Dell™ Precision™ T3500 Service Manual

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.

Model DCTA

March 2009   Rev. A00

Working on Your Computer
Dell™ Precision™ T3500 Service Manual

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:

- You have performed the steps in Working on Your Computer.
- You have read the safety information that shipped with your computer.
- 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: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.**

⚠ **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.
5. Disconnect your computer and all attached devices from their electrical outlets.
6. Press and hold the power button while the system is unplugged to ground the system board.
7. Remove the computer cover (see Removing and Replacing the Computer 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:

- Small flat-blade screwdriver
- Phillips screwdriver
- Small plastic scribe
- Flash BIOS update program CD (see the Dell Support website at **support.dell.com**)

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 Removing and Replacing the Cover).
2. Connect any telephone or network cables to your computer.

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

Adding and Replacing Parts
Dell Precision™ T3500 Service Manual

Specifications
Dell Precision™ T3500 Service Manual

📝 **NOTE:** Offerings may vary by region. For more information regarding the configuration of your Tablet-PC, click **Start** 🟦 (or **Start** in Windows XP)® **Help and Support**, and then select the option to view information about your Tablet-PC.

Processor	
Processor types	Intel® Xeon® Processor 3500 series Intel Xeon Processor 5500 series

System Information	
System chipset	Intel X58+ ICH10
Data bus width	64 bits

Memory	
Memory module connectors	Six
Memory module capacities	1 GB, 2 GB, or 4 GB
Memory type	DDR3 1066 MHz & 1333 MHz (Both ECC and Non-ECC)
Minimum memory	1 GB
Maximum memory	24 GB

Video	
Video type:	
Discrete	Two PCI Express 2.0 x16 slots Note: Support for discrete full length full height graphics option through PCIe x16 graphics card slot

Audio	
Audio type	ADI1984A integrated audio

Expansion Bus	
Bus type	PCI 2.3 PCI Express 2.0 (PCIe-x16) PCI Express 1.1 (PCIe-x1) SATA 1.0 and 2.0 USB 2.0

	eSATA
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 Connectors	
connectors	Two
connector size	124 pins
connector data width (maximum)	32 bits
PCI Express x8	
connector	Two
connector size	98 pins
PCI Express x16	
connector	Two
connector size	164 pins

Drives	
Externally accessible	One 3.5-inch drive bay (FlexBay), Two 5.25-inch drive bays
Internally accessible	Two 3.5-inch SATA drive bays **Note:** The platform can accommodate third and fourth 3.5-inch hard drives in the flex bay or the optical drive bay. (4 HDD support is limited to SATA only & tower orientation only, SAS is limited to 3 HDD)
Available devices	3.5-inch SATA hard drives SATA DVD, SATA CD-RW/DVD Combo, SATA DVD+/-RW, SATA BD Combo (Blu-Ray playback only), SATA Blu-ray R/W One 3.5-inch USB media card reader with Bluetooth® Internal USB floppy drive

Connectors	
External connectors:	
Video	(Depending on video card) DVI connector Display port
Network adapter	RJ-45 connector
USB	USB 2.0 compliant, support 2.0 A sustained charge to power external USB devices Two internal connectors Two in front Six at the back
Audio	Two rear connectors for line-in and line-out

	Two front-panel connectors for headphones and microphone
Serial	One 9-pin connectors; 16550C-compatible
PS/2	Two 6-pin mini-DIN connector
IEEE 1394a	One front-panel 6-pin connector (with optional card)
System board connectors:	
Serial ATA	Seven 7-pin connectors
Internal USB device	One 10-pin connector
Processor fan	One 4-pin connector
Chassis fan	One 3-pin connector
HDD cage fan	One 3-pin connector
PCI 2.3	Two 124-pin connectors
PCI Express x8	Two 98-pin connector
PCI Express x16	Two 164-pin connector
Front panel control (USB included)	One 40-pin connector
Front panel audio HDA header	One 10-pin connector
Processor	One 1366-pin connector
Memory	Six 240-pin connectors
Processor Power	One 8-pin connector
Power	One 24-pin connector

Controls and Lights	
Front of the computer:	
Power button	Push button
Power light	Amber light . Solid amber indicates a problem with an installed device; blinking amber indicates an internal power problem. Green light . Blinking green in sleep state; solid green for power-on state.
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.
Network link light	Green light . Solid green indicates a connection to an active network

	Off (no light) . System is not connected to a network
Back of the computer:	
Link integrity light (on integrated network adapter)	Green . A good connection at 10Mbs exists between the network and the computer. Orange . A good connection at 100Mbs exists between the network and the computer. Yellow . A good connection at 1000Mbs exists between the network and the computer. Off . The computer is not detecting a physical connection to the network.
Network activity light (on integrated network adapter)	Yellow blinking light

Power	
DC power supply:	
Wattage	525 W
Maximum heat dissipation (MHD)	1194 BTU/hr
Voltage	115/230 VAC, 50/60 Hz, 6.0/3.0 A
Coin-cell battery	3 V CR2032 lithium coin cell

Physical	
Height	44.8 cm (17.6 inches)
Width	17.2 cm (6.8 inches)
Depth	46.8 cm (18.4 inches)
Weight	17.3 kg (38.0 lb)

Environmental	
Temperature range:	
Operating	10° to 35°C (50° to 95°F)
Storage	-40° to 65°C (-40° to 149°F)
Relative humidity (maximum):	20% to 80% (noncondensing)
Maximum vibration (using a random-vibration spectrum that simulates user environment):	
Operating	5 to 350 Hz at 0.0002 G²/Hz
Storage	5 to 500 Hz at 0.001 to 0.01 G²/Hz
Maximum shock (measured with hard drive in head-parked position and a 2-ms half-sine pulse):	

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Operating	40 G +/- 5% with pulse duration of 2 msec +/- 10% (equivalent to 51 cm/sec [20 in/sec])
Storage	105 G +/- 5% with pulse duration of 2 msec +/- 10% (equivalent to 127 cm/sec [50 in/sec])
Altitude (maximum):	
Operating	-15.2 to 3048 m (-50 to 10,000 ft)
Storage	-15.2 to 10,668 m (-50 to 35,000 ft)
Airborne contaminant level	G2 or lower as defined by ISA-S71.04-1985

Diagnostics

Dell Precision™ T3500 Service Manual

- [Dell Diagnostics](#)
- [Power Button Light Codes](#)
- [Diagnostic Light Codes](#)
- [Beep Codes](#)

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* disc 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* disc.

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* disc.

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 (see [Turning Off 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.

2. 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.

3. 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.

4. When the tests are completed, if you are running the Dell Diagnostics from the *Drivers and Utilities* disc, remove the disc.

5. 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 power LED located in the power button on the front of the computer illuminates and blinks or remains solid to indicate five different states:

- No light—System is in the off state (S5, or mechanical (AC power not applied) OFF).
- Solid Amber—System fault, but Power Supply is good—normal operating state (S0).
- Blinking Amber—System fault error condition including Power Supply (only +5VSB working), Vreg failure, missing or bad CPU.
- Blinking Green—System is in power saving states S1, S3 or S4. (Blink rate is 1Hz). No fault/error condition.
- Solid Green—System is fully functional and is in S0 (ON) state.

Diagnostic Light Codes

Four (4) single color lights are incorporated on the front control panel to serve as a diagnostic aid for troubleshooting systems exhibiting No Post/No Video symptoms. The lights do not report runtime errors.

Diagnostic LED Patterns		
LED pattern (1234)	**LED Description**	**State description**
4	1 - Off 2 - Off 3 - Off 4 - On	BIOS checksum failure detected; system is in recovery mode.
3	1 - Off 2 - Off 3 - On 4 - Off	Possible processor failure.
3 4	1 - Off 2 - Off 3 - On 4 - On	Memory failure.
2	1 - Off 2 - On 3 - Off 4 - Off	Possible expansion card failure.
2 4	1 - Off 2 - On 3 - Off 4 - On	Possible video failure.
2 3	1 - Off 2 - On 3 - On 4 - Off	Diskette drive or hard drive failure.
2 3 4	1 - Off 2 - On 3 - On 4 - On	Possible USB failure.
1	1 - On 2 - Off 3 - Off 4 - Off	No memory modules detected.
1 4	1 - On 2 - Off 3 - Off 4 - On	System board failure.
1 3	1 - On 2 - Off 3 - On 4 - Off	Memory configuration error.
1 3 4	1 - On 2 - Off 3 - On 4 - On	Possible system board resource and/or system board hardware failure.

1 2	1 - On 2 - On 3 - Off 4 - Off	Possible system resource configuration error.
1 2 3	1 - On 2 - On 3 - On 4 - Off	Other failure.
1 2 3 4	1 - On 2 - On 3 - On 4 - On	End of POST - Hand off to boot.
	1 - Off 2 - Off 3 - Off 4 - Off	The system is in a normal operating condition after POST.

Beep Codes

When errors occur during a boot routine that cannot be reported on the monitor, the computer may emit a beep code that identifies the problem. The beep code is a pattern of sounds: for example, one beep followed by a second beep, then followed by a burst of three beeps (code 1-1-3) means that the computer was unable to read the data in nonvolatile random-access memory (NVRAM). If the system loses power and beeps constantly when you turn it back on, the BIOS is probably corrupted.

System Beep Codes			
Beep Code	**Description**	**Beep Code**	**Description**
1-1-2	CPU register test in progress	2-4-3	1st 64 K RAM chip or data line failure - bit E
1-1-3	CMOS read/write test in progress or failure	2-4-4	1st 64 K RAM chip or data line failure - bit F
1-1-4	BIOS ROM checksum in progress or failure	3-1-1	Slave DMA register test in progress or failure
1-2-1	Timer Test in progress or failure	3-1-2	Master DMA register test in progress or failure
1-2-2	DMA initialization in progress or failure	3-1-3	Master IMR test in progress or failure
1-2-3	DMA page register read/write test in progress or failure	3-1-4	Slave IMR test in progress or failure
1-3-1	RAM refresh verification in progress or failure	3-2-2	Interrupt vector loading in progress
1-3-2	1st 64 K RAM test in progress or failure	3-2-4	Keyboard controller test in progress or failure
1-3-3	1st 64 K RAM chip or data line failure (multi bit)	3-3-1	CMOS power fail and checksum test in progress
1-3-4	1st 64 K RAM odd/even logic failure	3-3-2	CMOS Config info validation in progress
1-4-1	1st 64 K RAM address line failure	3-3-3	RTC/Keyboard controller not found
1-4-2	1st 64 K RAM parity test in progress or failure	3-3-4	Screen memory test in progress or failure
1-4-3	Fail-safe timer test in progress	3-4-1	Screen initialization test in progress or failure
1-4-4	Software NMI port test in progress	3-4-2	Screen retrace tests test in progress or failure
2-1-1	1st 64 K RAM chip or data line failure - bit 0	3-4-3	Search for video ROM in progress
2-1-2	1st 64 K RAM chip or data line failure - bit 1	4-2-1	Timer tick interrupt test in progress or failure
2-1-3	1st 64 K RAM chip or data line failure - bit 2	4-2-2	Shutdown test in progress or failure
2-1-4	1st 64 K RAM chip or data line failure - bit 3	4-2-3	Gate A20 failure

2-2-1	1st 64 K RAM chip or data line failure - bit 4	4-2-4	Unexpected interrupt in Protected Mode
2-2-2	1st 64 K RAM chip or data line failure - bit 5	4-3-1	RAM test in progress or failure above address 0FFFFh
2-2-3	1st 64 K RAM chip or data line failure - bit 6	4-3-2	No memory in Bank 0
2-2-4	1st 64 K RAM chip or data line failure - bit 7	4-3-3	Interval Timer Channel 2 test in progress or failure
2-3-1	1st 64 K RAM chip or data line failure - bit 8	4-3-4	Time-Of-Day Clock test in progress or failure
2-3-2	1st 64 K RAM chip or data line failure - bit 9	4-4-1	Super I/O chip failure
2-3-3	1st 64 K RAM chip or data line failure - bit A	4-4-4	Cache test failure
2-3-4	1st 64 K RAM chip or data line failure - bit B		
2-4-1	1st 64 K RAM chip or data line failure - bit C		
2-4-2	1st 64 K RAM chip or data line failure - bit D		

About Your System Board

Dell Precision™ T3500 Service Manual

- Password Enable Jumper
- NVRAM Reset Jumper
- System Board Schematic

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Your computer's system board offers two jumpers—a password enable jumper and a RTCRST (Real Time Clock Reset) jumper.

Password Enable Jumper

PSWD - Password enable. The system password will be cleared and disabled when the system is started with this jumper removed.

Pins 1-2 shorted enables password

NVRAM Reset Jumper

RTCRST - Clears NVRAM. The NVRAM will be cleared when the jumper is closed (use the jumper from the password bridge). To properly clear; AC power must be applied (not necessarily turned on) to the system for about 10 seconds while the jumper is closed.

Pins 1-2 shorted clears NVRAM

The picture below shows the location of the configuration jumpers on the system board.

📝 **NOTE:** You can use the RTCRST jumper procedure above to attempt recovery from a No POST, No Video situation.
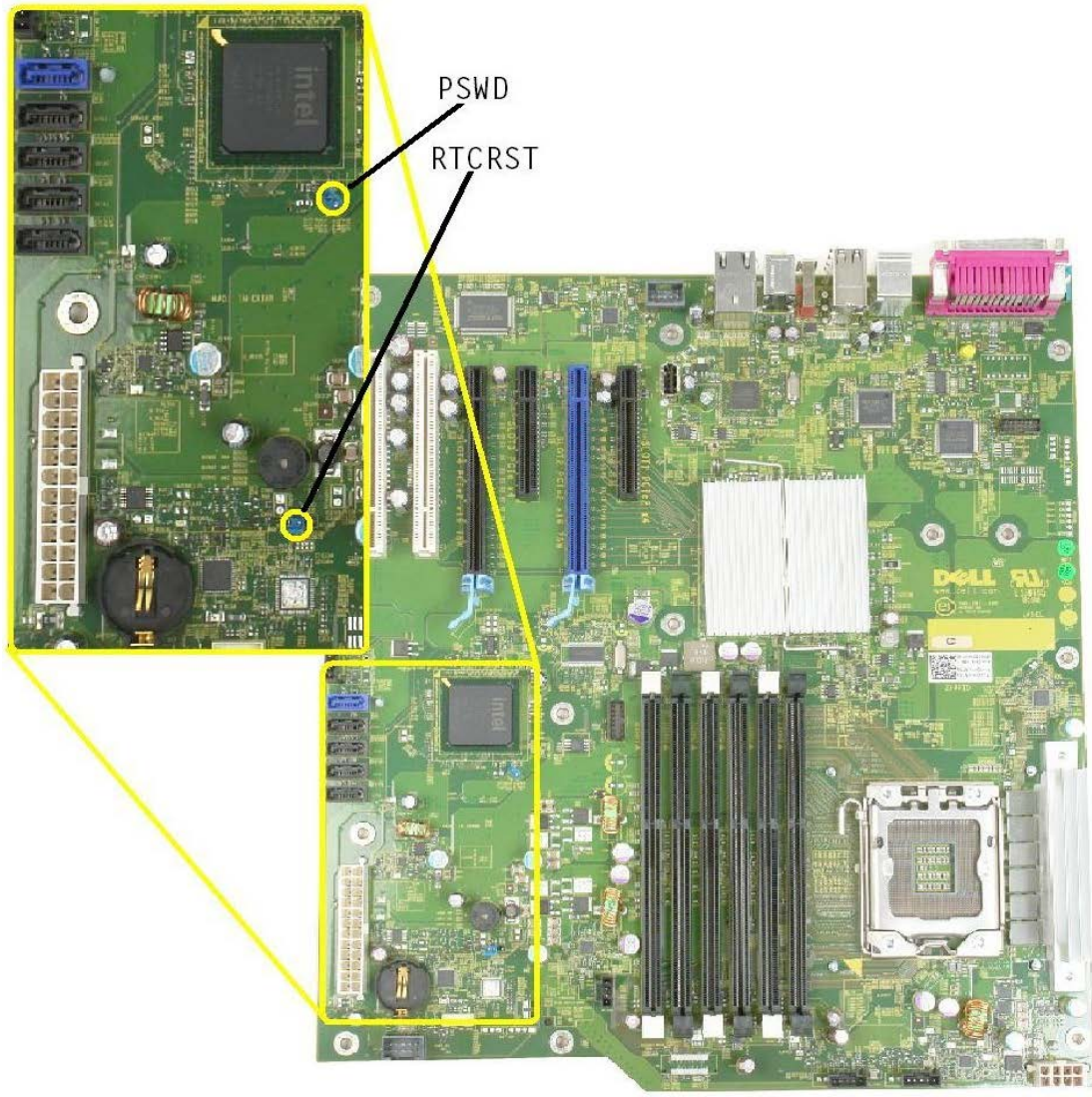
System Board Schematic
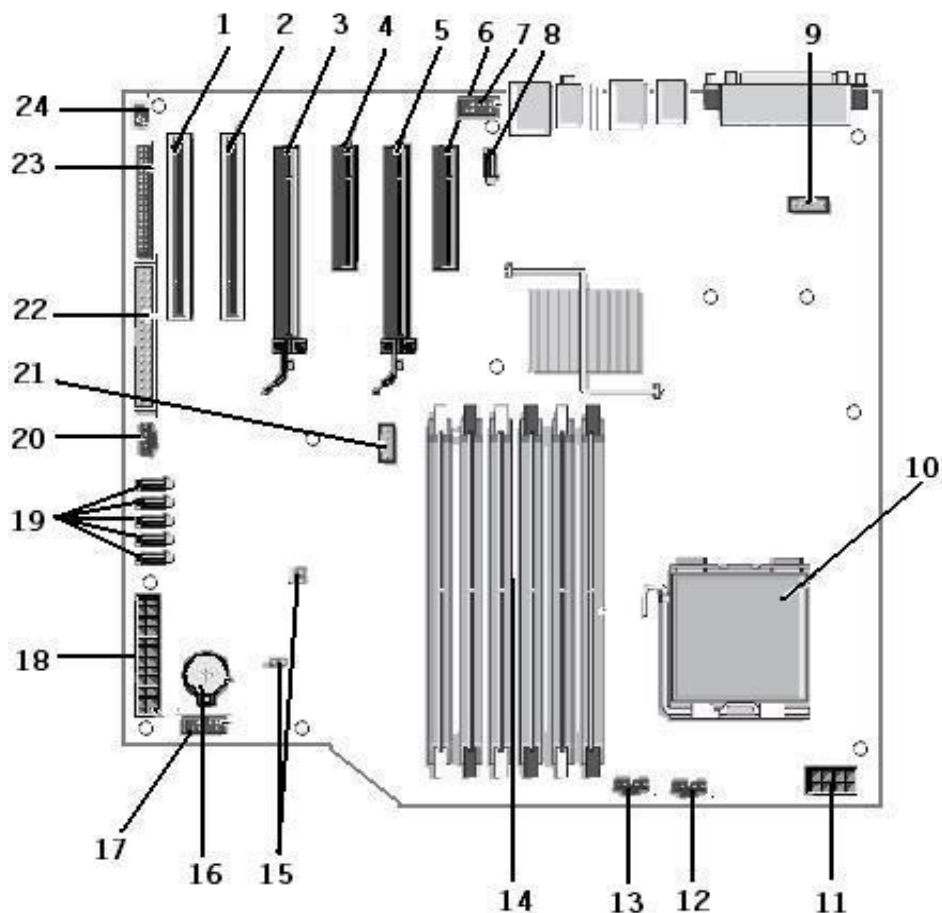
1	PCI Card Slot (Slot 6)	2	PCI Card Slot (Slot 5)
3	PCIe x16 (Slot 4)	4	PCIe x4 (Slot 3)
5	PCIe x16 (Slot 2)	6	PCIe x4 (Slot 1)
7	Audio Front Panel (FP_AUDIO)	8	Internal USB (USB_1)
9	LPC_DEBUG	10	Processor Connector
11	CPU Power Connector (POWER_CPU)	12	Front Bezel Fan (FAN_Front)
13	Front Cage Fan (FAN_CCAG)	14	Memory Module (RAM) Connectors (DIMM_1-6)
15	Jumpers (PSWD & RTCRTS)	16	Battery Socket (CMOS Battery)
17	Internal USB Socket (for Flexbay Card Reader)	18	Main Power Connector
19	SATA Connectors (SATA_0-4)	20	HDD Fan (FAN_HDD)
21	Serial Connector (SERIAL2)	22	FDD Connector
23	Front Panel Connector (FRONTPANEL)	24	Chassis Intrusion Connector (INTRUDER)

System Setup

Dell Precision™ T3500 Service Manual

- POST Keystrokes
- Boot Menu
- Entering System Setup
- System Setup Navigation Keystrokes

POST Keystrokes

Your computer has several keystroke options available during the POST process at the Dell™ Logo screen.

Keystroke	Function	Description
< F2>	Enter System Setup	Use System Setup to make changes to the user-definable settings.
< F12> or <Ctrl><Alt><F8>	Enter Boot Menu	One-time boot and diagnostics utility menu
< F3>	Network Boot	Bypass the BIOS boot sequence and boot directly to the network

Boot Menu
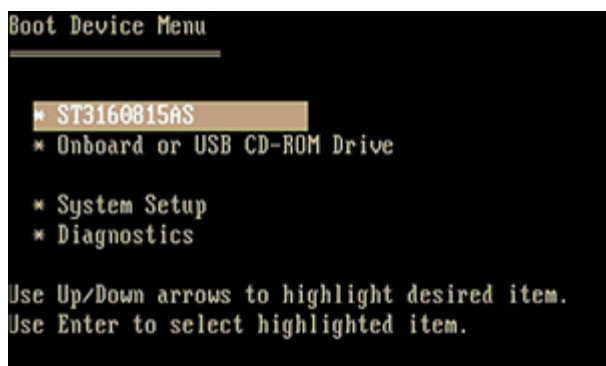
As with previous Dell Precision™ workstation platforms, your computer includes a one-time boot menu. This feature offers a quick and convenient method with which to bypass the System Setup-defined boot device order and boot directly to a specific device (e.g., floppy, CD-ROM, or hard drive).

The boot menu enhancements introduced on previous platforms are as follows:

- **Easier access**—Although the <Ctrl><Alt><F8> keystroke still exists and can be used to call up the menu, you can also simply press <F12> during system boot to access the menu.
- **Diagnostics options**—The boot menu includes two diagnostic options, IDE Drive Diagnostics (90/90 Hard Drive Diagnostics) and Boot to the Utility Partition.

Entering System Setup

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

Follow the on-screen instructions to view and/or change any settings. On each screen, the system setup options are listed at the left. To the right of each option is the setting or value for that option. You can change settings that appear as white type on the screen. Options or values that you cannot change (because they are determined by your Tablet-PC) appear less bright.

The upper-right corner of the screen displays help information for the currently highlighted option. The lower-right corner displays information about the computer. System setup key functions are listed across the bottom of the screen.

The system setup screens display the current setup information and settings for your computer, such as:

- System configuration
- Boot order
- Boot (start-up) configuration
- Basic device configuration settings
- System security and hard drive password settings

System Setup Navigation Keystrokes

Use the following keystrokes to navigate the BIOS screens.

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

NOTE: Depending on your computer and any installed devices, the items listed in this section may or may not appear.

Cover

Dell Precision™ T3500 Service Manual

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Removing the Cover

1. Follow the procedures in Before Working Inside Your Computer.

2. Pull the cover release latch toward the back of the computer.

3. Pivot the cover away from the computer and then remove the cover.

Front Bezel

**Dell Precision™ T3500 Service Manual**

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Removing the Front Bezel

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

4. While pressing the release tab down (1) slide the bezel toward the top of the computer (2).
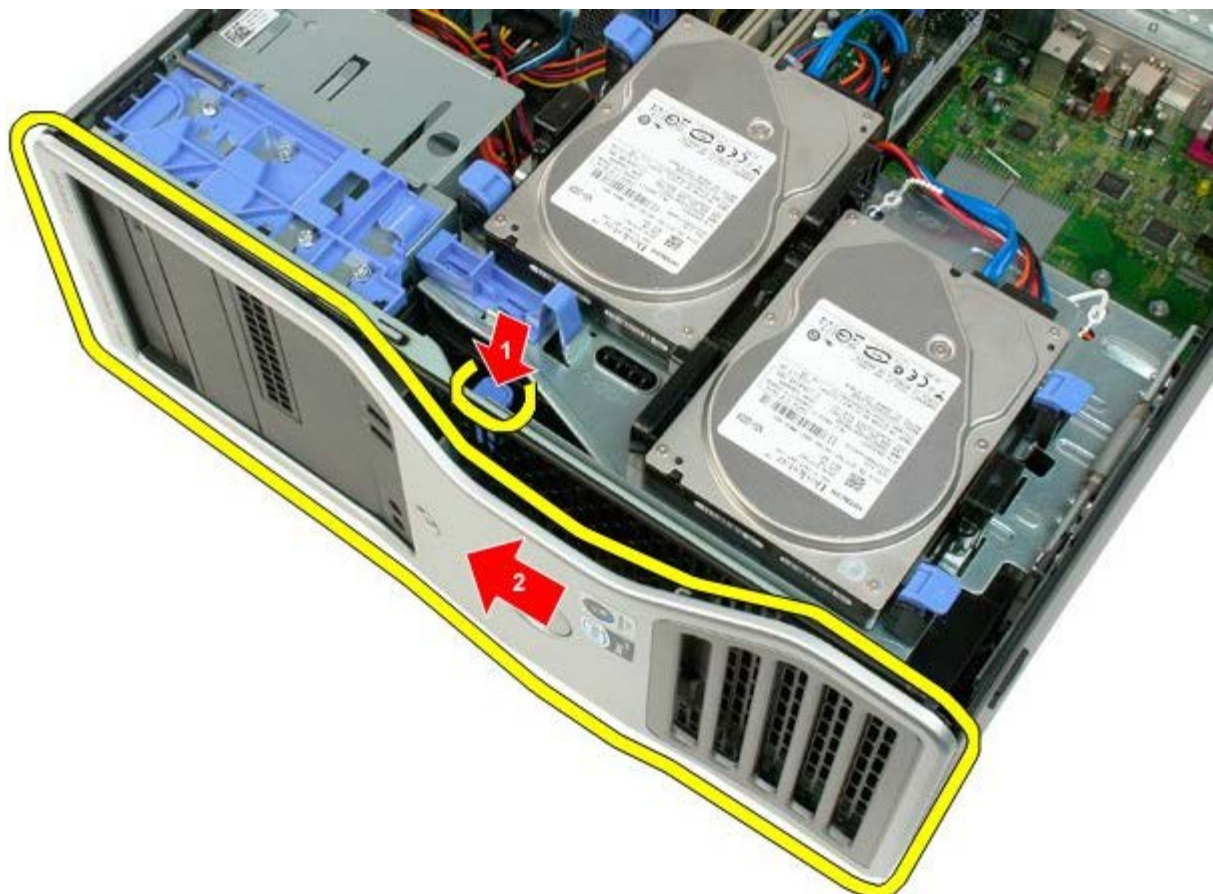
5. Remove the bezel from the front of the computer.

Hard Drives
Dell Precision™ T3500 Service Manual

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Removing the Hard Drives

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the computer cover.

3. Disconnect the power cable and data cable from the first hard drive.
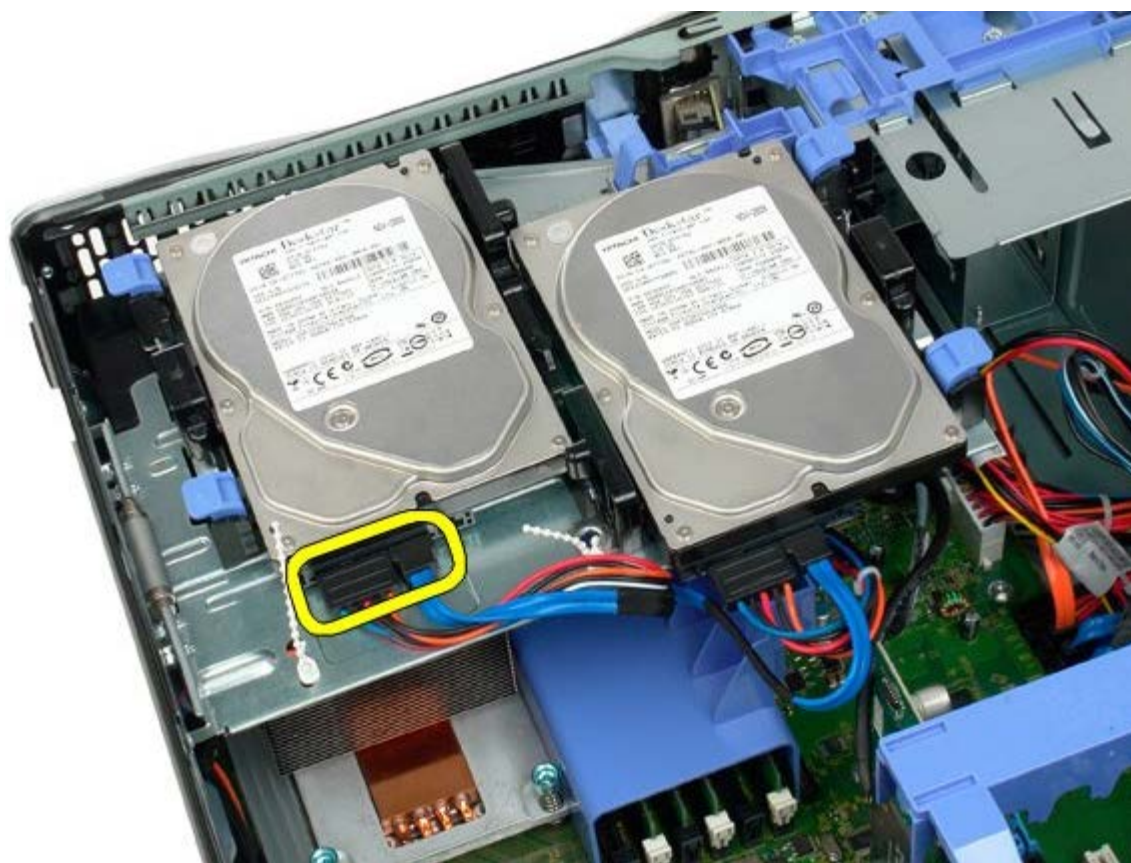
4. Lift the two release tabs on the first hard drive.
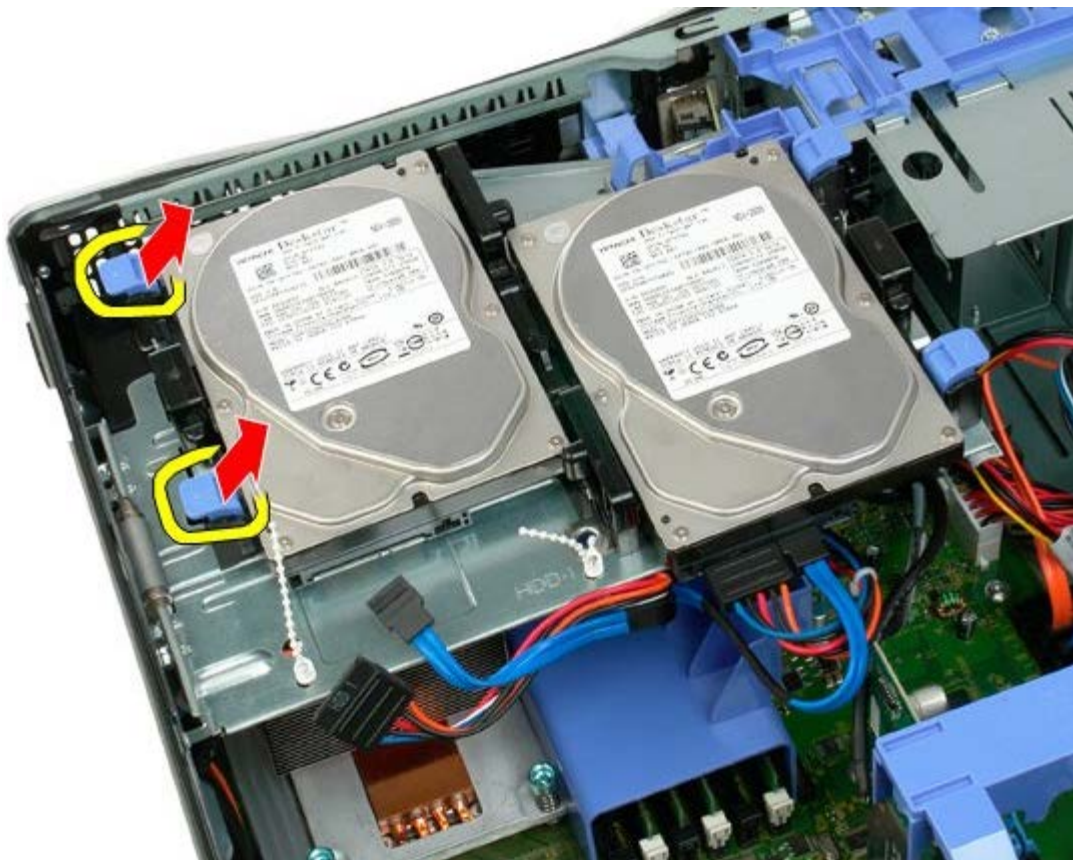
5. Squeeze the two release tabs toward each other and hold.

6. Tilt the hard drive towards away from the release tabs.
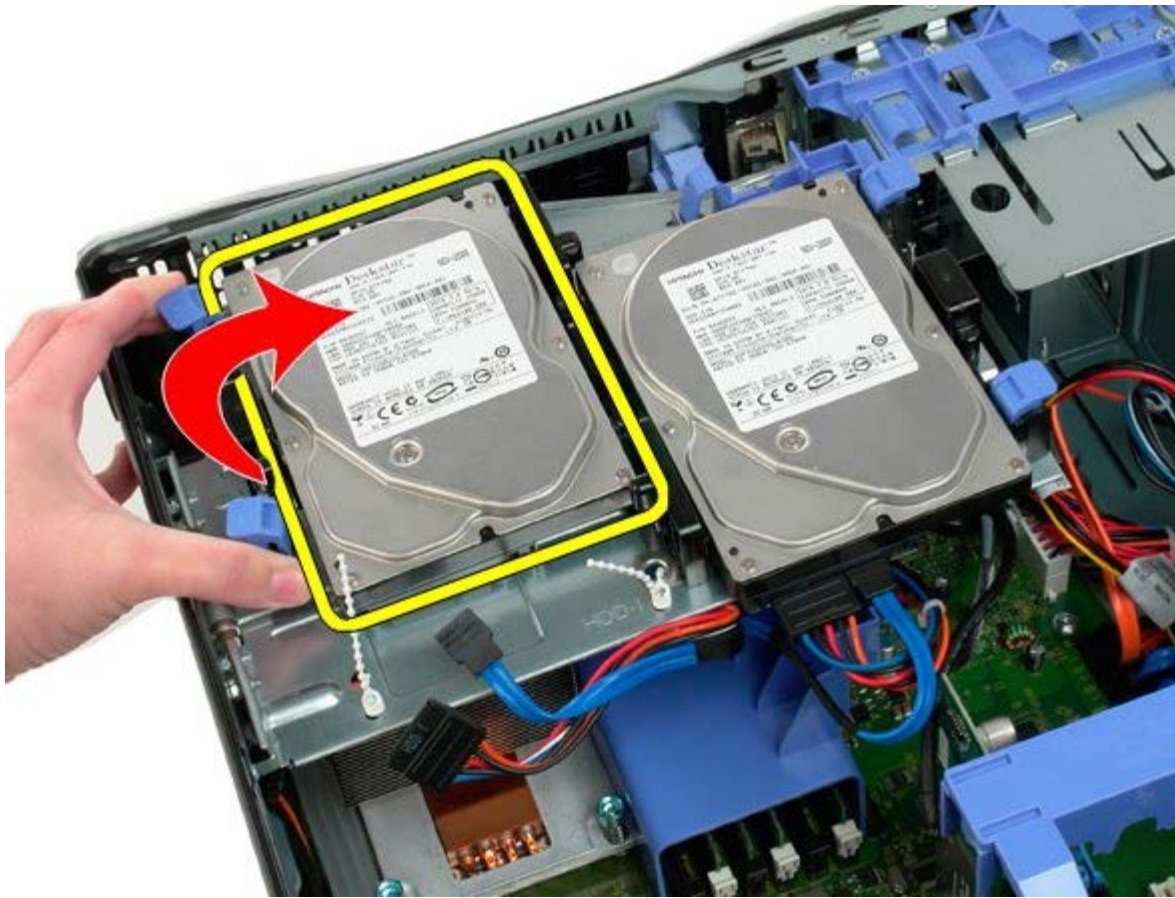
7. Remove the first hard drive from the computer at an angle.

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8. Repeat the process with the second hard drive.

Memory Shroud
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Removing the Memory Shroud

1. Follow the procedures in <u>Before Working Inside Your Computer</u>.
2. Remove the computer <u>cover</u>.
3. Raise the hard drive tray:
   a. Push and hold the blue release tab toward the bottom of the computer.

b. Raise the hard drive tray on its hinges.

4. Lift the memory shroud straight up and out of the system.

Battery

Dell Precision™ T3500 Service Manual

⚠ **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.**
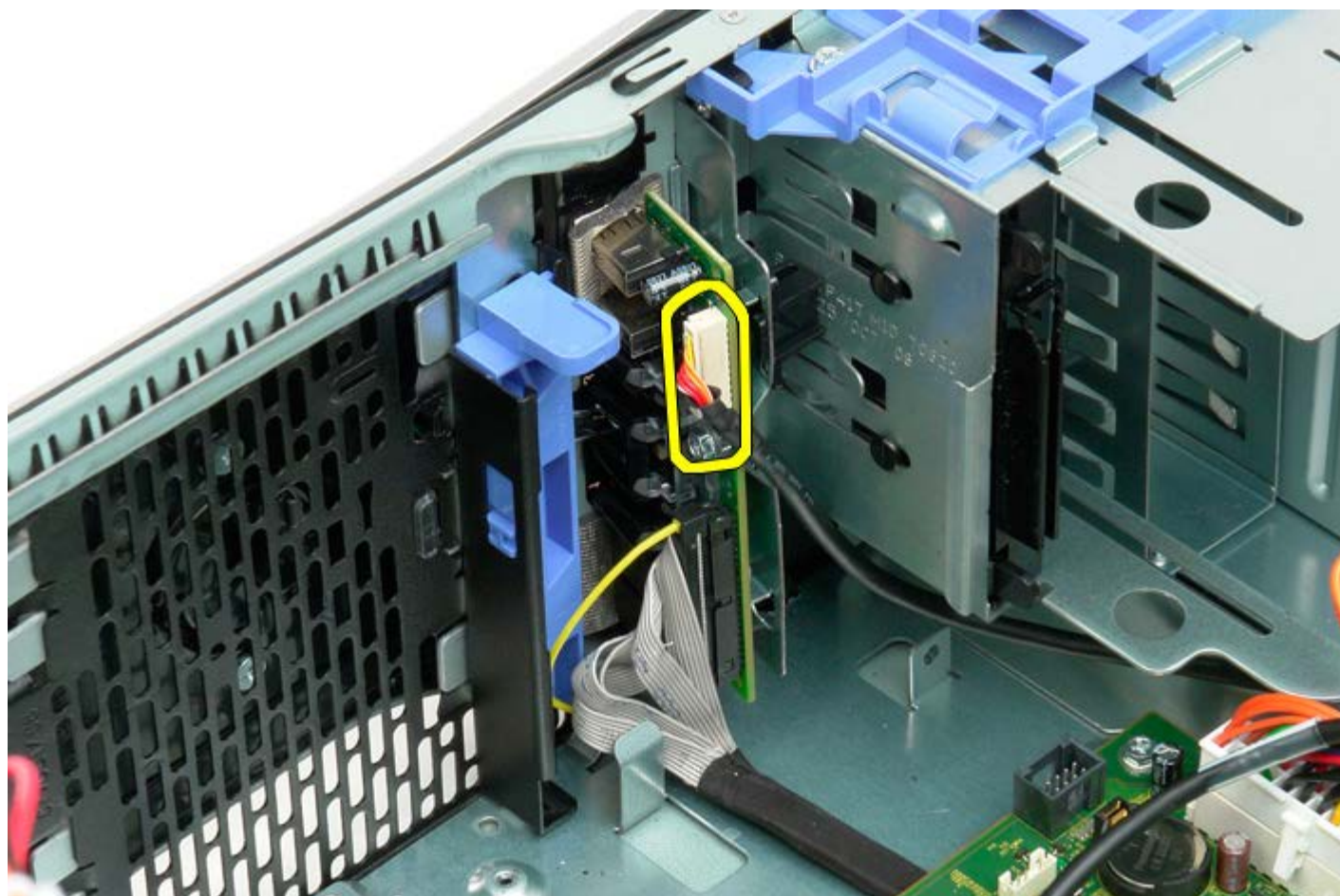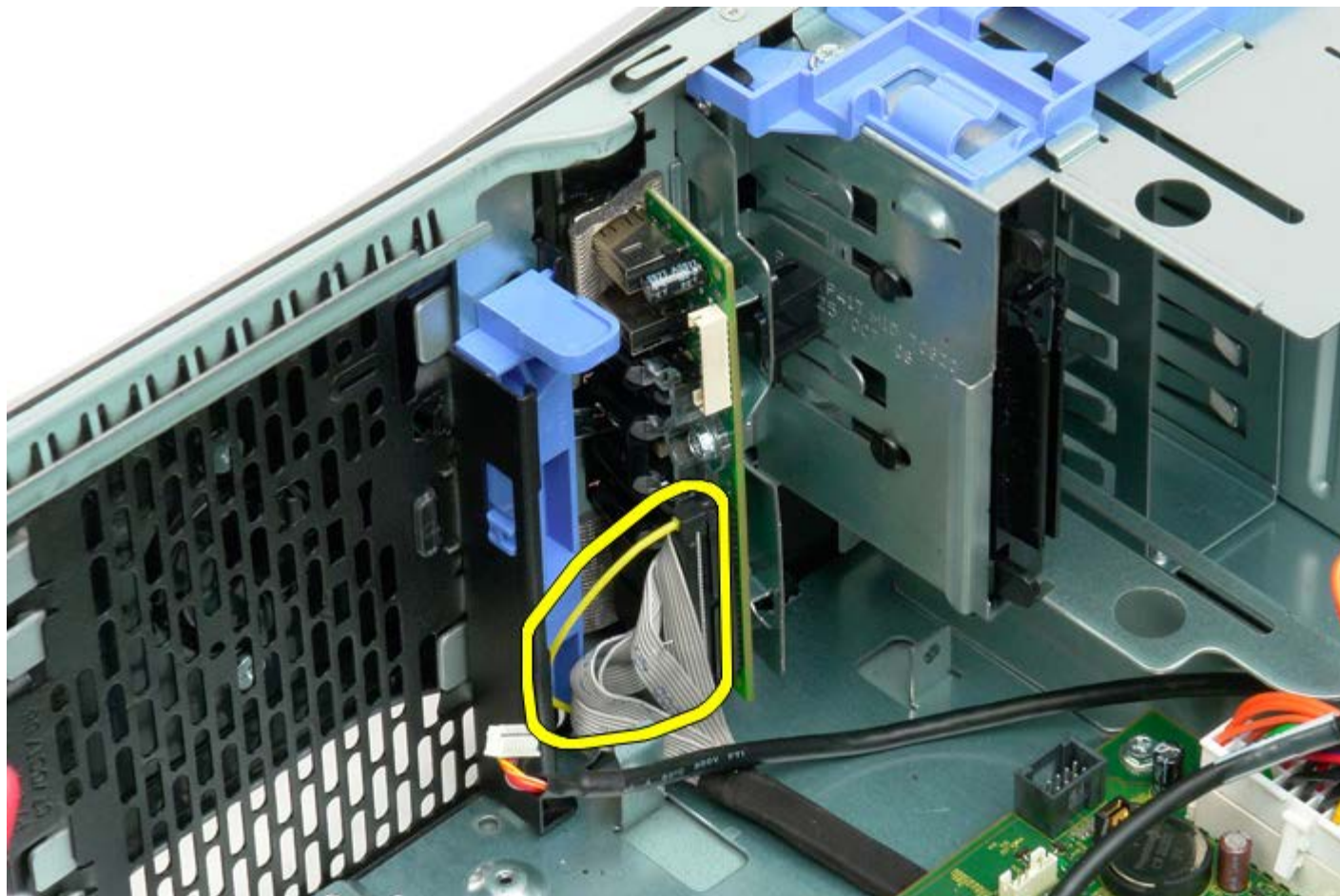
Removing the Battery

1. Follow the procedures in <u>Before Working Inside Your Computer</u>.
2. Remove the computer <u>cover</u>.
3. Lift the <u>hard drive tray</u>.

📝 **NOTE:** The memory module shroud has been removed to increase visibility to the following procedure.

2. Use a small screw driver or a scribe to push the coin-cell release tab.
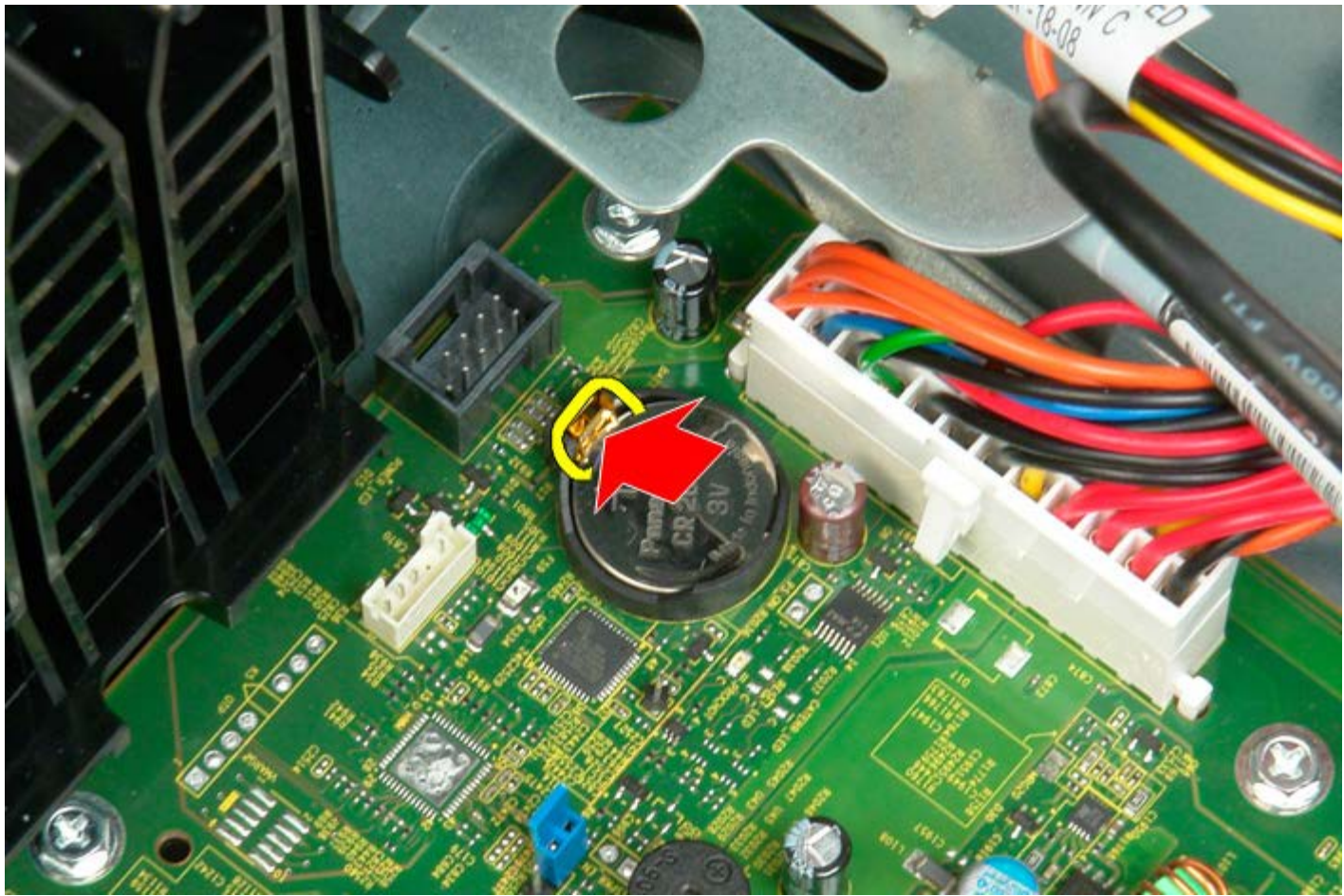
3. Remove the coin-cell battery from the computer.
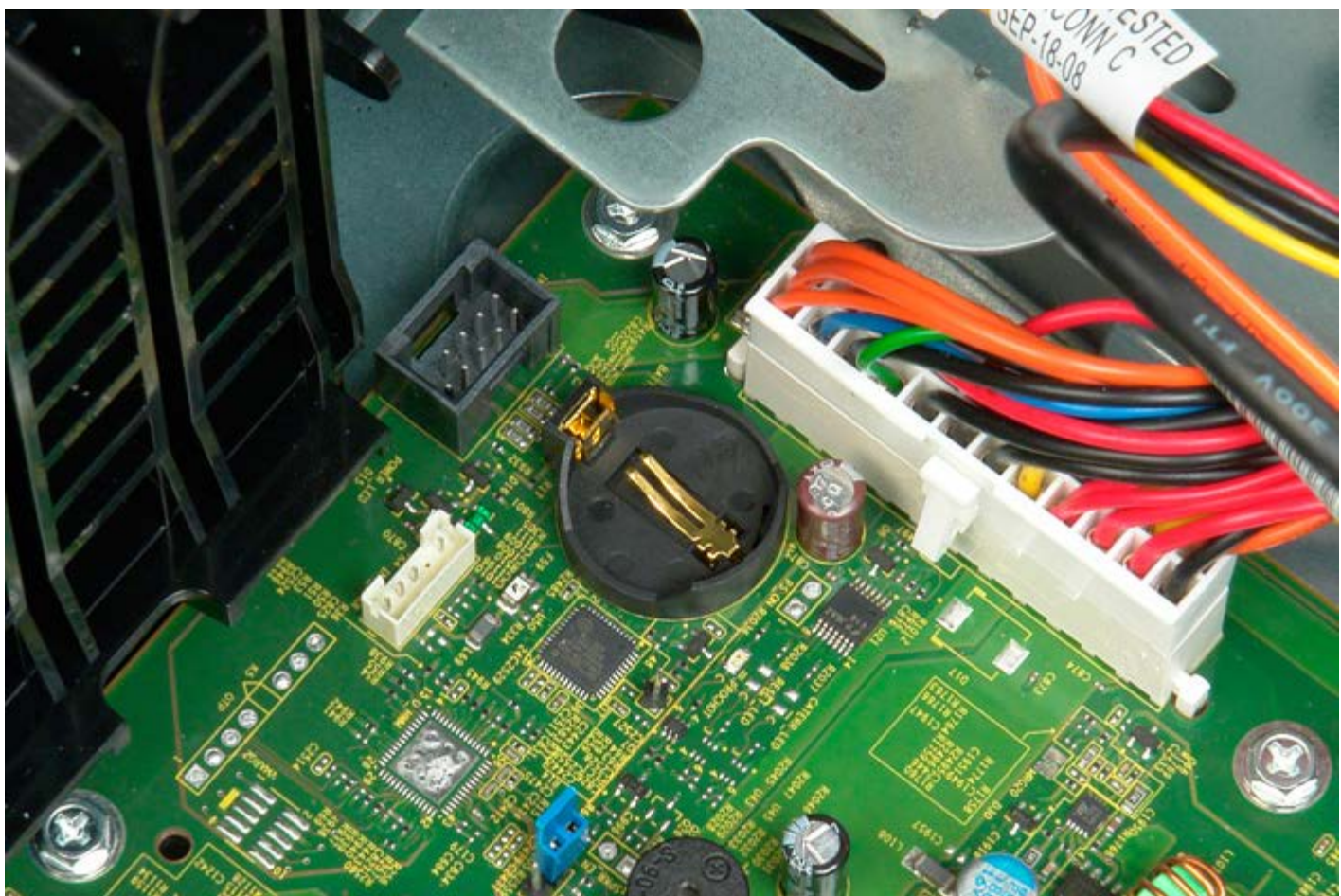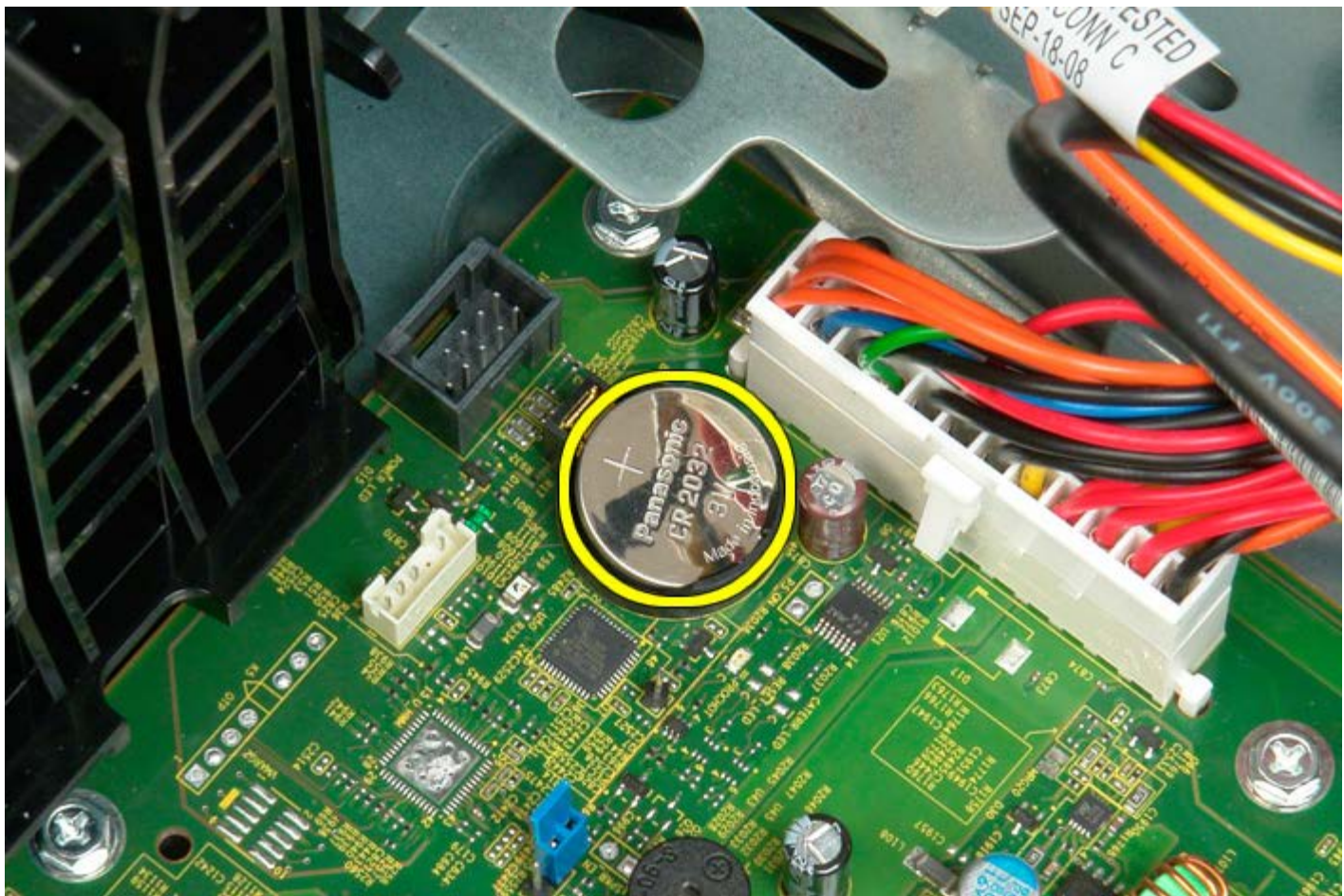
Video Card

Dell Precision™ T3500 Service Manual

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Removing the Video Card

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the computer cover.

3. Lift the expansion card retention assembly arm away from the chassis.

4. Squeeze the expansion card retention assembly release tabs together and hold.

5. Continue tilting the expansion card retention assembly towards the outside of the computer.
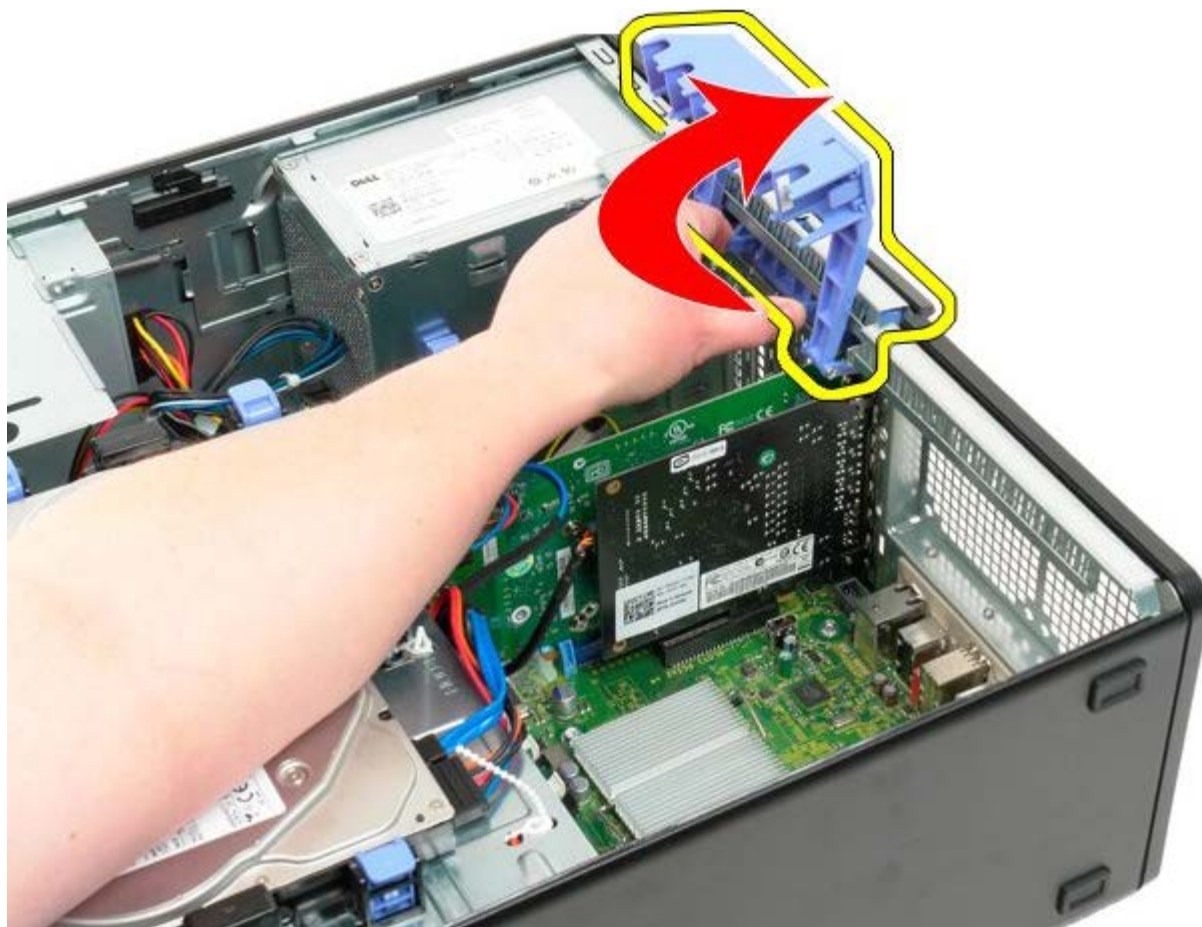
6. Pull the blue release tab on the system board away from the video card.

 NOTE: The expansion card has been removed to increase visibility to the following procedure.

7. Lift the video card straight up and remove the card from the computer.
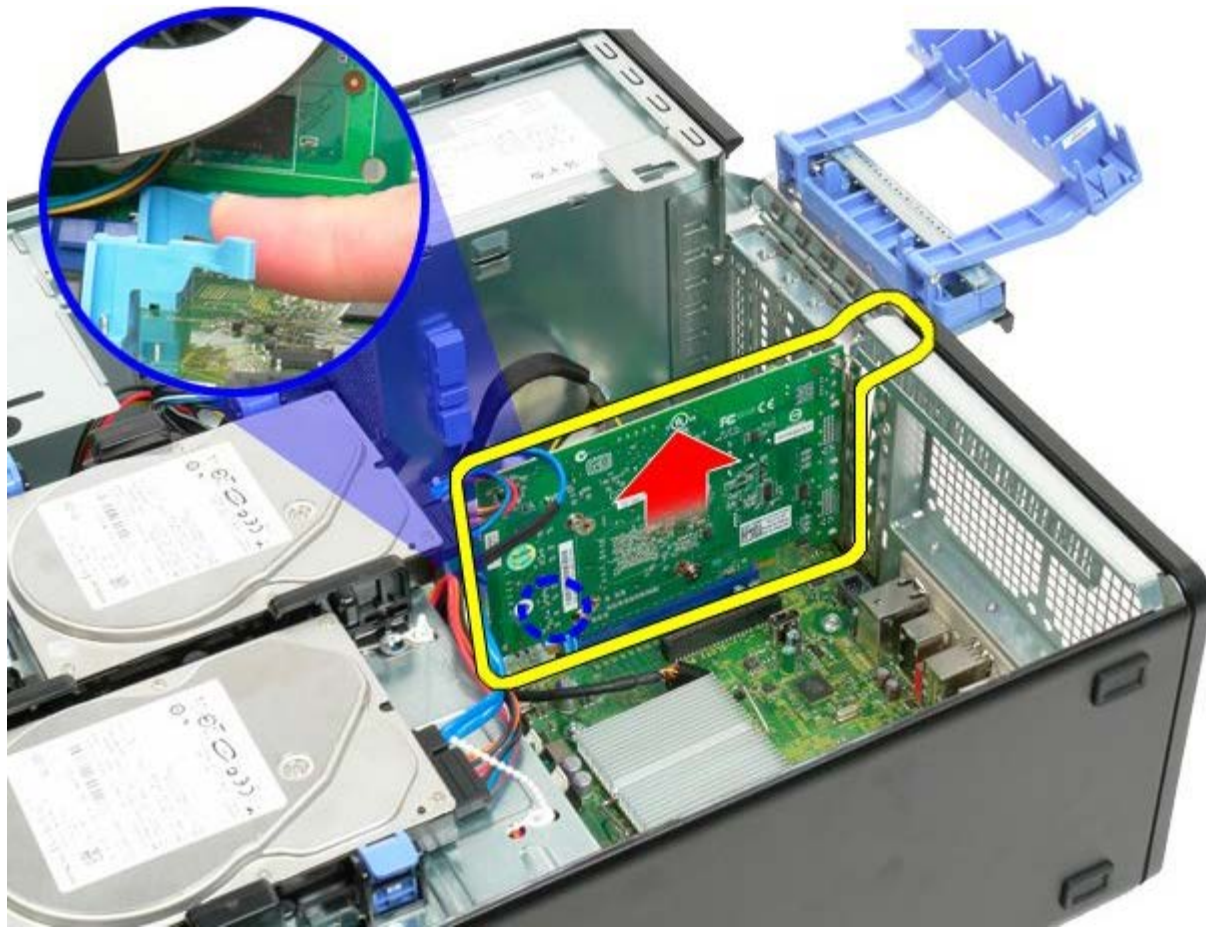
Heat Sink and Processor
Dell Precision™ T3500 Service Manual

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Removing the Heat Sink and Processor
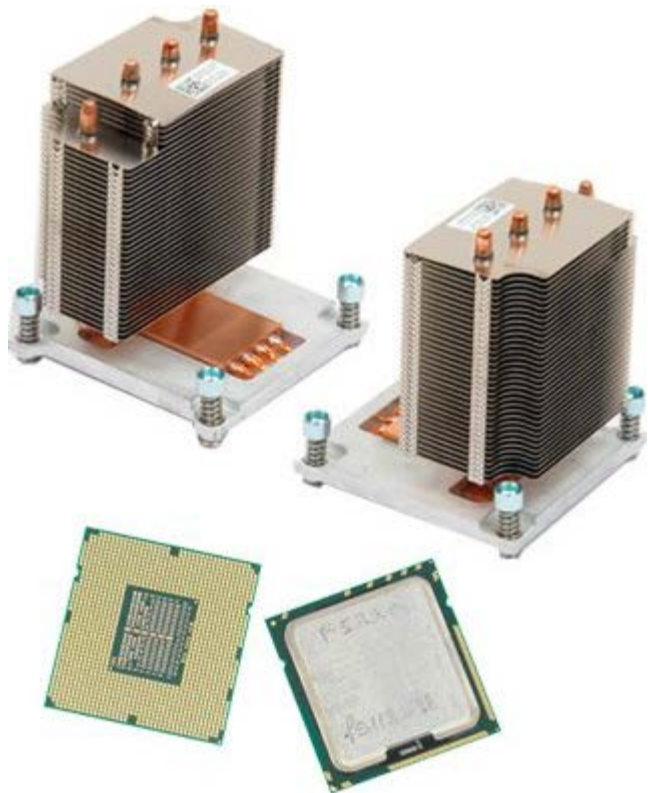
1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the computer cover.
3. Lift the hard drive tray:
    a. Push and hold the blue release tab toward the bottom of the computer.

b. Raise the hard drive tray on its hinges.

4. Remove the [memory module shroud](#).

5. Loosen the four captive screws on the heatsink.
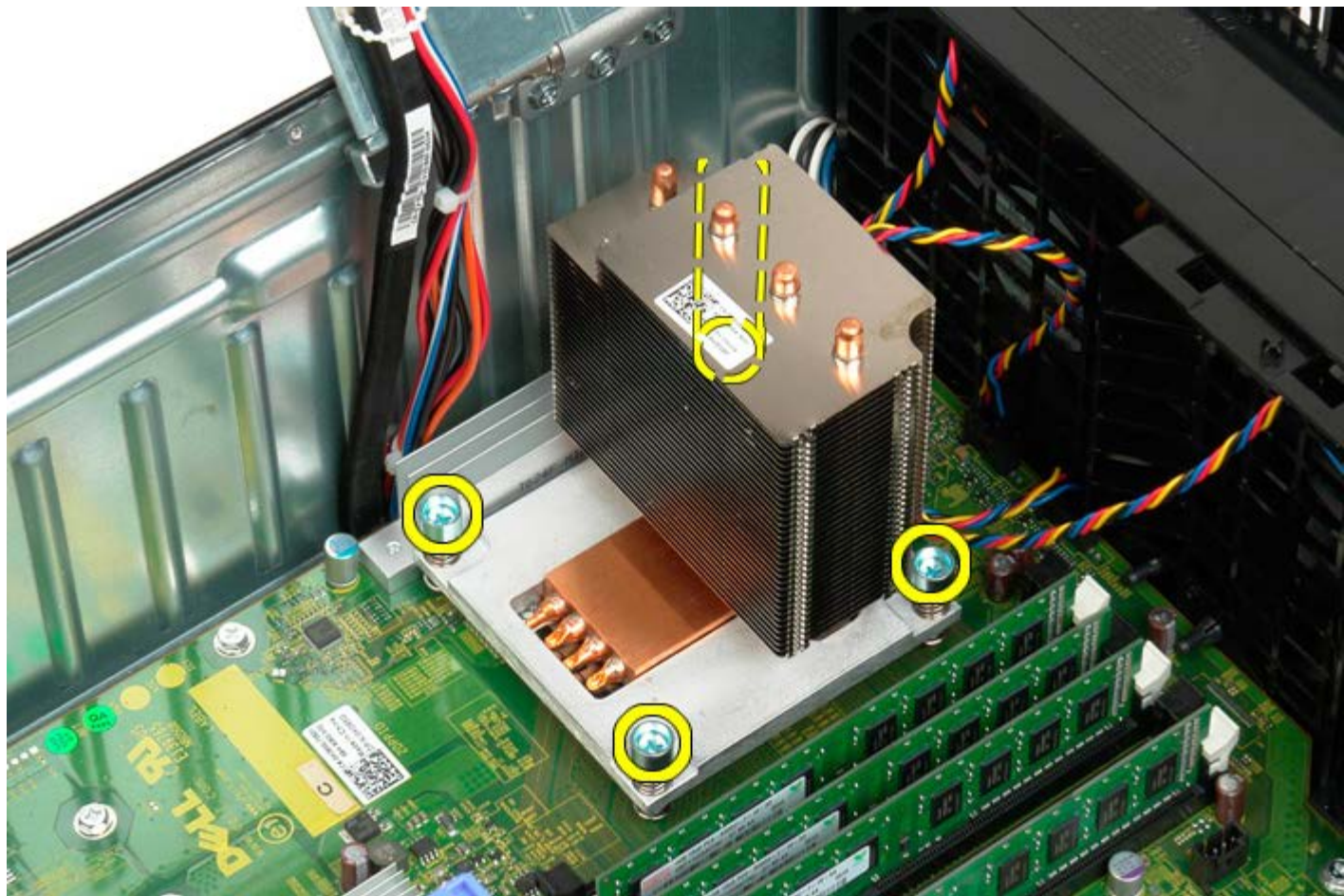
6. Lift the heat sink straight up and remove from the computer.

7. Open the processor cover by sliding the release lever from under the center cover latch on the socket.
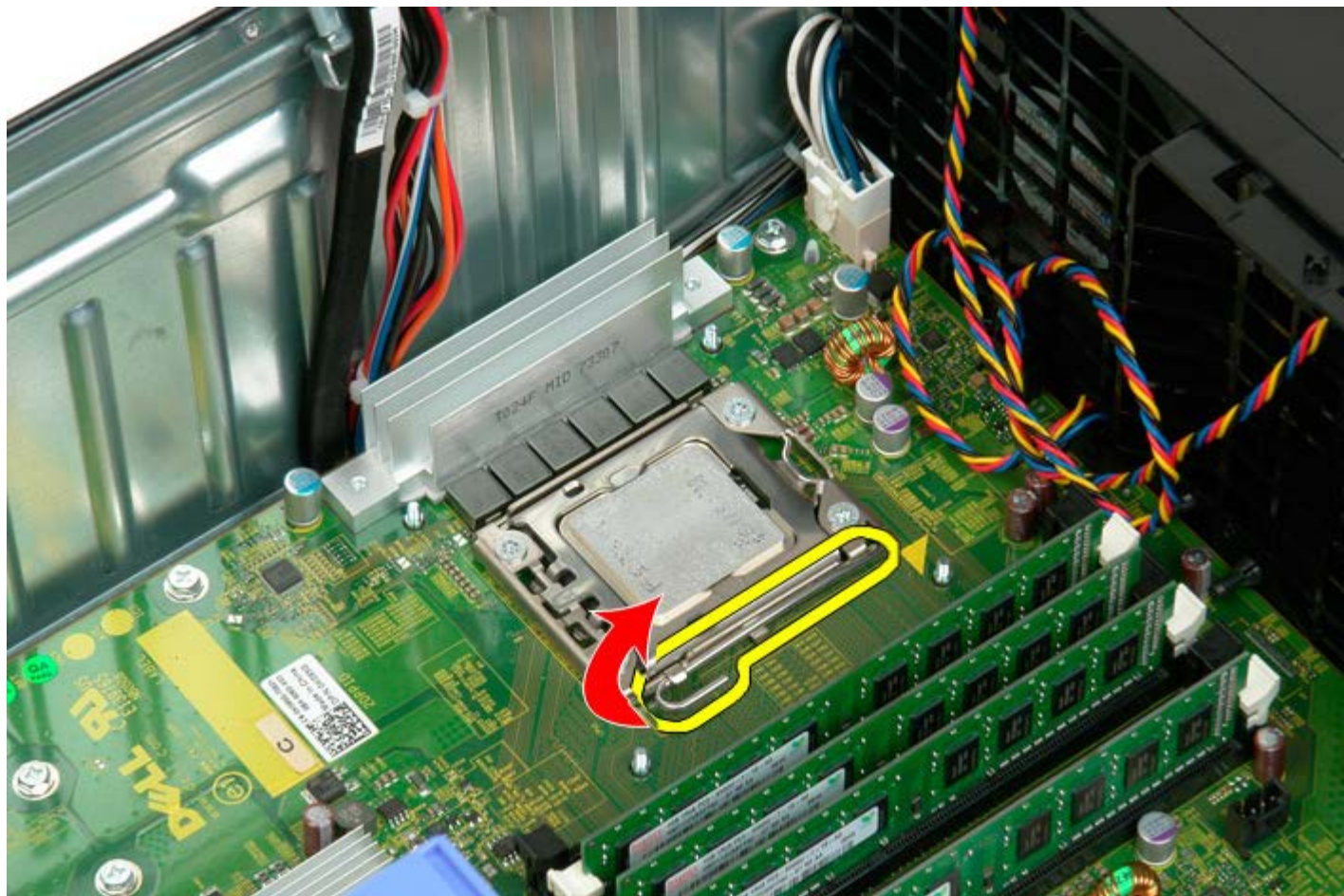
8. Lift the processor cover on its hinge to release the processor.
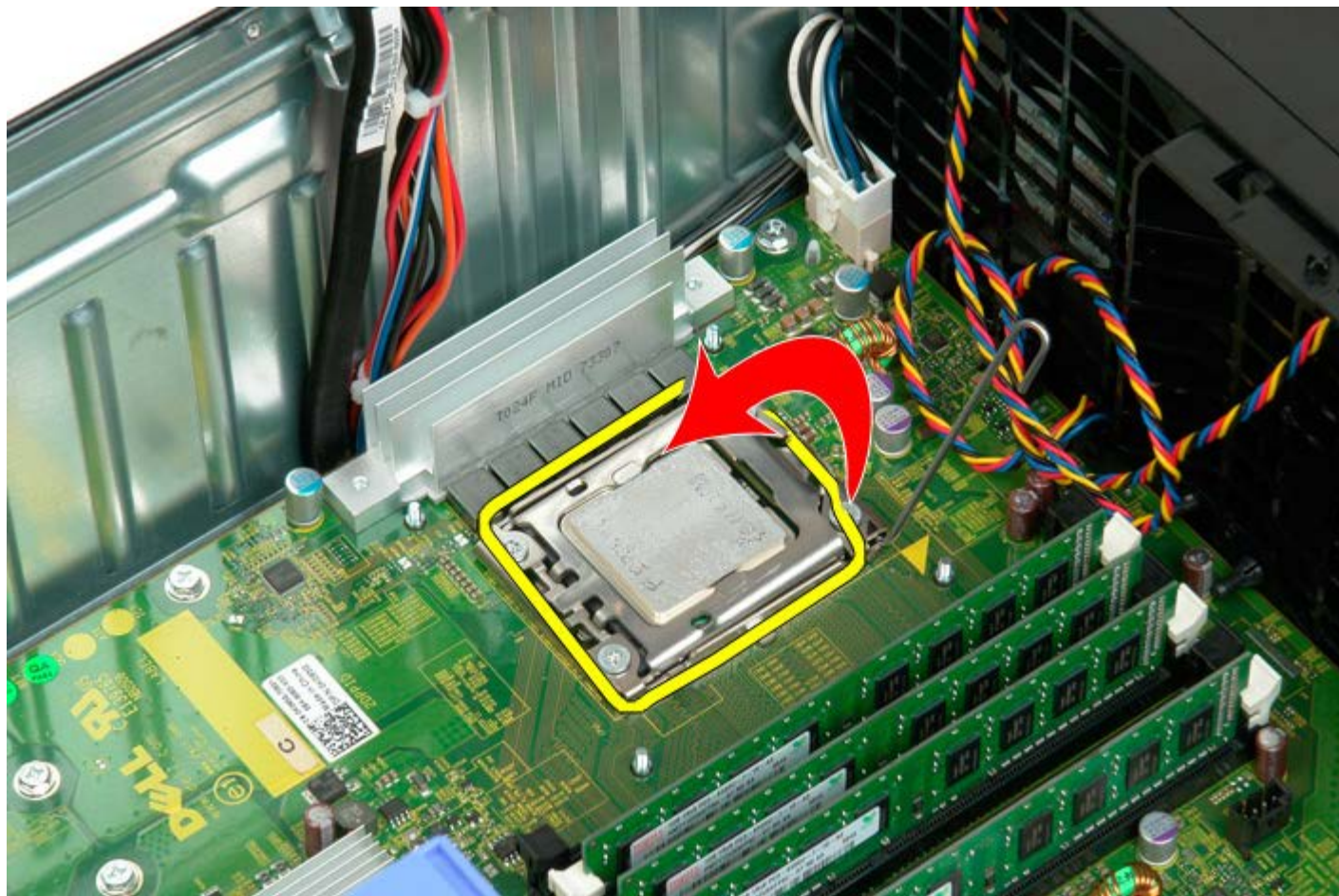
9. Carefully lift the processor straight up and remove it from the system.
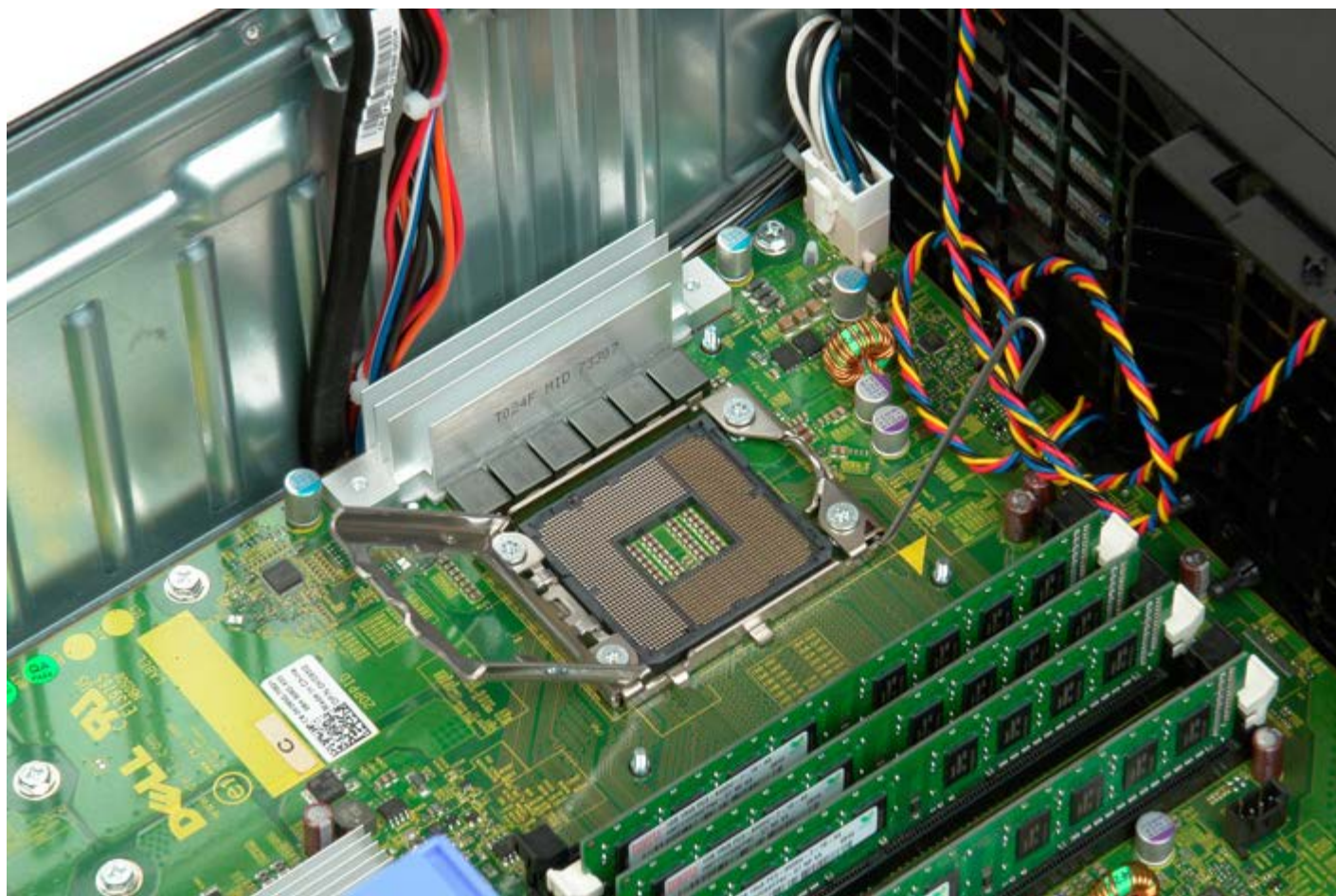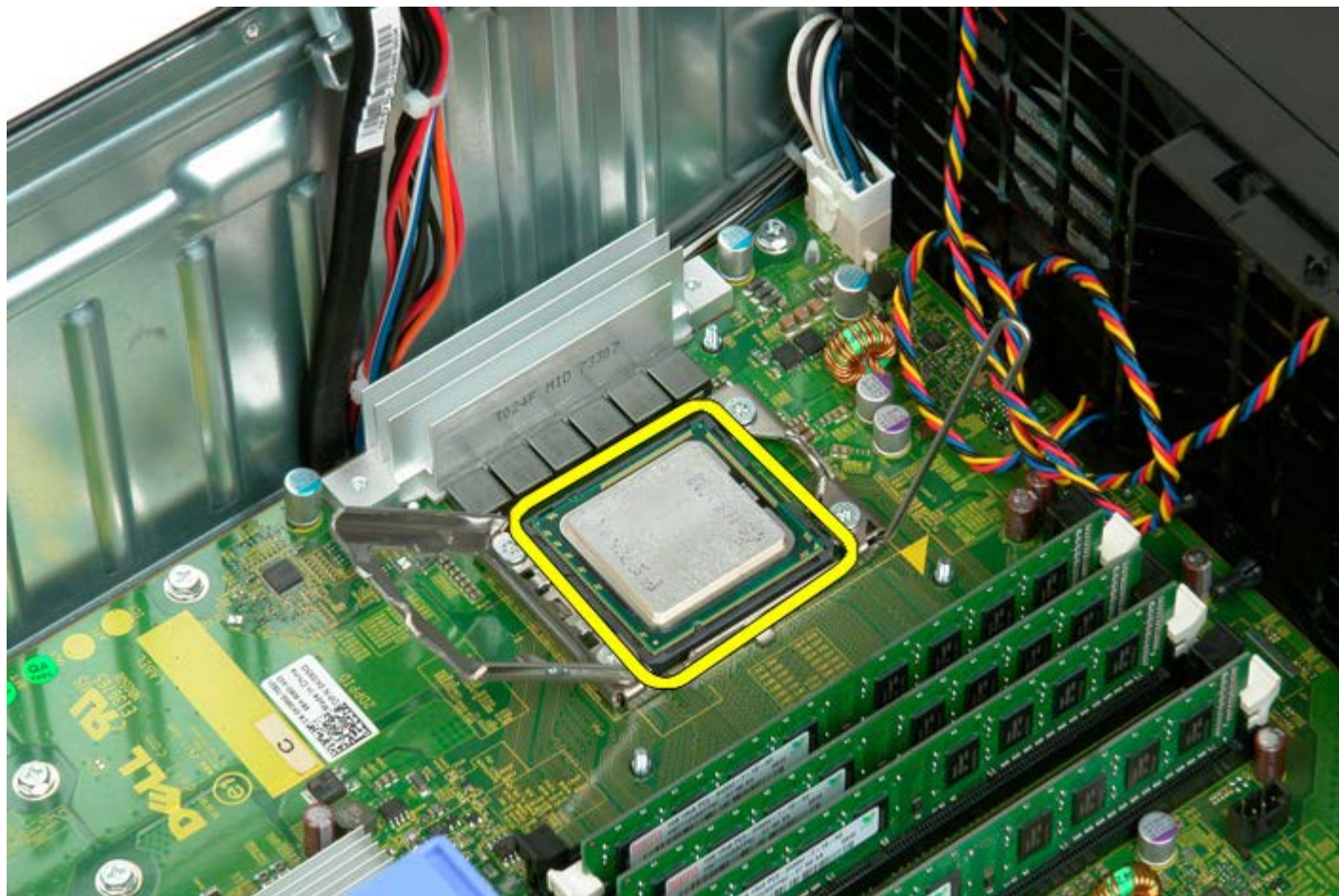
I/O Panel
Dell Precision™ T3500 Service Manual

⚠️ **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 I/O Panel

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the computer cover.
3. Raise the hard drive tray.
4. Remove the memory module shroud.
5. Remove the front fan assembly.

6. Disconnect the USB cable from the I/O panel.

7. Disconnect the I/O data cable from the I/O panel.

8. Remove the screw that secures the I/O panel to the computer.
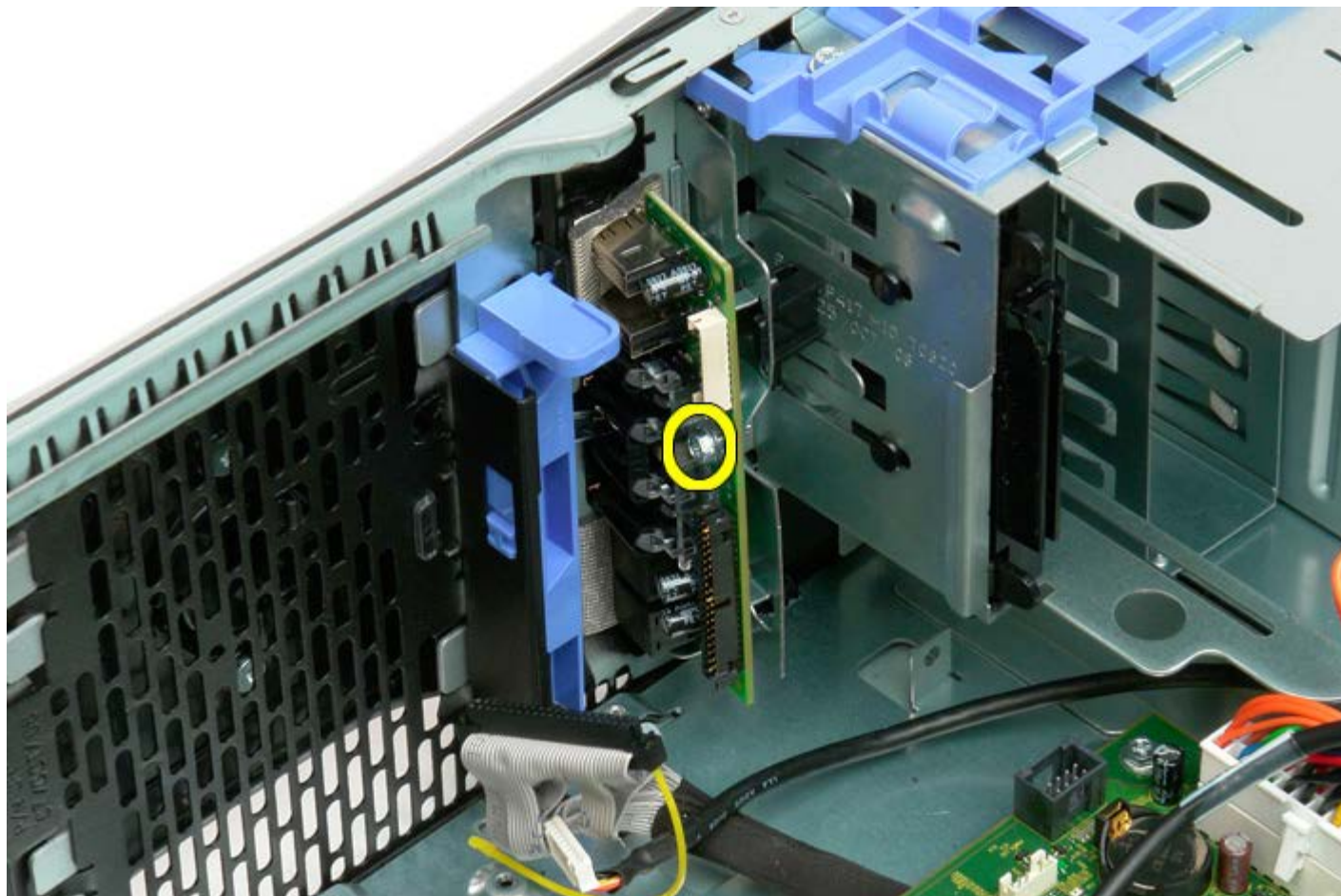
9. Remove the I/O panel from the computer.
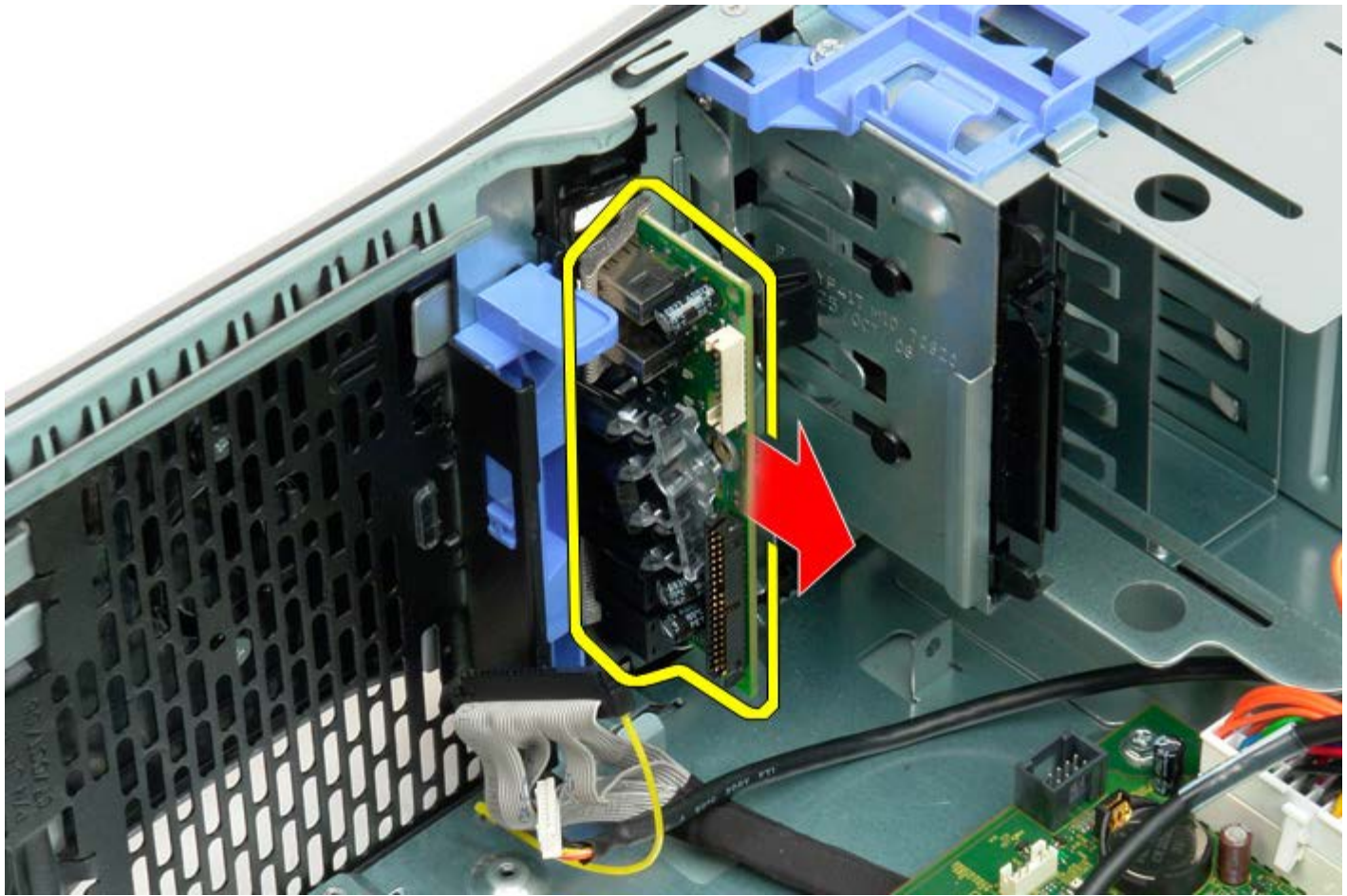
Power Supply

Dell Precision™ T3500 Service Manual

⚠️ **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 Power Supply

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the computer cover.

3. Tilt the expansion card retention arm towards the edge of the computer.
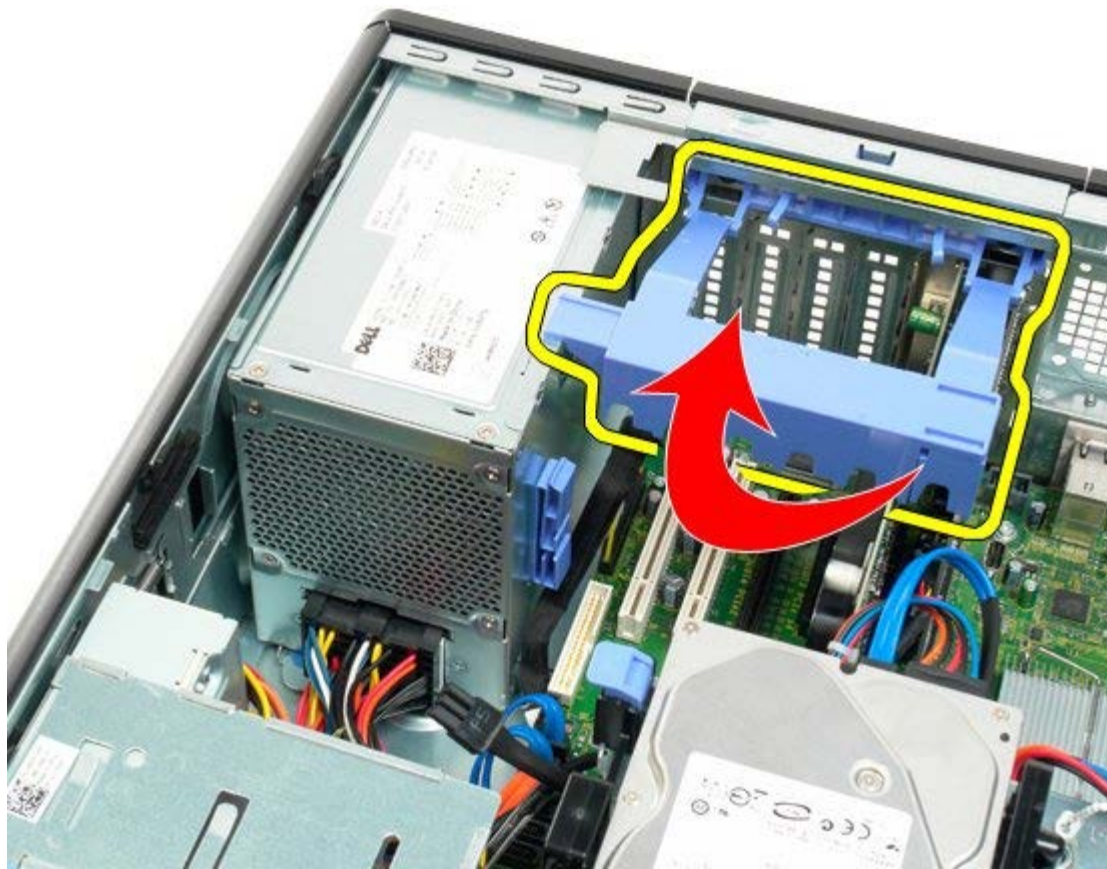
4. Disconnect the power supply cable by squeezing the tabs (1) while pulling the cable away from the power supply (2).

5. Remove the four screws that secure the hard drive at the back of the computer.
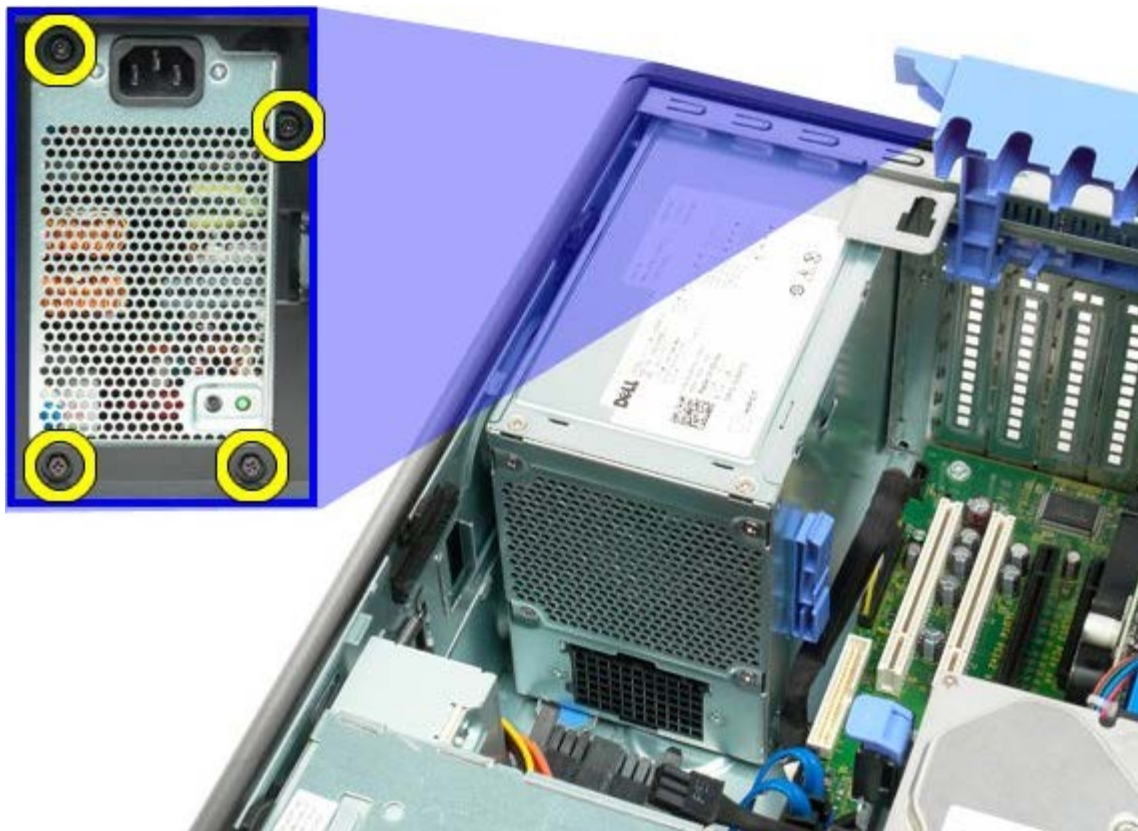
6. Push down on and hold the power supply release tab.
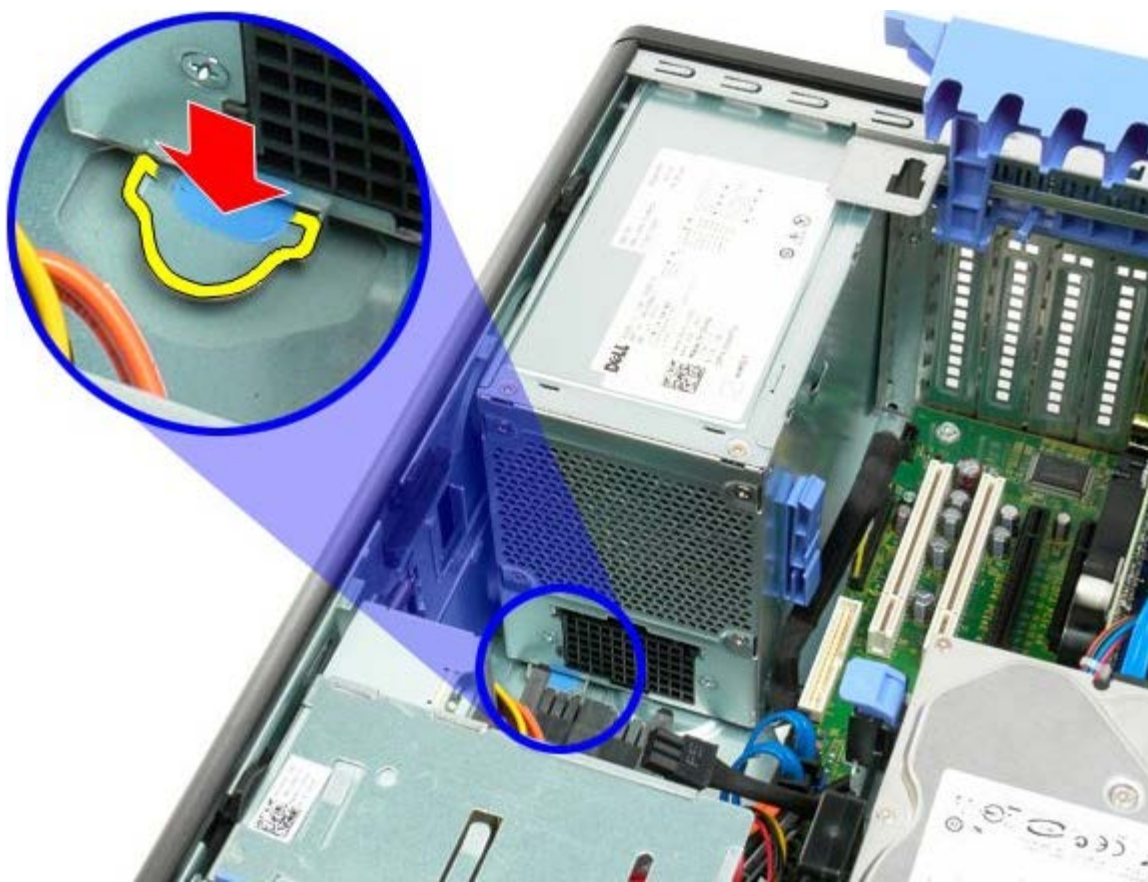
7. Slide the power supply towards the interior of the computer until it clears the metal frame.
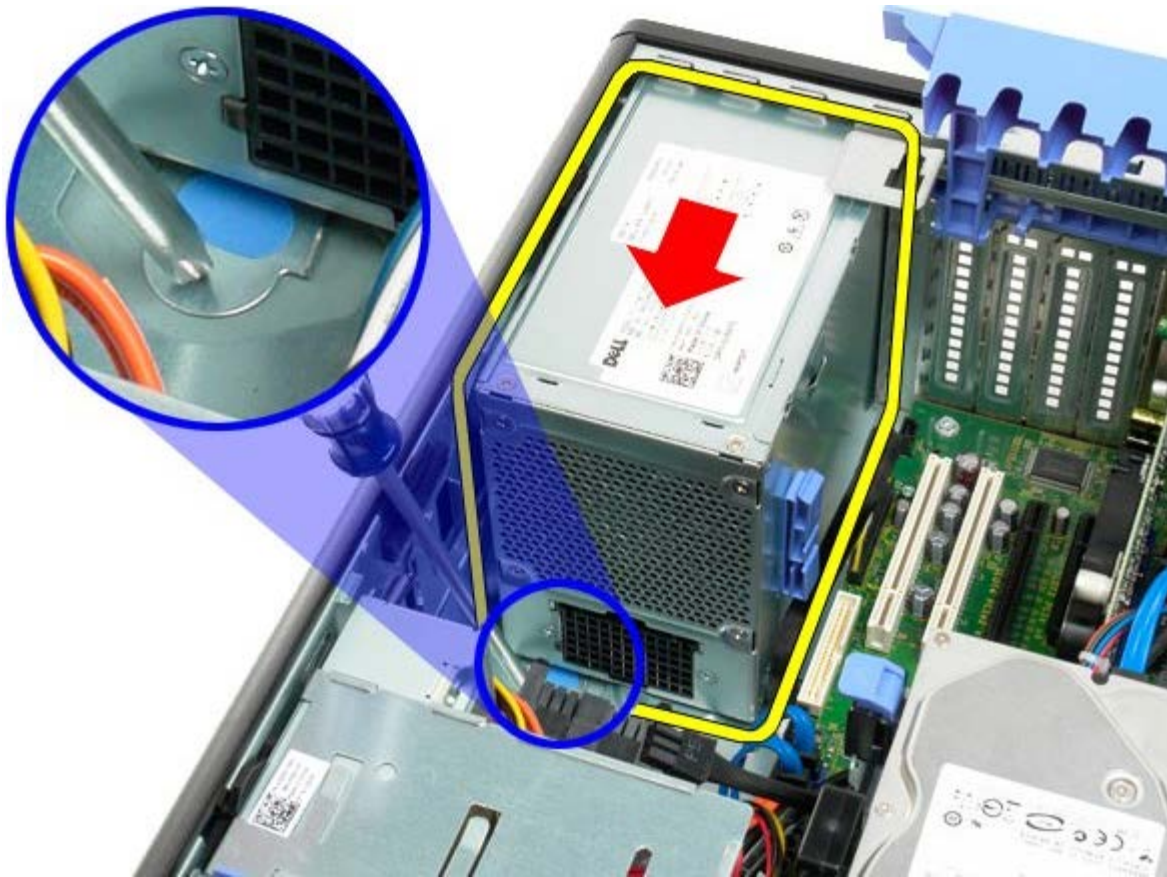
8. Lift the power supply straight up and remove from the computer.

Drives Bezel

Dell Precision™ T3500 Service Manual

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Removing Drives Bezel

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the computer cover.
3. Remove the front bezel.

4. Push the sliding plate lever down to release the drives bezel.

5. Tilt the drives bezel away from the front of the computer.

6. Remove the drives bezel from the computer.

Optical Drive

Dell Precision™ T3500 Service Manual

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📝 **NOTE: Additional 3rd and 4th hard drives can be installed in the optical drive bays. The installation and removal instructions for these drives remain the same as given below.**

Removing the Optical Drive

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the computer cover.
3. Remove the front bezel.
4. Remove the drives bezel.

5. Disconnect the power and data cables from the back of the optical drive.
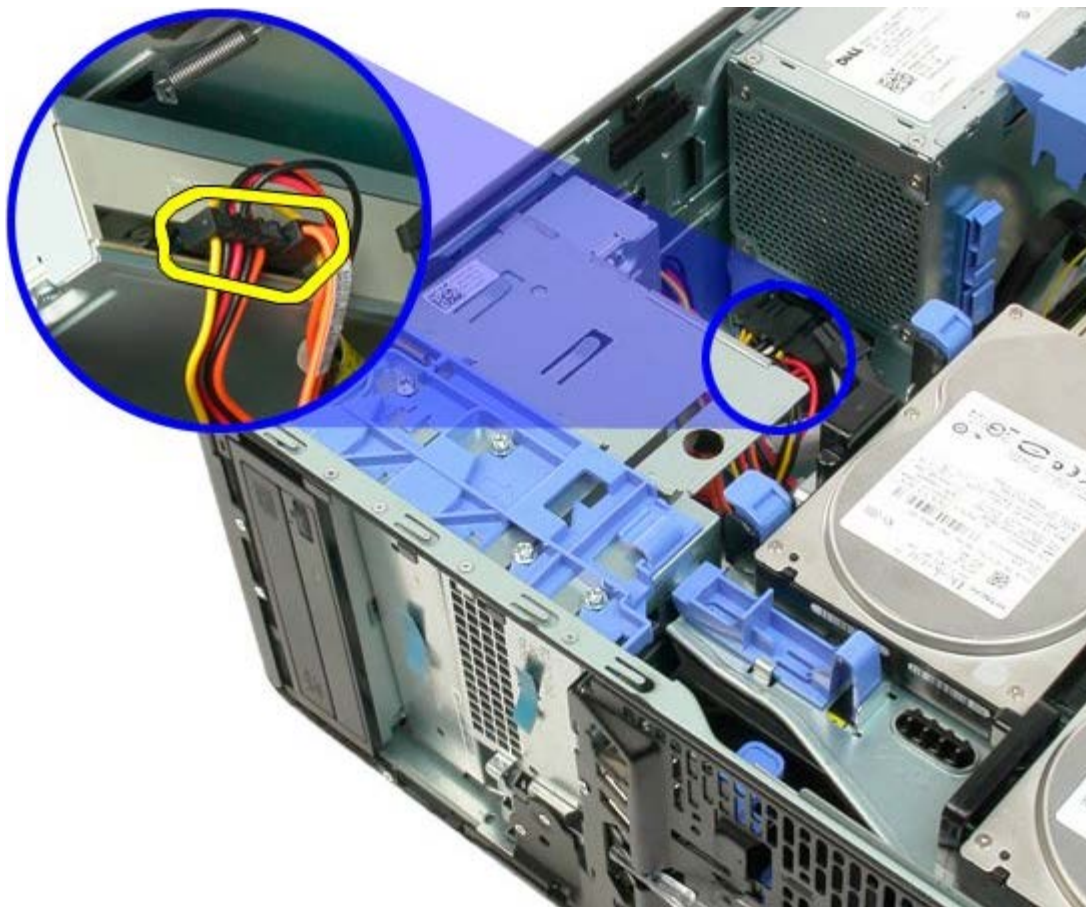
6. Push the sliding-plate lever down to release the optical drive.

7. Remove the optical drive from the computer.
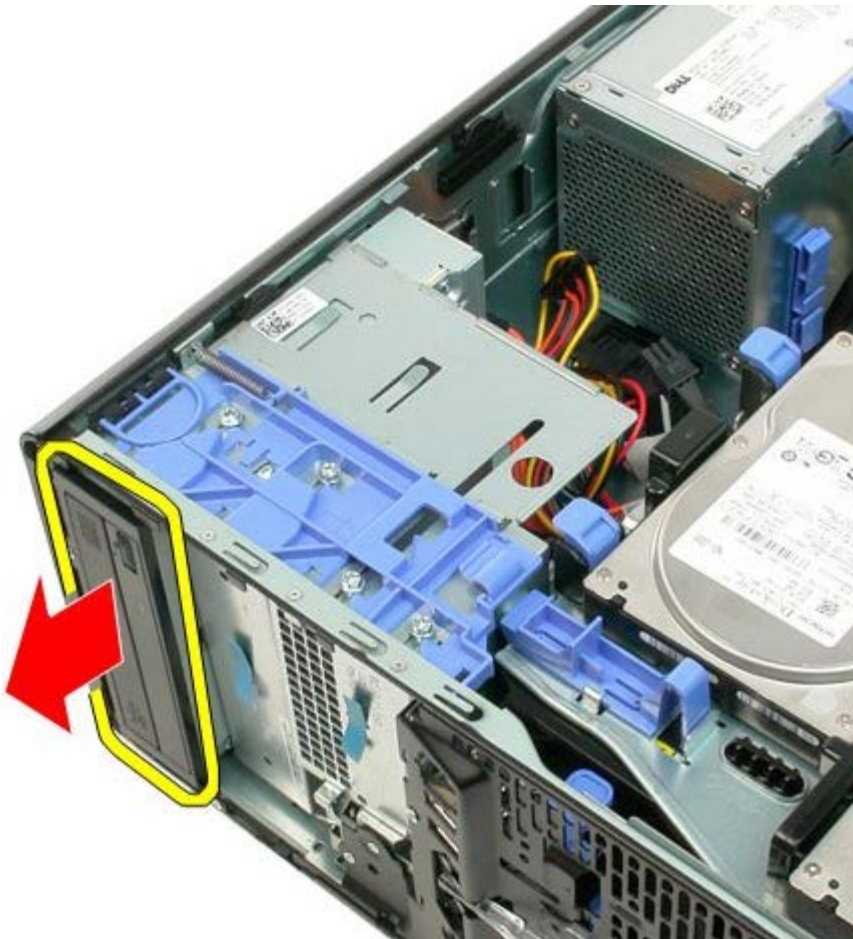
Memory
Dell Precision™ T3500 Service Manual

- Supported Memory Configurations
- Removing and Replacing Memory Modules

Your computer uses 1066 MHz or 1333Mhz DDR3 unbuffered SDRAM memory. DDR3 SDRAM, or double-data-rate three synchronous dynamic random access memory, is a random access memory technology. It is a part of the SDRAM family of technologies, which is one of many DRAM (dynamic random access memory) implementations, and is an evolutionary improvement over its predecessor, DDR2 SDRAM.

Supported Memory Configurations

Size (GB)	DIMM Ranks	DIMM1	DIMM2	DIMM3	DIMM4	DIMM5	DIMM6	1333MHz	1066MHz	Channel Mode
1	SR	1 GB						✓	✓	Single
2	SR	1 GB	1 GB					✓	✓	Dual
3	SR	1 GB	1 GB	1 GB				✓	✓	Tri
4	SR	1 GB	1 GB	1 GB	1 GB			✓	✓	Tri
4	DR	2 GB	2 GB					✓	✓	Dual
6	SR	1 GB	1 GB	1 GB	1 GB	1 GB	1 GB	✓	✓	Tri
6	DR	2 GB	2 GB	2 GB				✓	✓	Tri
12	DR	2 GB	2 GB	2 GB	2 GB	2 GB	2 GB	✓	✓	Tri
12	DR	4 GB	4 GB	4 GB				✓	✓	Tri
24	DR	4 GB	4 GB	4 GB	4 GB	4 GB	4 GB	✓	✓	Tri

NOTE: DDR3 DIMMs have 240 pins, the same number as DDR2, and are the same size, but are electrically incompatible and have a different key notch location.

Removing and Replacing Memory Modules

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.
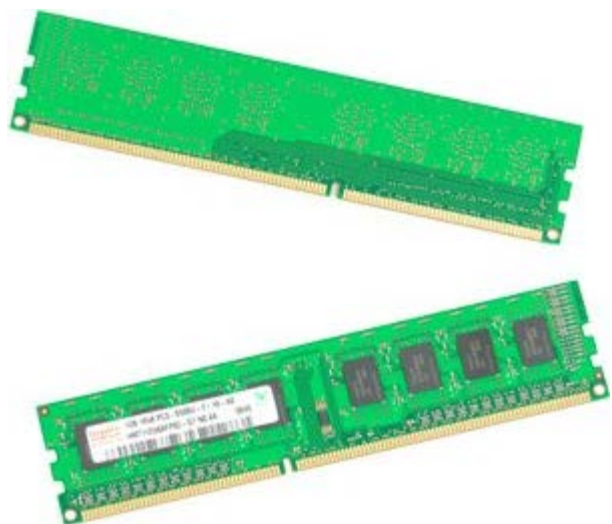
1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the computer cover.
3. Lift the hard drive tray:
    a. Push the blue release tab toward the bottom of the computer
    b. Raise the hard drive tray on its hinges.
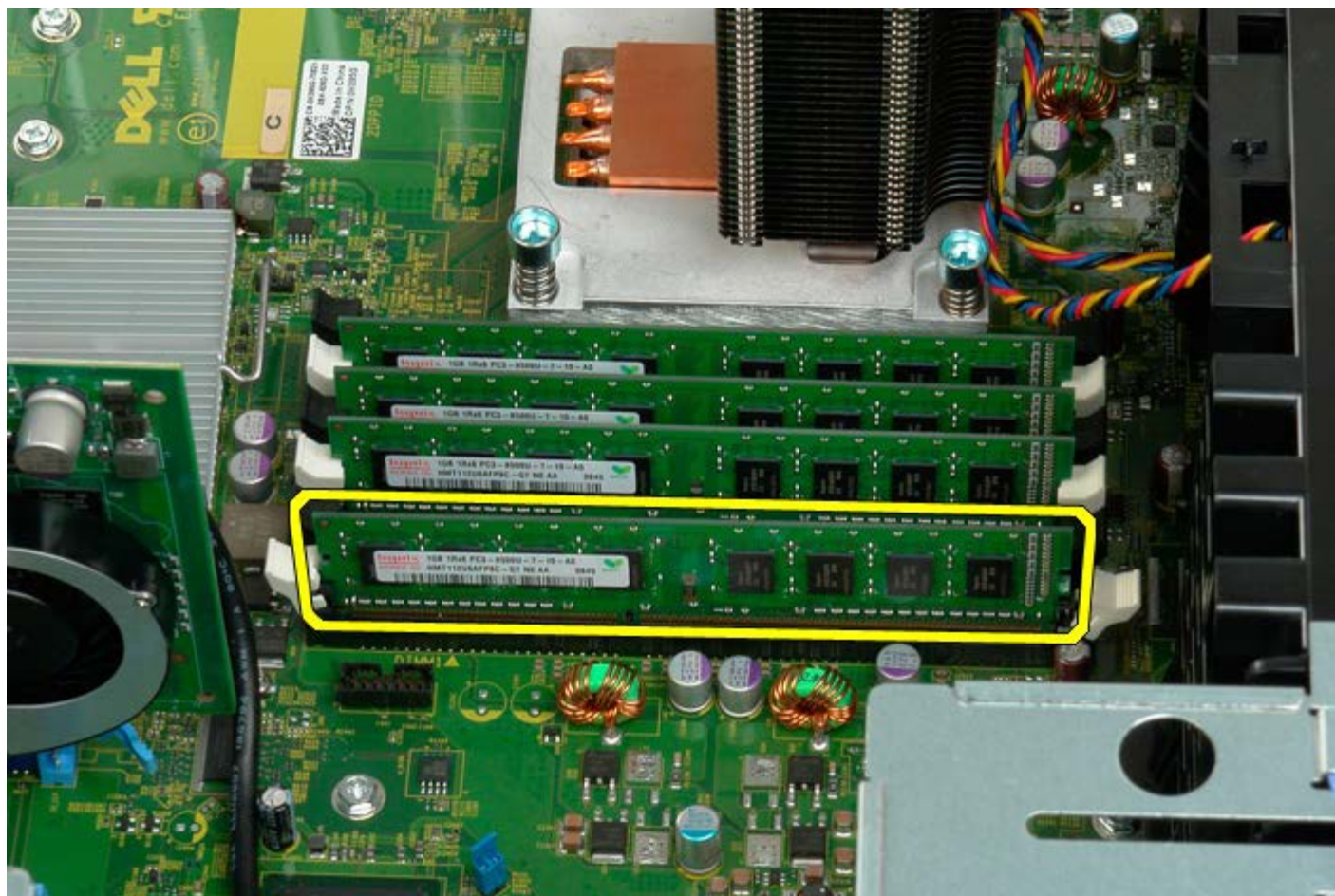
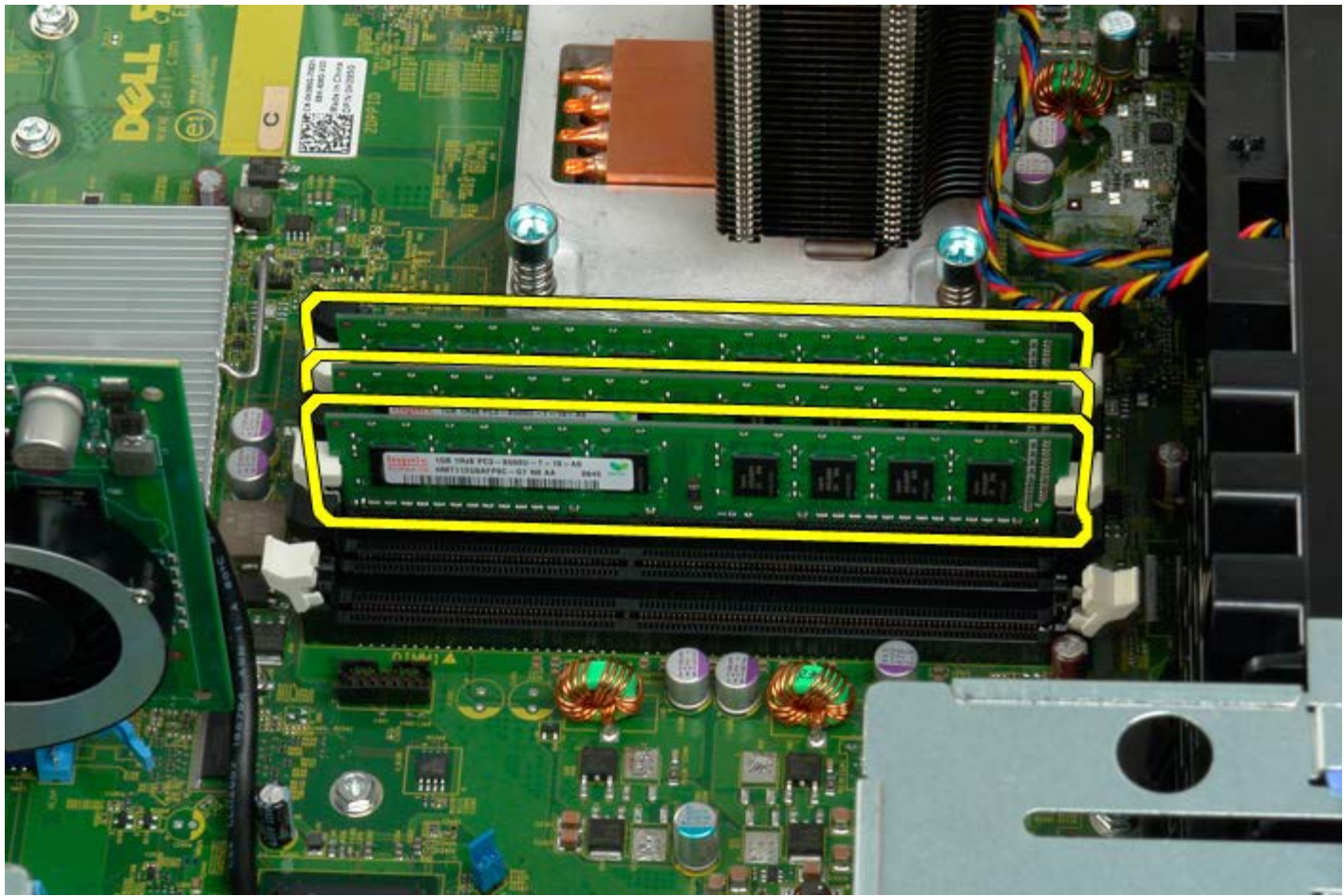4. Remove the memory module shroud.

5. Using your thumbs, gently push down on the memory module retention clips at either end of the module to release the module from the system board connector.
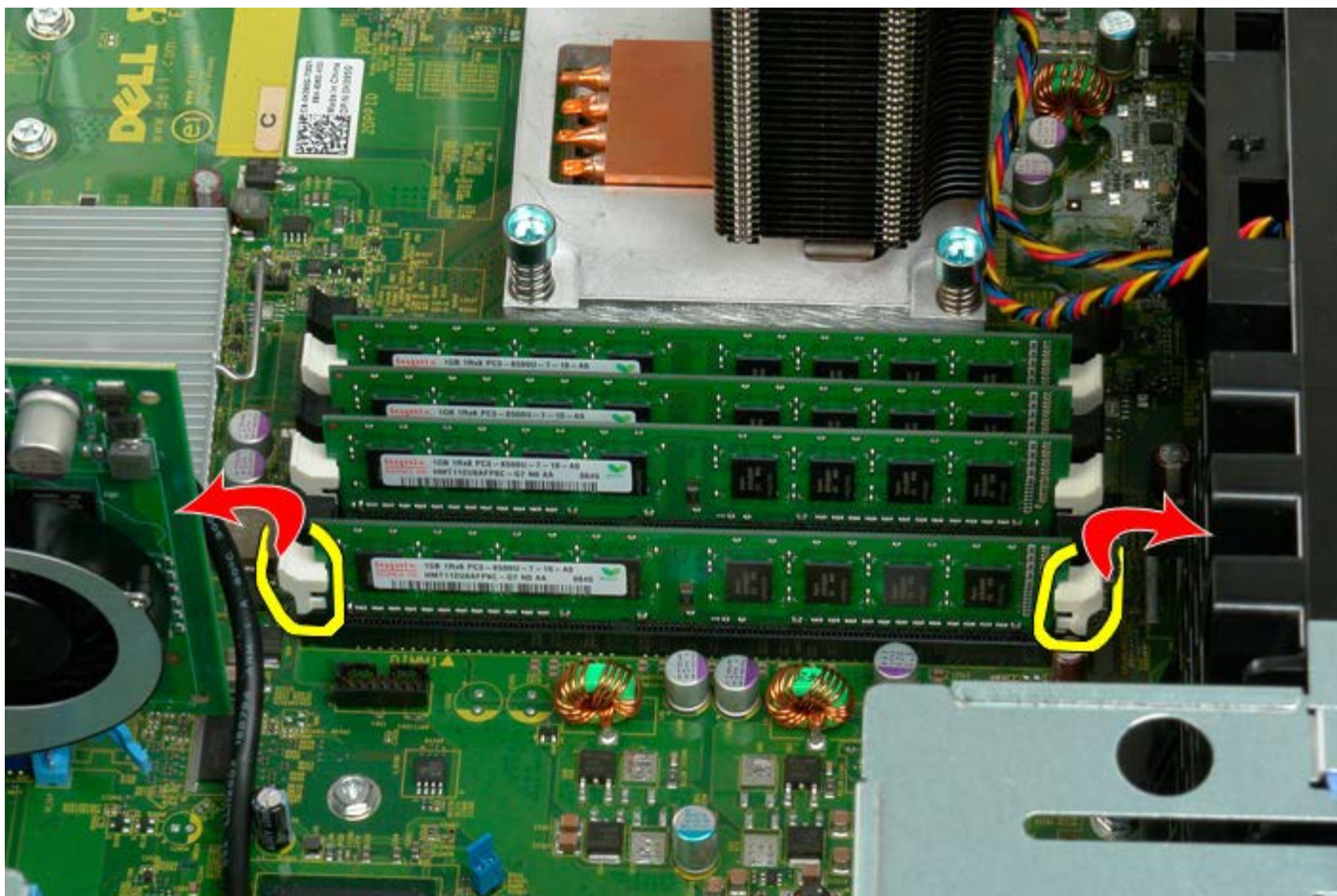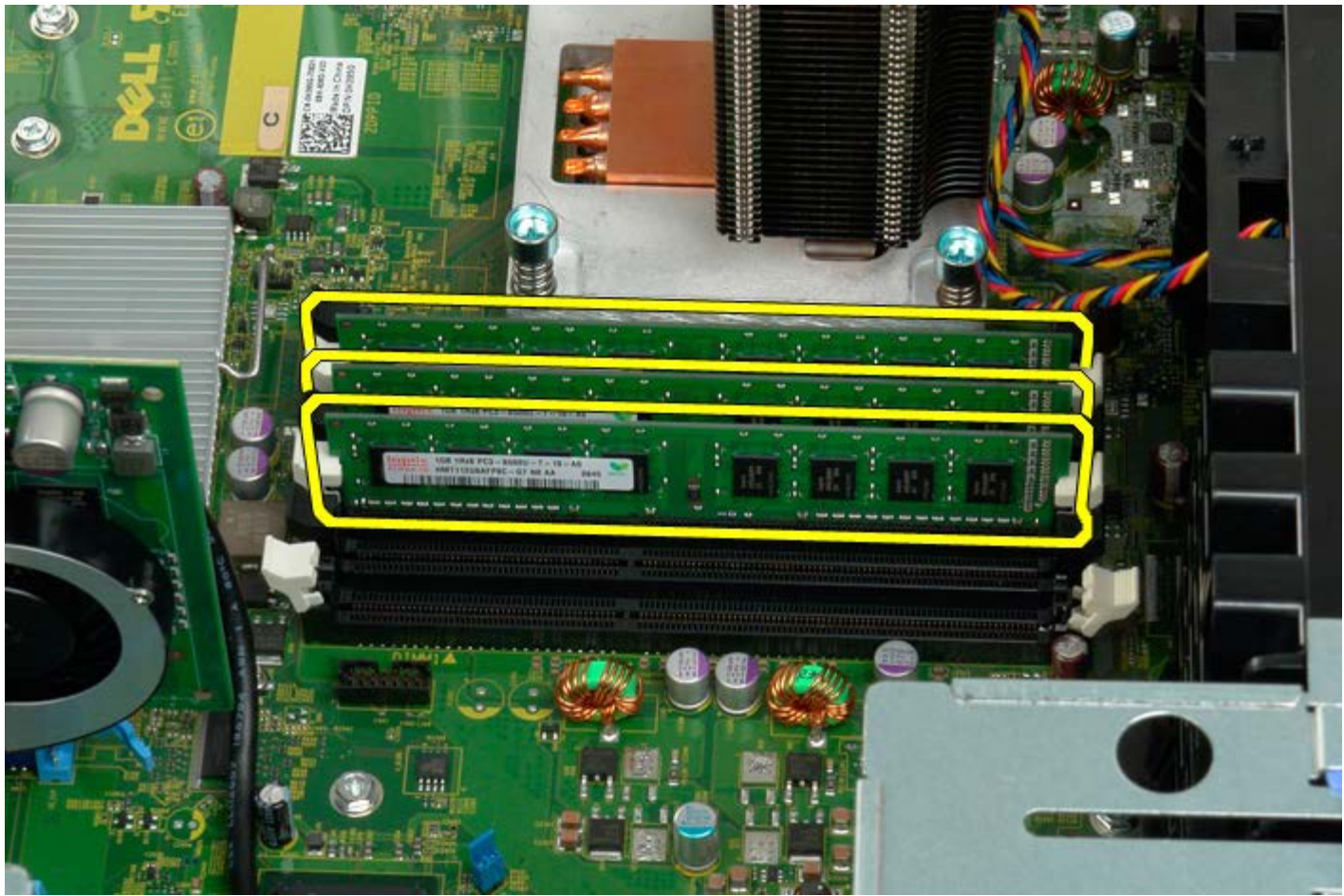
6. Lift the memory module straight up and out of the computer.

7. Repeat the process for any remaining memory modules.

Expansion Card
Dell Precision™ T3500 Service Manual

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Removing the Expansion Card

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the computer cover.

3. Lift the expansion card retention assembly arm away from the chassis.

4. Squeeze the expansion card retention assembly release tabs together and hold.

5. Continue tilting the expansion card retention towards the outside of the computer.

6. Disconnect the USB cable from the expansion card.

7. Lift the expansion card straight up and remove from the computer.

Front Fan Assembly

Dell Precision™ T3500 Service Manual

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Removing the Front Fan Assembly

1. Follow the procedures in <u>Before Working Inside Your Computer</u>.
2. Remove the computer <u>cover</u>.
3. Lift the hard drive tray:
   a. Push and hold the blue release tab toward the bottom of the computer.

b. Raise the hard drive tray on its hinges.

4. Remove the [memory module shroud](#).

5. Disconnect the two fan cables from the system board.
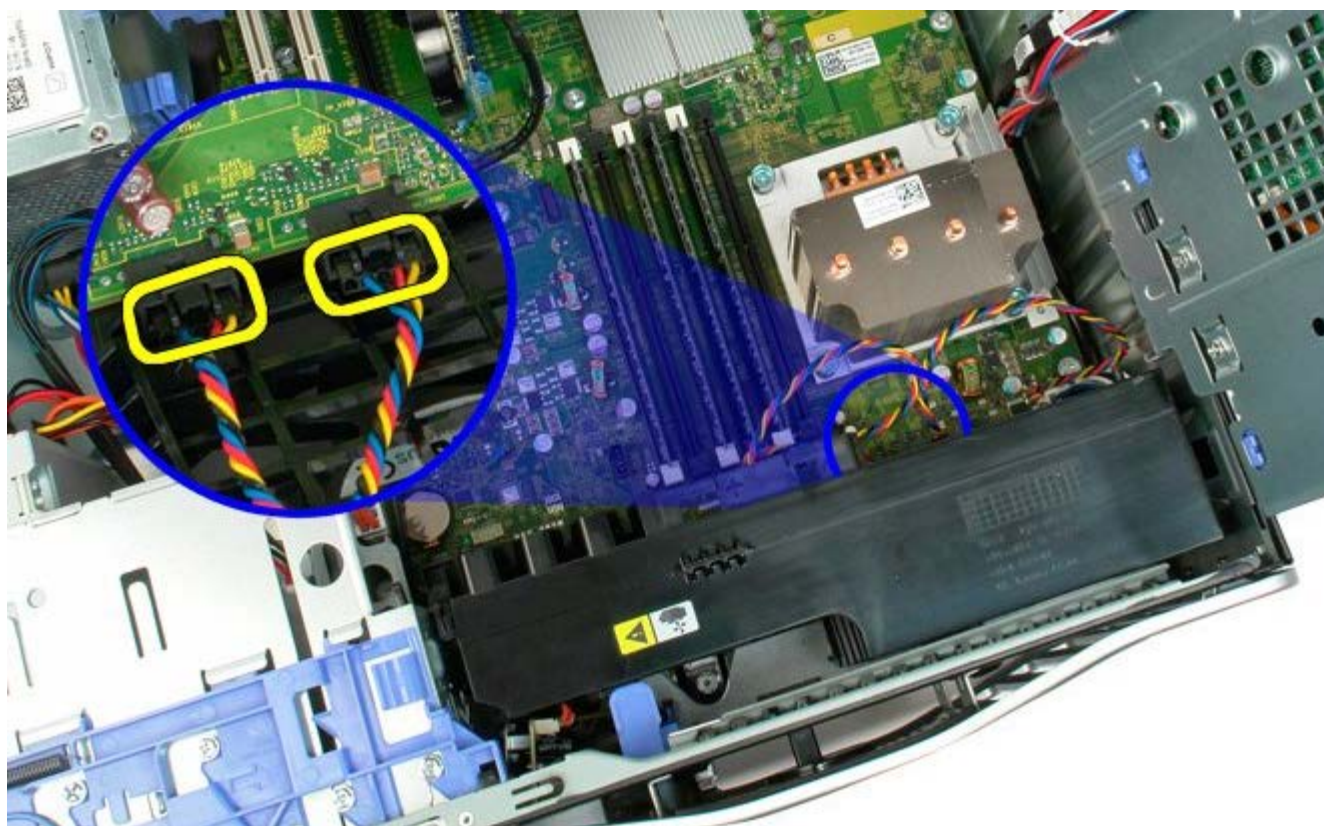
6. Remove the screw securing the front fan assembly to the computer.

7. Lift the front fan assembly straight up and remove it from the computer.
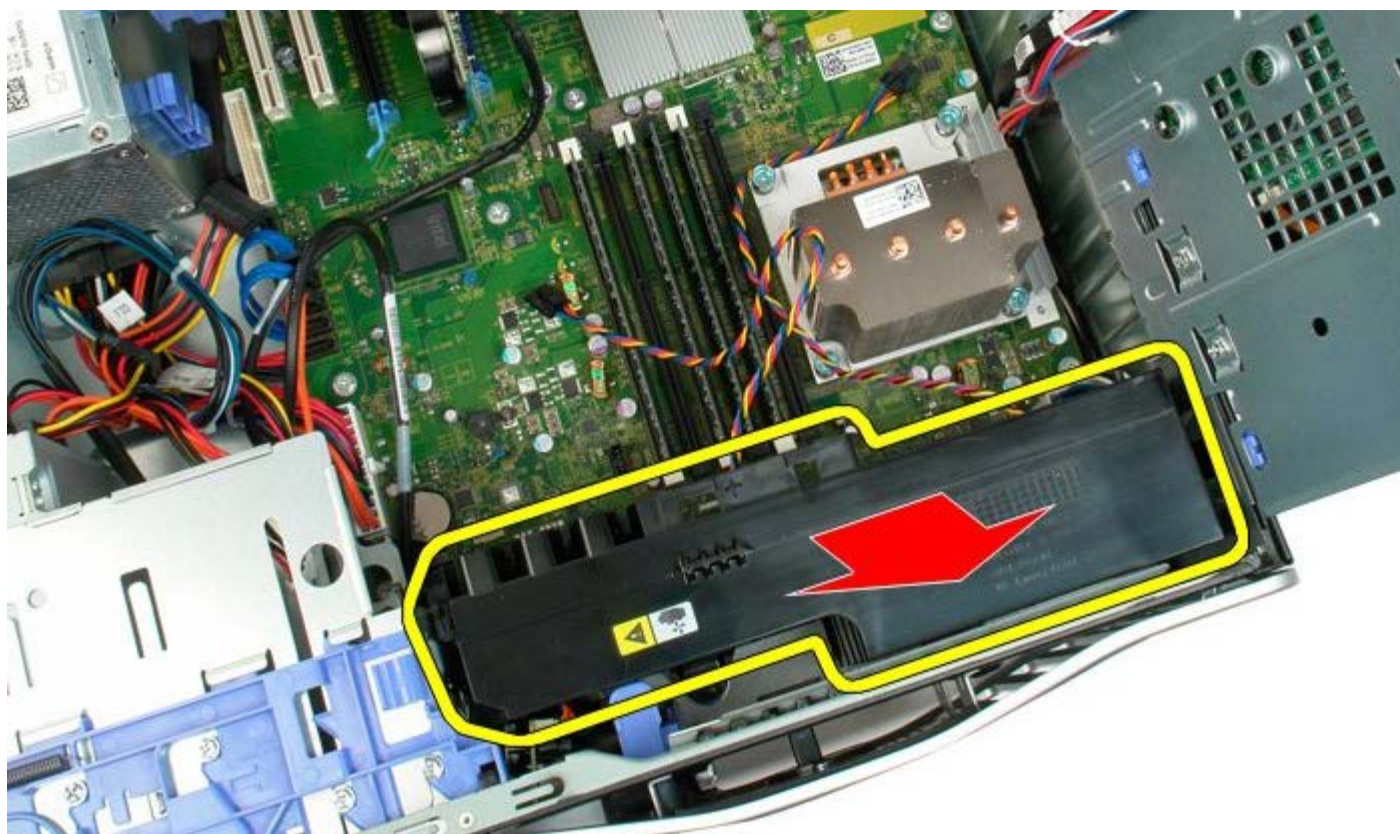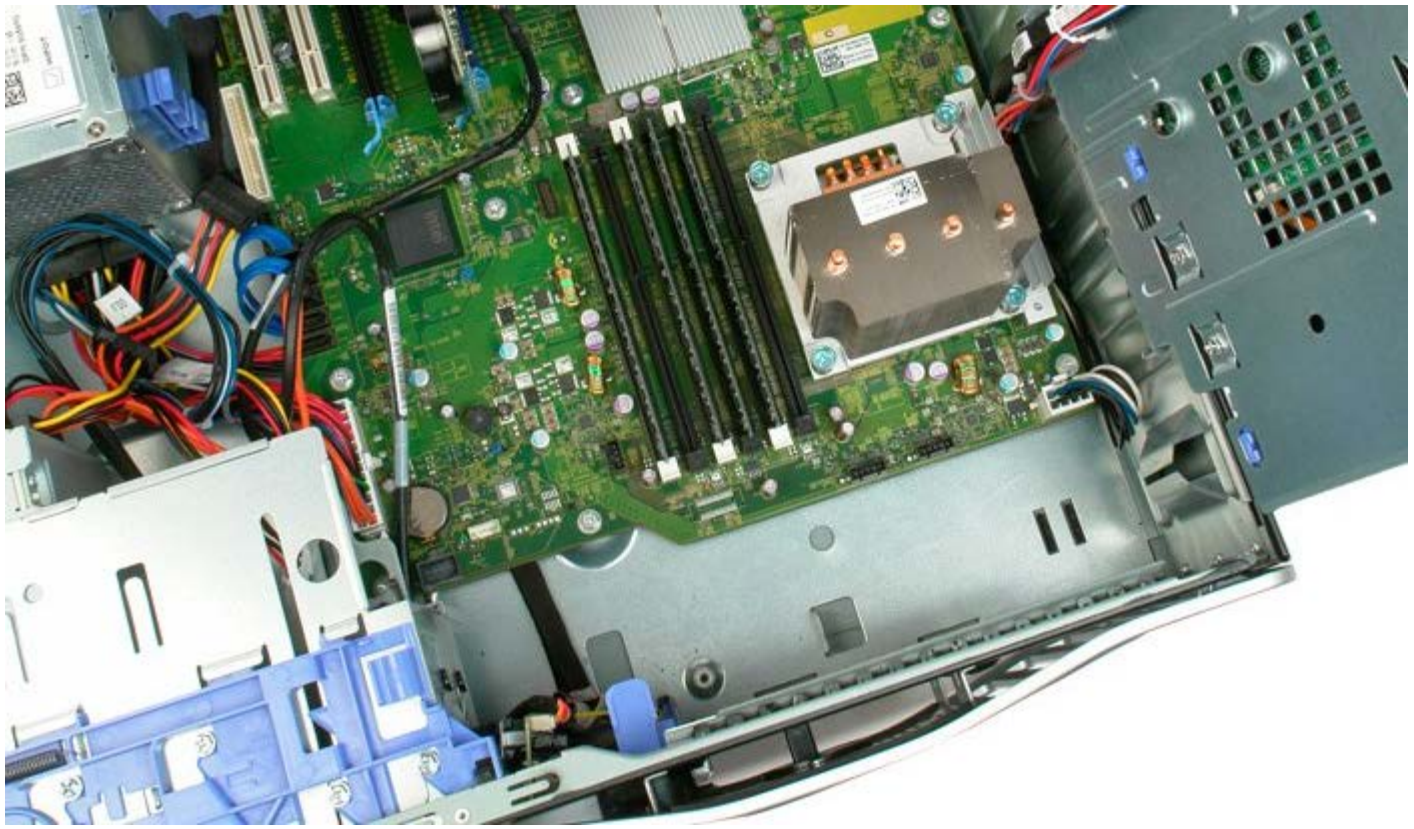
System Board
Dell Precision™ T3500 Service Manual

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Removing the System Board

1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the computer cover.
3. Lift the hard drive tray:
    a. Push and hold the blue release tab toward the bottom of the computer.

b. Raise the hard drive tray on its hinges.

4. Remove the memory module shroud.
5. Remove the front fan assembly.
6. Remove the expansion card if applicable.
7. Remove the video card.
8. Remove the heat sink and processor.
9. Remove any memory modules.

10. Disconnect the power supply data cable.
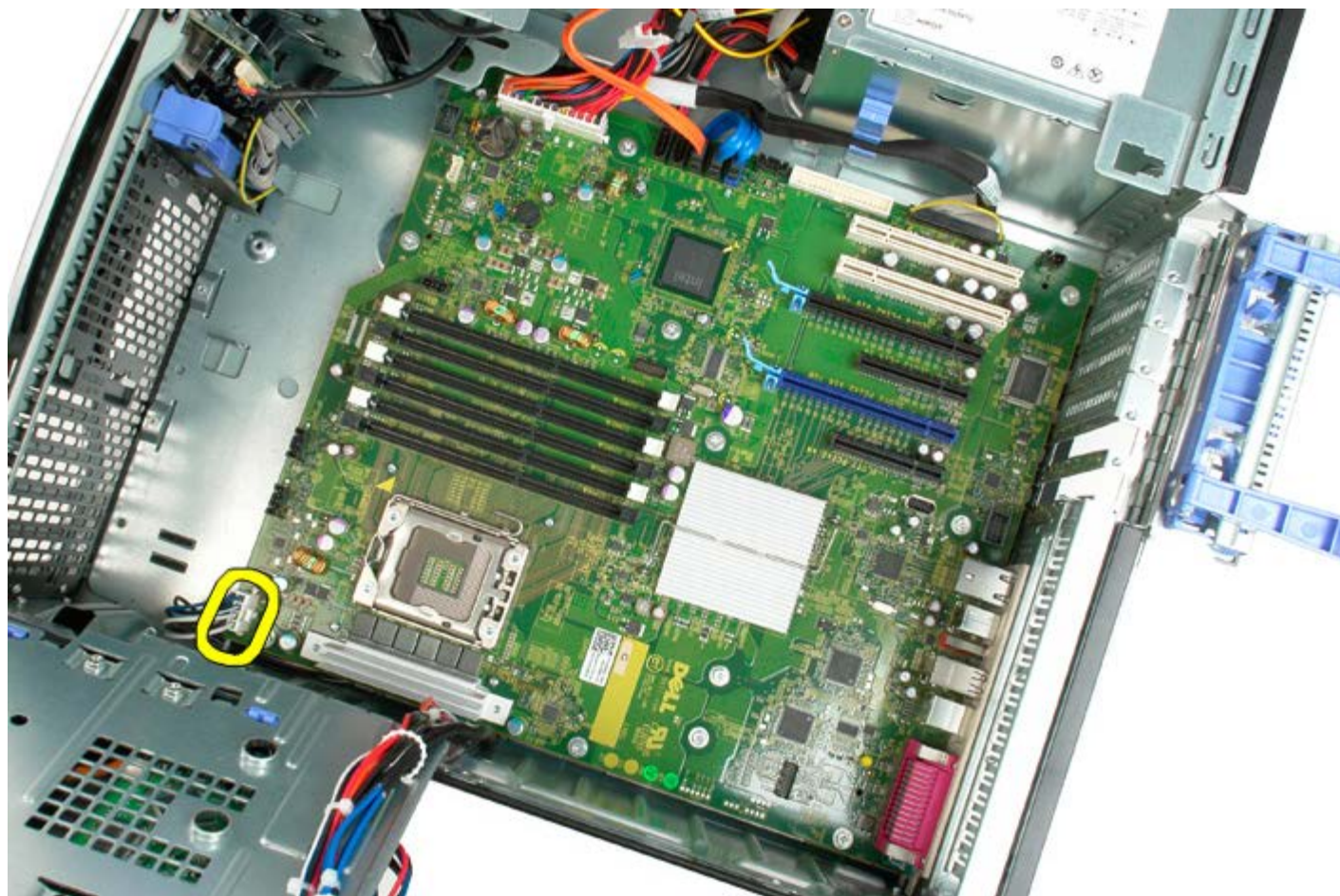
11. Disconnect the system board power cable.
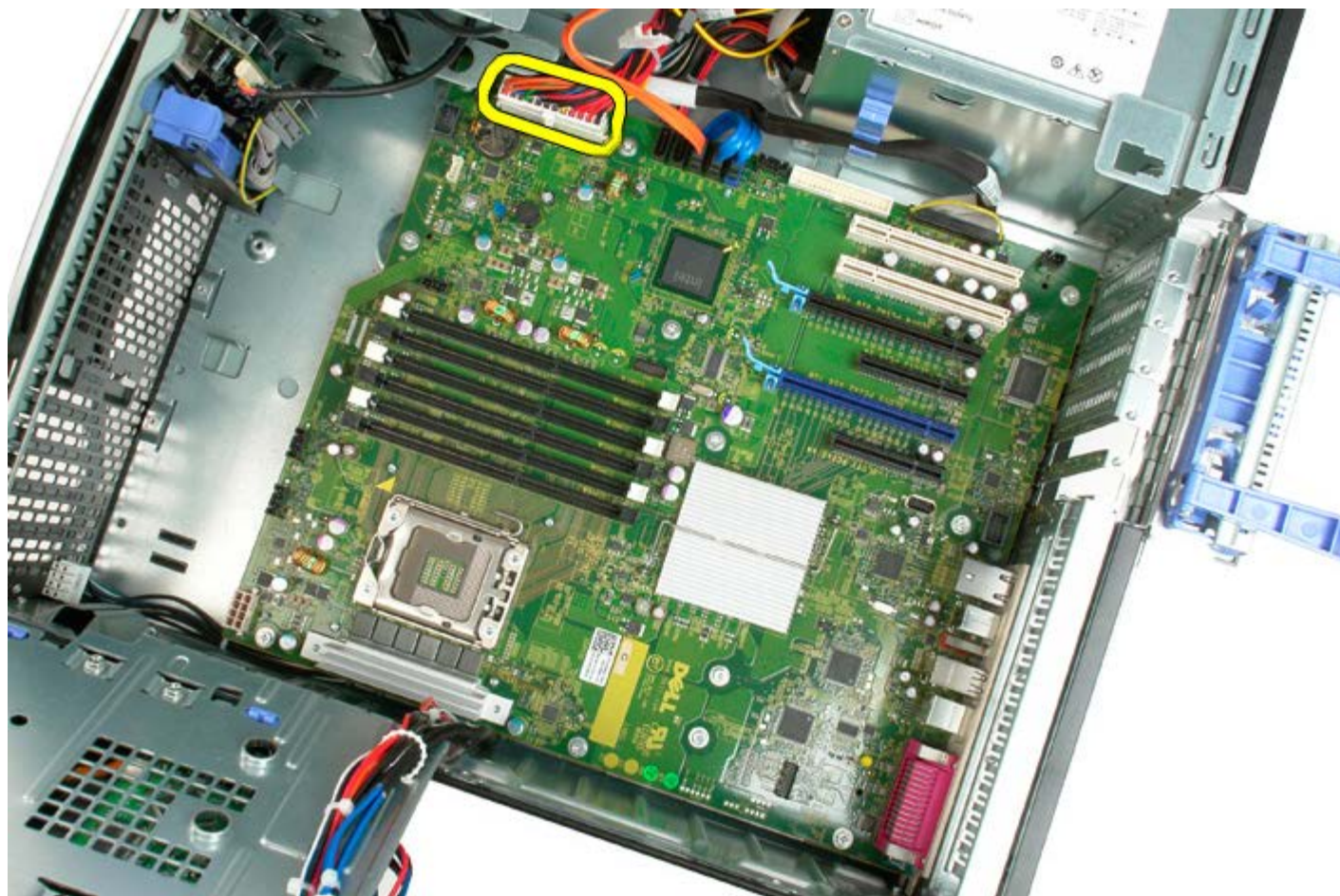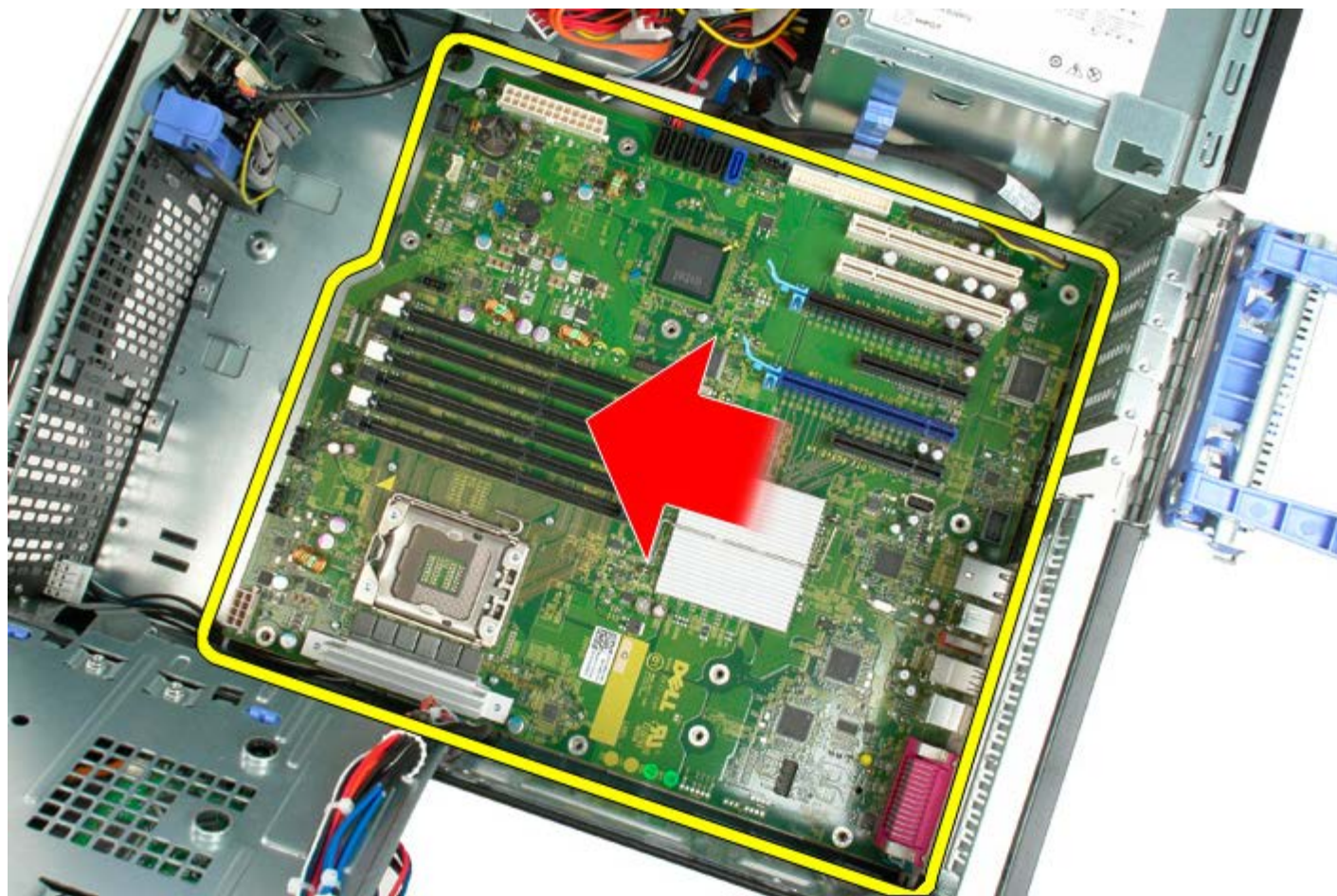
12. Disconnect the optical and hard drive data cables.
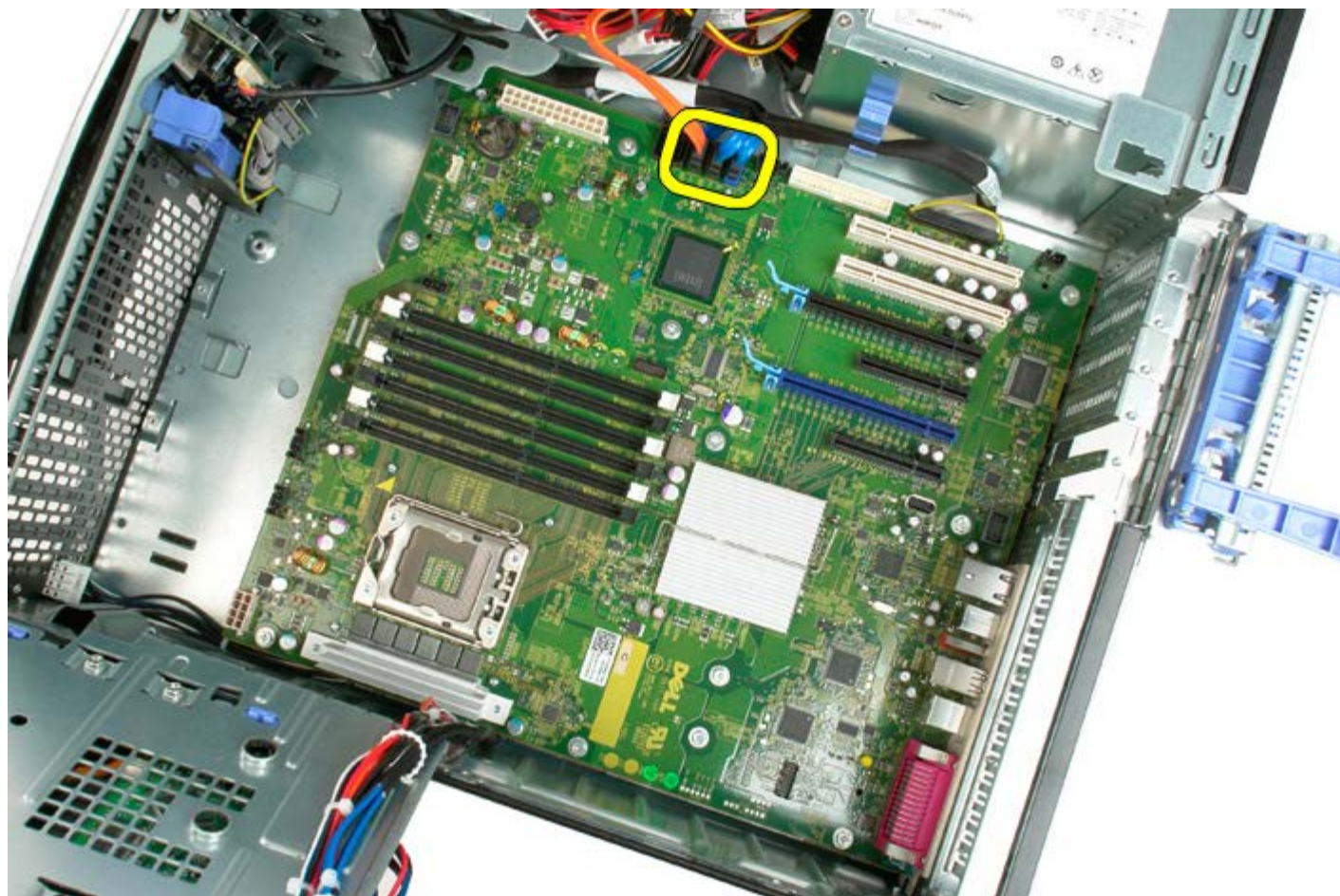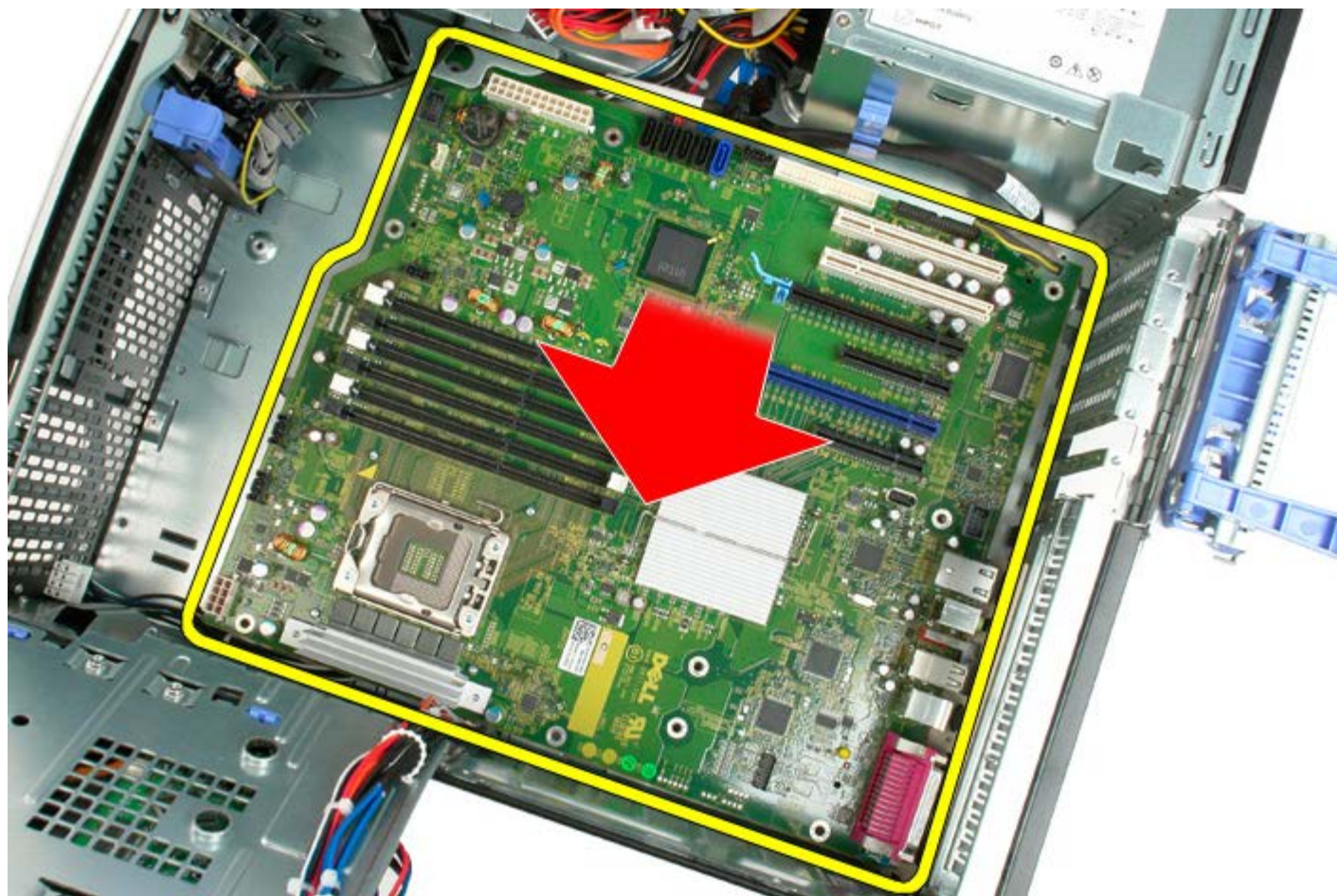
13. Disconnect the I/O data cable.
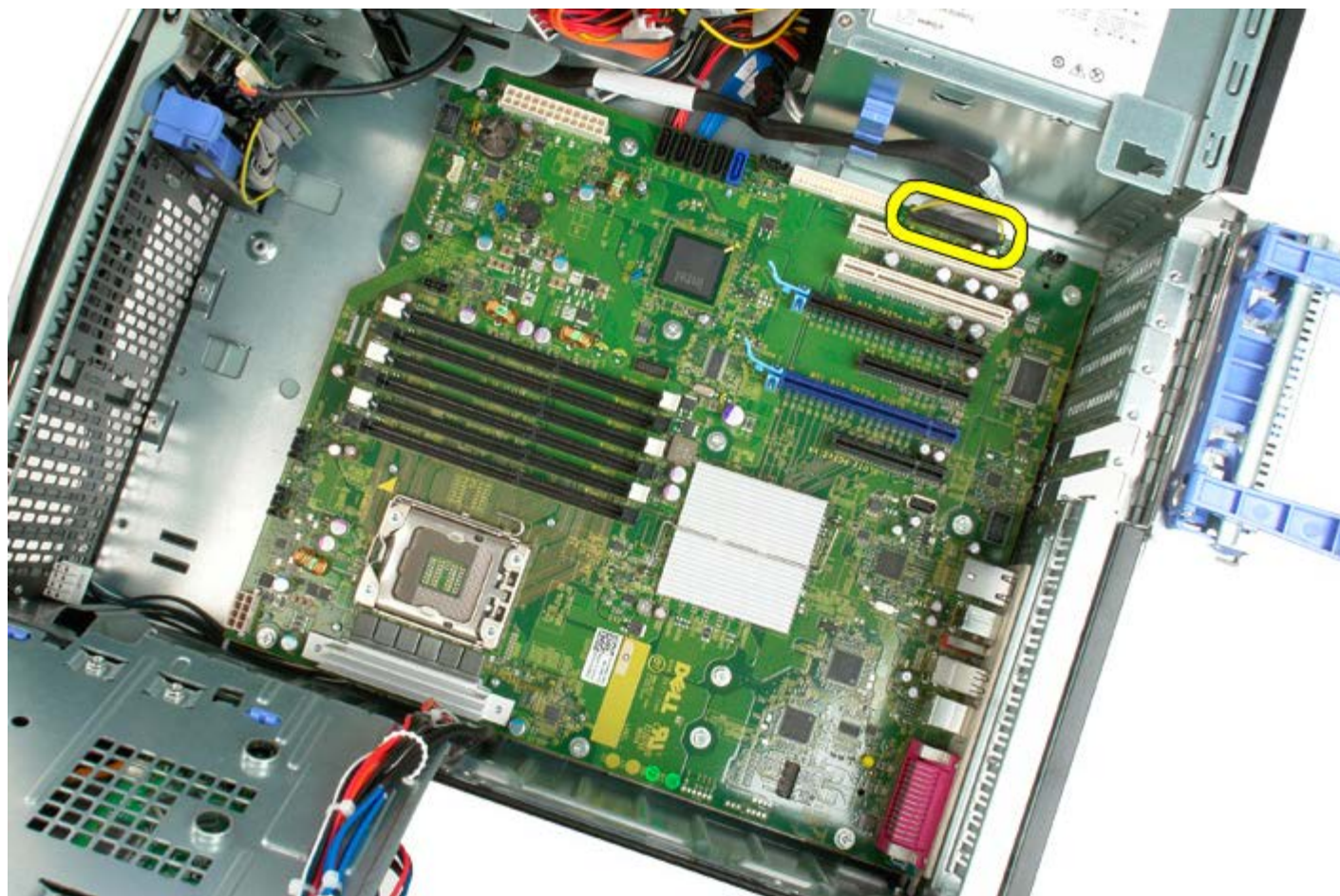
14. Remove the twelve screws that secure the system board to the computer chassis.
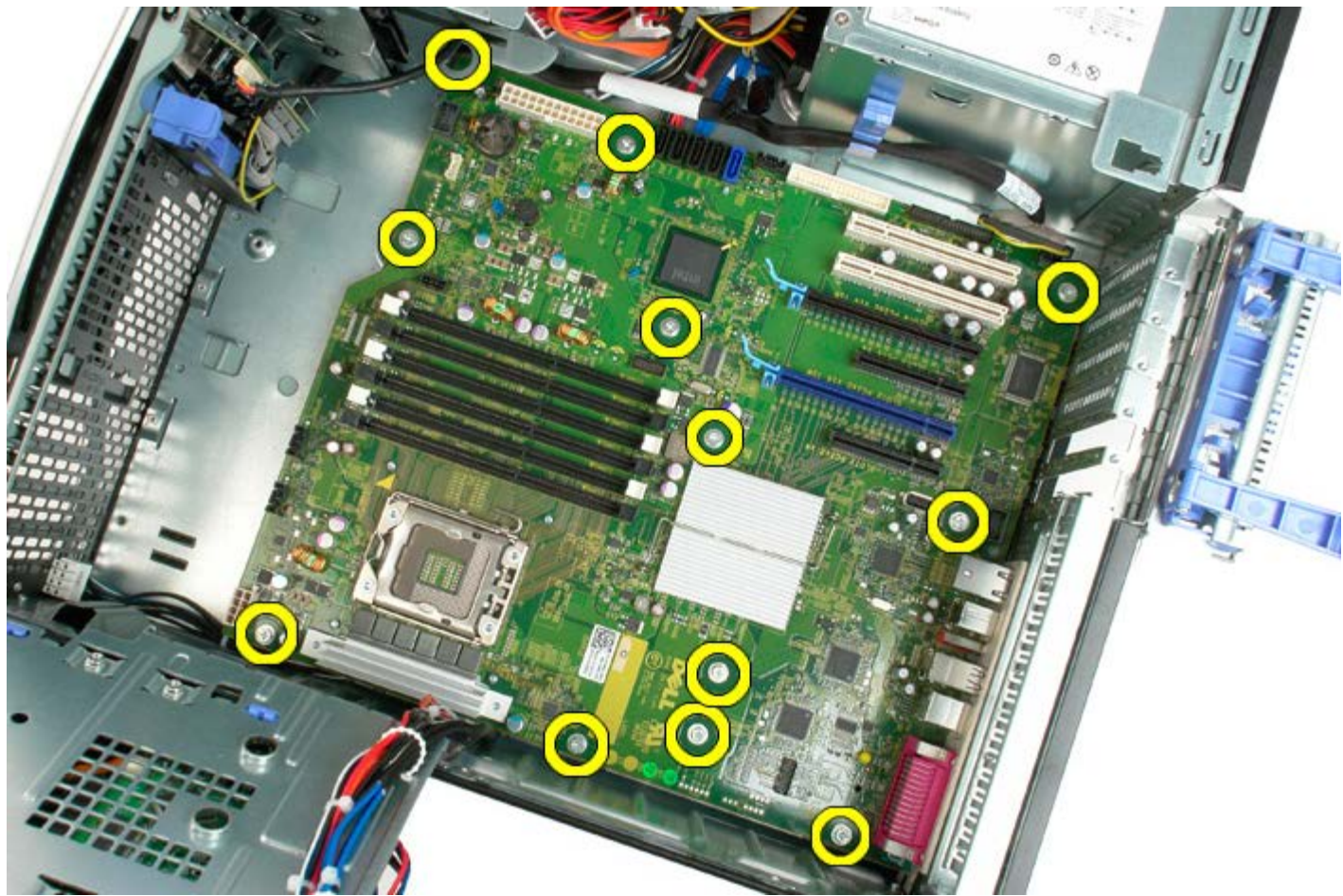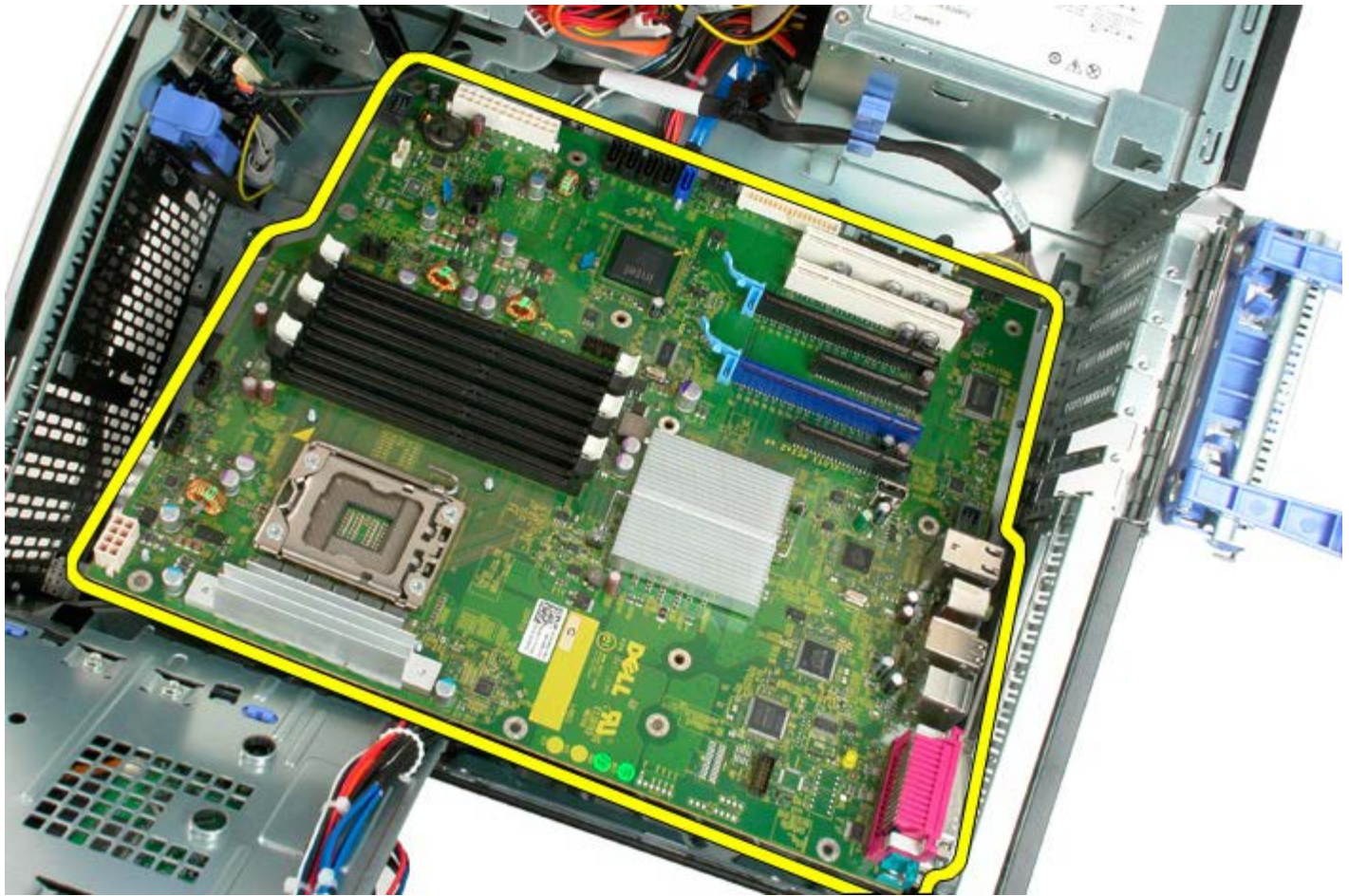
15. Slide the system board towards the front of the chassis.

16. Lift the system board up at an angle towards the edge of the chassis.

17. Remove the system board from the computer chassis.
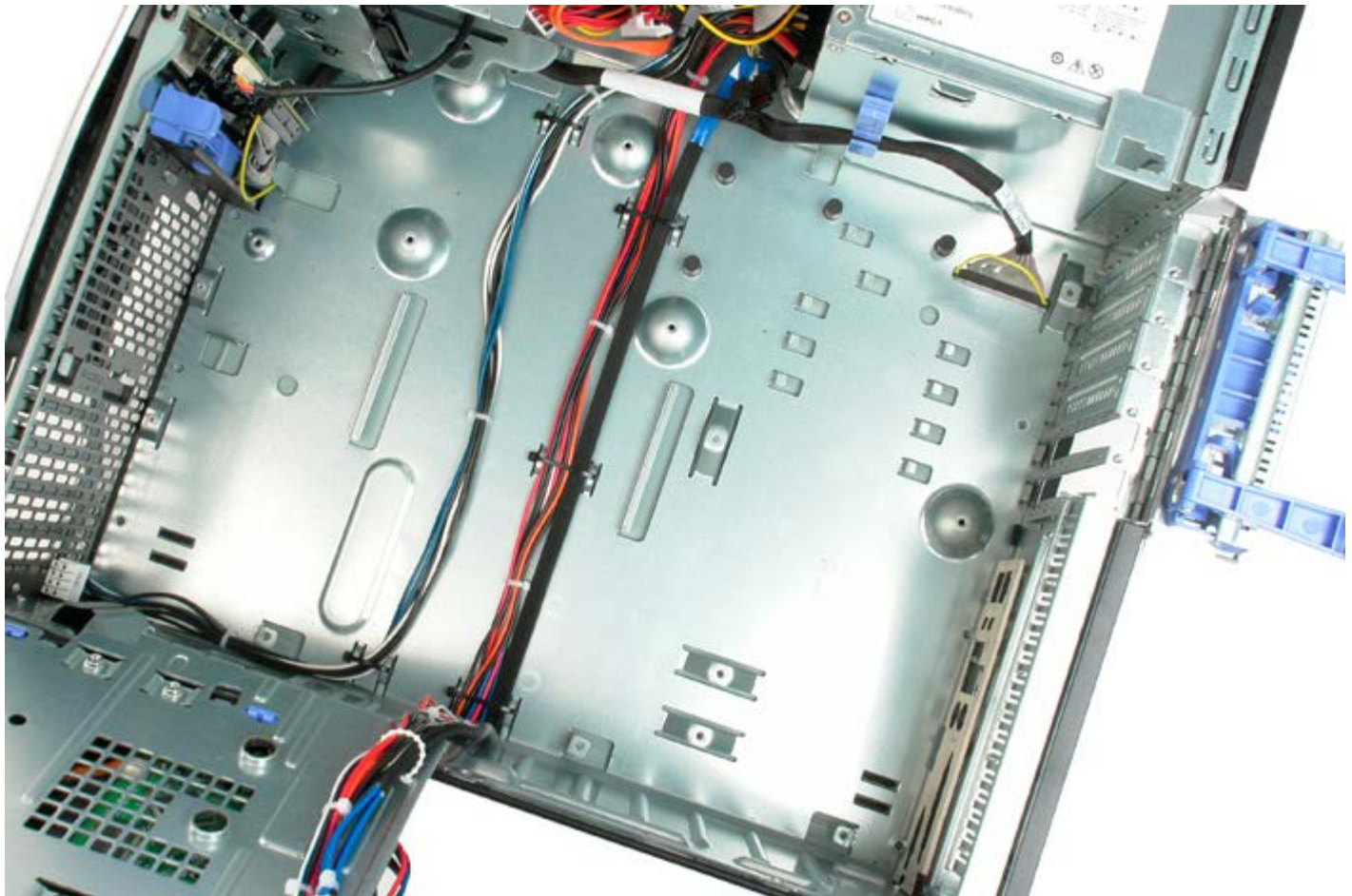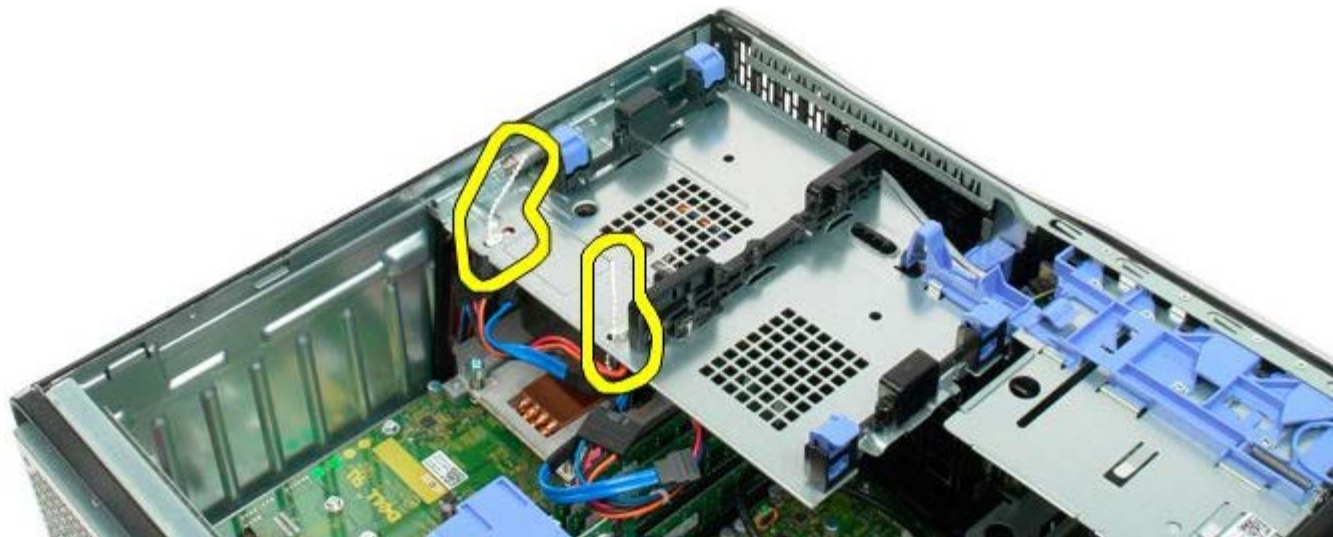
Hard Drive Tray
Dell Precision™ T3500 Service Manual

⚠️ **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.**
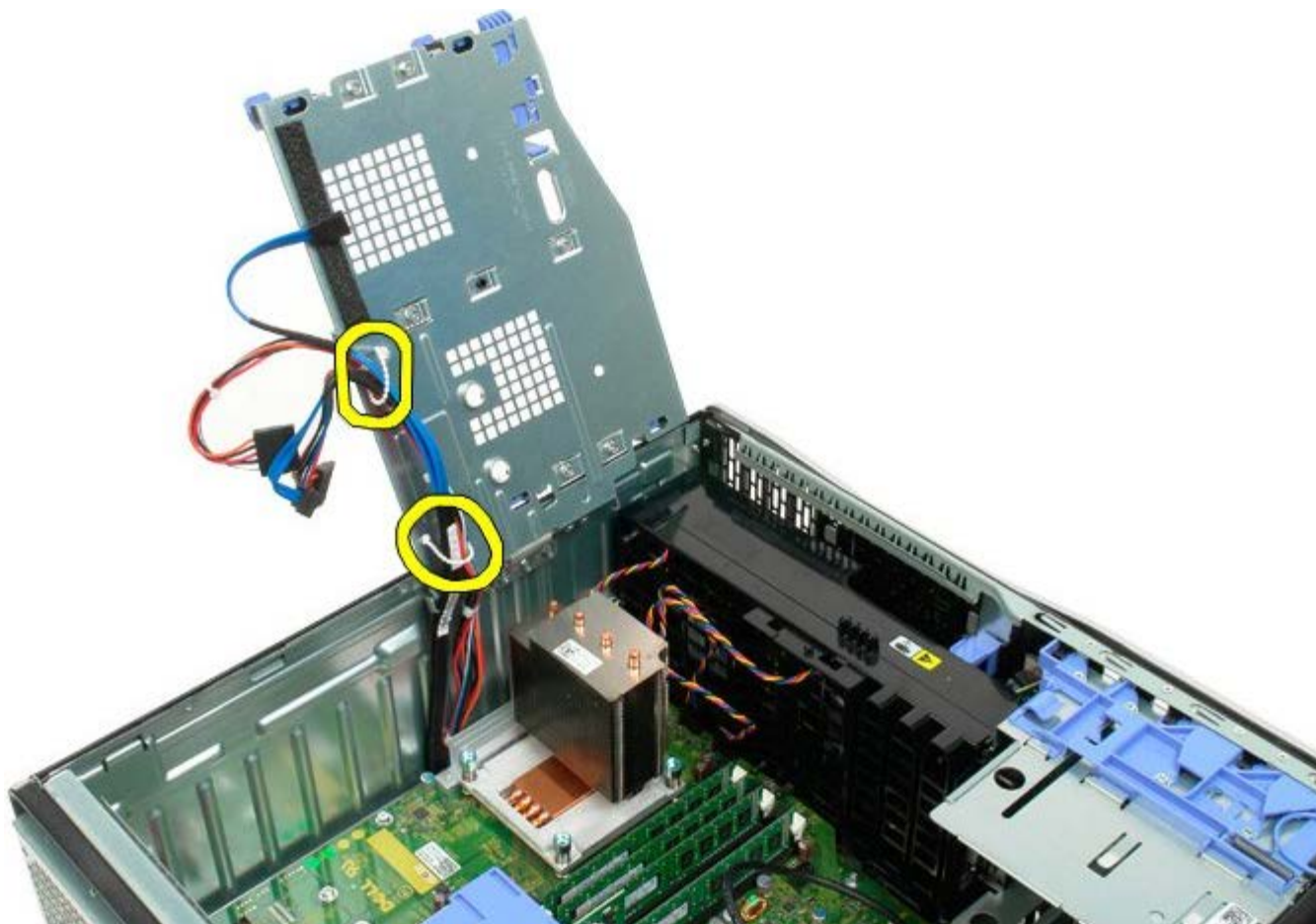
Removing the Hard Drive Tray
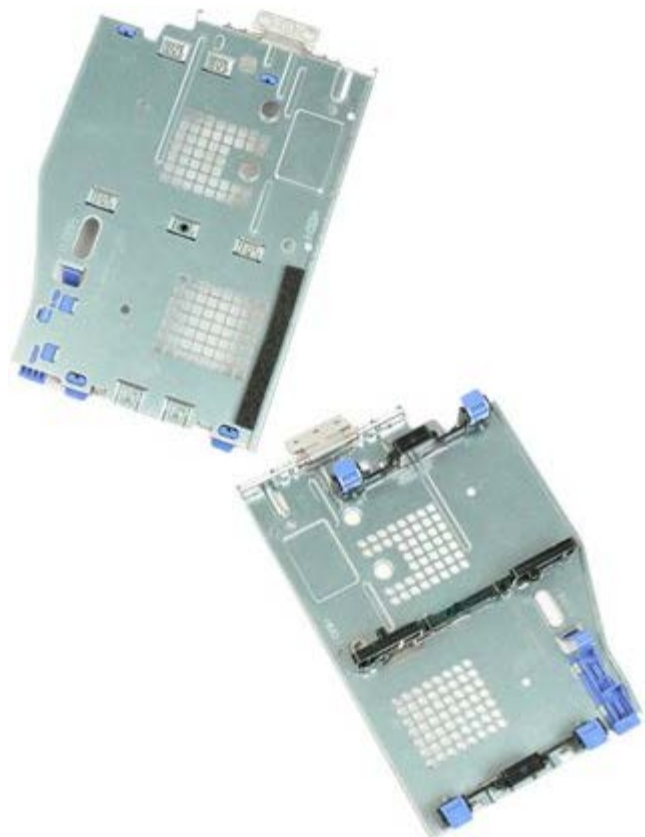
1. Follow the procedures in Before Working Inside Your Computer.
2. Remove the computer cover.
3. Remove the hard drives from the hard drive tray.
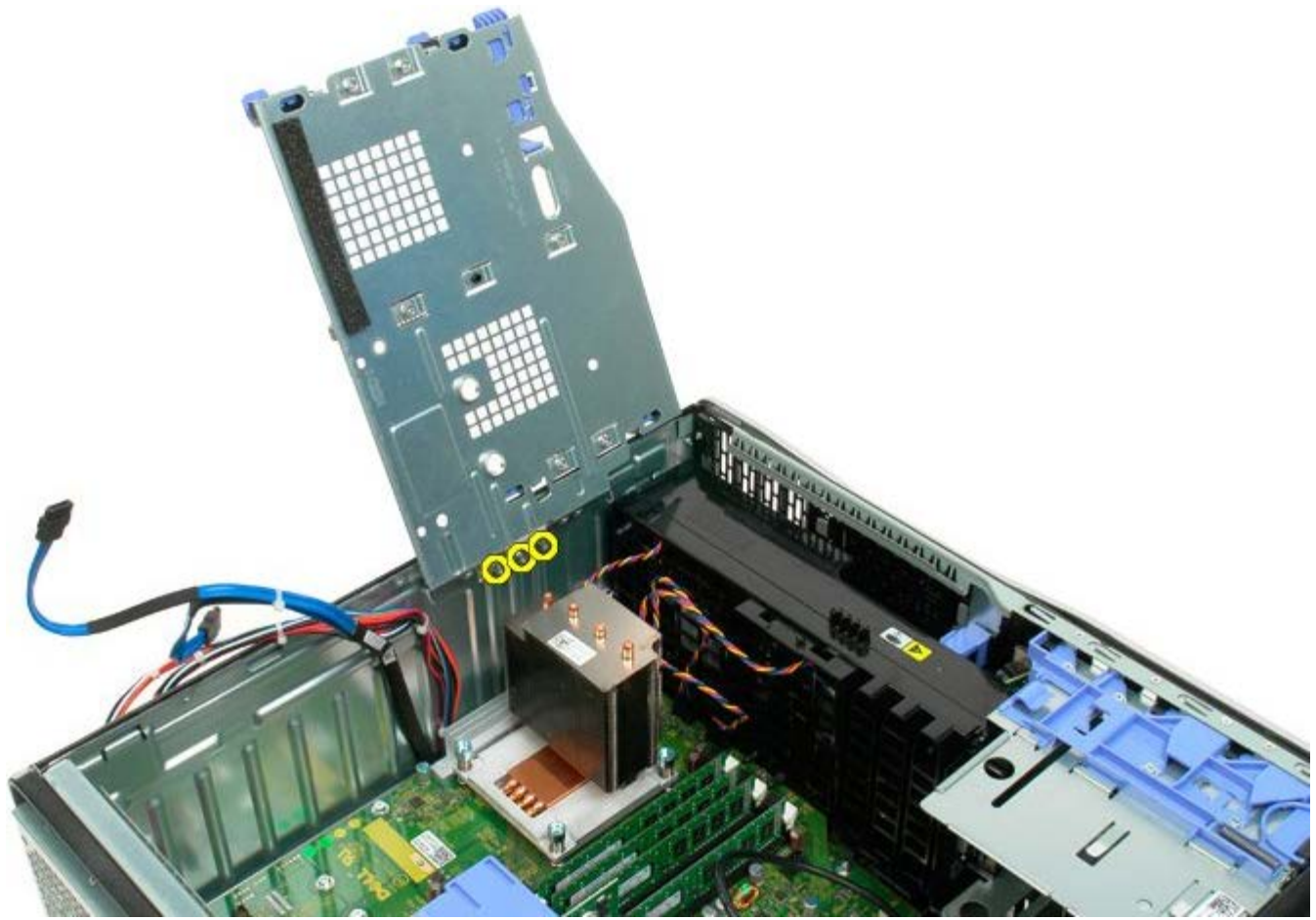4. Open the plastic ties securing the hard drive cables.

5. Lift the hard drive tray:
    a. Push the blue release tab toward the bottom of the computer
    b. Raise the hard drive tray upward on its hinges.

6. Continue releasing the hard drive cables from the plastic ties on the bottom of the hard drive tray.

7. Remove the three screws securing the hard drive tray to the computer.

8. Remove the hard drive tray from the computer.