ATL P1000 Series Tape Library

User's Guide

6221101-03

Ver. 3, Rel. 0

Quantum | ATL

ATL P1000 Series User's Guide, 6221101-03, Ver. 3, Rel. 0, September 1999. Printed in the USA.

COPYRIGHT STATEMENT

TRADEMARK STATEMENT

FCC STATEMENT

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

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

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

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

INDUSTRY CANADA (DIGITAL APPARATUS)
Interference-Causing Equipment Standard
ICES-003 Issue 2

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

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

CISPR-22 WARNING!

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

ACHTUNG!

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

ATTENTION!

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

NOTICE FOR USA AND CANADA ONLY

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

Plug Cap	Parallel blade with ground pin (NEMA 5-15P configuration)
Cord Socket	IEC 320 connector rated 250V 15A
Cord	Type: SJT, three 16 AWG or 18 AWG wires
Length	Maximum 15 feet (4.5m)
Rating	Minimum 10 A, 125 V

ATTENTION

LIRE LA REMARQUE DANS LE MODE D'EMPLOI.

REMARQUE

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

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

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

Fiche	Broches parallèles avec une broche de mise à la terre (configuration NEMA 5-15P)
Cordon	Type: SJT, trifilaire 16 AWG ou 18 AWG
Longeur	Maximum 15 pieds (4.5m)
Capacité	Minimum 10 A, 125 V

BATTERY STATEMENT

Caution

The Dallas Semiconductor DS1230AB-200 component on the robotic controller board inside this product contains a lithium battery. Lithium is a hazardous material that must be disposed of in accordance with local, state, and federal law.

Forsigtig

Båndbiblioteket indeholder et lithiumbatteri. Dallas Semiconductor DS1230AB-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 Semiconductor DS1230AB-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 DS1230AB-200 sur la carte robotic contrôleur contient une pile au lithium. Le lithium peut être considéré comme matériau dangereux. Jeter cette pile conformément aux lois locales, d’état et fédérales.

Achtung!

Die Bandbibliothek enthält eine Lithiumbatterie. Der Halbleiter Dallas Semiconductor DS1230AB-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 Semiconductor DS1230AB-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 DS1230AB-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 Semiconductor DS1230AB-200 en el tablero controlador robotic contiene una pila de litio. El litio puede considerarse como un material peligroso. Deseche esta pila de acuerdo con las leyes municipales, estatales y federales.

Varning!

Magnetbandsbiblioteket innehåller ett litiumbatteri. Dallas Semiconductor DS1230AB-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

Audience

This guide was written for operators of the P1000 library.

Purpose

This guide provides procedures for unpacking, installing, operating, and troubleshooting the basic P1000 library with a standard SCSI host interface.

The optional Fibre Channel capabilities are detailed in a separate series of documents (see “Related Documents” on page xiv).

Document Organization

This guide is organized as follows:

- Chapter 1, “Library Description,” provides an overview of the P1000 components and operation.
- Chapter 2, “Installing the P1000 Library,” explains how to unpack and install the P1000.
- Chapter 3, “Basic Operations,” introduces the P1000’s touch screen graphical user interface (GUI) and explains how to obtain library status, change the GUI security level, and perform several manual operations such as turning the library on and off and inserting tape cartridges.
- Chapter 4, “Operator Commands,” describes each of the commands on the Operator screen of the GUI.
- Chapter 5, “Service Commands,” describes each of the commands on the Service screen of the GUI.
- Chapter 6, “Troubleshooting,” discusses typical P1000 operating problems and provides probable solutions.
- Appendix A, “Specifications,” provides the physical, performance, and environmental characteristics of the P1000.
- Appendix B, “Installing the Slide Assembly in the Rack,” explains how to install the slide assembly in the rack (for rack-mount units only).

This guide concludes with a glossary and an index.

Notational Conventions

This manual uses the following conventions:

Caution: Cautions indicate potential hazards to equipment and are included to prevent damage to equipment.

Note: Notes emphasize important information related to the main topic.

Warning: Warnings indicate potential hazards to personal safety and are included to prevent injury.

This manual uses the following:

- Right side of the library — Refers to the right side as you face the component being described.
- Left side of the library — Refers to the left side as you face the component being described.

Related Documents

This section lists documents related to the ATL P1000 library.

ATL P1000 Documentation

Table 1 lists other manuals associated with the P1000 library.

Table 1 Related Documentation

Document Number	Title	Description
6221100	*ATL P1000 Series Library Unpacking Instructions*	This document explains how to unpack the P1000 library.
6331101	*ATL Prism FC210 Router Addendum*	This document provides operating and troubleshooting procedures that are specific to P1000 libraries with the Prism FC210 Router.

Note: For information regarding your tape drive, see the appropriate product manual.

SCSI-2 Specification

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

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

Contacts

This section provides contact information for ATL Products.

ATL Products Corporate Headquarters

To order documentation for the ATL P1000, contact:

ATL Products, Inc.
101 Innovation Drive
Irvine, CA 92612
(949) 856-7800
(800) 284-5101

Note: When placing an order for a document, please specify its part number.

Technical Publications

To comment on existing documentation send e-mail to:

atl-docs@atlp.com

Internet

Visit ATL's home page at:

http://www.atlp.com

Professional Services

The ATL Products Professional Services Department provides a 24-hour help desk that can be reached at:

voice: (949) 477-7924 or (800) 284-5101
fax: (949) 477-7940
e-mail: helpdesk@atlp.com

Chapter 1

Library Description

The ATL P1000 is an automated tape library system. When fully configured, the P1000 consists of four tape drives and 30 cartridges. The maximum storage capacity of the P1000 is 1050 GB (up to 2100 GB compressed), based on 30 cartridges at 35 GB each (up to 70 GB compressed).

The P1000 library is shipped in either a stand-alone (see figure 1) or rack-mount configuration (see figure 2). The stand-alone P1000 is set on casters. The rack-mount P1000 comes with a slide tray assembly for installation in a rack.

Note: A rack is not provided with the rack-mount P1000; it must be obtained separately.

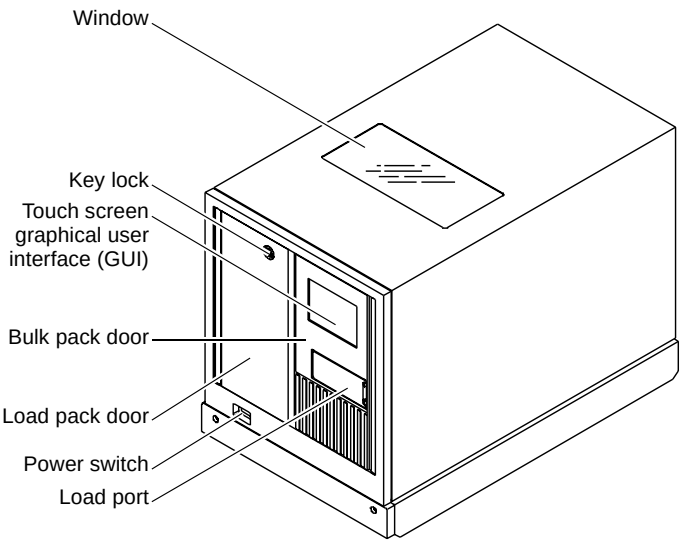
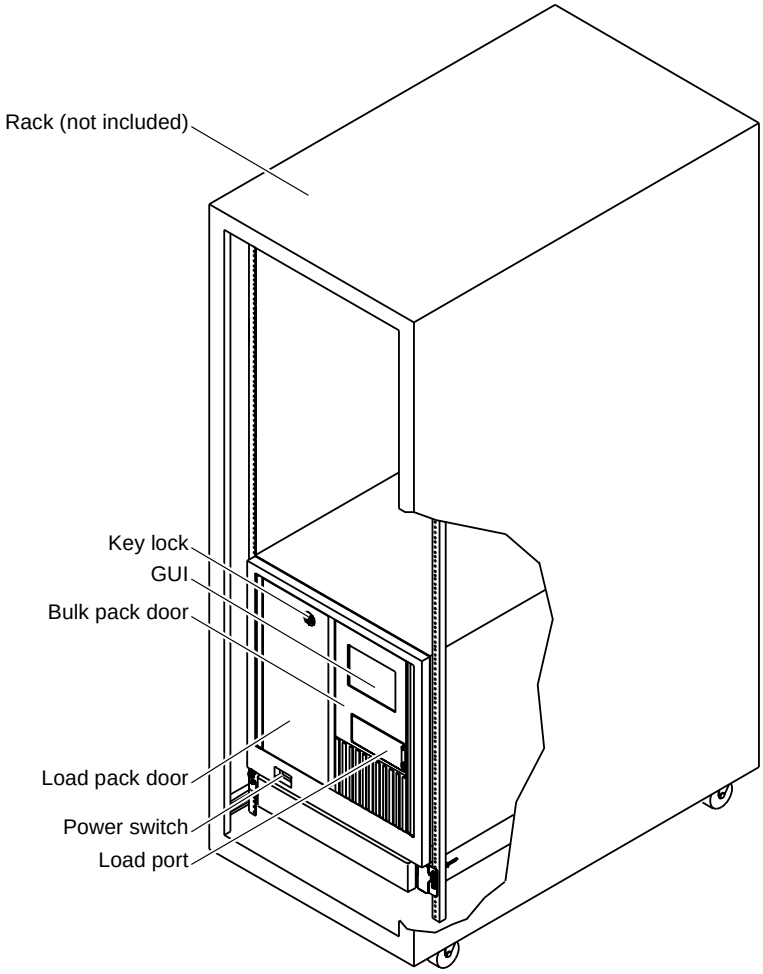


Figure 1 P1000 Front View, Stand-alone Library

Figure 2 P1000 Front View, Rack-mount Library



Configuration Options

As shown in figure 1 and figure 2, the P1000 library is available in stand-alone and rack-mount configurations. Other library options include:

- the number of tape drives

  The P1000 holds one to four tape drives.

- high-density or low-density tape configuration

  The high-density configuration consists of up to 30 tape cartridges: 9 in the back storage bins, 5 in the front storage bins, 8 in the load pack, and 8 in the bulk pack.

  The low-density configuration consists of 16 tape cartridges housed in the load pack and bulk pack. All fixed storage bins are removed from the low-density library.

- single-ended or differential SCSI communication module

- optical or copper-based Fibre Channel communication module

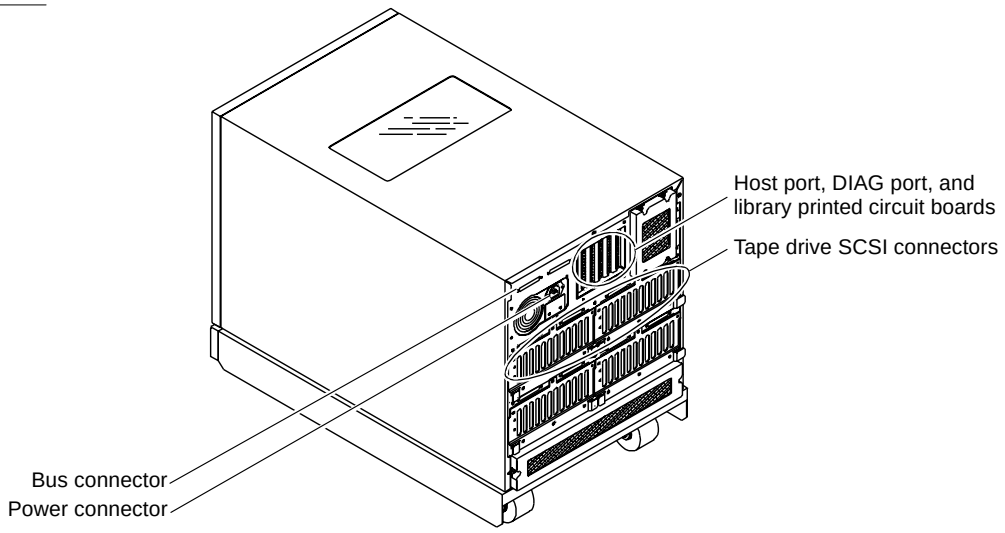
  The P1000 can be supplied with (or upgraded to) various Fibre Channel host interfaces, including a data router capability that convert Fibre Channel to SCSI within the library. This option is described in the *ATL Prism FC210 Router Addendum* (PN 6331101).

- multiple SCSI bus capability

  The P1000 supports 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 (see figure 3 on page 4).

As you unpack and install the P1000, verify that the library is configured with the options you require.

Figure 3 P1000 Library, Back View



Library Elements

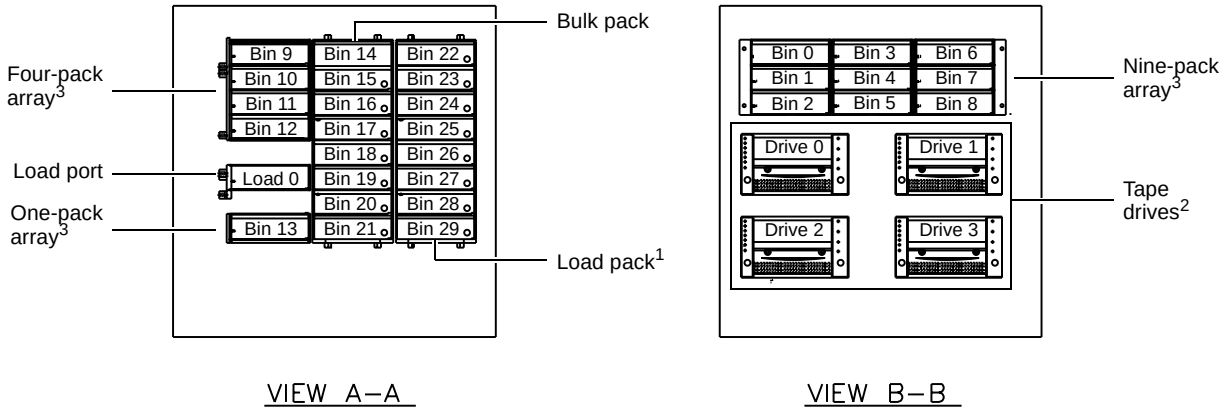
The P1000 has the following elements (see figure 4 on page 6):

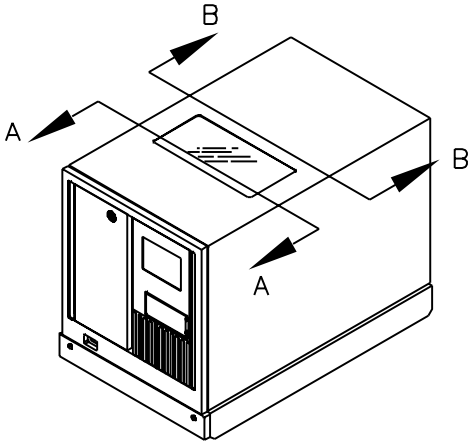
- storage bins
  - nine-pack fixed storage array (bins 0 to 8) (in high-density configuration only)
  - four-pack fixed storage array (bins 9 to 12) (in high-density configuration only)
  - one-pack fixed storage array (bin 13) (in high-density configuration only)
  - bulk pack (bins 14 to 21)
  - load pack (bins 22 to 29)

Note: In the low-density configuration, the P1000 stores tapes in the load and bulk packs only. All fixed bins are removed from the library.

- import export elements
  - load port (load 0)
  - load pack (when configured for import or export operation, these bins are numbered Load 1 to Load 8)
- up to 4 tape drives (drives 0, 1, 2, and 3)

Figure 4 Library Elements





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

[2] When fewer than four drives are present in the P1000, the drives occupy consecutive bays, starting with drive bay 0.

[3] These bins are present only in the high-density configuration.

Robotics Operation

Library robotics consist of the following components:

- gripper mechanism / bar code reader
- vertical actuator
- horizontal actuator
- extension actuator

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, allowing the gripper to pass cartridges between the front storage bins and the back storage bins or 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.

The gripper includes bar code scanners which can read standard six-character, 3 of 9 bar code labels. These scanners are used to maintain an inventory of the tape cartridges within the P1000. For example, an inventory occurs automatically when you turn on the library or close the bulk pack door. You may also initiate an inventory manually from the host computer.

Although the P1000 does not require tape cartridges to have bar code labels, properly labeled tape cartridges and full storage bins speed the inventory process.

Note: The automatic inventory feature can be disabled using the touch screen GUI (see chapter 4). This is useful for systems with unlabeled tape cartridges or partially filled storage bins.

Caution: The LED scanner is classified as a Class 1 LED light emitting device by IEC 825. The wavelength is 850 nm (invisible ultraviolet).

Operator-Accessible Components

The following P1000 components are operator-accessible:

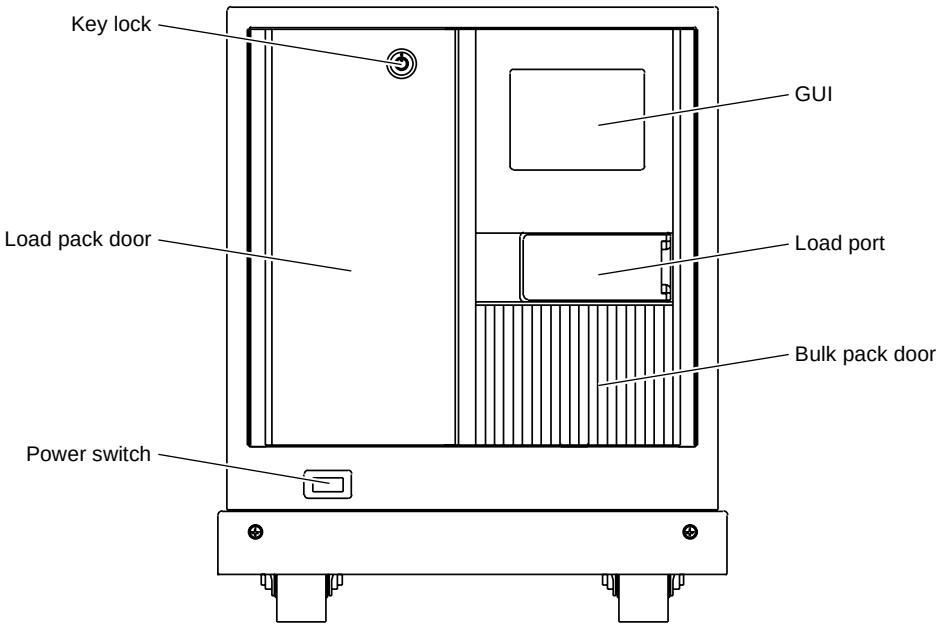
- front panel
- load and bulk packs
- back panel
- tape drives

The following sections describe each of these components.

Front Panel

The front panel consists of the GUI, the front doors and key lock, the power switch, and the load port (see figure 5).

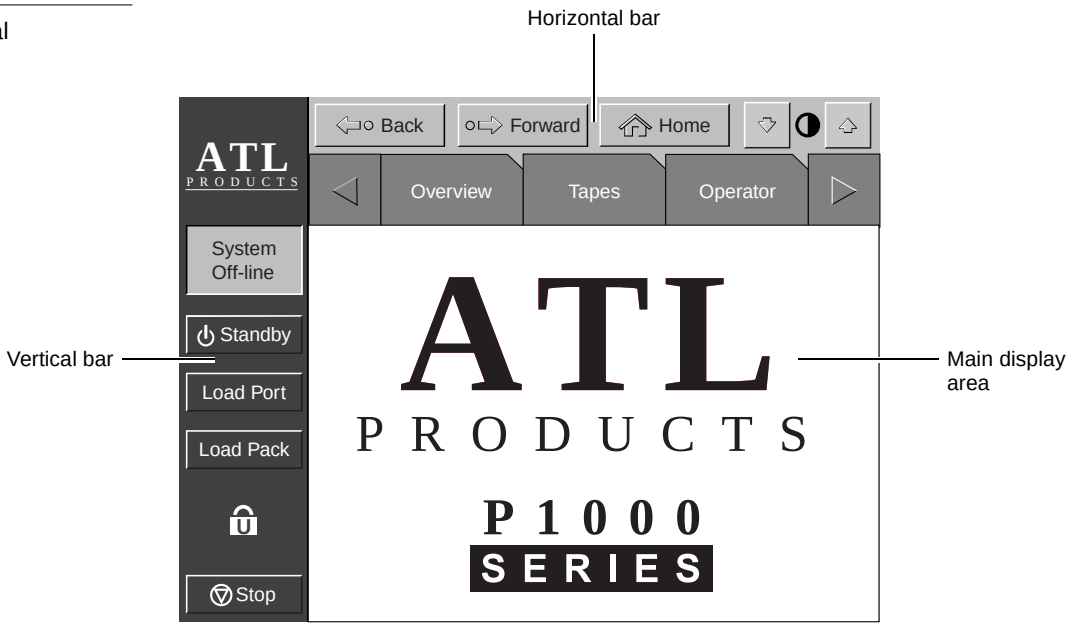
Figure 5 P1000 Front Panel



GUI

The GUI (see figure 6) displays touch screen menus that allow you to determine library status, configure the library, and perform certain diagnostic functions.

Figure 6 GUI: Initial Screen



The GUI screen consists of:

- a horizontal bar (at the top of the screen)
- a vertical bar (at the left side of the screen)
- a main display area

The main display area contains a series of screens with status, configuration, diagnostic, and operating controls. The horizontal and vertical bars remain the same while the content of the main display area changes.

For further information about the GUI, see chapters 3 and 4.

Front Doors

The front doors provide access to the load packs and the tape drives. They allow you to insert and remove tape cartridges and manually perform tape drive functions.

Warning: Before opening the front doors of the P1000, make sure the library is in standby mode and the robotics have come to a complete stop. Failure to do so may result in personal injury or damage to the P1000.

The front doors lock to prevent unauthorized access to the P1000. To unlock and open the doors:

Procedure

1. If the library is on-line, press the Standby button on the GUI.

   The system status indicator above the Standby button changes to indicate that the library is in Standby mode.

2. Use the key to unlock the load pack door.
3. Press the Load Pack button on the GUI.

   This prepares the library for load pack removal. Always press the Load Pack button before opening the front door to access the load pack.

4. Open the left door and then open the right door.

Load Port

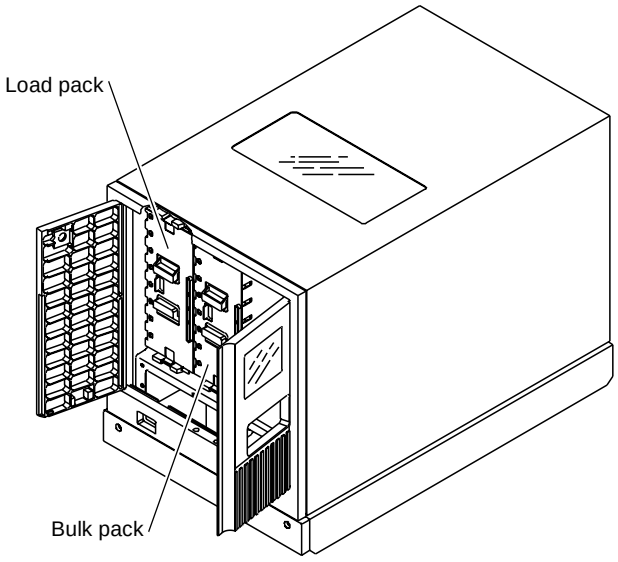
The load port enables you to insert a single tape cartridge into the P1000. To open the load port, press the Load Port button on the GUI.

Load and Bulk Packs

The load and bulk packs are eight-cartridge removable magazines that attach to the front storage bin frame (see figure 7). Use these packs to add or remove multiple tape cartridges.

The load pack can be configured as an additional load port.

Figure 7 Load and Bulk Packs



To install or remove load or bulk packs, see chapters 2 and 3.

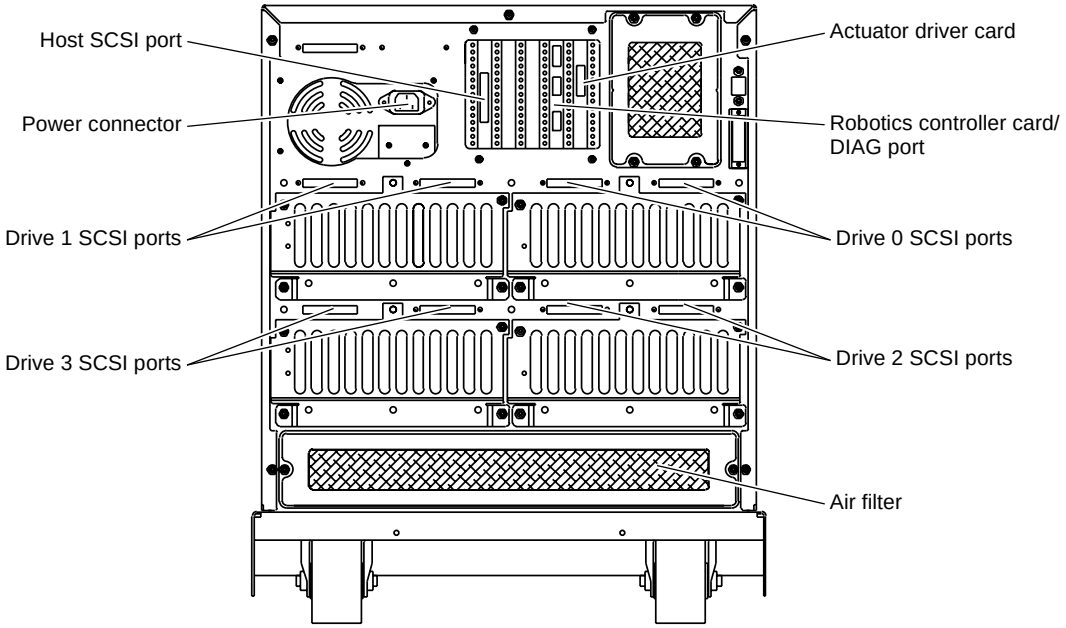
Back Panel

The back panel of the P1000 (see figure 8) has the following components:

- SCSI ports
- RS-232C diagnostic (DIAG) port
- power connector
- drive access (hot swap)
- air filters

These components provide the P1000 with power and communication links to external systems.

Figure 8 Back Panel, Stand-alone Library



Tape Drives

The P1000 holds up to four tape drives. When fewer than four tape drives are installed, the tape drives must occupy consecutive drive bays, beginning with drive bay 0 (see figure 4 on page 6).

Chapter 2

Installing the P1000 Library

This chapter explains how to install the stand-alone and rack-mount configurations of the P1000 library. Installation consists of the following tasks:

- verifying that the installation site meets the site requirements
- unpacking and positioning the library
- preparing and inserting tape cartridges
- connecting host computer(s) to the library
- turning on the library
- configuring and testing the library

Site Requirements

When selecting an installation site for the P1000 library, consider the following requirements:

- floor space
- floor clearance
- overhead clearance
- floor strength and inclination
- power and grounding
- environmental factors

Floor Space

Figure 9 shows the floor space requirements of the stand-alone P1000.

Figure 9 Floor Space Requirements, Stand-alone Library

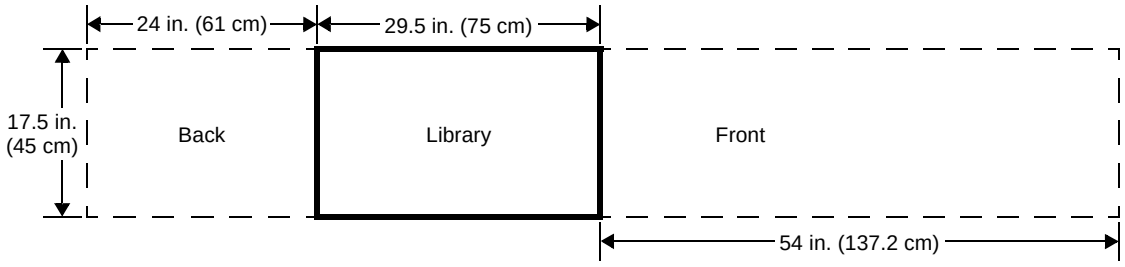
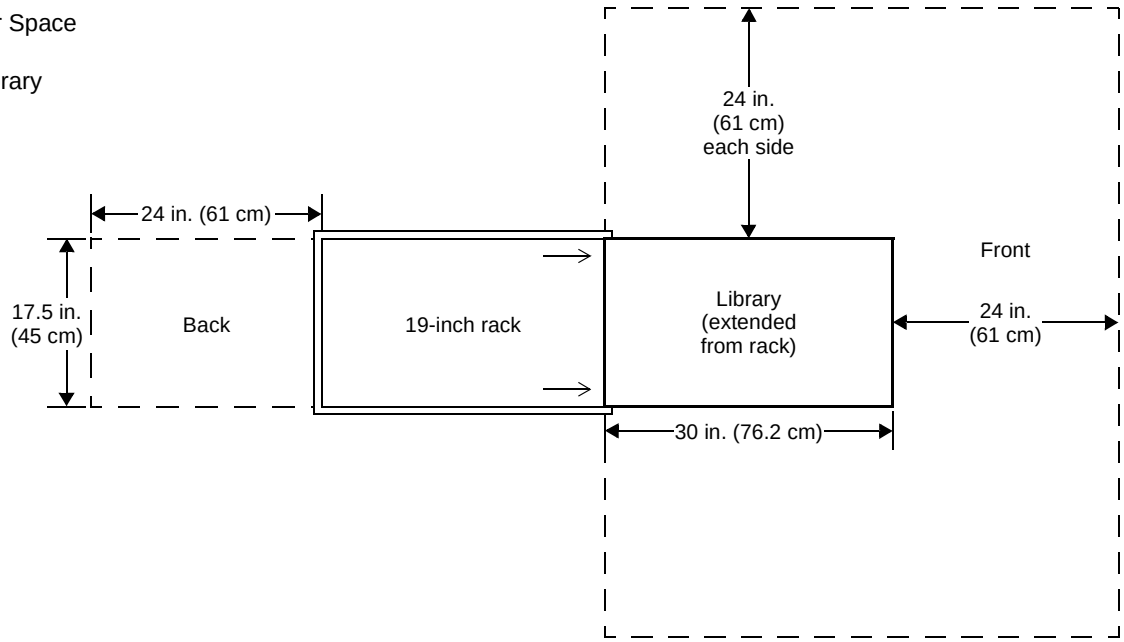


Figure 10 shows the floor space requirements for the rack-mount P1000.

Figure 10 Floor Space Requirements, Rack-mount Library



Floor Clearance

The stand-alone P1000 has a floor clearance of 0.75 in. (1.9 cm). Place the library on a level, uncarpeted floor free of defects.

Floor Strength and Inclination

The floor at the installation site must be rated at 250 lb / ft^2 (1221 kg / m^2). This is sufficient to support a fully loaded P1000 on the floor or in a rack.

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

Overhead Clearance

To remove the P1000 enclosure, there must be a minimum clearance of 24 in. (61 cm) above the library. When combined with the height of the library (21 in. / 53 cm), this is a total of 45 in. (114.5 cm) from the floor (stand-alone library) or bottom of the slide (rack-mount library).

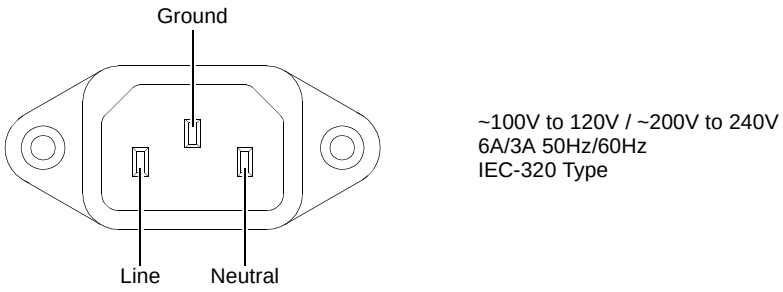
Power and Grounding

The library auto-ranging power supply accepts single-phase, 90 VAC to 264 VAC input power at 47 Hz to 63 Hz.

Power Inlet

The power inlet is an IEC-320 connector (see figure 11). For international applications, replace the power cord with a harmonized 3 x 1.0 mm^2 power cord approved by the country where used.

Figure 11 AC Power Receptacle



Rack Current Rating Consideration

Consider the current rating of the rack before installing more than one P1000 library. The P1000 library is rated 6A / 3A (120V / 230V). This means that no more than two libraries can be installed in a typical 15A / 120V rack.

If other equipment is installed in the rack, determine the total current rating of all the equipment before adding the P1000 library to the rack.

Grounding

The P1000 must be connected to a grounded power outlet. If the library is rack-mounted, the rack must also be grounded.

Temperature

The rack temperature should be less than 32°C.

Environmental Requirements

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

- humidity: 20% to 80%, non-condensing
- temperature: 59°F to 90°F (15°C to 32°C)
- altitude: sea level to 10,000 feet (3,033 meters)

Unpacking the P1000

This section explains how to receive and unpack the P1000.

Note: If you have already unpacked the library following the procedures in the *ATL P1000 Series Unpacking Instructions*, skip ahead to “Preparing and Inserting Tape Cartridges” on page 30.

This procedure consists of the following steps:

- receiving the library from the shipper
- uncrating the library
- checking the contents of the shipping carton and accessories tray
- installing the slide assembly in the rack (rack-mount library only)
- removing the library from the pallet
- removing the internal packing materials from the library

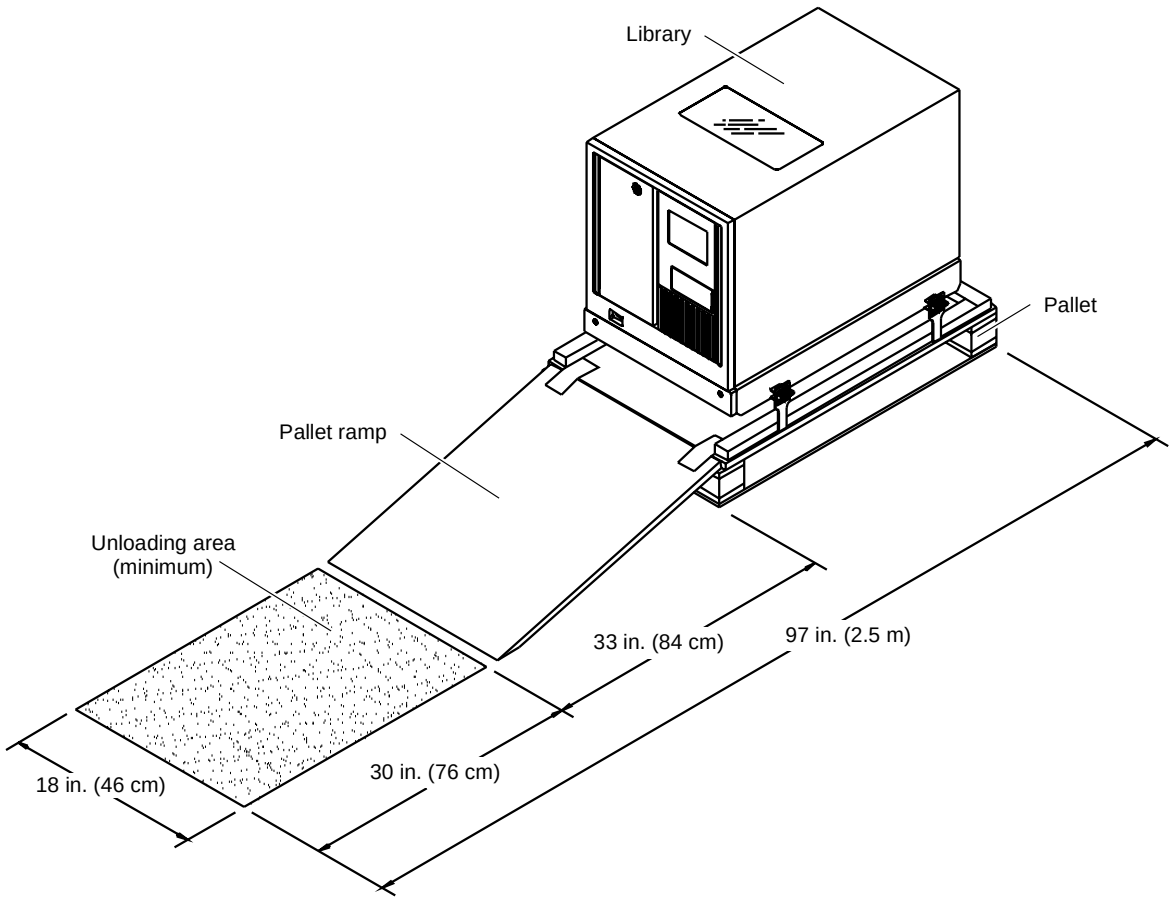
Note: Before performing the procedures in this section, verify that the installation site meets the requirements listed in “Site Requirements” on page 14.

Unloading Space Requirements

Before uncrating the library, verify that you have sufficient space. For the stand-alone unit, allow a minimum of six feet in front of the ramp side of the pallet (see figure 12 on page 18).

Note: Unpack the library as close to the installation site as possible.

Figure 12 Unloading Space Requirements, Stand-alone Library



Uncrating the Library

To uncrate the P1000 library:

Note: Be careful not to damage the shipping materials while uncrating the library. Save all packaging materials for possible future shipment of the library.

Procedure

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

The following items are stacked on top of the P1000:

- accessories tray
- ramp (stand-alone library) or slide assembly (rack-mount library)

Procedure (continued)

2 Remove these items from the carton and set them aside.

3 Remove all foam supports from inside the carton (see figure 13 on page 19 and figure 14 on page 20).

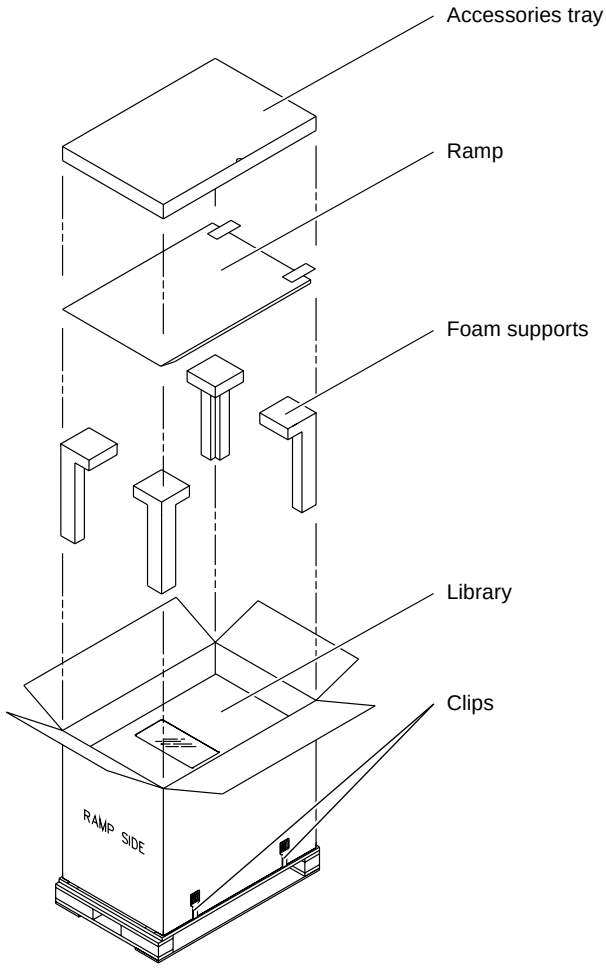
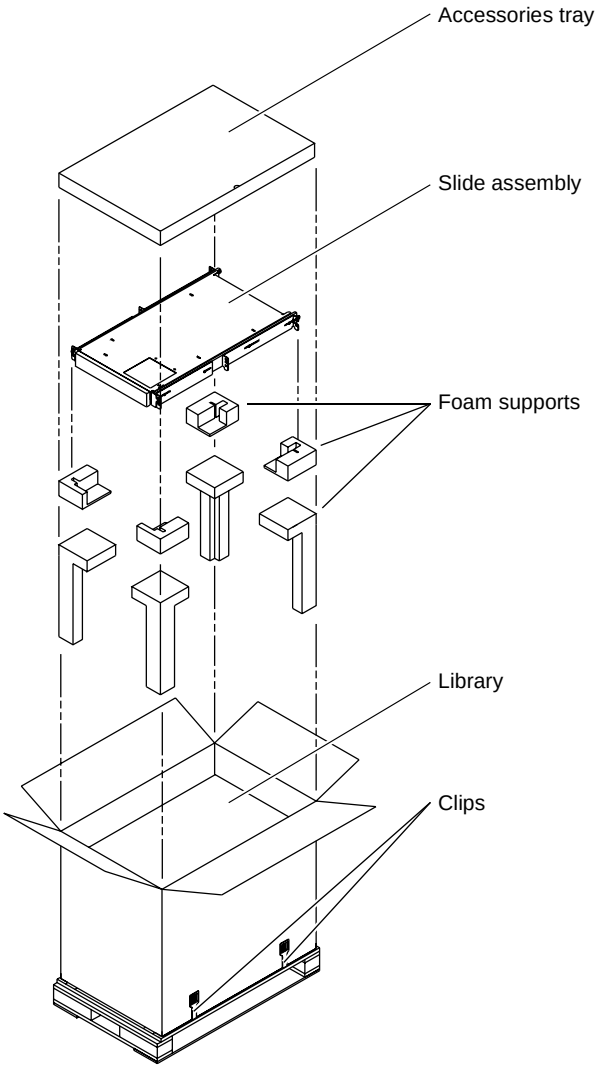


Figure 13 Uncrating the Stand-alone Library

Figure 14 Uncrating the Rack-mount Library



Procedure (continued)

4 Release the four clips that secure the carton to the pallet.

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

5 Lift the carton off of the pallet and set it aside.

Checking the Contents

Compare the contents of the shipping carton and the accessories tray with the packing list included in the shipping carton. If any items are missing or damaged, contact your authorized reseller.

Installing the Slide Assembly in the Rack

If you are installing a rack-mount library, install the slide assembly in the rack before proceeding to the next section, “Removing the Library from the Pallet.” See appendix B for slide assembly installation instructions.

Removing the Library from the Pallet

This section provides separate procedures for the stand-alone and rack-mount libraries:

- To remove a stand-alone library from the pallet, see the following section, “Removing a Stand-alone Library from the Pallet.”
- To remove a rack-mount library from the pallet, see “Removing a Rack-mount Library from the Pallet” on page 23.

Warning: Two people should perform steps that involve lifting or guiding the library. Use safe practices when lifting or guiding the library and handling the slide assembly or the ramp.

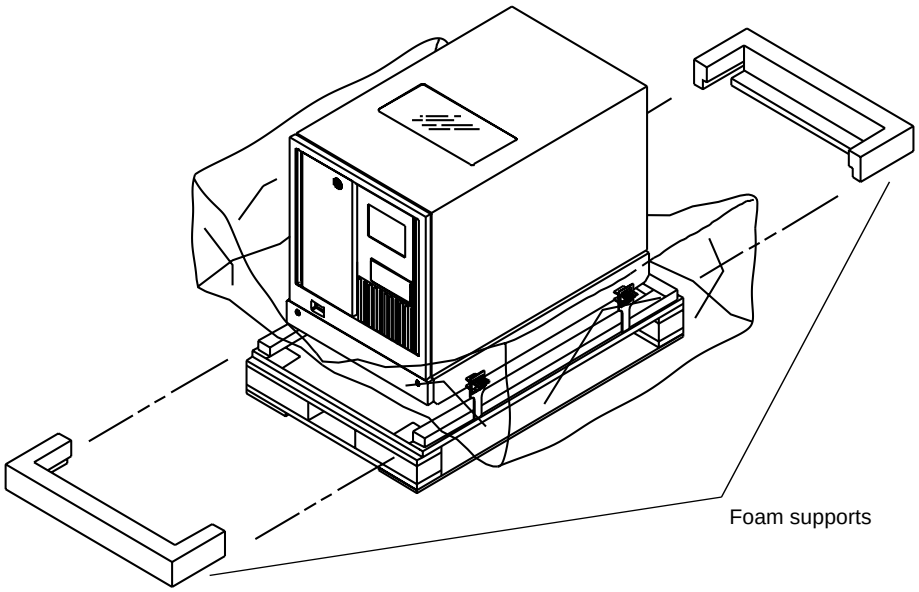
Removing a Stand-alone Library from the Pallet

To remove a stand-alone library from the pallet:

Procedure

1. Remove the plastic bag enclosing the P1000:
   a. Cut along the front seam of the plastic bag.
   b. Continue to cut all the way to the back of the library.
   c. Fold the bag out of the way.
2. Remove the foam supports from between the library and the pallet (see figure 15).

Figure 15 Removing the Foam Supports, Stand-alone Library



Procedure (continued)

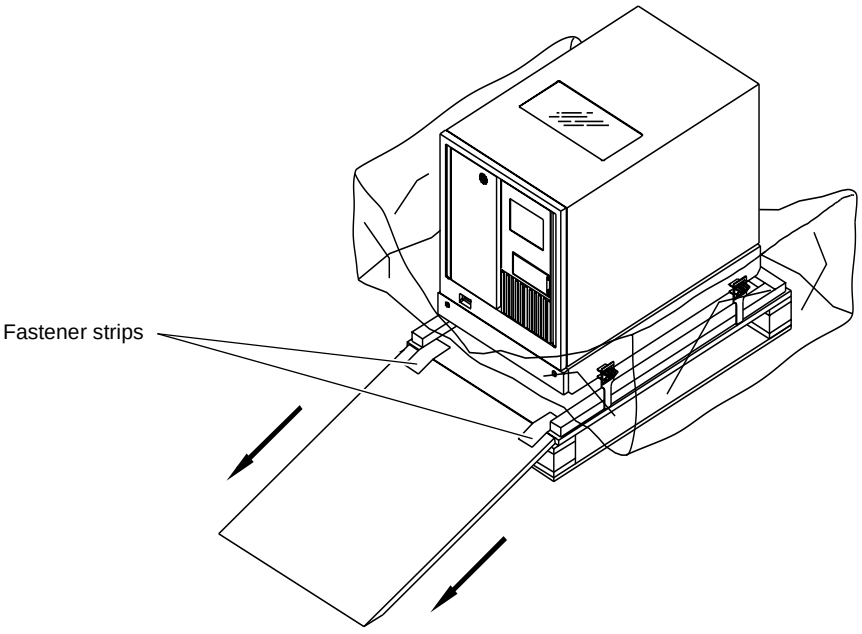
3 Attach the ramp to the pallet using fastener strips (see figure 16).

4 Make any necessary preparations for moving the library.

This may involve clearing a path to the installation site, unlocking doors, and placing mats over carpeted areas.

5 Carefully roll the library down the ramp.

Figure 16 Removing the Stand-alone Library from the Pallet



Procedure (continued)

6 Detach the ramp and place it on top of the pallet.

7 Roll the library to the installation site.

8 Save the shipping carton, bag, foam supports, ramp, and pallet for future use.

These items are required to package the library for reshipment.

Removing a Rack-mount Library from the Pallet

Note: The instructions in this section assume you have already installed the slide assembly in the rack. If you have not, do so now, following the instructions in appendix B.

To remove a rack-mount library from the pallet:

Procedure

1 Remove the plastic bag enclosing the library:

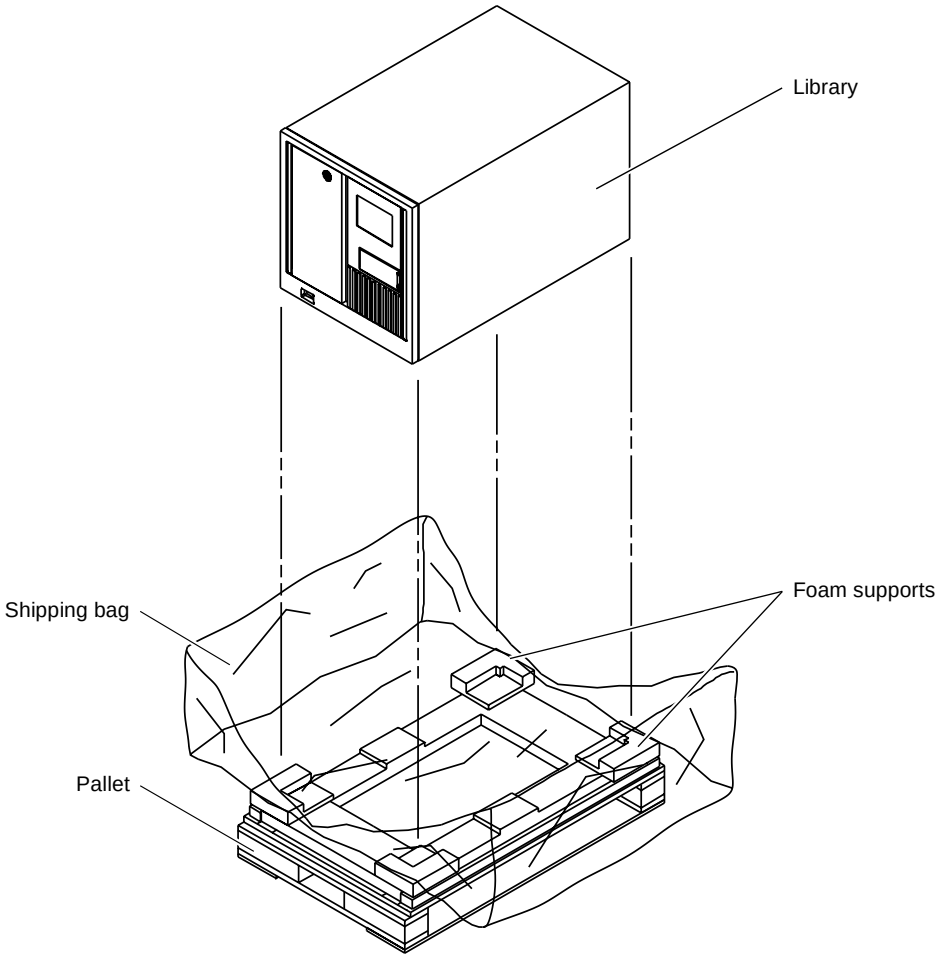
- **a** Cut along the front seam of the plastic bag.
- **b** Continue to cut all the way to the back of the library.
- **c** Fold the bag out of the way.

2 Pull the slide tray forward in the rack so it is fully extended.

Warning: The rack may tip forward when you extend the slide tray or place the library on the slide tray. If rack stabilizing feet are present, extend them during this procedure. If the rack does not have stabilizing feet, use extreme caution when extending the slide tray and mounting the P1000 in the rack.

3 With the help of a second person, lift the library from the pallet (see figure 17 on page 24).

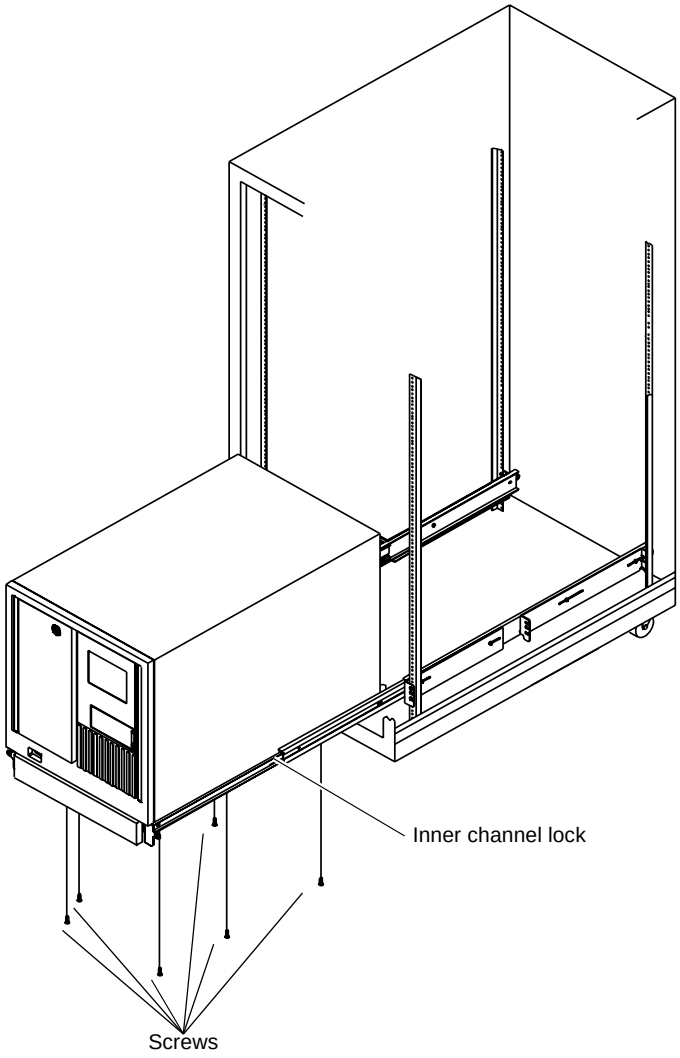
Figure 17 Lifting the Rack-mount Library from the Pallet



Procedure (continued)

4 Place the library on the fully extended slide assembly tray (see figure 18).

Figure 18 Placing the Library on the Slide Assembly Tray



Procedure (continued)

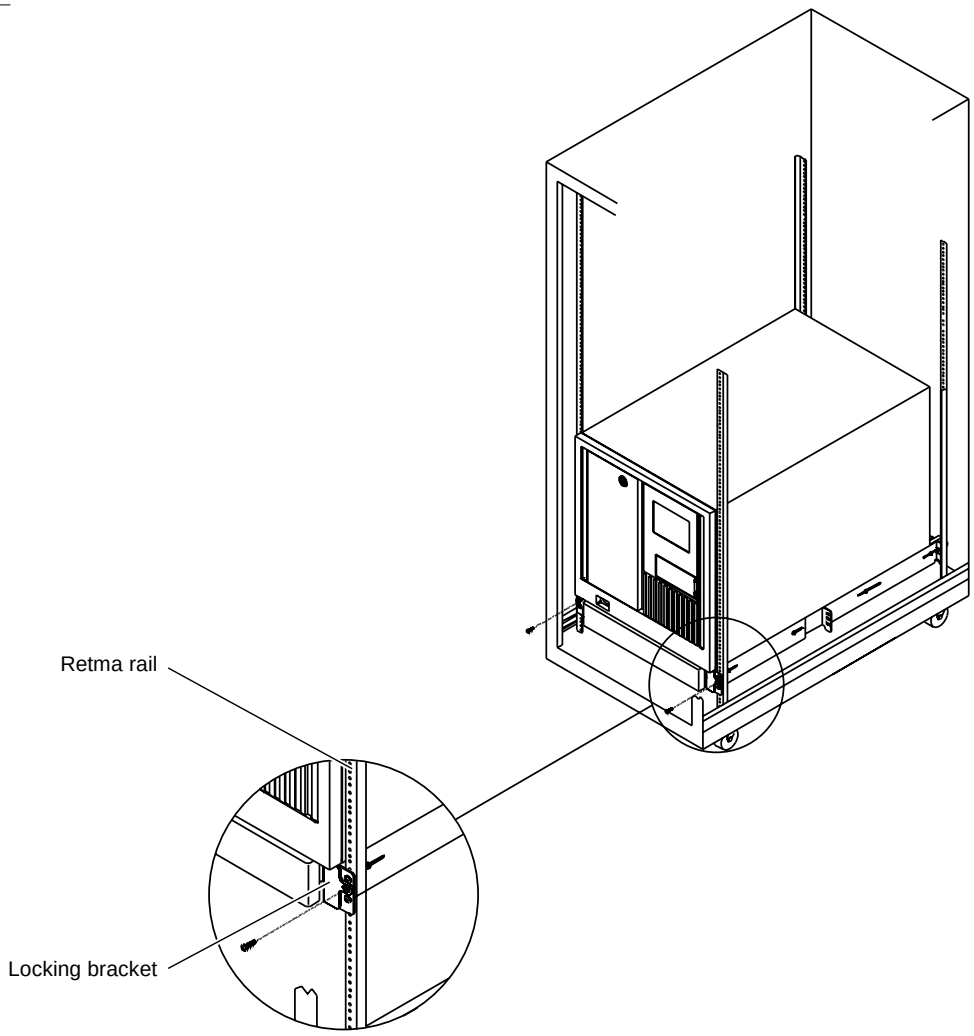
5 Secure the library to the slide tray, using six screws from the accessories kit (see figure 18).

6 Verify that, when the slide assembly is fully extended, there is adequate clearance around the library to access the back panel and remove the library enclosure.

7 Press on the inner channel locks to release them (see figure 18) and then push the slide assembly all the way into the rack.

8 To prevent the library from sliding out of the rack during operation, secure the locking brackets to the retma rails (see figure 19 on page 26).

Figure 19 Locking the Slide Tray in the Rack



Procedure (continued)

9 Save the shipping carton, bag, foam supports, and pallet for future use.

These items are required to package the library for reshipment.

Removing the Internal Packing Materials

This section explains how to remove the internal packing materials that protect the library during shipping and installation.

Caution: Before removing the internal packing materials, verify that the library is at its final installation site. Moving the library without these materials in place may damage the library.

Caution: Take precautions to prevent electrostatic discharge whenever you remove the library enclosure or open the library doors.

Opening the Doors

To open the library doors:

Procedure

1. Locate the key in the accessories kit and unlock the front door of the library.
2. Open the left door first, then open the right door.

Removing the Load and Bulk Packs

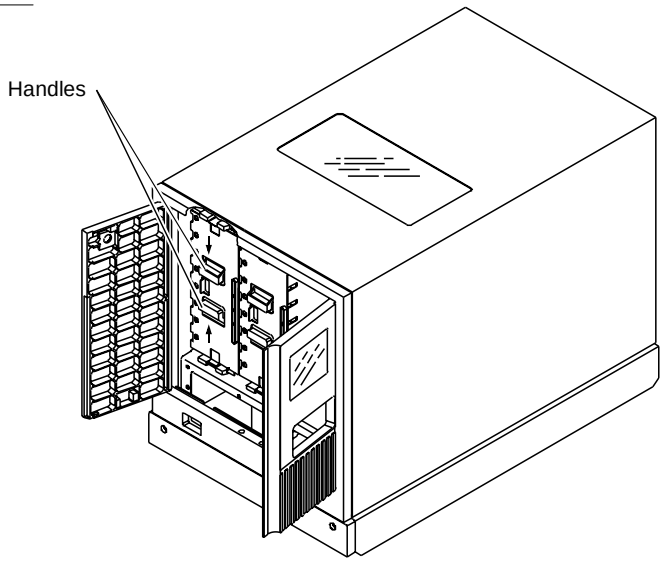
To remove the load and bulk packs (see figure 20):

Procedure

1. Grip the load pack handles and squeeze them together.

   This releases the latches securing the load pack.
2. Still holding the load pack handles, pull the load pack forward and out of the library.
3. Repeat steps 1 and 2 to remove the bulk pack.

Figure 20 Removing the Load and Bulk Packs



Removing the Shipping Restraint

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

To remove the shipping restraint:

Procedure

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 21).

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

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

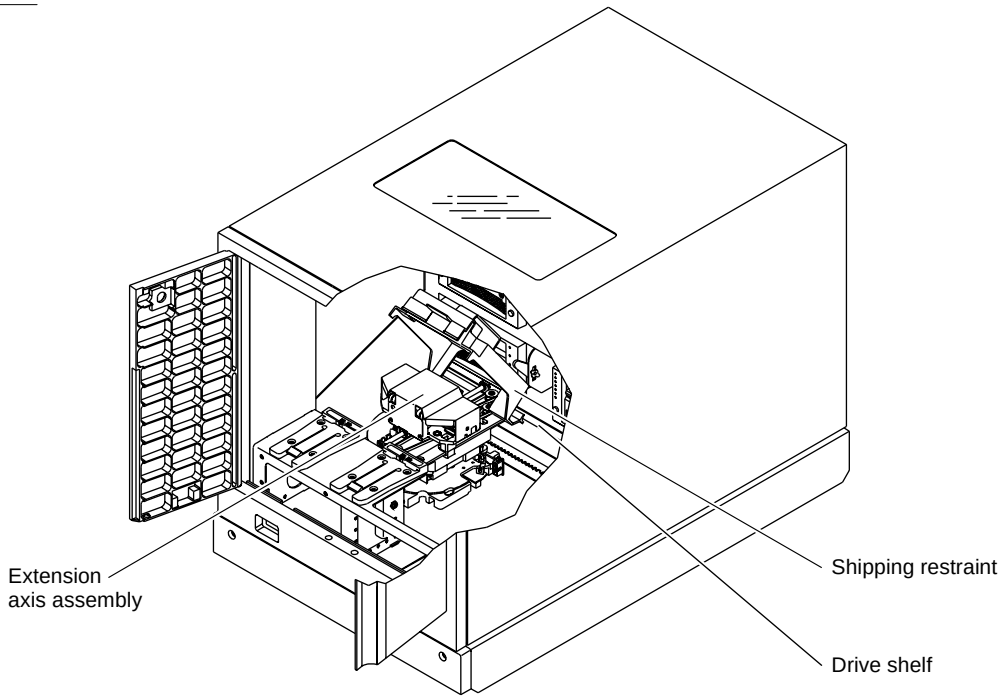
Procedure (continued)

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.

Figure 21 Removing the Shipping Restraint



Preparing and Inserting Tape Cartridges

This section explains how to insert tape cartridges into the P1000 library during initial installation. This procedure consists of the following steps:

- labeling tape cartridges
- setting the write-protect switch
- placing cartridges in the load and bulk packs
- placing cartridges in the fixed storage bins

Labeling a Tape Cartridge

Attaching a bar code label to each tape cartridge enables the library to identify tape cartridges quickly, which speeds the inventory process.

Bar code labels must conform to the specifications listed in table 2 and the dimensions shown in figure 22.

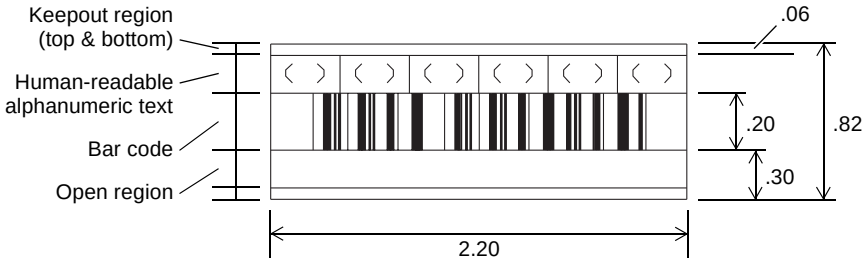
Table 2 Bar Code Label Specifications

Sample Number	Min.[a]	Max.	Average
Wide / narrow ratio	2.60	2.60	2.60
Average bar error	0.02	0.11	0.06
Ref. decode passes	A	A	A
Decode margin	74%	86%	80%
Symbol total	112.0	120.0	116.0
Print contrast signal	94%	98%	96%
Reflectance (light)	69%	75%	72%
Reflectance (dark)	1%	2%	1%
Symbol contrast	65%	74%	70%
Global threshold passes	A	A	A
R(min.) R(max.)	2%	3%	2%
Modulation	52%	62%	58%
Edge contrast (min.)	37%	44%	41%
Defects	5%	28%	8%

Sample Number	Min.[a]	Max.	Average
Message length	6.00	6.00	6.00
Traditional tests	PASS	PASS	PASS
Bar growth	IN TOL	IN TOL	IN TOL
PCS	OK	OK	OK
Print quality grade	B	C	C
Formatting checks	PASS	PASS	PASS

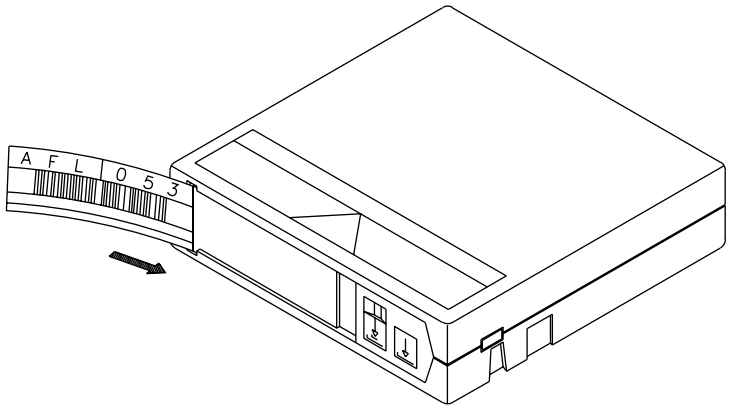
a. All bar code parameters should fall within the Min./Max. values when tested using a PSC Quick Check 500 bar code tester.

Figure 22 Bar Code Label Dimensions



To label a cartridge, insert the label into the label area on the front edge of the tape cartridge (see figure 23).

Figure 23 Inserting a Bar Code Label

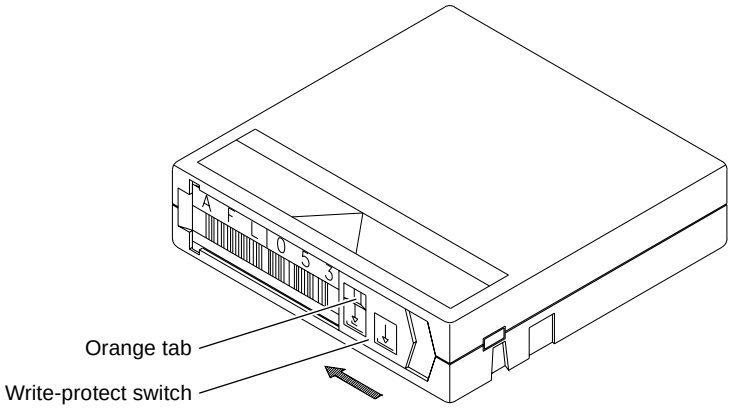


Setting the Write-protect Switch

The write-protect switch controls whether the tape cartridge is write-protected or write-enabled:

- Write-protecting a cartridge protects the data it contains from being erased or overwritten. To write-protect a cartridge, move the write-protect switch to the left (see figure 24). An orange tab appears above the switch.
- Write-enabling a cartridge allows new data to be written to the cartridge or existing data to be modified or erased. To write-enable a cartridge, move the write-protect switch to the right (see figure 24). The orange tab disappears.

Figure 24 Setting the Write-protect Switch



Placing Tape Cartridges in the Fixed Storage Bins

To place tape cartridges in the fixed storage bins:

Note: Low-density P1000 libraries do not have fixed storage bins. If you are using one of these libraries, skip this procedure and proceed to the following section, “Placing Tape Cartridges in the Load and Bulk Packs” on page 34.

Procedure

1 Open the library doors:

   a Locate the key in the accessories kit and unlock the front door of the library.

   b Open the left door first, then open the right door.

Procedure (continued)

2 Remove the load and bulk packs from the library (see figure 20 on page 28):

   a Grip the load pack handles and squeeze them together.

   This releases the latches securing the load pack.

   b Still holding the load pack handles, pull the load pack forward and out of the library.

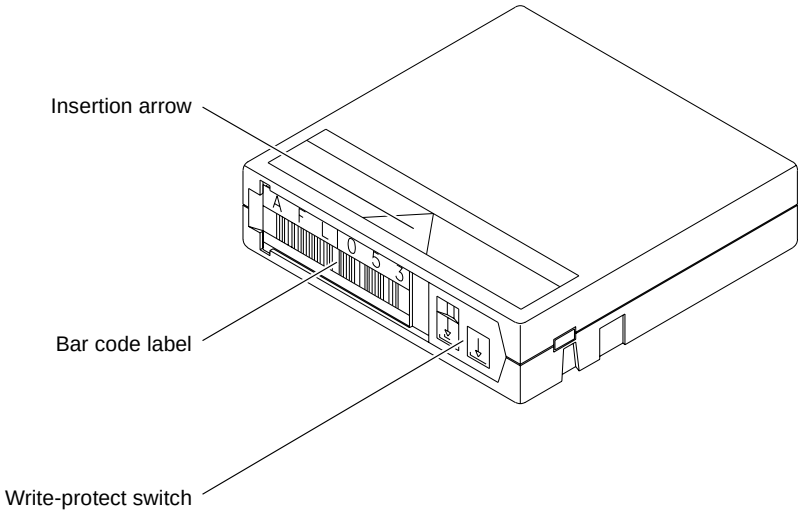
   c Repeat steps 2a and 2b to remove the bulk pack.

3 Set both packs aside.

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. (See figure 25 for the correct tape cartridge orientation.)

   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.

Figure 25 Correct Tape Cartridge Orientation



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 you to 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 Verify that each cartridge is properly seated in the bin (see figure 25 for correct cartridge orientation).

Placing Tape Cartridges in the Load and Bulk Packs

To place cartridges in the load and bulk packs:

Note: This procedure assumes that you have already removed the load and bulk packs. If not, remove the load and bulk packs, referring to steps 2a through 2c on page 33.

Procedure

1. Load eight cartridges into 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. Verify that each cartridge is properly oriented and seated in the bin (see figure 25 on page 33 for proper cartridge orientation).

Caution: Handle the load and bulk packs with care. The retention mechanism that secures the cartridges may 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-side 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 through 3c for the other pack.
4. Close and lock the library doors.

Connecting Host Computers

You are now ready to connect one or more host computers to the library. You can connect up to five host computers on separate SCSI busses.

Note: If your library is equipped with the Prism FC210 Router, disregard this section. Instead, see the *ATL PrismFC210 Router Addendum* (PN 6331101).

SCSI Cabling Guidelines

When connecting the host computer(s) to the library, follow these guidelines:

- Connect each host to a SCSI connector on the back panel of the library.
- When more than one device is on a SCSI bus, daisy-chain the devices using the SCSI cables from the accessories kit.
- Terminate the last device on each SCSI bus.

Using these guidelines, you can set up variations of one-, two-, three-, four-, or five-host configurations.

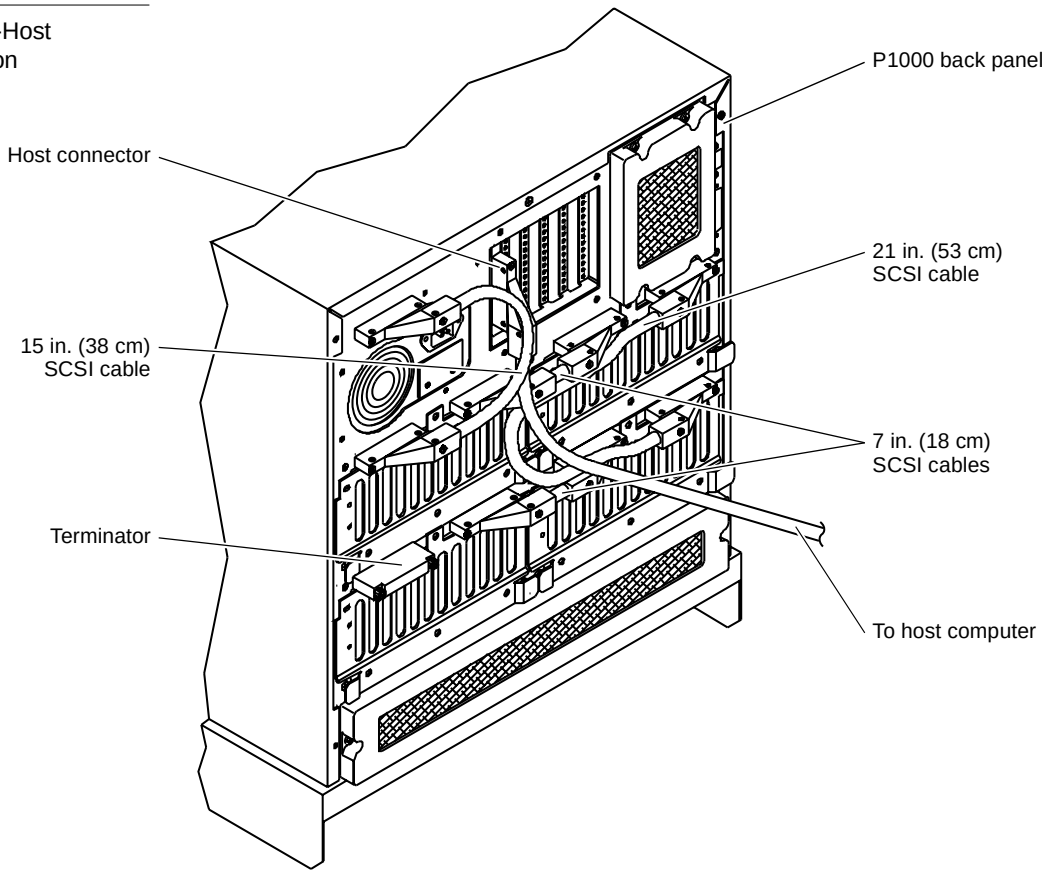
Note: The SCSI cable(s) to the host computer(s) must be supplied by the user.

SCSI Cabling Examples

This section provides three SCSI cabling examples. Each of these examples follows the guidelines introduced above.

In the single-host configuration (see figure 26), the host computer is connected to the host connector on the rear panel of the library. Since there is only one SCSI bus, use all of the SCSI cables from the accessories kit to daisy-chain the library to each of the tape drives.

Figure 26 Single-Host SCSI Configuration

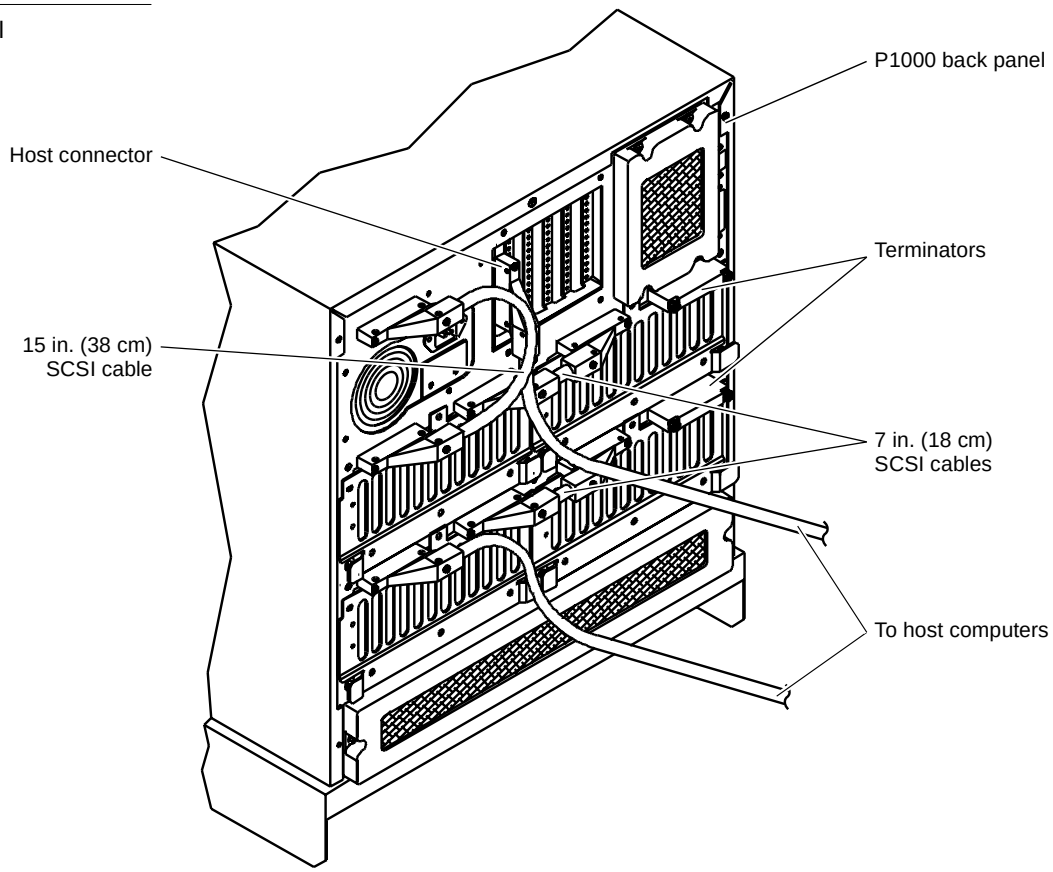


In the two-host configuration (see figure 27), host 1 is connected to the library and daisy-chained to tape drives 0 and 1 (upper drives). Host 2 is connected to tape drive 3 and daisy-chained to tape drive 2 (lower drives). The first SCSI bus is terminated at drive 0; the second is terminated at drive 2.

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

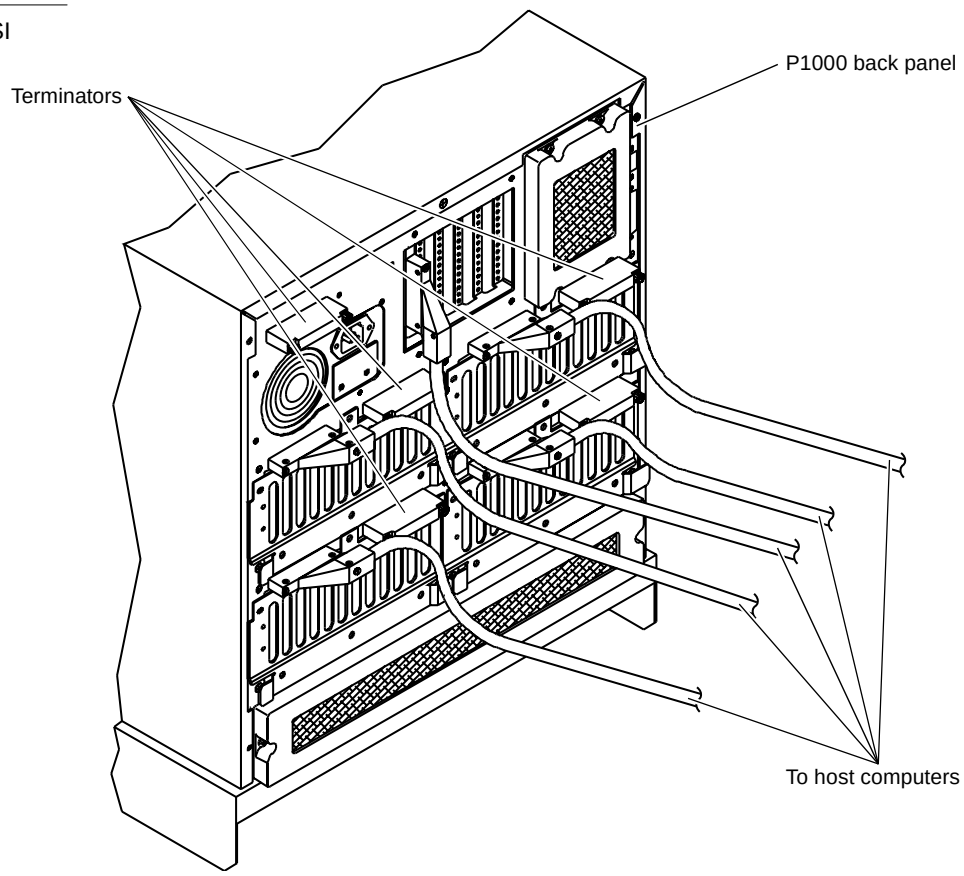
- both 7-inch SCSI cables
- 15-inch SCSI cable
- 2 SCSI terminators

Figure 27 Typical Two-Host SCSI Configuration



In the five-host configuration (see figure 28), five hosts are connected to the library, requiring five SCSI terminators.

Figure 28 Five-Host SCSI Configuration



Turning On the Library

To turn on the library:

Procedure

1. Verify that:
   - 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 power switch on.
3. After several seconds, verify that the touch screen graphical user interface (GUI) comes on.

Configuring and Testing the Library

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

Table 3 shows a sample library configuration.

Table 3 Sample Library Configuration

Item	Sample Default Condition
Model number	6220000
Number of bins (fixed storage and load pack)	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 bar code scan	Disabled
4/52 identity	Disabled

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

Note: You must have either Operator or Service access privileges to access the options described in chapter 4 and Service access privileges to access the options described in chapter 5.

Chapter 3

Basic Operations

This chapter describes the following basic library operating procedures:

- using the touch screen graphical user interface (GUI)
  - GUI components
  - GUI screens
- obtaining library status
- changing the GUI security level
- performing manual operations
  - turning the library on and off
  - placing the library on- or off-line
  - inserting tape cartridges
  - opening the library doors
  - manually ejecting a tape cartridge

For more advanced procedures such as configuring, calibrating, or testing the library, see chapters 4 and 5.

Using the GUI

At start-up, the GUI displays the following screen (see figure 29).

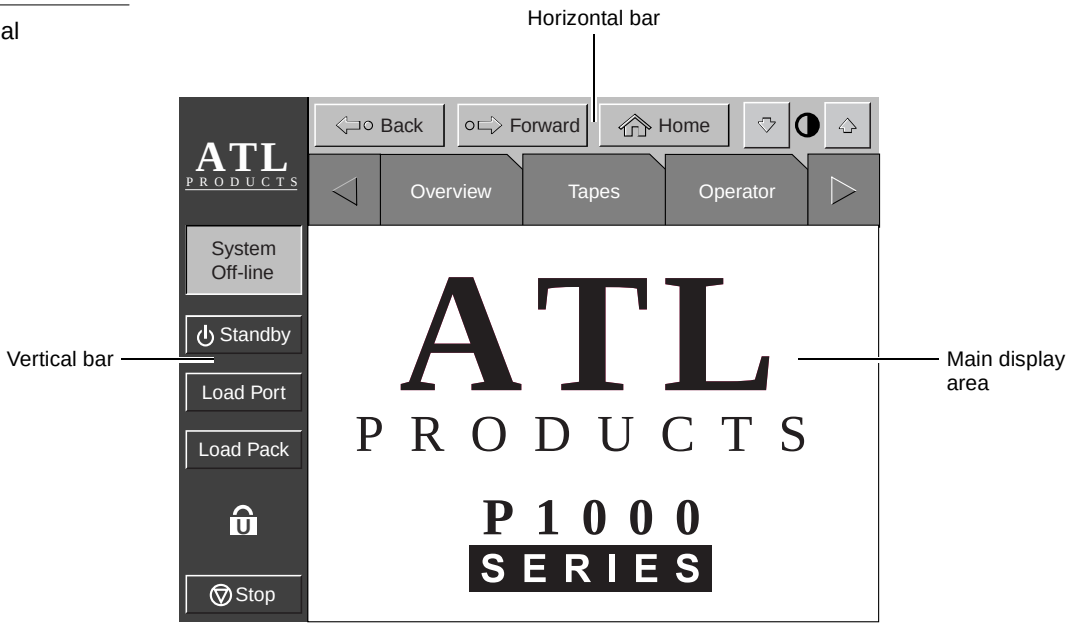


Figure 29 GUI: Initial Screen

From this screen, you can access controls to configure and operate the library. All operating procedures in this chapter and in chapters 4 and 5 require an understanding of the GUI screens.

GUI Components

The GUI screen consists of the following components:

- a vertical bar (at the left side of the screen)
- a horizontal bar (at the top of the screen)
- a main display area

These components are described in the following sections.

Vertical Bar

Table 4 describes each of the buttons and indicators on the vertical bar.

Table 4 Vertical Bar Buttons and Indicators

Button/Indicator	Description
Company logo	This area of the screen displays the ATL logo. Pressing the logo causes the GUI to display an "About ATL" screen.
System status indicator	The system status indicator shows the current state of the library and displays important messages relating to library operation.
Standby button	Pressing the Standby button toggles the library between on-line and standby status.
Load Port button	Pressing the Load Port button causes the load port to open, allowing you to insert or remove a tape cartridge.
Load Pack button	Pressing the Load Pack button prepares the library for load pack removal. Always press this button before opening the front door to access the load pack.
Security level indicator	The security level indicator displays the current security level of the GUI. There are five security levels: service (S), operator (O), user (U), import only (I), and locked (L). For more information about security levels, see "Changing the GUI Security Level" on page 49.
Stop button	Pressing the Stop button cuts power to the library robotics, thus stopping all library activity. Pressing the Stop button a second time restores power to the library robotics.

Horizontal Bar

Table 5 describes each of the buttons on the horizontal bar.

Table 5 Horizontal Bar Buttons

Button	Description
Back button	Pressing this button moves you backward screen-by-screen through previously selected screens.
Forward button	Pressing this button moves you forward screen-by-screen through previously selected screens.
Home button	Pressing this button returns you to the initial GUI screen (see figure 29 on page 42).
Contrast buttons (↑ and ↓)	Pressing these buttons adjusts the contrast of the GUI.

Main Display Area

The main display area provides access to five tabbed screens through which you can issue commands to the library. To view a screen, press its corresponding tab.

Since the GUI is not large enough to display all five tabbed screens at once, the initial GUI screen displays only the first three screens (Overview, Tapes, and Operator). To scroll forward to the remaining screens (Service and Prism Router), press the right arrow button.

To scroll backward through the screens, press the left arrow button.

Figure 30 Navigating through the GUI Screens

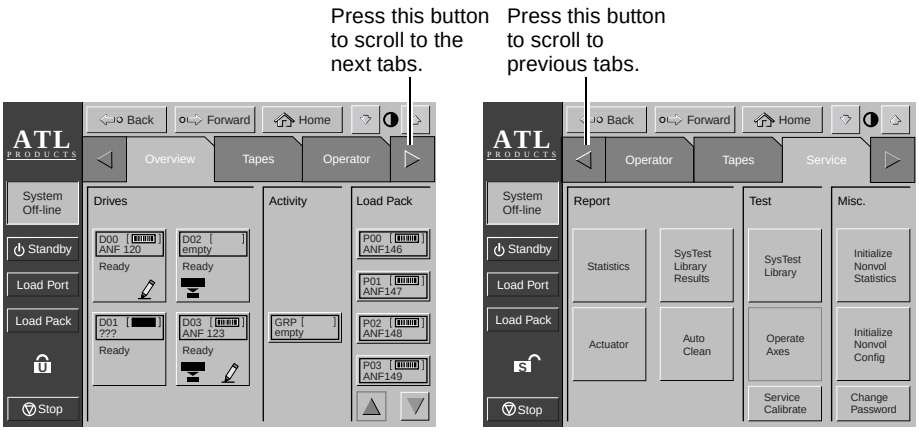


Table 6 describes each of the GUI screens.

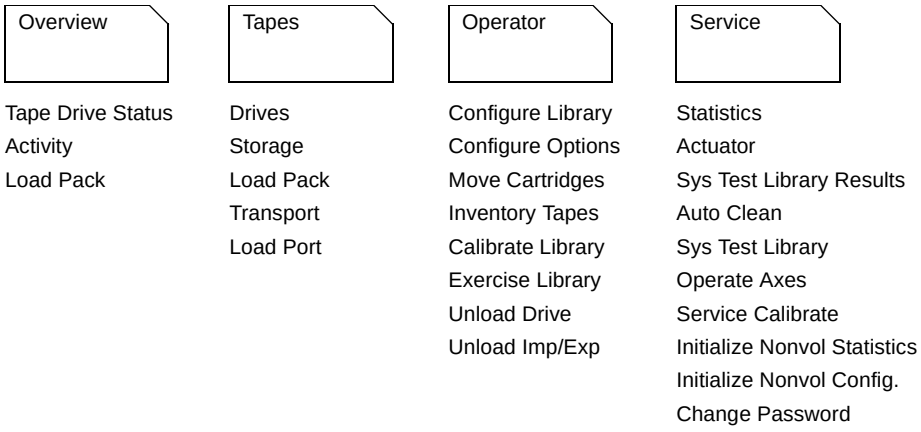
Table 6 GUI Screens

Screen	Description
Overview	This screen provides an overview of the tape drives, robot activity, and load pack inventory.
Tapes	This screen displays the contents of the tape drives, storage bins, load packs, the gripper, and the load port.
Operator	This screen contains the library configuration and control functions. To use this screen, you must have Operator or Service access privileges.
Service	This screen contains reporting functions, system tests, and miscellaneous commands. To use this screen, you must have Service access privileges.
Prism Router	This screen contains options related to the optional Prism FC210 Router. For information about these options, see the *ATL Prism FC210 Router Addendum* (PN 6331101).

GUI Screens

Figure 31 shows the commands that are available on the Overview, Tapes, Operator, and Service screens.

Figure 31 GUI Screens



Obtaining Library Status

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

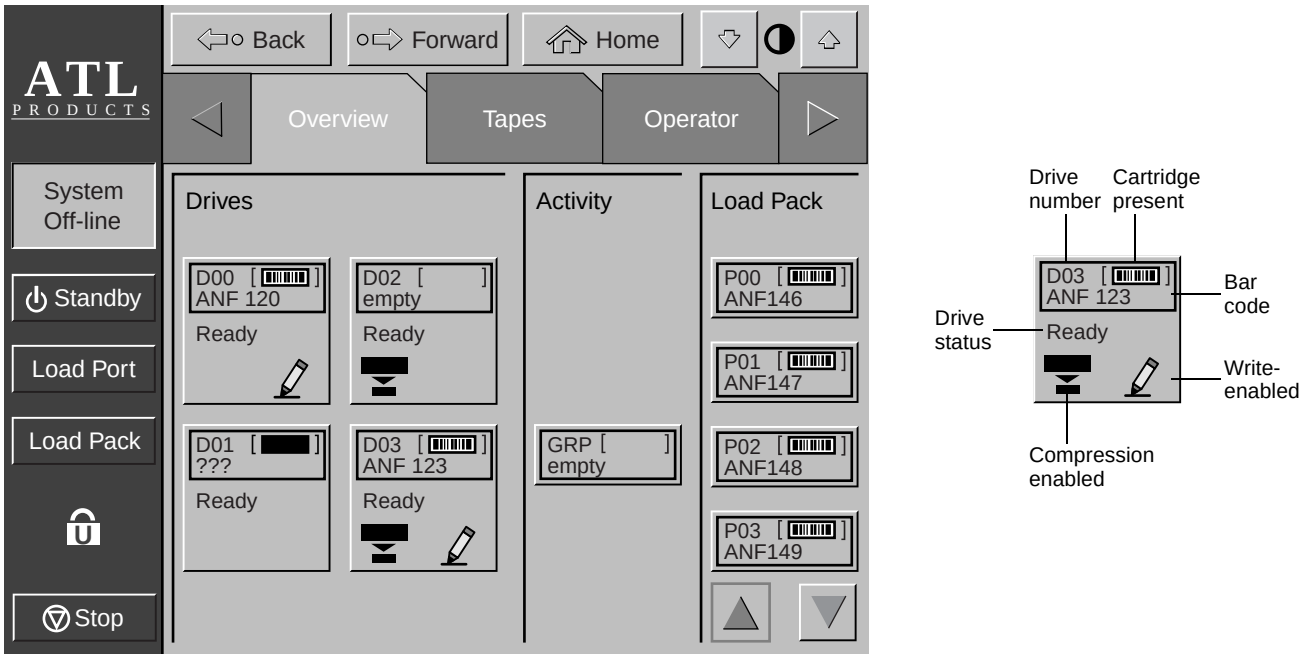
Overview Screen

To open the Overview screen, press the Overview tab on the GUI.

The Overview screen is divided into three sections (see figure 32):

- Drives
- Activity
- Load Pack

Figure 32 Overview Screen



Drives

The Drives section of the Overview screen displays the following information:

- whether a tape drive has a cartridge
- the bar code number of the cartridge (if a cartridge is present and the label is readable)
- whether the cartridge is write-enabled or write-protected
- whether compression is enabled

To view more detailed information about drive status, press the Overview screen anywhere in the Drives section. This opens a Tape Drive Status box (see figure 33). Use the arrow buttons to scroll through the list of drives. To return to the Overview screen, press the Tape Drive Status box.

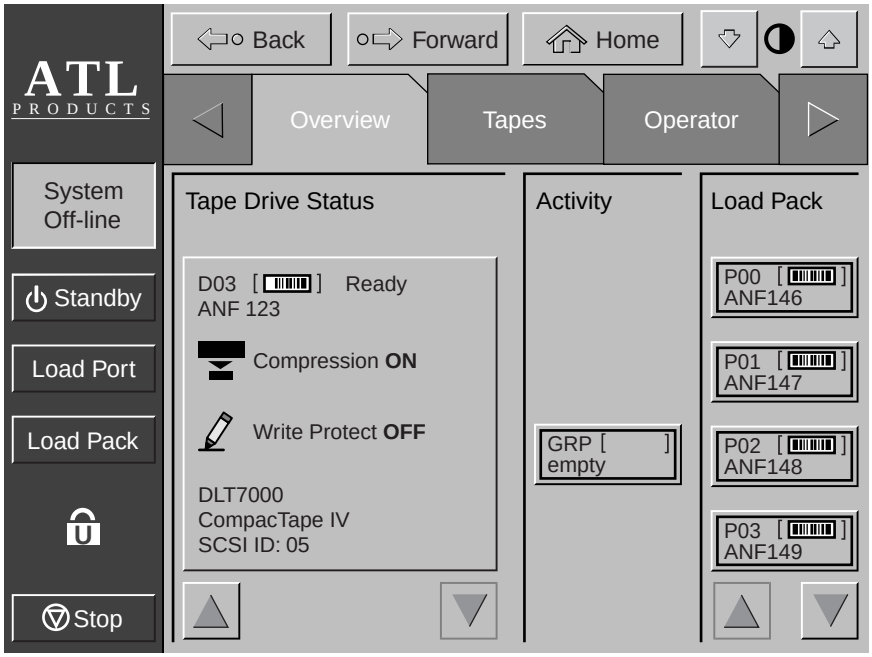


Figure 33 Overview Screen with Expanded Tape Drive Status

Activity

The Activity section of the Overview screen displays the source element, transport medium, and destination element involved in any current move activity.

Load Pack

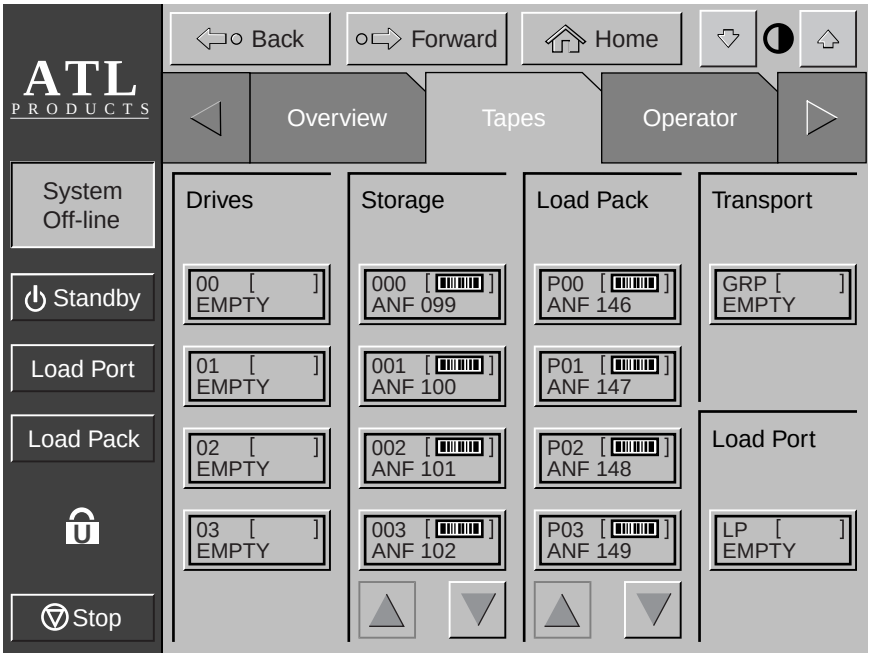
The Load Pack section of the Overview screen identifies the cartridges currently stored in the load pack. Press the arrow buttons at the bottom of the screen to scroll through the load pack bins and view their contents.

You can also view this information using the Tapes screen.

Tapes Screen

To open the Tapes screen, press the Tapes tab on the GUI. Use this screen to determine whether a particular element contains a tape cartridge, and whether the cartridge is labeled.

Figure 34 Tapes Screen



The Tapes screen is divided into sections by element type. To determine whether a particular element contains a cartridge, look at the appropriate section of the screen. For example, to determine whether there is a cartridge in the gripper, look at the Transport section of the screen.

The Storage and Load Pack sections contain too many elements to display on the screen at one time. Use the arrow buttons at the bottom of these sections to scroll through the section.

You can also expand the Storage or Load Pack sections to fill the screen by pressing the desired section anywhere above the arrow buttons. To return to the start of the Tapes screen, press the Back button.

Changing the GUI Security Level

Table 7 describes the five levels of security for the P1000 library GUI. The security level indicator at the lower left corner of the GUI indicates the current security level.

Table 7 GUI Security Levels

Security Level	Indicator	Description
Service (S)		This security level provides access to all GUI screens (Overview, Tapes, Operator, and Service) and all functions on the vertical bar.
Operator (O)		This security level provides access to the Overview, Tapes, and Operator screens, and all functions on the vertical bar.
User (U)		This security level provides access to the Overview and Tapes screens, and all functions on the vertical bar.
Import Only (I)		This security level provides access to the Overview and Tapes screens, and the Load Port button on the vertical bar. This security level prevents access to the Stop or Standby buttons on the vertical bar.
Locked (L)		This security level provides access to the Overview and Tapes screens only. This security level prevents access to any functions on the vertical bar.

Securing the GUI

The default security level is User. This security level provides access to the Overview and Tapes screens and the functions on the vertical bar. It does not provide access to the Operator and Service screens.

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

To change the security level:

Procedure

1 Press the security level indicator at the lower left corner of the GUI.

The GUI displays the Password screen (see figure 35).

Figure 35 Password Screen

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

3 If prompted, enter a password.

A password is required to enter a security level higher than the one currently set.

The default passwords are:

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

4 Press the Select button.

The GUI displays a screen indicating that the new security level has been set successfully.

5 Press Okay.

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

Performing Manual Operations

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

- turning the library on
- placing the library on-line
- placing the library off-line
- turning the library off
- inserting tape cartridges
- opening the library doors
- manually ejecting a tape cartridge

Turning On the Library

To turn on the library:

Procedure

1. Verify that:
   - 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 on.
3. After several seconds, verify that the GUI comes on.

Placing the Library On-line

To place the library on-line:

Note: You must have Operator level access privileges or higher to perform this procedure (see “Changing the GUI Security Level” on page 49).

Procedure

1. With the library turned on and the GUI indicating “System Off-line,” press the Standby button on the GUI.
2. Verify that the GUI displays “System On-line.”

Placing the Library Off-line

To place the library off-line:

Note: You must have Operator level access privileges or higher to perform this procedure (see “Changing the GUI Security Level” on page 49).

Procedure

1. With the library turned on and the GUI indicating “System On-line,” press the Standby button on the GUI.
2. Verify that the GUI displays “System Off-line.”

Turning Off the Library

To turn off the library:

Procedure

1. Place the library off-line (see the previous section, “Placing the Library Off-line”).

   The library completes the current command and then stops.
2. Verify that the GUI displays “System Off-line.”
3. Verify that the gripper is empty by checking the Overview screen.
4. If there is a tape cartridge in the gripper, execute a Move command to place the cartridge in an empty bin or drive (see “Moving a Cartridge” on page 64).
5. At the front panel, set the power switch off.

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

Inserting Tape Cartridges

This section explains how to insert tape cartridges.

Note: You must have Import Only level access privileges or higher to perform this procedure (see “Changing the GUI Security Level” on page 49).

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.

Procedure

1. Prepare the tape cartridge to be inserted by labeling it and setting the write-protect switch as desired (see “Preparing and Inserting Tape Cartridges” on page 30).
2. Press the Load Port button on the left side of the GUI.

   The library unlocks the load port, and the load port door springs open slightly.

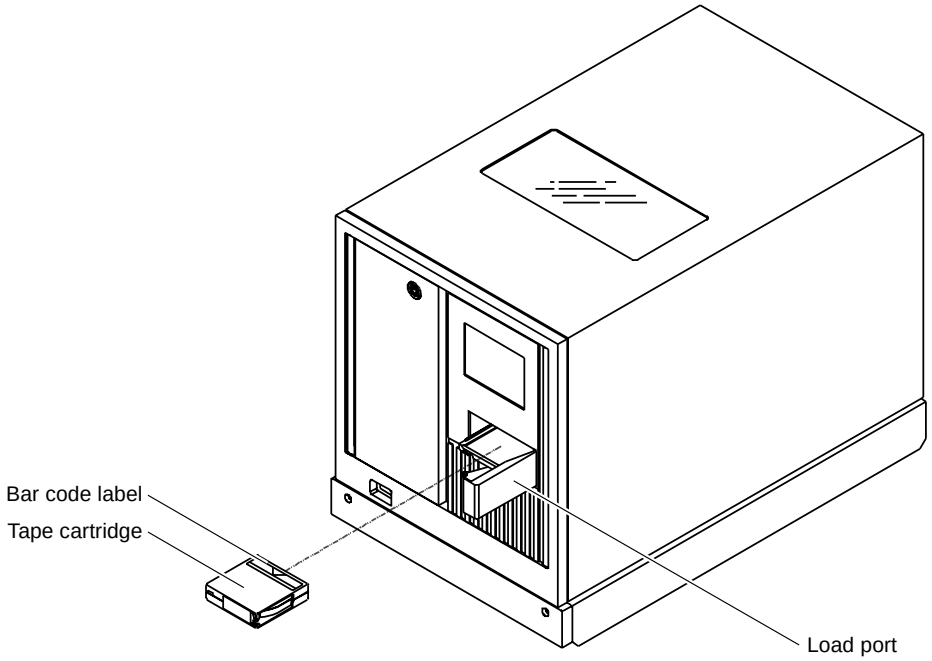
Warning: Mechanical hazards may be exposed when the load port is partially open or closed. Do not attempt to insert your hands or fingers into the load port opening at any time.

3. Open the load port door completely.
4. Place the tape cartridge into the load port slot, label-side first (see figure 25 on page 33 for proper cartridge orientation).
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 through 5 to insert other tape cartridges.

Note: To remove tape cartridges using the load port, see “Moving a Cartridge” on page 64.

Figure 36 Inserting a Tape Cartridge



Opening the Library Doors

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

To open the library doors:

Procedure

1. If the door is locked, unlock it.
2. Press the Load Pack button on the left side of the GUI.

   The library completes any current command and then unlocks the load pack door.
3. Open the left door first, and then open the right door.
4. To close the doors, reverse this procedure.

Manually Ejecting a Cartridge

To manually eject a tape cartridge from one of the tape drives:

Note: You must have Import Only level access privileges or higher to perform this procedure (see "Changing the GUI Security Level" on page 49).

Procedure

1. Open the library front doors (see "Opening the Library Doors" on page 54).
2. Remove the load and bulk packs from the library (see "Removing the Load and Bulk Packs" on page 27) and set them aside.
3. Press the Unload button on the desired drive (see drive product manual) 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 from 10 to 120 seconds. When the rewind process is complete, the Operate Handle indicator lights.

4. When the Operate Handle indicator lights, raise the insert / release handle to eject the tape cartridge.
5. Wait for two seconds, then grasp the tape cartridge and slowly pull it halfway out of the tape drive.

Caution: If the tape cartridge leader fails to detach from the take-up leader, push the tape cartridge all the way back into the drive, press down the insert / release handle, and return to step 4. Otherwise, proceed to step 6.

6. Pull the tape cartridge completely out of the drive.
7. Reinstall the load and bulk packs (see page 34).

   Be sure to line up the guides on the top and bottom of the load and bulk packs with the tabs on the mounting frame.
8. Close and lock the library doors.

Chapter 4

Operator Commands

This chapter describes the commands on the Operator screen of the touch screen graphical user interface (GUI). Using this screen, you can:

- configure the library
- configure library options
- move a tape cartridge
- inventory the tape cartridges
- calibrate the library
- exercise the library
- unload a tape drive
- unload the load port

The Operator screen is restricted to persons with Operator or Service access privileges.

Note: The commands on the Operator screen are operational only when the library is in Standby mode.

Note: This chapter assumes you are familiar with the P1000 GUI. If you are not, see “Using the GUI” on page 42 for more information.

Accessing the Operator Screen

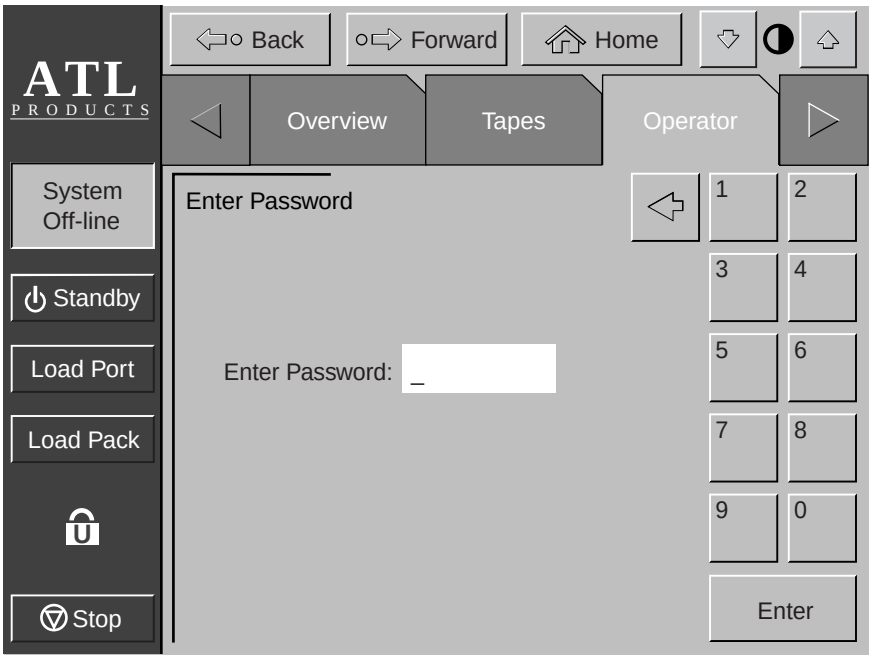
To access the Operator screen:

Procedure

1 On the GUI, press the Operator tab.

The GUI displays the Enter Password screen (see figure 37).

Figure 37 Enter Password Screen



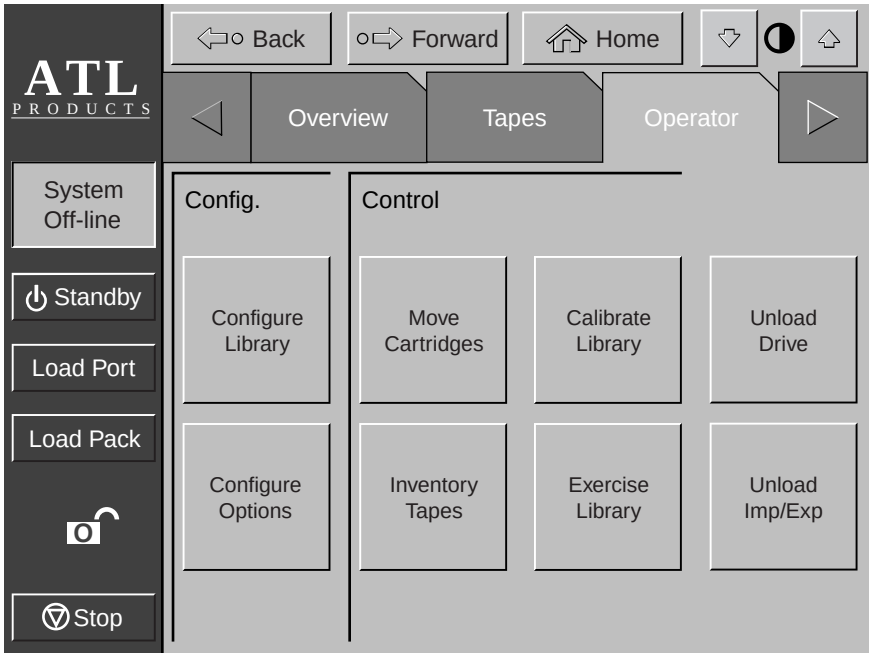
2 Enter the Operator or Service password.

Note: The default Operator password is 1234. To change the Operator password, see “Changing Passwords” on page 83. Changing passwords requires Service level access privileges.

Procedure (continued)

3 If the password you entered is valid, the GUI displays the Operator screen (see figure 38).

Figure 38 Operator Screen



Configuring the Library

The Configure Library command allows you to view or change the following library configuration information:

- library model number
- number of storage bins
- number of drives
- library SCSI ID
- tape drive SCSI IDs

To view or change the library configuration:

Procedure

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

The GUI displays the Configure: Library screen (see figure 39).

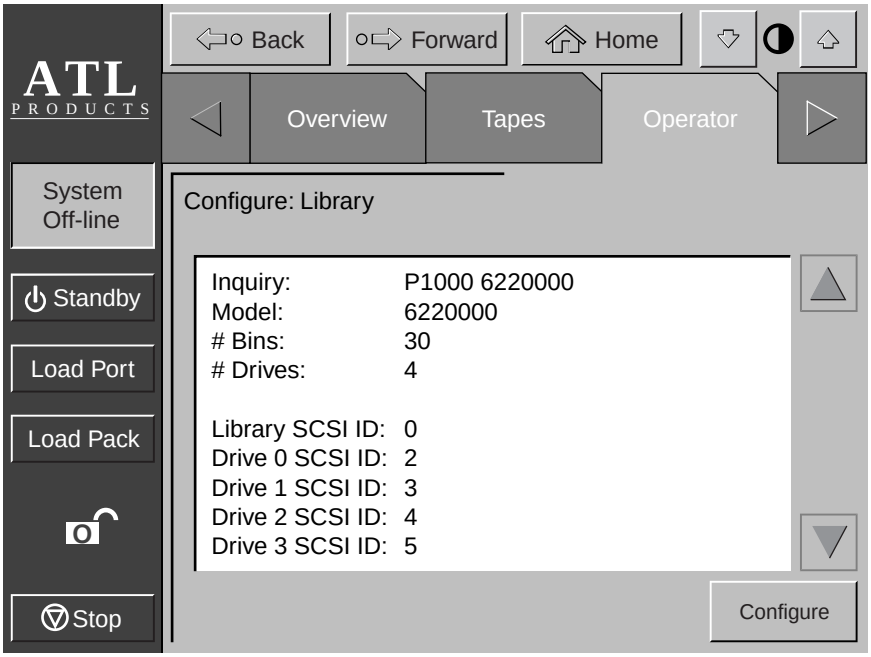
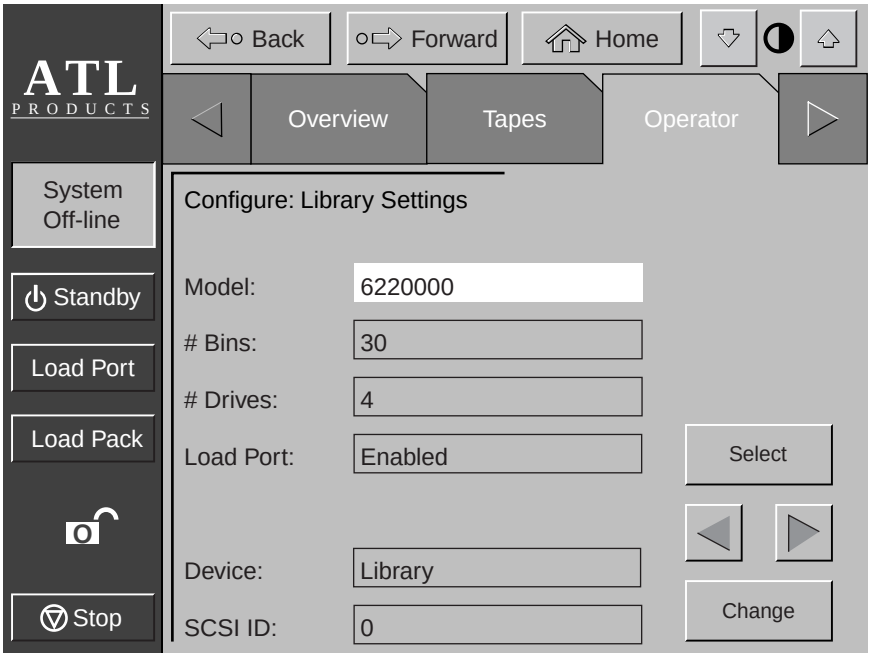


Figure 39 Configure: Library Screen

2 Press the Configure button.

The GUI displays the Configure: Library Settings screen (see figure 40).

Figure 40 Configure: Library Settings Screen



Procedure (continued)

3 To change any of the configuration information displayed on this screen:

a Press the Select button repeatedly until the desired option is highlighted.

Note: To change the SCSI ID of the library or a tape drive, first select the desired device, and then select the desired SCSI ID. 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.

b Press the arrow buttons to scroll through the available settings for that option.

c When the desired setting is displayed, press the Change button.

The setting is now saved as part of the library configuration.

d Repeat steps 3a through 3c to make additional changes to the library configuration.

4 Press the Back button to return to the Operator screen.

Configuring Library Options

The Configure Options command allows you to set the following options (see table 8).

Table 8 Available Settings, Configure: Options Screen

Option	Settings	Description
Power-On	Online Offline	This setting determines whether the library will be on-line or off-line when it is powered up.
Auto Clean	Enable Disable	When this option is enabled, the library performs drive cleaning tasks automatically when required.
Retries	Enable Disable	When this option is enabled, the library retries a failed command automatically before issuing an error message.
Auto Inventory	Enable Disable	When this option is enabled, the library performs an inventory automatically upon power-up.
Barcode Labels	Enable Disable	When this option is enabled, the library scans bar codes during inventory. Disable this option when using unlabeled cartridges.
Temp. Detection	Enable Disable	When this option is enabled, the over-temperature detection warning and shut down features of the library are activated.
Auto Load	Disable Enable	When this option is enabled, the library automatically moves any cartridge placed in the load port into an empty cartridge bin.
Power-On Security	User Locked Import Only Operator	This option sets the security level that will be used when the library is initially powered up. For a description of these security levels, see “Changing the GUI Security Level” on page 49.
4/52 Identity	Enable Disable	When this option is enabled, the library returns the same inquiry string as the ATL 4/52 library.

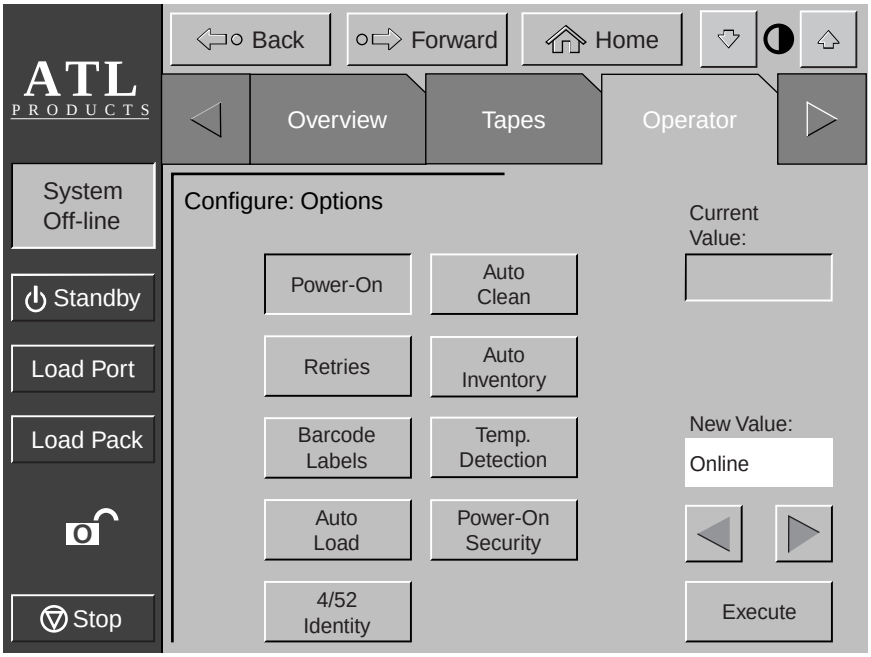
To set one of the options on the Configure: Options screen:

Procedure

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

The GUI displays the Configure: Options screen (see figure 39).

Figure 41 Configure: Options Screen



2 Press the button that corresponds to the option you wish to change.

3 Using the arrow buttons, scroll through the available option settings.

4 When the desired setting appears in the New Value field, press the Execute button.

The new value is added to the library configuration.

5 Repeat steps 2 through 4 to make any other configuration changes.

6 Press the Back button to return to the Operator screen.

Moving a Cartridge

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

Note: Before moving a cartridge from a tape drive, prepare the cartridge by issuing an Unload Drive command (see “Unloading a Drive” on page 70).

To move a cartridge:

Procedure

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

The GUI displays the Control: Move Cartridge screen (see figure 42).

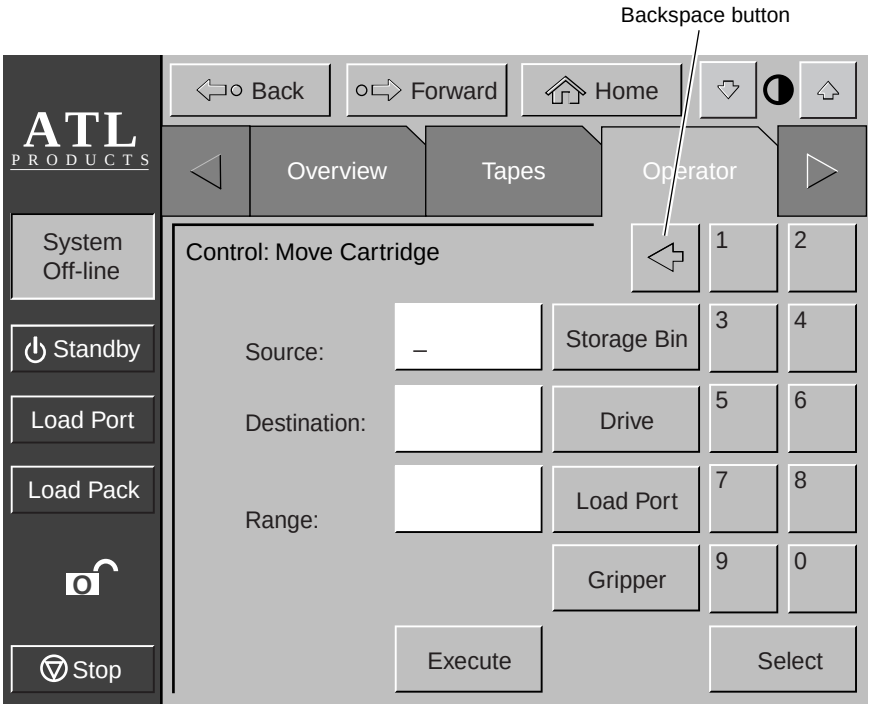


Figure 42 Control: Move Cartridge Screen

Procedure (continued)

2 Identify the source element (the element containing the cartridge to be moved):

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

   The GUI displays a range of addresses in the Range box (below the Destination box).

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

   If you make a mistake inputting the address, press the backspace button to erase the entry character by character.

   c Press the Select button.

   The Source box displays the source information and the Destination box becomes active.

3 Identify the destination element:

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

   The GUI displays a range of addresses in the Range box (below the Destination box).

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

   If you make a mistake inputting the address, press the backspace button to erase the entry character by character.

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

4 Press the Execute button to initiate the move.

   The GUI displays a “Command In Progress” screen. When the move is complete, the “Command In Progress” screen disappears.

   To cancel the move, press the Abort button on the screen.

5 Press the Back button to return to the Operator screen.

Performing an Inventory

The Inventory Tapes 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 containing unlabeled cartridges are marked full with no label.

To perform an inventory, press the Inventory Tapes button on the Operator screen. The GUI displays a “Command In Progress” screen. The inventory process continues until all storage elements have been checked. To cancel the inventory process, press the Abort button on the screen.

Calibrating the Library

The Calibrate Library command sets the horizontal and vertical graduations used by the library to position the gripper for pick and place operations. Once calibrated, the library can determine the exact position of any library element.

Note: Calibrate the library during the initial installation and after any maintenance procedure.

To calibrate the library:

Procedure

1 On the Operator screen, press the Calibrate Library button.

The GUI displays the Calibrate Library screen (see figure 43).

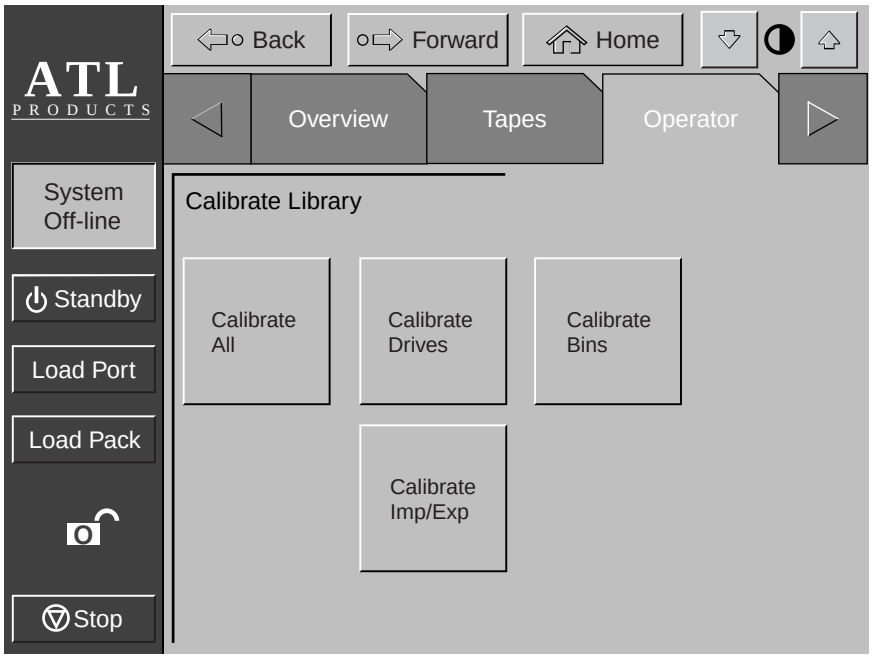


Figure 43 Calibrate Library Screen

2 Press the button that corresponds to the desired calibration operation:

- Calibrate All calibrates the drives, bins, and load port.
- Calibrate Drives calibrates the drives only.
- Calibrate Imp / Exp calibrates the load port only.
- Calibrate Bins calibrates the storage bins only.

The GUI displays a “Command In Progress” screen during the calibration process.

To cancel the calibration process, press the Abort button.

3 When the calibration is complete, press the Back button to return to the Operator screen.

Exercising the Library

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

To exercise the library, press the Exercise Library button on the Operator screen. The GUI displays a “Command In Progress” screen. The exercise process runs continuously until you press the Abort button or an error is detected.

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, eject and remove the cartridge using the Move Cartridges command (see “Moving a Cartridge” on page 64).

To unload a drive:

Procedure

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

The GUI displays the Control: Unload Drive screen (see figure 44).

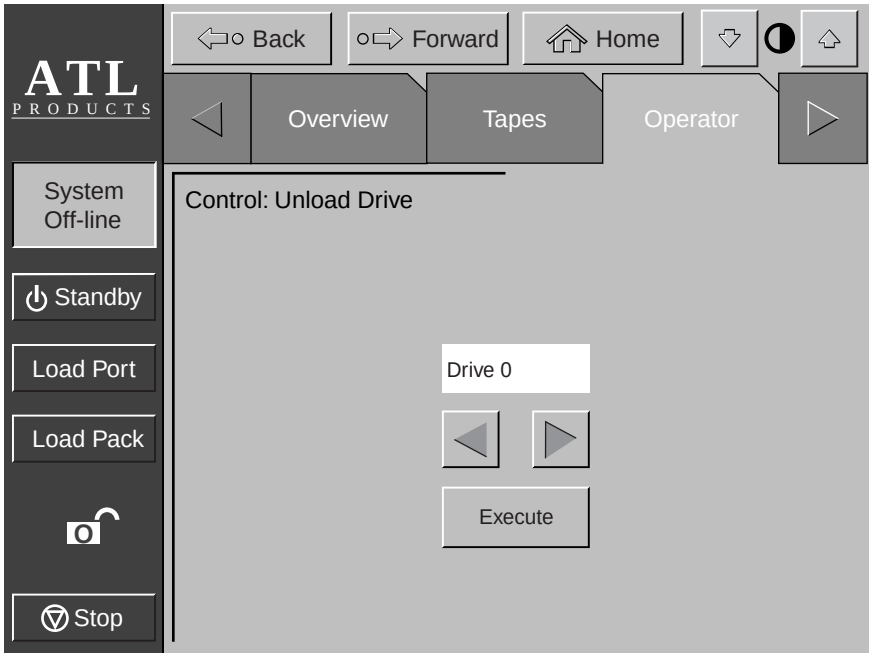


Figure 44 Control: Unload Drive Screen

2 Use the arrow buttons to highlight the desired drive.

3 Press the Execute button.

The GUI displays a “Command In Progress” screen and the library unloads the drive.

To cancel the Unload Drive command, press the Abort button.

4 Press the Back button to return to the Operator screen.

Unloading the Load Port

The Unload Imp/Exp command moves a tape cartridge from the load port to an available storage bin. Use this command to move a tape cartridge from the load port when the Auto Load option is disabled (see “Configuring Library Options” on page 62).

Note: You can also use the Move Cartridges command to unload the load port (see “Moving a Cartridge” on page 64). This command is especially useful if the destination of the move is important.

To unload the load port using the Unload Imp/Exp command, press the Unload Imp/Exp button on the Operator screen. The GUI displays a “Command In Progress” screen. To cancel the Unload Imp/Exp command, press the Abort button.

Chapter 5

Service Commands

This chapter describes the commands on the Service screen of the touch screen graphical user interface (GUI). Using this screen, you can:

- generate reports
- test the library
- initialize nonvolatile information
- change passwords

The Service screen is restricted to persons with Service access privileges.

Note: This chapter assumes you are familiar with the P1000 GUI. If you are not, see “Using the GUI” on page 42 for more information.

Accessing the Service Screen

To access the Service screen:

Procedure

1. On the GUI, press the right arrow button.

   The GUI displays the Service tab.

2. Press the Service tab.

   The GUI displays the Enter Password screen (see figure 45).

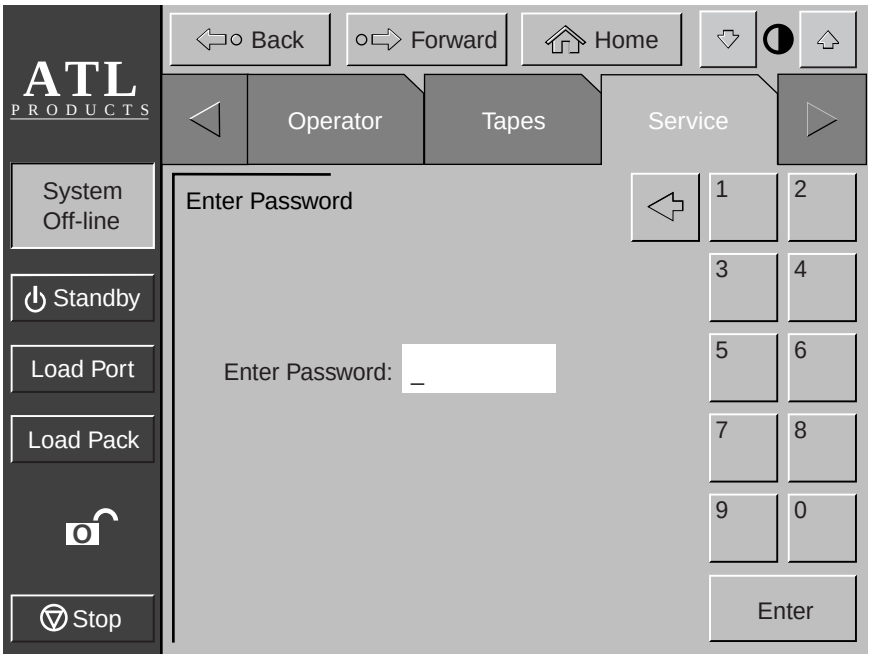


Figure 45 Enter Password Screen

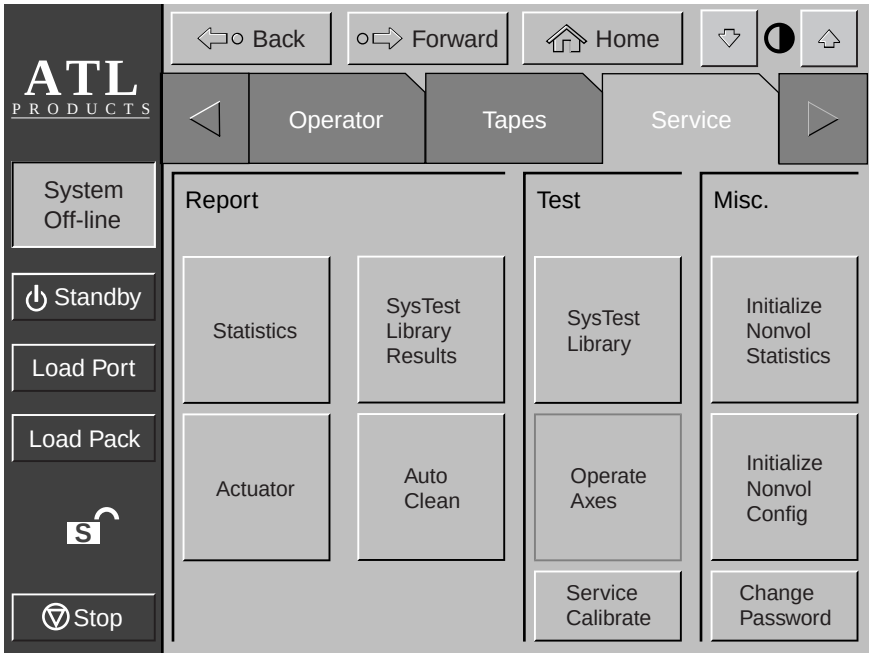
3. Enter the Service password.

Note: The default Service password is 5678. To change the Service password, see “Changing Passwords” on page 83. Changing passwords requires Service level access privileges.

Procedure (continued)

4 If the password you entered is valid, the GUI displays the Service screen (see figure 46).

Figure 46 Service Screen



Generating Reports

The Report section of the Service screen enables you to generate on-screen reports about:

- statistics regarding library operation
- actuator positions and status
- system test results
- AutoClean status and tracking information

To generate a report, press the appropriate button in the Report section of the Service screen. Within a few seconds, the GUI displays the report on the screen.

Use the arrow buttons at the right side of the screen to scroll through the report page by page. When you are finished viewing the report, press the Back button to return to the Service screen.

Figure 47 shows a sample statistics report screen (obtained by pressing the Statistics button on the Service screen).

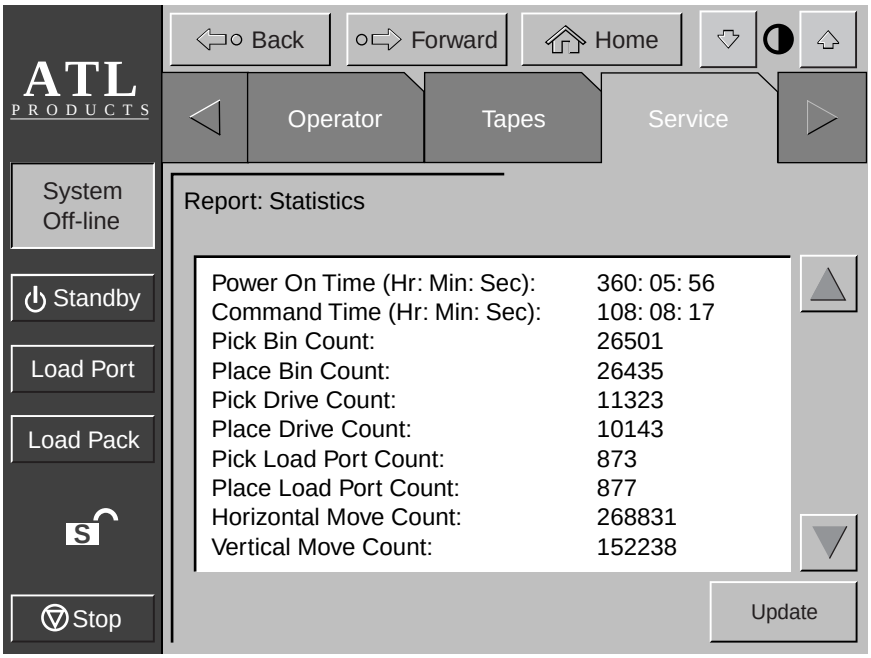


Figure 47 Report: Statistics Screen

Figure 48 shows a sample actuator status report screen (obtained by pressing the Actuator button on the Service screen).

Figure 48 Report: Actuator Status Screen

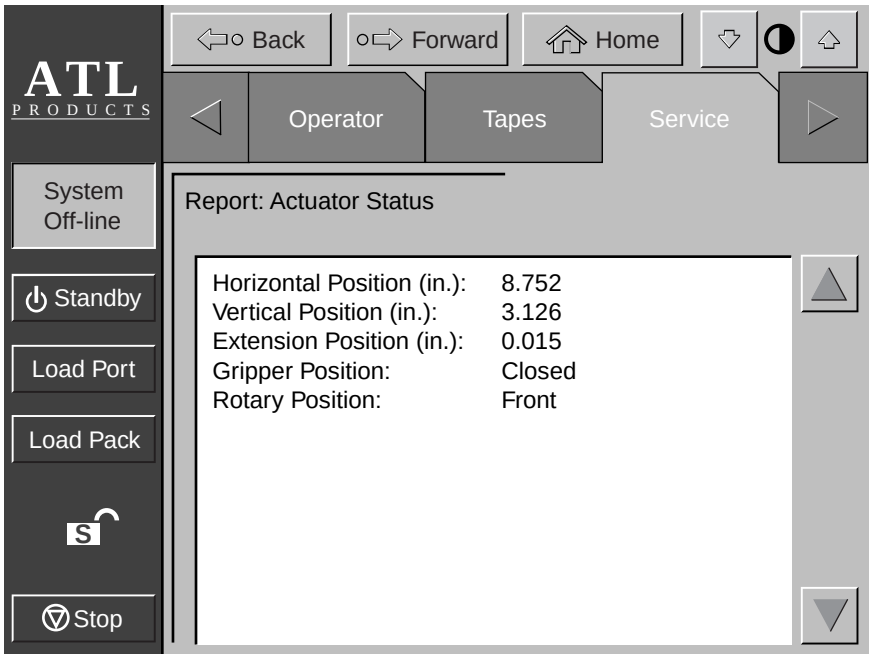


Figure 49 shows a sample SysTest Library results report screen (obtained by pressing the SysTest Library Results button on the Service screen).

Figure 49 Report: SysTest Library Results Screen

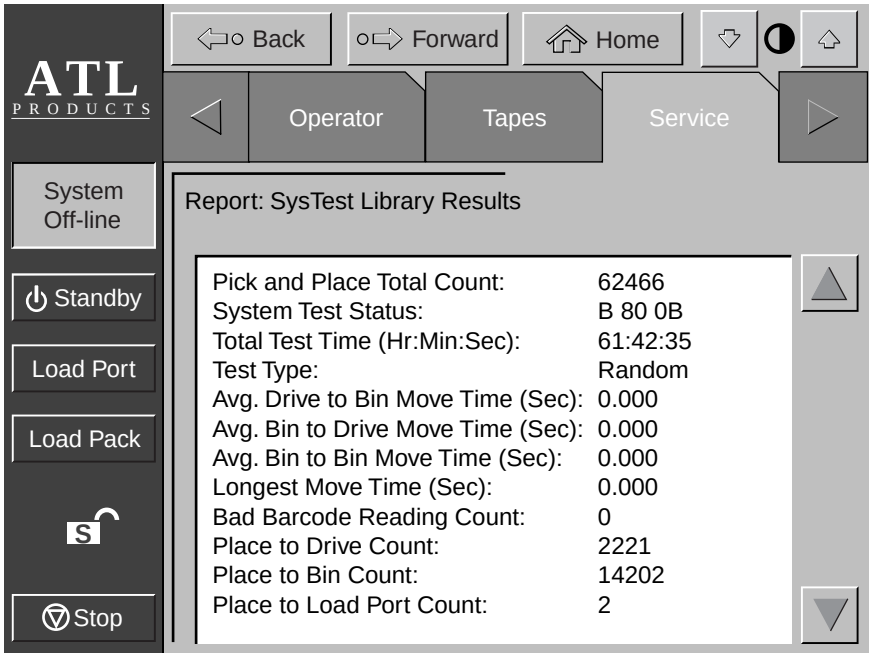
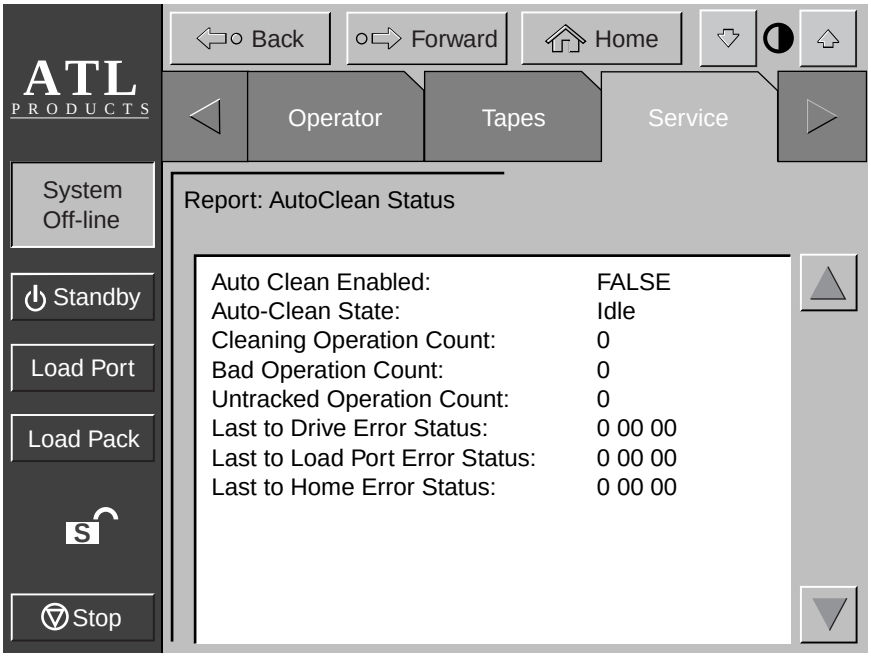


Figure 50 shows a sample AutoClean status report screen (obtained by pressing the Auto Clean button on the Service screen).

Figure 50 Report: AutoClean Status Screen



Testing the Library

The Test section of the Service screen provides three options:

- SysTest Library
- Operate Axes (not currently supported)
- Service Calibrate

Note: The commands in the Test section of the Service screen are operational only when the library is in Standby mode.

Performing a System Test

To perform a system test:

Procedure

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

The GUI displays the Test: SysTest Library screen (see figure 51).

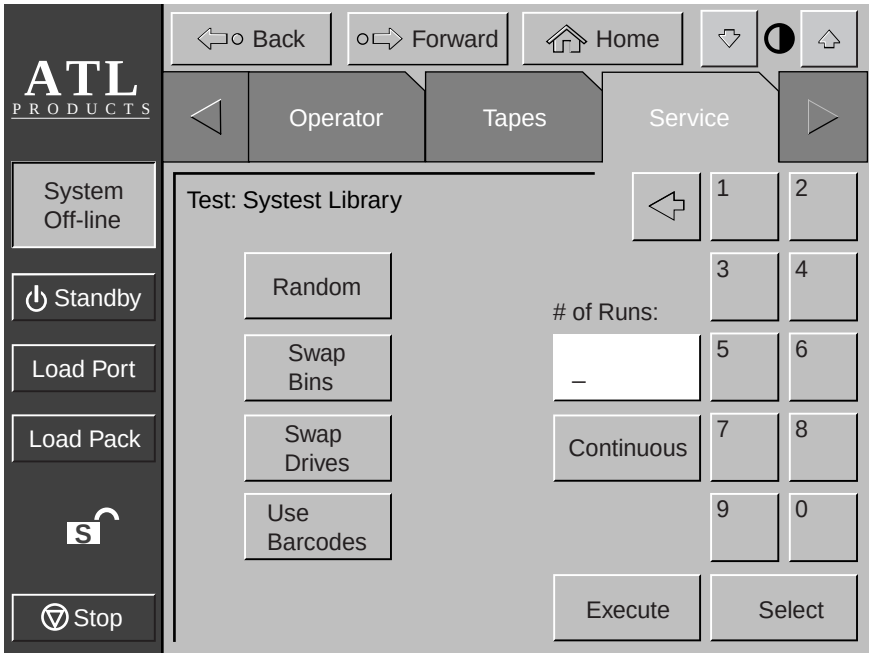


Figure 51 Test: SysTest Library Screen

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.

Procedure (continued)

3 Select all desired test options:

- To swap cartridges randomly, press the Random button.

  If you do not press this button, cartridges are swapped sequentially from the first bin or drive.

- To have the library read the bar code as it swaps each cartridge, press the Use Barcodes button.

- To have the test run continuously until aborted, press the Continuous button. Otherwise, enter the number of times you want the test to run into the # of Runs box.

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

  The GUI displays a “Command In Progress” screen.

  To cancel the system test, press the Abort button.

Note: If you selected the Continuous option in step 3, you must press the Abort button to stop the test.

Performing a Service Calibration

The Service Calibrate command autocalibrates the library (the tape drives, the cartridge bins, and the load port) and saves the target locations as a baseline for all subsequent calibration procedures.

Note: Before performing a service calibration, remove all tape cartridges from the library.

To perform a service calibration, press the Calibrate Library button on the Service screen. The GUI displays a “Command In Progress” screen during the calibration process.

To cancel the calibration process, press the Abort button.

Initializing Nonvolatile Information

The library nonvolatile memory resides on the robotic controller card. It retains library configuration information, 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 provides two commands involving information stored in nonvolatile memory:

- Initialize Nonvol Statistics—This command purges nonvolatile memory of all statistical information about library operation. This information is used to generate the library statistics report (see “Generating Reports” on page 76).
- Initialize Nonvol Config—This command returns library configuration settings to the factory default condition, eliminating current calibration data and any changes made using the Configure Library and Configure Options commands.

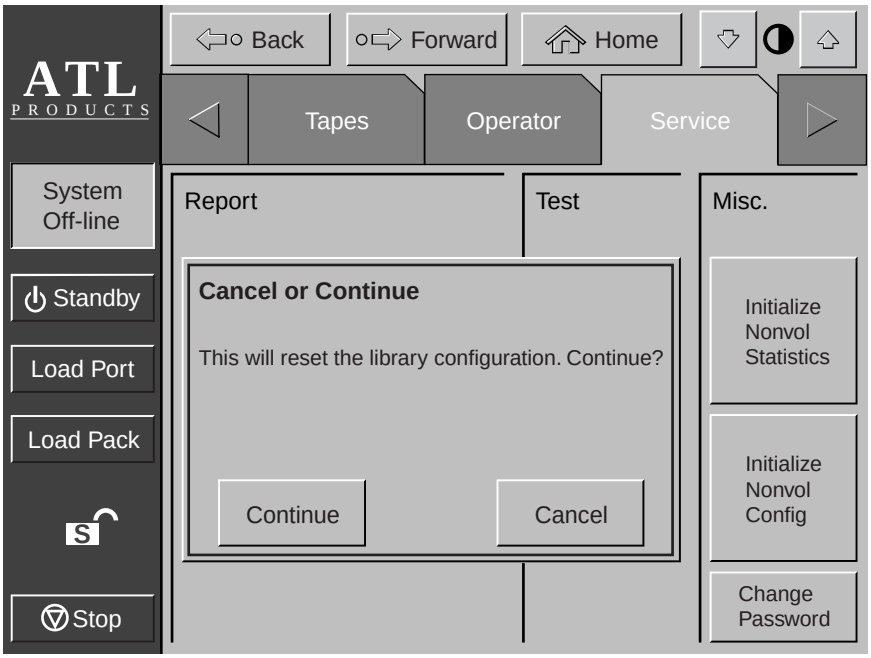
To execute a nonvolatile memory command:

Procedure

1 On the Service screen, press the appropriate command button (Initialize Nonvol Statistics or Initialize Nonvol Config).

The GUI displays a confirmation screen (see figure 52).

Figure 52 Confirmation Screen



2 Press Continue to execute the command.

To cancel the command, press the Cancel button.

Changing Passwords

The Change Password command enables you to change the passwords for four of the GUI security levels: Import Only, User, Operator, and Service. For information about the GUI security levels, see “Changing the GUI Security Level” on page 49.

To change a password:

Procedure

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

The GUI displays the Service: Change Password screen (see figure 53).

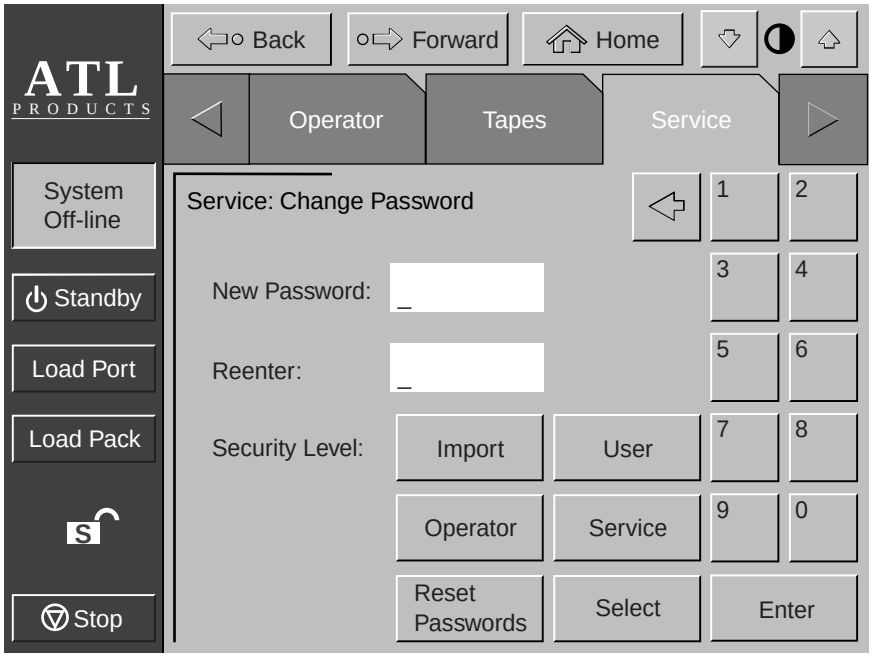


Figure 53 Service: Change Password Screen

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

3 Enter a new password using the keypad.

Asterisks representing each character appear in the New Password box.

Valid passwords consist of up to nine numeric characters.

4 Press the Select button.

Procedure (continued)

5 Reenter the new password.

Asterisks representing each character appear in the Reenter box.

6 Press the Execute button.

The new password is now saved.

Chapter 6

Troubleshooting

This chapter describes problems you may encounter during setup and operation of the P1000 library. Wherever applicable, corrective information is provided to help you resolve the problems.

Several of these problems produce error messages on the touch screen graphical user interface (GUI) called *sense data values*. Sense data value messages consist of a number and a description of the error. For a complete lists of sense data values, refer to the *ATL P1000 Series Field Service Manual*.

The troubleshooting information in this chapter is divided into the following categories:

- start-up problems
- GUI problems
- robotics problems
- operating problems
- tape drive problems

Start-up Problems

Table 9 provides corrective actions for problems which may occur while starting up the library.

Table 9 Start-up Problems

Problem	Corrective Action
The library does not power on.	Be sure the power switch is on 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 that 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, and then restart the library.
The library starts up in standby mode.	Press the Standby button. Verify that the library switches to on-line. The setting of the Power-On option determines whether the library will be on-line or off-line when it is powered up. To change this setting, see “Configuring Library Options” on page 62.

GUI Problems

Table 10 provides corrective actions for problems with the GUI.

Table 10 GUI Problems

Problem	Corrective Action
The GUI is blank.	Ensure that the power switch is turned on and the library is connected to a grounded electrical outlet. Contact an authorized field service engineer.
The GUI does not respond when pressed.	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 numerical values. Then, touch Okay to clear the message. For instructions about resolving the error, contact an authorized field service engineer.

Robotics Problems

Table 11 provides corrective actions for problems with the robotics.

Table 11 Robotics Problems

Problem	Corrective Action
The robot does not move at power up.	1 Verify that all internal packing materials were removed during the installation procedure. 2 Check the Stop and Standby buttons; be sure the library is on-line and the Stop button is released.
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 bar code reader on the gripper fails.	1 Verify that nothing obstructs the bar code reader. 2 Restart the library. If the problem continues, contact an authorized field service engineer.
The robot times out or fails during an operation.	1 Verify that the tape cartridge involved in the operation is properly positioned in the bin or drive and ready to be picked. 2 Check that the robot is not obstructed in any way. 3 Retry the operation. If it still fails, contact an authorized field service engineer.

Problem	Corrective Action
The robot drops a cartridge.	1 Open the doors safely: a Press the Load Pack button. b Open the left door. c Open the right door. 2 Remove the load and bulk packs. 3 Retrieve the cartridge. 4 Orient the cartridge properly and place it in an empty storage bin. Do not try to place the cartridge in the gripper. 5 Replace the load and bulk packs. 6 Close the right door and then the left door.
A cartridge is in the gripper at start-up, when a move command is requested, or after a place command is executed.	1 Open the doors safely: a Press the Load Pack button. b Open the left door. c Open the right door. 2 Remove the load and bulk packs. 3 Manually remove the cartridge from the gripper and place it in an empty bin. 4 Replace the load and bulk packs. 5 Close the right door and then the left door.
The gripper does not have a cartridge after completing a pick command.	1 Verify that there is a cartridge in the source location. 2 Retry the command. If the pick operation fails again, contact an authorized field service engineer.

Operating Problems

Table 12 provides corrective actions for problems which occur during library operation.

Table 12 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. **1** Confirm that the library is on-line (the Standby button is released). **2** Check cable connections, cable length, and termination. **3** Restart the host and the library. If the host and the library are still not communicating, contact an authorized 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 “Connecting Host Computers” on page 35.
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. **1** Check to see if the designated cartridge is present. **2** If it is, verify that it is seated properly. (For a tape drive, be sure the cartridge is completely unloaded.) **3** Retry the command. If the error persists, contact an authorized field service engineer.

Problem	Corrective Action
A move command failed.	1 Check the source and destination elements. The source element should hold the cartridge to be moved; the destination element should be empty. 2 Verify that the gripper is empty and all actuators are free of obstruction. 3 Verify that the library is on-line and the Stop button is released. 4 Retry the command.
A flash memory error is reported.	Contact an authorized field service engineer.
A maximum temperature exceeded warning appears.	1 Turn off the library and allow it to cool down. 2 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 13 provides correction actions for problems with the tape drives.

Table 13 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 an authorized field service engineer.
The tape drive does not eject a cartridge.	1 Reset the library. 2 Retry the unload command. If the tape still does not unload: 1 Stop the library. 2 Open the front door. 3 Manually unload and eject the cartridge.
A drive handle error occurs.	Contact an authorized field service engineer.

Appendix A

Specifications

The tables in this appendix list the characteristics and specifications of the P1000 library.

Table 14 Physical Characteristics

Unit Dimensions	
Width	17.3 in. (44 cm)
Depth	28.5 in. (72 cm)
Footprint	3.4 ft^2 (0.32 m^2)
Height	19.8 in. (50 cm)
Unit Weight	
Rack-mount model	89 lb (40 kg) without cartridges
Stand-alone model	101 lb (46 kg) without cartridges
Unit Capacity	
Tape drives	1 to 4 tape drives
Cartridges	0 to 30 cartridges

Table 15 Performance Characteristics

Average swap time	28 seconds, consisting of two “MOVE MEDIUM” commands
Inventory	less than 3 minutes, when the library is fully loaded with labeled cartridges

Table 16 Environmental Specifications

Power Environment		
Electrical rating	Voltage	100 VAC to 120 VAC or 200 VAC to 240 VAC
	Frequency	50 VAC to 60 VAC
	Power consumption	350 watts
	Power connection	IEC-320 male connector on rear panel
	Voltage range	90 VAC to 132 VAC or 180 VAC to 264 VAC
	Frequency range	47 VAC to 63 VAC
Climatic Environment		
Temperature (operating)	Dry Bulb	59° F to 90° F (15° C to 32° C)
	Wet Bulb	77° F (25° C) maximum
	Thermal transition	52° F (11° C) per hour
Temperature (shipping and storage)	Dry bulb	-40° F to 151° F (-40° C to 66° C)
	Wet bulb	115° F (46° C) maximum
	Thermal transition	54° F (30° C) 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 245 W)
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 @ 3 V / m
Fast transients (EFT or burst) per IEC-801-4	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

Installing the Slide Assembly in the Rack

This appendix provides instructions for installing the slide assembly in the rack. This procedure consists of the following steps:

- verifying that the rack meets the necessary requirements
- determining the mounting position of the slide assembly within the rack
- mounting the slide assembly in the rack
- adjusting the slide assembly to allow for required clearances

Warning: Use safe lifting practices when moving the slide assembly or the library. The slide assembly weighs about 25 lbs (11.25 kg) and its size and construction make it awkward to handle. The library weighs 89 lbs (40 kg); it must be lifted with assistance. Failure to follow these guidelines may result in equipment damage or personal injury.

Warning: When installing the library and other devices in the rack, determine the 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.

Verifying the Rack Requirements

Before installing the slide assembly in the rack, verify that the rack meets the following requirements.

Rack Current Rating Consideration

Consider the current rating of the rack before installing more than one P1000 library. The P1000 library is rated 6A / 3A (120V / 230V). This means that no more than two libraries can be installed in a typical 15A / 120V rack.

If other equipment is installed in the rack, determine the total current rating of all the equipment before adding the P1000 library to the rack.

Grounding

The P1000 must be connected to a grounded power outlet. If the library is rack-mounted, the rack must also be grounded.

Temperature

The rack temperature should be less than 32°C.

Determining the Mounting Position

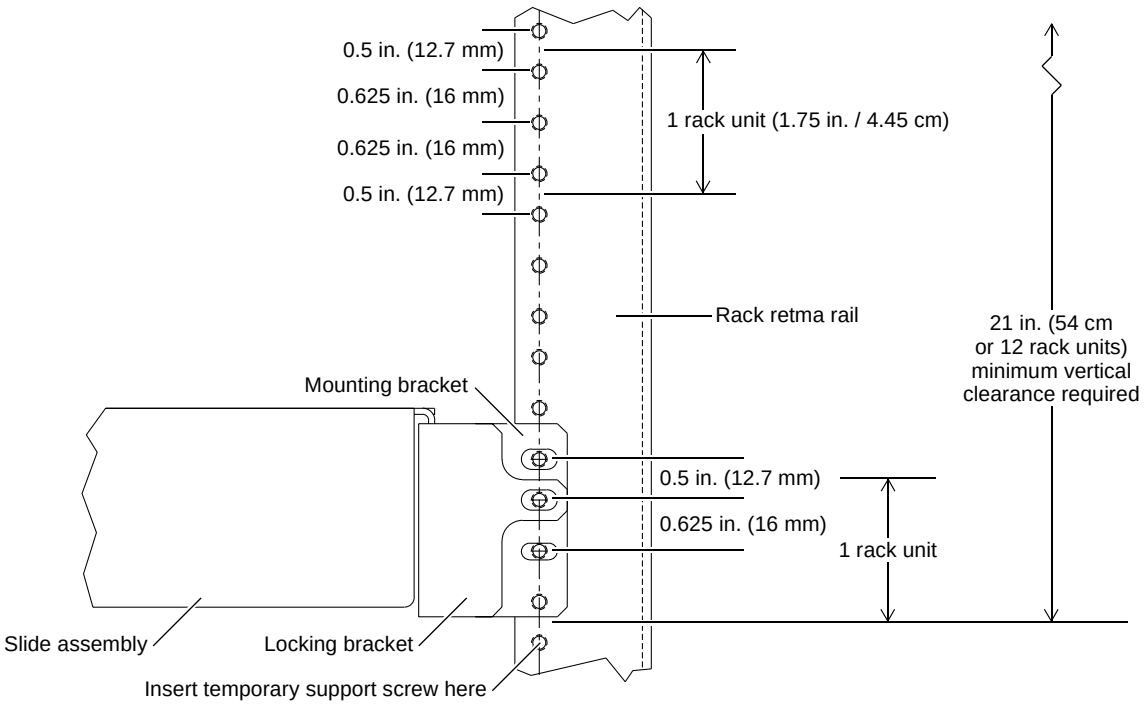
To determine the mounting position of the slide assembly within the rack:

Procedure

1 Locate the desired mounting position for the library (see figure 54).

The library and slide assembly require at least 21 in. (54 cm or 12 rack units) of vertical clearance. To ensure stability, mount the library low in the rack.

Figure 54 Positioning the Slide Assembly



As indicated in figure 54, the bottom edge of each slide assembly bracket must line up with the end of a rack unit.

2 If the rack retma rail holes are not threaded, attach the appropriate threaded clips to the holes that correspond to:

- the mounting bracket tabs (front and back)
- the locking bracket tabs (front only)
- the temporary support screws (front and back)

Procedure (continued)

3 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 into the retma rail holes.

4 Make sure the support screws are level with one another.

Leave the screws extended out of the retma rails at least 0.625 in. (16 mm) so they will support the slide assembly mounting brackets during installation.

Installing the Slide Assembly in the Rack

To install the slide assembly in the rack (see figure 55 on page 102):

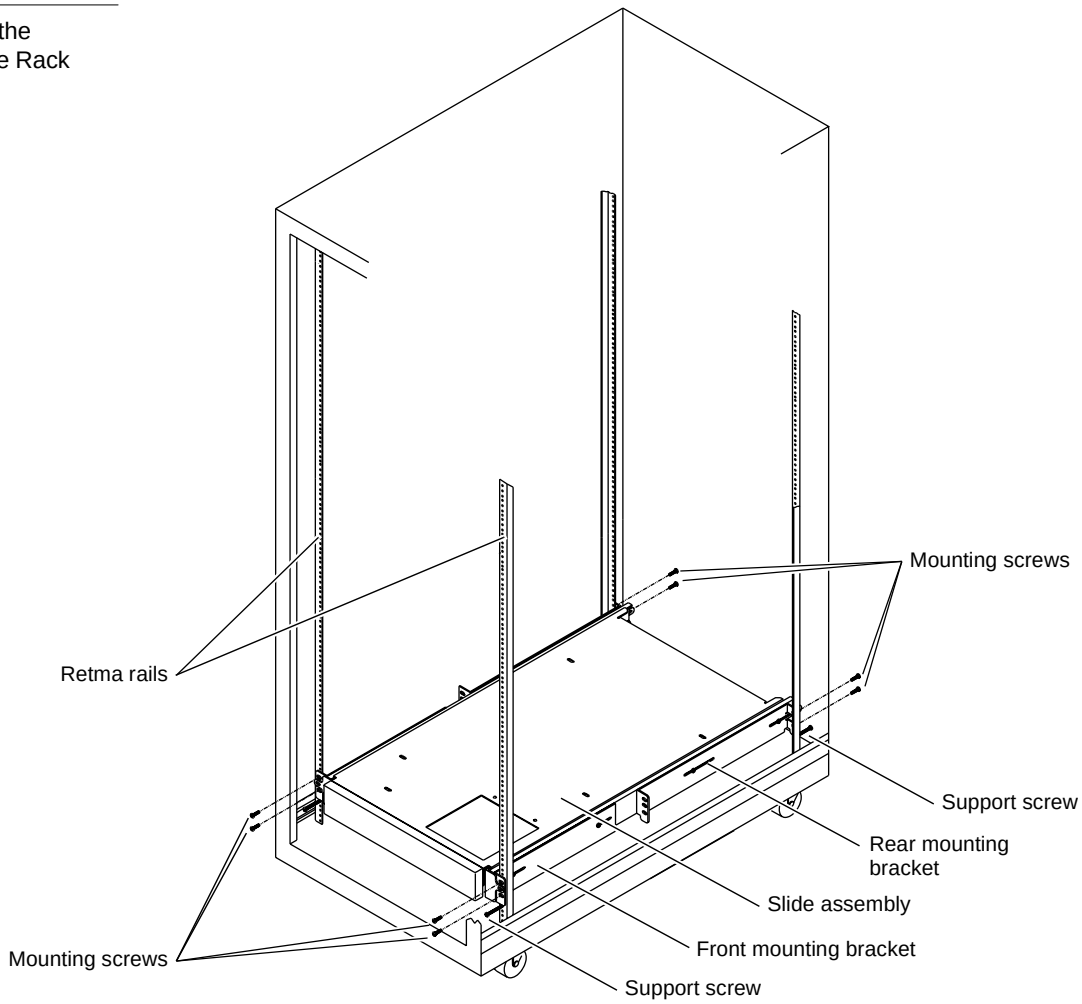
Procedure

1. Loosen (but do not remove) the nuts holding the rear mounting brackets to the slide assembly.
2. Measure the depth of the rack, from the outside edge of the front retma rail to the outside edge of the rear retma rail.
3. Adjust the rear mounting brackets so that the distance from the front mounting brackets to the rear mounting brackets is slightly greater than the depth of the rack.
4. Insert the slide assembly into the rack:
   a. Lift the slide assembly and tilt it sideways.
   b. Insert the back end of the slide assembly into the front of the rack, keeping the slide assembly above the temporary support screws.
   c. When the rear brackets clear the rear retma rails, turn the slide assembly right side up.
   d. Place the slide assembly in the rack so that each bracket rests on a temporary support screw.
5. Secure the front mounting brackets to the front retma rails, using four screws from the accessories kit.
6. Adjust the rear mounting brackets so they are flush with the outside of the rear retma rails.
7. Secure the rear mounting brackets to the rear retma rails, using four screws from the accessories kit.

Note: Do not tighten the nuts securing the rear mounting brackets to the slide assembly. You will tighten these during the following procedure, “Adjusting the Slide Assembly.”

8. Remove the four temporary support screws.

Figure 55 Installing the Slide Assembly in the Rack



Adjusting the Slide Assembly

Now that the slide assembly is installed in the rack, verify that:

- The front door of the rack opens and closes freely.
- The rear door of the rack opens and closes freely.
- When fully extended, the slide assembly extends at least 30 in. (76.2 cm) from the front of the rack.

If the slide assembly and rack do not meet the above requirements, complete the procedures in this section to adjust the slide assembly. The number of adjustments required varies from rack to rack.

Adjusting the Slide Assembly on the Mounting Brackets

To adjust the slide assembly on the mounting brackets:

Procedure

1 Loosen the outer nuts on both sides of the slide assembly (see figure 56).

These nuts secure the mounting brackets to the slide rails.

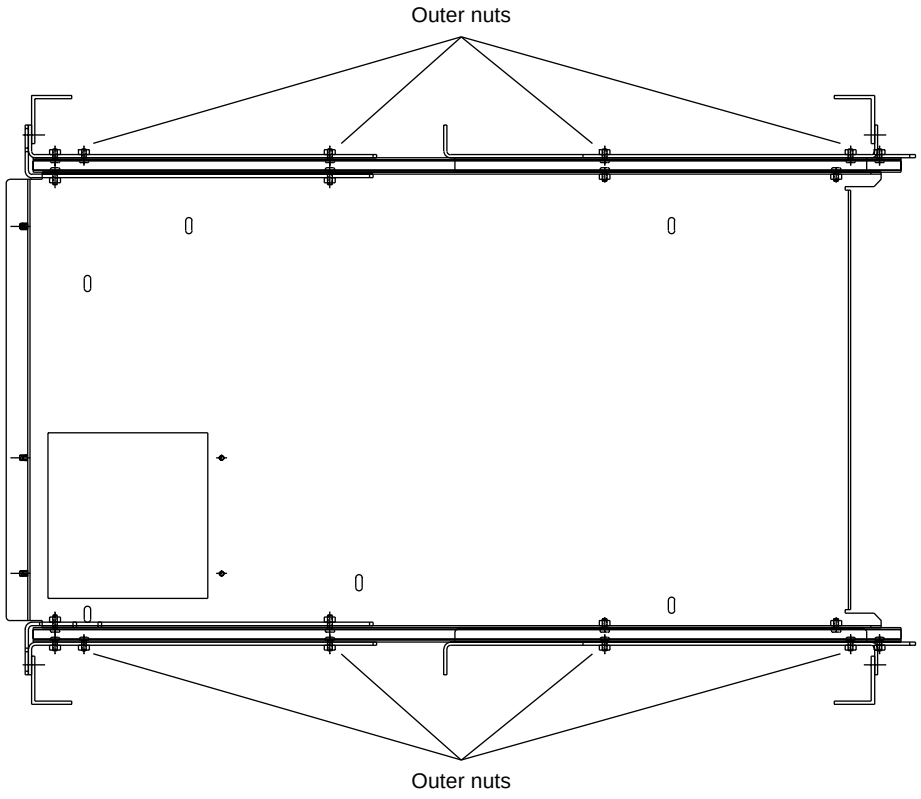


Figure 56 Loosening the Outer Nuts

Procedure (continued)

2 Move the slide assembly forward or backward as necessary.

3 When the slide assembly is in the desired position, tighten all outer nuts:

a Pull the slide assembly tray forward until you can access the four rear screws.

b Tighten each of the four rear nuts by holding the nut with an 11/32 inch open-ended wrench and then tightening its corresponding screw with a Phillips screwdriver.

c Extend the slide assembly out of the rack until both the intermediate and inner channels of the slide rails lock (see figure 57 on page 105).

The intermediate channels are secured by the intermediate channel locks, which are located on the inner, back edge of the intermediate channels.

d Release the intermediate channel locks by rotating them upward slightly.

Note: Do not release the inner channel locks.

e Push the slide assembly back into the rack until the access hole on the inside of the intermediate channel exposes a screw.

f Use a Phillips screwdriver to tighten the screw while holding its corresponding nut with an 11/32 inch open-ended wrench.

g Repeat steps 3e and 3f to tighten the remaining front nuts.

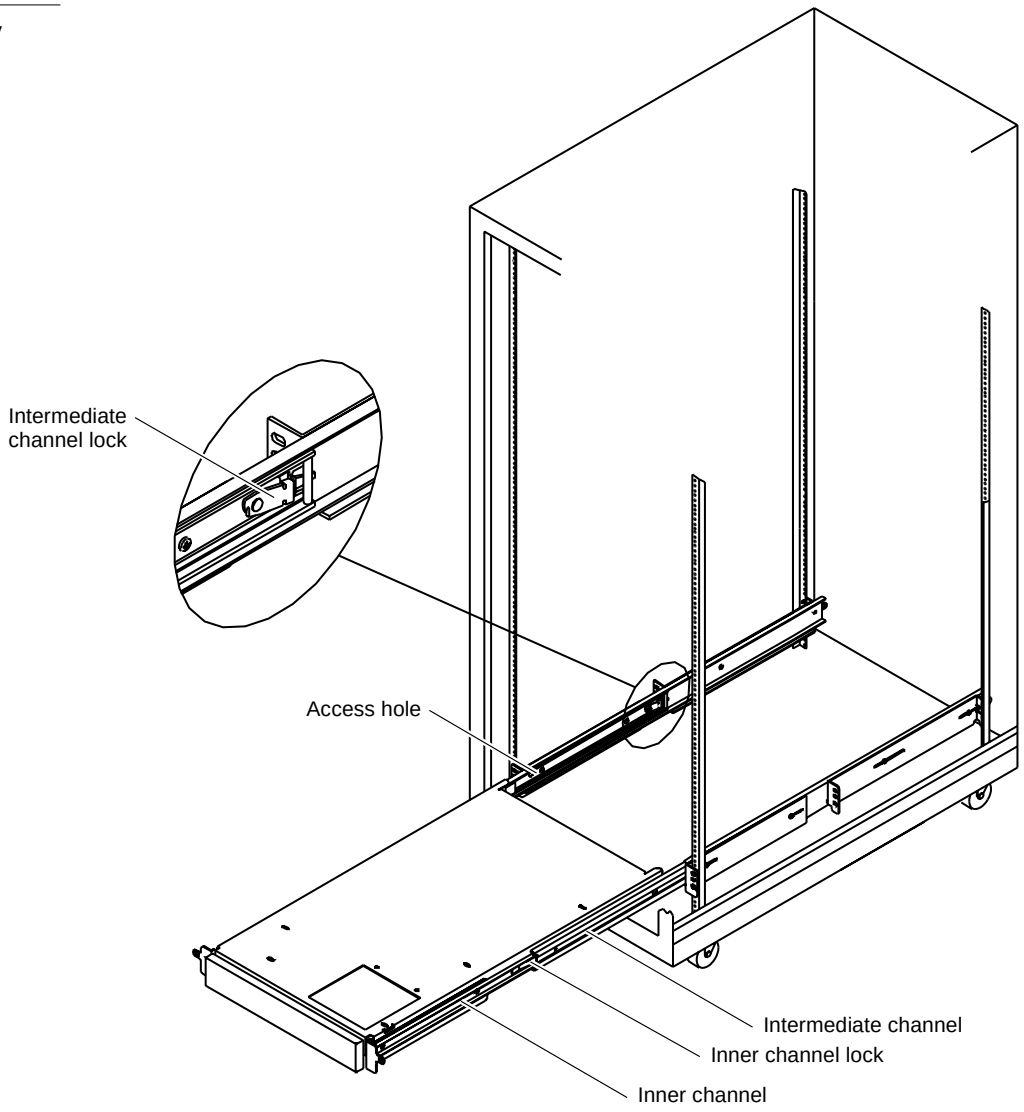
h Press on the inner channel locks to release them.

The inner channel locks are located on the outer, back edge of the inner channels.

i Push the slide assembly tray back into the rack.

4 Check for clearance. If necessary, repeat this procedure to adjust the slide assembly further.

Figure 57 Slide Assembly Tray, Fully Extended



Adjusting the Slide Assembly Tray on the Slide Rails

To adjust the slide assembly tray on the slide rails:

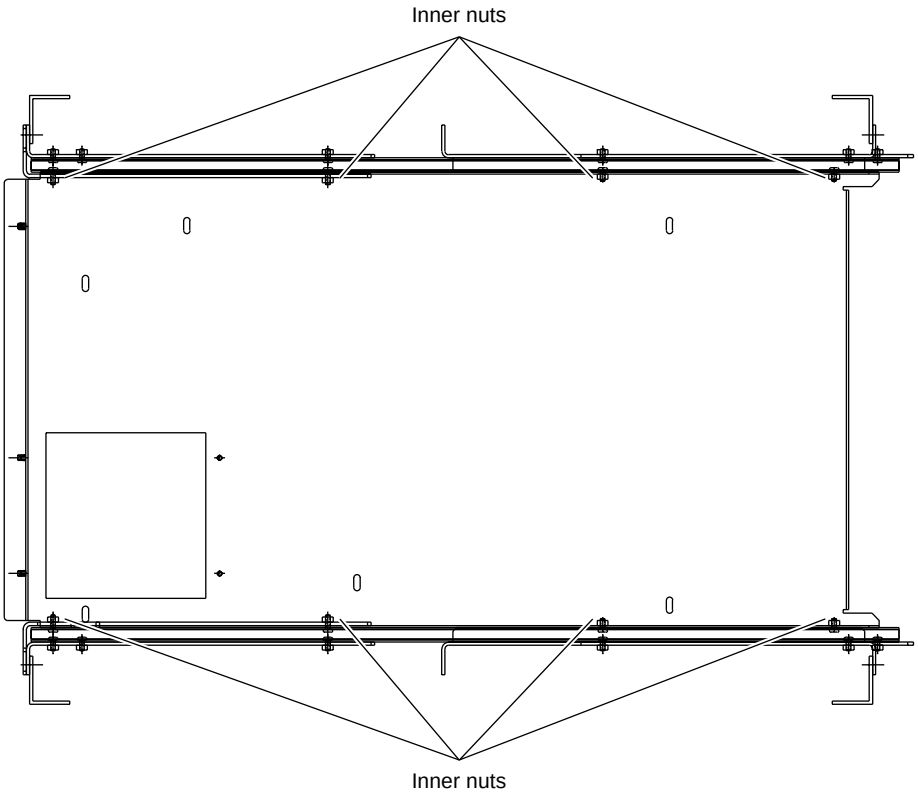
Procedure

1. Loosen the inner nuts on both sides of the slide assembly (see figure 58 on page 106).

   Access these nuts from underneath the slide assembly tray.

2. Move the slide assembly tray forward or backward as necessary.

Figure 58 Loosening the Inner Nuts



Procedure

3 When the slide assembly tray is in the desired position, tighten all inner nuts:

- **a** Extend the slide assembly out of the rack until both the intermediate and inner channels of the slide rails lock (see figure 57 on page 105).

  This allows you to access the front screws.

- **b** Tighten each of the front nuts by holding the nut with an 11/32 inch open-ended wrench and then tightening its corresponding screw with a Phillips screwdriver.

- **c** Press on the inner channel locks to release them (see figure 57 on page 105).

- **d** Push the slide assembly back into the rack until the access hole on the outside of the inner channel exposes a screw.

- **e** Use a Phillips screwdriver to tighten the screw while holding its corresponding nut with an 11/32 inch open-ended wrench.

- **f** Repeat steps 3d and 3e to tighten the remaining inner nuts.

- **g** Push the slide assembly tray back into the rack.

4 Check for adequate clearance. If necessary, repeat this procedure to adjust the slide tray further.

Now that the slide assembly is properly installed and adjusted, you are ready to remove the P1000 from the shipping pallet and mount it in the rack (see “Removing a Rack-mount Library from the Pallet” on page 23).

Glossary

A

actuators Robotic components that move inside the library to manipulate cartridges. These include the gripper, extension axis, vertical axis, and horizontal axis.

automated tape library A robotic storage and retrieval system for tape cartridges.

B

bar code label The identification label on tape cartridges.

bar code scanner A device mounted on the extension axis that reads the cartridge bar code labels.

bulk pack An 8-bin removable storage magazine for cartridges. The bulk pack fits inside the right front door of the P1000 library.

C

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

E

extension axis assembly Mounted on the vertical axis, the extension axis assembly consists of the gripper assembly and the horizontal axis on which the gripper assembly is mounted.

extension axis belt The drive belt connecting the extension motor / gearbox to the gripper.

F

FCC Class A A standard established by the U.S. Federal Communications Commission governing electromagnetic emissions.

Fibre Channel A 1 gigabit per second data transfer interface technology that operates over either copper or fiber optic cabling at distances up to 10 kilometers.

G

gripper assembly The assembly that mounts on the extension axis and grips cartridges.

GUI Graphical user interface. The touch screen panel on the front of the library. The GUI allows you to view and change library configuration information, generate reports, run system tests, and perform many other functions.

H

horizontal belt The drive belt connecting the horizontal motor to the horizontal axis assembly.

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

L

LCD Liquid crystal display.

load pack An 8-bin removable storage magazine for tape cartridges. The load pack fits inside the left front door of the P1000 library. You can configure this magazine to function as an import/export device, if desired.

load port The operator-accessible component of the library that allows you to insert or remove a single cartridge.

M

MSBF Mean swaps between failures.

MTBF Mean time between failures.

MTTR Mean time to repair.

N

NVRAM Nonvolatile random access memory (RAM)

O

on-line When the library is on-line, it is ready for communications with the host.

P

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 (ROM).

S

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

standby mode The state in which the library is not available for communication with the host.

T

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

U

UL Underwriters Laboratories.

V

vertical belt The drive belt connecting the vertical motor to the vertical axis assembly.

vertical carriage assembly The crossbar and linear bearings mounted on the vertical rails and all components mounted on the crossbar.

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