

Dell™ OptiPlex™ GX100 Systems Service Manual

[Small-Form-Factor Chassis — Removing and Replacing Parts](#)

[Low-Profile Chassis — Removing and Replacing Parts](#)


[Mini Tower Chassis — Removing and Replacing Parts](#)

Notes, Notices, and Cautions

Throughout this guide, blocks of text may be accompanied by an icon and printed in bold type or in italic type. These blocks are notes, notices, and cautions, and they are used as follows:

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

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 potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

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Initial release: May 1999

Last revised: 24 Aug 2000

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Low-Profile Chassis — Removing and Replacing Parts: Dell™ OptiPlex™ GX100 Systems Service Manual

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Overview

This section provides procedures for removing and replacing the components, assemblies, and subassemblies in the Dell OptiPlex low-profile chassis GX100 system.

Unless otherwise noted, each procedure assumes that the following conditions exist:

- 1 You have performed the steps in "[Precautionary Measures](#)."
 - 1 You have [removed the computer cover](#).
 - 1 You can replace or reinstall a part by performing the removal procedure in reverse order unless additional information is provided.
-

Recommended Tools

Most of the procedures in this file require the use of one or more of the following tools:

- 1 Small flat-blade screwdriver
- 1 Wide flat-blade screwdriver
- 1 #1 and #2 Phillips-head screwdrivers
- 1 1/4-inch nut driver

Also, use a wrist grounding strap as explained in "[Precautionary Measures](#)."

Precautionary Measures

Before you perform any procedure in this section, take a few moments to read the following caution for your personal safety and to prevent damage to the system from ESD.

CAUTION: FOR YOUR PERSONAL SAFETY AND PROTECTION OF THE EQUIPMENT

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

1. Turn off the computer and all peripherals.
2. Disconnect the computer and peripherals 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.

3. If you are disconnecting a peripheral from the computer or are removing a component from the system board, wait 10 to 20 seconds after disconnecting the computer from AC power before disconnecting the peripheral or removing the component to avoid possible damage to the system board.
4. Wear a wrist grounding strap, and clip it to an unpainted metal surface, such as the padlock loop on the back of the chassis. If a wrist grounding strap is not available, touch any unpainted metal surface on the back of the computer or on the computer chassis, such as the power supply, to discharge any static charge from your body before touching anything inside the computer. While you work, periodically touch an unpainted metal surface on the computer chassis to dissipate any static electricity that might harm internal components. Also avoid touching components or contacts on a card and avoid touching pins on a chip.
5. Verify that the auxiliary power indicator on the system board is not on. If it is on, you may need to wait 10 to 30 seconds for it to go out (see Item 13 on [Figure 17](#)).

Internal Views

Figure 1 shows a top view of the low-profile chassis to help you orient yourself when you work inside the computer.

Figure 1. Low-Profile Chassis Orientation View

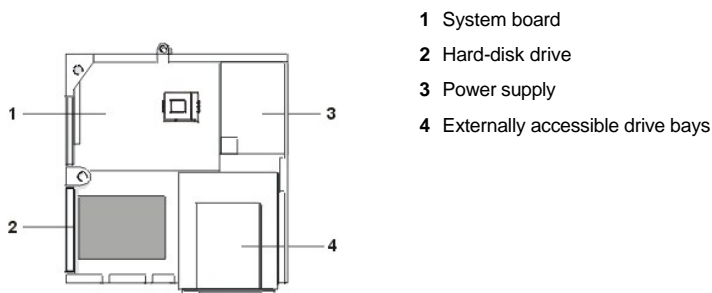
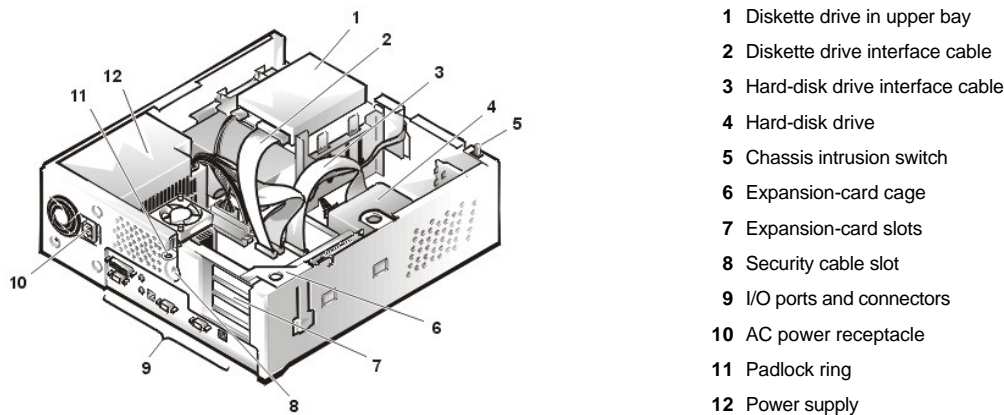


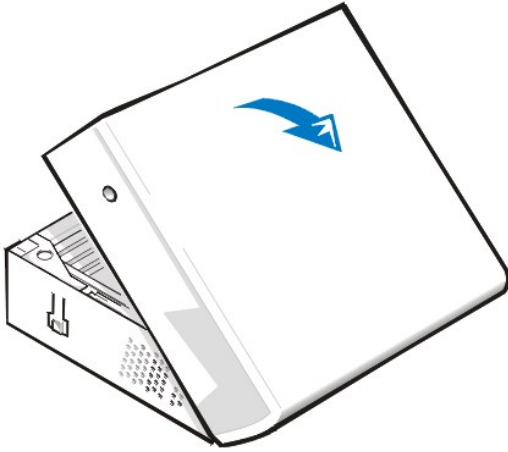
Figure 2 shows the low-profile chassis with the cover removed.

Figure 2. Inside the Low-Profile Chassis



Computer Cover

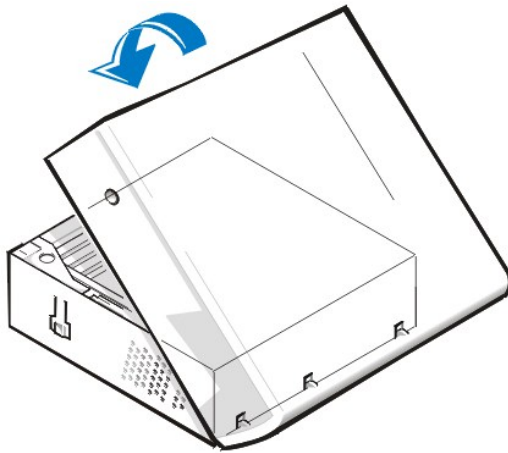
Figure 3. Computer Cover Removal



To remove the low-profile chassis computer cover, perform the following steps:

1. Press in on the two securing buttons until the cover is free to swing up (see Figure 3).
2. Raise the back of the cover, and pivot it toward the front of the computer.
3. Lift the cover off the hooks at the front of the chassis.
4. Disengage the tabs that secure the cover to the top of the chassis, and lift the cover away.

Figure 4. Computer Cover Replacement



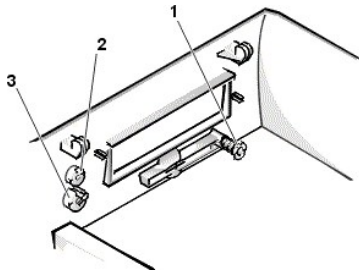
To replace the low-profile chassis computer cover, perform the following steps:

1. Face the front of the computer and hold the cover at a slight angle (see Figure 4).
2. Align the bottom of the cover with the bottom of the chassis and insert the hooks on the cover into the recessed slots on the computer chassis so that the tabs catch the hooks inside the slots.
3. Pivot the cover down toward the back of the chassis and into position.

Make sure that the securing buttons click into place.

Eject, Power, and Reset Buttons

Figure 5. Eject, Power, and Reset Button Removal



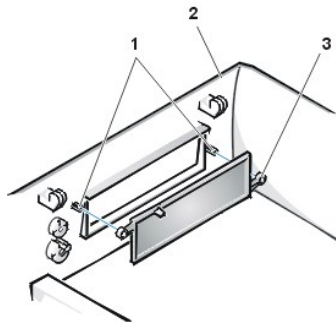
- 1 Disk eject button
- 2 Reset button
- 3 Power button

To remove the eject, power, and reset buttons, perform the following steps:

1. Lay the computer cover on a flat work surface, with the inside of the top cover facing up.
2. To remove the 3.5-inch diskette-drive eject button, pull gently on the plastic part of the button until it comes free.
3. To remove the power button or the reset button, use a small screwdriver and push in the two or three plastic clips that hold the button to the bezel. When these clips are released, the buttons come free from the bezel.

Front-Panel Inserts

Figure 6. 5.25-Inch Front-Panel Insert Removal



- 1 Posts (2)
- 2 Front of top cover
- 3 Ring tabs (2)

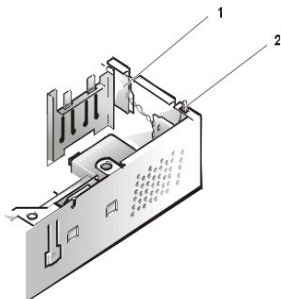
To remove a 5.25-inch front-panel insert, perform the following steps:

1. Hold the bezel with the front facing you.
2. From the front of the top cover, use your thumbs to press inward on the insert until it snaps free of the cover.

To replace a 5.25-inch front-panel insert, position the two ring-tabs over the posts on the inside of the bay opening, and then press the ring tabs over the posts.

Control Panel

Figure 7. Control Panel Removal



- 1 Control panel
- 2 Chassis intrusion switch

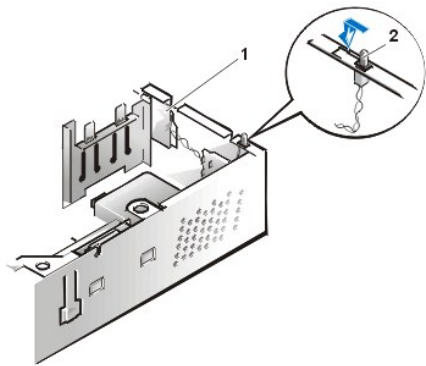
To remove the control panel in the low-profile chassis, perform the following steps:

1. Disconnect the control panel cable from the PANEL connector on the system board (see "[System Board Labels](#)" for the location of the PANEL connector).
2. From inside the chassis, remove the mounting screw that secures the control panel to the chassis.
3. Disconnect the chassis intrusion switch cable connector from the control panel.
4. Remove the control panel from the chassis.

When you reinstall the control panel, be sure to put the right side of the control panel behind the mounting tab.

Chassis Intrusion Switch

Figure 8. Chassis Intrusion Switch Removal



- 1 Control panel
- 2 Chassis intrusion switch

To remove the chassis intrusion switch in the low-profile chassis, perform the following steps:

1. Disconnect the chassis intrusion switch cable connector from the control panel on the front of the chassis and shown in Figure 8.
Note the routing of the chassis intrusion cable as you remove it from the chassis. Hooks on the chassis keep the cable in place.
 2. Slide the chassis intrusion switch out of its slot to remove it from the chassis ([see Figure 8](#)).
 3. Install the replacement chassis intrusion switch and cable.
 4. To reset the chassis intrusion detector, enter System Setup and reset **Chassis Intrusion** to **Enabled** or **Enabled-Silent** (see your *User's Guide* for instructions).
-

Drives


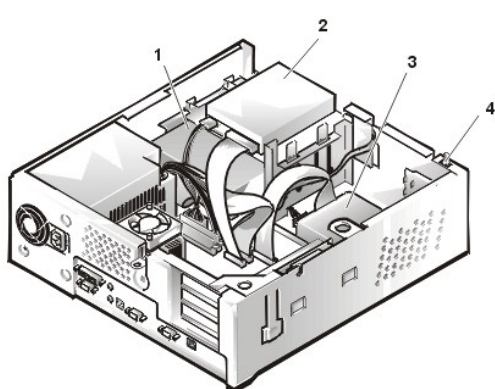

 **NOTE:** In all of the following procedures, left and right refer to your left and right as you face the front of the computer.

Figure 9. Drive Locations



- 1 5.25-inch drive
- 2 3.5-inch diskette drive
- 3 Hard-disk drive
- 4 Chassis intrusion switch

 **NOTE:** Computer configurations differ. Your computer may have an Iomega Zip drive installed instead of a 3.5-inch diskette drive, or your computer may have no externally accessible drives installed.

3.5-Inch Diskette Drive

To remove the 3.5-inch diskette drive assembly from the drive shelf, perform the following steps:

1. Disconnect the DC power cable and the interface cable from the back of the drive.
2. Press both release latches on the left side of the 3.5-inch diskette drive.
3. Pivot the 3.5-inch diskette drive upward 1 inch (2.5 cm), and then pull the drive away from the notched tabs on the right chassis wall.
4. Remove the bracket from the diskette drive you just removed.

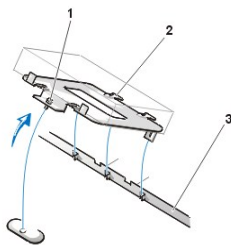
5.25-inch Drive

To remove the 5.25-inch drive/bracket assembly, perform the following steps:

1. [Remove the diskette drive](#) and bracket.
2. Disconnect the DC power cable and EIDE cable from the drive.
3. Lift the 5.25-inch drive/bracket straight up and out of the chassis.

Hard-Disk Drive Removal

Figure 10. Hard-Disk Drive/Bracket Assembly Removal

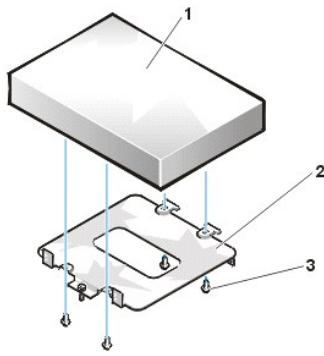


- 1 Captive screw
- 2 Hinge tabs on back of drive bracket (2)
- 3 Slots in floor divider (3)

To remove the hard-disk drive/bracket assembly, perform the following steps:

1. Disconnect the DC power cable and EIDE cable from the drive.
2. Loosen the captive screw securing the hard-disk drive/bracket to the bottom of the chassis.
3. Grasp the drive/bracket, and pivot it upward from the chassis until the two hinge tabs (located on the side opposite the screw) clear the floor divider (see Figure 10). Then lift the bracket upward and out of the chassis.
4. To remove the hard-disk drive from the bracket, place the drive/bracket on a flat surface with the bracket facing up.
5. Remove the four screws that secure the bracket to the drive.

Figure 11. Hard-Disk Drive to Bracket Installation



- 1 Hard-disk drive
- 2 Bracket
- 3 Screws (4)

To install a replacement hard-disk drive, perform the following steps.

⚠ CAUTION: To avoid the possibility of electric shock, turn off the computer and any peripherals, disconnect them from electrical outlets, and then wait at least 5 seconds before you remove the computer cover. Also, before you install a drive, see the other precautions in "[Precautionary Measures.](#)"

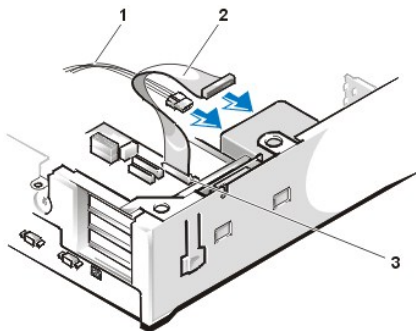
NOTICE: To avoid damaging the drive by electrostatic discharge (ESD), ground yourself by touching an unpainted metal surface on the back of the computer.

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. Prepare the drive for installation.
 - Check the documentation for the drive to verify that it is configured for your computer system.
2. If not already done, [remove the computer cover.](#)
3. To install the hard-disk drive to the bracket, place the drive top-down on a flat surface with the bracket mounting holes facing up.
4. Position the bracket over the holes and install four screws to secure the bracket to the drive.
5. Insert the bracket's hinge tabs into the chassis slots so that the tabs hook over the slots.
6. Rotate the bracket toward the chassis floor and secure the bracket with a screw.
7. Connect a power cable to the power input connector on the back of the drive (see Figure 12).
8. Check all connectors to ensure that they are properly cabled and firmly seated.
9. Connect one of the device connectors on the EIDE cable to the 40-pin interface connector on the back of the hard-disk drive.

NOTICE: You must match the red colored stripe on the EIDE cable with pin 1 on the drive's interface connector to avoid possible damage to your system.

Figure 12. Hard-Disk Drive Cable Attachment




- 1 Power cable
- 2 EIDE interface cable
- 3 IDE1 connector on system board

NOTICE: You must attach the blue connector on the EIDE interface cable to the IDE1 connector on the system board to avoid possible damage to your system.

NOTICE: You must match the red colored stripe on the EIDE interface cable with pin 1 on the IDE1 connector to avoid possible damage to your system.

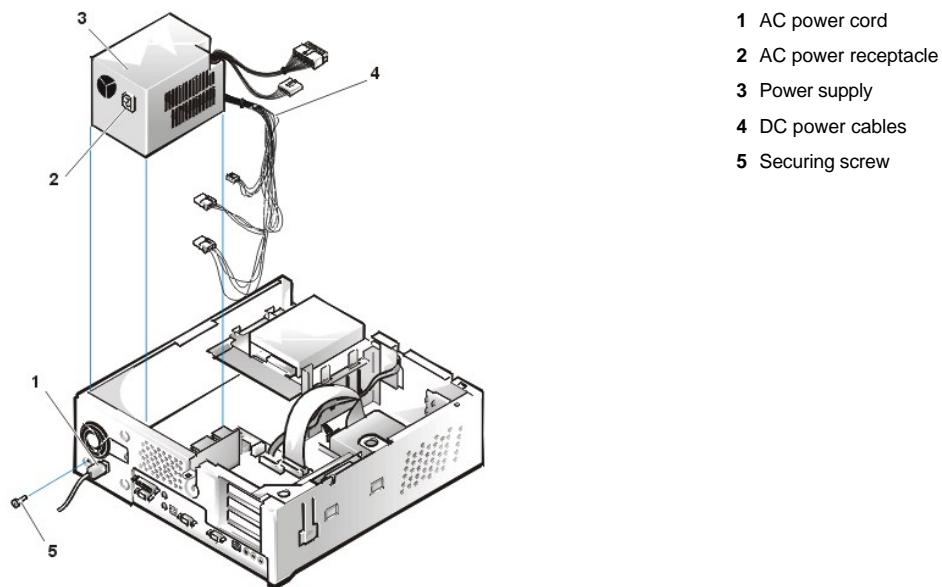
10. If it is not already connected, connect the blue connector on the EIDE interface cable to the IDE1 connector on the system board.
To locate the IDE1 connector on the system board, see "[System Board Components](#)."
11. Replace the computer cover. Then reconnect your computer and peripherals to their electrical outlets, and turn them on.
12. If the drive you just installed is the primary drive, insert a bootable diskette into drive A.
13. Turn on the computer system.
14. Enter System Setup and update the appropriate Primary Drive option, 0 or 1 (see the online *System User's Guide* for complete information).
15. After you update the System Setup settings, reboot the system.
16. Partition and logically format your drive before you proceed to the next step.
See the documentation for your operating system for instructions.

 **NOTE:** On systems with hard-disk drives larger than 2 GB, create a primary partition of 2 GB and divide the remaining capacity into partitions of 2 GB or less. For example, a system with a 2.5-GB hard-disk drive would have a primary partition of 2 GB (drive C) and a second partition of 500 MB (drive D). Hard-disk drives must be partitioned this way because MS-DOS®-based operating systems (including Microsoft® Windows NT®, when using a FAT16 file system) do not support drive partitions larger than 2 GB.

17. Test the hard-disk drive by running the Dell Diagnostics (see the online *System User's Guide* for complete information).
18. If the drive you just installed is the primary drive, install your operating system on the hard-disk drive.
For instructions, refer to the documentation that came with your operating system.

System Power Supply

Figure 13. Power Supply Removal



To remove the system power supply, perform the following steps:

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.

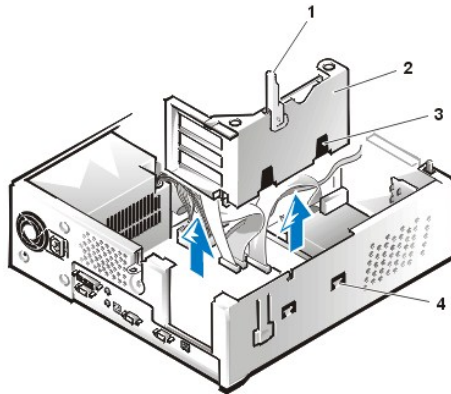
Note the routing of the DC power cables underneath the tabs in the chassis as you remove them from the system board and drives. It is important to route these cables properly when you replace them to prevent them from being pinched or crimped.

3. Remove the screw below the fan guard on the back of the chassis.
4. Slide the power supply toward the front of the computer approximately 1 inch.

5. Lift the power supply up and out of the chassis.

Expansion-Card Cage

Figure 14. Expansion-Card Cage Removal



- 1 Securing lever
- 2 Expansion-card cage
- 3 Slots (2)
- 4 Tabs (2)

To remove the expansion-card cage, perform the following steps:

1. Examine any cables connected to expansion cards through the back-panel openings and disconnect any cables that will not reach to where the cage must be placed upon removal from the chassis.

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

2. Locate the securing lever (see Figure 14). Rotate the lever upward until it stops in an **upright position**.
3. Slide the expansion-card cage out of the chassis.
4. Lift the expansion-card cage up and away from the chassis.

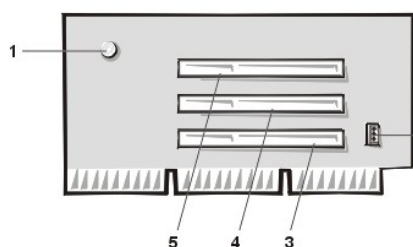
To replace the expansion-card cage into the low-profile chassis, perform the following steps:

1. With the securing lever in the upright position, align the expansion-card cage slots with the tabs in the chassis opening for the expansion-card cage (see Figure 14). Slide the expansion-card cage into place.
2. Rotate the securing lever downward until it is flush with the top of the chassis. Make sure that the riser board is fully seated in the RISER connector on the system board.
3. Reconnect any cables you removed in [step 1](#) of the previous procedure.

Riser Boards

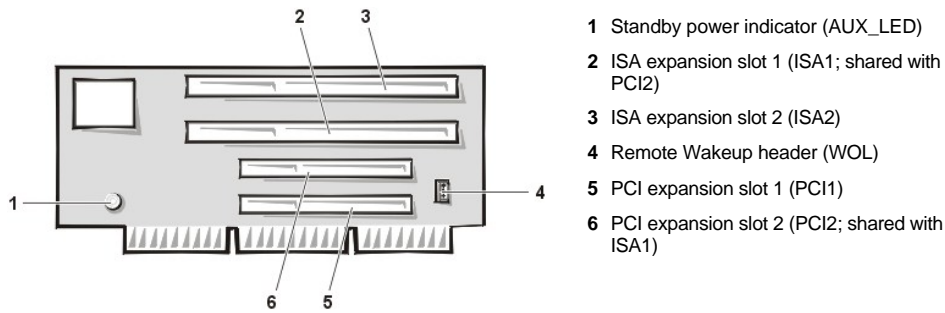
The low-profile chassis is available with either a PCI riser board (see [Figure 15](#)) or a PCI/ISA riser board (see [Figure 16](#)). The PCI riser board provides three PCI expansion card slots. The PCI/ISA riser board provides one PCI expansion slot, one ISA expansion slot, and one shared PCI/ISA expansion slot.

Figure 15. PCI Riser Board



- 1 Auxiliary power indicator LED (AUX_LED)
- 2 Wakeup On LAN (WOL) connector
- 3 PCI expansion slot 1 (PCI1)
- 4 PCI expansion slot 2 (PCI2)
- 5 PCI expansion slot 3 (PCI3)

Figure 16. Low-Profile Chassis PCI/ISA Riser Board



- 1 Standby power indicator (AUX_LED)
- 2 ISA expansion slot 1 (ISA1; shared with PCI2)
- 3 ISA expansion slot 2 (ISA2)
- 4 Remote Wakeup header (WOL)
- 5 PCI expansion slot 1 (PCI1)
- 6 PCI expansion slot 2 (PCI2; shared with ISA1)

To remove the riser board, perform the following steps.

⚠ CAUTION: Ground yourself by touching an unpainted metal surface on the back of the computer.

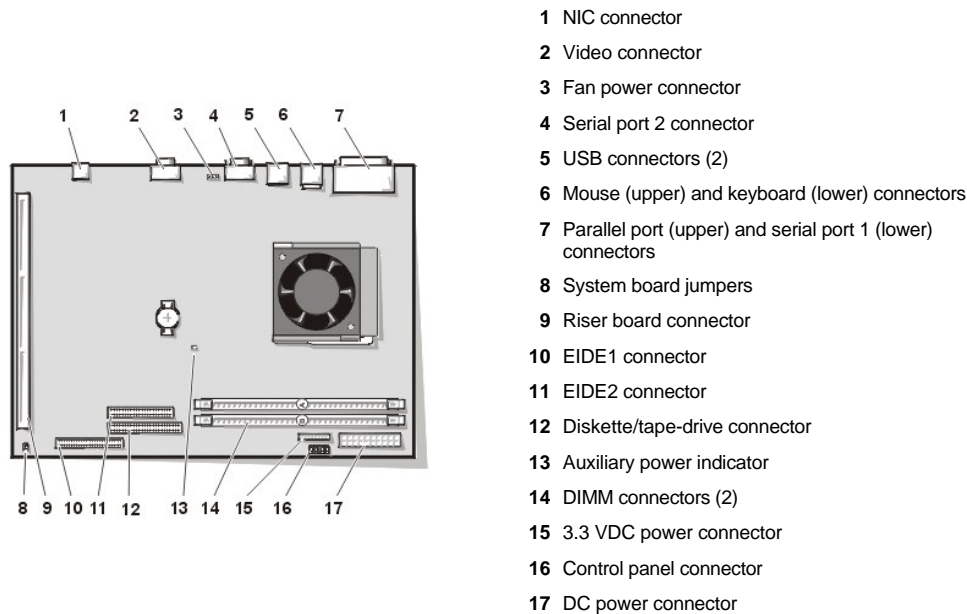
NOTICE: Use a wrist grounding strap as explained in "[Precautionary Measures.](#)"

1. [Remove the expansion-card cage.](#)
2. [Remove the expansion cards](#) installed in the slots.
3. Remove the screws securing the riser board to the expansion-card cage.
4. Lift the riser board off the expansion-card cage.

System Board Components

The subsections that follow contain procedures for removing system board components, which are shown in Figure 17.

Figure 17. System Board Components

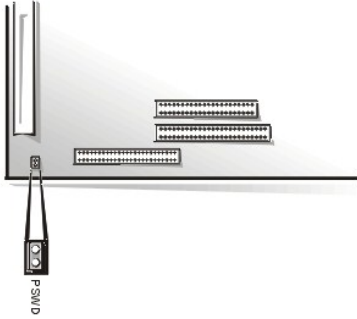


- 1 NIC connector
- 2 Video connector
- 3 Fan power connector
- 4 Serial port 2 connector
- 5 USB connectors (2)
- 6 Mouse (upper) and keyboard (lower) connectors
- 7 Parallel port (upper) and serial port 1 (lower) connectors
- 8 System board jumpers
- 9 Riser board connector
- 10 EIDE1 connector
- 11 EIDE2 connector
- 12 Diskette/tape-drive connector
- 13 Auxiliary power indicator
- 14 DIMM connectors (2)
- 15 3.3 VDC power connector
- 16 Control panel connector
- 17 DC power connector

System Board Jumpers

Figure 18 shows the layout of jumpers on the system board.

Figure 18. Layout of System Board Jumpers



Jumper pins are small groups of two or more pins on a circuit board. Plastic jumpers containing a wire fit down over the pins. The wire connects the pins and creates a circuit.

NOTICE: Make sure your system is turned off before you change a jumper setting. Otherwise, damage to your system or unpredictable results may occur.

To change a jumper setting, pull the jumper off its pin(s) and either remove it entirely, or carefully fit it down onto the pin(s) indicated.

Dell shipped your computer with a PSWD jumper installed, meaning that password features for this computer are enabled. When you remove the jumper, or when you install the jumper on only one of the two pins, the password features are disabled.

System Board Labels

Table 1 lists the labels for connectors and sockets on your system board, and it gives a brief description of their functions.

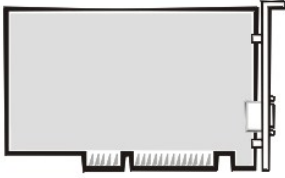
Table 1. System Board Connectors and Sockets

Connector or Socket	Description
AUX_LED	Auxiliary power indicator
B1	Battery socket
DIMM_x	DIMM socket
DSKT	Diskette/tape drive interface connector
ENET	Integrated NIC connector
FAN	Microprocessor fan connector
IDE _n	EIDE interface connector
KYBD	Keyboard connector
MICROPROCESSOR	Microprocessor connector
MONITOR	Video connector
MOUSE	Mouse connector
PANEL	Control panel connector
PARALLEL	Parallel port connector; sometimes referred to as <i>LPT1</i>
POWER_1	Main power input connector
POWER_2	3.3-V power input connector
RISER	Riser board connector
SERIAL _n	Serial port connectors
USB	USB connectors

Expansion Cards

The low-profile GX100 chassis can accommodate three 32-bit PCI expansion cards. Figure 19 shows an example of a 32-bit PCI expansion card.

Figure 19. 32-Bit PCI Expansion Card Example



Expansion-Card Removal

⚠ CAUTION: Use a wrist grounding strap as explained in "[Precautionary Measures.](#)"

To remove an expansion card, perform the following steps:

1. [Remove the computer cover.](#)
2. If necessary, disconnect any cables connected to the card.
3. Remove the screw on the mounting bracket of the card you want to remove.
4. Grasp the card by its outside corners, and ease it out of its connector.
5. If you are removing the card permanently, install a metal filler bracket over the empty card-slot opening.

📌 NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of your computer.

6. Replace the computer cover, and reconnect your computer and peripherals to their power sources and turn them on.

📌 NOTE: After you remove and replace the cover, the chassis intrusion detector will cause the following message to be displayed at the next system start-up:

ALERT! Cover was previously removed.

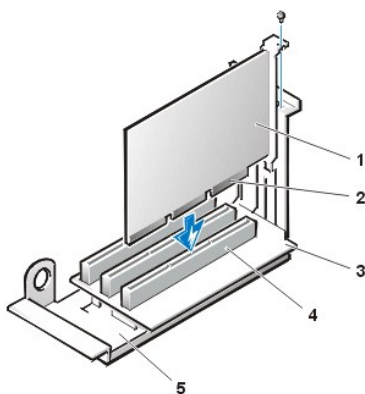
7. To reset the chassis intrusion detector, enter System Setup and reset **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

See the online *System User's Guide* for detailed information on the Intrusion detector.

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

Expansion-Card Installation

Figure 20. Expansion-Card Installation



- 1 Expansion card
- 2 Card-edge connector
- 3 Riser board
- 4 Expansion-card connector
- 5 Expansion-card cage

⚠ CAUTION: Use a wrist grounding strap as explained in "[Precautionary Measures.](#)"

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

To install an expansion card, perform the following steps:

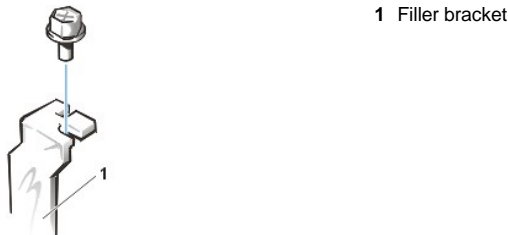
1. Prepare the expansion card for installation, and [remove the computer cover.](#)

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

2. Remove the screw and remove the metal filler bracket that covers the card-slot opening for the expansion-card slot you intend to use (see Figure 21).

Save the screw to use when installing the expansion card later in this procedure.

Figure 21. Filler Bracket Removal




3. Insert the expansion card into the expansion-card connector.

If the expansion card is full-length, insert the front end of the card into the corresponding card guide on the inside front of the chassis as you insert the card into its connector. Insert the card's edge connector firmly into the expansion-card slot.

4. When the card is firmly seated in the connector, secure the card's mounting bracket to the chassis with the screw you removed in [step 2](#).
5. Connect any cables that should be attached to the card.

See the documentation for the card for information about the card's cable connections.


6. [Replace the computer cover](#), and reconnect your computer and peripherals to their power sources and turn them on.

 **NOTE:** After you remove and replace the cover, the chassis intrusion detector will cause the following message to be displayed at the next system start-up:

ALERT! Cover was previously removed.

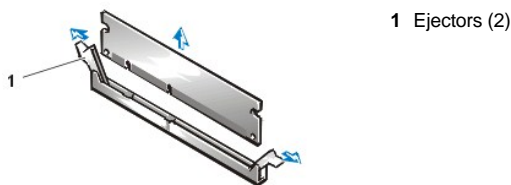
7. To reset the chassis intrusion detector, enter System Setup and reset **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.


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

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

DIMMs

Figure 22. DIMM Removal



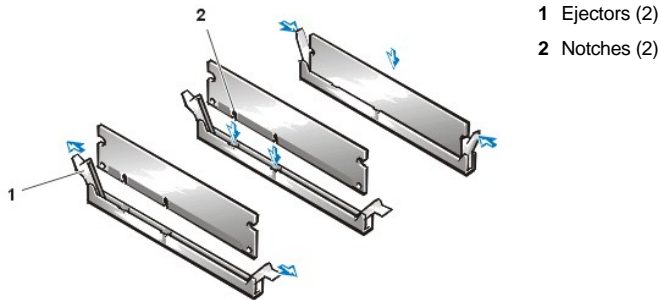
 **CAUTION:** Use a wrist grounding strap as explained in "[Precautionary Measures](#)."

To remove a DIMM, perform the following steps:

1. Push outward on the two DIMM socket ejectors simultaneously until the DIMM is released from its socket.
2. Lift the DIMM away from the socket.

To install a DIMM, press the DIMM fully into the socket while closing the ejectors to lock the DIMM into the socket (see Figure 23).

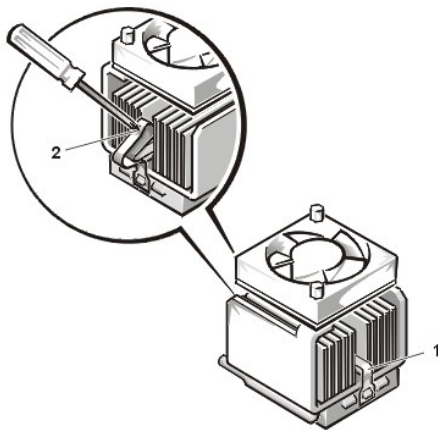
Figure 23. DIMM Installation



- 1 Ejectors (2)
- 2 Notches (2)

Microprocessor/Heat Sink Assembly

Figure 24. Microprocessor/Heat Sink Removal



- 1 Securing clip
- 2 Press here to release securing clip

CAUTION: The microprocessor SEC cartridge/heat sink assembly can get extremely hot. Be sure that the assembly has had sufficient time to cool before you touch it.

CAUTION: Use a wrist grounding strap as explained in "[Precautionary Measures](#)."

NOTE: Dell recommends that only a technically knowledgeable person perform this procedure.

To replace a microprocessor, perform the following steps:

1. [Remove the computer cover](#).
2. Locate the microprocessor socket on the system board.
3. Unplug the fan power connector on the system board.
4. Remove the screws securing the fan to the top of the heat sink assembly. Then remove the fan.
5. Remove the metal clip that secures the heat sink to the microprocessor socket. Then remove the heat sink from the microprocessor chip.
6. Press down on the folded part of the clip with a small screwdriver to release the clip (see Figure 24). The securing clip hooks over tabs on the sides of the socket.

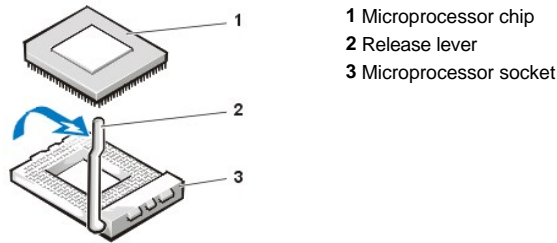
NOTICE: Be careful not to bend any of the pins when removing the microprocessor chip from its socket. Bending the pins can permanently damage the microprocessor chip.

7. Remove the microprocessor chip from the socket.

Your microprocessor socket is a zero insertion force (ZIF) socket with a lever-type handle that secures the chip in, or releases it from, the socket.

To remove the chip, pull the microprocessor-socket release lever straight out until the chip is released (see Figure 25). Then remove the chip from the socket. Leave the release lever extended so that the socket is ready for the new microprocessor.

Figure 25. Microprocessor Chip Removal



CAUTION: Ground yourself by touching an unpainted metal surface on the back of the computer.

- Unpack the new microprocessor.

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

If any of the pins on the chip appear to be bent, see the online *System User's Guide* for information on obtaining technical assistance.

- Align the pin-1 corner of the microprocessor chip with the pin-1 corner of the microprocessor socket (see Figure 26).

NOTE: Identifying the pin-1 corners is critical to positioning the chip correctly.

The pin-1 corner of the microprocessor is the squared off corner (see [Figure 26](#)).

NOTICE: When placing the microprocessor chip in the socket, be sure that all of the pins go into the corresponding holes on all sides of the socket. Be careful not to bend the pins.

NOTICE: Positioning the microprocessor chip incorrectly in the socket can permanently damage the chip and the computer when you turn on the system.

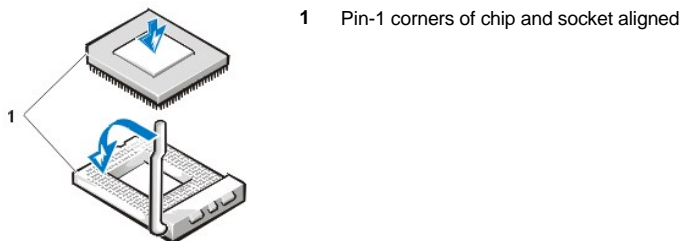
- Install the microprocessor chip in the socket (see [Figure 26](#)).

If the release lever on the microprocessor socket is not all the way out, move it to that position now.

With the pin-1 corners of the chip and socket aligned, align the pins on the chip with the holes in the socket. Set the chip lightly in the socket and make sure that all pins are headed into the correct holes. Because your system uses a ZIF microprocessor socket, there is no need to use force (which could bend the pins if the chip is misaligned). When the chip is positioned correctly, it should seat itself in the socket with minimal pressure.

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

Figure 26. Microprocessor Chip Installation



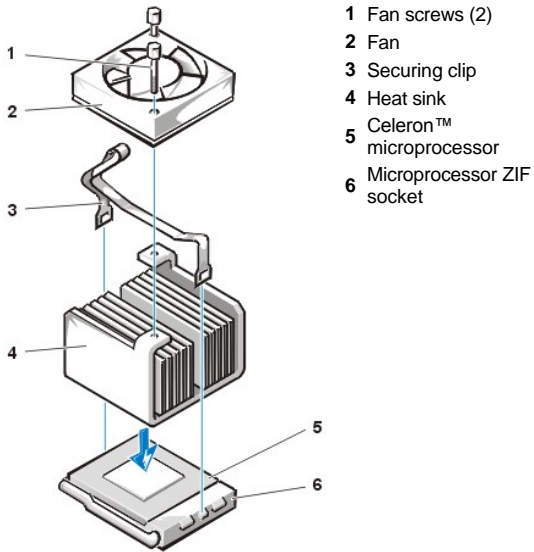
CAUTION: Ground yourself by touching an unpainted metal surface on the back of the computer.

- Unpack the heat sink included in your upgrade kit.

Peel the release liner from the adhesive tape that is attached to the bottom of the heat sink.

- Place the heat sink on top of the microprocessor chip (see [Figure 27](#)).

Figure 27. Heat Sink Installation



- 1 Fan screws (2)
- 2 Fan
- 3 Securing clip
- 4 Heat sink
- 5 Celeron™ microprocessor
- 6 Microprocessor ZIF socket

13. Replace the heat sink securing clip.

Orient the clip as shown in Figure 27, and hook the unfolded end of the clip over the tab on the top edge of the socket. Then press down on the folded end of the clip to snap the clip over the tab on the bottom edge of the socket.

14. Replace the fan assembly and secure it with two thumbscrews. Then connect the fan power cable to the FAN connector on the system board .

15. Replace the computer cover, and then reconnect your computer and peripherals to their power sources and turn them on.

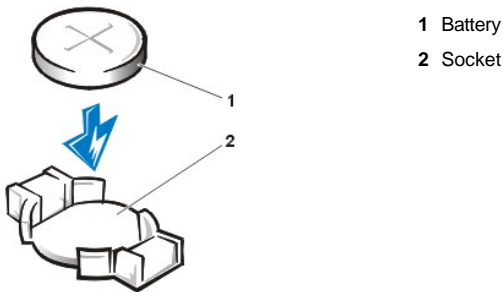
As the system boots, it detects the presence of the new microprocessor and automatically changes the system configuration information in System Setup.

16. Enter System Setup and confirm that the **Microprocessor** category correctly identifies the installed microprocessor.

17. Run the Dell Diagnostics to verify that the new microprocessor is operating correctly.

System Battery

Figure 28. System Battery Removal



- 1 Battery
- 2 Socket

⚠ 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.

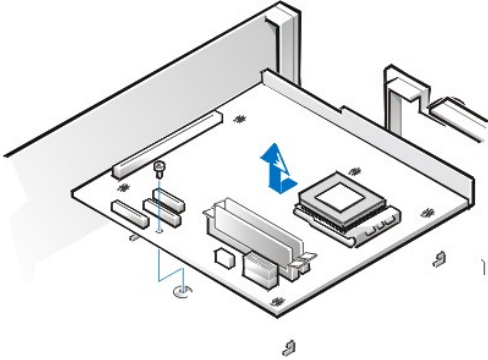
To remove the system battery, perform the following steps:

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.

When you replace the system battery, orient the new battery with the "+" facing up. Insert the battery into its socket and snap it into place.

System Board

Figure 29. System Board Removal



To remove the system board, perform the following steps:

1. Disconnect all cables from their connectors at the back of the computer.
2. Remove the expansion-card cage.
3. Disconnect all cables from the system board.
4. Remove the screw that secures the system board to the bottom of the chassis.
5. Slide the system board toward the front of the chassis until it stops.
6. Carefully lift the system board out of the chassis (be sure to lift evenly and not twist the system board).

To replace the system board, perform the following steps:

1. Remove the DIMMs and the microprocessor/heat sink assembly, and install them on the replacement board.
2. Set the jumpers on the new system board so that they are identical to those on the old board, unless you are installing a microprocessor upgrade.
3. Push down near each slot to engage the grounding clip onto its corresponding tab.
4. Push evenly on both sides of the system board as you slide and lock it into position (do not twist the system board).

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Mini Tower Chassis — Removing and Replacing Parts: Dell™ OptiPlex™ GX100 Systems Service Manual

Overview	Recommended Tools
Precautionary Measures	Internal Views
Computer Cover	Front Bezel
Eject, Power, and Reset Buttons	Front-Panel Inserts
Control Panel	Chassis Intrusion Switch
Drives	System Power Supply
Riser Boards	System Board Components
Expansion-Card Cage	Expansion Cards
DIMMs	Microprocessor/Heat Sink Assembly
System Battery	System Board

Overview

This section provides procedures for removing and replacing the components, assemblies, and subassemblies in the Dell OptiPlex mini tower chassis GX100 system.

Unless otherwise noted, each procedure assumes that the following conditions exist:

- 1 You have performed the steps in "[Precautionary Measures](#)."
 - 1 You have [removed the computer cover](#).
 - 1 You can replace or reinstall a part by performing the removal procedure in reverse order unless additional information is provided.
-

Recommended Tools

Most of the procedures in this file require the use of one or more of the following tools:

- 1 Small flat-blade screwdriver
- 1 Wide flat-blade screwdriver
- 1 #1 and #2 Phillips-head screwdrivers
- 1 1/4-inch nut driver

Also, use a wrist grounding strap as explained in "Precautionary Measures."

Precautionary Measures

Before you perform any of the procedures in this file, take a few moments to read the following caution for your personal safety and to prevent damage to the system from ESD.

CAUTION: FOR YOUR PERSONAL SAFETY AND PROTECTION OF THE EQUIPMENT

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

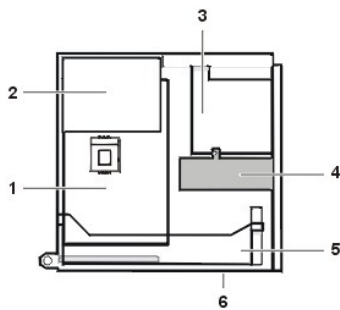
1. Turn off the computer and all peripherals.
2. Disconnect the computer and peripherals from their AC power sources. Also, disconnect any telephone or telecommunication lines from the computer. Doing so reduces the potential for personal injury or shock.

3. If you are disconnecting a peripheral from the computer or are removing a component from the system board, wait 10 to 20 seconds after disconnecting the computer from AC power before disconnecting the peripheral or removing the component to avoid possible damage to the system board.
4. Wear a wrist grounding strap, and clip it to an unpainted metal surface, such as the padlock loop on the back of the chassis. If a wrist grounding strap is not available, touch any unpainted metal surface on the back of the computer or on the computer chassis, such as the power supply, to discharge any static charge from your body before touching anything inside the computer. While you work, periodically touch an unpainted metal surface on the computer chassis to dissipate any static electricity that might harm internal components. Also avoid touching components or contacts on a card and avoid touching pins on a chip.
5. Verify that the auxiliary power indicator on the system board is not on. If it is on, you may need to wait 10 to 30 seconds for it to go out (see Item 13 of [Figure 24](#)).

Internal Views

Figure 1 shows a side view of the mini tower chassis computer to help orient you when you work inside the computer.

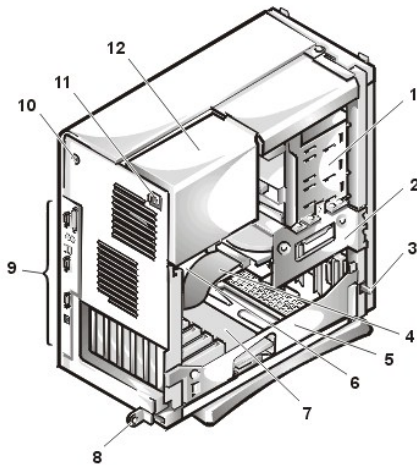
Figure 1. Mini Tower Chassis Orientation View



- 1 System board
- 2 Power supply
- 3 5.25-inch drive slots
- 4 Internal hard-disk drive bracket
- 5 Expansion-card cage
- 6 Bottom of computer

Figure 2 shows the mini tower chassis with the cover removed.

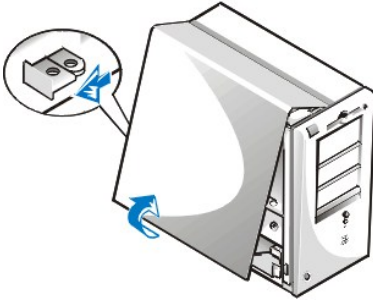
Figure 2. Inside the Mini Tower Chassis



- 1 5.25-inch drive slots
- 2 hard-disk drive bracket
- 3 Chassis intrusion switch
- 4 Hard-disk drive interface cable
- 5 Expansion-card cage
- 6 System board
- 7 Riser board
- 8 Padlock ring
- 9 I/O ports and connectors
- 10 Security cable slot
- 11 AC power receptacle
- 12 Power supply

Computer Cover

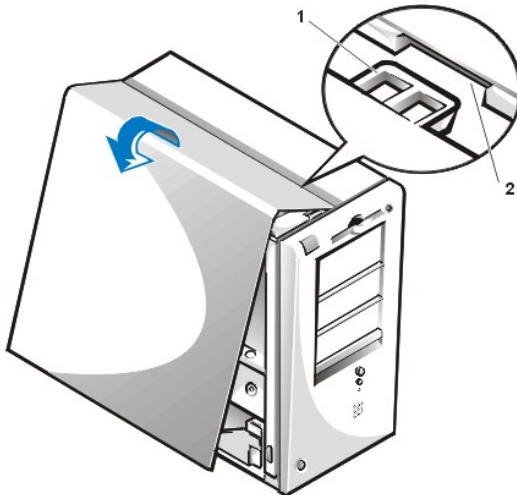
Figure 3. Computer Cover Removal



To remove the mini tower computer cover, perform the following steps:

1. Face the back of the computer and slide the upper half of the padlock ring to the left to unlock the cover release mechanism (see figure 3).
2. Face the left side cover and press the release button, located at the bottom-left corner of the front bezel (see Figure 3).
3. Lift the bottom of the cover, allowing it to pivot up toward you.
4. Disengage the tabs that secure the cover to the top of the chassis, and lift the cover away.

Figure 4. Computer Cover Replacement



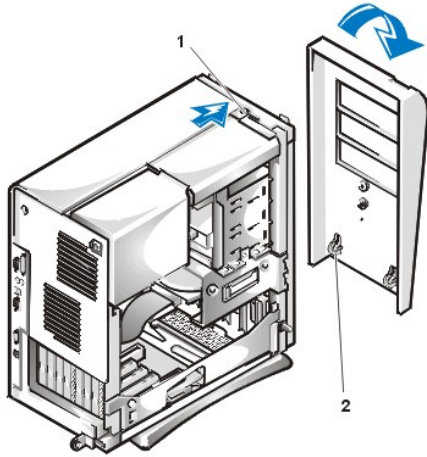
- 1 Hook
- 2 Recessed slot

To replace the mini tower computer cover, perform the following steps:

1. Face the left side of the computer and hold the cover at a slight angle, as shown in Figure 4.
2. Align the top of the cover with the top of the chassis and insert the hooks on the cover into the recessed slots on the computer chassis so that the tabs catch the hooks inside the slots.
3. Pivot the cover down toward the bottom of the chassis and into position.
Make sure that the securing hooks at the bottom of the cover click into place.
4. If you are using a padlock to secure your system, reinstall the padlock.

Front Bezel

Figure 5. Front Bezel Removal



- 1 Tab release
- 2 Retaining hooks (2)

To remove the front bezel, perform the following steps:

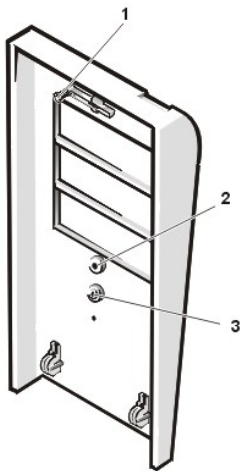
1. While pressing the tab release marked with the icon, tilt the bezel away from the chassis.
2. Disengage the two retaining hooks at the bottom of the bezel.
3. Carefully pull the bezel away from the chassis.

To replace the front bezel, perform the following steps:

1. Fit the two retaining hooks on the bezel into their corresponding slots at the bottom of the mini tower chassis.
2. Rotate the bezel toward the chassis until the tabs on the top of the chassis snap into their slots on the bezel.

Eject, Power, and Reset Buttons

Figure 6. Eject, Power, and Reset Button Removal



- 1 Diskette eject button
- 2 Power button
- 3 Reset button

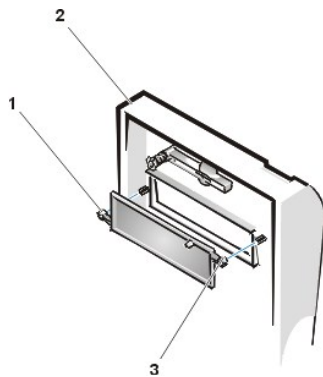
To remove the eject, power, and reset buttons, perform the following steps:

1. Lay the front bezel on a flat work surface, with the back of the bezel facing up.
2. To remove the 3.5-inch diskette eject button, pull gently on the plastic part of the button until it comes free.
3. To remove the power button or the reset button, use a small screwdriver and push in the two or three plastic clips that hold the button to the bezel.

When these clips are released, the buttons come free from the bezel.

Front-Panel Inserts

Figure 7. 5.25-Inch Front-Panel Insert Removal



- 1 Front panel insert
- 2 Bezel
- 3 Ring tab (2)

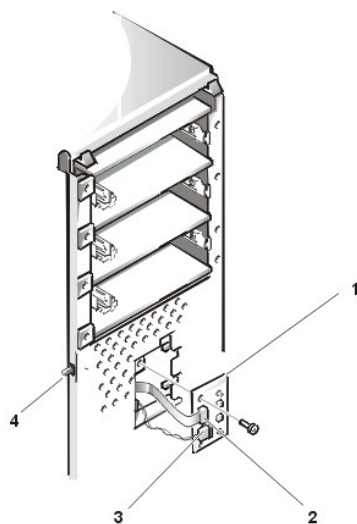
To remove a 5.25-inch front-panel insert, perform the following steps:

1. Hold the bezel with the front facing you.
2. From the front of the bezel, use your thumbs to press inward on the insert until it snaps free of the bezel.

To replace a 5.25-inch front-panel insert, position the two ring-tabs over the posts on the inside of the bay opening, and then press the ring tabs over the posts.

Control Panel

Figure 8. Control Panel Removal



- 1 Control panel
- 2 Control panel connector
- 3 Chassis intrusion cable connector
- 4 Chassis intrusion switch

To remove the control panel, perform the following steps:

1. Disconnect the control panel cable from the control panel connector on the system board (see "[System Board Labels](#)" for the location of the PANEL connector).

Note the routing of the control panel cable as you remove it from the chassis.

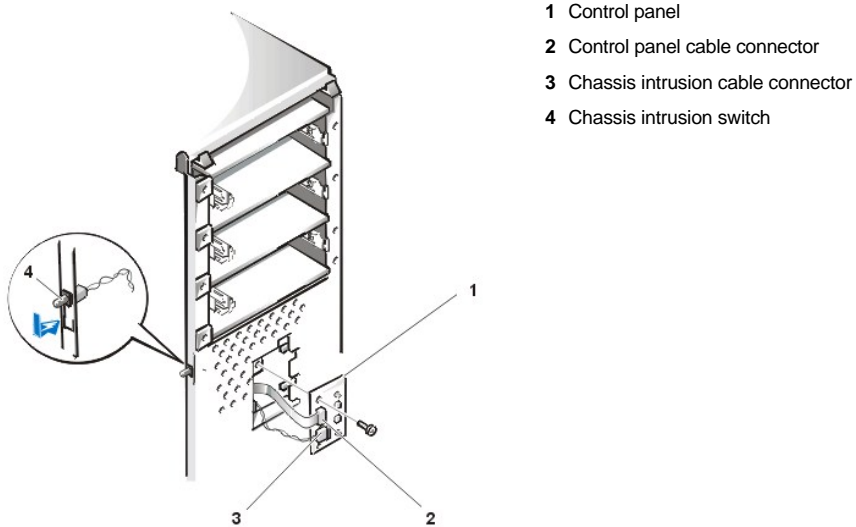
2. Disconnect the the chassis intrusion switch cable connector from the control panel.
3. Remove the mounting screw that secures the control panel to the chassis.
4. Remove the control panel cable.

5. Pull the control panel cable through the opening in the front wall, and carefully remove the cable from the routing tab in the chassis.
6. Pull out on the control panel to detach it from the chassis.

Note the routing of the control panel cable as you remove it from the chassis.

Chassis Intrusion Switch

Figure 9. Chassis Intrusion Switch Removal



To remove the chassis intrusion switch, perform the following steps:

1. [Remove the control panel](#) from the front panel.
2. Disconnect the chassis intrusion switch cable from the control panel (see Figure 9).

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

3. Slide the chassis intrusion switch out of its slot on the chassis and carefully remove the switch and its attached cable from the chassis.
 4. Install the replacement chassis intrusion switch and cable.
 5. To reset the chassis intrusion detector, enter System Setup and reset **Chassis Intrusion** to **Enabled** or **Enabled-Silent** (see your *User's Guide* for instructions).
-

Drives


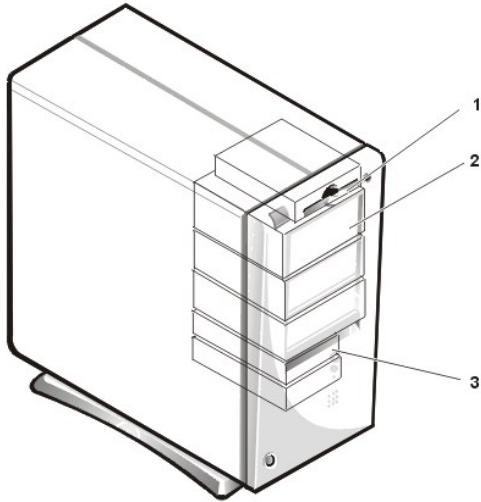
 **NOTE:** In all of the following procedures, left and right refer to your left and right as you face the front of the computer.

Figure 10. Drive Locations



- 1 3.5-inch diskette drive
- 2 5.25-inch drive slots (3)
- 3 3.5-inch internal bay for hard-disk drives (2)

3.5-Inch Diskette Drive

Figure 11. Removing a Diskette Drive From a Drive Bay



- 1 Release tab

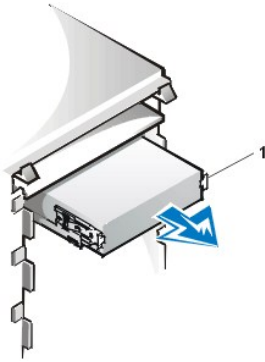
To remove the 3.5-inch diskette drive from the drive bay, perform the following steps:

1. Disconnect the DC power and diskette interface cable from the back of the drive.
2. Press the release tab on the left side of the diskette drive, and pull the diskette drive/bracket out of the chassis.
3. Remove the drive-mounting screw from the left side of the drive, and remove the drive from the bracket. to the bottom of the bracket (see Figure 11).

When you replace the 3.5-inch diskette drive, be sure that the two hooks on the right side of the bracket engage the mounting holes in the side of the 3.5-inch diskette drive.


5.25-Inch Drive

Figure 12. Removing a 5.25-Inch Drive From a Drive Bay



1 Bracket tabs (2)

To remove a 5.25-inch drive from a drive bay, perform the following steps.

 **NOTE:** For easier access inside the chassis, you may want to rotate the power supply out of the way temporarily.

1. [Remove the front bezel.](#)
2. Disconnect the DC power cable and the interface cable from the back of the drive.
3. Squeeze the metal tabs that extend from each side of the drive bracket toward each other, and pull the bracket out of the bay (see Figure 12).
4. Lay the 5.25-inch drive/bracket assembly upside down and remove the four screws that secure the drive to the bracket.

To replace the 5.25-inch drive, perform the following steps:

1. Turn the drive upside down, and locate the four screw holes around its perimeter.
2. Place the front of the drive toward the front of the bracket; then install the four screws, but do not tighten them.
3. Align the screws with the score marks on the bracket, and tighten the screws in the order stamped on the bottom of the bracket.
4. Check the alignment of the computer cover around the 5.25-inch bezel. Adjust the drive forward or backward on the bracket to align it.
5. To ensure proper installation, align all screw holes and ensure that the tabs on the front of the bracket are flush with the front of the drive (see Figure 13).

Figure 13. Attaching the Drive Bracket to the New Drive



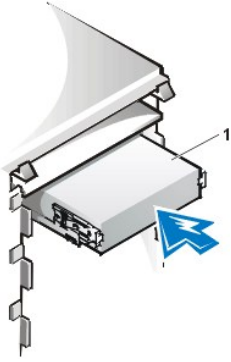
- 1 5.25-inch drive
- 2 Bracket tabs (2)
- 3 Bracket

6. To further ensure proper positioning of the drive in the bracket, insert and tighten all four screws *in the order in which the holes are numbered* (the holes are labeled "1" through "4").
7. Slide the drive into the drive bay until the drive snaps securely into place (see Figure 14).

Make sure that both bracket tabs snap into place in the drive bay.

Figure 14. Inserting the New Drive Into the Drive Bay

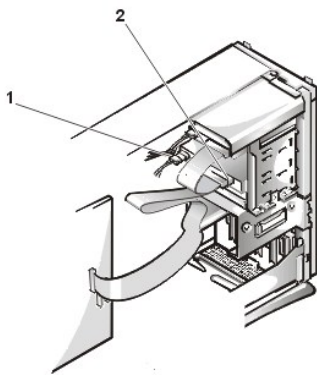
1 5.25-inch drive



NOTICE: You must match the colored strip on the cable with pin 1 on the drive's interface connector to avoid possible damage to your system.

8. Connect a DC power cable to the power input connector on the back of the drive (see Figure 15).

Figure 15. 5.25-Inch Drive Cables Attachment



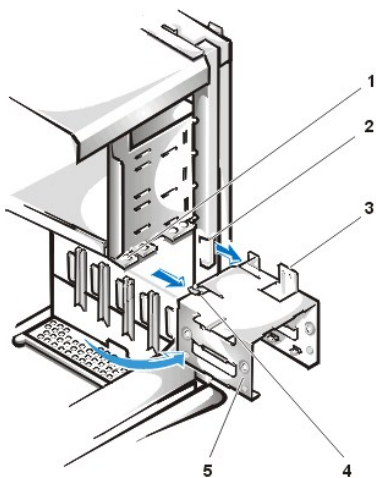
- 1 DC power cable
- 2 EIDE interface connector (on drive)

9. Connect the appropriate EIDE interface cable to the EIDE interface connector on the back of the drive (see Figure 15).

If your system came with an EIDE CD-ROM or tape drive, use the spare connector on the existing interface cable. Otherwise, use the EIDE interface cable provided in the drive kit.

Hard-Disk Drive Removal

Figure 16. Hard-Disk Drive Bracket Removal



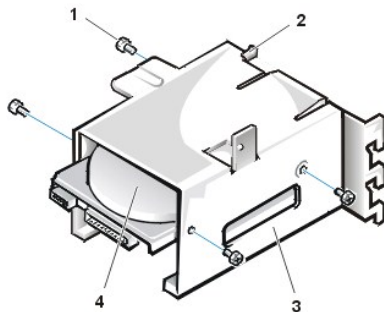
- 1 Drive bracket slide rail
- 2 Chassis hinge slots
- 3 Hinge tabs
- 4 Sliding tab
- 5 Drive bracket

To remove a hard-disk drive from the mini tower's internal hard-disk drive bracket, perform the following steps.

⚠ CAUTION: To avoid the possibility of electric shock, turn off the computer and any peripherals, disconnect them from electrical outlets, and then wait at least 5 seconds before you remove the computer cover. Also, before you remove a drive, see the other precautions in "[Precautionary Measures](#)."

1. If you are replacing a hard-disk drive that contains data you want to keep, make a backup copy of your files before you continue this procedure.
2. [Remove the computer cover](#).
3. [Remove the front bezel](#).
4. Open the drive bracket from the chassis:
 - a. Disconnect the DC power cable and EIDE cable from the drive.
 - b. Remove the screw securing the hard-disk drive bracket to the chassis.
 - c. Grasp the bracket, and rotate it outward from the chassis until the sliding tab clears the slide rail on the chassis (see Figure 16).
 - d. Lift the bracket up slightly to free its hinge tabs from the chassis hinge slots.
5. Remove the bracket from the chassis.

Figure 17. Hard-Disk Drive Removal From Bracket



- 1 Screws (4)
- 2 Sliding tab
- 3 Drive bracket
- 4 1.6-inch drive

6. Remove the four screws that hold the drive in the bracket (see Figure 17).
Retain the screws for use with the replacement hard-disk drive.
7. Remove the drive by sliding it out of the bracket.

Hard-Disk Drive Replacement

To install a replacement hard-disk drive, perform the following steps.

⚠ CAUTION: To avoid the possibility of electric shock, turn off the computer and any peripherals, disconnect them from electrical outlets, and then wait at least 5 seconds before you remove the computer cover. Also, before you install a drive, see the other precautions in "[Precautionary Measures](#)."

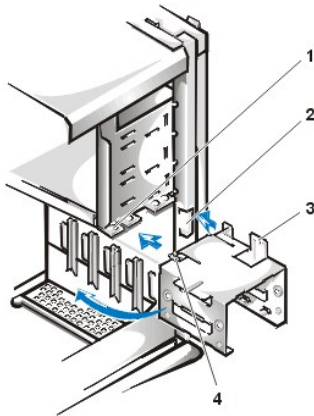
NOTICE: To avoid possibly damaging the by electrostatic discharge (ESD), ground yourself by touching an unpainted metal surface on the back of the computer.

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. Prepare the drive for installation.
Check the documentation for the drive to verify that it is configured for your computer system.
2. If not already done, [remove the computer cover](#).
3. If not already done, [remove the drive bracket from the chassis](#).
4. Slide the drive into the chosen bay of the bracket, orienting the drive so that the connectors on the back of the drive will face the back of the chassis when you reinstall the bracket (see Figure 18).
5. Align the four screw holes of the drive and bracket. Insert and tighten the [screws](#) from the hard-disk drive you removed in the previous procedure:

- 1. If you are installing a drive in the 1.6-inch bay, use the four screw holes in the side of the bracket (see Figure 17).
 - 1. If you are installing a drive in the 1-inch bay, use the four screw holes in the bottom of the bracket.
6. Reinstall the hard-disk drive bracket in the chassis (see Figure 18):
- a. Insert the bracket's hinge tabs into the chassis hinge slots so that the tabs hook over the hinge slots.
 - b. Rotate the bracket toward the chassis, and fit the bracket's sliding tab on the chassis slide rail.
 - c. Slide the bracket into place, and reinstall the screw you removed in [step 4](#) of the previous procedure.

Figure 18. Drive Bracket Insertion Into Chassis



- 1 Chassis slide rail
- 2 Chassis hinge slots
- 3 Hinge tabs
- 4 Sliding tabs

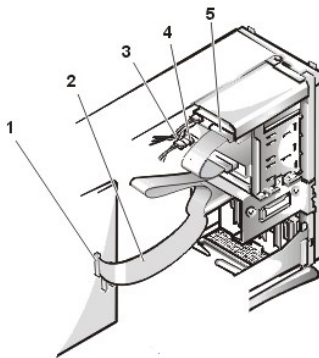
7. Connect a power cable to the power input connector on the back of the drive (see Figure 19).

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

NOTICE: You must match the red-colored stripe on the EIDE cable with pin 1 on the drive's interface connector to avoid possible damage to your system.

8. Connect the cable connector on the EIDE cable to the 40-pin interface connector on the back of the hard-disk drive.

Figure 19. Hard-Disk Drive Cables Attachment



- 1 Blue interface connector (on EIDE1)
- 2 Interface cable
- 3 Power cable
- 4 Power input connector on drive
- 5 Interface connector on drive

NOTICE: You must match the blue connector on the interface cable to the EIDE1 connector on the system board to avoid possible damage to your system.

NOTICE: You must match the red-colored stripe on the EIDE cable with pin 1 on the IDE1 connector to avoid possible damage to your system.


9. If it is not already connected, connect the blue connector of the EIDE cable to the IDE1 connector on the system board.

To locate the IDE1 connector, see "[System Board Components](#)."

10. [Replace the computer cover](#). Then reconnect your computer and peripherals to their electrical outlets, and turn them on.

11. If the drive you just installed is the primary drive, insert a bootable diskette (such as the *Dell Diagnostics Diskette*) into drive A.
12. Turn on the computer system.
13. Enter System Setup and update the appropriate **Primary Drive** option, **0** or **1** (see the online *System User's Guide* for complete information on System Setup).
14. After you update the System Setup settings, reboot the system.
15. Partition and logically format your drive before you proceed to the next step.

See the documentation for your operating system for instructions.

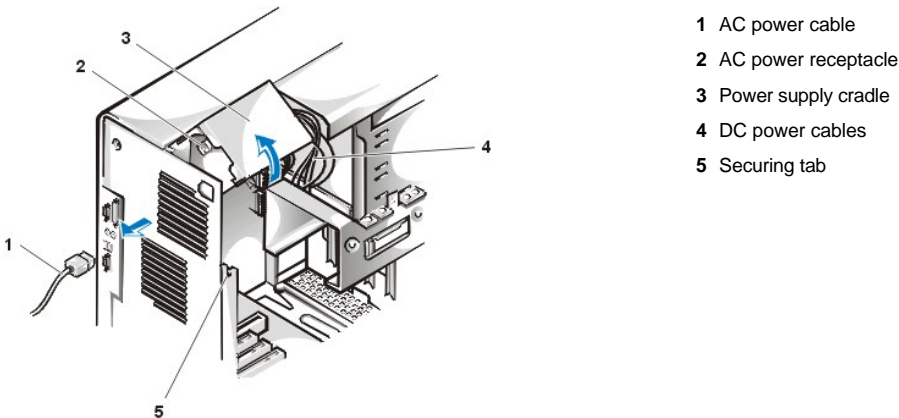
 **NOTE:** On systems with hard-disk drives larger than 2 GB, create a primary partition of 2 GB and divide the remaining capacity into partitions of 2 GB or less. For example, a system with a 2.5-GB hard-disk drive would have a primary partition of 2 GB (drive C) and a second partition of 500 MB (drive D). Hard-disk drives must be partitioned this way because MS-DOS®-based operating systems (including Microsoft® Windows NT®, when using a FAT16 file system) do not support drive partitions larger than 2 GB.

16. Test the hard-disk drive by running the Dell Diagnostics (see the online *System User's Guide* for complete information).
17. If the drive you just installed is the primary drive, install your operating system on the hard-disk drive.

For instructions, refer to the documentation that came with your operating system.

System Power Supply

Figure 20. Power Supply Removal



- 1 AC power cable
- 2 AC power receptacle
- 3 Power supply cradle
- 4 DC power cables
- 5 Securing tab

To remove the system power supply, perform the following steps:

1. Disconnect the AC power cable from the back of the power supply.
2. Free the system power supply from the securing tab labeled "RELEASE →" and rotate it upward until it locks.
3. Disconnect the DC power cables from the system board and the drives.

Note the routing of the DC power cables underneath the tabs in the chassis 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.

4. Remove the screw above the AC power receptacle.
5. Lift up on the power supply cradle tab to release the power supply from the cradle and slide the power supply toward the front of the computer approximately 1 inch.
6. Lower the power supply down and away from the computer.

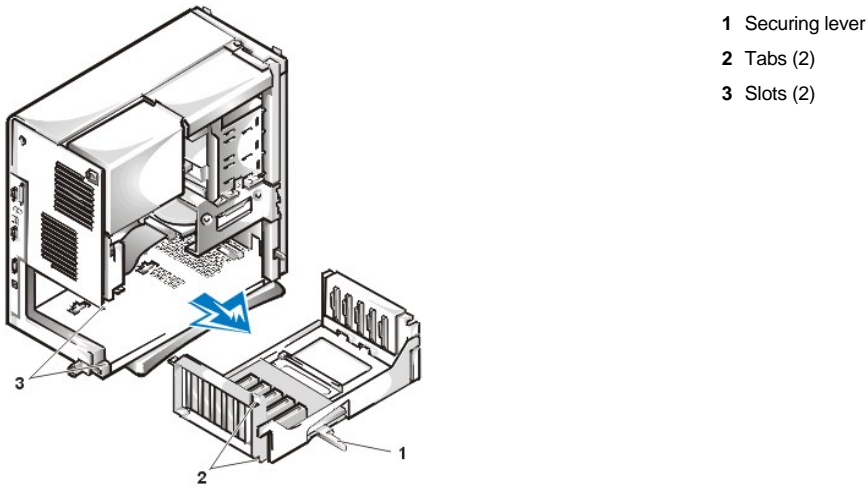
Expansion-Card Cage

NOTICE: Use a wrist grounding strap as explained in "[Precautionary Measures](#)."

To remove the expansion-card cage, perform the following steps:

1. Examine any cables connected to expansion cards through the back-panel openings and disconnect any cables that will not reach to where the cage must be placed upon removal from the chassis.
2. Locate the securing lever (see Figure 21). Rotate the lever upward until it stops in an upright position.

Figure 21. Expansion-Card Cage Removal



3. Slide the expansion-card cage out of the chassis.
4. Lift the expansion-card cage up and away from the chassis.

To replace the expansion-card cage, perform the following steps:

1. With the securing lever in the upright position, align the expansion-card cage tabs with the slots in the chassis opening for the expansion-card cage (see Figure 21). Slide the expansion-card cage into place.
2. Rotate the securing lever downward, until it is flush with the top side of the chassis. Make sure that the riser board is fully seated in the RISER connector on the system board (see Figure 22).
3. Reconnect any cables you removed in [step 1](#) of the previous procedure.

Riser Boards

The mini tower chassis is available with either a PCI riser board (see [Figure 22](#)) or a PCI/ISA riser board (see [Figure 23](#)). The PCI riser board provides five PCI expansion card slots. The PCI/ISA riser board provides three PCI expansion slots, two ISA expansion slots, and two shared PCI/ISA expansion slots.

Figure 22. PCI Riser Board

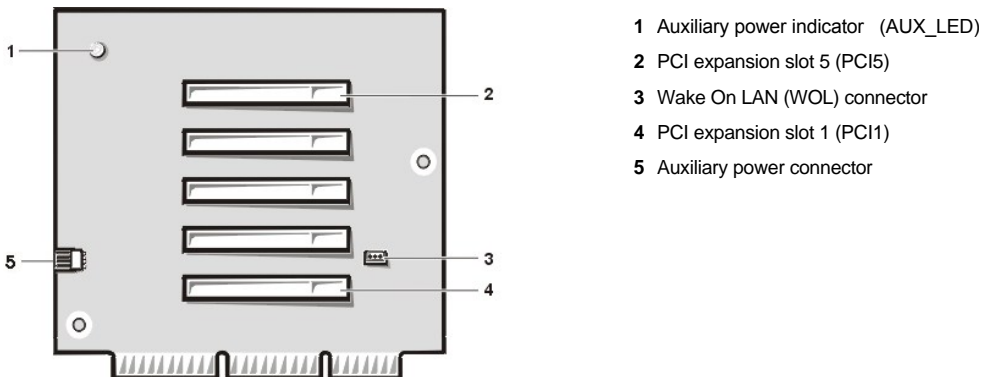
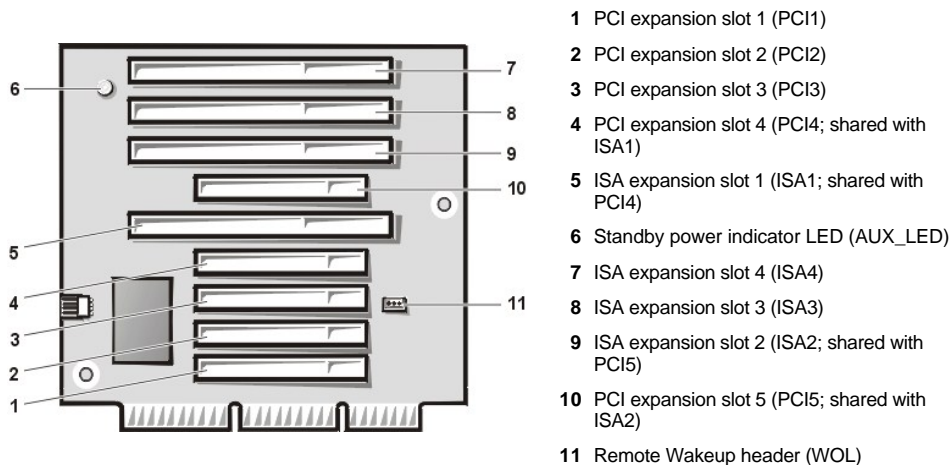


Figure 23. Mini Tower Chassis PCI/ISA Riser Board



To remove a riser board, perform the following steps.

CAUTION: Use a wrist grounding strap as explained in "[Precautionary Measures.](#)"

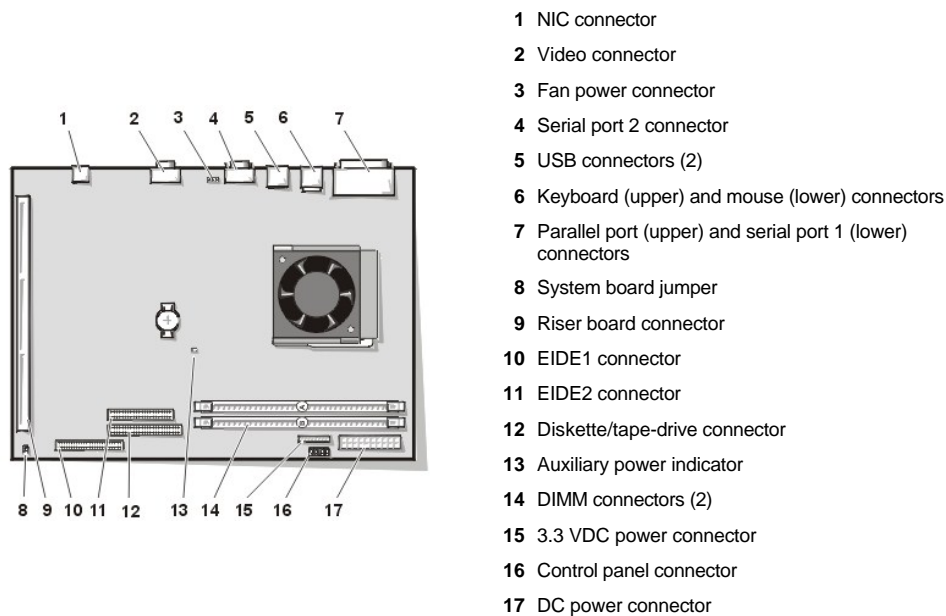
NOTICE: To avoid possibly damaging expansion cards or the system board by electrostatic discharge (ESD), ground yourself by touching an unpainted metal surface on the back of the computer.

1. [Remove the expansion-card cage.](#)
2. [Remove the expansion cards](#) installed in the slots.
3. Remove the screws securing the riser board to the expansion-card cage.

System Board Components

The subsections that follow contain procedures for locating or removing some of the system board components, which are shown in Figure 24.

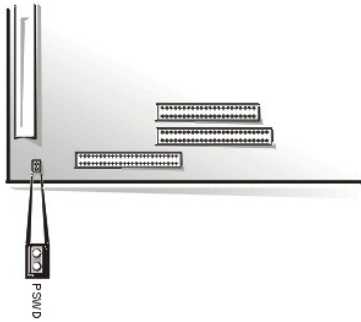
Figure 24. System Board Components



System Board Jumper

Figure 25 shows the location of the PSWD jumper on the system board.

Figure 25. System Board PSWD Jumper



Jumper pins are small groups of two or more pins on a circuit board. Plastic jumpers containing a wire fit down over the pins. The wire connects the pins and creates a circuit.

NOTICE: Make sure your system is turned off before you change a jumper setting. Otherwise, damage to your system or unpredictable results may occur.

To change a jumper setting, pull the jumper off its pin(s) and carefully fit it down onto the pin(s) indicated.

Dell shipped your computer with a PSWD jumper installed, meaning that password features for this computer system are enabled. When you remove the jumper, or when you install the jumper on only one of the two pins, the password features for this computer system are disabled.

System Board Labels

Table 1 lists the labels for connectors and sockets on your system board and gives a brief description of their functions.

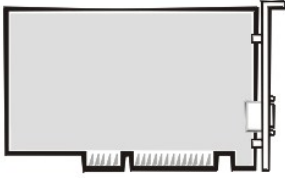
Table 1. System Board Connectors and Sockets

Connector or Socket	Description
AUX_LED	Auxiliary power indicator
B1	Battery socket
DIMM_x	DIMM socket
DSKT	Diskette/tape drive interface connector
ENET	Integrated NIC connector
FAN	Microprocessor fan connector
IDE _n	EIDE interface connector
KYBD	Keyboard connector
MICROPROCESSOR	Microprocessor connector
MONITOR	Video connector
MOUSE	Mouse connector
PANEL	Control panel connector
PARALLEL	Parallel port connector; sometimes referred to as <i>LPT1</i>
POWER_1	Main power input connector
POWER_2	3.3-volt V power input connector
RISER	Riser board connector
SERIAL _n	Serial port connectors
USB	USB connectors

Expansion Cards

The mini tower GX100 chassis can accommodate up to five 32-bit PCI expansion cards. Figure 26 shows an example of a 32-bit PCI expansion card.

Figure 26. 32-Bit PCI Expansion Card Example




Expansion Card Removal


⚠ CAUTION: Use a wrist grounding strap as explained in "[Precautionary Measures.](#)"

To remove an expansion card, perform the following steps:

1. [Remove the computer cover.](#)
2. If necessary, disconnect any cables connected to the card.
3. Remove the screw from the mounting bracket of the card you want to remove.
4. Grasp the card by its outside corners, and ease it out of its connector.
5. If you are removing the card permanently, install a metal filler bracket over the empty card-slot opening.

 **NOTE:** Installing filler brackets over empty card-slot openings is necessary to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of your computer.


6. Replace the computer cover, and reconnect your computer and peripherals to their power sources and turn them on.

 **NOTE:** After you remove and replace the cover, the chassis intrusion detector will cause the following message to be displayed at the next system start-up:

ALERT! Cover was previously removed.

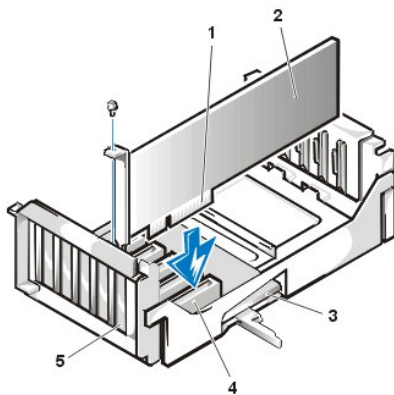
7. To reset the chassis intrusion detector, enter System Setup and reset **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

See the online *System User's Guide* for detailed instructions on the Intrusion detector.

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

Expansion Card Installation

Figure 27. Expansion Card Installation



- 1 Expansion-card cage
- 2 Card-edge connector
- 3 Expansion card
- 4 Riser board
- 5 Expansion-card connector

⚠ CAUTION: Use a wrist grounding strap as explained in "[Precautionary Measures.](#)"

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

To install an expansion card, perform the following steps:

1. Prepare the expansion card for installation, and [remove the computer cover](#).

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

2. Remove the screw and remove the metal filler bracket that covers the card-slot opening for the expansion slot you intend to use (see Figure 28).

Save the screw to use when installing the expansion card later in this procedure.

Figure 28. Filler Bracket Removal



1 Filler bracket

3. Insert the expansion card into the expansion-card connector.

If the expansion card is full-length, insert the front end of the card into the corresponding card guide on the inside front of the chassis as you insert the card into its connector. Insert the card's edge connector firmly into the expansion-card slot.

4. When the card is firmly seated in the connector, secure the card's mounting bracket to the chassis with the screw you removed in [step 2](#).
5. Connect any cables that should be attached to the card.

See the documentation provided with the card for information about the card's cable connections.

6. [Replace the computer cover](#), and reconnect your computer and peripherals to their power sources and turn them on.

✎ NOTE: After you remove and replace the cover, the chassis intrusion detector will cause the following message to be displayed at the next system start-up:

ALERT! Cover was previously removed.

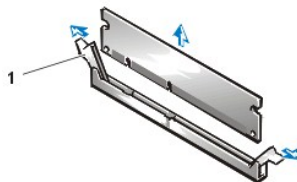
7. To reset the chassis intrusion detector, enter System Setup and reset **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

See the online *System User's Guide* for detailed instructions on the intrusion detector.

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

DIMMs

Figure 29. DIMM Removal



1 Ejectors (2)

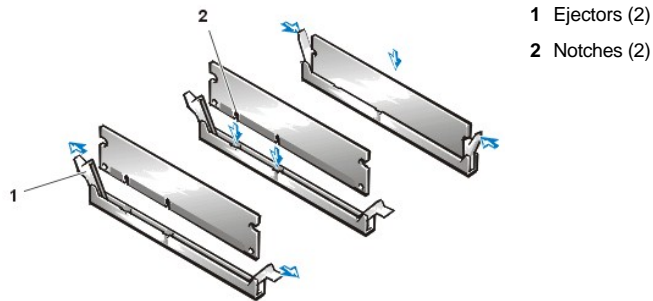
⚠ CAUTION: Use a wrist grounding strap as explained in "[Precautionary Measures](#)."

To remove a DIMM, perform the following steps:

1. Unlatch and rotate the power supply up until it locks (see [Figure 20](#)).
2. Push outward on the two DIMM socket ejectors simultaneously until the DIMM is released from its socket.
3. Lift the DIMM away from the socket.

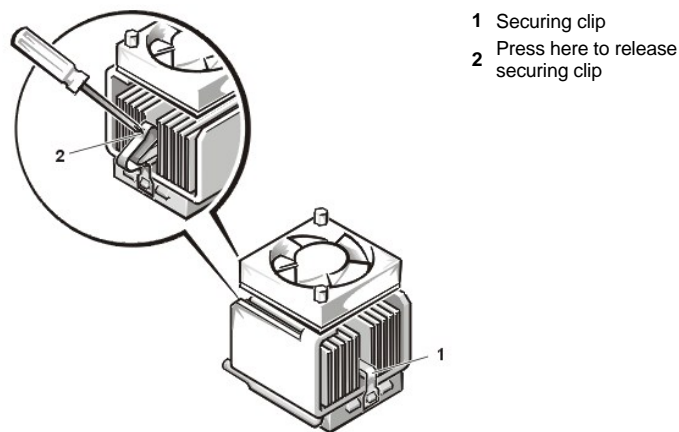
To install a DIMM, press the DIMM fully into the socket while closing the ejectors to lock the DIMM into the socket (see [Figure 30](#)).

Figure 30. DIMM Installation



Microprocessor/Heat Sink Assembly

Figure 31. Microprocessor/Heat Sink Removal



⚠ CAUTION: The microprocessor SEC cartridge/heat sink assembly can get extremely hot. Be sure that the assembly has had sufficient time to cool before you touch it.

⚠ CAUTION: Use a wrist grounding strap as explained in [Precautionary Measures](#).

🔧 NOTE: Dell recommends that only a technically knowledgeable person perform this procedure.

To replace a microprocessor, perform the following steps:

1. [Remove the computer cover](#).
2. Locate the microprocessor socket on the system board.
3. Remove the fan power cable from its connector on the system board. Then, remove two screws securing the fan to the heat sink assembly, and remove the fan.
4. Remove the metal clip that secures the heat sink to the microprocessor socket. Then remove the heat sink from the microprocessor chip.

5. Press down on the folded part of the clip with a small screwdriver to release the clip (see Figure 30).

The securing clip hooks over tabs on the sides of the socket.

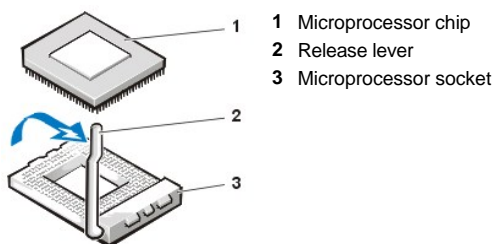
NOTICE: Be careful not to bend any of the pins when removing the microprocessor from its socket. Bending the pins can permanently damage the microprocessor.

6. Remove the microprocessor chip from the socket.

Your microprocessor socket is a zero insertion force (ZIF) socket with a lever-type handle that secures the chip in, or releases it from, the socket.

To remove the chip, pull the microprocessor-socket release lever straight out until the chip is released (see Figure 32). Then remove the chip from the socket. Leave the release lever extended so that the socket is ready for the new microprocessor.

Figure 32. Microprocessor Removal



⚠ CAUTION: Ground yourself by touching an unpainted metal surface on the back of the computer.

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

7. Unpack the new microprocessor.

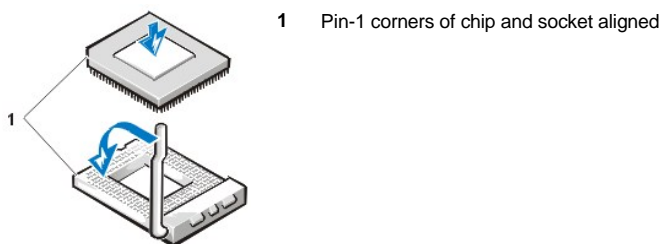
If any of the pins on the chip appear to be bent, see the online *User's Guide* for instructions on obtaining technical assistance.

8. Align the pin-1 corner of the microprocessor chip with the pin-1 corner of the microprocessor socket (see Figure 33).

The pin-1 corner of the microprocessor is the squared off corner (see Figure 33).

🔍 NOTE: Identifying the pin-1 corners is critical to positioning the chip correctly.

Figure 33. Microprocessor Chip Installation



⚠ CAUTION: Ground yourself by touching an unpainted metal surface on the back of the computer.

NOTICE: Positioning the microprocessor chip incorrectly in the socket can permanently damage the chip and the computer when you turn on the system.

NOTICE: When placing the microprocessor chip in the socket, be sure that all of the pins go into the corresponding holes on all sides of the socket. Be careful not to bend the pins.

9. Install the microprocessor chip in the socket (see Figure 33).

If the release lever on the microprocessor socket is not all the way out, move it to that position now.

With the pin-1 corners of the chip and socket aligned, align the pins on the chip with the holes in the socket. Set the chip lightly in the socket

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

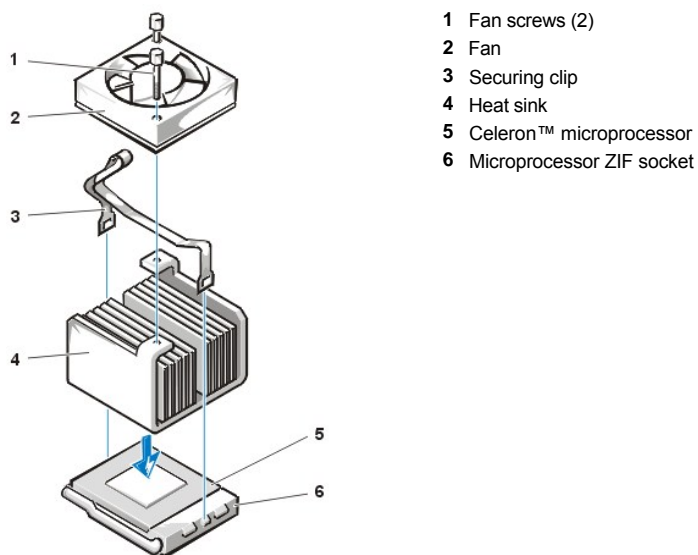
When the chip is fully seated in the socket, pivot the microprocessor-socket release lever back toward the socket until it snaps into place, securing the chip.

10. Unpack the heat sink included in your upgrade kit.

Peel the release liner from the adhesive tape that is attached to the bottom of the heat sink.

11. Place the heat sink on top of the microprocessor chip (see Figure 34).

Figure 34. Heat Sink Installation



12. Replace the heat sink securing clip.

Orient the clip as shown in Figure 34, and hook the unfolded end of the clip over the tab on the top edge of the socket. Then press down on the folded end of the clip to snap the clip over the tab on the bottom edge of the socket.

13. Replace the fan assembly and secure it with two thumbscrews.

14. Install the microprocessor fan cable connector to the FAN connector on the system board.

15. [Replace the computer cover](#), and then reconnect your computer and peripherals to their power sources and turn them on.

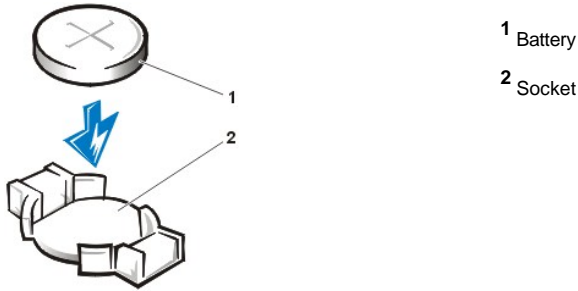
As the system boots, it detects the presence of the new microprocessor and automatically changes the system configuration information in System Setup.

16. Enter System Setup and confirm that the **Microprocessor** category correctly identifies the installed microprocessor.

17. Run the Dell Diagnostics to verify that the new microprocessor is operating correctly.

System Battery

Figure 35. System Battery Removal



⚠ 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.

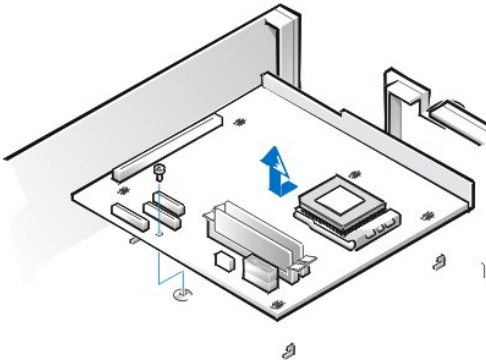
To remove the system battery, perform the following steps:

1. If possible, enter System Setup and print the System Setup screens.
2. Rotate the power supply up until it locks (see [Figure 20](#)).
3. 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.

When you replace the system battery, orient the new battery with the "+" facing up. Insert the battery into its socket and snap it into place.

System Board

Figure 36. System Board Removal



To remove the system board, perform the following steps:

1. Place the computer on its side on a flat surface.
2. Disconnect all cables from their connectors at the back of the computer.
3. Remove the expansion-card cage.
4. Unlatch and rotate the power supply until it locks (see [Figure 20](#)).
5. Disconnect all cables from the system board.
6. Remove the screw that secures the system board to the bottom of the chassis.
7. Slide the system board toward the front of the chassis until it stops.
8. Carefully lift the system board out of the chassis (be sure to lift evenly and not twist the system board).

If you are replacing a system board, remove the DIMMs and the microprocessor/heat sink assembly, and install them on the replacement board. Also, set the jumpers on the new system board so that they are identical to those on the old board, unless a microprocessor upgrade is being installed.

When you reinstall the system board, before you slide the system board back to lock it in position, push down near each slot to engage the grounding clip onto its corresponding tab. Push evenly on both sides of the system board as you slide it into position (do not twist the system

board).

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Small-Form-Factor Chassis — Removing and Replacing Parts: Dell™ OptiPlex™ GX100 Systems Service Manual

Overview	Recommended Tools
Precautionary Measures	Internal Views
Computer Cover	Eject and Power Buttons
Control Panel	Chassis Intrusion Switch
Drives	System Power Supply
Riser Board	System Board Components
Expansion-Card Cage	Expansion Cards
DIMMs	Microprocessor/Heat Sink Assembly
System Battery	System Board

Overview

This section provides procedures for removing and replacing the components, assemblies, and subassemblies in the Dell OptiPlex small-form-factor chassis GX100 system.

Unless otherwise noted, each procedure assumes that the following conditions exist:

- 1 You have performed the steps in "[Precautionary Measures](#)."
 - 1 You have [removed the computer cover](#).
 - 1 You can replace or reinstall a part by performing the removal procedure in reverse order unless additional information is provided.
-

Recommended Tools

Most of the procedures in this manual require the use of one or more of the following tools:

- 1 Small flat-blade screwdriver
- 1 Wide flat-blade screwdriver
- 1 #1 and #2 Phillips-head screwdrivers
- 1 1/4-inch nut driver

Also, use a wrist grounding strap as explained in "[Precautionary Measures](#)."

Precautionary Measures

Before you perform any procedures in this manual, take a few moments to read the following caution for your personal safety and to prevent damage to the system from ESD.

CAUTION: FOR YOUR PERSONAL SAFETY AND PROTECTION OF THE EQUIPMENT

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

1. Turn off the computer and all peripherals.
2. Disconnect the computer and peripherals 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.
3. If you are disconnecting a peripheral from the computer or are removing a component from the system board, wait 10 to 20 seconds after disconnecting the computer from AC power before disconnecting the peripheral or removing the component to avoid possible

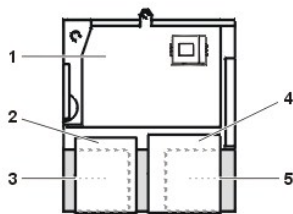
damage to the system board.

4. Wear a wrist grounding strap, and clip it to an unpainted metal surface, such as the padlock loop on the back of the chassis. If a wrist grounding strap is not available, touch any unpainted metal surface on the back of the computer or on the computer chassis, such as the power supply, to discharge any static charge from your body before touching anything inside the computer. While you work, periodically touch an unpainted metal surface on the computer chassis to dissipate any static electricity that might harm internal components. Also avoid touching components or contacts on a card and avoid touching pins on a chip.
5. Verify that the auxiliary power indicator on the system board is not on. If it is on, you may need to wait 10 to 30 seconds for it to go out (see [Figure 20](#)).

Internal Views

Figure 1 shows a top view of the chassis to help you orient yourself when you work inside the computer.

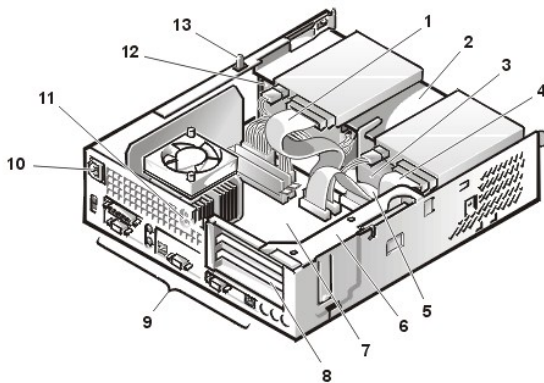
Figure 1. Orientation View



- 1 System board
- 2 Diskette drive
- 3 Hard-disk drive
- 4 CD-ROM drive
- 5 Power supply

Figure 2 shows the chassis with the cover removed.

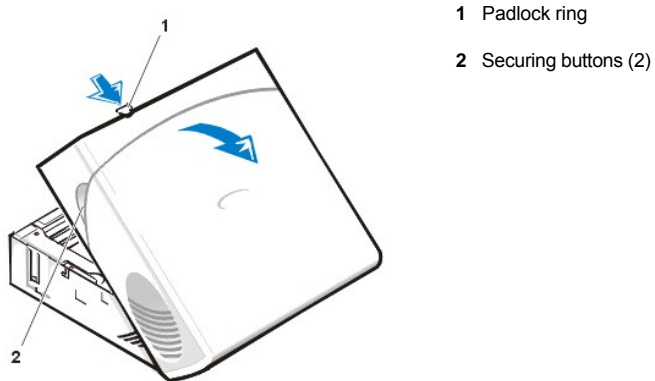
Figure 2. Inside the Chassis



- 1 CD-ROM drive interface cable
- 2 Externally accessible upper drive bay
- 3 Hard-disk drive
- 4 Diskette-drive interface cable
- 5 Hard-disk drive interface cable
- 6 Expansion-card cage
- 7 System board
- 8 Expansion-card slots
- 9 I/O ports and connectors
- 10 AC power receptacle
- 11 Security cable slot
- 12 Power supply
- 13 Chassis intrusion switch

Computer Cover

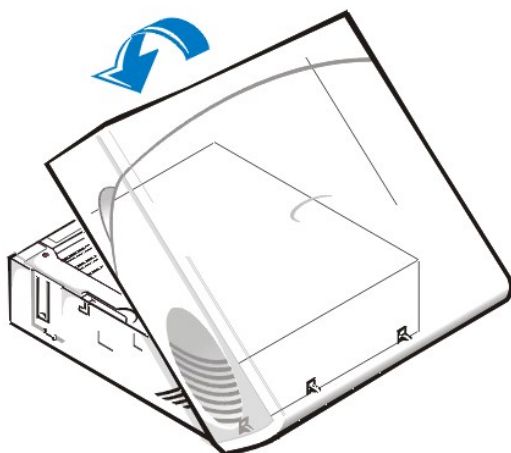
Figure 3. Computer Cover Removal



To remove the computer cover, perform the following steps:

1. Press in to retract the padlock ring into the cover to open (see Figure 3).
2. Press in on the two securing buttons until the cover is free to swing up (see Figure 3).
3. Raise the back of the cover, and pivot it toward the front of the computer.
4. Lift the cover off the hooks at the front of the chassis.
5. Disengage the tabs that secure the cover to the top of the chassis, and lift the cover away.

Figure 4. Computer Cover Replacement

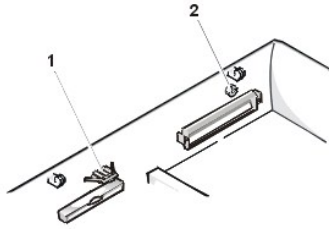


To replace the computer cover, perform the following steps:

1. Face the front of the computer and hold the cover at a slight angle (see Figure 4).
2. Align the bottom of the cover with the bottom of the chassis and insert the hooks on the cover into the recessed slots on the computer chassis so that the tabs catch the hooks inside the slots.
3. Pivot the cover down toward the back of the chassis and into position.
Make sure that the securing buttons click into place.
4. If you wish to install a padlock, slide the padlock ring out of the cover.

Eject and Power Buttons

Figure 5. Eject and Power Button Removal



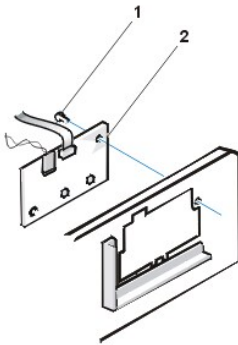
- 1 Diskette eject button
- 2 Power button

To remove the eject and power buttons, perform the following steps:

1. Lay the computer cover on a flat work surface, with the inside of the top cover facing up.
2. To remove the 3.5-inch diskette-drive eject button, pull gently on the plastic part of the button until it comes free.
3. To remove the power button, use a small screwdriver and push in the two plastic clips that hold the button to the bezel. When these clips are released, the button and the spring come free from the bezel.

Control Panel

Figure 6. Control Panel Removal



- 1 Screw
- 2 Control panel

To remove the control panel, perform the following steps:

1. [Remove the drive shelf.](#)
2. [Remove the power supply.](#)
3. Disconnect the control panel cable from the control panel connector on the system board (see "[System Board Labels](#)" for the location of the PANEL connector).

Note the routing of the control panel cable as you remove it from the chassis.

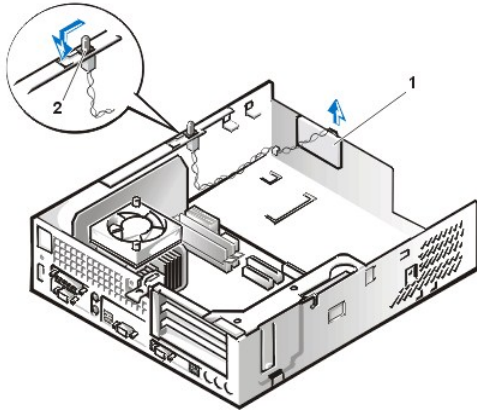
4. Remove the mounting screw that secures the control panel to the chassis.
5. Disconnect the chassis intrusion switch cable connector from the control panel.
6. Remove the control panel cable.
7. Remove the control panel from the chassis.

Note the routing of the control panel cable as you remove it from the chassis.

When you install the replacement control panel, be sure to put the right side of the control panel behind the mounting tab.

Chassis Intrusion Switch

Figure 7. Chassis Intrusion Switch Removal



- 1 Control panel
- 2 Chassis intrusion switch

To remove the chassis intrusion switch, perform the following steps:

1. [Remove the drive shelf.](#)
2. [Remove the power supply.](#)
3. [Remove the control panel.](#)
4. Disconnect the chassis intrusion switch cable connector from the control panel.

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

5. Slide the chassis intrusion switch out of its slot and remove the switch and its attached cable from the chassis.
6. Install the replacement chassis intrusion switch and cable.
7. To reset the chassis intrusion detector, enter System Setup and reset **Chassis Intrusion** to **Enabled** or **Enabled-Silent** (see your online *System User's Guide* for instructions).

Drives


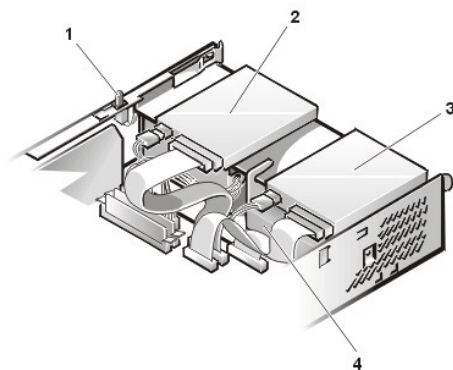
 **NOTE:** In all of the following procedures, left and right refer to your left and right as you face the front of the computer.

Figure 8. Drive Locations

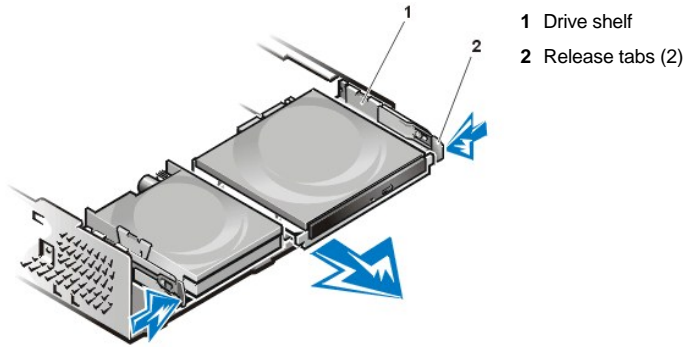


- 1 Chassis intrusion switch
- 2 CD-ROM drive
- 3 3.5-inch diskette drive
- 4 Hard-disk drive

Preliminary Steps

You must remove the drive shelf before removing the 3.5-inch diskette drive, the CD-ROM drive, the hard-disk drive, the control panel, the chassis intrusion switch, or the power supply.

Figure 9. Drive Shelf Removal

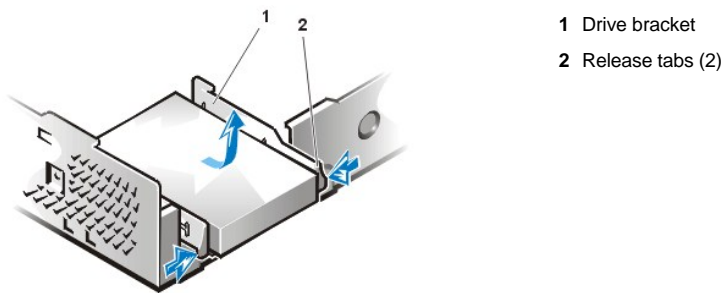


To remove the drive shelf from the chassis, perform the following steps:

1. Disconnect the power and interface cables from the diskette drive and CD-ROM drive.
2. Press inward on the two drive shelf release tabs, and pull the shelf forward and out of the chassis (see Figure 9).

Hard-Disk Drive

Figure 10. Hard-Disk Drive/Bracket Removal



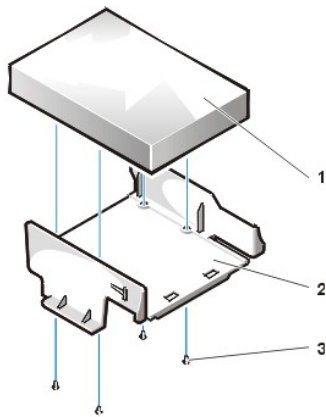
⚠ CAUTION: To avoid the possibility of electric shock, turn off the computer and any peripherals, disconnect them from electrical outlets, and then wait at least 5 seconds before you remove the computer cover. Also, before you remove a drive, see the other precautions in "[Precautionary Measures](#)."

🔧 NOTE: This procedure assumes that you have removed the drive shelf from the chassis.

To remove the hard-disk drive and its bracket from the chassis, perform the following steps:

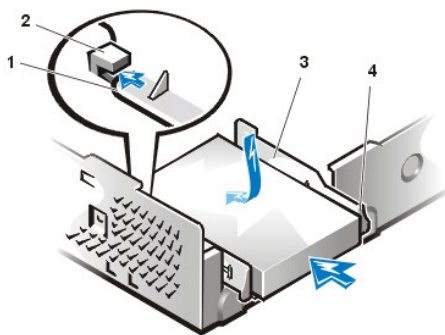
1. If you are replacing a hard-disk drive that contains data you want to keep, make a backup copy of your files before you continue this procedure.
2. [Remove the computer cover](#) if not already removed.
3. [Remove the drive shelf](#).
4. Squeeze the tabs on each side of the hard-disk drive/bracket, and pull the hard-disk drive/bracket forward about one inch (see Figure 10).
5. Disconnect the power and interface cables from the back of the drive.
6. Lift the hard-disk drive/bracket away from the chassis.
7. Lay the hard-disk drive/bracket on an antistatic surface with its bracket facing up.
8. Remove the four screws securing the hard-disk drive to the bottom of the bracket (see Figure 11).

Figure 11. Drive Bracket Removal



- 1 Drive
- 2 Drive bracket
- 3 Screws (4)

Figure 12. Hard-Disk Drive/Bracket Replacement



- 1 Tabs on bottom of drive bracket
- 2 Hooks on chassis floor
- 3 Drive bracket
- 4 Release tabs (2)

To install a replacement hard-disk drive in the chassis, perform the following steps.

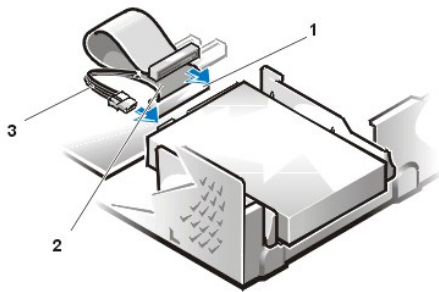
⚠ CAUTION: To avoid the possibility of electric shock, turn off the computer and any peripherals, disconnect them from electrical outlets, and then wait at least 5 seconds before you remove the computer cover. Also, before you install a drive, see the other precautions in "[Precautionary Measures](#)."

NOTICE: To avoid possibly damaging the drive by electrostatic discharge (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. Prepare the drive for installation.
 - Check the documentation for the drive to verify that it is configured for your computer system.
2. If not already done, [remove the computer cover](#).
3. If not already done, [remove the drive bracket from the chassis](#).
4. Attach the new hard-disk drive to the bracket with the four screws you removed in [step 8](#) of the previous procedure.
5. Reinstall the hard-disk drive/bracket in the chassis (see Figure 12).
6. Place the bracket so that the release tabs extend about one inch past the front of the chassis, and align the tabs on the bottom of the bracket with the hooks on the chassis floor.
7. Slide the bracket toward the back of the chassis until the tabs snap under the hooks (see Figure 12). The bracket release tabs should also snap into the front of the chassis.
8. Connect a power cable to the power input connector on the back of the drive, and connect an EIDE cable to the interface connector on the back of the drive (see Figure 13).
 - Check all connectors to be certain that they are properly cabled and firmly seated.

Figure 13. Hard-Disk Drive Cable Attachment



- 1 IDE1 connector
- 2 EIDE cable
- 3 Power cable

NOTICE: You must connect the blue connector on the EIDE interface cable to the IDE1 connector on the system board to avoid possible damage to your system.


NOTICE: You must match the red-colored stripe on the EIDE cable with pin 1 on the drive's interface connector to avoid possible damage to your system.

NOTICE: You must match the red-colored stripe on the EIDE interface cable with pin 1 on the IDE1 connector to avoid possible damage to your system.

9. If it is not already connected, connect the blue connector on the EIDE interface cable to the IDE1 connector on the system board.

To locate the IDE1 connector on the system board, see "[System Board Components](#)."


10. Replace the drive shelf and connect the diskette and CD-ROM drive power and interface cables.
11. [Replace the computer cover](#). Then reconnect your computer and peripherals to their electrical outlets, and turn them on.
12. Insert a bootable diskette into drive A.
13. Turn on the computer system.
14. Enter System Setup and update Primary Drive 0 (see the online *System User's Guide* for complete information on System Setup).
After you update the system setup settings, reboot the system.
15. Partition and logically format your computer's hard-disk drive before proceeding to the next step.
See the documentation for your operating system for instructions.

 **NOTE:** On systems with hard-disk drives larger than 2 GB, create a primary partition of 2 GB and divide the remaining capacity into partitions of 2 GB or less. For example, a system with a 2.5-GB hard-disk drive would have a primary partition of 2 GB (drive C) and a second partition of 500 MB (drive D). Hard-disk drives must be partitioned this way because MS-DOS®-based operating systems (including Microsoft® Windows NT®, when using a FAT16 file system) do not support drive partitions larger than 2 GB.

16. Test the hard-disk drive by running the Dell Diagnostics (see the online *System User's Guide* for complete information).
17. If the drive you just installed is the primary drive, install your operating system on the hard-disk drive.
For instructions, refer to the documentation that came with your operating system.

3.5-Inch Diskette Drive

To remove the 3.5-inch diskette drive from the drive shelf, perform the following steps:

 **NOTE:** This procedure assumes that you have removed the drive shelf from the chassis.

1. Press down on the release latch on the top left side of the 3.5-inch diskette drive.

The 3.5-inch diskette drive will pop up slightly when the latch disengages.

2. Pivot the 3.5-inch diskette drive up and out of the drive shelf.

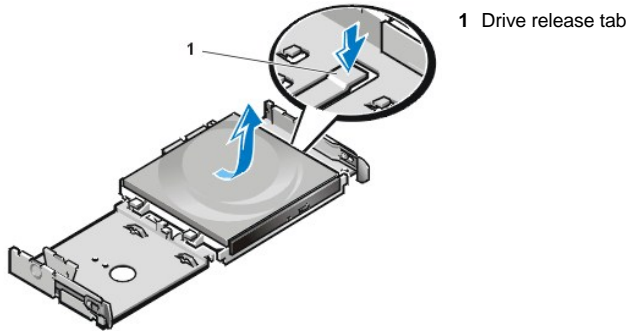
To replace the 3.5-inch diskette drive, perform the following steps:

1. Rotate the replacement drive into position under the right diskette drive bracket on the drive shelf.
2. Lower the left side of the diskette drive while gently pressing downward, so that the slots on the bottom of the 3.5-inch diskette drive engage in hooks on the drive shelf.


3. Ensure that the latch on the left side of the 3.5-inch diskette drive engages the top of the diskette drive.
If necessary, press on the latch from the bottom of the drive shelf.
4. Replace the drive shelf and connect the interface and power cable connectors.

CD-ROM Drive

Figure 14. CD-ROM Drive Removal



To remove a CD-ROM drive, perform the following steps.

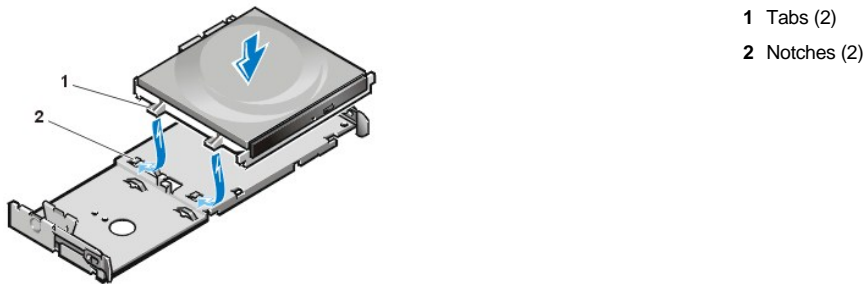
 **NOTE:** This procedure assumes that you have removed the drive shelf from the chassis.

1. Push down on the drive release tab on the right side of the drive (see Figure 14).
2. Slide the CD-ROM drive assembly forward and up and out of the chassis.

To replace a CD-ROM drive, perform the following steps:

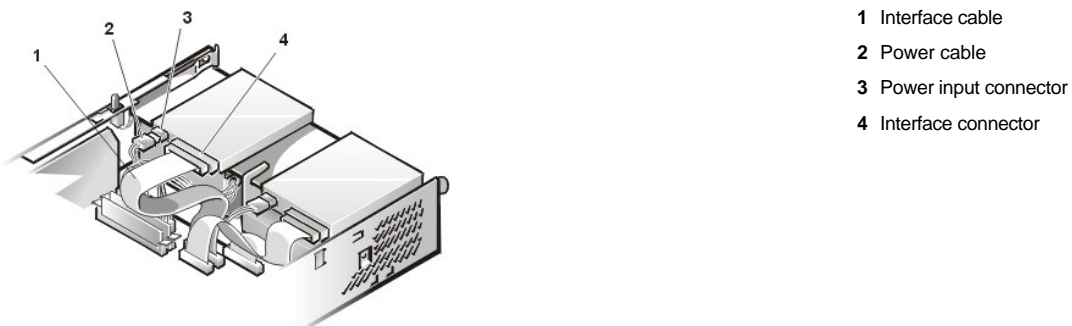
1. Align the tabs on the bottom of the CD-ROM drive with the notches on the drive shelf, and slide the drive toward the back of the shelf until it snaps into place (see Figure 15).

Figure 15. CD-ROM Drive Replacement



2. Connect a power cable and an interface cable to the appropriate connectors on the back of the drive (see Figure 16).

Figure 16. CD-ROM Drive Cable Attachment



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

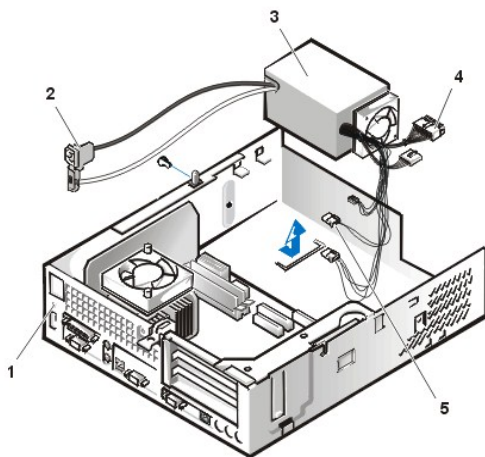
3. [Replace the computer cover](#); reconnect your computer and peripherals to their electrical outlets, and turn them on.
4. Update your system configuration information.

Set the **Drive 1** option under **Drives: Primary** to **Auto**. See the online *System User's Guide* for more information.

5. Verify that your system works correctly by running the Dell Diagnostics (see the online *System User's Guide* for complete information).

System Power Supply

Figure 17. Power Supply Removal



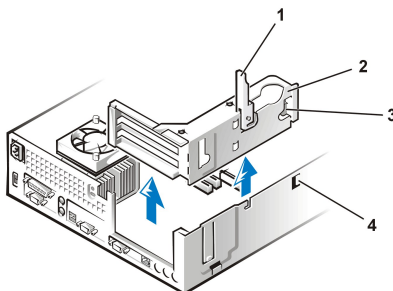
- 1 Securing screw hole
- 2 AC power receptacle
- 3 Power supply
- 4 System board DC power connectors (2)
- 5 Drive DC power connectors (3)

To remove the system power supply, perform the following steps:

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.
3. Remove the screw on the side of the chassis that secures the power supply.
4. Remove the screw below the AC power receptacle at the back of the chassis.
5. Slide the power supply toward the center of the computer approximately 1 inch.
6. Lift the power supply up and out the computer chassis.

Expansion-Card Cage

Figure 18. Expansion-Card Cage Removal



- 1 Securing lever
- 2 Expansion-card cage
- 3 Tabs (2)
- 4 Hooks (2)

To remove the expansion-card cage from the chassis, perform the following steps:

1. [Remove the computer cover.](#)

NOTICE: Use a wrist grounding strap as explained in "[Precautionary Measures.](#)"

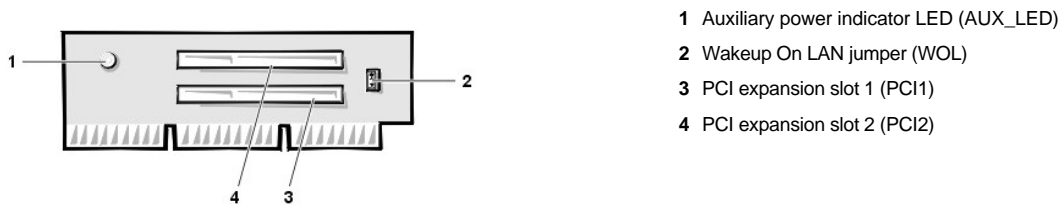
2. Examine the cables connected to expansion cards through the back-panel openings, and disconnect any cables that will not reach to where the cage must be placed when it is removed from the chassis.
3. Locate the securing lever and rotate the lever upward until it stops in an upright position.
4. Lift the expansion-card cage up and out of the chassis.

To replace the expansion-card cage into the chassis, perform the following steps:

1. With the securing lever in the upright position, align the tabs in the side of the expansion-card cage with the mating hooks on the left side of the chassis wall (see Figure 18). Slide the expansion-card cage into place.
2. Rotate the securing lever downward until it is flush with the top side of the chassis. Make sure that the riser board is fully seated in the RISER connector on the system board.
3. Reconnect any cables you removed in [step 2](#) of the previous procedure.

Riser Board

Figure 19. PCI Riser Board



The chassis has a PCI riser board that has two PCI expansion-card connectors (see Figure 19).

To remove the PCI riser board, perform the following steps:

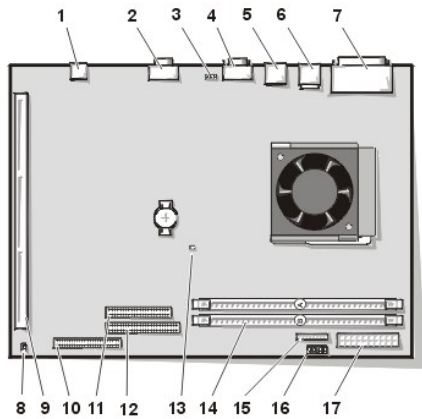
1. Remove the expansion-card cage.
2. Remove the expansion cards installed in the slots.
3. Remove the screws securing the riser board to the expansion-card cage.
4. Lift the riser board off the expansion card cage.

System Board Components

The subsections that follow contain procedures for removing system board components, which are shown in Figure 20.

Figure 20. System Board Components

- 1 NIC connector
- 2 Video connector
- 3 Fan power connector
- 4 Serial port 2 connector
- 5 USB connectors (2)

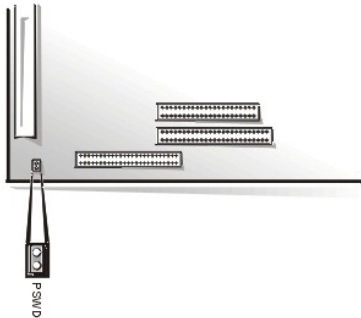


- 6 Mouse (upper) and keyboard (lower) connectors
- 7 Parallel port (upper) and serial port 1 (lower) connectors
- 8 System board jumpers
- 9 Riser board connector
- 10 EIDE1 connector
- 11 EIDE2 connector
- 12 Diskette/tape-drive connector
- 13 Auxiliary power indicator
- 14 DIMM connectors (2)
- 15 3.3 VDC power connector
- 16 Control panel connector
- 17 DC power connector

System Board Jumpers

Figure 21 shows the layout of jumpers on the system board.

Figure 21. System Board Jumpers



Jumper pins are small groups of two or more pins on a circuit board. Plastic jumpers containing a wire fit down over the pins. The wire connects the pins and creates a circuit.

NOTICE: Make sure that your system is turned off before you change a jumper setting. Otherwise, damage to your system or unpredictable results may occur.

To change a jumper setting, pull the jumper off its pin(s) and carefully fit it down onto the pin(s) indicated.

Dell shipped your computer with a PSWD jumper installed, meaning that the password features for this computer are enabled. When you remove the jumper, or when you install the jumper on only one of the two pins, the password features are disabled.

System Board Labels

Table 1 lists the labels for connectors and sockets on your system board, and it gives a brief description of their functions.

Table 1. System Board Connectors and Sockets

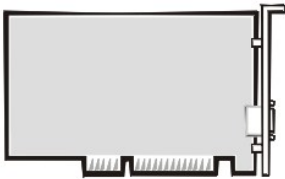
Connector or Socket	Description
AUX_LED	Auxiliary power indicator
B1	Battery socket
DIMM_x	DIMM socket
DSKT	Diskette/tape drive interface connector

ENET	Integrated NIC connector
FAN	Microprocessor fan connector
IDE _n	EIDE interface connector
KYBD	Keyboard connector
MICROPROCESSOR	Microprocessor connector
MONITOR	Video connector
MOUSE	Mouse connector
PANEL	Control panel connector
PARALLEL	Parallel port connector; sometimes referred to as <i>LPT1</i>
POWER_1	Main power input connector
POWER_2	3.3-volt (V) power input connector
RISER	Riser board connector
SERIAL _n	Serial port connectors
USB	USB connectors

Expansion Cards

The small-form-factor GX100 chassis can accommodate up to two half-length 32-bit PCI expansion cards. Figure 22 shows an example of a 32-bit PCI expansion card.

Figure 22. 32-Bit PCI Expansion Card Example



Removing an Expansion Card

⚠ CAUTION: Use a wrist grounding strap as explained in "[Precautionary Measures.](#)"

To remove an expansion card, perform the following steps.

1. [Remove the computer cover.](#)
2. If necessary, disconnect any cables connected to the card.
3. [Remove the expansion-card cage.](#)
4. Remove the screw on the mounting bracket of the card you want to remove.
5. Grasp the card by its outside corners, and ease it out of its connector.
6. If you are removing the card permanently, install a metal filler bracket over the empty card-slot opening.

📌 NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of your computer.

7. Replace the computer cover, and reconnect your computer and peripherals to their power sources and turn them on.

📌 NOTE: After you remove and replace the cover, the chassis intrusion detector will cause the following message to be displayed at the next system start-up:

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

8. To reset the chassis intrusion detector, enter System Setup and reset **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.

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


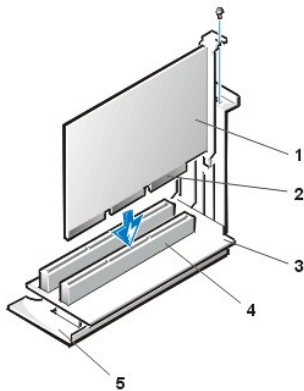


 **NOTE:** If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

Figure 23. Expansion Card Installation



- 1 Expansion card
- 2 Card-edge connector
- 3 Riser board
- 4 Expansion-card connector
- 5 Expansion-card cage

 **CAUTION:** Use a wrist grounding strap as explained in "[Precautionary Measures](#)."

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

To install an expansion card, perform the following steps:

1. Prepare the expansion card for installation, and [remove the computer cover](#).

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

2. Remove the screw and remove the metal filler bracket that covers the card-slot opening for the expansion slot you intend to use (see [Figure 24](#)).

Save the screw to use when installing the expansion card later in this procedure.

Figure 24. Filler Bracket Removal



- 1 Filler bracket


3. Insert the expansion card into the expansion-card connector.

If the expansion card is full-length, insert the front end of the card into the corresponding card guide on the inside front of the chassis as you insert the card into its connector. Insert the card's edge connector firmly into the expansion-card slot.

4. When the card is firmly seated in the connector, secure the card's mounting bracket to the chassis with the screw you removed in [step 2](#).
5. Connect any cables that should be attached to the card.

See the documentation for the card for information about the card's cable connections.


6. [Replace the computer cover](#), and reconnect your computer and peripherals to their power sources and turn them on.

 **NOTE:** After you remove and replace the cover, the chassis intrusion detector will cause the following message to be displayed at the next system start-up:

ALERT! Cover was previously removed.

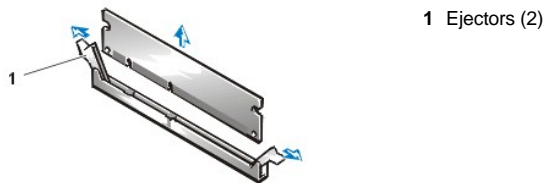
7. To reset the chassis intrusion detector, enter System Setup and reset **Chassis Intrusion** to **Enabled** or **Enabled-Silent**.


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

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

DIMMs

Figure 25. DIMM Removal



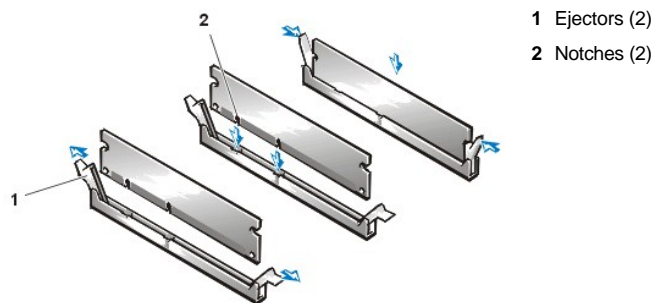
 **CAUTION:** Use a wrist grounding strap as explained in "[Precautionary Measures.](#)"

To remove a DIMM, perform the following steps:

1. Push outward on the two DIMM socket ejectors simultaneously until the DIMM is released from its socket.
2. Lift the DIMM away from the socket.

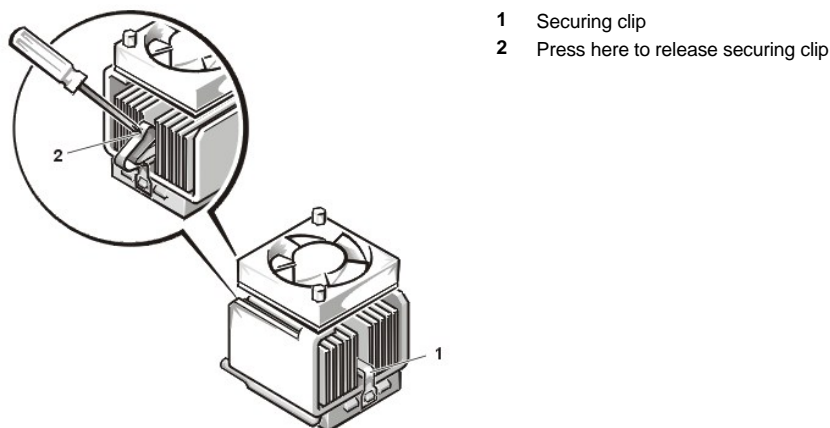
To install a DIMM, press the DIMM fully into the socket while closing the ejectors to lock the DIMM into the socket (see Figure 26).

Figure 26. DIMM Installation



Microprocessor/Heat Sink Assembly

Figure 27. Microprocessor/Heat Sink Assembly Removal



⚠ CAUTION: The microprocessor SEC cartridge/heat sink assembly can get extremely hot. Be sure that the assembly has had sufficient time to cool before you touch it.

⚠ CAUTION: Use a wrist grounding strap as explained in "[Precautionary Measures](#)."

🔧 NOTE: Dell recommends that only a technically knowledgeable person perform this procedure.

To replace a microprocessor, perform the following steps:

1. [Remove the computer cover](#).
2. Locate the microprocessor socket on the system board.
3. Unplug the fan power connector on the system board
4. Remove the screws securing the fan to the top of the heat sink assembly. Then remove the fan.
5. Remove the metal clip that secures the heat sink to the microprocessor socket. Then remove the heat sink from the microprocessor chip.
6. Press down on the folded part of the clip with a small screwdriver to release the clip (see [Figure 27](#)).

The securing clip hooks over tabs on the sides of the socket.

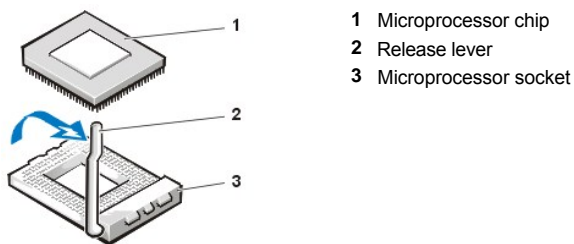
NOTICE: Be careful not to bend any of the pins when removing the microprocessor chip from its socket. Bending the pins can permanently damage the microprocessor chip.

7. Remove the microprocessor chip from the socket.

Your microprocessor socket is a zero insertion force (ZIF) socket with a lever-type handle that secures the chip in, or releases it from, the socket.

To remove the chip, pull the microprocessor-socket release lever straight out until the chip is released (see [Figure 28](#)). Then remove the chip from the socket. Leave the release lever extended so that the socket is ready for the new microprocessor.

Figure 28. Microprocessor Removal



⚠ CAUTION: Ground yourself by touching an unpainted metal surface on the back of the computer.

NOTICE: Positioning the microprocessor chip incorrectly in the socket can permanently damage the chip and the computer when you turn on the system.

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

8. Unpack the new microprocessor.

If any of the pins on the chip appear to be bent, see your *Installation and Troubleshooting Guide* for instructions on obtaining technical assistance.

9. Align the pin-1 corner of the microprocessor chip with the pin-1 corner of the microprocessor socket (see [Figure 29](#)).

🔧 NOTE: Identifying the pin-1 corners is critical to positioning the chip correctly.

The pin-1 corner of the microprocessor is the squared off corner (see [Figure 29](#)).

10. Install the microprocessor chip in the socket (see [Figure 29](#)).

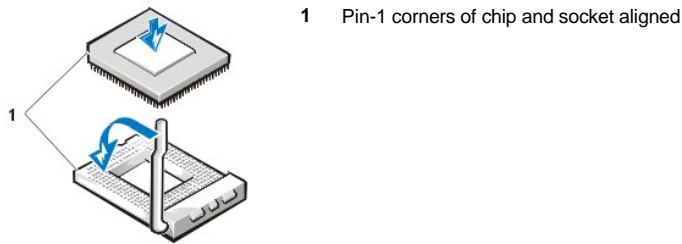
If the release lever on the microprocessor socket is not all the way out, move it to that position now.

With the pin-1 corners of the chip and socket aligned, align the pins on the chip with the holes in the socket. Set the chip lightly in the socket and make sure all pins are headed into the correct holes. Because your system uses a ZIF microprocessor socket, there is no need to use force (which could bend the pins if the chip is misaligned). When the chip is positioned correctly, it should seat itself in the socket with

minimal pressure.

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

Figure 29. Microprocessor Chip Installation



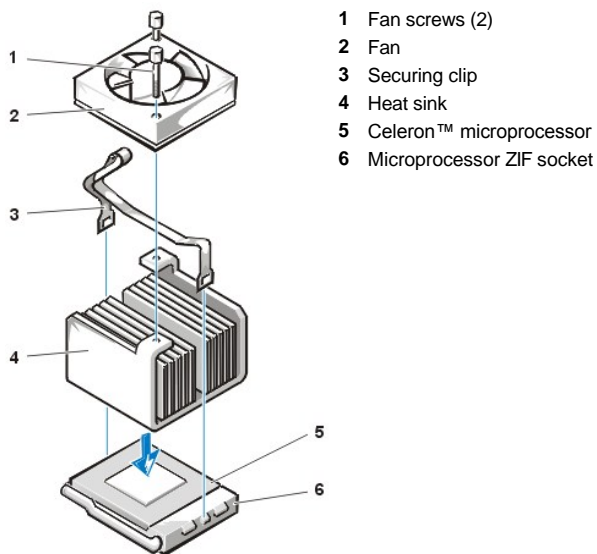
⚠ CAUTION: Ground yourself by touching an unpainted metal surface on the back of the computer.

11. Unpack the heat sink included in your upgrade kit.

Peel the release liner from the adhesive tape that is attached to the bottom of the heat sink.

12. Place the heat sink on top of the microprocessor chip (see Figure 30).

Figure 30. Heat Sink Installation



13. Replace the heat sink securing clip.

Orient the clip as shown in Figure 30, and hook the unfolded end of the clip over the tab on the top edge of the socket. Then press down on the folded end of the clip to snap the clip over the tab on the bottom edge of the socket.

14. Replace the fan assembly and secure it with two thumbscrews. Then connect the fan power cable to the FAN connector on the system board .

15. Install the microprocessor fan cable connector to the FAN connector on the system board.

16. Replace the computer cover, and then reconnect your computer and peripherals to their power sources and turn them on.

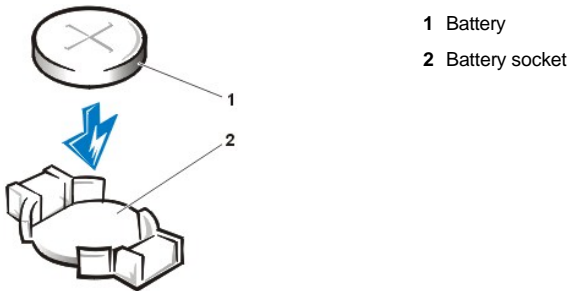
As the system boots, it detects the presence of the new microprocessor and automatically changes the system configuration information in System Setup.

17. Enter System Setup and confirm that the **Microprocessor** option correctly identifies the installed microprocessor.

18. Run the Dell Diagnostics to verify that the new microprocessor operates correctly.

System Battery

Figure 31. System Battery Removal



⚠ 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.

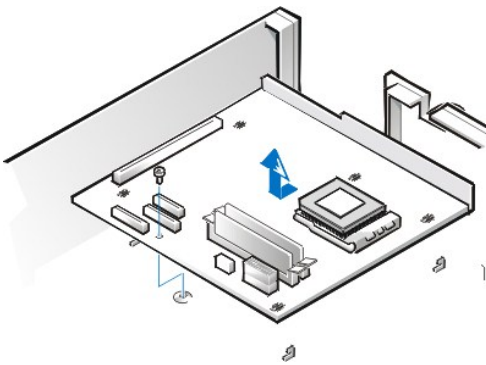
To remove the system battery, perform the following steps:

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.

When you replace the system battery, orient the new battery with the "+" facing up. Insert the battery into its socket and snap it into place.

System Board

Figure 32. System Board Removal



To remove the system board, perform the following steps:

1. Disconnect all cables from their connectors at the back of the computer.
2. Remove the [drive shelf assembly](#).
3. Remove the [expansion-card cage](#).
4. Remove the [hard-disk drive/bracket](#).
5. Disconnect all cables from the system board.
6. Remove the screw that secures the system board to the bottom of the chassis (see [Figure 32](#)).
7. Slide the system board toward the front of the chassis until it stops.
8. Carefully lift the system board out of the chassis (be sure to lift evenly and not twist the system board).

To replace a system board, perform the following steps:

1. Remove the DIMMs and the microprocessor/heat sink assembly and install them on the replacement board.
 2. Set the jumpers on the new system board so that they are identical to those on the old board, unless a microprocessor upgrade is being installed.
 3. Push down near each slot to engage the grounding clip onto its corresponding tab.
 4. Push evenly on both sides of the system board as you slide it into position (do not twist the system board).
-

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