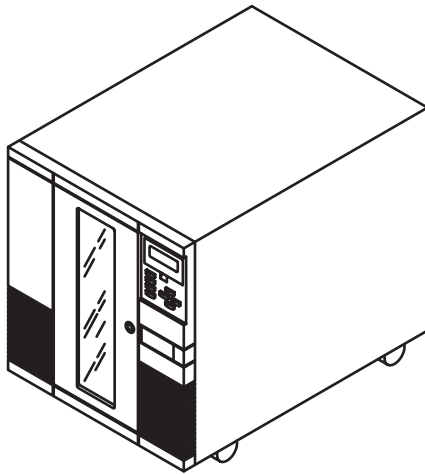


adic

SCALAR AIT 440/480

INSTALLATION AND OPERATING GUIDE



Scalar AIT 440/480 Libraries

Installation and Operation



 Advanced Digital Information Corp

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62-0153-01

Revision History

Revision	Date	Description
A	December 1998	Initial release
B	June 1999	AIT-1, AIT-2 tape drives

Revisions to This Manual

This revision of *Scalar AIT 440/480 Library Installation and Operation* (B) contains the following changes and enhancements:

- Added information about Scalar AIT 440/480 support for AIT-1 and AIT-2 tape drives.

Safety Agency Standards

The Scalar AIT 440/480 comply with the following domestic and international product safety standards:

- UL Standard 1950, 3rd Edition, Information Technology Equipment Including Electrical Business Equipment
- CSA Standard C22.2 No. 950-95, Safety of Information Technology Equipment Including Electrical Business Equipment
- IEC 950/EN60950, Safety of Information Technology Equipment including Electrical Business Equipment

Electro-magnetic Interference (EMI)

The Scalar AIT 440/480 meet the requirements for radiated and conducted emissions as defined by the following standards:

- FCC Rules and Regulations, Part 15: Class A, Radio Frequency Devices—
Subpart B: Unintentional Radiators
- Industry Canada Notice, ICES-003, Class A, Digital Apparatus
- CISPR Publication 22, 1985, (EN 55022)

FCC Notice

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 this instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Shielded cables are required for this device to comply with FCC Rules. **Use shielded cables when connecting this device to others.**

According to FCC regulations, changes or modifications to this equipment that are not expressly approved by ADIC could void the user's authority to operate the equipment.

Industry Canadian Notice per ICES-003

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

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

CISPR22 Compliance Notice

This equipment complies with the CISPR22B standard for EMI radiation.

Product Warranty Caution

The Scalar AIT 440/480 Libraries are warranted to be free from defects in materials, parts, and workmanship and will conform to the current product specification upon delivery. **For the specific details of your warranty, refer to your sales contract or contact the company from which the library was purchased.**

The warranty for the library shall not apply to failures of any unit when:

- The library is repaired by anyone other than ADIC's personnel or approved agent.
- The library is physically abused or is used in a manner that is inconsistent with the operating instructions or product specification defined by ADIC.
- The library fails because of accident, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, modification, or service by anyone other than the factory service center or its approved agent.
- The library is repaired by anyone, including an approved agent, in a manner that is contrary to the maintenance or installation instructions supplied by ADIC.
- ADIC's serial number tag is removed.
- The library is damaged because of improper packaging on return.

CAUTION

Returning the library in unauthorized packaging may damage the unit and void the warranty.

If problems with the library occur, contact your maintenance organization; do not void the product warranty by allowing untrained or unauthorized personnel to attempt repairs.

Notes

Contents

Welcome	xi
About the Scalar AIT 440 and Scalar AIT 480	xii
Front panel components	xiii
Internal components	xv
About this manual	xx
Contacting ADIC	xxiii
1 Installing the Hardware	1
Preparing for installation	1
Installing the library hardware	6
2 Configuring the Library	31
Displaying the Configuration Menu	33
Setting the SCSI IDs	34
Setting the LCD security option	36
Setting other configuration options	40
3 Checking the Setup	45
4 Operating the Library	47
Using the operator panel	47
Operating in different control modes	52
Selecting and replacing data cartridges	54
Replacing data cartridge magazines	61
Resetting the library	64
5 Operating the Tape Drives	67
Monitoring the tape drive LEDs	67
Cleaning the tape drives	69
Displaying information about tape drives	72
Ejecting a cartridge manually	76

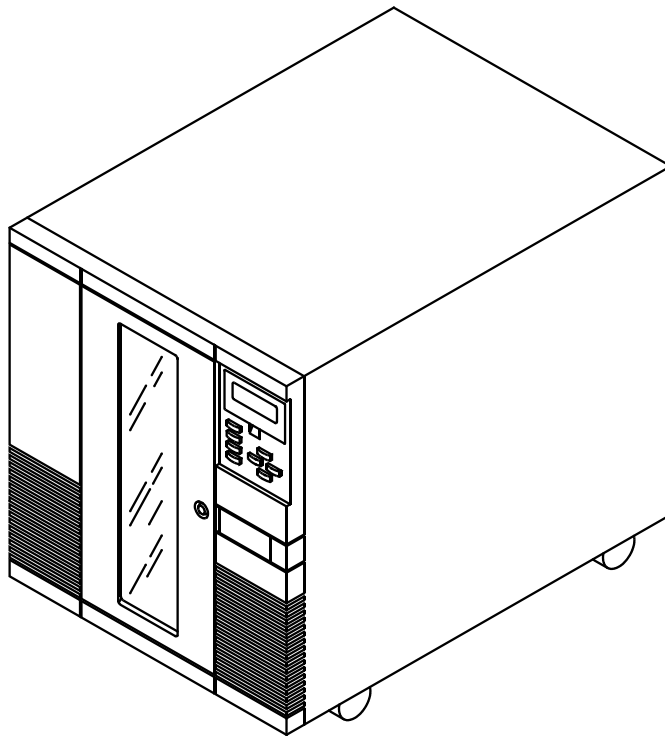
6	Maintaining the Library	79
	Replacing tape drives or drive blanks.....	80
	Replacing the fuse	85
	Replacing the air filter	87
	Cleaning the front window.....	90
	Using touch-up paint on the housing	90
7	Packing and Shipping the Library	91
	Returning the library for service.....	91
	Shipping the library	92
8	Using the Demo Menu	105
	Starting a demo.....	105
	Slot Demo.....	106
	Drive Demo	109
9	Performing Diagnostics	113
	Using the LCD Diagnostics Menu	113
	Configuring the serial ports for diagnostics	127
10	Using the Library Info Menu	131
	Accessing the Library Info Menu.....	131
	Using the SCSI Menu.....	132
	Viewing statistics	140
	Viewing system sensors	142
	Viewing command history	144
	Using the Inventory Menu	145
11	Troubleshooting	151
	Problems with installation	151
	Problems with tape drive operation	153
	Problems with library operation.....	154
	If you cannot resolve the problem.....	154

A	Specifications	157
	General specifications	157
	Physical characteristics	158
	Operating environment	158
	Power.....	158
	SCSI cable specifications	159
	SCSI terminator specifications	160
	Power cord requirements.....	160
B	LCD Error Codes	163
C	Library Elements	171
	Index	175

Notes

W elcome

Congratulations on selecting the Scalar AIT 440 or Scalar AIT 480 Library. Your new library provides automated data storage, archiving, backup, and retrieval for mid-range and high-end workstations, servers, and networks.



The library's robotic cartridge handling mechanism (CHM) responds to commands from the host application to move AIT data cartridges between tape drives and storage slots, while the tape drives read and write data. You can insert and remove cartridges through the entry/exit port without opening the library door.

About the Scalar AIT 440 and Scalar AIT 480

The following illustrations and descriptions summarize the important library features. For library specifications, refer to .

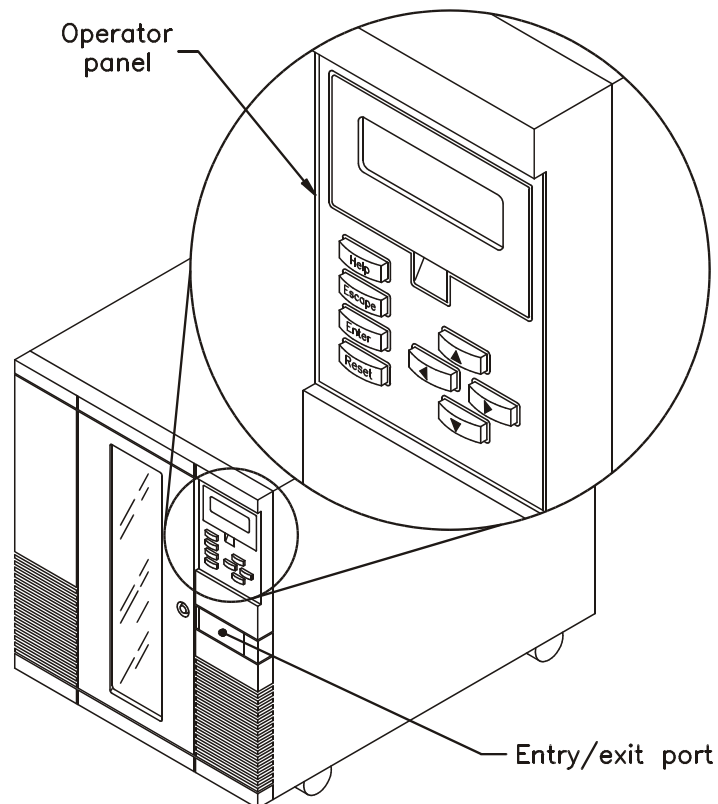
The Scalar AIT 440 contains 40 data cartridge slots, while the Scalar AIT 480 contains 80 data cartridge slots. Both libraries can include up to four 3.5" form factor Sony® AIT™ tape drives. The libraries can operate as five SCSI devices on up to five SCSI buses. When the library is equipped with AIT-1 drives, the library is a differential SCSI-2 device and the drives are differential Fast/Wide SCSI-2 devices. The library can be a differential SCSI-2 device and the drives are differential SCSI-2 Fast/Wide devices. When equipped with AIT-2 drives, the library can be configured as a high voltage differential (HVD) Wide Ultra SCSI device, or as a low voltage differential (LVD) Wide Ultra SCSI device.

When operating with four AIT-2 tape drives and assuming an average data compression ratio of 2:1, the Scalar AIT 440 can store up to 4.0 terabytes of information on 40 Advanced-Metal Evaporative (AME™) data cartridges (SDX2-50C), while the Scalar AIT 480 can store up to 8.0 terabytes of information on 80 AME cartridges.

Employing the 3.5" form factor AIT-2 drive, the Scalar AIT 440 and Scalar AIT 480 provide a maximum sustained data transfer rate of over 1440 MB per minute (assuming 2:1 data compression). The Wide Ultra SCSI drive does not require periodic head cleaning as often as many conventional tape drives. The drive constantly monitors head output to check for possible contamination. If present, the drive will invoke a built-in Active Head Cleaner. Under extreme operating conditions, a cleaning cartridge may be required and the drive indicates this by displaying a Cleaning Request message on its front panel Status LED.

The Sony SDX1-25C, SDX1-35C, SDX2-36C, and SDX2-50C data cartridges support the Advanced Intelligent Tape format. The cartridges use a new recording format, Adaptive Lossless Data Compression (ALDC), Memory In Cassette (MIC™) technology capabilities and use Sony's AME media, which incorporates dual cobalt magnetic layers, the absence of binder material to prevent tape head contamination and a super-durable "diamond-like carbon" protective coating for extreme durability.

Front panel components



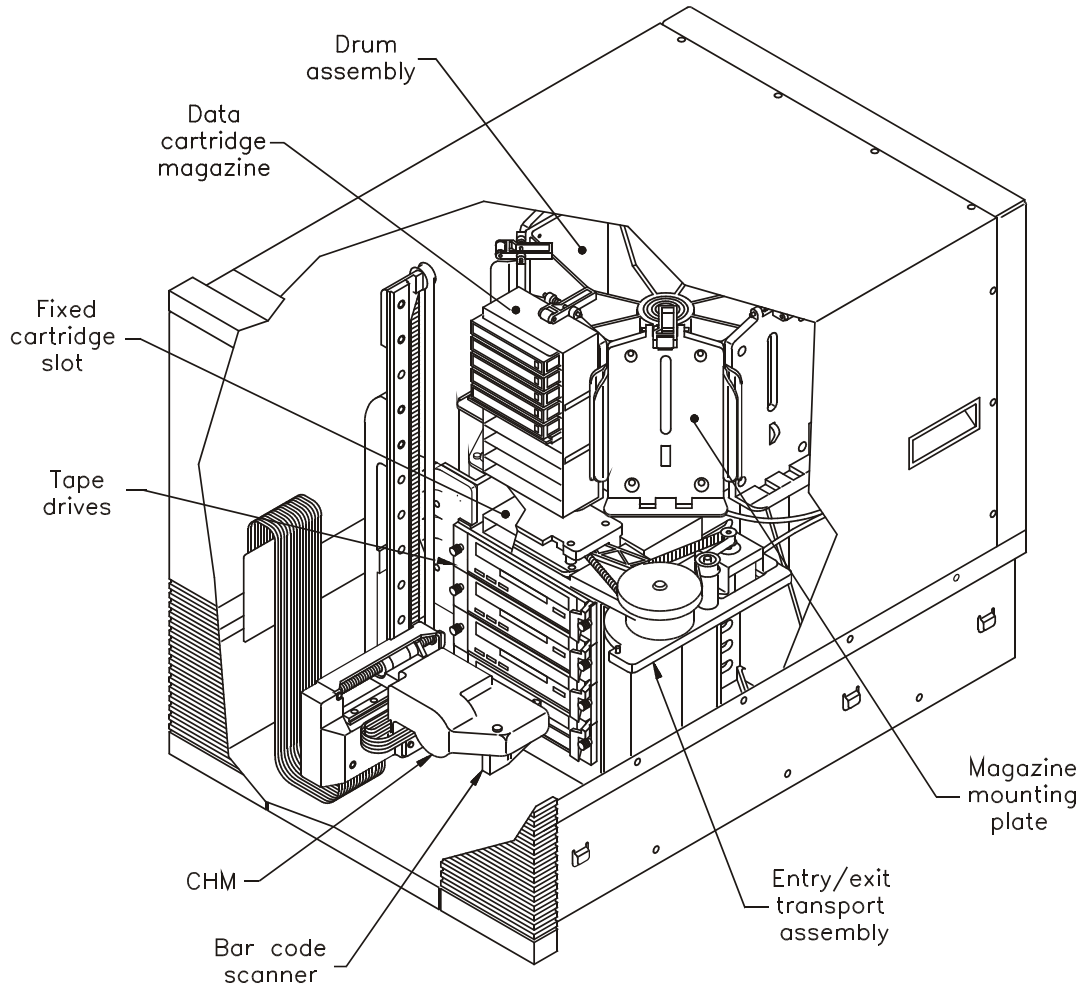
Operator panel

The operator panel includes a four-line liquid crystal display (LCD) and a keypad. Use the operator panel to access menu options used to configure the library and monitor operations. If necessary, you can tilt the LCD for easier viewing.

Entry/exit port

The entry/exit port allows you to insert or remove individual cartridges from the library without opening the door.

Internal components



Drum assembly

The drum assembly holds the data cartridge magazines and rotates 180 degrees in either direction to position the magazines in front of the CHM.

Data cartridge magazines

Data cartridge magazines are the removable carriers for the AIT data cartridges. The magazines snap onto mounting plates on the library's rotating drum assembly and allow easy removal and replacement of cartridges. Each magazine has individual cartridge slots for 10 cartridges. The Scalar AIT 440 contains up to four data cartridge magazines; the Scalar AIT 480 contains up to eight.

Fixed cartridge slot

The fixed cartridge slot, located directly above the tape drives, provides a storage location for a single cartridge. Typically, this slot is used to store an AIT cleaning cartridge.

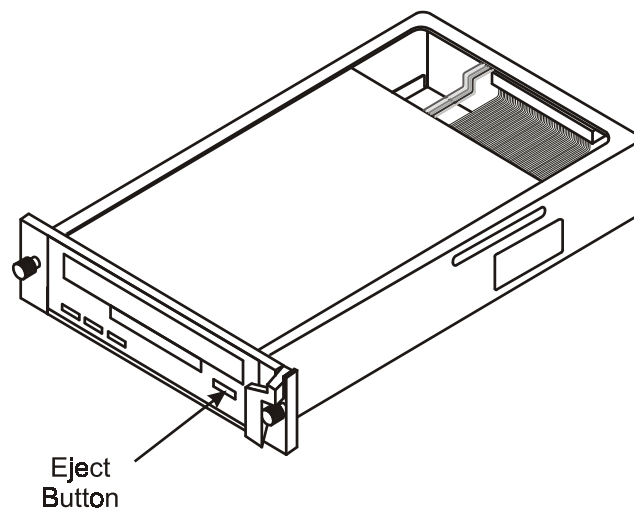
Tape drives

The library accommodates up to four HVD, Fast/Wide SCSI-2, AIT-1 tape drives, or up to four HVD/LVD, Wide Ultra SCSI AIT-2 tape drives.

Drive carrier

When you purchase the library, each tape drive in the library is fitted inside a drive carrier. The drive carrier allows you to slide the drive in and out of the library if the tape drive needs repair or if you are adding new tape drives.

Note: You must purchase the tape drive pre-installed in the drive carrier.



AIT drive carrier

Drive blank (not shown)

Drive blanks are “empty” drive carriers with solid faceplates. If you plan to operate the library with fewer than four tape drives, you must install drive blanks in the empty drive positions. The drive blanks ensure correct airflow through the library for cooling, compliance with EMI regulations, and in some configurations, correct SCSI connection.

Cartridge handling mechanism (CHM)

The cartridge handling mechanism (CHM) moves cartridges between cartridge slots, tape drives, and the entry/exit port.

Bar code scanner

The high-speed bar code scanner, mounted on the CHM, reads bar code labels affixed to the cartridges to track individual cartridges. Cartridge label information becomes part of the library's cartridge inventory stored in nonvolatile RAM.

Entry/exit transport assembly

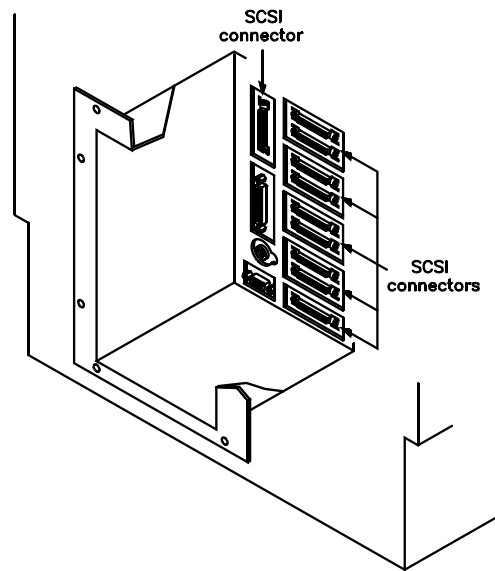
The entry/exit transport assembly moves the transport arm to and from the entry/exit port to pick up cartridges.

Serial ports

Two serial ports (25-pin and 9-pin) at the back of the library allow you to communicate with the tape drives and the library across a serial cable connected to an external computer. By running a special diagnostic program, you can perform diagnostics, upgrade firmware, and test CHM motion.

SCSI connectors

The library has ten SCSI connectors, accessible through the cabling bay on the back, and can be attached to up to five SCSI buses (all four tape drives and the library can be on separate buses).



About this manual

Use this manual to install, configure, operate, maintain, and diagnose problems with the Scalar AIT 440 or Scalar AIT 480 Library and its enclosed AIT tape drives. It includes the following chapters:

- [Chapter 1](#) explains how to install and set up the library.
- [Chapter 2](#) describes how to configure the library.
- [Chapter 3](#) describes how to check your setup.
- [Chapter 4](#) describes basic library operations.
- [Chapter 5](#) describes basic tape drive operations.
- [Chapter 6](#) describes basic maintenance procedures.
- [Chapter 7](#) describes how to move, pack, and ship the library.
- [Chapter 8](#) describes how to use the LCD demo programs.
- [Chapter 9](#) describes how to perform diagnostic tests.
- [Chapter 10](#) describes the Library Info menu.
- [Chapter 11](#) describes basic troubleshooting procedures.
- [Appendix A](#) provides basic library specifications.
- [Appendix B](#) provides LCD error codes.
- [Appendix C](#) shows the element indexes for library locations.

A quick reference card is provided at the end of the manual. Remove this card and keep it near your library. Use the *Quick Reference* as a reference for using the operator panel and interpreting error codes.

Conventions used in this manual

This manual uses the following conventions:

[Enter] Boxed text indicates keys on the library's operator panel keyboard.

Note: Notes provide hints or suggestions about the topic or procedure being discussed.

➤ **Important** Information next to the word “Important” helps you complete a procedure or avoid extra steps.

CAUTION

Boxed text under the heading “CAUTION” provides information you must know to avoid damaging the library or tape drives or losing data.

WARNING!

Boxed text under the heading “WARNING!” provides information you must know to avoid personal injury.

Related Publications

For information about these libraries, the tape drives, and the standards used by these libraries, refer to the following publications available from ADIC.

Scalar AIT 440 and Scalar AIT 480 Libraries

- *Scalar AIT 440/480 Libraries SCSI Reference, 62-0164-01*

Contacting ADIC

For technical support:	
ADIC Technical Assistance Center (ATAC)	1-800-827-3822 (US)
	1-303-790-2083 (International)
e-mail	support@adic.com
World Wide Web	http://www.adic.com
Bulletin Board (BBS)	1-425-883-3211 Connect at up to 28,800 baud with 8 data bits, 1 stop bit, and no parity. Turn on hardware (RTS/CTS) flow control.
To order supplies and accessories:	
ADIC Sales	1-800-336-1233
	1-425-881-8004
	1-425-881-2296 (fax)
To return equipment for service:	
ADIC Technical Assistance Center (ATAC)	1-800-827-3822 (US)
	1-303-790-2083 (International)
e-mail	support@adic.com

Notes

1 Installing the Hardware

This chapter describes how to install and set up the library hardware.

Preparing for installation

Before installing the library, complete the following preliminary steps.

✓	Step	Description
	1	Unpack the library.
	2	Check the accessories.
	3	Obtain additional equipment.
	4	Protect the library against ESD.
	5	For rack-mount models, obtain a fork lift or at least four people. For standalone models, remove the side panels to access the handles.
	6	Make sure your host bus adapter card or cards and application software are compatible with the library and the tape drives.

Step 1 – Unpack the library

Complete the unpacking steps printed on the box. Save all original packing materials in case you need to ship or move the library later.

Step 2 – Check the accessories

Make certain you received the following accessories:

- Power cord (U.S. and Canada only)
- SCSI jumpers (three for narrow SCSI libraries and four for wide SCSI libraries)
- AIT Data Cartridge Magazines with covers (four for the Scalar AIT 440 and eight for the Scalar AIT 480)
- Two cleaning packets for the door
- Two keys for the door lock
- One spare drive blank (in addition to those installed)

➤ **Important** Your library has been shipped to you with the tape drives pre-installed. For libraries that will operate with fewer than four tape drives, drive blanks have been installed in the unused carrier slots. For more information, see [Chapter 4](#).

- Slide rails and mounting hardware for the rack-mount model

Step 3 – Obtain additional equipment

The following table lists the additional equipment you may need to obtain to install the library.

Equipment	For more information...
SCSI cables*	See Appendix A .
SCSI terminators*	
Power cord (if outside the U.S. or Canada)*	
Data cartridges*	See page 16 .
Cleaning cartridges*	See page 21 .
Bar code labels*	See page 16 .
Rack-mount model: 19-inch by 30- to 36- inch EIA standard rack with extension support legs	Contact a rack supplier.

* These items can be purchased from ADIC.

Step 4 – Protect the library against ESD

If you remove the cover from the library, its internal components are susceptible to damage from electrostatic discharge (ESD). To ensure that the work area is as free from ESD as possible, place a grounded, static protection mat on the work surface, and wear a static protection wrist band. If a mat and wristband are unavailable, discharge static electricity from your body before touching the inside of the library or the tape drives. (Touch a known grounded surface, such as your computer's metal chassis.)

Step 5 – Prepare the library

Preparing to install the standalone library

The standalone library weighs approximately 211 pounds (96 kg) with four tape drives installed. This model includes two handles on each side for moving the library. The handles are located underneath the side panels, as shown in [Figure 1-1](#). To remove the side panels, use a flat-blade screwdriver to loosen the captive screws at the rear of the library (two at the rear of each side panel). Then, pull each side panel back and away from the library.

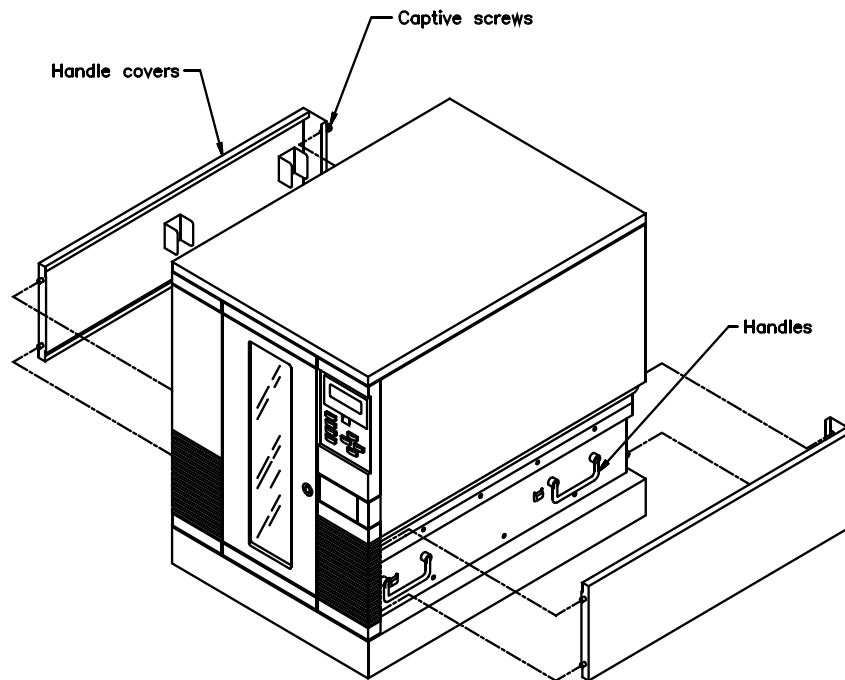


Figure 1-1 Removing the side panels to access handles

Preparing to install the rack-mount library

The slide rails and mounting hardware for the rack-mount library are shipped in the box with the library. The rack-mount library weighs 152 pounds (69 kg) with four tape drives installed. Before installing the library, make sure that your rack has extension support legs and that you have at least four people or two people and a small fork lift.

Step 6 – Check for compatibility issues

Make sure your SCSI host bus adapter card or cards installed in the host computer and its application software are compatible with the Scalar AIT 440/480 and the tape drives you are using. You can obtain software compatibility information for ADIC products from ADIC's internet site (<http://www.adic.com>).

You can install the software application on the host computer before or after library installation. However, if you install the software first, you may need to reconfigure it for use with the Scalar AIT 440/480.

Installing the library hardware

This section provides step-by-step instructions for installing the library hardware. Use the following table as a checklist.

✓	Step	Description
	1	If you have a rack-mount model, install the library into a rack.
	2	Unlock and open the door.
	3	Remove the packing foam.
	4	Move the CHM.
	5	Prepare and install cartridges in magazines.
	6	Install the magazines in the library.
	7	Install a cleaning cartridge.
	8	Close and lock the door.
	9	Connect the library to the SCSI bus.
	10	Connect the power cord.
	11	Power on the library.

WARNING!

Before performing any installation or maintenance procedures, be sure that the library power switch is in the off position and that the power cord is disconnected from the library and the outlet.

Step 1 – Install the rack-mount library

If you have a rack-mount library, follow these instructions to install it into a standard EIA 19-inch rack. If you have a standalone library, go to [“Step 2 – Unlock and open the door”](#) on page 13.

WARNING!

The rack-mount library weighs 137 – 179 pounds (62 – 81 kg); the standalone library weighs 190 – 238 pounds (86 – 110 kg).

You need at least 4 people, or 2 people and a small fork lift, to lift either model.

Make sure you install the library in the lowest possible location in the rack and that the rack is equipped with extension support legs.

Make sure you extend the support legs before installing the library in the rack or when sliding it out of the rack. If you do not have extension support legs, use an additional person to counterweight the back of the rack or cabinet.

Tools required

You need the following tools to install the library into a rack:

Tools required for rack-mount installation	
Included in the accessory box	Not included
<ul style="list-style-type: none">▪ Two slide rails▪ Eight 10-32 × 0.5 pan head screws▪ Two 10-32 × 1.0 pan head screws▪ Two 8-32 × 7/16 button head screws▪ Ten clip nuts	<ul style="list-style-type: none">▪ Standard 19-inch EIA rack, 30 to 36 inches deep, equipped with extension support legs▪ T-15 TORX screwdriver▪ T-25 TORX screwdriver

Installing the slide rails in the rack

1. Identify the holes on the rack where you want to install the library. The library will extend 1 to 2 inches (3 to 4 cm) below the slide rails.
2. If the rack does not have threaded holes, attach eight of the ten clip nuts over the holes (see [Figure 1-2](#)).
3. Using a T-25 TORX driver and eight 10-32 × 0.5 pan head screws, attach, but do not tighten, the slide rails to the rack (see [Figure 1-2](#)).

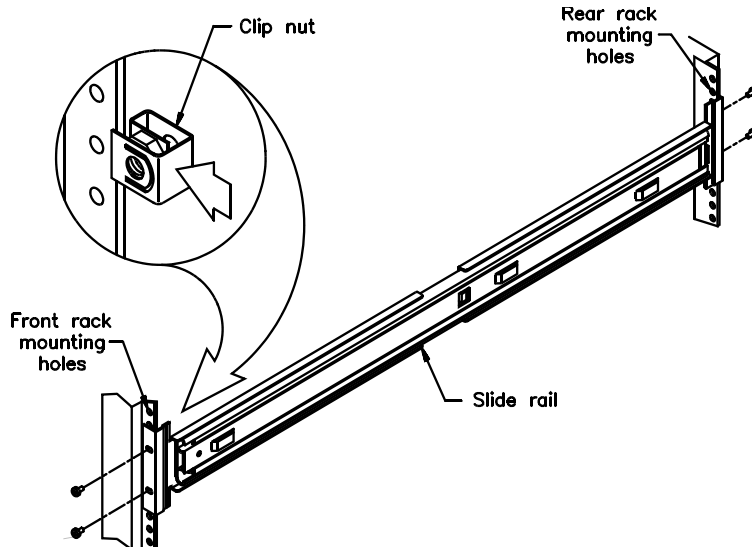


Figure 1-2 Attaching the slide rails

4. As shown in [Figure 1-3](#), adjust the distance between the front mounting brackets to $17\frac{5}{8}$ inches (44.8 cm).

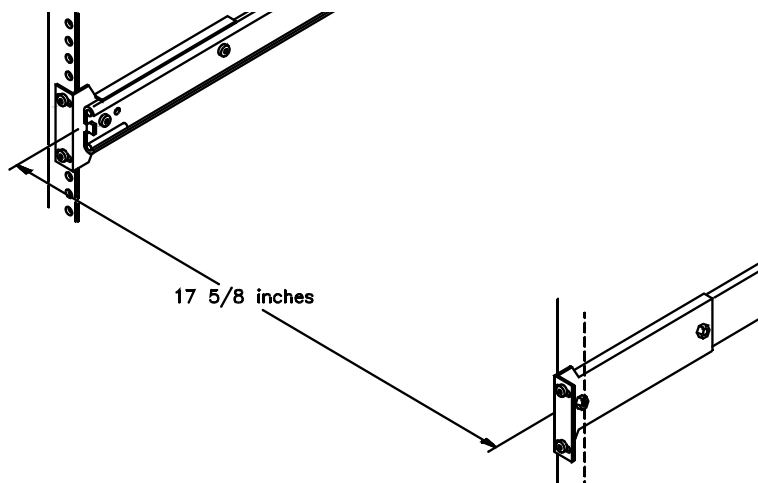


Figure 1-3 Adjusting the distance between the front mounting brackets

5. Tighten the screws.
6. Repeat steps 4 and 5 for the rear mounting brackets.

Installing the library into a rack

1. Extend the extension support legs on the rack.
2. Slide the inside rails as far out of the rack as they will go (see [Figure 1-4](#)).

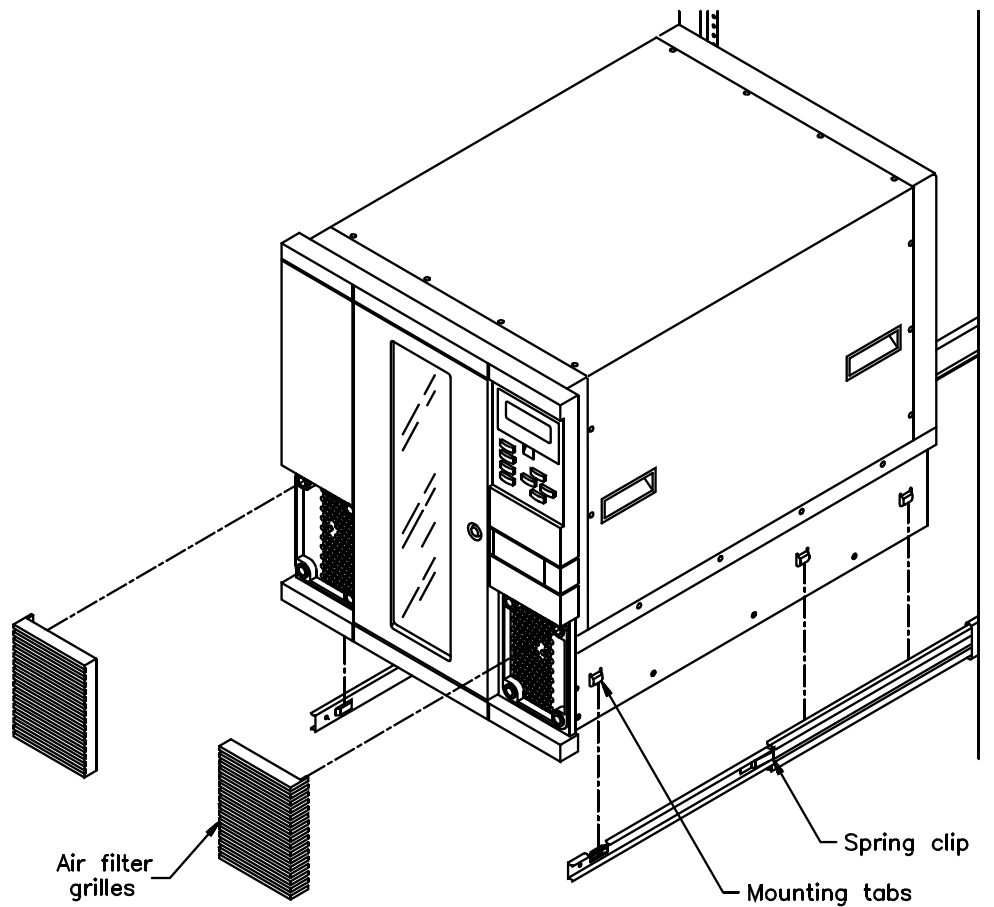


Figure 1-4 Installing the library in a rack

3. Remove the air filter grilles from the front of the library by lifting the outside edges and pulling the grilles away from the library (see [Figure 1-4](#)).
4. Using four people, or two people and a fork lift, lift the library by the handles and lower it onto the slide rails so the mounting tabs on each side of the library fit into the slots in the rails (see [Figure 1-4](#)). Make sure all six mounting tabs are fitted securely into the slots.
5. Press the spring clips and slide the library most of the way into the rack.
6. Install one $8-32 \times \frac{7}{16}$ button head screw into the screw hole on each rail, as shown in [Figure 1-5](#).

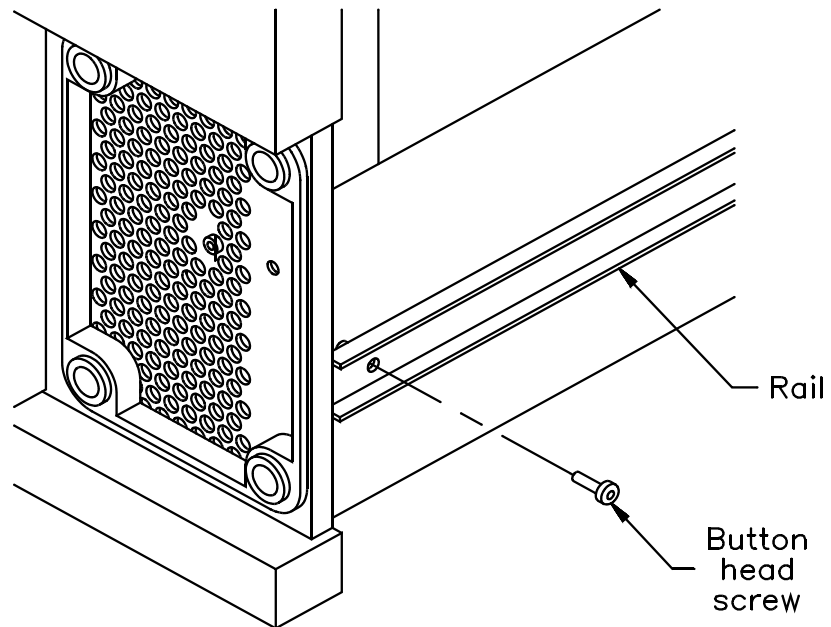


Figure 1-5 Attaching the screws to the sides of the library

7. If the holes in the rack are not threaded, install a clip nut on each side of the rack, as shown in [Figure 1-6](#).

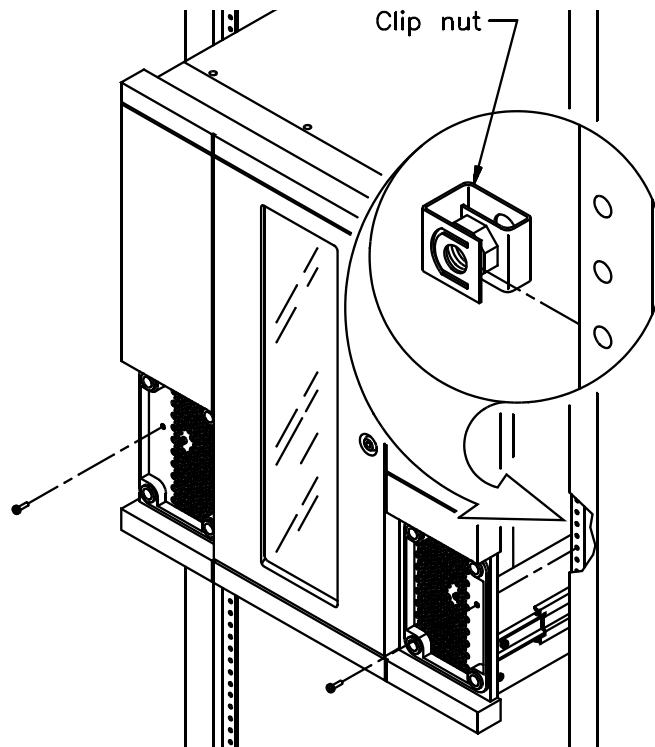


Figure 1-6 Securing the library in the rack

8. Slide the library completely into the rack. Use a T-25 TORX driver to insert the two 10-32 × 1.0 pan head screws on the front panel, as shown in [Figure 1-6](#). These screws prevent the library from sliding out of the rack.
9. Replace the air filter grilles on each side of the front panel.

Step 2 – Unlock and open the door

To open the door, insert the key from your accessory kit into the lock, push in, and turn it one-quarter turn to the right, as shown in [Figure 1-7](#). Pull open the door.

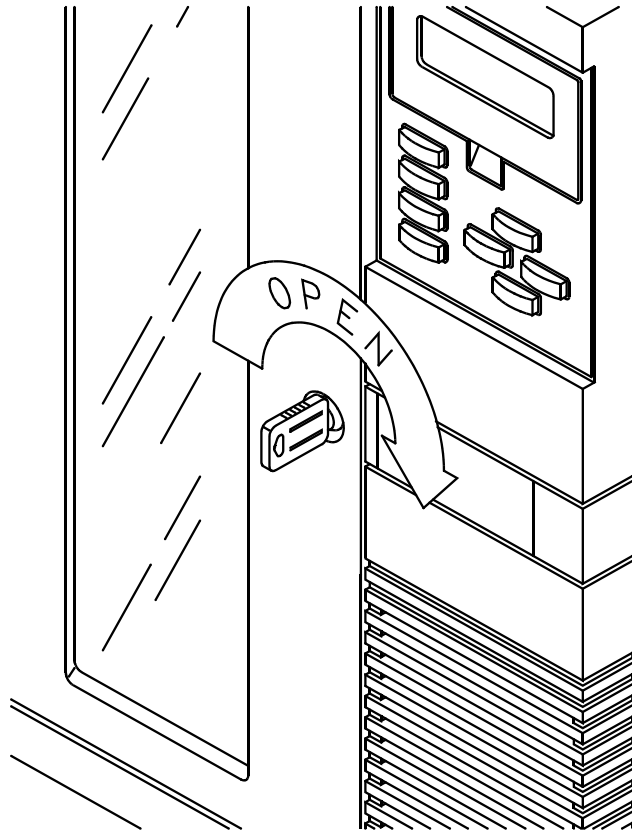


Figure 1-7 Opening the door

Step 3 – Remove the packing foam

Remove the packing foam from the library as shown in [Figure 1-8](#).

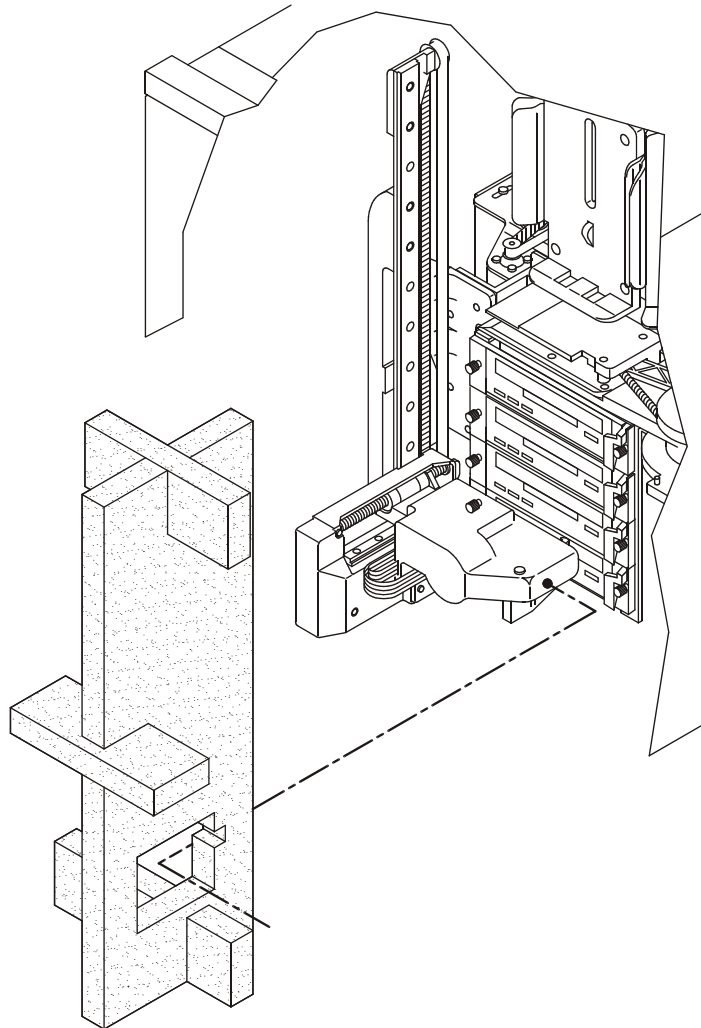


Figure 1-8 Removing the packing foam from the library

Step 4 – Move the CHM out of the way

Move the cartridge handling mechanism (CHM) so it is not blocking the magazine mounting plates on the drum. To move the CHM, reach in through the door and push against the *base* of the CHM, sliding it firmly to the bottom of the long axis until it stops, as shown in [Figure 1-9](#).

➤ **Important** Do not touch the lens on the bar code scanner; smudges on the lens can cause scanning errors.

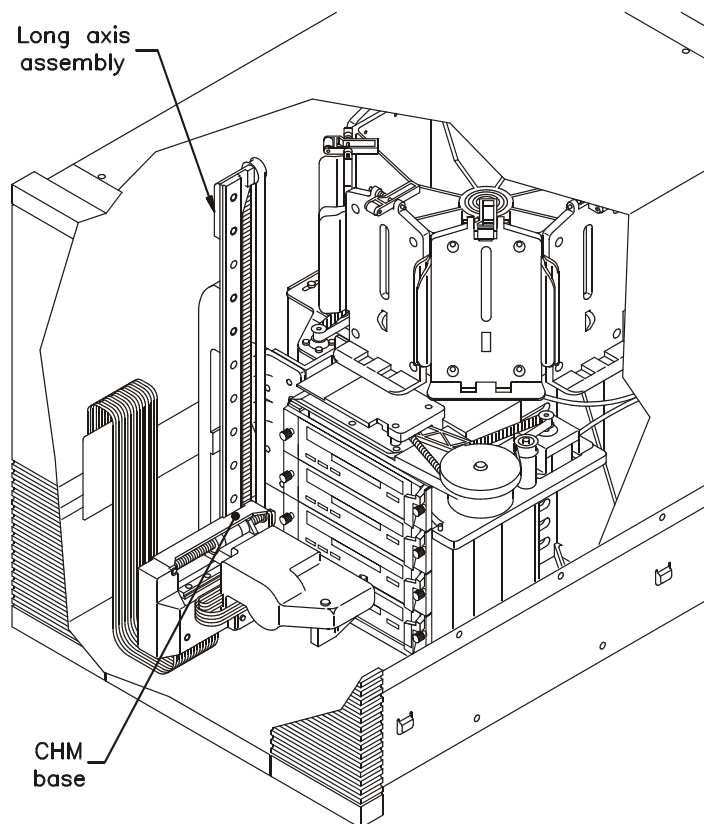


Figure 1-9 Moving the CHM to the bottom of the long axis

Step 5 – Prepare and install cartridges

Before installing data cartridges in the library, affix the bar code labels and set the write-protect switches.

Affix bar code labels

AIT barcode labels must conform to the Industry Standard Code 39 (3 of 9 code). Labels which meet the requirements of ANSI MH10.8M-1983 must be used. They must contain four to six alphanumeric characters plus a modulus 43 check character on an 0.40-inch by 2.175-inch label. The barcode and numerics should be centered horizontally. The narrow elements should be 0.015 +/- 0.004 inches (0.38 0.10mm), and the wide elements 0.030 +/- 0.004 inches (0.76 0.10 mm). There must be a minimum of 0.2 inches of white space at each end of the label. Use of a higher density is not recommended. If a human readable label is not required, the barcode may extend across the entire width of the label. Failure to comply with this specification may affect reliability.

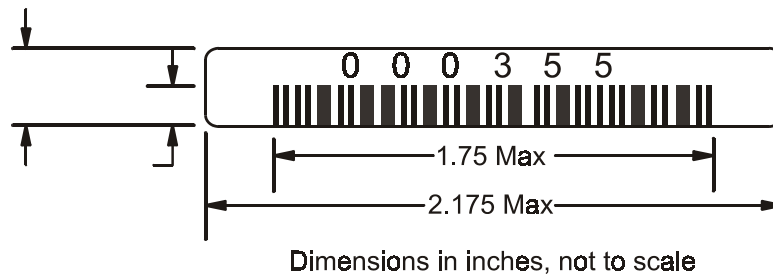


Figure 1-10 AIT Barcode Label Specifications

Barcode labels, both standard and custom, are readily available from suppliers specializing in media labels.

To affix bar code labels, position the label as shown in [Figure 1-11](#), using the recessed area on the cartridge for guidance. Make sure you orient the label correctly.

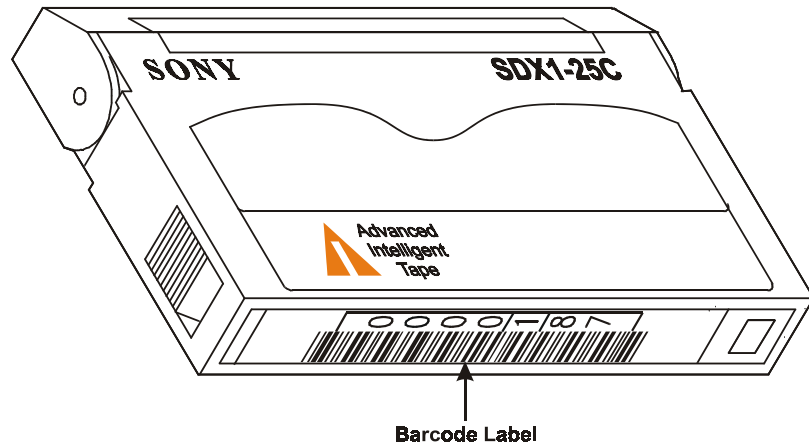


Figure 1-11 Affixing a bar code label to a data cartridge

Set the write-protect switches

CAUTION

If you remove a bar code label from a data cartridge without replacing it, make sure to clean the label area thoroughly. Bar code labels can leave adhesive on the label area, which may cause the data cartridge to stick to the CHM.

Make sure the write-protect switch on each data cartridge is set appropriately (see [Figure 1-12](#)). You can use a ball-point pen or similar instrument to move the write-protect switch. If the write-protect switch window is red, the cartridge is write-protected.

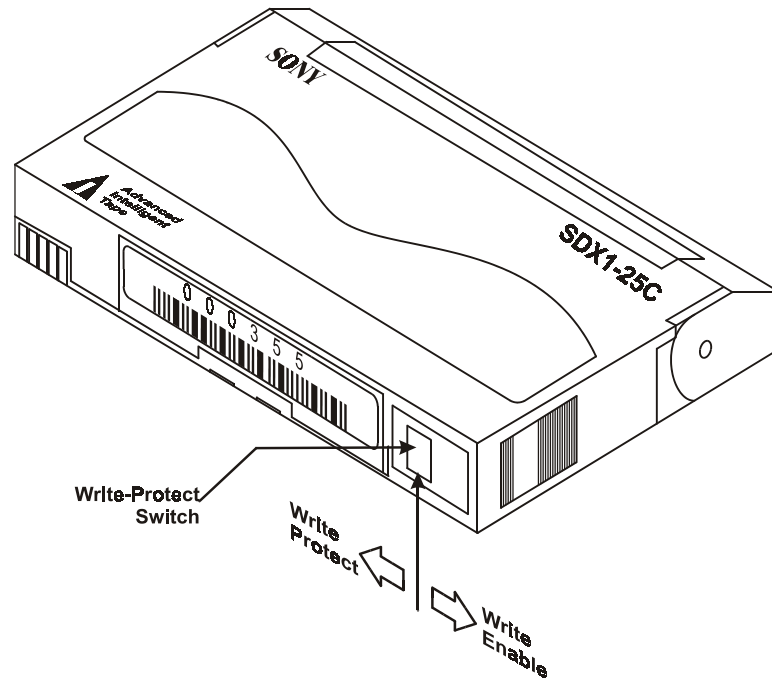


Figure 1-12 Setting the write-protect switch on a data cartridge

Install data cartridges in the magazines

1. Place the magazine on its feet with the single mounting guide toward the right, as shown in [Figure 1-13](#).
2. Position each cartridge so that the bar code label is on top and the write-protect switch is toward the front.
3. Insert the cartridge into the magazine slot.

Note: Very little force is needed to install a data cartridge. If it does not snap into place easily or if it protrudes further than the magazine's center rib, check the orientation of the cartridge.

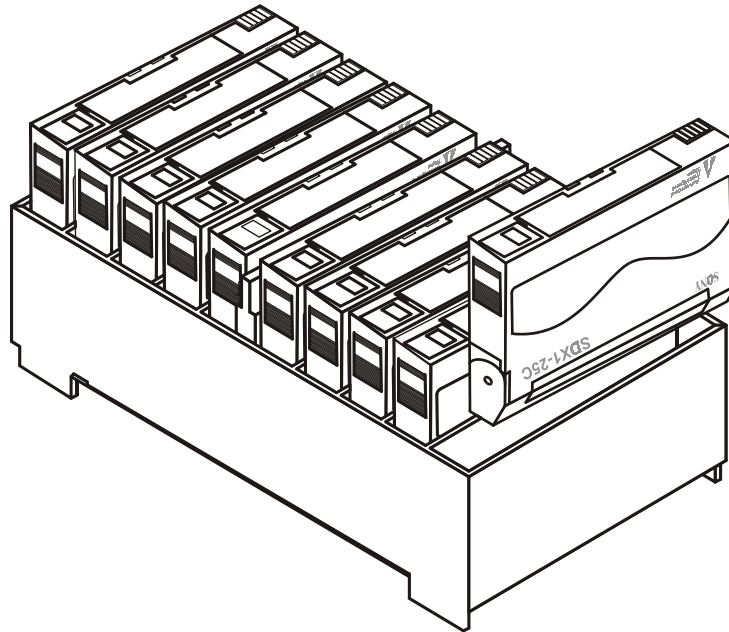


Figure 1-13 Installing data cartridges in the magazine

Step 6 – Install cartridge magazines

Note: The Scalar AIT 440's four magazine mounting plates are installed on every other mounting plate position on the drum, with the mounting plate identifiers 0, 1, 2, and 3.

CAUTION

Make sure the CHM and its cabling are safely out of the way before removing or installing cartridge magazines.

1. If necessary, manually rotate the drum to access the mounting plate where you want to install the magazine.

2. On the magazine mounting plate, locate the roller on the top end of the plate.
3. Make sure the cover is removed from the magazine and position the magazine over the mounting plate with the single mounting guide toward the top, as shown in [Figure 1-14](#).
4. Insert the bottom end of the magazine first, then snap the magazine into place by pressing against the top.

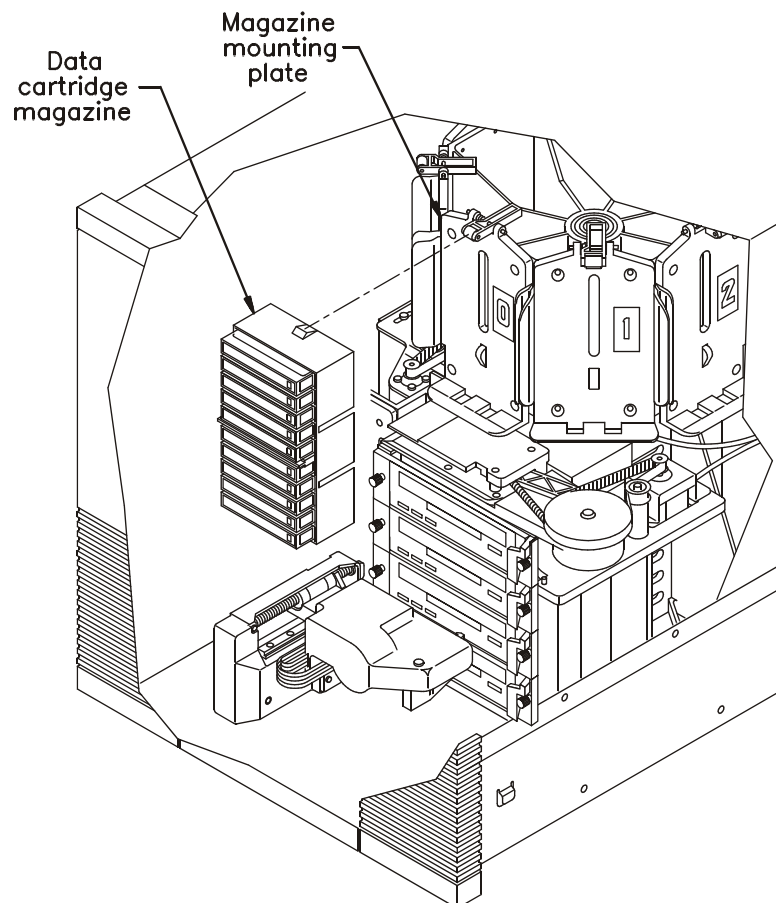


Figure 1-14 Installing a cartridge magazine in the library

Step 7 – Install a cleaning cartridge

The following procedure describes how to manually install a cleaning cartridge in the fixed cartridge slot. To replace this cartridge later, use the Remove Cartridge and Insert Cartridge options on the Maintenance Menu and the entry/exit port, as described on [page 56](#).

➤ **Important** Use a Sony TCL cleaning cartridge (or a cleaning cartridge approved by ADIC for use with the AIT drive).

➤ **Important** If you want to clean drives using the Clean Drives Menu on the LCD, you must install a cleaning cartridge in the fixed cartridge slot.

To install a cleaning cartridge in the fixed cartridge slot:

1. Position the cartridge so that the window showing the tape reels is toward the top (see [Figure 1-15](#)).
2. Insert the cartridge into the fixed cartridge slot until it snaps into place.

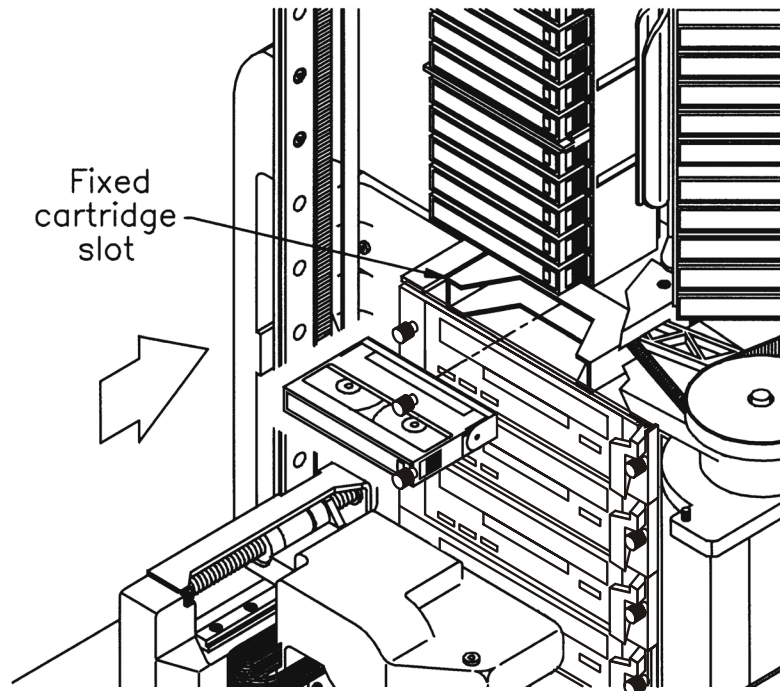


Figure 1-15 Installing a cartridge in the fixed cartridge slot

Step 8 – Close and lock the front door

Close the library door and turn the key one-quarter turn to the left. Remove the key and keep it in a safe place.

Step 9 – Connect the library to the SCSI bus

The SCSI connectors for the library and tape drives are accessible through the cabling bay at the back of the library, as shown in [Figure 1-16](#).

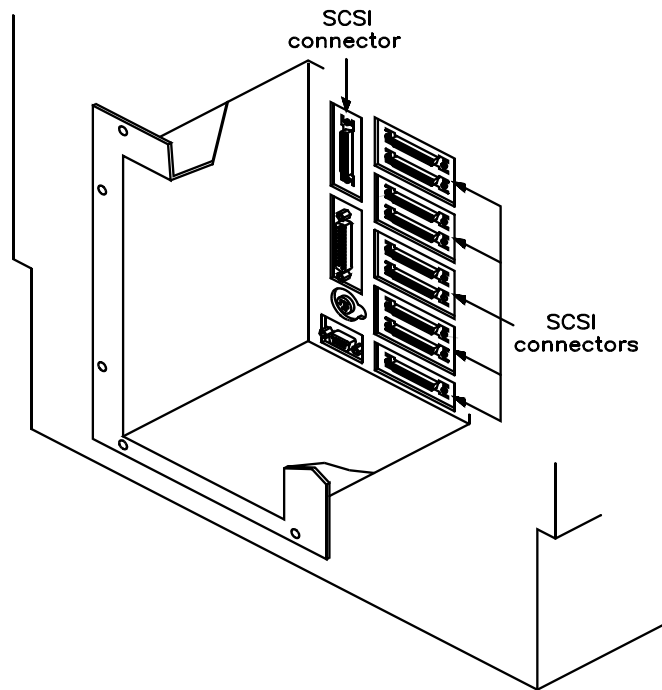


Figure 1-16 SCSI connectors for Scalar AIT 440/480 libraries

SCSI configuration guidelines

Before you connect the library to the SCSI bus, review the following SCSI guidelines:

- **Number of devices.** The library consists of up to five SCSI devices, including four tape drives and the library itself.
- **Differential SCSI.** If AIT-1 tape drives are installed in the library, the SCSI buses connected to the library and its tape drives must be all HVD Fast/Wide SCSI-2. If AIT-2 tape drives are installed in the library, the SCSI buses connected to the library and its tape drives may be HVD or LVD Wide Ultra SCSI.

- **Fast/Wide SCSI.** If AIT-1 tape drives are installed in the library, the tape drives must be all Fast/Wide SCSI-2.
- **Wide Ultra SCSI.** If AIT-2 tape drives are installed in the library, the tape drives may be HVD or LVD Wide Ultra SCSI.
- **Number of buses.** You can connect up to five SCSI buses to a wide SCSI library.
- **Number of tape drives on a bus.** The tape drives and the library can all be connected to the same SCSI bus.
- **SCSI cable length.** The total length of all internal and external cables on the SCSI bus should not exceed 25.0 meters (82 feet) if HVD and 12 meters (41 feet) if LVD. If an LVD bus is used, and a single-ended device is attached, the entire bus switches to single-ended mode. In this instance, the total length of all internal and external cables on the SCSI bus should not exceed 1.5 meters (4.9 feet) if five or more devices are attached, and 3 meters (9.8 feet) if four or less devices are attached.
- **SCSI termination (internal or external).** All termination must be external. Do not use internal terminators to terminate the library or the tape drives.
- **SCSI termination.** Use a 68-pin HVD or LVD terminator to terminate the library and the drives.

See [Appendix A](#) for specifications for the SCSI cables and terminators, including instructions for determining the cable lengths used for each SCSI bus.

Procedure for connecting the library to SCSI

CAUTION

To avoid damaging the tape drives, make sure the power is off when you connect the tape drives to the SCSI bus.

1. After referring to the previous guidelines, determine how many SCSI buses you plan to connect to the library and determine which devices will be on which buses.
2. For each bus, determine where the bus will be terminated. If it will be terminated at the library or tape drive, install an external terminator on the appropriate connector. See [Figure 1-17](#) for the connector assignments for the Scalar AIT 440/480 libraries.

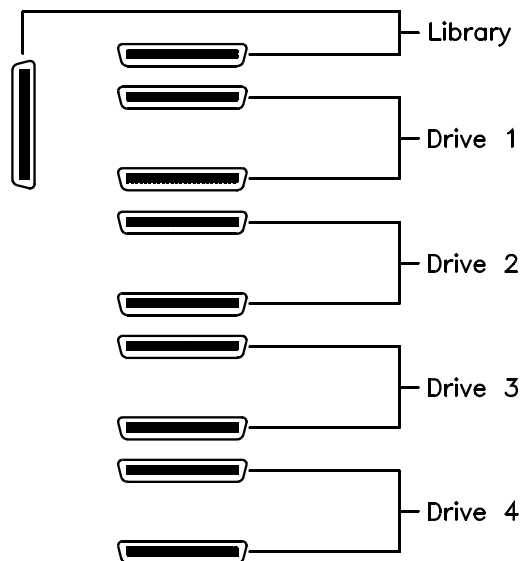


Figure 1-17 Connector assignments for Scalar AIT 440/480 library

3. Install SCSI cables as required to connect the library devices to the other devices on the SCSI bus
4. If more than one device in the library is on the same bus, place a jumper between the appropriate connectors. See [Figure 1-18](#) for an example of a Scalar AIT 440/480 library with two buses and four tape drives.

Example: Scalar AIT 440 library on two buses

In this example, a Scalar AIT 440 library with four tape drives is connected to two SCSI buses:

- On SCSI Bus A, a cable connects the host to the library, and jumpers connect the library to Drive 1 and Drive 1 to Drive 2. Bus A is terminated with an external terminator installed on the lower connector for Drive 2.
- On SCSI Bus B, a cable connects a second host to Drive 3, and a jumper connects Drive 3 to Drive 4. Then, a cable connects Drive 4 to the other devices on Bus B.

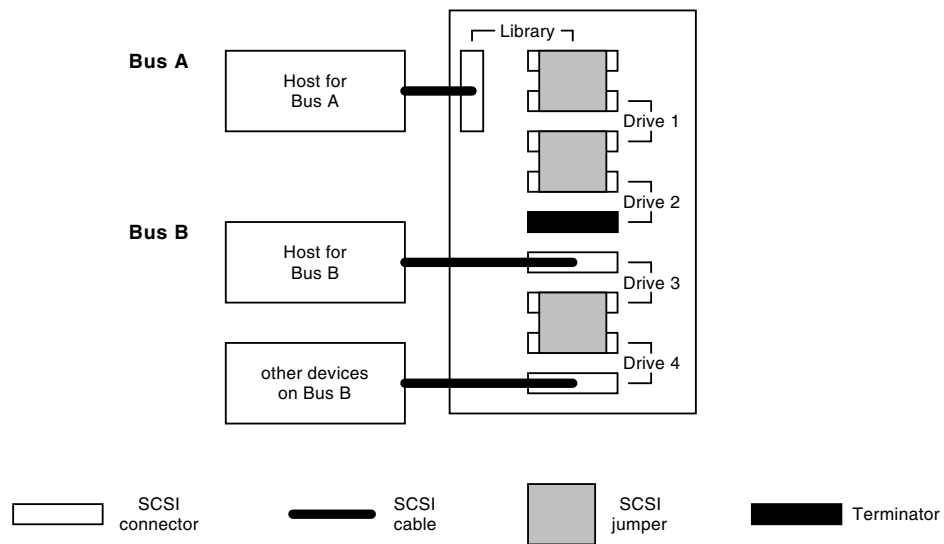


Figure 1-18 Scalar AIT 440 library with two buses and four tape drives

Step 10 – Connect the power cord

► **Important** The power cord shipped with the library is a 120 VAC three-conductor power cord for use in the United States or Canada. If you are planning to use another input voltage or if you plan to use the library outside of the U.S. or Canada, you must supply your own power cord. For more information, refer to [Appendix A](#).

1. Make sure that the power switch on the back of the library is off (the 0 is pressed).
2. Connect the female end of the power cord to the power connector on the back of the library.
3. Plug the male end of the power cord into the power source.

Note: The library has autoranging voltage selection, so you do not need to change the voltage setting.

Step 11 – Power on the library

1. Make certain the library's door is closed and locked.
2. Turn on the host computer.

Note: If your host requires that attached peripheral devices be powered on before the host, turn on the library before turning on the host.

3. Push the power switch on the back of the library to the on (I) position.

4. Wait while the library performs its power-on self-test. During this time, the following activities occur:
 - The cooling fan begins to rotate.
 - The LCD illuminates and displays the Main Screen.
 - The tape drives perform their power-on self-tests.
 - The library performs its power-on self-test.

Tape drive power-on self-test

During its power-on self-test, each tape drive checks its operating conditions and sends status information to the library.

Library power-on self-test

During its power-on self-test, the library:

- Engages the locking solenoid in the door
- Moves the CHM to the home positions on the short and long axes
- Moves the drum to the home position
- Retracts the entry/exit port transport arm
- Verifies the CHM's full range of motion by moving it to the top of the long axis
- Touches each cartridge to update the cartridge inventory
- Moves to the home position on the long axis

The power-on self-test takes from 2½ to 5 minutes, depending on the number of cartridge magazines present.

If problems occur...

If the library does not complete its power-on self-test and nothing is displayed on the LCD, check the following:

- Is the power switch on? (Is the I pressed?)
- Is the power cord inserted correctly?
- Is the library door closed and locked?
- Is the SCSI bus terminated?
- Is the host computer system turned on?
- Is the SCSI cable connected to the library and host computer?

If the library does not complete its power-on self-test and the LCD displays an error code, see [Appendix B](#).

For more detailed troubleshooting information, see [Chapter 11](#).

2 Configuring the Library

After installing the library hardware, you need to set or check the library's configuration options. Configuration steps include:

- Displaying the Configuration Menu
- Setting the SCSI IDs
- Setting the LCD security option
- Setting or checking other configuration options as required

To change options, you will use the operator panel (LCD and keypad) on the front of the library, as shown in [Figure 2-1](#). You can tilt the LCD for easier viewing.

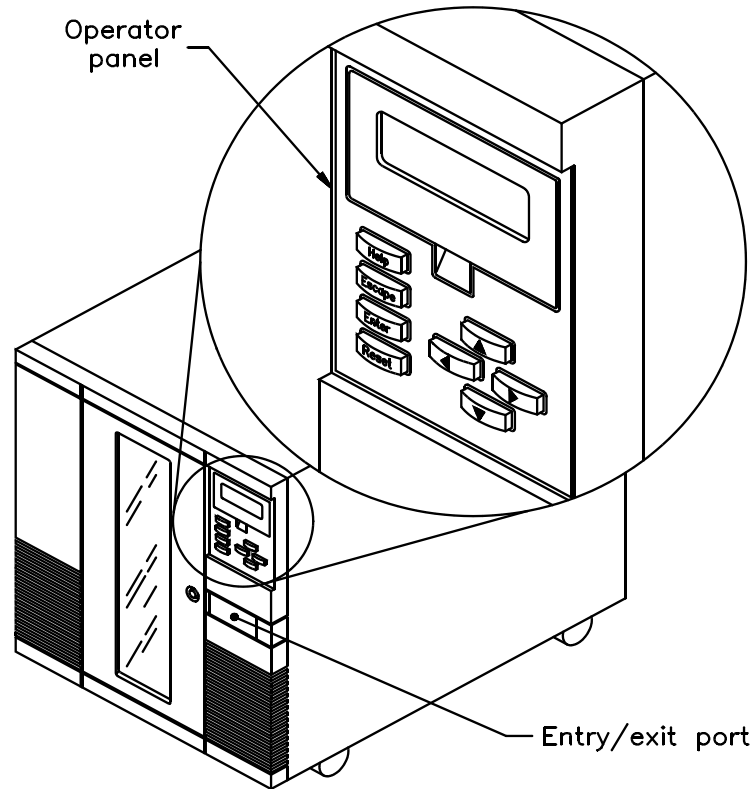


Figure 2-1 Operator panel

Displaying the Configuration Menu

To display the Configuration Menu:

1. Access the Main Menu by pressing **Escape** on the keypad. The Main Menu displays:

```
→ M a i n   S c r e e n
   E x t e n d / R e t r a c t   E / E
   I n t e r f a c e   M e n u
   C o n f i g u r a t i o n   M e n u ↓
```

2. Press **↓** to scroll down to Configuration Menu. Press **Enter**. The Configuration Menu displays:

```
→ S e t   S C S I   I D s
   S C S I   P a r i t y       O N
   A d j u s t   C o n t r a s t
   B a c k   L i g h t       O N ↓
```

During library configuration, use the operator keys for the following functions:

To scroll up and down:	↓ or ↑
To move the screen arrow to the left or right and toggle options:	← or →
To select the item next to the screen arrow:	Enter
To return to a previous screen or cancel the operation without saving:	Escape
To return to the Main Screen:	Select Main Screen from the Main Menu and press Enter.

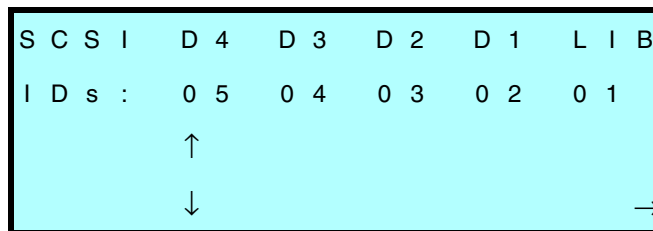
Setting the SCSI IDs

Default SCSI IDs are assigned at the factory for the library and each tape drive. Drive blanks are assigned B (for *blank*). This section describes how to view the default settings and change them if necessary.

► **Important** The library and tape drives must each have a unique SCSI ID within each SCSI bus. Because you may have multiple SCSI buses, the library does not check for duplicate SCSI IDs. It is your responsibility to make sure you do not assign duplicate SCSI IDs within a SCSI bus.

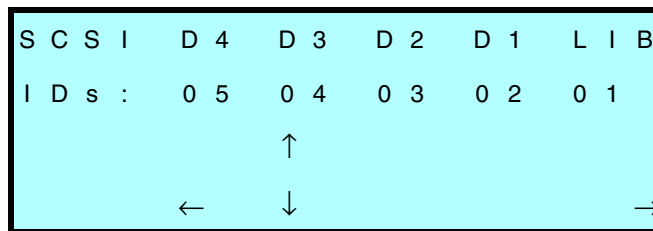
To view or change SCSI IDs:

1. From the Configuration Menu, make sure the screen arrow is pointing to Set SCSI IDs and press **Enter**. The following screen appears, where *Dn* indicates a tape drive and LIB indicates the library:



Note: The SCSI IDs shown are examples only; your settings may differ. If one of the drive carrier slots contains a drive blank, the library displays a B (for *blank*) instead of a SCSI ID.

2. To set the SCSI ID for the bottom tape drive (D4), press **↑** or **↓** until the screen displays the desired SCSI ID. SCSI IDs for narrow SCSI configurations range from 0 to 7; SCSI IDs for wide SCSI configurations range from 0 to 15.
3. Press **→** to move the up and down screen arrows to D3, as shown. Press **↑** or **↓** until the screen displays the SCSI ID you want.



Note: If any drive carrier slot contains a drive blank, the cursor will skip over the SCSI ID field for that slot.

4. Continue this process until you have set the SCSI IDs for all tape drives and the library.
5. When the SCSI IDs for all tape drives and the library are correct, press **Enter** to accept your choices. If you have changed one or more of the tape drive IDs, the library displays the following screen:

```
P r e s s   E N T E R   t o   r e s e t
t h e   d r i v e ( s )   o r   E S C
t o   c a n c e l   t h e   S C S I
I D   c h a n g e s .
```

6. Press **Enter**. The library resets the tape drives with changed IDs and redisplay the Configuration Menu.

Setting the LCD security option

The Security option allows you to prevent unauthorized personnel from disrupting the operation of the library. When you enable security, the following activities are prevented:

- Changing SCSI IDs
- Changing SCSI parity checking
- Changing the control mode
- Setting the library serial number
- Changing the installed tape drive model
- Using the LCD Diagnostics Menu and Demo Menu
- Using the Clean Drives Menu
- Opening the front door
- Communicating with a tape drive across a serial port
- Extending the entry/exit port

If you attempt to perform any of these operations when security is enabled, the library displays a message that states security is active. The message also states whether security was enabled from the operator panel or by the application through a SCSI command.

Methods for enabling and disabling security

Security can be enabled and disabled in either of two ways:

- You can set the Security option from the LCD on the operator panel using the Configuration Menu, as described in this section.
- The application software can issue a SCSI MODE SELECT command to turn security on and off (see your software documentation or the *Scalar AIT 440/480 Libraries SCSI Reference*).

Note: SCSI MODE SELECT security prevents the same activities as LCD security except opening the front door.

The method used to enable security (LCD or SCSI) must also be used to disable security. That is, if you enable security from the operator panel, you must disable it from the operator panel. If security is enabled by the application (SCSI), it must be disabled by the application.

Note: To determine if security has been set by your application, look at the SCSI Mode Parameters screen (see).

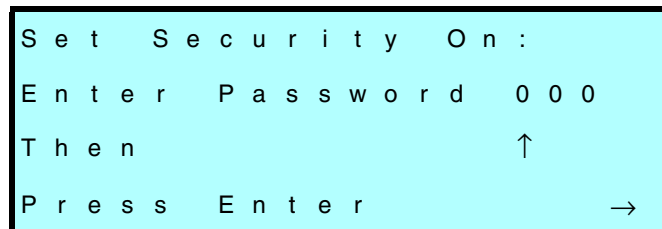
Security remains in effect across library resets.

Enabling security from the LCD

1. From the Configuration Menu, select Set Security On.

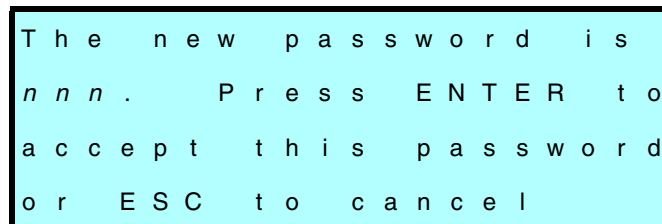
Note: If the menu displays Set Security Off, the security option has already been enabled.

The library displays the following screen:



```
Set Security On :
Enter Password 000
Then              ↑
Press Enter      →
```

2. Select a three-digit password. Press **→** and **←** to move from column to column and **↑** and **↓** to change the numbers. (The default password is 000.) When you are finished, press **Enter**. The library displays the following screen:



```
The new password is
n n n . Press ENTER to
accept this password
or ESC to cancel
```

3. To confirm the new password, press **Enter**. Or, press **Escape** to exit the Security screen without saving the password.

➤ **Important** You must use the same password to turn security off.

Disabling security from the LCD

1. From the Configuration Menu, select Set Security Off and press **Enter**. The library displays the following screen:

```
S e t   S e c u r i t y   O f f   :
E n t e r   P a s s w o r d   0 0 0
T h e n                                     ↑
P r e s s   E n t e r                                     →
```

Note: If the menu displays Set Security On, the LCD security function is disabled. However, security may have been enabled by your application using a SCSI command. If so, it must be disabled by your application (see your software documentation or the *Scalar AIT 440/480 Libraries SCSI Reference*).

2. To enter the three-digit password, press **→** and **←** to move from column to column and **↑** and **↓** to change the numbers. When you are finished, press **Enter**.

If you forget the password

Try entering the default password (000). If the default password has been changed and you do not know what it is, call your service provider. (A service technician can display the password on the Configuration screen from the Diagnostic console interface.)

Setting other configuration options

After setting the SCSI IDs and LCD security, you may need to set or check the following configuration options before putting your library into operation:

- SCSI parity checking for the library
- LCD contrast
- LCD back light
- Library date
- Library time
- Library serial number
- Tape drive model

Setting SCSI parity checking

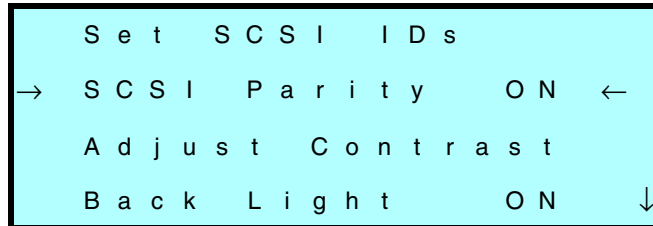
The SCSI Parity option allows you to enable parity checking for the library if the SCSI adapter card connected to the library supports it. When this option is enabled, the library checks all data coming across the SCSI bus for parity. The setting you specify remains in effect across power cycles.

Note: Parity checking can also be enabled and disabled by the application software using a SCSI MODE SELECT command. The method last used to set parity checking (LCD or SCSI command) has precedence.

Parity checking for tape drives is set separately. See the tape drive's SCSI Reference for more information.

To change parity checking:

1. From the Configuration Menu, press **↓** to select SCSI Parity.

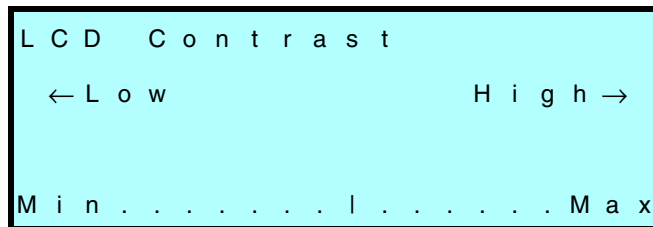


2. Use **→** and **←** to toggle parity checking on and off.

Adjusting the LCD contrast

The Adjust Contrast option controls the brightness of the lettering on your LCD. To adjust the contrast:

1. From the Configuration Menu, press **↓** to select Adjust Contrast and press **Enter**. The library displays the following screen:

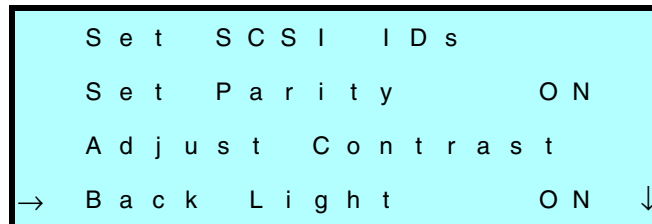


2. Press **→** and **←** to change the contrast. Press **Enter** to save your changes and exit the Adjust Contrast screen.

Adjusting the back light

The Back Light option turns the LCD background on or off. To change the back light:

1. From the Configuration Menu, press \downarrow or \uparrow to select Back Light.

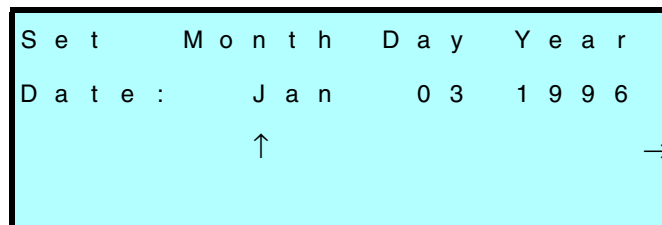


2. Press \rightarrow and \leftarrow to toggle back lighting on and off.

Setting the library date

The Set Date option allows you to set the date for the library. The date appears on the Command History screen (see [page 144](#)) and on diagnostic listings. To set the date:







1. From the Configuration Menu, press \uparrow or \downarrow to select Set Date and press Enter .

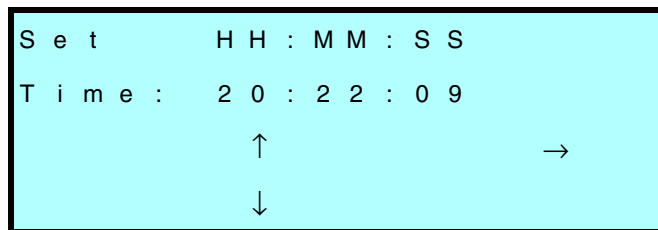



2. Press \downarrow and \uparrow to cycle through the selections under Month, Day, and Year. Use \rightarrow and \leftarrow to move between the columns.
3. Press Enter to save your changes and exit the Set Date screen.

Setting the library time

The Set Time option allows you to set the time that is shown on the library's Main Screen and Command History screen (see [page 144](#)). To set the time:

1. From the Configuration Menu, press  to select Set Time and press .
2. Use  and  to toggle through the selections under HH (hours), MM (minutes), and SS (seconds). Use  and  to toggle between the columns.



3. Press  to save your changes and exit the Set Time screen.

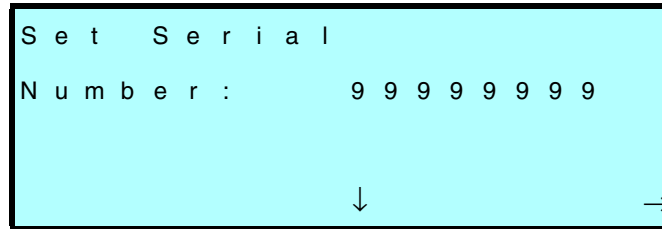
Checking the library serial number

The serial number is entered into the library firmware at the factory. If you want to check that number, look at the serial number label on the back of the library or use the Set Serial Number option. The serial number displayed on this screen appears on diagnostic listings.

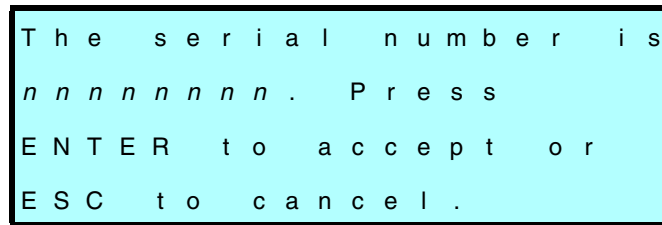
Note: If the serial number has never been entered, the number stored in memory is 99999999.

To check the serial number:

1. From the Configuration Menu, press **↓** or **↑** to select Set Serial Number and press **Enter**.



2. If necessary, enter the serial number by pressing **↓** and **↑** to change each digit. Press **→** and **←** to move from column to column.
3. Press **Enter**. The library displays the following screen:



4. Press **Enter** to save your changes or press **Escape** to cancel changes.

3 Checking the Setup

After installing and configuring the library hardware, install your application software on the host computer. If the software is already installed, you may need to reconfigure it for use with the library.

After installing and configuring the software, check the setup by performing some exercises on the library. These exercises are not required; however, it is a good idea to verify that your software and hardware are communicating properly before you begin operations.

- Use the options on the Diagnostic Menu to exercise the hardware. This determines whether the library hardware components are operating properly. See [Chapter 9](#) for instructions.
- Instruct the application software to load some cartridges into each tape drive. This determines whether the software and library are communicating properly.
- Back up several megabytes of data to each tape drive and perform a comparison check on the backed up data. This determines whether the software and tape drives are communicating properly.

If problems occur...

Problem	Refer to...
There is an error code on the library's LCD.	Appendix B for a list of error codes and corrective actions.
There is no error code displayed, but the library and tape drives are not operating as expected.	Chapter 11 for troubleshooting information.
You are unable to solve the problem yourself.	Contact your service provider or ADIC.

4 Operating the Library

Once the library and application software are installed and configured, you can automatically perform backup and restore operations using the software. You should not need to intervene in the cartridge processing during normal library operations.

This chapter describes library operations that you may occasionally need to perform:

- Using the operator panel
- Operating the library in different control modes
- Selecting and replacing data cartridges
- Resetting the library

Using the operator panel

The library includes a four-line LCD and keypad, called the *operator panel*, that allows you to control library operations. Using the operator panel, you can set library options, check operating statistics, and diagnose errors. If desired, you can tilt the LCD for easier viewing.

Main Screen

The Main Screen appears when you apply power to the library. The first and second lines on the Main Screen display the product name, version, and the current time. The third and fourth lines display status information about the library and tape drives.

```
A D I C   S C A L A R - 4 4 0
V E R   n . n n . n n   h h : m m : s s
S t a t u s :   M o v e   1 - D
P i c k i n g   F r o m   S l o t   1
```

Note: The exact wording on your Main Screen may be different.

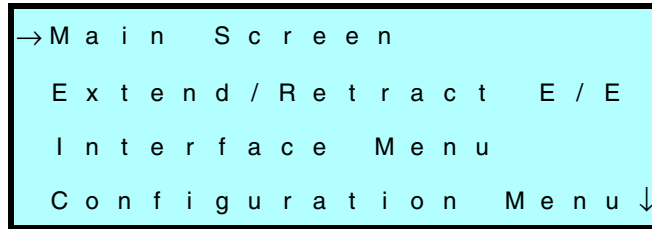
Error codes

If a library hardware error occurs, an error code appears on the third and fourth lines of the Main Screen. The third line provides the error's numerical code; the fourth line provides a brief explanation of the error. You must correct the error before operation can continue; refer to [Appendix B](#) for a list of error codes and corrective actions.

```
A D I C   S C A L A R - 4 4 0
V E R   n . n n . n n   h h : m m : s s
S t a t u s :   E r r o r   1 1
S O U R C E   E M P T Y
```

Main Menu

Use the Main Menu (shown below) to access LCD options and functions. To access the Main Menu, press **Escape** from the Main Screen.



- Select **Main Screen** to return to the Main Screen.
- Select **Extend/Retract E/E** to control the entry/exit port (see [page 56](#)).
- Select **Interface Menu** to change the CHM control mode (see [page 53](#)) and configure the serial ports (see [page 127](#)).
- Select **Configuration Menu** to set or change SCSI IDs, security, or the library's other configuration options (see [Chapter 2](#)).
- Select **Maintenance Menu** to insert and remove cartridges (see [page 56](#)), clean the tape drives (see [page 70](#)), run demos (see [page 105](#)), or perform diagnostic tests (see [page 113](#)).
- Select **Library Info Menu** to learn about library operations (see [page 131](#)) and tape drive operations (see [page 72](#)).

The library menu structure is shown in Figure 4-1.

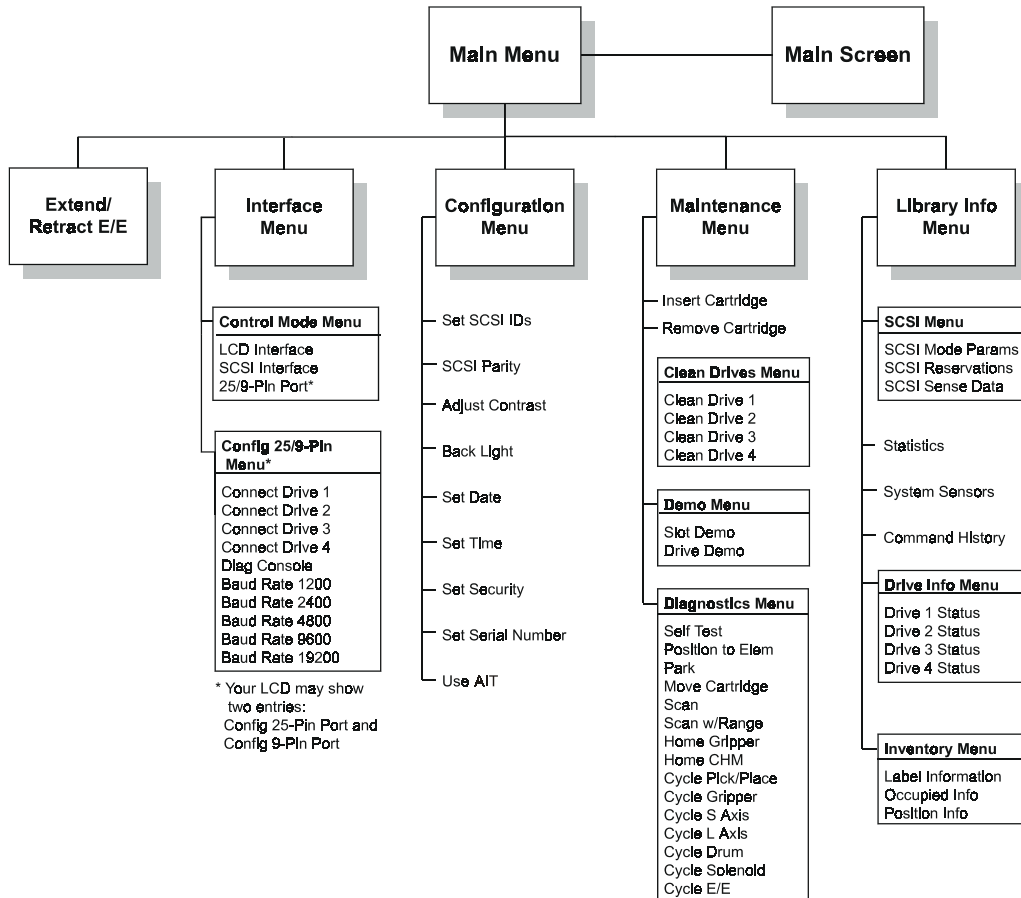











Figure 4-1 Library menu structure

Operator keys

The keys on the operator panel perform the following functions:

 	Scrolls the screen arrow (→) up or down. The screen arrow points to the current selection.
 	In some screens, moves the screen arrow left or right. On some menu selections, toggles an option on or off.
	Selects the item next to the screen arrow or accepts a change.
	Returns to the previous menu or screen, or cancels an operation without saving changes.
	Displays the Reset screen, which allows you to reset the library and the tape drives.
	Displays the Help screen. To exit Help, press  .

Operating in different control modes

The library's control mode determines which interface controls CHM motion.

In this control mode...	The CHM is controlled by...	Purpose
SCSI Interface	Application software	Standard operating mode
LCD Interface	A user at the operator panel	Replacing single cartridges; diagnostics
9-Pin Port 25-Pin Port (narrow libraries only)	A user operating a console interface to access library firmware across the 9-pin or 25-pin serial port	Diagnostics
25/9 Pin (wide libraries only)	A user operating a console interface to access library firmware across the 25- or 9-pin port	Diagnostics

Note: Control mode settings remain in effect through power cycles.

SCSI Interface mode

In SCSI Interface mode, your application software controls the motion of the CHM by issuing SCSI commands across the SCSI bus attached to the library.

Note: The application software can issue commands to the library regardless of the control mode. However, the library must be in SCSI Interface mode for the software to control the motion of the CHM.

LCD Interface mode

When the library is operating in LCD Interface mode, you can control the motions of the CHM from the operator panel.

Note: You can use many operator panel features without changing to LCD Interface mode. LCD Interface mode is required only when you want to control the motions of the CHM from the operator panel.

9-Pin and 25-Pin Port modes or 25/9 Pin mode

When the library is operating in 9-Pin or 25-Pin Port mode (narrow libraries only) or in 25/9 Pin mode (wide libraries only), you can control the motions of the CHM from a remote console program connected to the library's 9-pin or 25-pin port.

Note: Use the 9-Pin, 25-Pin, or 25/9 Pin mode to control CHM motion only. You do not need to change the control mode to access a tape drive's serial port.

Changing the control mode

➤ **Important** When you change from SCSI Interface control mode to any other mode, you cannot control CHM motion with the application software.

1. Make sure the library is in the ready state (that is, no hardware errors, door closed, and no cartridge move operations occurring).
2. If security has been enabled, disable it. See [page 39](#).
3. From the Main Menu, press **↓** to select Interface Menu.
4. From the Interface Menu, press **↓** to select Control Mode Menu and press **Enter**.
5. From the Control Mode Menu, press **↓** to select the control mode and press **Enter**. The current control mode is indicated with an asterisk (*). The library changes from the current control mode and displays a screen similar to the following:

```
A C T I V E   I N T E R F A C E :  
F r o m :      S C S I  
T o :         L C D  
S t a t u s :  D O N E
```

6. Press **Escape** to return to the Interface Menu, and **Escape** again to return to the Main Menu.

Selecting and replacing data cartridges

This section describes how to:

- Select data cartridges
- Store data cartridges when not in the library
- Replace a single cartridge
- Replace the cartridge magazines

Selecting data cartridges

ADIC strongly recommends that you use AIT™ data-grade media with all AIT tape drives. AIT media meets specifications that are the most stringent in the industry.

Storing data cartridges

To maximize the shelf life of your data cartridges and ensure data integrity, follow the guidelines below when storing cartridges.

- **Store cartridges in a suitable environment.** Follow the specifications for storage temperature and other environmental requirements, as described on the cartridge packaging. Do not allow the temperature and humidity in the storage environment to fluctuate.
- **Keep the storage area as free of airborne particulates as possible.** To eliminate obvious sources of particulates, do not permit anyone to smoke, eat, or drink near the storage area, and do not store cartridges near a copier or printer that may emit toner and paper dust.
- **Store cartridges as soon as possible** after you remove them from the library. Immediate storage helps avoid many of the conditions that can damage tapes, such as temperature and humidity fluctuation, particulate contamination, and excessive handling.

- **Store cartridges with the write-protect switch in the protected position** (the red switch is fully visible).
- **Store data cartridges in a cartridge magazine.** In the cartridge magazine, cartridges are protected from airborne contaminants by a clear plastic cover.

Replacing a single cartridge

As described in this section, you can use several different methods to replace single cartridges without opening the library door.

- Use the **Extend/Retract E/E** option to insert or remove cartridges through the entry/exit port.
- Use the **Remove Cartridge** option to remove the cartridge.
- Use the **Insert Cartridge** option to replace the cartridge.

➤ **Important** Do not open the library door to replace individual cartridges. Opening and closing the library door causes the library to update the cartridge inventory, which takes approximately 2½ to 5 minutes.

Using the Extend/Retract E/E option

1. Make sure that security is disabled (see [page 39](#)).
2. Select Extend/Retract E/E from the Main Menu. The library extends or retracts the entry/exit port transport arm, depending on its current position.

3. Insert the cartridge into the entry/exit port and press **Enter**, as shown in [Figure 4-2](#). Or, remove a cartridge by pressing down on the entry/exit port PUSH tab, as shown in [Figure 4-3](#).

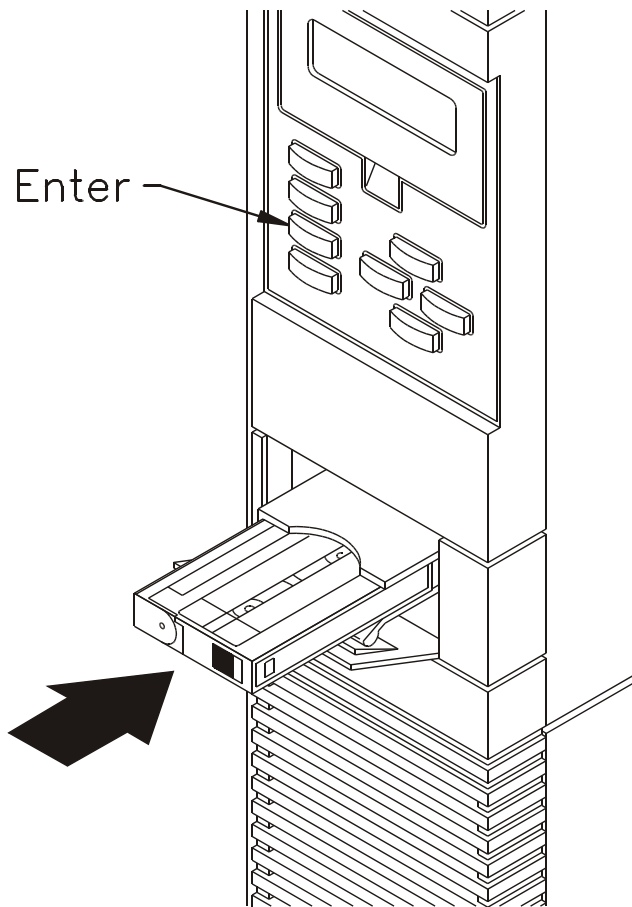


Figure 4-2 Inserting a cartridge into the entry/exit port

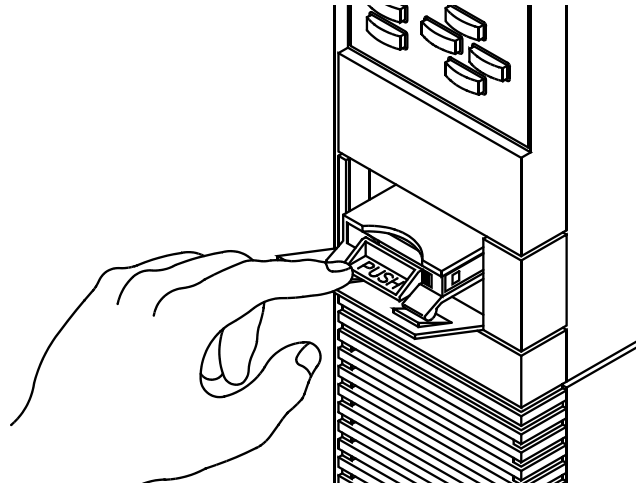
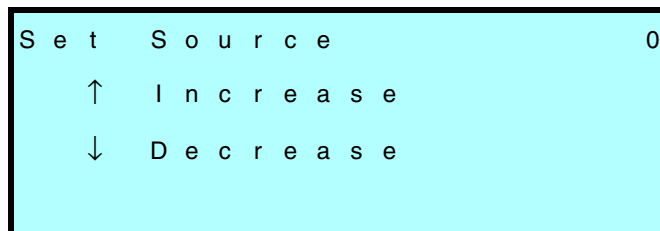


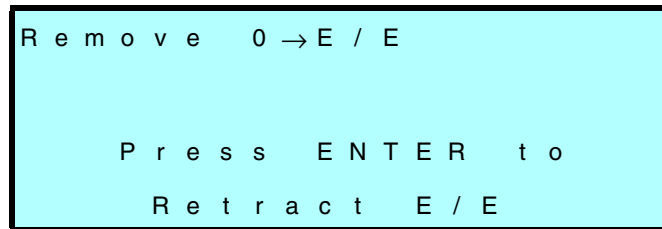
Figure 4-3 Removing a cartridge from the entry/exit port

Using the Remove Cartridge option

1. Make sure security is disabled (see [page 39](#)).
2. Change to LCD Interface control mode (see [Appendix C](#)).
3. From the Main Menu, press **↓** to select Maintenance Menu and press [Enter].
4. From the Maintenance Menu, press **↓** to select Remove Cartridge and press **Enter**. The library displays the following screen:



5. Press **↓** or **↑** to set the source element index (the index of the slot or tape drive where the cartridge is located). For more information about element indexes, see .
6. Press **Enter**. The CHM moves the cartridge to the entry/exit transport arm, and the transport arm extends to the entry/exit port. The library displays a screen similar to the following (the source index will be different):



```
R e m o v e    0 → E / E

          P r e s s    E N T E R    t o

          R e t r a c t    E / E
```

7. Press down on the entry/exit port PUSH tab and remove the cartridge (see [Figure 4-3 on page 58](#)).
8. Press **Enter** to retract the entry/export transport arm.
9. Press **Escape** to return to the Maintenance Menu.

Using the Insert Cartridge option

1. Make sure security is disabled (see [page 39](#)).
2. Change to LCD Interface control mode (see [page 53](#)).
3. From the Main Menu, select Maintenance Menu.

- From the Maintenance Menu, select Insert Cartridge and press **Enter**. The library displays the following screen:

```

S e t   D e s t i n a t i o n       0
  ↑   I n c r e a s e
  ↓   D e c r e a s e
  
```

- Press **↓** or **↑** to set the destination element index (the index of the slot or drive in which you want to place the cartridge). For more information about element indexes, see [Appendix C](#).
- Press **Enter**. If the location is a tape drive, the library displays the following prompt:

```

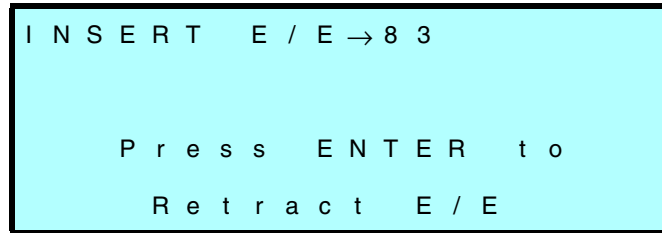
S h o u l d   t h e   c a r t r i d g e
b e   l o a d e d   i n t o
t h e   d r i v e ?                   N O →
  
```

- If you want to load the cartridge into the tape drive, press **→** to select Yes and press **Enter**. The library displays the following prompt:

```

S h o u l d   t h e
c a r t r i d g e   b e
s c a n n e d ?                       Y E S ←
  
```

8. If you do not want to scan the bar code label on the cartridge, press **←** to select No and press **Enter**. The library displays a screen similar to the following (the destination index will be different):



9. Insert the cartridge in the entry/exit port with the cartridge door flap to the left and press **Enter** (see [Figure 4-2 on page 57](#)).
10. Press **Escape** to return to the Maintenance Menu.

Replacing data cartridge magazines

To open the door and replace a data cartridge magazine:

1. Insert the key in the lock, push in, and turn it one quarter turn to the right, as shown in [Figure 4-4](#).

➤ **Important** Do not open the library door unless you need to remove and replace cartridge magazines or perform a maintenance operation. It takes 2½ to 5 minutes for the library to update the cartridge inventory after the door is opened and closed.

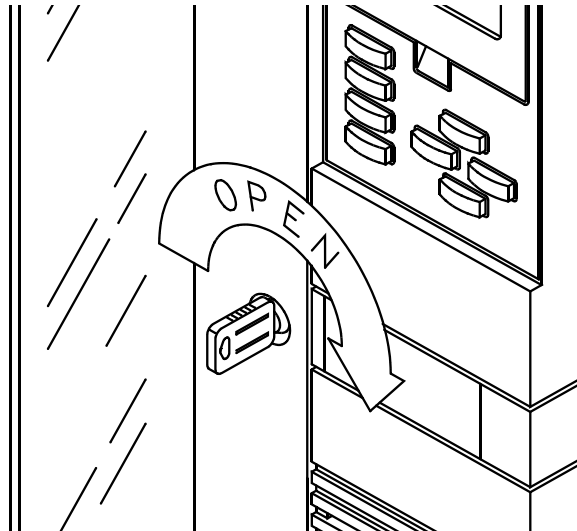


Figure 4-4 Opening the library door

When you unlock the door:

- The library completes its current operation, moves the CHM to the home position at the bottom of the long axis, rotates the drum assembly to the home position, and turns off current to all motors.
 - The interlock mechanism releases.
2. When the door's interlock mechanism releases, open the door.

CAUTION

Do not force the door open. The door's interlock mechanism may be prevented from releasing by LCD security or by the application software.

3. Make sure the CHM and its cabling are safely out of the way of the magazines. If necessary, move the CHM to the bottom of the long axis by pushing firmly against its base.
4. If necessary, manually rotate the drum assembly to access the cartridge magazine you want to remove.
5. Grasp the cartridge magazine on either side, pull the upper end out first, and remove it from the mounting plate. See [Figure 4-5](#).

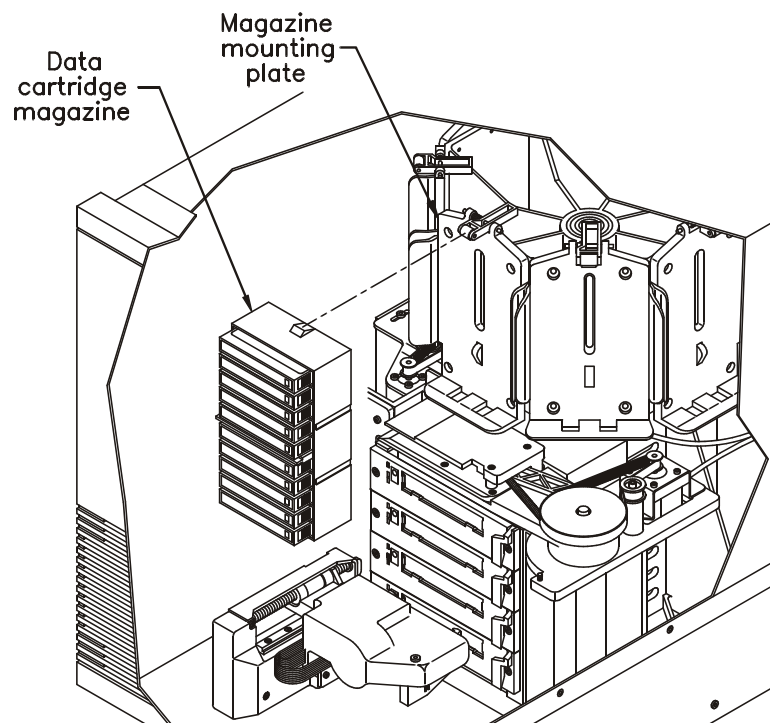


Figure 4-5 Replacing a cartridge magazine

6. Replace the magazine by positioning it over the mounting plate with the single mounting guide toward the top.

7. Insert the bottom end of the magazine first, then snap the magazine into place by pressing against the top.
8. Close the door and lock it by turning the key a quarter turn to the left. After the door is closed:
 - The library performs its power-on self-test.
 - The library returns Unit Attention status to the host.
 - The software may update its own cartridge inventory.

Resetting the library

If the library has encountered an error and is still not operating after you have tried the corrective action for the error, you may need to reset the library. A reset causes the library and the tape drives to perform their power-on self tests. Unless configured otherwise, tape drives will rewind the tape after a reset, but will not eject the data cartridge.

Note: If the library is performing a cartridge move operation when it is reset, it completes the move operation before it performs the power-on self-test.

CAUTION

Before resetting the library, make sure the library or tape drives are not communicating across the SCSI bus. Resetting the library and tape drives may disrupt communications on the SCSI bus.

As described in this section, you can use any of the following methods to reset the library and tape drives:

- Press **Reset** on the operator panel

- Turn the library's power off and back on again
- Use a remote reset switch

Reset key

When you press **Reset**, the following message appears:

```
D o   y o u   r e a l l y   w a n t
t o   r e s e t   ?

E N T E R :   R e s e t   n o w
E S C :   C a n c e l
```

Press **Enter** to reset the library and tape drives, or press **Escape** to cancel the reset and return to the previous menu or screen.

Power-on reset

CAUTION

Unless necessary for mechanical reasons, do not turn the power off while there are cartridges in the tape drives or CHM.

Turn the library off, then on. A power-on reset also resets the tape drives.

Remote hardware reset

If you plug a cable into the remote reset port on the back of the library, you can reset the library and the tape drives by pressing a reset button on the cable.

Note: The library and tape drives can also be reset automatically by SCSI bus resets or Bus Device Reset messages.

5 Operating the Tape Drives

Once installed and configured, the application software automatically controls the tape drives as you perform backup and restore operations. Unless there is a problem with the tape drives, you should never need to touch them. However, you may need to perform the following tasks, which are described in this chapter:

- Monitoring the tape drive LEDs
- Cleaning the tape drives
- Displaying information about tape drives
- Ejecting a cartridge manually

Note: You cannot control the tape drives from the operator panel. However, you can perform diagnostics on the tape drives across the 9-pin or 25-pin serial port.

Monitoring the tape drive LEDs

The AIT tape drives use light-emitting diodes (LEDs) to indicate their operating states. Normally, you do not need to monitor the LEDs when the tape drives are installed in the library; however, this section lists the basic tape drive LED states for your reference.

Drive LED states

The following table shows basic LED states for the AIT drive.

LED state	Condition
Off	Not active.
On	Activity.
Flashing - Mode 1	Drive activity.
Flashing - Mode 2	Warning.
Flashing - Code 1 or 2	Failure.

The following table defines each LED state.

State	Busy LED	Tape LED	Status LED
Off	Not busy	Unloaded	
On	SCSI activity	Loaded	Write protected
Flashing - Mode 1	Drive activity	Loading/ Unloading	
Flashing - Mode 2		Error rate warning	Cleaning request
Flashing - Code 1	Waiting for request	Waiting for eject	
Flashing - Code 2			Self-test failure

Mode 1 = 2 flashes per second.

Mode 2 = On for 3.5 seconds, off for 0.5 seconds.

Code 1 = One fast (0.25 sec.) pulse (LED on) every 1.25 seconds.

Code 2 - Two fast (0.25 sec.) pulses (LED on) every 1.25 seconds.

Cleaning the tape drives

CAUTION

Use only cleaning cartridges approved by ADIC for your tape drive. Using cloth swabs, cotton swabs, cleaning agents, or cleaning cartridges not approved by ADIC may void the tape drive warranty.

Regular cleaning of the tape path and tape heads helps ensure that the tape drives function reliably. The tape drives keep track of their cleaning needs internally and can notify the library or application software when they require cleaning.

Whether the tape drives are cleaned automatically depends on your application software:

- Some applications monitor the tape drives and automatically insert the cleaning cartridge in a tape drive when it needs to be cleaned. The cleaning is performed automatically and the CHM returns the cleaning cartridge to its storage location (normally, the fixed cartridge slot). If this is the case with your application, skip this section and resume reading on [page 72](#) for information about replacing the cleaning cartridge when it is used up.
- Some applications alert you when a tape drive needs to be cleaned but do not automatically insert the cleaning cartridge in the drive. In this case, you need to clean the tape drives from the operator panel (see the following section).

- Finally, some applications do not keep track of tape drive cleaning requirements. With these types of applications, you need to monitor the library LCD or the tape drive LEDs. Then, you need to clean the tape drives from the operator panel (see the following section).

To determine how your application software handles tape drive cleaning requirements, refer to the documentation for your software.

Cleaning the tape drives from the operator panel







When a tape drive requires cleaning, the message “Drive needs cleaning” appears on the Main Screen of the library LCD. To find out which tape drive needs cleaning, display the Drive Info screen or look through the library window at the tape drive's LEDs. The Tape and Status LEDs will flash Mode 2 when cleaning is required.

For best results, clean the tape drive as soon as possible after your software notifies you that cleaning is required or you see the “Drive needs cleaning” message.

➤ **Important** Before using the Clean Drives Menu, make sure you have a cleaning cartridge in the fixed cartridge slot. If the fixed cartridge slot contains a data cartridge instead of a cleaning cartridge, the tape drive will not be cleaned and you will have to manually eject the data cartridge from the tape drive (see [page 76](#)).

If there is no cleaning cartridge in the fixed cartridge slot, use the Insert Cartridge option on the Maintenance Menu to insert a cleaning cartridge into the library's fixed cartridge slot (see [page 59](#)).

To clean a tape drive using the Clean Drives Menu:

1. Make sure security is disabled (see [page 39](#)).
2. Change to LCD Interface control mode (see [page 53](#)).
3. From the Main Menu, press  to select Maintenance Menu and press .
4. From the Maintenance Menu, press  to select Clean Drives Menu and press .
5. Use  to select the tape drive you want to clean as described below, and press 
 - Clean Drive 1 (top tape drive)
 - Clean Drive 2 (second from top)
 - Clean Drive 3 (third from top)
 - Clean Drive 4 (bottom tape drive)

The CHM picks the cleaning cartridge from the fixed cartridge slot and inserts it in the tape drive you specified. The tape drive automatically performs the cleaning process and ejects the cartridge when the process is complete (several minutes). When the tape drive ejects the cartridge, the CHM picks the cartridge from the tape drive and replaces it in the fixed cartridge slot.

6. Confirm that the cleaning was done by looking at the LEDs on the front of the tape drive. The Tape and Status LEDs should not be flashing Mode 2. If the LEDs are still flashing Mode 2, replace the cleaning cartridge and clean the tape drive again. If the LEDs are still flashing Mode 2 after the second cleaning, there may be a problem with the tape drive.

Replacing the cleaning cartridge

To replace the cleaning cartridge when it is used up, use the Remove Cartridge and Insert Cartridge options on the Maintenance Menu and the entry/exit port. Set the source and destination to 0, which is the element index of the fixed cartridge slot. (See [page 56](#) for complete instructions.)

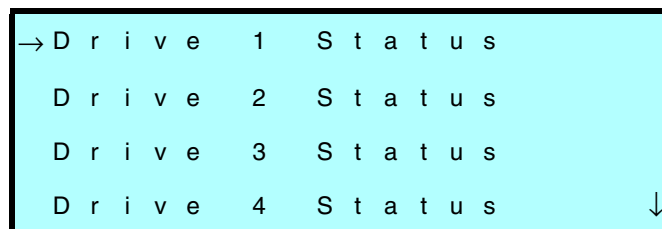
➤ **Important** Use a Sony TCI Cleaning Cartridge (or a cleaning cartridge approved by ADIC for use with AIT tape drives).

Displaying information about tape drives

You can display information about your tape drives from the Drive Info Menu, accessible under the Library Info Menu. The information screens are updated whenever there is a change in drive status.

To display tape drive information:

1. From the Main Menu, press **↓** or **↑** to select the Library Info Menu and press **Enter**.
2. Press **↓** or **↑** to select the Drive Info Menu and **Enter**. The library displays the following screen:



```
→ D r i v e   1   S t a t u s
   D r i v e   2   S t a t u s
   D r i v e   3   S t a t u s
   D r i v e   4   S t a t u s   ↓
```


3. Press **↓** or **↑** to select the tape drive for which you want to display information and press **Enter**. For each installed tape drive, the library displays a screen similar to the following:

```
DRIVE 1 STATUS :
Type           AIT
Present        1
Accessible     1 ↓
```

4. Press **Escape** to return to the previous menus.

Fields on Drive Status screen

Drive Status:	
DRIVE N STATUS	Identifies the tape drive, as follows: DRIVE 1 – The top tape drive DRIVE 2 – The second from top tape drive DRIVE 3 – The third from top tape drive DRIVE 4 – The bottom tape drive
Type	Identifies the tape drive model. This information is updated at power-up and after a reset. Note: “8mm” for Type indicates one of the following conditions: <ul style="list-style-type: none">▪ No tape drive is present in this slot.▪ A non-Mammoth tape drive is using downlevel firmware that cannot send status indicators to the library. (For non-Mammoth tape drives, you must have firmware level 8SC-0793 or above to obtain tape drive information.)▪ A Sony AIT tape drive is installed, but the Use Sony AIT configuration option is set to OFF.▪ A tape drive firmware error has occurred.

Drive Status:	
Present	Indicates whether a tape drive is installed in this slot: 0 – A tape drive is not present. 1 – A tape drive is present.
Accessible	Indicates the accessibility of the tape drive to the CHM: 0 – A cartridge is loaded in the tape drive or the tape drive's status is unknown. 1 – A cartridge is protruding from the tape drive or the drive is empty.
Clean	0 – The tape drive is clean. 1 – The tape drive needs to be cleaned or the cleaning tape is used up.
Warning	Not currently used.
Occupied	0 – There is no cartridge loaded in the tape drive. 1 – There is currently a cartridge loaded in the tape drive.
Occupied Valid	0 – The door has been opened or some other interruption has occurred so the occupied information may not be reliable. 1 – The occupied information is reliable.

Ejecting a cartridge manually

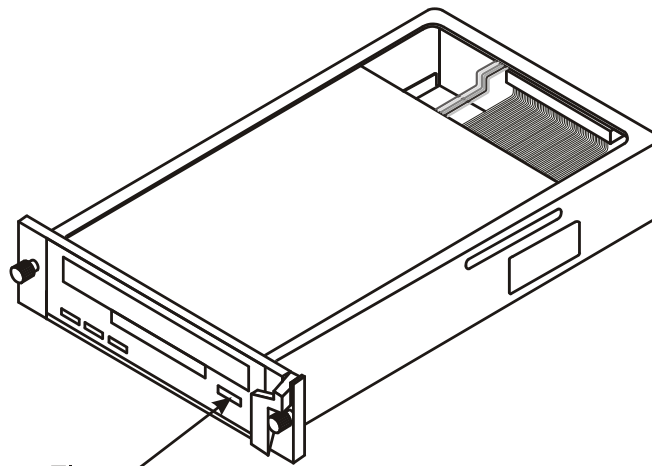
If a problem occurs that requires intervention, you may need to eject a cartridge manually:

1. Insert the key in the lock, push in, and turn it one quarter turn to the right.
2. When the door's interlock mechanism releases, open the door.

CAUTION

Do not force the door open. The door's interlock mechanism may be prevented from releasing by LCD security or by the application software.

3. Press the eject button on the tape drive's faceplate. See [Figure 5-1](#) for location of the Eject button.



Eject Button
Figure 5-1 Eject button

Notes

6 Maintaining the Library

This chapter provides information about the following maintenance functions that you may need to perform on your library:

- Replacing tape drives or drive blanks
- Replacing the fuse
- Replacing the air filter
- Cleaning the front window
- Using touch-up paint on the library housing

CAUTION

Unless you have a self-maintenance contract with ADIC, do not attempt to replace any components in the library other than the tape drives, drive blanks, fuse, or air filters. If you do so, you may void your warranty.

The library's internal components are lubricated at the factory and should not be cleaned or re-lubricated. To protect internal components from dust, keep the library door closed and locked.

Replacing tape drives or drive blanks

These instructions describe how to replace a drive blank or a tape drive that is already installed in a drive carrier.

➤ **Important** You must purchase the tape drive pre-installed in the carrier.

Using drive blanks

If you are using fewer than four tape drives, you must install a drive blank in the unused drive carrier slots. You cannot operate the library with empty drive carrier slots.

If your library has a narrow SCSI configuration, use the narrow SCSI drive blank. If your library has a wide SCSI configuration, use the wide SCSI drive blank.

Note: The library is shipped with one extra drive blank in the accessory box.

Procedure for replacing tape drives

To replace a tape drive, complete the steps listed in the table below. Each step is described on the following pages.

✓	Step	Description
	1	Prepare for replacement procedure.
	2	Remove the tape drive from the library.
	3	Install a drive blank or tape drive in the library.
	4	Resume library operations.

Note: In these instructions, *tape drive* refers to a tape drive installed in a drive carrier.

Step 1 – Prepare for replacement procedure

1. Obtain a flat-blade screwdriver.
2. To avoid damaging the library, be sure that the work area is free of conditions that could cause electrostatic discharge (ESD). See [page 3](#).
3. Turn the key in the lock.

4. When the door's interlock mechanism releases, open the door.

CAUTION

Do not force the door open. The interlock mechanism may be prevented from releasing by LCD security or by the application software.

5. Turn the library's power switch to off.
6. Disconnect the power cord.

WARNING!

Before performing any installation or maintenance procedures, be sure that the library power switch is in the off position and that the power cord is disconnected from the library and the outlet.

7. If necessary, reach in and push firmly against the base of the CHM to move it to the top or bottom of the long axis so it is not blocking access to the tape drives.

Step 2 – Remove the tape drive

1. Using a flat-blade screwdriver, loosen the two captive screws on the drive carrier faceplate. See [Figure 6-1](#).
2. Using your finger, pull out the lever on the faceplate.

CAUTION

Do not pull out the lever without first loosening the screws.

3. Pull the tape drive out of the slot.

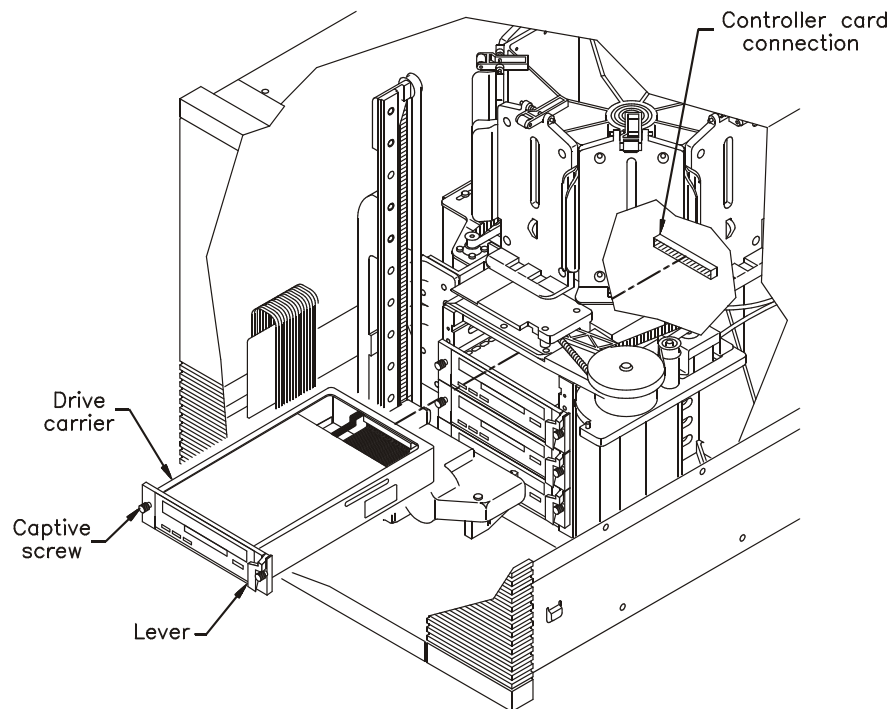


Figure 6-1 Removing and installing a tape drive

Step 3 – Install the tape drive

► **Important** Do not insert your fingers in the tape drive door.

1. As shown in [Figure 6-1](#), insert the tape drive into the slot with the lever to the right. Make sure the lever is closed. The tape drive should slide easily toward the back.
2. When the drive is almost completely inside the slot, you will feel some resistance. This is caused by the connection between the library's controller card and the tape drive. To seat the connection, push firmly against the drive until you can push no further.
3. Using a flat-blade screwdriver, tighten the captive screw on each end of the drive carrier faceplate (two screws).

Step 4 – Resume library operations

1. Connect the power cord to the back of the library and to the outlet.
2. Close and lock the library's door.
3. Turn the library power switch to on.

Note: When you replace a tape drive, the new tape drive automatically assumes the SCSI ID of the old tape drive. See [page 34](#) if you want to change the ID.

Replacing the fuse

The library uses a 4.0-amp, 250-volt fuse, which is located in the fuse drawer at the back of the library next to the power cord connector. An extra fuse is provided in the fuse drawer. Replacement fuses are available from ADIC.

CAUTION

When replacing the fuse, use only the same type and rating of fuse.

To replace the fuse:

1. Turn off the library and remove the power cord.

WARNING!

Before performing any installation or maintenance procedures, be sure that the library power switch is in the off position and that the power cord is disconnected from the library and the outlet.

2. Place a small screwdriver underneath the tab on the fuse drawer. Lift out the fuse drawer.

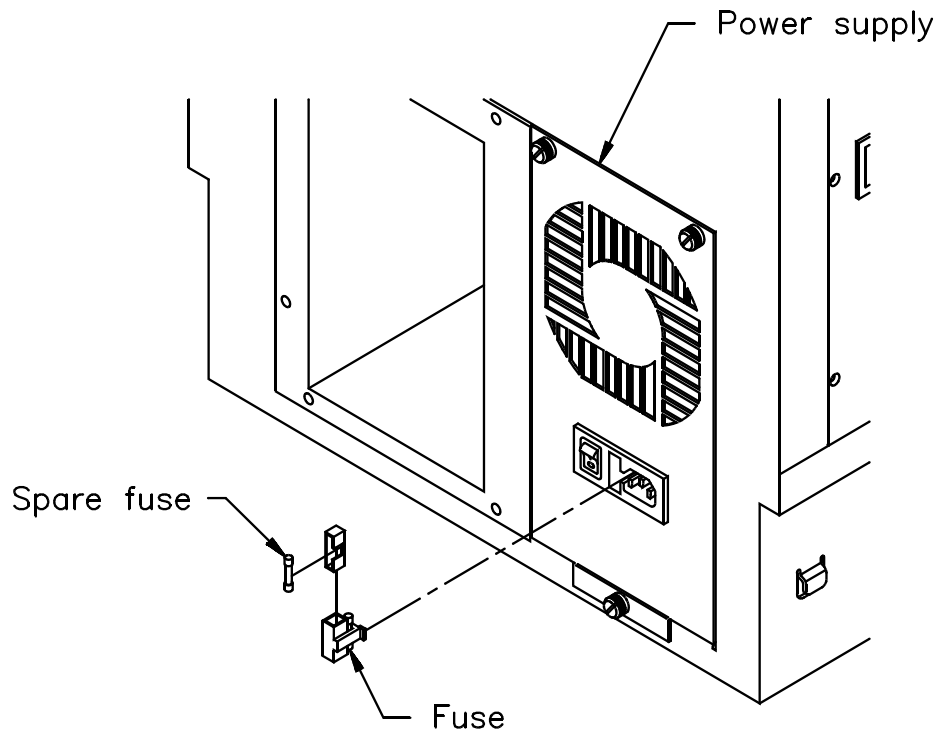


Figure 6-2 Replacing the fuse

3. Pull the blown fuse out of the fuse slot.
4. Use the screwdriver to push the spare fuse box out of the fuse drawer. Remove the spare fuse and place it in the fuse slot.
5. Place another spare fuse in the spare fuse box and replace the spare fuse box in the fuse drawer.
6. Insert the fuse drawer into the back panel. Push it in as far as you can.

Replacing the air filter

The library has two air filters, one on each side of the front panel (see [Figure 6-3](#)). You should replace the air filters once a year (or more frequently if the library is operating in a dirty environment). Replacement filters are available from ADIC.

➤ **Important** Air filters protect the library from large contaminants, but are not intended to keep the tape drives clean. To help maintain data integrity and reliability, you should clean the tape drives on a regular basis. See [page 69](#) for more information.

To replace the air filters:

1. As shown in [Figure 6-3](#), push against the outer edge of each air filter grille and pull the grille off the front panel.

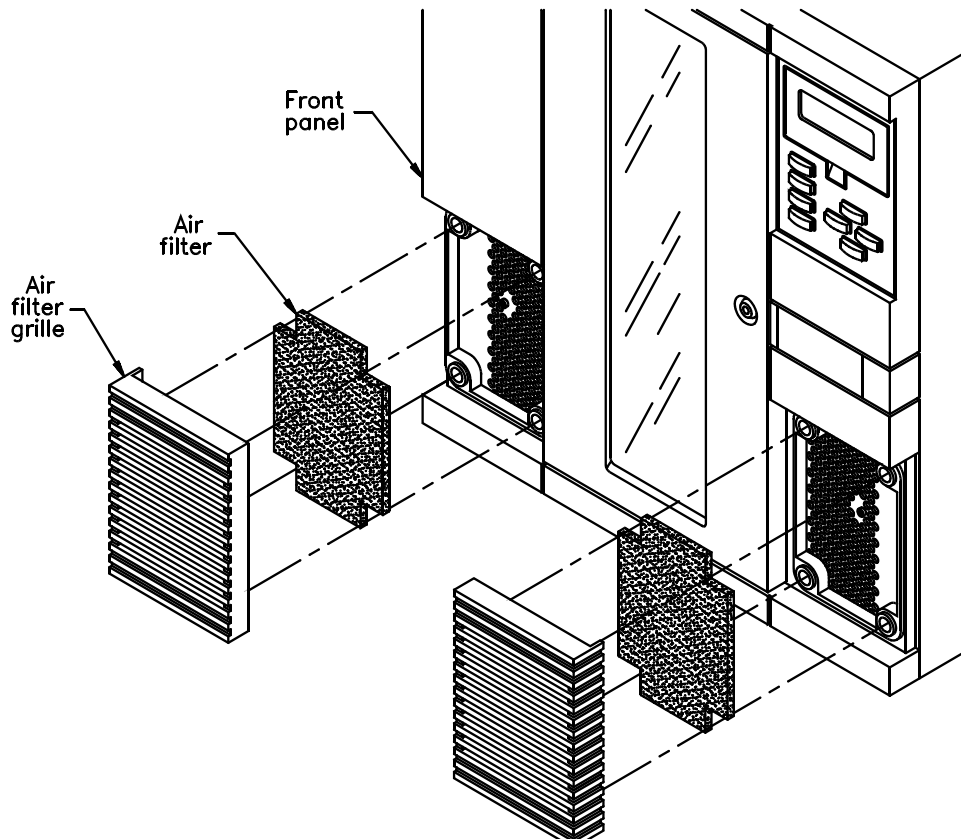


Figure 6-3 Replacing the air filters

2. Remove the air filter from inside of the air filter grille (see [Figure 6-4](#)).
3. Place a new filter inside each grille, tucking the mesh over the mounting pins inside the grille.

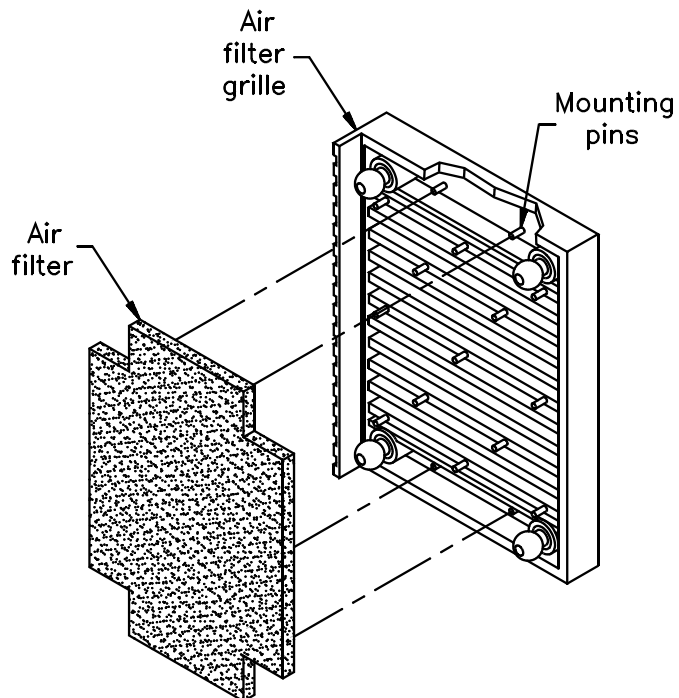


Figure 6-4 Replacing the air filter inside the air filter grill

4. Replace each grille by inserting the tabs into the holes and pushing against the grille until it is seated.

Cleaning the front window

Aside from the tape drives, the only library component that you should clean is the window in the front door. Two cleaning packets are provided with your library for cleaning the front window. To order additional cleaning packets, contact ADIC Sales.

CAUTION

To avoid scratching the window, do not use abrasive cleaners, abrasive cleaning implements, harsh chemicals, or solvents.

To clean the library's window, use the #1 wet wipe first, then the #2 dry wipe.

Using touch-up paint on the housing

For standalone models, a pearl-white paint kit is available for touching up nicks and scratches on the finish. Contact ADIC Sales.

7 Packing and Shipping the Library

This section describes the procedures for:

- Returning the library for service
- Shipping the library

Returning the library for service

If you need to return the library to the factory for service, contact your service provider. If your service provider instructs you to return the library directly to ADIC, contact ADIC Technical Support to obtain a Return Materials Authorization (RMA) number and the shipping address. When you have the RMA number, follow the shipping instructions on the following pages.

➤ **Important** If you are returning the library for service, remove and keep all cartridges, cartridge magazines, SCSI cables, terminators, jumpers, power cables, and keys.

Shipping the library

If you need to ship the library to another location, make sure you pack the library in the original packing materials. These include:

- Shipping containers
- Packing foam
- Antistatic bag

You will also need packing tape and banding material. If you are returning the library to your vendor, you may also need completed paperwork and shipping labels, as the vendor requires.

CAUTION

To avoid damaging the library and voiding your warranty, be sure to use the original shipping materials (or replacement materials obtained from your vendor) when repacking and shipping the library. Do not use the shipping carton and packing materials to ship items other than or in addition to a library.

Preparing the library for shipping

Before you pack the library, complete the preliminary steps listed in the following table.

✓	Step	Description
	1	<p>Turn the key in the lock. When the interlock mechanism releases, open the door.</p> <p>CAUTION: Do not force the door open. The interlock mechanism may be prevented from releasing by LCD security or by the application software.</p>
	2	Turn off the power.
	3	Remove the power cord*, SCSI cables*, terminators*, and jumpers* from the back of the library. Leave the tape drives and drive blanks in the library.
	4	Remove all data cartridge magazines.*
	5	<p><i>For rack-mount models, refer to the instructions on the following pages for removing the library from the rack.</i></p> <p><i>For standalone models, handles are located underneath the side panels for lifting the library. To remove the side panels, loosen the four captive screws at the back of the library (two captive screws for each panel), and pull each panel back and away from the library (see page 4).</i></p>

* If you need to ship these items, pack them in the accessories box. Do not return these items if you are returning the library to the factory.

Removing the rack-mount model

WARNING!

The rack-mount library weighs 137 – 179 pounds (62 – 81 kg); the standalone library weighs 190 – 238 pounds (86 – 110 kg).

You need at least 4 people, or 2 people and a small fork lift, to lift either model.

Preparation

- Obtain a fork lift or enlist the help of at least three additional people.
- Obtain the following tools:
 - T-15 TORX driver
 - T-25 TORX driver

Procedure for removing the library

To remove the library from a rack:

1. Extend the extension support legs on the rack.
2. Remove the air filter grilles from the front of the library by lifting on the outside edges and pulling the grilles away from the library.
3. Use a T-25 TORX driver to remove the two pan head screws that secure the library to the rack, as shown in [Figure 7-1](#). (A clip nut may have been installed over the screw hole on the rack.)

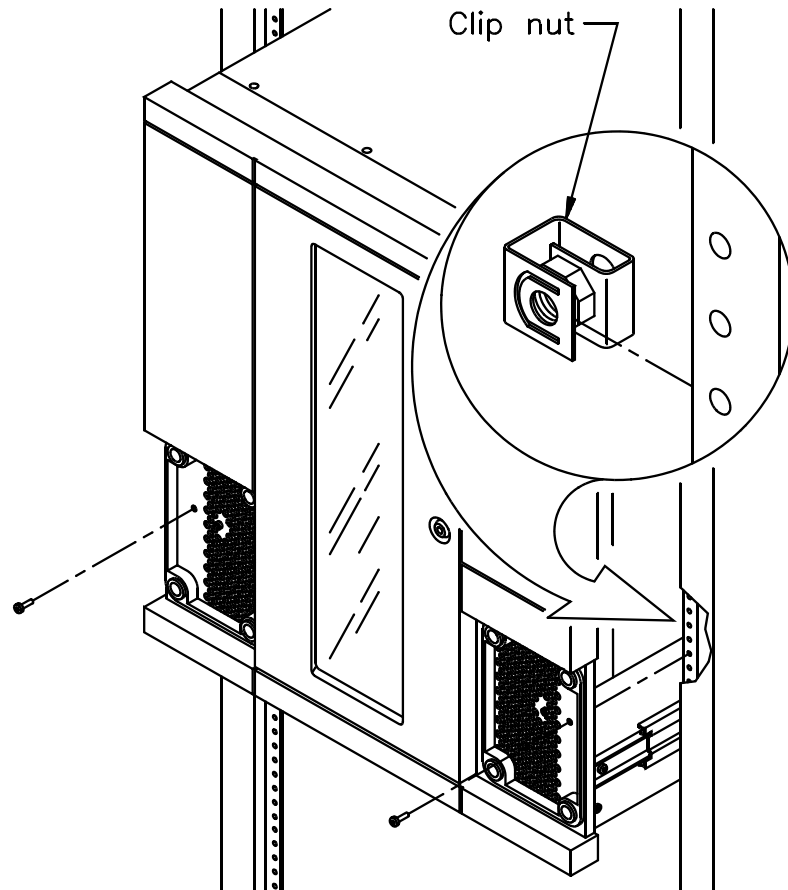


Figure 7-1 Removing the screws from the front of the rack

4. Slide the library a few inches out of the rack.
5. Use a T-15 TORX driver to remove the two button head screws attaching the rails to the sides of the library, as shown in [Figure 7-2](#).

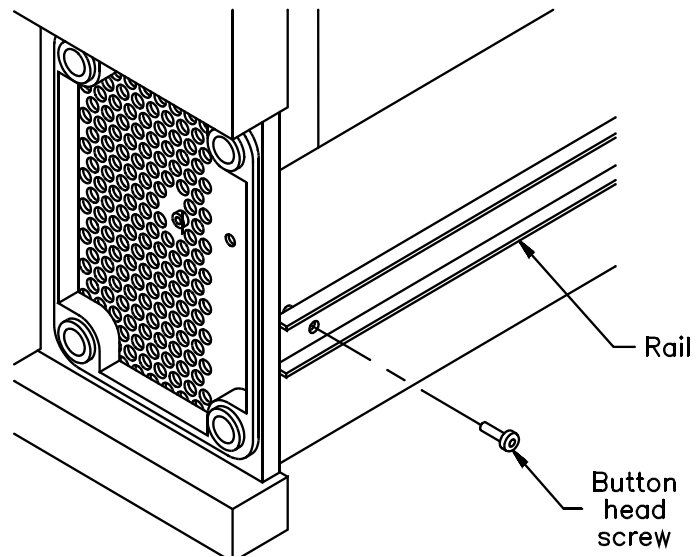


Figure 7-2 Removing the screws from the sides of the library

6. Making sure the library is supported so that the rack will not tip, slide the library forward until the rails stop at the spring clips (see [Figure 7-3](#)).
7. Lift the library from the rack and lower it to a low workbench or the floor.

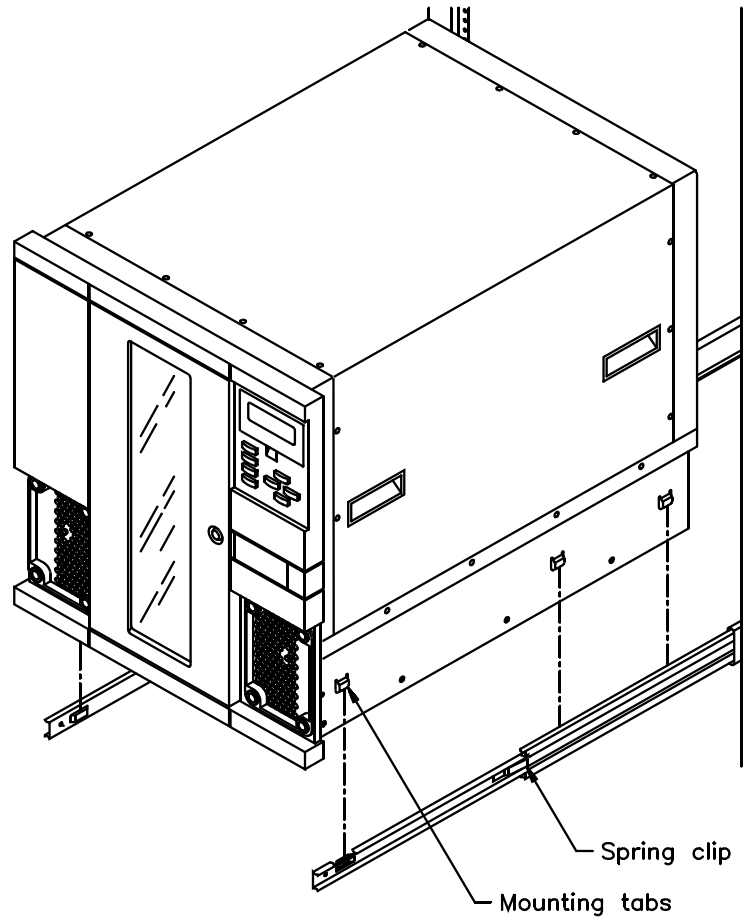


Figure 7-3 Lifting the library from the rack

8. Replace the air filter grilles on each side of the front panel.
9. Press the spring clips on the rails and push the rails back into the rack.

Inserting the packing foam in the library

1. Insert the packing foam next to the CHM, as shown in [Figure 7-4](#).

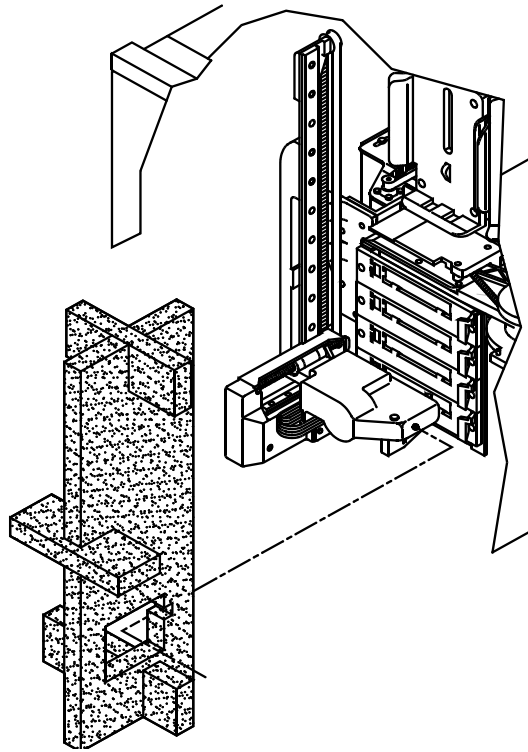


Figure 7-4 Installing the packing foam in the library

2. Adjust the packing foam so the CHM fits into the pocket, as shown in [Figure 7-5](#).

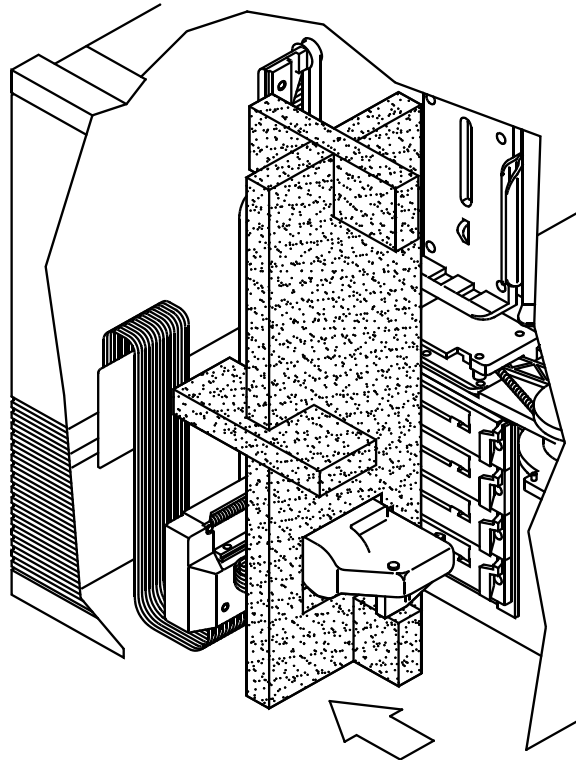


Figure 7-5 Moving the CHM into the pocket

3. Close the library door and lock it. Remove the key.

➤ **Important** If you are returning the library for service, keep the key. When the library is returned to you, the door will be locked.

Packing the library in the shipping containers

1. Lay the bottom packing cushion over the tray, which is stapled to the pallet.
2. Using four people, or two people and a fork lift, place the library on top of the bottom cushion.
3. Place the antistatic bag over the library as shown in [Figure 7-6](#).

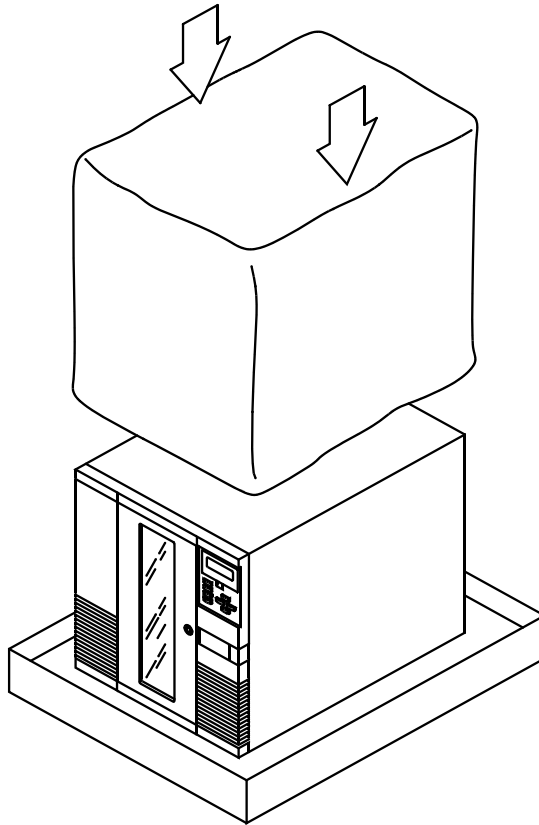


Figure 7-6 Placing the antistatic bag over the library

4. Place the cushioned packaging around the library, as shown in [Figure 7-7](#). (Use the alignment holes in the packing pieces as a guide.)

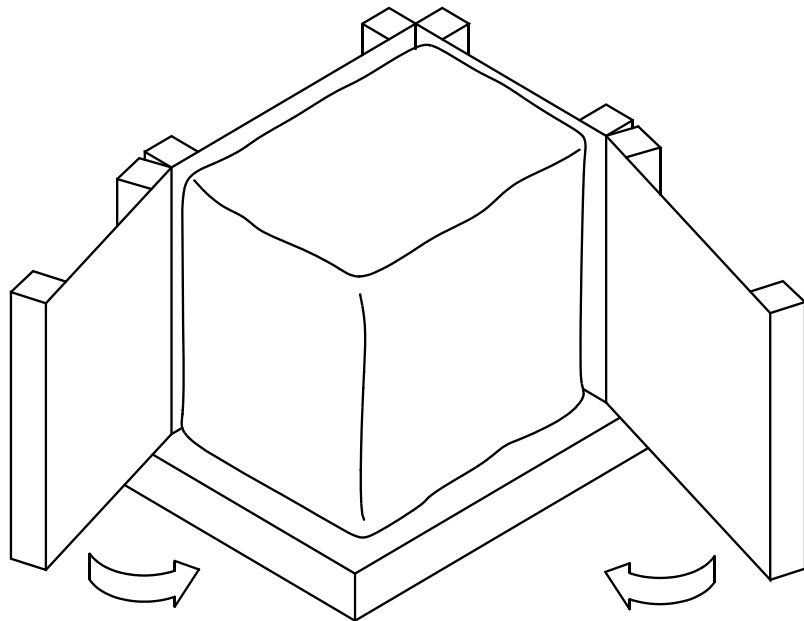


Figure 7-7 Placing the cushioned packaging around the library

5. If you are shipping the library's accessories, place the accessory box on top of the library, as shown in [Figure 7-8](#).

➤ **Important** If you are returning the library for service, do not return the library's accessories (cartridges, cartridge magazines, SCSI cables, terminators, jumpers, power cables, and keys).

6. Place the cushioned top over the accessory box, as shown in [Figure 7-8](#).

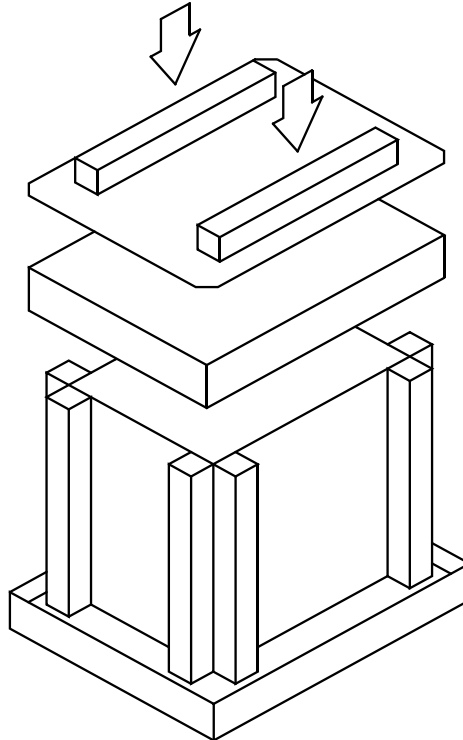


Figure 7-8 Placing the accessory box and top on the library

7. Lay the necessary paperwork on top.
8. Place the carton over the library, as shown in [Figure 7-9](#), and tape the box shut.

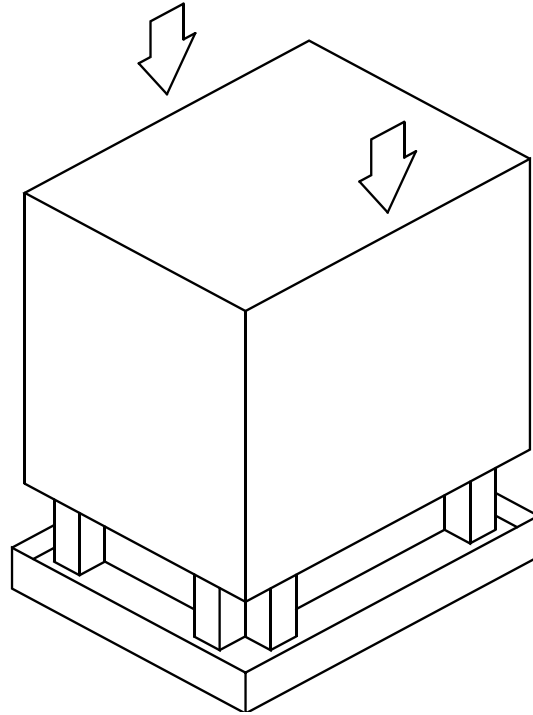


Figure 7-9 Placing the carton over the library

9. Place the shipping label on the box.

10. Secure banding material around the box and through the wooden pallet, as shown in [Figure 7-10](#).

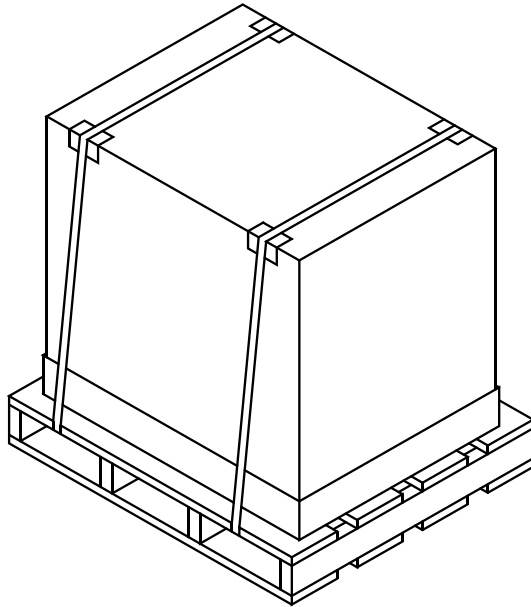


Figure 7-10 Securing the banding material

8 Using the Demo Menu

This chapter describes how to use the Demo Menu. This menu includes two selections:

- **Slot Demo** causes the CHM to move cartridges randomly between slots in the cartridge magazines and the fixed cartridge slot.
- **Drive Demo** causes the CHM to move cartridges randomly between slots in the cartridge magazines, the fixed cartridge slot, and the tape drives.

Starting a demo

To start either of the demos:

1. If necessary, disable security. See [page 39](#).
2. Change to LCD Interface control mode. See [page 53](#).
3. Make sure there is at least one data cartridge present and one empty slot before you begin the test.
4. From the Main Menu, press **↓** to select the Maintenance Menu and press **Enter**. The library displays the Maintenance Menu.

5. From the Maintenance Menu, press **↓** to select the Demo Menu and press **Enter**. The library displays the Demo Menu.

```
→ S l o t   D e m o
   D r i v e   D e m o
                                     ↓
```

Slot Demo

The Slot Demo option causes the CHM to move cartridges randomly from slot to slot (bypassing the tape drives). All cartridge magazines, plus the fixed cartridge slot, are included in the demo. To run the slot demo:

1. Select Slot Demo. The library displays the following prompt:

```
S h o u l d   t h e
c a r t r i d g e s   b e
s c a n n e d   d u r i n g
t h e   d e m o ?           N O   →
```

2. If you want to include bar code scanning in your demo, press to select Yes and press . Otherwise, press to select No. The library displays the following prompt:

```
S h o u l d   t h e   E E P O R T
b e   u s e d   d u r i n g
e a c h   p i c k / p u t
c y c l e ?                               N O   →
```

3. If you want the entry/exit port to be used during each pick and place cycle, press to select Yes and press . Otherwise, press to select No. The library begins the demo cycle and displays the following screen:

```
S L O T   D E M O :
T o t a l   C y c l e s :   n
S t a t u s :   M o v e   n n - n n
```

n indicates the number of cycles that have run so far, and *nn - nn* indicates the source and destination element indexes of the current move.

4. To stop the demo, press **Escape**. The library displays the following screen:

```
P r e s s   E N T E R   t o   a b o r t
t h e   o p e r a t i o n   i n
p r o g r e s s ,   o r   E S C   t o
c a n c e l .
```

5. Press **Enter** to stop the demo cycle. The library displays the following screen:

```
S L O T   D E M O :
   T o t a l   C y c l e s :   n
S t a t u s :   E r r o r   9 1
O P E R A T O R   A B O R T E D
```

n indicates the total number of cycles that were run during the demo, and Error 91 indicates that you have stopped the demo.

6. Press **Escape** to return to the Main Menu.

Drive Demo

The Drive Demo option causes the CHM to move cartridges randomly from slot to slot. All cartridge magazines, plus the tape drives and fixed cartridge slot, are included in the demo. To run the drive demo:

1. Select Drive Demo. The library displays the following prompt:

```
S h o u l d   c a r t r i d g e s
b e   l o a d e d   i n t o
t h e   d r i v e s   ?           Y E S ←
```

2. Press to select No and press . (The CHM will insert the cartridge into the drive slot, but will not push the cartridge all the way into the tape drive.)

➤ **Important** If you select Yes, the CHM pushes the cartridge all the way into the tape drive. The tape drive will not automatically eject the cartridge.

The library displays the following prompt:

```
S h o u l d   t h e
c a r t r i d g e s   b e
s c a n n e d   d u r i n g
t h e   d e m o   ?           N O   →
```

3. If you want to include bar code scanning in your demo, press to select Yes and press . Otherwise, press to select No. The library displays the following prompt:

```
S h o u l d   t h e   E E P O R T
b e   u s e d   d u r i n g
e a c h   p i c k / p u t
c y c l e ?                               N O   →
```

4. If you want the entry/exit port to be used during each pick and place cycle, press to select Yes and press . Otherwise, press to select No. The library begins the demo and displays the following screen:

```
D R I V E   D E M O :
   T o t a l   C y c l e s :   n
S t a t u s :   M o v e   n n - n n
```

n indicates the number of cycles that have run so far, and *nn - nn* indicates the source and destination element indexes of the current move.

5. To stop the demo, press **Escape**. The library displays the following screen:

```
P r e s s   E N T E R   t o   a b o r t
t h e   o p e r a t i o n   i n
p r o g r e s s ,   o r   E S C   t o
c a n c e l .
```

6. Press **Enter** to stop the demo cycle. The library displays the following screen:

```
D R I V E   D E M O :
T o t a l   C y c l e s :   n
S t a t u s :   E r r o r   9 1
O P E R A T O R   A B O R T E D
```

n indicates the total number of cycles that were run during the demo, and Error 91 indicates that you have stopped the demo.

7. Press **Escape** to return to the Main Menu.

Notes

9 Performing Diagnostics

This chapter describes how to use the LCD Diagnostics Menu to test the library hardware. It also provides information about using the serial ports to perform diagnostics on the library and tape drives.

Using the LCD Diagnostics Menu

The Diagnostics Menu provides basic functions to test or exercise the following hardware components:

- CHM and drum assembly
- Bar code scanner
- Entry/exit port
- Solenoid on the front door

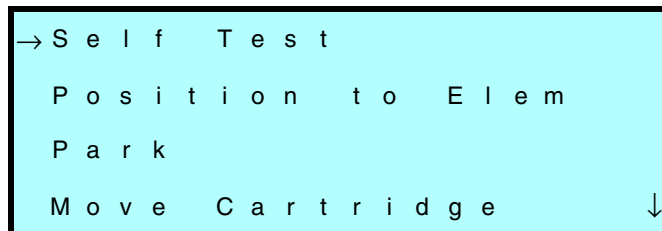
Summary of diagnostic tests

Diagnostic test	Description
Self Test	Opens and closes the gripper fingers, moves the CHM along the short and long axes, extends and retracts the entry/exit port, and rotates the drum assembly.
Position to Elem	Moves the CHM to a tape drive, cartridge slot, or the entry/exit port.
Park	Causes the CHM to move to the park position at the bottom of the long axis.
Move Cartridge	Moves a cartridge from one location to another.
Scan	Scans all of the elements.
Scan with Range	Scans a range of elements.
Home Gripper	Causes the gripper to move to its home position (open).
Home CHM	Causes the CHM to move to its home position at the top of the long axis.
Cycle Pick/Place	Causes the CHM to take a cartridge from a specified slot and replace it in the same slot.
Cycle Gripper	Causes the gripper to open and close.
Cycle S Axis	Causes the CHM to move in and out on the short axis.
Cycle L Axis	Causes the CHM to move up and down on the long axis.
Cycle Drum	Rotates the drum assembly 180 degrees.
Cycle Solenoid	Exercises the solenoid that controls the locking mechanism on the front door.
Cycle E/E	Extends and retracts the entry/exit port.

Accessing the Diagnostics Menu

To access the Diagnostics Menu:

1. If necessary, disable security. See [page 39](#).
2. Change to LCD Interface control mode. See [page 53](#).
3. From the Main Menu, press **↓** to select Maintenance Menu and press **[Enter]**.
4. From the Maintenance Menu, press **↓** to select Diagnostics Menu and press **[Enter]**. The library displays the Diagnostics Menu:



5. Refer to the appropriate section on the following pages to perform each test.

Specifying element indexes

Some of the tests require you to specify one or more element indexes. Refer to [Appendix C](#) for diagrams showing the element indexes for the Scalar AIT 440/480.

Stopping diagnostic tests

To stop a diagnostic test, press **[Escape]**, then **[Enter]**.

Self Test

The Self Test is an automated combination of most of the exercises described in this section. During the Self Test, the following actions occur:

- The CHM's gripper fingers move to the home position.
- The CHM cycles the short and long axes once (moves to each end of each axis), then moves to the park position at the bottom of the long axis.
- The drum assembly rotates 180 degrees and moves to its home position.
- The transport arm extends to the entry/exit port, then retracts to its home position.

To run the Self Test, select Self Test from the Diagnostics Menu and press **Enter**.

Position to Element

The Position to Element test positions the CHM in front of a tape drive, fixed cartridge slot, or magazine slot. To run the Position to Element test:

1. From the Diagnostics Menu, press **↑** or **↓** to select Position to Element and press **Enter**. The library displays the following screen:

```
S e t   D e s t i n a t i o n       0
      ↑   I n c r e a s e
      ↓   D e c r e a s e
```

2. Press **↑** and **↓** to select the element index (shown in the upper right corner) where you want to position the CHM, and press **Enter**. The library moves the CHM and, if necessary, rotates the drum so the CHM is positioned in front of the element you indicated. When the move is complete, the library displays a message similar to the one below (the element index will differ):

```
P O S I T I O N   T O   3   :

S t a t u s :   C o m p l e t e
```

3. To run the test again with a different element index, press **Escape** to return to the Diagnostics Menu and repeat steps 1 and 2.

Park

The Park test moves the CHM to the bottom of the long axis (the park position).

To run the Park test, press **↑** or **↓** from the Diagnostics Menu to select Park and press **Enter**. The library moves the CHM to the bottom of the long axis.

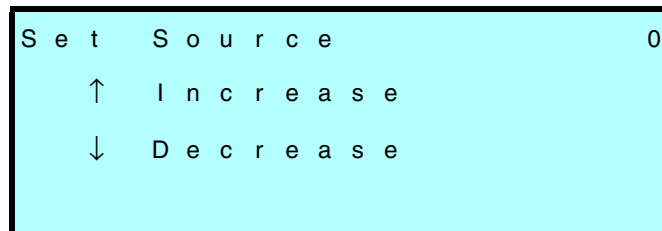
Move Cartridge

The Move Cartridge test picks a cartridge from one element and moves it to another.

► **Important** If you insert a cartridge in a tape drive, the tape drive will not automatically eject the cartridge.

To run the Move Cartridge test:

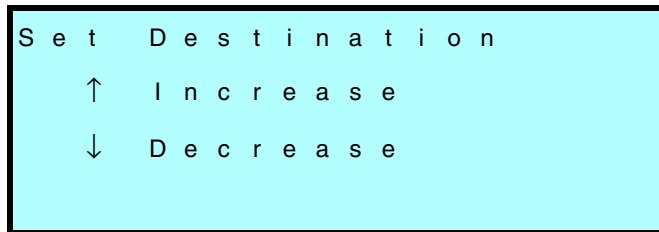
1. From the Diagnostics Menu, press **↑** or **↓** to select Move Cartridge and press **Enter**. The library displays the following screen:



```
S e t   S o u r c e           0
  ↑   I n c r e a s e
  ↓   D e c r e a s e
```

2. Press **↓** and **↑** to select the element index (shown in the upper right corner) of the cartridge slot from which you want the CHM to pick the cartridge.

3. Press **Enter**. The library displays the following screen:



4. Press **↓** and **↑** to select the element index (shown in the upper right corner) of the cartridge slot in which you want the CHM to place the cartridge.
5. Press **Enter**. The CHM moves the cartridge from the source to the destination.

Scan

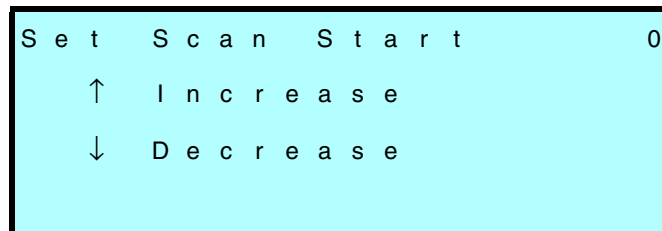
The Scan test scans all of the bar code labels. The information is stored in the cartridge inventory. Any scan errors encountered are displayed on the Label Info screen (see [page 146](#)).

To run the Scan test, press **↑** or **↓** from the Diagnostics Menu to select Scan and press **Enter**.

Scan with Range

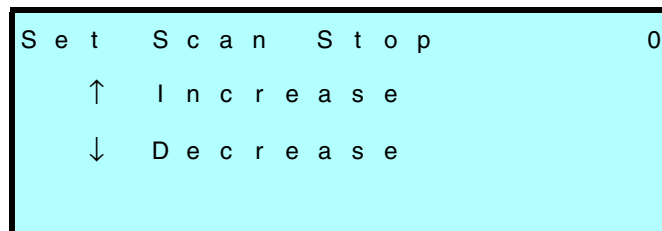
The Scan with Range test scans a range of bar code labels. The information is stored in the cartridge inventory. To run the Scan with Range test:

1. From the Diagnostics Menu, press **↑** or **↓** to select Scan with Range and press **Enter**. The library displays the following screen.



```
S e t   S c a n   S t a r t           0
      ↑   I n c r e a s e
      ↓   D e c r e a s e
```

2. Press **↓** and **↑** to specify an element index where you want the bar code scanner to begin scanning. Press **Enter**. The library displays the following screen.



```
S e t   S c a n   S t o p           0
      ↑   I n c r e a s e
      ↓   D e c r e a s e
```

3. Press **↓** and **↑** to specify an element index where you want the bar code scanner to end scanning. Any scan errors encountered are displayed on the Label Info screen (see [page 146](#)).

Home Gripper




The Home Gripper test closes and opens the gripper on the CHM.

To run the Home Gripper test, press  or  from the Diagnostics Menu to select Home Gripper and press .

Home CHM

During the Home CHM test, the following actions occur:

- The CHM moves in and out on the short (horizontal) axis.
- The CHM moves down and up on the long (vertical) axis.
- The drum assembly rotates to its home position (with cartridge magazine 0 toward the front).
- The CHM gripper closes and opens.

To run the Home CHM test, press  or  from the Diagnostics Menu to select Home CHM and press .

Cycle Pick/Place

The Cycle Pick/Place test picks a cartridge from the element you specify and places it back in the same element. The test repeats the number of times you specify. To run the Cycle Pick/Place test:

1. From the Diagnostics Menu, press **↑** or **↓** to select Cycle Pick/Place and press **Enter**. The library displays the following screen:

```
S e t   S o u r c e           0
      ↑   I n c r e a s e
      ↓   D e c r e a s e
```

2. Press **↓** and **↑** to select the element index (shown in the upper right corner) of the cartridge slot where you want the CHM to pick and place the cartridge.
3. Press **Enter**. The library displays the following screen:

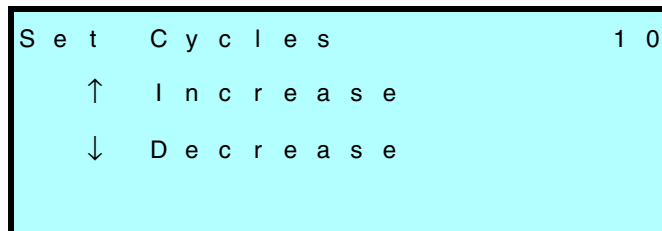
```
S e t   C y c l e s         1 0
      ↑   I n c r e a s e
      ↓   D e c r e a s e
```

4. Press **↓** and **↑** to select the number of cycles, in increments of ten, that you want the Cycle Pick/Place test to run.
5. Press **Enter**. The CHM picks and replaces the cartridge the number of times you specified.

Cycle Gripper

The Cycle Gripper test closes and opens the gripper the number of times you specify. For best results, move the CHM to the park position (as described below), so you can see the movement of the gripper through the library window.

1. From the Diagnostics Menu, press **↑** and **↓** to select Park and press **Enter**. The library moves the CHM to the park position (at the bottom of the long axis).
2. Press **Escape** to return to the Diagnostics Menu.
3. Press **↓** to select Cycle Gripper and press **Enter**. The library displays the following screen:



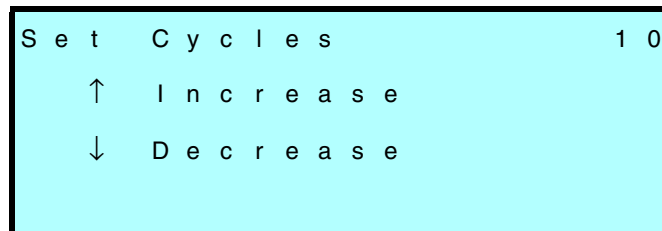
```
S e t   C y c l e s           1 0
  ↑   I n c r e a s e
  ↓   D e c r e a s e
```

4. Press **↑** and **↓** to select the number of cycles, in increments of ten, that you want the Cycle Gripper test to run. Press **Enter**.

Cycle S Axis

The Cycle S Axis test positions the CHM in front of the fixed cartridge slot and moves the CHM back and forth on the short axis the number of times you specify. To run the Cycle S Axis test:

1. From the Diagnostics Menu, press **↑** and **↓** to select Cycle S Axis and press **Enter**. The library displays the following screen:



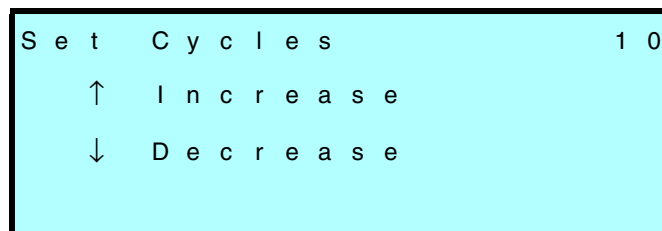
```
S e t   C y c l e s           1 0
  ↑   I n c r e a s e
  ↓   D e c r e a s e
```

2. Press **↑** and **↓** to select the number of cycles, in increments of ten, that you want the Cycle S Axis test to run and press **Enter**.

Cycle L Axis

The Cycle L Axis test moves the CHM up and down on the long axis the number of times you specify. To run the Cycle L Axis test:

1. From the Diagnostics Menu, press **↑** and **↓** to select Cycle L Axis and press **Enter**. The library displays the following screen:



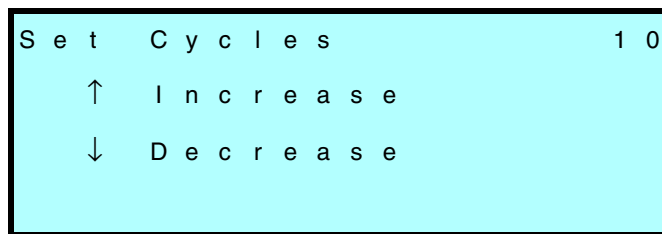
```
S e t   C y c l e s           1 0
  ↑   I n c r e a s e
  ↓   D e c r e a s e
```

2. Press **↑** and **↓** to select the number of cycles, in increments of ten, that you want the Cycle L Axis test to run and press **Enter**.

Cycle Solenoid

The Cycle Solenoid test exercises the solenoid that controls the locking mechanism on the front door. To run the Cycle Solenoid test:

1. From the Diagnostics Menu, press **↑** and **↓** to select Cycle Solenoid and press **Enter**. The library displays the following screen:



2. Press **↑** and **↓** to select the number of cycles, in increments of ten (up to 250), that you want the Cycle Solenoid test to run and press **Enter**. You will hear a clicking sound.

Cycle Drum

The Cycle Drum test rotates the drum assembly 180 degrees. To run the Cycle Drum test:

1. From the Diagnostics Menu, press **↑** and **↓** to select Cycle Drum and press **Enter**. The library displays the following screen:

```
S e t   C y c l e s           1 0
      ↑   I n c r e a s e
      ↓   D e c r e a s e
```

2. Press **↑** and **↓** to select the number of cycles, in increments of ten, that you want the Cycle Drum test to run and press **Enter**.

Cycle E/E

The Cycle E/E test exercises the entry/exit port transport assembly. To run the Cycle E/E test:

1. From the Diagnostics Menu, press **↑** and **↓** to select Cycle E/E and press **Enter**. The library displays the following screen:

```
S e t   C y c l e s           1 0
      ↑   I n c r e a s e
      ↓   D e c r e a s e
```

2. Press **↑** and **↓** to select the number of cycles, in increments of ten, that you want the Cycle E/E test to run and press **Enter**.

Configuring the serial ports for diagnostics

You can use one of the library's serial ports and a console interface program (such as CHSTERM) to access the library firmware. The console interface, also referred to as the *Diagnostic Console*, allows you to view information about the library, perform diagnostics tests, create diagnostic listings, and download new firmware. You can also use the library's serial ports to perform diagnostics on the tape drives.

The following table illustrates the functions you can perform using the serial ports. As the table indicates, unless you want to control the motion of the CHM, you do not need to switch to 9-Pin or 25-Pin Port control mode (for narrow libraries) or 25/9 Pin control mode (for wide libraries).



Function	Serial Port		Must change control modes?
	9-Pin	25-Pin	
Controlling the CHM for diagnostic purposes	✓	✓	✓
Upgrading library firmware	✓		
Creating diagnostic listings for the library	✓	✓	
Upgrading tape drive firmware	✓	✓	
Controlling the tape drives for diagnostic purposes	✓	✓	

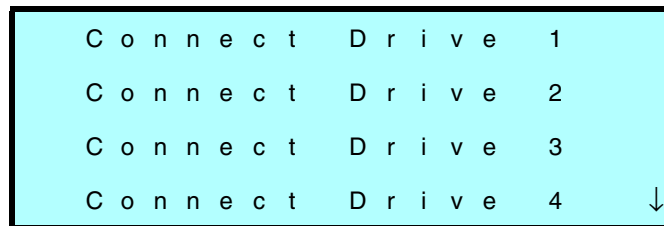
For detailed information about using the Diagnostic Console and the serial ports, refer to *Scalar AIT 440/480 Libraries Maintenance*. To configure the serial port:

1. Disable security (see [page 39](#)).

2. If you want to control CHM motion, change the control mode to the appropriate serial port mode (see [page 53](#)).

► **Important** Do not change to a serial port control mode if you want to connect a serial port to a tape drive.

3. From the Interface Menu, press  and  to select Config 25-Pin Port or Config 9-Pin Port (for narrow SCSI libraries) or Config 25/9 Pin Menu (for wide SCSI libraries). The library displays a screen similar to the following:



```
C o n n e c t   D r i v e   1
C o n n e c t   D r i v e   2
C o n n e c t   D r i v e   3
C o n n e c t   D r i v e   4   ↓
```

Note: An asterisk (*) indicates the current connection.

4. Press **↑** and **↓** to select one of the following options:
 - Connect Drive 1 (the top tape drive)
 - Connect Drive 2
 - Connect Drive 3
 - Connect Drive 4 (the bottom tape drive)
 - Diag Console (connect to the library's resident diagnostic program)

5. When you have selected the option you want, press **Enter**. The library assigns the port and displays a screen similar to the following (the ports and assigned devices may differ):

```
C h a n g e   p o r t   m o d e :  
P o r t :   2 5 - P i n  
N e w   M o d e :   D r i v e   1  
S t a t u s :   C h a n g e d
```

6. Press **↓** to select a baud rate for the port and press **Enter**. An asterisk (*) indicates the current connection.

The library assigns the baud rate and displays a confirmation message.

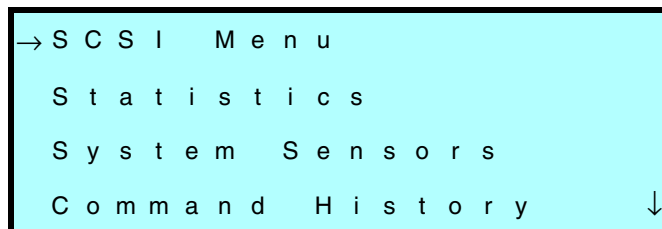
Notes

10 Using the Library Info Menu

This chapter describes how to use the Library Info Menu. The functions on this menu are mainly for use by technical support and application developers. If you are an end-user, you may be asked by technical support to display one of these screens and locate information that will help troubleshoot a problem.

Accessing the Library Info Menu

From the Main Menu, select Library Info Menu. The library displays the Library Information Menu:



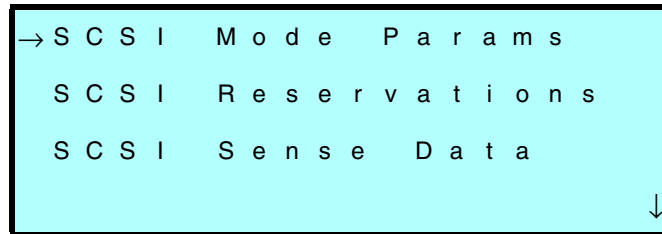
The Library Information Menu provides the following screens:

- The **SCSI Menu** contains information about SCSI mode parameters, reservations, and sense data (see [page 132](#)).

- The **Statistics** screens contain information about CHM operations and library elements (see [page 140](#)).
- The **System Sensors** screens contain information about the library's electro-mechanical sensors (see [page 142](#)).
- The **Command History** screen displays the contents of the history buffer (see [page 144](#)).
- The **Drive Info Menu** displays information about the tape drives (see [page 72](#)).
- The **Inventory Menu** displays information about bar code labels and the cartridge inventory (see [page 145](#)).

Using the SCSI Menu

From the Library Info Menu, select SCSI Menu. The library displays the SCSI Menu:



SCSI mode parameters

To view the SCSI Mode Parameters screen, select SCSI Mode Params from the SCSI Menu. The library displays the following screen:

E L E M E N T	A D D R	P A G E :
C H M	A d d r , C u r	n n
C H M	A d d r , D e f	n n
C H M	A d d r , S a v	n n ↓

Use this screen to check the settings of various operating mode parameters. These parameters are equivalent to the parameters reported by the library in response to a MODE SENSE command issued by the software application. Typically, the values of these parameters are changed by a MODE SELECT command.

The SCSI Mode Parameters screen provides the current (Cur), default (Def), and saved (Sav) values for each parameters listed below.

- The *current* value is the value currently active. It is either the power-on default or a temporary value set by the latest MODE SELECT command.
- The *default* value is the original value set at the factory.
- The *saved* value is the value specified as the power-on default by a MODE SELECT command. After a saved value has been specified with a MODE SELECT command, this value takes effect each time you power on the library.

Fields on SCSI Mode Parameters screen




SCSI Mode Parameters:	
CHM Addr*	The element address of the cartridge handling mechanism (CHM).
Stor Addr*	The element address of the first storage location, the fixed cartridge slot. The remaining cartridge slots are numbered consecutively.
Drive Addr*	The element address of the first tape drive (the top tape drive). The remaining tape drives are numbered consecutively.
Drive Num	The number of tape drives installed.
E/E Addr*	The element address of the entry/exit port.
Parity	Whether parity checking is enabled for the SCSI bus that is connected to the library. When the parity option is enabled, the library checks all data coming across the SCSI bus for parity.
Pty Retry	The number of times the library will retry a SCSI phase after detecting a parity error.
Security	Whether the SCSI security feature has been enabled by the application software or not. Note: Security can also be enabled from the LCD. For more information, see page 36 .
Write Line 1 <i>through</i> Write Line 4	Whether the text displayed on each of the four lines on the Main Screen is defined by the application software.

* When set to their default values, the element addresses reported on this screen are the same as the element indexes shown in [Appendix C](#). However, unlike element indexes, which cannot be changed, addresses can be changed by the application software using a MODE SELECT command.

SCSI reservations

Use these screens to check if the library or its elements are reserved for exclusive use by a host computer. Elements are reserved and released by the application software using the RESERVE and RELEASE SCSI commands.

You may want to view SCSI reservations if you are operating the library in a multi-host environment and you want to determine which elements are reserved for operations under which host. Multiple hosts can reserve different elements within a single library. For example, one host may reserve cartridge slots 1 through 10 for its exclusive use, while a second host may reserve slots 11 through 20. To view SCSI reservations:

1. From the Library Info Menu, select SCSI Menu.
2. From the SCSI Menu, select SCSI Reservations. The library displays the Unit Reservation screen.
3. To display the Element Reservations screen, press .
4. Press  and  to cycle through all element numbers.

Unit Reservation screen

```
UNIT RESERVATION :  
Unit Reserved : 0  
Host ID : 0  
↓
```

Element Reservations screen

```
ELEM RESERVATIONS ↑  
Elem Elem Host Res  
Addr Type ID ID  
n SLOT - NONE - ↓
```

Fields on Reservation Status screens

Unit Reservation:	
Unit Reserved	The library's reservation status: 0 – The entire library is not reserved. 1 – The entire library is reserved.
Host ID	The SCSI ID of the host reserving the library.
Elements Reservations:	
Elem Addr	The current address of this element.*
Elem Type	Slot, tape drive, CHM, or entry/exit port.
Host ID	The SCSI ID of the host reserving the element.
Res ID	The ID that the element is reserved under, assigned by the host when the reservation was made.

* The Element Reservation screen displays the element addresses currently set by the MODE SELECT command. If no element addresses were set, the default element addresses appear.

SCSI sense data

Sense data provides information to help diagnose problems with the library. This is a subset of the data that is returned to a host when it issues a REQUEST SENSE command to the library. To view the sense data:

1. From the Library Info Menu, select SCSI Menu.

- From the SCSI Menu, select SCSI Sense Data. The library displays the following screen:

S e n s e	D a t a ,	I D	<i>n</i>
K e y	0 h	B y t e 1 5	0 0 h
A S C	0 0 h	B y t e 1 6	0 0 h
A S C Q	0 0 h	B y t e 1 7	0 0 h





The ID at the top of the display (*n*) is the SCSI ID of the host that the sense data is being held for. (Note that sense data is supplied for inactive IDs as well as active IDs.)

Fields on SCSI Sense Data screens

SCSI Sense Data:	
KEY	<p>This is the sense key returned by the REQUEST SENSE command, as follows:</p> <p>0h–No Sense. There is no specific sense key information to report.</p> <p>2h–Not Ready. The library is not ready to perform motion commands.</p> <p>4h–Hardware Error. The library detected a hardware failure while performing the command or during a self-test. Operator intervention may be required.</p> <p>5h–Illegal Request. There was an illegal parameter in the command descriptor block or in the additional parameters supplied as data for a command, or the library is in the wrong mode to execute the command.</p> <p>6h–Unit Attention. The cartridge inventory may have been violated.</p> <p>Bh–Aborted Command. The library aborted the command. The initiator may be able to recover by trying the command again.</p>
ASC	This is the Additional Sense Code, which, along with the Additional Sense Code Qualifier, provides information describing a specific error condition.
ASCQ	This is the Additional Sense Code Qualifier, which, along with the Additional Sense Code, provides information describing a specific error condition.
Byte 15	This is the Sense Key Specific data, which provides additional information about an error condition. This information is valid only for the Illegal Request (5h) sense key.
Byte 16	This is the first byte of the Field Pointer data. It indicates which byte in the command had an error.
Byte 17	This is the second byte of the Field Pointer data.

Viewing statistics

The Statistics screens contain selections for reviewing information about CHM movements and for reviewing information about elements. To view statistics:

1. From the Library Info Menu, select Statistics. The library displays the System Statistics screen.
2. To display the Element Statistics screen, press  or  to scroll past the last item on the System Statistics screen.
3. Press  or  to scroll through the element numbers.

System Statistics screen

```
SYSTEM STAT TOTALS :  
M o v e s                7 1 0 7  
P i c k   R e t r y      0  
P u t   R e t r y      0 ↓
```

Element Statistics screen


```
ELEM STATS , INX = 0 : ↑  
T o t a l   P u t s :      0  
R e t r i e s :   P i c k   0  
P u t           0   S c a n   0 ↓
```

Fields on Statistics screens

System Statistics:	
Moves	The number of times the CHM has picked a cartridge and placed it in a slot or tape drive.
Pick Retry	The number of moves that required retries picking a cartridge.
Put Retry	The number of moves that required retries placing a cartridge.
Scans	The number of times the library scanned a bar code label.
Scan Retry	The number of times the library retried scanning a bar code label.
Scan Fail	The number of times the library was unable to scan a bar code label. The library tries to scan a bar code six times before it logs a failure.
E/E Cycles	The number of times the entry/exit port has been extended and retracted.
Element Statistics:	
Total Puts	The number of times a cartridge was placed in the element since the library was turned on.
Retries: Pick	The number of times the library retried picking a cartridge from the element.
Retries: Put	The number of times the library retried placing a cartridge in the element.
Retries: Scan	The number of times the library retried scanning the element.

Viewing system sensors

The System Sensors screens enable you to troubleshoot hardware problems by checking the current status of the library's internal mechanical sensors. To view system sensors:

1. From the Library Info Menu, select System Sensors. The library displays the Digital Sensors screen.
2. To display the Analog Sensors screen, press .

Digital Sensors screen

```
D I G I T A L   S E N S O R S :  
D o o r   C l o s e d           1  
K e y   l o c k                 1  
G r i p p e r   H o m e       0 ↓
```

Analog Sensors screen



```
A N A L O G   S E N S O R S           ↑  
T e m p e r a t u r e :   2 3 C  
+ 1 2 V :                   1 1 8 1 6   m V  
- 1 2 V :                   - 1 2 2 3 3   m V ↓
```

Fields on System Sensors screens

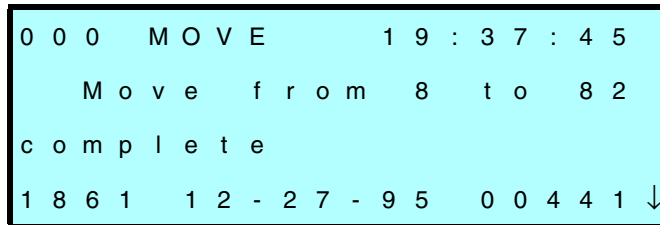
Digital Sensors:	
Door Closed	Indicates whether the front door is closed (1) or not (0).
Key lock	Indicates whether the front door is locked (1) or not (0).
Gripper Home	Indicates whether the gripper is located in its home position (1) or not (0). The gripper's home position is open.
Cart Seated	Indicates whether the cartridge is seated in the CHM (1) or not (0).
Drum Axis Home	Indicates whether the drum is located in its home position (1) or not (0). The drum axis's home position is with mounting plate 0 toward the front.
E/E Port Home	Indicates whether the entry/exit transport arm is in its home position (1) or not (0). The entry/exit transport arm's home position is with the arm retracted from the entry/exit port.
E/E Limit	Indicates whether the entry/exit transport arm is retracted (0) or extended to the entry/exit port (1).
Analog Sensors:	
Temperature	Indicates the temperature of the library in degrees Celsius.
+12V	Indicates the output of the +12-volt power supply in millivolts.
-12V	Indicates the output of the -12-volt power supply in millivolts.
+24V	Indicates the output of the +24-volt power supply in millivolts.

Viewing command history

The Command History screen displays the most recent 300 events that have occurred in the library. You may be asked by a technical support person to scroll through this display looking for particular events. To display the Command History screen:

1. From the Library Info Menu, select Command History.
2. Press  and  to scroll through the events.

Command History screen



```
0 0 0  M O V E      1 9 : 3 7 : 4 5
      M o v e  f r o m  8   t o  8 2
c o m p l e t e
1 8 6 1  1 2 - 2 7 - 9 5  0 0 4 4 1 ↓
```

Fields on Command History screen

Command History:		
Example	Field	Description
000	IDX (Index)	The number of this event in the command history. The range is 000 (the most recent event) through 299. The most recent event is displayed first.
MOVE	From	The process name that caused this event.
19:37:45	Time	The time, according to the library's internal clock, that the event took place.
Move from 8 to 82 complete	Description	Description of the event.
1861	Line	The line number of the source code that caused this event.
12-27-95	Date	The date, according to the library's internal calendar, that the event took place.
04441	Seq	The sequence number of this event across all system buffers.

Using the Inventory Menu

The library maintains a cartridge inventory in nonvolatile RAM and uses the information to process SCSI commands from the application software.

The inventory contains information about all element locations:

- CHM (the medium transport element)
- Entry/exit port (the import/export element)
- Cartridge slots (the storage elements)
- Tape drives (the data transfer elements)

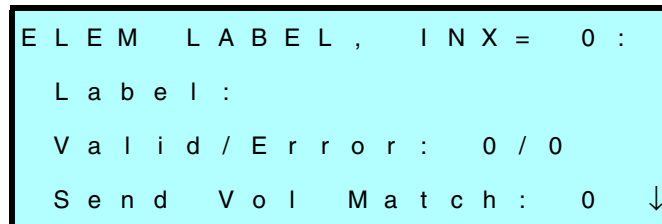
The Inventory Menu allows you to display the following information:

- **Bar code label information.** This includes data about whether the bar code scanner could accurately scan the label.
- **Element occupied information.** This includes data about whether the element contains a cartridge and whether a magazine or tape drive is installed.
- **Element position information.** This includes data about the exact position of each element.



Bar code label information

To display bar code label information:

1. From the Library Info Menu, select Inventory Menu.
2. From the Inventory Menu, select Label Info. The library displays the following screen:



```
E L E M L A B E L , I N X = 0 :  
L a b e l :  
V a l i d / E r r o r : 0 / 0  
S e n d V o l M a t c h : 0 ↓
```

3. Press  and  to scroll through the information for each element index.

Fields on Label Info Screen



Label Info:	
INX	Indicates the element index for which information is being displayed.
Label	If the element location contains a cartridge for which the bar code label has been scanned, contains the cartridge label.
Valid	Indicates whether the Label field is accurate: 0 – The Label field is not accurate. 1 – The Label field is accurate.
Error	Indicates whether the bar code scanner was unable to read the cartridge label: 0 – The bar code scan was successful, a reset condition occurred, or the door was opened. 0 – The bar code scanner could not read the bar code label because there was no label on the cartridge. 61 – The bar code scanner could not read the bar code label because the label was unreadable. 62 – The bar code scanner could not read the label because the magazine or tape drive is not installed. 65 – The bar code scanner could not read the bar code label because a Direct Memory Access overrun occurred. 67 – The bar code scanner could not read the bar code label because DMA channel 2 timed out. 69 – The bar code scanner could not read the bar code label because the label was upside down or misplaced.
Send Vol Match	Indicates whether the cartridge label matched the template sent with the last SEND VOLUME TAG SCSI command: 0 – The label did not match the template. 1 – The label matched the template.

Element occupied information

To display information about elements in the library:

1. From the Library Info Menu, select Inventory Menu.
2. From the Inventory Menu, select Occupied Info. The library displays the following screen:

```
E L E M   O C C U P ,   I N X =   0 :  
A d d r / S r c :           0 / 2 5 5  
O / V / P / A :   0 / 1 / 1 / 1  
C T S / W a r n i n g :   0 / 0   ↓
```

3. Press  and  to scroll through the information for each element index.

Fields on Element Occupied screen

Element Occupied:	
INX	Indicates the element index for which information is being displayed.
Addr (Address)	Indicates the SCSI address of this element.
Src (Source)	Indicates the index of the last storage element from which the cartridge was moved.
O (Occupied)	Indicates whether the library considers the specified element location to contain a data cartridge: 0 – The element location does not contain a data cartridge. 1 – The element location contains a data cartridge.
V (Valid)	Indicates whether the Occupied flag is accurate: 0 – The Occupied flag is questionable (may not be accurate). 1 – The Occupied flag is accurate.
P (Present)	Indicates whether a specific magazine or tape drive is installed. If the element index references a storage element, this flag indicates whether that particular magazine is installed. If the element index references a tape drive, this flag indicates whether that particular drive is installed. 0 – Not installed. 1 – Installed. Note: This flag is not used for the CHM or the entry/exit port.
A (Accessible)	Indicates whether a drive is empty, a cartridge is loaded in the drive, or the cartridge is ejected: 0 – A cartridge may be loaded in the drive. 1 – The drive is empty, or the cartridge is ejected and ready to be picked.
CTS	Indicates whether the element is a tape drive: 0 – The element is a tape drive. 1 – The element is not a tape drive.
Warning	Not currently used.


Element position information

To display information about the position of elements in the library:

1. From the Library Info Menu, select Inventory Menu.
2. From the Inventory Menu, select Position Information. The library displays the following screen:

```

E L E M   P O S ,       I N X =   0 :
  L o n g   A x i s :       6 3 9 5
  D e p t h :                0
  D r u m   A x i s :       0   ↓
```

3. Press  to scroll through the information for each element index.

Fields on Element Position screen

Element Position:	
INX	Indicates the element index for which information is being displayed.
Long Axis	The distance the CHM has to move along the long axis from its home position to the specified element location.
Depth	For storage elements, the distance the CHM has to move along the short axis from its home position to touch the magazine or a data cartridge in the magazine. (This field is not used for the tape drives, CHM, or entry/exit port.)
Drum Axis	For storage elements, this element's rotational position on the drum.

11 Troubleshooting

This chapter provides a list of suggestions for solving problems that may occur when you are installing and operating the library and enclosed tape drives. The instructions in this chapter are basic troubleshooting guidelines. For more advanced troubleshooting, contact your service provider.

Note: If an error code is displayed on the LCD, refer to [Appendix B](#). If LEDs are flashing on the tape drives, refer to [page 67](#).

Problems with installation

If your library and application software are not communicating after installation, check the following:

- **Single-ended and differential SCSI-2 devices.** If the library is equipped with AIT-1 drives, make sure all devices (including cables and terminators) are differential Fast/Wide SCSI-2. Do not mix single-ended and differential devices on a SCSI-2 bus. If the library is equipped with AIT-2 drives, the devices (including cables and terminators) may be HVD, LVD, or Single-ended LVD Wide Ultra SCSI.

- **Single-ended and differential Wide Ultra SCSI devices.** If the library is equipped with AIT-2 drives, the devices (including cables and terminators) may be HVD, LVD, or Single-ended LVD Wide Ultra SCSI. If using an HVD Wide Ultra SCSI bus, all devices must be HVD Wide Ultra SCSI. If using an LVD Wide Ultra SCSI bus, all devices should be LVD Wide Ultra SCSI, however, if any single-ended device is attached to the LVD bus, the entire bus will switch to single-ended mode.
- **Narrow SCSI-2 and Wide SCSI-2.** If the library is equipped with AIT-1 drives, make sure all devices within the library are Wide SCSI-2. Do not mix Narrow SCSI-2 and Wide SCSI-2 devices within the library.
- **Differential SCSI-2 cable lengths.** Make sure that the total length of all internal and external cables on the SCSI-2 bus does not exceed 25.0 meters (82 feet). See [page 159](#) for instructions for calculating the total cable length.
- **Wide Ultra SCSI cable lengths.** Make sure that the total length of all internal and external cables on the SCSI bus should not exceed 25.0 meters (82 feet) if HVD and 12 meters (41 feet) if LVD. If an LVD bus is used, and a single-ended device is attached, the entire bus switches to single-ended mode. In this instance, the total length of all internal and external cables on the SCSI bus should not exceed 1.5 meters (4.9 feet) if five or more devices are attached, and 3 meters (9.8 feet) if four or less devices are attached. See [page 159](#) for instructions for calculating the total cable length.
- **Termination.** All termination must be external. It is necessary to use a passive terminator on all differential buses.
- **SCSI bus connections.** Make sure that all SCSI cables and terminators are securely connected to the appropriate SCSI connectors on the back of the library. See [page 25](#) for more information.

- **SCSI IDs.** Make sure that the SCSI IDs you selected for the tape drives and library are not the same as the ID used by any other SCSI device on that bus, including the SCSI adapter card. The library does not check for duplicate IDs. See [page 37](#) for instructions.
- **Compatibility.** Make sure that your tape drive and library are compatible with the SCSI adapter card and application software you plan to use.
- **SCSI adapter card installation.** Make sure that you installed your SCSI adapter card or cards correctly. Refer to the documentation that came with your card for installation and troubleshooting instructions. Pay special attention to steps describing setting various jumpers and switches on the card. Make sure that the card is properly seated.
- **Software installation.** Make sure that your application software is installed correctly. Refer to the documentation that came with your software.
- **Control mode.** Make certain the library is operating in the correct control mode. When a software application is controlling the CHM, the library must be set to SCSI Interface control mode. See [page 53](#) for more information.

After checking these items, make sure there is no SCSI activity, then press **Reset** on the operator panel. Retry your operation.

Problems with tape drive operation

If you have been successfully operating the application software and library in the past, but are now experiencing problems reading and writing data, check the following:

- **Write-protect switch.** If you are writing data, make sure that the cartridge is write enabled. See [page 18](#) for instructions.
- **Cartridge brand.** Check the brand of cartridge you are using. Use Sony AIT data cartridges only. See [page 55](#) for more information.
- **Cartridge age.** If the cartridge has been in use for a long time or if it has been used frequently, try using a new cartridge.
- **Tape drive cleaning.** Clean the tape drive. See [page 69](#) for instructions. Make sure you are using the recommended cleaning cartridge for your tape drive. See [page 72](#) for details.
- **Use AIT option.** Make sure that the Use AIT configuration option is set to ON, as described on [page 40](#). Otherwise, the library will not be able to receive information from the tape drive.

Problems with library operation

If the library has been successfully operating in the past, but is now experiencing problems, check the following:

- **Control mode.** Make sure the library is operating in the correct control mode. The library must be in SCSI Interface mode for the application software to control CHM motion. See [page 53](#) for instructions.
- **Security.** Make sure that security is set correctly for the operation you are trying to perform. If security is on, you cannot perform many operations from the LCD. Security can be set from the LCD with a password or from SCSI by the application software. See [page 39](#) for more information.
- **Door open.** Check to make sure that the door is closed and locked.

- **Fuse.** Check to make sure that the fuse is good. See [page 85](#) for instructions.

If you cannot resolve the problem...

If you cannot resolve the problem, call your service provider. Before calling, gather the following information:

- **For the library:** serial number (found on the Serial Number screen on the LCD or on the rear panel), firmware number (found on the Main Screen of the LCD), and SCSI configuration (single-ended or differential, narrow or wide).
- **For the tape drives:** model, serial numbers (found on the top of the tape drive housing) and FECODE and EECODE numbers (found on the top of the tape drive housing).
- **For the host computer:** operating system, computer brand name and model, type of host bus adapter card installed, and application software name and version number.

Notes

A Specifications

General specifications

Capacity	Up to 8.0 terabytes, on 80 SDX2-50C data cartridges (230 meter) written in compressed format
Interface	SCSI-2, Fast/Wide, HVD when equipped with AIT-1 drives Ultra SCSI, Wide, HVD or LVD when equipped with AIT-2 drives
Maximum sustained data transfer rate*	2.0 MB per second

* Assumes an average compression ratio of 2:1.

Physical characteristics

Size	15.75 in. high × 8.50 in. wide × 19.11 in. long (40.01 × 21.59 × 48.53 cm)
Weight	38.9 pounds (17.6 kilograms) with tape drive

Operating environment

Ambient temperature range	+5°C to +35°C (+41°F to +95°F)
Relative humidity range	20% to 80%, non-condensing
Wet bulb temperature	26°C (79°F) max

Power

Input voltages	Accepts 120 or 240 VAC at 50 to 60 Hz; automatic input voltage selection
Power consumption	46 watts minimum; 60 watts maximum.

SCSI cable specifications

The page break that forced this section to a new page was setting the Page Break option under the Special menu. If you plan to use your own SCSI cable, make certain it meets the specifications listed below.

Cable feature	Requirement
Standard Construction	68 conductors (25 twisted pairs with drain wire and shield)
Primary Conductors	Insulated per UL Style 1589 Gauge: #28 AWG minimum stranded (7/34) annealed, tinned copper Insulation: Polypropylene (80° C) 0.010 inch nominal
Shielding	80% minimum tinned copper braid over aluminum/mylar foil
Outer Jacket	Insulated per UL Style 2919, Polyvinyl Chloride (80° C)
Voltage Rating	30 VAC
Impedance	100 Ohms 10% @ 1.5 Mhz
Grounding	Case-to-case grounding
Connector	68-contact Amphenol 57F series male connector
Maximum length	25 meters (82 feet) for HVD SCSI-2 configurations 25 meters (82 feet) for HVD Ultra SCSI configurations 12 meters (41 feet) for LVD Ultra SCSI configuration

SCSI terminator specifications

You can use one of the following types of terminators:

Differential external terminator

- When the library is equipped with AIT-1 drives, or AIT-2 drives operating in HVD mode, use ADIC p/n 61-1140-01A
- When the library is equipped with AIT-2 drives operating in LVD mode, use ADIC p/n 61-3020-01

Power cord requirements

The library includes an appropriate power cord for United States and Canada shipments, and for some international shipments.

United States and Canada

The library is shipped with a seven-foot (2.1 meter), three-conductor AC power cord for 120-volt use in the United States and Canada. If you plan to use a 220-volt AC power cord, make certain it meets the following criteria:

- A molded NEMA 6-15P attachment plug on one end and a molded IEC type CEE-22 female connector on the other end
- An SJT or SVT type, three-conductor, 18 AWG minimum
- Compliance with local electrical code

Outside the United States and Canada

When using the library outside the United States and Canada, make certain the power cord consists of:

- Attachment plug of the proper type, rating, and safety approval for the intended country
- Female connector, IEC type CEE-22, on one end
- Electrical cable, type HD21

Notes

B LCD Error Codes

This appendix describes the error codes that appear on the library's LCD (liquid crystal display). The error codes are listed in numerical order. LCD error codes do not reflect tape drive errors.

CAUTION

Library components can be replaced only by ADIC-approved service providers. If you cannot find an obstruction or other obvious cause for the error, contact your service provider. Do not attempt to replace any components in the library other than the tape drives, drive blanks, fuse, or air filters. If you do so, you may void your warranty.

If you reset the library, you may disrupt communications on all connected SCSI buses. Make sure there is no SCSI activity on any connected SCSI bus before resetting the library.

The columns in the table indicate the following:

- **Error.** The error code number, which appears on the library's operator panel LCD when the error occurs.
- **Description.** The error message that appears on the LCD, followed by a more complete description of the error.
- **Corrective Action.** The recommended corrective action or actions.

Error	Description	Corrective Action
10	DROPPED A CARTRIDGE. The CHM dropped a cartridge.	If the cartridge label was removed, make sure that there is no label adhesive remaining on the cartridge. If the label was not removed, contact your service provider. CAUTION: Do not try to put the cartridge back in the gripper.
11	SOURCE EMPTY. There is no cartridge in the source location.	Install a cartridge in the source location, or redirect the CHM to another location.
12	DESTINATION FULL. A cartridge already exists in the destination location.	Remove the cartridge from the destination, or redirect the CHM to another location.
13	PUT MECH. FAILURE. The CHM could not successfully place a cartridge because of mechanical problems.	Make sure there is nothing blocking the CHM or the tape drives. If the error persists, contact your service provider.
14	PICK MECH. FAILURE. The CHM could not successfully pick a cartridge because of mechanical problems.	
15	NO SRC ELEMENT; NO DEST	Install a data cartridge magazine or redirect the CHM.
16	ELEMENT. No data cartridge magazine was installed at the selected location.	

Error	Description	Corrective Action
17	CHM FULL BEFORE MOVE. There was a cartridge in the gripper when the operator powered-on or reset the library, or before a move operation.	Remove the cartridge and put it back in the cartridge magazine if you know where it goes. Make sure the library and tape drives are not being used by any host, then press Reset on the operator panel. If the error persists, contact your service provider.
18	SRC CART INSIDE CTS. The CHM could not successfully pick a cartridge because it was still loaded in the tape drive.	Press the tape drive eject button and wait for the cartridge to be unloaded, or redirect the CHM to another location.
19	PICK MECH. FAILURE. The CHM could not successfully pick from a full cartridge slot.	Open the door and look for anything that might be obstructing the gripper.
21	GRIP HOME ERROR. A gripper error occurred.	Make sure the library and tape drives are not being used by any host, then press Reset on the operator panel. If the error persists, contact your service provider.
22	GRIP MOTION TIMEOUT. A gripper motion took longer than the maximum time allocated for it. When motion functions do not complete in the allocated time, the current to the servo motors is shut off.	
25	PICK STALL. The CHM stalled while trying to pick a cartridge from the tape drive.	
26	CANNOT OPEN GRIPPER. The gripper could not open.	
30	S AXIS DOES NOT MOVE. The CHM could not move along the short axis.	Open the door and look for anything that might be obstructing the CHM along its short axis.
31	S AXIS FAILED HOME. The CHM could not return to the home position along the short axis.	Make sure the library and tape drives are not being used by any host, then press Reset on the operator panel. If the error persists, contact your service provider.

Error	Description	Corrective Action
36	S LM629 RESET FAIL. The library could not reset the servo chip for the short axis.	Make sure the library and tape drives are not being used by any host, then press Reset on the operator panel. If the error persists, contact your service provider.
38	CANNOT LOAD DRIVE. The CHM could not load the cartridge into the tape drive. (It could not move in far enough on the short axis.)	<ul style="list-style-type: none"> ▪ Open the door and look for anything that might be obstructing the CHM along its short axis. ▪ Make sure that a cartridge is not already loaded in the tape drive. ▪ Make sure that the flap on the cartridge is closed. ▪ Make sure the library and tape drives are not being used by any host, then press Reset on the operator panel. If the error persists, contact your service provider.
40	L AXIS DOES NOT MOVE. The CHM could not move along the long axis.	Open the door and look for anything that might be obstructing the CHM along its long axis.
41	L AXIS FAILED HOME. The CHM could not return to the home position on the long axis.	Make sure the library and tape drives are not being used by any host, then press Reset on the operator panel. If the error persists, contact your service provider.
46	L LM629 RESET FAIL. The library could not reset the servo chip for the long axis.	Make sure the library and tape drives are not being used by any host, then press Reset on the operator panel. If the error persists, contact your service provider.
50	D AXIS DOES NOT MOVE. The drum could not move on its axis.	Open the door and look for any obstructions around the drum. If there are no obstructions, contact your service provider.
51	D AXIS FAILED HOME. The library could not determine the home position for the drum.	Contact your service provider.

Error	Description	Corrective Action
60	NO LABEL. The bar code scanner could not read the bar code label because there was no label on the cartridge.	If present, this error appears on the Label Info screen. If the cartridge does not have a label, place a label on the cartridge. If the cartridge does have a label, reposition or replace it. If the error persists, contact your service provider.
61	READ ERROR. The bar code scanner could not read the bar code label because the label was unreadable.	
62	NOT PRESENT. The bar code scanner could not read the bar code labels because there was no data cartridge magazine present.	If present, this error appears on the Label Info screen. If necessary, install a data cartridge magazine.
65	DMA OVERRUN. The bar code scanner could not read the bar code label because a Direct Memory Access overrun occurred.	If present, this error appears on the Label Info screen. Make sure the library and tape drives are not being used by any host, then press Reset on the operator panel.
67	DMA CH. 2 TIMEOUT. Controller board error.	If the error persists, contact your service provider.
69	LABEL UPSIDE DOWN. The bar code scanner could not read the bar code label because the label is upside down.	If present, this error appears on the Label Info screen. Remove the label and reposition it on the cartridge. If the label is affixed correctly, contact your service provider.
70	L SERVO TIMEOUT. The CHM could not reach its destination along the long axis.	Open the door and look for anything that might be obstructing the CHM along its long axis. Make sure the library and tape drives are not being used by any host, then press Reset on the operator panel. If the error persists, contact your service provider.
71	PARAMETER > LIMIT. Firmware error.	Make sure the library and tape drives are not being used by any host, then press Reset on the operator panel. If the error persists, contact your service provider. You may be asked to supply a diagnostic listing, and you may need new firmware.

Error	Description	Corrective Action
72	FRONT DOOR OPEN. The front door is open or the door solenoid is malfunctioning.	<ul style="list-style-type: none"> ▪ Close and lock the door. ▪ If the error still appears, make sure the library and tape drives are not being used by any host, then press Reset on the operator panel. ▪ If the error persists, contact your service provider.
73	S SERVO TIMEOUT. The CHM could not reach its destination along the short axis.	<p>Open the door and look for anything that might be obstructing the CHM along its short axis.</p> <p>Make sure the library and tape drives are not being used by any host, then press Reset on the operator panel. If the error persists, contact your service provider.</p>
75	INTERNAL S/W ERROR. Firmware error.	<p>Make sure the library and tape drives are not being used by any host, then press Reset on the operator panel.</p> <p>If the error persists, contact your service provider. You may be asked to supply a Diagnostic listing, and you may need new firmware.</p>
76	POS ERROR TIMEOUT. The CHM could not reach its destination along the long axis.	<p>Open the door and look for anything that might be obstructing the CHM along its long axis.</p> <p>Make sure the library and tape drives are not being used by any host, then press Reset on the operator panel. If the error persists, contact your service provider.</p>
77	INTERFACE DISABLED. The library was not in the correct control mode when the operator sent a command.	<p>Make certain the library is in the correct control mode. If it is, contact your service provider.</p>

Error	Description	Corrective Action
80	E/E FAILED TO EXTEND. The entry/exit port could not be extended.	Open the door and look for obstructions around the entry/exit transport arm. If there are no obstructions, contact your service provider.
81	E/E FAILED TO RETURN. The entry/exit port could not be retracted.	
90	INVALID BLANK CONFIG. The drive blank configuration is invalid.	This error applies to earlier models of the library only. If you operate the library with fewer than four drives, you must have drive blanks installed in the empty slots. Tape drives must be installed in contiguous slots, starting with the top slot.
91	OPERATOR ABORTED. A diagnostic was aborted while it was in progress.	No corrective action required.
97	DRIVE NOT INSTALLED. The tape drive could not be cleaned because no tape drive is installed in this location.	This error only appears on the Clean Drives Menu. If no tape drive is installed in the location, redirect the CHM. If a tape drive is installed, make sure that the drive carrier is correctly seated. If the error persists, contact your service provider.
98	NO MAGAZINE. There is no magazine installed in this location.	If no magazine is installed in that location, redirect the CHM. If a magazine is installed, make sure that it is correctly seated on the mounting plate. If the error persists, contact your service provider.
101	DRUM MOVE, SAXIS EXT. The CHM could not move along the short axis.	Open the door and look for anything that might be obstructing the CHM along its short axis. Make sure the library and tape drives are not being used by any host, then press Reset on the operator panel. If the error persists, contact your service provider.
104	DRIVE DID NOT EJECT. The CHM timed out waiting for a tape drive to eject a cartridge.	There may be a problem with the tape drive. Contact your service provider.

Error	Description	Corrective Action
105	480 KEY NOT PRESENT. The library is missing the hardware key. (This error applies to the Scalar AIT 480 only.)	<p>Reseat the hardware key on the controller card at the rear of the library.</p> <p>Make sure the library and tape drives are not being used by any host, then press Reset. If the error persists, contact your service provider.</p>
108	INCOMPATIBLE BOOT ROM. The installed boot ROM is not compatible with the flash EEPROM code.	<p>You do not have the correct boot ROM for the firmware you are trying to run in your library.</p> <p>Contact your service provider.</p>
109	CHECK CLEANER. The cleaning cartridge was ejected immediately after being loaded into the tape drive.	<p>Replace the cleaning cartridge and try cleaning the tape drive again. Make sure you are using the correct type of cleaning cartridge for your tape drive. If the error persists, contact your service provider.</p> <p>Note: This error is only displayed if the cleaning was requested from the LCD.</p>
130	FAS216 ERROR; SCSI UNEXPECTED INT; SCSI INT STUCK ERROR. There is a SCSI chip failure.	<p>Make sure the library and tape drives are not being used by any host, then press Reset on the operator panel.</p> <p>If the error persists, contact your service provider. You may be asked to supply a Diagnostic listing to for diagnosis, and you may need a new controller card.</p>
131		
132		
133		
134		
135		
136		
137		

C Library Elements

The library contains four types of elements:

- The CHM is the *medium transport element*.
- The entry/exit port is the *import/export element*.
- The cartridge slots are the *storage elements*.
- The tape drives are the *data transfer elements*.

Each element has an element index, which is the number you must specify when you use the entry/exit port or perform positioning or pick and place functions from the LCD. Element indexes are the same as the default element addresses used in SCSI commands.

[Figure C-1 on page 172](#) shows the element indexes for the Scalar AIT 440. [Figure C-2 on page 173](#) shows the element indexes for the Scalar AIT 480.

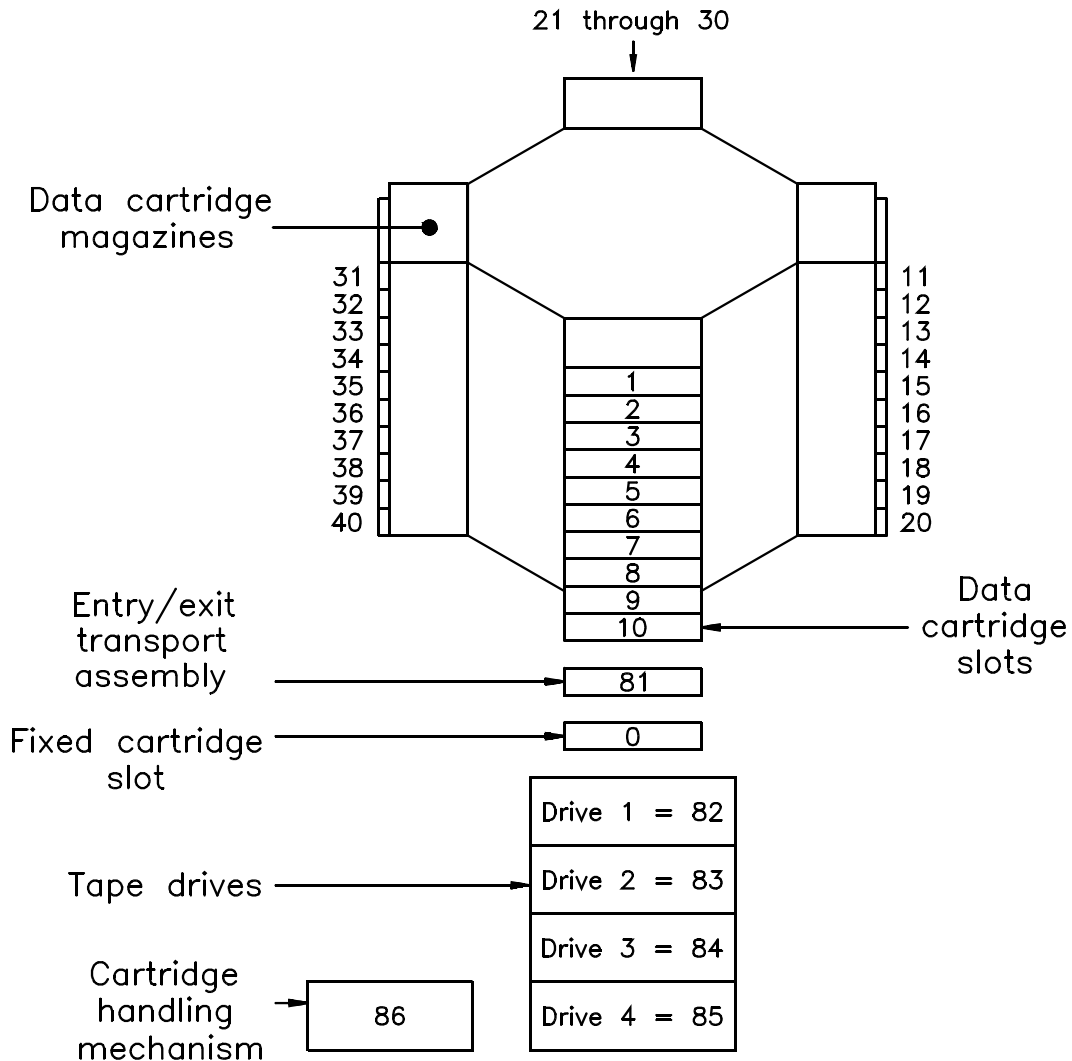


Figure C-1 Element indexes for Scalar AIT 440 (identical to the element addresses)

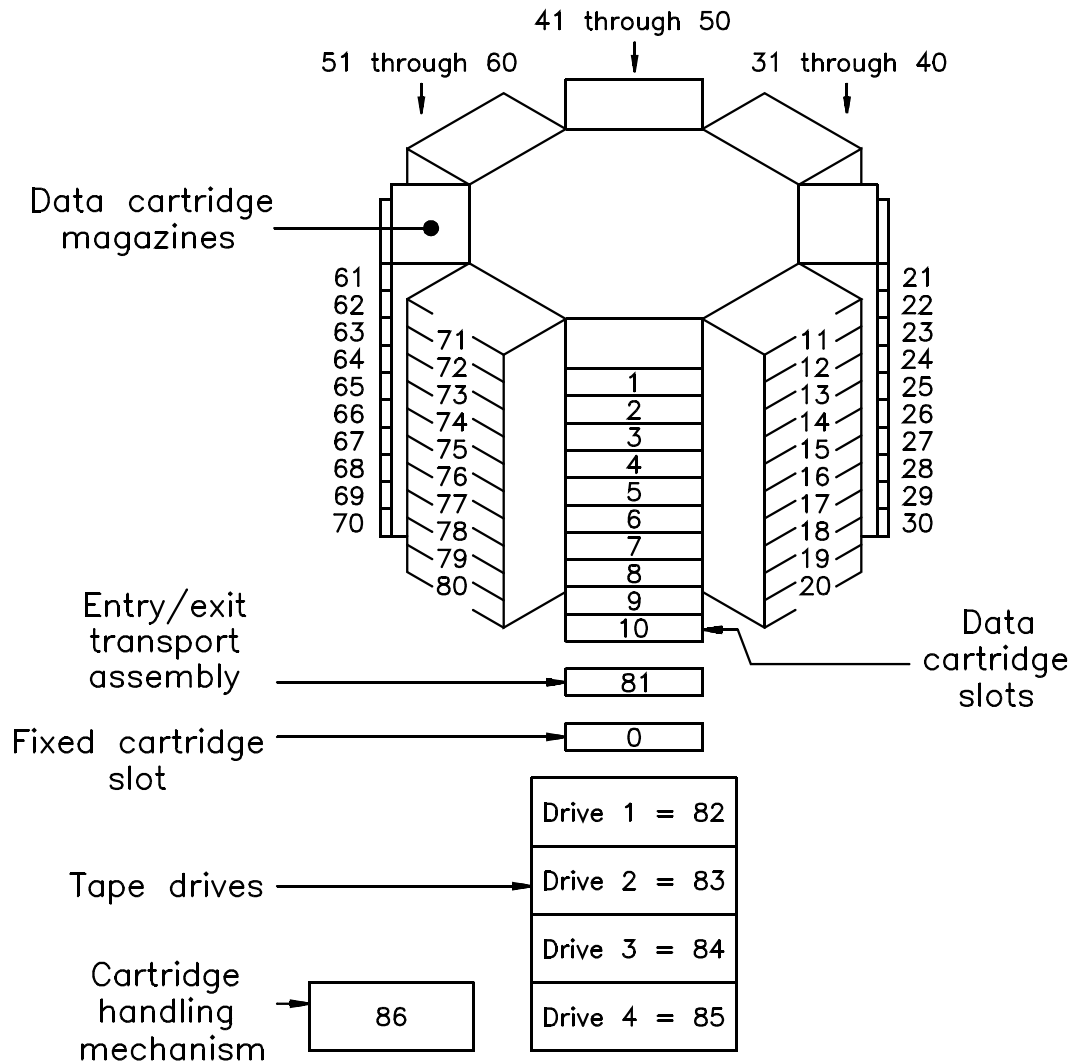


Figure C-2 Element indexes for Scalar AIT 480 (identical to the element addresses)

Notes

Index

#

- 19-inch EIA rack 8
- 25/9 pin control mode 53
- 25-pin serial port
 - control mode 53
 - described xviii
 - tape drive diagnostics 67
- 9-pin port
 - control mode 53
- 9-pin serial port
 - described xviii
 - tape drive diagnostics 67

A

- Aborted Command sense key 139
- Accessible field 75, 149
- accessories
 - ordering more xiii, xxiii
 - shipped with library 2
 - shipping 91, 101
- active termination 25
- additional sense code (ASC) 139
- additional sense code qualifier (ASCQ) 139
- agency standards iii
- air filter, replacing 87–89
- altitude specification 157–158
- Analog Sensors screen 142
- ASC 139
- ASCQ 139
- autoranging voltage selection 28

B

- back light 42
- bar code label
 - affixing 16
 - displaying on LCD 146
 - viewing on LCD 147
- bar code scanner
 - caution about touching 15
 - described xviii
 - scanning labels from LCD 119–120
- baud rate 129
- blank
 - see drive blank
- BOOT field 76
- Bus Device Reset message 66

C

- cabling bay 24
- Canadian DOC notice iv
- capacity 157
- Cart Seated sensor 143
- cartridge inventory xviii, 145
- cartridge slots
 - element addresses 134
 - element indexes 172–173
- cartridges
 - ordering more xiii, xxiii
- changing control mode 36
- CHM
 - controlling motion 52
 - described xviii
 - element address 134
 - element index 172–173
 - gripper home sensor 143
 - moving by hand 15
 - moving on the long axis 124
 - moving on the short axis 124
 - moving to home position 121

- moving to park position 117
 - positioning to element 117
 - testing gripper function 121, 123
 - viewing statistics for 140
- CHSTERM 127
- Clean Drives Menu
 - effect of security on 36
 - using 71
- cleaning cartridge
 - installing 21
 - ordering more xiii, xxiii
 - replacing 72
- cleaning packet
 - number shipped 2
 - using 90
- cleaning the tape drive 69
- command history 144
- Configuration Menu
 - accessing 33
 - Adjust Contrast option 41
 - Back Light option 42
 - SCSI Parity option 41
 - Set Date option 42
 - Set SCSI IDs option 35
 - Set Serial Number option 43
 - Set Time option 43
- configuring the library 31
- Connect Drive 129
- contrast 41
- control mode
 - changing 53
 - defined 52
 - effect of power cycle 52
 - effect of security on 36
 - LCD interface 53
 - SCSI interface 52
 - serial port 53
- controller card 24
- cover 3
- Cycle Drum test 126
- Cycle E/E test 126

- Cycle Gripper test 123
- Cycle L Axis test 124
- Cycle Pick/Place test 122
- Cycle S Axis test 124
- Cycle Solenoid test 125

D

- data capacity 157
- data cartridge
 - affixing bar code label 16
 - moving between locations 118
 - picking and placing test 122
 - replacing 56
 - selecting 55
 - storing 55
 - write-protect switch 18
- data cartridge magazine
 - described xvi
 - installing 20
 - installing cartridges in 19
 - number shipped 2
 - replacing 61
- date 42
- Demo Menu
 - accessing 105
 - Drive Demo 109
 - effect of security on 36
 - Slot Demo 106
- Diagnostic Console 127, 129
- diagnostics
 - for library 113
 - for tape drives 67, 127
 - stopping 115
 - using serial ports for 127
- Diagnostics Menu
 - accessing 115
 - Cycle Drum 126
 - Cycle E/E 126
 - Cycle Gripper 123

- Cycle L Axis 124
- Cycle Pick/Place 122
- Cycle S Axis 124
- Cycle Solenoid 125
- effect of security on 36
- Home CHM 121
- Home Gripper 121
- Move Cartridge 118
- Park 117
- Position to Element 117
- Scan 119
- Scan with Range 120
- Self Test 116
- summary 114
- differential SCSI bus
 - cable lengths for 25, 152
 - requirements 24
- Digital Sensors screen 142
- dimensions of the library 158
- door
 - caution about opening 62, 76
 - closing and locking 23
 - Door Closed sensor 143
 - effect of security on 36
 - opening with power off 13
 - opening with power on 61
 - testing solenoid 125
- drive blank
 - described xvii
 - number shipped 2
 - requirement for 80
 - SCSI ID 34
- drive carrier
 - described xvii
 - requirement for 80
 - types available xvii
- Drive Demo option 109
- Drive Info Menu 72
- Drive Status field 74
- Drive Status screen
 - accessing 72

- information 74
- drum assembly
 - described xv
 - testing 126

E

- electrostatic discharge 3
- element addresses
 - compared to element indexes 171
 - default 171
 - displaying on LCD 134, 149
- element indexes
 - compared to element addresses 171
 - Exabyte 440 172
 - Exabyte 480 173
- Element Reservations screen 136
- element statistics 140
- elements
 - default addresses 171
 - displaying information 148
 - indexes 171–173
 - position information 150
 - reserved 135
 - types of 171
- Eliant 820
 - upgrading to Mammoth 80
- enter key 51
- entry/exit port
 - described xiv
 - effect of security 36
 - element address 134
 - element index 172
 - extending and retracting 56
 - testing 126
- error codes
 - corrective actions for 163–170
 - displaying on LCD 48
 - list of 163–170
- escape key 51

ESD 3
Exabyte 440
 element indexes 172
 introduction xi
 magazine mounting plates for 20
 overview xii
Exabyte 480
 element indexes 172
 introduction xi
 overview xii
Exabyte 8505XL
 upgrading to Mammoth 80
Exabyte support services xiii, xxiii
Exabyte, contacting xxiii
EXATAPE 55
EXB-8505XL
 capacity of library with 157
Extend/Retract E/E option
 effect of security on 36
 using 56
extending the entry/exit port 56
extension support legs 8

F

factory service 91
FCC notice iv
field pointer data 139
filter, replacing 87–89
firmware level 74
fixed cartridge slot
 described xvi
 element address 134
 element index 172–173
 installing a cartridge 21
foam packing piece
 installing 97
 removing 14
fuse 85

G

Gripper Home sensor 143

H

handles 93
Hardware Error sense key 139
help key 51
Home CHM test 121
Home Gripper test 121
host bus adapter card
 compatibility 5
 parity checking 40
 troubleshooting problems 151
humidity specification 157–158

I

Illegal Request sense key 139
Insert Cartridge option 59
installing the library
 procedure 1–30
 troubleshooting problems 151
Interface Menu
 configuring a serial port 127
 Control Mode Menu 53
Inventory Menu 145

K

key
 number shipped 2
 using 13
key lock
 sensor 143
 using 61
keypad

- functions 51
- location xiii, 32

L

- Label information 146

LCD

- location xiii, 32
- Main Menu 49
- Main Screen 48
- tilting 47

- LCD Interface control mode 53

LCD security

- default password 38
- disabling 39
- effect of 36
- enabling 38
- if you forget the password 39

LEDs

- Mammoth 68

library

- capacity 157
- configuring 31
- elements 171–173
- installing 1–30
- maintaining 79–90
- operating 47–66
- overview xii
- returning to factory 91
- serial number 43
- setting SCSI ID 34
- shipping 92–104
- statistics 140
- testing before use 45
- troubleshooting 151–155
- weight of rack-mount model 5
- weight of standalone model 4

Library Info Menu

- accessing 131
- Command History 144

- Drive Info Menu 72
- Inventory Menu 145
- SCSI Menu 132
- Statistics 140
- System Sensors 142

- locking door 23

M

- Main Menu 49

Main Screen

- displaying 48
- error code display 48
- text 48, 134

- maintenance for library 79–90

Maintenance Menu

- Clean Drives Menu 71
- Demo Menu 105
- Diagnostics Menu 113
- Insert Cartridge option 59
- Remove Cartridge option 58

Mammoth

- capacity of library with 157
- eject button 77
- LED states 68
- upgrading to 80

- menu structure 50

- mode parameters 133

- MODE SELECT command 40, 133

- MODE SENSE command 133

- Move Cartridge test 118

- move statistics 141

N

narrow SCSI library

- drive blank for 81
- location of connectors 24, 26
- SCSI IDs 35

No Sense sense key 139
nonvolatile RAM xviii
Not Ready sense key 139

O

Occupied field 75
Occupied Info 148
Occupied Valid field 76
opening door
 caution about 62, 76
 power off 13
 power on 61
operating environment 157–158
operation
 library 47–66
 tape drive 67
operator panel
 keypad functions 51
 location xiii, 32
 Main Screen 48
 using 47

P

packing foam
 installing 97
 removing 14
packing materials 92
paint for touching up finish 90
parity checking
 effect of security on 36
 library 40, 134
 retries 134
 tape drive 40
Park test 117
passive termination 25
password
 default 38

 viewing 39
pick retries 141
Position Info 150
Position to Element test 117
power cord
 connecting 28
 requirements and
 specifications 160
 shipped with library 2
power supply status 143
powering on library 28
power-on reset 65
power-on self-test 29
Pty Retry option 134
put retries 141

R

rack-mount library
 installing 7
 preparing 5
 removing from rack 94
RELEASE command 135
remote hardware reset 65
Remove Cartridge option 58
REQUEST SENSE command 137
RESERVE command 135
reserved elements 135
reset key 51, 65
retracting the entry/exit port 56
RMA number 91

S

safety agency standards iii
scan statistics 141
Scan test 119
Scan with Range test 120
SCSI bus reset 66

- SCSI cable
 - installing 23
 - length 25, 152
 - specifications 159
- SCSI commands
 - MODE SELECT 40, 133
 - MODE SENSE 133
 - RELEASE 135
 - REQUEST SENSE 137
 - RESERVE 135
- SCSI configuration guidelines 24
- SCSI connectors
 - described xix
 - narrow SCSI library 24, 26
 - wide SCSI library 24, 26
- SCSI ID
 - B (blank) 34
 - drive blank 34
 - effect of security on 36
 - setting 34
- SCSI interface control mode 52
- SCSI jumper
 - installing 23
 - number shipped 2
- SCSI Menu 132
- SCSI mode parameters 37, 133
- SCSI Parity option 40
- SCSI reservations 135
- SCSI security 134
- SCSI sense data 137
- security
 - methods for enabling and disabling 37
 - setting 36
- Self Test 116
- sense data 137–139
- sensors 142
- serial number
 - effect of security on 36
 - library 43
- serial ports
 - configuring 127
 - control modes for using 53, 127
 - described xviii
 - effect of security on 36
- service 91
- shipping the library 92–104
- side panels 4
- single-ended SCSI bus
 - requirements 24
- size of the library 158
- slide rails 8
- Slot Demo option 106
- software
 - compatibility 5
 - installing 45
 - tape drive cleaning 69
 - troubleshooting problems 151
- solenoid 125
- standalone library
 - handles for moving 4, 93
 - preparing 4
 - touch-up paint 90
 - weight 4
- static protection 3
- Statistics screens 140
- status message 48
- storage capacity 157
- storing data cartridges 55
- system sensors 142
- system statistics 140–141

T

- tape drive
 - changing models 36, 80
 - cleaning 69–71
 - controlling 67
 - described xvi
 - diagnostics 67
 - displaying information 72

- element address 134
- element index 172–173
- installing 84
- number installed 134
- operating 67
- parity checking for 40
- powering on 28
- power-on self-test 29
- replacing 81
- setting SCSI ID 34
- troubleshooting 153
- type 76
- using a drive carrier 80
- using fewer than four in a library 80

temperature

- displaying on LCD 143
- specification 157–158

terminator

- installing 23

terminator for library

- type to use 160

testing the library

- Cycle Drum test 126
- Cycle E/E test 126
- Cycle Gripper test 123
- Cycle L Axis test 124
- Cycle Pick/Place test 122
- Cycle S Axis test 124
- Cycle Solenoid test 125
- Drive Demo option 109
- Home CHM test 121
- Home Gripper test 121
- Move Cartridge 118
- Park test 117
- Position to Element test 117
- Scan test 119
- Scan with Range test 120
- Self Test 116
- Slot Demo option 106

time 43

- touch-up paint 90
- troubleshooting 151
- Type field 76

U

- Unit Attention sense key 139
- Unit Reservation screen 136
- unlocking door 13, 61
- Use Mammoth option 74

V

- voltage selection 28

W

weight

- rack-mounted library 5
- standalone library 4

weight of the library 158

wide SCSI library

- drive blank for 81
- example configuration 27
- location of connectors 24, 26
- number of buses 25
- SCSI IDs 35

window, cleaning 90

Write Line 134

write-protect switch 18