

HP SureStore DLT Tape Library User's Guide

**Models 4115w/4215w,
7115w/7215w**



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See Appendix B for important safety and regulatory information.

Printing History

New editions of this manual incorporate all material updated since the previous edition. The manual printing date and part number indicate the current edition. The printing date changes when a new edition is printed. (Minor corrections and updates incorporated at reprint do not cause this date to change.)

September, 1997 Edition 1

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September 1998 Edition 4 (Enhancements added)

In This Book

This book is a guide for setting up and operating your tape library. It is organized as follows:

Chapter 1	Installing your library; moving or shipping the library.
Chapter 2	Choosing and using digital linear tape cartridges.
Chapter 3	Operating the tape drive.
Appendix A	Ordering supplies and accessories; locating HP sales and support offices.
Appendix B	Safety and regulatory information.
Appendix C	TapeAlert messages.
Glossary	Terms related to digital linear tape storage products.

Typographical Conventions

This manual uses the following typographical conventions:

Font	Used for
<i>Italics</i>	Document titles and statements that need to be emphasized.
COMPUTER OUTPUT	Information displayed in the control panel or screen menu items that you can select.
KEYCAP TEXT	Keys on the library control panel.

NOTE

Notes provide information that can be helpful in understanding the operation of the product.

CAUTION

Cautions call attention to an operating procedure or practice that could result in damage to the product if not correctly performed. *Do not proceed beyond this box until you fully understand and meet the indicated conditions.*

WARNING

Warnings call attention to a procedure or practice that could result in personal injury if not correctly performed. *Do not proceed beyond this box until you fully understand and meet the indicated conditions.*



This warning symbol on a product label indicates that personal injury could result if the product is used improperly, and that more detailed information is given in the installation and/or user manuals.

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Tables

1 **Installing the Tape Library**

Installation Overview

Before you install the tape library:

- Make sure you have the components listed in Table 1-2 on page 1-4.
- Become familiar with the back of the tape library, as shown in “Tape Library Rear Panel” on page 1-4.

To install the library, you must:

1. Choose a location.
2. Unpack the library.
3. Install the SCSI host adapter card.
4. Mount the library in a rack (rackmount configuration only).
5. Set the SCSI interface mode switch.
6. Connect the tape library.
7. Power on the system.

NOTE

These steps are explained in this chapter. This chapter also explains how to move or ship the library.

NOTE

After the library is installed, you must perform additional tasks explained in Chapters 2 and 3.

Step 1: Choose a Location

Choose a location that meets the following criteria. Take the library there *before* unpacking it.

Table 1-1

Location Criteria

Room temperature	50-104° F (10-40° C)
Power source	AC power voltage: 100-127 V or 200-240 V
Air quality	Minimal sources of particulate contamination. Avoid areas near frequently used doors and walkways, stacks of supplies that collect dust, and smoke-filled rooms. CAUTION: Excessive dust and debris can damage tapes and tape drives.
Adequate clearance	<p>Standalone configuration — free standing or against a wall/desk:</p> <p>Back 56 cm (22 in.) for cooling and service.</p> <p>Front 86 cm (34 in.) for operator access.</p> <p>Sides 56 cm (22 in.) for removal of the external cover.</p> <p>If less space is allowed, move the library to an open area before servicing.</p> <p>Rack mount configuration:</p> <p>Back Allow adequate room to open the rear door of the rack for service access, usually 46-61 cm (18-24 in.), depending on the rack.</p> <p>Front 86 cm (34 in.) for operator access.</p> <p>Height For ease of use, install the library so the bottom is 60-120 cm (24-48 in.) above the floor. Do not install the library in the bottom rail position because of clearance.</p>

Step 2: Unpack the Library

Make sure you have all required components and become familiar with the library's components.

Required Components

Table 1-2

Components Included for Installation

Component	Description
Tape Library	Unpack the library when it is in the desired location.
SCSI card(s)	One single-ended FAST/WIDE SCSI is included with the library. Data is transferred up to 20 Mbytes/second. For FAST handshaking, the total length of the SCSI bus is limited to 3 meters.
SCSI cable: allowable lengths	One 3-meter single-ended FAST/WIDE SCSI is included with the library.
Daisy-chain cable	Included with two-drive libraries.
Power cord	Included with library.
Rackmount kit	Included with rackmount libraries.
Data cartridge	Five tapes are included with library.
Cleaning cartridge	One cleaning tape is included with library.

NOTE

Contact your service representative if you are missing any components.

Additional Components Provided

Table 1-3

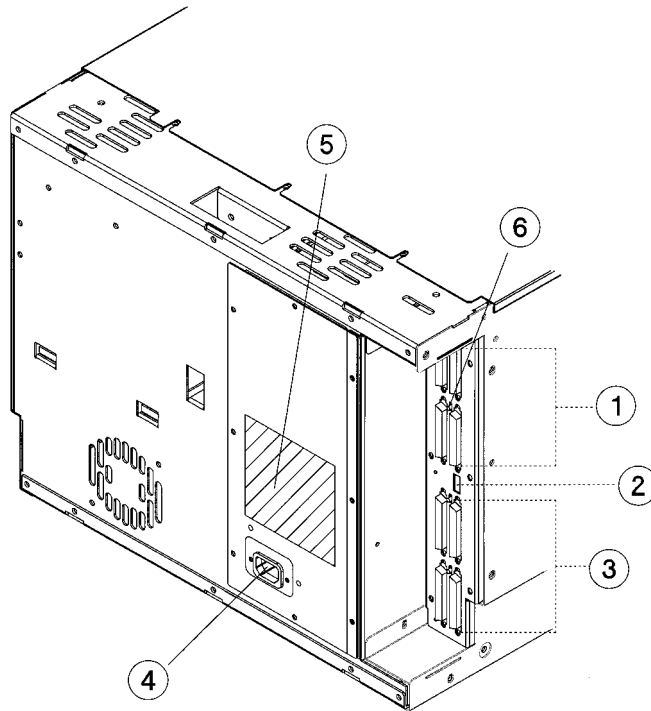
Additional Components

Component	Description
User's Guide	Printed user's manual in English.
DLT Library Advisor	Online user's manual with video clips.
HP SureStore Tape CD-ROM	Includes TapeAssure/TapeAlert, as well as other diagnostic utilities. Also includes the User's Guide on CD-ROM, translated into French, Italian, German, Spanish, and Japanese.
Live Trial Backup Software	Includes live trial versions of backup software for your evaluation.
Tape Data Sheet	Describes the tape specifications, characteristics, and maintenance needed
Bar Code Labels	Includes bar code labels and reordering information.

Tape Library Rear Panel

Figure 1-1

Rear Panel Features



The following list identifies the numbered components in Figure 1-1:

1	Bus 1 SCSI ports
2	SCSI interface mode switch
3	Bus 2 SCSI ports
4	Power port
5	SCSI bus indicator label
6	SCSI bus status indicators

Step 3: Install the Host SCSI Card(s)

Install the single-ended or differential SCSI card into the host computer system.

Refer to the host user manual and the SCSI card installation instructions for information on installing and configuring SCSI cards.

Step 4: Mount the Library in a Rack (optional)

For stand-alone installations, go to “Step 5: Set the SCSI Interface Mode Switch” on page 1-20.

The rack slides can be adjusted to fit any standard rack with a depth of 26 to 31 inches (66.04 to 78.75 centimeters).

Safety Precautions

Because the tape library weighs approximately 100 pounds (45 kilograms), the following safety precautions must be taken when mounting the tape library:

- Fully extend the rack’s antitip rail and lower the leveller feet.
- Mount the tape library no higher than 4 feet (122 centimeters) in the rack.
- **IMPORTANT:** At least two people must lift the library during installation.

WARNING

Do not pull the library out of the rack to its fully extended position unless the anti-tip rail on the bottom of the rack has been positioned correctly. Do not attempt to move the tape library by yourself.

The tape library weighs approximately 100 pounds (45 kilograms). Pulling the library out of the rack without the rack’s anti-tip rail extended could result in personal injury and/or damage to the tape library if the rack tips over.

Tools and Components

Tools:

Phillips screwdriver (included in kit)

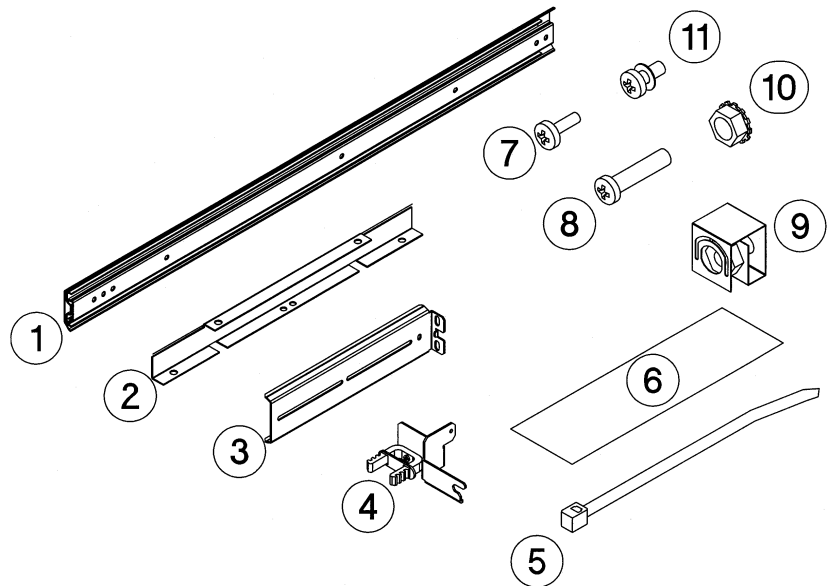
1/2 inch open-ended wrench

Kit Hardware (parts are labeled for easy identification):

- | | |
|------------------------------|---|
| 1. rack slides (1 pair) | 7. 8-32 x 3/8 pan slotted phillips lw profile hd (14) |
| 2. bezel spacers (2) | 8. 10-32 x 5/8 pan slotted phillips (14) |
| 3. mounting brackets (4) | 9. 10-32 clip nuts (12) |
| 4. strain relief bracket (1) | 10. 8-32 keps nuts (8) |
| 5. cable ties (4) | 11. 6-32 x 3/8 pan phillips, with internal lockwasher (1) |
| 6. template | |

Figure 1-2

Rackmounting Components



Mounting the Library

To mount the tape library in a rack, you must:

- First, attach the front and back mounting brackets to the rack slides.
- Next, attach the rack slides to the rack.
- Finally, attach the tape library to the rack slides.

These steps are explained in detail in the following sections.

Attach the Mounting Brackets

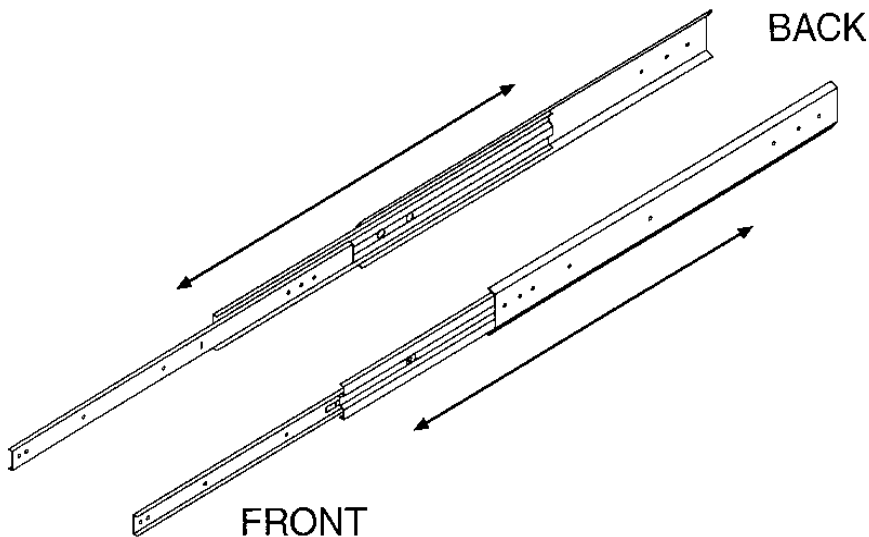
1. **IMPORTANT:** Lower the rack's leveller feet using a 1/2-inch open-end wrench, and extend the rack's antitip rail.

WARNING

Failure to extend the antitip rail could result in personal injury and/or damage to the tape library if the rack tips over.

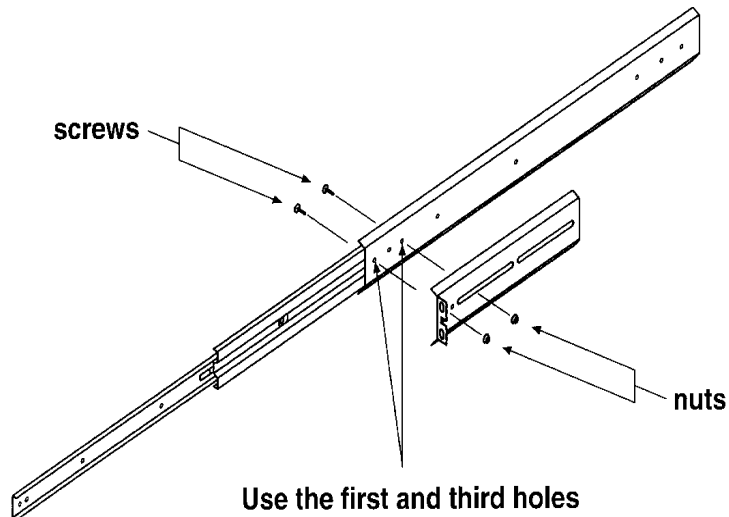
2. Pull the rack slide members out to the fully extended position. (The slides should "click" into a locked position.)

Figure 1-3 **Rack Slides**



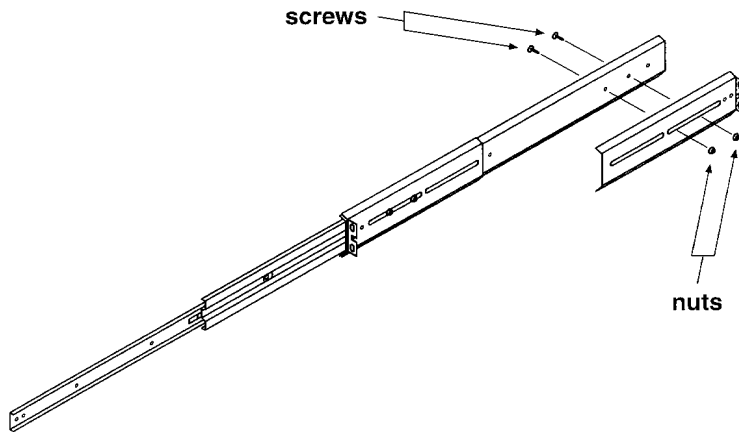
3. Attach the front mounting brackets to the front end of each slide using two 8-32 x 3/8 pan-slotted phillips screws and two 8-32 keps nuts. Tighten the screws.

Figure 1-4 Front Mounting Bracket



4. Attach the rear mounting brackets to the back side of each slide using two 8-32 x 3/8 pan-slotted phillips screws and two 8-32 keps nuts. Do not tighten the screws.

Figure 1-5 Rear Mounting Bracket

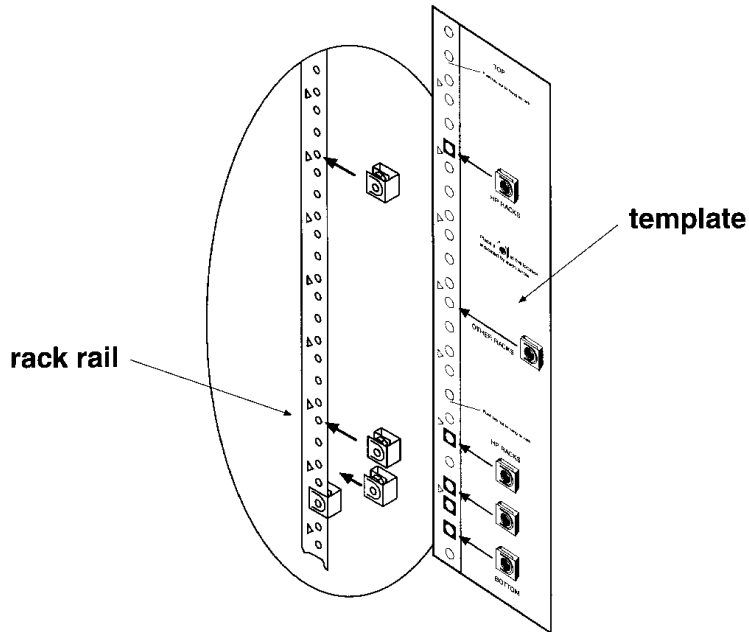


Step 4: Mount the Library in a Rack (optional)

Attach the Rack Slides to the Rack

1. Line up the template with an existing product in the rack. Attach clip nuts to each front rail in the locations indicated on the template.

Figure 1-6 **Clip Nuts (Front Rails)**



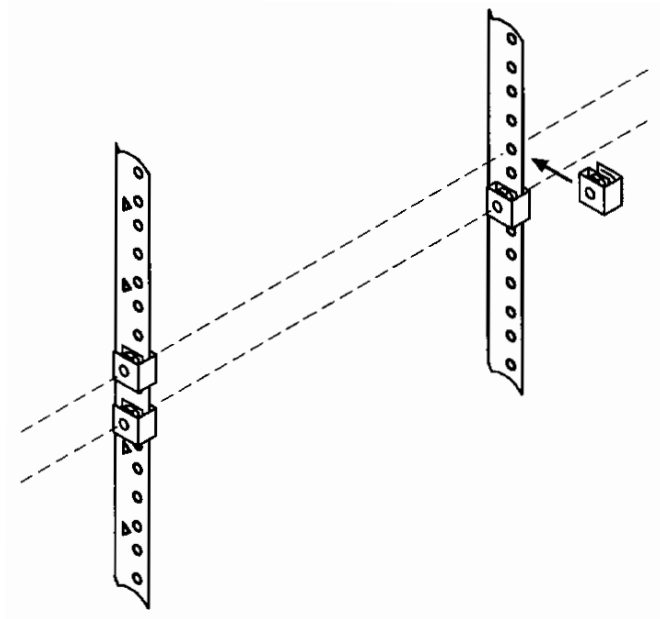
NOTE

Do not install the library in the bottom of the rack. Make sure the bottom of the library is no higher than 4 feet off the floor.

2. Attach two clip nuts to each of the back rails so that the slides will be level when attached to the rails.

NOTE

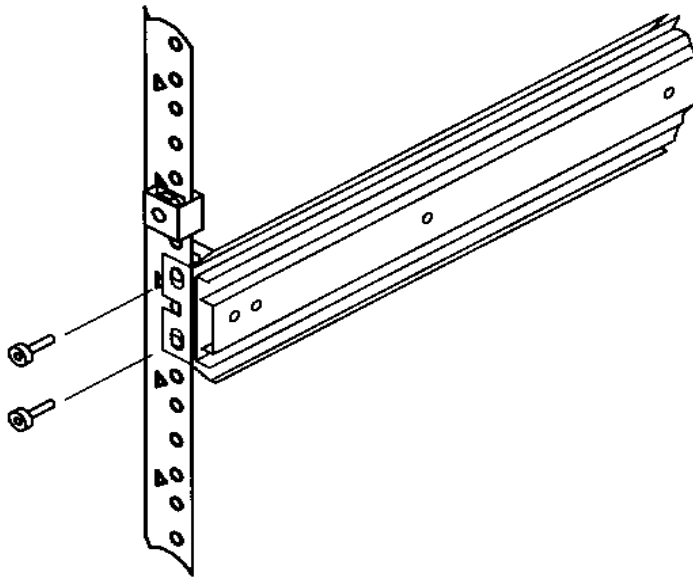
Count the holes on the front and back rails to ensure the slides will be level.

Figure 1-7**Clip Nuts (Back Rails)**

Step 4: Mount the Library in a Rack (optional)

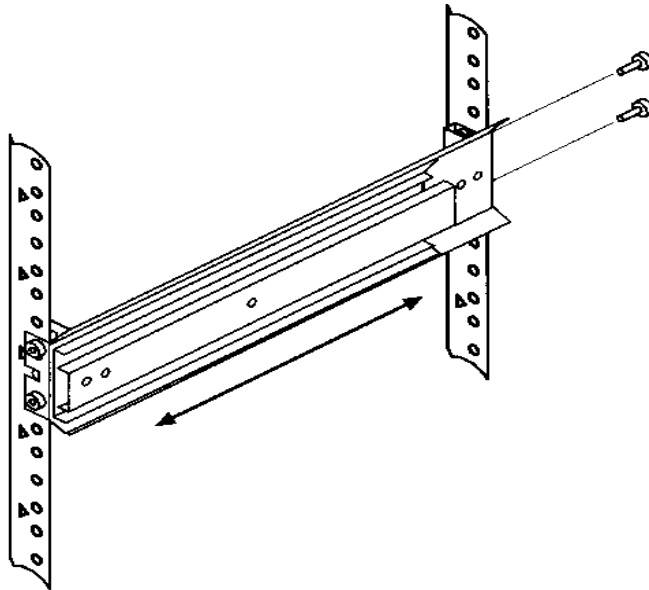
3. Attach the front bracket:
 - a. Return the slides to their compressed position.
 - b. Attach the front slide mounting bracket to the lower two clip nuts on the front rails using two 10-32 x 5/8 pan slotted phlp screws.
 - c. Push the slides as far as possible toward the outside of the rack.
 - d. Tighten the screws.

Figure 1-8 Front Bracket on Rack



4. Attach the rear bracket:
 - a. Adjust the rear mounting brackets to fit lengthwise in the rack.
 - b. Attach the rear slide mounting bracket to the rear clip nuts using two 10-32 x 5/8 pan slotted phlp screws.
 - c. Push the slides as far as possible toward the outside of the rack.
 - d. Tighten the screws.
 - e. Tighten all bracket screws.

Figure 1-9 Rear Bracket on Rack

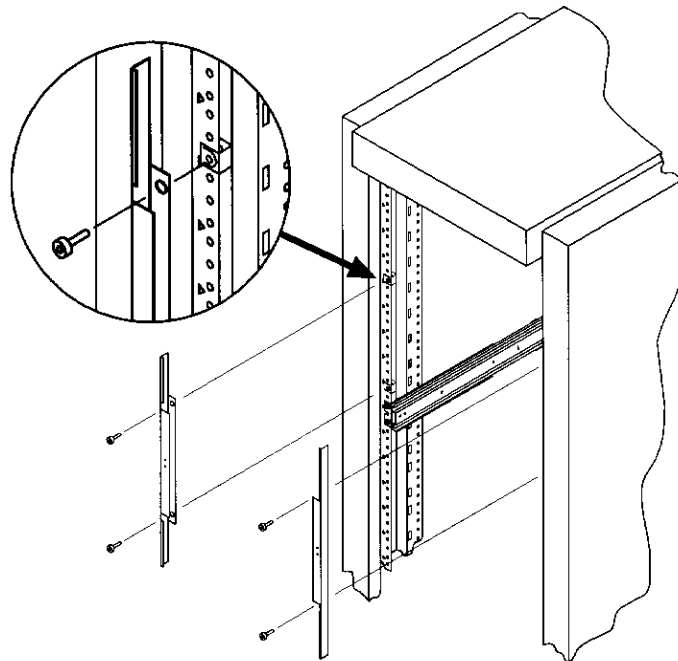


5. Extend the slides fully, make sure they are parallel, and then recompress them.

Step 4: Mount the Library in a Rack (optional)

6. Connect the two bezel spacers to the front rails using two 10-32 x 5/8 pan slotted phl p screws. The screws attach to the two clip nuts on the front rails above the slides.

Figure 1-10 Bezel Spacers

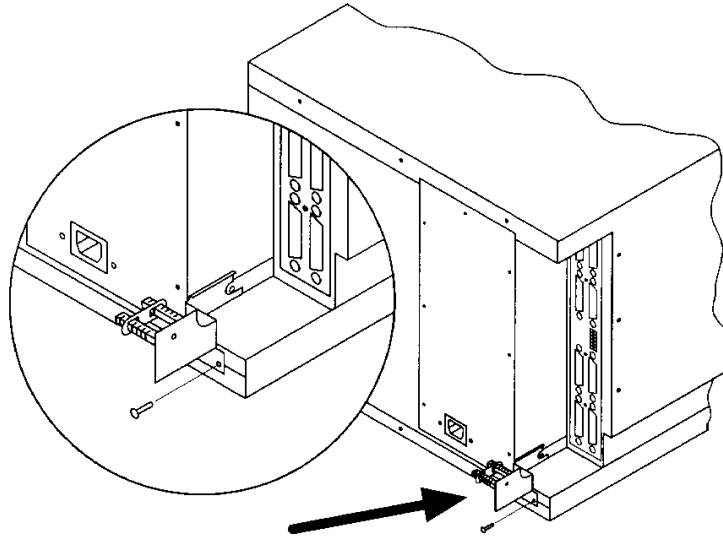


Place the Library in the Rack

1. Attach the cable strain relief bracket to the library rear panel below the SCSI connectors using one 6-32 x 3/8 pan phlp, with internal lockwasher screw.

Figure 1-11

Strain Relief Bracket



2. Ensure that the rack's anti-tip rails are extended.

WARNING

Failure to extend the rack's anti-tip rail could result in personal injury and/or damage to the tape library.

3. Remove the keys from the library handle.
4. Important – two people needed: Lift the library onto the slides and back slightly into the rack using the side handles. Make sure the handles sit securely on the slides and that the front holes in the library line up with the second hole from the front on the slides.

WARNING

Do not attempt to move the tape library by yourself.

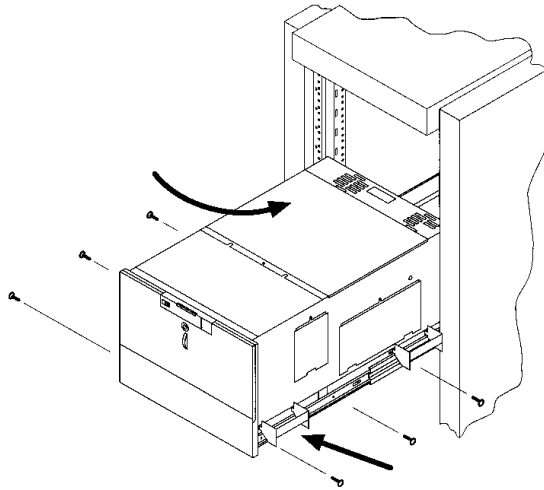
The tape library weighs approximately 100 pounds (45 kilograms). To avoid personal injury and/or damage to the tape library, a minimum of two people are needed to move the library.

Installing the Tape Library

Step 4: Mount the Library in a Rack (optional)

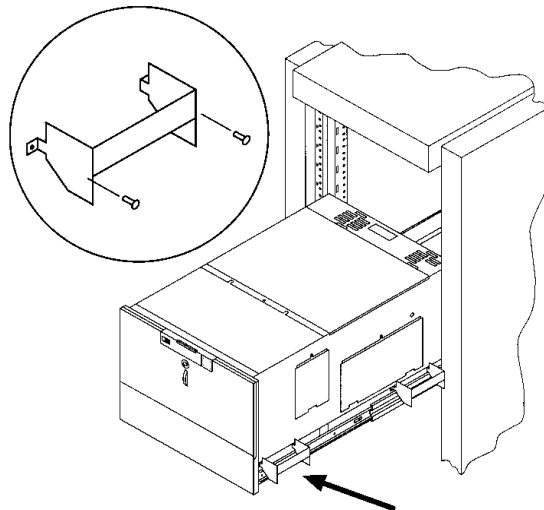
5. Attach the library to each slide using three 8-32 x 3/8 pan-slotted phillips screws.

Figure 1-12 Library on Slides



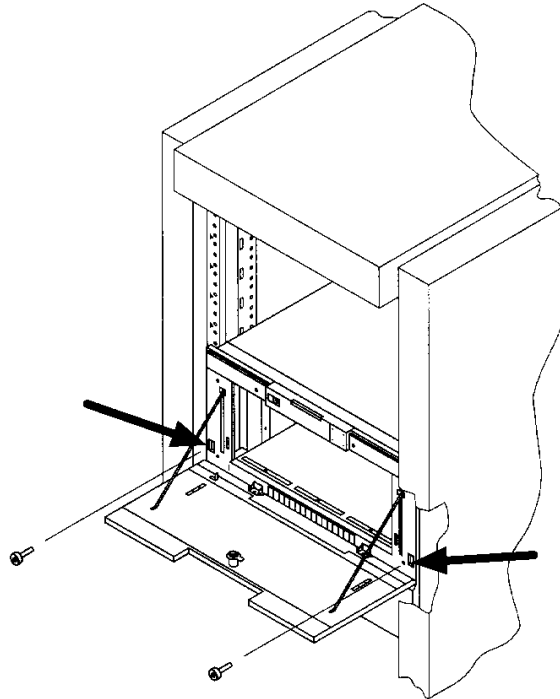
6. Remove the installation handles by removing two screws on each handle. Keep the screws and handles in case the library needs to be reshipped in the future.

Figure 1-13 Installation Handles



7. Release the slide latch springs, then push the tape library into the rack.
8. Open the front access door using the key, and secure the library to the rack through the rectangular holes in the door using two 10-32 x 5/8 pan slotted phlp screws.

Figure 1-14 **Front Access Door**



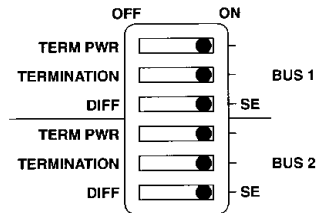
Step 5: Set the SCSI Interface Mode Switch

Do not connect any cables yet.

The SCSI interface mode switch, shown below, is on the rear panel between the bus 1 and bus 2 SCSI ports.

Figure 1-15

SCSI Interface Mode Switch (Example)



To set the SCSI interface mode switch:

1. Determine how to connect the library according to:
 - Number of drives in the library and drive type
 - Other peripherals (if any) on your system
 - Type of SCSI card (differential or single-ended)

NOTE

For best library performance, connect only one library on a SCSI bus.

2. Set the SCSI interface mode switch.

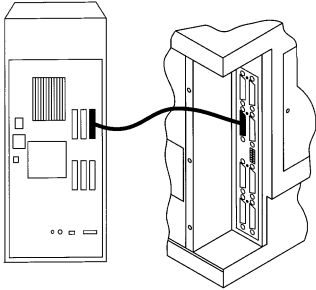
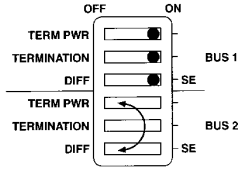
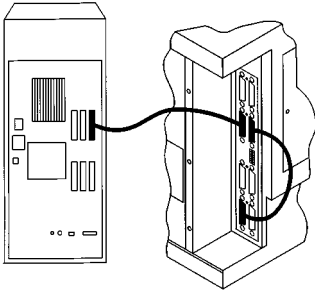
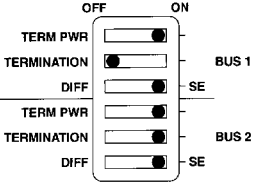
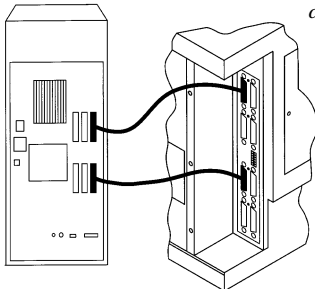
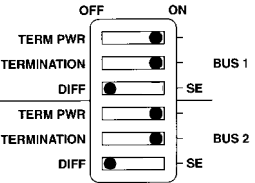
Table 1-4

SCSI Interface Mode Switch Settings

Setting	Purpose	Set to
Term Pwr	Sends power to the terminator.	ON in most installations
Termination	Terminates the SCSI bus. Functions the same as a physical terminator.	ON if the tape drive is the last device on the SCSI chain OFF if another peripheral will connect to the library
DIFF/SE	Specifies whether you are using the differential or single-ended port.	DIFF for differential SE for single-ended

The following table shows connection options when there are no other peripherals.

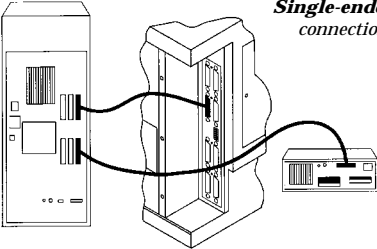
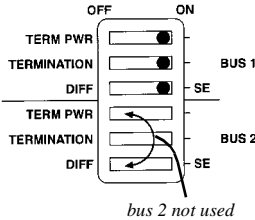
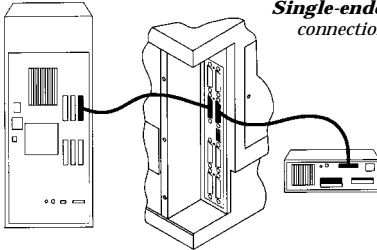
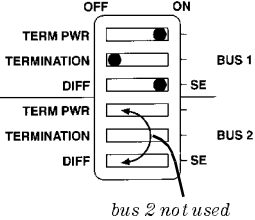
Table 1-5 **Tape Library as the Only Peripheral**

Configuration	Cabling	Mode Switch Settings
<p>One-Drive Tape Library</p>	 <p><i>Single-ended SCSI connection</i></p>	
<p>Two-Drive Library: Daisy chained</p> <p>Minimum host I/O slots used</p>	 <p><i>Single-ended SCSI connection shown</i></p>	
<p>Two-Drive Library</p> <p>Bus 1 and bus 2 connect to separate SCSI cards</p> <p>Maximum performance</p> <p>Additional card and cable required</p>	 <p><i>Differential SCSI connection shown</i></p>	

Step 5: Set the SCSI Interface Mode Switch

The following table shows connection options when there are other peripherals.

Table 1-6 Tape Library with Other Peripherals

Configuration	Cabling	Mode Switch Settings
<p>One-Drive Tape Library: Library on its own bus</p> <p>Maximum performance</p>	 <p><i>Single-ended SCSI connection shown</i></p>	 <p><i>bus 2 not used</i></p>
<p>One-Drive Tape Library: Daisy chained to peripheral</p> <p>Minimum host I/O slots used</p>	 <p><i>Single-ended SCSI connection shown</i></p>	 <p><i>bus 2 not used</i></p>
<p>Two-Drive Library: Daisy chained library and peripheral</p> <p>Minimum host I/O slots used</p>		
<p>Two-Drive Library: bus 1 and bus 2 use separate SCSI cards</p> <p>Additional card and cable required</p> <p>Minimum I/O slots used</p>		

Step 6: Connect Library to Host

Do not turn on the host system or library yet!

1. Properly shut down all peripheral devices connected to the host computer.
If the host computer is connected to a network, be sure to check with the system administrator before switching off power.
2. Switch off power to the server.
3. Connect the SCSI cables.

Before you set the mode switch, you determined how to configure your SCSI bus (see the connection diagrams on page 1-21 and page 1-22). Using this configuration, connect the library to the host. Make sure:

- You use the proper port (single-ended or differential).
 - The last device in the SCSI bus is terminated.
4. Make sure the power switch on the library front panel is switched off.
 5. Plug the power cord into the power port on the back of the library.

Stand-alone installations: Go to “Step 7: Power On the System” on page 1-27.

Rack mount installations: Go to the next section, “Routing SCSI and Power Cables on Rack Mounted Libraries.”

Routing SCSI and Power Cables on Rack Mounted Libraries

CAUTION

SCSI and power cables must be routed and secured properly on rack mounted libraries. Failure to properly route library cables could result in damage to the cables.

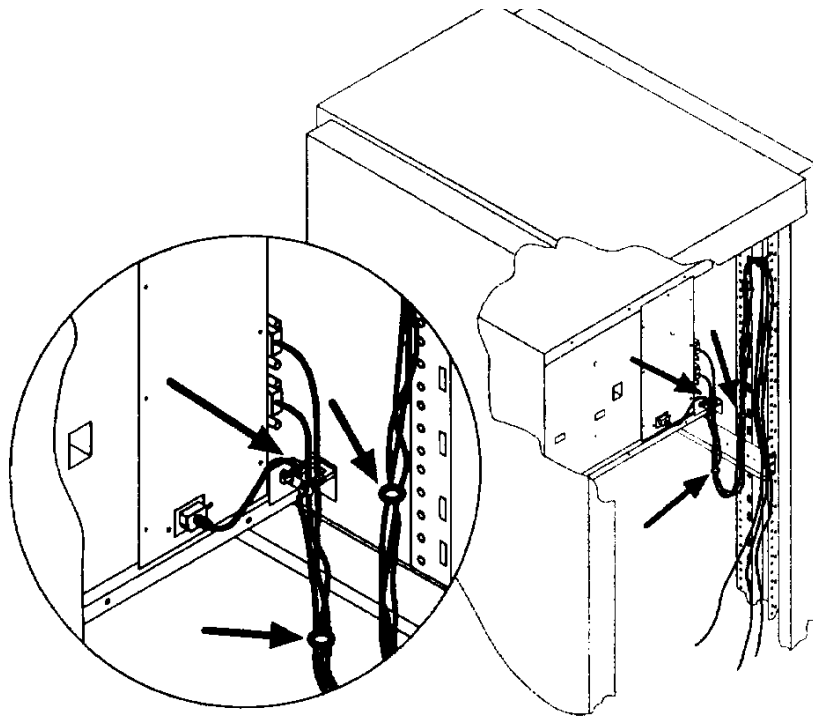
To properly route and secure rack mounted library power and SCSI cables:

1. Route the SCSI/power cables through the strain relief bracket:
 - a. Squeeze the two plastic ends of the cable strain relief bracket together.
 - b. Pull off the plastic strain relief clamp.

Step 6: Connect Library to Host

- c. Route the SCSI cable(s) and the power cord through the cable strain relief bracket.
- d. Slide the strain relief clamp back onto the bracket.
- e. Attach a cable tie (included in the rack mount kit) to the SCSI and power cables about eight inches back from the strain relief bracket.
- f. Attach another cable tie about eight inches back from the first cable tie.

Figure 1-16 SCSI/Power Cables and Strain Relief Bracket



2. Extend the rack's anti-tip rail and verify that the leveller feet are down.

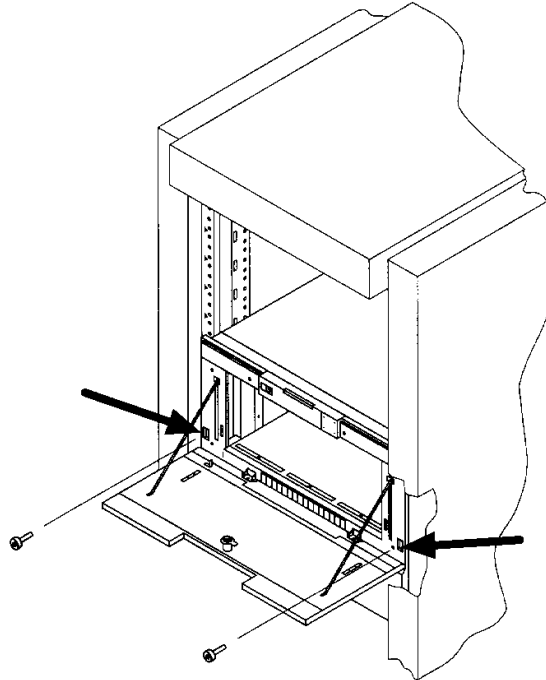
WARNING

Failure to extend the antitip rail could result in personal injury and/or damage to the library if the rack tips over.

3. Use the key to open the front access door. Remove the two screws that secure the library to the rack.

Figure 1-17

Front Access Door

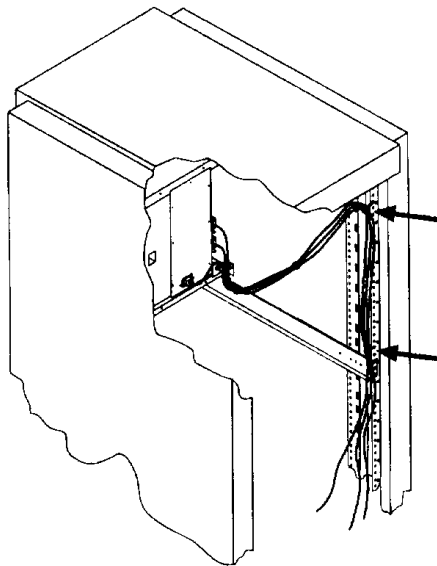


4. Slide the library out of the rack so that it is in the fully extended position.

Step 6: Connect Library to Host

5. Gently pull the SCSI and power cables back toward the rear of the rack. Use a cable tie to secure them to the rail at the back of the rack. The cable tie should be at about the same height as the top of the library.
6. Carefully route the cables down along the back rail. Use a cable tie to secure them to the rail just above the slide mounting bracket. Clip off the ends of all four cable ties.

Figure 1-18 Secured SCSI and Power Cables



7. Close the back door on the rack.
8. Push the library back into the rack.
9. Open the front access door. Replace the two screws that secure the library to the rack, then re-lock the door.

Step 7: Power On the System

1. Plug the power cord into a grounded outlet.
2. Turn on the power switch.

Initially **SELF TEST** and **NOT READY**, and then **NOT READY** and **INVENTORY CHECK** alternately appear in the display window on the library. After the power-on test completes (approximately 1.5 minutes), the drive status information displays. (See “Understanding Display Window Messages” on page 3-4.)

NOTE

If the drive status information does not display, the power-on test was not successful and **DEVICE FAILED** displays. See “Troubleshooting” on page 3-38 for troubleshooting procedures.

3. Turn on other peripherals (if any).
4. Turn on the host system.

Install Backup Software

Follow the instructions provided with your backup software to configure it to your library. Several trial versions are provided with the library for your evaluation.

Verify Installation With TapeAssure

HP TapeAssure is a software utility that tells you quickly and easily whether your configuration is correct and whether the tape drive is ready for use with backup software. Your backup software must be TapeAlert compatible for you to receive these messages (compatible packages will display the HP TapeAlert logo). For the latest list of backup packages that support TapeAlert, refer to HP’s World Wide Web site (<http://www.hp.com/go/tape>).

Moving or Shipping the Library

This section explains how to move the library a short distance, such as to another office or to another floor in the building and how to ship the library to another location.

WARNING

The library weighs approximately 100 pounds (45 kilograms). To avoid personal injury and possible damage to the library, at least two people must move the library.

To move or ship the library:

1. Properly shut down and power off the host.
2. Unmount (unreserve) any tape cartridges in the library if necessary. See your computer operating system documentation, or software application documentation for instructions on how to unmount tape cartridges.
3. Verify that all drives in the library are empty:

If the drives are full, empty them before shipping the library. (For instructions, refer to the software documentation your host system uses to manage the library.)

4. Switch off the power switch on the library front panel.

CAUTION

Do not switch off power to the library until the SCSI bus is inactive.

Removing power from a SCSI peripheral when the bus is active can result in data loss and/or indeterminate bus states. (Check your host system manuals for information about checking the SCSI bus status.) If your computer is connected to a LAN, be sure to check with your system administrator before shutting off power to the library.

5. Remove the power cord and the SCSI cable connections from the library rear panel.

6. If the library is rack mounted:
 - a. Extend the anti-tip rail on the rack.

WARNING

Failure to extend the anti-tip rail could result in personal injury and/or damage to the library if the rack tips over.

- b. Slide the library out of the rack so that it is in the fully extended position.
 - c. Reattach the handles to the side of library using two screws. Make sure the handle flanges are on top of the slides. (The handles and hardware for reattaching them should have been saved with the original shipping materials. If they are missing, call your service representative to order replacement handles.)
 - d. Remove the three 8-32 screws on each side of the library that secure the library to the rack slides.
 - e. **IMPORTANT** — two people needed: With a person on each side of the library, lift the library onto a cart.
7. Transport the library:
 - To move the library a short distance, roll the cart to the new location.
 - To ship the library, repackage the library in the same materials and ship it in the same manner in which it was received.

CAUTION

The library can be seriously damaged if it is not shipped using appropriate shipping materials. A service representative can provide assistance or advice on how to best repackage and ship the library.

8. Re-install the library. Refer to installation steps in this chapter.

Installing the Tape Library
Moving or Shipping the Library

2 **Using Tape Cartridges**

Tape Cartridge Overview

The tape cartridges you use in the tape drive are an integral part of the storage process. This chapter explains how to:

- Choose a tape cartridge.
- Label tape cartridges with bar code labels.
- Label bulk load magazines.
- Interpret drive cleaning messages.
- Write-protect a tape cartridge.
- Maintain a tape cartridge.

NOTE

For top performance and reliability, Hewlett Packard recommends HP-labeled tape cartridges that have been fully tested for use with HP's tape products. Purchase these cartridges through any HP-authorized dealer, or order them through HP Direct. See "Supplies and Accessories" on page A-3 for ordering information.

Choosing Tape Cartridges

Two types of compatible digital linear tape cartridges are available:

Table 2-1

Supported Tape Types

Cartridge Type	Available Densities
HP DLTtape IV Data Cartridge	20 GBytes uncompressed (DLT4000 drive) 35 GBytes uncompressed (DLT7000 drive)
HP DLTtape III XT Data Cartridge	15 GBytes uncompressed

NOTE

Hewlett-Packard recommends using the HP DLTtape IV Data Cartridge for top performance, highest capacity, and least amount of head cleaning.

Labeling Tape Cartridges

Make it a practice to use bar code labels on your tape cartridges. Your host software may need to keep track of the following information and the associated bar code:

- date of format or initialization
- cartridge owner (such as group or department)
- storage purpose (such as backup, old version of operating system)

If the host software does not keep track of this information, create a method of doing so.

Slide the label into the slot on the face of the cartridge as illustrated in Figure 2-1.

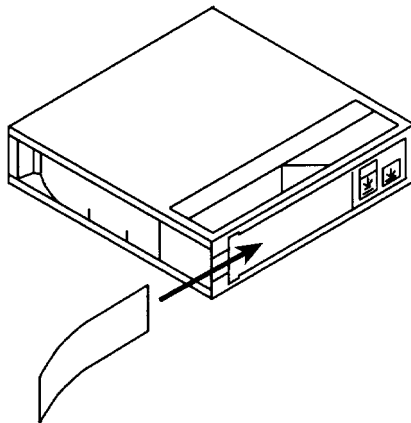
NOTE

If bar code labels are not used and the “Barcode On/Off” configuration is set to “Off,” the Inventory Check test performance can be significantly impacted. This test runs when the library is powered on and whenever the front access door is opened.

See Appendix A for information about ordering additional bar code labels.

Figure 2-1

Proper Label Position



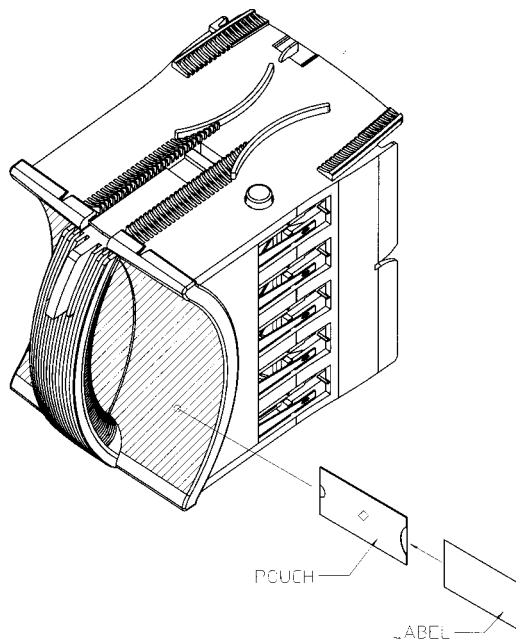
Labeling Bulk Load Magazines

Bulk load magazines can be labeled in a manner similar to tape cartridges.

To label bulk load magazines:

1. Clean the magazine surface with isopropyl alcohol (optional, but recommended).
2. Remove the adhesive backing from the label pouch.
3. Apply the pouch to the magazine anywhere within the shaded area shown in Figure 2-2.
4. Slide the label into the pouch.

Figure 2-2 Magazine Label Position



Drive Cleaning Messages

Table 2-2 lists drive cleaning messages that might be caused by a tape. Note that:

- The tape drives do not require scheduled cleaning maintenance. Excessive use of the cleaning cartridge can cause unnecessary wear on the drive head.
- After 20 cleaning cycles, the cleaning cartridge must be replaced.

NOTE

For drive cleaning instructions, refer to “Cleaning the Library Tape Drives” on page 3-23.

Table 2-2 Drive Cleaning Messages

If this happens:	Reason:	You need to:
A brand new tape cartridge is used and a drive cleaning message is received.	Debris from the tape manufacturing process was deposited on the drive head.	Clean the drive using the tape library cleaning procedure in “Cleaning the Library Tape Drives” on page 3-23. If the message is displayed again within a short amount of time, replace the cartridge.
An older, frequently used tape cartridge is loaded and a drive cleaning message is received.	Dust from frequent tape loads and unloads has probably built up on the tape cartridge and was deposited on the drive head.	Clean the <i>outside</i> of the tape cartridge with a damp cloth. Clean the tape drive using the tape drive cleaning procedure in “Cleaning the Library Tape Drives” on page 3-23.
An older, frequently used tape causes a cleaning message to be displayed for the second time.	The tape is probably damaged. (Damaged cartridges can cause unnecessary use of the cleaning cartridge.)	<ol style="list-style-type: none"> 1. Verify the tape is readable by clearing the error message. (Select the ONLINE REPAIR option from the control panel. Turn off the drive containing the tape. Turn the drive on again. (See “Using Online Drive Replacement” on page 3-36). 2. Try reading the tape again: <ul style="list-style-type: none"> • If the tape can be read, back up data from the damaged cartridge to another tape cartridge and discard the damaged one. • If the tape cannot be read, call service.

Write-Protecting Tape Cartridges

The use of the write protect switch ensures data safety for files that have been previously written to the tape and prevents any additional files from being written to the tape.

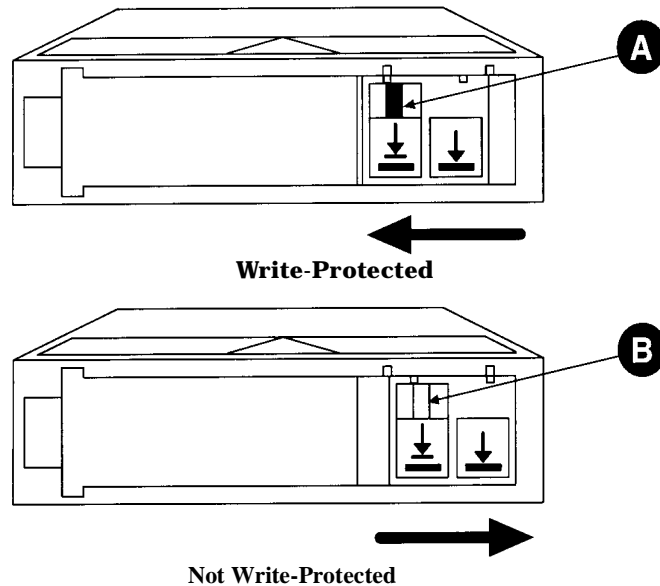
To change the write-protect setting, move the write-protect switch:

- Left to **prevent** data from being written to the cartridge. The orange indicator on the cartridge can be seen when the write-protect switch is in the “ON” position (see “A” in Figure 2-3).
- Right to **allow** data to be written to the cartridge. The orange indicator on the cartridge cannot be seen when the write-protect switch is in the “OFF” position (see “B” in Figure 2-3).

With the write-protect switch in either position, data can be read from the cartridge.

Figure 2-3

Write-Protect Button Settings



Maintaining Tape Cartridges

Table 2-3

Tape Cartridge Maintenance

DO NOT:	DO:
<ul style="list-style-type: none"> • Expose cartridges to magnetic fields. • Leave cartridges in the tape drive when library power is off. • Expose cartridges to extreme temperatures or extreme humidity. Acceptable operating temperatures range from 10-40° C (50-104° F). Acceptable storage temperatures range from 16-32° C (60-90° F). Acceptable operating humidity ranges from 20-80%; acceptable storage humidity ranges from 10-95%. • Expose cartridges to moisture or direct sunlight. • Drop the cartridges or carry them in a loose container that could submit the cartridges to any unnecessary physical shock. • Open cartridges lid, exposing the tape to possible contamination or physical damage. • Touch the tape surface. • Take cartridges apart. • Use graphite pencils, water soluble felt pens, or other debris-producing writing instruments to label cartridges. • Erase a label; replace it instead. 	<ul style="list-style-type: none"> • Store cartridges in a clean, safe place in their protective plastic containers when not in use. • Remove dust on the <i>outside</i> of cartridges using a damp cloth. (Older, frequently used tapes may build up dust.) • Store cartridges vertically, not flat. • Store cartridges intended for archiving data in their plastic containers and in environmental conditions of 18-28° C (64-82° F) and 40-60% relative humidity. • Use labels like those included in the accessories kit or that meet the specifications listed in Table A-1 on page A-3.

Using Tape Cartridges
Maintaining Tape Cartridges

3 **Operating the Library**

Overview

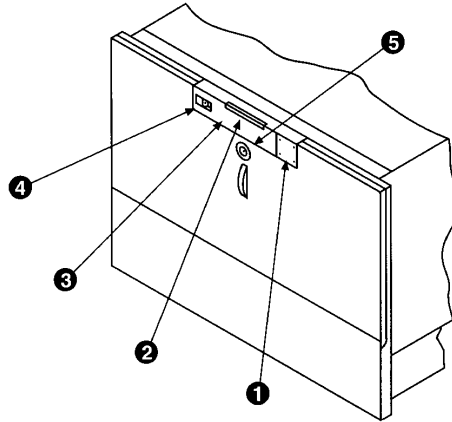
This chapter explains the following library operations:

- “Operating the Control Panel” on page 3-3
- “Understanding Display Window Messages” on page 3-4
- “Entering the Administration Menu Password” on page 3-9
- “Setting a New Administration Menu Password” on page 3-10
- “Setting and Viewing SCSI IDs” on page 3-11
- “Loading Tape Cartridges Into the Library” on page 3-15
- “Removing Tape Cartridges from the Library” on page 3-19
- “Viewing Cartridge Bar Code Labels” on page 3-22
- “Cleaning the Library Tape Drives” on page 3-23
- “Using Online Drive Replacement” on page 3-36
- “Setting Configuration Options” on page 3-25
- “Retrieving Performance Information” on page 3-28
- “Running an Internal Test” on page 3-32
- “Using Online Drive Replacement” on page 3-36
- “Troubleshooting” on page 3-38

Operating the Control Panel

Figure 3-1

Tape Library Control Panel



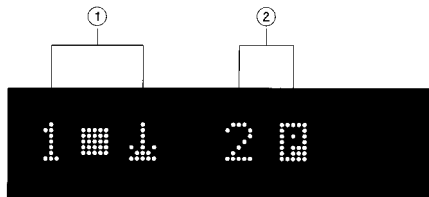
1. Selection buttons allows you to perform the following operations:
 - **CANCEL** cancels the current operation or option.
 - **PREV** scrolls the display options backward by one. When held continuously, the options scroll quickly.
 - **NEXT** scrolls the display options forward by one. When held continuously, the options scroll quickly.
 - **ENTER** selects the displayed option.
2. Activity light indicates the following:
 - Steady Green – power is on.
 - Flashing Green – a tape cartridge is being accessed.
 - Amber – fault indicator.
3. 16-Character Display displays information about the current operation or drive status. An asterisk (*) indicates there is a menu beneath the option. Press **ENTER** to access the menu. Press **NEXT** or **PREV** to display the menu options.
4. Power switch switches power to the unit on and off.
5. Door latch locks/unlocks door for access to bulk load magazines.

Understanding Display Window Messages

The display window displays drive status indicators and menu options.

Drive Status

The following figure shows the drive status indicators displayed when the library is in the “ready” state.



In this example:

1. Drive 1 has a cartridge inserted and data is being written to the tape.
2. Drive 2 has a write-protected cartridge inserted.

Status Indicators

Status indicators provide drive status information for the drive number that precedes one of the following indicators.



The drive is full.



The drive is empty.



The drive needs to be cleaned.



The tape cartridge in the drive is write-protected.

Activity Indicators

The activity light flashes during the following operations:



Information is being written to the tape in the drive.



Information is being read to the tape in the drive.



The tape in the drive is being searched backward or is rewinding.



The tape in the drive is being searched forward.



The drive is being cleaned.

Control Panel Options

Press **PREV** or **NEXT** while the library is in the “ready” state to display first-level options. Access second-level options from **ADMIN *** (second level options require a password; see “Entering the Administration Menu Password” on page 3-9).

An asterisk (*) indicates that the option has multiple selections.

When a menu selection is flashing, press **ENTER** to select the option or display the option’s selections. Press **PREV** or **NEXT** to display other available options.

First Level Options

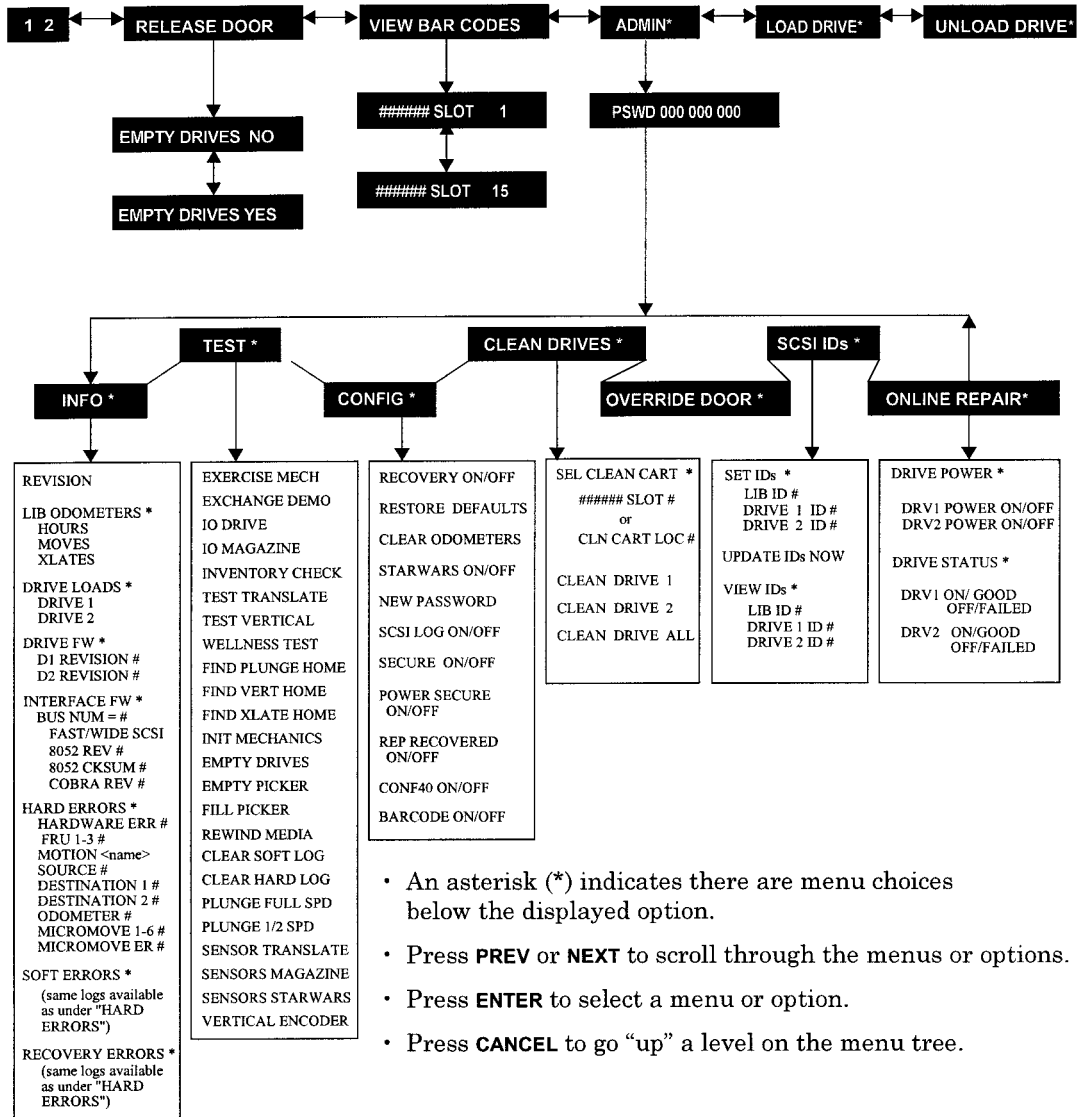
RELEASE DOOR	Select to allow the access door to be unlocked.
VIEW BAR CODES *	Select to view the bar code labels on each tape cartridge by slot number.
ADMIN *	Accesses second-level options.
LOAD DRIVE *	Loads a tape from a slot to the drive. To load a tape: <ol style="list-style-type: none">1. Select the drive that you want to load a tape into.2. Select the tape that you want to load. The control panel displays the barcode number and slot number. Press PREV or NEXT to select, then ENTER.3. The control panel displays the drive it is loading to. TAPE LOADED displays when complete.
UNLOAD DRIVE *	Unloads a tape from the drive to the slot it came from. <ol style="list-style-type: none">1. Press PREV or NEXT to select the drive that you want to unload. Press ENTER. If a tape is not in the drive, SOURCE IS EMPTY displays.2. The activity light flashes green and TAPE UNLOADED flashes when complete.

Second Level Options

INFO *	Displays performance information stored in the library.
TEST *	Runs internal library tests.
CONFIG *	Customizes the way the library functions.
CLEAN DRIVES *	Displays the drive numbers you wish to clean.
OVERRIDE DOOR *	Opens the door when media is in drives.
SCSI IDs *	Sets the SCSI addresses for the robotics and the library drives.
ONLINE REPAIR *	De-activates a drive for replacement.

Control Panel Menu Tree

Figure 3-2 Control Panel Menu Options



- An asterisk (*) indicates there are menu choices below the displayed option.
- Press **PREV** or **NEXT** to scroll through the menus or options.
- Press **ENTER** to select a menu or option.
- Press **CANCEL** to go "up" a level on the menu tree.

Entering the Administration Menu Password

1 2 → ADMIN * → CONFIG *

A numeric password is required to access options beneath **ADMIN*** menu of the library (see Figure 3-2 on page 3-8). A three-part default password of 000-000-000 is set at the factory. To change the password, see “Setting a New Administration Menu Password” on page 3-10.

To enter the password:

1. Verify that the drive status displays. If it does not display, press **CANCEL** until it does.
2. Press **NEXT** until ADMIN * displays, then press **ENTER**.
3. PSWD 000-000-000 displays, and the first set of zeros flashes.

Press **ENTER** to accept this number (if no password has been set), or press **NEXT** or **PREV** until the correct number displays. Press **ENTER**.

4. The middle set of zeros flashes.

Press **ENTER** to accept this number (if no password has been set), or press **NEXT** or **PREV** until the correct number displays. Press **ENTER**.

5. The last set of zeros flashes.
6. Press **ENTER** to accept this number (if no password has been set), or press **NEXT** or **PREV** until the correct number displays.
7. Press **ENTER**. INFO * displays.

To access options under the ADMIN * menu, press **PREV** or **NEXT** until the desired option displays, then press **ENTER**.

Setting a New Administration Menu Password

1 2 → ADMIN * → CONFIG * NEW PASSWORD

NOTE

Change the password to so that only authorized persons can access the library and change operation settings. Do not forget the password. Only a service representative can reset the password to the factory setting.

To set a new password:

1. Follow the steps on “Entering the Administration Menu Password” on page 3-9 to enter the existing password.
2. Press **NEXT** until CONFIG * displays, then press **ENTER**.
3. Press **NEXT** or **PREV** until NEW PASSWORD displays, then press **ENTER**.
4. NEW 000-000-000 displays, and the first set of zeros flashes.

Press **NEXT** or **PREV** to display the new numbers you wish to assign the first part of the password, then press **ENTER**.

5. The second set of zeros flashes.

Press **NEXT** or **PREV** to display the new numbers you wish to assign the second part of the password, then press **ENTER**.

6. The last set of zeros flashes.

Press **NEXT** or **PREV** to display the new numbers you wish to assign the third part of the password, then press **ENTER**.

7. PASSWORD CHANGED displays. Press **CANCEL** three times to return to the drive status (“ready” state).

NOTE

Save the new password to flash ROM by power cycling the library, which allows the password to be recovered if the library is powered off for more than ten days.

Do not switch off power to the library until the SCSI bus is inactive. Removing power from a SCSI peripheral when the bus is active can result in data loss and/or indeterminate bus states. If the library is connected to a LAN, check with the system administrator before shutting off power to the library.

Setting and Viewing SCSI IDs

1 2 → ADMIN * → SCSI IDs *

NOTE

The tape library has a Fast/Wide SCSI interface. SCSI addresses can be set from:

- 0 to 7 on a DLT 4000-based library
- 0 to 15 on a DLT 7000-based library

If connecting to a narrow host, use only addresses 0 to 7.

When you choose SCSI IDs, you have two options:

- SET IDs * lets you assign individual SCSI IDs to each drive in the library and to the library controller.
- VIEW IDs * lets you see the current drive and library controller settings.

The following table shows the default settings:

Table 3-1

Default SCSI IDs

DEVICE	SCSI ID	BUS #
LIB ID	6	Bus 1
DRV 1 ID	5	Bus 1
DRV 2 ID (two-drive models only)	4	Bus 2

If you are already using any of these IDs for your computer or another SCSI peripheral device, follow the instructions in “Setting SCSI IDs” on page 3-12.

To view the current SCSI address settings, see “Viewing Current SCSI Address Settings” on page 3-14.

Setting SCSI IDs

1 2 → ADMIN * → SCSI IDs * → SET IDs *

A SCSI ID is required for the robotics controller and each drive. The default IDs are shown in Table 3-1 on page 3-11.

The following configuration choices are available:

Table 3-2

SCSI Address Configuration Options

Number of Drives	SCSI Bus Addresses Available
1	13 addresses are available on bus 1. (Drive 1 uses one address and the library controller uses 1 address.)
2	If buses 1 and 2 are connected to separate host SCSI cards: <ul style="list-style-type: none">• 13 addresses are available on bus 1 for other devices.• 14 addresses are available on bus 2 for other devices. If buses 1 and 2 are daisy-chained: <ul style="list-style-type: none">• 12 addresses are available on the bus for other devices.

To change the current SCSI address settings:

1. Verify that the drive status displays (if not, press **CANCEL** until it does).
2. Press **NEXT** until ADMIN * displays, then press **ENTER**.
3. Enter the three-part numerical password (see “Entering the Administration Menu Password” on page 3-9).
4. Press **NEXT** until SCSI IDs * displays, then press **ENTER**.
5. SET IDs * displays. Press **ENTER**.

LIB BUS # ID # or DRV # BUS # ID # displays. LIB BUS # ID # stands for the current SCSI ID of the robotics controller. DRV # BUS # ID # is the current SCSI ID setting for the drive number and its associated bus #.

6. Press **NEXT** until the setting to change displays, then press **ENTER**.

7. The current SCSI address setting flashes. Press **NEXT** or **PREV** until the desired address displays, then press **ENTER**.
8. Press **NEXT** until UPDATE IDs NOW displays, then press **ENTER**.
9. IDs SAVED displays briefly, then one of the following messages displays:
 - If the new settings do not conflict with other SCSI IDs in the library, SCSI IDs * displays.
 - If the new settings conflict with other IDs in the library, CONFLICT ABORTED displays briefly, then SET IDs * displays. Any changes entered are lost, and previous steps must be repeated to set a new address.

If any buses are daisy chained together, make sure the SCSI IDs are different for each device on the bus.
 - If a serial communications error is detected while trying to set the SCSI IDs, DRV CONNECT ERR displays, followed by IDs NOT CHANGED. Any changes entered are lost. The SCSI IDs* menu displays.
10. Press **CANCEL** three times to return to the drive status (“ready” state).

NOTE

To save new settings can be saved to flash ROM, turn the library off, then turn it back on. This allows the settings to be recovered if the library is powered off for more than ten days.

Do not switch off power to the library until the SCSI bus is inactive. Removing power from a SCSI peripheral when the bus is active can result in data loss and/or indeterminate bus states. (Check the host system manuals for information about checking the SCSI bus status.) If the host is connected to a LAN, be sure to check with the system administrator before shutting off power to the library.

Interpreting SCSI Bus Status Indicator LEDs

Each SCSI bus has an LED to indicate the bus status.

Table 3-3

SCSI Status Indicators

Indication	Status
Steady green	Port active and OK. Internal (on-board) termination enabled.
Flashing green	Port active and OK. Internal (on-board) termination disabled.
No light	Port not active or not configured.
Flashing red	Bus mismatch or loss of external termination power.
Flashing yellow	Bus off-line for on-line drive replacement.

Viewing Current SCSI Address Settings

1 2 → ADMIN * → SCSI IDs * → VIEW IDs *

To view the current SCSI address settings:

1. Verify that the drive status displays. If not, press **CANCEL** until it does.
2. Press **NEXT** until **ADMIN *** displays, then press **ENTER**.
3. Enter the three-part numerical password (see “Entering the Administration Menu Password” on page 3-9).
4. Press **NEXT** until **SCSI IDs *** displays, then press **ENTER**.
5. **SET IDS *** displays. Press **NEXT** until **VIEW IDS *** displays, then press **ENTER**.
6. **BUS # LIB ID #** or **BUS # DRV # ID *** displays. (**BUS # LIB ID #** stands for the current SCSI ID of the robotics controller. **BUS # DRV # ID #** is the current SCSI ID setting for the displayed drive number and its associated BUS#.)
7. Press **NEXT** or **PREV** to scroll through the current address settings.
8. Press **CANCEL** until the next operation to perform displays, or until the drive status (library “ready” state) displays.

Loading Tape Cartridges Into the Library

Inserting/Removing Cartridges with Software

If the software package requires that cartridges be inserted and removed using the software, check the software documentation before proceeding.

Label all cartridges before inserting them into the magazines. (See “Labeling Tape Cartridges” on page 2-4.)

The bar codes and storage slot locations are stored in library memory when the door is closed and the Inventory Check test is automatically run.

Keeping Cartridges in the Magazine

To prevent cartridges from sliding out of the bulk load magazines when inserting them into the library:

- Do not use excessive force when inserting the magazines. This can cause the magazine “latching” mechanisms to fail.
- Do not insert magazines when the library power is turned off. During normal library operation, the cartridge release button on top of the magazine is pushed down by a special mechanism inside the library. This “unlocks” the cartridges, allowing them to be inserted and removed from the storage slots as needed. When the control panel RELEASE DOOR option is enabled, the button on top of the magazine is released, which “relocks” the cartridges into the magazine slots. During a power failure, however, this button is not released, and cartridges can slide out of their storage slots if a magazine is inserted or removed from the library. (If no magazines are in a library, the special mechanism defaults to the position that keeps cartridges locked into the magazine storage slot.)

Loading Tapes

Tapes are bulk loaded into magazines, which are then inserted into the library through the front access door. The library holds from one to three 5-slot magazines.

To load tapes into the magazine:

1. Verify that the drive status displays (if not, press **CANCEL** until it does).
2. Verify that all drives in the library are empty (see the note below).

NOTE

The drive(s) must be empty before the access door can be released. If the drive(s) are not empty, **EMPTY DRIVES NO** displays. Press **NEXT** or **PREV** until **EMPTY DRIVES YES** displays, then press **ENTER**.

3. Press **NEXT** or **PREV** until **RELEASE DOOR** displays.
4. Press **ENTER**. **DOOR RELEASED** displays. If an error message displays, see “Troubleshooting” on page 3-38.)

NOTE

Some security configurations may prevent the access door from being released. If a security option is enabled, **SECURITY ENABLED** displays after the **RELEASE DOOR** option is chosen.

In some situations it may be necessary to override a security option and open the access door. To open the access door when a security option prevents the door from being released, use the **OVERRIDE DOOR** option under the **ADMIN *** menu (Figure 3-2 on page 3-8).

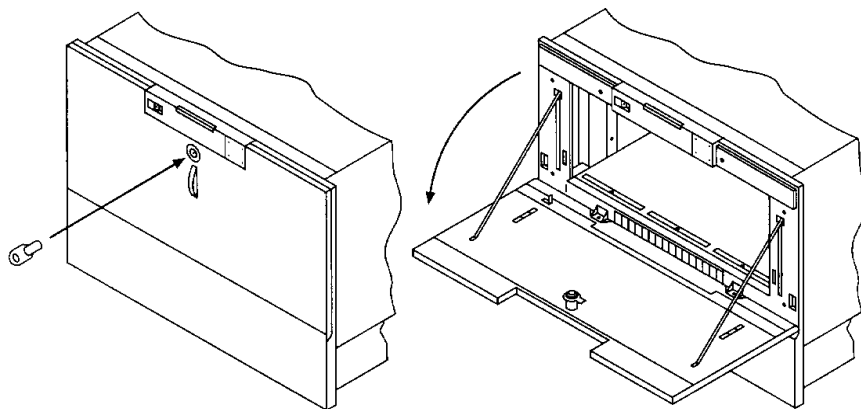
5. Unlock the access door using the key.

6. Open the access door by pulling the top of the door outward.

NOTE

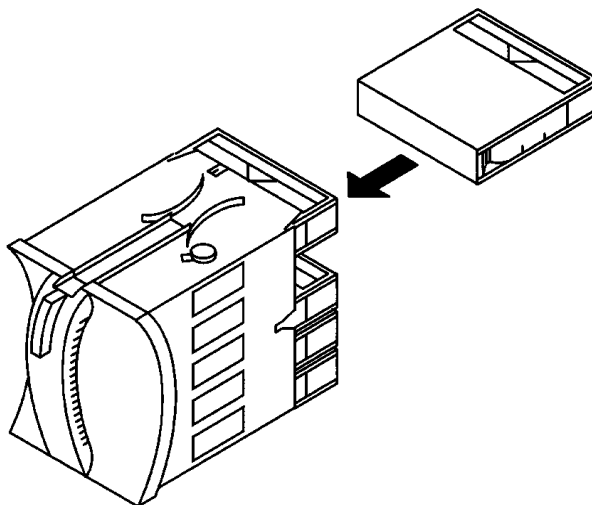
Do not let the door fall open. The door straps may be damaged.

Figure 3-3 **Opening the Front Access Door**



7. Insert up to five tape cartridges into a magazine so that the tape brand name printed on the top of the cartridge is facing up and the tape label is facing out. The tapes should “click” into place.

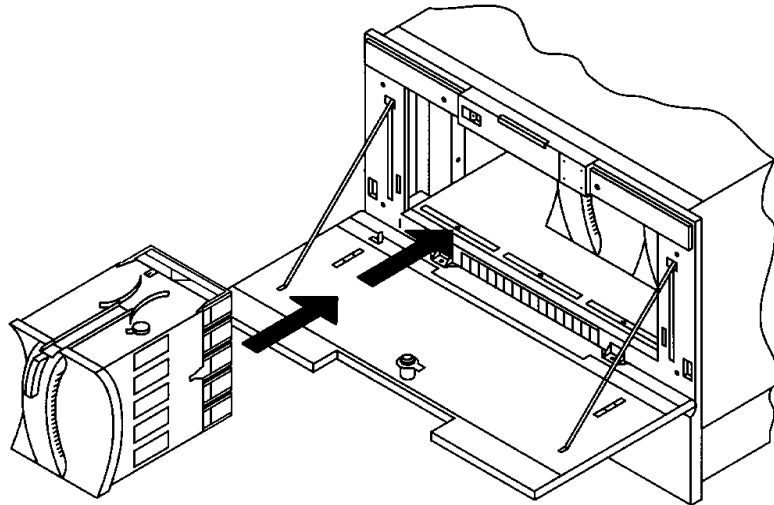
Figure 3-4 **Loading Tape Cartridges into the Magazine**



Loading Tape Cartridges Into the Library

8. Insert the magazine so it lines up with the arrow on the label inside the library, the handle is facing the front of the library, and the tapes are facing the inside of the tape library. The magazine should “click” into place.

Figure 3-5 **Inserting Magazines**



9. Shut and lock the access door using the key lock. Make sure the door is shut completely.

NOTE

The library INVENTORY CHECK test runs when the access door is closed so that an inventory of tape bar code labels and storage slot locations can be stored into library memory. This process takes about one minute. The test fails if the door is not completely shut.

WARNING

Do not attempt to disable the interlocks. If the library is operating with fewer than three magazines inserted and the door open, the user can be exposed to Class II laser light emitted from the bar code reader.

Removing Tape Cartridges from the Library

The tape library is designed to hold from one to three 5-slot magazines. Follow these steps to remove magazines from the library:

NOTE

Some software packages require that tape cartridges be inserted and removed using the software. If a software package manages files in the library, check the software documentation before proceeding.

NOTE

All drives must be empty before the access door can be released. In addition, some security configurations may prevent the access door from being released. If a security option is enabled, SECURITY ENABLED displays after the RELEASE DOOR option is chosen.

To remove magazines from the library:

1. Verify that the drive status displays (if not, press **CANCEL** until it does).
2. Verify that all drives in the library are empty.
3. Press **NEXT** or **PREV** until RELEASE DOOR displays.
4. Press **ENTER**. DOOR RELEASED displays. (See the following note. If an error message displays, see “Troubleshooting” on page 3-38.)

NOTE

The drive(s) must be empty before the access door can be released. If the drive(s) are not empty, EMPTY DRIVE NO displays. Press **NEXT** or **PREV** until EMPTY DRIVE YES display, then press **ENTER**.

In some situations it may be necessary to override a security option and open the access door. To open the access door when a security option prevents the door from being released, use the OVERRIDE DOOR option under the ADMIN * menu (see Figure 3-2 on page 3-8).

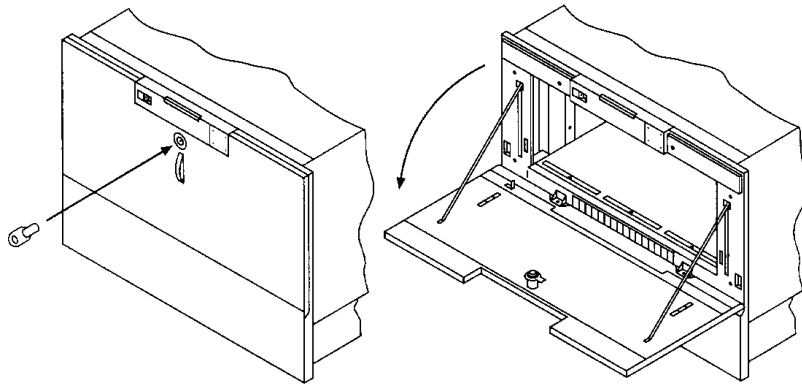
Operating the Library
Removing Tape Cartridges from the Library

5. Unlock the access door using the key, then open the door.

NOTE

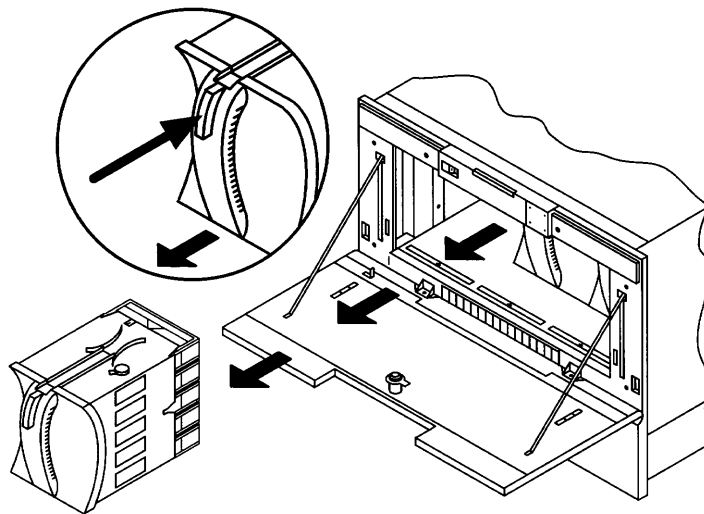
Do not let the door fall open. Damage to the door straps may occur.

Figure 3-6 **Opening the Front Access Door**



6. Remove the desired magazine by pushing the button at the top of the magazine handle (see Figure 3-7) and pulling out the magazine.

Figure 3-7 **Removing Magazines**



7. If necessary, remove tapes from the magazine. Press the button on top of the magazine, then pull out the tape.

WARNING

Do not attempt to disable the interlocks. If the library is operating with fewer than three magazines inserted and the door open, the user can be exposed to Class II laser light emitted from the bar code reader.

8. Shut and lock the access door using the key lock. Make sure the door is shut completely.

NOTE

The library INVENTORY CHECK test runs when the access door is completely closed so that an inventory of tape bar code labels and storage slot locations can be stored into library memory. This process takes about one minute.

Viewing Cartridge Bar Code Labels

Bar code label information can be viewed for each tape cartridge in the library using the control panel. Bar code information displays sequentially by storage slot number.

To view bar code information:

1. Verify that the drive status displays (if not, press **CANCEL** until it does).
2. Press **NEXT** until VIEW BAR CODES * displays, then press **ENTER**.
SLOT # displays. (“#####” represents the bar code information, and “#” represents the first storage slot that contains a bar coded tape cartridge.)

NOTE

If there are no bar coded tape cartridges in the library, LIBRARY EMPTY displays briefly, then VIEW BAR CODES * displays. Press **CANCEL** to return to the drive status indicators (“ready” state).

3. Press **NEXT** or **PREV** to scroll through the storage slot locations that contain bar coded tape cartridges.
4. Press **CANCEL** twice to return to the drive status indicators (“ready” state).

Cleaning the Library Tape Drives

1 2 → ADMIN * → CLEAN DRIVES *

NOTE

Cleaning the drives takes about 5 minutes per drive and requires a special digital linear tape cleaning cartridge. (Typically, cleaning cartridges are light yellow and data cartridges are black, brown, or white. See Appendix A for a list of supplies.)

The drive mechanisms do not require scheduled cleanings and should be cleaned only if a “clean drive” status indicator displays after the drive number. See “Understanding Display Window Messages” on page 3-4.

If a cleaning cartridge is not stored inside the tape library, it must be inserted into a library storage slot before you begin cleaning the drive.

If the cleaning cartridge needs to be replaced, REPLACE CLEANING displays.

The software package may manage drive cleaning.

To clean one or more of the drives:

1. Verify that the drive status displays (if not, press **CANCEL** until it does).
2. Make sure all drives are empty. To empty the drives, refer to the documentation for the software package.
3. Press **NEXT** until ADMIN * displays, then press **ENTER**.
4. Enter the three-part numerical password (see “Entering the Administration Menu Password” on page 3-9).
5. INFO * displays. Press **NEXT** until CLEAN DRIVES * displays, then press **ENTER**.
 - If the library power has been turned off or the access door has been opened since a cleaning cartridge location was last selected, SET CLEAN CART* displays. Press **ENTER**.
 - If the library power has not been turned off or the access door has not been opened since a cleaning cartridge location was last selected, CLN CART LOC # displays (the number of the cleaning cartridge storage slot last

Cleaning the Library Tape Drives

selected is flashing.) If the storage slot location is correct, press **ENTER**. To select a different storage slot location, press **NEXT** until the correct storage slot location displays, then press **ENTER**.

6. ##### SLOT # displays (“#####” is a barcode number or is blank if barcodes are not being used, and the storage slot location number is flashing). Press **ENTER** to select the displayed storage slot location or press **NEXT** or **PREV** to select a different storage slot location, then press **ENTER**.
7. CLEAN DRIVE 1 displays and the “1” is flashing. Press **NEXT** until the drive number to clean displays, then press **ENTER**.

To clean both drives, press **NEXT** or **PREV** until CLEAN DRIVE ALL displays, then press **ENTER**.

NOTE

If the drives are not empty, a DRIVE FULL message displays, and the drives must be emptied before they can be cleaned.

If the slot location chosen in Step 4 did not contain a cleaning cartridge, NOT CLEAN CART displays briefly, then CLEAN FAIL # displays. Press **CANCEL** twice to return to the “ready” state. Check the bulk load magazines in the library to locate the cleaning cartridge. If no cleaning cartridge is present, insert one into an available slot.

In the event of a drive error, such as a serial communications failure, FAILED displays and the CLEAN DRIVES * menu displays.

CLEANING DRV # displays (# is the number of the drive being cleaned). When the drive has been cleaned, CLEANED DRV # displays briefly, then CLEAN DRIVES * is again displayed.

8. Press **CANCEL** until the next operation to perform displays, or until the drive status indicators (library “ready” state) are displayed.

Setting Configuration Options

1 2 → ADMIN * → CONFIG *

You can set certain options to customize the way the library operates. These options are called configurations.

To change a configuration:

1. Verify that the drive status displays (if not, press **CANCEL** until it does).
2. Press **NEXT** until ADMIN * displays, then press **ENTER**.
3. Enter the three-part numerical password (see “Entering the Administration Menu Password” on page 3-9).
4. INFO * displays. Press **NEXT** until CONFIG * displays, then press **ENTER**.
5. Press **NEXT** or **PREV** until the name of the configuration you wish to set displays, then press **ENTER**. If the configuration has multiple settings, the current setting flashes. Otherwise, the configuration option is set and a confirmation message displays. (Configuration options are described on the following pages.)

If the current configuration setting is flashing, press **NEXT** or **PREV** until the desired setting displays, then press **ENTER**. OPTION SAVED displays.

6. Press **CANCEL** to return to the drive status (“ready” state).

The table on the following page describes the available configurations.

Table 3-4 Configuration Options

Config Name	Description	Default
RECOVERY ON/OFF	If the configuration is set to ON, the library attempts to recover from errors. If the configuration is set to OFF, the library immediately stops moving if an error occurs. The default configuration is RECOVERY ON and should remain ON under normal conditions.	ON
RESTORE DEFAULTS	Sets all library configurations back to their default settings.	—
CLEAR ODOMETERS	Used by service personnel only. Sets all library odometers back to zero.	—
STARWARS ON/OFF	Used by service personnel only and should be set to ON during normal operation. If the configuration is set to ON, the library runs with the vertical sensors enables. If the configuration is set to OFF, the library runs with vertical sensors disabled.	ON
NEW PASSWORD	Allows you to change the numerical password required to access the options under the ADMIN * menu on the library control panel. These options include configurations, tests, and information logs. To change the password, see “Setting a New Administration Menu Password” on page 3-10.	—
SCSI LOG ON/OFF	Used by service personnel only, and should be set to OFF during normal operation. Tracks internal SCSI states and saves the information to a log.	OFF
SECURE ON/OFF	When set to ON, tape magazines cannot be loaded or removed. If the configuration is set to OFF, the library operates in its default state, which allows cartridges to be loaded and removed.	OFF
POWER SECURE ON/OFF	When set to ON, the SECURE ON/OFF configuration setting is retained in the event of a power outage. If this configuration is set to OFF, the library returns to its default setting of POWER SECURE OFF when power is returned after being shut off.	OFF

Config Name	Description	Default
REP RECOVERED ON/OFF	When set to ON, the recovered errors are reported. When set to OFF, the recovered errors are not reported.	ON
CONF40 ON/OFF	Used by service personnel only. Do not attempt to use this configuration – to do so may result in a service call.	—
BARCODE ON/OFF	When set to ON, the barcodes and slot locations are stored into library memory when the front access door is closed and the Inventory Check test runs. When set to OFF, the barcodes are not recorded when the Inventory Check test runs.	ON

Retrieving Performance Information

1 2 → ADMIN * → INFO *

Use the **INFO *** option to display information about the operations of the library. This information is called a log.

To access an information log:

1. Verify that the drive status displays (if not, press **CANCEL** until it does).
2. Press **NEXT** until **ADMIN *** displays, then press **ENTER**.
3. Enter the three-part numerical password (see “Entering the Administration Menu Password” on page 3-9).
4. **INFO *** displays. Press **ENTER**.
5. Press **NEXT** until the name of the log to access displays, then press **ENTER**. An asterisk (*) indicates that there are more choices beneath the displayed choice.
6. Press **CANCEL** to return to the drive status (“ready” state).

Table 3-5 Information Logs

Log Name	Description
REVISION	Displays the library's firmware revision number.
LIB ODOMETERS *	<p>Press ENTER to select the odometer logs.</p> <p>HOURS # Number of operation hours (time during which power was on). Some time may have been spent in power reduction mode.</p> <p>MOVES # Total number of moves and move attempts by the cartridge transport mechanism.</p> <p>XLATES # Total number of cartridge transport mechanism horizontal moves.</p>
DRIVE LOADS *	<p>Press ENTER to select the logs described in the next few rows.</p> <p>DRIVE 1 Number of tape cartridge loads for drive 1.</p> <p>DRIVE 2 Number of tape cartridge loads for drive 2 (two drive library only).</p>
DRIVE FW *	<p>Press ENTER to select the firmware revision of the drive you want to see.</p> <p>D1 REVISION # Firmware revision of drive 1.</p> <p>D2 REVISION # Firmware revision of drive 2 (two drive library only).</p>
INTERFACE FW *	<p>Press ENTER to select the Interface board revision.</p> <p>BUS NUM = Press NEXT or PREV to display the interface bus number to select, then view:</p> <p>FAST WIDE SCSI Displays the interface type.</p> <p>8052 Rev # Displays the 8052 firmware.</p> <p>8052 CKSUM # Displays the 8052 checksum revision.</p> <p>COBRA REV# Displays the revision of the interface chip (Cobra).</p>

Library Operation

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Log Name	Description
HARD ERROR *	Log of unrecoverable errors (commands that did not successfully complete). Returns either NO HARD ENTRIES or ENTRY #. (There may be multiple hard error numbers.) Press ENTER to view the log for the currently displayed error, or press NEXT to select the next error.
SOFT ERROR *	Log of recovered errors (commands successfully completed). Returns either NO SOFT ENTRIES or ENTRY #. (There may be multiple soft error numbers.) Press ENTER to view the log for the currently displayed error, or press NEXT to select the next error.
RECOVERY ERROR *	Log of errors during most recent move. Returns either NO ENTRIES or the number of recovery errors. Press ENTER to view the log for the currently displayed error, or press NEXT to select the next error.
Error Logs	
HARDWARE ERR#	Indicates the cause of the failure.
FRU 1 #	Field replaceable unit most likely to be at fault.
FRU 2 #	Field replaceable unit second most likely to be at fault.
FRU 3 #	Field replaceable unit third most likely to be at fault.
MOTION <name>	<name> indicates the type of movements taking place at the time of the failure: EXCHANGE MOVE POSITION INIT ELEM REZERO ROTATE DIAGNOSTIC RESTORE
SOURCE #	Element number to which the source refers. (Valid for MOVE, EXCHANGE, and POSITION movements only.)

Log Name	Description
DESTINATION 1 #	Element to which the first destination refers. (Valid for MOVE and EXCHANGE movements only.)
DESTINATION 2 #	Element to which the second destination refers. (Valid for EXCHANGE movement only.)
ODOMETER #	Move number in which the error occurred.
MICROMOVE 1 #	First library micro-move for the original move command issued before the failure.
MICROMOVE 2 #	Second library micro-move for the original move command issued before the failure.
MICROMOVE 3 #	Third library micro-move for the original move command issued before the failure.
MICROMOVE 4 #	Fourth library micro-move for the original move command issued before the failure.
MICROMOVE 5 #	Fifth library micro-move for the original move command issued before the failure.
MICROMOVE 6 #	Last library micro-move for the original move command issued before the failure.
MICROMOVE ER #	Actual micro-move error that occurred.

Running an Internal Test

1 2 → ADMIN * → TEST *

The library can run self-diagnostic tests. To run these tests, follow these steps:

CAUTION

Some diagnostic tests can place tape cartridges in unexpected locations. These tests should be run only by authorized service personnel.

1. Verify that the drive status displays. If not, press **CANCEL** until it does.
2. Press **NEXT** until ADMIN * appears in the display window, then press **ENTER**.
3. Enter the three-part numerical password (see “Entering the Administration Menu Password” on page 3-9).
4. INFO * displays. Press **NEXT** or **PREV** until TEST * displays, then press **ENTER**.
5. Press **NEXT** until the name of the test to run displays, then press **ENTER**.
6. NUM LOOPS # displays, where the 1 is flashing. Press **NEXT** until the number of test loops you wish to run displays, then press **ENTER**.

NOTE

Press **CANCEL** at any time to abort a test. TEST CANCEL – WAIT displays while the current test loop completes.

Table 3-6 Internal Tests

Test Name	Description
EXERCISE MECH	Runs the VERTICAL TEST, TRANSLATE TEST, MAGAZINE IO, and DRIVE IO tests. Each test is run one time per test loop.
EXCHANGE DEMO	Used by service personnel only. Do not run this test if the library contains tape cartridges with file system data on them. This test moves randomly chosen cartridges to random storage slot locations. This test displays FAIL if there are no cartridges in the library or if all storage slots are full. For best results, the library should contain as many cartridges as there are drives, plus two additional cartridges. The transport must be empty.
IO DRIVE	Makes a combination of moves with a PASS/FAIL result. If the drives are empty, a tape cartridge is moved from a randomly chosen full slot to a randomly chosen drive. If the drives are full, a tape cartridge is moved from a randomly chosen drive to a randomly chosen storage slot. It then moves the cartridge back to its original location. This test displays FAIL if there are no cartridges in the library or if all storage slots are full. The transport and the mailslot must be empty.
IO MAGAZINE	Makes a combination of moves with a PASS/FAIL result. It moves a tape cartridge from a random full slot to a random empty slot. It then moves the tape cartridge back to its original storage slot. This test displays FAIL if there are no cartridges in the library or if all storage slots are full. The drives, transport, and the mailslot must be empty.
IO MAIL SLOT	Makes a combination of moves with a PASS/FAIL result. It moves a tape cartridge from a random full slot to the mailslot. It then moves the tape cartridge back to its original storage slot. This test displays FAIL if there are no cartridges in the library or if all storage slots are full. The drives, transport, and the mailslot must be empty.
INVENTORY CHECK	Functions the same as the SCSI Initialize Element Status command. This test physically scans the entire unit to determine which storage slots contain tape cartridges and if the drives contain cartridges. NOTE: This test will appear as ISTAT TEST in all front panel error messages.
TEST TRANSLATE	Translates from side to side. No tape cartridges are required.
TEST VERTICAL	Moves the transport mechanism up and down the full length of the rail. Returns PASS/FAIL. No tape cartridges are required.

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Running an Internal Test

Test Name	Description
WELLNESS TEST	Checks the general capability of the library. Requires one loaded tape cartridge, but the drives and transport must be empty. Runs INIT MECHANICS and EXERCISE MECH. Each test is run one time per test loop.
FIND PLUNGE HOME	Runs mechanism recalibration, determines the reference points in the picker travel path, and tests the picker. This test assumes that the mechanics and servo system are functional. No tape cartridges are required.
FIND VERT HOME	Recalibrates the vertical position and verifies that the vertical path is clean. No tape cartridges are required.
FIND XLATE HOME	Calibrates the translate position. No tape cartridges are required.
INIT MECHANICS	Runs the FIND PLUNGE HOME, FIND VERTICAL HOME, FIND XLATE HOME, and INIT ELEM STATUS tests. Each test is run one time per test loop.
EMPTY DRIVES	Used by service personnel only. Do not run this test if the library contains tape cartridges with actual file system data on them. Moves cartridges out of the drive mechanism and returns them to their original storage slot locations if the locations are known, otherwise the cartridges are placed into the first available storage slot.
EMPTY PICKER	Used by service personnel only. Do not run this test if the library contains tape cartridges with actual file system data on them. Moves a tape cartridge from the cartridge transport mechanism to its original storage slot location if the location is known, otherwise the cartridge is placed into the first available storage slot.
FILL PICKER	Used by service personnel only. Do not run this test if the library contains tape cartridges with actual file system data on them. Moves a tape cartridge into the cartridge transport mechanism from the first storage slot containing a cartridge.
REWIND MEDIA	Used by service personnel only. Do not run this test if the library contains tape cartridges with actual file system data on them. Rewinds the tape in the drive(s) and opens the solenoid in the drive handle, which allows the tape to be removed from the drive by lifting the handles. If the picker malfunctions, use this option to get the tapes out of the drive.
CLEAR SOFT LOG	Sets the soft error log to zero.
CLEAR HARD LOG	Sets the hard error log to zero.

Test Name	Description
PLUNGE FULL SPD	Allows the cartridge transport mechanics to run at full speed. This setting should always be used under normal library operations.
PLUNGE 1 / 2 SPD	Used by service personnel only. Allows the cartridge transport mechanics to run at half speed.
SENSOR TRANSLATE	Tests the horizontal path that the cartridge transport mechanism follows when moving from one stack of tape cartridges to another. Displays ON or OFF. If OFF displays, the sensor is block. (This display is automatically updated if the sensor status change.) Requires the use of one tape cartridge.
SENSOR MAGAZINE	The displays shows M1 1 M2 1 M3 1. Each “1” indicates that the caddy is in place. If a “0” is displayed, the caddy has not been inserted into the library. (This display is automatically updated if the sensor status changes.)
SENSOR STARWARS	The display shows 0 0. Each “0” indicates one of the paths that the cartridge transport mechanism follows in front of each stack of tape cartridges. If the path is clean, a 0 displays; if the path is blocked (because of a cartridge that is not inserted fully into its storage slot for example), an * will be displayed. (This display is automatically updated if the sensor status changes.)
VERTICAL ENCODER	Moves the cartridge transport mechanism down, moves it back up a short distance, then moves it back down. The last time the transport mechanism is moved down the number of encoder counts is verified. Returns PASS / FAIL. No tape cartridges are required.

Library Operation

Using Online Drive Replacement

1 2 → ADMIN * → ONLINE REPAIR *

CAUTION

Unless the situation described below exists, this options should only be used by an authorized service representative. **Using this option causes the library drive mechanism(s) to become inactive.**

Online drive replacement is an important new feature that allows:

- an authorized service representative to replace a faulty drive while the library is active
- a user to clear a drive cleaning error when a tape that may be damaged is in the drive

This feature should only be used by an authorized service representative. However, if an older, frequently used tape causes a drive cleaning message to be displayed more than once and you suspect the tape is damaged, use the “Online Repair” option can be used to clear the drive error message so you can attempt to recover data from the damaged tape.

To use this option to clear a drive cleaning error:

1. With CLEAN DRV # displayed, press **CANCEL** until the drive status displays. (# is the drive number containing the damaged tape.)
2. Press **NEXT** until ADMIN * displays, then press **ENTER**.
3. Enter the three-part numerical password (see “Entering the Administration Menu Password” on page 3-9).
4. INFO * displays. Press **NEXT** or **PREV** until ONLINE REPAIR * displays, then press **ENTER**. DRIVE POWER * displays.

5. Press **NEXT** or **PREV** until DRIVE STATUS displays, then press **ENTER**. DRV 1 ON GOOD displays.
 - If the damaged tape is in drive 1, press **ENTER**.
 - If the damaged tape is in drive 2, press **NEXT** until DRV 2 ON GOOD displays, then press **ENTER**.

DRV # ON GOOD displays, where “#” is the drive number and ON GOOD is flashing.
6. Press **NEXT** until DRV # OFF FAILED displays then press **ENTER**.
7. CHANGE CONFIRMED displays briefly, then ONLINE REPAIR * displays. Press **ENTER**.
8. DRIVE POWER * displays.
9. Press **NEXT** or **PREV** until DRIVE STATUS displays, then press **ENTER**.
10. Press **NEXT** or **PREV** until DRV # OFF FAILED displays (where “#” is the number of the drive that was just taken off-line) then press **ENTER**.
11. DRV # OFF FAILED displays, where “#” is the drive number and OFF FAILED is flashing.
12. Press **NEXT** until DRV # ON GOOD displays, then press **ENTER**.
13. SETTING UP DRIVE displays briefly while the drive communication tests run, following by CHANGE CONFIRMED and then ONLINE REPAIR *.
14. Press **CANCEL** twice to return to the drive numbers and status indicators (“ready” state).
15. Try reading the damaged tape again.
 - If the tape can be read, back up data from the damaged cartridge to another tape cartridge and discard the damaged one.
 - If the tape cannot be read, call your service representative.

Troubleshooting

This section provides information on solutions to problems that may occur in the operation of the library. Table 3-7 lists steps the administrator should take before consulting a service representative.

NOTE

If you decide that a service call is needed, write down the library serial number before calling. The serial number is located on a label towards the bottom of the library on the library rear panel.

For problems that may be related to the computer, refer to the host computer system documentation or library application software instructions.

Table 3-7 Troubleshooting Table

Problem	What to do
Library will not power on.	<ul style="list-style-type: none"> • Make sure the power cord connections are tight. • Make sure the power switch is switched on. (The power switch is located on the library control panel.) • Make sure the power outlet is operating. • Replace the power cord with a known good one. • If the library still won't power on, call a service representative.
Power-on test failed. DEVICE FAILED displays.	<ul style="list-style-type: none"> • Verify that all tapes in the bulk load magazines are fully inserted in the magazines, and that the magazines are securely locked into position inside the tape library. • Press the power switch off and then on again. (See the caution note at the end of this table.) • If the power-on test continues to fail, press ENTER, write down the displayed error code, and call a service representative for assistance.

Problem	What to do
<p>DEVICE FAILED displays. Hardware Error #61 (External SCSI cables) is reported.</p>	<ul style="list-style-type: none"> • Make sure that only one SCSI device type (single-ended OR differential) exists on the SCSI bus. • Verify that the library SCSI selector switch is set correctly (either single-ended or differential). • Verify that the mode switch termination is set correctly.
<p>The library's power failed while a cartridge was in the drive and did not return to the drive status indicators ("ready" state) after the power came back on.</p>	<ul style="list-style-type: none"> • Press the power switch off and then on again. (See the caution note at the end of this table.) • If the power-on test is unsuccessful, switch off the power. Call a service representative for assistance.
<p>No display messages appear.</p>	<ul style="list-style-type: none"> • Make sure the power cord is connected. • Make sure the power switch is on. • Power cycle the library. (See the caution note at the end of this table.) • If there is still no display, call a service representative for assistance.

Operating the Library
Troubleshooting

Problem	What to do
An error message is received after bulk loading tape cartridges.	<ul style="list-style-type: none"> • Verify that cartridges are inserted into the magazine in the correct orientation. (See “Loading Tape Cartridges Into the Library” on page 3-15.) • Verify that the correct tape type is used. (See “Choosing Tape Cartridges” on page 2-3.) • If the light bar on the display panel is orange, cycle power to the library and try to load the magazine again when the drive numbers and status indicators are displayed. (See the caution note at the end of this table.) • If SECURITY ENABLED displays, a security option has been set that prevents cartridges from being loaded into or removed from the library. See “Setting Configuration Options” on page 3-25. • If TRANSPORT FULL displays, the cartridge transport mechanism already contains a tape cartridge. Refer to the host documentation or call a service representative to remove the cartridge from the transport. • If a LOAD ERROR or FAILED message still displays, this could indicate a library failure; call a service representative for assistance.
Changed drive address but the new address is not recognized.	Try rebooting the host computer. Some computers require this for the new address to be recognized. (See the caution note at the end of this table.)
Cannot remember the administration menu password.	First, try the default password (000-000-000). If the default is not accepted, call a service representative for assistance.
Attempted to open the front access door, but a RESERVED message displays.	<ul style="list-style-type: none"> • The host may have reserved an element and must unreserve it. Refer to the host system documentation to unreserve a tape. • A security configuration was set to prevent cartridge removal. See SECURE ON/OFF in the list of configurations found in “Setting Configuration Options” on page 3-25.
Started a test and need to stop.	Press CANCEL . The current test loop continues until finished, then the test stops.

Problem	What to do
DO INVENTORY TEST displays (initialize element status).	<ul style="list-style-type: none"> • Power cycle the library by pressing the power switch off and then on again. (See the caution note at the end of this table.) • Run the INVENTORY CHECK test under the TEST * menu.
Cannot write to the tape.	<ul style="list-style-type: none"> • Check the host file system access permissions. • Check the write-protect tab on the cartridge to assure write-enabled status. • Check the application software.
Cannot read the tape.	<ul style="list-style-type: none"> • Check the host file system access permissions. • Verify that the correct tape type is used (See “Choosing Tape Cartridges” on page 2-3.) • Check the application software.

CAUTION

Do not press the library power switch until all SCSI peripherals connected to host are shut down. Pressing the power button when the SCSI system is active can cause data loss and/or problems with the SCSI interface.

A Supplies and Customer Support

Overview

This appendix covers:

- supplies and accessories (page A-3)
- HP customer support information (page A-6)

Supplies and Accessories

A full range of supplies may be ordered through a Hewlett-Packard authorized dealer, sales office, or through HP Direct. To contact HP Direct, call 1-800-227-8164 or write to HP Direct at the following address:

HP Direct
 Hewlett-Packard
 attn: Mail Order
 P.O. Box 1145
 Roseville, CA 95678

Call 1-800-752-0900 for the location of the nearest authorized Hewlett-Packard dealer.

Table A-1

Basic Supplies and Accessories

Item	Part Number
Bulk Load Magazine	
5-slot removable magazine with 5 HP DLT tape IV cartridges	C5148F
5-slot removable magazine, empty	C5149F
Tape Cartridges	
HP DLT Tape IV Data Cartridge with 35 Gbyte/20 Gbyte Native Capacity	C5141F
HP DLT Tape III XT Data Cartridge with 15 Gbyte native capacity	C5141A
Cleaning Tape Cartridge	C5142A

Supplies and Accessories

Item	Part Number
Bar Code Labels	
<p>Bar Code labels are not available through Hewlett-Packard, but may be ordered through other companies (see sample labels shipped in the accessories kit). When ordering, make sure the bar code labels meet the following specifications:</p> <p>Message: 6-character (2 alpha, 4 numeric) Dimensions: 2.2 in. x .82 in. Symbology: code 39 without check digit Start/Stop Characters: */* Narrow Bar: 0.014 in. Ratio: 2:5:1 Print Quality: ANSI Grade "A"</p>	N/A
SCSI Cables (68-pin to 68-pin)	
.9 m (2.9 ft) SCSI cable, high-density with thumb screws to high-density with thumb screws, m-m	C2911A
2.5 m (8.2 ft) SCSI cable, high-density with thumb screws to high-density with thumb screws, m-m	C2924A or D3636A
10m (32.8 ft) SCSI cable, high-density with thumb screws to high density with thumb screws, m-m	C2925A
20m (65.6 ft) SCSI cable, high-density with thumb screws to high density with thumb screws, m-m	C2926A
Jumper cable: 0.16 m SCSI cable; wide high-density with thumb screws to high-density with thumb screws, m-m	C5172-61606
Mounting Kits	
Rack mounting kit for mounting into a standard 19-inch rack	C5157F

Item	Part Number
Drive Upgrade Kits	
DLT 4000 - 1 Drive upgrade kit (upgrades 4115 to 4215)	C5174F
DLT 7000 - 1 Drive upgrade/conversion kit (upgrades 7115 to 7215; converts 4x15 to 7115)	C5174J
User's Guide (replacement/additional)	C5173-90000

Hewlett-Packard Customer Support

If a DLT library fails during the warranty period, and the troubleshooting guide and user manual does not solve the problem, you can receive support by doing the following:

- Consult HP FIRST or QUICK FAX for faxback services. See “HP FIRST/QUICK FAX Faxback Services” on page A-6.
- Consult one of the computer/modem connectivity services available, such as America Online or CompuServe. See “Electronic Support Services” on page A-9.
- Consult one of the customer support centers in your area for standard or post warranty work. See “Customer Support Centers” on page A-10.

If the library fails after the warranty period, contact your authorized HP dealer/distributor or the nearest HP sales and service office. Customers in the US and Europe can also use a credit card for phone assistance.

HP FIRST/QUICK FAX Faxback Services

QUICK FAX and HP FIRST are automated systems that fax requested product information and/or technical support documents to you. These faxback services are available 24 hours/day.

To use this service, dial the appropriate fax number below for your country from a touch-tone phone. Follow the voice prompts to select an index of available support and product documents.

NOTE

Remember to dial the country code before these numbers.

Asia-Pacific

Australia	(03) 9272 2627
China	(81610) 65055280
Hong Kong	800-7729
India	(011) 622 6420
Indonesia	6221-350-3408
Japan	(3) 3335-8622
Korea	(02) 769-0543
Malaysia	800-1611
New Zealand	(09) 356 6642
Philippines	636-867-3551
Singapore	(65) 291-7951
Taiwan	(02) 719 5589
Thailand	(02) 661 4011
Vietnam	001- (84) 823-4530

Europe

Austria	06 60 63 86
Belgium, Dutch	0800 11906
Belgium, French	0800 17043
Denmark	800 10453
Finland	0800 13134
France	05 905900
Germany	0130 810 061
Ireland	01 662 5525
Italy	1678 59020
Netherlands	06 022 2420
Norway	800 11319
Portugal	01 441 7199
Spain	900 993123
Sweden	020 795743
Switzerland, German	0800 55 1527
Switzerland, French	0800 55 1526
United Kingdom	0800 960271
Other locations in Europe	31 20 681 5792

North and South America (includes Canada)

(800) 368-9673 or (970) 635-1510

Other Countries

(970) 635-1510

Electronic Support Services

For 24-hour access to information over your modem:

On-line Service Providers

Technical information is available on CompuServe and America Online.

Service Provider	Description	Address
CompuServe	To download software, firmware, and support documents, and to discuss issues in user forums.	GO HPSYS
America Online	To download software, firmware, and support documents, and to discuss issues in user forums.	GO HPSTOR

Hewlett-Packard Web Site

Product and support information is available on the Hewlett-Packard web site:

Support and Product information: <http://www.hp.com/go/tape>

Global support: <http://globalsupt.mayfield.hp.com/>

Customer Support Centers

NOTE

Contact the customer support center in your area for technical assistance during the warranty of your product.

North and South America (includes Canada)

Monday - Friday, 6am - 6pm MST

HP Colorado Tape Drive and SureStore CD drivers (970) 635-1500

DLT Tape Drives (970) 635-1000

European Customer Support Centers

Monday - Friday, 8:30 - 18:00 (C.E.T)

NOTE

Language or country support might not be available for all products.

Austria	06 60 63 86
Belgium, Dutch	02 626 8806
Belgium, French	02 626 8807
Denmark	3929 4099
Finland	0203 47 288
France	01 43 62 34 34
Germany	0180 52 58 143
Ireland	01 662 5525
Italy	02 264 10350
Netherlands	020 606 8751
Norway	22 11 6299
Portugal	7095 923 50 01
Spain	902 321 123
Sweden	08 619 2170
Switzerland	0848 80 11 11
United Kingdom	0800 960271

Asia-Pacific

Australia	+64 (0) 3 9282 8000
China	+85 (0) 10 6505 3888
Hong Kong	+85 (0) 2 2802 4098 800 96 7729
India	+ 91 (0) 11 682 6035
Indonesia	+62 (0) 21 350 3408
Japan	+81 (0) 3 3335 8333
Korea	+82 (0) 2 3270 0700 Outside Seoul: 080 999 0700
Malaysia	+60 (0) 3 295 2566
New Zealand	+64 (0) 9 356 6640
Philippines	+63 2 867 3551
Singapore	+65 (0) 272 5300
Taiwan	+886 (0) 2 717 0055
Thailand	+66 (0) 2 661 4011

Elsewhere

Contact your authorized HP dealer/distributor or the nearest HP sales and service office.

Telephone Support After Warranty

Before Calling

Before calling, please complete the following information so that you will have it ready for the support center representative:

- Serial number of product _____
- Brand and model of host computer _____
- Version of software used; driver selected _____

US and Canada

Using a VISA or MasterCard, call one of the following:

- (800) 810-0130: Per incident fee of \$25.00 will be charged to the credit card.
- (900) 555-1800: \$2.50 per minute with a maximum of \$25.00 will be charged to the credit card.

Europe

Call the appropriate number listed under “European Customer Support Centers” on page A-10. A per incident fee will be charged for after-warranty support. Please have a credit card, PO number, or billing number address ready.

Elsewhere

Contact your authorized HP dealer/distributor or the nearest HP sales and service office for after-warranty support.

HP Reseller Locator Numbers

US (800) 752-0900

Canada (800) 387-3867

Mexico and South
America (305) 267-4220

B **Safety and Regulatory Information**

Overview

This section contains important safety and regulatory information for the United States, Finland, Sweden, European Union, and Japan.

Safety Information

Laser Safety

WARNING

Do not attempt to disable the interlocks or open the service panels while library power is turned on. If the library is operating with the service panels removed, or with fewer than three magazines inserted and the door is open, you can be exposed to Class II laser light emitted from the bar code reader.

CDRH Regulations (USA Only)

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States. The labels and artwork shown below indicate compliance with CDRH regulations and must be attached to laser products marketed in the United States.

Complies with 21 CFR Chapter 1 Subchapter J.
--

WARNING

Use of controls, adjustments or performing procedures other than those specified in this manual may result in hazardous laser radiation exposure.

Laser Class Information: A black on yellow label that reads, "Class 1 Laser Product" printed in English, French, German, Finnish, Japanese, and Spanish.

Regulatory Information

FCC DECLARATION OF CONFORMITY

Manufacturer's Name: Hewlett-Packard Company

Manufacturer's Address: Storage Systems Division
700 71st Avenue
Greeley, CO 80634
USA

Product Name: DLT Tape Library

Model Numbers: C5170x, C5171x, C5172x, C5173x, C5185x, C5186x
Also Known as A4851x
(where x is any alpha, with or without suffixes)

Product Options: All

The manufacturer listed above declares that this product has been tested and found to comply with the limits of a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

Reorient or relocate the receiving antenna.
Increase the separation between the equipment and receiver.
Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
Consult the dealer or an experienced radio/TV technician for help.

Change or modification of this equipment not expressly approved by Hewlett-Packard could void the user's authority to operate this equipment. Only use the cables, connectors, power cords and accessories supplied with this equipment or expressly approved by Hewlett-Packard.

Date: 24 September 1997

USA Contact: Product Regulations Manager, Hewlett-Packard Company, 700 71st Avenue Greeley, CO 80634 USA.
(Phone 970-350-5600). Test Report on File # 97.5800.005-1

Declaration of Conformity

DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name: Hewlett-Packard Co.

Manufacturer's Address: Storage Systems Division
700 71st Avenue
Greeley, CO 80634 USA

declares, that the product

Product Name: DLT Tape Library

Model Numbers: C5170x, C5171x, C5172x, C5173x, C5185x, C5186x
Also known as A4851x
(x is any alpha, with or without suffixes)

Product Options: All options

conforms to the following Product Specifications:

Safety: EN 60950: 1992 +A1 +A2:1993 +A3:1995 / IEC950 (1991)+A1+A2+A3
EN 60825-1 (1994) / IEC 825-1 (1993), Laser Class 1

EMC: EN 55022 (1994) / CISPR-22 (1993), Class B
EN 50082-1 (1992)
prEN 55024-2 (1992) / IEC 1000-4-2 (1995), 4kV CD, 8kV AD
prEN 55024-3 (1991) / IEC 1000-4-3 (1995), 3 V/m
prEN 55024-4 (1993) / IEC 801-4 (1988), 1 kV Peak Power Lines
0,5 kV Signal Lines
EN61000-3-2 (1995) / IEC 1000-3-2 (1995), Harmonics
EN61000-3-3(1995) / IEC 1000-3-3 (1994), Flicker

Supplementary Information:

The product herewith complies with the requirements of the Low Voltage Directive 93/68 EEC and the EMC Directive 89/336/EEC and carries the CE-marking accordingly. These products conform when tested with Hewlett-Packard Computers. Additional suffixes may be used to indicate variation in color or firmware.

Greeley, CO , September 18, 1997 Storage Systems Division _____
Quality Manager

European Contact: Your local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, Department TRE, Herrenberger
StraBe 130, D-71304 Boblingen (FAX: +49-7031-14-3143)

United Kingdom Telecommunications Act 1984

The digital linear tape libraries are approved under Approval Number NS/G/1234/J/100003 for indirect connection to Public Telecommunication Systems within the United Kingdom.

Herstellerbescheinigung

Diese Information steht im Zusammenhang mit den Anforderungen der Maschinenlärn information sverordnung vom 18 Januar 1991.

Schalldruckpegel $L_p < 70 \text{ dB(A)}$

- am arbeitsplatz
- normaler betrieb
- nach ISO 7779: 1988/EN 27779:1991 (Typprüfung)

English Translation of German Sound Emission Directive

This statement is provided to comply with the requirements of the German Sound Emission Directive, from 18 January 1991.

Sound pressure $L_p < 70 \text{ dB(A)}$

- at operator position
- normal operation
- according to ISO 7779: 1988/EN 27779: 1991 (type test)

Turvallisuusyhteenveto

Laserturvallisuus

LUOKAN 1 LASERLAITE

KLASS 1 LASER APPARAT

HP DLT Tape Library -nauhamuistiasemat ovat käyttäjän kannalta turvallisia luokan 1 laserlaitteita. Nauhamuistiasemien sisälle asennettu lasersädetä käyttävä viivakoodinlukija ei normaalissa käytössä aiheuta vaaraa käyttäjälle.

Laitteiden turvallisuusluokka on määritetty standardin EN 60825-1 (1994) mukaisesti.

VAROITUS !

Laitteen käyttäminen muulla kuin käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle lasersäteilylle.

VARNING !

Om apparaten används på annat sätt än i bruksanvisning specificerats, kan användaren utsättas för laserstrålning som överskrider gränsen för laserklass 1.

HUOLTO

HP DLT Tape Library -nauhamuistiasemien sisällä ei ole käyttäjän huollettavissa olevia kohteita. Laitteen saa avata ja huoltaa ainoastaan sen huoltamiseen koulutettu henkilö. Nauhamuistiaseman sisälle asennettua viivakoodinlukijaa ei tule avata eikä purkaa huoltotoimenpiteiden yhteydessä.

VARO !

Nauhamuistiaseman suojakotelon ollessa avattuna saatat altistua lasersäteilylle viivakoodinlukijan toimiessa. Älä tuijota säteeseen.

VARNING !

När skyddshöljet av magnetbandstationen är öppnad, kan användaren utsättas för laserstrålning då streckkodläsare är i funktion. Stirra ej in i strålen.

Tiedot viivakoodinlukijassa käytettävän laserdiodin säteilyominaisuuksista:

Aallonpituus 675 nm

Teho 0,5 mW

Turvallisuusluokka Luokan 2 laser

English Translation of Finnish Regulatory Information

LASER SAFETY SUMMARY

LASER SAFETY

CLASS 1 LASER PRODUCT (The same text in Swedish)

HP DLT Tape Library Systems are for user safe class 1 laser products. In normal use the laser bar code reader installed inside the tape library units doesn't cause any hazard to the user.

The laser safety class of the libraries was defined in accordance with the standard EN 60825-1 (1994).

WARNING!

The use of the product otherwise than specified in the user's manual may expose the user to laser radiation exceeding safety class 1.

(THE SAME WARNING IN SWEDISH)

SERVICE

There are no user serviceable parts inside the HP DLT Tape Library units. The DLT units can be serviced only by qualified service personnel. The laser bar code reader installed inside the library units shall not be opened or disassembled during service.

WARNING!

If the enclosure of the tape library unit is opened, you may be exposed to laser radiation when the bar code reader is operating. Don't stare into the beam.

(THE SAME WARNING IN SWEDISH)

The information about the radiation characteristics of the laser diode used in the laser bar code reader:

Wavelength 675 nm

Power 0,5 mW

Laser safety class Class 2 laser

Japanese VCCI Statement

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

English Translation of Japanese VCCI Statement

This equipment is in the Class B category information technology equipment based on the rules of Voluntary Control Council For Interference by Information Technology Equipment (VCCI). Although aimed for residential area operation, radio interference may be caused when used near a radio or TV receiver. Read the instructions for correct operation.

Safety and Regulatory Information
Regulatory Information

C **TapeAlert Messages**

Overview

This section contains information on TapeAlert, a diagnostic tool that monitors the drive's operations, checks media integrity, and send messages via your backup software to warn you of existing or potential problems.

TapeAlert Messages and Descriptions

There are three types of messages, listed in order of severity. They are information (I), warning (W), and Critical (C). Information messages explain a diagnostic situation. Warning messages appear when data may be lost. Critical messages describe the most severe situations, and require immediate attention.

Table C-1 TapeAlert Tape Error Messages

No.	Flag	Type	Displayed Message	Additional Action Information
1	Read Warning	W	The tape is having problems reading data. No data has been lost, but there has been a reduction in the performance of the tape.	Back up information on to another tape and discard the defective tape. If the problem persists, call the tape drive supplier helpline.
2	Write Warning	W	The tape drive is having problems writing data. No data has been lost, but there has been a reduction in the capacity of the tape.	Back up information on to another tape and discard the defective tape. If the problem persists, call the tape drive supplier helpline.
3	Hard Error	W	The operation has stopped because an error has occurred while reading or writing data which the drive cannot correct.	Back up information on to another tape and try the operation again. If the problem persists, call the tape drive supplier helpline.
5	Read Failure	C	The tape is damaged or the drive is faulty. Call the tape drive supplier helpline.	Eject the tape and inspect for damage. Insert a new tape and try operation again.

TapeAlert Messages and Descriptions

No.	Flag	Type	Displayed Message	Additional Action Information
6	Write Failure	C	<p>The tape is from a faulty batch or the tape drive is faulty:</p> <ol style="list-style-type: none"> 1. Use a good tape to test the drive. 2. If the problem persists, call the tape drive supplier helpline. 	Eject the tape and inspect for damage. Insert a new tape and try operation again.
9	Write Protect	C	<p>You are trying to write to a write-protected cartridge. Remove the write-protection or use another tape.</p>	<p>Insert a new tape and try operation again.</p> <p>If the problem persists, call the tape drive supplier helpline.</p>
10	No Removal	I	<p>You cannot eject the cartridge because the tape is in use. Wait until the operation is complete before ejecting the cartridge.</p>	<p>If the problem persists, call the tape drive supplier helpline.</p>
11	Cleaning Media	I	<p>The tape in the drive is a cleaning cartridge. If you want to back up or restore, insert a data-grade tape.</p>	<p>If the problem persists, call the tape drive supplier helpline.</p>

No.	Flag	Type	Displayed Message	Additional Action Information
20	Clean Now	C	<p>The tape drive needs cleaning:</p> <ol style="list-style-type: none"> 1. If the operation has stopped, eject the tape and clean the drive. 2. If the operation has not stopped, wait for it to finish and then clean the drive. <p>Check the tape drive users manual for device specific cleaning instructions.</p>	<p>If the problem persists, call the tape drive supplier helpline.</p>
22	Expired Cleaning Media	C	<p>The last cleaning cartridge used in the tape drive has worn out:</p> <ol style="list-style-type: none"> 1. Discard the worn out cleaning cartridge. 2. Wait for the current operation to finish. 3. Then use a new cleaning cartridge. 	<p>Wait for the current operation to finish before discarding the cartridge.</p> <p>If the problem persists, call the tape drive supplier helpline.</p>

TapeAlert Messages and Descriptions

No.	Flag	Type	Displayed Message	Additional Action Information
31	Hardware B	C	<p>The tape drive has a hardware fault:</p> <ol style="list-style-type: none"> 1. Turn the tape drive off and then on again. 2. Restart the operation. 3. If the problem persists, call the tape drive supplier helpline. <p>Check the tape drive users manual for device specific instructions on turning the device power on and off.</p>	Power off the tape drive and attempt the operation again.
32	Interface	W	<p>The tape drive has a problem with the host interface:</p> <ol style="list-style-type: none"> 1. Check the cables and cable connections. 2. Restart the operation. 	If the problem persists, call the tape drive supplier helpline.
34	Download Fail	W	<p>The firmware has failed because you have tried to use the incorrect firmware for this tape drive. Obtain the correct firmware and try again.</p>	Call the tape drive supplier helpline for more information.

Table C-2 TapeAlert Library Error Messages

No.	Flag	Type	Displayed Message	Additional Action Information
1	Hardware A	C	<p>The library mechanism is having difficulty communicating with the drive.</p> <ol style="list-style-type: none"> 1. Turn the library off then on. 2. Restart the operation. 3. If the problem persists, call the library supplier helpline. 	<p>Inspect the library to make sure all cable and power connections are secure and tapes inserted correctly.</p>
2	Hardware B	W	<p>There is a problem with the library mechanism. If the problem persists, call the library supplier helpline.</p>	<p>Inspect the library to make sure all connections are secure and tapes inserted correctly.</p>
3	Hardware C	C	<p>The library has a hardware fault:</p> <ol style="list-style-type: none"> 1. Reset the library. 2. Restart the operation. <p>Check the library users manual for device specific instructions on resetting the device.</p>	<p>If the problem persists, call the library supplier helpline.</p>

TapeAlert Messages and Descriptions

No.	Flag	Type	Displayed Message	Additional Action Information
4	Hardware D	C	<p>The library has a hardware fault:</p> <ol style="list-style-type: none"> 1. Turn the library off and then on again. 2. Restart the operation. 3. If the problem persists, call the library supplier helpline. <p>Check the library users manual for device specific instructions on turning the device power on and off.</p>	Inspect the library to make sure all connections are secure and tapes inserted correctly.
6	Library Interface	C	<p>The library has a problem with the host interface:</p> <ol style="list-style-type: none"> 1. Check the cables and cable connections. 2. Restart the operation. 	If the problem persists, call the library supplier helpline.
13	Library Pick Retry	W	<p>There is a potential problem with a drive ejecting cartridges short or with the library mechanism picking a cartridge from a slot. This warning is for information purposes only. No action needs to be taken at this time. If the problem persists, call the tape drive supplier helpline.</p>	<p>Inspect the library to see if any visible problems exist.</p> <p>Insert a cartridge and try the operation again.</p>

No.	Flag	Type	Displayed Message	Additional Action Information
14	Library Place Retry	W	There is a potential problem with the library mechanism placing a cartridge into a slot. This warning is for information purposes only. No action needs to be taken at this time. If the problem persists, call the tape drive supplier helpline.	Inspect the library to see if any visible problems exist. Insert a cartridge and try the operation again.
15	Library Load Retry	W	There is a potential problem with a drive or the library mechanism loading cartridges, or an incompatible cartridge.	Inspect the library to see if any visible problems exist. Insert a cartridge and try the operation again. Inspect the cartridge to verify compatibility. Call the library supplier helpline if problems persist.
16	Library Door	C	The operation has failed because the library door is open: 1. Clear any obstructions from the library door. 2. Eject any magazine and then insert it again. 3. If the fault does not clear, turn the library off and then on again. 4. If the problem persists, call the library supplier helpline.	Inspect the library to see if any visible problems exist. Insert a cartridge and try the operation again.

TapeAlert Messages and Descriptions

No.	Flag	Type	Displayed Message	Additional Action Information
17	Library Mailslot	C	There is a mechanical problem with the library media import/export mailslot.	Inspect the library to see if any visible problems exist. Insert a cartridge and try the operation again. Call the library supplier helpline.
18	Library Magazine	C	The library cannot operate without the magazine. 1. Insert the magazine into the library. 2. Restart the operation.	Refer to user's manual for library operation instructions about inserting magazines. Call the library supplier helpline.
20	Library Security Mode	I	The security mode of the library has been changed. The library has either been put into secure mode, or the library has exited the secure mode. This is for information purposes only. No action is required.	Check the user's manual to verify library configuration.
21	Library Off-line	I	The library has been manually turned off-line and is unavailable for use.	Power the library on to use.
22	Library Drive Off-line	I	A drive inside the library has been taken off-line. This is for information purposes only. No action is required.	If drive is desired for use, power the library on.

No.	Flag	Type	Displayed Message	Additional Action Information
23	Library Scan Retry	I	<p>There is a potential problem with the barcode label or the scanner hardware in the library mechanism.</p>	<p>Eject the tape and verify that the barcode label is in place and undamaged.</p> <p>Insert the tape and retry the operation.</p> <p>Call the library supplier helpline.</p>
24	Library Inventory	C	<p>The library has detected an inconsistency in its inventory.</p> <ol style="list-style-type: none"> 1. Redo the library inventory to correct inconsistency. 2. Restart the operation. <p>Check the applications users manual or the hardware users manual for specific instructions on redoing the library inventory.</p>	<p>Call the library supplier helpline if problems persist.</p>
25	Library Illegal Operation	W	<p>A library operation has been attempted that is invalid at this time.</p>	<p>Call the library supplier helpline if problems persist.</p>

TapeAlert Messages

TapeAlert Messages and Descriptions

Glossary

A

autochanger. *See tape library.*

autochanger controller. The part of the library that controls the sending and receiving of SCSI commands and controls the picker.

B

bulk load magazine. *See magazine.*

C

cartridge . A plastic enclosure that contains the digital linear tape. The tape is never removed from the cartridge.

cleaning cartridge. A special tape cartridge that is used to clean digital linear tape drives.

control panel. The part of the library that is used to manage and display library functions.

D

digital linear tape. Digital linear tape (DLT) drives read and write data to digital linear tape in straight tracks that run the full length of the tape. The read/write head moves vertically to read from or write to the tracks on the tape.

driver. A program that allows the operating system to communicate with a peripheral device.

E

element . A SCSI term for any one of the autochanger components-- drive, storage slots, or picker.

J

jukebox. *See tape library.*

L

library. *See tape library.*

LAN. Local Area Network. A group of computers and peripherals physically connected so users can share hardware and software resources.

M

magazine. A removable part of the library used to insert, remove, and store tape cartridges in the library.

Glossary

P

peripheral device . A product used in conjunction with a computer, that is physically separate but that is under the computer's control. It is usually connected to the computer by cables or wires. Printers, disk drives, scanners, libraries, and modems are examples of peripheral devices.

picker. *See transport mechanism.*

R

rack. A cabinet-like product used to house one or more computer peripherals. Computer peripherals are mounted to special brackets or rack slides which allow the peripherals to be installed into the rack.

rack slides. Expandable mechanical devices that are mounted to a computer peripheral and allow the peripheral to be installed into a rack which can house multiple computer peripheral devices. The rack slides allow the peripheral to be extended out of the rack for service.

rails. The vertical slotted metal pieces at the front and back of a rack used to mount the rack slides to the rack.

S

SCSI. An acronym for the Small Computer Systems Interface.

slides. *See rack slides.*

storage slot. An area of the magazine that holds cartridges when the cartridges are not in the drive.

swap. A motion that occurs when the transport mechanism replaces one tape cartridge in the drive with another, returning the first to its storage slot.

Glossary

T

tape library. A term synonymous with jukebox or autochanger. This type of tape storage device is often referred to as a “jukebox” because when a file is requested, the tape cartridge containing the file is found, inserted into the drive, and the requested information is sent to the host computer system. This is similar to the way a musical jukebox finds a record and moves it to the turntable when a song is requested.

terminator. A resistor array device used for electrically terminating a SCSI bus. A SCSI bus must be terminated at its two physical ends. A peripheral device uses a terminator only if it is at the end of the bus.

transport mechanism. The part of the library that transports tape cartridges to and from storage slots and the drive.

U

UPS . Uninterruptible Power Supply. A product that is used to supply power to computer systems when there is a power failure.

W

write-protect. A feature that prevents data from being written to a tape. A write protect tab is located on the tape cartridge to enable write-protection of the tape.

Glossary

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