

Quantum®



DLT VS160

Tape Drive Installation and Operations Guide



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Revision History

The following table lists all revisions made to this document in chronological order.

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Notes

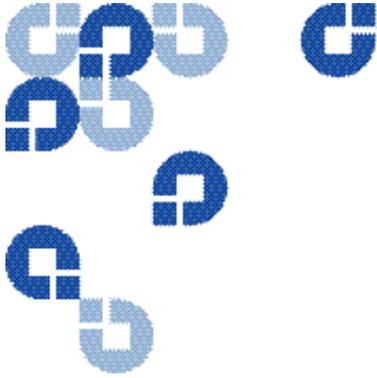


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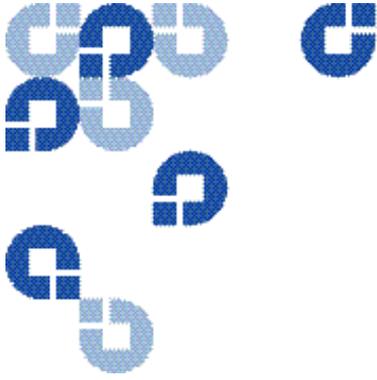
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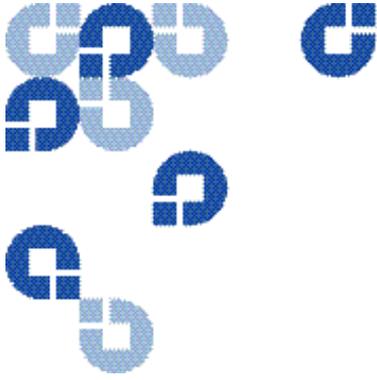
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CHAPTER 1

Introduction

1.1 Purpose and Scope

This *Installation and Operation guide* is a comprehensive source of information about the DLT VS160 internal tape drive and the DLT VS160 tabletop tape drive, and is intended to provide all the information you need to install and use your tape drive.

1.2 Related Documents

DLT VS160 Tape Drive Product Specification (002287-01)

DLT VS160 SCSI Interface Guide (002202-01)

1.3 Structure of this Manual

- [Chapter 1, “Introduction,”](#) is the chapter you are currently reading.
- [Chapter 2, “Product Information,”](#) provides a general overview of the product.
- [Chapter 3, “Installing Your Tape Drive,”](#) explains how to configure and install the tabletop or internal tape drive.
- [Chapter 4, “Using Your Tape Drive,”](#) explains how to use your DLT VS160 tape drive.
- [Chapter 5, “Troubleshooting Your Tape Drive,”](#) provides troubleshooting information for your DLT VS160 tape drive.

1.4 Conventions Used in this Manual

This manual uses the following conventions:

NOTE: *Notes* provide supplemental information.

CAUTION *Cautions* provide information you must know to avoid damaging the tape drive or losing data.

1.5 For More Information

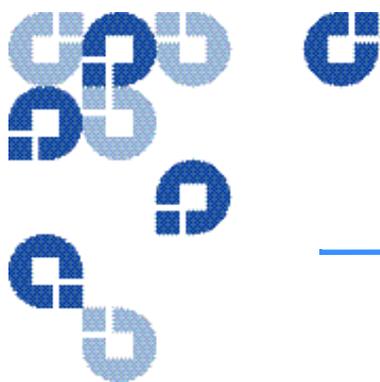
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1.6 Reader Comments

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Product Information

This chapter introduces your DLT VS160 internal tape drive or DLT VS160 tabletop tape drive, and provides a general overview of the product.

2.1 DLT VS160 Tape Drive Overview

Your Quantum DLT VS160 tape drive is a value-priced, high-reliability, high-capacity linear streaming data cartridge tape drive designed for use on entry- to mid-range computing platforms. With a combination of data compression and compaction, your DLT VS160 tape drive offers a formatted data cartridge capacity of 160 gigabytes (GB) (assuming a 2:1 compression ratio), and a sustained user data transfer rate of 16 megabytes (MB)/sec (assuming a 2:1 compression ratio).

The DLT VS160 tape drive is a 5¼-inch, half-height form-factor device that uses ½-inch tape. Its design includes a four-channel read/write head, Lempel-Ziv (DLZ) high-efficiency data compression, and a tape-mark directory to achieve fast data throughput and data access times.

2.2 Features and Upgrades

This section covers the VS160 tape drive features, and information about obtaining drivers and firmware upgrades.

2.2.1 Features

Your DLT VS160 tape drive offers the following features:

- Supported formats: DLT VS160 (read/write using DLTtape VS1 Media data cartridges), DLT1/VS80 (read only using DLTtape™ IV data cartridges)
- Uses DLTtape VS1 data cartridge
- 5¼-inch half-height form-factor
- Formatted data cartridge capacity of 80 GB native, 160 GB compressed
- Sustained user data transfer rate of 8 MB/s native, up to 16 MB/s with compression*
- Requires an Ultra2, Ultra160, or Ultra3, Low-Voltage Differential (LVD) or Single-Ended (SE) Wide SCSI bus.

*Assumes 2:1 compression ratio. The capacity and data transfer rates realized in practice depend on the data set, which determines the actual compression ratio.

2.2.2 Firmware Upgrades and Drivers

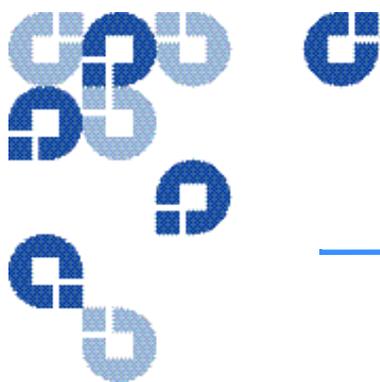
Quantum frequently provides new and updated tools to use with its tape drives. These tools include such items as upgrades for product software and firmware, and diagnostic software that may be newly developed. All these tools are available on Quantum's web site.

NOTE: These tools are only available to registered Quantum customers.

Refer to the following procedure to access these tools.

1. Go to the Quantum web site: **www.quantum.com**.
2. Click **SERVICE AND SUPPORT** in the upper menu bar. This opens the Service and Support window.
3. Explore the various pages that comprise Service and Support until you find what you need.

New tools and utilities get added frequently, so check back often.



Installing Your Tape Drive

This chapter explains how to configure and install your tape drive. Configuration and installation are not difficult and require only that you follow the instructions presented in this chapter.

3.1 Preparing to Install Your Tape Drive

This section helps you prepare to install your DLT VS160 tape drive (tabletop or internal).

3.1.1 SCSI Bus Requirements

Your DLT VS160 tape drive (tabletop and internal) incorporates a wide Ultra 160 low-voltage differential (LVD) small computer system interface (SCSI) bus, but you can also attach it to a single-ended (SE) SCSI bus.

Make sure your SCSI host adapter or controller supports these configurations. If you connect the tape drive to an SE bus, or if there are SE devices attached to the same SCSI bus, the tape drive's performance is limited to the maximum data transfer speed and maximum cable lengths of the SE bus (usually 40 MB/s). The DLT VS160 is not compatible with a standard differential or high-voltage differential (HVD) SCSI bus.

3.1.2 Physical Considerations

If you attach the tape drive to a narrow (50-pin) SCSI bus, you must use a customer-supplied 68-pin to 50-pin adapter that terminates the unused 18 pins. These adapters are sometimes labeled “high-byte termination.”

Make sure the total length of the SCSI bus does not exceed the ANSI SCSI standard of 19 feet (6 meters) for an SE SCSI bus, 40 feet (12 meters) for an LVD SCSI bus with multiple devices, or 82 feet (25 meters) for an LVD SCSI bus with a single device.

3.1.3 Before You Start

Installing your DLT VS160 tabletop tape drive requires no special tools. You will need a ballpoint pen to change the SCSI ID switch on the rear panel of the tape drive.

If you are installing a DLT VS160 internal tape drive, refer to [“Installing your Quantum DLT VS160 Internal Tape Drive” on page 3-9](#) for instructions. Installing your DLT VS160 internal tape drive requires only the usual tools needed to install an internal tape drive in the computer you have chosen to house the tape drive (for example, a screwdriver and some ESD protection).

3.2 Installing Your Quantum DLT VS160 Tabletop Tape Drive

This section contains step-by-step instructions for installing your DLT VS160 tabletop tape drive.

3.2.1 Identifying the Steps

Installing your DLT VS160 tabletop tape drive is fast and easy when you follow the instructions in this section in the order presented. Complete the following steps, covered in the next few sections:

Table 3-1. Installing the DLT VS160 Tabletop Tape Drive

Step	Instruction	Page
1	Unpack and check your tape drive for shipping damage.	Page 3-3
2	Select a location near the server or workstation that is to host your tape drive.	Page 3-4
3	Set the SCSI ID for your tape drive, if you do not want to use the factory-set default.	Page 3-4

Table 3-1. Installing the DLT VS160 Tabletop Tape Drive

Step	Instruction	Page
4	Shut down and power off the server or workstation that is to host your tape drive.	Page 3-5
5	Install an LVD/SE SCSI host adapter in the server or workstation, if necessary.	Page 3-5
6	Connect the SCSI cable to your tape drive and SCSI host adapter.	Page 3-6
7	Connect the terminator on your tape drive—if it is the last or only device on the SCSI bus.	Page 3-7
8	Connect the power cable to your tape drive, server or workstation, and all peripheral devices. Plug the power cable into the nearest power outlet and apply power to all devices.	Page 3-8
9	Check your tape drive to make sure it is working properly.	Page 3-8

3.2.2 *Unpacking Your Tabletop Tape Drive and Selecting a Location*

Before you begin, clear a desk or table so that you can unpack your tape drive. You also need to select a location near the server or workstation that has room for the tape drive to sit without being crowded.

NOTE: If the room in which you are working differs from the temperature at which your tape drive was shipped or stored by 30 °F (17 °C) or more, let the tape drive acclimate to the surrounding environment for at least 12 hours before opening the shipping carton.

Unpacking Your Tabletop Tape Drive

Before you do anything else, unpack and inspect your DLT VS160 tabletop tape drive for shipping damage. If you notice any damage, report it both to Quantum and to the shipping company immediately.

NOTE: Save the packing materials in case you need to move or ship your tape drive in the future. You must ship your DLT VS160 tabletop tape drive in the original (or equivalent) packing materials or you will invalidate your warranty.

Selecting a Location for Your Tabletop Tape Drive

Select a location for your tape drive that is flat, sturdy, level, and close to the server or workstation. A desk or table top surface is most suitable. Regardless of the location you choose for your tape drive, make sure the environment is free from dust, cigarette smoke, and excessive temperature and humidity. See the *DLT VS160 Tape Drive Product Specification* for acceptable operating temperature and humidity limits.

Be sure to follow these additional guidelines when selecting a location for your tape drive:

- Allow at least 6 inches (15.2 cm) behind the tape drive for proper cooling.
- Avoid locations near printers or photocopier machines, both of which produce paper fiber and other types of dust and airborne contaminants.
- Do not place your tape drive on the floor.
- Avoid locations near generators, electric motors, audio speakers, or other sources of magnetic fields. Magnetic fields can adversely affect your tape drive and data cartridges.

3.2.3 Setting the SCSI ID

All SCSI devices attached to the server or workstation must have a unique SCSI ID. Check the SCSI IDs on all other devices on the selected server or workstation, including the SCSI host adapter, and select an unused SCSI ID for your tape drive. The factory default SCSI ID for this tape drive is 5, as shown in Fig. If the tape drive's factory default SCSI ID is not already in use by another device on the same SCSI bus, you do not need to change the SCSI ID.

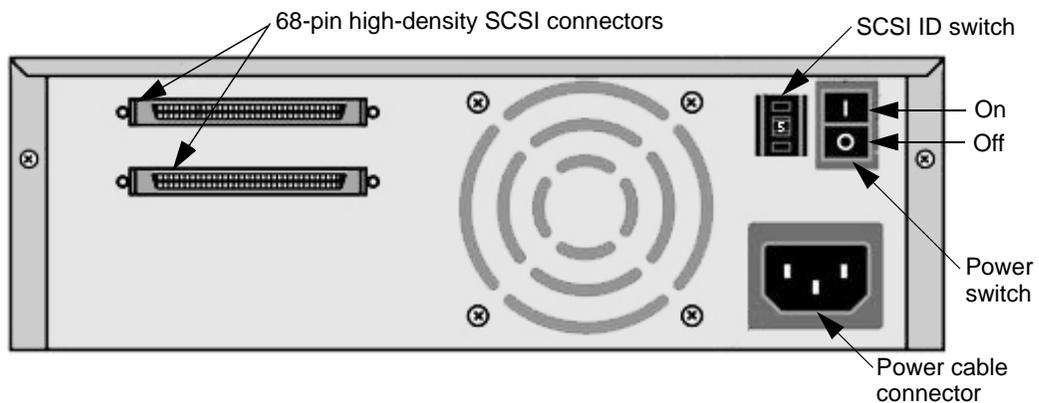


Figure 3-1. DLT VS160 Tape Drive Rear Panel (tabletop model)

NOTE: If you attach the tape drive to a narrow (50-pin) SCSI bus, you can only use IDs 0 through 7.

To set the SCSI ID on your tape drive, use a small screwdriver or ballpoint pen to press the button above the SCSI ID switch to select the next lower SCSI ID. Press the button below the SCSI ID switch to select the next higher SCSI ID. Each time you press one of these buttons, the SCSI ID decreases or increases by one. Press the appropriate button until the desired SCSI ID appears on the switch display.

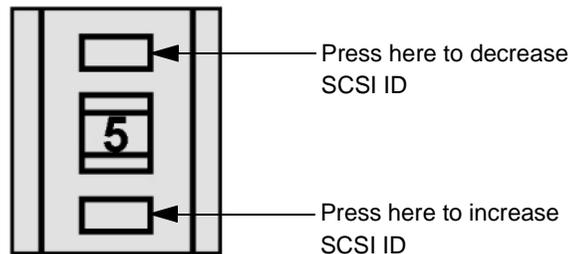


Figure 3-2. SCSI ID Selector Switch

3.2.4 Connecting the Cables

In the final installation stage, you connect the SCSI and power cables to your tape drive.

NOTE: If the selected server or workstation does not already have an installed SCSI host adapter, you will need to install one. For more information on SCSI host adapter requirements, see [“SCSI Bus Requirements” on page 3-1](#).

To connect the SCSI and power cables to your tape drive, follow these steps:

1. Shut down the operating system and power down the server or workstation.
2. Power off all peripheral devices, such as printers and other SCSI devices.

CAUTION Do not go to step 3 until you have completed steps 1 and 2. Failure to follow these instructions may result in damage to your tape drive or other devices.

3. Obtain a SCSI cable with an open 68-pin, high-density connector.

4. Connect one end of the SCSI cable to one of the connectors on the rear panel of your tape drive as shown in [Figure 3-3](#). Either SCSI connector works equally well. [Figure 3-3](#) does not show a terminator because none of the three tape drives in the illustration are at the end of the SCSI bus.

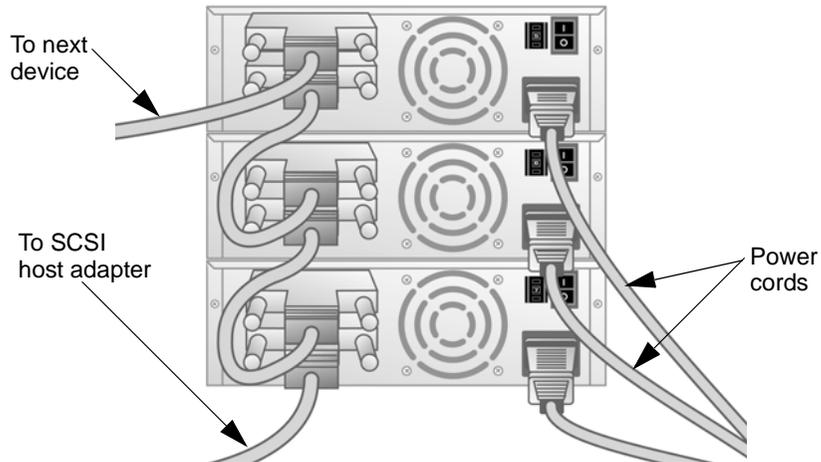


Figure 3-3. Tape Drive SCSI and Power Cable Connections

5. Connect the other end of the SCSI cable to the connector on your SCSI host adapter or to the connector on the previous SCSI device on the SCSI bus as shown in [Figure 3-4](#).

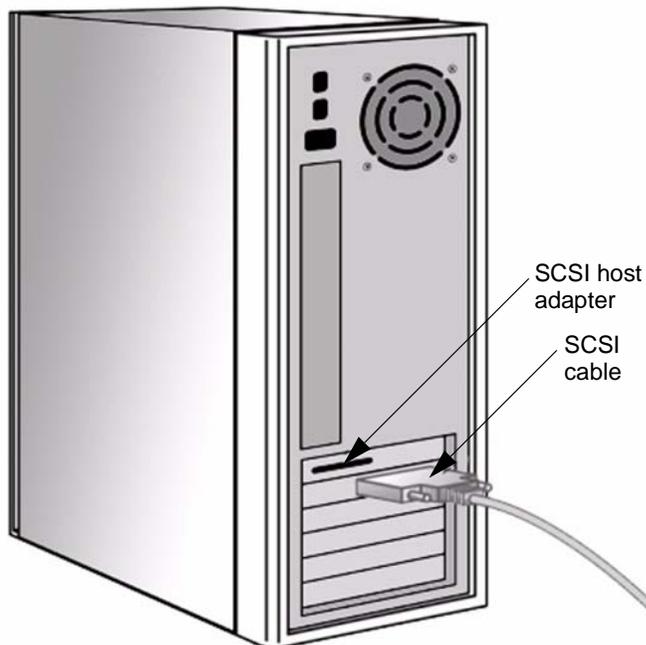


Figure 3-4. Server SCSI Cable Connections

Terminating Your Tabletop Tape Drive

You must terminate the tape drive if it is the last physical device on the SCSI bus (at the end of the SCSI chain). If another SCSI device is the last device on the SCSI bus, confirm that it is properly terminated and do *not* terminate your tape drive.

NOTE: Regardless of which device terminates the SCSI bus, it must have power applied and be powered on for proper termination to occur.

To terminate your tape drive, locate the terminator in the accessories package and press it firmly into either of the two SCSI connectors on the rear panel of the tape drive. Secure the terminator by tightening the screws until snug. See [Figure 3-5](#) for more details.

Powering the Terminator

At least one device on the SCSI bus must supply terminator power (TERMPWR). The factory default for the tape drive is for TERMPWR to be enabled. Only an authorized service provider can disable the tape drive TERMPWR setting. Attach the terminator as shown in [Figure 3-5](#).

NOTE: It is acceptable for more than one device on the SCSI bus to provide TERMPWR.

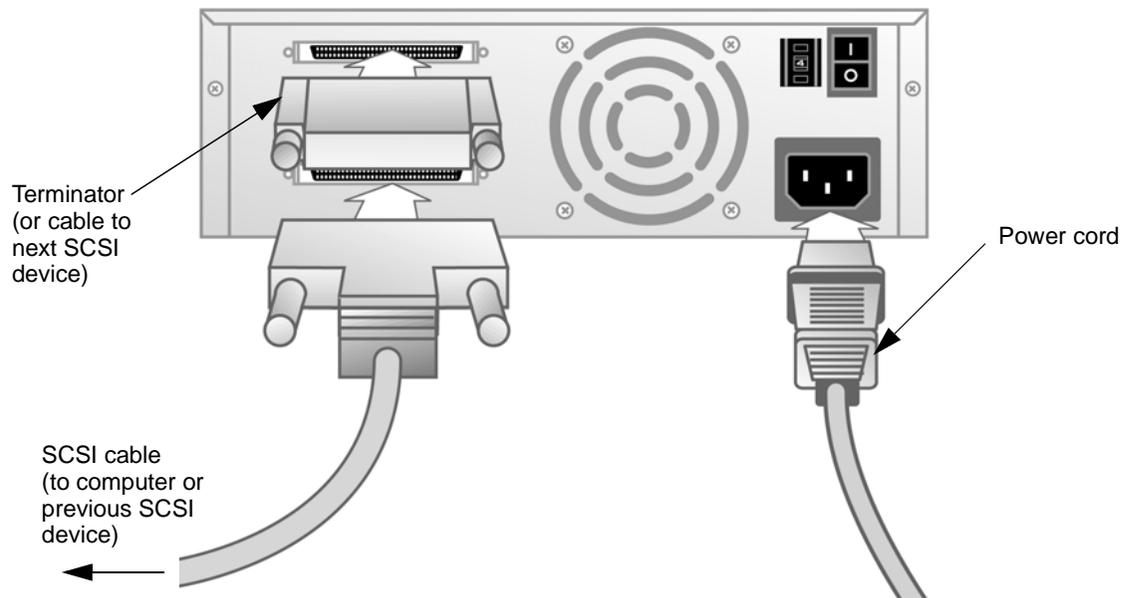


Figure 3-5. Back Panel Connections

3.2.5 Completing the Installation

1. Secure the SCSI cable connectors by tightening the screws until snug.

NOTE: If your SCSI cable does not fit the connector on your SCSI host adapter, you either have an incompatible SCSI host adapter or you need to purchase a cable adapter. Contact your Quantum sales representative or your SCSI host adapter manufacturer for information.

2. Make sure the power switch on the rear panel of your tape drive is in the OFF position (tabletop model only). Attach the female connector on the power cable to the power connector on the rear panel of the tape drive, as shown in [Figure 3-5](#).
3. Connect the power cables to the server or workstation and all peripheral devices.
4. Plug the power cable into a nearby power outlet.
5. Power on your tape drive and any other devices you powered off earlier.
6. Power on the server or workstation and allow its operating system to start.
7. Check your tape drive to make sure it is working properly. See “[Indicator Activity During Power-On Self-Test \(POST\)](#)” on [page 4-2](#) to learn about your tape drive’s self-test and initialization features.

3.3 Installing your Quantum DLT VS160 Internal Tape Drive

This section contains step-by-step instructions for installing your DLT VS160 internal tape drive.

3.3.1 Identifying the Steps

Installing your tape drive is fast and easy when you follow the instructions in this section in the order presented. Complete the following steps, covered in the next few sections:

Table 3-2. Installing the DLT VS160 Internal Tape Drive

Step	Instruction	Page
1	Unpack and check your tape drive for shipping damage.	Page 3-10
2	Select a server or workstation that is to host your tape drive.	Page 3-10
3	Set the SCSI ID for your tape drive, if you do not want to use the factory-set default.	Page 3-10
4	Install an active LVD/SE terminator on the SCSI cable if your tape drive is the last or only device on the SCSI bus.	Page 3-12
5	Shut down and power off the server or workstation that is to host your tape drive. Power off all peripheral devices attached to the server or workstation.	Page 3-14
6	Remove the cover from the server or workstation, as explained in the server or workstation's manuals.	Page 3-14
7	Install an LVD/SE SCSI host adapter in the server or workstation, if necessary.	Page 3-15
8	Install your tape drive in an open drive bay.	Page 3-15
9	Connect the SCSI cable to your tape drive and the SCSI host adapter.	Page 3-16
10	Connect a power cable to your tape drive.	Page 3-16
11	Secure your tape drive in the selected server or workstation.	Page 3-17
12	Install the server or workstation's cover, connect power cables to all peripheral devices, and apply power to the server or workstation and all peripheral devices.	Page 3-17
13	Check your tape drive to make sure it is working properly.	Page 3-17

3.3.2 Unpacking Your Internal Tape Drive

Before you do anything else, unpack and inspect your tape drive for shipping damage. If you notice any damage, report it both to Quantum and to the shipping company immediately.

NOTE: Save the packing materials in case you need to move or ship your tape drive in the future. You must ship your tape drive in the original (or equivalent) packing materials or you will invalidate your warranty.

If there is no damage to the tape drive, select a server or workstation to host your tape drive, then move on to the following installation steps.

3.3.3 Configuring Your Internal Tape Drive

Configuring your tape drive is fast and easy. You only need to select a unique SCSI ID and decide if your tape drive needs to be terminated. The following sections explain how to configure your tape drive.

Setting the SCSI ID

All SCSI devices attached to the server or workstation that is to host your tape drive must have a unique SCSI ID. Check the SCSI IDs on all other devices on the selected server or workstation, including the SCSI host adapter, and select an unused SCSI ID for your tape drive. The factory default SCSI ID is 5. If the tape drive's factory default SCSI ID is not being used, you do not need to change the SCSI ID.

NOTE: If you plan to attach the tape drive to a narrow (50-pin) SCSI bus, you can only use IDs 0 through 7.

Locate the SCSI ID jumpers on the rear panel of the tape drive, as shown in [Figure 3-6](#).

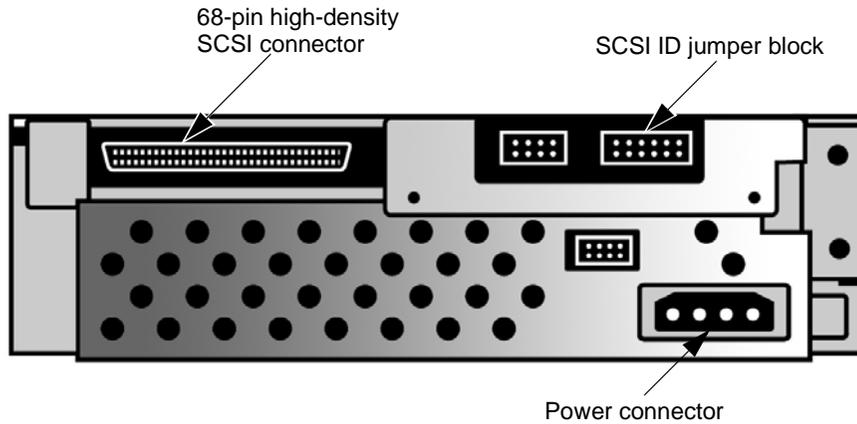


Figure 3-6. Back Panel Connections, Internal Tape Drive

Use the supplied jumpers to select the desired SCSI ID as shown in the following table:

Table 3-3. Selecting the SCSI ID

SCSI ID	0	1	2	3	4	5 ^a	6	7
Jumper Block								
SCSI ID	8	9	10	11	12	13	14	15
Jumper Block								

a. Factory default SCSI ID

Terminating Your Internal Tape Drive

If your tape drive is the only SCSI device attached to the selected server other than the SCSI host adapter, or if it is the last physical device on the SCSI bus (at the end of the SCSI chain), you must terminate it. If another SCSI device is the last device on the SCSI bus, confirm that it is properly terminated and do *not* terminate your tape drive.

NOTE: Regardless of which device terminates the SCSI bus, that device must have power applied and be powered on for proper termination to occur.

To terminate your tape drive, install an active LVD/SE cable-end or inline terminator on the SCSI cable you intend to use with your tape drive, as shown in [Figure 3-7](#). You can use a cable-end terminator as shown in [Figure 3-7](#), or an inline terminator, whichever is most convenient. See the terminator's instructions for more information.

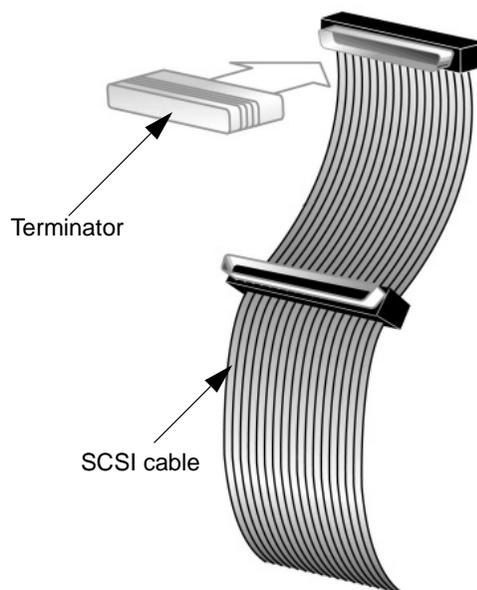


Figure 3-7. Terminator Installation

NOTE: If the SCSI cable that came with your SCSI host adapter already has a terminator built into it, do not use another terminator. [Figure 3-8](#) shows an example of such a cable.

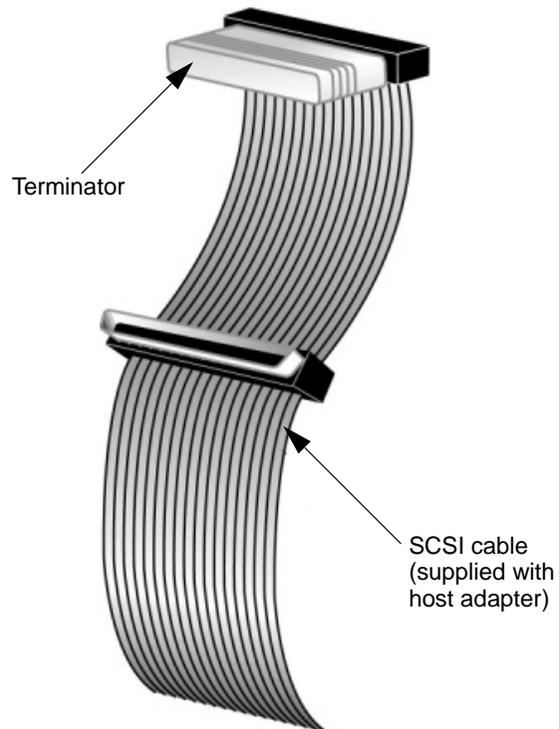


Figure 3-8. SCSI Cable with Built-in Terminator

3.3.4 Installing Your Internal Tape Drive

In the final installation stage, you install your tape drive in the server or workstation and connect the SCSI and power cables.

To install your tape drive, follow these steps:

1. Shut down the operating system and power off the server or workstation.
2. Power off all peripheral devices, such as printers and other SCSI devices.

CAUTION Do not go to step 3 until you have completed steps 1 and 2. Failure to follow these instructions may result in damage to your tape drive or other devices.

3. Remove the cover from the server or workstation as described in the server or workstation's manuals.

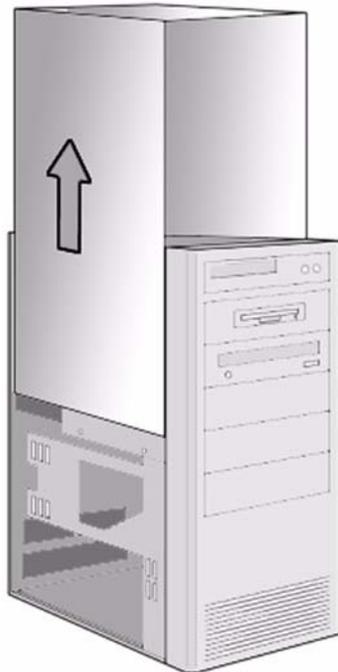


Figure 3-9. Removing the Workstation Cover (example)

4. Locate an available 5¼-inch drive bay and remove the front cover from the drive bay as described in the server or workstation's manuals.
5. Slide your tape drive into the open drive bay.

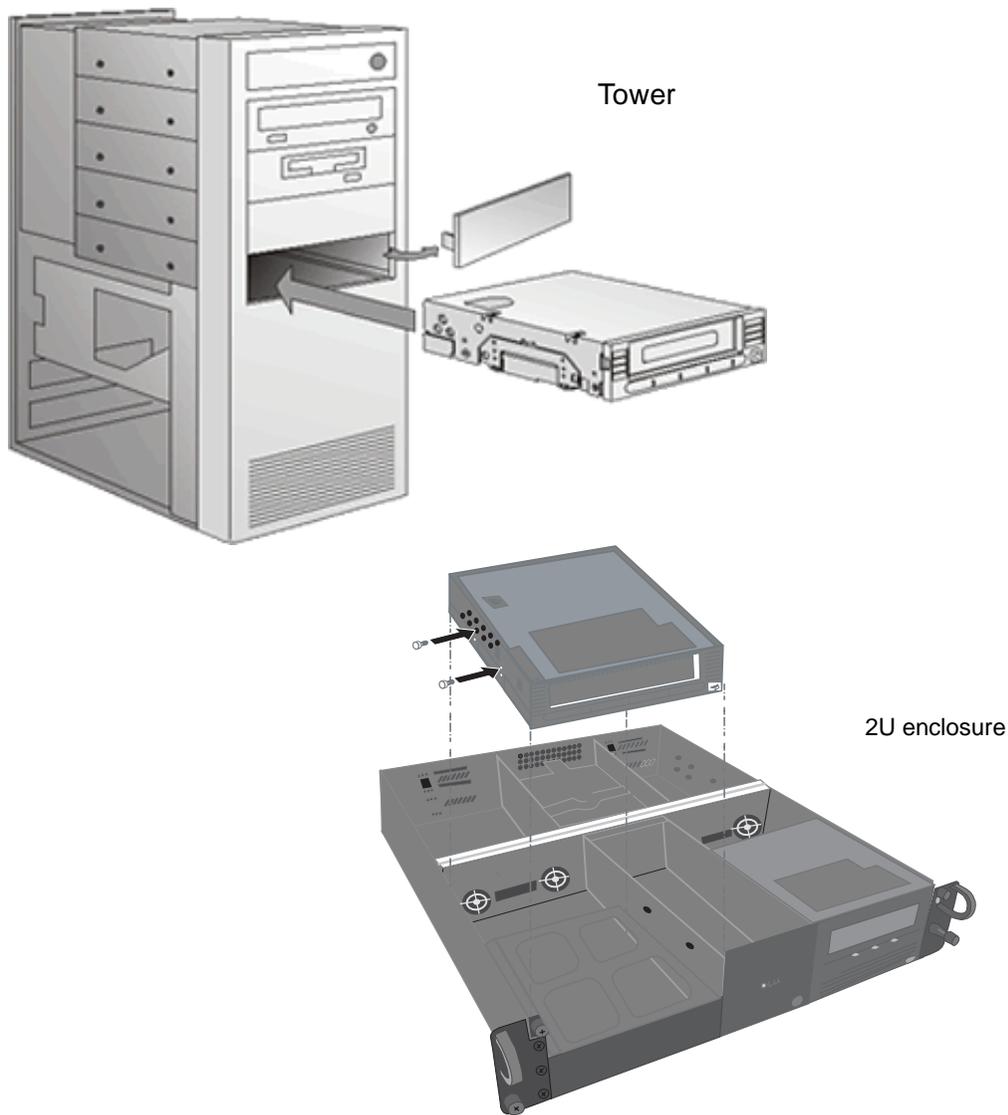


Figure 3-10. Tape Drive Installation in an Open Drive Bay

NOTE: Install a SCSI host adapter in the selected server or workstation now, if necessary. For more information on SCSI host adapter requirements, see [“SCSI Bus Requirements”](#) on page 3-1.

6. Obtain a SCSI cable with an open 68-pin, high-density connector.
7. Connect one end of the SCSI cable to the SCSI connector on the rear panel of your tape drive. The SCSI connectors are keyed, preventing improper connection.

NOTES: 1 If the SCSI cable does not fit the connector on your SCSI host adapter, you either have an incompatible SCSI host adapter or you need to purchase a cable adapter. Contact your Quantum sales representative or your SCSI host adapter manufacturer for information.

2 Refer to [“Terminating Your Internal Tape Drive” on page 3-12](#) to determine if you need to use an LVD/SE terminator with the SCSI cable.

8. Connect the other end of the SCSI cable to the SCSI host adapter, aligning the colored stripe on the cable with pin 1 on the SCSI host adapter’s connector.
9. Locate an available power cord in the server or workstation and attach it to the power connector on the rear panel of your tape drive. The connector is keyed, preventing improper connection.

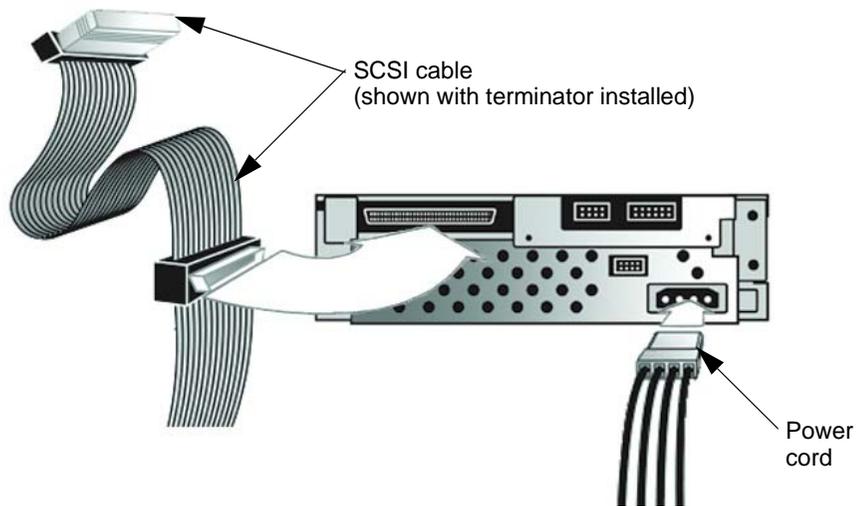


Figure 3-11. SCSI and Power Cable Location (Internal Tape Drive)

3.3.5 Completing the Installation

1. Secure your DLT VS160 internal tape drive with the necessary mounting screws, either in the sides or bottom of the tape drive sled, as appropriate for the server or workstation chassis. Reference [Figure 3-12](#) for an example.

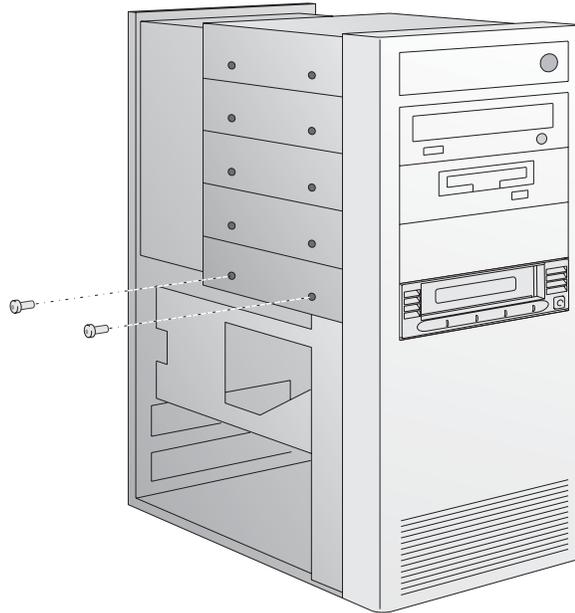


Figure 3-12. Securing the Internal Tape Drive in the Installation Bay

NOTE: Some servers and workstations require mounting rails for internal devices. Contact your server or workstation manufacturer for information.

2. Replace the cover on the server or workstation.
3. Connect the power cord to the server or workstation and any peripheral devices that you detached earlier.
4. Power on the server or workstation and allow its operating system to start.
5. Check your tape drive to make sure it is working properly. Refer to [“Indicator Activity During Power-On Self-Test \(POST\)”](#) on page 4-2 to learn about your tape drive’s self-test and initialization features.

3.4 Installing the Device Drivers

This section describes how to install device drivers from Microsoft Windows NT[®] 4.0 or Microsoft Windows 2000[®].

NOTE: If you intend to use native operating system backup applications, you can find the required device drivers at www.quantum.com. Commercial backup applications generally provide all necessary device driver support.

3.4.1 Microsoft Windows NT 4.0

1. Make sure that you are logged on to the server or workstation with Administrator privileges.
2. Download the required drivers from www.quantum.com.
3. Click **Start**, select **Settings**, then click **Control Panel**.
4. Double-click the **Tape Devices** icon.
5. Click the **Drivers** tab.
6. Click the **Add** button.
7. Click **Install From Disk** button.
8. Type the path to the driver you downloaded in step 2.
9. Click the **DLT1VS Tape NT** entry and click **OK**.
10. When the New SCSI Tape Device Found dialog appears, click **OK**.
11. Type the path to the driver you downloaded in step 2 and click **Continue**.
12. Click **OK** in the Tape Devices dialog box.
13. Restart the server or workstation.
14. After the server or workstation restarts, log on with Administrator privileges, click **Start**, select **Settings**, click **Control Panel**, double-click **Tape Devices** (icon), and make sure the DLT VS160 drive device driver is loaded. If the device driver is not loaded, repeat the installation process beginning at step 1.

3.4.2 *Microsoft Windows 2000*

1. Make sure that you are logged on to the server or workstation with Administrator privileges.
2. Download the required drivers from **www.quantum.com**.
3. Right-click **My Computer** (icon) on the Windows desktop, click **Manage**, then click **Device Manager**.
4. The DLT VS160 tape drive is listed under the “? Other Devices” item as “Quantum DLT VS160 SCSI Sequential Device.”
5. Right-click **Quantum DLT VS160 SCSI Sequential Device**, click **Uninstall**, and then click **OK** to confirm that you want to remove the device.
6. Click **Action** in the upper-left corner of the Computer Management dialog or right-click anywhere in the right pane of the dialog.
7. Click **Scan for Hardware Changes**. Windows 2000 now scans for the DLT VS160 tape drive. The DLT VS160 tape drive appears under “? Other Devices” again.
8. Right-click **Quantum DLT VS160 SCSI Sequential Device**, and click **Properties**.
9. Click **Reinstall Driver**.
10. When the Upgrade Device Driver Wizard appears, click **Next**.
11. Click **Display a list...** and then click **Next**.
12. Click **Tape Drives**. You may need scroll down to see this item.
13. Click **Install From Disk**, type the path to the driver you downloaded in step 2, and click **OK**.
14. Click **Quantum** in the Manufacturers box.
15. Click **Quantum Value DLTtape™ DLT VS160 Drive**, and click **Next**.
16. Click **Next** to install the driver.
17. Click **Finish**.
18. Close the Device Properties dialog box.

The tape drive now appears in the Device Manager under Tape Drives, listed as “DLT VS Tape Drive,” and is ready to use.

Notes



Using Your Tape Drive

This chapter explains how to use your Quantum DLT VS160 tape drive. It describes the front panel LEDs and controls, how to load and eject the data cartridges, how to use and care for your data cartridges, and how to use the cleaning cartridge.

4.1 Front Panel Controls and Indicators

This section explains how to use the front panel controls and indicators.

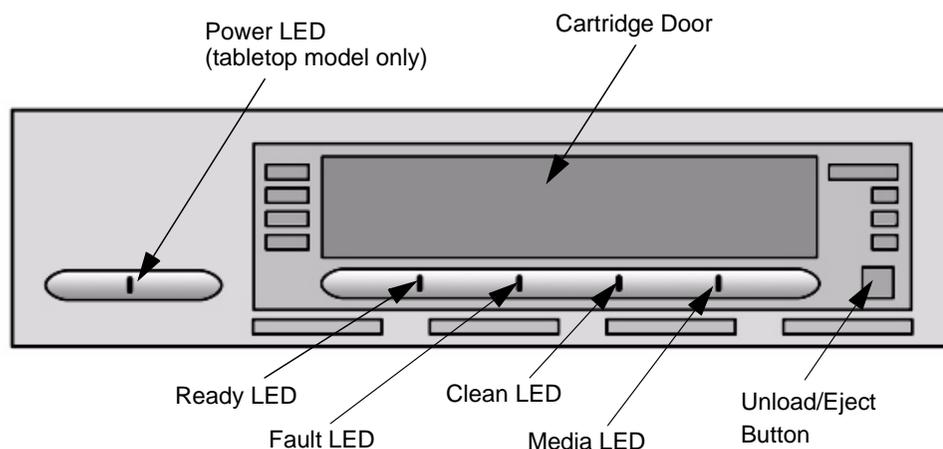


Figure 4-1. DLT VS160 Tape Drive Front Panel

NOTE: The front panel controls and indicators are in the same locations on both the internal and tabletop tape drives, except that the internal tape drive does not have a Power LED.

4.1.1 Interpreting the Indicators

This section describes what each front panel indicator means and the circumstances under which one or more indicators are illuminated.

Indicator Activity During Power-On Self-Test (POST)

Every time you power on or reset your tape drive, it conducts a power-on self-test (POST). This test ensures that your tape drive is working properly and is ready to use. While POST is in progress, watch the front panel LEDs to see the progress and results of the test:

- The LEDs illuminate one at a time, from left to right, starting with the Ready LED, next the Fault LED, and finally the Clean LED, at approximately one second intervals.
- About four seconds later, the Media LED illuminates.
- Each LED signals a different part of the POST process.
- All LEDs then blink momentarily.
- If a data cartridge is not loaded, the Ready LED illuminates and POST is complete, the entire process taking approximately eight seconds.
- If a data cartridge is loaded, the Ready LED flashes while the tape drive mounts the data cartridge, a process that can take several minutes.
- As POST completes, the tape drive makes a slight buzzing noise for several seconds. This noise is normal.

The tape drive is now ready to use.

Indicator Activity During Normal Operation: Ready LED

When your DLT VS160 tape drive is in use, the Ready LED indicates the three states detailed in [Table 4-1](#). The Ready LED operates independently of the other three LEDs.

Table 4-1. Interpreting Ready LED Activity

Ready LED	Tape Drive Status
Off	No power to the tape drive.
On	Power is on; no data cartridge is loaded or a loaded data cartridge is idle with no tape motion.
Blinking	The tape drive is loading a data cartridge or a loaded data cartridge has tape motion, such as read, write, seek, rewind, calibration, or other data cartridge activity.

Indicator Activity During Normal Operation: Fault/Clean/Media LEDs

The Fault, Clean, and Media LEDs indicate the status of the tape drive. Note that the LEDs can indicate more than one of the indicated operating conditions simultaneously; for example:

- If cleaning is required while a DLT1 (VS80) format data cartridge is loaded, both the Clean and Media LEDs are on.
- If an internal write/read diagnostic fails as a result of a permanent write error, both the Fault and Clean LEDs blink slowly.

Table 4-2 describes the meaning of each front panel indicator.

Table 4-2. Fault / Clean / Media LED Activity and Tape Drive Status

Indicator	Activity	Operating Condition
Fault	Slow Blink (1x per second)	User-initiated write/read diagnostic failed.
	Fast Blink (3x per second)	Servo or mechanism error.
	On	Internal firmware error.
Clean	Slow Blink (1x per second)	Calibration error or permanent write/read error.
	Medium Blink (2x per second)	Cleaning in progress.
	On	Cleaning required: 250 tape motion hours exceeded since last cleaning.
Media	Slow Blink (1x per second)	Unsupported format, or damaged or unsupported data cartridge type inserted into the tape drive.
	On	DLT1 (VS80) format DLTtape IV data cartridge loaded.

See Chapter 5, “Troubleshooting Your Tape Drive,” for details on error conditions.

4.1.2 Unload/Eject Button

This section describes your DLT VS160 Unload/Eject Button.

Unload/Eject Button Features

The Unload/Eject button provides features in addition to unloading and ejecting a data cartridge. To activate one of these features, press and hold the Unload/Eject button for the amount of time specified in [Table 4-3](#). Release the Unload/Eject button when you reach the desired LED sequence.

If you do nothing for 15 seconds after accessing any of the additional features that require an action, such as loading a data cartridge, the tape drive returns to normal operating mode.

CAUTION The two features noted in [Table 4-3](#) overwrite any data currently on the data cartridge. Do not enter these features if the data cartridge in the tape drive contains critical data.

Table 4-3. Unload / Eject Button Features

Description	LED Status				Button Hold Time (seconds)
	Ready	Fault	Clean	Media	
Normal unload/eject function	On	N/A	N/A	N/A	0 to 6
Reserved	Blinking	Off	Off	Off	6 to 9
Enter code update mode	Blinking	Blinking	Off	Off	9 to 12
Reserved	Blinking	Blinking	Blinking	Off	12 to 15
Reserved	Blinking	Blinking	Blinking	Blinking	15 to 18
Revert to normal operating mode	On	Off	Off	Off	18 to 21
Write/read diagnostic mode CAUTION: <i>This feature overwrites any data currently on the data cartridge.</i>	On	On	Off	Off	21 to 24
Reserved CAUTION: <i>This feature overwrites any data currently on the data cartridge.</i>	On	On	On	Off	24 to 27
Emergency reset	On	On	On	On	27 to 30
Revert to normal operating mode	Off	Off	Off	Off	30+

Unload/Eject Button Functions

Normal Unload/Eject

When you press and release the button, the tape drive unloads and ejects the data cartridge.

Enter Code Update Mode

When you press the button for 9 to 12 seconds, the tape drive is ready to accept a code update data cartridge. Insert a code update data cartridge within 15 seconds to update the firmware inside the tape drive. If you do not load a code update data cartridge within 15 seconds, the tape drive returns to normal operating mode.

Write/Read Diagnostic Mode

CAUTION This mode overwrites all data on the data cartridge in the tape drive. The diagnostic requires that you first load a data cartridge that is blank or does not contain valuable data. Use extreme caution when using this feature to avoid loss of important data.

When you press the button for 21 to 24 seconds, the tape drive initiates an internal write/read diagnostic. When the diagnostic begins, the tape drive writes and then reads approximately 400 MB of data and then unloads and ejects the data cartridge. The process takes approximately two minutes. If the diagnostic test detects no errors, the tape drive returns to normal operating mode. If an error occurs, the tape drive illuminates the appropriate LEDs.

Emergency Reset

When you press the button for 27 to 30 seconds, the tape drive performs a hard reset, behaving as if it had been powered off and then on. A standard POST then occurs.

Revert to Normal Operating Mode

When you press the button for 30 or more seconds, and then release it, the tape drive returns to normal operation.

4.2 Data Cartridge Use and Care

Your Quantum DLT VS160 tape drive reads and writes Quantum DLTtape™ VS1 data cartridges. Your DLT VS160 tape drive can read—but not write—DLTtape IV data cartridges previously written with the DLT1/VS80 format.

NOTE: The tape drive automatically ejects any data cartridges whose format it cannot read. Make sure all data cartridges that you use for data backup are Quantum DLTtape VS1 data cartridges.

4.2.1 Loading a Data Cartridge

Loading a data cartridge into your DLT VS160 tape drive is easy. After the tape drive completes POST, insert the DLTtape VS1 data cartridge into the cartridge slot, oriented as shown in [Figure 4-2](#), and push the data cartridge gently into the tape drive until it stops.

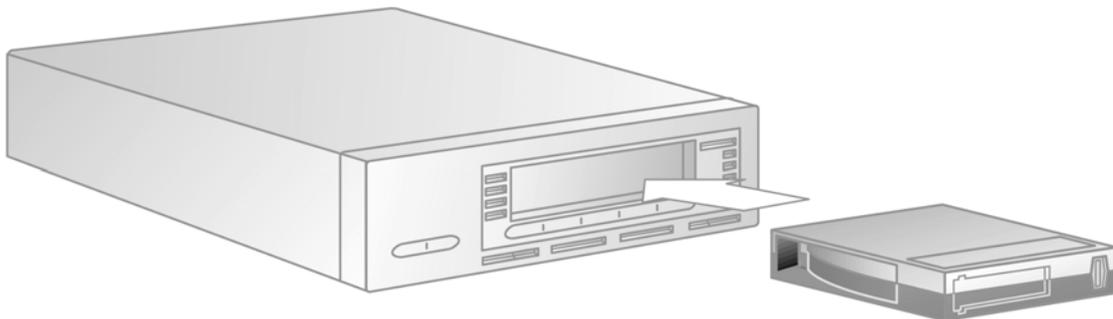


Figure 4-2. Loading a DLTtape VS1 Data Cartridge

The Ready LED blinks while the tape drive loads the data cartridge. When the data cartridge is ready to use, the tape drive illuminates the Ready LED. If the data cartridge is a DLTtape™ IV written using the DLT1 (VS80) format, the tape drive also illuminates the Media LED.

4.2.2 Unloading a Data Cartridge

CAUTION Remove the data cartridge from your tape drive before powering off the tape drive—or the server or workstation for an internal tape drive. Leaving a data cartridge in the tape drive when power is off can result in data cartridge and tape drive damage and may cause data loss because the header/catalog data may not be properly written before the tape drive loses power.

To unload a data cartridge from your tape drive, follow these steps:

1. Press the **Unload/Eject** button or use your tape backup software to unload the data cartridge. The Ready LED blinks while the tape drive rewinds the tape.
2. When the tape drive has rewound the tape, it ejects the data cartridge.

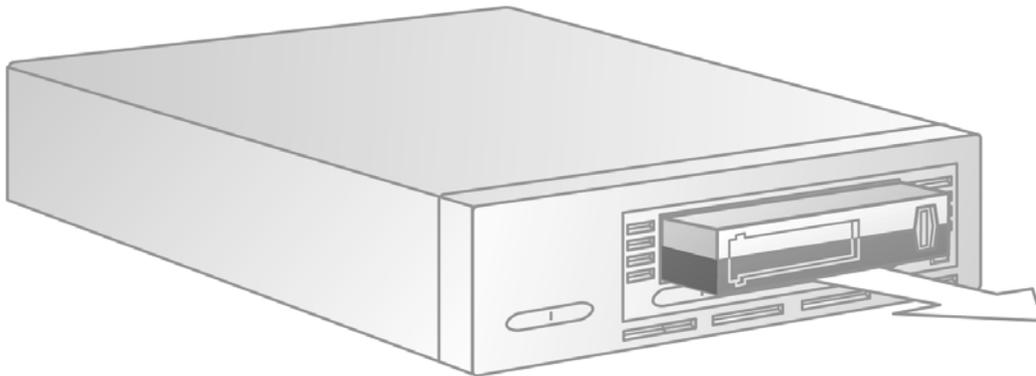


Figure 4-3. Unloading a DLTtape VS1 Data Cartridge from the Tape Drive

3. Remove the data cartridge from the tape drive.
4. Return the data cartridge to its plastic storage case to prolong data cartridge life.

4.2.3 Write-Protecting the Data Cartridge

All data cartridges have a write-protect switch to prevent accidental erasure of data. Before loading a data cartridge into your tape drive, make sure to position the write-protect switch on the front of the data cartridge as desired.

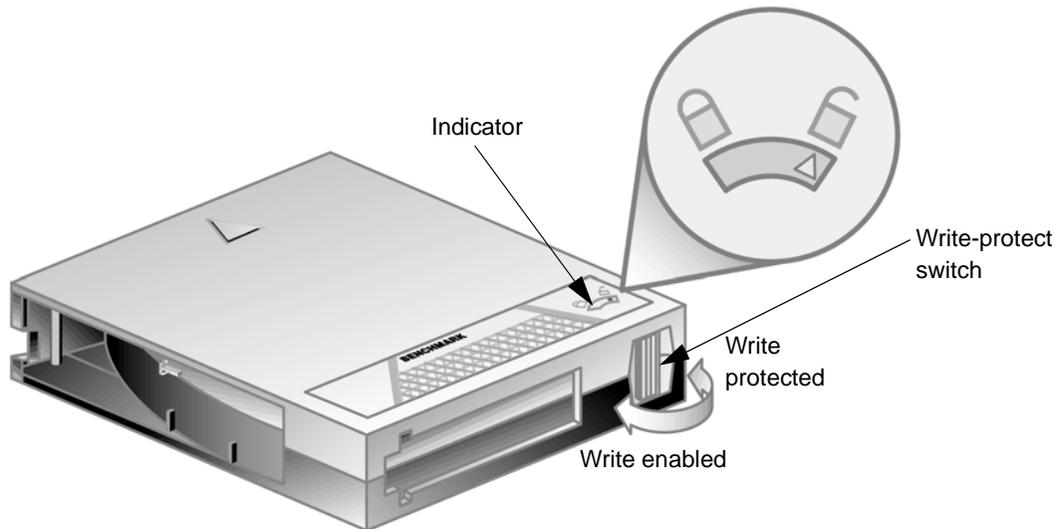


Figure 4-4. DLTtape VS1 Data Cartridge Write-Protect Switch

Write Protected	Slide the switch to the right to write-protect the data cartridge. A “locked” icon appears on the switch indicating that the data cartridge is write-protected.
Write Enabled	Slide the switch to the left to allow your tape drive to write data to the data cartridge. The “unlocked” icon appears on the switch. The indicator on the top of the data cartridge also points to the appropriate icon, indicating the write-protected status.

4.2.4 *Caring for Your Data Cartridges*

To ensure the longest possible life for all of your Quantum DLTtape VS1 data cartridges, follow these guidelines:

- Maintain clean and smoke-free operating and storage environments.
- Do not drop or strike a data cartridge. Excessive shock can displace the tape leader, making the data cartridge unusable and possibly damaging your tape drive.
- Store your data cartridges in their plastic storage cases.
- Do not expose your data cartridges to direct sunlight or sources of heat, including portable heaters and heating ducts.
- The operating temperature range for your data cartridges is 10 °C to 40 °C (50 °F to 104 °F). The storage temperature range is 16 °C to 32 °C (60 °F to 90 °F).
- If a data cartridge is exposed to temperatures outside the ranges specified above, stabilize the data cartridge at room temperature for the same amount of time it was exposed to extreme temperatures, up to 24 hours.
- Store your data cartridges in a dust-free environment in which relative humidity is always between 20% and 80% (noncondensing). The ideal storage relative humidity is 40%, $\pm 20\%$.
- Do not place data cartridges near sources of electromagnetic energy or strong magnetic fields, such as computer monitors, electric motors, speakers, or X-ray equipment. Exposure to electromagnetic energy or magnetic fields can destroy data on data cartridges.
- Place identification labels only in the slide-in slot on the front of the data cartridge.
- Never use any type of adhesive labels or “sticky” notes on data cartridges—they can become dislodged inside the tape drive and entangled in the mechanism.
- Do not use graphite pencil, water-soluble felt pens, or other debris-producing writing instruments on your labels. Never erase a label—replace it.

4.2.5 Using the Cleaning Cartridge

When the Clean LED is illuminated, your tape drive's read/write head needs to be cleaned. See [Chapter 5, "Troubleshooting Your Tape Drive"](#) for other conditions that may indicate tape drive cleaning is necessary.

Follow the instructions on [page 4-6](#) to load the cleaning cartridge. Cleaning typically takes several minutes, during which the Clean LED blinks. If you attempt to load any other type of cleaning cartridge, your DLT VS160 tape drive prevents damage by ejecting the cartridge after approximately 25 seconds without allowing the cleaning tape to come into contact with the read/write head.

CAUTION Use only approved cleaning cartridges in your DLT VS160 tape drive. Use of any other type of cleaning cartridge can damage the read/write head in your tape drive.

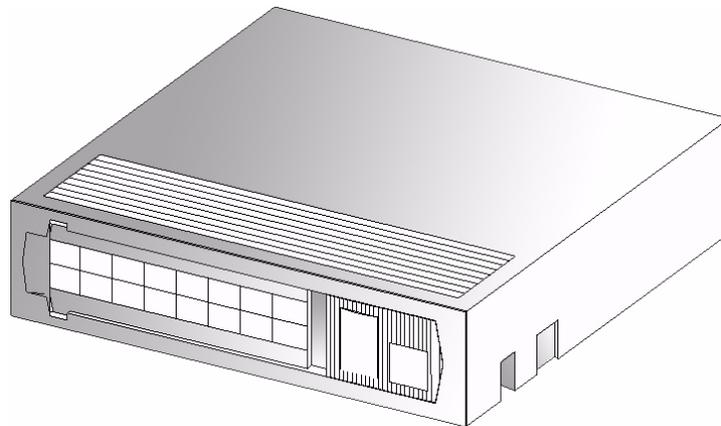
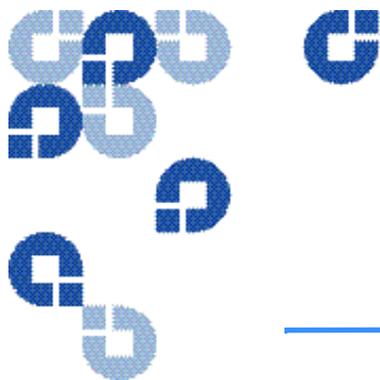


Figure 4-5. DLT VS1 Cleaning Cartridge

Each cleaning cartridge has a useful life of 20 cleanings. The cleaning cartridge includes a label with 20 small boxes printed on it. Place a check mark in one of the boxes each time you use the cleaning cartridge to clean the tape drive. Replace the cleaning cartridge when you have checked all boxes.

When the cleaning cartridge has cleaned the read/write head, the Clean LED turns off and the tape drive ejects the cleaning cartridge.

NOTE: If any LEDs blink or if the Clean LED illuminates again when you insert another cartridge immediately after cleaning, see [Table 4-2 on page 4-3](#) for more information.



Troubleshooting Your Tape Drive

This chapter provides troubleshooting information for your DLT VS160 tape drive.

5.1 General Troubleshooting Guidelines

If you have a problem when using the tape drive, first try to isolate the cause of the problem. For example, if you have just installed a new SCSI host bus adapter and the system will not start, the cause of the problem is likely to be the adapter.

When installing multiple items of hardware and software, install each item one at a time, restarting the system each time. Also, if you have installed multiple devices or software and then experience problems, remove or uninstall each in turn to establish which one is causing the problem.

Remember that the system recognizes devices during power-on: if you swap or connect a product when the system is running, be sure to restart the system. Restarting the system resets devices and often resolves problems. It is good practice to restart after adding a driver or installing new firmware.

5.2 Obtaining Drivers and Firmware Upgrades

See [“Firmware Upgrades and Drivers”](#) on page 2-2 for information about obtaining drivers or updating firmware.

5.3 Troubleshooting the Tape Drive

Table 5-1 on page 5-3 provides troubleshooting information on errors indicated by front panel LEDs, including the following topics:

- None of the tape drive's LEDs illuminate
- Media LED: Slow blink
- Media LED: Illuminated
- Clean LED: Slow blink
- Clean LED: Illuminated
- Fault LED: Slow blink
- Fault LED: Fast blink
- Fault LED: Illuminated
- Other LED Indications.

Table 5-2 on page 5-5 provides troubleshooting information on tape drive and connectivity troubleshooting, including the following topics:

- The server or workstation does not recognize your DLT VS160 tape drive.
- There are fatal or nonfatal errors for which you cannot find the cause.
- The backup application does not recognize the tape drive.
- The tape drive cannot write data to or read data from a data cartridge.
- The tape drive is not backing up data efficiently.
- The tape drive does not eject a data cartridge.
- The tape drive repeatedly rejects a data cartridge.

5.3.1 *Power-On Self-Test (POST) and Tape Drive Connectivity*

Every time you power on or reset the tape drive, it conducts a power-on self-test (POST). This test ensures that the tape drive is working properly and is ready to use. While POST is in progress, watch the front panel LEDs to see the progress and results of the test. See [Section 4.1.1, “Interpreting the Indicators”](#) on page 4-2 for details about normal LED activity during POST.

A successful POST always finishes with a steadily illuminated Ready LED. Any unexpected LED indications during POST may indicate a failure. Use the information in [Table 5-1](#) and [Table 5-2](#) to troubleshoot the tape drive. If the condition persists, contact Quantum Technical Support.

Table 5-1. Errors Indicated by Front Panel LEDs

Symptom	Problem	Solution
None of the tape drive's LEDs illuminate	The tape drive is not receiving power.	Check the tape drive's power cable. If you are using a tabletop tape drive, check the power cable connections. Plug the power cable into a different power outlet.
Media LED: Slow blink	Unsupported format, unsupported data cartridge type, or damaged data cartridge.	<p>Inspect the data cartridge and confirm the format, type, and integrity. The tape drive ejects the data cartridge if you load an unsupported data cartridge, such as:</p> <ul style="list-style-type: none"> • DLTtape™ III • SDLT I and II data cartridges • Incompatible cleaning cartridges • Data cartridges with damaged media • DLTtape™ IV data cartridge that is either blank or was written using an unsupported format such as DLT 4000, DLT 7000, or DLT 8000 • Any cartridge that causes an unsuccessful buckle operation. <p>If the problem is repeatable with a known-good data cartridge, replace the tape drive or call Quantum Technical Support.</p>
Media LED: Illuminated	A DLT1 (VS80) format DLTtape™ IV data cartridge is loaded.	Your DLT VS160 tape drive can read, but not write, to this data cartridge. If attempting to read, no action is required. If you attempt a write operation, your backup application will return a "Write Protected" message.
Clean LED: Slow blink	Calibration error or permanent write/read error.	The tape drive cannot read the calibration tracks on the media or has encountered a permanent write or read error. If the failure is the result of a calibration error, the tape drive ejects the data cartridge. If the failure is the result of a permanent read/write error, the tape drive does not eject the data cartridge. Try a known-good data cartridge. If the condition persists with a particular data cartridge, discard or degauss that data cartridge. If this error is repeatable with a known-good data cartridge, try cleaning the tape drive. If cleaning the tape drive does not help, replace the tape drive or contact Quantum Technical Support.

Table 5-1. Errors Indicated by Front Panel LEDs (*Continued*)

Symptom	Problem	Solution
Clean LED: Illuminated	Cleaning required. 250 tape motion hours exceeded since last cleaning.	The tape drive continues to function, although you may encounter more soft error rates. Clean the tape drive at your earliest convenience. The LED remains illuminated until the tape drive is cleaned.
Fault LED: Slow blink	User initiated write/read diagnostic failed.	Eject the data cartridge, power cycle or reset the tape drive. Try the diagnostic again with a different, known-good data cartridge. CAUTION: <i>This feature overwrites any data currently on the data cartridge. Confirm that the selected data cartridge does not contain critical data.</i> If this condition persists with a known-good data cartridge, contact Quantum Technical Support.
Fault LED: Fast blink	Servo or mechanical error.	Power cycle or reset the tape drive. Try the operation again with a known-good data cartridge. If the condition persists, contact Quantum Technical Support.
Fault LED: Illuminated	Internal firmware error.	Power cycle or reset the tape drive. Try the operation again with a known-good data cartridge. If the condition persists, contact Quantum Technical Support.
Other LED Indications	Unspecified.	If you encounter any LED indications that are not covered in this manual, contact Quantum Technical Support.

Table 5-2 helps you troubleshoot other tape drive and connectivity problems.

Table 5-2. Tape Drive and Connectivity Troubleshooting

Symptom	Problem	Solution
The server or workstation does not recognize your DLT VS160 tape drive.	The tape drive's SCSI ID might not be unique.	Check the SCSI IDs on all the other SCSI devices on the selected server, including the SCSI host adapter, and select an unused SCSI ID for your tape drive. Note: If you attach the tape drive to a narrow (50-pin) bus, you can only use SCSI IDs 0 through 7; otherwise you can use 0 through 15.
	The SCSI host adapter might be incorrectly configured.	Check the SCSI host adapter configuration. Refer to the SCSI host adapter manual for instructions.
	The SCSI cable might be loose.	Check both ends of the SCSI cable to see if the cable is well-seated.
	The SCSI terminator might be loose or missing.	Make sure an active LVD/SE terminator is properly seated on the back of the tape drive. Make sure an active LVD/SE terminator is in place on the SCSI ribbon cable for the internal tape drive. Note: If the tape drive is <i>not</i> the last or only device on the SCSI bus, make sure the last device on the SCSI bus is properly terminated <i>and</i> is powered on whenever you use your DLT VS160 tape drive.

Table 5-2. Tape Drive and Connectivity Troubleshooting (*Continued*)

Symptom	Problem	Solution
The server or workstation does not recognize your DLT VS160 tape drive.	The SCSI bus might be improperly terminated.	<ul style="list-style-type: none"> • If your tape drive is the last or only device on the SCSI bus, make sure the tape drive is properly terminated. • If your tape drive is not the last or only device on the SCSI bus, check all the SCSI cable connections and make sure the last device on the SCSI bus is terminated. • Make sure termination is set properly on the SCSI host adapter. • If you attach the tape drive to a narrow (50-pin) SCSI bus, you must use a customer-supplied 68-pin to 50-pin adapter that terminates the unused 18 pins. These adapters are sometimes labeled “high-byte termination.” • Regardless of which device terminates the SCSI bus, it must have power applied and be powered on for proper termination to occur.
	The SCSI terminator might not be at the end of the SCSI bus or more than two terminators might be present on the SCSI bus.	Make sure the terminators are placed only at each end of the SCSI bus—normally one at the host adapter and one on the last device on the bus. However, if both internal and external devices are attached to the same SCSI host adapter, the adapter may be positioned in the middle of the SCSI bus and should not be terminated. In that case, terminate the SCSI devices on each end of the bus.
	The SCSI host adapter might be in a defective expansion slot.	Move the SCSI host adapter to a different expansion slot.
	The SCSI bus might be too long.	<p>Make sure the total length of the SCSI bus does not exceed the following ANSI SCSI standards”</p> <ul style="list-style-type: none"> • 19 feet (6 meters) for a (SE) bus • 40 feet (12 meters) for a LVD SCSI bus with multiple devices • 82 feet (25 meters) for an LVD SCSI bus with a single device. <p>Note: If you attach the tape drive to a SE bus, or if there are any SE devices attached to the bus, the bus is limited to the maximum cable lengths of an SE bus.</p>

Table 5-2. Tape Drive and Connectivity Troubleshooting (*Continued*)

Symptom	Problem	Solution
There are fatal or nonfatal errors for which you cannot find the cause.	The SCSI bus might be improperly terminated.	<ul style="list-style-type: none"> • If your tape drive is the last or only device on the SCSI bus, make sure the tape drive is properly terminated. • If your tape drive is not the last or only device on the SCSI bus, check all the SCSI cable connections and make sure the last device on the SCSI bus is terminated. • Make sure termination is set properly on the SCSI host adapter. • If you attach the tape drive to a narrow (50-pin) SCSI bus, you must use a customer-supplied 68-pin to 50-pin adapter that terminates the unused 18 pins. These adapters are sometimes labeled “high-byte termination.” • Regardless of which device terminates the SCSI bus, it must have power applied and be powered on for proper termination to occur.
	The AC power source may not be properly grounded (DLT VS160 tabletop tape drive only).	<ul style="list-style-type: none"> • Plug your tape drive’s power cable into a power outlet on the same circuit as the server. • Plug your tape drive’s power cable into a different power outlet.
The backup application does not recognize the tape drive.	Application not compatible or improper device drivers installed.	If the operating system recognizes the tape drive, but not the backup application, confirm that you are using a compatible backup application. Also confirm that you have the proper device drivers installed. See “Firmware Upgrades and Drivers” on page 2-2 to obtain the latest operating system drivers and/or firmware upgrades.

Table 5-2. Tape Drive and Connectivity Troubleshooting (*Continued*)

Symptom	Problem	Solution
The tape drive cannot write data to or read data from a data cartridge.	Data cartridge or tape drive problem.	<ul style="list-style-type: none"> • Make sure that the data cartridge is write-enabled. Move the write-protect switch to the write-enabled position. • If you are attempting to write data, make sure you are using a DLTtape VS1 data cartridge. • Make sure that the data cartridge has not been exposed to harsh environmental or electrical conditions and is not physically damaged in any way. • Many backup applications do not read or write to data cartridges created with a different backup application. In this case, perform an erase, format, or label operation on the data cartridge using your backup application. • Make sure you understand any data protection or overwrite protection schemes that your backup application uses. Some schemes might prevent you from writing to a data cartridge. • Retry the operation with a different, known-good data cartridge. • Clean the tape drive.
The tape drive is not backing up data efficiently.	Network, data cartridge, SCSI bus, backup data set, or backup application problem.	<ul style="list-style-type: none"> • Check the network bandwidth from the server. If you are backing up data over a network, compare to a local-only backup to get relative backup speed indication. • Make sure that the tape drive is on its own SCSI bus and not daisy-chained to another tape drive or to the hard drive being backed up. • Clean the tape drive. • Try a new data cartridge. A marginal data cartridge can cause performance problems due to bad spots on the media. • Make sure that the data is being compressed. See your backup application program's documentation for details. • Check the size of the files in the backup set. Small file size or block size can impact performance. • Confirm that the backup application is using block sizes of at least 32KB, and preferably 64KB. See your backup application program's documentation for details.

Table 5-2. Tape Drive and Connectivity Troubleshooting (*Continued*)

Symptom	Problem	Solution
The tape drive does not eject a data cartridge.	Timing or tape drive problem.	<ul style="list-style-type: none"> • Allow sufficient time for the tape drive to complete any operations, such as POST, reset, load, unload, or rewind. The slowest operation is when powering-on or resetting the tape drive with the tape positioned at the physical end of the media. Recovery from this state could take several minutes. • Allow sufficient time for the backup application to release any hold it may have on the tape drive. This could take several minutes. Confirm that the backup application is not set to prevent data cartridge removal. • Try a software eject, using your backup application, allowing sufficient time for the command to execute. • If the tape drive still does not eject the data cartridge, power-off the tape drive and remove all connectors except power from the rear of the tape drive. Apply power to the tape drive and allow it to complete POST. Press the Unload/Eject button, allowing sufficient time for the command to execute. • See “Unresponsive Tape Drive” on page 5-10 for instructions on performing an emergency reset to eject the data cartridge. • If the tape drive still does not eject the data cartridge, contact Quantum Technical Support.
The tape drive repeatedly rejects a data cartridge.	Data cartridge or tape drive problem.	<p>Inspect the cartridge and confirm format, type, and integrity. The tape drive rejects any unsupported data cartridge; for example:</p> <ul style="list-style-type: none"> • DLTtape™ III • SDLT I and II data cartridges • Incompatible cleaning cartridges • Data cartridges with damaged media • DLTtape™ IV data cartridge that is either blank or was written using an unsupported format such as DLT 4000, DLT 7000, or DLT 8000 • Any cartridge that causes an unsuccessful buckle operation. <p>If the problem is repeatable with a known-good data cartridge, try cleaning the tape drive. If cleaning does not help contact Quantum Technical Support.</p>

5.3.2 Unresponsive Tape Drive

On rare occasions, the tape drive may become unresponsive. If this should happen, follow these steps to reset the tape drive and unload the data cartridge:

1. Press and hold the **Unload/Eject** button for approximately 27 seconds until all four LEDs are steadily illuminated (not blinking).
2. Release the **Unload/Eject** button while all four LEDs are steadily illuminated. The tape drive initiates a device reset, then performs a POST.
3. Upon completion of POST, press and release the **Unload/Eject** button as soon as the Ready LED begins to blink and/or you hear media motion. The tape drive attempts to eject the data cartridge as soon as the device reset is complete and the tape drive completes a mid-tape load. This can take several minutes.
4. If you do not press the **Unload/Eject** button again as indicated in Step 3, the data cartridge in the tape drive is ready to use after the tape drive resets.

5.3.3 Tape Drive Noises During System Startup

During system startup, the computer accesses the tape drive and re-tensions any data cartridge in the tape drive to prepare the tape drive for operation. The noise and vibration associated with this activity are normal for this technology and do not indicate a problem with the tape drive.

5.3.4 Tape Drive Failures During Backup or Restore Operations

If you experience tape drive failures during backup or restore operations, check each of the following conditions:

- Make sure you are using the correct type of data cartridge.
- Make sure data cartridge is not write-protected.
- Remove and reinsert the data cartridge.
- Try a different data cartridge, preferably a new one.
- Clean the tape drive read/write head.
- Verify tape drive settings in the system setup program.
- Check all cable connections.

5.3.5 Media Backup Software Errors

If your media backup software experiences errors, check each of the following conditions:

- Direct Memory Access (DMA) conflicts during backup or compare operations.
- Unreadable media.

See the manual supplied with your tape backup software application for more information.

Notes

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