Universal Tape Library

User's Guide

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User's Guide

Note

Before using this information and the product it supports, read the information in Appendix C, “Notices,” on page 65 and the warranty information in the *Warranty and Support Guide* on the IBM *Documentation* CD.

First Edition (May 2006)

Contents

Safety

Before installing this product, read the Safety Information.

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Antes de instalar este produto, leia as Informações de Segurança.

在安装本产品之前，请仔细阅读 Safety Information
(安全信息)。

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

Ennen kuin asennat tämän tuotteen, lue turvaohjeet kohdasta Safety Information.

Avant d'installer ce produit, lisez les consignes de sécurité.

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

Πριν εγκαταστήσετε το προϊόν αυτό, διαβάστε τις πληροφορίες ασφάλειας
(safety information).

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

Prima di installare questo prodotto, leggere le Informazioni sulla Sicurezza.

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

Пред да се инсталира овој продукт, прочитајте информацијата за безбедност.

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

Les sikkerhetsinformasjonen (Safety Information) før du installerer dette produktet.

Przed zainstalowaniem tego produktu, należy zapoznać się
z książką "Informacje dotyczące bezpieczeństwa" (Safety Information).

Antes de instalar este produto, leia as Informações sobre Segurança.

Перед установкой продукта прочтите инструкции по
технике безопасности.

Pred inštaláciou tohto zariadenia si prečítaje Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

Antes de instalar este producto lea la información de seguridad.

Läs säkerhetsinformationen innan du installerar den här produkten.

安裝本產品之前，請先閱讀「安全資訊」。

Statement 1:

DANGER

Electrical current from power, telephone, and communication cables is hazardous.

To avoid a shock hazard:

- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**
- **Connect all power cords to a properly wired and grounded electrical outlet.**
- **Connect to properly wired outlets any equipment that will be attached to this product.**
- **When possible, use one hand only to connect or disconnect signal cables.**
- **Never turn on any equipment when there is evidence of fire, water, or structural damage.**
- **Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.**
- **Connect and disconnect cables as described in the following table when installing, moving, or opening covers on this product or attached devices.**

To Connect:	To Disconnect:
1. Turn everything OFF.	1. Turn everything OFF.
2. First, attach all cables to devices.	2. First, remove power cords from outlet.
3. Attach signal cables to connectors.	3. Remove signal cables from connectors.
4. Attach power cords to outlet.	4. Remove all cables from devices.
5. Turn device ON.	

Statement 15:

CAUTION:
Make sure that the rack is secured properly to avoid tipping when the unit is extended.

Statement 23:

CAUTION:
Do not place any object weighing more than 50 kg (110 lb) on top of rack-mounted devices.

>50 kg (110 lb)

Chapter 1. Introduction

The IBM® Universal Tape Library is an automated tape storage and retrieval device for high-end xSeries® and System x™ servers. The library supports up to two tape drives and can store up to 38 LTO3 tape cartridges in two magazines.

The Universal Tape Library comes with a limited warranty, see the *IBM Universal Tape Library Support and Warranty Guide*.

Contact your place of purchase if an item is missing or damaged. Be sure to retain your proof of purchase. It might be required for you to receive warranty service.

The IBM xSeries Documentation CD

The IBM xSeries *Documentation* CD contains documentation for your option in Portable Document Format (PDF) and includes the IBM Documentation Browser to help you find information quickly.

Hardware and software requirements

The IBM xSeries *Documentation* CD requires the following minimum hardware and software:

- Microsoft® Windows NT® 4.0 (with Service Pack 3 or later), Windows® 2000, or Red Hat Linux®.
- 100 MHz microprocessor.
- 32 MB of RAM.
- Adobe Acrobat Reader 3.0 (or later) or xpdf, which comes with Linux operating systems. Acrobat Reader software is included on the CD, and you can install it when you run the Documentation Browser.

Using the Documentation Browser

Use the Documentation Browser to browse the contents of the CD, read brief descriptions of the documents, and view documents, using Adobe Acrobat Reader or xpdf. The Documentation Browser automatically detects the regional settings in use in your system and displays the documents in the language for that region (if available). If a document is not available in the language for that region, the English-language version is displayed.

Use one of the following procedures to start the Documentation Browser:

- If Autostart is enabled, insert the CD into the CD drive. The Documentation Browser starts automatically.
- If Autostart is disabled or is not enabled for all users, use one of the following procedures:
  - If you are using a Windows operating system, insert the CD into the CD drive and click **Start --> Run**. In the **Open** field, type

    ```
    e:\win32.bat
    ```

    where *e* is the drive letter of the CD drive, and click **OK**.
  - If you are using Red Hat Linux, insert the CD into the CD drive; then, run the following command from the /mnt/cdrom directory:

    ```
    sh runlinux.sh
    ```

Select your server from the **Product** menu. The **Available Topics** list displays all the documents for your server. Some documents might be in folders. A plus sign (+) indicates each folder or document that has additional documents under it. Click the plus sign to display the additional documents.

When you select a document, a description of the document appears under **Topic Description**. To select more than one document, press and hold the Ctrl key while you select the documents. Click **View Book** to view the selected document or documents in Acrobat Reader or xpdf. If you selected more than one document, all the selected documents are opened in Acrobat Reader or xpdf.

To search all the documents, type a word or word string in the **Search** field and click **Search**. The documents in which the word or word string appears are listed in order of the most occurrences. Click a document to view it, and press Crtl+F to use the Acrobat search function or Alt+F to use the xpdf search function within the document.

Click **Help** for detailed information about using the Documentation Browser.

Notices and statements in this documentation

The caution and danger statements that appear in this document are also in the multilingual *Safety Information* document, which is on the IBM *Documentation* CD. Each statement is numbered for reference to the corresponding statement in the *Safety Information* document.

The following notices and statements appear in this document:

- **Note:** These notices provide important tips, guidance, or advice.
- **Attention:** These notices indicate potential damage to programs, devices, or data. An attention notice is placed just before the instruction or situation in which damage could occur.
- **Danger:** These statements indicate a situation that can be potentially lethal or extremely hazardous to you. A danger statement is placed just before the description of a potentially lethal or extremely hazardous procedure step or situation.

Components

The Universal Tape Library contains the following components:

- Front panel
- Back panel
- Tape drive

Front panel

The front panel contains the magazine access doors and the operator control panel. The magazine access doors are used to access the magazines, and they protect the data cartridges.

Note: The illustrations in this document might differ slightly from your hardware.

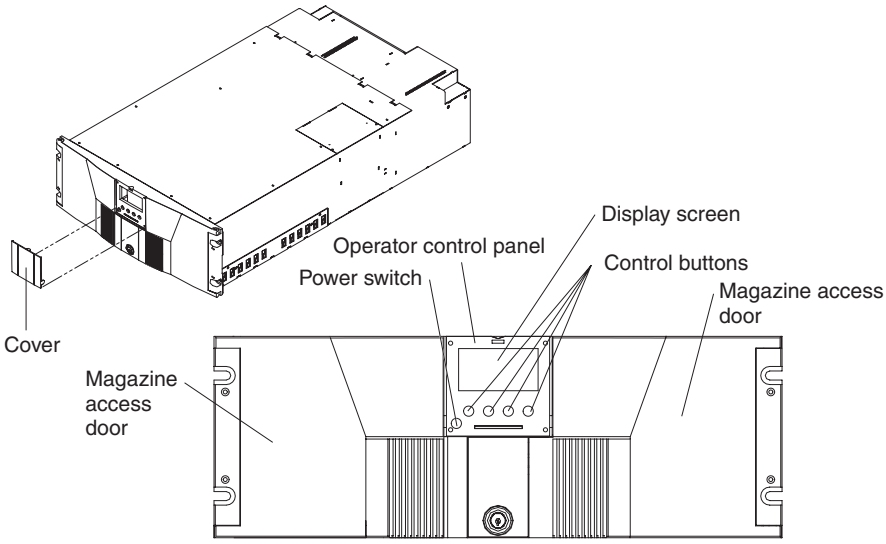

Figure 1. Front panel components

Table 1 describes the operator control panel components.

Table 1. Operator control panel components

Component	Description
Display screen	The display screen displays library status information and is used to access the library menus. Use the menus to view or change library configuration information and run diagnostic tests.
Control buttons	Use the control buttons to select menu options and values.
Power button	Press the power button to turn the library on and off.
LED	The LED displays the library status: • Steady green: Idle • Flashing green: Busy • Steady amber: Error • Flashing amber: Attention

Back panel

Figure 2 on page 4 shows the components that are mounted on the back panel.

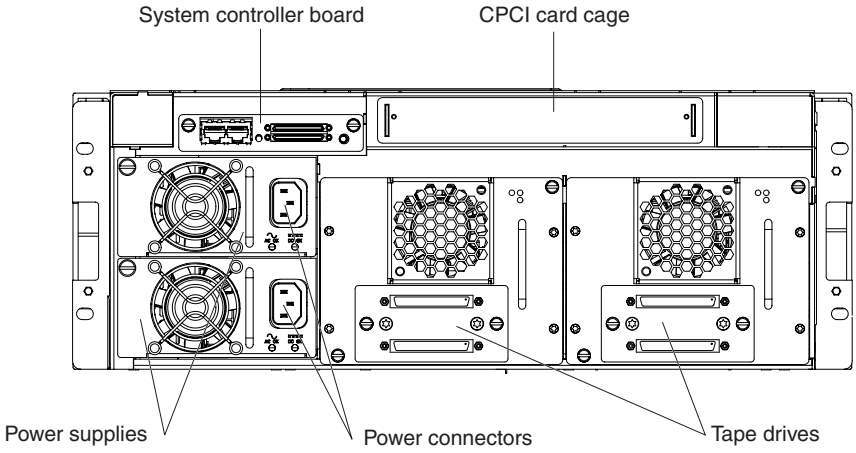

Figure 2. Back panel

Tape drive

The Universal Tape Library uses SCSI tape drives. The SCSI bus is a wide (16-bit), low voltage differential (LVD) bus.

Note: The library supports only LVD SCSI buses. LVD SCSI configurations have a maximum allowable bus length of 12 meters.

Library options

Table 2 describes the Universal Tape Library options.

Table 2. Library options

Option	Description
Library chassis	The library chassis option consists of the following items: • Library chassis • Power cords • Rack mounting hardware • Short SCSI cable • Long SCSI cable • SCSI terminator The installation and use of the library chassis is described in this book.
Magazine	The magazine option consists of the left and right magazines. The installation and use of the magazines is described in this book.
Tape drive	The tape drive option consists of the tape drive and cartridge labels. The installation and use of the tape drive is described in this book.
iSCSI module	The iSCSI module option consists of the following items: • iSCSI module • Rack mounting hardware • Ethernet cable • SCSI cables (2) • Documentation The installation and use of the iSCSI module is described in the documentation that comes with the iSCSI module.

Library scalability

Libraries can be used as stand-alone libraries or they can be combined in a rack to form a larger library called a *multiple library stack*. A multiple library stack can contain from two to four libraries. A multiple library stack appears to the host as one library, and cartridges can be passed between libraries. See “Stacking libraries” on page 14 for more information.

Table 3 provides information about each library combination.

Table 3. Library capacity

Number of libraries	Maximum number of tape drives	Cartridge capacity	Native data capacity	Compressed data capacity
1	2	38	15.2 TB	30.4 TB
2	4	76	30.4 TB	60.8 TB
3	6	114	45.6 TB	91.2 TB
4	8	152	60.8 TB	121.6 TB

Configuring the magazines

There are two magazines. Each magazine holds 18 LTO3 cartridges, as shown in Figure 3.

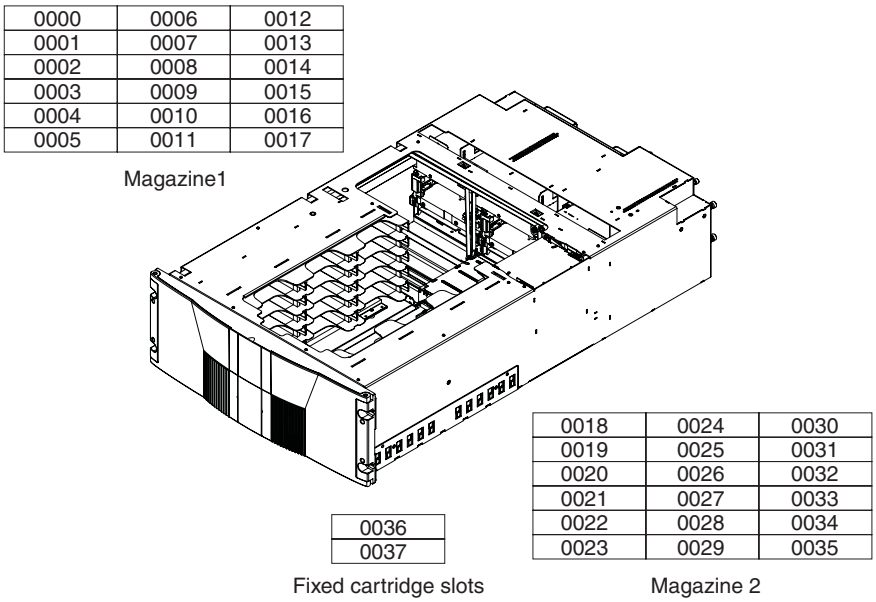

Figure 3. Cartridge magazines

The magazines can be configured as a magazine load port and a column load port or as two column load ports. You cannot configure two magazine load ports. A magazine load port provides 18 cartridge slots, and a column load port provides six cartridge slots.

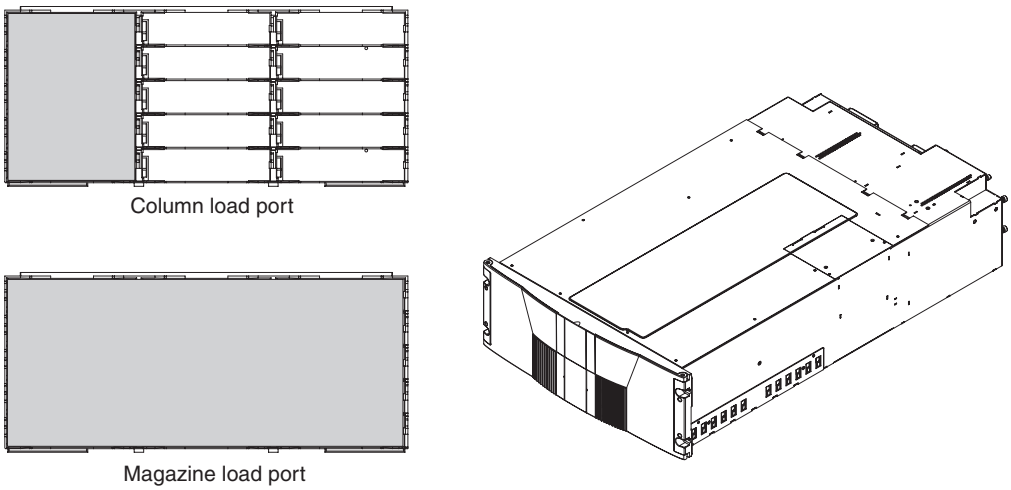

Figure 4. Load ports

When a magazine is configured as a column load port, access to the magazine is physically restricted to allow access only to the first column of magazine slots. When a magazine is configured as a magazine load port, access to the magazine is unrestricted, and the entire magazine can be removed.

Chapter 2. Installing and configuring the library

This chapter provides instructions for installing the Universal Tape Library.

Installation guidelines

Before you remove or replace a device, read the following information:

- Read the safety information that begins on page v and “Handling static-sensitive devices.” This information will help you work safely.
- Observe good housekeeping in the area where you are working. Place removed covers and other parts in a safe place.
- Do not attempt to lift an object that you think is too heavy for you. If you have to lift a heavy object, observe the following precautions:
  - Make sure that you can stand safely without slipping.
  - Distribute the weight of the object equally between your feet.
  - Use a slow lifting force. Never move suddenly or twist when you lift a heavy object.
  - To avoid straining the muscles in your back, lift by standing or by pushing up with your leg muscles.
- Make sure that you have an adequate number of properly grounded electrical outlets for the server and all attached devices.
- Back up all important data before you make changes to disk drives.

Review the documentation that comes with your rack cabinet for safety and cabling information. Before installing your enclosure in a rack cabinet, consider the following guidelines:

- Two or more people are required to install the device in a rack cabinet.
- Ensure that the room air temperature is below 35°C (95°F).
- Do not block any air vents, usually 15 cm (6 in.) of space provides proper airflow.
- Do not leave open spaces above or below an installed enclosure in your rack cabinet. To help prevent damage to enclosure components, always install a blank filler panel to cover the open space and to help ensure proper air circulation.
- Plan the device installation starting from the bottom of the rack cabinet.
- Install the heaviest device in the bottom of the rack cabinet.
- Do not extend more than one device out of the rack cabinet at the same time.
- Do not overload the power outlet when installing multiple devices in the rack cabinet.

Handling static-sensitive devices

Attention: Static electricity can damage electronic devices. To avoid damage, keep static-sensitive devices in their static-protective packages until you are ready to install them.

To reduce the possibility of damage from electrostatic discharge, observe the following precautions:

- Limit your movement. Movement can cause static electricity to build up around you.

- The use of a grounding system is recommended. For example, wear an electrostatic-discharge wrist strap, if one is available.
- Handle the device carefully, holding it by its edges or its frame.
- Do not touch solder joints, pins, or exposed circuitry.
- Do not leave the device where others can handle and damage it.
- While the device is still in its static-protective package, touch it to an unpainted metal surface for at least 2 seconds. This drains static electricity from the package and from your body.
- Remove the device from its package and install it immediately without setting down the device. If it is necessary to set down the device, put it back into its static-protective package. Do not place the device on a metal surface.
- Take additional care when handling devices during cold weather. Heating reduces indoor humidity and increases static electricity.

Returning a device or component

If you are instructed to return a device or component, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Required tools

Make sure that the following tools are available:
- 3 mm hex wrench
- 2.5 mm hex wrench
- #1 flat blade screwdriver
- Anti-static wrist strap

Installing the Universal Tape Library

To install the Universal Tape Library, complete the following steps:

1. Read the safety information that begins on page v and “Installation guidelines” on page 7.
2. Make sure that the host system is turned off and that the host system is not connected to power.
3. If you are installing a multiple library stack, go to “Stacking libraries” on page 14. Then, continue with step 4.
4. Assemble the rack shelves (see Figure 6 on page 9):
   a. Loosely attach the rack shelves to the rack rails, using four M5 x 10 hex screws.

      Note: The rack shelves must be installed inside the rack rails.

   b. With the arrow on each rail adapter pointing up, attach a rail adapter to the front and back of each rack mount shelf using 2 M5 x 10 hex screws for each rail adapter.

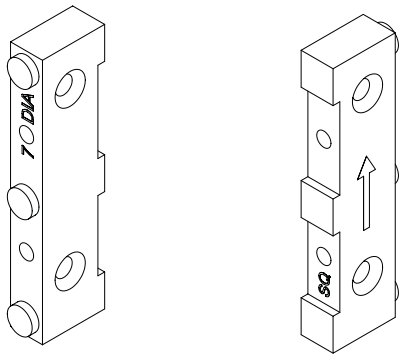

Figure 5. Rail adapter

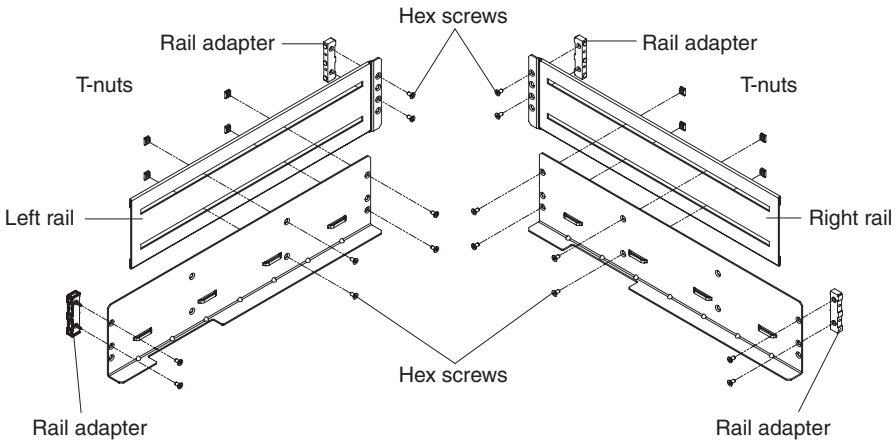

Figure 6. Assembling the rack rails

5. Attach the rack shelves to the rack, using four M4 x 12 hex screws and two mounting plates for each shelf.

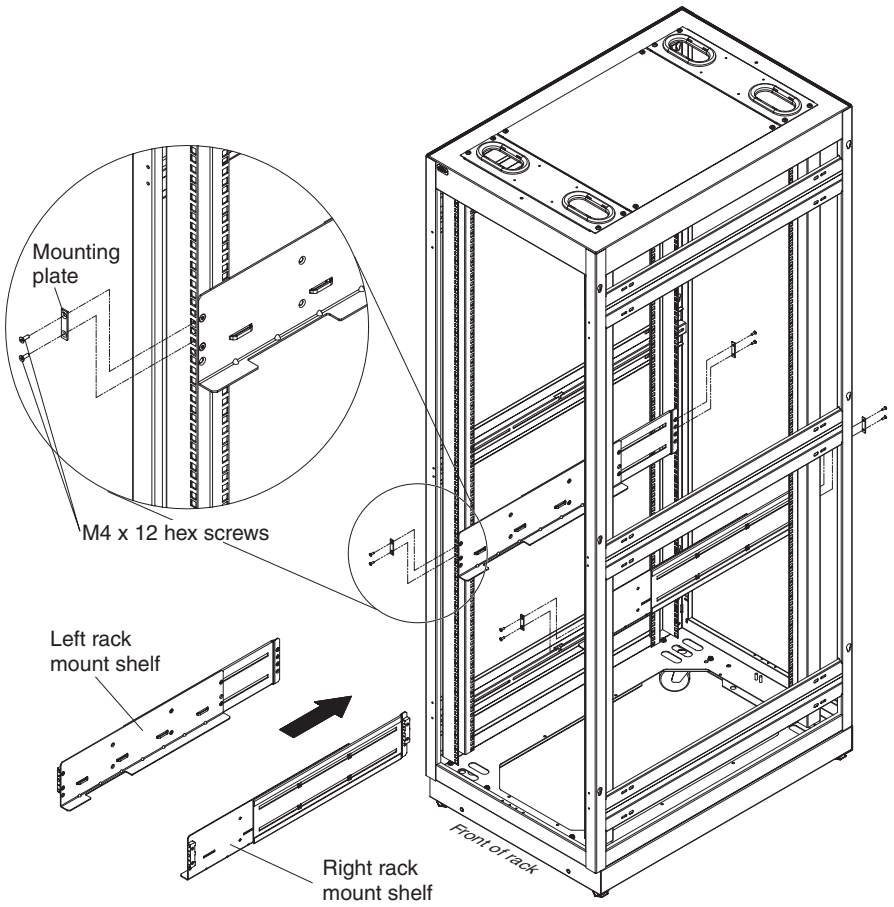

Figure 7. Attaching the rack mount shelves

6. Tighten the four M5 x 10 hex screws that secure each rack mount shelf to one of the rack rails.
7. Loosen the power-supply captive retaining screws, using a flat-blade screwdriver, and remove the power supplies from the library.
8. Loosen the tape drive captive mounting screws, using a flat-blade screwdriver, and remove the tape drives from the library.
9. Determine which holes in the back mounting brackets to use. The back mounting holes are lettered A - I, as shown in Figure 8.

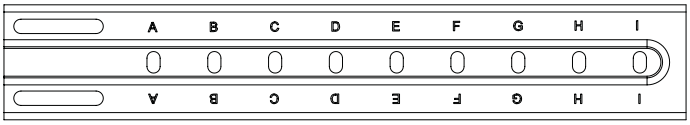

Figure 8. Back mounting bracket holes

Table 4. Back mounting bracket positions

Rack depth	Use mounting holes
28 inches or less	A and C
29 inches or less	B and D
30 inches or less	A and C
31 inches or less	B and D

Table 4. Back mounting bracket positions (continued)

Rack depth	Use mounting holes
32 inches or less	C and E
33 inches or less	D and F
34 inches or less	E and G
35 inches or less	F and H
36 inches or less	G and I

10. Attach a back mounting bracket to each side of the library, using 2 M5 x 8 hex screws as shown in Figure 9.

    Table 4 on page 10 shows which mounting holes to use, depending on the depth of the rack.

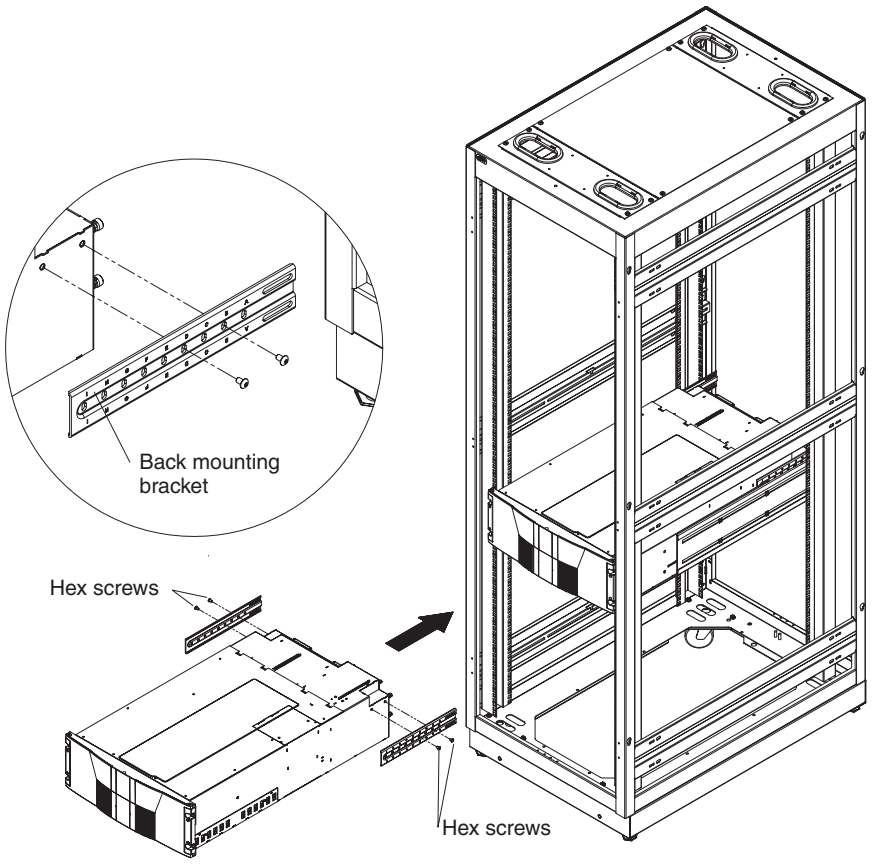

Figure 9. Installing the back mounting brackets

11. Place the library in the rack and attach the two mounting clamps (see Figure 10 on page 12):
    - If the rack depth is less than 30 inches, attach each mounting clamp with the long portion of the mounting clamp toward the back of the rack.
    - If the rack depth is greater than 30 inches, attach each mounting clamp with the long portion of the mounting clamp toward the front of the rack.

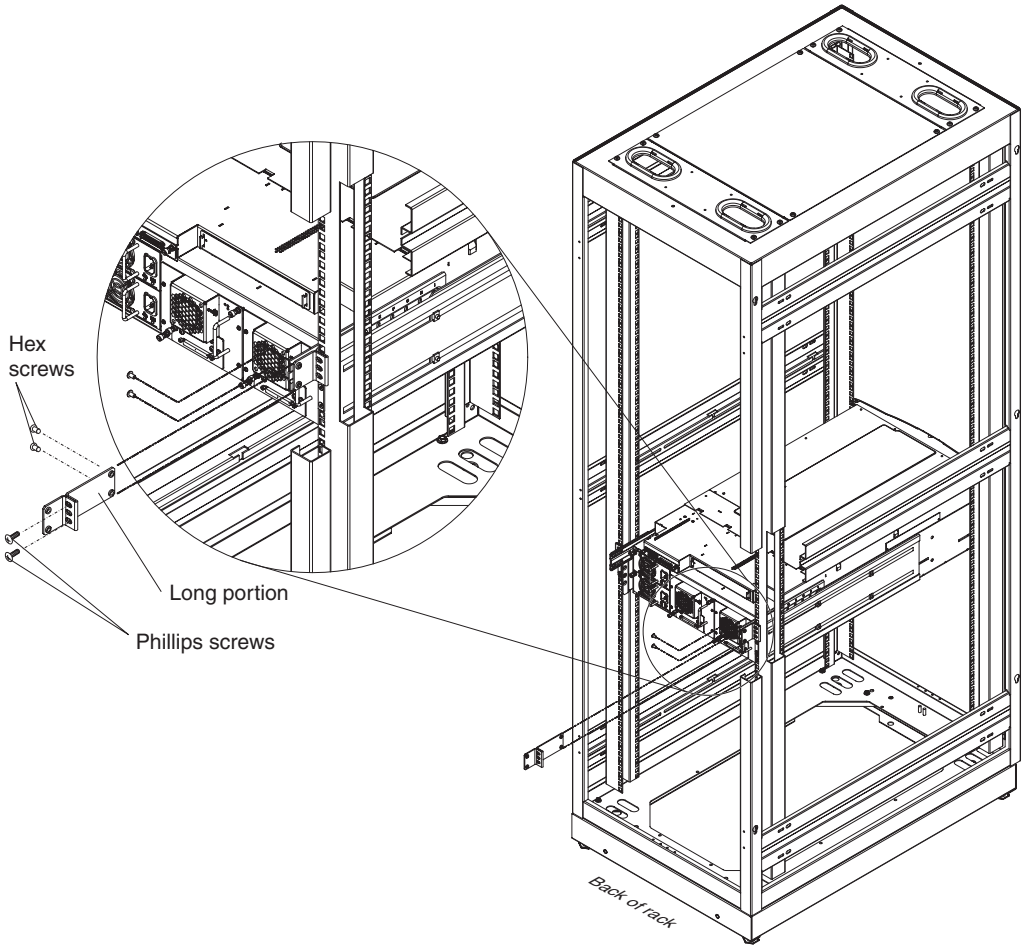

Figure 10. Attaching the mounting clamps

12. Install the power supplies in the library. Tighten the captive screws, using a flat-blade screwdriver.
13. Install the tape drives in the library. Tighten the captive screws, using a flat-blade screwdriver.
14. Install the SCSI cables as shown in Figure 11 on page 13.

    Notes:

    a. The library comes with sufficient cables to connect two tape drives per SCSI bus. However, for optimum performance, one tape drive per SCSI bus might be necessary.

    b. The total length of the SCSI cables must not exceed 25 m (82 feet).

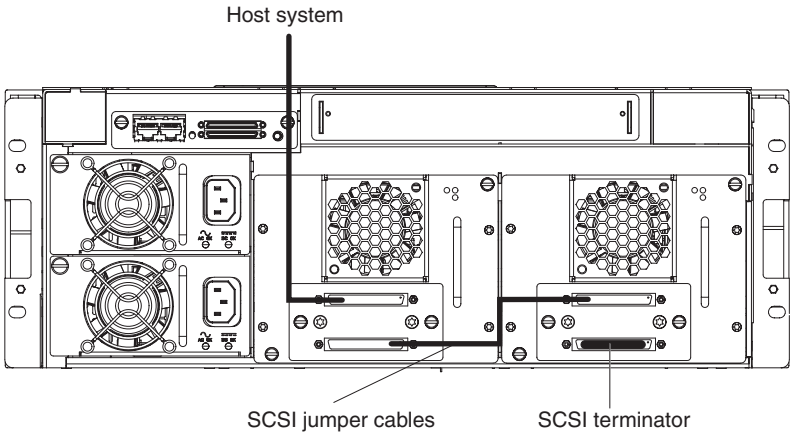

Figure 11. Install SCSI cables

15. Connect the power cords to the power supplies and the power source.
16. Install the tape cartridges. For more information, see “Installing tape cartridges.”
17. Turn on the library. For more information, see “Turning the library on and off.”
18. Configure the library. For more information, see “Configuring the library” on page 15.

Installing tape cartridges

To install the tape cartridges, complete the following steps:

1. Label the cartridges.
2. Set the write-protect switch on each cartridge to write-protect or write-enable.
3. Open the magazine access doors.
4. Place the cartridges in the fixed slots and magazines.
5. Close the magazine access doors.

Turning the library on and off

To turn on the library, complete the following steps:

1. Make sure that the power cords are correctly connected.
2. Remove the operator control panel cover.
3. Press the power switch (see Figure 12 on page 14).

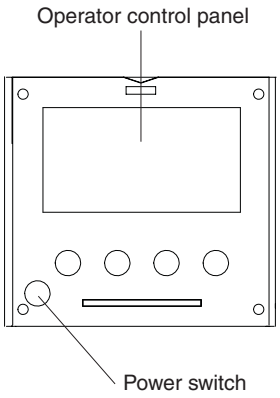

Figure 12. Power switch

To turn off the library, complete the following steps:

1. Take the library offline. See “Library on/offline” on page 19 for more information.
2. Make sure that no cartridge is in the gripper.

   If there is a cartridge in the gripper, move it to an available slot. See “Move tape” on page 20 for more information.
3. Press the power switch for 1 second. The shutdown sequence can take up to 1 minute to be completed.

Stacking libraries

To combine libraries into a multiple library stack, complete the following steps:

1. Remove the pass-through cover plates. See Figure 13 to determine which pass-through plates you must remove.

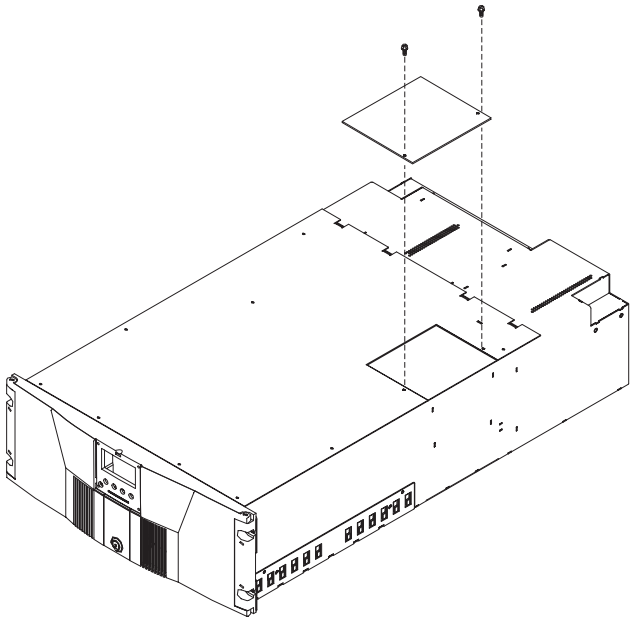

Figure 13. Pass-through cover plate

2. Install the top alignment hardware.
3. Install the bottom alignment hardware.

Note: Install only the bottom alignment hardware on the top library in the stack. Install only the top alignment hardware on the bottom library in the stack.

4. Install the libraries in the rack. See “Installing the Universal Tape Library” on page 8 for more information.

Configuring the library

To configure the library, complete the following steps:

1. From the main screen, press the Setup button.
2. For a stand-alone library, go to step 3. For a multiple library stack, set the stack role for the library:
   a. Press the Down (↓) button to select **Cabinet** (if it is not already selected), and press the Enter button.
   b. Press the Down button to select **Stack role**, and press the Enter button.
   c. Press the Down button to select **Master** (if it is not already selected) or **Slave**, and press the Enter button.
   d. Press the Exit button to return to the **Setup** menu.
3. Set the date and time:
   a. Press the Down button to select **Date & time**, and press the Enter button.
   b. Press the Up (↑) or Down button to select your time zone, and press the Enter button.
   c. In the Set date & time screen, press the Up or Down button to change a value. Press the Next button to select the next value that you want to change.
   d. When you have set the last value, press the Save button to save the changes and return to the **Setup** menu.
4. Select the network settings:
   a. Press the Up button to select **Network**, and press the Enter button.
   b. Press the Up or Down button to select the network option that you want to set, and press the Enter button.
   c. For each network option, press the Up or Down button to change a value. Press the Next button to select the next value that you want to set.
   d. When you have set the last value, press the Save button to save the changes and return to the **Network setup** menu.
   e. Press the Exit button. If you are prompted to cycle power for settings to take effect, press the Ok button, and press the Exit button to return to the main screen.

Chapter 3. Using the menus

Use the menus on the display screen to display information, issue commands, and test library functions. Use the four control buttons under the display screen to select menu options and set values. The functions of the buttons change according to the menu or screen that is displayed.

To display the main screen, press any of the four control buttons under the display screen.

Table 5 provides a list of the information that is displayed by the menus.

Table 5. Menu information

Menu	Information displayed
Info	• Overview • Hardware • Event Logs • Statistics
Ops	• Library Operations • Find Tape • Move Tape • Drive Operations • Scan Inventory
Setup	• Cabinet • Library • Security • Network • Date and Time
Diags	• System-level Test • Subsystem Test • Component Tests

Info menu

Press the Info button to display the **Info** menu.

Overview information

To display the overview information, complete the following steps:

1. From the **Info** menu, press the Down (↓) button to select **Overview** (if it is not already selected), and press the Enter button. The **Firmware Info** screen is displayed.
2. Press the Next button to display the following network information:
   - IP address
   - Network mask
   - Gateway
3. Press the Exit button to return to the **Info** menu.

Hardware information

To display hardware sensor information, complete the following steps:

1. From the **Info** menu, press the Down (↓) button to select **Hardware**, and press the Enter button. The **Hardware info** menu is displayed.

2. Press the Down button to select the sensor that you want to display more information about (if it is not already selected), and press the Enter button.
3. Press the Exit button to return to the **Info** menu.

Event logs

To view the event logs, complete the following steps:

1. From the **Info** menu, press the Down (↓) button to select Event logs, and press the Enter button. The **Select events** menu is displayed.
2. Press the Down button to select the category of events that you want to display (if it is not already selected), and press the Enter button. The following event types are displayed:
   - All
   - Critical
   - Warning
   - Information
3. Press the Down button to select the type of event that you want to display, and press the Enter button. The event information is displayed.
4. Press the Back or Next button to scroll through the list of events.
5. Press the Exit button to return to the **Info** menu.

Statistics

To display the statistics, complete the following steps:

1. From the **Info** menu, press the Up (↑) or Down (↓) button arrow to select **Statistics**, and press the Enter button. The **Statistics** menu is displayed.
2. Press the Down button to scroll through the list of events. The following statistics are displayed:
   - ElapTm: The number of seconds since the library was started
   - PCycles: The number of times the power has been turned on or off and the library has been restarted
   - SlotGet: The number of times that cartridges have been retrieved from slots
   - SlotPut: The number of times that cartridges have been delivered to slots
   - SltRetG: The number of times that cartridge retrievals have been retried
   - SltRetP: The number of times that cartridge deliveries have been retried
   - DrvGet: The number of times that cartridges have been retrieved from the tape drives
   - DrvPut: The number of times that cartridges have been delivered to the tape drives
   - DrvRetG. The number of times that cartridge retrieval from the tape drives has been retried
   - DrvRetP: The number of times that cartridge delivery to the tape drives has been retried
   - DrvLdR: The number of times that cartridge loading in the tape drives has been retried
   - DrvUnR: The number of times that cartridge unloading from the tape drives has been retried
   - XYmove: The number of times that a horizontal move has been made
   - Zmove: The number of times that a vertical move has been made
   - Pmove: The number of times that an extension move has been made
   - Rmove: The number of times that a rotation move has been made

- XYretry: The number of times that a horizontal move has been retried
- Zretry: The number of times that a vertical move has been retried
- Pretry: The number of times that an extension move has been retried
- Rretry: The number of times that a rotation move has been retried

3. Press the Exit button to return to the **Info** menu.

Operations menu

Press the Ops button to display the **Ops** menu.

Library operations

To display the **Library Ops** menu, complete the following steps:

1. From the **Ops** menu, press the Down (↓) button to select **Library operations** (if it is not already selected), and press the Enter button. The **Library Ops** menu is displayed.
2. Press the Down button to select one of the following library operations, and press the Enter button:
   - Library on/offline
   - Open load ports
   - Release magazines
   - Park for shipping

Library on/offline

When the library is online, it can communicate with the host to perform backup tasks. When the library is offline, it cannot communicate with the host. The library must be offline to perform the following tasks:

- Perform self-tests
- Perform diagnostics
- Conduct an inventory

To take the library offline, complete the following steps:

1. From the **Library Ops** menu, press the Down (↓) button to select **Library online/offline** (if it is not already selected), and press the Enter button. A confirmation screen is displayed.
2. Press the Yes button. The library is now offline.

To make the library online, complete the following steps:

1. From the **Library Ops** menu, use the Down (↓) arrow to select **Library online/offline**, and press the Enter button. A confirmation screen is displayed.
2. Press the Yes button. The library is now online.

Open load ports

To open a load port, complete the following steps:

1. From the **Library Ops** menu, press the Down (↓) button to select **Open load ports** (if it is not already selected), and press the Enter button. The **Open load ports** menu is displayed.
2. Press the Down button to select the port that you want to open, and press the Enter button. The port you selected is opened.

Release magazines

To release a magazine, complete the following steps:

1. From the **Library Ops** menu, press the Down (↓) button to select **Release magazines** (if it is not already selected), and press the Enter button. A list of magazines is displayed.
2. Press the Down button to select the magazine that you want to release, and press the Enter button. The magazine is released.

Park for shipping

To park the robotics for shipping, complete the following steps:

1. Remove all cartridges from the library.
2. From the **Library Ops** menu, press the Down (↓) button to select **Park for shipping**, and press the Enter button. The robotics are parked, and the library is turned off.

Find tape

To search for a tape according to its cartridge label, complete the following steps:

1. From the **Ops** menu, press the Down (↓) button to select **Find tape**, and press the Enter button.
2. Press the Up or Down button to cycle through the available characters. Note that the wildcard character is a question mark (?). When the character that you want to use is displayed, press Enter.
3. Repeat step 2 until the cartridge that you want to select is displayed.
4. Press the Down button to select the cartridge that you are trying to find, and press the Enter button. The cartridge type and location are displayed.
5. Press Exit to return to the **Ops** menu.

Move tape

To move a tape cartridge, complete the following steps:

1. From the **Ops** menu, press the Down (↓) button to select **Move tape**, and press the Enter button. The **Move from** menu is displayed.
2. Press the Down button to select a magazine, tape drive, or fixed slot group (if it is not already selected), and press the Enter button. The **Move from** menu displays a list of storage bins.
3. Press the Down button the select the tape cartridge that you want to move, and press the Enter button. The **Move to** menu displays a list of magazines, tape drives, and fixed slots.
4. Press the Down button to select the empty bin that you want to move the tape to, and press the Enter button. The **Move in progress** screen is displayed. When the move is completed, the **Move done** screen is displayed.
5. Press the Exit button to return to the **Ops** menu.

Drive operations

To perform a drive operation, complete the following steps:

1. From the **Ops** menu, press the Down (↓) button to select **Drive operations** , and press the Enter button. The **Drive operations** menu is displayed.
2. Press the Down button to select the tape drive (if it is not already selected), and press the Enter button. Information about the tape drive is displayed and the following drive options are available:
   - Pwr off
   - Pwr on
   - Reset

3. Press the Down button to select the operation that you want to perform, and press the Enter button.
4. Press the Exit button to return to the **Ops** menu.

Scan inventory

To perform an inventory of the tape cartridges in the library, complete the following steps:

1. From the **Ops** menu, press the Down (↓) button to select **Scan inventory**, and press the Enter button. The inventory is conducted, and the **Scan complete** screen is displayed when the inventory is complete.
2. Press Done to return to the **Ops** menu.

Setup menu

Press the Setup button on the main menu to display the **Setup** menu.

Cabinet

To view and set the cabinet settings, complete the following steps:

1. From the **Setup** menu, press the Down (↓) button to select **Cabinet** (if it is not already selected), and press the Enter button. The **Cabinet setup** menu is displayed.
2. Press the Down button to select the cabinet option for which you want to view and set settings (if it is not already selected), and press the Enter button. Table 6 describes the options in the **Cabinet setup** screen.

Table 6. Cabinet options

Option	Description
Host bus	Use the host bus option to view or edit the SCSI IDs for the library and tape drive.
Stack role	Use the stack role option to view or set the library stack role (stand-alone, master, or slave).
Left load port	Use the left load port option to enable or disable the left load port, and to designate one column or the entire magazine as a load port.
Right load port	Use the right load port option to enable or disable the right load port and to designate one column or the entire magazine as a load port.
Drive FUP from tape	Use this option to select the magazine or fixed slot that contains the firmware update cartridge and the tape drive that you want to update. The library must be offline to update the tape drive firmware.

3. Press the Exit button to return to the **Setup** menu.

Library

To view and set the library setup settings, complete the following steps:

1. From the **Setup** menu, press the Down (↓) button to select **Library**, and press the Enter button. The **Library setup** menu is displayed.
2. Press the Down button to select the option that you want to change (if it is not already selected), and press the Enter button. Table 7 on page 22 describes the options in the **Library setup** menu.

Table 7. Library options

Option	Description
Auto clean	Use the auto-clean option to turn the library auto-clean function on and off. When this option is turned on, the library automatically loads a cleaning cartridge when a tape drive requests a cleaning.
Barcode swap	When this option is turned on, the media type prefix is changed from the end of the bar code to the beginning.
Emulation	Use the emulation option to change the library emulation mode (PX500 or M1500).

3. Press the Exit button to return to the **Setup** menu.

Security

To view and set the library security settings, complete the following steps:

1. From the **Setup** menu, press the Down (↓) button to select **Security**, and press the Enter button.
2. Press the Down button to select the PIN that you want to set (if it is not already selected), and press the Enter button. Table 8 describes the two types of PINs.

Table 8. Security options

PIN	Description
Set admin PIN	The administration PIN provides access to all of the operator control panel menus. The administration PIN can be 0 through 8 numeric characters.
Set operator PIN	The operator PIN provides view access to the Info and Ops menus. An operator cannot change library settings. The operator PIN can be 0 through 8 numeric characters.

3. Press the Down button to select a digit. Press Enter to accept the digit.
4. Repeat step 3 until you have set the PIN that you want to use.
5. Press the Enter button twice to set the PIN. The cursor moves to the **Verify PIN** field.
6. Repeat steps 3 through 5 to set the **Verify PIN** field and press the Enter button.
7. Press the Exit button to return to the **Setup** menu.

Network

To view and set the network settings, complete the following steps:

1. From the **Setup** menu, press the Down (↓) button to select **Network**, and press the Enter button.
2. Press the Up or Down button to select the network option that you want to set (if it is not already selected), and press the Enter button. Table 9 describes the options in the **Network options** menu.

Table 9. Network options

Option	Description
DHCP	If your network uses DHCP, enable this option. If your network uses static addresses, disable this option.
IP address	Set the IP address if you are not using DHCP.
Subnet mask	Set the subnet mask if you are not using DHCP.

Table 9. Network options (continued)

Option	Description
Default gateway	Set the default gateway if you are not using DHCP.

3. For each network option, press the Up or Down button to change a value. Press the Next button to select the next value that you want to set.
4. When you have set the last value, press the Save button to save the changes and return to the **Network setup** menu.
5. Press the Exit button. If you are prompted to cycle power for settings to take effect, press the OK button to return to the **Setup** menu.
6. Turn off the library and turn it on again.

Date & time

To set the date and time, complete the following steps:

1. From the **Setup** menu, press the Down (↓) button to select **Date & time**, and press the Enter button.
2. Press the Up or Down button to select your time zone, and press the Enter button.
3. In the **Set date & time** screen, press the Up or Down button to change a value. Press the Next button to select the next value that you want to change.
4. When you have set the last value, press the Save button to save the changes and return to the **Setup** menu.

Diagnostics menu

Press the Diags button to display the **Diags** menu.

System-level tests

To run a system-level test, complete the following steps:

1. From the **Diags** menu, press the Down (↓) button to select **System-level tests** (if it is not already selected), and press the Enter button.
2. Press the Down button to select the test that you want to run, and press the Enter button. The test starts.
3. When the test is complete, press the Ok button. The test results are displayed.
4. Press the Exit button to return to the **Diags** menu.

Subsystem tests

To run a subsystem level test, complete the following steps:

1. From the **Diags** menu, press the Down (↓) button to select **Subsystem tests**, and press the Enter button.
2. Press the Down button to select the test that you want to run, and press the Enter button. The test starts.
3. Press the Ok button. The test results are displayed.
4. Press the Exit button to return to the **Diags** menu.

Component tests

To run a component test, complete the following steps:

1. From the **Diag** menu, press the Down (↓) button to select **Component tests**, and press the Enter button.

2. Press the Down button to select the test that you want to run, and press the Enter button.
3. Press the OK button. The test results are displayed.
4. When you are done running component tests, Press the Exit button to return to the **Diags** menu.

Chapter 4. Using the Remote Management utility

Use the Remote Management utility to perform the following tasks:

- Display library status information
- Perform library operations
- Perform library configuration tasks
- Work with the library remotely
- Access other Web sites and library identification information

Figure 14 shows the options in the Remote Management utility.

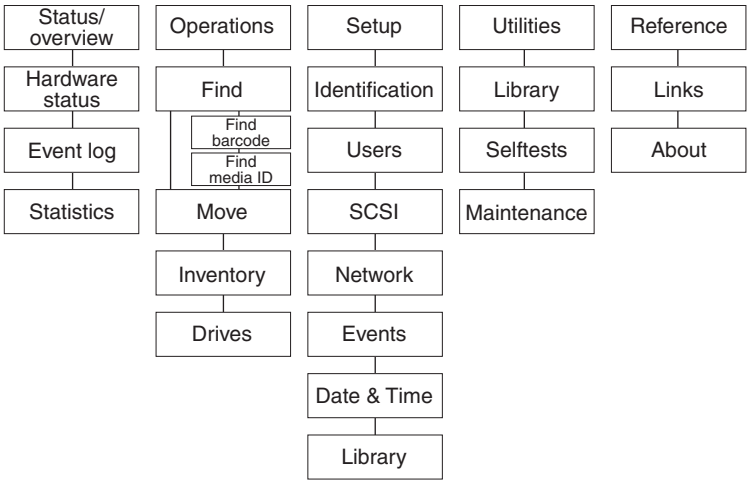

Figure 14. Menu items

To run the Remote Management utility, complete the following steps:

1. Make sure that the library is connected to an Ethernet network.
2. Make sure that the library is turned on.
3. Open a Web browser and enter the IP address of the library in the following format: http://*ipaddress*.
4. Type the user name and password and click **OK**. The Remote Management utility home page is displayed.

   Note: The default user name and password is `admin`.

Displaying library information

Use the Status page to display the following information:

- Status overview
- Hardware status
- Event log
- Statistics
- Drive log

Table 10 on page 26 describes the information and the access procedures.

Table 10.

Information	Description	Access procedure
Overview	This page is the Remote Management utility home page. It indicates the overall status of the library	The Overview page is displayed when the Remote Management utility is started.
Hardware	This page displays the status of the library components or a link to display status.	To display hardware information, complete the following steps: 1. From the Status page, click the **Hardware** tab. The Hardware Status page is displayed. 2. Expand the component that you want status for. If the status of the component is displayed as a link, click the link to display the status of the component.
Event Log	This page displays the library events. The events are displayed in the following categories: • All: Display all events • Hard: Display hardware events • Soft: Display software events • Update: Display library update events • Boot: Display library boot sequence events For each category, you can specify the following priorities: • Critical Event • Warning Event • Information Event	To display event information, complete the following steps: 1. From the Status page, click the **Event Log** tab. The Event Log page is displayed. 2. Specify the date and time period 3. Specify the event category and event priority. 4. Specify the cabinet. 5. Click **View**. The event information is displayed.
Statistics	This page displays the library statistics or a link to the statistics for a component.	To display the statistics, complete the following steps: 1. From the Status page, click the **Statistics** tab. The Statistics page is displayed. 2. Expand the component that you want status for. If a link is provided, click the link to display the statistics for that component.
Drive Log	This page displays the status of the tape drives.	To display the tape drive status, from the Status page, click the **Drive Log** tab. The Drive Log page is displayed.

Operating the library

Use the Operations page to perform the following tasks:

- Find cartridges
- Move cartridges
- Inventory cartridges
- Control tape drives

Table 11. Operations page actions

Action	Description	Access procedure
Find	Use the Find page to find cartridges according to either the bar code or the media ID, and display information about library components in a physical or logical map. The asterisk (*) and question mark (?) characters can be specified as wildcard characters. The physical map displays a high-level physical representation of the library. Select a component to display details about that component. The logical map lists the components of the library. Select a component to display details about that component.	To find cartridges or display component information, complete the following steps: 1. From the Status page, click the **Operations** tab. The Operations page is displayed. 2. From the Operations page, click the **Find** tab. The Find page is displayed. 3. Perform one of the following tasks: • Type a bar code and click **Find**. All cartridges that meet the specified criteria are displayed. Leave the bar code field blank to display the bar codes of all the cartridges in the library. • Type a media ID and click **Find**. All cartridges that meet the specified criteria are displayed. Leave the media ID field blank to display the media ID of all the cartridges in the library. 4. Click the bar code or media label of the cartridge that you want to display more information about. To display a physical or logical view of the library components, click **Physical/Logical**.
Move cartridges	Use the Move page to move a cartridge.	To move a cartridge, complete the following steps: 1. From the Status page, click the **Operations** tab. The Operations page is displayed. 2. From the Operations page, click the **Move** tab. The Move page is displayed. 3. Specify the following source information: • Partition (library name) • Element • Position 4. Specify the following destination information: • Partition (library name) • Element • Position 5. Click **Apply**.
Inventory cartridges	Use the inventory page to perform a cartridge inventory.	To perform a cartridge inventory, complete the following steps: 1. From the Status page, click the **Operations** tab. The Operations page is displayed. 2. From the Operations page, click the **Inventory** tab. The Inventory page is displayed. 3. Select the library for which you want to preform an inventory. 4. Click **Apply** to start the inventory.

Table 11. Operations page actions (continued)

Action	Description	Access procedure
Control tape drives	Use the Drives page to perform the following tasks: • Shutdown • Power on • Power off • Reset	To perform an action on a tape drive, complete the following steps: 1. From the Status page, click the **Operations** tab. The Operations page is displayed. 2. From the Operations page, click the **Drives** tab. The Drives page is displayed. 3. Type the tape drive number. 4. Select the action that you want to perform. 5. Click **Apply** to start the inventory.

Configuring the library

Use the Setup page to perform the following tasks:

- Identify the library
- Control user access
- Work with SCSI IDs
- Work with network information
- Identify events for e-mail notification
- Specify the date and time
- Configure automatic library actions

Table 12.

Task	Description	Procedure
Identify the library	This information is used to describe a library for support purposes. Use the Identification page to specify the following information: • Library name: A unique name • Contract number: The library contract number • Asset number: A user-defined number • Location: The location of the library • Description: A short description of the library • Company: The name of the company • Address: The address of the company	To specify library identification information, complete the following steps: 1. From the Status page, click the **Setup** tab. The Identification page is displayed. 2. Specify the identification information. **Note:** Information that is marked with an asterisk (*) is required. 3. Click **Save**.

Table 12. (continued)

Task	Description	Procedure
Users	Use this page to identify library users and to define e-mail notification. Use the Users page to specify the following information: • Full name: The full name of the user • User name: A unique user name • Password: The user password • Verify password: The user password • Access role: The administrator or operator • Address: The user address • Phone: The user phone number • Fax: The user fax number • Pager: The user pager number • E-mail: The user e-mail address. • Add to Events e-mail list: Add the user to the e-mail events list	To add a new user, complete the following steps: 1. From the Status page, click the **Setup** tab. The Identification page is displayed. 2. From the Identification page, click the **Users** tab. The Users page is displayed. 3. Specify the identification information. **Note:** Information that is marked with an asterisk (*) is required. 4. Click **Apply**.
Work with SCSI IDs	Use this option to set the SCSI ID of the library and tape drives. You must take the library offline to set the SCSI ID of a tape drive. After you set the SCSI ID of the library, you must restart the library.	To set the SCSI ID, complete the following steps: 1. From the Status page, click the **Setup** tab. The Identification page is displayed. 2. From the Identification page, click the **SCSI** tab. The SCSI page is displayed. 3. If you are setting a tape drive SCSI ID, take the library offline. 4. Type the SCSI ID of the gripper or tape drive and click **Apply**. 5. If you changed a tape drive SCSI ID, place the library online. 6. If you changed the gripper SCSI ID, restart the library.
Work with network information	Use this option to define your network and e-mail server. The following fields are required: • Hostname • Domain • IP address • Subnet mask • Default gateway The following fields are optional: • Obtain IP address from DHCP server • E-mail server • Primary DNS address • Secondary DNS address	To define the network information or e-mail server, complete the following steps: 1. From the Status page, click the **Setup** tab. The Identification page is displayed. 2. From the Identification page, click the **Network** tab. The Network page is displayed. 3. Specify the network or e-mail server information and click **Save**. 4. Restart the library.

Table 12. (continued)

Task	Description	Procedure
Identify events for e-mail notification	Use the Events page to define which events should be e-mailed to a user.	To initially identify events for e-mail notification, complete the following steps: 1. From the Status page, click the **Setup** tab. The Identification page is displayed. 2. From the Identification page, click the **Events** tab. The Events page is displayed. 3. Select the message type. 4. Specify the e-mail addresses of the recipients and click **Update**. 5. Click **Send Test** to send a test e-mail. To add a new user or change an existing e-mail notification list, complete the following steps: 1. From the Status page, click the **Setup** tab. The Identification page is displayed. 2. From the Identification page, click the **Events** tab. The Events page is displayed. 3. Select the message type. 4. Click **New** to Add a new user, or click **Edit** to change an existing user. 5. Specify the information and click **Update**. 6. Click **Send Test** to send a test e-mail. To remove a user, complete the following steps: 1. From the Status page, click the **Setup** tab. The Identification page is displayed. 2. From the Identification page, click the **Events** tab. The Events page is displayed. 3. Select the user that you want to remove 4. Click **Remove**.
Specify the date and time	Use the Date & Time page to set the date and time that the library uses to create a time stamp for events.	To set the date and time, complete the following steps: 1. From the Status page, click the **Setup** tab. The Identification page is displayed. 2. From the Identification page, click the **Date & Time** tab. The Date & Time page is displayed. 3. Take the library offline. 4. Select the date. 5. Select the time. 6. Select the time zone. 7. If you want the library to automatically adjust the time for daylight saving time, select **Automatically adjust for daylight saving if available**. 8. Click **Save**. 9. Restart the library.

Table 12. (continued)

Task	Description	Procedure
Configure automatic library actions	Use the Library page to work with the following options: • Enable Left Load Port/Right Load Port: Enable this option to use the load ports as load ports. Disable this option to use the load ports as slots. • Clean Drives Automatically: Use this option to automatically clean the tape drives. • Enable Barcode Swap: Use this option to swap the media type prefix from the end of the bar code to the start of the bar code. • Emulate M-Series: Use this option to define the type of emulation that you want the library to use.	To set the date and time, complete the following steps: 1. From the Status page, click the **Setup** tab. The Identification page is displayed. 2. From the Identification page, click the **Library** tab. The Library page is displayed. 3. Specify the option that you want to change. 4. Take the library offline. 5. Restart the library.
Partition the library	Partitions enable host systems on the same network to use the library. The following information is specified: • Partition name: A unique name for the partition. The name must meet the following criteria: – Must start with a letter – Can be 1 - 10 characters – Cannot contain spaces or special characters – The names library, global, and unassigned are reserved. • Cabinet: Select an available cabinet. • Magazines: Select one or more unused magazines. A partition must have at least one magazine. • SCSI logical unit: Enter the SCSI logical unit number for this partition. • Load port: Select a load port for this partition if one is required. Load ports can be shared by cabinets. • Enable autoclean: Select this option if you want the tape drives to be cleaned automatically. • Enable barcode swap: Moves the media type prefix from the beginning of the barcode to the end of the barcode. • Configured slots: Specify the number of slots for the partition.	To partition a library, complete the following steps: 1. Take the library offline. 2. From the Status page, click the **Setup** tab. The Identification page is displayed. 3. From the Identification page, click the **Partition** tab. The Partition page is displayed. 4. Specify the information. 5. Click **Apply**. 6. Restart the library.

Controlling the library

Use the Utilities page to perform the following tasks:

- Put the library online and offline
- Restart the library
- Park the robotics for shipment
- Perform system tests
- Perform maintenance tests

Table 13.

Task	Description	Procedure
Put the library online or offline	Use these options to put the library online or offline.	1. From the Status page, click the **Utilities** tab. The Utilities page is displayed. 2. From the Utilities page, click the **Library** tab. The Library page is displayed. 3. Click **Online** or **Offline**.
Park for shipping	Use this option to park the robot for shipment.	1. From the Status page, click the **Utilities** tab. The Utilities page is displayed. 2. From the Utilities page, click the **Library** tab. The Library page is displayed. 3. Take the library offline. 4. Select the cabinet (library) that you want to work with. 5. Click **Park**. 6. Place the library online.
Restart the library	Use this option to restart the library.	1. From the Status page, click the **Utilities** tab. The Utilities page is displayed. 2. From the Utilities page, click the **Library** tab. The Library page is displayed. 3. Click **Reboot**.
Run system tests	Use this option to test the movement of the robot in all axes. The following types of tests can be run: • Self-tests • Calibration statistics • Random load or unload • Random slot • Random drive You can specify the number of times a test will run. If you do not specify a number, the tests run continuously until you stop them.	1. From the Status page, click the **Utilities** tab. The Utilities page is displayed. 2. From the Utilities page, click the **System Tests** tab. The System Tests page is displayed. 3. Take the library offline. 4. Select the test type. 5. Select the cabinet (library). 6. Specify the number of test runs. 7. Click **Start Test**.

Table 13. (continued)

Task	Description	Procedure
Perform maintenance	Use this option to back up or restore the library configuration files or install new firmware. The configuration files contain all of the library configuration information. Back up the configuration files to the host system. You can select from the following types of configuration files: • All: Contains all user, network, and library configuration information. Use this option to replace all configuration options for the library. • User: Contains the user configuration information. Use this file to replace the user configuration information or configure another library with the same user configuration information. • Network: Contains the network configuration information. Use this file to replace the network configuration information or configure another library with the same network configuration information. • Library: Contains the library configuration information. Use this file to replace the library configuration information or configure another library with the same library configuration information.	To back up or restore configuration files, complete the following steps: 1. From the Status page, click the **Utilities** tab. The Utilities page is displayed. 2. From the Utilities page, click the **Maintenance** tab. The Maintenance page is displayed. 3. Take the library offline. 4. Select one of the following options: • **Backup** to save configuration information • **Restore** to restore your configuration information • **Factory** to restore the configuration to the default values that the library came with 5. Specify the file that has the information. 6. Click **Apply**. 7. Put the library online. To upload firmware, complete the following steps: 1. From the Status page, click the **Utilities** tab. The Utilities page is displayed. 2. From the Utilities page, click the **Maintenance** tab. The Maintenance page is displayed. 3. Take the library offline. 4. Type the path and file name of the firmware file or click **Browse**. 5. Click **Apply**.

Accessing Web sites and library information

Use the Library page to perform the following tasks:

- Access online reference information
- Display library identification information

Table 14.

Task	Description	Procedure
Access online reference information	Use this option to access Web sites that contain information about the library.	To access Web pages, complete the following steps: 1. From the Status page, click the **Reference** tab. The Reference page is displayed. 2. From the Reference page, click the **Links** tab. The Links page is displayed. 3. Click the link for the Web site that you want to access.
Display library identification information	Use this option to display the following information about the library: • Model number • Software version • Network information • Serial number • Slot and drive configuration	To display information about the library, complete the following steps: 1. From the Status page, click the **Reference** tab. The Reference page is displayed. 2. From the Reference page, click the **About** tab. The About page is displayed.

Chapter 5. Solving problems

This chapter provides information about solving the following types of problems:

- Initial startup
- Operator control panel
- Gripper
- Operational

Solving initial startup problems

Table 15 lists initial startup problems and corrective actions.

Table 15. Initial startup problems

Problem	Corrective action
The library does not start.	Make sure that all power cords are connected to a grounded electrical outlet.
The library or tape drives do not respond on the SCSI bus.	Make sure that each SCSI device on the same SCSI bus has a unique address and that the last device is correctly terminated.
During initialization, a `not ready` message is displayed.	Determine the failure type by checking any previous error codes that were returned to the host system. Correct the cause of the error.
One or more tape drives fail to spin up during startup.	Check all SCSI cables and termination at the back of the library. If this does not solve the problem, replace the tape drive. See Table 19 on page 41 for more information.
An internal communication error is reported.	Communication between the robot controller and system controller board has been lost. Restart the library. If this does not solve the problem, replace the controller board. See Table 19 on page 41 for more information.

Solving operator control panel problems

Table 16 lists operator control panel problems and corrective actions.

Table 16. Operator control panel problems

Problem	Corrective action
The operator control panel is blank.	Make sure that the library power is on. If power is on, replace the power supply. See Table 19 on page 41 for more information.
The operator control panel does not respond to the control buttons.	Confirm that the library power is on. If power is on, replace the library chassis. See Table 19 on page 41 for more information.
An error message is displayed.	Write down all of the message information. Correct the problem.

Solving gripper problems

Table 17 lists gripper problems and corrective actions.

Table 17. Gripper problems

Problem	Corrective action
The robot does not move when the library is started.	Make sure that all internal shipping material has been removed and that the doors are closed. If this does not resolve the problem, replace the library chassis. See Table 19 on page 41 for more information.
The gripper has partially gripped a cartridge.	Use the Remote Management utility to move the cartridge to an empty slot.
The gripper has dropped a cartridge.	Complete the following steps: 1. Open the doors and retrieve the cartridge. 2. Place the cartridge in an empty slot. 3. Start the inventory process.
The bar code reader has failed.	Make sure that nothing is obstructing the bar code reader. If nothing is obstructing the bar code reader, restart the library. If this does not resolve the problem, replace the library chassis. See Table 19 on page 41 for more information.
The gripper has timed-out or failed during an operation.	Make sure that the tape cartridge is correctly positioned and that nothing is obstructing the gripper. Retry the operation.

Solving operational problems

Table 18 lists operational problems and corrective actions.

Table 18. Operational problems

Problem	Corrective action
The host system cannot communicate with the library.	There might be a SCSI timeout problem, or the library was prematurely disconnected. Make sure that the following items are correct: • Power is turned on • SCSI cables are the correct length • SCSI cables are connected correctly • SCSI bus is correctly terminated If this does not resolve the problem, replace the library chassis. See Table 19 on page 41 for more information.
A tape cartridge is not recognized.	The gripper cannot sense a cartridge where the inventory indicates it is. Make sure that the cartridge is in the correct location and that it is positioned correctly. Correct any problems that you find and retry the operation.

Table 18. Operational problems (continued)

Problem	Corrective action
A move command failed.	Check the following items: 1. Make sure that the cartridge is in the source slot and that the destination slot is empty. 2. Make sure that nothing is obstructing the gripper. 3. Make sure that the library is online. Retry the command.
A flash memory error is reported.	Replace the library chassis. See Table 19 on page 41 for more information.
A temperature warning is displayed on the operator control panel.	Turn off the library and allow it to cool down. If the problem remains, lower the room temperature or increase air circulation around the library.

Creating a failure analysis file

A failure analysis file contains information that is helpful for diagnosing problems. To create the failure analysis file, complete the following steps:

1. Connect the RS-2320-to-3mm cable, which comes with the library, to the library system controller board and a COM port of a local system.
2. On the local system, open a HyperTerminal window and set the following properties:
   - Baud rate: 38400
   - Data bits: 8
   - Parity: None
   - Stop bits: 1
   - Flow control: None
   - Emulation: ANSI
3. Press Ctrl+L.
4. From the main menu, click **Capture Text**. The Capture Text window is displayed.
5. Type the file name, and press Enter.
6. Type `fa` and press Enter.
7. After the file has been created, click **Stop**.

Manual magazine removal

If a problem prevents you from releasing a magazine, for example, no power is available, use the following procedure to manually remove a magazine:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 7.
2. To open the door, insert the metal pick that is provided in the accessory kit into the door release hole as shown in Figure 15 on page 38.

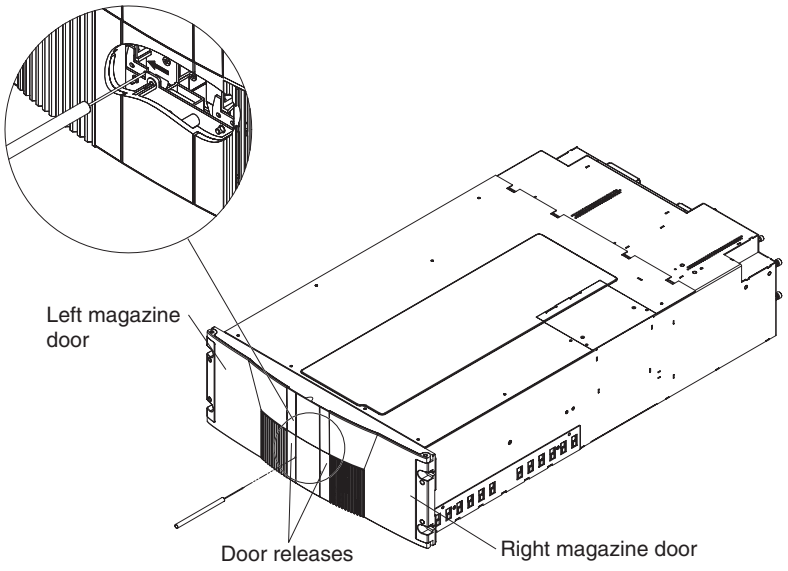

Figure 15. Door release

3. Insert the wooden dowel that is provided in the accessory kit into the magazine release hole and actuate the magazine release mechanism as shown in Figure 16 on page 39.

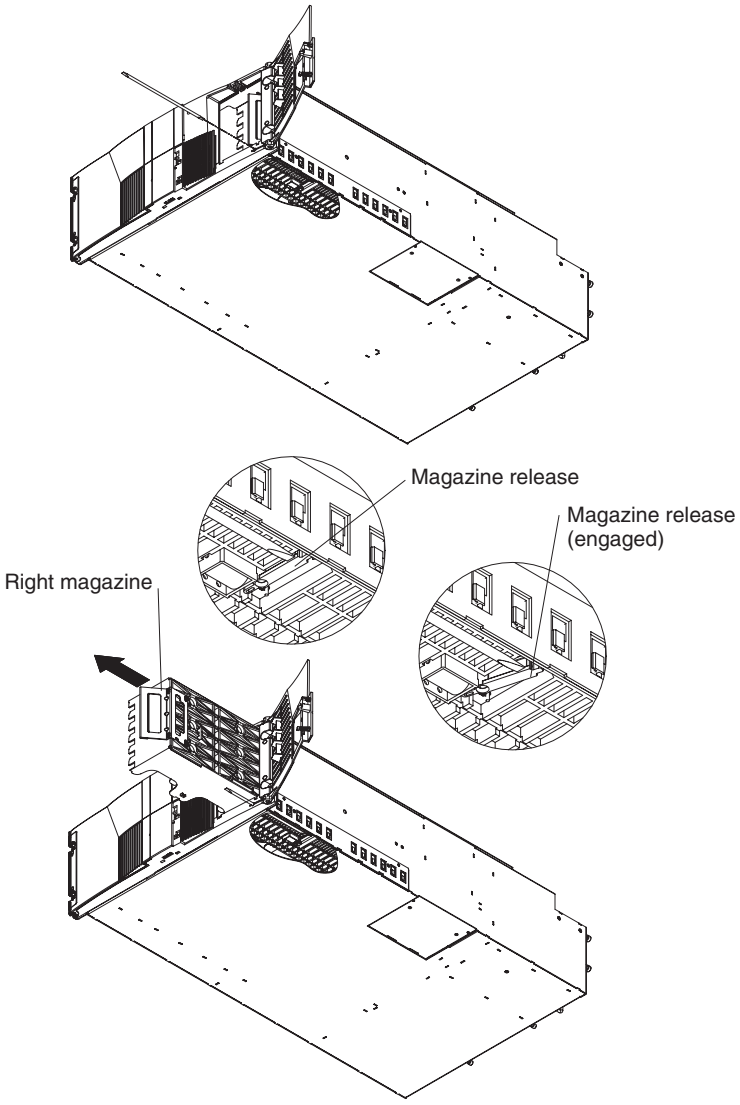

Figure 16. Magazine release

Note: Keep the wooden dowel as straight as possible when you insert it into the magazine release hole.

4. With the magazine release mechanism actuated, slowly pull the magazine out of the library.

Chapter 6. Removing and replacing library components

Replaceable parts are of two types:

- Tier 1 customer replaceable unit (CRU): Replacement of Tier 1 CRUs is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation.
- Tier 2 customer replaceable unit (CRU): You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service that is designated for your product.

For more information about the terms of the warranty and getting service and assistance, see the *Warranty and Support Information* document.

If you are instructed to return a component, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Table 19 lists the replaceable components.

Table 19. Parts listing

CRU part number	Description	Tier
42C3924	Library chassis	1
42C3925	Magazines	1
42C3926	Power supply	1
42C3927	LTO3 tape drive	1
23R3594	4.5M SCSI cable	1
25R5164	0.61M SCSI cable	1
23R5841	SCSI terminator	1
39M5081	US power cord	1
39M5377	PDU power cord	1
42C3939	Library controller	1
42C3928	iSCSI module	1
42C3940	Rack rail kit	1

Removing the library chassis

To remove the library chassis, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 7.
2. Turn off the library and disconnect the power cord.
3. Using the operator control panel, open the doors.
4. Remove the magazines. See “Removing a magazine” on page 44.
5. Remove the tape drives. See “Removing a tape drive” on page 45.
6. Remove the screws that secure the mounting rails to the library chassis.
7. Remove the screws that secure the clamps to the back of the library chassis.
8. Remove the chassis from the library.
9. Remove the back mounting brackets from the library.

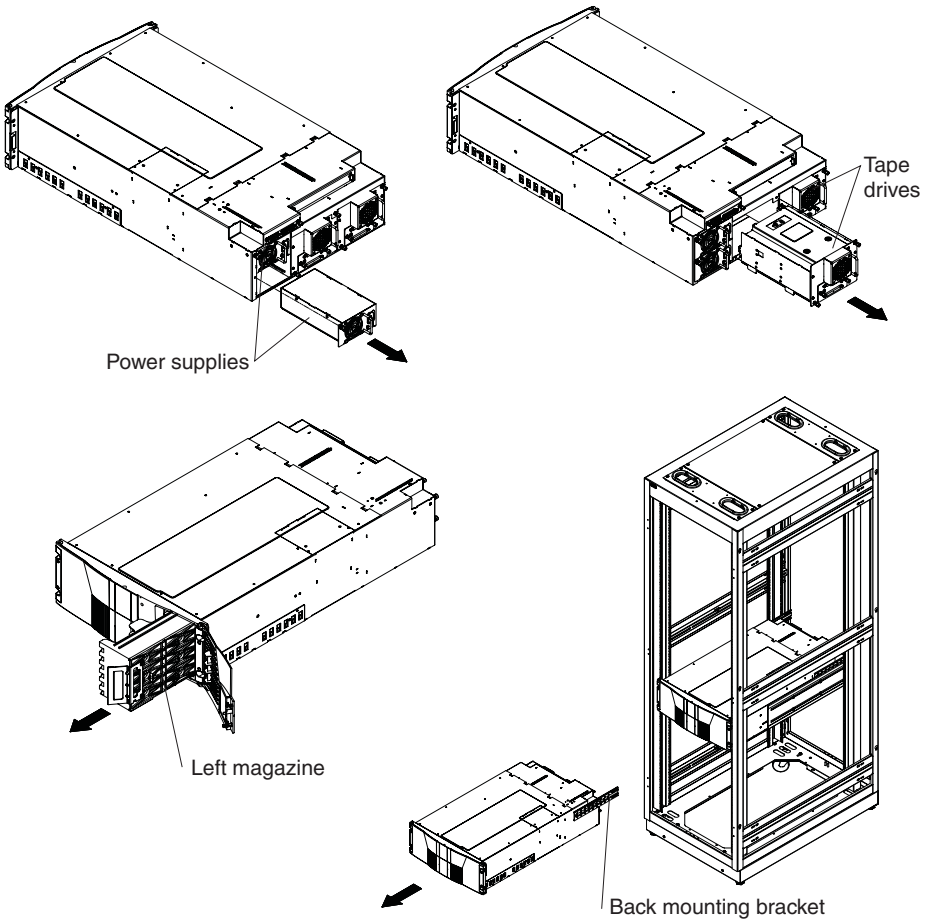

Figure 17. Removing the chassis

Installing the library chassis

To install the chassis, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 7.
2. Make sure that the library is turned off and that the power cord is disconnected.
3. Attach the back mounting brackets to the library.
4. Place the library chassis in the rack.
5. Install the screws that secure the mounting rails to the library chassis.
6. Install the screws that secure the mounting clamps to the back of the library chassis.
7. Install the tape drives. See “Installing a tape drive” on page 45 for more information.
8. Install the power supplies. See “Installing a power supply” on page 44 for more information.
9. Install the magazines. See “Installing a magazine” on page 44 for more information.

Removing the system control board

To remove the system control board, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 7.
2. Turn off the library and disconnect the power cord.
3. Disconnect the SCSI cable and Ethernet cable from the system control board
4. Loosen the two captive screws.
5. Pull the system control board out of the library chassis as shown in Figure 18.

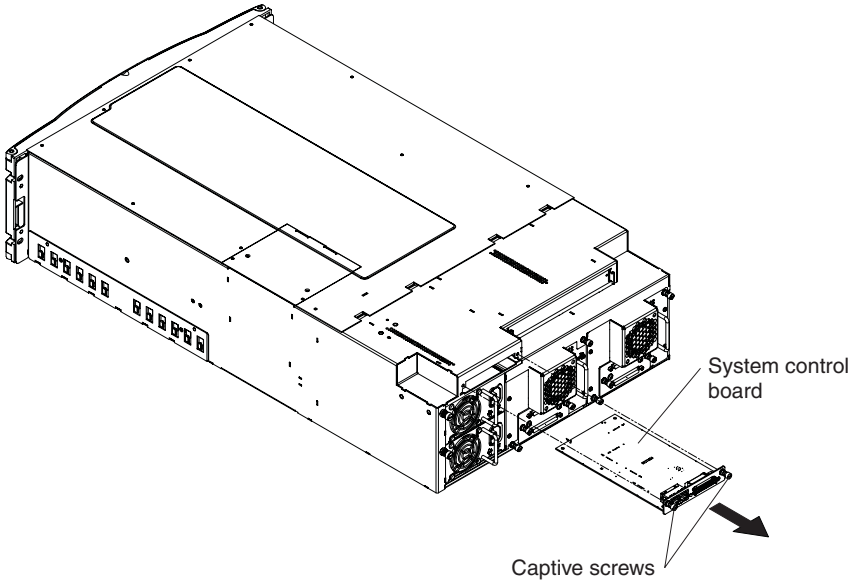

Figure 18. Removing the system control board

Installing the system control board

To install the system control board, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 7.
2. Make sure that the library is turned off and that the power cord is disconnected.
3. Insert the system control board into the library chassis.
4. Tighten the captive screws.
5. Connect the Ethernet cable and the SCSI cable.
6. Turn on the library.
7. If you are not using DHCP, configure the Ethernet address. See “Network” on page 22 for more information.

Removing a power supply

To remove a power supply, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 7.
2. Turn off the library and disconnect the power cord.
3. Loosen the captive screw.
4. Pull the power supply out of the library chassis as shown in Figure 19 on page 44.

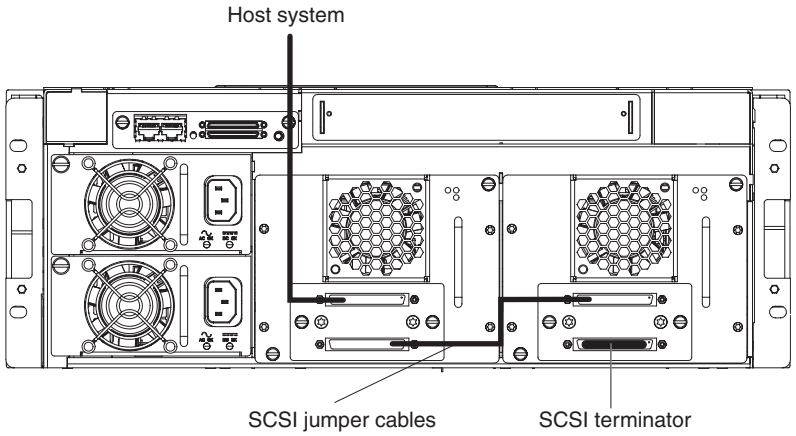

Figure 19. Removing a power supply

Installing a power supply

To install a library power supply, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 7.
2. Make sure that the library is turned off and that the power cord is disconnected.
3. Slide the power supply into the library chassis.
4. Tighten the captive screw.
5. Install the power cord.

Removing a magazine

To remove a magazine, complete the following steps:

1. From the main screen, press the Ops button.
2. From the **Ops** menu, press the Down (↓) button to select **Library Operations** (if it is not already selected), and press the Enter button. The **Library Ops** menu is displayed.
3. Press the Down button to select **Release Magazines**. The magazine doors open, and the magazines are released.

   Attention: Use care when you remove a magazine with cartridges installed. The magazine is heavy and will drop when it is removed from the library.
4. Pull the magazine out of the library.
5. Remove the tapes from the magazine.
6. Remove the three Phillips screws that secure the magazine handle to the magazine.

Installing a magazine

To install a magazine, complete the following steps:

1. Secure the handle to the magazine, with the three Phillips screws.
2. Install the tapes in the magazine.
3. Install the magazine in the library chassis.
4. Close the front doors.

Removing a tape drive

To remove a tape drive, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 7.
2. Turn off the tape drive power:
   a. From the main menu, press the Ops button.
   b. From the **Ops** menu, press the Down button (↓) to select **Drive operations**, and press the Enter button. The **Drive operations** menu is displayed.
   c. Press the Down button to select the tape drive, and press the Enter button.
   d. Press the Down button to select **Pwr off**, and press the Enter button.
3. Loosen the captive screws that secure the tape drive.
4. Pull on the tape drive handle to remove the tape drive.

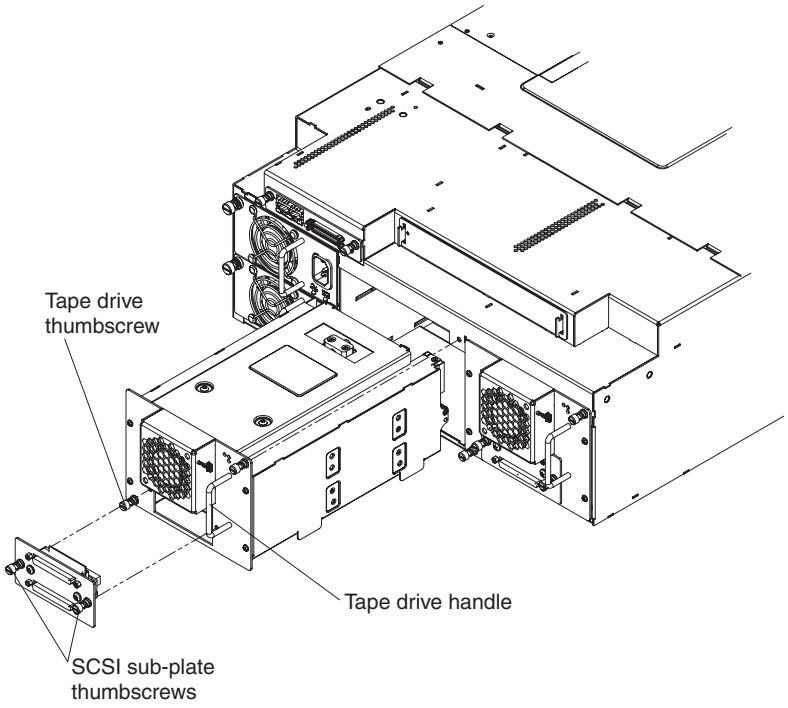

Figure 20. Remove tape drive

Installing a tape drive

To install a tape drive, complete the following steps:

1. Read the safety information that begins on page vii and “Installation guidelines” on page 7.
2. Make sure that the library is turned off and that the power cord is disconnected.
3. Slowly insert the tape drive into the library chassis until the connectors are fully seated.
4. Tighten the captive retaining screws.
5. Turn on the tape drive power:
   a. From the main menu, press the Ops button. The **Ops** menu is displayed.
   b. From the **Ops** menu, press the Down (↓) button to select **Drive operations**, and press the Enter button. The **Drive operations** menu is displayed.

c. Press the Down button to select the tape drive, and press the Enter button.
d. Press the Down button to select **Pwr on**, and press the Enter button.

Appendix A. Specifications

This appendix provides the physical, environmental, and tape drive specifications for the library.

Physical specifications

Size and weight	Electrical
Width: 48.2 cm (19 in.)	Input frequency: 47 - 63 Hz
Depth: 76.2 cm (31 in.)	Power: 150 W (average)
Height: 17.1 cm (6.75 in.)	Input voltage: 88 - 264 V ac
Weight: 39.5 kg (87 lb) (with 2 tape drives and 2 magazines)	

Environmental specifications

Specification	Operating	Storage or non-operating
Ambient temperature range	10° to 35°C (50° to 95°F)	-40° to 65°C (-40° to 149°F)
Relative humidity (humidity gradient)	20% to 80%; non-condensing	10% to 90%; non-condensing
Altitude	-152.4 m to 3048 m (-500 ft to 30 000 ft)	-152.4 m to 12 192 m (-500 to 40 000 ft)

Tape drive specifications

Table 20 describes the specifications of the tape drive.

Table 20. Tape drive specifications

Specification	Value
Capacity, native	15.2 TB (400 GB per cartridge)
Capacity, compressed	30.4 TB (800 GB per cartridge)
Performance	9.6 GB per minute (native)
Average swap time	Less than 14 seconds

Appendix B. SNMP trap list

Table 21 lists the following information about the SNMP traps:

- Event: The name of the event.
- Event description: A description of the event.
- Category:
  - Critical: Immediate intervention is required.
  - Warning: Intervention might be required.
  - Information: A normal library event has occurred.
- Reported by: The component that created the trap.

Table 21. SNMP trap list

Event	Event description	Category	Reported by
Start Backup System Code update (type/dest)	A backup flash update was attempted.	Information	Code update
Start Sled Code update (type/dest)	A drive sled update was attempted.	Information	Code update
Start Drive Code update (type/dest)	A drive update was attempted.	Information	Code update
Loader Image size larger than hdr entry (image size)	The library failed the version verification test.	Critical	Code update
Loader Image size smaller than hdr entry (image size)	The library failed the version verification test.	Critical	Code update
Loader Image too large for allocated memory (image size)	The library failed the version verification test.	Critical	Code update
Invalid boot image	The boot code that is used to initialize the system is invalid. Update the library firmware with the latest version of code.	Critical	Code update
Invalid drive image (type/dest)	The tape drive software that was downloaded into the library memory is invalid.	Critical	Code update
Invalid system image (location)	The library software that is used for system operation is invalid. Update the library firmware with the latest version of code.	Warning	Code update
Start System Code update (type/dest)	A loader update was attempted.	Information	Code update
Code update successful (type/dest)	A code update has been completed.	Information	Code update
Code update failed (status)	A code update has failed.	Information	Code update
Backplane nv erase err (region id/status)	Nonvolatile memory on the backplane could not be erased. Replace the backplane to restore normal library operations.	Critical	Diagnostics
Backplane nv read err (region id/status)	Nonvolatile memory on the backplane could not be read. Replace the backplane to restore normal library operations.	Critical	Diagnostics

Table 21. SNMP trap list (continued)

Event	Event description	Category	Reported by
Backplane nv write err (region id/status)	Nonvolatile memory on the backplane could not be written. Replace the backplane to restore normal library operations.	Critical	Diagnostics
Hand-camera image fail	The camera in the robotics hand has failed to read an image.	Critical	Diagnostics
Hand-camera init fail	The camera in the robotics hand has failed its initialization routine.	Critical	Diagnostics
Selftest Camera FIFO failure	The camera in the robotics hand has failed to read its memory that is used to transfer data.	Critical	Diagnostics
Selftest display bram failure	The diagnostic buffer that is used to report test results is not large enough to hold the data.	Critical	Diagnostics
Scb-fpga camera fifo fail	The memory on the system controller board has failed to read the memory that is used to transfer data.	Critical	Diagnostics
Test details buffer overflow (len/testId)	The diagnostic buffer that reports test results is not large enough to hold the data.	Critical	Diagnostics
Test record semaphore locked (index/tx-status)	An internal firmware error has occurred.	Critical	Diagnostics
Test structure corrupt (testId)	An internal firmware error has occurred.	Critical	Diagnostics
Insufficient num cart for test (num)	There are not enough tape cartridges in the library to complete the system test.	Warning	Diagnostics
Insufficient num drives for test (num)	There are not enough tape drives in the library to complete the system test.	Warning	Diagnostics
Insufficient num empty slots for test (num)	There are not enough empty bins in the library to complete the system test.	Warning	Diagnostics
Hand-cal offset fail	The library failed the calibration test that computes offsets for the robotic hand.	Critical	Diagnostics
Hand-theta cal offset fail	The library failed the calibration test that computes offsets for the robotic hand in rotation.	Critical	Diagnostics
Hand-trans cal offset fail	The library failed the calibration test that computes offsets for the robotic hand in translation.	Critical	Diagnostics
XY & hand cal offset fail	The library failed the calibration test that computes offsets for the robotics tray.	Critical	Diagnostics
XY & hand_theta cal offset fail	The library failed the calibration that computes offsets for the robotics tray and robotics hand.	Critical	Diagnostics
XY & hand_trans cal offset fail	The library failed the calibration test that computes offsets for the robotics tray and robotics rotation.	Critical	Diagnostics
XY & Z cal offset fail	The library failed the calibration test that computes offsets for the robotics tray and the robotics up and down motion.	Critical	Diagnostics

Table 21. SNMP trap list (continued)

Event	Event description	Category	Reported by
XY-cal offset fail	The library failed the calibration test that computes offsets for the robotics tray.	Critical	Diagnostics
Z & hand cal offset fail	The library failed the calibration test that computes offsets for the robotics tray up and down and robotics hand.	Critical	Diagnostics
Z & hand_theta cal offset fail	The library failed the calibration test that computes offsets for the robotics tray up and down and robotics hand rotation.	Critical	Diagnostics
Z & hand_trans cal offset fail	The library failed the calibration test that computes offsets for the robotics tray up and down and robotics hand translation.	Critical	Diagnostics
Z-cal offset fail	The library failed the calibration test that computes the offsets for the robotics tray up and down.	Critical	Diagnostics
Hand-trans axis init fail	The robotic hand could not initialize the translation axis.	Critical	Diagnostics
Hand-trans home fail	The robotic hand could not home the translation axis.	Critical	Diagnostics
Hand-trans motor fail (zone #)	The robotic hand has failed to position translation to a predetermined physical location.	Critical	Diagnostics
Hand-theta axis fail (zone #)	The robotic hand has failed to position rotation to a predetermined physical location.	Critical	Diagnostics
Hand-theta axis init fail	The robotic hand could not initialize the rotation axis.	Critical	Diagnostics
Hand-theta home fail	The robotic hand could not home the rotation axis.	Critical	Diagnostics
Hand-theta motor fail (zone #)	The robotic hand has failed to position rotation to a predetermined physical location.	Critical	Diagnostics
Hand-theta neg position fail (zone #)	The robotic hand has failed to position rotation to a predetermined physical location.	Critical	Diagnostics
Hand-theta pos position fail (zone #)	The robotic hand has failed to position rotation to a predetermined physical location.	Critical	Diagnostics
Hand-theta position fail	The robotic hand has failed to position rotation to a predetermined physical location.	Critical	Diagnostics
API msg que send shutdown err (tx-status)	An internal API could not send a shutdown message.	Critical	Diagnostics
API send response que err (tx-status/fromId)	An internal API received a command message error.	Critical	Diagnostics
API send test msg que err (tx-status/fromId)	An internal API received a command message error.	Critical	Diagnostics
Bad sender for get resp que (taskId/sender)	An internal API received a command message error.	Critical	Diagnostics

Table 21. SNMP trap list (continued)

Event	Event description	Category	Reported by
Create main msg que err (tx-status)	An internal API received a command message error.	Critical	Diagnostics
Create response msg que err (tx-status)	An internal API received a command message error.	Critical	Diagnostics
Main msg que receive err (tx-status)	An internal API received a command message error.	Critical	Diagnostics
Response msg que receive err (tx-status)	An internal API received a command message error.	Critical	Diagnostics
Create test record semaphore err (tx-status)	An internal API received a command message error.	Critical	Diagnostics
Ralu rnd number generator reset	The random number generator that calculates the slot locations for the internal Random Access Load Unload (RALU) function has been reset.	Information	Diagnostics
Elem move failed limits check	A move to an element failed a calibration limit.	Warning	Diagnostics
Hand-communication fail	The communication to the robotic hand has failed.	Warning	Diagnostics
XYZ-communication fail	The communication to the robotic hardware for moving the X, Y, and Z axes has failed.	Warning	Diagnostics
Timeout waiting for response (status/taskId)	A command that was sent by the diagnostics module has timed out while waiting for a return from another module in the system.	Critical	Diagnostics
Z-axis init fail	The Z (vertical) axis initialization routine has failed.	Critical	Diagnostics
Z-motor fail (zone #)	The robotic hand has failed to position the vertical axis to a predetermined physical location.	Critical	Diagnostics
Z-position fail (zone #)	The robotic hand has failed to position the vertical axis to a predetermined physical location.	Critical	Diagnostics
X-position fail (zone #)	The robotic hand has failed to position the XY axis to a predetermined physical location.	Critical	Diagnostics
XY-home fail	The XY axis initialization routine has failed to find its home position.	Critical	Diagnostics
XY-motor fail (zone #)	The robotic hand has failed to position the XY axis to a predetermined physical location.	Critical	Diagnostics
XY-position fail	The robotic hand has failed to position the XY axis to a predetermined physical location.	Critical	Diagnostics
XY-safe to rotate fail	The safe-to-rotate sensor that homes the XY axis could not be seen by the calibration routine.	Warning	Diagnostics

Table 21. SNMP trap list (continued)

Event	Event description	Category	Reported by
Y-position fail (zone #)	The robotic hand has failed to position the XY axis to a predetermined physical location.	Critical	Diagnostics
Bad SCSI Sense Data	A command that was sent to the drive received bad sense data.	Warning	Drive Manager
Aborted any open exchanges	Drive communication has failed.	Information	Drive Manager
ADT login failed	The library failed to log in and set up communication to a drive.	Critical	Drive Manager
Bad reply received	The drive did not return a valid response.	Warning	Drive Manager
Login failed, too many retries	The library could not initiate communication with the drive.	Warning	Drive Manager
Login failed, no response	The drive did not respond correctly to the login command sequence.	Warning	Drive Manager
Unexpected login, not handled or requested	The drive unexpectedly sent a login request.	Information	Drive Manager
ACI invalid Response	The HP Gen 2 Drive returned an invalid command response.	Warning, Critical	Drive Manager
Command Id not supported	The tape drive does not support the command.	Critical	Drive Manager
Could not send adt logout	Drive communication is lost, possibly because of hardware.	Critical	Drive Manager
Message Id not supported	The tape drive does not support the command.	Critical	Drive Manager
Response ServiceType not supported	The tape drive does not support the requested operation.	Warning, Critical	Drive Manager
SCSI Response ptr is NULL ptr	The tape drive did not return correct data to the requested command.	Critical	Drive Manager
SCSI unsupported response code	The tape drive does not support the requested command.	Critical	Drive Manager
Too many busy retries	The tape drive has responded with too many busy responses.	Warning	Drive Manager
Unknown protocol type	The tape drive communication protocol is not recognized.	Critical	Drive Manager
Malloc block failed	The system has run out of internal memory.	Critical	Drive Manager
Drive wait que error	The system has run out of internal memory.	Critical	Drive Manager
Sema error	The operating system has failed to create a resource.	Critical	Drive Manager
Sema put failed	The operating system has failed to create a resource.	Critical	Drive Manager
Could not activate event timer	The operating system has failed to create a timer resource.	Warning	Drive Manager
Could not activate util timer	The operating system has failed to create a timer resource.	Warning	Drive Manager
Could not change event timer	The operating system has failed to modify a timer resource.	Warning	Drive Manager

Table 21. SNMP trap list (continued)

Event	Event description	Category	Reported by
Could not change util timer	The operating system has failed to modify a timer resource.	Warning	Drive Manager
System reset by hardware (code/srr0)	Codes: 0x1111 MACHINE_CHECK 0x2222 ID_DATA_STORAGE 0x3333 ISI_EXCEPTION 0x4444 ALIGNMENT_EXCEPTION x5555 PROGRAM_EXCEPTION x6666 SYSTEM_CALL 0x7777 FIT 0x8888 WATCHDOG 0x9999 INT_ID_DATA_TLB 0xAAAA INT_ID_INST_TLB 0xBBBB INT_ID_DEBUG 0xCCCC INT_ID_RESET srr0 is always 0	Critical	Event Manager
System reset by software (0/0)	The system has been reset by the system software.	Critical	Event Manager
System reset by watchdog timer (0/0)	The system has been reset by the internal watchdog timer.	Critical	Event Manager
System power failed (0/0)	System power has failed internal monitoring limits.	Critical	Event Manager
(re)Booted for unknown reason (post fail/sled:qsb)	An unexpected restart has occurred.	Critical	Event Manager
Rebooted by hardware trap (post fail/sled:qsb)	Serial bus channel: Drive Channel 89 - 0x00000200 Drive Channel 67 - 0x00000100 Drive Channel 45 - 0x00000080 Drive Channel 23 - 0x00000040 Drive Channel 01 - 0x00000020 Front Panel - 0x00000010XYZ - 0x00000008 Hand - 0x00000004 Regulator Module - 0x00000002 Backplane - 0x00000001	Information	Event Manager
Rebooted by software trap (post fail/sled:qsb)	An unexpected restart has occurred.	Information	Event Manager
Rebooted by CPU watchdog (post fail/sled:qsb)	An unexpected restart has occurred.	Information	Event Manager
Rebooted by code load (post fail/sled:qsb)	An unexpected restart has occurred.	Information	Event Manager
Powered on (post fail/sled:qsb)	An unexpected restart has occurred.	Information	Event Manager
Booted after power failed (post fail/sled:qsb)	An unexpected restart has occurred.	Information	Event Manager
User requested reboot (post fail/sled:qsb)	An unexpected restart has occurred.	Information	Event Manager

Table 21. SNMP trap list (continued)

Event	Event description	Category	Reported by
Camera failed POST (event class/failure detail)	Event classes: Internal Firmware Failure 0x24 Operating System Failure - 0x43 and 0x44 Camera Init Failure 0x7C Failure details are listed in the following event description.	Critical	Image proc
Camera initialization failed (camera code)	Failure codes: Camera was reset, try again - 0x0D Write data does not match read data - 0x0C Counter does not match data mount - 0x0B Interrupt not received at 3/4 - 0x0A Interrupt received too early - 0x09 Problem reading control regs - 0x08 Problem writing control regs - 0x07 I2C channel problem - 0x06 Image data is truncated or missing - 0x05 Invalid image format - 0x04 Cannot set camera's data window- 0x03 Firmware bug detected - 0x02 Camera is not operating or unrecognized - 0x01 No problems detected - 0x00	Critical	Image proc
Camera was unexpectedly reset	The internal camera has been reset since the last time the system was powered-on.	Warning	Image proc
Couldn't get mutex for camera I2C (thrdx status)	The operating system has failed to create a resource.	Warning	Image proc
Unknown status for OCP status LED (lib status)	The front panel hardware is in an unknown state.	Warning	OCP
Internal request to send null SCSI CDB	The operating system has failed to create a proper SCSI command data block.	Critical	SCSI
Queue insert failed when receiving data out	The operating system has failed to create a resource for the SCSI module.	Critical	SCSI
SCB null in Release SCB	The information in the SCSI command is not present.	Critical	SCSI
SCB null when receiving data out	The information in the SCSI command is not present.	Critical	SCSI
SCB null	The information in the SCSI command is not present.	Critical	SCSI
Semaphore put failed when receiving data out	The operating system has failed to create a resource.	Critical	SCSI
Unexpected data out received	Data out was received from the host, but the SCSI server (the current SCB) was not in a state to receive the data.	Critical	SCSI
Unexpected data received	Data in was unexpectedly sent to the host.	Critical	SCSI

Table 21. SNMP trap list (continued)

Event	Event description	Category	Reported by
Unexpected response - no non-immed	A response to an outstanding non-immediate command was received, and the SCSI server did not know about the non-immediate command.	Critical	SCSI
Unexpected response - wrong state	A response to an outstanding non-immediate command was received, and the SCSI server did not know about the non-immediate command.	Critical	SCSI
No SCBs available	The operating system has failed to create a resource.	Critical	SCSI
Release failed in Release SCB	The operating system has failed to create a resource.	Critical	SCSI
Queue insert failed when receiving a SCSI command	The operating system has failed to create a resource.	Critical	SCSI
Queue insert failed	The operating system has failed to create a resource.	Critical	SCSI
Semaphore put failed when receiving a SCSI command	The operating system has failed to create a resource.	Critical	SCSI
Semaphore put failed	The operating system has failed to create a resource.	Critical	SCSI
Servo Initialization Failure	The system has failed to initialize the robotics.	Critical	Servo
Cartridge not in hand after get from magazine	The robotics did not detect a cartridge present when a tape was pulled from the magazine.	Warning	Servo
Servo Initialization Is Complete	The system has succeeded in initializing the robotics.	Information	Servo
Picker Axis Jammed	The portion of the robotics that picks the tape cannot move its motor.	Warning	Servo
Picker Axis Position Lost	The portion of the robotics that picks the tape cannot move its motor to the expected internal limits.	Warning	Servo
Picker Axis Retry	The portion of the robotics that picks the tape has exceeded internal retries.	Warning	Servo
Picker Axis Stalled	The portion of the robotics that picks the tape cannot move its motor to the expected internal limits.	Warning	Servo
Picker Axis Timeout	The portion of the robotics that picks the tape could not position within its allotted time.	Warning	Servo
Theta Axis Jammed	The portion of the robotics that rotates cannot move its motor.	Warning	Servo
Theta Axis Position Lost	The portion of the robotics that rotates cannot move its motor to the expected internal limits.	Warning	Servo
Theta Axis Retry	The portion of the robotics that rotates theta has exceeded internal retries.	Warning	Servo

Table 21. SNMP trap list (continued)

Event	Event description	Category	Reported by
Theta Axis Stalled	The portion of the robotics that rotates cannot move its motor to the expected internal limits.	Warning	Servo
Theta Axis Timeout	The portion of the robotics that rotates theta could not position within its allotted time.	Warning	Servo
XY Axis Jammed	The portion of the robotics that moves the XY axis cannot move its motor.	Warning	Servo
XY Axis Position Lost	The portion of the robotics that moves the XY axis cannot move its motor to the expected internal limits.	Warning	Servo
XY Axis Retry	The portion of the robotics that moves XY has exceeded internal retries.	Warning	Servo
XY Axis Stalled	The portion of the robotics that moves the XY axis cannot move its motor to the expected internal limits.	Warning	Servo
XY Axis Timeout	The portion of the robotics that moves XY could not position within its allotted time.	Warning	Servo
Z Axis Jammed	The portion of the robotics that positions up and down cannot move its motor.	Warning	Servo
Z Axis Position Lost	The portion of the robotics that moves the up/down axis cannot move its motor to the expected internal limits.	Warning	Servo
Z Axis Retry	The portion of the robotics that moves up and down has exceeded internal retries.	Warning	Servo
Z Axis Stalled	The portion of the robotics that moves the up/down axis cannot move its motor to the expected internal limits.	Warning	Servo
Z Axis Timeout	The portion of the robotics that moves up and down could not position within its allotted time.	Warning	Servo
Position to XYZ Failed	The robotics could not move to any axis position.	Warning	Servo
Failed to read NVM (status, region)	The robotics backplane has failed.	Critical	Sys manager
Failed to write NVM (status, region)	The robotics backplane has failed.	Critical	Sys manager
Init element structure failed	A firmware error has occurred.	Critical	Sys manager
Read from NV (backplane SPI) failed (status)	The robotics backplane has failed.	Warning	Sys manager
Could not convert GUI addr to physical (elem type/instance)	An element address is bad.	Warning	Sys manager
Could not convert logical addr to physical (elem type/instance)	An element address is bad.	Warning	Sys manager
Could not find drive element in partition (instance/part id)	An element address is bad.	Warning	Sys manager
Could not find load port in cabinet (instance/cab index	An element address is bad.	Warning	Sys manager

Table 21. SNMP trap list (continued)

Event	Event description	Category	Reported by
Could not find load port in partition (instance/part id)	An element address is bad.	Warning	Sys manager
Could not find storage element in cabinet (instance/cab index)	An element address is bad.	Warning	Sys manager
Could not find storage element in partition (instance/part id)	An element address is bad.	Warning	Sys manager
Drv type from dmgr is not known (type)	A firmware error has occurred.	Critical	Sys manager
Failed to send response (status)	A firmware error has occurred.	Critical	Sys manager
Invalid element type in get SCSI Start Addr (type/sys Id)	An element address is bad.	Warning	Sys manager
Invalid element type in get element count (type/sys Id)	An element address is bad.	Warning	Sys manager
Receive async element status - invalid data type (type)	A firmware error has occurred.	Critical	Sys manager
Receive async element status - null element (type, index)	A firmware error has occurred.	Critical	Sys manager
SCSI Address does not convert to valid element type (addr/sys id)	An element address is bad.	Information	Sys manager
Sensor grp unknown (grp)	A firmware error has occurred.	Warning	Sys manager
Stack data received and no buffer to store it (cab index, offset)	A firmware error has occurred.	Warning	Sys manager
Stack message received unexpectedly (cab index, state)	A firmware error has occurred.	Warning	Sys manager
Unexpected response received (txid/sender)	A firmware error has occurred.	Information	Sys manager
Unknown cleaning cartridge requested (drv elemType)	A firmware error has occurred.	Critical	Sys manager
Cleaning tape not found (tape type)	An operation failed.	Warning	Sys manager
Cleaning tape not loaded for clean op (drvNum)	An operation failed.	Critical	Sys manager
Drive cleaning operation failed (drvNum, status)	An operation failed.	Critical	Sys manager
Stack message received while one in progress (cab index, offset)	A stack communication error has occurred.	Information	Sys manager
Allocate failed (threadX status/pool)	A TX blk pool op error has occurred.	Critical	Sys manager
Create data pool failed (threadX status)	A TX blk pool op error has occurred.	Critical	Sys manager
Create elem pool failed (threadX status)	A TX blk pool op error has occurred.	Critical	Sys manager
Create label pool failed (threadX status)	A TX blk pool op error has occurred.	Critical	Sys manager

Table 21. SNMP trap list (continued)

Event	Event description	Category	Reported by
Release failed (threadX status)	A TX blk pool op error has occurred.	Critical	Sys manager
Create failed (threadX status/que)	A TX blk queue op error has occurred.	Critical	Sys manager
Receive failed (threadX status)	A TX blk queue op error has occurred.	Critical	Sys manager
Send failed (msgid/threadX status)	A TX blk queue op error has occurred.	Critical	Sys manager
Create failed (threadX status)	A TX blk semaphore op error has occurred.	Critical	Sys manager
Create failed (threadX status)	A TX blk timer op error has occurred.	Critical	Sys manager
Shutdown timer expired (task mask)	A time limit has expired.	Information	Sys manager
Fan speed critical(0,id) Fan speed warning(0,id)	Fan monitoring id Blake 0 B1|B2|B3 ″ PSU0″ 1 B1|B2|B3 ″ PSU1″ 2 B2|B3 ″ PSU2″ 3 B2|B3 ″ PSU3″ 4 B3 ″ PSU4″ 5 B3 ″ PSU5″ 6 B1|B2|B3 ″Sled0″ 7 B1|B2|B3 ″Sled1″ 8 B2|B3 ″Sled2″ 9 B2|B3 ″Sled3″ 10 B2|B3 ″Sled4″ 11 B2|B3 ″Sled5″ 12 B3 ″Sled6″ 13 B3 ″Sled7″ 14 B3 ″Sled8″ 15 B3 ″Sled9″ 16 B2|B3 ″CPCI0″ 17 B2|B3 ″CPCI1″	Critical	Sys monitor
FPGA program failed	The FPGA has failed.	Critical	Sys monitor
Unexpected error returned from smgrEventDriveInserted (index,status)	A firmware error has occurred.	Critical	Sys monitor
Unexpected error returned from smgrEventDriveRemoved (index,status)	A firmware error has occurred.	Critical	Sys monitor
Unexpected error returned from smgrEventDriveSensorChange-QSB(index,status)	A firmware error has occurred.	Critical	Sys monitor
Unexpected error returned from smgrEventDriveSensorChange-power(index,status)	A firmware error has occurred.	Critical	Sys monitor
Unexpected error returned from smgrEventDriveSensorChange-power(index,status)	A firmware error has occurred.	Critical	Sys monitor
Unexpected error returned from smgrEventDriveSensorChange-temp(0,status)	A firmware error has occurred.	Critical	Sys monitor

Table 21. SNMP trap list (continued)

Event	Event description	Category	Reported by
Unexpected error returned from smgrEventPowerSupplySensor Change(index,status)	A firmware error has occurred.	Critical	Sys monitor
Unexpected error returned from smgrEventSensorChange-QSB(0,status)	A firmware error has occurred.	Critical	Sys monitor
Unexpected error returned from smgrEventSensorChange-adc(0,status)	A firmware error has occurred.	Critical	Sys monitor
Unexpected error returned from smgrEventSensorChange-doors(0,status)	A firmware error has occurred.	Critical	Sys monitor
Unexpected error returned from smgrEventSensorChange-temp(0,status)	A firmware error has occurred.	Critical	Sys monitor
Unexpected error returned from smgrEventVarries-fans(0,status)	A firmware error has occurred.	Critical	Sys monitor
MAC Address is Zero(index/index)	A MAC address is not set.	Critical	Sys monitor
Drive Sled Inserted(sled/0)	Normal operation	Information	Sys monitor
Drive Sled Removed(sled/0)	Normal operation	Information	Sys monitor
Power Supply Inserted (supply/0)	Normal operation	Information	Sys monitor
Power Supply Removed (supply/0)	Normal operation	Information	Sys monitor
System Time Base Set(msecs/seconds)	Normal operation	Information	Sys monitor
System booted(build type/version)	Normal operation	Information	Sys monitor

Table 21. SNMP trap list (continued)

Event	Event description	Category	Reported by
Monitored power level critical(0,id) Monitored power level warning(0,id)	Power monitoring channel 0-1id Blake Units 0 B2|B3 VOLTS ″3.3v cpci_A″ 1 B2|B3 VOLTS ″5.0v cpci_A″ 2 B2|B3 VOLTS ″24v cpci_A″ 3 B2|B3 VOLTS ″24v cpci_B″ 4 B3 VOLTS ″24v cpci_C″ 5 B2|B3 VOLTS ″3.3v cpci_B″ 6 B2|B3 VOLTS ″5.0v cpci_B″ 7 B3 VOLTS ″3.3v cpci_C″ 8 B3 VOLTS ″5.0v cpci_C″ 9 B2|B3 VOLTS ″12v cpci″ 10 B1|B2|B3 AMPS ″24v buss_A current″ 11 B1|B2|B3 VOLTS ″3.3v scb″ 12 B1|B2|B3 VOLTS ″2.5v scb″ 13 B1|B2|B3 VOLTS ″1.8v scb″ 14 B1|B2|B3 VOLTS ″1.2v scb″ 15 B1|B2|B3 PSID ″psu0 ID″ 16 B1|B2|B3 PSID ″psu1 ID″ 17 B1|B2|B3 VOLTS ″psu0 24v″ 18 B1|B2|B3 VOLTS ″psu1 24v″ 19 B1 VOLTS ″12v cpci″ 20 B2|B3 VOLTS ″24v scb″ 21 B1 VOLTS ″5.0v scb/cpci″ 22 B2|B3 AMPS ″24v buss_B current″ 23 B2|B3 PSID ″psu2 ID″ 24 B2|B3 PSID ″psu3 ID″ 25 B2|B3 VOLTS ″psu2 24v″ 26 B2|B3 VOLTS ″psu3 24v″ 27 B2|B3 VOLTS ″5.0v scb″ 28 B3 AMPS ″24v buss_C current″ 29 B3 PSID ″psu4 ID″ 30 B3 PSID ″psu5 ID″ 31 B3 VOLTS ″psu4 24v″ 32 B3 VOLTS ″psu5 24v″	Warning, Critical	Sys monitor
QSB Channel Errors (channel/errors)	A QSB error has occurred.	Warning	Sys monitor
QSB Channel Failure (channel/count)	A QSB failure has occurred.	Critical	Sys monitor
QSB Channel Resyncs (channel/resyncs)	A QSB resync has occurred.	Warning	Sys monitor
RTC Failure	The real-time clock has failed.	Critical	Sys monitor
RTC Time not set	The real-time clock has not been set.	Information	Sys monitor
Unknown board revision(board/Board Revision)	An unknown board revision has been detected.	Critical	Sys monitor
Wrong CPLD revision(board/CPLD Revision)	A wrong CPLD revision was detected.	Critical	Sys monitor
ADC Sensor Communication Failed(channel/id)	The SPI flash has failed. channel 0-1id 2 SPI_ID_BP_ADC_1 3 SPI_ID_BP_ADC_2 14 SPI_ID_BRM_ADC	Critical	Sys monitor
BP is over temperature(old temp/new temp)	The backplane has experienced an over-temperature condition.	Critical	Sys monitor

Table 21. SNMP trap list (continued)

Event	Event description	Category	Reported by
BRM is over temperature(old temp/new temp	The BRM has experienced an over-temperature condition.	Critical	Sys monitor
BRM1 is over temperature(old temp/new temp)	The BRM1 has experienced an over-temperature condition.	Critical	Sys monitor
BRM2 is over temperature(old temp/new temp)	The BRM2 has experienced an over-temperature condition.	Critical	Sys monitor
BRM3 is over temperature(old temp/new temp)	The BRM3 has experienced an over-temperature condition.	Critical	Sys monitor
OCP is over temperature(old temp/new temp)	The OCP has experienced an over-temperature condition.	Critical	Sys monitor
HAND is over temperature(old temp/new temp)	The hand has experienced an over-temperature condition.	Critical	Sys monitor
SCB is over temperature(old temp/new temp)	The system controller board has experienced an over-temperature condition.	Critical	Sys monitor
SLED0 is over temperature(old temp/new temp)	Sled 0 has experienced an over-temperature condition.	Critical	Sys monitor
SLED1 is over temperature(old temp/new temp)	Sled 1 has experienced an over-temperature condition.	Critical	Sys monitor
SLED2 is over temperature(old temp/new temp)	Sled 2 has experienced an over-temperature condition.	Critical	Sys monitor
SLED3 is over temperature(old temp/new temp)	Sled 3 has experienced an over-temperature condition.	Critical	Sys monitor
SLED4 is over temperature(old temp/new temp)	Sled 4 has experienced an over-temperature condition.	Critical	Sys monitor
SLED5 is over temperature(old temp/new temp)	Sled 5 has experienced an over-temperature condition.	Critical	Sys monitor
SLED6 is over temperature(old temp/new temp)	Sled 6 has experienced an over-temperature condition.	Critical	Sys monitor
SLED7 is over temperature(old temp/new temp)	Sled 7 has experienced an over-temperature condition.	Critical	Sys monitor
SLED8 is over temperature(old temp/new temp)	Sled 8 has experienced an over-temperature condition.	Critical	Sys monitor
SLED9 is over temperature(old temp/new temp)	Sled 9 has experienced an over-temperature condition.	Critical	Sys monitor

Table 21. SNMP trap list (continued)

Event	Event description	Category	Reported by
Temp Sensor Communication Failed(channel/iic_id)	A temperature sensor has failed. channel 0-9id 17 IIC_ID_TEMP_SCB 18 IIC_ID_TEMP_BP 19 IIC_ID_TEMP_BRM 20 IIC_ID_TEMP_BRM1 21 IIC_ID_TEMP_BRM2 22 IIC_ID_TEMP_BRM3 23 IIC_ID_TEMP_HAND 24 IIC_ID_TEMP_XY 25 IIC_ID_TEMP_Z 26 IIC_ID_TEMP_GUI 27 IIC_ID_TEMP_SLED0 28 IIC_ID_TEMP_SLED1 29 IIC_ID_TEMP_SLED2 30 IIC_ID_TEMP_SLED3 31 IIC_ID_TEMP_SLED4 32 IIC_ID_TEMP_SLED5 33 IIC_ID_TEMP_SLED6 34 IIC_ID_TEMP_SLED7 35 IIC_ID_TEMP_SLED8 35 IIC_ID_TEMP_SLED8 36 IIC_ID_TEMP_SLED9	Critical	Sys monitor
XY is over temperature(old temp/new temp)	The XY axis motor has experienced an over-temperature condition.	Critical	Sys monitor
Z is over temperature(old temp/new temp)	The Z axis motor has experienced an over-temperature condition	Critical	Sys monitor

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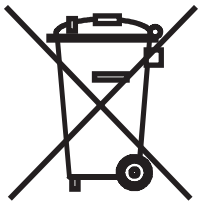

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Part Number: 40K2571

Printed in USA

(1P) P/N: 40K2571