Dell Precision™ WorkStation 340 Service Manual

Before You Begin

Removing and Installing Parts

Notes, Notices, and Cautions

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

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

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

Battery

Dell Precision™ WorkStation 340 Service Manual

The 3.0-V CR2032 coin-cell battery installed on the system board provides power to retain the configuration, date, and time information when the computer is turned off. The computer battery is designed to provide years of service without being replaced. However, you may need to replace the battery if configuration or clock-related inconsistencies occur or if one of the following messages is displayed during the boot routine:

```
Time-of-day not set - please run SETUP program
```

or

```
Invalid configuration information -
please run SETUP program
```

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

⚠ **CAUTION: Before you perform this procedure, see "Safety First—For You and Your Computer."**

🚫 **NOTICE:** Before disconnecting a device from the computer, wait 10 to 20 seconds after disconnecting the computer from its electrical outlet. Before removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see your computer's illustration in "System Board Components."

1. If you have not already done so, make a copy of your computer configuration information in system setup.

   If the settings are lost while you are replacing the battery, you can refer to your copy of the computer configuration information to restore the correct settings.

2. Turn off the computer and devices, disconnect them from their electrical outlets, and wait 10 to 20 seconds.

3. Open the computer cover.

4. Remove the battery.

   To locate the battery on the system board, see your computer's illustration in "System Board Components."

Removing the Battery
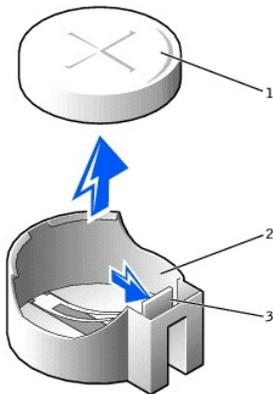
|	
1	battery
2	battery socket
3	tab

   Press in on the tab to release the battery.

5. Install the new battery.

   Orient the battery with the side labeled "+" facing up. Then insert the battery into the socket, and snap it into place.

Installing the Battery
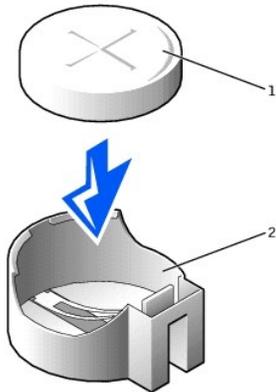
| 1 | battery |
| 2 | battery socket |

6. Close the computer cover.

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

NOTE: If enabled, the **Chassis Intrusion** option will cause the following message to be displayed at the next computer start-up: ALERT! Cover was previously removed.

8. Enter system setup and enter the current time and date. Then exit system setup and save the information.

   For more information on entering system setup, see your *User's Guide*.

9. Turn off your computer and disconnect it from its electrical outlet. Leave the computer off for at least 10 minutes.

10. Reconnect the computer to its electrical outlet and turn it on.

11. Enter system setup, and check the date and time.

12. If the time and date are still incorrect, contact Dell for technical assistance.

Back to Contents Page

Chassis Intrusion Switch
**Dell Precision™ WorkStation 340 Service Manual**

Removing the Chassis Intrusion Switch

⚠️ **CAUTION: Before you perform this procedure, see "Safety First—For You and Your Computer."**

🚫 **NOTICE:** Before disconnecting a device from the computer or removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 10 to 20 seconds, lay the mini-tower computer on its side, and open the computer cover.

Small Desktop Computer
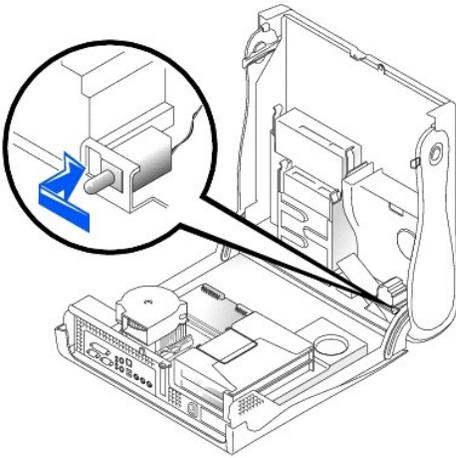
Small Mini-Tower Computer
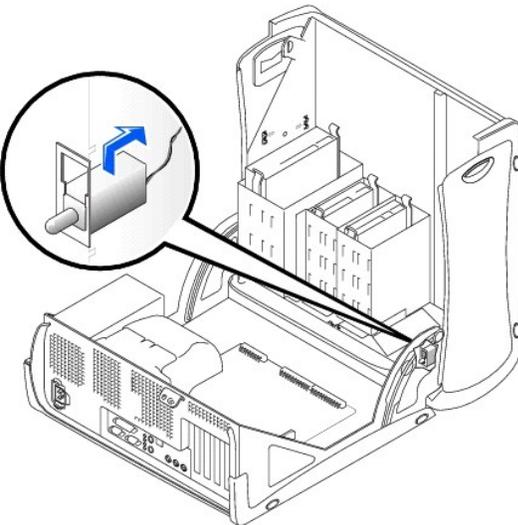
2. Disconnect the chassis intrusion switch cable connector from the control panel on the front of the computer.

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

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

Replacing the Chassis Intrusion Switch

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

Resetting the Chassis Intrusion Detector

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

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

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

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

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

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

Computer Cover
Dell Precision™ WorkStation 340 Service Manual

Opening the Computer Cover

⚠️ **CAUTION: Before you perform this procedure, see "Safety First—For You and Your Computer."**

🔴 **NOTICE:** Before disconnecting a device from the computer, wait 10 to 20 seconds after disconnecting the computer from its electrical outlet. Before removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see your computer's illustration in "System Board Components."

1. Turn off the computer and devices, disconnect them from their electrical outlets, and wait 10 to 20 seconds.

2. If you have installed a padlock through the padlock ring on the back panel, remove the padlock.

3. If you have a mini-tower computer, lay the computer on its side.

📝 **NOTE:** On the small desktop computer, remove the stand before you open the computer cover. On the mini-tower computer, place the computer on its side before you open the cover. See your *User's Guide* for more information.

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

4. Press the two release buttons until the cover is free to swing up.

🔴 **NOTICE:** Open the cover slowly to ensure you do not damage any cables.

5. Raise the back of the cover, and pivot it toward the front of the computer.

Small Desktop Computer
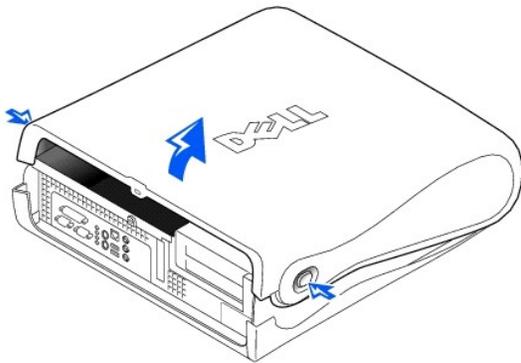
Mini-Tower Computer
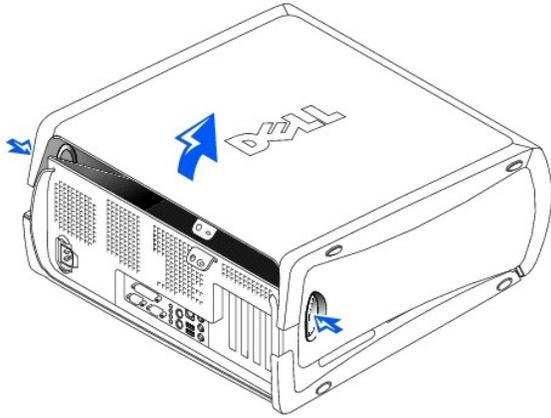
Closing the Computer Cover

1. Check all cable connections, especially those that might have come loose during your work. Fold cables out of the way so that they do not obstruct the computer cover.

2. Ensure that no tools or extra parts (including screws) are left inside the computer.

3. Close the computer cover by pivoting the cover down toward the back of the computer and into position. Make sure that the release buttons click into place.

Small Desktop Computer
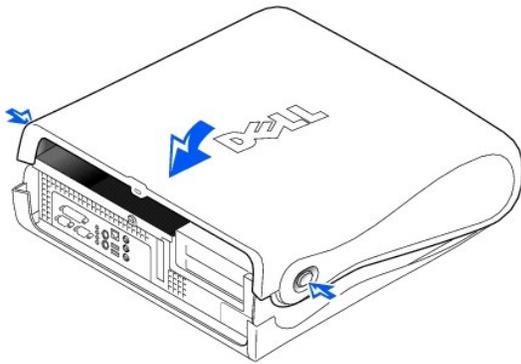
Mini-Tower Computer
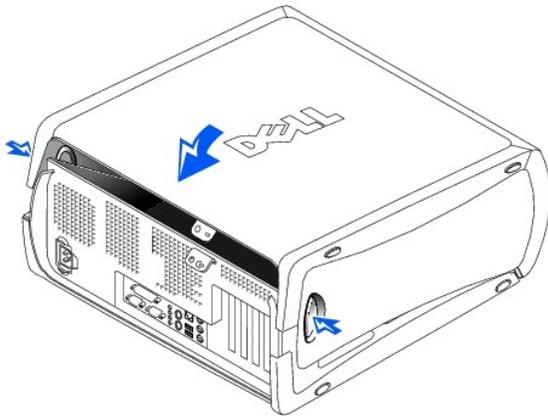
4. If you are using a padlock to secure your computer, install the padlock.

Control Panel

Dell Precision™ WorkStation 340 Service Manual

⚠️ **CAUTION: Before you perform this procedure, see the safety instructions in your *System Information Guide*.**

🚫 **NOTICE:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface (such as the back panel) on the computer.

🚫 **NOTICE:** Before you disconnect a device from the computer or remove a component from the system board, verify that the standby power light on the system board has turned off. To locate the light, see "System Board Components."

Removing the Control Panel

Desktop Computer

1. Remove the front I/O panel.
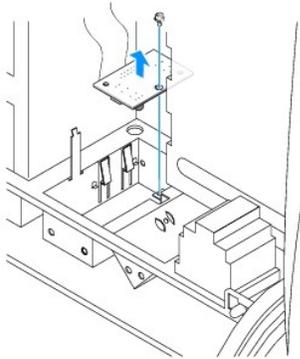
2. Using an 8-inch #2 Phillips screwdriver, remove the screw that secures the control panel to the computer, and lift the panel away from the computer.

Mini-Tower Computer

1. To remove the top and bottom panels of the computer, remove any installed CD drives and release all the tabs on each panel.
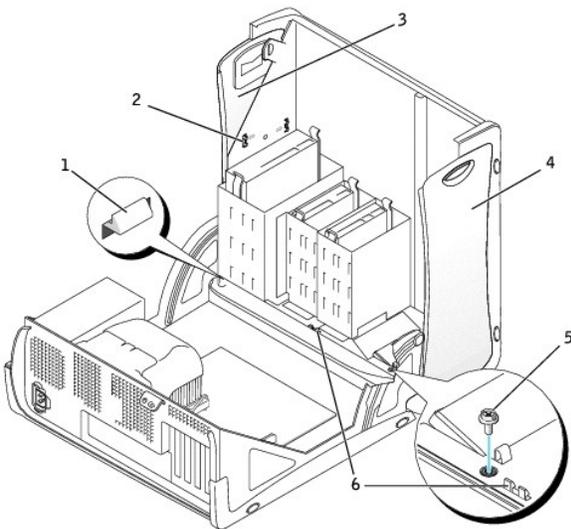
| 1	computer cover tab (remove the CD drive to access this tab)
2	top-panel tabs
3	top panel
4	bottom panel
5	computer cover screw
6	computer cover tabs (2)

2. To prepare the computer cover for removal, release the three computer cover tabs (one tab is located by the CD drive and two tabs are located by the I/O panel).

📝 **NOTE:** To release the tab located by the CD drive, you can pry the computer cover away from the computer and pull out the tab.

3. If necessary, remove the computer cover screw.

4. Close the computer and remove the computer cover.

5. Remove the screw that secures the control panel to the computer, and pull the control panel away from the computer.
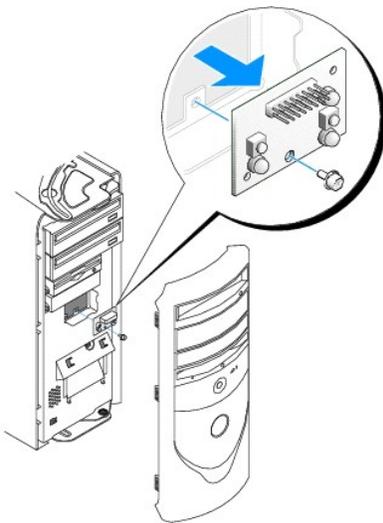
Replacing the Control Panel

Desktop Computer

Follow the steps in the "Removing the Control Panel" procedure in the reverse order, ensuring that all tabs are secure.

Mini-Tower Computer

Follow the steps in the "Removing the Control Panel" procedure in the reverse order, ensuring that all tabs are secure.

Drives

Dell Precision™ WorkStation 340 Service Manual

📝 **NOTE:** Cable ends are color coded so that black identifies the floppy-disk drive cable, yellow the front I/O panel cable, orange the secondary IDE cable, white the SCSI cable, and blue the primary IDE cable.

⚠️ **CAUTION: To avoid the possibility of electric shock, turn off the computer and any devices, disconnect them from their electrical outlets, and then wait at least 5 seconds before you open the computer cover. Also, before you install a drive, see the other precautions in "**Safety First—For You and Your Computer**."**

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

Removing and Installing a Floppy Drive—Small Desktop Computer

1. Unpack the drive and prepare it for installation.

   Check the documentation that accompanied the drive to verify that the drive is configured for your computer. Change any settings necessary for your configuration.

2. Open the computer cover.

3. If you are replacing a drive that is already installed in the bay, disconnect the power and floppy-drive cables from the back of the drive before you remove the drive and bracket assembly.

Floppy-Drive Cable Removal
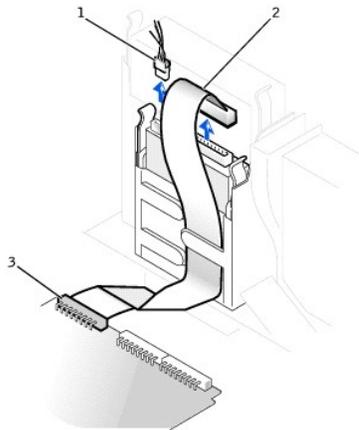
1	power cable
2	floppy-drive cable
3	floppy-drive connector

4. Press inward on the two tabs on the sides of the drive bay to disengage the bracket.

5. Slide the bracket upward, and remove it from the inside of the computer.

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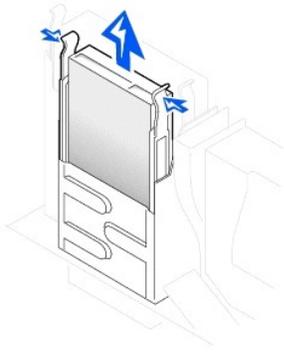
6. If the replacement drive does not have the bracket rails attached, remove the rails from the old drive by removing the two screws that secure each rail to the drive.

Drive-Rail Bracket Removal and Replacement
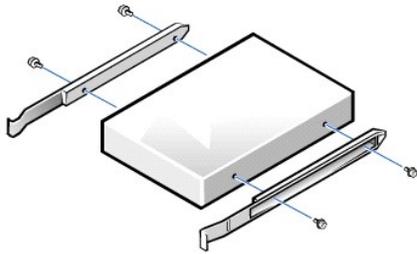
7. Attach the bracket to the new drive by aligning the screw holes on the drive with the screw holes on the rails and tightening all four screws.

8. Reinstall the 3.5-inch floppy drive and bracket assembly by gently sliding the bracket into place until the tabs securely click into position.

Floppy-Drive Installation
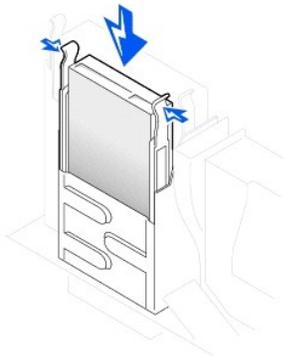
9. Connect the power cable and floppy drive cable to the connectors on the drive.

10. Close the computer cover, reconnect your computer and devices to their electrical outlets, and turn them on.

Floppy-Drive Cable Attachment
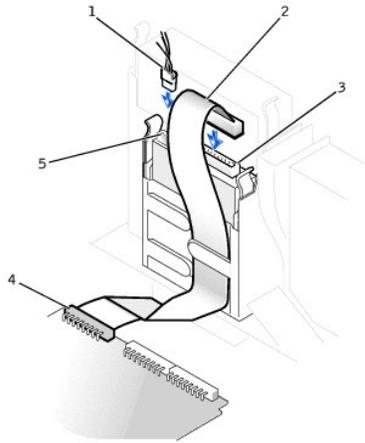
| 1	power cable	4	floppy-drive connector
2	floppy cable	5	power connector
3	floppy-cable connector		

Removing and Installing a Floppy Drive—Mini-Tower Computer

1. Unpack the drive and prepare it for installation.

   Check the documentation that accompanied the drive to verify that the drive is configured for your computer. Change any settings necessary for your configuration.

2. Open the computer cover.

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

4. Press inward on the two tabs on the sides of the drive bay to disengage the bracket.

5. Slide the drive upward, and remove it from the computer.

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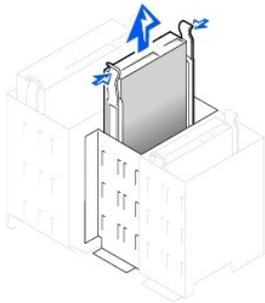
6. If the replacement drive does not have the bracket rails attached, remove the rails from the old drive by removing the two screws that secure each rail to the drive.

7. Attach the bracket to the new drive by aligning the screw holes on the drive with the screw holes on the bracket rails and tightening all four screws.

Drive Rail Bracket Removal and Replacement
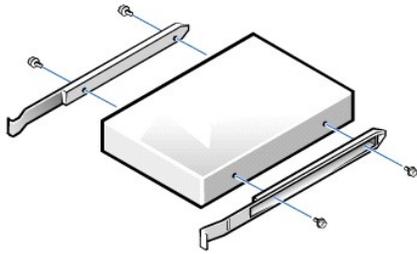
8. Gently slide the drive into place until the tabs securely click into position.

9. Attach the floppy-drive data cable to the back of the floppy drive.

10. Connect the power cable to the power input connector on the drive.

11. Close the computer cover, reconnect your computer and devices to their electrical outlets, and turn them on.

Floppy-Drive Cable Attachment
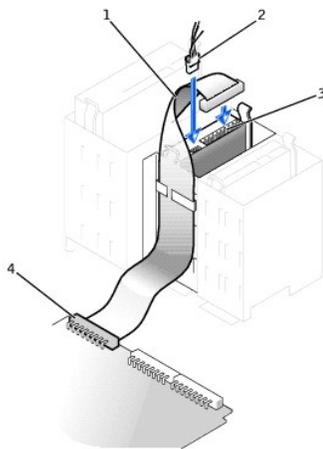
1	floppy-drive cable	3	floppy-drive cable connector
2	power cable	4	floppy-drive connector

Removing and Installing a 5.25-Inch Removable Media Drive— Small Desktop Computer

1. Unpack the drive and prepare it for installation.

   Check the documentation that accompanied the drive to verify that the drive is configured for your computer. Change any settings necessary for your configuration.

2. Open the computer cover.

3. Remove the removable media drive data cable from the drive.

4. Remove the power cable and audio cable from the drive.

Removable Media Cable Removal
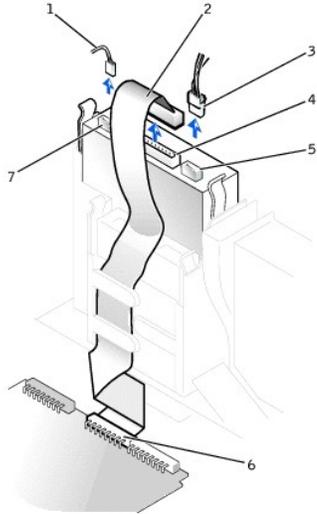
1	audio cable	5	power cable connector
2	removable media drive data cable	6	removable media drive connector (IDE SEC)
3	power cable	7	audio cable connector
4	data cable connector		

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

6. Slide the drive upward and remove it from the computer.
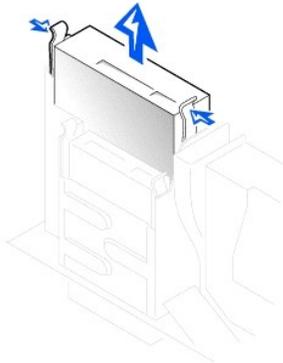
Removable Media Drive Removal

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

8. Attach the rails to the new drive by aligning the screw holes on the drive with the screw holes on the rails and tightening all four screws.

9. If you are installing a new drive, connect it to the set of rails that are attached to the inside of the cover.

Removable Media Drive Installation
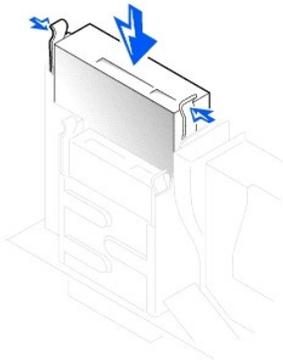
10. Reinstall the removable media drive and bracket assembly by gently sliding the bracket into place until the tabs securely click into position.

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

> **NOTE:** Problems may arise if two expansion cards are trying to use the same resources: memory, I/O addresses, and IRQs. To avoid this type of conflict, see "Interrupt Assignment Conflicts" in your *User's Guide* and the documentation that came with the card for more information.

12. Connect a power cable to the power cable connector on the back of the drive.

13. Connect the appropriate removable media drive data cable to the removable media drive connector on the back of the drive.

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

Removable Media Drive Cable Attachment
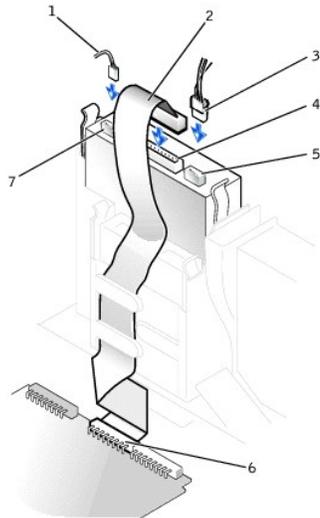
1	audio cable	5	power cable connector
2	removable media drive data cable	6	removable media drive connector (IDE SEC)
3	power cable	7	audio cable connector
4	data cable connector		

14. Connect the removable media drive data cable to the system board or a controller card, depending on the type of drive.

    l For a CD drive, connect the other end of the removable media drive data cable to the removable media data connector labeled "IDE SEC" on the system board.

    l For a drive that comes with its own controller card, connect the other end of the IDE drive data cable to the controller card.

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

16. If the removable media drive bay was previously empty, remove the front-panel insert from the front panel.

17. Close the computer cover, reconnect your computer and devices to their electrical outlets, and turn them on.

18. If necessary, update your configuration information in system setup.

19. Verify that your computer works correctly by running the Dell Diagnostics.

    For more information on using the Dell Diagnostics, see your *User's Guide*.

Removing and Installing a 5.25-Inch Removable Media Drive— Mini-Tower Computer

If you are replacing a removable media drive and bracket assembly, follow these instructions. If you are installing a new drive that does not have bracket rails attached, connect the drive to the set of rails that are attached to the inside of the cover.

📝 **NOTE:** If there are no screws with the bracket in the mini-tower computer, contact Dell. See "Getting Help" in your *User's Guide* for information on contacting Dell.

1. Unpack the drive and prepare it for installation.

   Check the documentation that accompanied the drive to verify that the drive is configured for your computer. Change any settings necessary for your configuration.

2. Open the computer cover.

3. Remove the removable media drive data cable from the removable media drive.

4. Remove the removable media drive power cable and audio cable from the removable media drive.

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

Removable Media Drive Removal
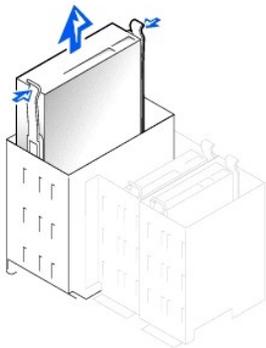
6. Slide the drive upward and remove it from the computer.

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

Drive Bracket Rail Removal and Replacement
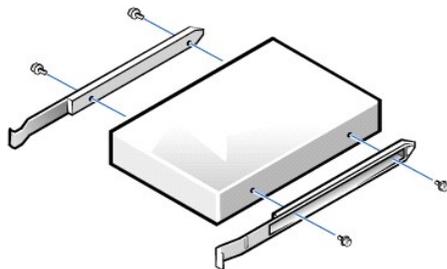
8. Attach the bracket to the new drive by aligning the screw holes on the drive with the screw holes on the bracket rails and tightening all four screws.

9. Reinstall the removable media drive and bracket assembly in the computer by gently sliding the drive into place until the tabs securely click into position.

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

NOTE: Problems may arise if two expansion cards are trying to use the same resources: memory, I/O addresses, and IRQs. To avoid this type of conflict, see "Interrupt Assignment Conflicts" in your *User's Guide* and the documentation that came with the card for more information.

11. Connect the removable media drive power cable and audio cable to the removable media drive.

12. **Connect the removable media drive data cable to the removable media drive.**

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

13. If the removable media drive bay was previously empty, remove the front-panel insert from the front panel.

Removable Media Drive Cable Attachment
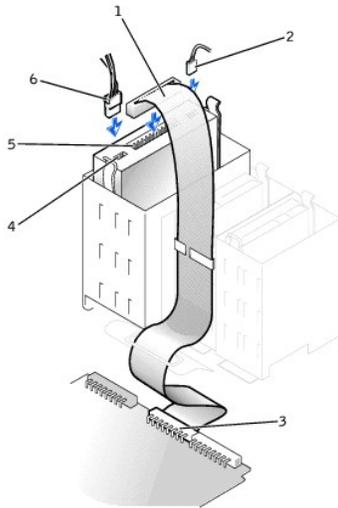
1	removable media drive data cable	4	power cable connector
2	audio cable	5	data cable connector
3	removable media drive connector (IDE SEC)	6	power cable

NOTE: If you install a second removable media drive, do not route the cable through the plastic clips on the side of the floppy-drive bay.

14. Close the computer cover.

Removing and Installing the Hard Drive—Small Desktop Computer

CAUTION: To avoid the possibility of electric shock, turn off the computer and any devices, disconnect them from electrical outlets, and then wait at least 5 seconds before you open the computer cover. Also, before you install a drive, see the other precautions in "Safety First—For You and Your Computer."

1. If you are replacing a hard drive that contains data you want to keep, be sure to make a backup of your files before you begin this procedure.

NOTE: For information on adding a SCSI drive, see the documentation that came with the drive and "SCSI Device Installation Guidelines."

NOTICE: 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.

2. Unpack the drive, and prepare it for installation.

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

3. Open the computer cover.

4. Remove the plastic shroud covering the hard drive by pressing in on the indented tab at the top of the shroud and lifting the shroud away.

Hard-Drive Shroud and Hard-Drive Removal
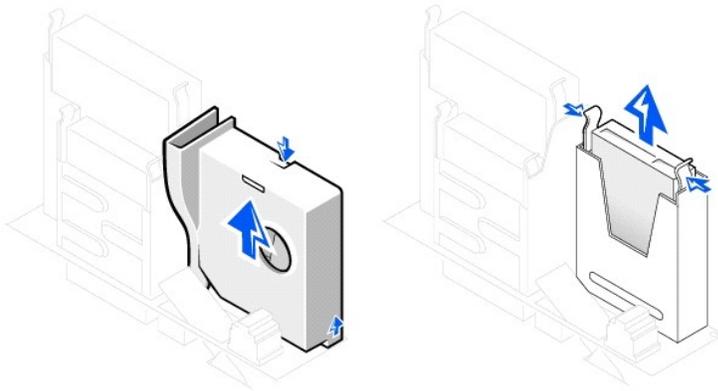
5. Disconnect the power and hard-drive data cables from the drive.

Hard-Drive Cable Removal
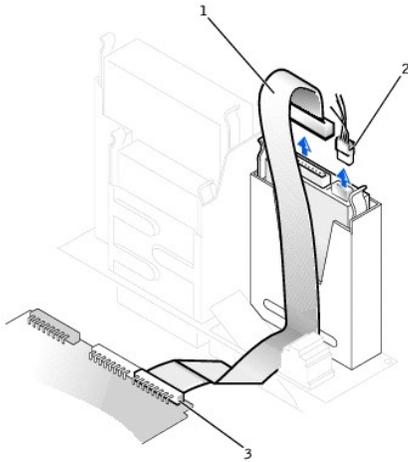
1	hard-drive data cable
2	power cable
3	hard-drive connector (IDE PRI)

6. Remove the drive bracket from inside the computer.

   a. If a hard drive is already installed in the drive bracket, disconnect the power and hard-drive data cables from the drive.

   b. Press in on the tabs on each side of the bracket, and slide it up and out.

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

Drive Bracket Rail Removal and Replacement
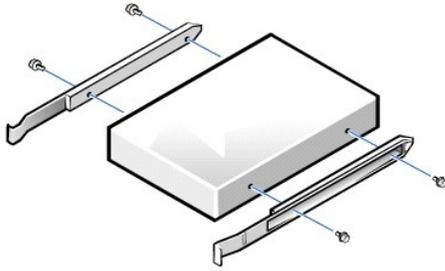
8. Attach the bracket rails to the new hard drive by aligning the four screw holes of the drive and bracket and then inserting and tightening the screws that came with your upgrade kit.

9. Reinstall the hard-drive bracket by gently sliding the bracket into place until you hear it securely click.

Installing a Hard Drive
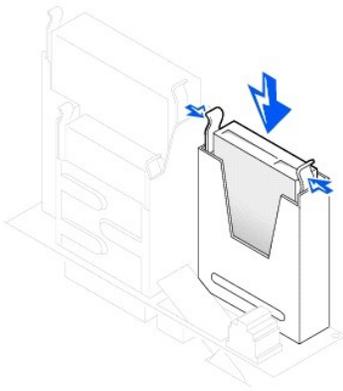
🚫 **NOTICE:** To avoid possible damage to the computer, you must match the colored stripe on the hard-drive data cable with pin 1 on the drive's data cable connector and with the IDE drive data connector (labeled IDE_PRI) on the system board.

10. Connect a power cable to the power cable connector on the drive, and connect the hard-drive data cable to the hard drive.

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

Hard-Drive Cable Attachment
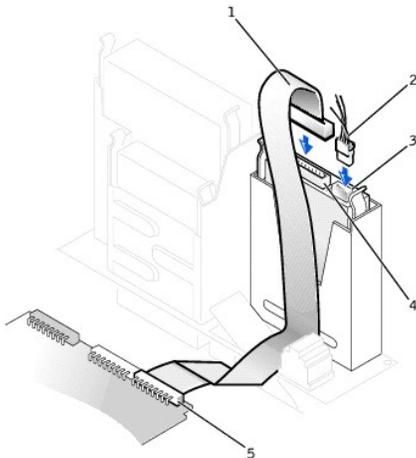
| 1 | hard-drive data cable | 4 | hard-drive data cable connector |

2	power cable	5	hard-drive connector (IDE PRI)
3	power cable connector		

11. If it is not already connected, connect the other end of the hard-drive data cable to the IDE PRI connector on the system board.

12. Replace the plastic shroud covering the drive by inserting the two tabs on the bottom into the holes and snapping the top into place.

13. Close the computer cover, reconnect your computer and devices to their electrical outlets, and turn them on.

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

15. Turn on the computer.

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

    See "System Settings" in your *User's Guide* for complete information on system setup.

17. Reset the chassis intrusion detector.

18. Restart the computer.

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

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

20. Test the hard drive by running the Dell Diagnostics.

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

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

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

Removing and Installing a Hard Drive—Mini-Tower Computer

1. If you are replacing a hard drive that contains data you want to keep, be sure to make a backup of your files before you begin this procedure.

NOTE: For information on adding a SCSI drive, see the documentation that came with the drive and "SCSI Device Installation Guidelines."

If you are adding a second hard drive to the mini-tower computer, see "Adding a Second Hard Drive."

NOTICE: 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.

2. Unpack the drive, and prepare it for installation.

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

3. Open the computer cover.

Hard Drive Removal
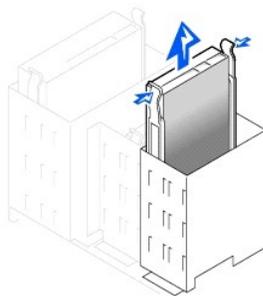
4. Disconnect the power and hard-drive data cables from the drive.

Hard-Drive Cable Removal
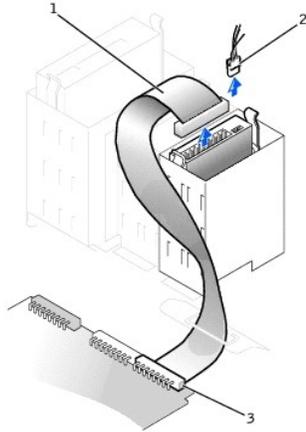
1	hard-drive data cable
2	power cable
3	hard-drive connector (IDE PRI)

5. Press in on the tabs on each side of the bracket, and slide it up and out.

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

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

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

7. If necessary, attach the bracket rails to the new hard drive by aligning the four screw holes of the drive and bracket and then inserting and tightening the screws that came with your upgrade kit.

8. Reinstall the hard-drive bracket by gently sliding the bracket into place until you hear it securely click.

Hard-Drive Replacement
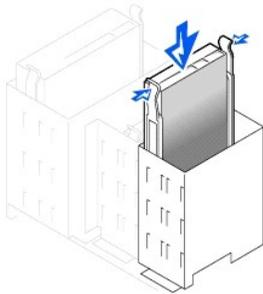
9. Connect a power cable to the power cable connector on the back of the drive, and connect the hard-drive data cable to the hard-drive data cable connector on the drive.

Hard-Drive Cable Attachment
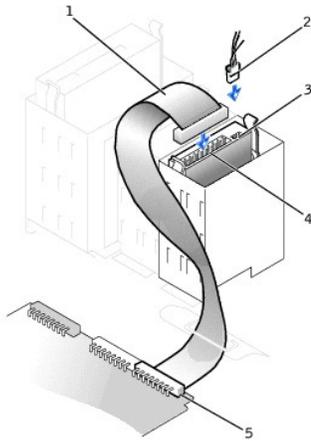
1	hard-drive data cable	4	hard-drive data cable connector
2	power cable	5	hard-drive connector (IDE PRI)
3	power cable connector		

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

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

11. If it is not already connected, connect the other end of the hard-drive data cable to the IDE_PRI connector on the system board.

12. Close the computer cover.

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

14. Turn on the computer.

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

    See "System Settings" in your *User's Guide* for complete information on system setup.

16. Reset the chassis intrusion detector.

17. Restart the computer.

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

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

19. Test the hard drive by running the Dell Diagnostics.

    See "Finding Solutions" in your *User's Guide* for complete information.

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

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

Adding a Second Hard Drive

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

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

1. Unpack the drive, and prepare it for installation.

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

2. Open the computer cover.

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

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

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

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

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

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

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

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

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

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

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

Second Hard Drive Installed
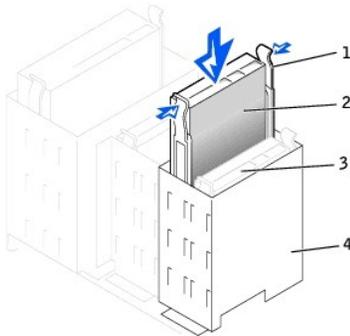
1	rail tabs (2)
2	second hard drive in upper bay
3	first hard drive in lower bay
4	hard drive cage

NOTICE: Match the colored strip on the cable with pin1 on the drive.

7. Locate the extra connector on the drive cable that is attached to the first hard drive and attach the connector to the second hard drive. For more information, see "IDE Drive Addressing."

IDE Drive Addressing

All IDE devices require that you configure the cable select setting, which assigns master and slave status to devices according to their position on the interface cable. You usually configure a drive for cable select by setting a jumper or switch, depending on the drive. Refer to the drive documentation in your upgrade kit for information on configuring devices for the cable select setting. When you connect two IDE devices to a single IDE interface cable and configure them for the cable select setting, the device attached to the last connector on the interface cable is the master or boot device (drive 0), and the device attached to the middle connector on the interface cable is the slave device (drive 1).

With the two IDE interface connectors on the system board, your computer supports up to two IDE devices. IDE hard drives should be connected to the IDE interface connector labeled "IDE PRI." (Always connect removable media drives to the IDE interface connector labeled "IDE SEC.")

Connecting Drives

When you install a drive, you connect two cables—a DC power cable and an interface cable—to the back of the drive. Your drive's power input connector (to which you connect the DC power cable) resembles the following connector.

Power Cable Connector
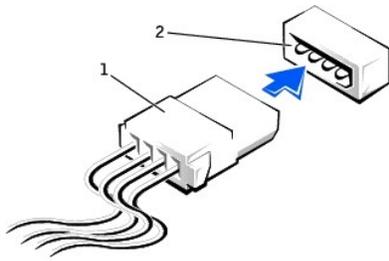
| 1 | power cable |
| 2 | power input connector |

The drive's interface connector is a card-edge connector or a header connector, as shown in the following figure.

Drive Interface Connectors
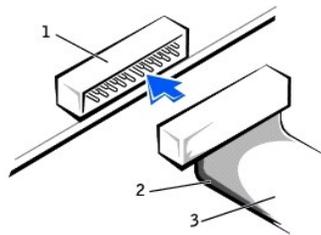
1	header connector
2	colored stripe on the cable
3	interface cable

When you attach the interface cable to a drive, be sure to match the colored stripe on the cable to pin 1 of the drive's interface connector. For the location of pin 1 on the drive's interface connector, see the documentation that came with the drive.

When you disconnect an interface cable from the system board, be sure to press in on the locking tabs on the cable connector before you disconnect the cable. When you attach an interface cable to the system board, be sure that the locking tabs snap into place so that the cable is firmly attached to the connector on the system board.

Most interface connectors are keyed for correct insertion; that is, a notch or a missing pin on one connector matches a tab or a filled-in hole on the other connector. Keyed connectors ensure that the pin-1 wire in the cable (indicated by the colored stripe along one edge of the cable) goes to the pin-1 end of the connector. The pin-1 end of a connector on a board or a card is usually indicated by a silk-screened "1" printed directly on the board or card.

◯ NOTICE: When you connect an interface cable, do not reverse the interface cable (do not place the colored stripe away from pin 1 of the connector). Reversing the cable prevents the drive from operating and could damage the controller, the drive, or both.

IDE Device Installation Guidelines

General Guidelines

With the two IDE drive cable connectors on the system board, your computer can support up to four IDE drives:

- Cable the primary IDE system-board connector to IDE hard drives.

- Cable the secondary IDE connector to IDE CD, DVD, tape, DAT, and zip drives.

To locate the IDE drive data connectors on the system board, see "System Board Components" or the interior service label. Each IDE drive data connector on the system board supports the following:

- Two devices, master and slave

- Logical blocking address (LBA)

- PIO Mode 3 and Mode 4

- Ultra ATA/100 (backward-compatible with ATA/66 and ATA/33)

IDE Cables

To transfer data at full speed, Ultra ATA/100 hard drives require an 80-conductor cable like that used with ATA/66 drives. The 80-conductor cable has a 40-pin connector like the ATA/33 cable, but it has twice as many wires within the cable. If you use an ATA/33 cable with Ultra ATA/100 hard drives, the drives will operate properly, but data will transfer at ATA/33 speeds.

NOTICE: Dell recommends that you use only IDE cables purchased from Dell. Cables purchased elsewhere are not guaranteed to work with Dell™ computers.

SCSI Device Installation Guidelines

To install a SCSI device, you can use one or both of the following SCSI controllers:

- The SCSI connector on the system board. To locate the SCSI system board connector, see "System Board Components" or the interior service label.

NOTE: The system board SCSI controller will support hard drives only. Do not connect CD or DVD drives, tape drives, DAT drives, and so on. An add-in SCSI controller can be installed in your computer for this purpose.

- A SCSI controller card installed in your computer.

SCSI ID Numbers

Internal SCSI devices must have a unique SCSI ID number from 0 to 15. Each SCSI bus will have a set of SCSI ID numbers from 0 to 15.

When SCSI devices are shipped from Dell, the default SCSI ID numbers are assigned as follows:

System Board Controller		Optional Controller Card	
Device	**ID**	**Device**	**ID**
Controller	7	Controller	7
Boot hard drive	0	Boot hard drive	0
		CD or DVD drive	5
		Tape or DAT drive	6
NOTE: There is no requirement that SCSI ID numbers be assigned sequentially or that devices be attached to the cable in order by ID number.			

SCSI devices installed by Dell are configured correctly during the manufacturing process. You do not need to set the SCSI ID for these SCSI devices.

If you attach additional optional SCSI devices, refer to the documentation for each device for information about setting the appropriate SCSI ID number.

NOTICE: Dell recommends that you use only SCSI cables purchased from Dell. Cables purchased elsewhere are not guaranteed to work with Dell computers.

Device Termination

SCSI logic requires that termination be enabled for the two devices at opposite ends of the SCSI chain and disabled for all devices in between.

Dell recommends that you use terminated cables and that you disable termination on all devices. See the documentation provided with any optional SCSI device you purchase for information on disabling termination on the device.

General Guidelines

Follow these general guidelines when installing SCSI devices in your computer:

- Although you install SCSI devices essentially the same way as other devices, their configuration requirements are different. For details on configuring your particular SCSI subsystem, refer to the documentation for your SCSI devices and/or your host adapter card.

- Configure the device for a SCSI ID number and disable termination, if necessary.

- To use an external SCSI device, you must have a SCSI controller card installed in your computer. Connect one end of the external SCSI cable to the connector on the back of the SCSI device. Attach the other end of the external SCSI cable to the connector on the controller card installed in the computer.

- After installing a SCSI hard drive, **Primary Drive 0** and **Primary Drive 1** should be set to **None** in system setup if no IDE hard drives are installed. If you have any IDE devices on the second IDE channel, such as a CD or tape drive, **Secondary Drive 0** and/or **Secondary Drive 1** should be set to **Auto**.

- You may need to use programs other than those provided with the operating system to partition and format SCSI hard drives. Refer to the documentation that came with your SCSI software drivers for information on installing the appropriate drivers and preparing your SCSI hard drive for use.

SCSI Cables

Ultra 160/m and Ultra2/Wide LVD drives (typically hard drives) both use a 68-pin cable. One end of the cable attaches to the SCSI connector on the system board or the SCSI controller card installed in your computer. The remaining connectors on the cable attach to the various drives.

Narrow SCSI drives (optional SCSI cards such as tape drives, CD drives, and some hard drives) use a 50-pin cable. One end of this cable attaches to the SCSI controller card. The remaining connectors on the cable attach to the various Narrow SCSI devices.

NOTICE: Dell recommends that you use only SCSI cables purchased from Dell. Cables purchased elsewhere are not guaranteed to work with Dell computers.

Protecting Against Electrostatic Discharge
Dell Precision™ WorkStation 340 Service Manual

Static electricity can harm delicate components inside your computer. To prevent static damage, discharge static electricity from your body before you touch any of your computer's electronic components, such as the microprocessor. You can do so by touching an unpainted metal surface on the computer.

As you continue to work inside the computer, periodically touch an unpainted metal surface to remove any static charge your body may have accumulated.

You can also take the following steps to prevent damage from electrostatic discharge (ESD):

- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the antistatic packing material until you are ready to install the component in your computer. Just before unwrapping the antistatic packaging, be sure to discharge static electricity from your body.

- When transporting a sensitive component, first place it in an antistatic container or packaging.

- Handle all sensitive components in a static-safe area. If possible, use antistatic floor pads and workbench pads.

Expansion Cards
Dell Precision™ WorkStation 340 Service Manual

Your computer provides expansion slots for the following cards:

l In the small desktop computer, up to two 32-bit, 33-MHz PCI cards.

l In the mini-tower computer, up to four 32-bit, 33-MHz PCI cards.

l One 32-bit AGP card. The expansion slot supports an AGP 4x (low profile in the small desktop computer) card operating at 1.5 V.

NOTE: To meet PC99 Workstation requirements, your Dell™ computer does not support ISA expansion cards. This is an industry standard for ease of use.

Expansion Card Types
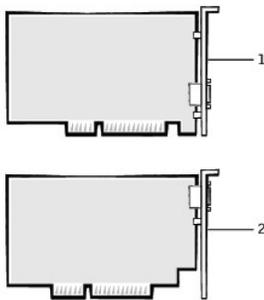
1	32-bit PCI card
2	AGP 4x card

NOTE: The AGP expansion slot only supports cards that use 1.5-V signaling.

Small Desktop Computer
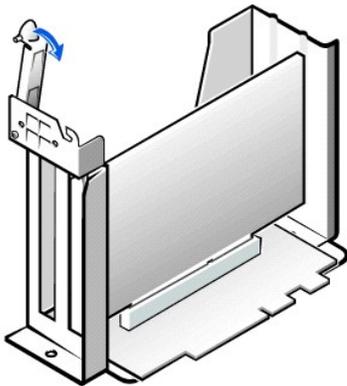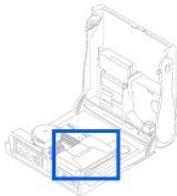
Mini-Tower Computer
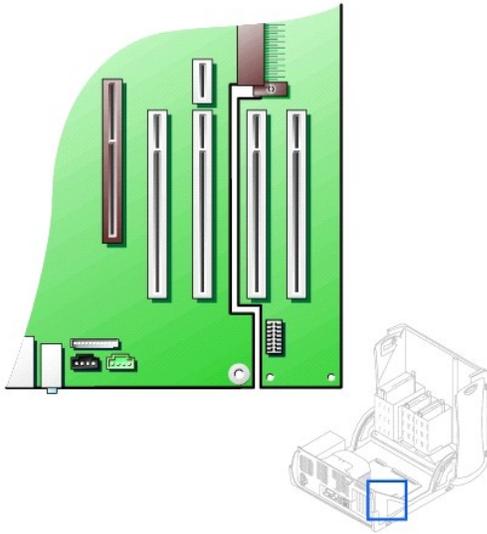
Installing an Expansion Card

⚠ **CAUTION: Before you perform this procedure, see "Safety First—For You and Your Computer."**

◯ **NOTICE:** Before disconnecting a device from the computer, wait 10 to 20 seconds after disconnecting the computer from its electrical outlet. Before removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see your computer's illustration in "System Board Components."

1. If you are replacing an expansion card, remove the current driver for the expansion card from the operating system.

2. Turn off the computer and devices, disconnect them from their electrical outlets, and wait 10 to 20 seconds.

3. Open the computer cover.

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

Expansion Card Retention Arm—Small Desktop Computer
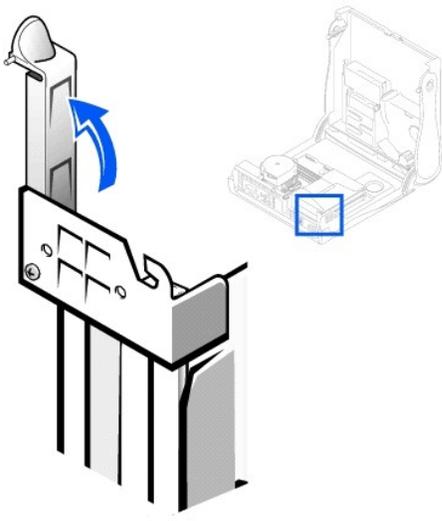
Expansion Card Retention Arm—Mini-Tower Computer
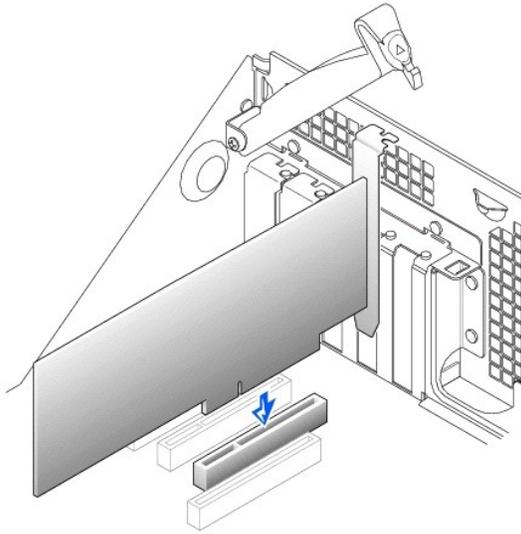
5. If you are installing a new expansion card, remove the filler bracket for an empty card-slot opening. Then continue with step 6.

6. If you are replacing an expansion card that is already installed in the computer, remove the expansion card.

   If necessary, disconnect any cables connected to the card. Grasp the card by its top corners, and ease it out of its connector.

7. Prepare the new expansion card for installation.

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

⚠️ **CAUTION: Some network adapters automatically start the computer when they are connected to a network. To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any expansion cards and verify that the standby power light on the system board has turned off. To locate this light, see your computer's illustration in "System Board Components."**

8. Insert the expansion card into the expansion-card connector and press down firmly. Make sure the card is fully seated in the slot.
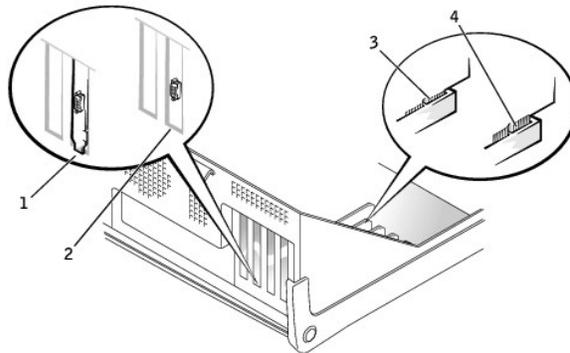
Expansion Card Connection

1	bracket is incorrectly seated outside of slot
2	bracket is correctly seated within slot
3	card is correctly seated in connector
4	card is incorrectly seated in connector

9. As you lower the retention arm, make sure that all expansion cards and filler brackets are flush with the alignment bar. Press the arm into place, securing the expansion card(s) in the computer.

Expansion Card Installation—Small Desktop Computer
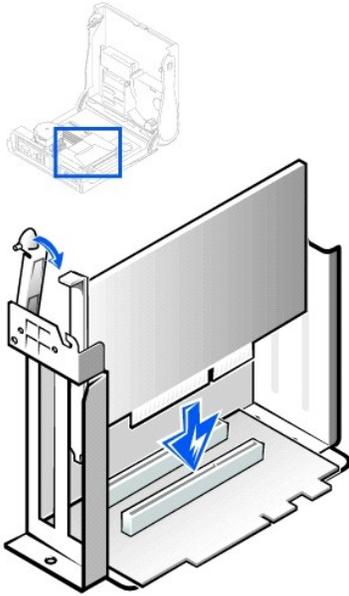
Expansion Card Installation—Mini-Tower Computer
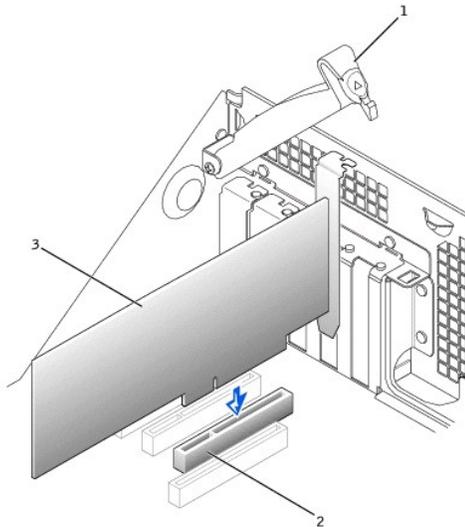
1	card retention arm
2	card connector
3	expansion card

10. Lower the expansion card retention arm and press it into place, securing the expansion card(s) in the computer.

11. Connect any cables that should be attached to the card.

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

NOTICE: Do not route expansion card cables over or behind the expansion cards. Cables routed over the expansion cards can prevent the computer cover from closing properly or cause damage to the equipment.

12. Close the computer cover.

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

14. Enter system setup and enable the new expansion card.

![NOTE icon] **NOTE:** If enabled, the <u>Chassis</u> **Intrusion** option will cause the following message to be displayed at the next computer start-up: `Alert! Cover was previously removed.` <u>Reset the chassis intrusion detector</u>.

If you installed a sound card, perform the following steps:

   a. Enter system setup, select **Integrated Devices (LegacySelect)** and change the setting for **Sound** to **Off**.

   b. Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the microphone, speaker/headphone, or line-in connectors on the computer back panel (see "<u>Inside Your Computer</u>").

If you installed an add-in network adapter, perform the following steps:

   a. Enter system setup, select **Integrated Devices (LegacySelect)** and change the setting for **Network Interface Card** to **Off**.

   b. Connect the network cable to the add-in network adapter's connectors. Do not connect the network cable to the integrated connector on the computer back panel (see "<u>Inside Your Computer</u>").

15. Install appropriate drivers for the expansion card.

Removing an Expansion Card

![CAUTION icon] **CAUTION: Before you perform this procedure, see "<u>Safety First—For You and Your Computer</u>."**

![NOTICE icon] **NOTICE:** Before disconnecting a device from the computer, wait 10 to 20 seconds after disconnecting the computer from its electrical outlet. Before removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see your computer's illustration in "<u>System Board Components</u>."

1. Turn off the computer and devices, disconnect them from their electrical outlets, and wait 10 to 20 seconds.

2. <u>Open the computer cover</u>.

3. Press the lever on the expansion card retention arm and raise the retention arm (see the <u>expansion card retention arm</u> illustration for your computer).

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

5. Grasp the card by its top corners, and ease it out of its connector.

6. If you are removing the card permanently, install a filler bracket in the empty card-slot opening.

   If you need a filler bracket, contact Dell.

![NOTE icon] **NOTE:** Installing filler brackets over empty card- slot openings is necessary to maintain FCC certification of the computer. The brackets also keep dust and dirt out of your computer.

7. Lower the expansion card retention arm and press it into place, securing the expansion card(s) in the computer.

8. <u>Close the computer cover</u>.

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

10. Uninstall the expansion card driver from the operating system.

![NOTE icon] **NOTE:** If enabled, the <u>Chassis</u> **Intrusion** option will cause the following message to be displayed at the next computer start-up: `ALERT! Cover was previously removed.` <u>Reset the chassis intrusion detector</u>.

11. Enter system setup and disable the expansion card.

   If you removed a sound card, perform the following steps:

   a. Enter system setup, select **Integrated Devices**, and change the setting for **Sound** to **On**.

   b. Connect external audio devices to the audio connectors on the computer back panel (see "<u>Inside Your Computer</u>").

   If you removed an add-in network adapter, perform the following steps:

   a. Enter system setup, select **Integrated Devices (LegacySelect)** and change the setting for **Network Interface Card** to **On**.

   b. Connect the network cable to the integrated connector on the computer back panel (see "<u>Inside Your Computer</u>").

Installing an AGP Graphics Card

![NOTE icon] **NOTE:** The small desktop computer supports low- profile AGP cards.

1. <u>Open the computer cover</u>.

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

   On the small desktop computer, press the indentation with your thumb at an angle toward the system board until you release the tab. Continue holding

the lever and pull the lever up.

AGP Slot Filler Bracket Removal—Small Desktop Computer
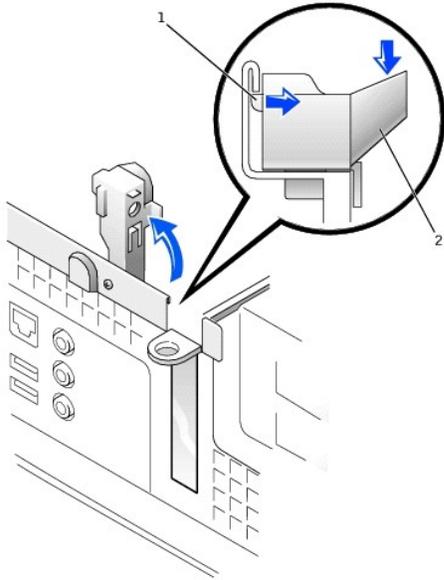
1	tab
2	indentation

AGP Slot Filler Bracket Removal—Mini-Tower Computer
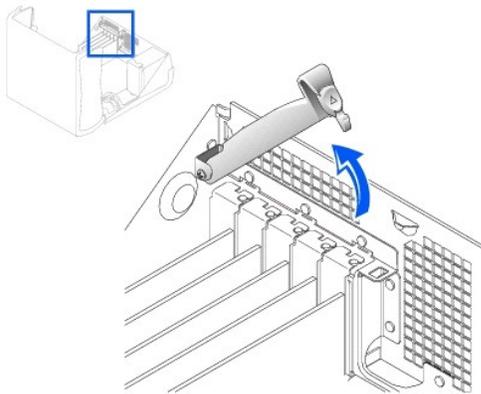
3. Press the AGP card clip lever toward PCI slot 1.

4. Slide the AGP card into place.

AGP Card Installation
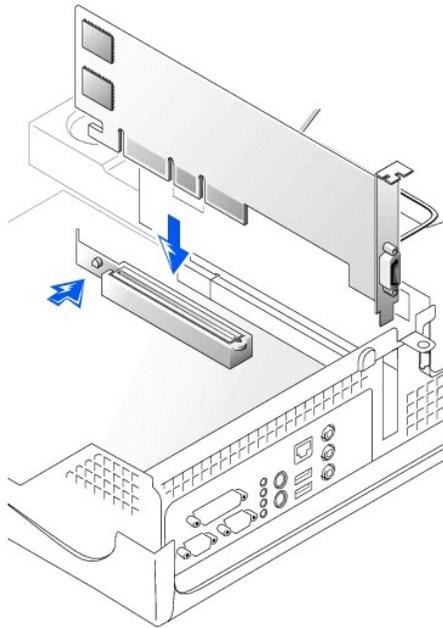
5. Release the AGP card clip lever, ensuring that the tab on the AGP card clip lever fits into the notch on the front end of the AGP card.

6. Secure the AGP card bracket by lowering the securing lever on the back panel.

7. Close the computer cover.

Removing an AGP Card

1. Raise the hinged lever on the back on the computer.

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

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

Back to Contents Page

Expansion Card Cage (Small Desktop Computer Only)
Dell Precision™ WorkStation 340 Service Manual

The PCI riser board in the small desktop computer has two PCI expansion card slots.

Removing the Expansion-Card Cage

⚠️ **CAUTION: Before you perform this procedure, see "Safety First—For You and Your Computer."**

1. Open the computer cover.

2. Check any cables connected to expansion cards through the back- panel openings. Disconnect any cables that will not reach the cage once it is removed from the computer.

Expansion-Card Cage Removal
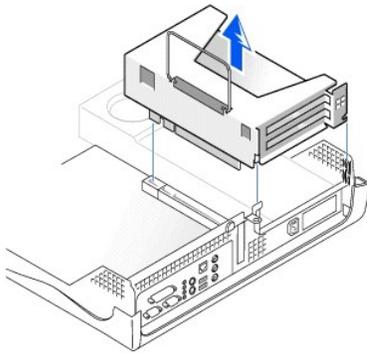
3. Gently pull on the handle and lift the expansion-card cage away from the computer.

Replacing the Expansion-Card Cage

1. Align the slots in the side of the expansion-card cage with the tabs on the side of the computer, and slide the expansion-card cage down into place.

Expansion-Card Cage Replacement
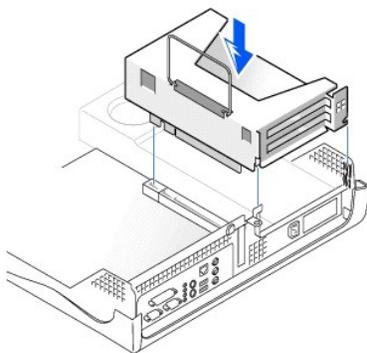
2. Make sure that the riser board is fully seated in the connector on the system board.

3. Reconnect any cables that you removed in step 2 of the previous procedure.

Front Panel Door and Hinge Arms
Dell Precision™ WorkStation 340 Service Manual

To prevent damage to your computer, the front door is designed to "break away" if it is lifted up too far. If the front door breaks away, you might need to reattach both the front door and the hinge arms.

Reattaching the Front Door

1. Shut down the computer.

2. Lower the hinge arms to the vertical position.

3. Align the two clips on the inside of the front door with the two hinge arms.

4. Press inward on the front door until it clips to both hinge arms.

Front Panel Door
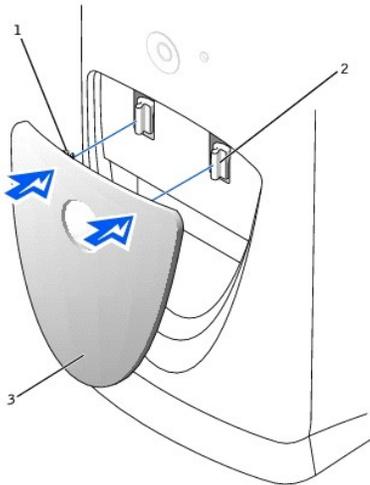
1	front-door clips (2)
2	hinge arms (2) in vertical position
3	front door

Reattaching the Hinge Arms

1. Shut down the computer.

2. Remove the front door, if attached.

    The front door snaps off of the two hinge arms.

3. Lift both hinge arms to the horizontal position. Then pull the arms toward you until they snap into place.

NOTICE: Using excessive force to pull the hinge arms into place may damage the arms or the front panel.

    If the hinge arms don't snap back into place on the first attempt, slightly reposition the arms and try again.

Hinge Arms
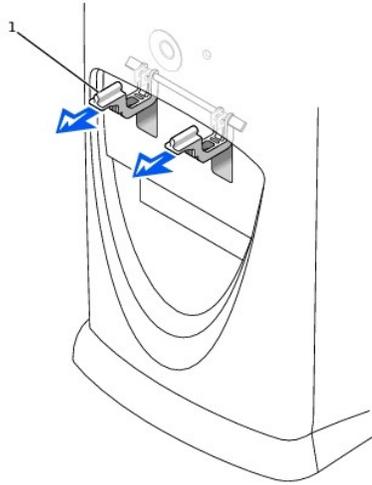
| 1 | hinge arms (2) in horizontal position |

4. After the hinge arms snap into place, lower and raise the arms two or three times to properly seat them.

5. Reattach the front door (see "Reattaching the Front Door").

Back to Contents Page

Front-Panel Inserts
Dell Precision™ WorkStation 340 Service Manual

Removing Front-Panel Inserts

⚠ **CAUTION: Before you perform this procedure, see "Safety First—For You and Your Computer."**

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 10 to 20 seconds, lay the computer on its side, and open the computer cover.

2. On the small desktop computer:

    a. Face the front of the computer and use your fingers to remove the front-panel cover.

    b. Press on the insert until it pops free of the front-panel cover.

3. On the mini-tower computer:

    a. Open the cover to a 90-degree angle and release the insert tabs from inside the computer.

    b. Press on the insert until it pops free of the front-panel cover.

Small Desktop Computer
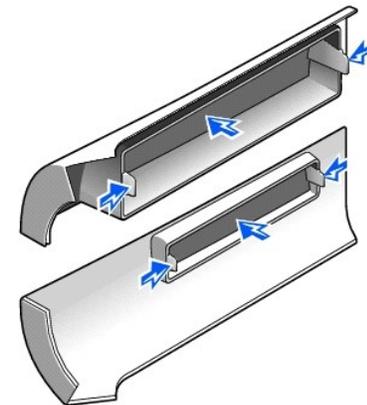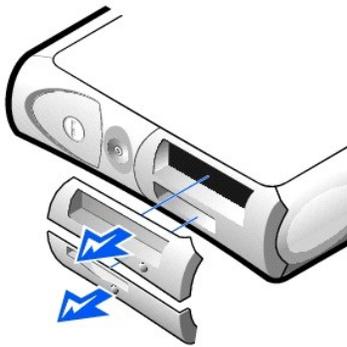
Mini-Tower Computer
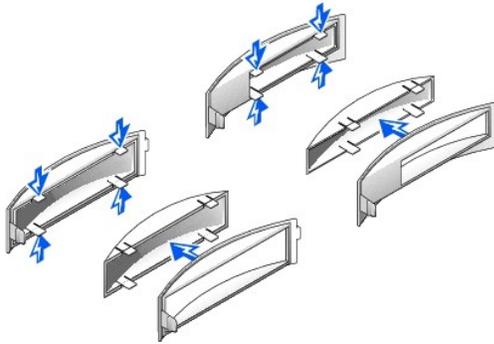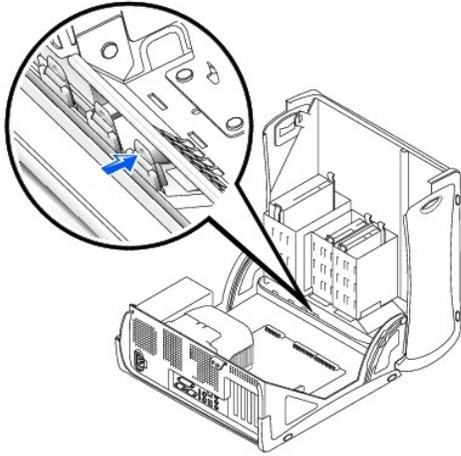
Replacing Front-Panel Inserts

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

Back to Contents Page

Inside Your Computer
Dell Precision™ WorkStation 340 Service Manual

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

Small Desktop Computer
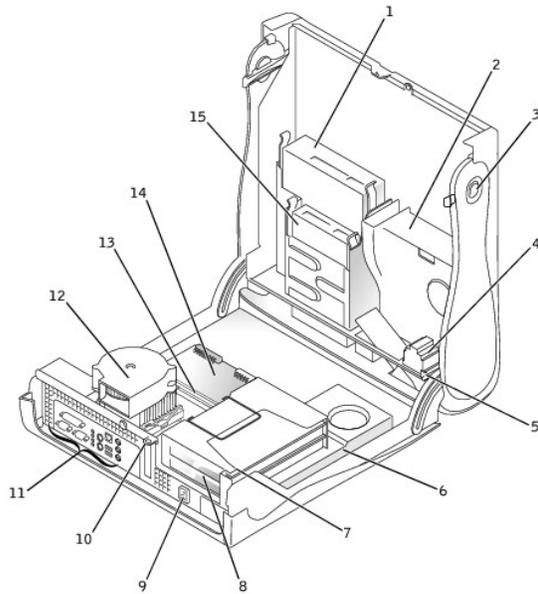
1	removable media drive	9	AC power connector
2	hard drive	10	padlock ring
3	cover release buttons (2)	11	back-panel connectors
4	speaker	12	microprocessor/blower assembly
5	chassis intrusion switch	13	memory modules
6	power supply	14	system board
7	expansion-card cage	15	floppy drive
8	PCI expansion-card slots (2)		

Mini-Tower Computer
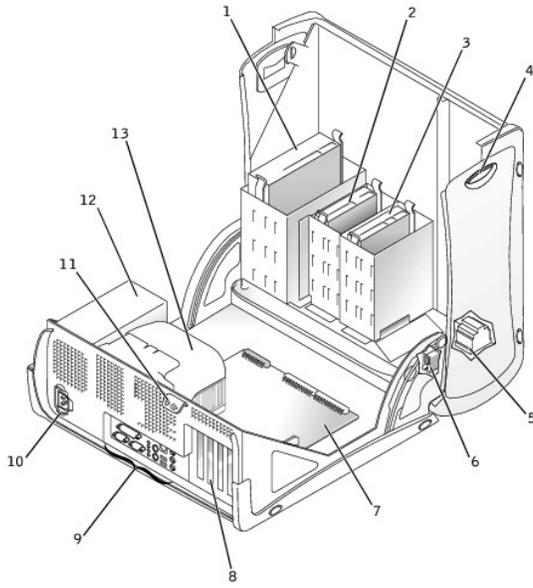
| 1	removable media drive	8	PCI expansion-card slots (4)
2	floppy drive	9	back panel connectors
3	hard drive	10	AC power connector
4	cover release buttons (2)	11	padlock ring
5	speaker	12	power supply
6	chassis intrusion switch	13	microprocessor airflow shroud
7	system board		

I/O Panel
Dell Precision™ WorkStation 340 Service Manual

Removing the I/O Panel—Small Desktop Computer

⚠ **CAUTION: Before you perform this procedure, see "Safety First—For You and Your Computer."**

⊘ **NOTICE:** Before disconnecting a device from the computer or removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 10 to 20 seconds, lay the computer on its side, and remove the computer cover.

2. Remove the hard-drive shroud.

3. Disconnect the hard-drive data cable.

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

5. Disconnect the front I/O cable from the front-panel connector on the system board (see "System Board Components" for the location of the front-panel connector).

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

Front I/O Panel Removal
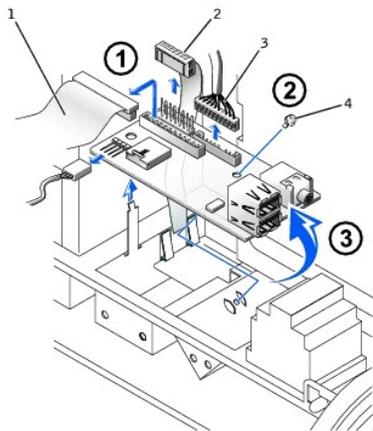
1	control-panel cable
2	front audio cable
3	front I/O cable
4	mounting screw

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

7. Remove the mounting screw that secures the front I/O panel to the computer.

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

## Removing the I/O Panel—Mini-Tower Computer

⚠ **CAUTION: Before you perform this procedure, see "Safety First—For You and Your Computer."**

⊘ **NOTICE:** Before disconnecting a device from the computer or removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

Front I/O Panel Removal
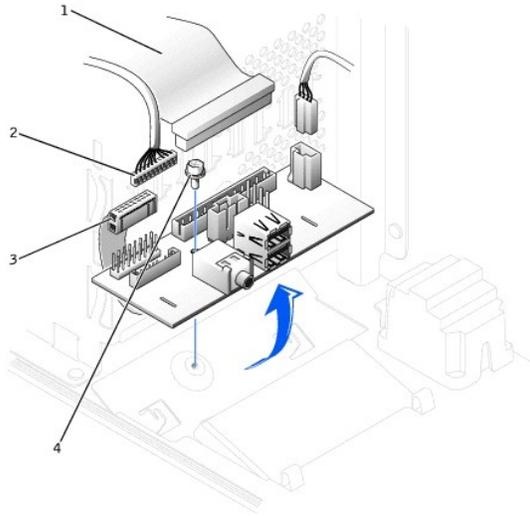
1	control-panel cable
2	front audio cable
3	front I/O cable
4	mounting screw

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

2. Disconnect the front I/O cable from the front-panel connector on the system board (see "System Board Components" for the location of the front-panel connector).

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

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

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

5. Rotate the front I/O panel towards the hard drive and remove the front I/O panel from the computer.

Replacing the I/O Panel

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

Back to Contents Page

Computer Memory
Dell Precision™ WorkStation 340 Service Manual

Your computer supports dual-channel RDRAM RIMMs in 64-, 128-, 256-, and 512-MB capacities. See "Computer Memory Installation Guidelines" for instructions you must follow when installing memory modules.

To locate the memory sockets on the system board, see "System Board Memory Components."

Memory Module Label
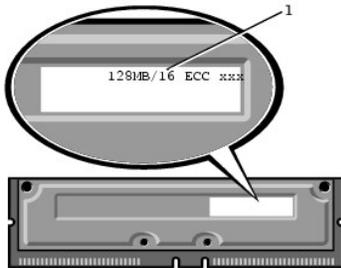
System Board Memory Components

| 1 | memory module sockets (RIMM 3 and 4) |
| 2 | memory module sockets (RIMM1 and 2) |

Computer Memory Installation Guidelines

l   Before you install new memory modules, download the most recent BIOS for your computer from the Dell | Support website at **support.dell.com**.

l   Each memory socket on the system board must be occupied either by a RIMM or a CRIMM.

Memory Modules
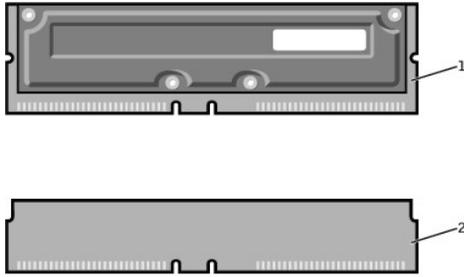
1	RIMM
2	CRIMM

NOTICE: If you remove your original memory modules from the computer during a memory upgrade, keep them separate from any new modules that you may have, even if you purchased the new modules from Dell. You must install your original memory modules in pairs either in connectors RIMM1 and RIMM2 or RIMM3 and RIMM4. Do not pair one original memory module with one new memory module. Otherwise, your computer may not start properly.

- l   Memory sockets must be upgraded in matched pairs. In other words, two sockets in a pair must contain modules of identical capacity, number of components, and speed. See "System Board Memory Components" to identify pairs of sockets.

- l   Mixed pairs of ECC and non-ECC modules all function as non-ECC.

- l   Be sure to install a RIMM in socket 1 first (closest to the processor) before installing modules in the other sockets.

- l   The system board supports PC800 memory modules.

Removing a Memory Module

⚠ **CAUTION: RIMMs can get very hot during normal operation. Be sure that the RIMMs have had sufficient time to cool before you touch them.**

⚠ **CAUTION: Before you perform this procedure, see "Safety First—For You and Your Computer."**

NOTICE: Before disconnecting a device from the computer, wait 10 to 20 seconds after disconnecting the computer from its electrical outlet. Before removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see your computer's illustration in "System Board Components."

1.   Turn off the computer and devices, disconnect them from their electrical outlets, and wait 10 to 20 seconds.

2.   Open the computer cover.

NOTICE: To avoid damage to the memory module, press the securing clips with equal force applied at each end of the memory socket.

3.   Press the securing clips at each end of the memory socket outward simultaneously until the module pops out slightly from the socket.

NOTICE: If you remove your original memory modules from the computer during a memory upgrade, keep them separate from any new modules that you may have, even if you purchased the new modules from Dell. You must install your original memory modules in pairs either in connectors RIMM1 and RIMM2 or RIMM3 and RIMM4. Do not pair one original memory module with one new memory module. Otherwise, your computer may not start properly.

4.   Lift the module away from the socket.

Removing a Memory Module
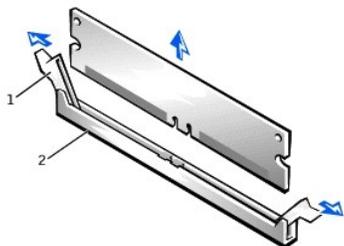
1	securing clips
2	memory module socket

Installing a Memory Module

1. If necessary, remove memory modules that occupy system board sockets in which you plan to install upgrade modules.

2. Press the securing clips at each end of the socket outward until they snap open.

3. Align the slots on the bottom of the module with the ridges inside the socket.

⊘ **NOTICE:** To avoid damage to the memory module, press the module straight down into the socket with equal force applied at each end of the module.

4. Press the module straight down into the socket until the securing clips snap into place at the ends of the module. You should hear a click when the module is correctly seated.

Installing a Memory Module
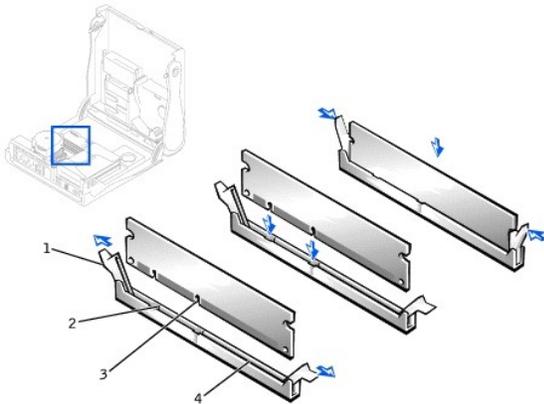
1	securing clips (2)	**3**	slots (2)
2	ridges (2)	**4**	memory module socket

5. Close the computer cover.

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

📝 **NOTE:** If enabled, the **Chassis Intrusion** option will cause the following message to be displayed at the next computer start-up: Alert! Cover was previously removed.Reset the chassis intrusion detector.

The computer detects that the new memory does not match the existing computer configuration information and generates the following message:

```
The amount of system memory has changed.
Strike the F1 key to continue, F2 to run the setup utility
```

7. Enter system setup, and check the value for **System Memory**. The computer should have already changed the value of **System Memory** to reflect the newly installed memory. If the new total is correct, skip to step 9.

8. If the memory total is incorrect, repeat step 1 through step 3. Check the installed modules to ensure that they are seated properly in their sockets. Then repeat step 7 through step 9.

9. When the **System Memory** total is correct, exit system setup.

10. Run the Dell Diagnostics to verify that the memory modules are operating properly.

For for information on running the Dell Diagnostics, see your *User's Guide.*

Microprocessor
Dell Precision™ WorkStation 340 Service Manual

Removing the Microprocessor

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

> ⚠ **CAUTION: The processor can get very hot during normal operation. Be sure that the processor has had sufficient time to cool before you touch it.**

> ⚠ **CAUTION: Before you perform this procedure, see "Safety First—For You and Your Computer."**

> ⬤ **NOTICE:** Before disconnecting a device from the computer, wait 10 to 20 seconds after disconnecting the computer from its electrical outlet. Before removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see your computer's illustration in "System Board Components."

1. Disconnect the fan power cable from the system board (see "System Board Components" for the location of the connector).

2. Disconnect the 12-volt power cable from the system board (see "System Board Components" for the location of the connector).

3. On the mini-tower computer, rotate the airflow shroud.

Airflow Shroud Rotation—Mini-Tower Computer
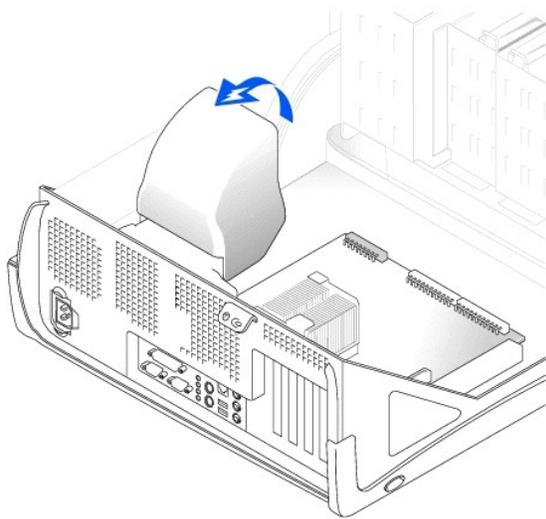
4. Remove the securing clips to remove the heat sink/blower assembly.

   On the small desktop computer, the heat sink is attached to the blower.

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

Heat Sink/Blower Assembly Removal—Small Desktop Computer
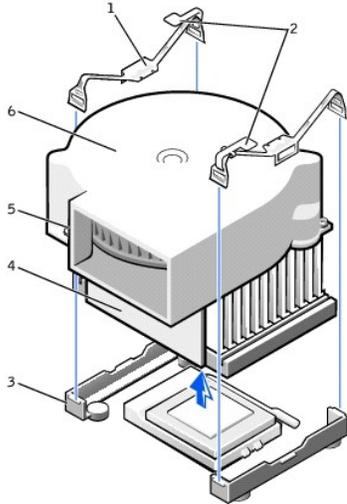
1	securing clips (2)	4	heat sink
2	latches (2)	5	screws (2)
3	retention base	6	blower

Heat Sink Removal—Mini-Tower Computer
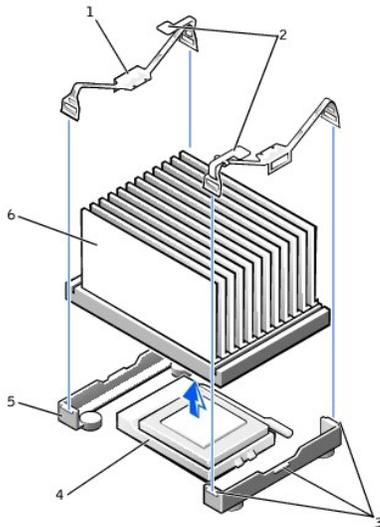
1	securing clips (2)	4	ZIF socket
2	latches (2)	5	retention base
3	tabs (3)	6	heat sink

NOTICE: Gently rock the heat sink and then lift it to remove.

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

6. On the small desktop computer, remove the two screws on the blower to remove it from the heat sink.

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

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

7. Pull the socket lever up straight up until the microprocessor is released.

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

Microprocessor Removal
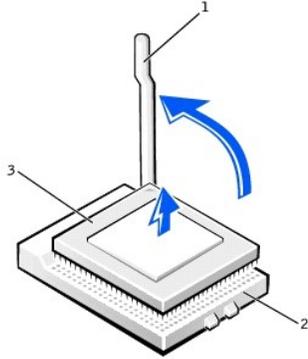
| 1	ZIF socket lever	3	microprocessor
2	ZIF socket		

8. Remove the microprocessor from the socket.

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

Installing the Microprocessor

🚫 **NOTICE:** You must position the microprocessor package correctly in the socket to avoid permanent damage to the microprocessor and the computer.

1. If the release lever on the ZIF socket is not extended to the release position, move it to that position.

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

✏️ **NOTE:** Pin 1 of the microprocessor is indicated by a small triangle in one corner of the microprocessor. Pin 1 of the socket is indicated by a small triangle in one corner of the socket.

Microprocessor Installation
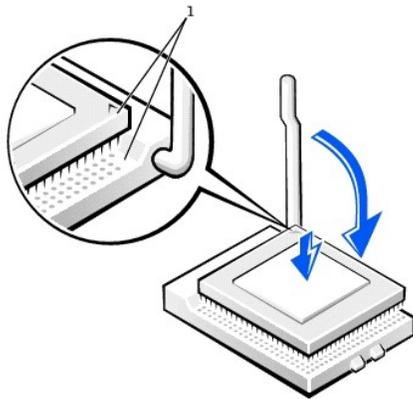
| 1 | pin-1 corners of microprocessor and the socket |

⊝ **NOTICE:** The microprocessor pins are delicate. To avoid damage, ensure that the microprocessor aligns properly with the socket, and do not use excessive force when installing the processor.

3. Carefully set the microprocessor in the socket and press it down lightly to seat it.

4. Rotate the lever toward the socket until it snaps into place, securing the microprocessor package.

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

5. If you are installing a new heat sink, remove the film covering the bottom of the heat sink.

6. On the small desktop computer, reinstall the two screws that attach the blower to the heat sink.

7. Lower the heat sink or blower/heat sink assembly to the microprocessor so that the heat sink fits in the retention base.

8. Fit the end of each securing clip that does *not* have the latch over its tab on the retention base. Then, fit the middle of the clip over the middle tab on the retention base, and press down on the clip's latch to secure the clip to the retention base.

9. On the mini-tower computer, lower the airflow shroud over the heat sink.

10. Plug the cooling fan power cable into its connector on the system board.

11. Plug the 12-volt power cable into its connector on the system board.

12. Close the computer cover, reconnect your computer and devices to their electrical outlets, and turn them on.

Checking Computer Functions

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

✎ **NOTE:** After you open and close the cover, the chassis intrusion detector causes the following message to be displayed at the next computer start-up: ALERT! Cover was previously removed. Reset the chassis intrusion detector.

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

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

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

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

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

Back to Contents Page

Power Supply

Dell Precision™ WorkStation 340 Service Manual

Removing the Power Supply

⚠️ **CAUTION: Before you perform this procedure, see "Safety First—For You and Your Computer."**

🛑 **NOTICE:** Before disconnecting a device from the computer, wait 10 to 20 seconds after disconnecting the computer from its electrical outlet. Before removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait 10 to 20 seconds, lay the computer on its side, and open the computer cover.

Small Desktop Computer
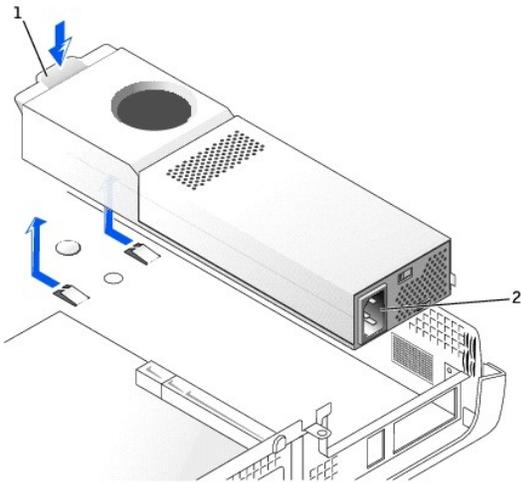
1	push button
2	AC power connector

Mini-Tower Computer
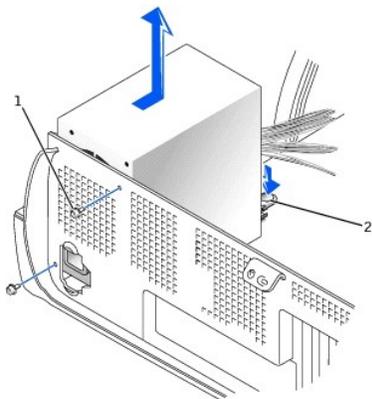
1	power supply screws (2)

2	push button

2. Disconnect the AC power cable from the back of the power supply.

3. Disconnect the DC power cables from the system board and the drives.

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

4. On the small desktop computer, remove the expansion-card cage and remove the power cables from the side of the hard drive. To remove the power cables, use the cables as leverage and pull away from the clips while simultaneously pulling on the metal clips with your fingers.

5. On the mini-tower computer, remove the two screws that secure the power supply.

6. Press the push button.

7. Slide the power supply toward the front of the computer approximately 1 inch.

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

Replacing the Power Supply

1. Slide the power supply into place.

2. Reconnect the DC power cables.

3. Connect the AC power cable to the connector.

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

5. Run the cables underneath the clips.

6. Press the clips to close them over the cables.

Safety First—For You and Your Computer

Dell Precision™ WorkStation 340 Service Manual

Use the following safety guidelines to help protect your computer system from potential damage and to ensure your own personal safety.

When Working Inside Your Computer

Before you open the computer cover, perform the following steps in the sequence indicated.

> **NOTICE:** Do not attempt to service the computer yourself, except as explained in your online Dell documentation or otherwise provided to you. Always follow installation and service instructions closely.

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

1. Perform an orderly computer shutdown using the operating system menu.

2. Turn off the computer and any devices.

3. Wear a wrist grounding strap, and clip it to an unpainted metal surface, such as the padlock loop on the back of the computer. If a wrist grounding strap is not available, ground yourself by touching an unpainted metal surface on the computer, such as the power supply, to discharge any static charge from your body before touching anything inside your computer.

   While you work, periodically touch an unpainted metal surface on the computer 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.

4. Disconnect your computer and devices from their power sources.

   Before disconnecting a device from the computer, wait 10 to 20 seconds after disconnecting the computer from its electrical outlet. Before removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

   Also, disconnect any telephone or telecommunication lines from the computer. Doing so reduces the potential for personal injury or shock.

In addition, take note of these safety guidelines when appropriate:

- When you disconnect a cable, pull on its connector or on its strain-relief loop, not on the cable itself. Some cables have a connector with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before disconnecting the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, make sure both connectors are correctly oriented and aligned.

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

Also see "Protecting Against Electrostatic Discharge." In addition, Dell recommends that you periodically review the safety instructions in your *Setup and Quick Reference Guide or System Information Guide*.


System Board Components
Dell Precision™ WorkStation 340 Service Manual

The following figures show the principal connectors and components on the system board. See "System Board" for information on removing the system board.

Small Desktop Computer
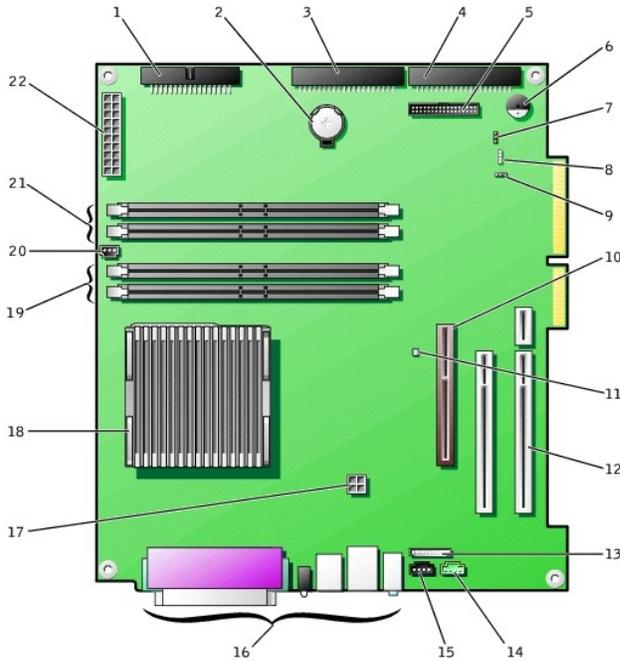
1	floppy-drive connector (FLOPPY)	12	PCI expansion-card connectors(2)
2	battery	13	front-panel audio connector
3	removable-media drive connector (IDE SEC)	14	telephony connector
4	hard-drive connector (IDE PRI)	15	CD audio connector
5	front panel connector	16	back panel connectors
6	system board speaker	17	microprocessor power connector
7	password jumper	18	microprocessor/heat sink assembly
8	auxiliary hard-drive activity light connector	19	memory module sockets (RIMM 1 and 2)
9	CLR CMOS jumper	20	fan power connector
10	AGP card connector	21	memory module sockets (RIMM 3 and 4)
11	standby power light	22	main power connector

Mini-Tower Computer
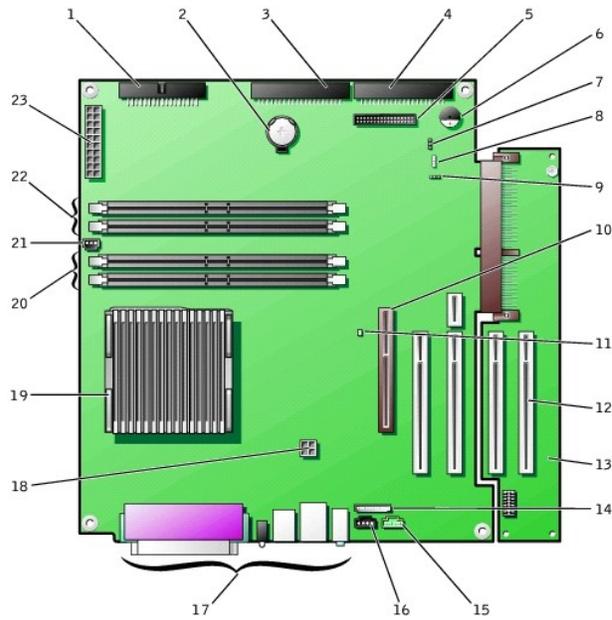
| 1	floppy-drive connector (FLOPPY)	13	PCI riser board
2	battery	14	front-panel audio connector
3	removable-media drive connector (IDE SEC)	15	telephony connector
4	hard-drive connector (IDE PRI)	16	CD audio connector
5	front panel connector	17	back panel connectors
6	system board speaker	18	microprocessor power connector
7	password jumper	19	microprocessor/heat sink assembly
8	auxiliary hard-drive activity light connector	20	memory module sockets (RIMM 1 and 2)
9	CLR CMOS jumper	21	fan power connector
10	AGP card connector	22	memory module sockets (RIMM 3 and 4)
11	standby power light	23	main power connector
12	PCI expansion-card connectors (4)		

System Board Labels

Connector or Component	Label
AGP	AGP card connector
AUDIO	Audio connectors
BATTERY	Battery socket
CD	CD audio connector
CLR CM	Clear CMOS jumper
CPU	Microprocessor/heat sink assembly
DIAG LED	Diagnostic lights
FAN1	Microprocessor fan connector
FLOPPY	Floppy-drive connector
FNT PNL	Front panel connector
FNT PNL AUDIO	Front-panel audio connector
KEY BRD_MOUSE	PS/2 keyboard and mouse connectors
MAIN POWER	Main power connector
PARALLEL	Parallel connector
PCI*n*	PCI expansion-card connector
IDE PRI	Hard drive connector secondary IDE connector
IDE SEC	Removable-media drive connector

PSWD	Password jumper
RIMM_n	Memory module socket
SERIAL_n	Serial connectors (2)
SCSI	Auxiliary hard-drive activity light connector
SPEAKER	System board speaker
STANDBY_LED	Standby power light
TELE	Telephony (TAPI) connector
USB_LAN	Network and Port 1 USB (2) connectors

Jumpers

System Board Jumpers
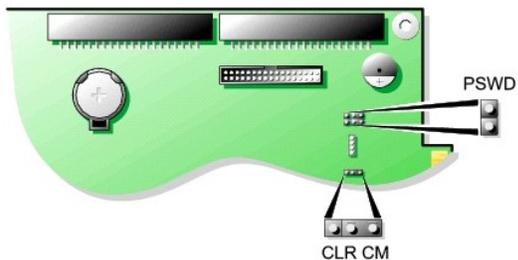
NOTICE: Before changing a jumper setting, verify that the standby power light on the system board has turned off. Otherwise, damage to your computer or unpredictable results may occur. To locate this light, see "System Board Components."

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

System-Board Jumper Settings

Jumper	Setting	Description
PSWD	(default)	Password features are enabled.
		Password features are disabled.
CLR CM	(pins 1 and 2)	Normal setting—pins 1 and 2 are jumpered.
	(pins 2 and 3)	CLR CM setting—pins 2 and 3 are jumpered. See "Reset Corrupted BIOS Settings" in your *User's Guide*.
jumpered unjumpered		

NOTE: The CLR CM settings are also located on the system board next to the AGP card clip tab.

Back to Contents Page

System Board
Dell Precision™ WorkStation 340 Service Manual

Removing the System Board

⚠ **CAUTION: Before you perform this procedure, see "Safety First—For You and Your Computer."**

⊘ **NOTICE:** Before disconnecting a device from the computer or removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

1. Write down your BIOS settings before you turn off your computer.

   See the *User's Guide* that came with your computer for instructions to find your BIOS settings.

2. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 10 to 20 seconds, lay the computer on its side, and open the computer cover.

⚠ **CAUTION: Before you remove any component from the system board, read the steps in "Safety First—For You and Your Computer."**

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

3. Remove any components that restrict access to the system board.

4. Disconnect all cables from the system board.

5. Before you remove the existing system board, visually compare the replacement system board to the existing system board to make sure that you have the correct part.

6. Pull up on the tab and slide the system board toward the front of the computer; lift it up and away.
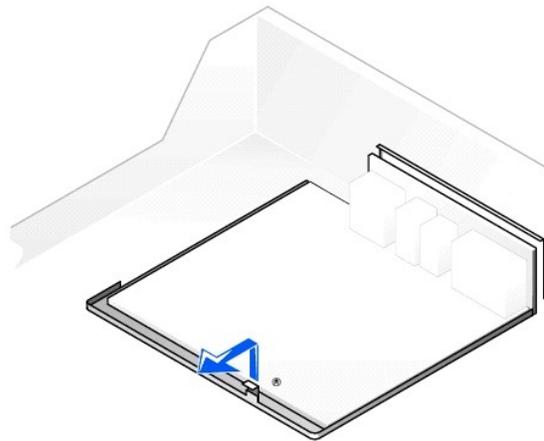
Removing the System Board

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

Replacing the System Board

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

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

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

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

4. Configure the settings of the replacement system board.

5. Set the jumpers on the replacement system board they are identical to the one on the existing board.

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

6. Orient the replacement board by aligning the notches on the bottom to the tabs on the computer floor.

7. Slide the board toward the back of the computer until it clicks into place.

8. Replace any components and cables that you removed from the system board.

9. Reconnect all cables to their connectors at the back of the computer, close the computer cover, and reconnect the computer and devices to their power sources and turn them on.

NOTE: After you close the cover, the chassis intrusion detector causes the following message to be displayed at the next computer start-up: `Alert! Cover was previously removed.` Reset the chassis intrusion detector.

10. Set the jumpers on the new system board so that they are identical to those on the original board.

11. Run system setup to ensure that your settings are correct and that all system board components are correctly identified.

12. Run the Dell Diagnostics to verify that the computer is operating properly.

For more information on system setup and the Dell Diagnostics, see your *User's Guide*.

Back to Contents Page

Dell Precision™ WorkStation 340 Service Manual

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

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

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

_____

Information in this document is subject to change without notice.
© 2003 Dell Computer Corporation. All rights reserved.

Reproduction in any manner whatsoever without the written permission of Dell Computer Corporation is strictly forbidden.

Trademarks used in this text: *Dell*, the *DELL* logo, and *Dell Precision* are trademarks of Dell Computer Corporation.

Other trademarks and trade names may be used in this document to refer to either the entities claiming the marks and names or their products. Dell Computer Corporation disclaims any proprietary interest in trademarks and trade names other than its own.

March 2003 Rev. A02