot 1.

4 Pull the AGP card up and out of the AGP card clip.

Small Mini-Tower Computer

1 Remove the filler bracket by raising the hinged lever and then sliding the bracket up.

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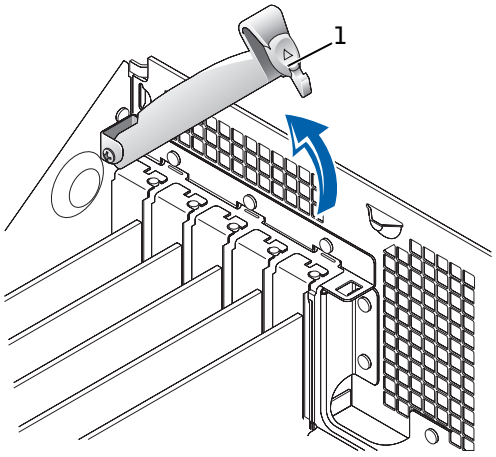
AGP Slot Filler Bracket Removal



1 Hinged lever

2 On the AGP card clip, press the lever toward PCI slot 1.

3 Pull the AGP card up and out of the AGP card clip.

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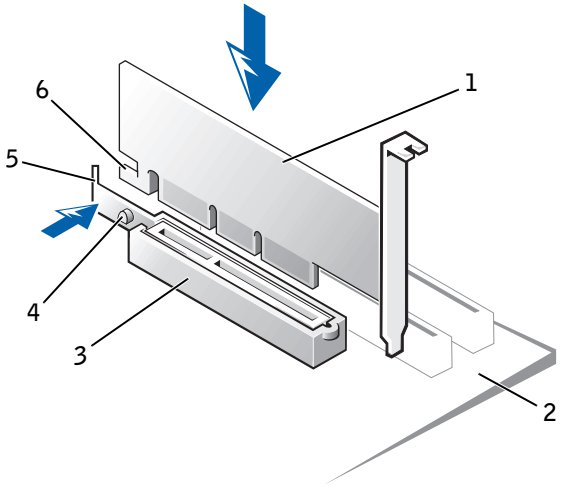
Replacing an AGP Graphics Card

Small Form-Factor, Small Desktop, and Small Mini-Tower Computers



1	AGP card	4	AGP card clip tab
2	System board	5	AGP card clip lever
3	AGP card clip	6	AGP card notch

1. Press the AGP card clip lever, ensuring that the tab on the AGP card clip lever fits into the notch on the front end of the AGP card.
2. Secure the AGP card by lowering the hinged lever on the back panel.

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SECTION 9

Expansion-Card Cage (Small Desktop Computer Only)

Removing the Expansion-Card Cage
Replacing the Expansion-Card Cage
Removing the PCI Riser Board
Replacing the PCI Riser Board

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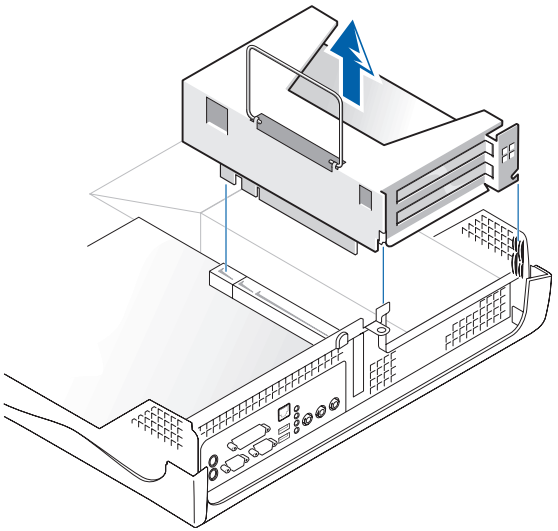
Removing the Expansion-Card Cage

CAUTION: Use a wrist grounding strap as explained in "Precautionary Measures."

1. Examine any cables connected to expansion cards through the back-panel openings, and disconnect any cables that will not reach the expansion-card cage once it is removed from the computer.
2. Remove any cables connected to the expansion card.
3. Gently pull on the handle and lift the expansion-card cage up and away from the computer.

Expansion-Card Cage Removal



Replacing the Expansion-Card Cage

1. Align the slots in the side of the expansion-card cage with the tabs on the side of the computer, and slide the expansion-card cage down into place.
2. Make sure that the riser board is fully seated in the RISER connector on the system board.

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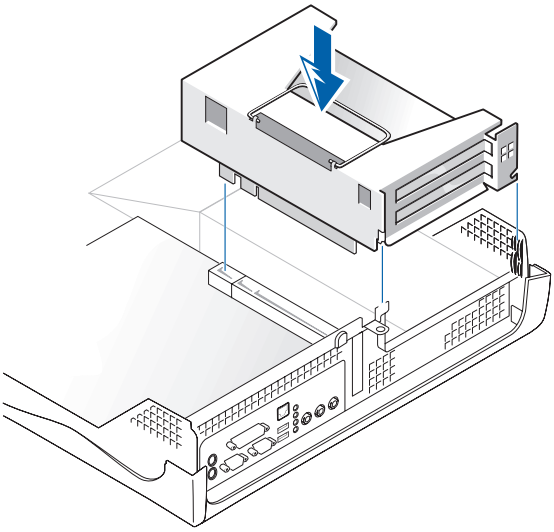

3 Replace and reconnect any cables you removed in steps 1 and 2 of the previous procedure.

Removing the PCI Riser Board

NOTICE: To avoid damage to the expansion cards or the system board by ESD, ground yourself by touching an unpainted metal surface on the back of the computer.

CAUTION: Use a wrist grounding strap as explained in "Precautionary Measures."

1 Remove the expansion-card cage.

2 Remove the expansion cards installed in the slots.

3 Remove the two screws that attach the riser board to the expansion-card cage.

Replacing the PCI Riser Board

Follow the "Removing the PCI Riser Board" procedures in reverse order.

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SECTION 10

Front-Panel Inserts

Removing Front-Panel Inserts
Replacing Front-Panel Inserts

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Removing Front-Panel Inserts

1. On the small form-factor and small desktop computers, perform the following steps.
   a. Face the front of the computer and use your fingers to remove the front-panel cover.
   b. Press on the insert until it pops free of the front-panel cover.
2. On the small mini-tower computer, perform the following steps.
   a. Open the computer cover to a 45-degree angle and disconnect the CD/DVD drive data cable.
   b. Open the cover to a 90-degree angle and release the insert tabs from inside the chassis.
   c. Press on the insert until it pops free of the front-panel cover.

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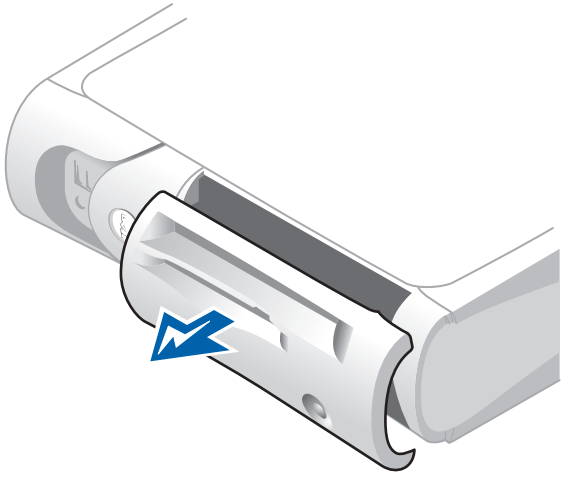
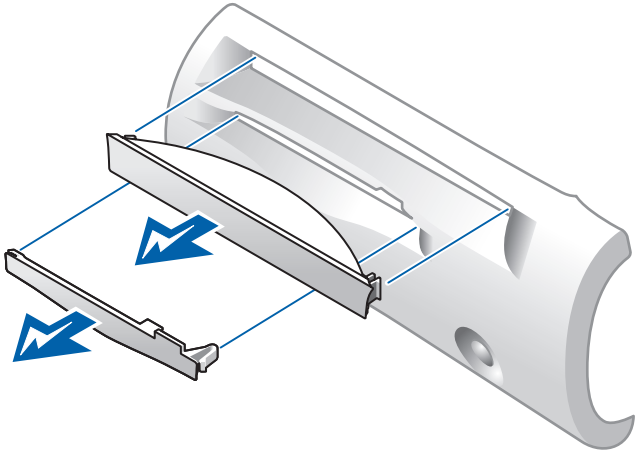
Small Form-Factor Computer





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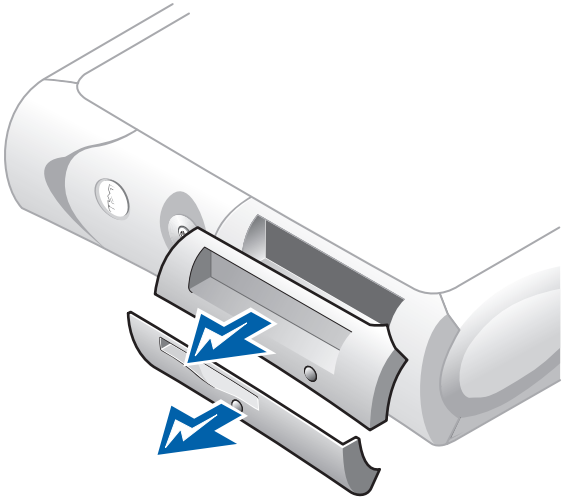
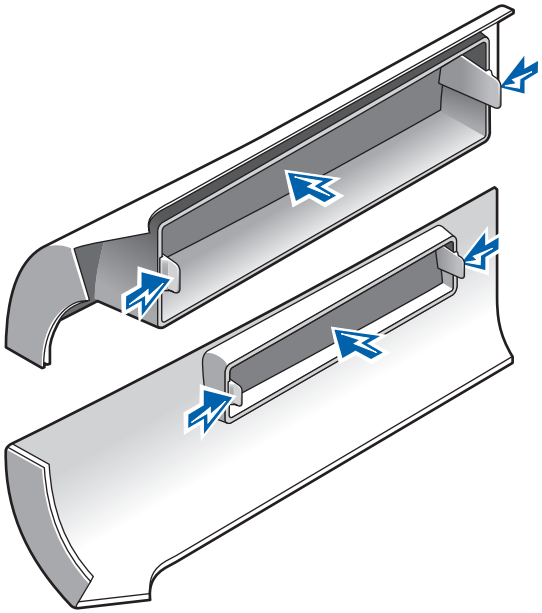
Small Desktop Computer





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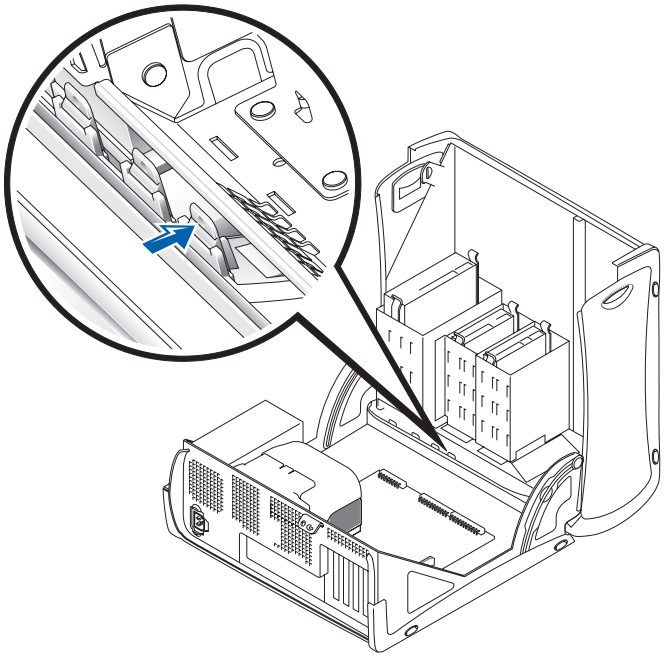
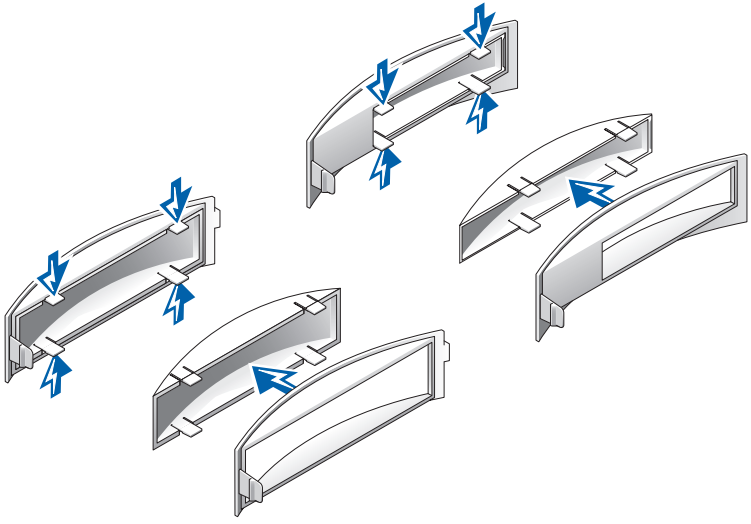
Small Mini-Tower Computer





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Replacing Front-Panel Inserts

To replace a front-panel insert, follow the appropriate procedure, in reverse, in "Removing Front-Panel Inserts."

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SECTION 11

I/O Panel

Removing the Front I/O Panel

Replacing the Front I/O Panel

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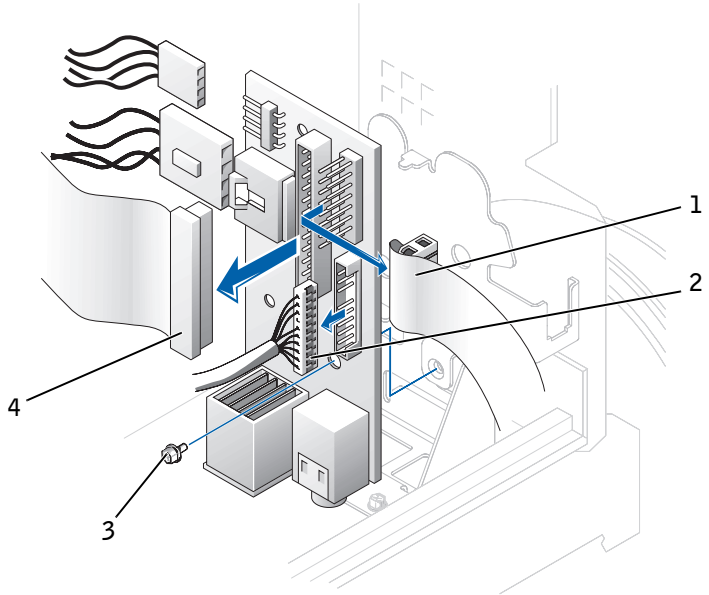
Removing the Front I/O Panel

Small Form-Factor Computer

1 To access the mounting screw that holds the front I/O panel to the computer, remove the hard drive.

Front I/O Panel Removal



1 Front I/O cable
2 Front audio cable
3 Mounting screw
4 Control panel cable

2 Disconnect the control panel cable from the control panel connector on the I/O panel.

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3 Disconnect the front I/O cable from the front-panel connector on the system board (see "System Board Components" for the location of the front-panel connector and see "Small Form-Factor Computer" for the location of the control panel and I/O cables).

4 Remove all cables that are connected to the front I/O panel.

5 From inside the computer cover, remove the mounting screw that secures the front I/O panel to the computer.

6 Remove the front I/O panel from the computer.

Small Desktop Computer

1 Remove the hard-drive shroud.

2 Disconnect the hard-drive data cable.

3 Disconnect the control panel cable from the control panel connector on the I/O panel.

4 Disconnect the front I/O cable from the front-panel connector on the system board (see "System Board Components" for the location of the front-panel connector and see "Small Desktop Computer" for the location of the control panel and I/O cables).

Note the routing of the control panel cable as you remove it from the computer so that you can replace it correctly.

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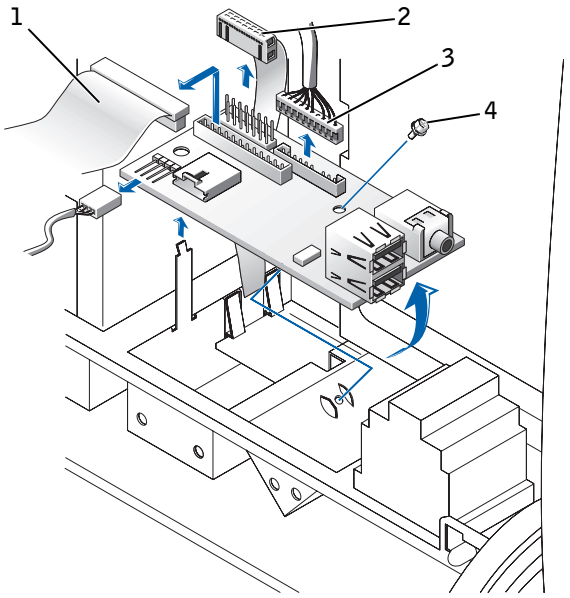
Front I/O Panel Removal



1 Control panel cable
2 Front I/O cable
3 Front audio cable
4 Mounting screw

5. Remove all cables that are connected to the front I/O panel.
6. Remove the mounting screw that secures the front I/O panel to the computer.
7. Remove the front I/O panel from the computer.

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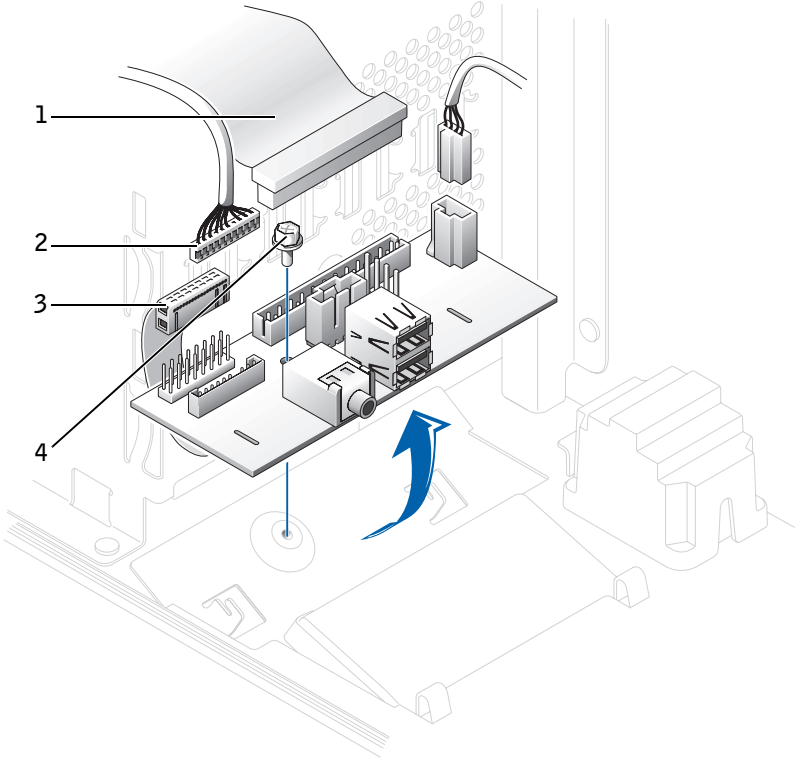
Small Mini-Tower Computer

Front I/O Panel Removal



1 Control panel cable
2 Front audio cable
3 Front I/O cable
4 Mounting screw

1. Disconnect the control panel cable from the control panel connector on the I/O panel.
2. Disconnect the front I/O cable from the front-panel connector on the system board (see "System Board Components" for the location of the front-panel connector and see "Small Mini-Tower Computer" for the location of the control panel and front I/O cables).

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Note the routing of the control panel cable as you remove it from the computer so that you can replace it correctly.

3. Remove all cables that are connected to the front I/O panel.
4. From inside the chassis cover, remove the mounting screw that secures the front I/O panel to the chassis.
5. Remove the front I/O panel from the chassis.

Replacing the Front I/O Panel

To replace the front I/O panel, follow the removal procedure for your computer in reverse.

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SECTION 12

Memory

Removing a Memory Module
Replacing a Memory Module

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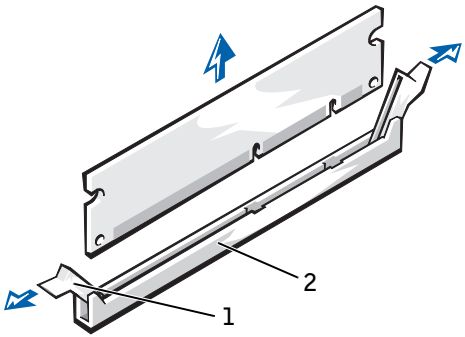
Removing a Memory Module

CAUTION: Use a wrist grounding strap as explained in "Precautionary Measures."

1 Press the securing clips outward simultaneously until the memory module disengages and pops out slightly from the socket.

Memory Module Removal



1 Securing clips (2)
2 Socket

2 Lift the module away from the socket.

Replacing a Memory Module

1 Press the module fully into the socket while closing the securing clips to lock the module into place.

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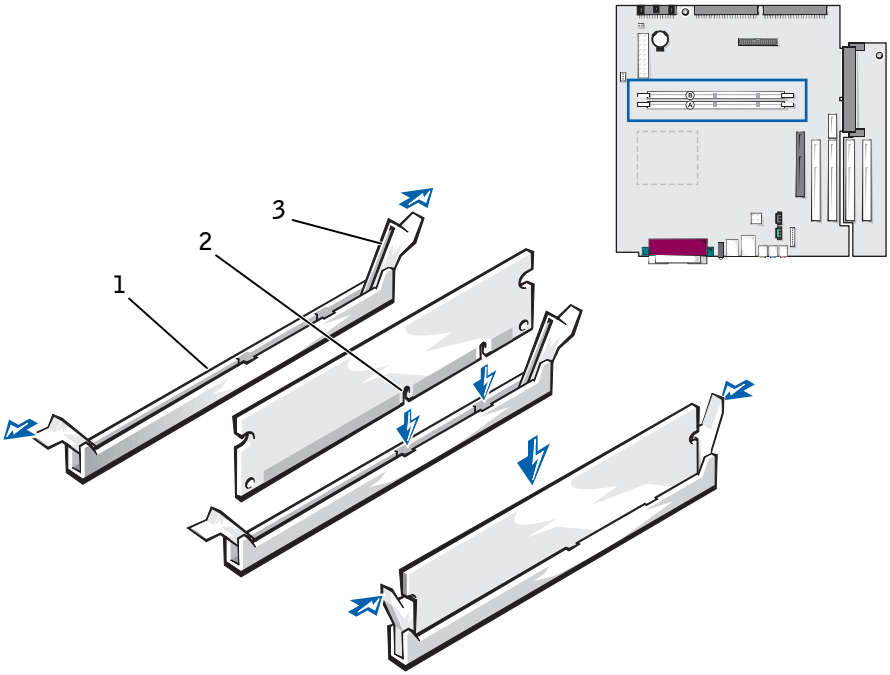

1 Socket
2 Slot
3 Securing clip

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SECTION 13

Microprocessor

Removing the Cooling Fan/Heat-Sink Assembly and Microprocessor

Replacing the Cooling Fan/Heat-Sink Assembly and Microprocessor

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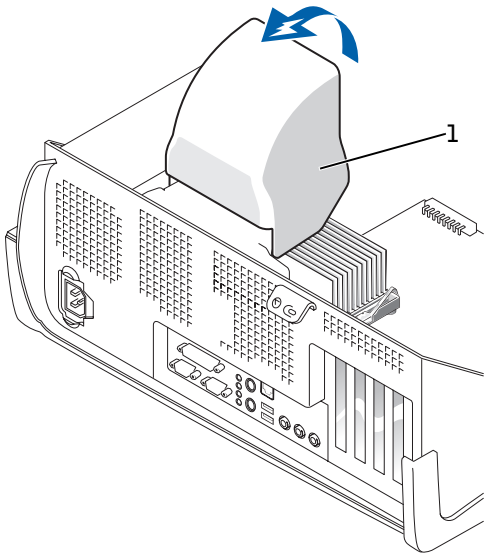
Removing the Cooling Fan/Heat-Sink Assembly and Microprocessor

CAUTION: Use a wrist grounding strap as explained in "Precautionary Measures."

CAUTION: The microprocessor and heat sink assembly can get extremely hot. To avoid burns, be sure both have had sufficient time to cool before you touch them.

1. Disconnect the fan cable from the system board.
2. Disconnect the 12-volt power cable from the system board.
3. On the small mini-tower computer, rotate the airflow shroud.

Airflow Shroud Rotation—Small Mini-Tower Computer



1 Airflow shroud

4. On the small mini-tower computer, press down on the metal securing latches to release the securing clips from the retention base. Then lift the clips out of the tabs on the retention base and away from the heat sink.

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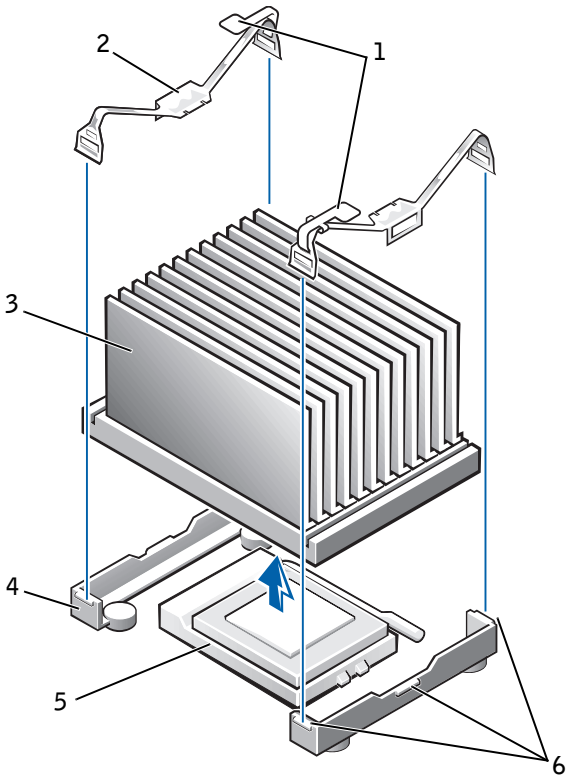
Heat Sink Removal—Small Mini-Tower Computer



1	Securing latches (2)	4	Retention base
2	Securing clips (2)	5	ZIF socket
3	Heat sink	6	Tabs (3)

5 On the small form-factor and small desktop computers, remove the securing clips to remove the heat sink/blower assembly.

The heat sink is attached to the blower.

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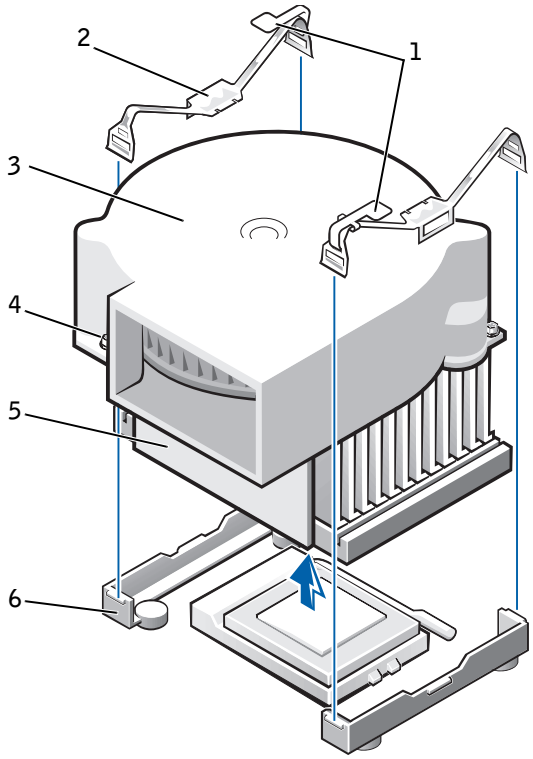
Heat Sink/Blower Assembly Removal—Small Form-Factor and Small Desktop Computers



1	Latches (2)	4	Screws (2)
2	Securing clips (2)	5	Heat sink
3	Blower	6	Retention base

NOTICE: Before you remove the heat sink, gently rock the heat sink, and then slightly twist it as you lift it from the system board.

6 Lift the heat sink or heat sink/blower assembly away from the microprocessor.

7 On the small form-factor and small desktop computers, remove the two screws on the blower to remove it from the heat sink.

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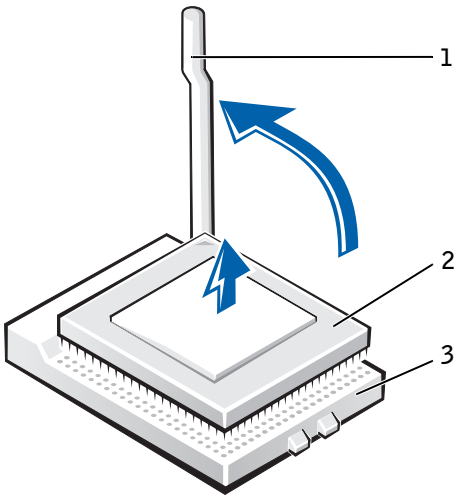
NOTICE: Do not discard the original heat sink and securing clips unless you are installing a microprocessor upgrade kit from Dell. If you are *not* installing a microprocessor upgrade kit from Dell, reuse the original heat sink, blower, and securing clips when installing your new microprocessor.

NOTICE: Lay the heat sink down with the thermal grease facing upward. Do not lay the heat sink down with the thermal grease touching the work surface.

8 Discard the original heat sink and securing clips.

Microprocessor Removal



1 Release lever
2 Microprocessor
3 ZIF socket

NOTICE: Be careful not to bend any of the pins when you remove the microprocessor from the ZIF socket. Bending the pins can permanently damage the microprocessor.

The ZIF socket has a lever-type handle that secures and releases the microprocessor from the ZIF socket.

9 Pull the socket release lever straight up until the microprocessor releases.

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10 Remove the microprocessor from the socket.

11 Leave the release lever extended so that the socket is ready for the new microprocessor.

Replacing the Cooling Fan/Heat-Sink Assembly and Microprocessor

CAUTION: Use a wrist grounding strap as explained in "Precautionary Measures."

NOTICE: Be careful not to bend any of the pins when you unpack the microprocessor. Bending the pins can permanently damage the microprocessor.

1 Unpack the new microprocessor.

2 Align pin-1 (the beveled corner) of the microprocessor with the pin-1 corner of the socket.

NOTE: You must identify the pin-1 corner to correctly position the microprocessor.

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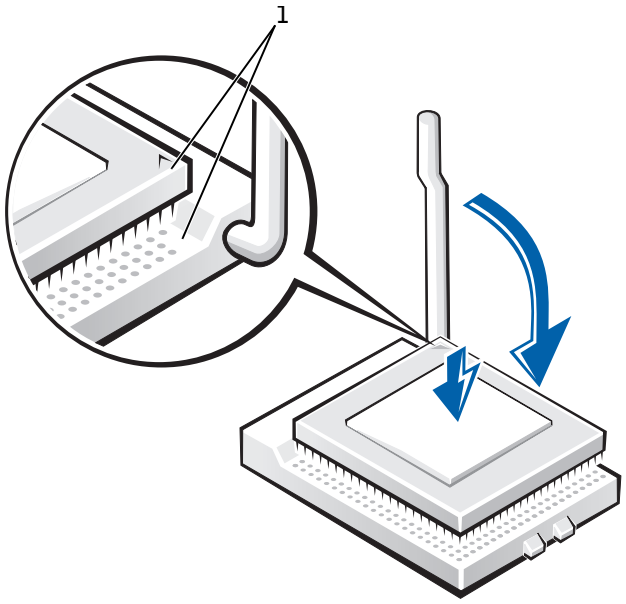

1 Pin-1 corners of microprocessor and socket aligned

NOTICE: You must position the microprocessor correctly in the ZIF socket to avoid permanent damage to the microprocessor and the computer when you turn on the computer.

3 Set the microprocessor lightly in the socket and make sure all pins are headed into the correct holes. Because your computer uses a ZIF socket, there is no need to use force (which could bend the pins if the microprocessor is misaligned). When the microprocessor is positioned correctly, press it with minimal pressure to seat it.

4 When the microprocessor is fully seated in the socket, pivot the release lever back toward the socket until it snaps into place, securing the microprocessor.

NOTICE: If you are installing a microprocessor replacement kit from Dell, return the microprocessor to Dell in the same package in which your replacement kit was sent.

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NOTICE: If you are *not* installing a microprocessor upgrade kit from Dell, reuse the original blower/heat sink assembly and securing clips when replacing the microprocessor.

5. Remove the film covering the bottom of the heat sink.
6. On the small form-factor and small desktop computers, reinstall the two screws that attach the blower to the heat sink.
7. Lower the heat sink or blower/heat sink assembly to the microprocessor so that the heat sink fits in the retention base.
8. Fit the end of each securing clip that does *not* have the latch over its tab on the retention base. Then, fit the middle of the clip over the middle tab on the retention base, and press down on the clip's latch to secure the clip to the retention base.
9. On the small mini-tower computer, rotate the airflow shroud back over the heat sink.
10. Plug the fan cable into its connector on the system board.
11. Plug the 12-volt power cable into its connector on the system board.
12. Close the computer cover, reconnect your computer and devices to their electrical outlets, and turn them on.

    As the computer boots, it detects the presence of the new microprocessor and automatically changes the configuration information in system setup.

NOTE: After you open and close the cover, the chassis intrusion detector causes the following message to be displayed at the next system start-up:

```
ALERT! Cover was previously removed.
```

13. Enter system setup and confirm that the system data area correctly identifies the type of installed microprocessor.

    For instructions on using system setup, see the *User's Guide*.

14. While in system setup, reset the **Chassis Intrusion** option by pressing the left- or right-arrow key to select **Reset** and then choosing **Enabled**, **Enabled-Silent**, or **Disabled**.

    See the *User's Guide* for information on the chassis intrusion detector.

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15 Run the Dell Diagnostics to verify that the new processor is operating correctly.

See the *User's Guide* for information on Dell Diagnostics.

NOTE: If a setup password has been assigned by someone else, contact the network administrator for information on resetting the chassis intrusion detector.

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SECTION 14

Power Supply

Removing the Power Supply
Replacing the Power Supply

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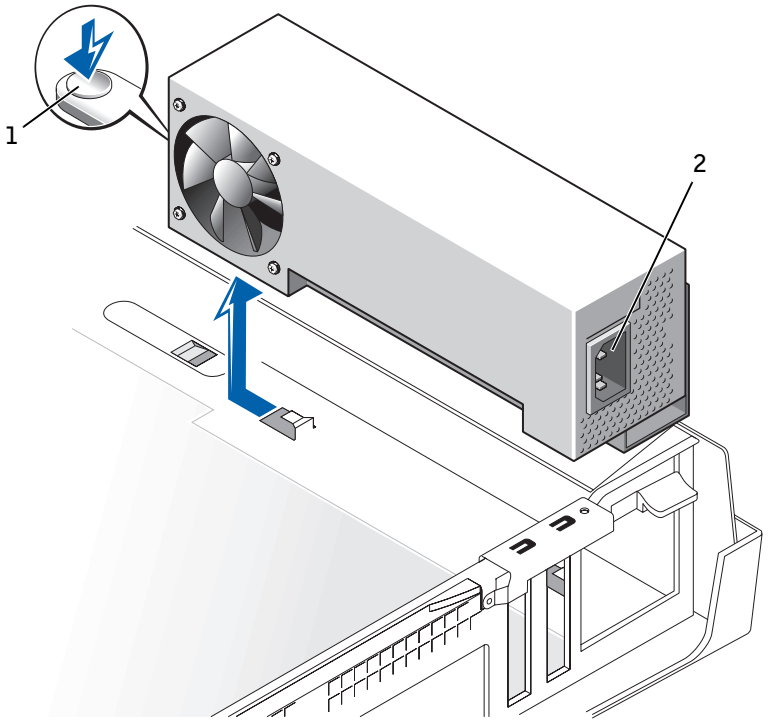
Removing the Power Supply

Small Form-Factor Computer



1 Release button

2 AC power connector

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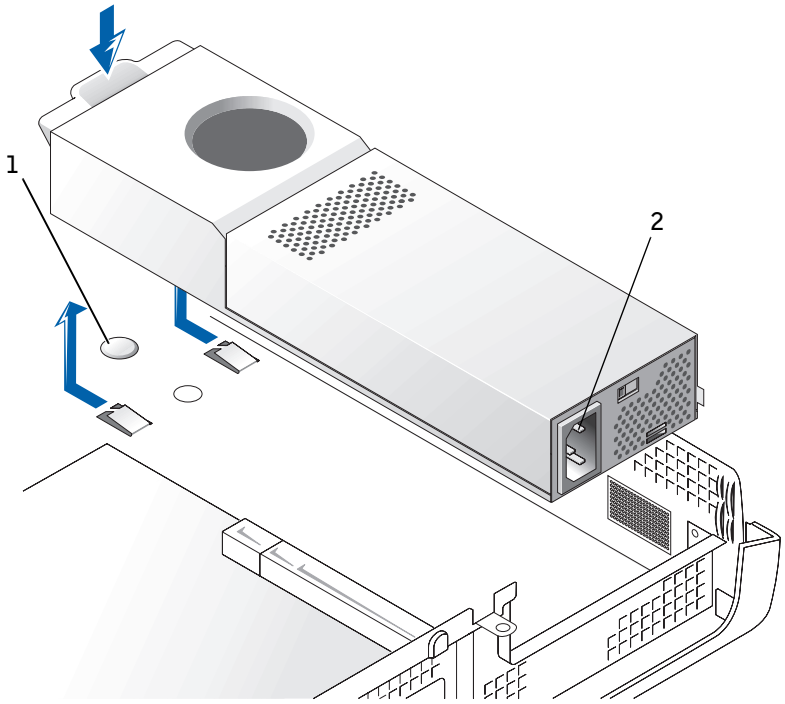

1 Release button

2 AC power connector

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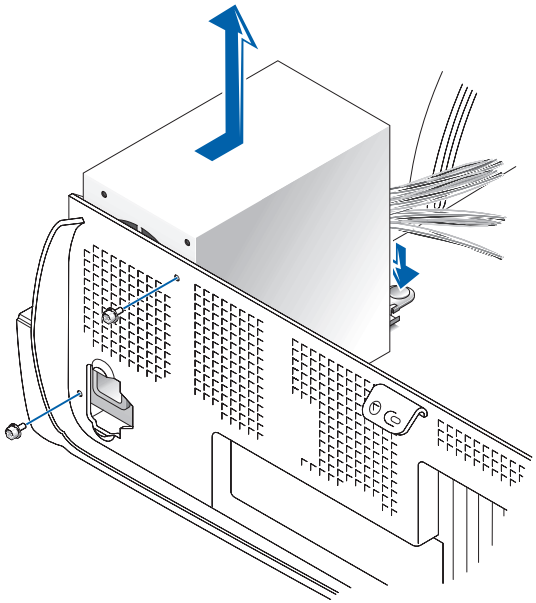
Small Mini-Tower Computer



1. Disconnect the AC power cable from the back of the power supply.
2. Disconnect the DC power cables from the system board and the drives.

   Note the routing of the DC power cables underneath the clips in the computer as you remove them from the system board and drives. It is important to route these cables properly when you replace them to prevent them from being pinched or crimped.
3. On the small desktop computer, remove the expansion-card cage and remove the power cables from the side of the hard drive. To remove the power cables, use the cables as leverage and pull away from the clips while simultaneously pulling on the metal clips with your fingers.
4. On the small mini-tower computer, remove the two screws that attach the power supply to the rear wall.
5. Press the release button. On the small desktop computer, press down on the handle, which in turn presses on the release button.
6. Slide the power supply toward the front of the computer approximately 1 inch.

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7 Lift the power supply up and out of the computer.

Replacing the Power Supply

1 Slide the power supply into place.

2 Reconnect the DC power cables.

3 Connect the AC power cable to the connector.

4 On the small desktop computer, reattach the power cables to the side of the hard drive and replace the expansion-card cage.

5 Run the cables underneath the clips.

6 Press the clips to close them over the cables.

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SECTION 16

System Board

System Board Components
Removing the System Board
Replacing the System Board

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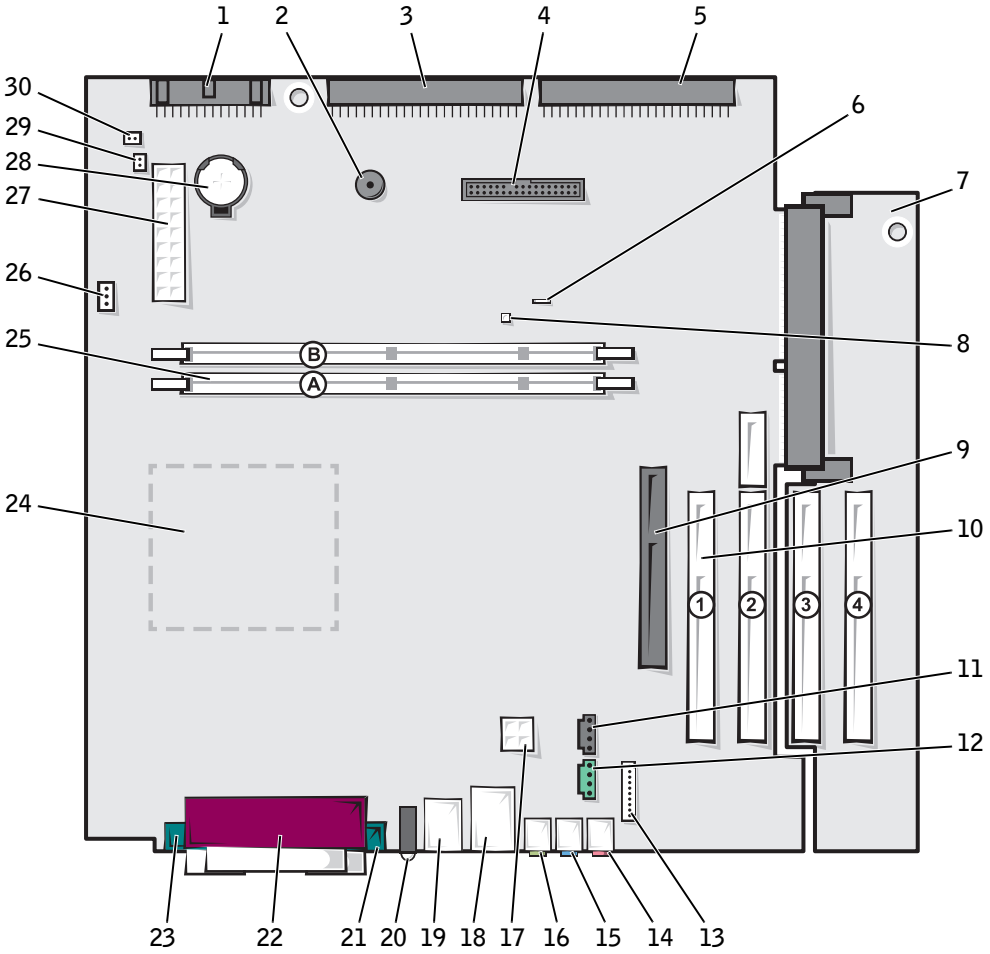
System Board Components



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1	Floppy drive	16	Audio line-out connector
2	Internal speaker	17	12-volt microprocessor power connector
3	EIDE2 connector	18	Network (upper) and USB connectors (2) (lower)
4	Front panel connector	19	Keyboard (lower) and mouse (upper) connectors
5	EIDE1 connector	20	Diagnostic lights
6	Suspend-to-RAM light	21	Serial 2 connector
7	PCI riser (small mini-tower computer only)	22	Parallel connector
8	Auxiliary power light	23	Serial 1 connector
9	AGP connector	24	Microprocessor and heat sink
10	PCI connectors	25	Memory module (DIMM) connectors
11	CD audio connector	26	Fan connector
12	Telephony connector (TAPI)	27	Main power connector
13	Front audio connector	28	Battery
14	Microphone connector	29	RTC reset jumper
15	Audio line-in connector	30	Password jumper

System Board Labels

Connector or Socket	Description
AUDIO	Line-in, line-out, and microphone jacks
AUX_PWR	Auxiliary power light
BATTERY	Battery socket
CD-IN	CD/DVD drive audio cable connector
CPU	Microprocessor connector
DIAG_LED	Diagnostic lights
DIMM_x	Dual in-line memory module (DIMM) socket
DSKT	Floppy/tape drive interface connector
FAN	Microprocessor fan connector
FRONTAUDIO	Front panel audio connector for integrated audio
FRONTPANEL	Front panel cable connector
H_RISER	Horizontal riser board connector; vertical PCI cards
IDE*n*	EIDE interface connector

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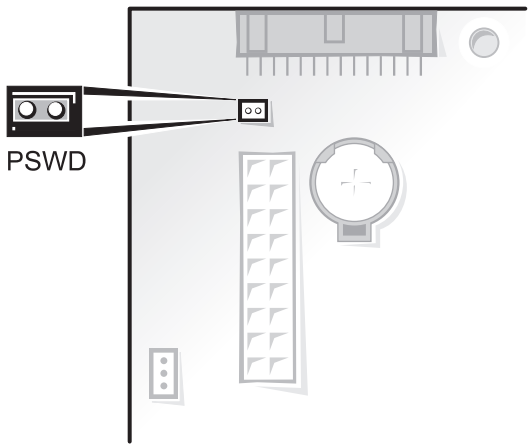
Connector or Socket	Description
KYBD_MOUSE	Keyboard and mouse connectors
MODEM	Telephony connector
NIC_USB	Integrated network adapter connector and USB connectors
PAR_SER1_SER2	Parallel and serial port connectors
PCI*n*	PCI expansion card connectors
POWER	Main power input connector
12VPOWER	12-volt power connector
PSWD	Password jumper
RTCRST	RTC reset jumper
SPEAKER	Internal speaker
STR	Suspend-to-RAM light
V_RISER	Vertical riser board connector; horizontal PCI cards

System Board Jumper



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Jumper	Setting	Description
PSWD	(default)	Password features are enabled.
		Password features are disabled.
RTCRST		Real-time clock reset. Can be used for troubleshooting purposes.

jumpered *unjumpered*

Removing the System Board

CAUTION: Before you remove any component from the system board, read the steps in "Precautionary Measures."

1. Remove any components that restrict access to the system board.
2. Disconnect all cables from the system board.
3. Before you remove the existing system board, visually compare the replacement system board to the existing system board to make sure that you have the correct part.
4. Pull up on the tab and slide the system board toward the front of the computer; lift it up and away.

NOTE: The system board and metal tray are attached and are removed as one piece.

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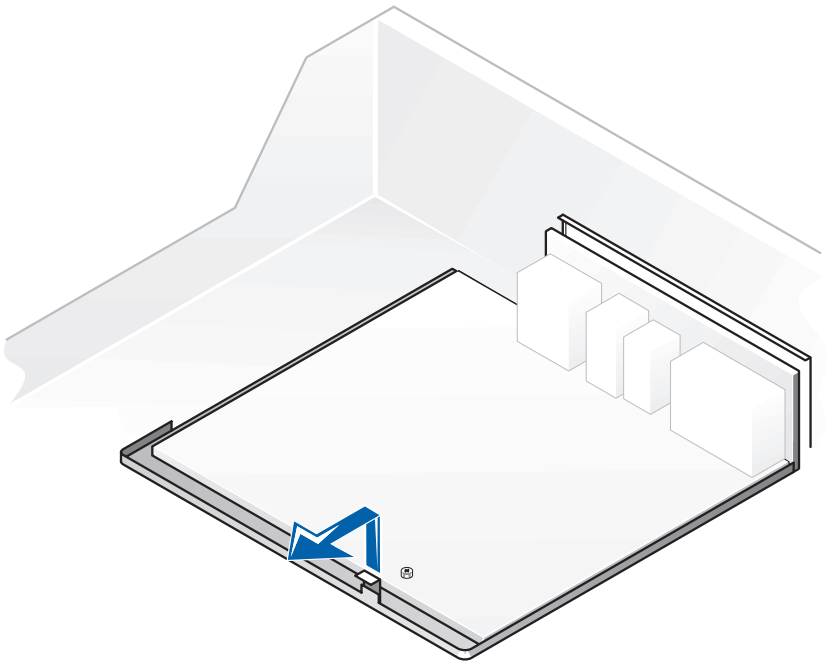

5 Place the system board that you just removed next to the replacement system board.

Replacing the System Board

1 Transfer components from the existing system board to the replacement system board.

2 Remove the memory modules and install them on the replacement board.

⚠ **CAUTION: The microprocessor package and heat sink assembly can get hot. To avoid burns, be sure that the package and assembly have had sufficient time to cool before you touch them.**

3 Remove the heat sink assembly and microprocessor from the existing system board and transfer them to the replacement system board.

4 Configure the settings of the replacement system board.

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5. Set the jumpers on the replacement system board so it is identical to the one on the existing board.
6. Orient the replacement board by aligning the notches on the bottom to the tabs on the computer floor.
7. Slide the board toward the back of the computer until it clicks into place.
8. Replace any components and cables that you removed from the system board.
9. Reconnect all cables to their connectors at the back of the computer, close the computer cover, and reconnect the computer and devices to their power sources and turn them on.

NOTE: After you close the cover, the chassis intrusion detector causes the following message to be displayed at the next computer start-up:

```
ALERT! Cover was previously removed.
```

10. Reset the chassis intrusion detector.

NOTE: Some components and connectors on the replacement system board may be in different locations than the corresponding connectors on the existing system board.

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