Sun™ StorEdge™ L1000 User's Guide

THE NETWORK IS THE COMPUTER™

Sun Microsystems Computer Company
A Sun Microsystems, Inc. Business
901 San Antonio Road
Palo Alto, CA 94303-4900 USA
1 650 960-1300 fax 1 650 969-9131

Part No. 805-4823-10
Revision A, May 1998

Send comments about this document to: smcc-docs@sun.com

Regulatory Compliance Statements

Your Sun product is marked to indicate its compliance class:

- Federal Communications Commission (FCC) — USA
- Department of Communications (DOC) — Canada
- Voluntary Control Council for Interference (VCCI) — Japan

Please read the appropriate section that corresponds to the marking on your Sun product before attempting to install the product.

FCC Class A Notice

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

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: 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. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Shielded Cables: Connections between the workstation and peripherals must be made using shielded cables in order to maintain compliance with FCC radio frequency emission limits. Networking connections can be made using unshielded twisted-pair (UTP) cables.

Modifications: Any modifications made to this device that are not approved by Sun Microsystems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

DOC Class A Notice - Avis DOC, Classe A

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 Règlement sur le matériel brouilleur du Canada.

VCCI 基準について

第一種VCCI基準について

第一種VCCIの表示があるワークステーションおよびオプション製品は、第一種情報装置です。これらの製品には、下記の項目が該当します。

この装置は、第一種情報装置(商工業地域において使用されるべき情報装置)で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会(VCCI)基準に適合しております。したがって、本製品を、住宅地域または住宅地域に隣接した地域でご使用になりますと、ラジオ、テレビジョン受信機等に受信障害を与えることがあります。

取り扱い説明書に従って正しくお取り扱いください。

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 CapParallel blade with ground pin (NEMA 5-15P configuration).

CordType: SJT, three 16 AWG (1.5 mm^2) or 18 AWG (1.0 mm^2) wires.

LengthMaximum 15 feet (4.5 m).

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.

FicheBroches paralléus avec une broche de mise à la terre (configuration NEMA 5-15P).

CordonType: SJT, trifilaire 16 AWG (1.5 mm^2) ou 18 AWG (1.0 mm^2).

LongueurMaximum 15 pieds (4.5 m).

CapacitéMinimum 10 A, 125 V.

Zu Ihrer Sicherheit

Vorsicht

Um Feuergefahr und die Gefahr eines elektrischen Schlages zu vermeiden. Darf das Gerät weder Regen noch Feuchtigkeit ausgesetzt werden.

Um einen elektrischen Schlag zu vormeiden, darf das Gehäuse nicht geöffnet werden. Überlassen Sie Wartungsarbeiten stets nur einem Fachmann.

Achtung

Die Verwendung von Brillen, Kontaktlinsen usw.vergrössert die Gefahr.

Zur besonderen Beachtung

Zur Sicherheit

Sollte ein fester Gegenstand oder Flüssigkeit in das Geräteinnere gelangen, trennen Sie das Gerät von der Wandsteckdose ab und lassen Sie es von einem Fachmann überprufen, bevor Sie es weiter verwenden.

Zum Abziehen des Kabels fassen Sie stets am Stecker und niemals am Kabel selbst an.

Zur Aufstellung

Stellen Sie das Gerät weder auf einer weichen Unterlage (z. B. Decke, Teppich) noch in der Nahe von Vorhangen, Tapeten usw, auf, da hierdurch die Ventilationsöffnungen blockiert werden können.

Zur Reiningung

Verwenden Sie zur Reiningung des Gehäuses, des Bedienungspultes und der Bedienungselemente ein trockenes, weiches Tuch oder ein weiches, leicht mit mildem Haushaltsreiniger angefeuchtetes Tuch. Lösemittel wie Alkohol oder Benzin dürfen nicht verwendet werden, da diese die Gehäuseoberfläche ungreifen.

LITHIUM BATTERY STATEMENT

CAUTION - The tape library contains a lithium battery. The Dallas Semiconductor DS1225AB-200 on the robotic controller board contains a lithium battery. Lithium is a hazardous material. Dispose of this battery in accordance with local, state, and federal laws.

FORSIGTIG - Båndbiblioteket indeholder et lithiumbatteri. Dallas halvleder DS1225AB-200 på robotkontroltavlen indeholder et lithiumbatteri. Lithium kan anses for at være et sundhedsfarligt materiale. Kassér dette batteri i overensstemmelse med lokale og nationale lovbestemmelser.

HUOMAUTUS - Nauhakirjastossa on litiumparisto. Robottiohjainkortin Dallas DS1225AB-200-puolijohteessa on litiumparisto. Litium voidaan luokitella vaaralliseksi aineeksi. Pariston hävittämisessä on noudatettava viranomaisten antamia ohjeita ja määräyksiä.

ATTENTION - La bibliothèque de bande contient une pile au lithium. Le Dallas Semiconductor DS1225AB-200 sur la carte Robotic Contoller contient une pile au lithium. Le lithium peut est matériel dangereux. Jeter cette pile conformément aux lois locales, d'état et fédérales.

ACHTUNG! - Die Bandbibliothek enthält eine Lithiumbatterie. Der Halbleiter Dallas DS1225AB-200 auf dem Roboter-Controller enthält eine Lithiumbatterie. Lithium gilt als Schadstoff. Bei der Entsorgung dieser Batterie alle entsprechenden kommunalen, staatlichen und bundesweiten Vorschriften beachten!

ATTENZIONE - La libreria a nastro magnetico contiene una batteria al litio. Il semiconduttore Dallas DS1225AB-200 sulla scheda Controller Robotic contiene una batteria al litio. Il litio può essere considerato un materiale pericoloso. Eliminare queste batterie in conformità alle normative locali e statali vigenti.

FORSIKTIG - Kassettbiblioteket inneholder et litiumbatteri. Enheten Dallas Semiconductor DS1225AB-200 på robotkontrollkortet inneholder et litiumbatteri. Litium kan anses som et farlig materiale. Batteriet skal kastes i henhold til lokal og nasjonal lovgivning.

PRECAUCIÓN - La biblioteca de cintas contiene una pila de litio. El semiconductor Dallas DS1225AB-200 en el tablero controlador robotic contiene una pila de litio. El litio es un material peligroso. Deseche esta pila de acuerdo con las leyes municipales, estatales y federales.

VARNING! - Magnetbandsbiblioteket innehåller ett litiumbatteri. Dallas halvledare DS1225AB-200 på robotstyrkortet innehåller ett litiumbatteri. Litium kan anses vara ett farligt material. Kassera detta batteri i enlighet med lokala och statliga lagar och förordningar.

Contents

Figures

Tables

Preface

The *Sun StorEdge L1000 User's Guide* provides operating instructions and basic troubleshooting information for the Sun™ StorEdge™ L1000 tape library system.

How This Book Is Organized

This user's guide is written for the operator and users of the Sun StorEdge L1000 tape library. The operator is the system administrator or other individual responsible for configuring, troubleshooting, and maintaining the library. A user is a computer operator who archives files using the StorEdge L1000.

- **Chapter 1, "Library Description,"** gives an overview of the StorEdge L1000 library components and theory of operation.
- **Chapter 2, "Installing the Library,"** describes facility requirements for the library as well as installation procedures for the stand-alone and rackmount units.
- **Chapter 3, "Basic Operations,"** provides procedures for:
  - Turning the library on and off
  - Inserting and removing tape cartridges
  - Manually unloading a tape drive
  - Obtaining information from unsecured areas of the control panel
- **Chapter 4, "Operator Commands,"** describes the commands and operations available from the Operator screen of the control panel, including:
  - Selecting SCSI IDs
  - Configuring library options
  - Calibrating the library
  - Performing an inventory
  - Moving tape cartridges

- **Chapter 5, “Service Commands,”** describes the commands and operations available from the Service screen of the control panel, including:
  - Generating reports
  - Testing the library
  - Initializing nonvolatile memory
  - Changing control panel passwords
- **Chapter 6, “Operator Troubleshooting,”** provides solutions for typical library operating problems.
- **Appendix A, “Specifications,”** gives physical, performance, and environmental characteristics of the StorEdge L1000 library.
- **Appendix B, “Relocating the Library,”** describes procedures for safely shipping, moving, and unpacking the library.
- **Glossary** provides a list of words and phrases found in this book and their definitions.

Typographic Conventions

TABLE P-1 Typographic Conventions

Typeface or Symbol	Meaning	Examples
`AaBbCc123`	The names of commands, files, and directories; on-screen computer output.	Edit your `.login` file. Use `ls -a` to list all files. `% You have mail.`
`AaBbCc123`	What you type, when contrasted with on-screen computer output.	`% su` `Password:`
AaBbCc123	Book titles, new words or terms, words to be emphasized. Command-line variable; replace with a real name or value.	Read Chapter 6 in the *User's Guide*. These are called *class* options. You *must* be `root` to do this. To delete a file, type `rm` *filename*.

Shell Prompts

TABLE P-2 Shell Prompts

Shell	Prompt
C shell	*machine_name*%
C shell superuser	*machine_name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#

Related Documentation

TABLE P-3 Related Documentation

Application	Title	Part Number
Unpacking	*Sun StorEdge L1000 Unpacking Guide*	805-4822
Service, Configuration, and Troubleshooting	*Sun StorEdge L1000 Service Manual*	805-4824

Sun Documentation on the Web

The `docs.sun.com` web site enables you to access Sun technical documentation on the World Wide Web. You can browse the `docs.sun.com` archive or search for a specific book title or subject at `http://docs.sun.com`.

Sun Welcomes Your Comments

We are interested in improving our documentation and welcome your comments and suggestions. You can email your comments to us at `smcc-docs@sun.com`. Please include the part number of your document in the subject line of your email.

CHAPTER **1**

Library Description

The Sun StorEdge L1000 is an automated digital linear tape (DLT™) library system consisting of up to four DLT7000 tape drives and 30 tape cartridge bins. The maximum storage capacity of the library is 1050 gigabytes (up to 2100 gigabytes compressed), based on 30 cartridges at 35 gigabytes each (up to 70 gigabytes compressed).

The StorEdge L1000 library is shipped in either a stand-alone (FIGURE 1-1) or rackmount configuration (FIGURE 1-2). The stand-alone model is set on casters. The rackmount unit includes a slide tray assembly for installation in a customer-supplied rack.

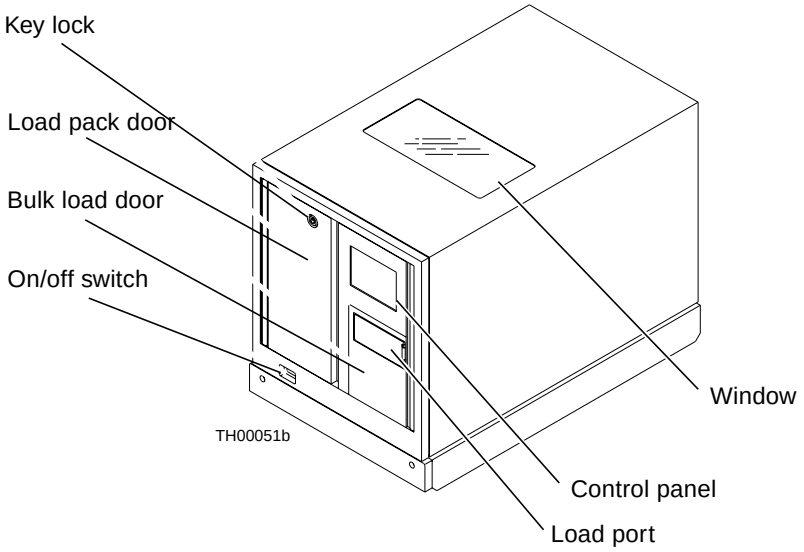


FIGURE 1-1 Library Front View—Stand-Alone Model

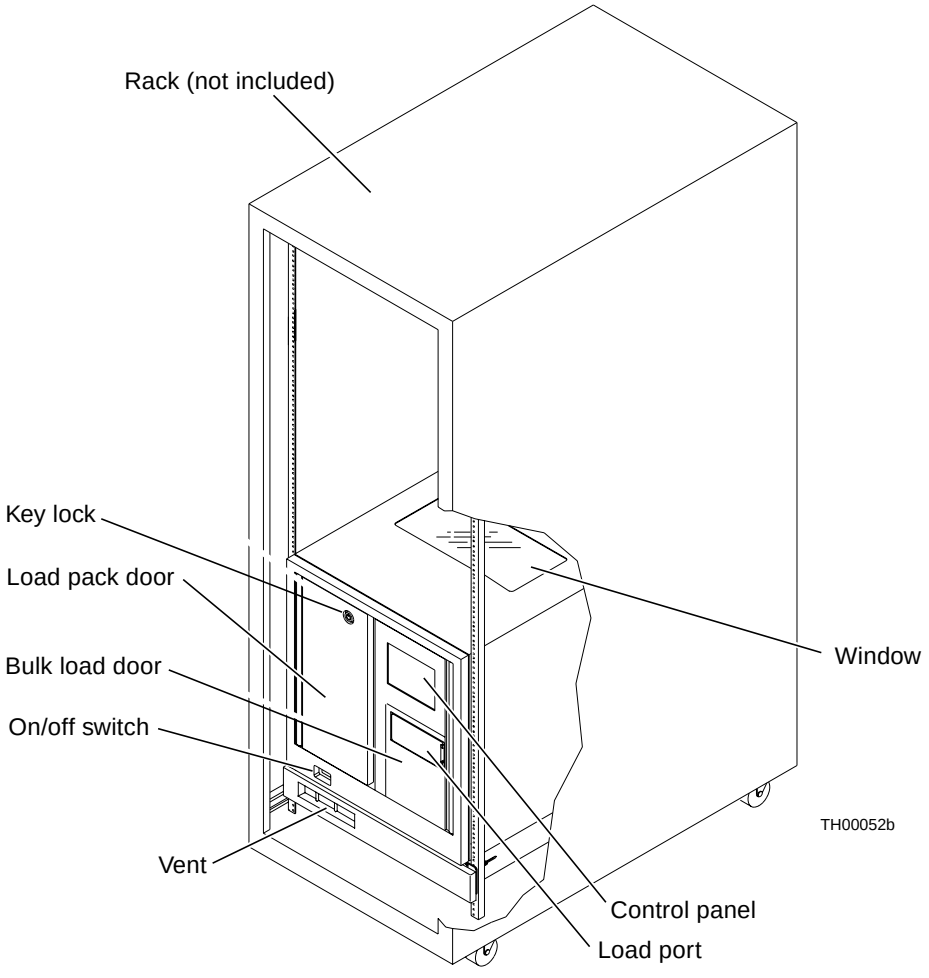


FIGURE 1-2 Library Front View—Rackmount Model (Shown in Rack)

Configuration Options

As shown in FIGURE 1-1 and FIGURE 1-2, the StorEdge L1000 library is available in standalone and rackmount configurations. Other options for the library include:

- *The number of DLT tape drives.* The library can hold one to four DLT7000 tape drives.
- *Multiple SCSI bus capability.* The library can support one to five host computers, each on a separate SCSI bus. The library is controlled by these host computers via a SCSI communications link and the SCSI-2 medium changer command set. The host computer SCSI interface port, the RS-232 port for diagnostics, and the power connectors are located on the back panel (FIGURE 1-3).

Be sure the StorEdge L1000 you ordered is configured with the options you require.

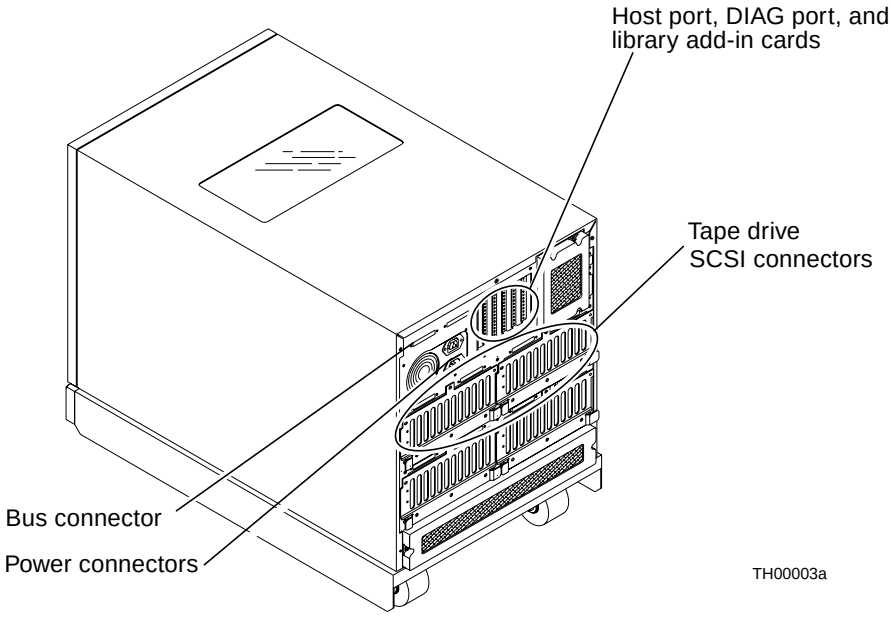
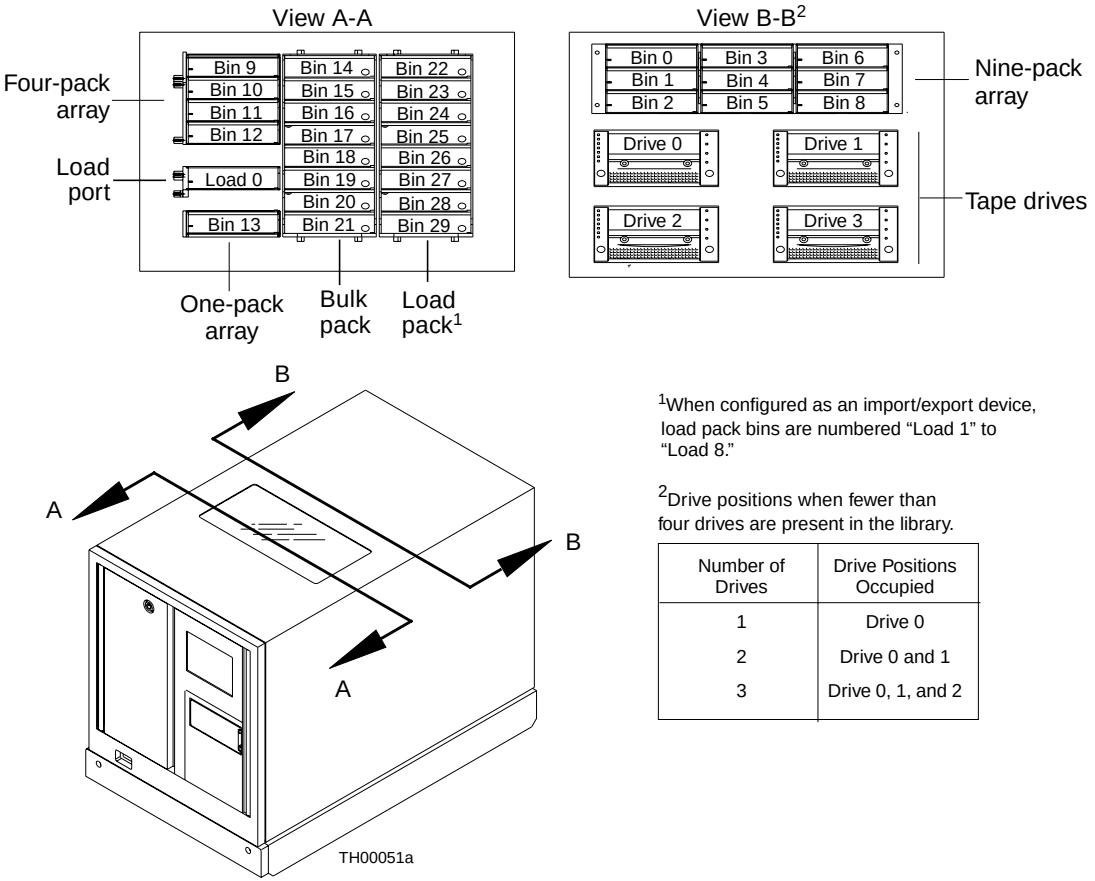


FIGURE 1-3 Library Back Panel

Library Elements

The library has the following elements (FIGURE 1-4):

- Storage bins
  - Nine-pack fixed storage array (bins 0 to 8)
  - Four-pack fixed storage array (bins 9 to 12)
  - One-pack fixed storage array (bin 13)
  - Bulk pack (bins 14 to 21)
  - Load pack (bins 22 to 29)
- Import/export elements
  - Load port (load 0)
  - Load pack (when configured for import/export operation—load 1 to 8)
- Up to 4 DLT tape drives (Drives 0, 1, 2, and 3)



[1]When configured as an import/export device, load pack bins are numbered “Load 1” to “Load 8.”

[2]Drive positions when fewer than four drives are present in the library.

Number of Drives	Drive Positions Occupied
1	Drive 0
2	Drive 0 and 1
3	Drive 0, 1, and 2

FIGURE 1-4 Library Elements

Library Robotics

The library robotics consists of the following components:

- Cartridge handling mechanism / bar code reader
- Vertical actuator
- Horizontal actuator
- Extension actuator

The cartridge handling mechanism (or *gripper*) includes bar code scanners that read standard six-character, 3-of-9 bar code labels. These scanners enable the system to maintain an inventory of the tape cartridges within the library. For example, an inventory occurs automatically whenever the library is turned on or after the bulk load door has been closed. You can also initiate an inventory manually from the host computer.

Note – 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. For systems with unlabeled cartridges or partially populated storage bins, the automatic scanning feature can be disabled through the control panel as explained in Chapter 4.

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

Operator-Accessible Components

As the operator, you can access the following library components:

- Front panel
- Load and bulk packs
- Back panel
- Tape drives
- Load port

A brief description of each of these components follows.

Front Panel

The front panel consists of the control panel, the front doors and lock, the on/off switch, and the load port (FIGURE 1-5). These items give you access to the library and tape drives.

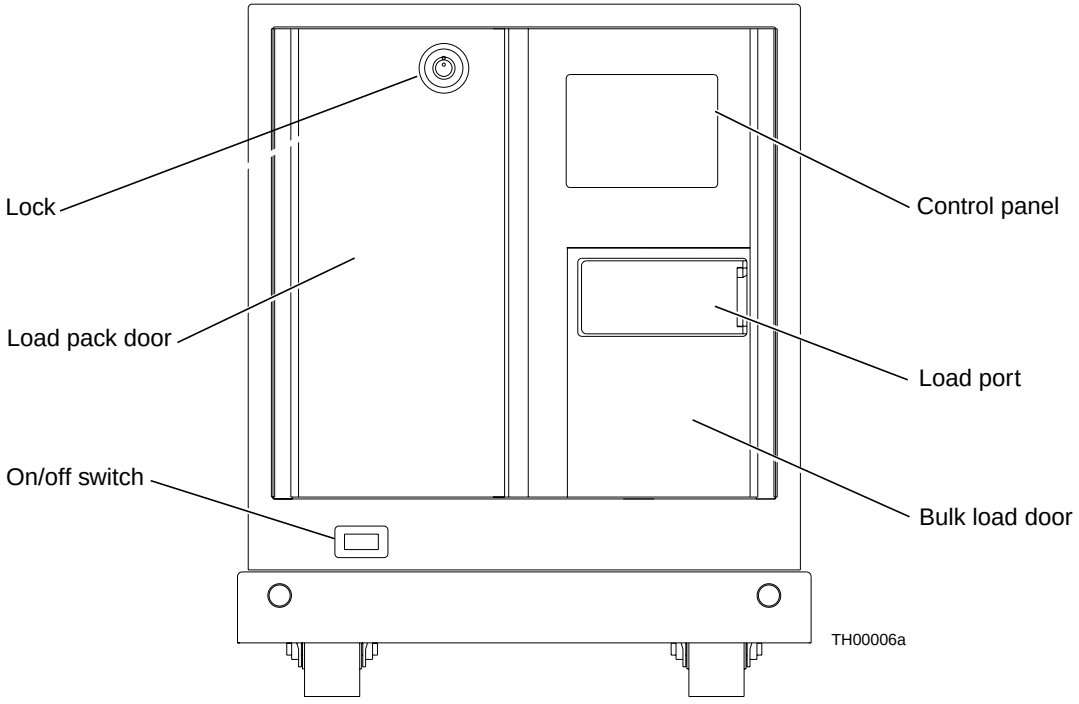


FIGURE 1-5 Library Front Panel

Control Panel

The control panel (FIGURE 1-6) contains a touch-screen menu system that enables you to determine library status, configure the library, and perform diagnostic functions.

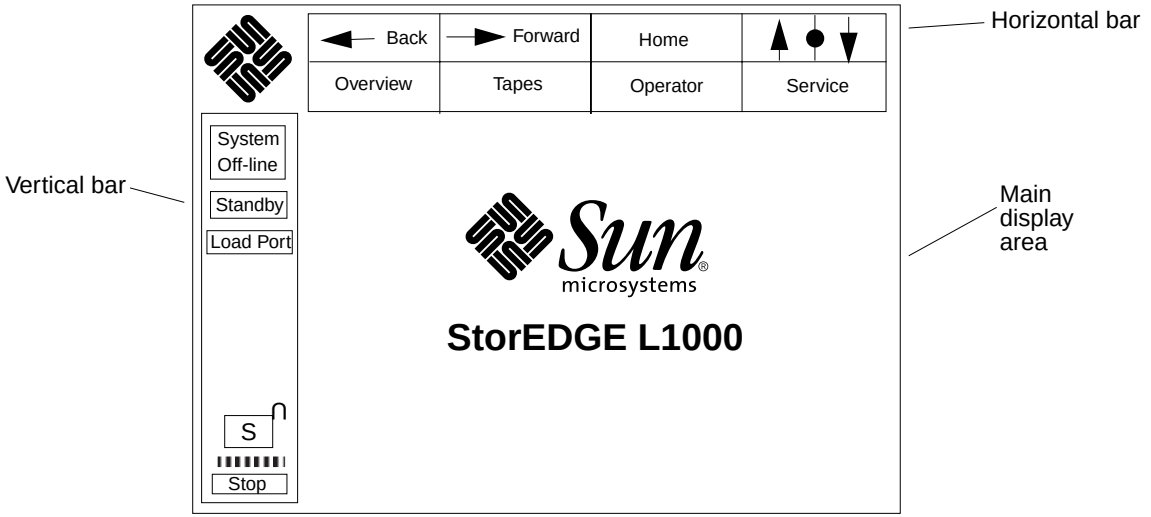


FIGURE 1-6 Control Panel Initial Screen

As indicated in the figure, the control panel menu screen consists of:

- A horizontal bar (top row)—a set of menu navigational controls
- A vertical bar (left column)—a set of library operational controls
- A main display area—a series of screens with status, configuration, diagnostic, and operating controls

For further information about the library control panel, see Chapters 2, 3, and 4.

Front Doors

The front doors provide access to the load and bulk packs, the tape drives, and the nine bins above the tape drives. This enables you to introduce new tape cartridges into the library system, remove tape cartridges from the library, and manually perform tape drive functions.

Caution – Before opening the front doors, always be sure that the library is in standby mode and that the robotics have come to a complete stop. Failure to do so can result in personal injury or damage to the library.

The front doors can be locked to prevent unauthorized access to the library. Use the key from the installation kit.

Load Port

The load port enables you to insert a single tape cartridge into the library. To open the load port, press the Load Port button on the control panel.

Load and Bulk Packs

The load and bulk packs are eight-cartridge removable magazines that attach to the front storage bin frame (FIGURE 1-7). These magazines act as storage elements for the library, providing 16 bins. Because they are removable through the front doors, you can use these magazines to bulk load or bulk unload the library.

The load pack (left magazine) can even be configured as an additional load port.

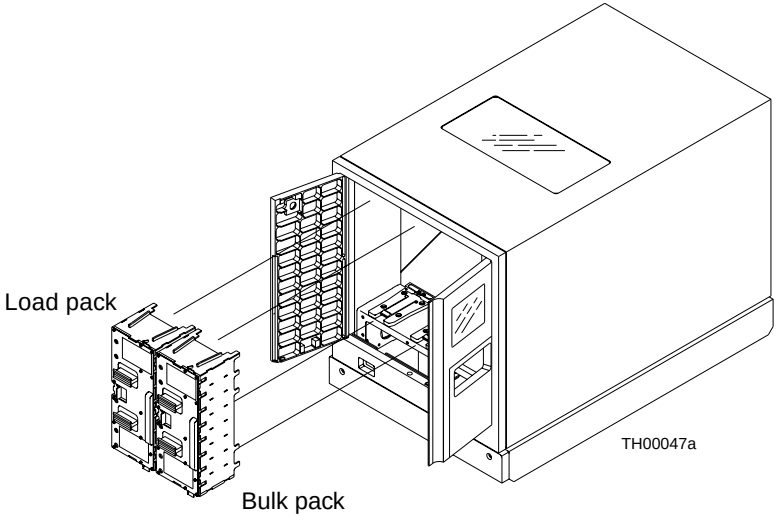


FIGURE 1-7 Load and Bulk Packs

For load or bulk pack installation and removal, see Chapter 2.

Back Panel

The back panel of the library (FIGURE 1-8) has the following components:

- SCSI ports
- RS-232 diagnostic (DIAG) port
- Power connectors
- Drive access panels (for hot swapping)
- Air filters

These components provide the library with operating power and vital communication links with external systems.

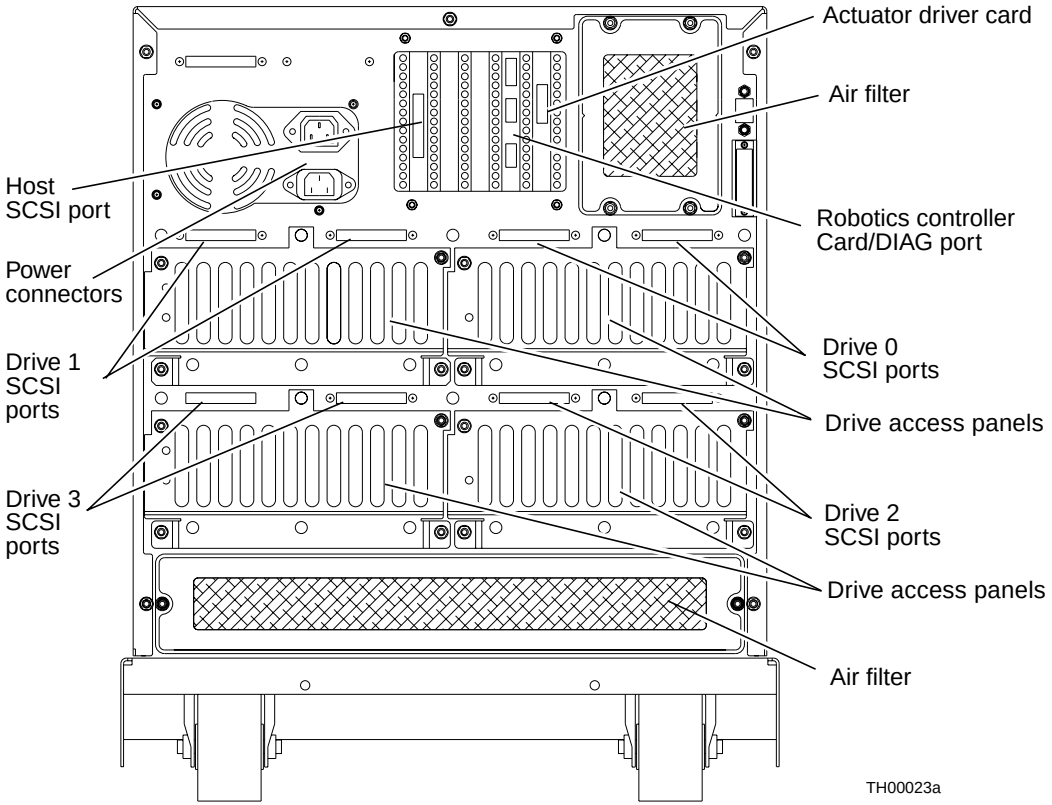


FIGURE 1-8 Back Panel—Stand-Alone Model

The back panel of the rackmount library is identical except that it has six small exterior fans mounted to the drive access panels (one fan on each of the left drive access panels and two fans on each of the right drive access panels). These fans have been designed to facilitate hot-swap operations.

Tape Drives

The library is shipped with up to four DLT7000 tape drives. When fewer than four drives are installed, they must occupy consecutively numbered drive bays starting with Drive 0 (see FIGURE 1-4 on page 4).

DLT7000 drives can use either DLTtape III or IV cartridges.

Caution – Do not use DLTtape I, II, or IIIXT cartridges in this library.

CHAPTER 2

Installing the Library

Installation consists of the following general tasks.

- Verifying that the library site meets installation requirements—page 12
- Preparing for installation—page 15
- Positioning the library at the installation site (stand-alone or rackmount units)—page 16
- Inserting tape cartridges—page 26
- Connecting the host computer(s) to the library—page 31
- Turning the library on and off—page 34
- Configuring and testing the library—page 35

Site Requirements

When choosing an installation site for the StorEdge L1000 library, consider the following requirements:

- Floor space
- Floor clearance
- Overhead clearance
- Floor strength and inclination
- Power and grounding
- Environmental factors

Floor Space

FIGURE 2-1 shows the floor space requirements for the stand-alone library.

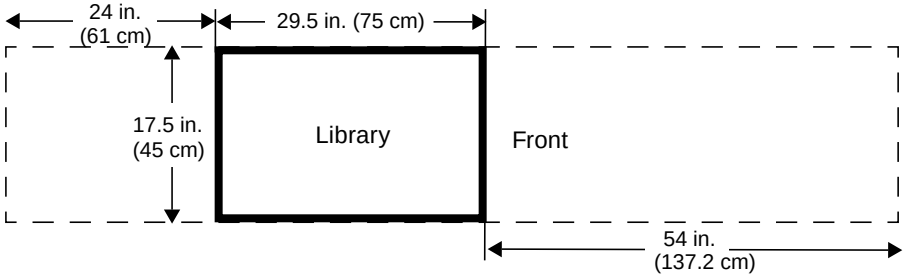


FIGURE 2-1 Floor Space Requirements (Stand-Alone Library)

FIGURE 2-2 shows the floor space requirements for the rackmount library.

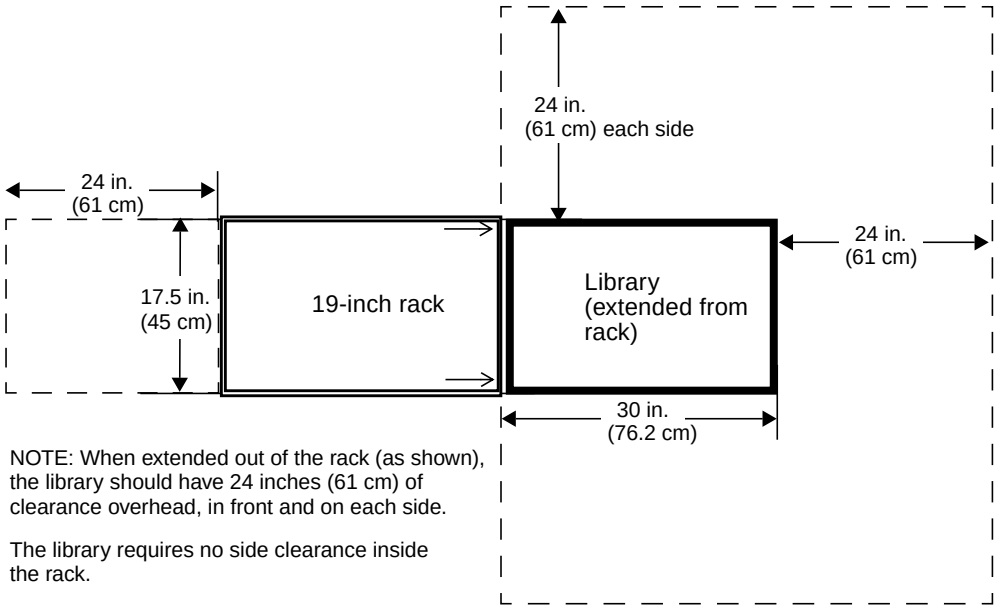


FIGURE 2-2 Floor Space Requirements (Rackmount Library)

Floor Clearance

The stand-alone version of the library has a nominal floor clearance of 0.75 inch (1.9 cm). Place the library on a level, uncarpeted floor free of cracks, depressions, and other similar defects.

Floor Strength and Inclination

The floor in the installation site must be rated at 250 lb/ft^2 (1221 kg/m^2). This is sufficient to support a fully loaded library on the floor or in a rack.

The floor in the installation site must also be level to within 0.25 inch (6.4 mm) over a 6-foot-by-6-foot (1.8 m by 1.8 m) area.

Overhead Clearance

A minimum clearance of 24 inches (61 cm) above the library is required in order to remove the library enclosure. When combined with the height of the library (21 inches / 53 cm), this is a total of 45 inches (114.3 cm) from the floor (stand-alone library) or bottom of the slide (rackmount library).

Power and Grounding

The library auto-ranging motor and logic power supplies accept single-phase input power range of 90 to 132 and 180 to 264 VAC at 47 to 63 Hz. In the United States and Canada, the power inlet is an IEC-320 connector (FIGURE 2-3). Outside North America, replace the power cord set with a harmonized 3 by 1.0 mm^2 power cord set approved by the country where used.

Caution – The installation site must provide an earth ground cable for the library. For rackmount installations, the rack must also be grounded.

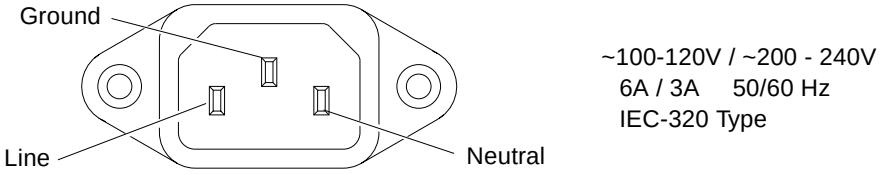


FIGURE 2-3 AC Power Receptacle

Consider the current rating of the rack before installing the library. For example, no more than two libraries can be installed in a typical 15A / 120V rack. A 24A / 200-240V rack can support a maximum of three libraries.

If other equipment is installed in the rack, determine the total current rating of all equipment before adding the StorEdge L1000 library to the rack.

Environmental Requirements

The installation site (stand-alone library) or the interior of the rack (rackmount library) must meet the following environmental requirements:

- Humidity: 20% to 80%, non-condensing
- Temperature: 15 degrees C to 35 degrees C (59 degrees F to 95 degrees F)
- Altitude: sea level to 10,000 feet (3,000 meters)

Preparing for Installation

Before you begin the installation procedures in this chapter:

1. If you have not already done so, perform the procedures found in the *Sun StorEdge L1000 Unpacking Guide.*

   These procedures explain how to move the library to the installation site, remove it from its shipping carton, and remove internal packing materials. For your convenience, unpacking instructions have also been included in the appendixes of this guide.

2. Check the packing list or the parts list found in the *Sun StorEdge L1000 Unpacking Guide* to make sure all necessary parts are available for installation.

Note – The customer must supply all SCSI cabling between the library and host computer(s).

---

3. Make sure the tools and equipment listed in TABLE 2-1 are available for the installation.

TABLE 2-1 Required Tools

Quantity	Description
1	Pair of wire cutters
1	Phillips screwdriver
1	Wrench, 11/32, open-ended (for rackmount library)

4. Protect the library from electrostatic discharge (ESD) by:

   a. Connecting the library to a grounded power outlet during installation

   b. Avoiding direct contact with static-sensitive components

   c. Wearing an antistatic wristband

5. Make sure the installation site meets or exceeds all applicable power requirements and physical and environmental specifications.

   For a comprehensive listing of library specifications and power requirements, refer to Appendix A.

Positioning a Standalone Library

▼ To Position the Standalone Library

1. **Roll the library to the installation site and connect it to a grounded power outlet.**
2. **Proceed to “Preparing and Inserting Tape Cartridges” on page 26.**

Positioning a Rackmount Library

Positioning the library in a standard rack involves:

- Determining the mounting position of the library within the rack.
- Separating the slide assembly rails from the tray.
- Mounting the rails in the rack.
- Installing and adjusting the tray.
- Mounting the library on the slide assembly tray.
- Securing the library in the rack.

Caution – Use safe lifting practices when moving the slide assembly or the library. The slide assembly weighs about 38 pounds (17 kilograms) and its size and construction makes it awkward to handle. The library weighs 89 pounds (40 kilograms); it must be lifted with assistance. Failure to follow these guidelines can result in equipment damage or personal injury.

Caution – When installing the library and other devices in a rack, determine the relative weight of each device and position the heaviest devices lower in the rack. If the library is the first device to be installed, place it near the bottom of the rack.

▼ To Determine the Mounting Position

1. **Using** FIGURE 2-4 **as a guide, locate the desired mounting position for the library.**

   The library and slide assembly require at least 21 inches (54 cm or 12 rack units) of overhead clearance. To ensure stability, choose a low mounting position in the rack.

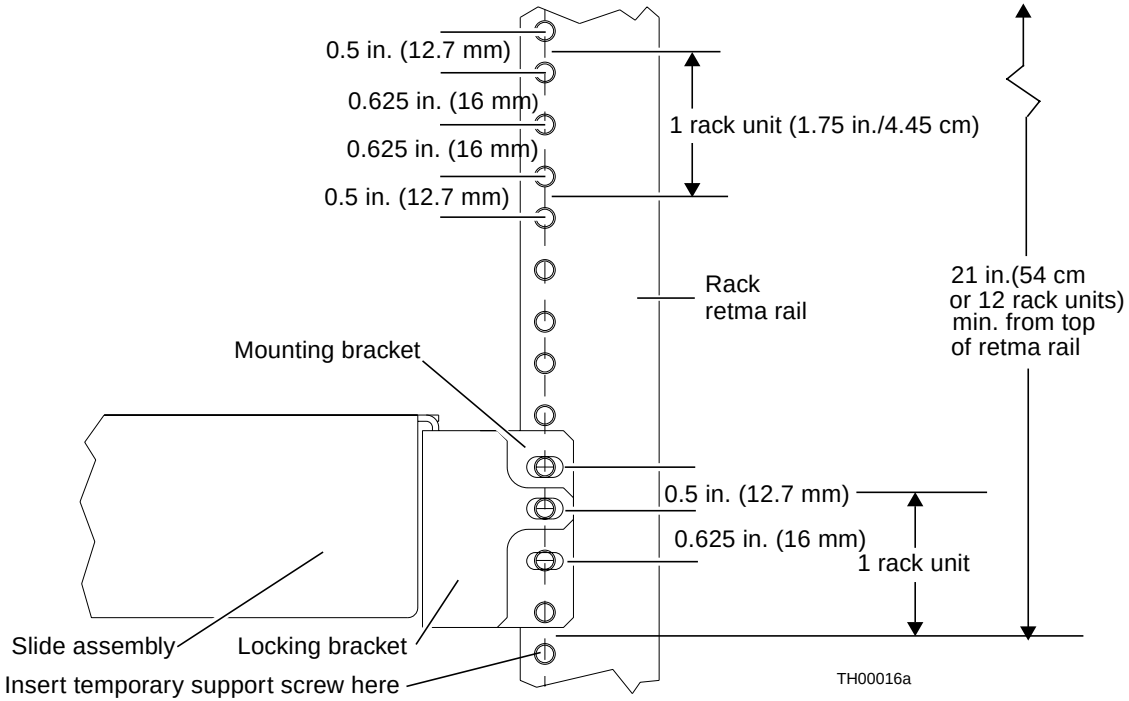


FIGURE 2-4 Positioning the Slide Assembly

As indicated in the figure, the bottom edge of each slide assembly bracket must line up with end of a rack unit.

2. **If desired, insert a temporary support screw into each retma rail just below the desired position of the slide assembly bracket.**

   Use any long screws that fit in the retma rail holes. Be sure these screws are level with each other and secure. Leave them extended out of the retma rails at least 0.625 inch (16 mm) so they will support the slide rail mounting brackets during installation.

▼ To Remove the Slide Rails from the Tray

1. **Place the slide assembly on a table. Provide enough room to fully extend the slide rails.**
2. **Extend both slide rails all the way out of the slide assembly.**
3. **Press the outer tabs to release the slide rails (**FIGURE 2-5**).**
4. **Remove the slide rails from the tray.**

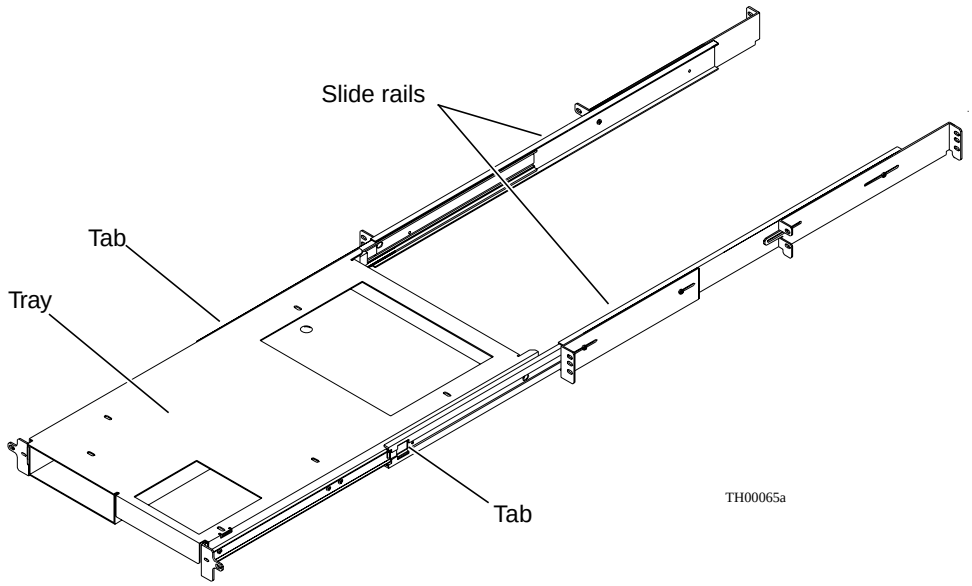


FIGURE 2-5 Removing the Slide Rails

▼ To Mount the Slide Rails in the Rack

1. **Adjust each slide rail for the rack.**

   a. **Loosen the rear bracket screws on each slide rail.**

      This enables you to extend or retract the bracket as needed to help fit the slide rail in the rack.

   b. **Measure the depth of the rack from the outer edge of the front retma rail to the outer edge of the rear retma rail.**

   c. **Adjust the rear mounting brackets so that the distance from the front mounting bracket to the rear mounting bracket is slightly greater than the depth of the rack.**

      Add approximately 0.25 inch (6 mm).

2. **Secure each slide rail to the rack (**FIGURE 2-6**).**

   a. **Find the left slide rail by looking at the front locking bracket of each rail.**

      The brackets are marked “Left” or “Right.”

   b. **Secure the left slide rail to the front and back retma rails on left side of the rack.**

      If desired, use temporary support screws to support the back mounting bracket of the slide rail while you mount the front end.

   c. **Repeat Steps 2a and 2b to mount the right slide rail.**

   d. **Verify that both rails are level with each other from front to back.**

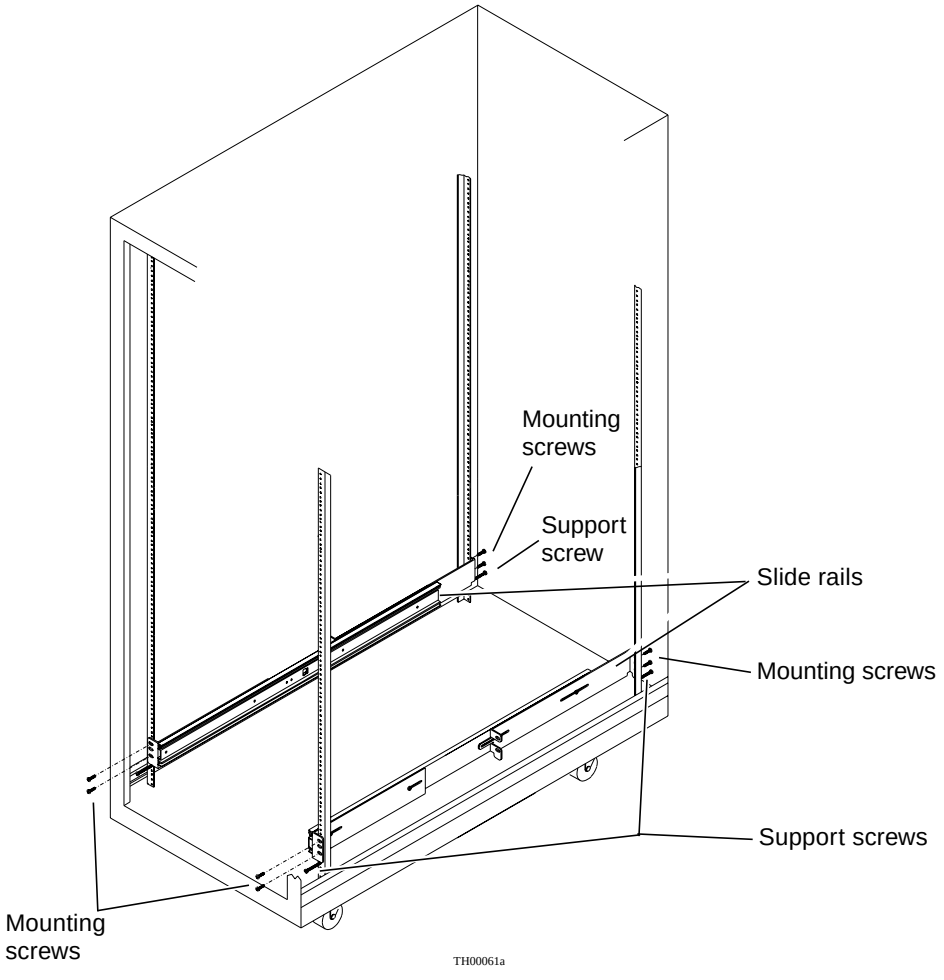


FIGURE 2-6 Installing the Slide Rails

▼ To Install the Tray

1. **Push the ends of the slide rails all the way into the library.**
2. **Align the tray with the slide rails.**
3. **Slide the tray onto the slide rails until the tray snaps into place (**FIGURE 2-7**).**
   Ensure that the tray engages the rail ball bearings properly.

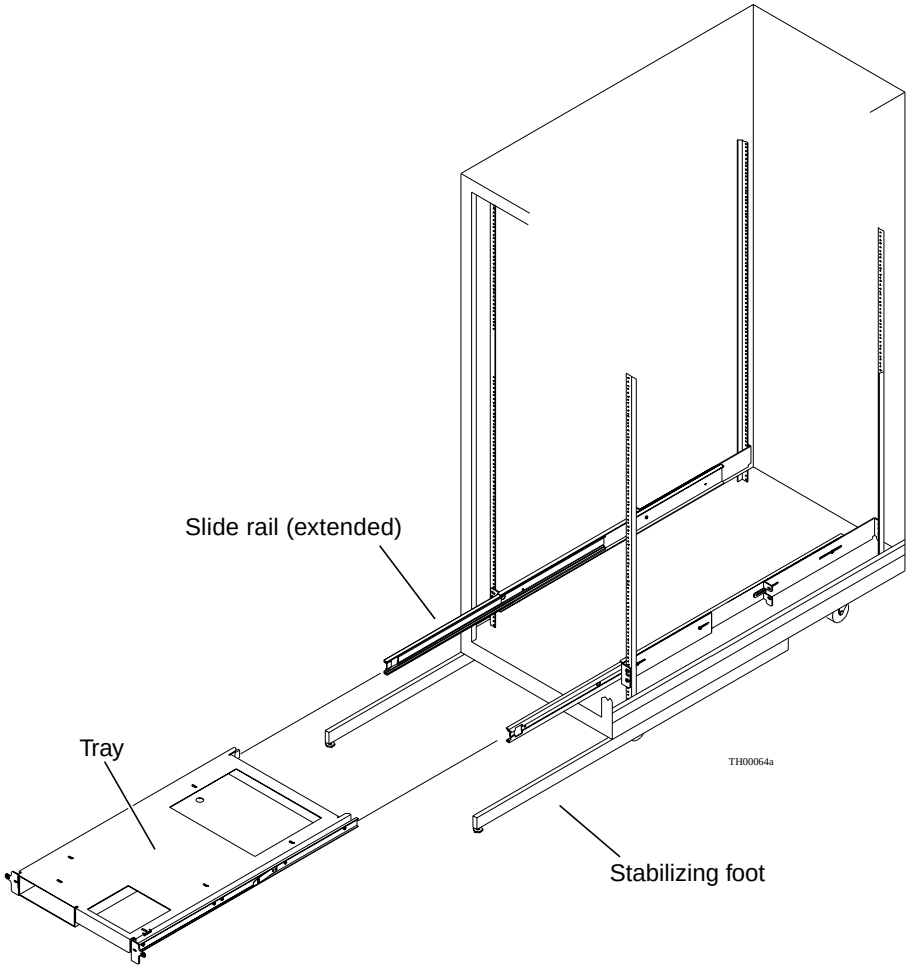


FIGURE 2-7 Installing the Tray

▼ To Adjust the Slide Rail

This procedure is required only if the positions of the front mounting brackets, the locking brackets, or the slide have been changed from the factory condition.

1. **Adjust the position of the rails.**

   a. **Remove the tray from the slide rails as explained on page 18.**

   b. **Loosen the 10 outer adjustment screws (**FIGURE 2-8**).**

      Some adjustment screws are not readily accessible. To access these screws, you must extend or retract the slide until access holes on the slide line up with the screws.

   c. **Push the slide rails all the way into the rack.**

   d. **Tighten the outer adjustment screws.**

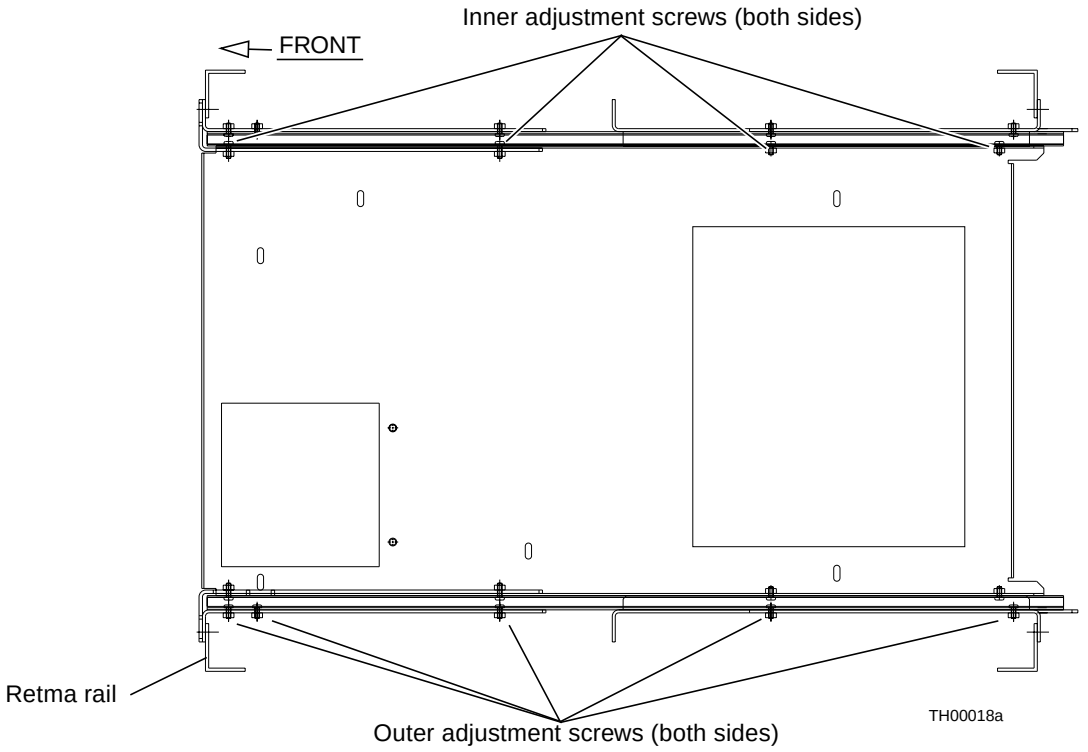


FIGURE 2-8 Slide Assembly—Top View

2. **Adjust the position of the tray.**

   a. **Remove the cosmetic panel from the tray.**

   b. **Loosen the eight inner adjustment screws on the sides of the tray (**FIGURE 2-8**).**

      The rear inner adjustment screws are not accessible unless the tray is detached from the slide rails. To adjust the tray, these screws must be loosened before installing the tray onto the rails.

   c. **Install the tray onto the slide rails as explained on page 21.**

   d. **Push the tray and the locking brackets all the way into the rack.**

   e. **Adjust the locking brackets so they are in contact with the front mounting brackets.**

   f. **Adjust the tray so that the front of the tray is 0.25 inch (6 mm) recessed from the front of the locking brackets.**

   g. **Tighten the four front inner adjustment screws (two on each side of the tray).**

      To do this, gently pull the tray out of the rack without altering the amount of recess between the tray and the locking brackets, and then tighten the screws.

   h. **Remove the tray from the slide rails.**

   i. **Tighten the four rear inner adjustment screws on the tray.**

   j. **Install the tray onto the rails.**

   k. **Install the cosmetic panel onto the tray.**

▼ To Mount the Library

1. **Be sure of the following:**
   - The tray is secured to the slide rails.
   - The stabilizing feet are fully extended at the bottom of the rack.
   - The slide assembly is fully extended out of the rack.
2. **With the help of a second person, lift the library onto the slide assembly tray.**
3. **Secure the library using the six socket screws from the accessory kit (**FIGURE 2-9**).**

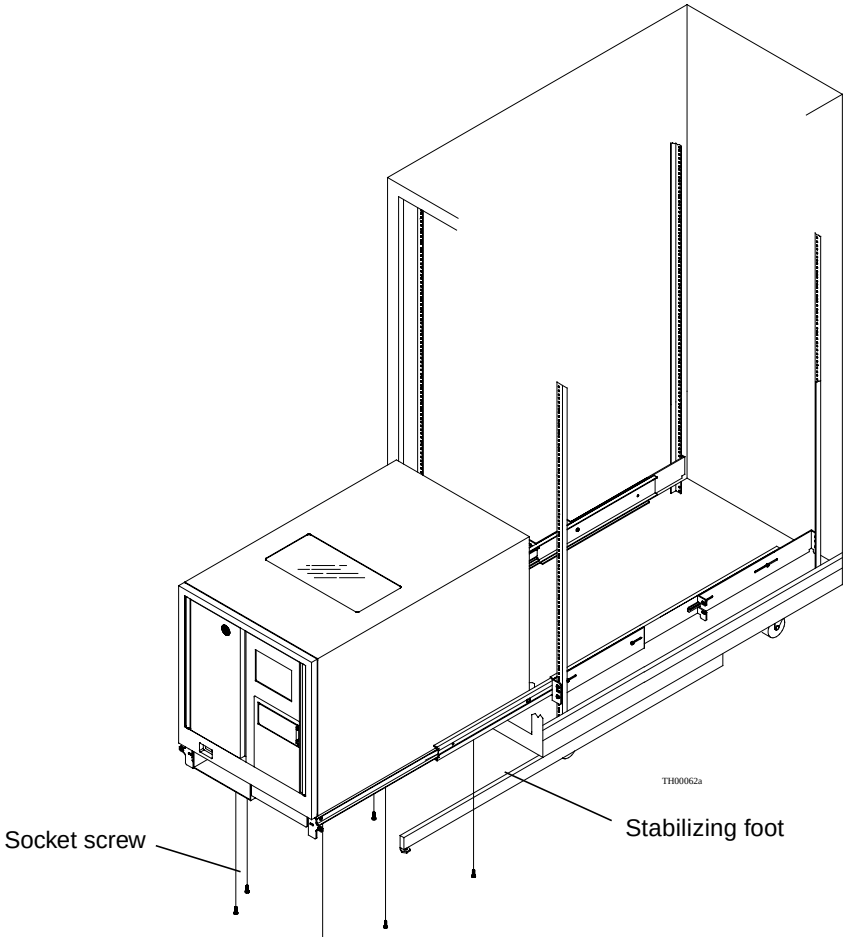


FIGURE 2-9 Attaching the Library to the Slide

▼ To Secure the Library to the Rack

1. **Remove the slide assembly cosmetic panel.**
2. **Secure the locking brackets at the front of the slide to the retma rails (**FIGURE 2-10**).**
3. **Replace the slide assembly cosmetic panel.**

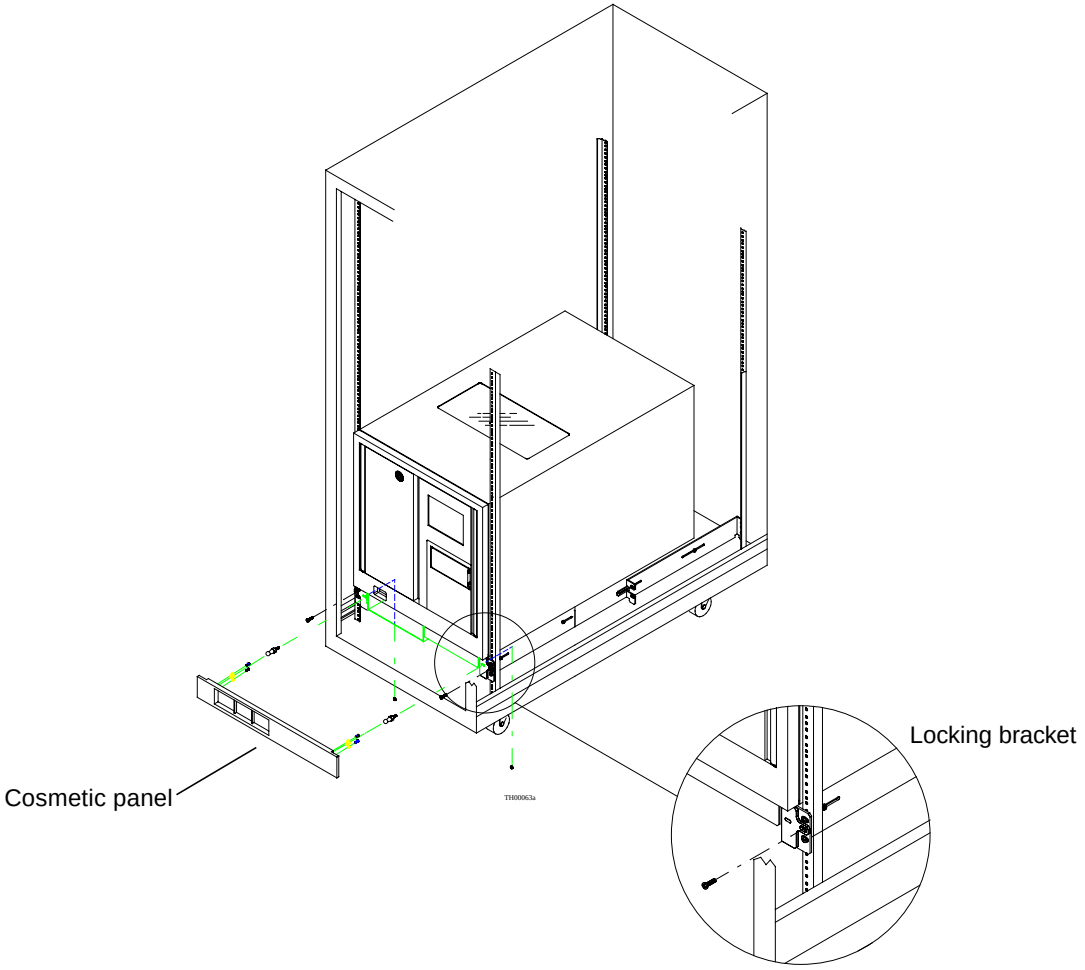


FIGURE 2-10 Securing the Locking Brackets

Preparing and Inserting Tape Cartridges

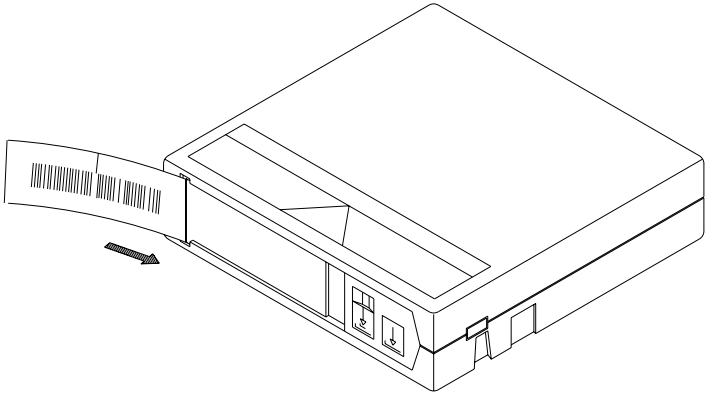
This section explains how to insert tape cartridges into the StorEdge L1000 library during initial installation. This procedure includes:

- Labeling tape cartridges
- Setting the write-protect switch
- Placing cartridges in the load and bulk packs
- Placing cartridges in the fixed storage bins

▼ To Label a Tape Cartridge

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

- **Insert the label within the label area on the front edge of the tape cartridge (**FIGURE 2-11**).**



TH00010a

FIGURE 2-11 Inserting a Bar Code Label

▼ To Write-Protect a Cartridge

Write-protecting a tape cartridge protects the data it contains from being erased or overwritten.

- **Move the write-protect switch to the left as indicated by the arrow in** FIGURE 2-12**.**

  An orange tab appears above the switch.

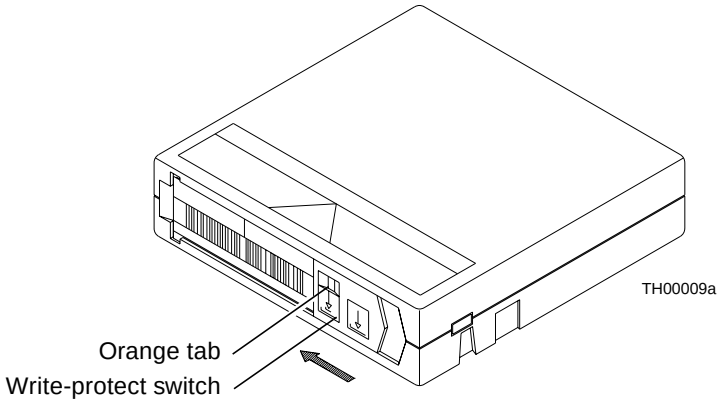


FIGURE 2-12 Setting the Write-Protect Switch

▼ To Write-Enable a Cartridge

Write-enabling a tape cartridge allows new data to be written to the cartridge or existing data to be modified or erased.

- **Move the write-protect switch to the right.**

  The orange tab disappears.

▼ To Place Tape Cartridges in Fixed Storage Bins

1. **Open the library doors.**

   a. **If the doors are locked, use the key from the accessory kit to unlock the doors.**
   Turn the key counterclockwise to unlock the doors.

   b. **Open the left door and then the right.**

2. **Remove the load and bulk packs from the front of the library.**

   a. **Press the latch at the top of either pack (**FIGURE 2-13**).**

   b. **Grasp the handles and gently pull the pack while pressing the latch at the bottom of the pack.**

   c. **Repeat Steps 1a and 1b to remove the other pack.**

   Set both packs aside.

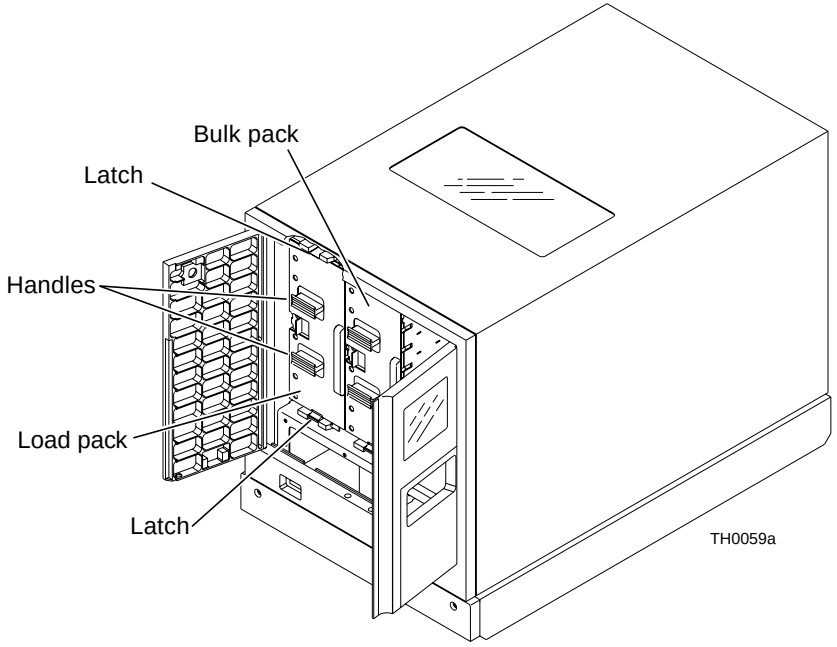


FIGURE 2-13 Removing a Pack

3. **Make sure to orient each cartridge properly (**FIGURE 2-14**).**

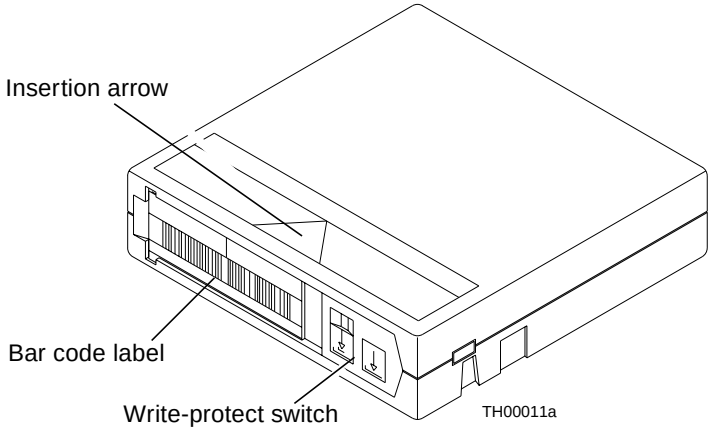


FIGURE 2-14 Correct Tape Cartridge Orientation

4. **Reaching in through the front doors of the library, insert a tape cartridge into each of the nine storage bins above the tape drives.**

   Each cartridge should slide into place with very little force. If a cartridge does not slide into place easily, check the cartridge for correct orientation and structural integrity.

5. **Insert a cartridge into each of the five storage bins above and below the load port at the front of the library.**

   This requires that you reach into the library through the front doors and then back toward the front. There are four bins above the load port and one bin below.

6. **Make sure each cartridge is properly seated in the bin. See** FIGURE 2-14 **for correct cartridge orientation.**

▼ To Place Tape Cartridges in Load and Bulk Packs

Note – The load and bulk packs should already have been removed as a result of the previous procedure. For more information, see “To Place Tape Cartridges in Fixed Storage Bins” on page 28.

---

1. **Load eight cartridges in each pack.**

   As you slide each cartridge into a bin, there should be initial resistance from the retention mechanism before the cartridge snaps into place. If a cartridge does not snap into place, check for correct orientation and structural integrity.

2. **Make sure each cartridge is properly oriented and seated in the bin. See** FIGURE 2-14 **for correct cartridge orientation.**

Caution – Handle the load and bulk packs with care. Although a retention mechanism secures the cartridges, this mechanism can be compromised by rough handling, causing the cartridges to fall out.

---

3. **Reinstall the load and bulk packs.**

   a. **Insert a pack into the library, cartridge-edge first.**

   b. **Line up the pack with the plastic guides on the top and bottom of the library frame.**

   c. **Slide the pack onto the guides until it snaps into place.**

   d. **Repeat Steps 3a–3c for the other pack.**

4. **Close and lock the library doors.**

   a. **Close the right door and then the left.**

   b. **Insert the key into the lock on the left door and turn the key clockwise to the locked position.**

   c. **Remove the key and put it in a safe place.**

Connecting Host Computers

You are now ready to connect the library to one or more host computers. Up to five host computers can be connected on separate SCSI buses. Sample configurations are shown in FIGURE 2-15 through FIGURE 2-17.

Note – Sun Microsystems™ ships sufficient cables and terminators with this library for a two-drive, one-bus configuration or a four-drive, two-bus configuration. Additional cables and terminators must be purchased separately.

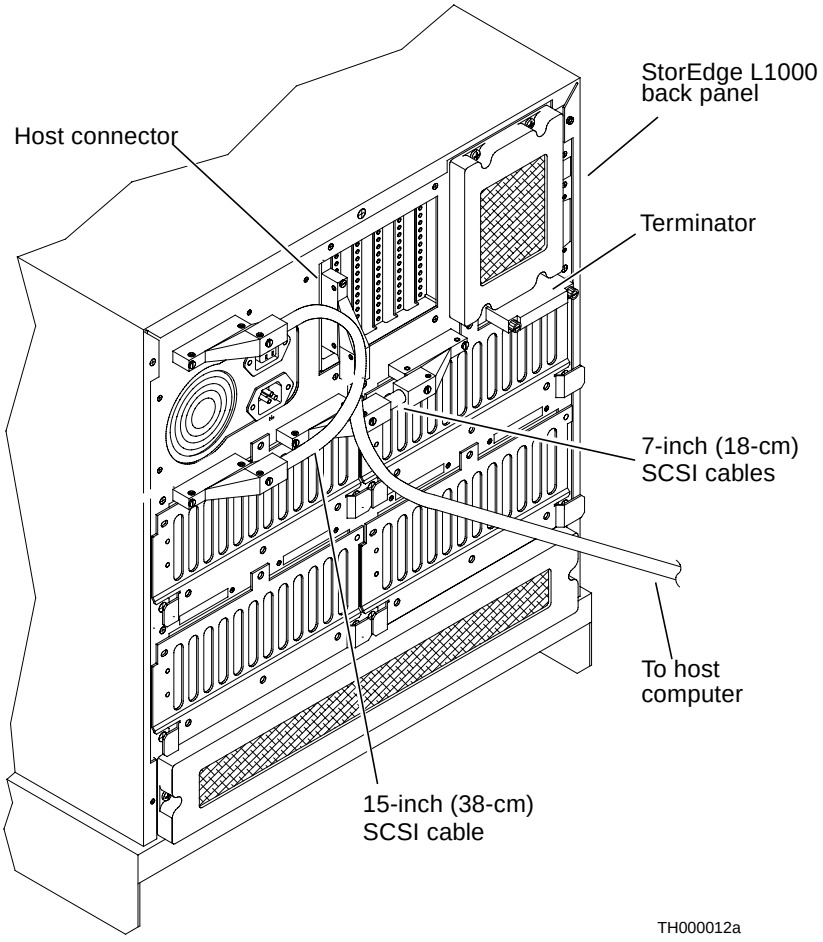


FIGURE 2-15 Two-Drive, Single-Bus SCSI Configuration

In FIGURE 2-15, the host computer is connected to the SCSI port associated with the library. Since there is only one SCSI bus, use all the SCSI cables from the accessories kit to daisy-chain the library to each of the tape drives.

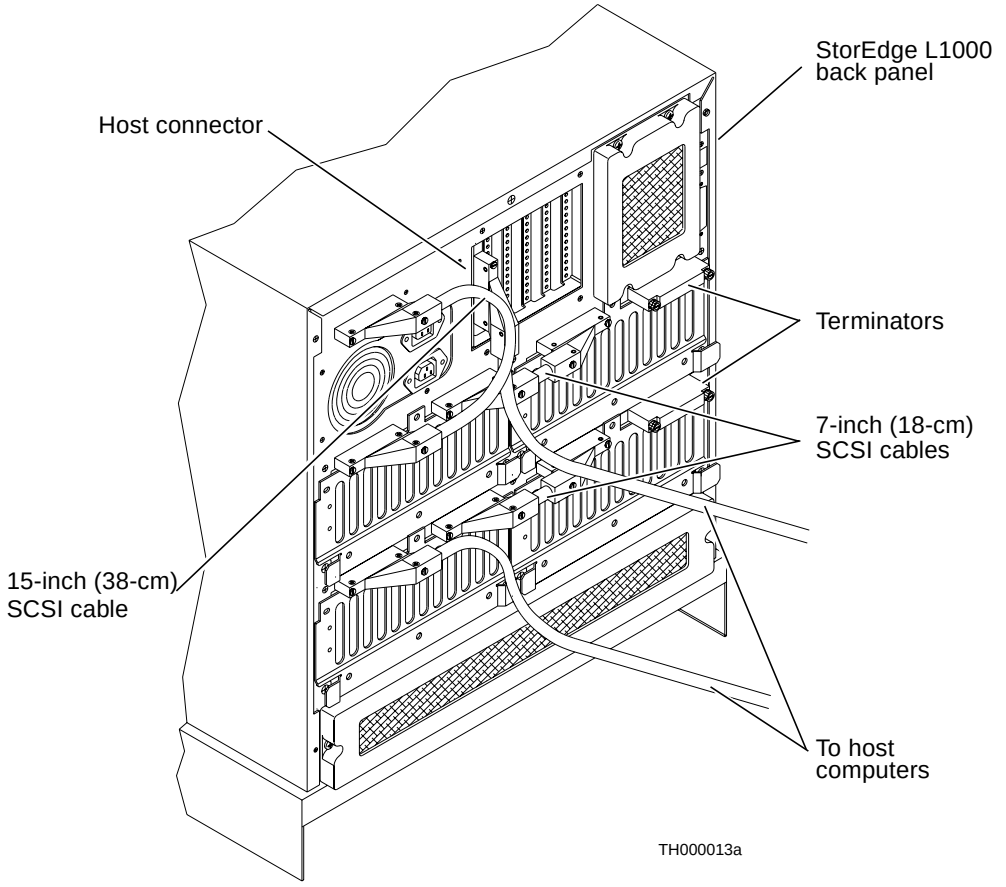


FIGURE 2-16 Four-Drive, Two-Bus SCSI Configuration

FIGURE 2-16 illustrates a two-SCSI-bus configuration. Bus 1 connects to the library and tape drives 0 and 1 (upper drives). Bus 2 connects to tape drive 3 and 2 (lower drives). The first SCSI bus is terminated at drive 0; the second, at drive 2.

For this configuration, you need the following items from the accessories kit:

- Both 7-inch (18-centimeter) SCSI cables
- 15-inch (38-centimeter) SCSI cable
- 2 SCSI terminators

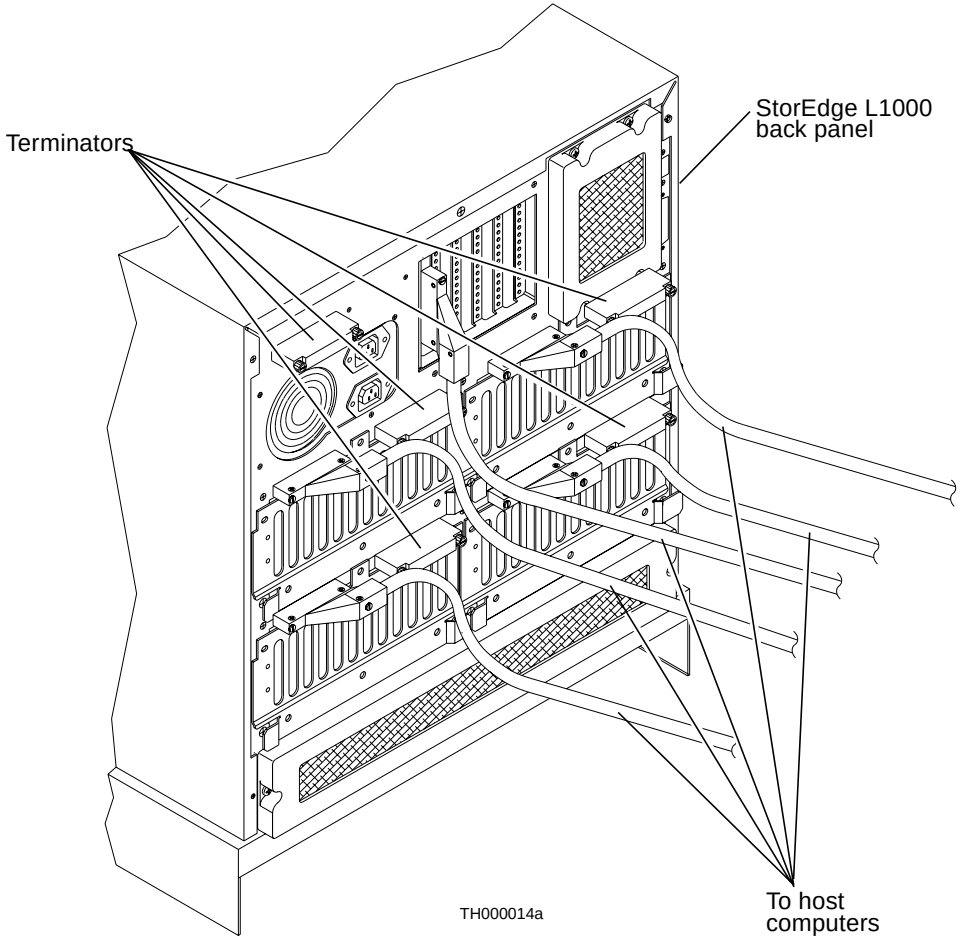


FIGURE 2-17 Five-Bus SCSI Configuration

In FIGURE 2-17, five hosts are connected to the library, requiring five terminators.

Other Configurations

In all three examples, basic configuration guidelines are followed. Using these guidelines, you can set up other multi-SCSI bus variations.

- Each host connects to a SCSI connector on the back panel of the library.
- SCSI devices on the same bus are daisy-chained using SCSI jumper cables.
- The last device on each SCSI bus is terminated.

Turning the Library On and Off

To ensure smooth operation, follow these steps when turning the library on or off.

▼ To Turn the Library On

1. **Be sure of the following:**
   - All internal packaging is removed.
   - The front doors and load port are closed.
   - The library enclosure is installed.
   - All back panel connections are secure.
2. **At the front panel, set the AC power switch to the | (on) position.**

   After several seconds, verify that control panel comes on.

▼ To Turn the Library Off

1. **Press the Standby button.**

   Verify that the library completes the current command and then goes off-line.
2. **Make sure the gripper is empty by checking the Overview control panel screen.**

   If the gripper has a tape cartridge, use the Move Cartridge command to move the cartridge to a storage bin or load port.
3. **Set the AC power switch to the O (off) position.**

   Verify that the control panel turns off.

Configuring and Testing the Library

When you finish installing the library, you should make any desired changes to the configuration of the library and then calibrate the library and test its functionality.

A sample configuration of the library is shown in TABLE 2-2.

TABLE 2-2 Sample Library Configuration

Item	Sample Default Condition
Model number	6220070
Number of bins (fixed storage and load and bulk packs)	30
Number of drives	4
Library SCSI ID number	0
Drive 0 SCSI ID number	2
Drive 1 SCSI ID number	3
Drive 2 SCSI ID number	4
Drive 3 SCSI ID number	5
Library power-up state	On-line
Automatic drive cleaning function	Disabled
Retry move command	Enabled
Auto load from load port	Disabled
Auto inventory at power up	Enabled
No barcode scan	Disabled
4/52 identity	Disabled

To view and make changes to the configuration or to calibrate the library, go to Chapter 4. To test the library, go to Chapter 5.

Note – You must have either operator or service security clearance to access the information described in Chapter 4 and service security clearance to access the information described in Chapter 5.

CHAPTER 3

Basic Operations

This chapter describes the following basic library operating procedures:

- Using the control panel
  - Control panel components—page 38
  - Control panel navigation—page 40
  - Library status information—page 41
- Performing manual operations
  - Inserting tape cartridges—page 45
  - Opening the library doors—page 47
  - Manually ejecting a tape cartridge—page 47

These procedures can be performed by any user without the need for a password. For more advanced procedures (such as configuring, calibrating, or testing the library), see Chapters 4 and 5.

Using the Control Panel

At start up, the following screen appears in the control panel display (FIGURE 3-1).

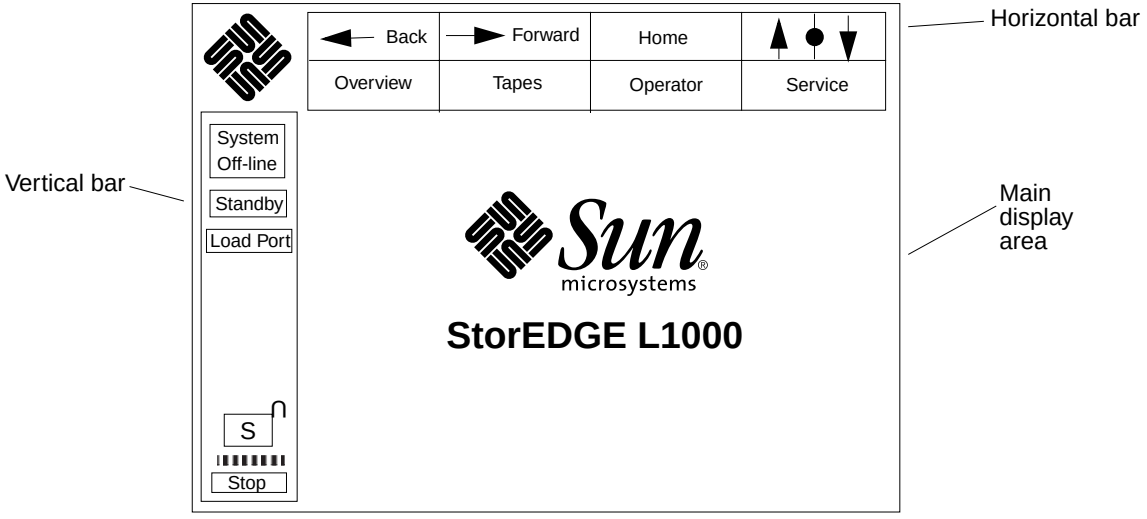


FIGURE 3-1 Control Panel Display—Initial Screen

From this screen, you can access controls that enable you to configure and operate the library. All operating procedures in this chapter and in Chapters 4 and 5 require an understanding of the control panel.

Control Panel Components

The control panel consists of the following three components:

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

These components are identified in FIGURE 3-1 as well as in the sections that follow.

Vertical Bar

The vertical bar consists of the following items:

- *Company logo*—If you touch this area, an “About Sun” screen appears.
- *System state display—S*hows the current state of the library system and displays important messages relating to library operation.
- *Standby button—S*witches the library between on-line and off-line mode. To select a default mode for startup, see “Configuring Library Options” on page 55.
- *Load Port button*—Causes the load port to open, allowing you to insert or remove a tape cartridge.
- *Load Pack button*—Prepares the library for load pack removal. Press this button before opening the front door to access the load or bulk pack.
- *Security level indicator*—Shows the current security level available at the control panel. As shown in TABLE 3-1, there are three security levels: user (U), operator (O), and service (S).

TABLE 3-1 Security Level Attributes

Security Level	Lock Icon Indicator	Password Protected	Menu Access			
			Overview Screen	Tapes Screen	Operator Screen	Service Screen
User	U	No	Yes	Yes	No	No
Operator	O	Yes	Yes	Yes	Yes	No
Service	S	Yes	Yes	Yes	Yes	Yes

- *System activity indicator*—A blinking dotted line directly below the security level indicator that tells you that the library is active and functioning normally.
- *Stop button*—Halts all the activity of the library by cutting power to the library robotics. Pressing the Stop button a second time restores power to library robotics.

Horizontal Bar

The horizontal bar consists of the following menu navigation buttons:

- *Back button*—Moves you backwards screen-by-screen through previous menu selections.
- *Forward button*—Moves you forward screen-by-screen through previous menu selections.
- *Home button*—Returns you to the initial control panel screen (FIGURE 3-1).
- *Contrast buttons*—Adjust the contrast of the screen.

Main Display Area

The main display area consists of four tabbed screens (FIGURE 3-1) which contain the controls that issue commands to the library:

- *Overview*—Displays a snapshot of the tape drives, robot activity, and the load pack inventory.
- *Tapes*—Displays the contents of tape drives, storage bins, load packs, the gripper, the load port, and the pass-through mechanism (if supported).
- *Operator*—Contains the library configuration and control functions. To use this screen, you must have either operator or service access privileges.
- *Service*—Contains reporting functions, system tests, and miscellaneous commands. To use this screen, you must have service access privileges.

Control Panel Navigation

The control panel uses a touch-screen for convenient navigation. To activate a button or a screen, simply touch the screen.

You can select a screen directly by touching the appropriate button or by using the Back and Forward buttons to move through previous screens in the order they were selected.

Use the Home button to go back to the main menu screen.

Library Status Information

You can obtain library status from the Overview and Tapes tabbed screens.

Overview Screen

The Overview screen displays a snapshot of the tape drive, robot activity, and load pack inventory (FIGURE 3-2).

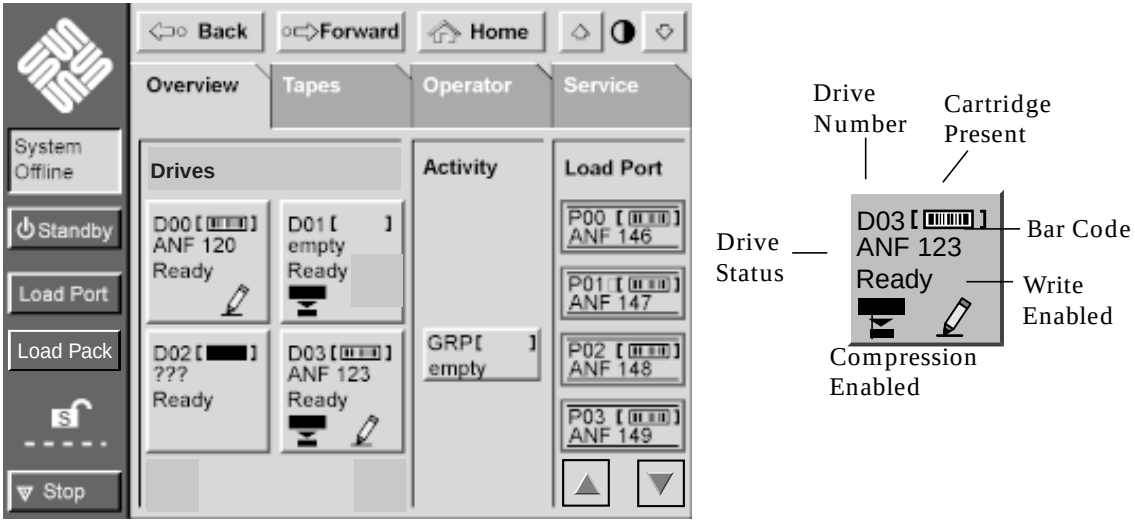


FIGURE 3-2 Overview Screen

Drives

The Drives area gives you the following information:

- Whether a tape drive has a cartridge
- The bar code number of the cartridge (if the label can be read)
- Whether the cartridge is write-enabled or write-protected
- Whether compression is enabled

For a more detailed view of drive status, touch the screen anywhere in the Drives area to make the Tape Drive Status box appear (FIGURE 3-2). Use the arrow buttons below the box to scroll to the desired drive. To return to the Overview screen, press anywhere in the Tape Drive Status box.

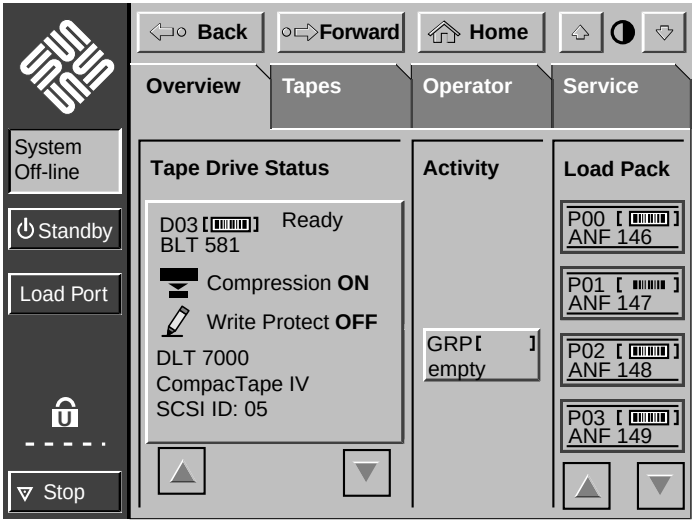


FIGURE 3-3 Overview Screen with Expanded Tape Drive Status

Activity Status

The Activity area shows the source element, the transport medium, and the destination element involved in a move activity.

Load Pack Status

The Load Pack area identifies tape cartridges currently stored in the load pack. Use the arrow button to view contents of load pack bins not currently displayed.

Tapes Screen

The Tapes screen contains the contents of all library elements (FIGURE 3-4).

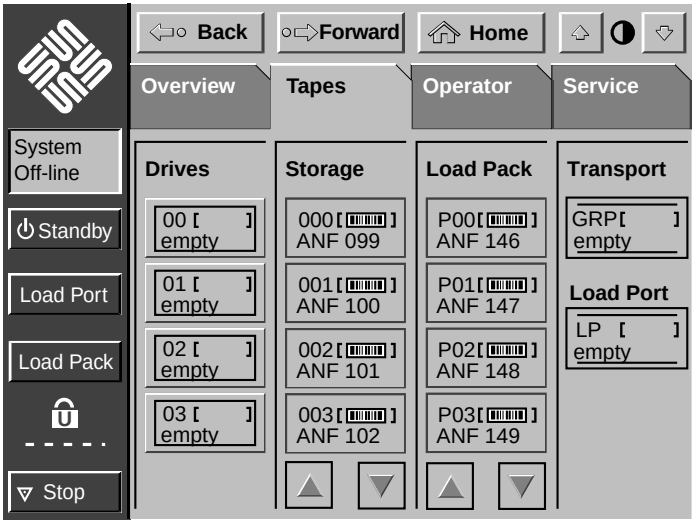


FIGURE 3-4 Tapes Screen

In this screen, there are five element types:

- Tape drives
- Storage (fixed storage bins)
- Load pack
- Transport (gripper)
- Load port

Using these categories, you can determine whether a particular element has a tape cartridge and whether the cartridge is labeled.

Viewing Storage and Load Pack Elements

The Storage and Load Pack categories contain too many elements to display on the screen at one time. To scroll through these elements, use the arrow buttons at the bottom of each category.

You can also expand the Storage or Load Pack 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.

Performing Manual Operations

This section describes procedures requiring operator intervention. These procedures consist of:

- Turning the library on or off
- Inserting tape cartridges
- Opening the library doors
- Ejecting a tape cartridge

▼ To Turn the Library On

1. **Verify:**
   - The load port and all library doors are closed
   - The metal enclosure is in place
   - All back panel connectors are secure
2. **At the front panel, set the power switch to the | (on) position.**
3. **After several seconds, verify that the control panel displays the current state of the library.**

▼ To Place the Library On-line

1. **With the library turned on and the control panel indicating "System Off-line," press the Standby button on the control panel.**
2. **Verify that"System On-line" appears in the control panel system state display.**

▼ To Place the Library Off-line

1. **With the library turned on and the control panel indicating "System On-line," press the Standby button on the control panel.**
2. **Verify that"System Off-line" appears in the control panel system state display.**

▼ To Turn the Library Off

1. **Using the Standby button, place the library off-line.**

   The library robotics completes the current command and then stops.
2. **Verify that "System Off-line" appears in the control panel system state display.**
3. **Verify that the library gripper is empty by checking the Overview screen in the control panel.**

   If there is a tape cartridge in the gripper, execute a Move command to place the cartridge in an empty bin or drive. For more information, see "To Move a Cartridge" on page 57.
4. **At the front panel, set the power switch to the O (off) position.**

Caution – Always leave library power off for at least 15 seconds before turning the power on again.

▼ To Insert Tape Cartridges

Caution – *Do not use* CompacTape I™, CompacTape II™or CompacTape IIIXT™ tape cartridges in this library.

Caution – Examine all cartridges before loading them into the library or tape drive. Look for label stock or other foreign material that may be clinging to the cartridges.

1. **Prepare the tape cartridge to be inserted by labeling it and write-protecting or write-enabling it as desired. For more information about these procedures, see Chapter 2.**
2. **Press the Load Port button on the left side of the control panel. The library unlocks the load port. The load port door springs open slightly when unlocked.**

Caution – Mechanical hazards could be exposed when the load port is partially open or closed. Do not attempt to insert hands or fingers into the load port opening at any time.

3. **Use the finger grip on the load port door to open the door completely.**
4. **With the load port door open, place the tape cartridge in the load port slot label-side first. (The proper orientation for tape cartridge insertion is shown in** FIGURE 2-14 **on page 29.)**
5. **Manually close the load port door. If auto load is enabled, the library automatically moves the cartridge to an available bin.**
6. **Repeat Steps 1–5 to insert other tape cartridges.**

Note – To remove tape cartridges using the load port, refer to "Moving Cartridges" on page 57.

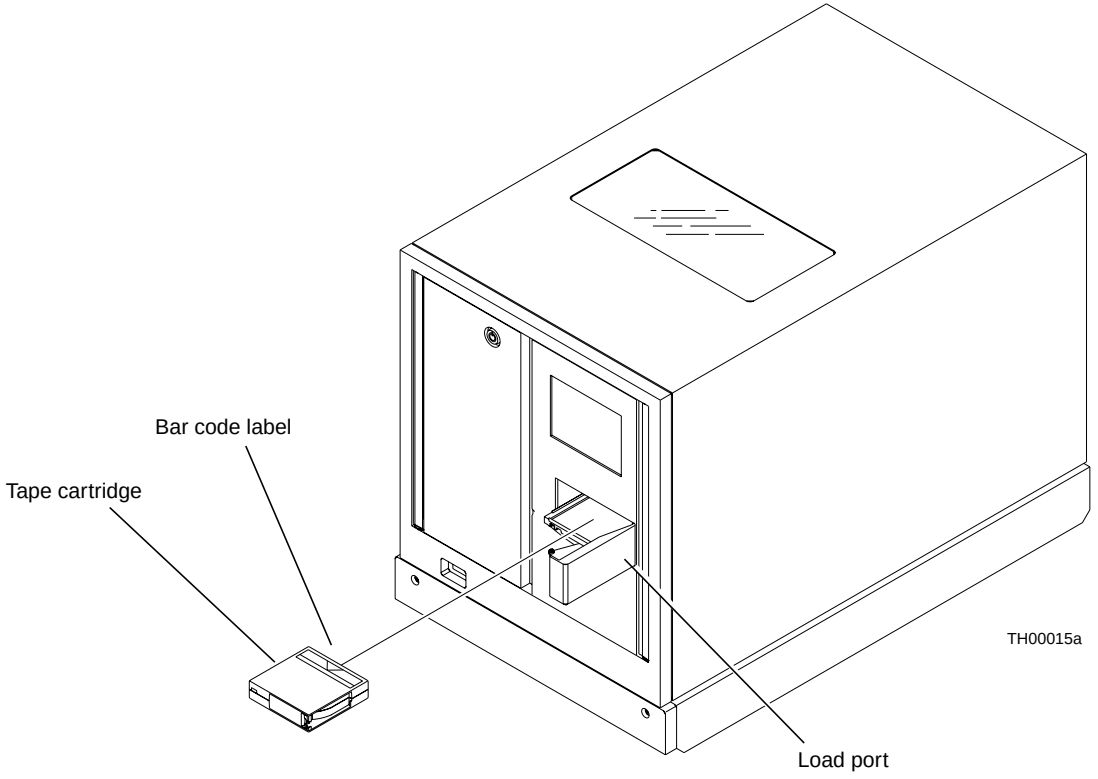


FIGURE 3-5 Inserting a Tape Cartridge

▼ To Open the Library Doors

Open the front doors to access a tape drive, to access the load and bulk packs, or to load the library with tape cartridges.

1. **If the door is locked, insert the key into the front door lock and turn it counterclockwise.**
2. **Press the Load Pack button on the left side of the control panel. The library completes any current command and then unlocks the load pack door.**
3. **Open the left door first, and then open the right.**

Note – To close the front doors of the library, simply reverse this procedure.

▼ To Manually Eject a Cartridge

Occasionally, you may need to unload and eject a tape cartridge using the controls on the front panel of the tape drive.

1. **Open the library doors as indicated in the preceeding section (see "To Open the Library Doors").**
2. **Remove the load and bulk packs from the front of the library.**
   a. **Press the latch at the top of either pack (**FIGURE 3-6**).**
   b. **Grasp the handles and gently pull the pack while pressing the latch at the bottom of the pack.**
   c. **Repeat Steps 2a and 2b to remove the other pack.**

   Set both packs aside.

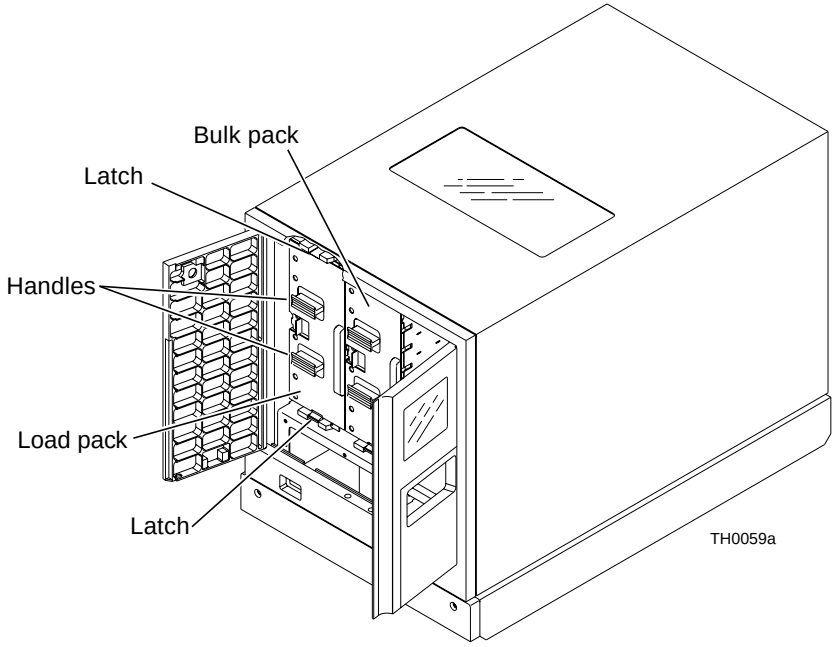


FIGURE 3-6 Removing the Load and Bulk Packs.

3. **Press the Unload button on the drive (**FIGURE 3-7**) and wait for the Operate Handle indicator to light.**

Note – When you press Unload, the tape cartridge rewinds. Depending on the tape cartridge position, this may take between 10 to 120 seconds. When the rewind process is completed, the Operate Handle indicator lights.

---

4. **When the Operate Handle indicator lights, raise the insert/release handle to eject the tape cartridge.**

5. **Pause for two seconds, then grasp the tape cartridge and slowly pull it one-half way out of the drive.**

6. **Examine the tape cartridge to see whether all of the tape media has been rewound into the tape cartridge.**

   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 4. Otherwise, continue to Step 7.

7. **Pull the tape cartridge completely out of the drive.**

8. **Reinstall the load and bulk packs by reversing the removal procedure in Step 2.**

   Be sure to line up the guides on the top and bottom of the load packs with the mounting blocks on the frame.

9. **Close and lock the library doors.**

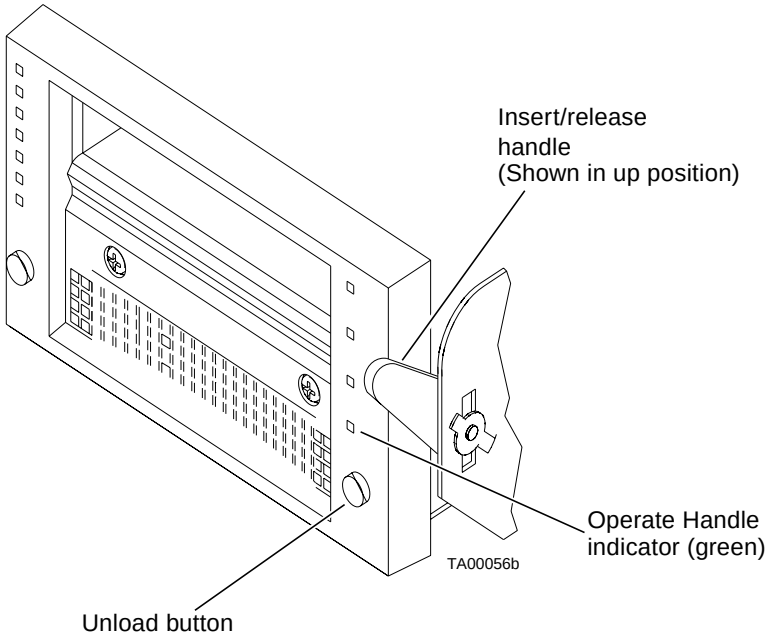


FIGURE 3-7 DLT7000 Front Bezel

CHAPTER 4

Operator Commands

This chapter describes the commands found on the Operator screen of the library control panel. These commands include:

Note – This chapter assumes that you are familiar with the basic operation of the StorEdge L1000 control panel. To learn about control panel components and navigation, see “Using the Control Panel” on page 38.

Accessing the Operator Screen

The Operator screen is restricted to individuals with operator or service access privileges.

- **To access the Operator screen, press the Operator tab.**

  When you press the Operator tab, a dialog box appears requesting a password (FIGURE 4-1).

Note – The default Operator password is 1234. To change the Operator password, refer to “Changing Passwords” on page 71. Changing passwords requires Service level clearance.

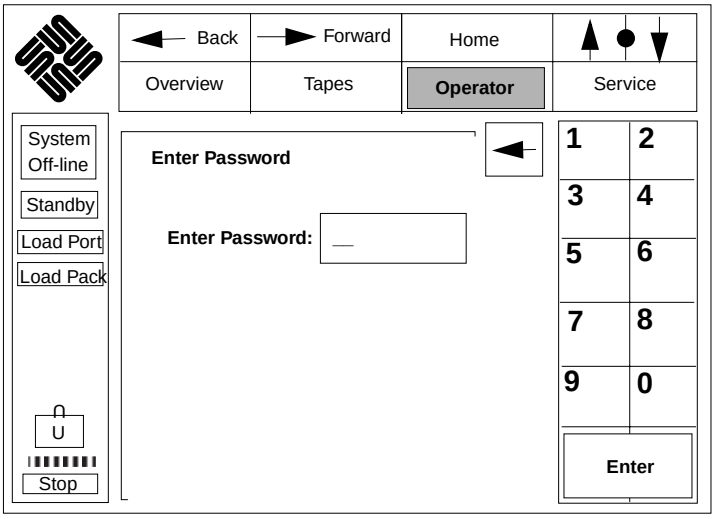


FIGURE 4-1 Enter Password Screen

You must enter the correct operator or service password to gain access to the Operator screen (FIGURE 4-2).

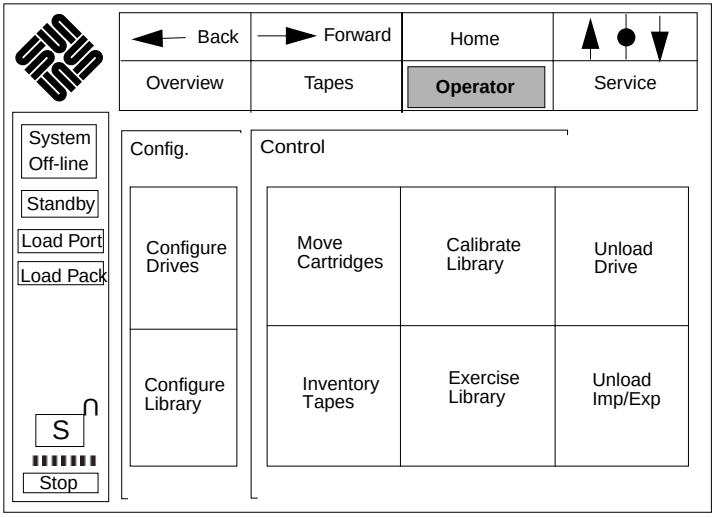


FIGURE 4-2 Operator Screen

Configuring the Library

The `Configure Library` command enables you to assign the following:

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

▼ To Configure Library Attributes

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

   The Configure: Library screen appears (FIGURE 4-3).

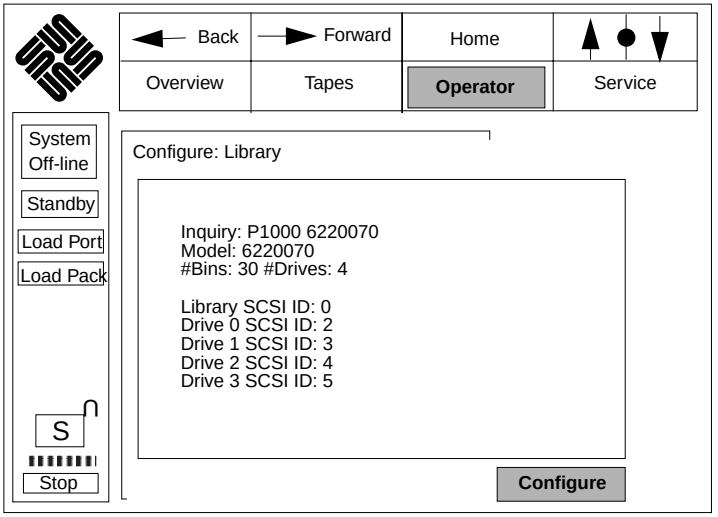


FIGURE 4-3 Configure: Library Screen

2. **Change any of these configuration settings by pressing the Configure button.**

   The Configure: Library Settings screen appears (FIGURE 4-4).

FIGURE 4-4 Configure: Library Settings Screen

3. **Change a library setting.**

   a. **Press the Select button until you highlight the configuration element with the setting you want to change.**

Note – To make changes to the SCSI ID of the library or a tape drive, first select the desired device, and then select the desired SCSI ID.

---

   b. **Use the arrow buttons to scroll through setting choices until the desired setting appears.**

   c. **Press the Execute button to save the new setting as part of the library configuration.**

4. **Repeat Step 3 to make additional changes to library configuration.**

SCSI ID Assignment Guidelines

When selecting SCSI IDs, remember that SCSI devices on each bus must have a unique number from 0 to 15. SCSI devices include the library robotics, the host computer, the library tape drives, and internal and external hard disk drives.

Configuring Library Options

The `Configure Options` command enables you to set the following:

- *Library power-up state*—Determines whether the library is on-line or off-line when powered up.
- *Auto clean*—Enables the library to perform drive cleaning tasks automatically as needed.
- *Retries*—Causes the library to automatically retry a failed command before issuing an error message.
- *4/52 identity*—Causes the library to return the same inquiry string as the ATL 4/52 library.
- *Bar code scan*—Turns bar code scanning on or off during inventory. It should be disabled when using unlabeled cartridges.
- *Auto inventory*—Causes the library to perform an inventory whenever the library is powered up.
- *Auto load*—Moves any cartridge placed in the load port into an empty bin slot automatically.

▼ To Configure Library Options

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

   The Config.: Options screen appears (FIGURE 4-5).

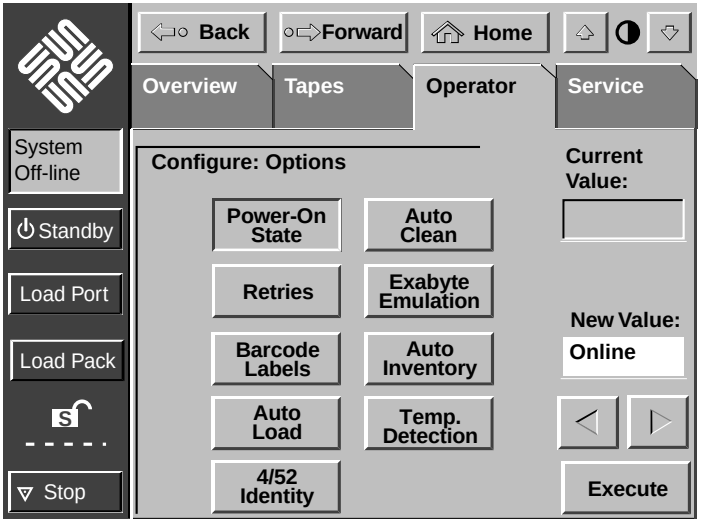


FIGURE 4-5 Configure: Options Screen

2. **Select the option you want to change by pressing the corresponding button.**
3. **Using the arrow buttons, scroll through the list of choices available for the option until the desired choice appears in the New Value field.**
4. **Press the Execute button to add this new value to the library configuration.**
5. **Repeat Steps 2 through 4 to make other configuration changes.**

Moving Cartridges

The `Move` command enables you to move tape cartridges from one library element to another. Library elements consist of storage bins, a tape drives, the load port, or the gripper.

Note – To move a cartridge from a tape drive, you must first issue an `Unload Drive` command as explained in “Unloading a Drive” on page 61.

▼ To Move a Cartridge

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

   The Control: Move Cartridges screen appears with the Source input field active (FIGURE 4-6).

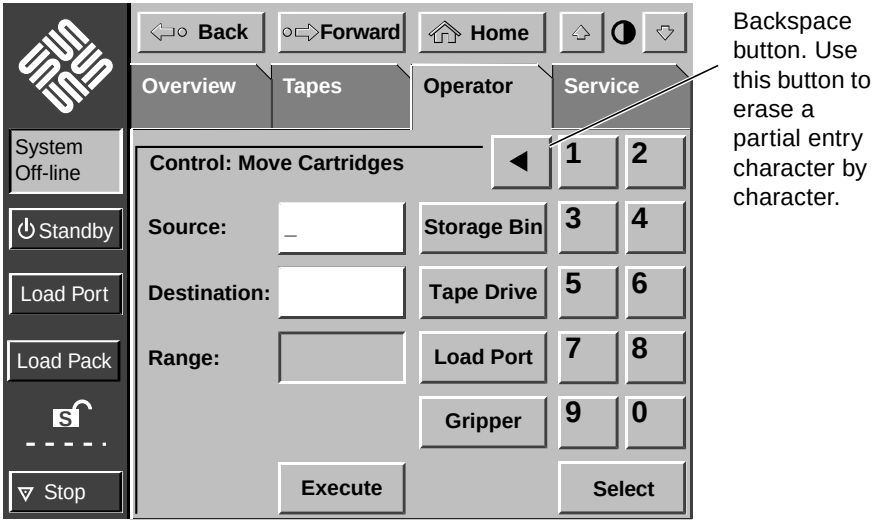


FIGURE 4-6 Control: Move Cartridge Screen

2. **Identify the source element with the cartridge to be moved.**

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

Note – When you press an element type, the range of addresses appears in the Range display below the Destination text box.

b. Using the keypad, enter the address of the source element and then press the Select button.

The source information appears in the Source text box and the destination text box becomes active.

3. Identify an empty destination element for the cartridge.

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

b. Using the keypad, enter the address of the destination element.

The destination information appears in the Destination text box as you type.

4. Press the Execute button to initiate the move.

A "Command In Progress" screen appears. The move command continues until completed unless you press the ABORT button in the screen.

Performing an Inventory

The `Inventory` command records the bar code labels of the cartridges in the tape drives, fixed storage bins, load pack bins, and the load port. Library elements that contain cartridges without labels will be marked full with no label.

▼ To Perform an Inventory

- **Press the Inventory Tapes button in the Operator screen.**

A "Command In Progress" screen appears. The inventory process continues until all storage elements have been checked or you stop the process by pressing the Abort button in the screen.

Calibrating the Library

The `Calibrate Library` command checks the horizontal and vertical graduations used by the library to position the gripper for picking and placing operations. Once calibrated, the library can determine the exact position of any library element.

Note – The library should be calibrated during initial installation and after any maintenance procedure.

▼ To Calibrate the Library

1. **In the Operator screen, press the Calibrate Library button. The Calibrate Library screen appears (**FIGURE 4-7**).**

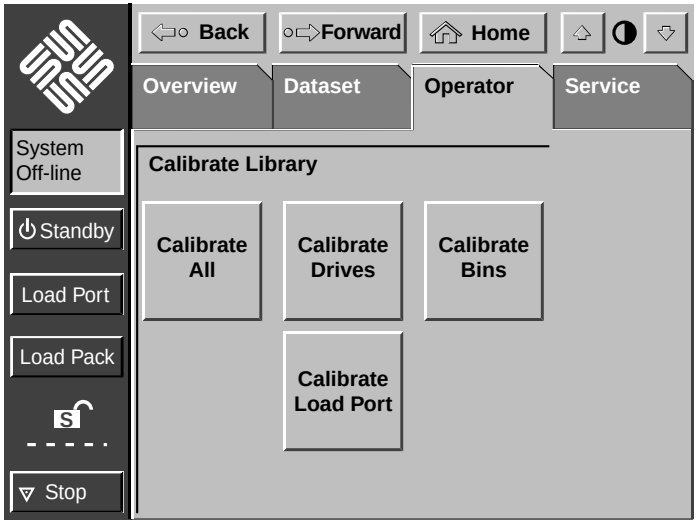


FIGURE 4-7 Calibrate Library Screen

2. **Press the button with the desired calibration option. Pressing Calibrate All causes the drives, bins, and the load port to be calibrated.**

   A “Command In Progress” screen appears while the calibration process is under way.

Exercising the Library

The `Exercise Library` command tests the robotics and the calibration by randomly moving tape cartridges from one storage location to another.

▼ To Exercise the Library

- **Press the Exercise Library button in the Operator screen.**

  A “Command In Progress” screen appears. The exercise process runs continuously until you stop the process by pressing the Abort button.

Note – The exercise process is also stopped if an error is detected. In this case, an error message appears in the control panel screen.

Unloading a Drive

The `Unload Drive` command prepares a tape cartridge to be ejected from a drive by disengaging the tape from the read/write heads and rewinding it. After unloading the drive, you can eject and remove the tape cartridge using the Move Cartridges command.

▼ To Unload a Drive

1. **In the Operator screen, press the Unload Drive button. A screen appears with a list of drives (**FIGURE 4-8**).**

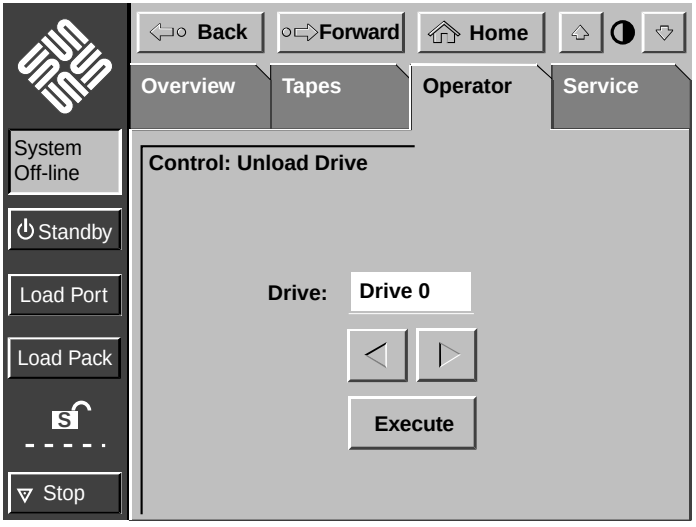


FIGURE 4-8 Unload Drives Screen

2. **Use the arrow buttons to highlight the desired drive.**
3. **Press Execute.**

   A “Command In Progress” screen appears. The Unload command continues until completed unless you press the Abort button on the screen.

Unloading the Load Port

The `Unload Imp/Exp` command moves a tape cartridge from the load port to an available storage bin. It must be invoked after inserting a tape into the load port whenever the library auto load feature is disabled (see Chapter 3).

Note – You can also use the move command to unload the load port. The move command is especially useful if the destination of the move is important. For more information about the move command, see “Moving Cartridges” on page 57.

▼ To Unload the Load Port

- **Press the Unload Imp/Exp button in the Operator page.**

  A “Command In Progress” screen appears. The Unload command continues until completed unless you press the Abort button on the screen.

CHAPTER 5

Service Commands

This chapter describes the commands found in the Service screen of the library control panel. These commands include:

- Generating reports—page 65
- Testing the library—page 68
- Initializing nonvolatile information—page 70
- Changing passwords—page 71

Note – This chapter assumes that you are familiar with the basic operation of the StorEdge L1000 control panel. To learn about control panel components and navigation, see “Using the Control Panel” on page 38.

Accessing the Service Screen

The Service screen is restricted to individuals with service access privileges.

- **To access the Service screen, press the Service tab.**

When you press the Service tab, a screen appears requesting a password (FIGURE 5-1).

Note – The default Service password is 5678. To change the Operator or Service password, refer to “Changing Passwords” on page 71. Changing passwords requires Service level clearance.

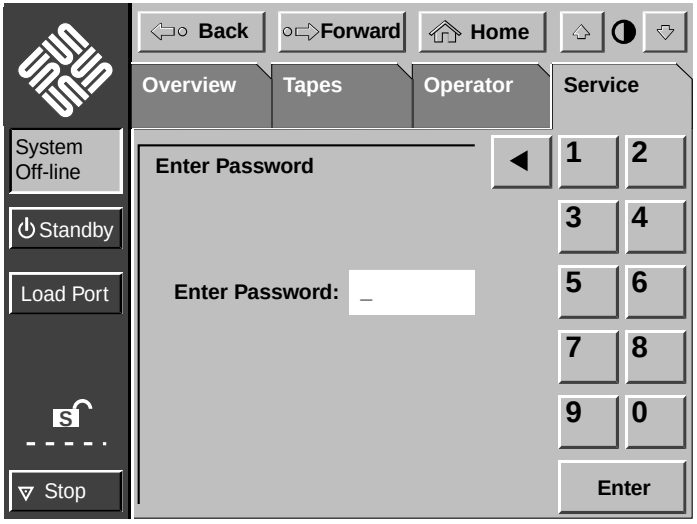


FIGURE 5-1 Enter Password Screen

You must enter the correct password to gain access to the Service screen (FIGURE 5-2).

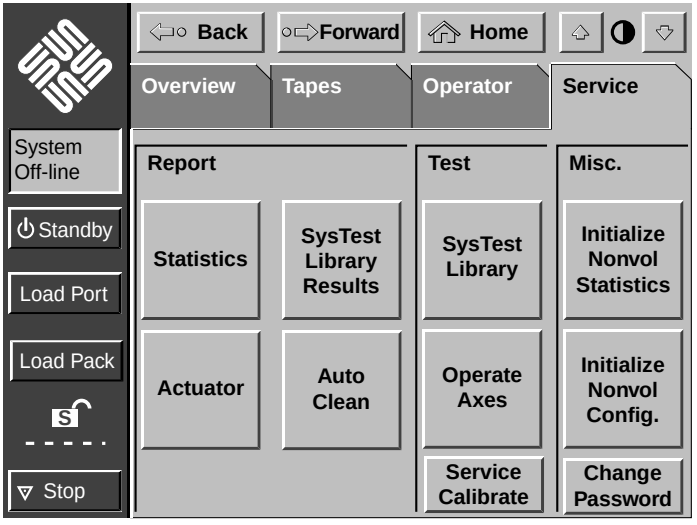


FIGURE 5-2 Service Screen

Generating Reports

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

- Statistics regarding library operation
- Actuator positions and status
- System test results
- Auto Clean status and tracking information

To generate any of these reports, press the appropriate button in the Report area of the Service screen. Within a few seconds, the report appears on the screen.

FIGURE 5-3 shows a sample statistics report screen (obtained by pressing the Statistics button).

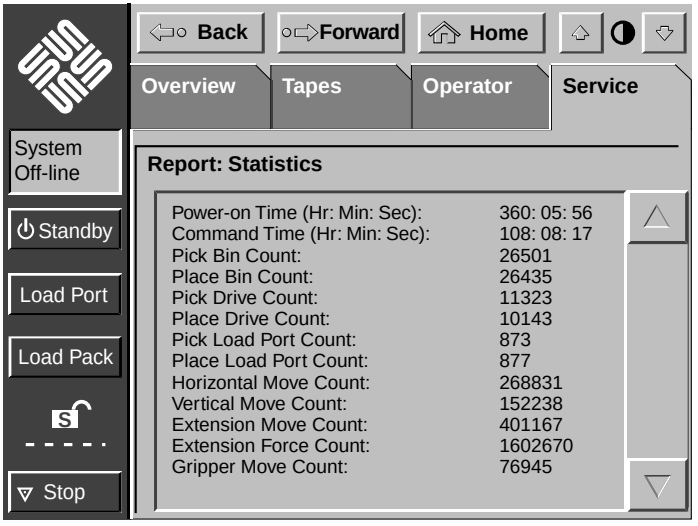


FIGURE 5-3 Statistics Report Screen

FIGURE 5-4 shows a sample actuator report (obtained by pressing the Actuator button).

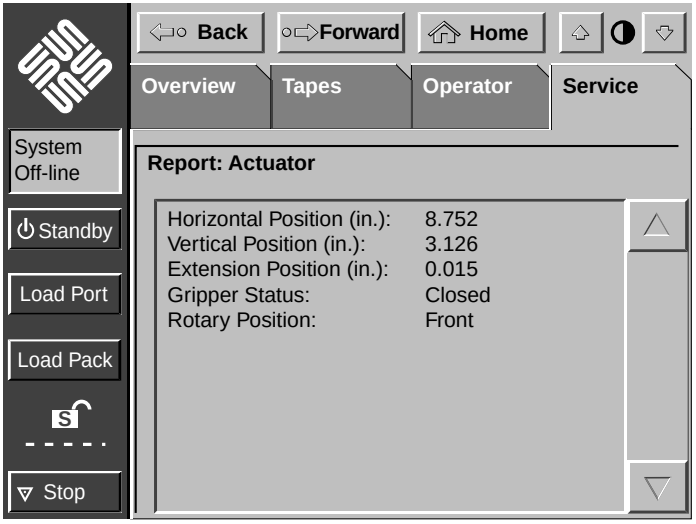


FIGURE 5-4 Actuator Report Screen

FIGURE 5-5 shows a sample system test report (obtained by pressing the SysTest Library Results button).

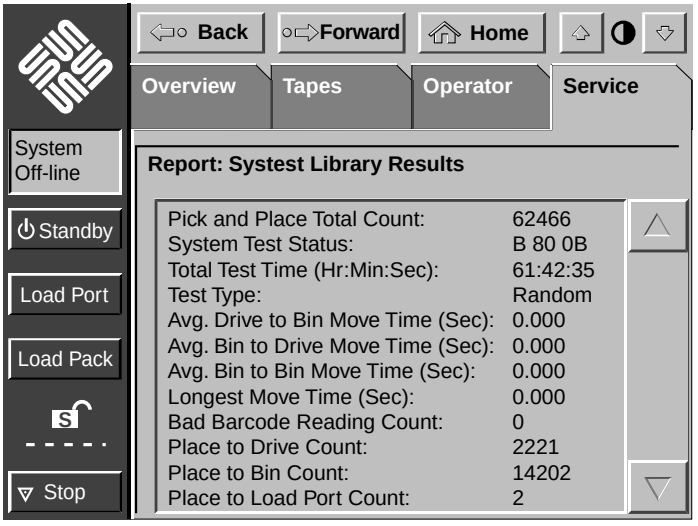


FIGURE 5-5 System Test Report Screen

FIGURE 5-6 shows a sample Auto Clean report (obtained by pressing the Auto Clean button).

Note – This button does not turn Auto Clean on or off . To change the current Auto Clean setting, see “Configuring Library Options” on page 55.

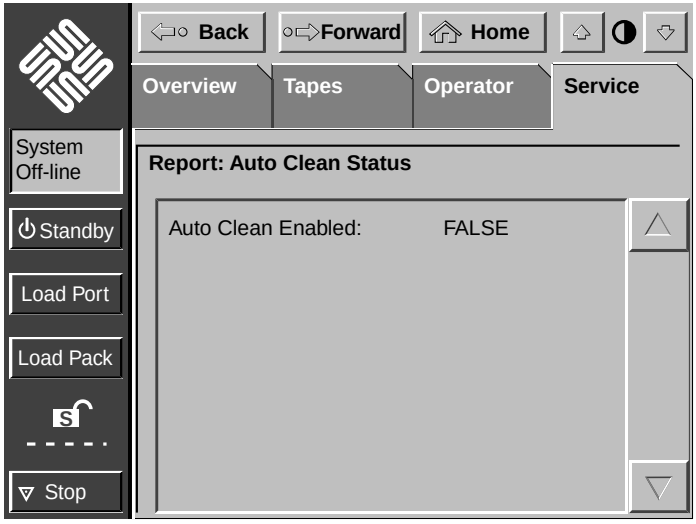


FIGURE 5-6 Auto Clean Report

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

Testing the Library

The Service screen provides two system tests:

- *System test*—Tests library operation by swapping tape cartridges between storage bins or drives.
- *Operate Axes tests* (currently not supported)—Enables you to selftest, home, position, and exercise specific library axes.

▼ To Perform a System Test

1. **From the Service screen, press the Systest Library button.**

   The Test: Systest Library screen appears (FIGURE 5-7).

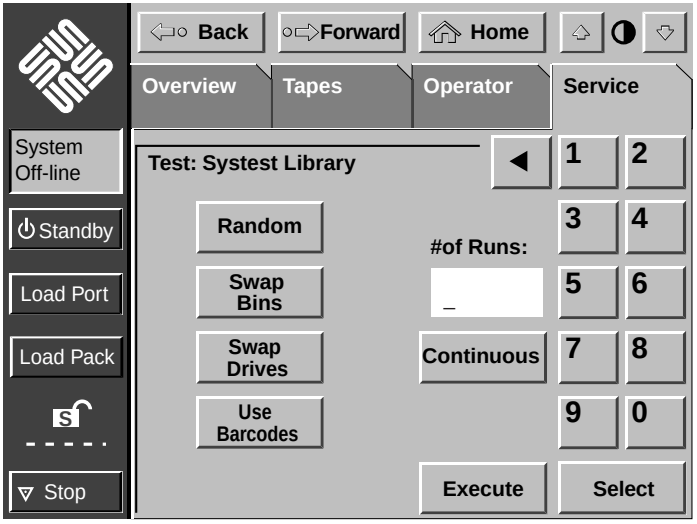


FIGURE 5-7 Systest Library Screen

2. **Select one of the following system test options:**
   - To test storage bins only, press the Swap Bins button.
   - To test drives only, press the Swap Drives button.
   - To test both bins and drives, press both the Swap Bins and Swap Drives buttons.

3. **Select all desired test options.**

   a. **To swap cartridges at random, press the Random button.**

      (If you do not press this button, cartridges will be swapped sequentially from the first bin or drive.)

   b. **To have the library read the barcode as it swaps each cartridge, press the Use Barcode button.**

   c. **To have the test repeat itself continuously until aborted, press the Continuous button. Otherwise, enter the number of times you want the test to run.**

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

   A “Command In Progress” screen appears. 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 Nonvolatile Information

The library nonvolatile memory resides on the robotic controller card. It retains library configuration information (number of drives, number of bins, and so on), calibration information, and statistics. This information should be initialized only by an authorized field service engineer when replacing the robotic controller card.

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

- *Initialize nonvolatile memory configuration*—Returns library configuration settings to factory-default condition, eliminating current calibration data and changes made using the Configure Library and Configure Options.
- *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 65.

▼ To Execute Nonvolatile Memory Commands

1. **Press the appropriate button in the Service screen.**

   A confirmation screen appears (FIGURE 5-8).

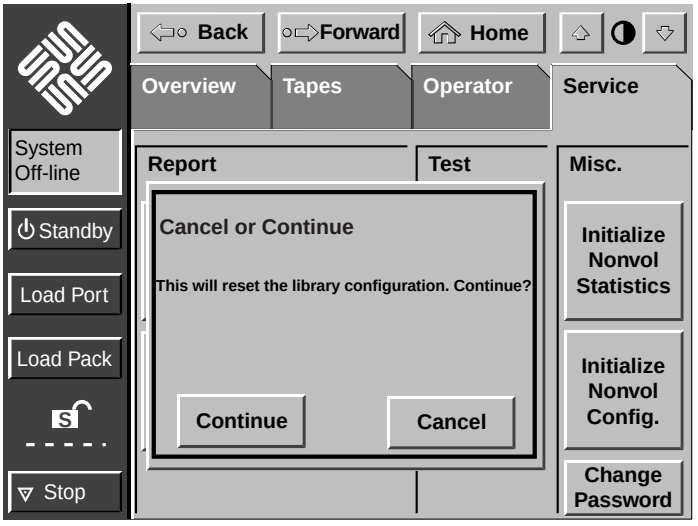


FIGURE 5-8 Confirmation Screen

2. **Press Continue to execute the command.**

Changing Passwords

This command enables you to change the operator or service password. Valid passwords consist of four to eight numeric characters entered using the keypad.

▼ To Change a Password

1. **Press the Change Password button in the Service screen.**

   The Change Password screen appears (FIGURE 5-9).

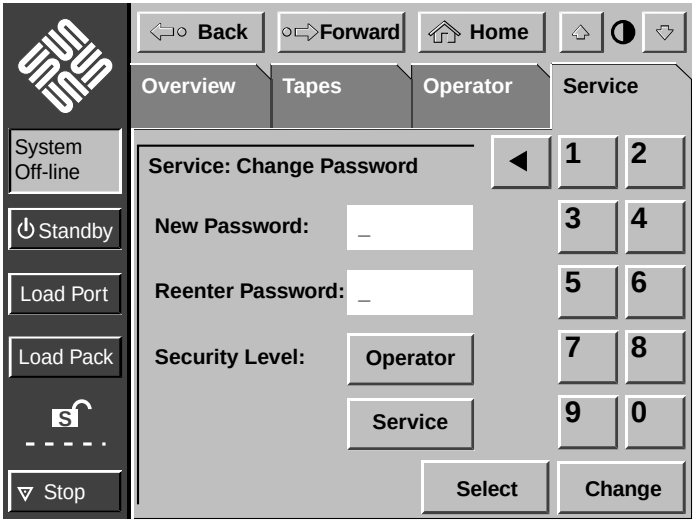


FIGURE 5-9 Change Password Screen

2. **Press the desired security level button.**

   This determines the password to be changed.

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

   Asterisks representing each character appear in the New Password text box.

4. **Re-enter the password and press the Change button.**

   Asterisks representing the password appear in the Reenter Password text box.

Note – If you lose your new password, contact Sun Technical Support.

CHAPTER 6

Troubleshooting

This chapter contains a description of problems which you may encounter during the setup and operation of the StorEdge L1000 library. Wherever applicable, corrective information has also been provided to help you resolve the problems.

Several of these problems produce error messages on the control panel called *sense data values*. Sense data value messages consist of a number and a description of the error. For a complete list of sense data values, refer to the *Sun StorEdge L1000 Service Manual.*

The troubleshooting information in this chapter is categorized as follows:

Start-up Problems

TABLE 6-1 describes the corrective action for problems which occur while starting up the library.

TABLE 6-1 Start-up Problems

Problem	Corrective Action
The library does not power on.	Be sure the library power switch is set to the | (on) position and the power cord is connected to a grounded electrical outlet.
The library or tape drives do not respond on the SCSI bus.	Be sure each SCSI device on the same SCSI bus has a unique address and the last device is properly terminated.
The library reports are not ready during initialization.	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 on the back panel of the library. If necessary, contact your field service representative about replacing the drive(s).
The gripper has a cartridge, preventing system calibration and inventory.	Manually remove the cartridge from the gripper. Then, restart the library.
The library starts up in standby mode.	Press the Standby button. Verify the library switches to on-line. You can use the control panel to select either on-line or standby mode at power-up.

Control Panel Problems

TABLE 6-2 describes the corrective action for problems with the control panel.

TABLE 6-2 Control Panel Problems

Problem	Corrective Action
The control panel is blank.	Contact an authorized field service engineer.
The control panel does not respond to touch.	Contact an authorized field service engineer.
An error message appears in the display	Write down the details of the error message, including the SK, ASC, and ASCQ numeric values. Then, press Okay to clear the message. For instructions about resolving the error, refer to the *Sun StorEdge L1000 Service Manual.*

Robotics Problems

TABLE 6-3 describes the corrective action for problems with library robotics.

TABLE 6-3 Robotics Problems

Problem	Corrective Action
The robot does not move at power up.	Be sure that all internal packing materials (foam pads and tie wraps) were removed during the installation procedure. Check the Stop and Standby buttons; be 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 element.
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.
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.

TABLE 6-3 Robotics Problems *(Continued)*

Problem	Corrective Action
The robot drops a cartridge.	Open the doors safely. (To do so, press the Load Pack button first, unlock and open the left door, open the right door, and remove the load packs.) 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.) Afterwards, replace the load packs and close the doors (right door first).
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 and remove the load packs. Manually remove the cartridge from the gripper and place it in an empty bin. Then replace the load packs and close the doors (right door first).
The gripper does not have a cartridge after completing a pick command.	Be 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 6-4 describes the corrective action for problems which occur during library operation.

TABLE 6-4 Operating Problems

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 library back panel.	Reconnect the cable or terminator according to the guidelines found in the cabling section in Chapter 2 of this guide.
A tape cartridge (medium) is reported not present.	This means that the gripper could not sense a tape cartridge in a particular storage element even though the inventory reports that it is present. Check to see if the designated cartridge is present. If it is, be sure it is properly seated. (For a tape drive, be sure the cartridge is completely unloaded.) Then retry the command. If the error persists, contact a field service engineer.

TABLE 6-4 Operating Problems *(Continued)*

Problem	Corrective Action
A move command failed.	Check the source and destination elements. The source element should hold the cartridge to be moved; the destination element should be empty. Be sure the gripper is empty and all actuators are free of obstruction. Also, be 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.
A maximum temperature exceeded warning appears.	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 automatically shuts down until the temperature drops.)

Tape Drive Problems

TABLE 6-5 describes the corrective action for problems with the tape drives.

TABLE 6-5 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.
A drive handle error occurs.	Contact a field service engineer.

APPENDIX **A**

Specifications

This appendix lists the characteristics and specifications of the Sun StorEdge L1000 library.

Physical Characteristics

TABLE A-1 Physical Characteristics

Unit Dimensions	
Width	17.3 in. (43.8 cm)
Depth	28.5 in. (72.1 cm)
Footprint	3.4 $ft.^2$ (31 cm^2)
Height	19.8 in. (50.3 cm)
Unit Weight	
Rack-mount Model	89 lb. (41 kg) without cartridges
Stand-alone Model	101 lb. (46 kg) without cartridges
Tape Drives and Cartridges	
Tape Drives	1 to 4 DLT7000
Cartridges	0–30 DLTtape III or IV

Performance Characteristics

TABLE A-2 Performance Characteristics

Average Swap Time	28 seconds, consisting of two “MOVE MEDIUM” commands.
Inventory	Less than 3 minutes, fully loaded with labeled cartridges.

Environmental Specifications

TABLE A-3 Environmental Specifications

Power Environment		
Electrical Inputs	Voltage	90-132 VAC or 180-264 VAC
	Frequency	47-63 VAC
	Power Consumption	350 VAC max
	Power Connection	IEC 320 male connector on rear panel
Climatic Environmental		
Temperature (Operating)	Dry Bulb	15 to 32^{o}C (59 to 90^{o}F)
	Wet Bulb	25^{o}C (77^{o}F) maximum
	Thermal Transition	11^{o}C per hour
Temperature (Shipping and Storage)	Dry Bulb	-40 to 66^{o}C (-40 to 151^{o}F)
	Wet Bulb	46^{o}C (115^{o}F) maximum
	Thermal Transition	30^{o}C (54^{o}F) per hour
Relative Humidity	Operating	20% to 80%, non-condensing
	Shipping and Storage	5% to 95%, non-condensing
Altitude	Operating	Sea level to 10,000 ft (3,000 m)
	Shipping and Storage	Sea level to 12,000 ft (3,650 m)
Heat Dissipation	Operating	830 BTU/hr (207 kCal/hr or 245W)

TABLE A-3 Environmental Specifications *(Continued)*

Electromagnetic/Electrostatic Susceptibility		
Direct ESD	Contact Discharge	@ 4.0 kV
	Air Discharge	@ 8.0 kV
Indirect ESD	Contact Discharge	@ 4.0 kV
Radiated Fields per IEC-801-3	Unmodulated	27 MHz to 500 MHz @ 3V/m
Fast Transients (EFT or Burst) per IEC801-4	Data Cables	@ 0.5 kV
	Power Cables	@ 1.0 kV
Acoustical Noise		
Sound Power Level	Operating	6.0 Bel
	Idle	5.0 Bel
Sound Pressure @ Bystander	Operating	49 dB

APPENDIX **B**

Relocating the Library

This appendix explains how to relocate the Sun StorEdge L1000 library. It includes instructions for both the stand-alone and rackmount units. 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:

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 “Shipping the Library” on page 90.

Note – These procedures require the original packing materials of the library. If you do not have the original packing materials, contact your Sun reseller.

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 “Site Requirements” on page 12. Make sure the new location meets all applicable clearance, environmental, and power requirements.

Preparing the Library for Relocation

Take the following steps to prepare the library for relocation:

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

▼ To Remove Tape Cartridges

1. **Unload and eject all tape cartridges from the tape drives.**
2. **Remove the bulk and load packs to access the cartridge bins.**
   a. **Press the Load Pack button on the control panel.**
   b. **Wait for the lock to release, and then open the left door.**
   c. **Press the latch at the top of either pack.**
   d. **Grasp the handle and gently pull the pack while pressing the latch at the bottom of the pack.**
   e. **Repeat Steps 2c and 2d to remove the other pack.**
3. **Remove all tape cartridges from the library and pack them for shipment.**
4. **Turn off the library.**

▼ To Install Internal Packing Materials

1. **If the gripper is not facing the front doors, reorient the extension axis.**

   To do this, gently pull back on the gripper to unlock the extension axis and then rotate the extension axis in a clockwise direction until it locks into position facing the front doors.

2. **Push the gripper as far away from the front doors as possible, and then pull the gripper approximately 1.5 inches (3.8 cm) forward.**

3. **Position the horizontal carriage so that the extension axis assembly is centered between the the load and bulk pack mounting blocks.**

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

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

6. **Insert the shipping restraint through the open doors at a downward angle, hooking the restraint on the lower drive shelf (**FIGURE B-1**).**

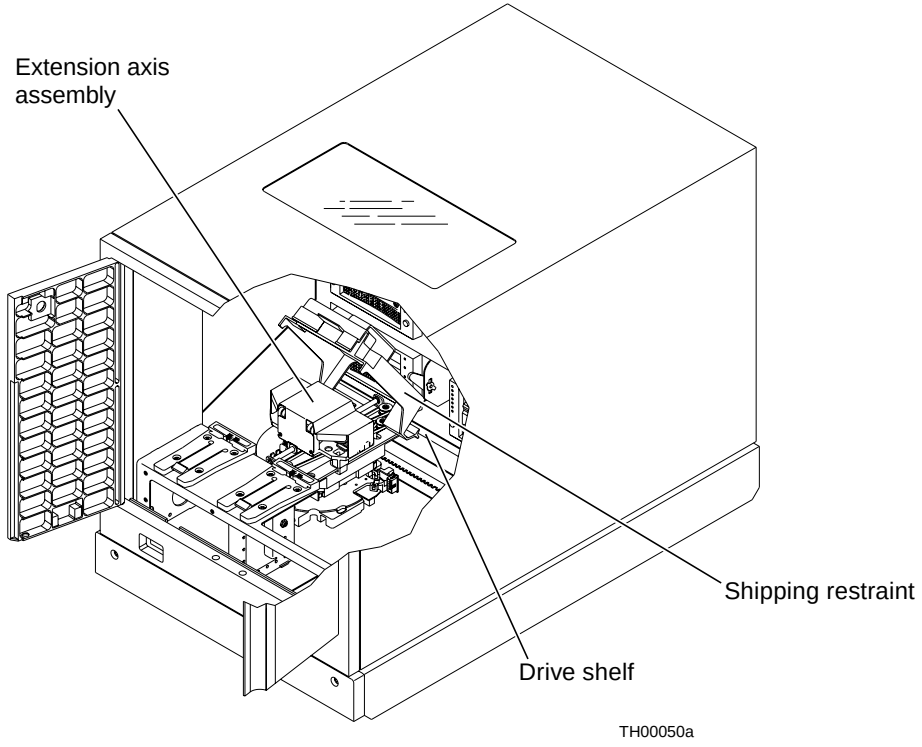


FIGURE B-1 Inserting the Shipping Restraint

7. **Position the shipping restraint over the extension axis assembly and carefully push it down over the extension axis assembly.**

   The restraint tab must fall between the load and bulk pack mounting blocks.

8. **Push on the corners of the front edge of the shipping restraint until it snaps in place and the tab is flush with the frame.**

   If the tab is not completely flush with the frame, you will not be able to install the load and bulk packs.

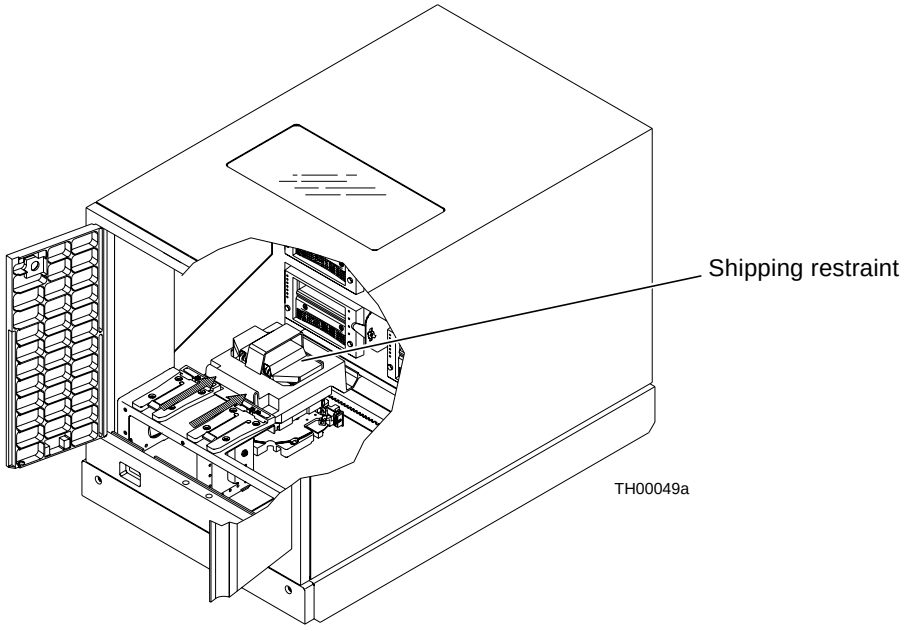


FIGURE B-2 Snapping the Restraint Into Place

▼ To Secure the Load and Bulk Packs

1. **Install the load and bulk packs in the library.**

   a. **Line up a pack with mounting blocks on the top and bottom of the library frame.**

   b. **Slide the pack onto the mounting blocks until the top and bottom latches snap into place.**

   c. **Repeat Steps 1a and 1b to install the other pack.**

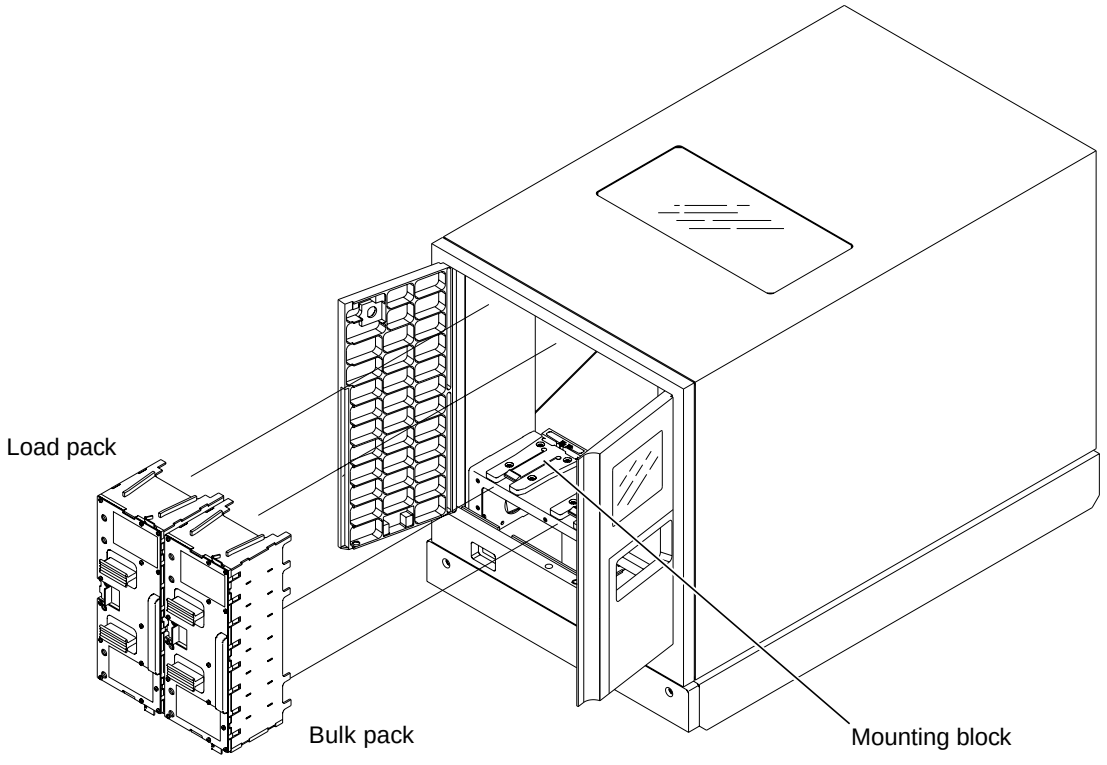


FIGURE B-3 Installing the Load and Bulk Packs

2. **Secure the load and bulk pack latches with cardboard inserts as shown in** FIGURE B-4**.**

   These inserts fit into the spaces above and below the latches to prevent movement during relocation.

3. **Close and lock the doors (right door first).**

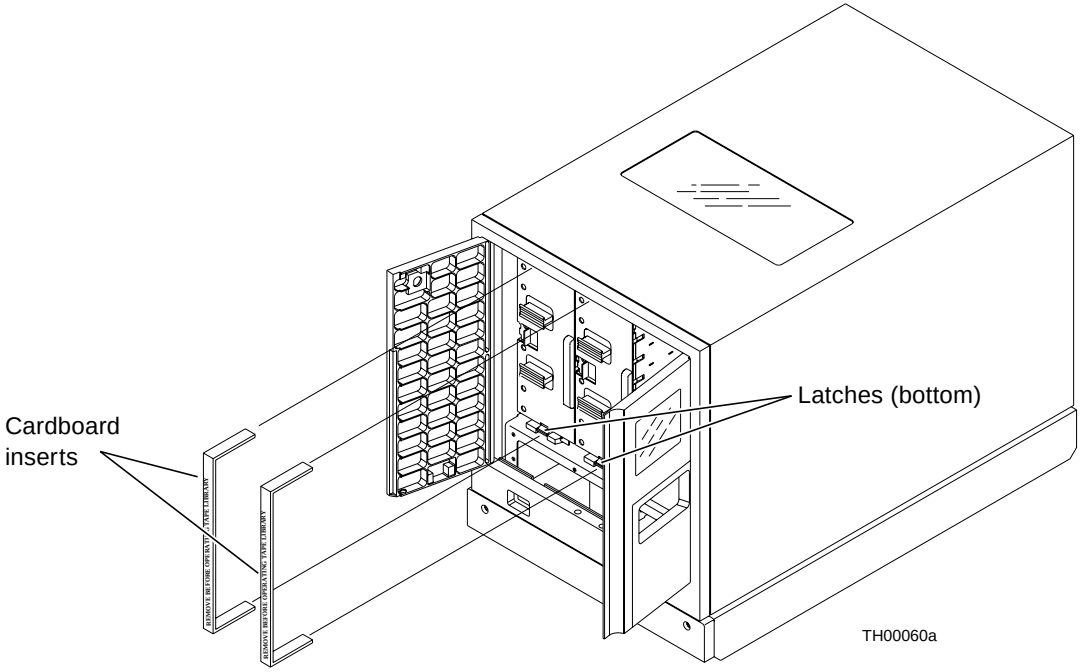


FIGURE B-4 Securing the Load and Bulk Pack Latches

▼ To Disconnect Library Cables

1. **Disconnect SCSI cables as follows:**
   - If you plan to ship the library, remove all SCSI cables and terminators from the back panel.
   - If you plan to move the library within the building, only disconnect the library from the host computers. Leave SCSI jumper cables and terminators connected to the back panel.
2. **Disconnect the power cord from the outlet and the back panel of the library.**
3. **Pack all cables in the accessories tray.**

▼ To Remove the Library from the Rack

If you plan to ship the rackmount library or move it to a new rack, follow the steps in this section.

Note – If you are planning to move the rack and library together (for example, to a different location within the same facility), skip this section and the sections on shipping and receiving the library and continue with “Moving the Library to the New Location” on page 96.

---

1. **Remove the library from the rack:**

   a. **Fully extend the rack stabilizing feet.**

   b. **Release the tray locking brackets (if necessary) and slide the library all the way out of the rack.**

   c. **Remove the six screws securing the library to the slide assembly and set the screws aside.**

   d. **With the help of a second person, lift the library from the slide assembly and place it on a sturdy hand cart or work table.**

2. **Remove the slide assembly.**

   a. **If desired, insert a support screw just below the slide assembly bracket on each of the retma rails.**

      Leave each support screw extended far enough out of the rail to support the bracket as the mounting screws are removed.

   b. **Remove the tray from the slide rails.**

      With the tray extended all the way out of the rack, press the tray release tabs and pull the tray off the slide rails. Then, set the tray aside.

   c. **Detach the slide rails from the rack by removing the screws that secure the slide rail brackets to the front and back retma rails. Then, lift each slide rail out of the rack.**

      The support screws should keep the slide rail from falling as you remove each set of mounting screws.

3. **Remove the support screws from the retma rails.**

   These screws will be needed when you install the library in the new rack.

4. **Place the slide rails on the tray for shipping.**

Shipping 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, truck, or similar means.

Skip this section if you are moving the library within a facility. Instead, refer to "Moving the Library to the New Location" on page 96.

▼ To Pack the Library

Caution – Two people should perform any steps that involve lifting or guiding the rack or library. Use safe practices when lifting or guiding the library and handling the slide assembly or ramp.

1. **Prepare the shipping pallet by placing the foam supports and then the shipping bag on top of the pallet. For the stand-alone library, attach the ramp to the side of the pallet.**
2. **Move the library onto the pallet.**
   - For the stand-alone model, roll the library up the ramp and into the bag on the pallet (FIGURE B-5).

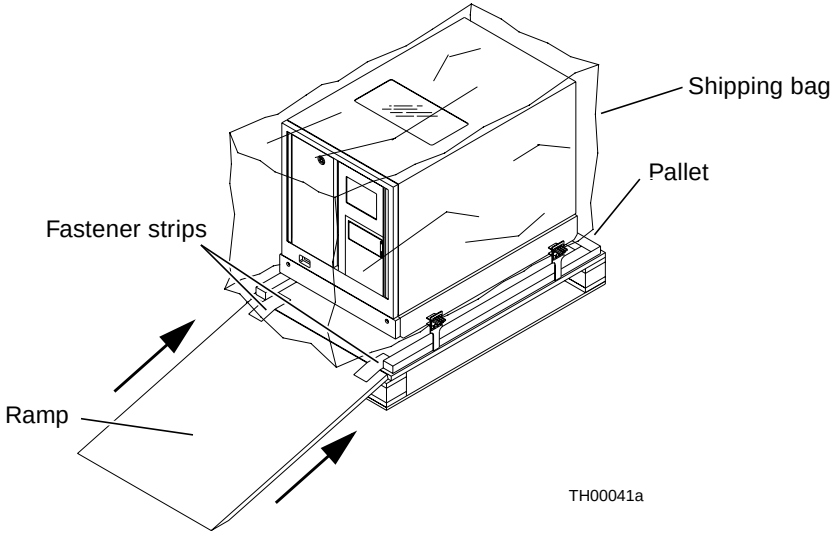


FIGURE B-5 Rolling the Stand-Alone Library Onto the Pallet

- For the rackmount library, remove it from the slide assembly and lower it onto the bag on the pallet (FIGURE B-6).

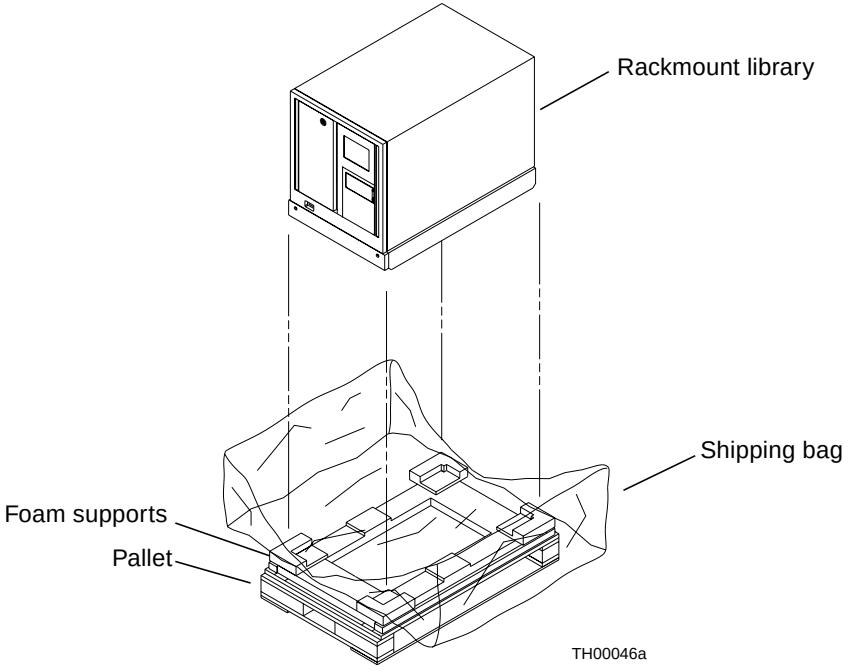


FIGURE B-6 Placing the Rackmount Library on the Pallet

3. **Seal the bag with tape.**
4. **For the stand-alone library, place additional foam supports between the library and the pallet (**FIGURE B-7**).**

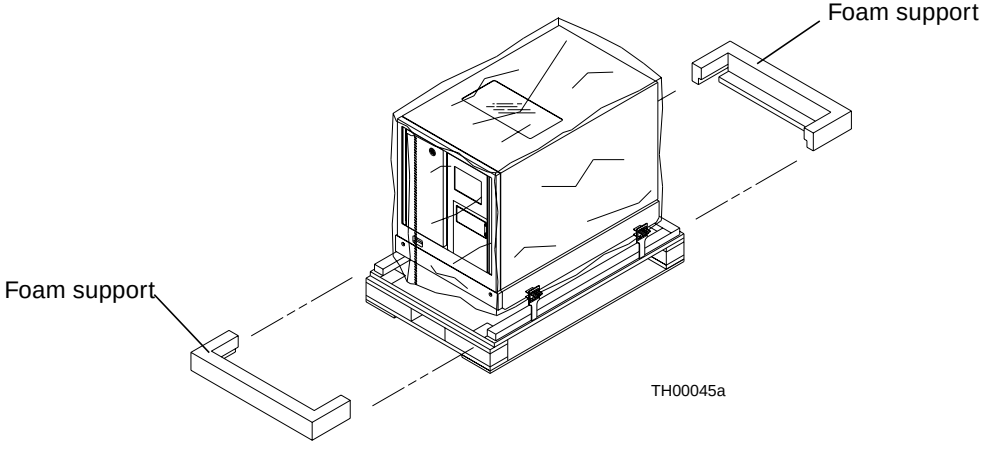


FIGURE B-7 Adding Foam Supports (Stand-Alone Unit Only)

5. **Place the shipping carton over the library and secure it to the pallet using the four clips.**

6. **Insert a foam support inside the box at each corner.**

   See FIGURE B-8 for the stand-alone configuration and FIGURE B-9 for the rack-mountable configuration. Note the additional foam pieces that secure the slide assembly.

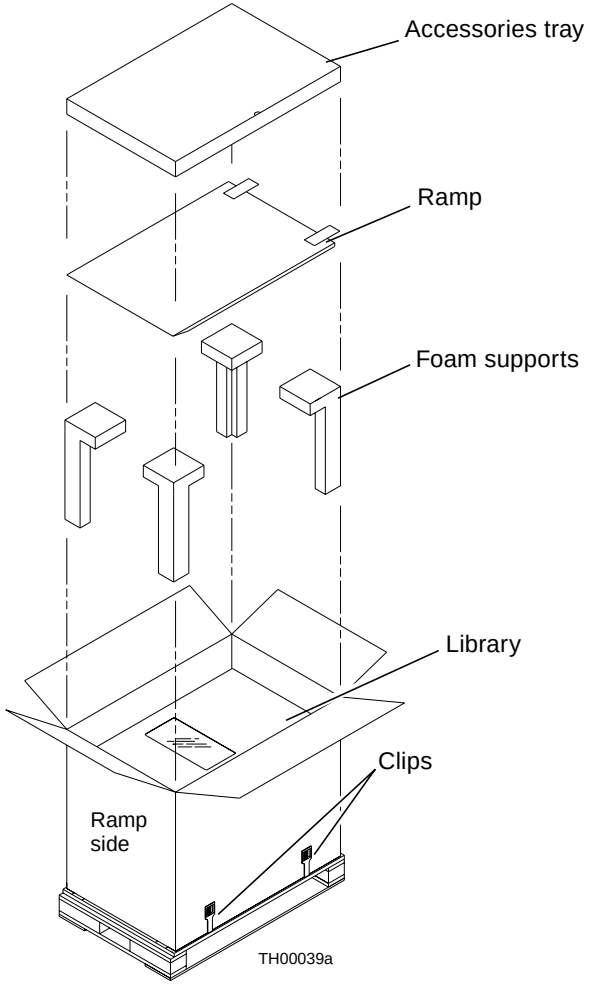


FIGURE B-8 Packing the Stand-Alone Library

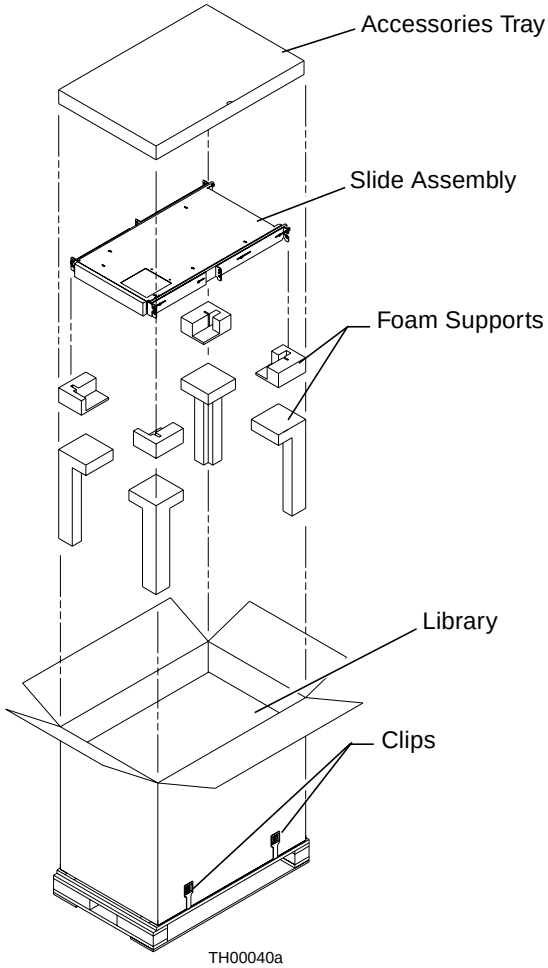


FIGURE B-9 Packing the Rackmount Library

7. **Place the ramp (stand-alone) or the slide assembly (rackmount) and the accessories tray into the box on top of the library.**
8. **Close the carton and seal the flaps with shipping tape.**
9. **Ship the library.**

▼ To Receive the Library

1. **Receive the library as close to the installation site as possible.**
2. **For the stand-alone unit, allow a minimum of 63 inches (160 cm) in front of the ramp side of the pallet as shown in** FIGURE B-10**.**

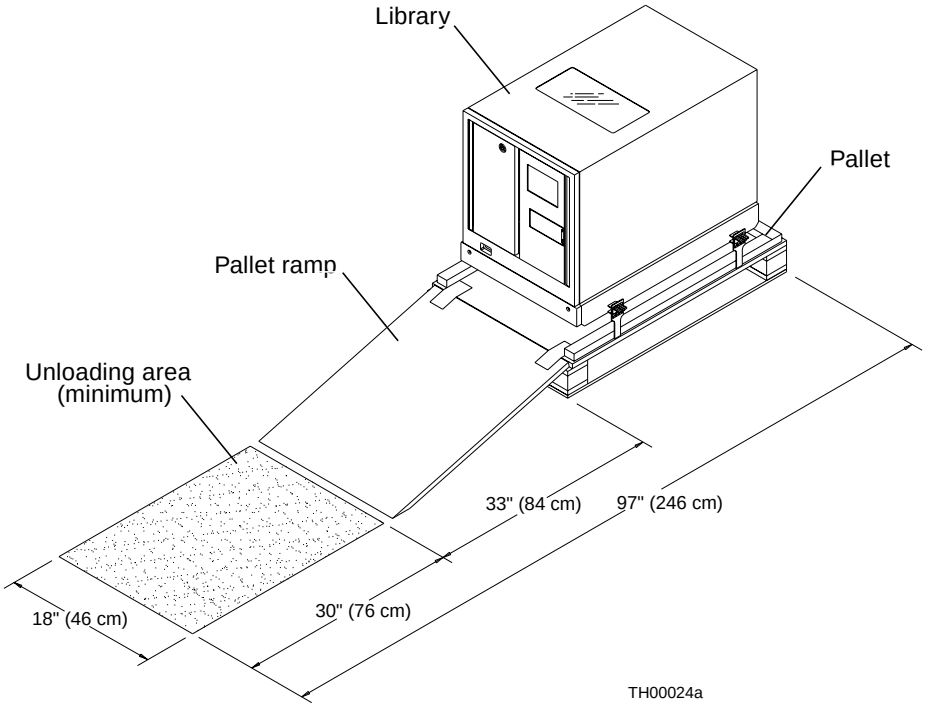


FIGURE B-10 Unloading Space Requirements (Stand-Alone Library)

3. **Inspect the crating material for damage that may have occurred during shipment. Report any damage to the shipper immediately.**

▼ To Uncrate the Library

1. **Open the top of the shipping carton by carefully cutting the packaging tape.**

   The following items are stacked on top of the library:

   - Accessories tray
   - Ramp (stand-alone library) or slide assembly (rackmount library)

2. **Remove these items from on top of the library and set them aside.**
3. **Remove all foam supports inside the carton.**
4. **Release the four clips that secure the carton to the pallet.**

   To release a clip, pinch the center tabs firmly together and pull on the tabs.

5. **Lift the carton off the pallet. Set the carton aside.**
6. **Open the shipping bag by removing the tape or cutting the bag along its seam.**
7. **If unpacking a stand-alone library, remove the library from the pallet as follows:**

   a. **Remove the foam supports from between the library and the pallet.**

   b. **Attach the ramp to the pallet.**

   c. **Carefully guide the library down the ramp as a second person pushes the library from the back.**

8. **Store all packing materials for future use.**

Moving the Library to the New Location

Use this section:

- To move the library to a nearby site (that is, within the same building).
- To move the library to the installation site after uncrating the library.

This section provides separate procedures for stand-alone and rackmount units.

Caution – Two people should perform any steps that involve lifting or guiding the rack or library. Use safe practices when lifting or guiding the library and handling the slide assembly or the ramp.

▼ To Move the Standalone Unit

1. **Make sure all tape cartridges have been removed from the library and all internal packing materials are in place.**

   For more information, see “Preparing the Library for Relocation” on page 84.

Caution – Always remove tape cartridges and add internal packing materials before shipping or relocating the library. Failure to do this may result in data loss or equipment damage.

2. **Map out the route to the installation site.**

   Be sure to clear a path to the installation site, unlock doors, place mats down over carpeted areas, and so on. For more information, refer to “Site Requirements” on page 12.

3. **Carefully roll the library on its casters to the installation site.**

▼ To Move the Rackmount Unit

The rackmount unit may be moved with or without the existing rack.

▼ To Move the Library and Rack Together

1. **Make sure all tape cartridges have been removed from the library and all internal packing materials are in place.**

   For more information, see “Preparing the Library for Relocation” on page 84.

2. **Do not remove the library from the rack.**

3. **Secure the library and slide assembly to the retma rails using two locking screws (see “Positioning a Standalone Library” on page 16).**

4. **Map out the route to the installation site.**

   Be sure to clear a path to the installation site large enough for the rack, unlock all doors, place mats down over carpeted areas, and so on.

5. **With the help of another person, carefully roll the rack to the installation site.**

▼ To Move the Library Only

1. **Make sure all tape cartridges have been removed from the library and all internal packing materials are in place.**

   For more information, see “Preparing the Library for Relocation” on page 84.

2. **Map out the route to the installation site.**

   Be sure to clear a path to the installation site, unlock doors, place mats down over carpeted areas, and so on. For more information, refer to “Site Requirements” on page 12.

3. **Remove the library and slide assembly from the rack as explained in “To Remove the Library from the Rack” on page 89.**

4. **Move the library and slide assembly to the new location.**

   If possible, use a hand cart or similar device to move the library and slide assembly.

Caution – Keep the library upright and level during the move.

5. **Install the library in the new rack as explained in “Positioning a Rackmount Library” on page 16.**

Preparing the Library for Operation

Once you have moved the library to its new location, you are ready to put the library back in operation. To do so, you must:

- Remove internal packing materials
- Reinstall the library

▼ To Remove Internal Packing Materials

Caution – Before removing the protective packaging materials inside the library, make sure the library is at its final installation site. Damage to the equipment may occur if the library is moved without these materials in place.

Caution – Take precautions to prevent ESD whenever the library enclosure is removed.

▼ To Open the Doors

1. **Locate the key in the accessories kit.**
2. **Insert the key into the lock and turn it counterclockwise to the open position.**
3. **Open the left door first, then the right door.**
4. **Remove the cardboard inserts securing the load and bulk pack latches.**

▼ To Remove the Load and Bulk Packs

1. **Press the latch at the top of either pack.**
2. **Grasp the handle and gently pull the pack while pressing the latch at the bottom of the pack.**
3. **Repeat Step 1 and Step 2 to remove the other pack.**

▼ To Remove the Extension Axis Packing Materials

Note – The shipping restraint that protects the extension axis assembly is hooked to the bottom drive shelf and fits over the supports for the load and bulk packs.

---

1. **Grasp the front edge of the shipping restraint and carefully push inward at both corners while lifting it up at an angle. (See** FIGURE B-1**.)**

   The tab on the shipping restraint (between the mounting blocks for the load and bulk packs) should pop up, thereby releasing the shipping restraint from the load pack shelf. The back of the shipping restraint should unhook from the bottom drive shelf.

2. **Lift the shipping restraint off the extension axis assembly.**

3. **Raise the extension axis assembly and remove the foam block beneath it.**

4. **Lower the extension axis assembly to its normal position on the floor of the library.**

Note – Retain the original shipping container and shipping bag, pallet, ramp, accessories tray, and all packing materials for future use. Store the key away from the library.

Reinstalling the Library

After relocating the library and removing internal packing materials, you are ready to reinstall the library. This involves:

- Reinserting tape cartridges.
- Replacing the load and bulk packs.
- Reconnecting SCSI cables.
- Connecting the library to a grounded power source.

For more information about these procedures, refer to Chapter 2.

Glossary

actuator A robotic component that moves inside the library to manipulate cartridges. Actuators include the gripper, extension axis, rotary axis, vertical axis, and horizontal axis.

bar code label An identification label with a series of vertical bars of varying widths attached to DLT cartridges to facilitate media inventory and tracking.

bar code scanner A device mounted on the extension axis to read cartridge bar code labels.

bulk pack An 8-bin, removable, storage magazine for DLT cartridges that fits inside the right door of the StorEdge L1000 library.

calibration The software measurements and configuration required for successful operation of the library.

control panel The small touch screen on the front of the StorEdge L1000 library that consists of various graphical user interface (GUI) menus for configuration, testing, and diagnostics.

DLT Digital linear tape.

EIA/TIA-574 A serial communications cabling and protocol standard for 9-pin connectors, sometimes referred to as RS-232. The diagnostic port (DIAG), on the rear of the library, uses this protocol.

extension axis An assembly consisting of the gripper and the baseplate on which the gripper is mounted.

gripper An electromechanical device mounted on the extension axis to pick and place cartridges.

host computer A computer that issues SCSI commands to control the library robotics.

load pack An eight-bin removable storage magazine for DLT tape cartridges that fits inside the left door on the front of the StorEdge L1000 library. This magazine can be configured to act as a import/export device, if desired.

load port A single-cartridge import/export device located in the front of the library.

MSBF Mean swaps between failures

MTBF Mean time between failures

MTTR Mean time to repair

NVRAM Nonvolatile RAM

off-line The state of the library when it is not available for communication with the host but ready for communication through the diagnostic port. Also called standby mode.

on-line The state of the library when it is ready for communications with a host.

pick The act of removing a cartridge from one location in preparation for placing it in another location.

place The act of placing a cartridge in a location after it has been picked from another location.

PROM Programmable read-only memory

RAM Random-access memory

SCSI Small computer system interface. A communications standard for attaching peripheral equipment to computers.

standby mode The state where the library is not available for communication with the host but is ready for communication through the diagnostic port. Also called off-line mode.

tape drive A mechanism that reads data from, and writes data to, a tape cartridge.

Index

R

S

T

U

W