

Dell™ Vostro™ 230s Service Manual—Slim Tower

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Notes, Cautions, and Warnings

-  **NOTE:** A NOTE indicates important information that helps you make better use of your computer.
-  **CAUTION:** A CAUTION indicates potential damage to hardware or loss of data if instructions are not followed.
-  **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

If you purchased a Dell™ n Series computer, any references in this document to Microsoft® Windows® operating systems are not applicable.

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March 2010 Rev. A00

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System Setup

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Boot Menu

Press <F12> when the Dell™ logo appears to initiate a one-time boot menu with a list of the valid boot devices for the system.

The options listed are:

Internal HDD
CD/DVD/CD-RW Drive
Onboard NIC
BIOS Setup
Diagnostics

This menu is useful when you are attempting to boot to a particular device or to bring up the diagnostics for the system. Using the boot menu does not make any changes to the boot order stored in the BIOS.

Navigation Keystrokes

Use the following keystrokes to navigate the System Setup screens.

Navigation Keystrokes	
Action	Keystroke
Expand and collapse field	<Enter>, left- or right-arrow key, or +/-
Expand or collapse all fields	< >
Exit BIOS	<Esc>—Remain in Setup, Save/Exit, Discard/Exit
Change a setting	Left or right-arrow key
Select field to change	<Enter>
Cancel modification	<Esc>
Reset defaults	<Alt><F> or Load Defaults menu option

Entering System Setup

Your computer offers the following BIOS and System Setup options:

- ı Bring up a one-time boot menu by pressing <F12>
- ı Access System Setup by pressing <F2>

<F12> Menu

Press <F12> when the Dell™ logo appears to initiate a one-time boot menu with a list of the valid boot devices for the computer. **Diagnostics** and **Enter Setup** options are also included in this menu. The devices listed on the boot menu depend on the bootable devices installed in the computer. This menu is useful when you are attempting to boot to a particular device or to bring up the diagnostics for the computer. Making changes in the boot menu does not make any changes to the boot order stored in the BIOS.

<F2>

Press <F2> to enter System Setup and make changes to user-definable settings. If you have trouble entering System Setup using this key, press <F2> when the keyboard lights first flash.

System Setup Menu Options



NOTE: System Setup options may vary depending on your computer and may not appear in the exact same order.

System Info	
System Info	The System Info page provides the basic configuration information. You cannot change these options. The following information is available: <ul style="list-style-type: none">ı BIOS Versionı Service Tagı Processor Typeı Processor L2 Cacheı Installed Memoryı Memory Speedı Memory Channel Modeı Memory Type



Main	
System Time	System Time allows you to set the desired time (usually the current time) in the <hour><minute><second> format.
System Date	System Date allows you to set the desired date (usually the current day) in the <day><month><date><year> format. <ul style="list-style-type: none"> <input type="checkbox"/> Day — Choose the day of the week, defined by BIOS (read-only) <input type="checkbox"/> Month — Choose the month <input type="checkbox"/> Date — Choose the date, which you can change using the keyboard. <input type="checkbox"/> Year — Set the year.
SATA	The computer only supports two hard drives, however the system setup can support up to four SATA hard drives. When you enter System Setup it detects the presence of SATA devices. Pressing <Enter> displays the SATA 0 - 3 sub-menus. These sub-menus displays the status of the auto detection. The following information is displayed: <ul style="list-style-type: none"> <input type="checkbox"/> Device <input type="checkbox"/> Vendor <input type="checkbox"/> Size (only displayed when the Hard Drive is detected)
S.M.A.R.T. Reporting	This field controls whether errors for integrated drives are reported while booting the computer. This technology is part of the SMART (Self Monitoring Analysis and Reporting Technology) specification. <ul style="list-style-type: none"> <input type="checkbox"/> Auto (default) <input type="checkbox"/> Off
Halt On Error	During the power-on self-test (POST), the computer stops if the system setup detects a hardware error. You can configure the system setup to ignore certain errors during POST and continue the boot-up process. Available settings are: <ul style="list-style-type: none"> <input type="checkbox"/> Disabled <input type="checkbox"/> Enabled (default)
Keyboard Errors	During the power-on self-test (POST), the computer detects keyboard error. You can configure the BIOS to enable or disable error reporting during POST. Available settings are: <ul style="list-style-type: none"> <input type="checkbox"/> Report (default) <input type="checkbox"/> Do not report
Fan Errors	During the power-on self-test (POST), the computer detects fan error. You can configure the BIOS to enable or disable error reporting during POST. Available settings are: <ul style="list-style-type: none"> <input type="checkbox"/> Report (default) <input type="checkbox"/> Do not report
Advanced	
CPU Information	<p>Max CPUID Value Limit — The maximum CPUID input value determines the values that the operating system can write to the CPUID's EAX register to obtain information about the processor. Available Settings are: <ul style="list-style-type: none"> <input type="checkbox"/> Enable <input type="checkbox"/> Disable (default) </p> <p>Intel® Virtualization Tech — Intel® Virtualization Technology (Intel® VT) is comprised of a set of processor enhancements that improve traditional software-based virtualization solutions. Allows a computer to run multiple operating systems and applications as independent virtual machines. Using virtualization capabilities, one computer can function as multiple "virtual" computers. Available Settings are: <ul style="list-style-type: none"> <input type="checkbox"/> Enable (default) <input type="checkbox"/> Disable </p> <p>Execute Disable Bit — Execute Disable Bit (EDB) is an Intel hardware-based security feature that can help reduce your computers exposure to viruses and malicious code. This feature allows the processors to specify areas on the memory where application codes can or cannot execute. When a malicious worm attempts to insert code in the buffer, the processor disables the code's execution, preventing damage and worm propagation. Available Settings are: <ul style="list-style-type: none"> <input type="checkbox"/> Enable (default) <input type="checkbox"/> Disable </p>
Integrated Graphics Configuration	<p>Initiate Graphic Adapter — Allows you to enable or disable the VGA controller. Available Settings are: <ul style="list-style-type: none"> <input type="checkbox"/> PEG/PCI (default) <input type="checkbox"/> PEG <input type="checkbox"/> PCI </p> <p>Video Memory Size — Allows you to set the size of the Video Memory. Available Settings are: <ul style="list-style-type: none"> <input type="checkbox"/> 32 MB (default) <input type="checkbox"/> 64 MB <input type="checkbox"/> 128 MB </p> <p>DVMT Model Select — Intel's Dynamic Video Memory Technology (DVMT) allows the computer to dynamically allocate memory resources according to the demands of the computer at any point in time. The DVMT improves the efficiency of the memory allocated to either computer's or graphic's processor. Available Settings are:</p>

	<ul style="list-style-type: none"> <input type="radio"/> DVMT Mode (default) <input type="radio"/> UMA Mode <p>DVMT/FIXED Memory — Allows you to set the size of the DVMT/FIXED Memory. Available Settings are:</p> <ul style="list-style-type: none"> <input type="radio"/> 128 MB <input type="radio"/> 256 MB (default) <input type="radio"/> Maximum DVMT
Integrated Peripherals Configuration	<p>ATA/IDE Configuration —</p> <ul style="list-style-type: none"> <input type="radio"/> Disabled <input type="radio"/> Compatible <input checked="" type="radio"/> PEG/PCI (default) <p>USB Functions —</p> <ul style="list-style-type: none"> <input checked="" type="radio"/> Enabled (default) <input type="radio"/> Disabled <p>USB Storage Functions —</p> <ul style="list-style-type: none"> <input checked="" type="radio"/> Enabled (default) <input type="radio"/> Disabled <p>Audio Controller —</p> <ul style="list-style-type: none"> <input checked="" type="radio"/> Enabled (default) <input type="radio"/> Disabled <p>Integrated NIC —</p> <ul style="list-style-type: none"> <input checked="" type="radio"/> Enabled (default) <input type="radio"/> Disabled <p>LAN Boot ROM —</p> <ul style="list-style-type: none"> <input checked="" type="radio"/> Enabled (default) <input type="radio"/> Disabled <p>Serial Port Address —</p> <ul style="list-style-type: none"> <input type="radio"/> 3F8/IRQ4 (default) <input type="radio"/> 2F8/IRQ3 <input type="radio"/> 3E8/IRQ4 <input type="radio"/> 2E8/IRQ3 <p>Bootup Num-Lock —</p> <ul style="list-style-type: none"> <input checked="" type="radio"/> On (default) <input type="radio"/> Off <p>Quick Boot —</p> <ul style="list-style-type: none"> <input checked="" type="radio"/> Enabled (default) <input type="radio"/> Disabled

Power	
Low Power Mode	<p>Enables or disables low power mode.</p> <p>This option is disabled by default.</p> <p>When low power mode is enabled, the integrated network card is disabled when the computer shuts down or hibernates. Only add-in network cards will be able to remotely wake the computer.</p>
Suspend mode	<p>Sets the energy-saving mode of the ACPI function. It determines the Standby mode in the operating system. Available settings are:</p> <ul style="list-style-type: none"> <input type="radio"/> S1 (POS) <input checked="" type="radio"/> S3 (STR) (default) <p>When you select S1 (POS) mode, the power does not shut off and the supply status remains as it is. But when you select S3 (STR) mode, the power is cut off after a delay. The computer's status before it enters STR is saved in memory, and the computer can quickly return to that previous status when the STR function wakes.</p>
USB Wakeup From S3	<p>Allows the system to wake up from USB peripheral that supports wake from USB. Available settings are:</p> <ul style="list-style-type: none"> <input checked="" type="radio"/> Enabled (default) <input type="radio"/> Disabled
Restore on AC Power Loss	<p>Determines what action the computer will take when power is restored. Available settings are:</p> <ul style="list-style-type: none"> <input type="radio"/> Last State <input type="radio"/> On <input checked="" type="radio"/> Off (default)
Resume by PS2	<p>Allows the computer to resume back after go to standby using PS2 Devices. Available settings are:</p>

Devices	<ul style="list-style-type: none"> <input type="radio"/> Enabled (default) <input type="radio"/> Disabled
Resume on LAN	Allows the system to resume from an onboard LAN, PCIE-X1 LAN card, or a PCI LAN card. Available settings are: <ul style="list-style-type: none"> <input type="radio"/> Enabled <input checked="" type="radio"/> Disabled (default)
Resume on RTC Alarm	You can set the alarm to enabled and key in Data/time to power on system Available settings are: <ul style="list-style-type: none"> <input type="radio"/> Enabled <input checked="" type="radio"/> Disabled (default)
Security	
Supervisor Password	Provides restricted access to the computer's system setup program in the same way that access to the system can be restricted with the System Password option . This option is not set by default.
Boot	
Boot Sequence	Specifies the Boot Device Priority sequence from available devices.

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Diagnostics

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Dell Diagnostics

When to Use the Dell Diagnostics

It is recommended that you print these procedures before you begin.

 **NOTE:** The Dell Diagnostics software works only on Dell computers.

 **NOTE:** The *Drivers and Utilities* media is optional and may not ship with your computer.

Enter system setup (see [Entering System Setup](#)), review your computer's configuration information, and ensure that the device you want to test displays in System Setup and is active.

Start the Dell Diagnostics from either your hard drive or from the *Drivers and Utilities* media.

Starting the Dell Diagnostics From Your Hard Drive

1. Turn on (or restart) your computer.
2. When the DELL logo appears, press <F12> immediately.

 **NOTE:** If you see a message stating that no diagnostics utility partition has been found, run the Dell Diagnostics from your *Drivers and Utilities* media.

If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop. Then shut down your computer and try again.

3. When the boot device list appears, highlight **Boot to Utility Partition** and press <Enter>.
4. When the Dell Diagnostics **Main Menu** appears, select the test that you want to run.

Starting the Dell Diagnostics From the Drivers and Utilities Disc

1. Insert the *Drivers and Utilities* disc.
2. Shut down and restart the computer.

When the DELL logo appears, press <F12> immediately.

If you wait too long and the Windows logo appears, continue to wait until you see the Windows desktop. Then shut down your computer and try again.

 **NOTE:** The next steps change the boot sequence for one time only. On the next startup, the computer boots according to the devices specified in the system setup program.

3. When the boot device list appears, highlight **Onboard or USB CD-ROM Drive** and press <Enter>.
4. Select the **Boot from CD-ROM** option from the menu that appears and press <Enter>.
5. Type 1 to start the menu and press <Enter> to proceed.
6. Select **Run the 32 Bit Dell Diagnostics** from the numbered list. If multiple versions are listed, select the version appropriate for your computer.
7. When the Dell Diagnostics **Main Menu** appears, select the test you want to run.

Dell Diagnostics Main Menu

1. After the Dell Diagnostics loads and the **Main Menu** screen appears, click the button for the option you want.

Option	Function
Express Test	Performs a quick test of devices. This test typically takes 10 to 20 minutes and requires no interaction on your part. Run Express Test first to increase the possibility of tracing the problem quickly.
Extended Test	Performs a thorough check of devices. This test typically takes 1 hour or more and requires you to answer questions periodically.
Custom Test	Tests a specific device. You can customize the tests you want to run.
Symptom Tree	Lists the most common symptoms encountered and allows you to select a test based on the symptom of the problem you are having.

- If a problem is encountered during a test, a message appears with an error code and a description of the problem. Write down the error code and problem description and follow the instructions on the screen.
- If you run a test from the **Custom Test** or **Symptom Tree** option, click the applicable tab described in the following table for more information.

Tab	Function
Results	Displays the results of the test and any error conditions encountered.
Errors	Displays error conditions encountered, error codes, and the problem description.
Help	Describes the test and may indicate requirements for running the test.
Configuration	Displays your hardware configuration for the selected device. The Dell Diagnostics obtains configuration information for all devices from system setup, memory, and various internal tests, and it displays the information in the device list in the left pane of the screen. The device list may not display the names of all the components installed on your computer or all devices attached to your computer.
Parameters	Allows you to customize the test by changing the test settings.

- When the tests are completed, if you are running the Dell Diagnostics from the *Drivers and Utilities* disc, remove the disc.
- Close the test screen to return to the **Main Menu** screen. To exit the Dell Diagnostics and restart the computer, close the **Main Menu** screen.

Power Button Light Codes

The diagnostic lights give much more information about the system state, but legacy power light states are also supported in your computer. The power light states are shown in following table.

Power Light State	Description
Off	Power is off, light is blank. The computer is either turned off or is not receiving power.
Solid Blue	Power light is steady blue and the computer is not responding, ensure that the display is connected and powered on.
Blinking Blue	Indicates the computer is in standby mode. Press a key on the keyboard, move the mouse, or press the power button to resume normal operation. If the power light is blinking amber, the computer is receiving electrical power, a device such as a memory module or graphics card might be malfunctioning or incorrectly installed.
Blinking Amber	Indicates the computer is receiving electrical power but a device such as a memory module or graphics card might be malfunctioning or incorrectly installed.
Solid Amber	Indicates the computer is facing the power issue or an internal device is malfunctioning.

Beep Codes

If the monitor cannot display error messages during the POST, the computer may emit a series of beeps that identifies the problem or that can help you identify a faulty component or assembly. The following table lists the beep codes that may be generated during the POST. Most beep codes indicate a fatal error that prevents the computer from completing the boot routine until the indicated condition is corrected.

Code	Cause	Cause
1	BIOS checksum failure.	Possible system board failure. Contact Dell.
2	No memory modules are detected	<ol style="list-style-type: none"> If you have two or more memory modules installed, remove the modules, reinstall one module, and then restart the computer. If the computer starts normally, reinstall an additional module. Continue until you have identified a faulty module or reinstalled all modules without error. If available, install good memory of the same type into your computer. If the problem persists, contact Dell.
3	Possible system board failure	Contact Dell.
4	RAM Read/Write failure	<ol style="list-style-type: none"> Ensure that no special memory module/memory connector placement requirements exist. Verify that the memory modules that you are installing are compatible with your computer. If the problem persists, contact Dell.
5	Real-time clock failure. Possible battery failure or system board failure.	Replace the battery. If the problem persists, contact Dell.
6	Video BIOS Test Failure	Contact Dell.
7	CPU-cache test failure	Contact Dell.

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Removing and Replacing Parts

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Specifications

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 **NOTE:** Offerings may vary by region. For more information regarding the configuration of your computer, click Start→Help and Support and select the option to view information about your computer.

Processor	
Type	Intel® Core™2 Quad Intel Core2 Duo Intel Pentium® Dual Core Intel Celeron®

System Information	
Chipset	Intel G41 Express Chipset
Front Side Bus (FSB)	800 MHz, 1066 MHz, or 1333 MHz

Memory	
Type	DDR3 1066 MHz
Connectors	two DIMM slots
Capacity	1 GB or 2 GB
Minimum memory	1 GB
Maximum memory	4 GB

Video	
Type:	
Discrete:	
Mini Tower	PCI-E x16 full-height graphics card
Slim Tower	PCI-E x16 half-height graphics card
Integrated VGA (on system board)	Intel GMA X4500
Memory:	
Discrete	NVIDIA GeForce G310 - 512 MB (for Mini Tower and Slim Tower) NVIDIA GeForce GT 220 (for Mini Tower only) - 1 GB
Integrated VGA (on system board)	Up to 512 MB shared video memory (with 1 GB system memory)

Audio	
Type	Realtek ALC662 (5.1 Channel audio)

Network	
Integrated	Broadcom NetLink 57788 10/100/1000 Mb/s

Expansion Bus	
Bus type	PCI 2.3 PCI Express Gen1 (PCIe-x16) from G41 PCI Express 1.0a (PCIe-x1) from ICH7 SATA 1.0 and 2.0 USB 2.0
Bus speed	133 MB/s (PCI) x1-slot bidirectional speed — 500 MB/s (PCI Express) x16-slot bidirectional speed — 8 GB/s (PCI Express) 1.5 Gbps and 3.0 Gbps (SATA) 480-Mbps high speed, 12-Mbps full speed, 1.2-Mbps low speed (USB)
PCI cards:	
Connectors	one PCIe x16 one PCIe x1

	two PCI
Cards	
PCI	two full height and $\frac{3}{4}$ length cards (for Mini Tower) two low profile cards (for Slim Tower)
PCI Express x1	one full height and $\frac{3}{4}$ length card (for Mini Tower) one low profile card (for Slim Tower)
PCI Express x16	one full height and $\frac{3}{4}$ length card (for Mini Tower) one low profile card (for Slim Tower)
Drives	
	Mini Tower
Externally accessible:	
3.5-inch drive bays	one
5.25-inch drive bays	two
Internally accessible:	
3.5-inch drive bays	two
Available devices:	
3.5-inch SATA hard drives	two
5.25-inch SATA DVD-ROM, DVD/CD-RW, and DVD+/-RW drives	two
one	
External Connectors	
Audio:	
back panel	three connectors for line-in, line-out, and microphone
front panel	two connectors for microphone and headphone
Network adapter	one RJ45 connector
USB:	
internal	two
front panel	two
back panel	four
Video	15-pin VGA connector
Systemboard Connectors	
PCI 2,3:	
connectors	two 124-pin connectors
data width (maximum)	32 bits
PCI Express x1:	
connectors	one 36-pin connector
data width (maximum)	one PCI-Express lane
PCI Express x16:	
connectors	one 164-pin connector
data width (maximum)	16 PCI-Express lanes
Serial ATA	four 7-pin connectors
Memory	two 240-pin connectors
Internal USB device	one 10-pin connector (supports two USB ports)
Processor fan	one 4-pin connector
System fan	one 3-pin connector
Front panel control	one 10-pin connector
Front panel audio HDA header	one 10-pin connector
Processor	one 775-pin connector
Power 12V	one 4-pin connector
Power	one 24-pin connector
Controls and Lights	
Front of the computer:	
Power button	push button
Power light	Solid blue light — indicates power-on state. Blinking blue light — indicates sleep state of the computer. Solid amber light (when the computer does not start) — indicates a problem with the system board or power supply. Blinking amber light — indicates a problem with the system board.

Drive activity light	Green light — A blinking green light indicates the computer is reading data from or writing data to the SATA hard drive or CD/DVD.
Back of the computer:	
Network activity light (on integrated network adapter)	Yellow light — A good connection exists between the network and the computer. Off (no light) — The computer is not detecting a physical connection to the network.
Power supply diagnostic light	Green — A green light indicates that the 5 V standby power is OK.

Power	Mini Tower	Slim Tower
DC power supply:		
Wattage	300 W	250 W
Maximum heat dissipation (MHD)	1338 BTU/hr	1233 BTU/hr
Voltage	115/230 VAC, 50/60 Hz, 9.0A/4.5A	115/230 VAC, 50/60 Hz, 8.0A/4.0A
Coin-cell battery	3 V CR2032 lithium coin cell	

NOTE: Heat dissipation is calculated by using the power supply wattage rating.

NOTE: See the safety information that shipped with your computer for important voltage setting information.

Physical	Mini Tower	Slim Tower
Height	37.00 cm (14.50 inches)	37.30 cm (14.60 inches)
Width	17.00 cm (6.70 inches)	10.60 cm (4.20 inches)
Depth	42.70 cm (16.90 inches)	43.70 cm (17.20 inches)
Weight	6.10 kg (13.50 lb)	5.80 kg (12.80 lb)

Environmental		
Temperature:		
Operating	10 °C to 35 °C (50 °F to 95 °F)	
Storage	-40 °C to 65 °C (-40 °F to 149 °F)	
Relative humidity	20% to 80% (noncondensing)	
Maximum vibration:		
Operating	5–350 Hz at 0.0002 G2/Hz	
Storage	5–500 Hz at 0.001 to 0.01 G2/Hz	
Maximum shock:		
Operating	40 G +/- 5% with pulse duration of 2 msec +/- 10% (equivalent to 20 in/sec [51 cm/sec])	
Storage	105 G +/- 5% with pulse duration of 2 msec +/- 10% (equivalent to 50 in/sec [127 cm/sec])	
Altitude:		
Operating	-15.2 m to 3048 m (~50 ft to 10,000 ft)	
Storage	-15.2 m to 10,668 m (~50 ft to 35,000 ft)	
Airborne contaminant level	G2 or lower as defined by ISA-S71.04-1985	

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Chassis Support Bracket

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 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Chassis Support Bracket



 **NOTE:** You may need to install Adobe® Flash® Player from Adobe.com in order to view the illustrations below.

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove the [cover](#).
3. Remove the screw that secures the chassis support bracket to the computer.

4. Lift and remove the support bracket out of the computer.

Replacing the Chassis Support Bracket

To replace the chassis support bracket, perform the above steps in reverse order.

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Fan

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Removing the Fan



 **NOTE:** You may need to install Adobe® Flash® Player from Adobe.com in order to view the illustrations below.

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove the [cover](#).
3. Remove the [front bezel](#).
4. Remove the [chassis support bracket](#).
5. Remove the [hard drive](#).
6. Disconnect the fan cable from the system board.

7. Remove the the fan cable from the tabs on the computer.

8. Remove the screws that secure the fan to the computer.

9. Remove the fan from the computer.

Replacing the Fan

To replace the fan, perform the above steps in reverse order.

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Coin-cell Battery

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Removing the Coin-cell Battery



 **NOTE:** You may need to install Adobe® Flash® Player from Adobe.com in order to view the illustrations below.

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove the [cover](#).
3. Remove the [front bezel](#).
4. Remove the [chassis support bracket](#).
5. Press the release latch to release the coin-cell battery from the socket.

6. Remove the battery from the computer.

Replacing the Coin-cell Battery

To replace the coin-cell battery, perform the above steps in reverse order.

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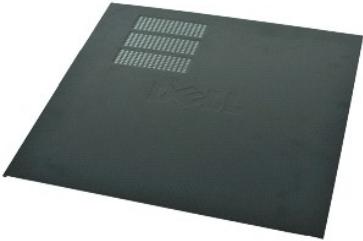
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Cover

Dell™ Vostro™ 230s Service Manual—Slim Tower

 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Cover



 **NOTE:** You may need to install Adobe® Flash® Player from Adobe.com in order to view the illustrations below.

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove the thumbscrews that secure the cover to the computer.

3. Slide the cover towards the back of the computer.

4. Lift up and remove the cover from the computer.

Replacing the Cover

To replace the cover, perform the above steps in reverse order.

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Expansion Card(s)

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 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing an Expansion Card



 **NOTE:** You may need to install Adobe® Flash® Player from Adobe.com in order to view the illustrations below.

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove the [cover](#).
3. Remove the [chassis support bracket](#).
4. Grasp the card by its top corners, and ease the card from its connector.

Replacing Expansion Cards

To replace an expansion card, perform the above steps in reverse order.

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Front Bezel

Dell™ Vostro™ 230s Service Manual—Slim Tower

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Removing the Front Bezel



 **NOTE:** You may need to install Adobe® Flash® Player from Adobe.com in order to view the illustrations below.

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove the [cover](#).
3. Gently pry the retention clips away from the chassis to release the bezel from the computer.

4. Rotate and release the bezel from the computer.

Replacing the Front Bezel

To replace the front bezel, perform the above steps in reverse order.

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Front I/O Panel and SD Card Reader

Dell™ Vostro™ 230s Service Manual—Slim Tower

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Removing the Front I/O Panel and SD Card Reader



 **NOTE:** You may need to install Adobe® Flash® Player from Adobe.com in order to view the illustrations below.

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove the [cover](#).
3. Remove the [front bezel](#).
4. Remove the [chassis support bracket](#).
5. Remove the [hard drive](#).
6. Remove the [optical drive](#).
7. Remove the [power button and card reader light cables](#).
8. Disconnect all the cables from the system board.

9. Unthread the cables from their routing clips on the chassis.

10. Remove the screws that secure the I/O panel to the computer.

11. Gently slide the I/O panel towards the bottom of the computer and remove the I/O panel from the chassis.

12. Release the two securing clips and push up the SD card reader.

13. Remove the SD card reader from the I/O panel bracket.

Replacing the Front I/O Panel and SD Card Reader

To replace the front I/O panel and SD card reader, perform the above steps in reverse order.

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Hard Drive

Dell™ Vostro™ 230s Service Manual—Slim Tower

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Removing the Hard Drive



 **NOTE:** You may need to install Adobe® Flash® Player from Adobe.com in order to view the illustrations below.

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove the [cover](#).
3. Remove the [front bezel](#).
4. Remove the [chassis support bracket](#).
5. Disconnect the power cable and data cable from the hard drive.

6. Press and hold the drive release latch and push the hard drive towards the back of the computer.

7. Lift and remove the hard drive from the drive bay.

Replacing the Hard Drive

To replace the hard drive, perform the above steps in reverse order.

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Heat Sink and Processor

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Removing the Heat Sink and Processor



>Note: You may need to install Adobe® Flash® Player from Adobe.com in order to view the illustrations below.

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove the [cover](#).
3. Remove the [chassis support bracket](#).
4. Disconnect the heat sink cable from the system board.
5. Loosen the captive screws that secure the heat sink and fan assembly to the system board.
6. Lift the heat sink assembly and remove it from the computer. Lay the assembly on a clean work surface with the fan facing downward and the bottom facing upward.
7. Press down and slide the lever to release the processor cover.
8. Lift the processor cover.
9. Carefully lift and remove the processor from its socket, and place it into an antistatic package.

Replacing the Heat Sink and Processor

To replace the heat sink and processor, perform the above steps in reverse order.

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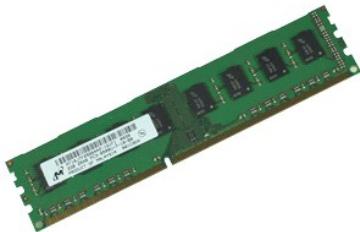
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Module

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Removing a Memory Module



 **NOTE:** You may need to install Adobe® Flash® Player from Adobe.com in order to view the illustrations below.

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove the [cover](#).
3. Press the securing clip at each end of the memory module connector to release the module from the computer.

4. Remove the memory module from the computer.

Replacing a Memory Module

To replace a memory module, perform the above steps in reverse order.

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Optical Drive

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Removing the Optical Drive



>Note: You may need to install Adobe® Flash® Player from Adobe.com in order to view the illustrations below.

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove the [cover](#).
3. Remove the [front bezel](#).
4. Remove the [chassis support bracket](#).
5. Disconnect the power cable and data cable from the optical drive.

6. Press and hold the drive release latch, then slide the optical drive through the front bezel and out of the computer.

Replacing the Optical Drive

To replace the optical drive, perform the above steps in reverse order.

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Power Button and Card Reader Light

Dell™ Vostro™ 230s Service Manual—Slim Tower

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Removing the Power Button and Card Reader Light



>Note: You may need to install Adobe® Flash® Player from Adobe.com in order to view the illustrations below.

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove the [cover](#).
3. Remove the [front bezel](#).
4. Remove the [chassis support bracket](#).
5. Remove the [optical drive](#).
6. Press the plastic tabs inward to release the power button and card reader light cables from the chassis.

7. Unthread the power button and card reader light cables from their routing clip.

8. Disconnect the power button and card reader light cables from the system board and remove them from the computer.

Replacing the Power Button and Card Reader Light

To replace the power button and card reader light, perform the above steps in reverse order.

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Power Supply

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Removing the Power Supply



>Note: You may need to install Adobe® Flash® Player from Adobe.com in order to view the illustrations below.

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove the [cover](#).
3. Remove the [chassis support bracket](#).
4. Disconnect all the power cables from the system board and the drives.

5. Remove the screws that secure the power supply to the computer.

6. Press down on the power supply release latch and slide the power supply back slightly.

7. Pivot the power supply away from the chassis and lift it up and out of the computer.

Replacing the Power Supply

To replace the power supply, perform the above steps in reverse order.

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Rubber Foot

Dell™ Vostro™ 230s Service Manual—Slim Tower

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Removing the Rubber Foot



 **NOTE:** You may need to install Adobe® Flash® Player from Adobe.com in order to view the illustrations below.

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove the [cover](#).
3. Remove the [chassis support bracket](#).
4. Remove the [power supply](#).
5. Rotate the rubber foot and remove it from the computer.

Replacing the Rubber Foot

To replace the rubber foot, perform the above steps in reverse order.

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System Board

Dell™ Vostro™ 230s Service Manual—Slim Tower

 **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the System Board



 **NOTE:** You may need to install Adobe® Flash® Player from Adobe.com in order to view the illustrations below.

1. Follow the procedures in [Before Working Inside Your Computer](#).
2. Remove the [cover](#).
3. Remove the [chassis support bracket](#).
4. Remove the [memory](#).
5. Remove the [heat sink and processor](#).
6. Remove any [expansion cards](#).
7. Disconnect all cables from the system board.

8. Remove the screws that secure the system board to the computer.

9. Slide the system board toward the front of the computer and carefully lift the system board out of the computer.

Replacing the System Board

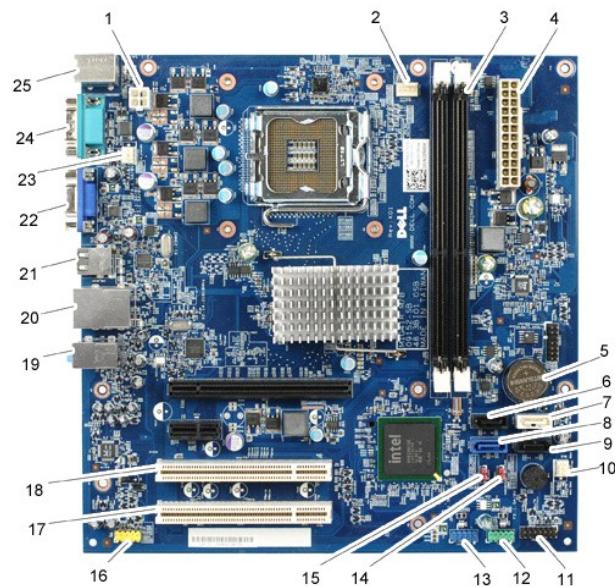
To replace the system board, perform the above steps in reverse order.

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System Board Layout

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1	Power connector (PWR1)	2	Processor heat sink/fan assembly power (CPUFAN1)
3	Memory module connectors (2)	4	Main power connector
5	Battery socket	6	Serial ATA drive connector (SATA3)
7	Serial ATA drive connector (SATA2)	8	Serial ATA drive connector (SATA0)
9	Serial ATA drive connector (SATA1)	10	Chassis fan connector 2(SYS FAN2)
11	Power button & LED connector(LEDH1)	12	Front I/O panel connector (USBF1)
13	Card reader connector (USBF_INT1)	14	CMOS jumper (CMOS1)
15	Password jumper (PW_CLR1)	16	Audio connector (AUDIOF1)
17	PCI connector (PCI1)	18	PCI connector (PCI2)
19	Audio connectors	20	One LAN and two USB ports
21	Two USB ports	22	Onboard video connector (VGA)
23	Chassis fan connector (SYSFAN1)	24	Serial connector
25	PS/2 mouse and keyboard connectors		

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Working on Your Computer

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- [Before Working Inside Your Computer](#)
 - [Recommended Tools](#)
 - [Turning Off Your Computer](#)
 - [After Working Inside Your Computer](#)
-

Before Working Inside Your Computer

Use the following safety guidelines to help protect your computer from potential damage and to help to ensure your personal safety. Unless otherwise noted, each procedure included in this document assumes that the following conditions exist:

- 1 You have performed the steps in [Working on Your Computer](#).
- 1 You have read the safety information that shipped with your computer.
- 1 A component can be replaced or—if purchased separately—installed by performing the removal procedure in reverse order.

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

⚠ CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.

⚠ CAUTION: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface, such as a connector on the back of the computer.

⚠ CAUTION: 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 processor by its edges, not by its pins.

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

>Note: The color of your computer and certain components may appear differently than shown in this document.

To avoid damaging your computer, perform the following steps before you begin working inside the computer.

- 1 Ensure that your work surface is flat and clean to prevent the computer cover from being scratched.
- 2 Turn off your computer (see [Turning Off Your Computer](#)).

⚠ CAUTION: To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.

- 3 Disconnect all network cables from the computer.
- 4 Disconnect your computer and all attached devices from their electrical outlets.
- 5 Press and hold the power button while the system is unplugged to ground the system board.
- 6 Remove the cover (see [Cover](#)).

⚠ CAUTION: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate static electricity, which could harm internal components.

Recommended Tools

The procedures in this document may require the following tools:

- 1 Small flat-blade screwdriver
- 1 Phillips screwdriver
- 1 Small plastic scribe
- 1 Flash BIOS update program media

Turning Off Your Computer

⚠ CAUTION: To avoid losing data, save and close all open files and exit all open programs before you turn off your computer.

- 1 Shut down the operating system:

In Windows Vista®:

Click **Start**  , then click the arrow in the lower-right corner of the **Start** menu as shown below, and then click **Shut Down**.



In Windows® XP:

Click **Start**→**Turn Off Computer**→**Turn Off**.

The computer turns off after the operating system shutdown process is complete.

2. Ensure that the computer and all attached devices are turned off. If your computer and attached devices did not automatically turn off when you shut down your operating system, press and hold the power button for about 6 seconds to turn them off.
-

After Working Inside Your Computer

After you complete any replacement procedure, ensure you connect any external devices, cards, and cables before turning on your computer.

1. Replace the computer cover (see [Cover](#)).

 **CAUTION:** To connect a network cable, first plug the cable into the network device and then plug it into the computer.

2. Connect any telephone or network cables to your computer.
3. Connect your computer and all attached devices to their electrical outlets.
4. Turn on your computer.
5. Verify that the computer works correctly by running the Dell Diagnostics. See [Dell Diagnostics](#).

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