Quantum | ATL P3000 Series Automated Tape Library

User's Guide

6311601-05

Ver. 5, Rel. 0

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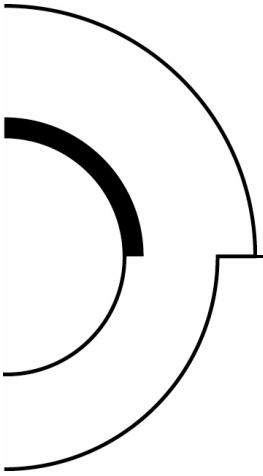
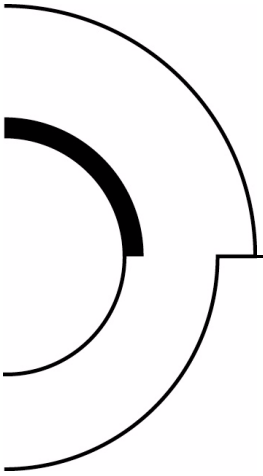


Contents

Figures

Tables



Preface

This manual introduces the Quantum | ATL P3000 Series library (P3000) and discusses:

- Library operations
- Configuration
- Calibration
- Servicing, and
- Basic troubleshooting

Audience

This manual is written for library operators and field service engineers.

Purpose

This document provides information about the P3000 including:

- Description
- Basic library operations
- Operator commands
- Service commands
- Multi-unit commands

Document Organization

Following is a brief description of chapter contents.

- Chapter 1, "Library Description," provides an overview of the library and orients the operator or field service engineer to the numbering conventions for bins and tape drives.
- Chapter 2, "Basic Library Operations," provides an overview of the library GUI and introduces the operator to the basic procedures for placing the library on line.
- Chapter 3, "Operator Commands," provides an overview of the library GUI and introduces the operator to the basic procedures for placing the library on line.
- Chapter 4, "Service Commands," discusses using the Service screen for generating reports and testing the library.
- Chapter 5, "Multi-Unit Commands," discusses the commands available through the Multi-Unit screen of the GUI. These commands allow multi-unit configuration and calibration.
- The Appendixes provide library specifications, relocation and repacking instructions, automatic drive cleaning instructions, laser regulations, and regulatory statements.

Notational Conventions

This manual uses the following conventions:

Caution: Caution indicates potential hazards to equipment or data.

Warning: Warning indicates potential hazards to personal safety.

Note: Note emphasizes important information related to the main topic.

This manual uses the following conventions:

- Right side of the library — Refers to the right side as you face the component being described.
- Left side of the library — Refers to the left side as you face the component being described.
- *b* — All binary numbers are succeeded by "b."
- *h* — All hexadecimal numbers are succeeded by "h."
- Error or attention conditions are represented in parenthesis that translate as follows:

  (SK=S ASC=AA ASCQ=QQ)

  where:

  S — hexadecimal sense key value

  AA — hexadecimal additional sense code

  QQ — hexadecimal additional sense code qualifierer

Related Documents

The following Quantum | ATL documents are also available for the P3000 Series library:

Document No.	Document Title	Document Description
6311600	ATL P3000 Series Library Unpacking Instructions	Describes unpacking and moving a P3000
6311602	ATL P2000/P3000 Series Library Software Interface Guide	For programmers writing P3000 control software
6311615	ATL Pass Through Mechanism Installation Instructions	Contains instructions for interconnecting up to five P2000 and/or P3000 libraries

Refer to the appropriate product manual(s) for information about your tape drive and cartridges.

SCSI-2 Specification

The SCSI-2 communications specification is the proposed American National Standard for information systems, dated March 9, 1990. Copies may be obtained from:

Global Engineering Documents
15 Inverness Way, East
Englewood, CO 80112
(800) 854-7179 or (303) 397-2740

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Technical Publications

To comment on existing documentation send e-mail to:

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Visit the Quantum|ATL home page at:

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Chapter 1

Library Description

This chapter describes the P3000 and its components. The chapter consists of:

- Overview
- Features and benefits
- Library components
  - Cabinet
  - GUI
  - IntelliGrip™ mixed media cartridge handling mechanism (CHM)
  - Tape drives
  - Mixed media load port

Overview

The P3000 is an automated storage and retrieval library that may consist of up to 16 tape drives and up to 326 cartridges.

Tape drive choices include the

- Quantum DLT 8000 (HVD and LVD)
- IBM LTO Ultrium T200 (LVD only), or
- Quantum SDLT (HVD and LVD)

Throughput capabilties for these drives are:

- 6 MB/sec
- 20 MB/sec
- 16 MB/sec, respectively.

Library Models

The P3000 comprises four models that support a wide range of storage and performance requirements

The P3000 can be configured with up to 16 tape drives and up to 170 or 326 tape cartridge bins.

Table 1 Performance Characteristics Using DLT 8000 Tape Drives

P3000 Model (drives/bins)	16/326
Capacity in Terabytes (TB) (40 GB per cartridge)	13.04
Throughput (GB/hr) based on 6 MB/sec transfer rate	346

Table 2 Performance Characteristics Using IBM LTO Ultrium Tape Drives

P3000 Model (drives/bins)	16/326
Capacity in Terabytes (TB) (100 GB per cartridge)	32.60
Throughput (GB/hr) based on 15 MB/sec transfer rate	864

Table 3 Performance Characteristics Using Quantum SDLT Tape Drives

P3000 Model (drives/bins)		16/326
Capacity in Terabytes (TB)	(110 GB per cartridge)	35.86
Throughput (GB/hr) based on 16 MB/sec transfer rate		922

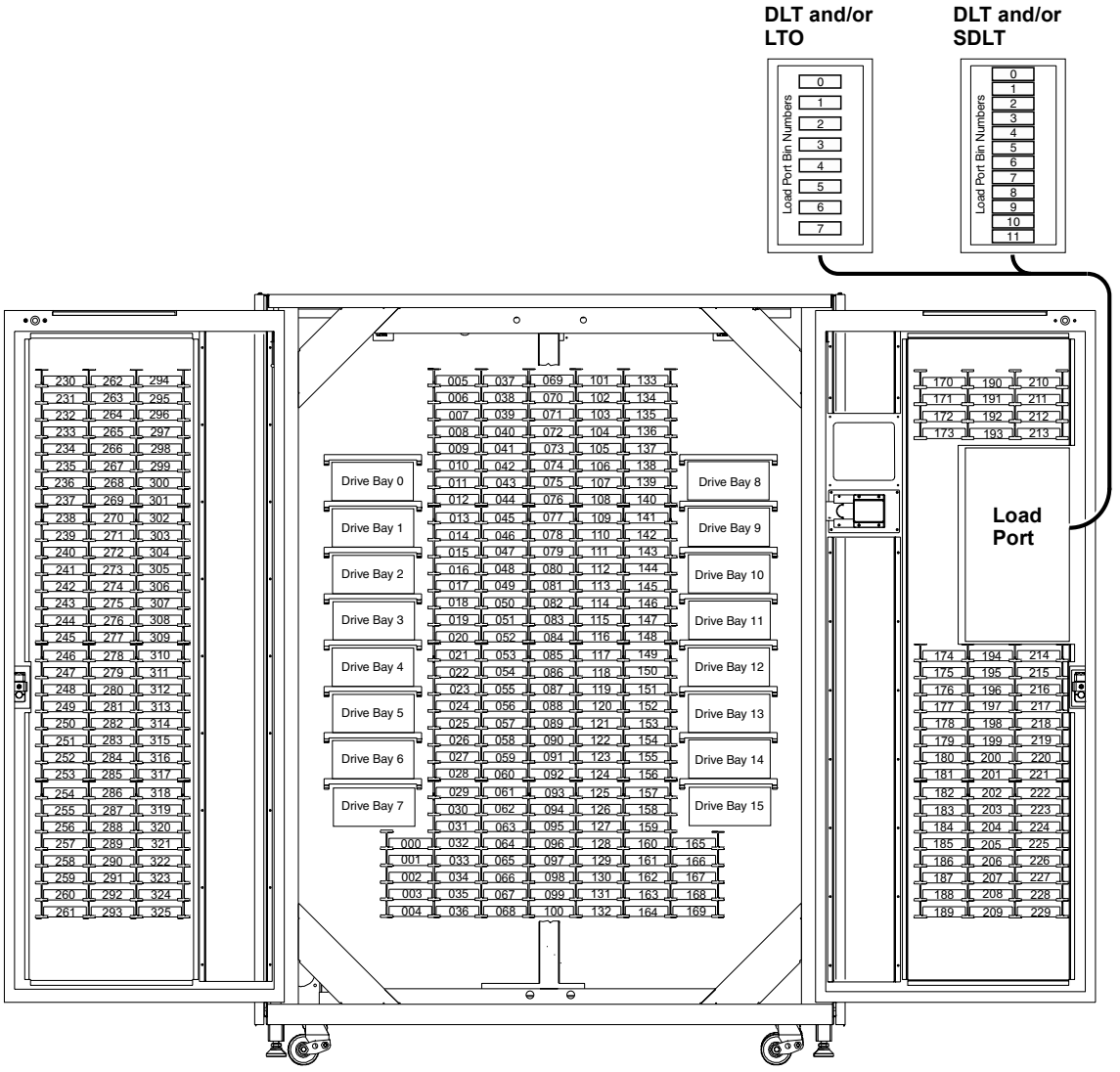
Shelf Bin Numbering Conventions

The library stores tape cartridges in the following locations:

- 170 storage bins on back wall
- Up to 96 shelf bins on inside of left door
- Up to 60 shelf bins on inside of right door
- One load port
  - 8 shelf bins - two stationary LTO load port shelf bin modules (4 shelf bins each) are built into the load port assembly
  - 12 shelf bins - DLT and SDLT tape cartridges use two removeable 6-cartridge magazines
  - If the library is configured with both DLT and LTO tape drives, stationary LTO load port shelf bin modules are used
- Up to 16 tape drives

Figure 1 shows the storage bin, load port bin, and tape drive numbering conventions. These conventions are used by the library GUI and the diagnostic software program.

Figure 1 Bin Shelf Numbering Conventions



Features and Benefits

The P3000 provides the following features and benefits:

- High-capacity, high-performance data storage and retrieval
  - The library may house up to 326 tape cartridges in configurations with up to 16 tape drives
- Expandable library configurations
- Up to five P2000 and/or P3000 libraries can be joined together into one virtual library, which enables tape cartridge sharing between libraries using Quantum | ATL's Pass Through Mechanism (PTM)
- Access to future expandability and technology upgrades through Quantum | ATL's Prism™ architecture
  - Prism architecture employs standard PCI bus technology to provide greater upgrade flexibility at reduced costs
  - This technology ensures compatibility with future on-board technologies such as tape drive controllers, high-speed host and network interfaces, as well as server and tape RAID
- Reliable, versatile 120-240 volt AC auto-switching power supplies
- Hot-swappable, redundant DC power supplies ensure library operations against power supply failure
- An optional advanced cooling system is available to prevent failures from overheating
- On-line cartridge exchanges: load port with two removable, 6-cartridge magazines for easy insertion of cartridges without interrupting library operations
- Easy serviceability and manageability
  - Hot-swappable drives, DC power supplies, and fans enable field service engineers to make repairs without taking the library off-line

- Easy access and replacement of critical components
- A user-friendly GUI provides a wide range of configuration and service-related functions
- WebAdmin™ provides library access through the Internet

Library Components

The P3000 consists of these major components:

- Cabinet
- GUI
- Intelligrip™ mixed-media CHM
- Mixed-media tape drives (DLT and SDLT, or DLT and LTO)
- Load port

Cabinet

The cabinet houses all library components including:

- CHM
- Storage bins
- Control electronics
- Power supply and distribution equipment
- Fan modules
- Tape drives

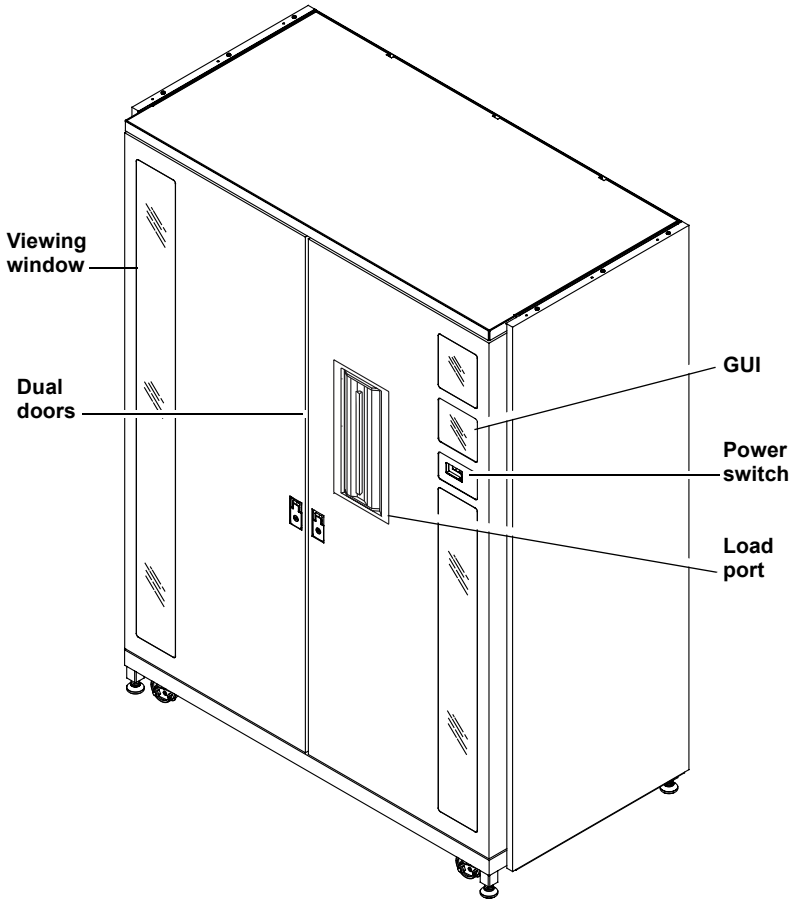
You can access these components to monitor and control library operation through the front doors and back panels of the library cabinet.

Front Panel

The front of the library cabinet (see figure 2) provides the following:

- Two front doors provide easy access to the CHM and the storage array
- The viewing window makes it possible to visually monitor library operations
- A GUI on the right side of the cabinet enables you to monitor and control library operations

Figure 2 Cabinet-Front View



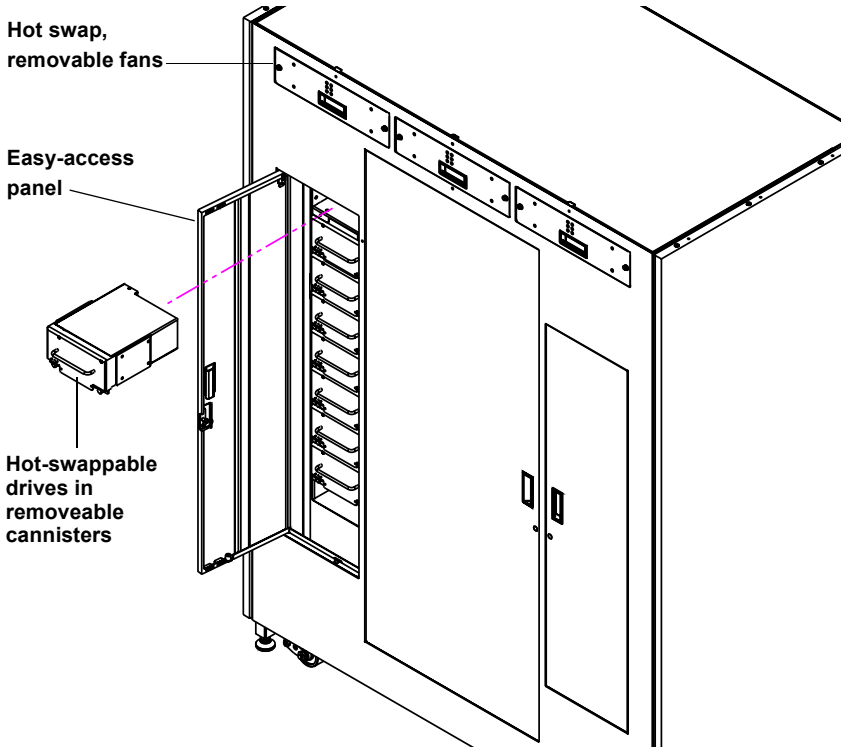
- A mixed media load port equipped with either two 8-cartridge stationary load packs for libraries configured with LTO tape drives, or two 6-cartridge removable load pack magazines for DLT and/or SDLT tape drives, provides easy insertion of additional tape cartridges while the library is in operation.
- The power switch for the library is located behind a sliding panel on the right front door

Cabinet-Back

The back of the cabinet (see figure 3) provides easy accessibility to:

- Cooling fans
- Power, control, and data interfaces
- Tape drives

Figure 3 Cabinet - Back Panels



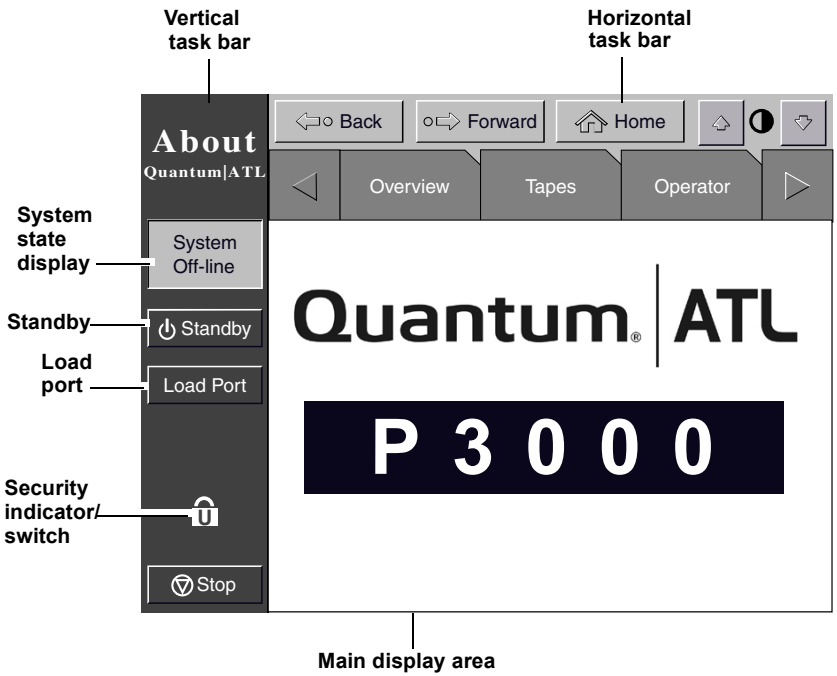
GUI

The GUI features a menu system for determining library status, configuring the library, and performing certain diagnostic functions.

The GUI screen (see figure 4) consists of:

- Horizontal taskbar (top row)
- Vertical taskbar (left column)
- Main display area

Figure 4 GUI—Initial Screen



The horizontal taskbar provides left and right arrow buttons to scroll through the tabs for status, configuration, diagnostic, and operating controls options.

The vertical taskbar provides various library controls:

- System state display - indicates current tasks and requests in process

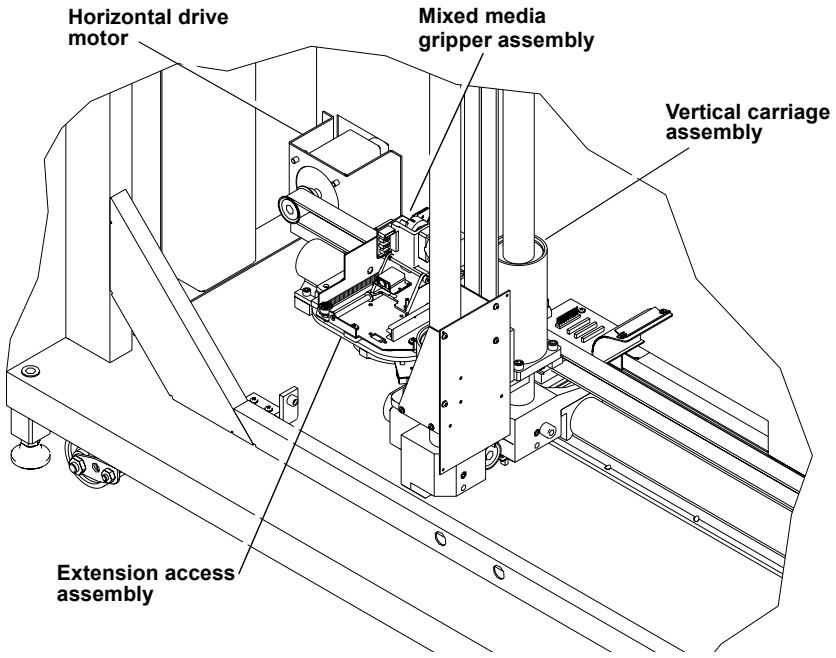
- Standby - takes the library “off-line” or “on-line”
- Load port button - submits request to the library to open the load port
- Security level indicator - shows “locked” on start-up and initialization (default)
- Stop button - immediately removes power from the library robotics.

IntelliGrip™ Mixed Media CHM

The CHM of the library consists of the following components:

- Mixed media gripper assembly
- Vertical carriage assembly
- Horizontal drive motor
- Extension axis assembly

Figure 5 Advanced Robotics System



The vertical and horizontal actuators move the mixed media gripper into position to pick and place tape cartridges. The rotary actuator rotates the mixed media gripper 180 degrees, allowing the mixed media gripper to pass cartridges between the front storage bins and the back storage bins or tape drives. The extension actuator extends the mixed media gripper forward to make contact with the desired cartridge and then retracts the mixed media gripper to remove the cartridge from a bin or drive.

The mixed media gripper includes a Class II aser bar code scanner that reads standard six-character, 3 of 9 bar code labels. The scanner is used to maintain an inventory of the tape cartridges within the library. An inventory occurs automatically whenever the library is turned on or after the bulk load door has been closed. An inventory can also be initiated from the host computer.

Although the library does not require tape cartridges to have bar code labels, properly labeled tape cartridges and full storage bins speed up the inventory process.

Tape Drives

The P3000 holds up to 16 tape drives, including combinations of DLT and SDLT, or DLT and LTO.

Table 4 Tape Drive and Cartridge Specifications

Tape Cartridge	Transfer Rate	Cartridge Capacity	Cartridge Capacity (compressed)	Total Library Capacity (326 bins)	Library Capacity (compressed*)
Quantum DLT 8000	6 GB/sec	40 GB	80 GB	13.04 TB	26.08 TB
IBM LTO Ultrium T200	15 GB/sec	100 GB	200 GB	32.60 TB	65.20 TB
Quantum SDLT	11 GB/sec	110 GB	220 GB	35.86 TB	71.72 TB

Note: * Compressed capacity assumes a 2:1 compression ratio.

When fewer than 16 tape drives are installed, the tape drives must occupy consecutive drive bays, beginning with drive bay 0.

The drives used in the P3000 are more reliable than standard drives due to the automated environment.

The P3000 can be populated simultaneously with DLT, SDLT, or LTO tape drives.

If a drive experiences read/write errors when the AutoClean function is enabled, the library issues an error message stating that drive cleaning is required. Without user intervention, the IntelliGrip CHM replaces the data cartridge with a cleaning cartridge. When the cleaning procedure finishes, the CHM returns the data cartridge to the drive.

Note: When a DLT cleaning cartridge has completed its 20-use limit, it is automatically exported from the library, requiring a new one to be loaded through the load port.

Load Port and Magazines

The load port is a mechanical device in the front panel of the library that enables you to import or export tape cartridges to and from the library via two tape cartridge magazines without interrupting library operations.

The DLT/SDLT load port uses two removeable 6-bin tape cartridge magazines (see figure 6).

The LTO load port uses two stationary 4-bin tape cartridge magazines (see figure 7).

Figure 6 DLT/SDLT Load Port

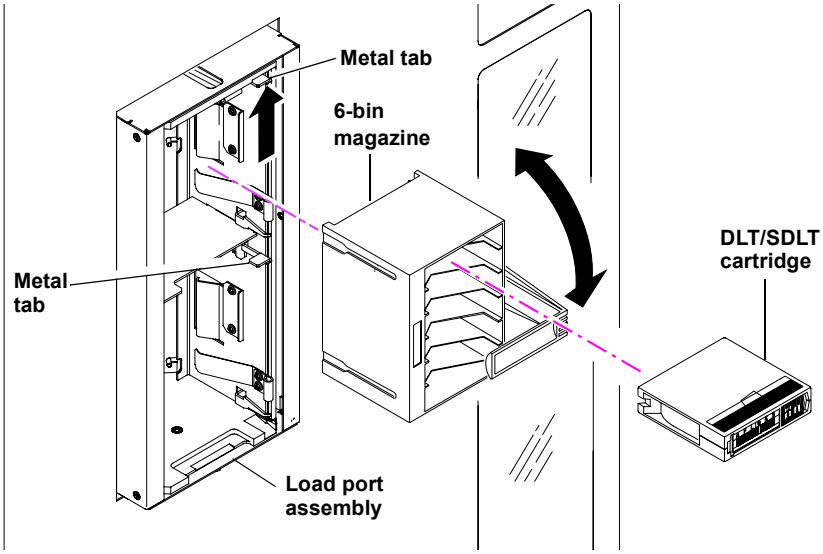
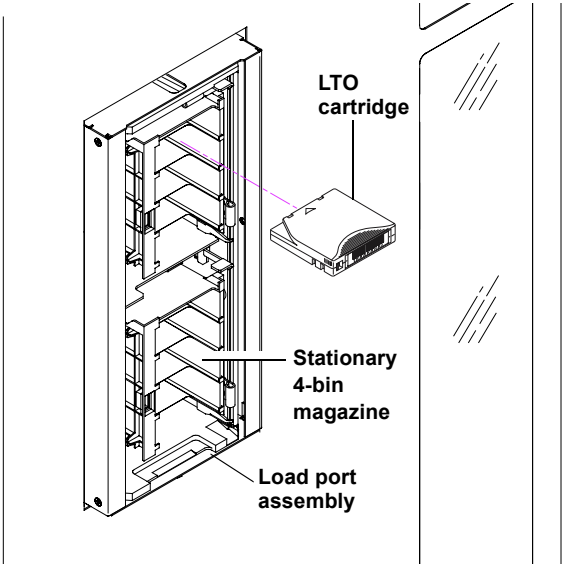
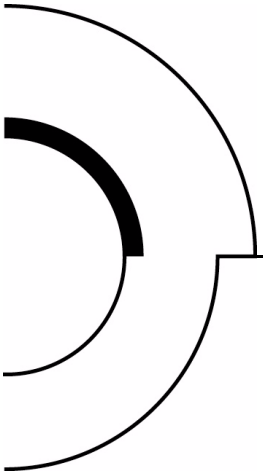


Figure 7 LTO Load Port





Chapter 2

Basic Library Operations

This chapter provides an overview of the graphical user interface (GUI) and describes the following basic library operating procedures:

- Installing tape cartridges
- Preparing the library for operation
- Turning the library on and off
- Using the GUI
- Obtaining library status
- Changing the GUI security level
- Operating the load port
- Inserting tape cartridges
- Manually ejecting a cartridge

Installing Tape Cartridges

To install tape cartridges

1. Label each cartridge
2. Set the write-protect switch
3. Place cartridges in the fixed bins

> **Caution:** Handle tape cartridges with care. Do not drop or bang them, or place them near sources of electromagnetic interference. Rough handling can displace the tape leader, making the cartridge unusable and potentially hazardous to the tape drives.

Taking ESD Precautions

Components within the P3000 contain static-sensitive parts. To prevent damage to these parts while performing installation, maintenance, or replacement procedures, observe the following precautions:

- Keep the library turned off during all installation, maintenance, and replacement procedures.

> **Note:** Hosts without a direct SCSI interface require external communications bus converters.

- Keep the library power cord connected to a grounded power outlet except when working with AC electrical components.

> **Warning:** Avoid contact with the power supplies, EMI filter, and all other AC electrical components while the library is connected to a power outlet.

- Use an antistatic wrist strap when touching internal library components. To use the wrist strap properly, place the band around your wrist and attach the clip to the library frame. Keep the strap on until you are ready to close the library doors.
- Keep static-sensitive parts in their shipping containers until ready for installation.
- Do not place static-sensitive parts on any metal surface. If you need to put down a static-sensitive part, place it inside its protective shipping bag or on a grounded antistatic mat.
- Avoid direct contact with static-sensitive parts. Avoid touching connectors and discrete components.
- Close library door and access panel when not working on the library.
- Be very careful when installing the library or handling components in dry climates or environments where cold weather heating is used. Environments such as these with lower relative humidity have greater potential to produce static electricity.

> **Note:** In environments with high potential for static electricity, you may want to take additional precautions such as the use of an antistatic smock or a grounded antistatic mat.

DLT/SDLT Cartridges

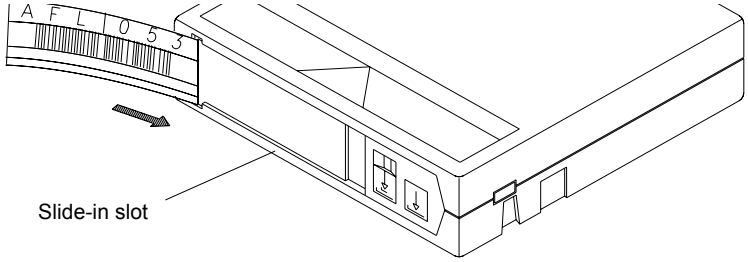
The following shows you how to label DLT/SDLT tape cartridges, as well as setting the write-protect switch and proper orientation.

Labeling

Attaching a bar code label to each tape cartridge enables the library to identify the cartridge quickly, thereby speeding up inventory time.

Place the label in the slide-in slot on the front of the cartridge (see figure 8).

Figure 8 Inserting a Bar Code Label (DLT/ SDLT)



Note: Only use bar code labels that have been designed for cartridges. Do not adhere labels to a cartridge anywhere except the slide-in slot.

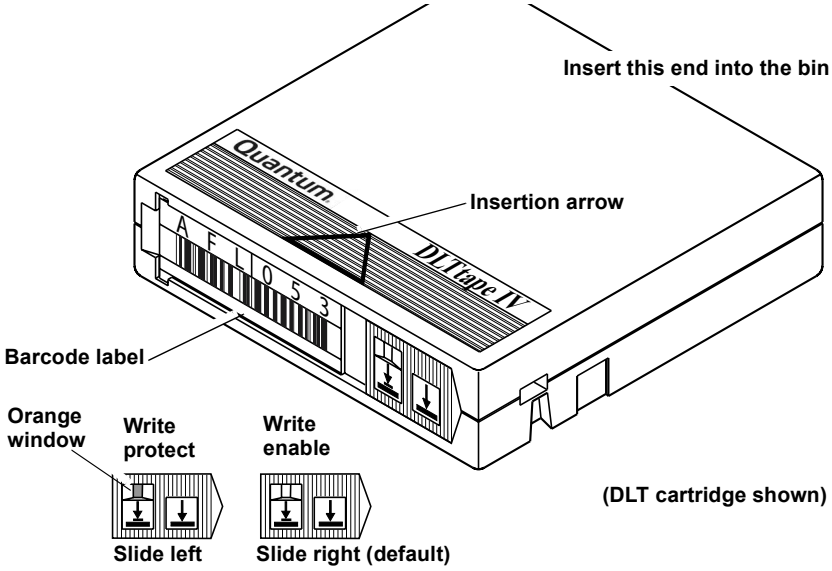
Setting the Write-Protect Switch

Each tape cartridge has a write-protect switch similar to that shown in figure 9. This switch determines whether new data can be written to the cartridge (*write-enabled*) or whether data on the cartridge is protected from being erased or overwritten (*write-protected*).

Proper Insertion Orientation

Refer to figure 9 for proper label placement, write protection settings and insertion orientation.

Figure 9 DLT and SDLT Cartridges

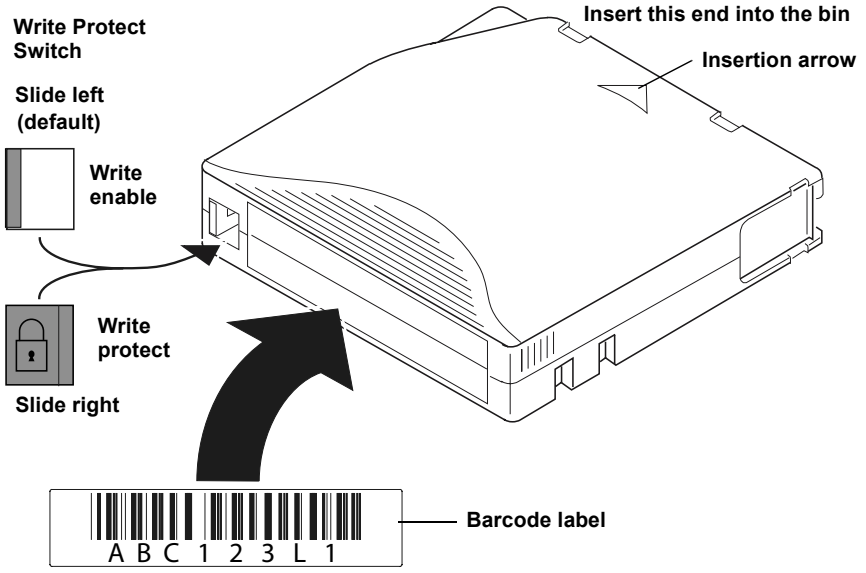


LTO Cartridges

LTO tape cartridges are different in size to the DLT/SDLT cartridges as well as in the barcode labeling and write-protect switch setting.

Adhesive-backed bar code labels are used on LTO tape cartridges. Refer to figure 10 for proper label placement, write protection settings and insertion orientation.

Figure 10 LTO Cartridge



Caution: LTO tape drive media cannot be degaussed due to the fact that it uses "magnetic servos". Do not attempt to degauss LTO tape drive media. If this media is degaussed, it will no longer work.

Placing Tape Cartridges in the Library

Place a tape cartridge in each fixed storage bin on the back wall of the library and on the inside of the front doors. Be sure all cartridges are properly oriented with the barcode facing you and that they are fully seated in the bins.

Preparing the Library for Operation

To prepare the library for operation:

- Close the library doors and access panels
- Connect the host workstations

Closing the Library Doors and Access Panels

The library has two front doors and three back access panels.

1. Close and lock the front doors.
   a. Close one door and then the other.
   b. Turn the door latches to secure the doors to the library frame.
   c. Lower the latches over the door locks.
   d. Using the key from the accessory kit, lock the latches in place.
2. Close and lock the back access panels using a 5/32 hex wrench (not provided).

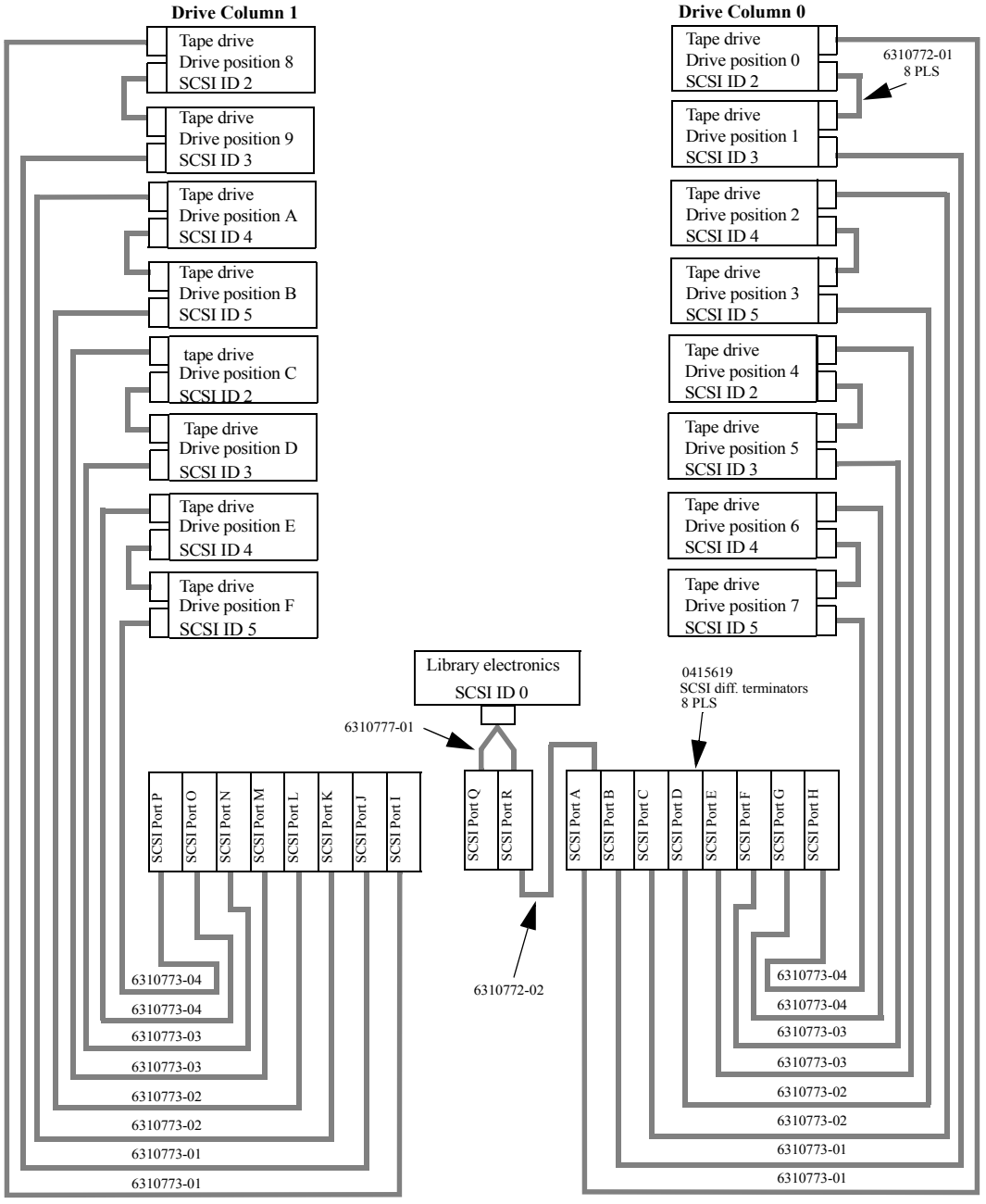
Connecting Host Workstations

Connect the SCSI cables and jumpers as shown in the applicable figures.

> **Note:** Quantum | ATL ships sufficient SCSI cables and terminators with this library to set up two-drives per SCSI bus, as well as adequate SCSI jumper cables to accommodate up to 4 drives per SCSI bus.

Figure 11 shows the recommended cabling configurations for the 16-drive library.

Figure 11 Cabling
Configuration 16 Drive



Turning the Library On and Off

This section explains how to:

- Turn on the library
- Place the library on-line or off-line
- Turn off the library
- Test the installation

Turning On the Library

To turn on the library:

1. Verify that:
   - Power cables are firmly in place
   - All doors are closed
2. Turn on the power switch located behind the small sliding door below the GUI.
3. After several seconds, verify that the current state of the library ("System On-line" or "System Off-line") appears in the System State display on the GUI (see figure 12).

Placing the Library On-line or Off-line

With the library turned on, press the Standby button on the GUI.

Pressing the Standby button toggles the library between on-line and off-line states.

Turning Off the Library

To turn off the library:

1. Place the library off-line by pressing the Standby button.

   The library robotics completes any current commands and then stops.
2. Verify that the GUI display indicates "System Off-line."

3 Verify that the CHM is empty by checking the Overview screen on the GUI (see chapter 3, Operator Commands).

   If there is a tape cartridge in the CHM, perform a Move command to place the cartridge in an available bin.

4 Turn off the power switch located below the GUI.

> **Note:** Wait ten seconds before turning on the power switch again.

Using the GUI

The GUI is activated by touching the screen, and is located on the front of the library. The menus displayed on the GUI allow you to obtain information about the library, execute library commands, and test library functions (see figure 12).

The GUI's functions are grouped into the following four screens:

- *Overview screen*—displays current tape drive, CHM, and load port content and activities.
- *Tapes screen*—displays tape drive, storage bin, load port, and gripper inventories.
- *Operator screen*—contains library configuration and control functions (password protected).
- *Service screen*—contains reporting functions, system tests, and service commands (password protected).
- *Multi-Unit screen*—contains multi-unit configuration and calibration.

Figure 12 GUI—Initial Screen

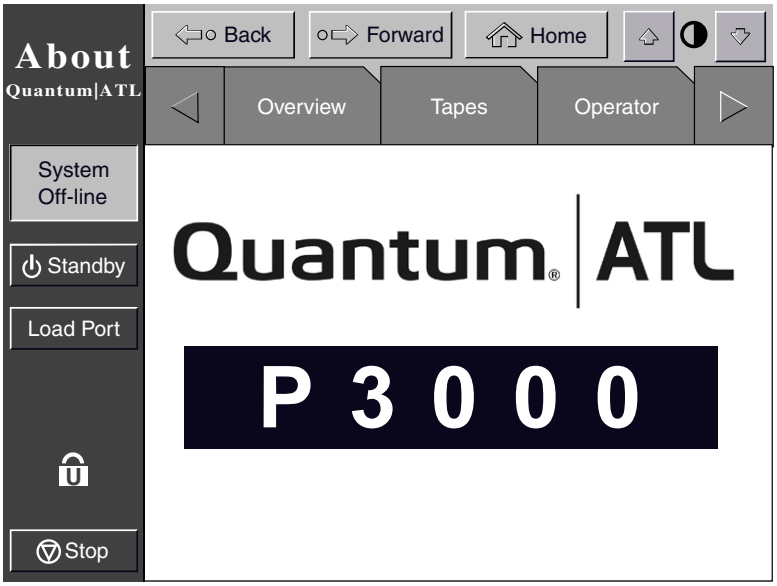


Table 5 lays out the various functions of the GUI.

Table 5 GUI Components

Overview Screen	Tapes Screen	Operator Screen*	Service Screen*	Multi-Unit*
Status display • Tape drives • Activity • Load port	Inventory display • Tape drives • Storage bins • Load port • Transport (CHM)	Configure • Configure Library • Configure Options • Control • Move Cartridges • Inventory Tapes • Calibrate Library • Unload Drive • Unload Imp/Exp (CHM)	Reports • Statistics • Actuator • SysTest Results • Auto Clean • Tests • SysTest Library • Miscellaneous • Initialize Nonvol Stats • Initialize Nonvol Config • Change Password	Configuration Calibration

*These screens are password protected.

Opening a Screen

To open one of the four main screens, touch the desired tab at the top of the GUI. The Overview and Tapes screens are accessible to any user. The Operator and Service screens require a password.

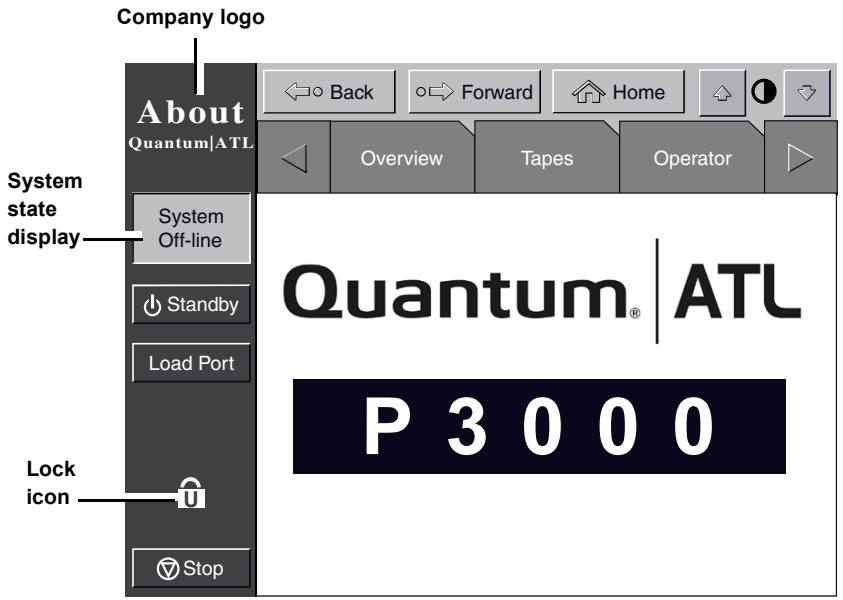
Once the desired screen appears on the GUI, you can view information or press buttons to execute commands and open other screens.

Library Status Information

Some information about the library firmware version, security status, and library status can be found on the left side of the GUI.

- *Company logo*—displays a company information screen when pressed, as well as the application level and boot block level.
- *System state display*—shows the current state of the library (system on-line, system off-line, system stopped, door open, and so on).
- *Lock icon*—shows the current security level at the GUI. Five security levels are available: service (S), operator (O), user (U), import only (I), and locked (L). Table 6 describes the attributes of each security level.

Figure 13 Library Status Indicators



Exiting a Screen

To exit any screen, press the Back or Home button.

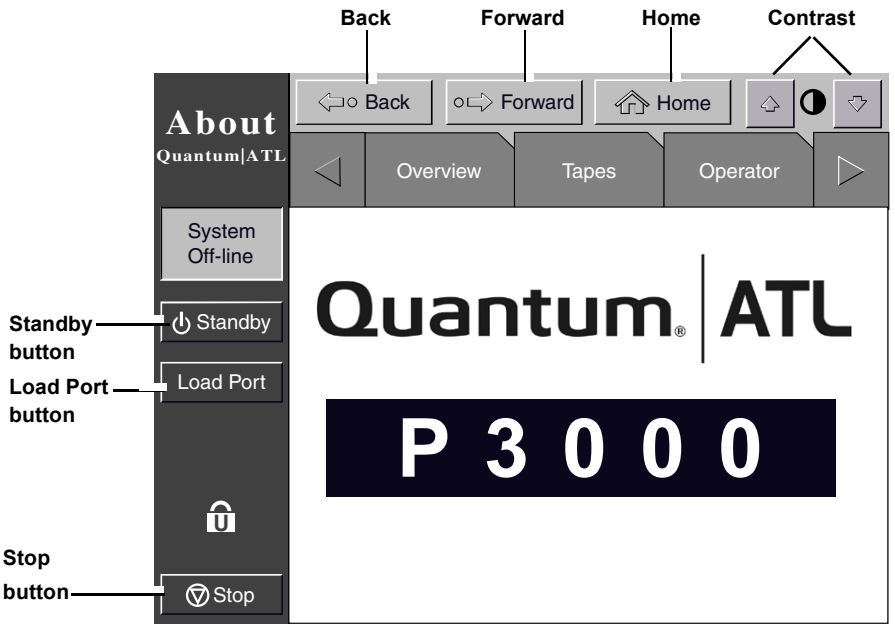
While the command is executing, the GUI displays a Command In Progress dialog box with an Abort button. Pressing Abort cancels the command and stops the ongoing operation.

After pressing Abort, it is still necessary to press the Back button to exit the screen associated with the aborted command.

Library Controls

Library controls are located along the top and left side of the GUI in the horizontal and vertical bars (see figure 14).

Figure 14 Library Controls



These controls function as follows:

- *Home button*—returns to the home (initial) screen.
- *Forward button*—moves forward screen by screen through previous selections.
- *Back button*—moves backward screen by screen through previous selections.
- *Contrast buttons*—adjust the contrast of the GUI screen.
- *Standby button*—toggles the library between on-line and off-line states.
- *Load Port button*—releases and locks the load port door. If the load port is locked in the closed position, pressing this button releases the load port and then locks the door. If the load port is

locked in the open position, pressing this button unlocks the load port, allowing you to rotate the load port to the closed position where it automatically locks.

- *Stop button*—halts library activity immediately by cutting power to library robotics. Pressing the Stop button a second time restores power to library robotics.

Note: The default passwords are:

- Service "5678"
- Operator "1234"
- User "2222"
- Import Only "1111"

For more information on password and security levels, refer to Changing the GUI Security Levels on page 33.

Obtaining Library Status

The Overview and Tapes screens on the GUI provide library status. The Overview screen displays a "snapshot" of the tape drive, robot activity, and load port inventory (see figure 15). The Tapes screen displays the inventory of all elements in the library (see figure 17).

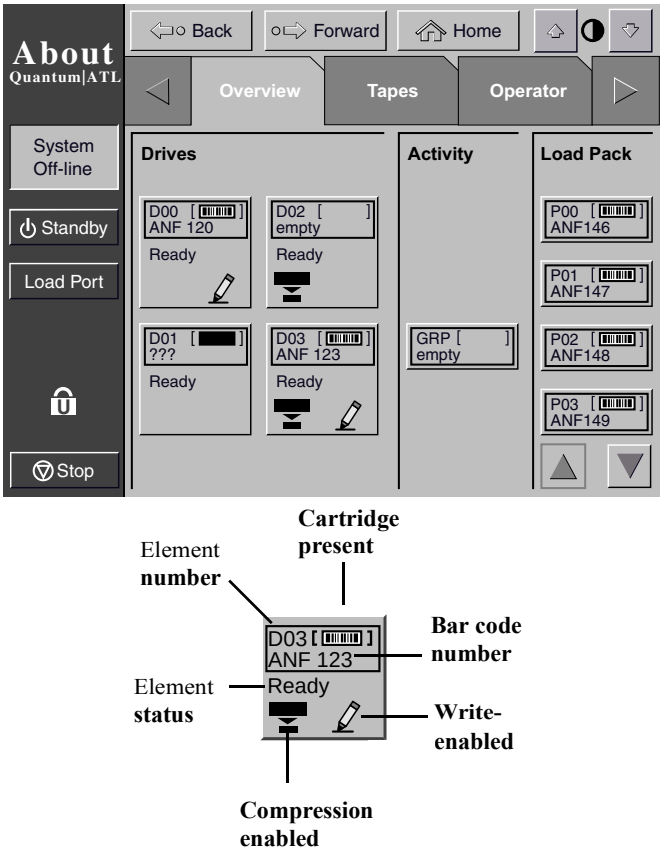
To display the Overview or Tapes screen, press the appropriate tab on the GUI.

Overview Screen

The Overview screen provides information for the following items:

- Drives
- Activity
- Load port

Figure 15 Overview Screen



Drives

The Drives area reports whether:

- A tape drive contains a tape cartridge
- The tape cartridge is write-enabled or write-protected
- Compression is enabled

It also displays the bar code number of the cartridge.

For a more detailed screen showing an individual drive's status, press the screen anywhere in the Drives area to display the Tape

Drive Status screen (see figure 16). Use the arrow buttons at the bottom of the screen to scroll to the desired drive.

Figure 16 Tape Drive Status Screen

To return to the Overview screen, press the screen anywhere in the Tape Drive Status box.

Activity

The Activity area shows the source element, the transport medium, and the destination element involved in the activity; the current location of the tape cartridge; and the progress of the activity.

Load Port

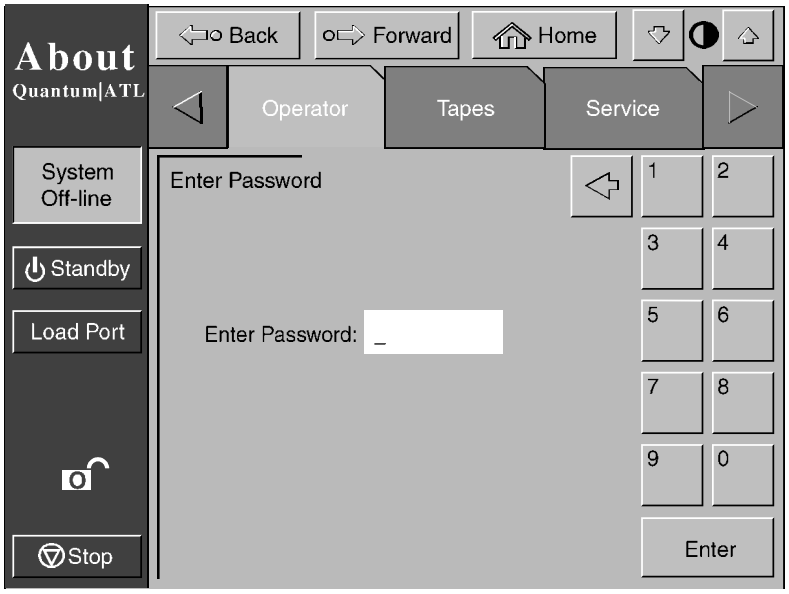
The Load Port area identifies tape cartridges currently stored in either magazine in the load port. Use the arrow button to view contents not currently displayed.

Tapes Screen

The Tapes screen identifies the tape cartridges residing in the following elements:

- Drives
- Storage (fixed storage bins)
- Load port
- Transport (gripper)

Figure 17 Tapes Screen



Viewing Storage and Load Port Elements

The Drives, Storage, and Load Port categories may contain too many elements to display at once. To scroll through these elements, use the arrow buttons at the bottom of each category.

You can also expand the Drives, Storage, or Load Port list to fill the screen by touching the desired category anywhere above the scrolling arrows. To return to the start of the Tapes screen, press the Back button.

Changing the GUI Security Levels

There are five levels of security for the P3000 GUI (see table 6):

- *Service (S)*—provides access to both the Operator and Service set of screens and all functions on the system bar.
- *Operator (O)*—provides access to the Operator set of screens and all functions on the system bar.
- *User (U)*—provides access to screens that are not password-protected (Overview and Tapes screens) and all functions on the status bar.
- *Import Only (I)*—provides access to Overview and Tapes screens and the Load Port button on the system bar (no Stop or Standby).
- *Locked(L)*—provides access to Overview and Tapes screens only.

The security level indicator (lock icon) at the lower left corner of the GUI indicates the current security level (S, O, U, I, or L).

Table 6 Security Levels (listed from highest to lowest)

Level	Lock Icon Indicator	Password Protected	Overview Screen Access	Tapes Screen Access	Operator Screen Access	Service Screen Access	Load Port Access	Stop and Standby Access
Service	S	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Operator	O	Yes	Yes	Yes	Yes	No	Yes	Yes
User	U	Yes	Yes	Yes	No	No	Yes	Yes
Multi-Unit	O	Yes	No	No	No	No	No	No

Level	Lock Icon Indicator	Password Protected	Overview Screen Access	Tapes Screen Access	Operator Screen Access	Service Screen Access	Load Port Access	Stop and Standby Access
Import Only	I	Yes	Yes	Yes	No	No	Yes	No
Locked	L	No	Yes	Yes	No	No	No	No

Securing the GUI

When the User security level is set, access is restricted to the Operator and Service screens. Since these screens control library configuration, testing, and initializing functions, the User security level is appropriate default condition for routine library operation.

Changing Security Levels

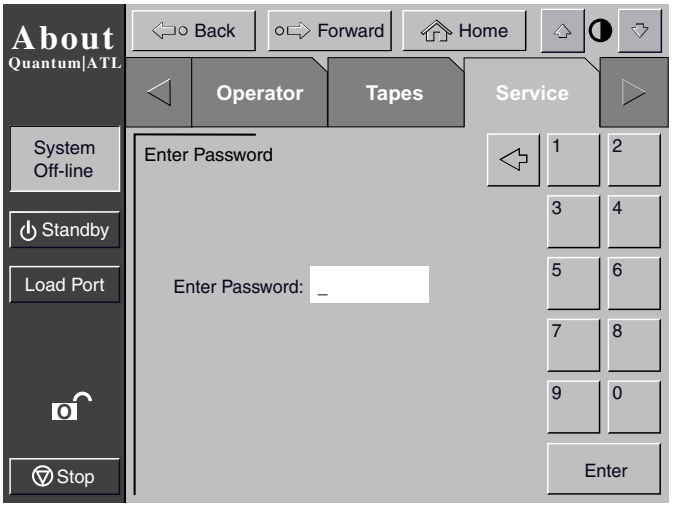
To change security levels:

1. Press the Lock icon.

   The Password screen appears (see figure 18).

2. Press the desired security level button (Service, Operator, User, Import Only, or Locked).

Figure 18 Password Screen



3 Enter a password if necessary.

A password is required to enter a higher security level than the current level.

4 Press the Select button.

A screen appears indicating that the new security level has been set successfully.

5 Press Okay.

The lock icon displays the new security level (S, O, U, I, or L).

Note: This procedure is especially useful to change from Operator or Service levels to the User level after executing an Operator or Service level command.

Note: If the GUI is accessed from the Service (S) or Operator (O) level, and no activity has occurred for 15 minutes, the GUI will return to the initial screen (see figure 12).

Operating the Load Port

After pressing the Load Port button on the GUI, the library will release the lock on the load port (you will hear an audible 'click'). The GUI displays "Wait Open Load Port." Pull on the load port's handle. The load port pulls outward about an inch to its unlocked position which allows its interior drum to be rotated 180° for magazine loading or unloading.

Warning: Opening or closing the load port door presents mechanical hazards. Use both hands to pull or push the load port finger grip and use the top and bottom surfaces of the load port drum to keep fingers out of load port openings when rotating the load port drum (see figure 19).

After loading or unloading the magazines, rotate the load port back 180° and push the load port handle to lock the load port into position.

Note: The mixed media load port used with LTO tape cartidges has two stationary 4-cartridge magazines built into the load port, unlike the two removable 6-cartridge magazines used with DLT and SDLT tape cartridges. If the library contains both DLT and LTO tape drives, the stationary magazines are used in the load port.

Removing/ Installing a Tape Cartridge Magazine

To remove a DLT/SDLT magazine from the load port, press up on the metal tab at the upper right corner of the load port bay. Rotate the magazine handle from the top of the magazine toward you and pull the magazine from the loadport. Reverse this procedure to install a magazine (see figure 6 on page 13).

Loading a Tape Cartridge Magazine

The magazine used with DLT/SDLT tape cartridges have keyed bins to prevent improper cartridge insertions. They are equipped with spring-loaded mechanisms to capture or release a tape cartridge.

To insert a tape cartridge, push it into the magazine's bin until you here a click and the metal tab at the left side of the bin pops out.

To remove a tape cartridge, gently push the cartridge all the way into the bin, then release. The cartridge will be partially ejected, making it easy to remove.

Inserting Tape Cartridges into the Load Port

This section explains how to insert tape cartridges using the load port mechanism.

Caution: Do not use CompacTape I, CompacTape II, or CompacTape IIIXT cartridges in this library.

Inserting DLT and SDLT Tape Cartridges

DLT/SDLT tape cartridges are inserted into two removeable 6-cartridge magazines as shown in figure 6 on page 13. Tape cartridges may be loaded to or unloaded from a magazine with the magazine in or out of the library.

To insert a DLT tape cartridge into a magazine:

Note: To move cartridges to the load port for removal, refer to Moving Cartridges on page 50.

1 Prepare the tape cartridges to be inserted by affixing a bar code label and write-protecting or write-enabling each cartridge as desired.

For more information about these procedures, refer to Installing Tape Cartridges on page 16.

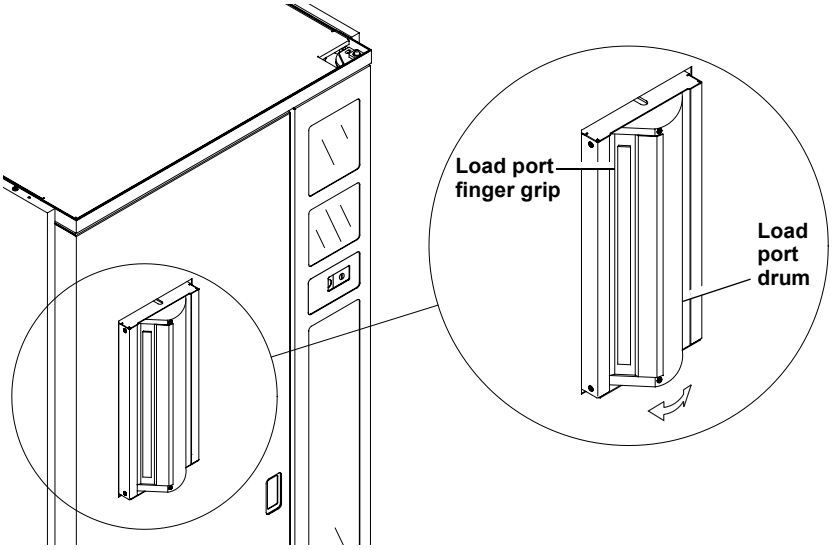
2 With the load port door open, place the tape cartridges in any available load port magazine slot (see figure 20).

3 If the magazine is out of the load port, load the tape cartridges into the magazine, then load the magazine into the load port.

The proper orientation for tape cartridge insertion is shown in DLT/SDLT Cartridges on page 17 and LTO Cartridges on page 19.

4 Rotate the load port drum 180° so that the load port handle faces you (see figure 19).

Figure 19 Rotating the Load Port Drum



Warning: Take care to keep fingers out of load port openings when opening or closing the load port door or when rotating the load port drum.

5 Manually close the load port door by pushing the load port assembly so that it is flush with the front surface of the library. You will hear a “click” when it locks into position.

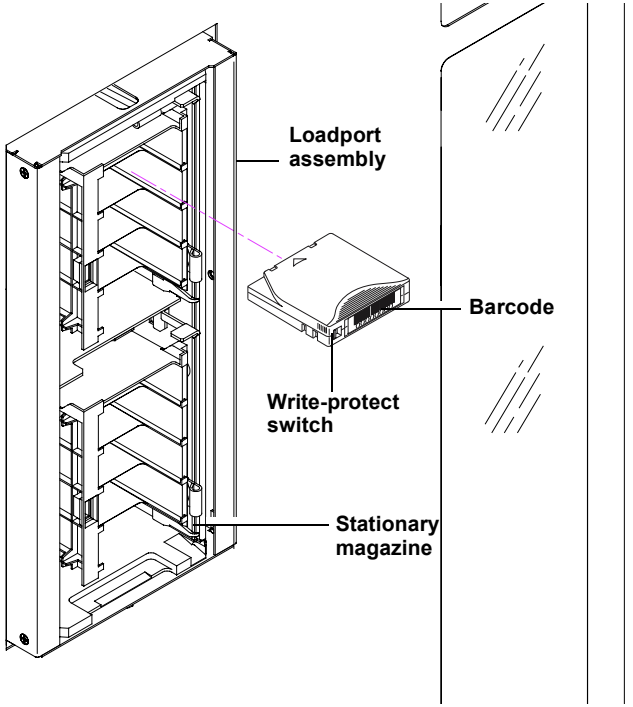
If Auto Load is enabled, the library automatically moves the cartridges to available bins.

Inserting LTO Tape Cartridges

To insert an LTO cartridge:

1 The two load port magazines used when LTO tape drives are present in the library are stationary and built into the load port. They accommodate up to 8 LTO or DLT tape cartridges. The magazines employ no loading mechanism (unlike the DLT removeable magazines) and tape cartridges are simply placed into the bins with the barcodes facing out and the write-protect switch on the left (see figure 20).

Figure 20 LTO Tape Cartridge Load Port



Manually Ejecting a Tape Cartridge

DLT Tape Drives

To manually eject a tape cartridge from a DLT tape drives:

1. Open one or both of the library front doors:
   - **a** Press the Standby button on the GUI. This places the library off-line.
   - **b** Verify that the display state display reads System Off-line and that the robotics has stopped moving. The off-line state does not take effect until current commands are completed.
   - **c** Take electrostatic discharge precautions as explained in Taking ESD Precautions on page 16.
   - **d** Using the key from the accessories kit, unlock each door.
   - **e** Lift each door handle straight up and then turn the handle counterclockwise to unlatch each door.
   - **f** Gently pull on each door handle to open the door.
2. Press the Unload button on the drive (see figure 21).

   When you press Unload, the tape cartridge rewinds. This may take between 10 to 120 seconds. When the rewind process is completed, the Operate Handle indicator comes on.

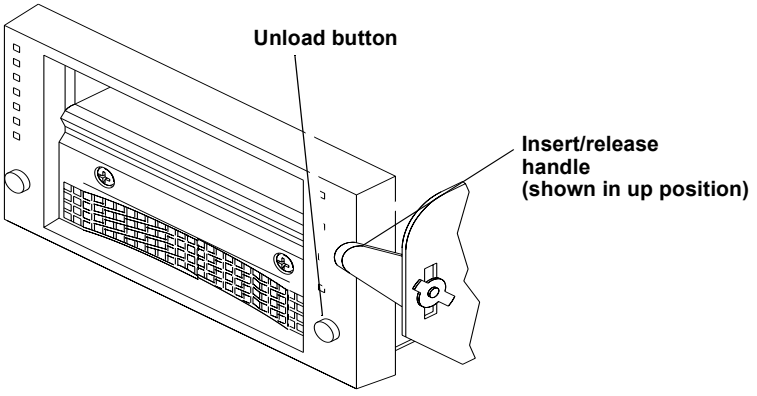


Figure 21 DLT Tape Drive Front Bezel (Example)

3 When the Operate Handle indicator comes on, raise the insert/release handle to eject the tape cartridge.

> **Note:** Place your finger approximately 1/4 of an inch in front of the drive's cartridge opening to ensure that the cartridge does not drop when ejected.

> **Caution:** Pause for *at least* 3 seconds, then grasp the tape cartridge and slowly pull it half way out of the drive.

> **Caution:** If the tape cartridge leader failed to detach from the take-up leader, push the tape cartridge all of the way back into the drive, press down the insert/release handle, and return to step 2. Otherwise, continue to step 5.

4 Pull the tape cartridge completely out of the drive.

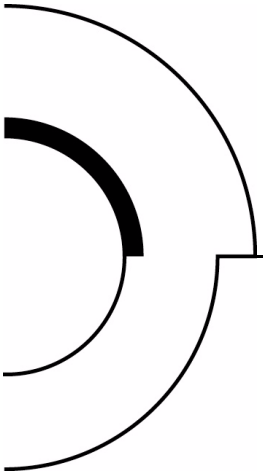
5 Close and lock the library doors.

Quantum SDLT and IBM Ultrium LTO Tape Drives

To manually eject a tape cartridge from Quantum SDLT and IBM Ultrium LTO T200 tape drives:

1 Refer to Steps 1a-1f under DLT Tape Drives on page 40.

2 Press the Unload button on the drive. The Unload button works the same as a soft eject (VCR-style) button.



Chapter 3

Operator Commands

This chapter describes the commands found on the Operator screen of the graphical user interface (GUI). The Operator screen commands initiate the following actions:

- Opening the Operator screen
- Unloading the load port
- Configuring the library*
- Configuring library options*
- Performing an inventory*
- Moving cartridges*
- Unloading a drive*

* The library must be off-line to perform these functions.

Caution: Library operator commands are to be used only by qualified, Quantum | ATL-trained personnel. Serious operational problems and data loss may occur if you do not understand the consequences of these commands.

Opening the Operator Screen

To open the Operator screen:

1. Press the Operator tab.

   The GUI displays the password screen (see figure 22).

2. Enter the correct operator or service password to gain access to the Operator Screen (see figure 23).

   The default operator password is 1234.

> **Note:** To change passwords, see Press Continue. A "Command in Progress" dialog screen is displayed. on page 64.

Figure 22 Password Screen

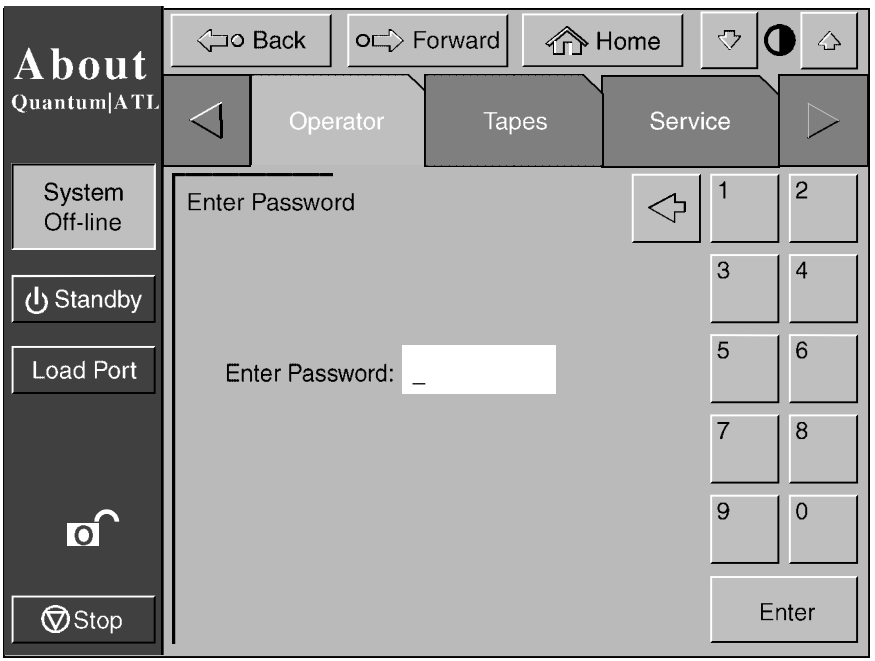
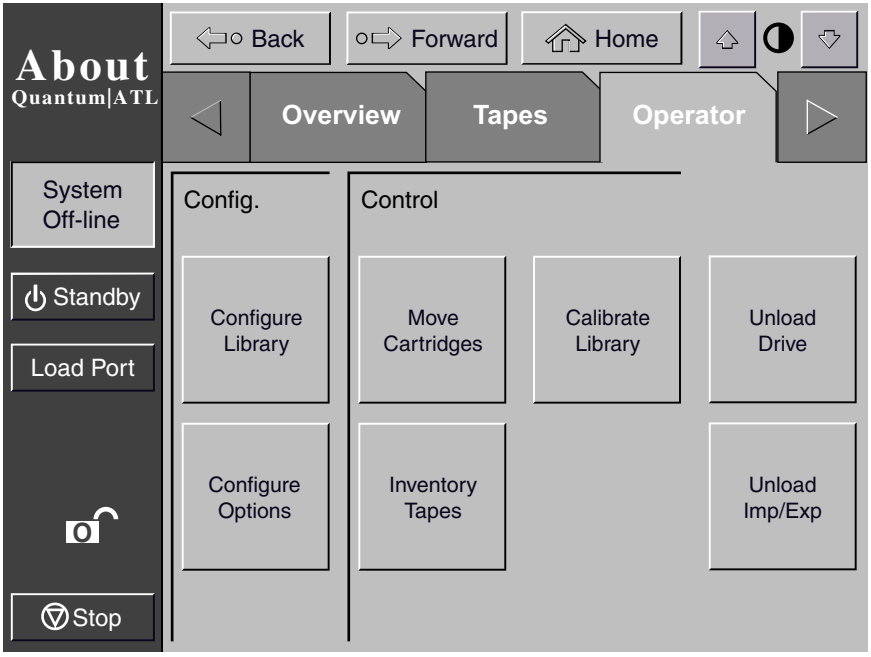


Figure 23 Operator Screen



Configuring the Library

The Configure Library command allows you to assign the following:

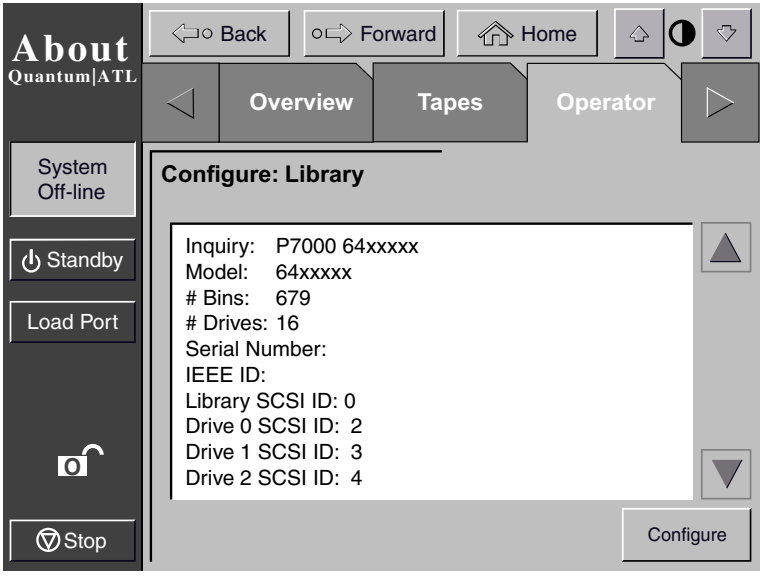
- Library model number
- Number of storage bins
- Number of drives
- Library SCSI ID
- Tape drive SCSI ID

To configure any of these attributes use the following procedure.

1 In the Operator screen, press the Configure Library button.

The Configure: Library screen is displayed (see figure 24).

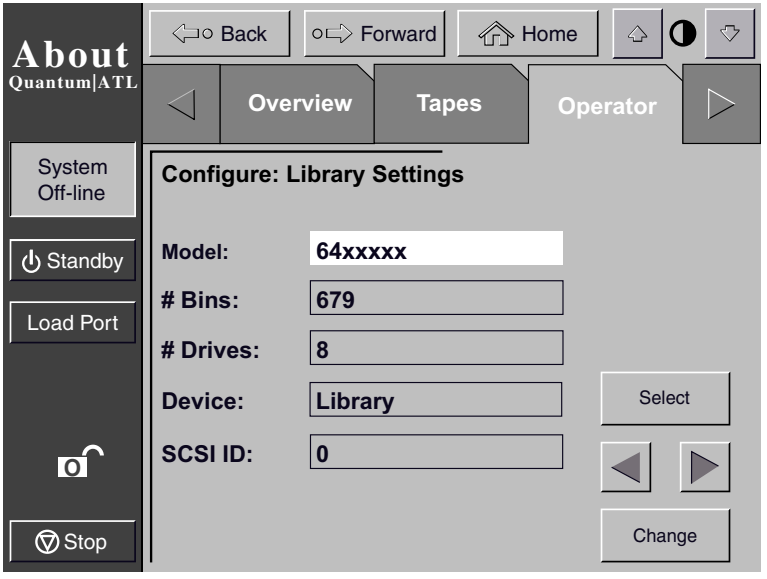
Figure 24 Configure: Library Screen



2 Press the Configure button.

The GUI dispays the Configure: Library Settings screen (see figure 25).

Figure 25 Configure: Library Settings Screen



3 Press the Select button until you highlight the setting you want to change.

4 Using the arrow buttons, scroll through available values for the setting.

5 Press the Change button to accept the new value.

6 Repeat steps 3 through 5 to make other changes.

7 Press the Back button to return to the Configure: Library screen.

The options you selected are now part of the library configuration.

SCSI ID Assignment Guidelines

When selecting SCSI ID numbers, each SCSI device on the same bus must have a unique number from 0 to 15. SCSI devices include the library robotics, the host computer, the library tape drives, internal and external hard disk drives, and so on.

If you set up the library with multiple SCSI buses, you can assign the same number to two or more devices, provided each device is on a different SCSI bus.

> **Note:** Power must be cycled for the new SCSI ID number to become effective.

Configuring Library Options

The Configure Options command allows you to set the following:

- *Power-On State*—determines whether the library is on-line or in standby mode when powered up. The default setting is On-line.
- *AutoClean*—allows the library to perform drive cleaning tasks automatically as needed. The default setting is Disabled.

- *Retries*—causes the library to automatically retry a failed command before issuing an error message. The default settting is Enabled.
- *Bar Code Labels*—turns bar code scanning on or off during inventory. It should be disabled when the library contains cartridges that are not labeled. The default setting is Disabled.
- *Auto Inventory*—causes the library to perform an inventory whenever the library is powered up. The default setting is Disabled.
- *Auto Load*—causes the library to automatically move cartridges in the load port to empty storage bins as soon as the load port door closes. The default setting is Disable.
- *Temp. Detection*—enables or disables the over-temperature detection warning and shutdown features of the library. The default setting is Enabled.
- *Power-On Security*—determines the library security level when powered up. The default setting is User.
- *4/52 Identity Mode*—causes the library to return the same inquiry string as the ATL 520 library (out of production).

Configuring a Library Option

To configure a library option:

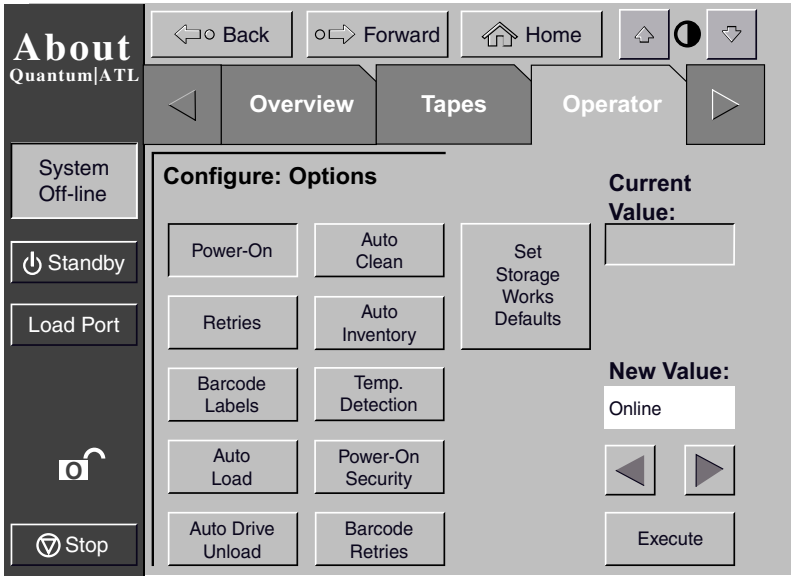
1. In the Operator screen, press the Configure Options button.

   The GUI displays the Configure: Options screen (see figure 26).
2. Press the button with the desired option.
3. Using the arrow buttons, scroll through available values for the selected option.
4. When the New Value box displays the desired value, press the Execute button to apply the new value.

   The Current Value box displays the new value.
5. Repeat steps 2 through 4 to change other configuration options.

6 When you have finished making changes to library options, press the Back button until you return to the initial Operator Screen.

Figure 26 Configure: Options Screen



Performing an Inventory

The Inventory Tapes command reads the bar code labels of the cartridges in the tape drives, fixed storage bins, and the load port bins. All elements that contain cartridges without labels are marked as full with no label.

1 Press the Inventory Tapes button in the Operator screen.

The GUI displays a “Command In Progress” screen.

2 Press the Abort button to stop continuous running of the inventory process, otherwise, the process will continue until all storage elements have been inventoried.

> **Note:** The inventory process is also stopped if an error is detected. In this case, the GUI displays an error message.

Moving Cartridges

The Move Cartridges command allows you to move any tape cartridge in the library to the destination you specify. This destination can be a storage bin, a tape drive, the load port, or the gripper.

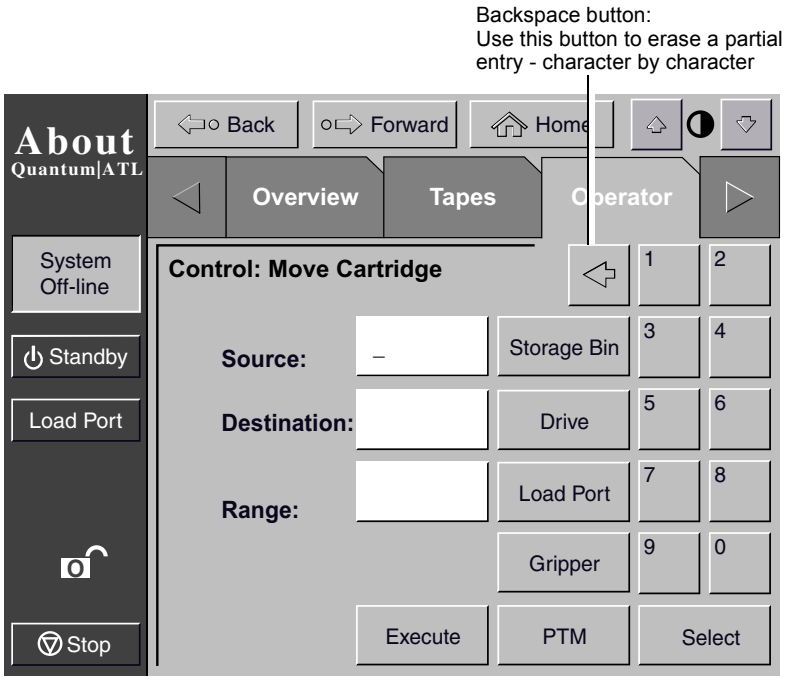
> **Note:** To move a cartridge from a tape drive, issue an Unload Drive command as explained in "Unloading a Drive."

To move a cartridge:

1 In the Operator screen, press the Move Cartridges button.

The GUI displays the Control: Move Cartridges screen, with the Source input field active (see figure 27).

Figure 27 Control: Move Cartridges Screen



2 Identify the source element of the cartridge to be moved. Proceed as follows:

a Press the appropriate source element button (Storage Bin, Tape Drive, Load Port, or Gripper). When you press an element type, the Range field (below the Destination field) displays the range of addresses .

b Using the keypad, enter the address of the source element and then press the Destination input field. The Source information is displayed in the Source field and the Destination field becomes active.

3 Identify the destination for the cartridge:

a Press the appropriate destination element button (Storage Bin, Tape Drive, Load Port, or Gripper).

b Using the keypad, enter the address of the destination element and then press the Execute button. The destination information is displayed in the Destination text box and the move is initiated.

The GUI displays a Command In Progress dialog box with an Abort button.

The Move Cartridges command continues until completed unless you press the Abort button to stop the operation.

Unloading a Drive

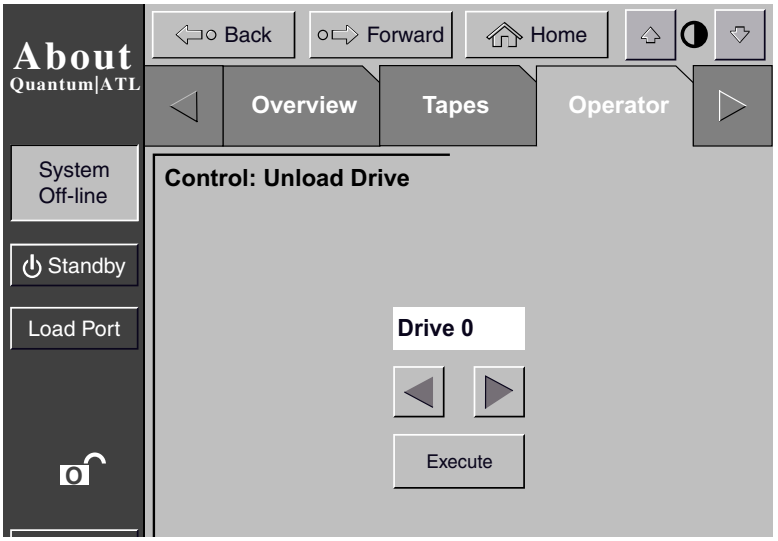
The Unload Drive command prepares a tape cartridge to be removed from a drive by rewinding and ejecting the cartridge. After unloading the drive, remove the tape cartridge using the Move Cartridges command.

To unload a drive:

1 On the Operator screen, press the Unload Drive button.

The GUI displays the Control: Unload Drive screen (see figure 28).

Figure 28 Unload Drives Screen



2 Use the arrow buttons to highlight the desired drive and then press Execute.

The GUI displays a Command In Progress dialog box.

The Unload Drive command continues until completed unless you press the Abort button to stop the operation.

Unloading the Load Port

The Unload Imp/Exp command moves a tape cartridge from the load port to an available storage bin. This option must be invoked after inserting a tape into the load port whenever the library auto load feature is disabled (see Configuring Library Options on page 47).

Note: You can also use the Move Cartridge command to unload the load port. The Move Cartridge command is especially useful if the destination of the move is important. For more information about the Move Cartridge command, see Moving Cartridges on page 50.”

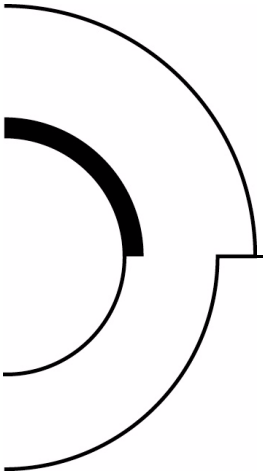
To unload the load port:

1 On the Operator screen, press the Unload Imp/Exp button.

The GUI displays a Command In Progress dialog box is displayed.

2 If it becomes necessary to stop the Unload command, press the Abort button

Note: The inventory process is also stopped if an error is detected. In this case, the GUI displays an error message.



Chapter 4

Service Commands

This chapter describes the Service screen commands of the library graphical user interface (GUI). Topics covered are:

- Opening the service screen
- Changing passwords
- Generating reports

Warning: Serious operational problems and data loss may occur if you do not fully understand the consequences of these commands. The following service tasks are shown here are for explanation only and should not be carried out by anyone other than Quantum | ATL-trained personnel:

- Testing the library
- Initializing nonvolatile information

Opening the Service Screen

To open the Service screen:

1 Press the Service tab.

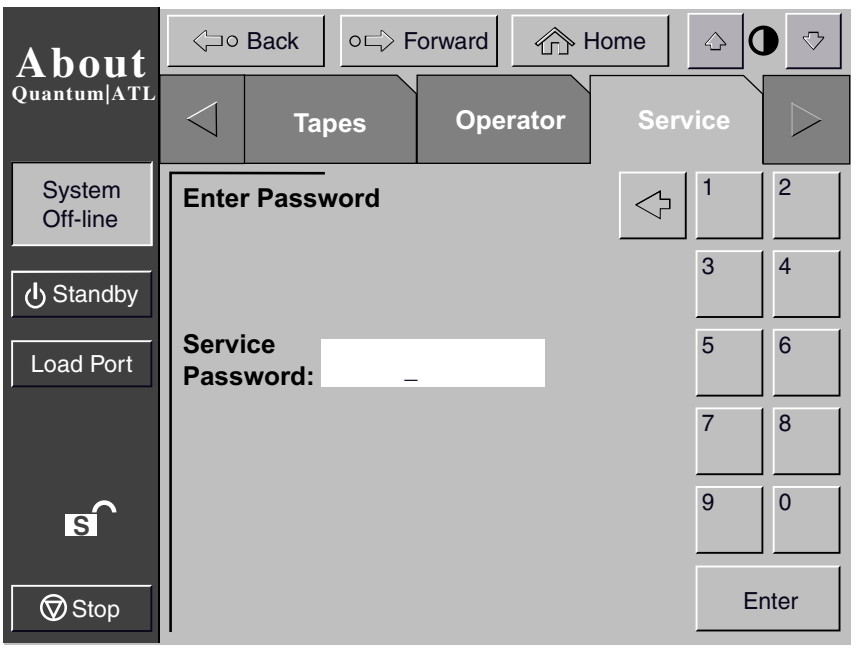
> **Note:** The Service screen is restricted to individuals with Service-level access privileges.

2 The GUI displays a password screen (see figure 29).

Enter the correct service password to gain access to the Service screen (see figure 31). The default service password is "5678."

> **Note:** For information about changing passwords, see Executing Either Command on page 64.

Figure 29 Enter Password Screen



Changing Passwords

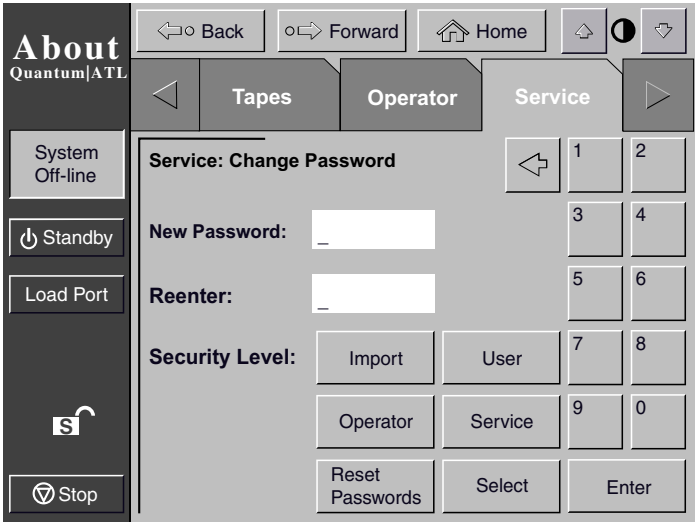
This command allows you to change the password. Valid passwords consist of four to eight numeric characters entered using the keypad in the Change Password screen.

To change a password:

1 On the Service screen, press the Change Password button.

The GUI displays the Service: Change Password screen (see figure 30).

Figure 30 Service: Change Password Screen



2 Press the security level button that corresponds to the password you want to change.

3 Using the keypad, enter a new password and press the Select button.

Asterisks representing password characters appear in the New Password field.

4 Reenter the password and press the Select button.

Asterisks representing the password appear in the Reenter text box.

If You Lose a Password

If you lose the Operator, Import Only, or User password, you can replace it by:

- Opening the Service screen and following the steps to change the password (see page 64)
- Pressing the Reset Passwords button on the Change Password screen. This resets all passwords to their default values.

The default values are:

- Service "5678"
- Operator "1234"
- User "2222"
- Import Only "1111"

If you lose the Service password (and cannot access the Change Password screen), contact the ATL Customer Support Department for assistance (see the preface for contact information).

Generating Reports

The Service screen enables you to generate on-screen reports about the following:

- Library operation statistics
- Actuator positions and status
- System test results
- Auto Clean status and tracking information

Generating Any Service Report

Press the appropriate button in the Service screen.

Within a few seconds, the report is displayed on the screen.

Statistics Report

Figure 32 shows a sample Statistics report.

Press the Update button to update the report (otherwise the report will update periodically).

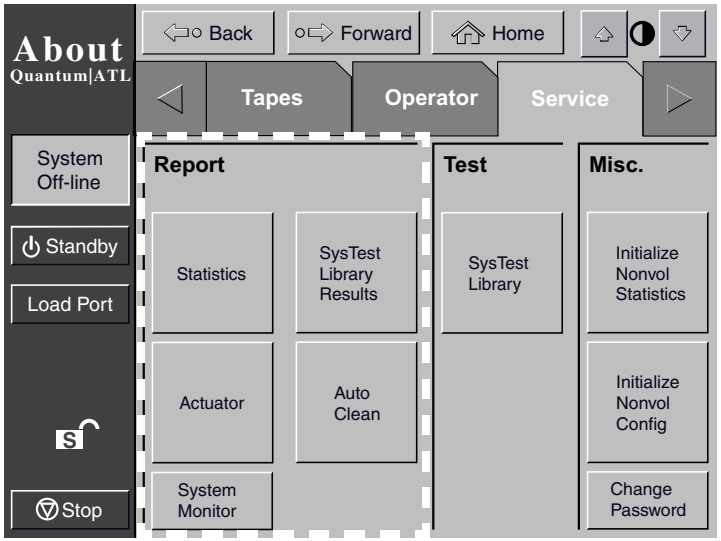
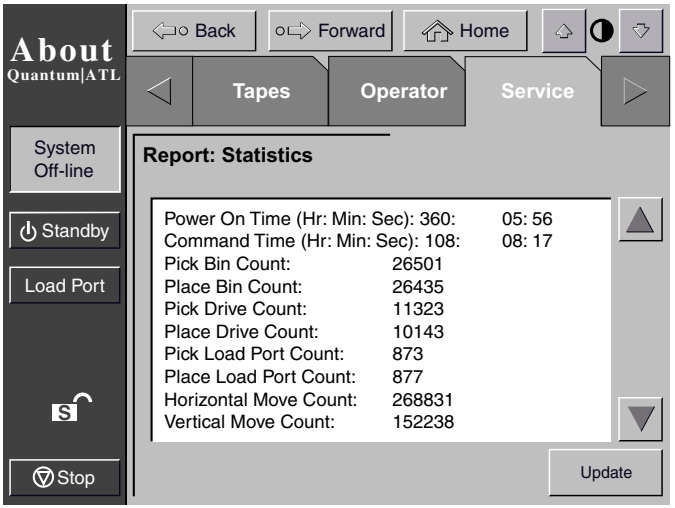


Figure 31 Service Screen - Reports

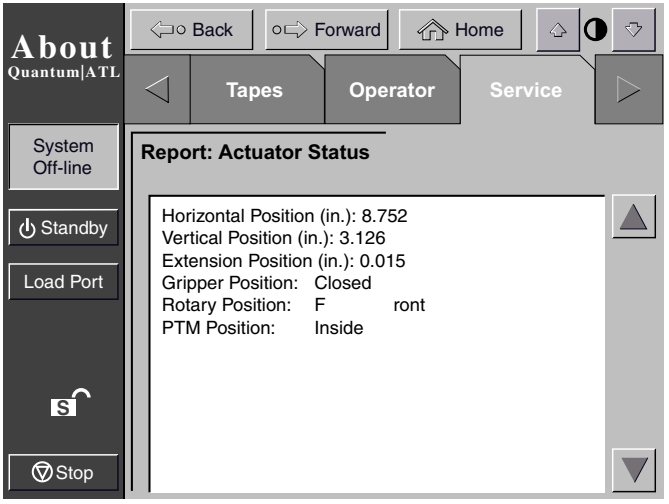
Figure 32 Report: Statistics Screen



Actuator Report

Figure 33 shows a sample Actuator Status report.

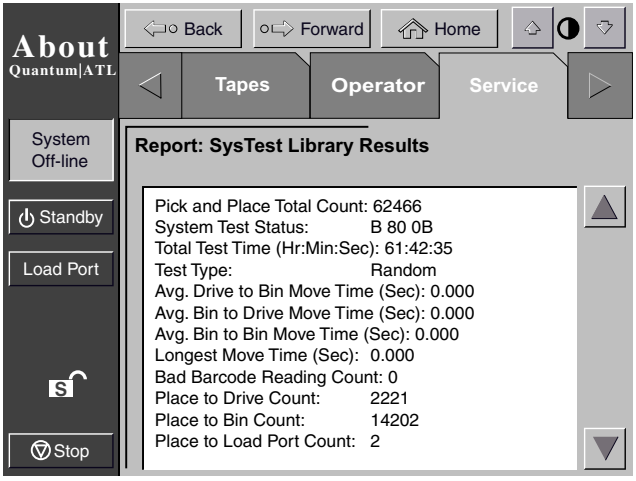
Figure 33 Report: Actuator Status Screen



SysTest Report

Figure 34 shows a sample System Test report.

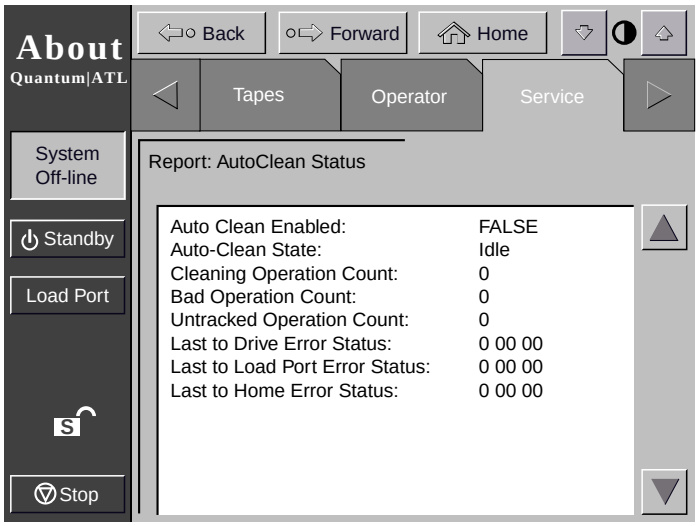
Figure 34 Report: SysTest Library Results Screen



AutoClean Report

Figure 35 shows a sample AutoClean report.

Figure 35 Report: AutoClean Status Screen



When you have finished reviewing the report, press the Back button to return to the Service screen.

Testing the Library

The Service screen provides a testing command:

- *SysTest*—this command tests library operation by swapping tape cartridges between storage bins or drives.

Caution: This screen is meant to be used only by qualified, ATL-trained personnel. It is presented here for explanation only. SysTest will alter inventory information.

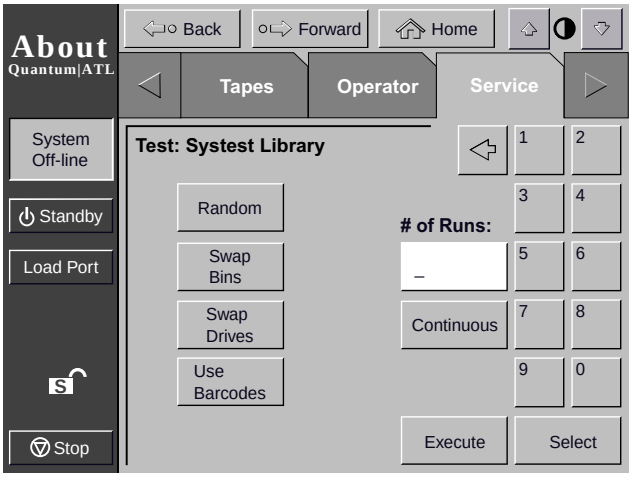
Performing a System Test

To perform a system test:

1 From the Service screen, press the SysTest Library button.

The Test: SysTest Library screen is displayed (see figure 36).

Figure 36 Test: Systest Library Screen



2 Select one of the following system test options:

- Swap Bins - test storage bins only
- Swap Drives - test drives only

3 Select all desired test options as follows:

- Random - swap cartridges at random
- Use Barcodes - read barcode as cartridges are swapped
- Continuous - repeat test until aborted

Note: The Continuous button must be de-selected to enter "# of Runs".

4 When you have selected the type of test and all test options, press the Execute button.

A "Command In Progress" dialog box is displayed.

The system test continues until completed unless you press the Abort button. If you pressed the Continuous button in step 3, you must press the Abort button to stop the test.

Initializing Non-Volatile Information

The Service screen contains two commands involving information stored in nonvolatile memory:

> **Caution:** The following two commands are meant to be used only by qualified, ATL-trained personnel. They are presented here for explanation only. Serious operational problems and data loss may occur if you do not fully understand the consequences of these commands.

- *Initialize nonvolatile memory configuration*—returns the library configuration to its factory-default condition, eliminating any changes made using the Configure Library and Configure Options commands in the Operator screen and invalidates the calibration data.
- *Initialize nonvolatile memory statistics*—purges nonvolatile memory of all statistical information about library operation. This information is used to generate the statistical report described on page 58.

Executing Either Command

To execute either command:

1. On the Service screen, press the button that corresponds to the command you want to execute. The GUI displays a dialog box prompting you to Continue or Cancel the command.
2. Press Continue. A "Command in Progress" dialog screen is displayed.

> **Note:** If it becomes necessary to abort the command, press Cancel.

Chapter 5

Multi-Unit Commands

This chapter describes the Multi-Unit screen commands of the library Graphical User Interface (GUI). Topics covered are:

- Opening the multi-unit screen
- Configure multi-units (P2000/P3000)
- Calibrating the libraries in a multi-unit configuration

Note: Refer to the *ATL Pass Through Mechanism Installation Instructions, PN 6311615,* for more information regarding P2000/P3000 multi-unit configurations.

Caution: Multi-Unit Commands on the GUI are meant to be used only by qualified, Quantum | ATL-trained personnel. They are presented here strictly as presentation only. Serious operational problems and data loss may occur if you do not understand the consequences of these commands.

Opening the Multi-Unit Screen

To open the Multi-Unit screen:

1 Press the Multi-Unit tab.

> **Note:** The Multi-Unit screen is restricted to individuals with Operator level access privileges.

The GUI displays a password screen (see figure 37).

2 Enter the correct service password to gain access to the Multi-Unit screen (see figure 38).

The default multi-unit password is "1234."

> **Note:** For information about changing passwords, see Executing Either Command on page 64.

Figure 37 Enter Password Screen

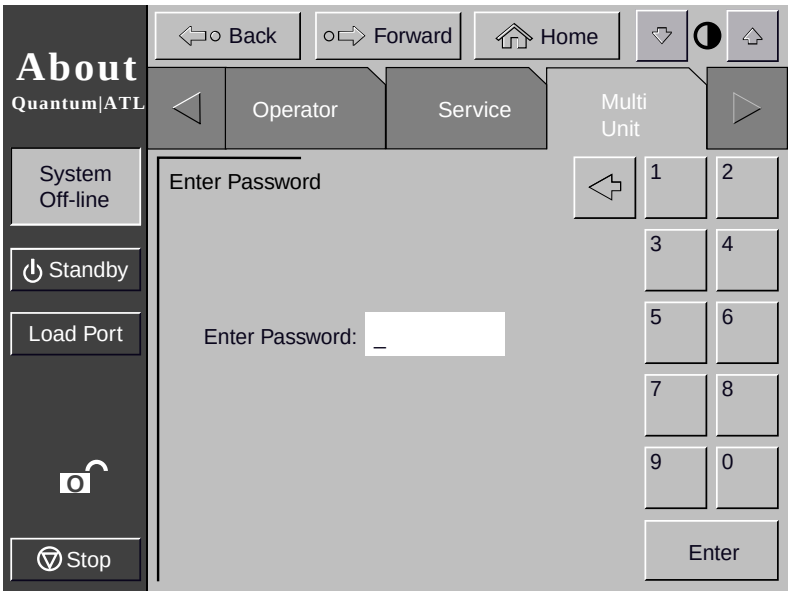
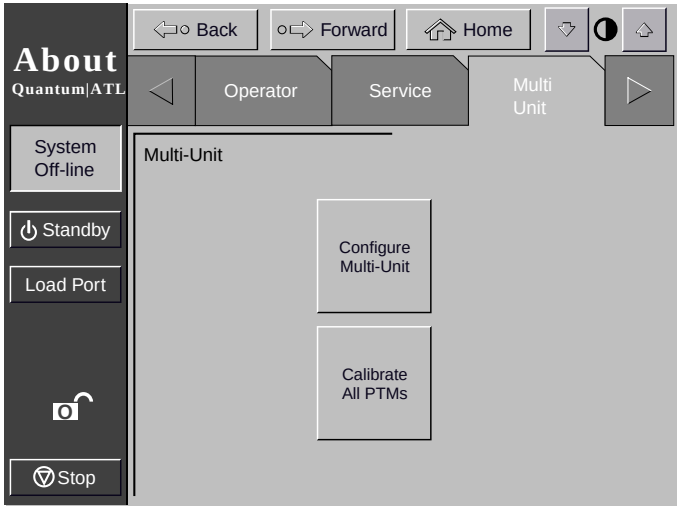


Figure 38 Multi-Unit Screen



Configure Multi-Units (P2000/P3000)

The Configure Multi-Unit command allows you to set the following:

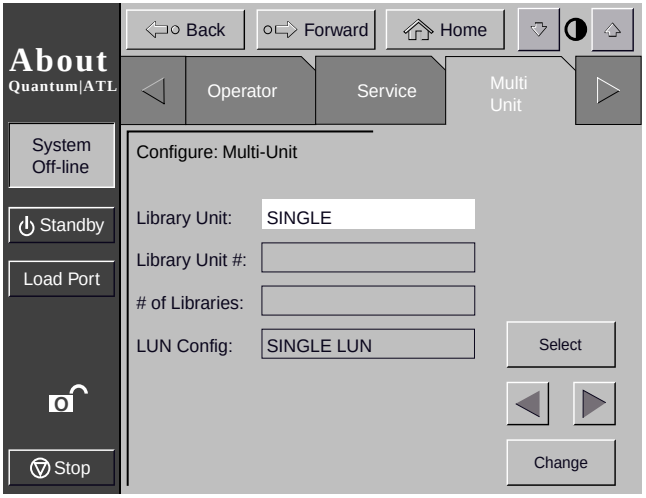
- *Library Unit field*—sets whether the library is single, slave, or master in the multi-unit configuration
- *Library Unit # field*—sets the number assigned to a particular library in the multi-unit configuration. Libraries are numbered left to right beginning with 0 and ending with 4
- *# of Libraries field*—sets the total number of libraries in the multi-unit configuration
- *LUN Config field*—this option will always be set to Single LUN

To configure a Multi-Unit Library option:

1 In the Multi-Unit screen, press the Configure Multi-Unit button.

The GUI displays the Configure: Multi-Unit screen (see figure 39).

Figure 39 Configure Multi-Unit



2 Press the Select button to access the option to configure.

3 Using the arrow buttons, scroll through the available values for the selected option.

4 When the desired value is displayed, press the Select button to advance to the next option.

5 When you have finished making changes to the multi-unit configuration options, press the Change button to save the options and complete the configuration.

Calibrating the Libraries in a Multi-Unit Configuration

The Calibrate All PTMs command enables you to calibrate all pass through mechanisms in all of the libraries in the multi-unit configuration. Calibrate the libraries during the initial installation and after any maintenance procedure.

To calibrate all library elements:

1 From the Master library in the multi-unit configuration, press the Multi-Unit tab.

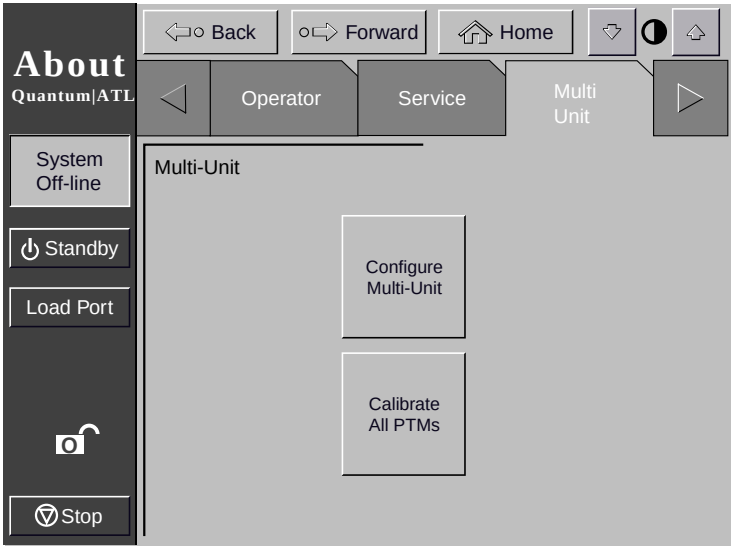
The GUI displays the Multi-Unit screen (see figure 40).

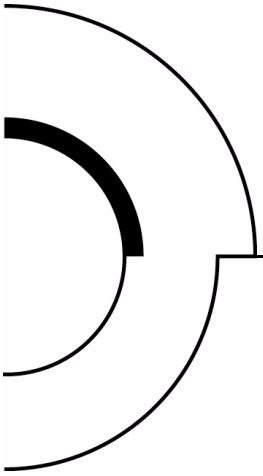
2 Press the Calibrate All PTMs button.

The GUI displays a Command In Progress dialog box while the calibration process is in progress.

> **Note:** Multi-Unit calibration MUST be executed from the master library designated during multi-unit configuration.

Figure 40 Multi-Unit Screen





Chapter 6

Troubleshooting

This chapter describes problems you may encounter during the setup and operation of the P3000. Corrective information is provided to help you resolve the problems.

Several of these problems produce error messages on the graphical user interface (GUI) called *sense data values*. Sense data value messages consist of a number and a description of the error.

Common Problems and Solutions

The troubleshooting information in this section covers the following topics:

- Start-up problems
- GUI problems
- Robotics problems
- Operating problems
- Tape drive problems

Start-up Problems

Table 7 describes corrective actions for problems which occur during start-up.

Table 7 Start-up Problems

Problem	Corrective Action
The library does not power on.	Make sure the power cord is connected to a dedicated, grounded electrical outlet and the power switch behind the slide panel just below the GUI is on.
The library or tape drives do not respond on the SCSI bus.	Make sure each SCSI device on the same SCSI bus has a unique address and the last device is properly terminated.
During initialization, the library reports “Not Ready.”	Determine the failure type by checking any previous error codes returned to the host computer. Correct the cause of the error.
One or more tape drives fail to spin up during start-up.	Check all SCSI cabling and termination behind the center back access door. If necessary, contact your field service engineer about replacing the drives.
The library starts up in standby mode.	Press the Standby button to verify that the library switches to on-line mode. You can use the GUI to select either on-line or standby mode at power up.

GUI Problems

Table 8 describes corrective actions for GUI problems.

Table 8 GUI Problems

Problem	Corrective Action
GUI is blank.	Confirm that power is on, then contact an authorized field service engineer.
The GUI does not respond to touch.	Contact an authorized field service engineer.
An error message is displayed.	Write down the details of the error message, including the SK, ASC, and ASCQ numeric values. Press Okay to clear the message.

Robotics Problems

Table 9 describes corrective actions for robotics problems.

Table 9 Robotics Problems

Problem	Corrective Action
The robot does not move at power up.	Make sure that all internal packing materials and brackets have been removed. Check the Stop and Standby buttons; make sure the library is on-line and the Stop button is disabled.
The gripper partially grips a tape cartridge.	Issue a Move Cartridge command to move the cartridge from the gripper to an empty storage bin.
The barcode reader on the gripper fails.	Verify that nothing obstructs the reader. Then, restart the library. If the problem continues, contact a field service engineer.

Problem	Corrective Action
The robot times out or fails during an operation.	Check that the tape cartridge involved in the operation is properly positioned in the bin or drive and ready to be picked. Check that the robot is not obstructed in any way. Retry the operation. If it still fails, contact a field service engineer.
Misplaced cartridge.	Open the doors. Inspect the suspect tape cartridge for damage. Gently shake the cartridge. If there are any sounds of loose pieces, **do not** put the cartridge back in the library. Retrieve the cartridge, orient it properly, and place the cartridge in an empty storage bin. (Do not try to place the cartridge in the gripper.) Perform an inventory (see Performing an Inventory on page 49). If the operator manually places a cartridge in an empty bin, he must then run an inventory so the library records the position of the manually placed cartridge.
A cartridge is in the gripper at start-up, when a move command is requested, or after a place command is executed.	Open the front doors. Manually remove the cartridge from the gripper and place it in an empty bin. Perform an inventory (see Performing an Inventory on page 49). If the operator manually places a cartridge in an empty bin, he must then run an inventory so the library records the position of the manually placed cartridge.
The gripper does not have a cartridge after completing a pick command.	Make sure a cartridge can be found in the source location. Retry the command. If the pick operation fails again, contact a field service engineer.

Operating Problems

Table 10 describes the corrective action for problems which occur during library operation.

Table 10 Problems During Library Operation

Problem	Corrective Action
The host computer cannot communicate with the library.	This may be a SCSI bus time-out or a premature disconnect problem. Check cable connections, cable length, SCSI addresses, and termination. Restart the host and the library. If the host and library still are not communicating, contact a field service engineer.
A cable or terminator is disconnected from the SCSI bulkhead.	Reconnect the cable or terminator according to the guidelines found in the cabling section in Connecting Host Workstations on page 21 of this guide.
A tape cartridge (tape medium) is reported not present.	This indicates that the gripper could not sense a tape cartridge in a particular storage bin even though the inventory reports that it is present. Check to see if the designated cartridge is present. If it is, make sure it is properly seated. (For a tape drive, make sure the cartridge is completely unloaded.) Then retry the command. If the error persists, contact a field service engineer.
A move command failed.	Check the source and destination bins. The source bin should hold the cartridge to be moved; the destination bin should be empty. Make sure the gripper is empty and all actuators are free of obstruction. Also, make sure the library is on-line and the Stop button is released. Retry the command.
A flash memory error is reported.	Contact a field service engineer.

Problem	Corrective Action
A maximum temperature exceeded warning is displayed.	Turn off the library and allow it to cool down. Lower the room temperature, if possible, and increase ventilation around the library. (If the operating temperature is too high, the library will automatically shut down until the temperature drops.)

Tape Drive Problems

Table 11 describes the corrective action for problems with the tape drives.

Table 11 Tape Drive Problems

Problem	Corrective Action
The library is unable to communicate with a drive.	This is indicated by a Drive Communication Time-out error. Contact a field service engineer.
The tape drive does not eject a cartridge.	Reset the library and retry the unload command. If the tape still does not unload, stop the library, open the front door, and manually unload and eject the cartridge (see Manually Ejecting a Tape Cartridge on page 40).
A drive handle error occurs.	Contact an ATL field service engineer.

Tape Drive LED Conditions

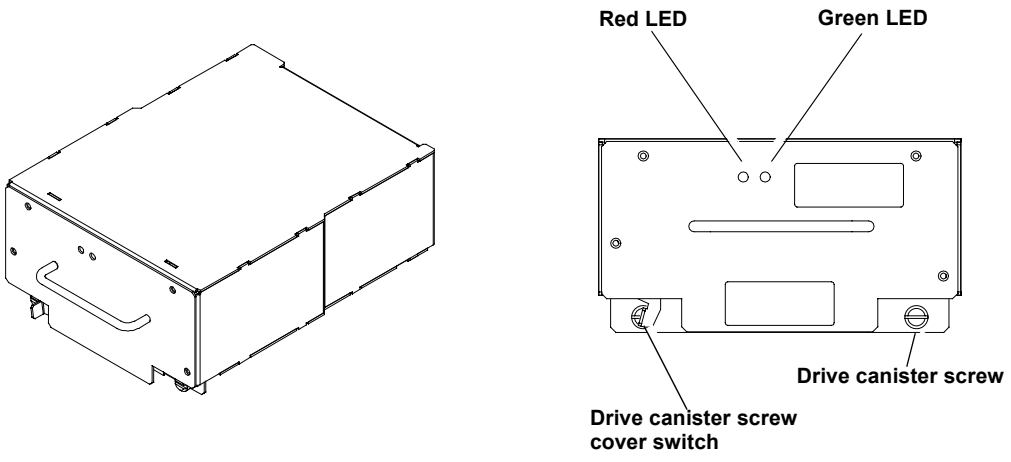
These actions are to be performed based on the LED displays on the backs of the drive canisters in mixed media P3000 tape libraries. Table 12 and figure 41 show the diagnostic table of tape drive conditions as indicated by the two LEDs at the back of the tape drive canister.

Table 12 Tape Drive LED Conditions (SDLT and LTO drives)

Red LED	Green LED	Condition	Action
ON	ON	Reserved	Contact an ATL Field Service Engineer
ON	Flashing	Reserved	Contact an ATL Field Service Engineer
ON	OFF	Drive power fail (detected by firmware	Toggle the drive canister screw cover switch to clear the drive power fail condition. If the LED reappears, contact an ATL Field Service Engineer
OFF	ON	Good	No action
OFF	Flashing	SCSI bus incompatible (detected by firmware)	Indicates LVD/HVD incompatibility. Ensure that the SCSI cable and host bus adapter are correct and replace if necessary.
OFF	OFF	No power to tape drive interface board	Ensure that: • Be sure that the library power is ON. • Drive canister screw cover switch is in the position so that it covers the screw. • Check library configuration on the GUI to see if the library is configured with the correct number of drives. • If the condition persists, call an ATL Field Service Engineer.

Red LED	Green LED	Condition	Action
Flashing	ON	Drive unhealthy (detected by firmware). Detects hardware errors in DLT and SDLT drives. It also detects the absence of a tape cartridge; and in DLT and SDLT drives, the drive is not ready to accept a new cartridge. In LTO drives, this condition is a warning of a snapped tape.	Contact an ATL Field Service Engineer
Flashing	Flashing	Drive inserted (under hardware control, upon the first firmware command, the LEDs will turn off and obey the firmware command.	This condition should terminate shortly after the library is turned ON. If the condition persists, call an ATL Field Service Engineer.
Flashing	OFF	Microbridge incompatibility (under hardware control).	Contact an ATL Field Service Engineer

Figure 41 Tape Drive LEDs



Appendix A

Library Specifications

This appendix lists characteristics and specifications of the P3000. These characteristics and specifications are categorized as follows:

- Physical characteristics
- Performance characteristics
- Environmental specifications

> **Note:** For tape drive specifications see the appropriate tape drive product manual.

Physical Characteristics

Table 13 provides dimensions and other physical characteristics of the library unit.

Table 13 Physical Characteristics

Unit Dimensions and Weight	
Width	57 in. (144 cm)
Depth	29 in. (74 cm)
Footprint	11.50 sq. feet (1.07 sq. meters)
Height	75 in. (191 cm)
Weight	Library: 1300 lbs (591 Kg) DLT Drives: 13.5 lbs. (6.12 kg) each DLT Cartridges: 7.7 oz. (218 kg) each
Tape Drives and Cartridges	
Tape Drives, Max. No.	Up to 16 tape drives
Cartridges, Max. No.	0-326 tapes

Table 14 Interfaces

Host to Library Interfaces	
Software	SCSI-2 medium changer command set
Power Input	
Power cord	1 or 2 standard US, IEC 320 C19 male connector rated at 125VAC (NEMA 5-20 P connector included)
Host to Tape Drive Interface	
Software	SCSI-2
Library Diagnostics	
Diagnostics	RS-232C service port for connection to a field service PC or Solaris Workstation running diagnostic software.

Performance and Reliability Characteristics

Table 15 and table 16 list performance and reliability characteristics of the library.

Table 15 Performance Characteristics

Average Swap Time	22 seconds, consisting of two Move Medium commands
Inventory	Less than 5 minutes, fully loaded with labeled cartridges

Table 16 Reliability Characteristics

MTBF	250,000 power-on hours
MSBF	1 million load/unload cycles
MTTR	Less than 30 minutes

Environmental Specifications

Table 17 provides various library environmental specifications.

Table 17 Environmental Specifications

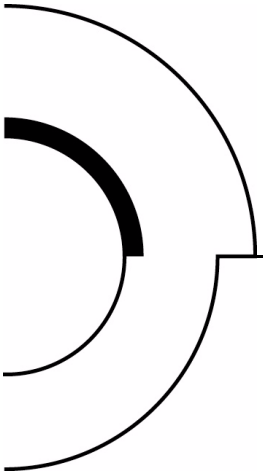
Power Environment		
Electrical inputs	Voltage	100 VAC to 240 VAC
	Rated Frequency	60 Hz
	Rated Current	16A to 8A
	Power consumption	VA max 1600W

	Electrical connection to power	IEC 320 C19 male connector inside back door
Climatic Environment		
Temperature (operating)	Dry Bulb	15°C to 32°C (59°F to 90°F)
	Wet bulb	25°C (77°F) maximum
	Thermal transition	11°C per hour
Temperature (shipping and storage)	Dry bulb	-40°C to 66°C (-40°F to 151°F)
	Wet bulb	46°C (115°F) maximum
	Thermal transition	30°C (54°F) per hour
Relative humidity	Operating	20% to 80%, non-condensing
	Shipping and storage	5% to 95%, non-condensing
Electromagnetic/Electrostatic Susceptibility		
Altitude	Operating	Sea Level to 10,000 ft. (3,048 m)
	Shipping and storage	Sea Level to 12,000 ft. (3,657 m)
Heat dissipation	Operating	5500 BTU/hr (1400 KCal/ hr or 1600 watts)
Direct ESD	Contact discharge	@ 2.0, 4.0, 6.0, 8.0 kV to all external metal panels and doors
	Air discharge	@ 2.0, 4.0, 6.0, 8.0, 10.0, 12.0, 15.0 kV to the front GUI display
Indirect ESD	Contact discharge	@ 2.0, 4.0, 6.0, 8.0 kV to the VCP

Radiated fields per IEC-801-3	Unmodulated	27 MHz to 500 MHz @ 3 V/m
Fast transients (EFT or Burst) per IEC801-4	Data cables Power cables	@ 0.5kV @ 1.0kV

Acoustical Noise

Sound power level	Operating Idle	8.10 Bel 7.83 Bel
Sound pressure @ bystander	Operating	63db



Appendix B

Relocating the Library

This appendix explains how to relocate the P3000. As used in this appendix, the term *relocate* means either to ship the library or simply to move it to a nearby location (for example, from one area in a building to another).

The instructions in this appendix are divided into the following sections:

- Checking the new installation site
- Preparing the library for relocation
- Crating the library
- Preparing the library for operation

To ship the library or move it using a motor vehicle (for example, truck or forklift) follow all of the instructions in this appendix.

To move the library to a new location within the same building or facility, follow all instructions in this appendix except for those found in Crating the Library on page 94.

Note: These procedures require the original packing materials of the library. If you do not have the original packing materials, contact the ATL Customer Support Department.

Caution: Moving or shipping the library without proper packing materials can result in damage to library components.

Checking the New Installation Site

Check the new installation site for the library using the guidelines found in the *ATL P2000/P3000/P6000 Pre-Installation Site Survey Instructions*. Make sure the new location meets all applicable clearance, environmental, and power requirements.

Preparing the Library for Relocation

You will need the following tools to prepare the library for relocation:

- #2 Phillips head screwdriver
- 3/16-inch Allen wrench

Take the following steps to prepare the library for relocation:

- Removing tape cartridges
- Installing internal packing materials

- Disconnecting library cables

Caution: Always prepare the library for relocation before any move.

Removing Tape Cartridges

To remove tape cartridges:

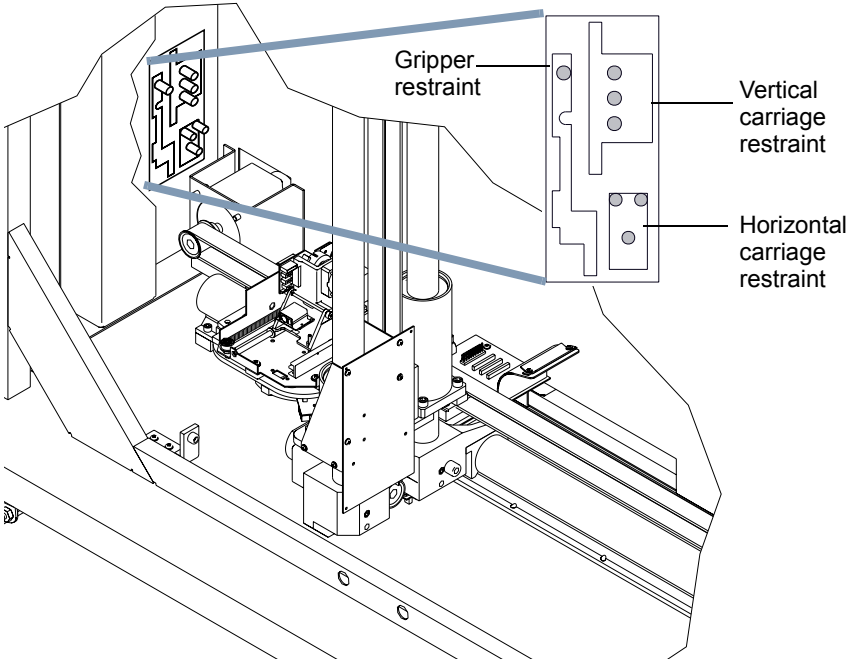
1. Unload all tape cartridges from the tape drives.
2. Stop all library operation.
   a. Press the Standby button on the GUI. This places the library off-line after the completion of any currently executing operations. When the library is off-line, the GUI system state display indicates “System Off-line.”
   b. Press the Stop button to remove power from library robotics.
3. Unlock and open both library doors.
4. Turn off the library.
5. Remove all tape cartridges from the library bins and tape drives.
6. Carefully pack all tapes for shipment.

Installing Shipping Restraints and Packing

To install internal shipping restraints:

1. Remove the extension axis restraints from their storage location in the chassis (see figure 42).

Figure 42 Extension Axis Restraints - Storage Location



2 If the cartridge handling mechanism (CHM) is not in the far right position, gently move it along the horizontal carriage until it is as far right as possible.

3 Place the large foam packing block between the extension axis and the floor.

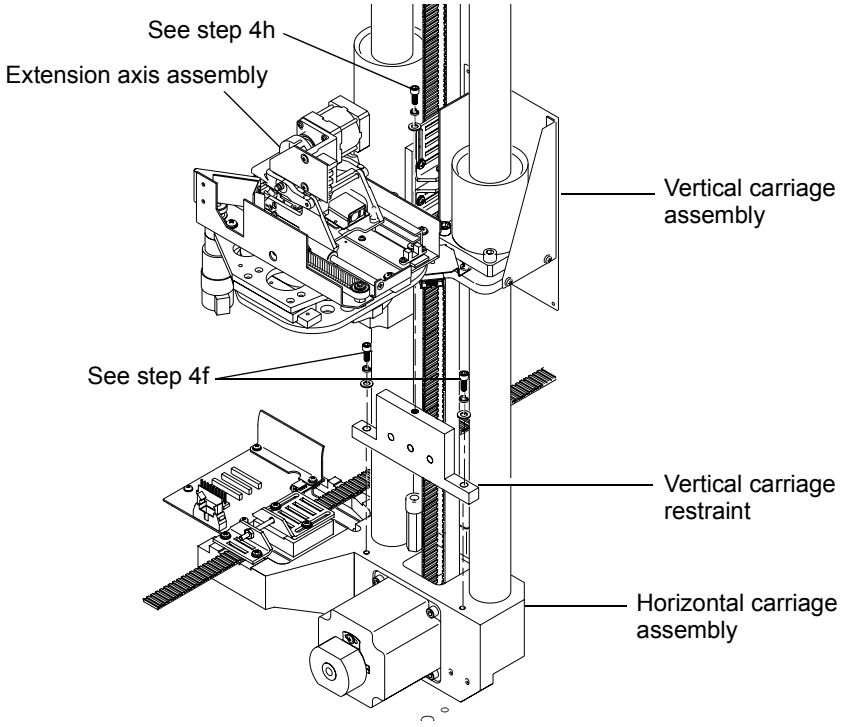
   a Lift the extension axis assembly and place the large foam block between it and the floor of the library.

   b Gently lower the extension axis assembly, resting it on the foam block.

4 Install the vertical carriage restraint (see figure 43):

Warning: The vertical carriage is extremely heavy. More than one technician may be required to assist this operation.

Figure 43 Installing the Vertical Carriage Restraint



a Gently lift the vertical carriage assembly to eye-level.

b Squeeze the two sides of the vertical belt together, making sure to interlock the belt cogs.

c Secure the vertical belt with a tie wrap or clamp.

d Rotate the extension axis assembly 90 degrees.

e Place the vertical carriage restraint.

f Install the two screws that secure the vertical carriage restraint to the horizontal carriage assembly. Torque the screws to 70 in-lbs.

g Install the screw that secures the vertical carriage restraint to the vertical carriage assembly.

h Remove the tie wrap or clamp from the vertical belt and gently lower the vertical carriage.

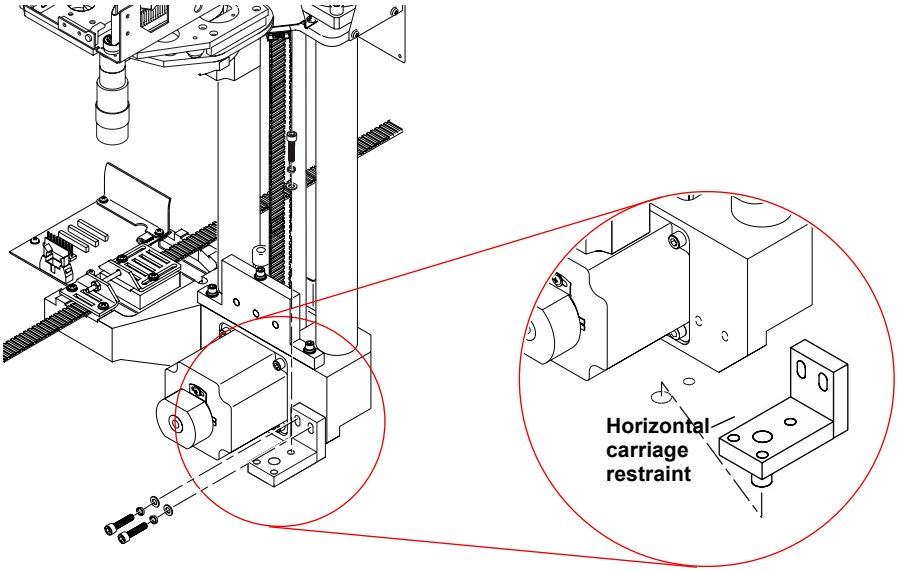
5 Install the horizontal carriage restraint (see figure 44):

a Move the vertical carriage assembly to the right hand end of the horizontal axis.

b Place the horizontal carriage restraint and install the screw that secures it to the floor of the library.

c Install the two screws that secure the horizontal carriage restraint to the horizontal carriage assembly.

Figure 44 Installing the Horizontal Carriage Restraint



6 Install the gripper restraint:

a Slide the gripper assembly away from the vertical axis until the gripper assembly is fully extended and the gripper restraint disengages from the follower guide.

b Pivot the gripper restraint into place until it interlocks with the motor, spring post, and follower guide (see figure 45). The gripper restraint should now be parallel to the follower guide.

c Slide the gripper assembly and gripper restraint toward the vertical axis (see figure 46 and figure 47).

Figure 45 Pivoting Gripper Restraint into Position

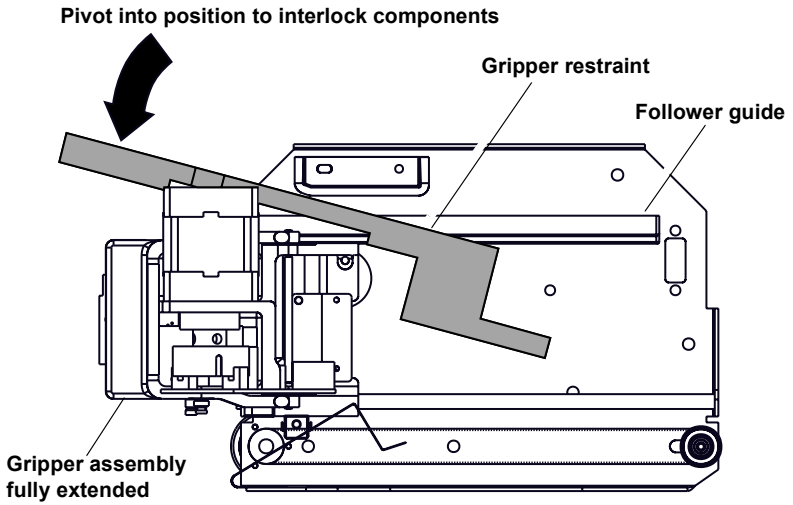


Figure 46 Gripper Restraint in Position

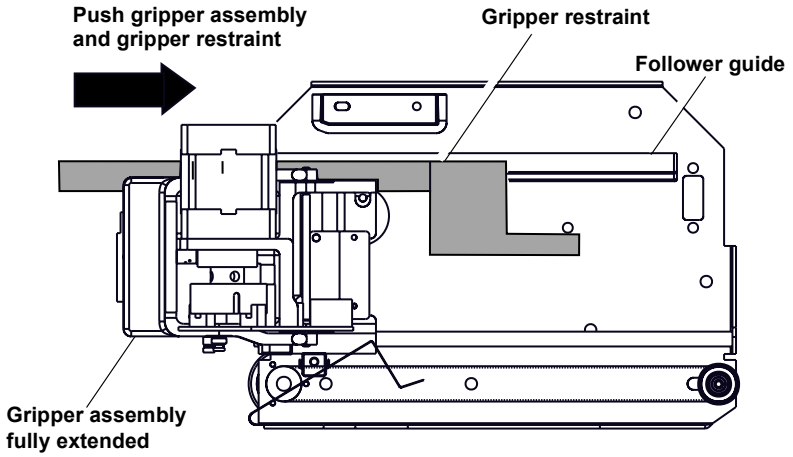
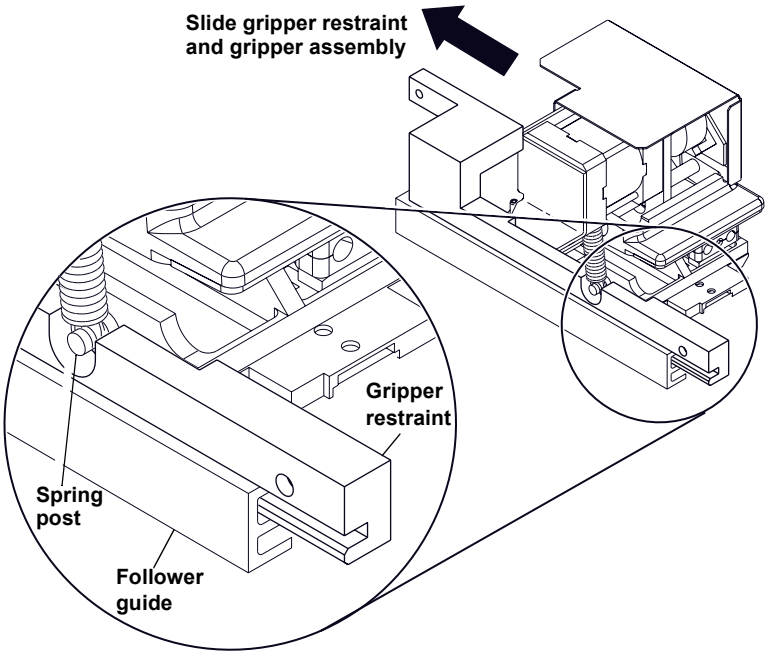
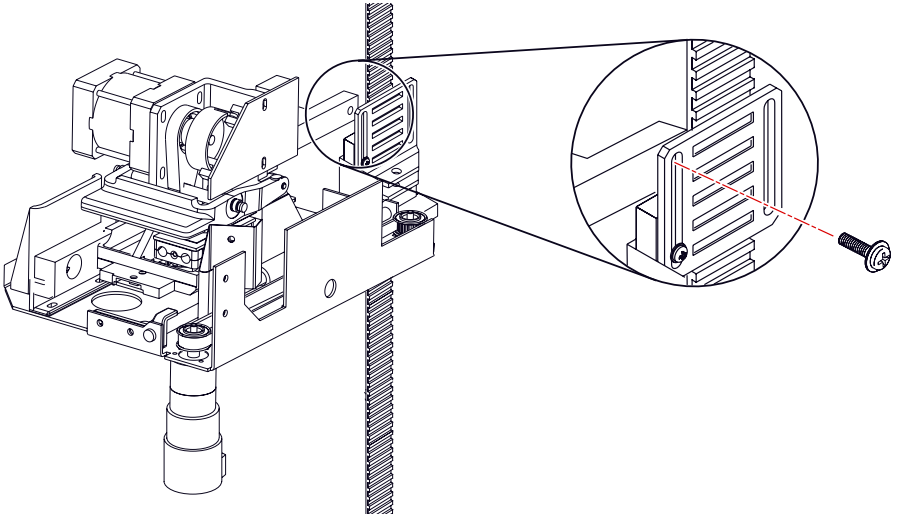


Figure 47 Installing the Gripper Restraint



d Install the screw that secures the gripper restraint to the belt clamp (see figure 48).

Figure 48 Installing the Gripper Restraint Screw



Load Port Shipping Plate

The load port is located in the right front door of the library.

a Attach the cardboard and shipping plate to the load port.

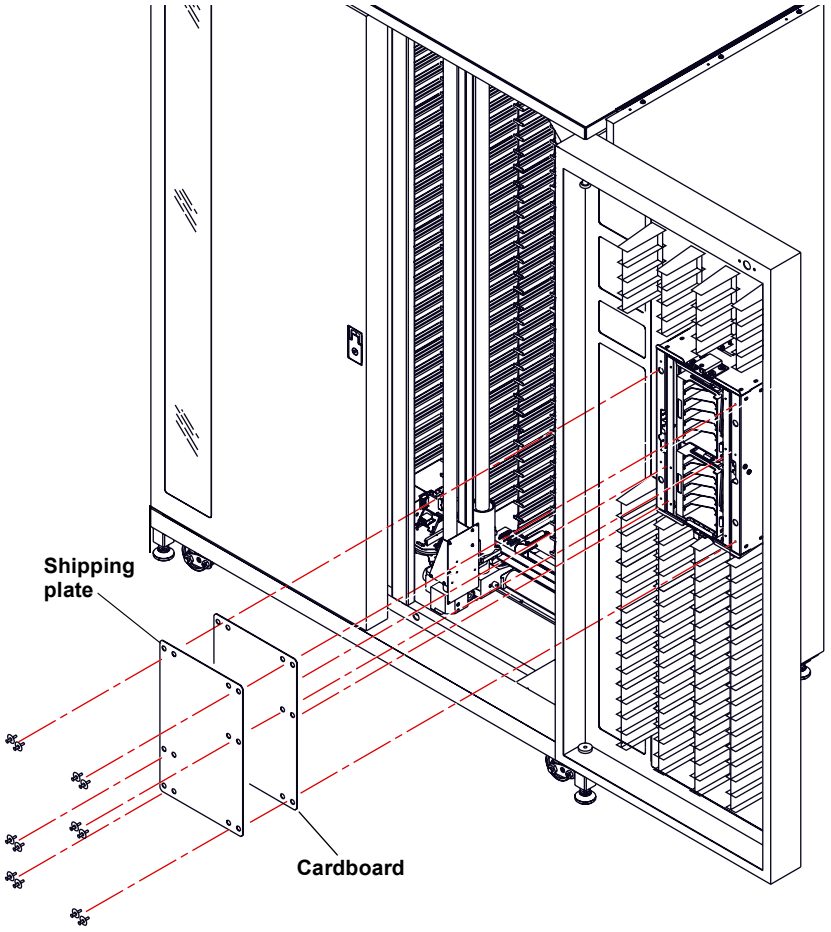
b Insert the bolts and washers that secure the plate to the load port and secure them using the screws provided during the unpacking procedure (see figure 49).

Disconnecting Library Cables

To disconnect library cables:

1. Disconnect SCSI cables and terminators.
2. Disconnect the power cord from the outlet and the power distribution assembly of the library.
3. Pack all cables with other library accessories.

Figure 49 Inserting the Shipping Plate



Crating the Library

Use this section:

- If you need to ship the library to the new site.
- If you need to transport the library by forklift or similar means.

If you are moving the library within a facility, refer to Preparing the Library for Operation on page 98.

To crate the library for a new site:

> **Warning:** The library weighs approximately 1300 pounds (591 kg). Use at least two people to perform any steps that involve lifting or guiding the library. Use safe practices when lifting or guiding the library and handling the ramp.

1. Prepare the shipping pallet for the library as shown in figure 50.
   - **a** Attach the two ramp extensions to the pallet.
   - **b** Place the wooden support bar underneath the ramp extensions.
   - **c** Verify that the left wooden bar is attached to the pallet.
2. Place the library on the pallet
   - **a** Raise the library support feet.
   - **b** With the help of at least one person, roll the library to a position in front of the pallet ramp.
   - **c** Roll the library onto the pallet.
3. Secure the library.
   - **a** Place the shipping bag over the library, and secure it into place.
   - **b** Remove the ramp sections from the pallet and slide them into the center section.
   - **c** Insert the foam block around the bottom of the library and the pallet.
   - **d** Insert and attach the stop blocks underneath the library on the right side.
   - **e** Attach the wooden bar on the right side of the library.
   - **f** Remove the wooden bar on the left side of the library.

g Repeat steps d and e for the left side of the library.

4 Place the accessory kits into the cutouts on the back crate panel.

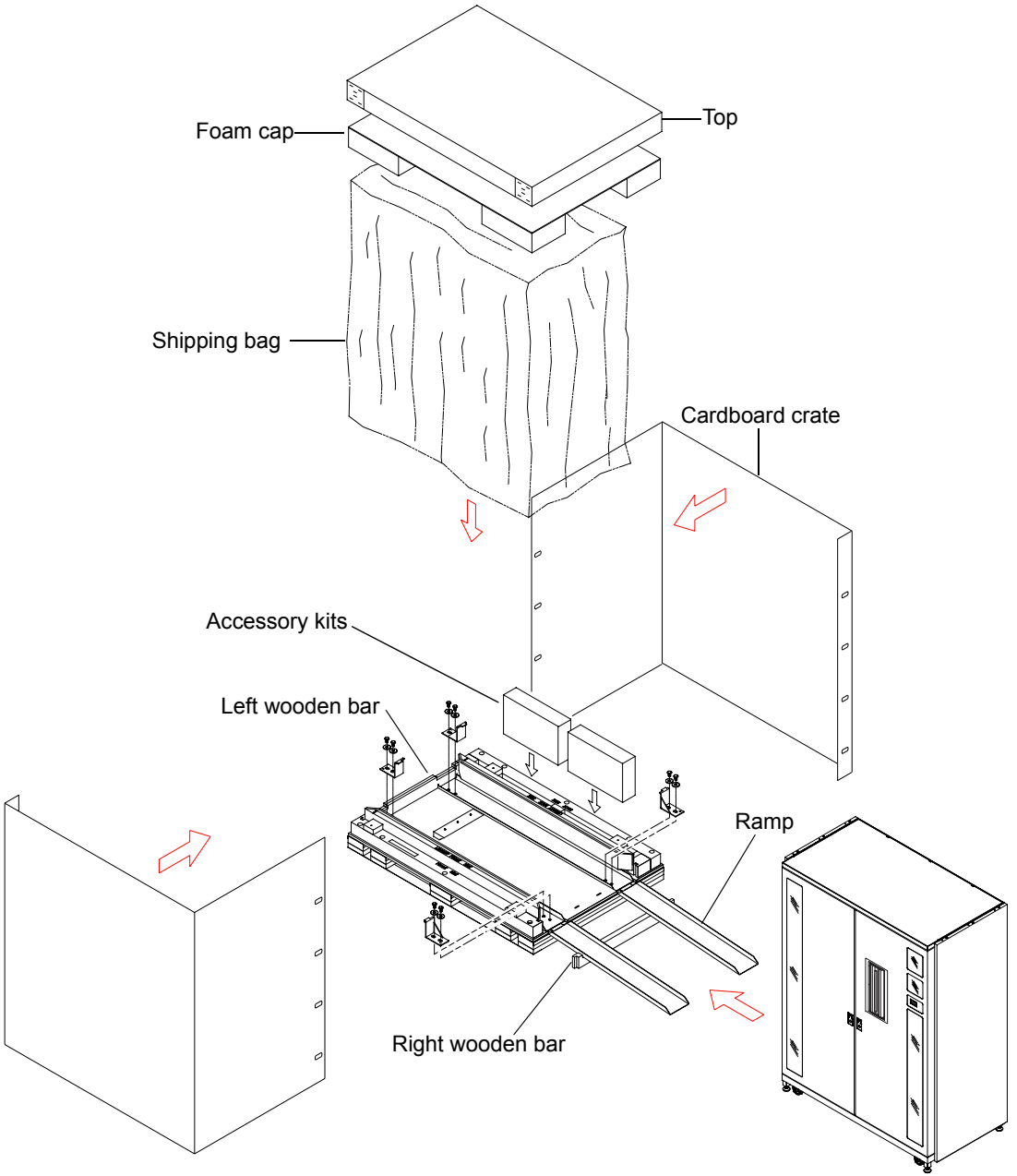
5 Place the foam cap over the library.

6 Wrap the cardboard crate around the library (see figure 50) and fasten it using the plastic restraining clips.

7 Place the top onto the crate.

8 Secure the crate with two steel restraining bands.

Figure 50 Crating the Library



Preparing the Library for Operation

After shipping or moving the library, refer to the *ATL P2000/ P3000/P6000 Pre-Installation Site Survey Instructions* and the *ATL P3000 Series Unpacking Instructions* to:

- Prepare the new installation site
- Receive the library
- Uncrate the library (required in shipping the library)
- Position the library
- Prepare the library for operation

Appendix C

Automatic Drive Cleaning

This appendix is a description of the tape library's automatic drive cleaning feature.

Drive Cleaning Modes

Two modes of drive cleaning support are provided on the Product Name:

- Host-initiated cleaning mode
- Automatic drive cleaning mode

Host-Initiated Cleaning Mode

In host-initiated cleaning mode the *host* is responsible for all cleaning functions such as:

- Detecting when a drive requires cleaning
- Tracking and selecting cleaning cartridges
- Moving a cleaning cartridge to the drive

- Determining when a cleaning cartridge has used all 20 of its available cleaning cycles
- Moving used up cartridges to the load port

Automatic Drive Cleaning Mode

Automatic drive cleaning is disabled by default. In automatic drive cleaning mode the *library* is responsible for all cleaning functions such as:

- Detecting when a drive requires cleaning
- Tracking and selecting cleaning cartridges
- Moving a cleaning cartridge to the drive
- Determining when a cleaning cartridge has used all 20 of its available cleaning cycles
- Moving used up cartridges to the load port

Selection of Cleaning Mode

The cleaning mode is selectable from the:

- Diagnostic software
- GUI
- Mode Select command

The default cleaning mode is host-initiated. A Mode Select command permanently changes the cleaning mode in the library's NVRAM, and is retained if the library power is cycled.

Diagnostic Software

To change automatic cleaning mode from the diagnostic software select **Config**:

- **Enable clean tape** - turns automatic cleaning mode on
- **Disable clean tape** - turns automatic cleaning mode off

GUI

To change automatic cleaning mode from the touch screen GUI, select **Configuration/Auto Clean**:

- **Enable** - turns automatic cleaning mode on
- **Disable** - turns automatic cleaning mode off

Mode Select Command

To change the automatic cleaning mode using the Mode Select command set the Vendor Unique Page (20h) byte 2, bit 1 (AC) to:

- One - enable automatic cleaning
- Zero - disable automatic cleaning

To save the automatic drive cleaning mode setting in NVRAM set the Mode Select command Save Page (SP) bit to one.

When the automatic drive cleaning mode setting is saved in NVRAM, neither a SCSI bus reset or a power cycle of the Product Name will change the mode setting.

Reporting of Cleaning Mode

The current drive cleaning mode can be reported by:

- Diagnostic Software
- Mode Sense command

Diagnostic Software

To display the current drive cleaning mode from diagnostic software select:

- **Config/Report Clean Tape**

The diagnostic screen will display the:

- Current cleaning mode
- Bar code label of each cleaning cartridge

- Number of uses of each cleaning cartridge
- "Home" storage element of each cleaning cartridge
- "Current" storage element of each cleaning cartridge

Mode Sense Command

To report the current drive cleaning mode, use the Mode Sense command and:

- Set the Page Code field to 20h - Vendor Unique Page 20h
- Set Page Control field to 0 - Target to return current values for the page code specified (20h)

Vendor Unique Page 20h, byte 2, bit 1 indicates the current drive cleaning mode:

- One - indicates the automatic drive cleaning feature is enabled
- Zero - indicates the automatic drive cleaning feature is disabled

Cleaning Cartridges

In host-initiated cleaning mode the host tracks all cleaning cartridges and their use.

In automatic cleaning mode the library tracks all cleaning cartridges and their use.

Capacity

Although a maximum of ten cleaning cartridges may be present in the Product Name, four or less are recommended to optimize library performance. If more than ten cleaning cartridges are present in the library at inventory, the library moves the additional cartridges to the load port for manual unloading.

Identification

Cleaning cartridges have unique bar code labels that begin with "CLN," (for example, CLN001).

Storage and Tracking

Each cleaning cartridge is tracked from the time that it is loaded into the library. When a cleaning cartridge is unloaded from the library, the library no longer retains information concerning that cleaning cartridge (bar code). If a new cleaning cartridge with the identical bar code is then imported into the library, it is considered a different cleaning cartridge for all tracking purposes.

Each cleaning cartridge must have a unique bar code. If a cleaning cartridge with a duplicate bar code label is imported, the original cleaning cartridge is moved to the load port for removal from the library.

After a cleaning cartridge is used twenty times it is moved to the load port for removal from the library.

The library adjusts for cleaning cartridges that are manually moved within the library while the library is off-line. When an inventory is performed (after power-up or a transition from off-line to on-line), all cartridges are scanned and identified. Each cleaning cartridge is checked for a previous record of location and use. Cartridges that remain in previous locations retain their previous usage information.

If previous records do not show a cleaning cartridge with the same bar code at a given location, the library checks if a cleaning cartridge with the same bar code label was previously located at another location (and is not currently at that other location). If so, the library assumes that it is the same cleaning cartridge that was manually moved and retains all cleaning cartridge information. If the library cannot locate a previous record for the cleaning cartridge, it assumes the cleaning cartridge is new and creates a new record for it.

Monitoring Usage

The library maintains a usage history for each cleaning cartridge within the library. The usage history is a count of the number of times the cleaning cartridge was used to clean a drive.

When a cleaning cartridge has been identified and imported into the library, the usage history for that cleaning cartridge is initialized and set to zero (0).

Each time a cleaning cartridge is removed from a drive by the robotics, the "use count" for that cleaning cartridge is incremented by one. When the "use count" reaches the maximum allowable number of 20, (in automatic cleaning mode) the cleaning cartridge is moved to the load port.

A cleaning cartridge that is defective will have its number of uses set to 20, and the library will move it to the load port.

When a cleaning cartridge has been exported from the library, all record of that cleaning cartridge is deleted.

Element Status Information

The presence of cleaning cartridges results in the reporting of additional status information in response to host-initiated Read Element Status commands. This additional information is only present in automatic cleaning mode and is suppressed in host-initiated cleaning mode. The additional information may consist of the Except bit being set and the Additional Sense Code and Additional Sense Code Qualifier values being filled-in as well as possible changes to the Access bit (described below).

A storage element that contains a cleaning cartridge that *is not* used up has the Access bit set to 1, the Except bit set to 1, and the status set to Cleaning Cartridge Installed (ASC=30 ASCQ=03).

A storage element that contains a cleaning cartridge that *is* used up has the Access bit set to 1, the Except bit set to 1, and the status set to Operator Medium Removal Request (ASC=5A ASCQ=01).

A storage element that is empty but is the home location for a cleaning cartridge that is currently being used in a cleaning operation has the Access bit set to 0, the Except bit set to 1 and the status set to Cleaning Cartridge Installed (ASC=30 ASCQ=03).

A data transfer element that is currently being cleaned as part of an automatic cleaning operation has the Access bit set to 0, the Except bit set to 1, and the status set to Cleaning Cartridge Installed (ASC=30 ASCQ=03).

Monitoring the Drives

In host-initiated cleaning mode, the host is responsible for monitoring the drives to determine when a drive needs to be cleaned.

In automatic cleaning mode, the library monitors the drives to determine when a drive needs to be cleaned.

Each drive "CLEANING_ REQUIRED" flag is checked at the completion of an inventory.

A specific drive's "CLEANING_REQUIRED" flag is checked at the completion of a Move Medium command involving that drive.

Media Movement to the Drive

When a cleaning cartridge is selected, the library moves it to the drive requiring cleaning. If the movement operation is not completed due to an unrecoverable error, the drive cleaning operation does not proceed, and the library returns the cleaning cartridge to its original storage element. If an unrecoverable error occurs when moving a cleaning cartridge that prevents a subsequent host initiated command from completing, a check condition is set in the returned status byte and a subsequent Request Sense returns the appropriate error (such as Transfer Element Full). Since the drive still indicates that it needs cleaning, a new drive cleaning operation is attempted.

If a library-initiated cleaning cartridge movement is in progress and the host issues a command that requires the use of the transport, the host-initiated command is held until the library-initiated movement is completed. If an error occurs with the library-initiated movement, the host initiated command is processed following the error. If a subsequent error occurs, a check condition will be set in the returned status byte and a subsequent Request Sense will return the appropriate error code.

If the host attempts to move a cartridge to a cleaning cartridge's home location while the cleaning cartridge is being used in a cleaning operation, the Move Medium command fails, a check condition is set in the returned status byte and a subsequent Request Sense returns a Cleaning Cartridge Installed status (SK=5 ASC=30 ASCQ=03). The cleaning cartridge's original location is not available until either the library determines that the cleaning cartridge's location is empty (with an Initialize Element Status) or the library moves the cleaning cartridge to a different storage element.

Supervising the Drive Cleaning Operation

When a cleaning cartridge is placed into a drive, the drive loads the cartridge and initiates the cleaning operation. The library is still available to service host-initiated commands during the drive cleaning operation.

If the host attempts to move a cartridge into the drive that is being cleaned, a check condition is set in the returned status byte and a subsequent Request Sense returns a Cleaning Cartridge Installed status (SK=5 ASC=30 ASCQ=03).

Upon completion of the cleaning operation, the drive rewinds and unloads the cleaning cartridge.

> **Note:** Unsuccessful drive cleaning operations may not rewind and unload the cartridge, especially if it is a data cartridge incorrectly labeled as a cleaning cartridge.

If a drive does not complete the cleaning operation and unload the cleaning cartridge within five minutes, the library classifies the cartridge as defective.

The library monitors the drive "HANDLE_OK" flag to determine when the cleaning cartridge has been unloaded.

Media Movement from the Drive

Whether a cleaning operation is successful or unsuccessful, the library increments the cleaning cartridge's "use count" and attempts to move the cleaning cartridge back to its home location.

If an export or movement operation cannot be completed due to unrecoverable errors, the library attempts to return the cleaning cartridge to its original storage element to clear the transport element. If an unrecoverable error occurs during the movement of a cleaning cartridge that prevents a subsequent host-initiated command from completing, a check condition is set in the returned status byte and a subsequent Request Sense returns the appropriate error code.

Unloading Cleaning Cartridges

When each cleaning operation is completed, the library moves all cleaning cartridges that have been marked as "used up" to the load port.

Appendix D

Laser Regulations

This appendix displays regulations for the Class II laser bar code scanner used by the gripper assembly in the P3000. These regulations are defined in the following figures:

- Label product conformation
- Laser light warning labels
- Exposure warning label

Laser Regulation Labels

Product Conformation Label

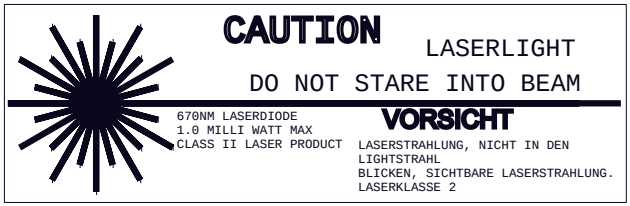
The product conformation label is on the back panel of the library (see figure 51).

Figure 51 Product Conformation Label

Laser Warning Label

The laser light warning label is near the laser (see figure 52).

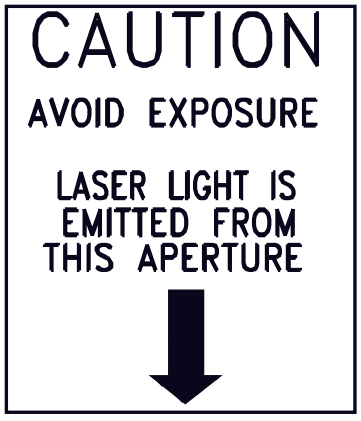
Figure 52 Laser Light Warning Label

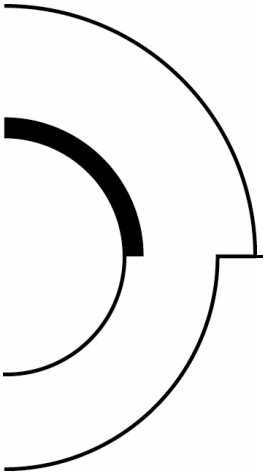


Exposure Warning Label

The exposure warning label is on the laser (see figure 53).

Figure 53 Exposure Warning Label





Appendix E

Regulatory Statements

FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. 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.

Any changes or modifications made to this equipment may void the user's authority to operate this equipment.

Operation of this equipment in a residential area may cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

1 This device may not cause harmful interference, and

2 This device must accept any interference received, including interference that may cause undesired operation.

Industry Canada (Digital Apparatus)

Referemce: *Interference-Causing Equipment Standard*, ICES-003 Issue 2

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Reglément sur le matériel brouilleur du Canada.

CISPR-22 WARNING!

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

ACHTUNG!

Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmassnahmen verantwortlich ist.

ATTENTION!

Ceci est un produit de classe A. Dans un environment domestique, ce produit peut causer des interférences radioélectriques. Il appartient alors à l'utilisateur de prendre les mesures appropriées.

Notice for USA and CANADA Only

If shipped to USA, use the UL LISTED power cord specified below for 100-120 V operation. If shipped to Canada, use the CSA CERTIFIED power cord specified below for 100-120V operation.

Plug Cap	Parallel blade with ground pin (NEMA 5-15P configuration)
Cord	Type: SJT, three 16 AWG (1.5 mm^2) or 18 AWG (1.0 mm^2) wires

LengthMaximum 15 feet (4.5m)

RatingMinimum 10 A, 125 V

ATTENTION LIRE LA REMARQUE DANS LE MODE D'EMPLOI.

REMARQUE CETTE REMARQUE NE CONCERNE QUE LES ÉTATS-UNIS ET LE CANADA.

En cas d'envoi aux États-Unis, utiliser le cordon d'alimentation CERTIFIÉ UL et convenant pour 100-120 V.

En cas d'envoi au Canada, utiliser le cordon d'alimentation CERTIFIÉ CSA et convenant pour 100-120 V.

Fiche	Broches parallèles avec une broche de mise à la terre (configuration NEMA 5-15P)
Cordon	Type: SJT, trifilaire 16 AWG (1.5 mm^2) ou 18 AWG (1.0 mm^2)

LongeurMaximum 15 pieds (4.5m)

CapacitéMinimum 10 A, 125 V

Laser Statement

Class 1 Laser Product

CAUTION: With all panels and enclosures in place, this product is rated as a Class I laser product. The bar code scanner inside this product, however, is a Class II laser. Avoid exposure to the laser light emitted from the bar code scanner. Do not stare into the beam.

CAUTION: Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous exposure.

Laser Klasse 1

VORSICHT: Dieses Produkt Enthdlt Einen Laser Der Kategorie II. Laserstrahlen - Der Strichcode-scanner Gibt Laserstrahlen aus. VERMEIDEN SIE jeden Blickkontakt und direkten kvrperlichen Kontakt mit diesen Strahlen.

VORSICHT: Ein nicht ordnungsgemd_er (siehe hier enthaltene Anweisungen) Einsatz bzw. Dnderungen der Betriebsleistung kvnnen einen gesundheitsgefdhrdenden Kontakt zur Folge haben.

Appareil à Laser de Classe 1

ATTENTION: Ce produit émet de la classe laser II. Rayonnement laser - NE PAS fixer des yeux le rayon. Éviter les expositions - Le rayonnement laser est émis à partir du lecteur optique de code barre.

ATTENTION: L'utilisation de contrôles ou d'ajustements de performance des procédures autres que ceux indiqués ici peut entraîner une exposition dangereuse.

Producto Láser de Clase 1

¡ATENCIÓN! Este producto contiene laser de clase II. Luz de laser - NO mire el rayo. Evite el contacto con la luz: la luz de laser se emite desde el explorador de código de barras.

¡ATENCIÓN! El uso de los controles o ajustes para realizar procedimientos que no son especificados puede provocar una situación peligrosa.

Luokan 1 Laserlaite

ATTENZIONE: Questo prodotto emette una luce laser di Classe II. NON guardare il facsio di luce ed evitare di esporsi alla fonte del laser. Il fascio di luce laser h emesso dal dispositivo di scansione del codice a barre.

ATTENZIONE: L'uso di comandi o regolazioni per eseguire le procedure che non siano quelli specificati in questa documentazione pur causare rischi all 'incolumit' delle persone.

Battery Statement

CAUTION

This product contains a Lithium battery. The Dallas Semiconductor DS12B887 on the motherboard contains a Lithium battery. Lithium may be considered a hazardous material. Dispose of this battery in accordance with local, state, and federal laws.

LET OP

Dit product bevat een lithiumbatterij. De DS12B887-chip van Dallas Semiconductor op het moederbord bevat een lithiumbatterij. Lithium kan als gevaarlijk materiaal worden beschouwd. Werp de batterij weg in overeenstemming met de plaatselijke en landelijke milieuwetgeving.

VAROITUS

Tässä tuotteessa on litiumparisto. Emolevyllä oleva Dallas Semiconductor DS12B887 sisältää litiumpariston. Litium saattaa olla luokiteltu vaaralliseksi aineeksi. Hävitä tämä paristo paikallisten lakien ja määräysten mukaisesti.

ATTENTION

Ce produit contient une batterie au lithium. Le composant Dallas DS12B887 de la carte mère contient une batterie au lithium. Le lithium peut être considéré comme un produit dangereux. Rejetez cette batterie selon les règlements locaux, régionaux ou fédéraux.

ACHTUNG

Dieses Produkt enthält eine Lithium-Batterie. Der Dallas Halbleiter DS12B887 auf der Hauptplatine enthält eine Lithium-Batterie. Lithium gilt als speziell zu entsorgender Sondermüll. Bei der Entsorgung dieser Batterie müssen die entsprechenden lokalen, länder- und bundesweiten Gesetze und Regelungen betreffend Sammel- und Rückgabestellen beachtet werden.

Attenzione

Questo prodotto contiene una batteria al litio. Il modulo Dallas Semiconductor DS12B887 contiene una batteria al litio sulla scheda madre. Il litio può essere considerato un materiale pericoloso. Utilizzare questo tipo di batterie in accordo con le normative vigenti.

PRECAUCIÓN

Este producto contiene una batería de litio. El modelo Dallas Semiconductor DS12B887 de la placa base contiene una batería de litio. El litio puede ser considerado un material peligroso. Deseche la batería conforme a la normativa vigente de aplicación.

VARNING!

Denna produkt innehåller ett litiumbatteri. Dallas Semiconductor DS12B887 på moderkortet innehåller ett litiumbatteri. Litium kan betraktas som ett miljöfarligt ämne. När batteriet förbrukats, ska de lagar som gäller för miljöfarligt avfall respekteras.

Glossary

A

Antistatic mat A mat made of antistatic material which includes a cabled connection to ground at a wall receptacle.

ASC The Additional Sense Code is part of the SCSI-2 specification. The additional sense code (ASC) field indicates further information related to the error or exception condition reported in the sense key field.

ASCQ Additional Sense Code Qualifier is part of the SCSI-2 specification. The additional sense code qualifier (ASCQ) indicates detailed information related to the additional sense code.

ATL Aside from being the company moniker, it stands for Automated Tape Library.

AutoClean A user-defined mode made on the touch screen GUI by which the library automatically performs drive cleaning tasks.

B

Bit The basic unit of data in a bimary numbering system (binary digit), represented by a 0 or a 1. Eight bits equals one byte.

Byte The basic unit of computer memory which is large enough to hold one character.

C

Calibrate A process used by the library robotics to determine the exact position of storage, data transfer, and import/export elements.

Check Condition status Blocks of data are stored on the tape medium along with additional information that the library controller uses to manage storage and retrieval. The format of the additional information is unique and is hidden from the initiator during normal read or write operations. This additional information is often used to identify the physical location of the blocks of data and the address of the logical block, and to provide protection against the loss of the user data.

The address of the first logical block is zero. The address of the last logical block is [n-1], where [n] is the number of logical blocks available on the medium. A Read Capacity command may be issued to determine the value of [n-1]. If a command is issued that requests access to a logical block not within the capacity of the medium, the command is terminated with CHECK CONDITION.

CISPR 22 This standard describes the emissions testing methods and test limits for information technology equipment, such as computers, office machines, or telecommunications equipment connected to low - voltage power main networks (<600V). It does not apply to equipment whose primary function is radio transmission or reception as defined by the International Telecommunications Union (ITU) Radio Regulations.

The object of the standard is to establish uniform requirements for the conducted and radiated disturbance levels of the equipment covered by the standard. Disturbance limits are established for Class A and Class B equipment, and measurement methods, operating conditions, and intepretation of results are addressed.

Class A digital device Class A equipment is intended for Commercial installation.

Class I laser product Class 1 lasers are products where the power of the laser beam produced (the accessible emission) is always below the Maximum Permissible Exposure value. Therefore, for Class 1 lasers the output power is below the level at which it is believed eye damage will occur. Exposure to the beam of a Class 1

laser will not result in eye injury. Class 1 lasers may therefore be considered eye safe.

Class II laser product Class 2 lasers are limited to a maximum output power of 1 mW. A person receiving an eye exposure from a Class 2 laser, either accidentally or as a result of someone else's deliberate action (misuse) will be protected from injury by their natural blink reflex. This is a natural involuntary response which causes the individual to blink and avert their head thereby terminating the eye exposure.

D

DLT Digital Linear Tape technology is owned, developed, and manufactured by Quantum Corporation. DLT tape drives use half-inch wide tape. DLT 8000 tape drives record on 208 tracks (uncompressed).

E

Elements SCSI designation for any device or bin in the library that can hold a cartridge. SCSI elements include storage bins, tape drives, load port bins, and the gripper.

EMI Electro-Magnetic Interference refers to unwanted electrical noise present on a power line. This noise may "leak" from the power lines and affect equipment that isn't even connected to the power line. Such "leakage" is called a magnetic field. Magnetic fields are formed when unwanted noise voltages give rise to noise currents. Such noise signals may adversely affect electronic equipment and cause intermittent data problems.

ESD Electro-Static Discharge

G

Gripper A mechanical component of the extension axis assembly (robotics) which grips and holds a tape cartridge in transit

GUI An ATL touch screen Graphical User Interface is made up of bit-mapped graphics displays resembling tabs and buttons, designed to act as the library's main console for receiving information and inputting commands.

H

Host The device or devices to which the library is connected.

HVD High Voltage Differential or HVD (also called Differential SCSI). The benefit of using HVD cabling is that it works well in noisy areas and can reach up to 25 meters in distance. Quantum DLT8000 and SDLT tape drives can be HVD or LVD devices.

I

IEC The International Electrotechnical Commission is based in Geneva, Switzerland.

L

Load port The revolving assembly on a front door of ATL enterprise libraries that incoporates a revolving drum and tape cartidge bins (stationary or removeable) for loading and unloading tape cartridges.

LTO Linear Tape-Open is a tape drive specification backed by IBM, Hewlett-Packard, and Seagate.

LVD Low Voltage Differential or LVD is the newest type of SCSI cabling, and LVD SCSI specifications can reach distances up to 12 meters. LVD SCSI cabling requires "Twist and Flat" ribbon cable and an LVD/SE terminator or a "Twist and Flat" ribbon cable with built-in LVD termination. All IBM LTO tape drives are LVD devices. Quantum DLT8000 and SDLT tape drives can be LVD or HVD devices.

M

Mixed media This term refers to the use of different tape drive types within one tape library. ATL mixed media libraries may use DLT and LTO tape drives simultaneously (LVD), as well as DLT and SDLT tape drives HVD or LVD).

Mixed media gripper A specialized gripper assembly which will accept DLT, SDLT or LTO tape cartridges.

MSBF Mean Swaps Before Failure

MTBF Mean Time Between Failures

MTTR Mean Time To Repair

Multi-unit Refers to linking up to five P2000 and/or P3000 tape libraries together using ATL's Pass Through Mechanism.

N

NEMA National Electrical Manufacturers Association

Network interface Card (NIC) A NIC is a device that handles communication between a device and other devices on a network.

NVRAM Non-Volatile Random Access Memory is a type of memory that retains its contents when power is turned off. One type of NVRAM is SRAM that is made non-volatile by connecting it to a constant power source such as a battery. Another type of NVRAM uses EEPROM chips to save its contents when power is turned off. In this case, NVRAM is composed of a combination of SRAM and EEPROM chips.

P

PCI The PCI bus typically runs at speeds of 33 MHZ or 66 MHZ and is usually 32 bits wide. This means that it passes 32 bits of data simultaneously as if down 32 separate wires. Some of the most recent computers include "wider" 64-bit PCI buses, and already certain very high end video capture cards offer improved performance if connected to a 64-bit PCI bus.

Prism Storage Architecture™ Accommodates a wide range of needs from large data centers to work groups to remote sites and is based on the PCI bus. Scalable Prism options provide "plug and play" serviceability, eliminating expensive upgrades and library obsolescence. It improves manageability with library partitioning, SNMP integration, e-mail notification, and Web-based management features.

R

RAID Redundant Array of Independent Disks is a technology through which several physical storage disks are grouped into an array that appears to an operating system as one or more physical devices.

Reports Refers to the report options on the touch screen GUI's Service screen.

Robotics As used in the context of ATL automated tape libraries; the X-axis, Y-axis, and Z-axis mechanical assemblies inside the library used to move tape cartridges.

RS-232C Short for Recommended Standard-232C, a standard interface approved by the Electronic Industries Association (EIA) for connecting serial devices. This standard is for ASYNCHRO-NOUS TRANSFER between computer equipment and accessories.

Data is transmitted bit by bit in a serial fashion. The RS-232 standard defines the function and use of all 25 pins of a DB-25 type connector.

S

SCSI Small Computer System Interface. An American National Standards Instsitute (ANSI) communications standard for attaching peripheral equipment to computers.

SCSI ID A unique address (0 to 15) assigned to each device on a SCSI bus.

SCSI-2 A second generation SCSI interface which includes command sets for magnetic and optical disks, tapes, printers, processors, CD-ROMs, scanners, medium changers, and communication devices.

SDLT Super Digital Linear Tape is a Quantum tape drive and tape cartridge specification offered in three ranges of capacity and transfer rates for workgroup, mid-range, and enterprise needs.

T

Take-up leader The ring at the beginning of a tape in a cartridge.

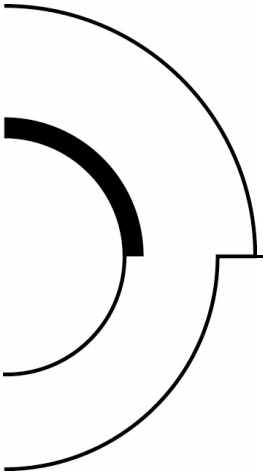
Tape drive controllers A device that controls the transfer of data from a host to a tape drive and vice versa.

Terabyte A unit of measure for digital data equal to approximately 1,000 gigabytes, or 1,099,511,627,776 bytes!

Terminator Special electrical resistors (terminators) are installed in the SCSI devices at each end of the SCSI bus and are not installed in other devices on the bus. The SCSI bus must be properly terminated at both ends so that commands and data can be transmitted to and from all devices on the bus.

W

WebAdmin ™ is the first software package allowing remote library administration using a Java™-enabled browser. WebAdmin provides system administrators the freedom to access their tape libraries from within an intranet, or anywhere on the World Wide Web.



Index

D

E

G

H

I

L

M

N

O

P

R

S

T

U

W