SPARCstorage Library Service Manual

Warning – Procedures contained in this manual must be performed by qualified service-trained maintenance providers.

Refer to the section ”Safety Information” in the Preface and Chapter 4, “Safety Information.”

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Preface

This book describes how to troubleshoot, diagnose error messages, and remove and replace parts in the SPARCstorage™ Library.

Who Should Use This Book

This book is written for a qualified Sun™ field service engineer or system administrator. You must have experience as a system administrator or field service engineer in order to perform the procedures in this book.

Related Books

An additional recommended book is the *Field Engineer's Handbook*.

What Typographic Changes Mean

The following table describes the typographic changes used in this book.

Table P-1 Typographic Conventions

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

Shell Prompts in Command Examples

The following table shows the default system prompt and superuser prompt for the C shell, Bourne shell, and Korn shell.

Table P-2 Shell Prompts

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

Safety Information

Before you begin, carefully read each of the procedures in this manual. If you have not performed similar operations on comparable equipment, *do not attempt* to perform these procedures.

Warning – This equipment contains lethal voltage. Accidental contact can result in serious injury or death.

Caution – Improper handling by unqualified personnel can cause serious damage to this equipment. Unqualified personnel who tamper with this equipment may be held liable for any resultant damage to the equipment.

Individuals who remove any outer panels or open covers to access this equipment must observe all safety precautions and ensure compliance with skill level requirements, certification, and all applicable local and national laws.

Procedures contained in this document must be performed by qualified service-trained maintenance providers.

Caution – Do not make mechanical or electrical modifications to the equipment. Sun Microsystems, Inc. is not responsible for regulatory compliance of a modified SPARCstorage Library.

Caution – There is a lithium battery soldered on the SMC controller card. When the lithium battery needs to be replaced, replace the entire SMC controller card. Do not dispose of the SMC controller card, with the lithium battery in fire.

Part 1— System Information

Product Description 1

The SPARCstorage Library is an 8 mm data cartridge library.

The major parts of the tape library enclosure include:

- One robotic handler, referred to as the *cartridge handling mechanism* (CHM)
- One or two half-height 8 mm tape drives
- One magazine that can contain up to ten 8 mm data cartridges
- One fixed cartridge holder for a cleaning cartridge or an additional data cartridge
- One power supply

The SPARCstorage Library can store up to 140 Gbytes of information on ten data cartridges, assuming an average data compression ratio of 2:1.

The tape library includes a four-line display panel and a keypad on the front panel that enables you to interactively control operations, such as setting options, checking operating statistics, and diagnosing errors.

The major parts of the tape library are described on the following pages.

Note – The internal components of all three versions of the tape library are identical. Most illustrations of the tape library in this manual show the rack-mounted version.

The SPARCstorage Library is available in three models, which have identical internal parts:

Tower unit	Figure 1-1
Rack-mounted unit	Figure 1-2
Tabletop unit	Figure 1-3

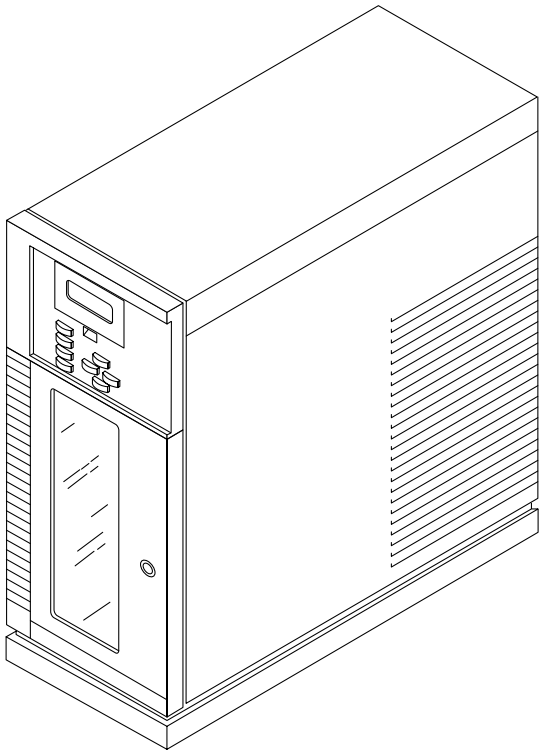


Figure 1-1 Tower Unit

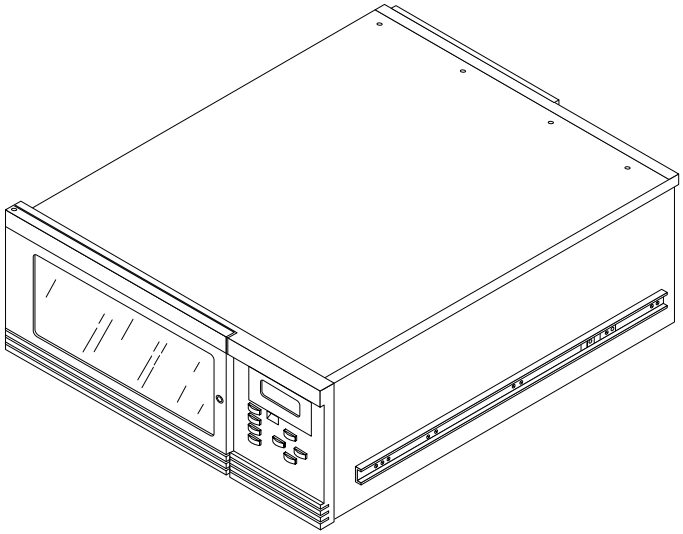


Figure 1-2 Rack-mounted Unit

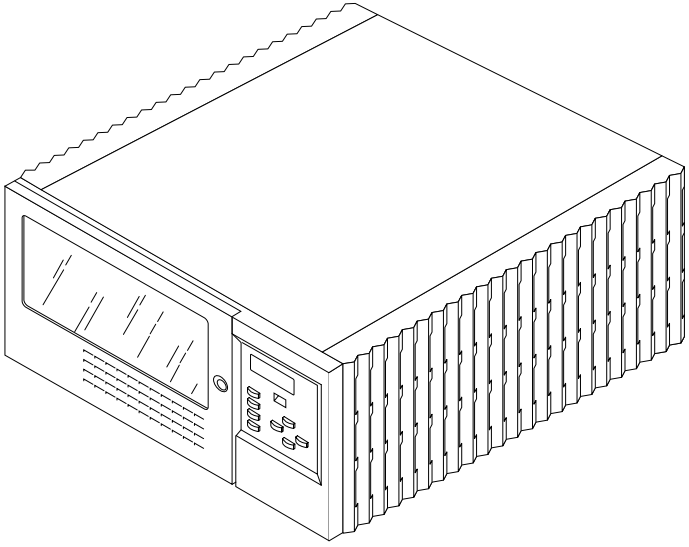


Figure 1-3 Tabletop Unit

1.1 Features

1.1.1 Front Panel

The front panel parts has the following features described below (see Figure 1-4 on page 1-5):

Door	Provides a clear, shatterproof window that allows you to view the interior.
Key lock	Provides data security. When you turn the key to the unlocked position, the tape library completes its current operation, moves the CHM to the park position, then releases the latch on the front door. Any other pending operations will be performed when you lock the door again.
Solenoid	Provides the electronic locking mechanism that allows the CHM to complete its current operation before the door latch is released.
Display panel	Allows you to manually change control modes, set SCSI IDs, and perform diagnostics. A security option prevents users from making changes using the menus on the display panel.

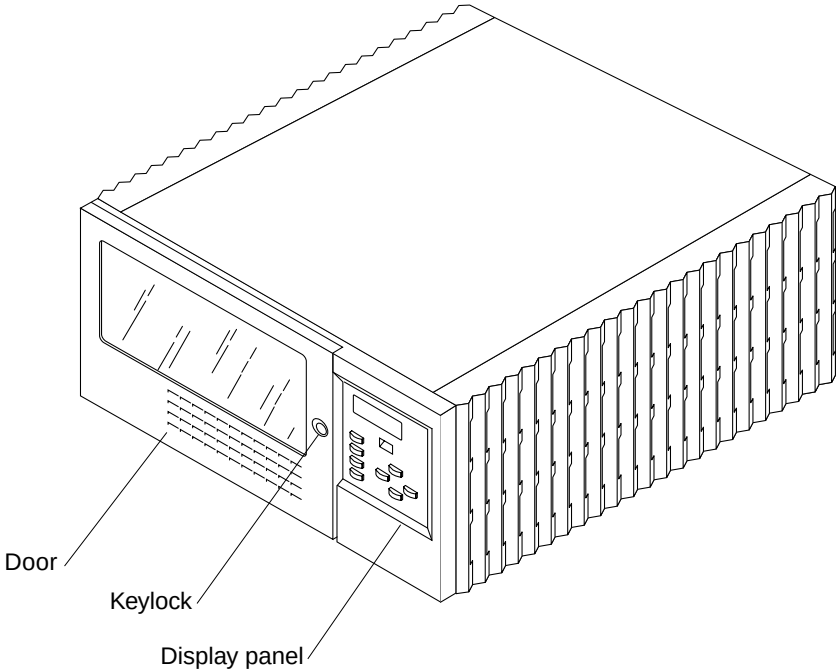


Figure 1-4 Front Panel Features

1.1.2 Back Panel

The back panel (see Figure 1-5) parts and their functions are described below:

SMC controller card	Provides control for the robotic mechanism (CHM) of the tape library. The serial diagnostic ports, SCSI connectors, and the outer shield are part of the SMC controller card.
Outer shield	Provides ESD protection for the SMC controller card.
Power supply assembly	Comprises the fan, power switch, power connector, and fuse.

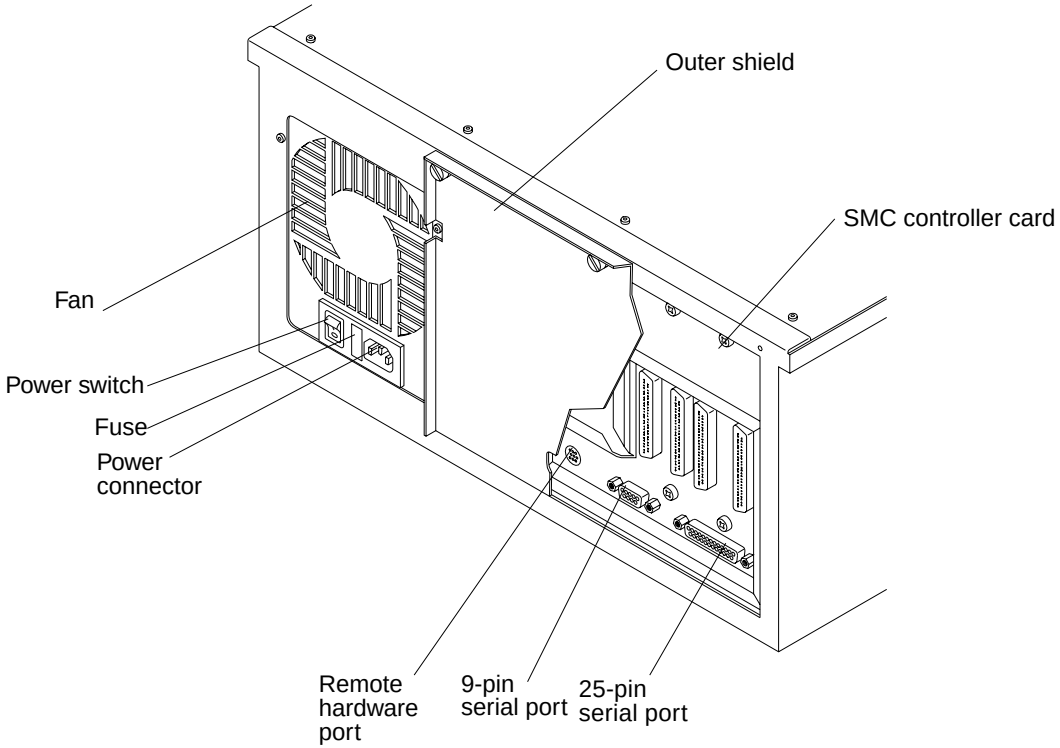


Figure 1-5 Back Panel Cutaway View

The power supply assembly (see Figure 1-5 on page 1-6) is comprises:

Fan	Provides cooling.
Power switch	Controls power on and off.
Power connector	Part of the power supply assembly.
Fuse	Part of the power supply assembly.

1.1.3 Front Internal Components

The tape library front internal components (see Figure 1-6 on page 1-8) consist of:

Data cartridge magazine	Holds the data cartridges.
Fixed cartridge holder	Used to store a cleaning cartridge or as an extra data cartridge holder.
Data cartridge magazine mounting plate	Provides a mount for the data cartridge magazine.
Cartridge handling mechanism (CHM)	Handles cartridges. The CHM is a robotic assembly that picks and places cartridges and moves them between the cartridge storage locations and the tape drives. The CHM is mounted on the long axis assembly.
Bar code scanner (optional)	Located on the cartridge handling mechanism (CHM). Allows the unit to read identification labels on data cartridges.
Idler pulley assembly	Provides movement control for the long axis belt.
Tape drives	Contains up to two 8 mm half-height tape drives. If the unit contains only one tape drive, you must install a drive blank in the second slot.

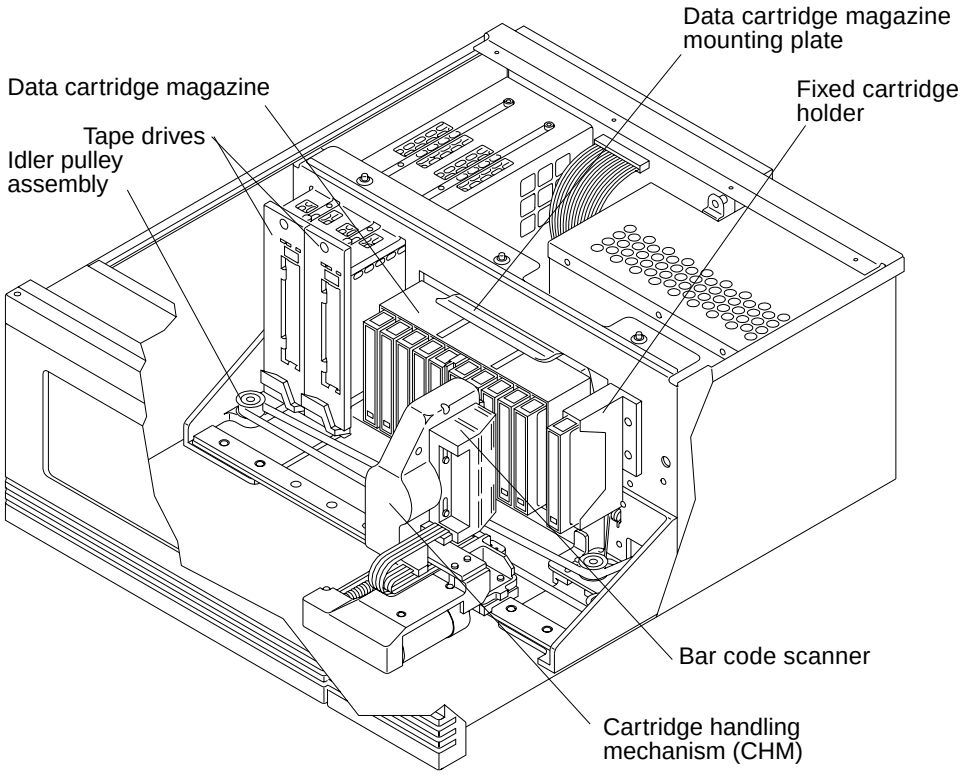


Figure 1-6 Front View of the Internal Components

1.1.4 Back Internal Components

The tape library back internal components (see Figure 1-7 on page 1-10) consist of:

Power supply	Provides power for the tape library. The fan, power switch, power connector, and fuse are part of this assembly.
Long axis motor	Powers the motion of the CHM on the long axis.
CHM cable	Provides a connection between the SMC controller card and the CHM.
Display panel cable	Provides connection between the SMC controller card and the display panel.

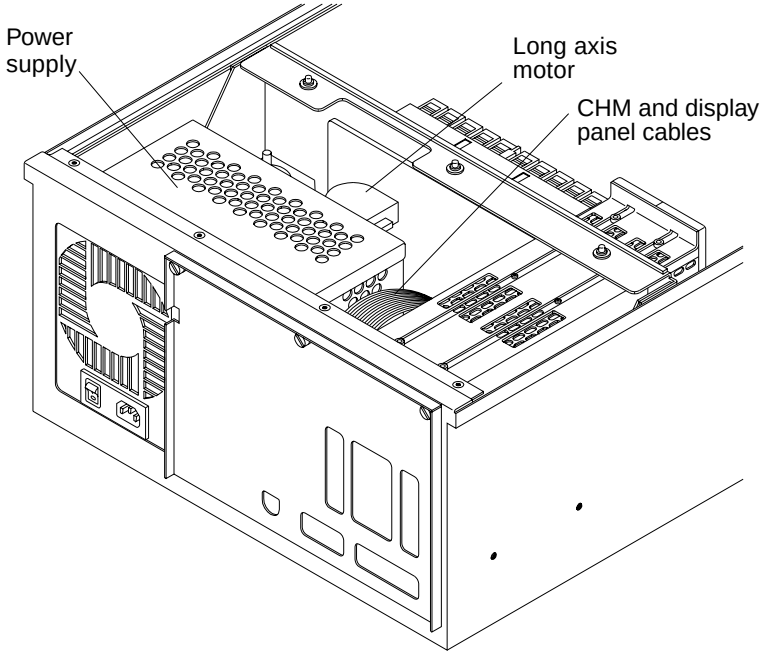


Figure 1-7 Back View of the Internal Components

Part 2— Troubleshooting

Troubleshooting 2

This chapter describes how troubleshoot the SPARCstorage Library by interpreting error codes. It describes the functions of the keypad, including how to use the display panel to:

- Run diagnostics
- Configure the unit
- Perform maintenance
- Display tape library statistics and other information

This chapter is organized in the following major sections:

2.1 Error Codes

2.1.1 Hardware Errors

Table 2-1 presents the hardware error conditions in numerical order. The error code number appears on the display panel during either normal operation or diagnostic operation.

Table 2-1 Hardware Errors by Error Code

Error Number	Description	Corrective Action
10	CHM dropped a cartridge.	Put the cartridge back in the data cartridge magazine. Do not try to put the cartridge back in the gripper. The tape library will not start if there is a cartridge in the gripper. Reset the tape library.
11	Source empty. There is no cartridge in the source location.	Install a cartridge in the source location or redirect the CHM to another location.
12	Destination full. A cartridge already exists in the destination location.	Remove the cartridge from the destination or redirect the CHM to another location.
13	Put mechanical failure. The CHM could not place a cartridge due to mechanical problems.	Reset the tape library. If this error still occurs, replace the tape library.
14	Pick mechanical failure. The CHM could not pick a cartridge due to mechanical problems.	Reset the tape library. If this error still occurs, replace the tape library.
15	No source element.	A data cartridge was not installed at the selected location.
16	No destination element.	A data cartridge was not installed at the selected location.
17	CHM full before move. A cartridge was in the gripper in one of these circumstances: - at power-on - when reset - before a move operation	Remove the cartridge. Put the cartridge back in the data cartridge magazine. Make sure the tape library and the tape drives are not being used by the host computer then reset the tape library.
18	The CHM could not pick the tape because it was still in the drive.	Reset the tape library. If this error still occurs, replace the tape library.

Table 2-1 Hardware Errors by Error Code *(Continued)*

Error Number	Description	Corrective Action
19	Pick mechanical failure. The CHM could not successfully pick from a full cartridge slot.	Reset the tape library. If this error still occurs, replace the tape library.
21	Gripper error.	Reset the tape library. If this error still occurs, replace the tape library.
22	Gripper motion timeout. The gripper motion took longer than the maximum allocated time. Because of this, the current to the servo motors is shut off.	Reset the tape library. If this error still occurs, replace the tape library.
25	Pick stall. The CHM stalled while trying to pick a cartridge from the tape drive.	Remove the cartridge from the tape drive by pressing the eject button on the drive carrier faceplate. Reset the tape library.
26	Cannot open gripper. The gripper could not open.	Open the door and look for anything that might be obstructing the CHM gripper. Make sure the tape library and the tape drives are not being used by the host computer then reset the tape library. If this error still occurs, replace the tape library.
30	S axis does not move. The CHM could not move along the short axis.	Reset the tape library. If this error still occurs, replace the tape library.
31	S axis failed home. The CHM could not return to the home position along the short axis.	Reset the tape library. If this error still occurs, replace the tape library.
36	S LM629 Failure. The tape library could not reset the servo chip for the short axis.	Make sure the tape library and the tape drives are not being used by the host computer then reset the tape library. If this error still occurs, replace the SMC controller card.
40	L axis does not move. The CHM could not move along the long axis.	Open the door. Look for anything that might be obstructing the path of the CHM along the long axis. Make sure that the axis belt is intact. If there are no obstructions and the belt is intact, you may need to replace the SMC controller card. If replacing the SMC controller card does not help, replace the tape library.

Table 2-1 Hardware Errors by Error Code *(Continued)*

Error Number	Description	Corrective Action
41	L axis failed home. The CHM could not return to the home position on the long axis.	Open the door. Look for anything that might be obstructing the path of the CHM along the long axis. Make sure that the axis belt is intact. If there are no obstructions and the belt is intact, you may need to replace the SMC controller card. If replacing the SMC controller card does not help, replace the tape library.
46	L LM629 reset fail. The tape library could not reset the servo chip on the long axis.	Make sure the tape library and the tape drives are not being used by the host computer then reset the tape library. If this error still occurs, replace the SMC controller card.
60	No label. The bar code scanner could not read the bar code label because there was no label on the cartridge.	If the cartridge does not have a bar code label, place a label on the cartridge. If there is a bar code label and it is correctly placed on the cartridge, you may need to replace the bar code scanner.
61	Read error. The bar code scanner could not read the bar code label because the label was unreadable.	If the cartridge does not have a bar code label, place a label on the cartridge. If there is a bar code label and it is correctly placed on the cartridge, you may need to replace the bar code scanner.
62	Not present. The bar code scanner could not read the bar code labels because there was no data cartridge magazine present.	Install a data cartridge magazine. If installing a data cartridge magazine does not remedy the problem, you may need to replace the bar code scanner.
65	DMA overrun. The bar code scanner could not read the bar code label because a Direct Memory Access (DMA) overrun occurred.	Make sure the tape library and the tape drives are not being used by the host computer then reset the tape library. If this error still occurs, replace the SMC controller card.
67	DMA CH.2 Timeout. Controller board error.	Make sure the tape library and the tape drives are not being used by the host computer then reset the tape library. If this error still occurs, replace the SMC controller card.
69	Label upside down. The bar code scanner could not read the bar code label because the label is upside down.	Replace the bar code label correctly.
70	L servo timeout. The CHM could not reach its destination along the long axis.	Open the door. Look for anything that might be obstructing the path of the CHM along the long axis. Make sure that the axis belt is intact. If there are no obstructions and the belt is intact, you may need to replace the SMC controller card. If replacing the SMC controller card does not help, replace the tape library.

Table 2-1 Hardware Errors by Error Code *(Continued)*

Error Number	Description	Corrective Action
71	Parameter > limit. Firmware error.	Make sure the tape library and the tape drives are not being used by the host computer then reset the tape library. If the error still occurs, replace the SMC controller card.
72	Front door open. The front door is open or the door solenoid is malfunctioning.	If the door is open, close the door. Lock the front door to resume the tape library's operation. If the door is securely locked, replace the front panel.
73	S servo timeout. The CHM could not reach its destination along the short axis.	Open the door. Look for anything that might be obstructing the path of the CHM along the short axis. If there are no obstructions, you may need to replace the tape library.
75	Internal S/W error. Firmware error.	Make sure the tape library and the tape drives are not being used by the host computer then reset the tape library. If the error still occurs, replace the SMC controller card.
76	POS error timeout. The CHM could not reach its destination along the long axis.	Open the door. Look for anything that might be obstructing the path of the CHM along the long axis. Make sure that the axis belt is intact. If there are no obstructions and the belt is intact, you may need to replace the SMC controller card. If replacing the SMC controller card does not help, replace the tape library.
77	Interface disabled. The tape library was not in correct control mode when a command was sent.	Make certain that the port you are sending commands through is also the port that has control through the Control Mode Menu.
90	Invalid blank config. Empty drive slot. The drive blank configuration is invalid.	If you operate the tape library with only one drive, you must have a drive blank installed in the left or bottom drive carrier slot. Install a drive blank in the left or bottom carrier slot.
91	Operator aborted. A diagnostic, in progress, was aborted.	No corrective action required.
104	CTS did not eject. The CHM timed out waiting for a tape drive to eject the cartridge.	There may be a problem with the tape drive. Try replacing the tape drive.

Table 2-1 Hardware Errors by Error Code *(Continued)*

Error Number	Description	Corrective Action
108	Incompatible boot ROM. The installed boot ROM is not compatible with the flash EEPROM code.	Try replacing the SMC controller card.
109	Check cleaner. The cleaning cartridge was ejected immediately after being loaded into the tape drive.	Replace the cleaning cartridge.
130-137	FAS216 error; SCSI unexpected int; SCSI int stuck error. There is SCSI chip failure.	Make sure the tape library and the tape drives are not being used by the host computer then reset the tape library. If the error still appears, replace either the host adapter card or the SMC controller card. Lastly, replace the tape library.

2.1.2 SCSI Sense Key Errors

The SCSI sense key error messages, listed in Table 2-2, appear in the console window on the computer system. For more detailed information on the SCSI Sense Error messages, see Appendix D, “Error Codes.”

Table 2-2 SCSI Sense Key Error Messages

SCSI Sense Error Messages	Description	Action
0h - No sense	There is no specific sense key information to report.	N/A
2h - Not Ready	The tape library cannot accept any tape motion commands. Typically, there is no tape in the tape drive unit addressed.	Perform one or more of the following actions: - Close the door. - Insert a data cartridge in the tape drive. - Put the tape library under SCSI control. To do so, select SCSI Interface under the Control Mode Menu.
4h - Hardware Error	The tape library detected a nonrecoverable hardware failure during a selftest or while performing a command.	Try the command again. If the error message persists, replace the tape drive.
5h - Illegal Request	The unit detected an illegal operation request. For example, an illegal parameter was sent with a command or the tape library was in the wrong mode to execute the command.	Retry the operation.
6h - Unit Attention	Something happened that may have changed the state of the unit. For example, the unit was powered on, a tape was loaded into the tape drive, or the SCSI bus was reset.	N/A
Bh - Aborted Command	The tape library aborted a command (typically operator aborted).	Retry the operation.

2.2 Tape Drive LEDs

The tape drives in the tape library use three LEDs to indicate diagnostic and operating states. Table 2-3 lists the possible states and LED indicators for each state.

Table 2-3 Tape Drive LED Descriptions

Mode	LED Indicators			Status
	Amber (Top/right) Warnings	**Green/Amber (Middle) Access/ Compression**	**Green (Bottom/Left) Activity**	
Diagnostic				
	On	Off	On	Selftest in progress; no tape in drive
	Off	Off	Off	Self-test successful; no tape in drive
	Off	Off	Slow / Fast	Self-test in progress; tape in drive
	Off	Off	On	Self-test successful; tape in drive
	Fast*	Off	Off	Hardware error or detection failure
Operation				
Normal Operation	Off	Off	Off	No tape loaded
	Off	Off	On	Tape loaded, drive ready
	Off	Blinking#	Slow†	SCSI or tape activity
	Off	Blinking or Off	Fast	High-speed tape motion
Errors/Warnings	Slow	Off	Off	Error
Unload Operation	Fast	Off	Slow	Unload in progress
	Off	Off	Off	Tape ejection; followed by selftest cycle and a “no tape loaded” status
Cleaning Operation	Slow	Off	Slow	Time to clean
	Off / Fast	Off	Slow	Cleaning in progress

† A slow flash is approximately one flash per second.
* A fast flash is approximately four flashes per second.
# The blinking rate depends on the SCSI activity.
NOTE: When the middle LED is *green*, the drive is in an uncompressed mode. When it is *amber*, the drive is in a compressed mode.

2.3 *Primary Menu*

The SPARCstorage Library has a primary menu on the display panel from which you can access several menus as shown on the screen below. Figure 2-1 shows the menu structure and submenus.

```
Main Screen
Interface Menu
Configuration Menu
Maintenance Menu
Library Info Menu
```

When the primary menu is displayed, these keys perform the following functions:

↑	Scrolls up, often increases a value.
↓	Scrolls down, often decreases a value.
→	Scrolls right.
←	Scrolls left.
Help	Goes to the Help screen.
Escape	Goes forward/backward through menus.
Enter	Selects the item next to the arrow.
Reset	Goes to the reset screen.

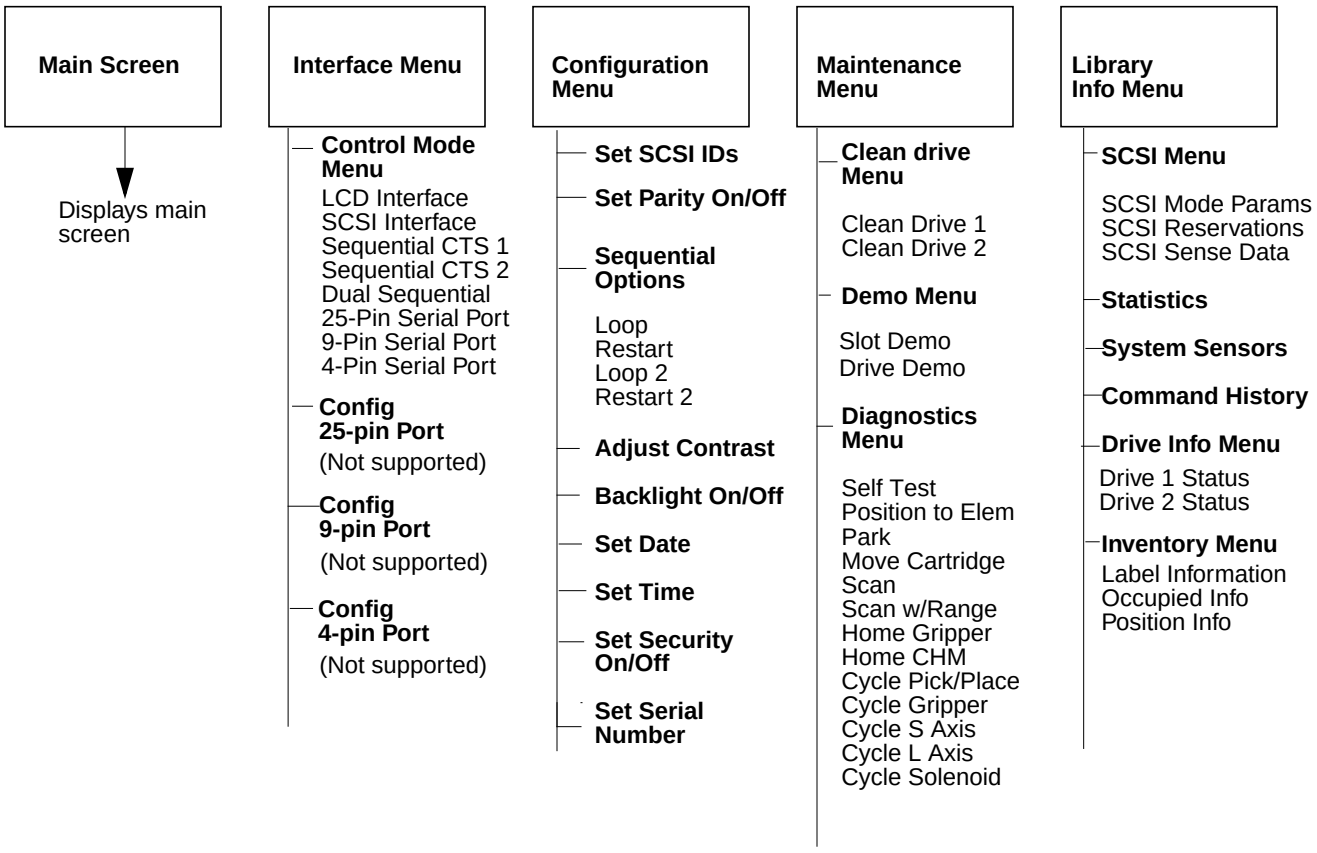


Figure 2-1 Primary Menu

▼ To access the primary menu

♦ **Press Escape (see Figure 2-1) until the primary menu is displayed.**

2.3.1 Interface Menu

The Interface Menu consists of the following submenus:

- Control mode
- Configure 25-Pin Port (not supported)
- Configure 9-Pin Port (not supported)
- Configure 4-Pin Port (not supported)

2.3.1.1 Control Mode

The Control Mode Menu determines what controls the motions of the CHM. The tape library has the following control modes:

- LCD Interface
- SCSI Interface
- Sequential CTS 1
- Sequential CTS 2
- Dual Sequential
- 25-Pin Serial Port (not supported)
- 9-Pin Serial Port (not supported)
- 4-Pin Serial Port (not supported)

Use ↑ to scroll up through the control mode functions and ↓ to scroll down.

▼ To set the tape library to LCD Interface Mode

LCD Interface Mode is required when you want to control the motions of the cartridge handling mechanism (CHM) though the display panel. Putting the tape library in LCD Interface mode is necessary to run some tests and diagnostics under the Maintenance Menu. For example, diagnostics can be performed that test individual motions, such as picking and placing cartridges from specific locations.

1. **Make sure the tape library is in the ready state.**
   There should be no hardware errors and the door should be closed.
2. **Press Escape until the primary menu is displayed.**

3. **Disable security, if security is enabled.**
   When security is disabled, the display panel will read Set Security On. If you see Set Security Off, security is turned on and you must turn security off. See "To enable or disable security" on page 2-22.

4. **Select the Interface Menu by pressing ↓ or ↑, then Enter.**

5. **Select the Control Mode Menu by pressing ↓ or ↑, then Enter.**

6. **Select LCD Interface mode by pressing ↓ or ↑, then Enter.**
   An asterisk (*) is displayed by the current control mode. You can now execute commands in the Maintenance Menu. See Section 2.3.3, "Maintenance Menu," on page 2-24.

▼ To set the tape library to SCSI Interface Mode

SCSI Interface mode is normal operation mode. In SCSI Interface mode, the host computer system issues SCSI commands to the tape library to specify the order cartridges are loaded and unloaded from the cartridge magazine and to access the tape drives.

1. **Make sure the tape library is in the ready state.**
   There should be no hardware errors and the door should be closed.

2. **Disable security (the display panel must read Set Security On when security is disabled).**
   If the display panel reads Set Security Off, security is turned on. See "To enable or disable security" on page 2-22.

3. **Press Escape until the primary menu is displayed.**

4. **Select the Interface Menu by pressing ↓ or ↑, then Enter.**

5. **Select the Control Mode Menu by pressing ↓ or ↑, then Enter.**

6. **Select SCSI Interface by pressing ↓ or ↑, then Enter.**
   An asterisk (*) is displayed by the current control mode.

7. **Press Escape until the primary menu is displayed.**

8. **Select Main Screen by pressing ↑, then Enter.**

▼ To set the tape library to Sequential CTS 1, CTS 2, or Dual Sequential Modes

Set the tape library to Sequential CTS1, Sequential CTS2, or Dual Sequential mode in order to run the SunDiag system exerciser. If only one tape drive is installed, the display panel displays only Sequential CTS1 mode. The tape library ignores the fixed slot in all sequential modes.

Note – CTS is an abbreviation for Cartridge Tape Subsystem (tape drive).

The following chart explains what each sequential mode does.

Sequential CTS 1	The CHM picks cartridges from the magazine sequentially and processes them in CTS 1 (the rightmost CTS in the tabletop and rack-mounted units or the topmost CTS in the tower unit.)
Sequential CTS 2	The CHM picks cartridges from the magazine sequentially and processes them in CTS 2 (the leftmost CTS in the tabletop and rack-mounted units or the bottommost CTS in the tower unit.)
Dual Sequential	The CHM picks cartridges from the magazine sequentially and processes them (tape cartridges 1-5 from CTS 1 and tape cartridges 6-10 from CTS 2).

1. **Check to see if there are any tapes in the tape drives by checking if the top/left and bottom/right LEDs are steadily flashing. If there are tapes in the tape drives, you must remove them.**
   See Figure 2-2.

   If the top and bottom LEDs are steadily flashing:

   a. **Open the door of the tape library.**

b. Push the Unload square button on the tape drive.
See Figure 2-2. The tape unloads. The tape library ignores the fixed slot in all sequential modes.

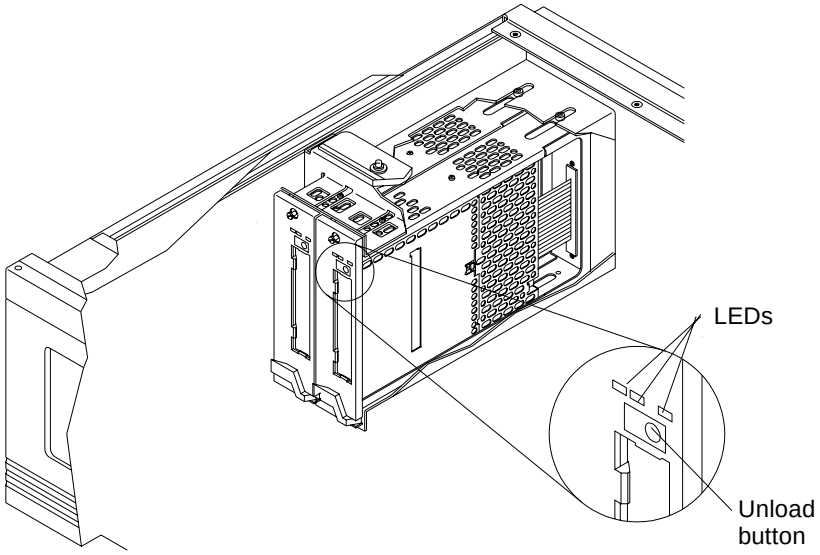


Figure 2-2 Location of Tape Drive Unload Button

2. **Make sure the tape library is in the ready state.**
There should be no hardware errors and the door should be closed.

3. **Disable security (the display panel must read Set Security On when security is disabled).**
If the display panel reads Set Security Off, security is turned on. See "To enable or disable security" on page 2-22.

4. **Press Escape until the primary menu is displayed.**

5. **Select the Interface Menu by pressing ↓ or ↑, then Enter.**

6. **Select the Control Mode Menu by pressing ↓ or ↑, then Enter.**

7. **Select Sequential CTS1, Sequential CTS2, or Dual Sequential mode by pressing ↓ or ↑, then Enter.**

The tape library performs the following actions when processing a cartridge:

1. Picks the first cartridge from the cartridge magazine (the rightmost cartridge for the rack-mounted unit or the topmost cartridge for the tower unit.) If the CHM encounters an empty cartridge slot, it moves to the next cartridge in the magazine and picks it.

2. Places the cartridge in CTS 1 or CTS 2 (depending on the mode) and waits until the CTS ejects the cartridge.

3. Retrieves the cartridge from the CTS and returns it to its original slot in the magazine.

4. Repeats the process with the next cartridge.

25-Pin, 9-Pin, and 4-Pin Serial Port Modes

The 25-pin, 9-pin and 4-pin serial port modes activate control ports that are not supported on Sun systems.

2.3.2 Configuration Menu

The Configuration Menu consists of the following submenus:

- Set SCSI IDs
- Set SCSI parity checking
- Sequential options
- Adjust contrast
- Backlight
- Set date
- Set time
- Set security
- Set serial number

2.3.2.1 Set SCSI IDs

Note – On the computer system, use `probe-scsi-all` at the `ok` prompt to determine the SCSI IDs that are currently set.

Use Set SCSI IDs to change the SCSI IDs of the tape library (LIB) and the cartridge tape subsystems (CTSs). Each device (the library and the two CTSs) must have separate SCSI IDs. If the tape library contains only one CTS, the SCSI ID for the blank drive displays a “B” for blank.

Table 2-4 shows the default SCSI IDs for the SPARCstorage Library, the tape drives, and the host computer system.

Table 2-4 Default SCSI IDs for the SPARCstorage Library, the Tape Drives, and the Host

Device/Unit	SCSI ID	Description
SPARCstorage Library	2	Includes the cartridge handling mechanism (CHM), the data cartridge magazine, and the fixed cartridge slot.
Tape drive (first)	4	The top 14 Gbyte 8 mm tape drive (tower unit) or the right tape drive (tabletop and rack-mounted units). See Figure 2-3.
Tape drive (second)	5	The bottom 14 Gbyte 8 mm tape drive (tower unit) or the left tape drive (tabletop and rack-mounted units). See Figure 2-3.
Computer system (host) or SCSI host adapter SBus card	7	Allows the host to act as the initiator of commands on the SCSI bus.

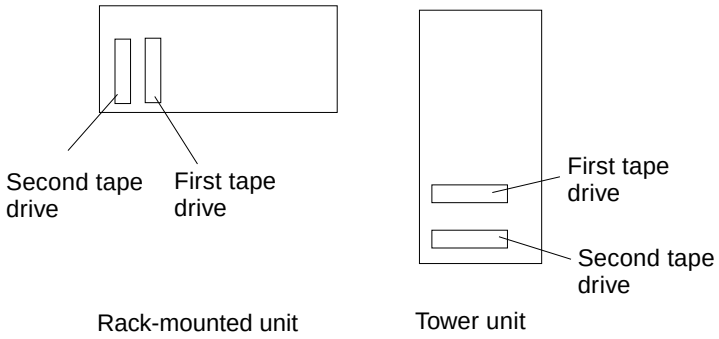


Figure 2-3 Location of the Tape Drives

Under the Solaris 2.x software environment, you can set the SCSI IDs of the tape drive to any available SCSI ID not used elsewhere on the SCSI bus, from 0 - 6. SCSI IDs 4 and 5 are most commonly used for tape drives. SCSI ID 7 is reserved for the host or the SCSI host adapter card.

▼ To view or change SCSI IDs

1. **Disable security (the display panel must read Set Security On when security is disabled).**
   If the display panel reads Set Security Off, security is turned on. See “To enable or disable security” on page 2-22.
2. **Select the Configuration Menu by pressing ↓ or ↑, then Enter.**
3. **Select Set SCSI IDs by pressing ↓ or ↑, then Enter.**
4. **Set the SCSI IDs for CTS 1 (tape drive 1), CTS 2 (tape drive 2) and the tape library (LIB).**
   a. **Press → or ← to select the devices.**
   b. **Press ↑ or ↓ to increase or decrease the SCSI ID value.**
   c. **Press Enter to make the selection active.**

2.3.2.2 *Set SCSI Parity Checking*

Use the SCSI parity option to turn parity checking on the tape library *on* or *off*. You must set parity for each device. All devices on the SCSI bus must have the same parity setting.

When parity is on (default, the display panel reads SCSI Parity Off), the tape library checks all data coming across the SCSI bus for parity. When you change SCSI parity, it changes both the current and the saved Mode Select parity parameters to the new value.

▼ To set parity checking

1. **Disable security (the display panel must read Set Security On when security is disabled).**
   If the display panel reads Set Security Off, security is turned on. See "To enable or disable security" on page 2-22.
2. **Select the Configuration Menu by pressing ↓ or ↑, then Enter.**
3. **Select Set Parity by pressing ↓ or ↑.**
4. **Turn SCSI parity checking on or off by pressing → to turn parity checking ON or ← to turn parity checking OFF.**
   If you see SCSI Parity Off on the display panel, SCSI parity checking is turned on. When SCSI parity checking is turned off, the display panel reads SCSI Parity On. In other words, the next state, not the current state, is displayed.

2.3.2.3 *Sequential Options*

With the Sequential Options, you can perform the following actions to control how the cartridges are processed in Sequential CTS 1, Sequential CTS 2, and Dual Sequential modes. The loop and restart options are application specific.

Restart option	Determines whether the tape library restarts at the first cartridge or restarts where it left off after a power-on or reset.
On	Starts at the first cartridge
Off	Restarts operation where it left off.
Loop option	Determines if the tape library should stop after processing all ten cartridges (five in Dual Sequential mode) in the magazine or loop back to the first cartridge and continue processing.
On	Loops back to the first cartridge.
Off	Stops processing cartridges after processing the last cartridge.

▼ To set the restart option

1. **Select the Configuration Menu by pressing ↓ or ↑, then Enter.**
2. **Select Sequential Options by pressing ↓ or ↑, then Enter.**
   The following screen is displayed.

```
→ Loop:                OFF →
   Restart:             ON
   Loop2:               OFF
   Restart2:            ON
```

3. **Select Restart for tape drive 1 or Restart2 for tape drive 2 by pressing ↑ or ↓.**
4. **Set Restart on or off by pressing ← or →.**

▼ To set the loop option

1. **Select the Configuration Menu by pressing ↓ or ↑, then Enter.**
2. **Select Sequential Options by pressing ↓ or ↑, then Enter.**
   The following screen is displayed.

```
→ Loop:                 OFF →
   Restart:             ON
   Loop2:               OFF
   Restart2:            ON
```

3. **Select Loop for tape drive 1 or Loop2 for tape drive 2 by pressing ↑ or ↓.**
4. **Set the loop option on or off by pressing ← or →.**

2.3.2.4 *Adjust Contrast*

The Adjust Contrast option controls the brightness of the lettering on the display panel.

▼ To adjust the contrast

1. **Select the Configuration Menu by pressing ↓ or ↑, then Enter.**
2. **Select Adjust Contrast by pressing ↓ or ↑, then Enter.**
3. **Raise the contrast by pressing → or lower the contrast by pressing ←.**
4. **Press Enter to keep the changes.**

Press Escape to leave the menu without making changes.

2.3.2.5 *Back Light*

The Back Light feature turns the light in back of the display panel on or off.

▼ To turn the back light on or off

1. **Select the Configuration Menu by pressing ↓ or ↑, then Enter.**

2. **Select Back Light by pressing ↓ or ↑, then Enter.**

3. **Turn Back Light on by pressing → or turn Back Light off by pressing ←.**

2.3.2.6 Set Date

▼ To set the date

Use the Set Date screen to set the date shown on the Main Screen.

1. **Select the Configuration Menu by pressing ↓ or ↑, then Enter.**

2. **Select Set Date by pressing ↓ or ↑, then Enter.**

3. **Set the date using these keys.**

   ↑ Increases the day, month, or year.
   ↓ Decreases the day, month, or year.
   → Moves to the column on the right.
   ← Moves to the column on the left.

2.3.2.7 Set Time

▼ To set the time

Use the Set Time screen to set the time shown on the Main Screen.

1. **Select the Configuration Menu from the primary menu by pressing ↓ or ↑ then Enter.**

2. **Select Set Time by pressing ↓ or ↑ then Enter.**

3. **Set the time using these keys.**

   ↑ Increases the hours, minutes, or seconds.
   ↓ Decreases the hours, minutes, or seconds.
   → Moves to the column on the right.
   ← Moves to the column on the left.

2.3.2.8 *Set Security*

The security option allows you to prevent a user from inadvertently changing important settings and operations.

Note – Security remains in effect after resetting the tape library.

When security is enabled, a user cannot access the following activities:

- Changing the control mode
- Changing the SCSI IDs
- Changing the library serial number
- Changing SCSI parity checking
- Using the Diagnostics Menu and the Demo Menu
- Using the Clean Drives Menu
- Opening the front door (LCD security only)

If a user attempts to perform any of the these operations when security is enabled, (the display panel reads Set Security Off) the tape library displays a message stating security is active.

▼ To enable or disable security

1. **Select the Configuration Menu by pressing ↓ or ↑, then Enter.**
2. **Select Set Security On/Off by pressing ↓ or ↑, then Enter.**
   When security if turned on, the display panel reads Set Security Off. When security if turned off, the display panel reads Set Security On.
3. **Select a three digit password (something easy to remember.)**
   To disable security, enter the same password used to turn security on.
   a. **Move from column to column by pressing ← or → .**
   b. **Change the password (default password is `000`) by pressing ↑ or ↓.**
   c. **Make the password active by pressing Enter.**

Note – If you forgot the password, try entering the default password, `000`.

2.3.2.9 *Set Serial Number*

A label on the back of the unit displays the serial number. To enter the serial number in the tape library firmware, use the Set Serial Number option.

▼ To enter the serial number into the firmware

1. **Disable security (the display panel must read Set Security On when security is disabled or turned off).**
   If the display panel reads Set Security Off, security is turned on. See "To enable or disable security" on page 2-22.
2. **Select the Configuration Menu by pressing ↓ or ↑, then Enter.**
3. **Select Set Serial Number by pressing ↓ or ↑, then Enter.**
4. **Change the serial number.**
   a. **Move from column to column by pressing ← or →.**
   b. **Change each digit by pressing ↑ or ↓.**
   c. **Press Enter.**
   The following screen displays:

```
The serial number is
NNNNNN.  Press
ENTER to accept or
ESC to cancel.
```

5. **Press Enter to save the changes or Escape to cancel the changes.**

2.3.3 Maintenance Menu

The Maintenance Menu consists of the following submenus:

- Clean drive menu
- Demo menu
- Diagnostics menu

2.3.3.1 Clean Drive Menu

To clean the tape drives see “Cleaning Tape Drives” on page 2-51.

2.3.3.2 Demo Menu

The Demo Menu includes:

Drive Demo	Causes the cartridge handling mechanism (CHM) to move randomly between slots in the cartridge magazines, the fixed cartridge, and the CTSs.
Slot Demo	Causes the cartridge handling mechanism (CHM) to move cartridges randomly between slots in the cartridge magazines and the fixed cartridge slot.

▼ **To run the Drive Demo test**

1. **Disable security (the display panel reads Set Security On when security is disabled).**
   If the display panel reads Set Security Off, security is turned on. See “To enable or disable security” on page 2-22.
2. **Put the tape library into LCD Interface mode:**
   a. **Press Escape until the primary menu is displayed.**
   b. **Select the Interface Menu by pressing ↓ or ↑, then Enter.**
   c. **Select the Control Mode Menu by pressing ↓ or ↑, then Enter.**
   d. **Select LCD Interface mode by pressing ↓ or ↑, then Enter.**
3. **Select the Maintenance Menu by pressing ↓ or ↑, then Enter.**

4. **Make sure that there is at least one tape present and one empty slot before beginning.**

5. **Select Demo Menu by pressing ↓ or ↑, then Enter.**

6. **Select Drive Demo by pressing ↓ or ↑, then Enter.**
   The screen displays:

```
Should cartridges
be loaded into
the drives?                        NO→
```

   When using standard tape cartridges, select NO using the arrow keys. Use → or ← and press Enter.

   - If you select YES, the CHM pushes the cartridge all the way into the drive.
   - If you select NO, the CHM inserts the cartridge into the drive slot, but does not push the cartridge all the way into the drive.

   The tape drive will not automatically eject the cartridge.

   The system displays the following:

```
Should the
cartridges be
scanned during
the demo?                              NO→
```

7. **Select YES if you want to include bar code scanning in the demo. Select NO if you do not want to include bar code scanning in the demo.**
   Use → or ← and press Enter. The system begins the demo and displays this screen:

```
DRIVE DEMO:
 Total Cycles: N
Status: Move NN - NN
```

N	Indicates the number of cycles that have run so far.
NN- NN	Indicates the source and destination element indexes of the current move.

To stop the demo, press Escape then Enter.

Note – If you cannot press the Escape or Reset keys, power cycle the tape library.

▼ To run the Slot Demo test

1. **Disable security (the display panel reads Set Security On when security is disabled).**
   If the display panel reads Set Security Off, security is turned on. See "To enable or disable security" on page 2-22.
2. **Put the tape library into LCD Interface mode:**
   a. **Press Escape until the primary menu is displayed.**
   b. **Select the Interface Menu by pressing ↓ or ↑, then Enter.**
   c. **Select the Control Mode Menu by pressing ↓ or ↑, then Enter.**
   d. **Select LCD Interface mode by pressing ↓ or ↑, then Enter.**
3. **Select the Maintenance Menu by pressing ↓ or ↑, then Enter.**
4. **Make sure that there is at least one tape present and one empty slot before beginning the Slot Demo test.**
5. **Select Demo Menu by pressing ↓ or ↑, then Enter.**
6. **Select Slot Demo by pressing ↓ or ↑, then Enter.**
   The system begins the demo and displays this screen:

```
SLOT DEMO:
 Total Cycles: N
 Status: Move NN - NN
Moving to Slot N
```

Where:

N	Indicates the number of cycles that have run so far.
NN- NN	Indicates the source and destination element indexes of the current move.

To stop the demo, press Escape and then Enter.

2.3.3.3 *Diagnostics Menu*

The Diagnostics Menu enables you to perform a variety of diagnostic functions. Use ↑ to scroll up or ↓ to scroll down. Before you perform diagnostics, make certain you know the element indexes for the components you will exercise. See Figure 2-4.

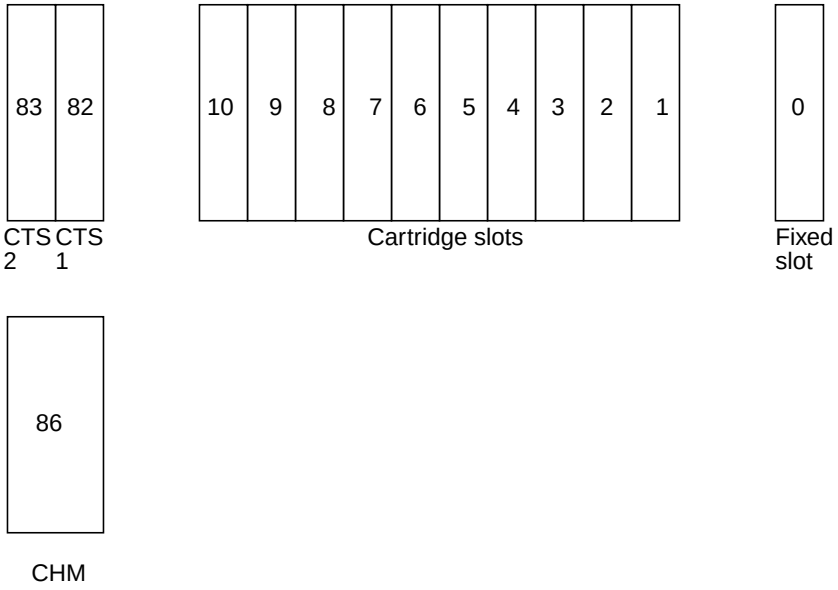


Figure 2-4 Default Element Addresses for the Tape Drives, Cartridge Slots, the Fixed Slot, and the Cartridge Handling Mechanism

The following chart describes the diagnostics available and a brief description of each diagnostic.

Self Test	Performs the following tests: - Performs a Home CHM test - Cycles the CHM along the short axis once - Cycles the CHM along the long axis once - Moves the CHM to the home position
Position to Elem	Moves the CHM to one of the tape drives or to one of the cartridge slots. You must specify an element address for the destination. See Figure 2-4 on page 2-27.
Park	Moves the CHM to the park position (to the right of the cartridge magazine in the tabletop and rack-mounted units or at the top in the tower unit).
Move Cartridge	Moves a cartridge from one location to another. You must specify an element address for the source and destination. See Figure 2-4 on page 2-27.
Scan	Scans the element where the bar code scanner is currently located.
Scan with Range	Scans a range of elements.
Home Gripper	Causes the gripper to move to the home position (open).
Home CHM	Causes the CHM to: - Retract on its short axis - Move to the top of the long axis (tower unit) or to the right (tabletop and rack-mounted units) - Move in front of the tape drives, then open and close its gripper.
Cycle Pick / Place	Causes the CHM to take a cartridge from a specified slot or CTS and replace it in the same slot. You must specify the source slot (see Figure 2-4 on page 2-27) and the number of pick / place cycles that the CHM should perform in increments of 10 (up to 250).

Cycle Gripper	Causes the gripper to open and close. You must specify the number of cycles in increments of 10 (up to 250).
Cycle S Axis	Causes the CHM to move end to end along the short axis (the axis where the CHM moves in and out). You must specify the number of cycles the CHM must perform in increments of 10 (up to 250).
Cycle L Axis	Causes the CHM to move end to end along the long axis (the axis where the CHM moves left and right for the tabletop and rack-mounted units or up and down for the tower unit). You must specify the number of cycles the CHM must perform in increments of 10 (up to 250).
Cycle Solenoid	Cycles the door solenoid, used to lock the front door. You must specify the number of cycles the CHM must perform in increments of 10 (up to 250).

▼ To run the Self Test

The following actions occur during the Self Test diagnostic:

- The gripper fingers of the CHM move to the home position.
- The CHM cycles the long and short axes once, then moves to the home position at the bottom of the long axis.

1. **Disable security (the display panel reads Set Security On when security is disabled).**
   If the display panel reads Set Security Off, security is turned on. See “To enable or disable security” on page 2-22.
2. **Put the tape library into LCD Interface mode:**
   a. **Press Escape until the primary menu is displayed.**
   b. **Select the Interface Menu by pressing ↓ or ↑, then Enter.**
   c. **Select the Control Mode Menu by pressing ↓ or ↑, then Enter.**
   d. **Select LCD Interface mode by pressing ↓ or ↑, then Enter.**
3. **Select the Maintenance Menu by pressing ↓ or ↑, then Enter.**

4. **Select the Diagnostics Menu by pressing ↓ or ↑, then Enter.**
5. **Select Self Test by pressing ↓ or ↑, then Enter.**

To abort the Self Test diagnostic, press Escape and then Enter.

▼ To run the Position to Element diagnostic

This diagnostic positions the cartridge handling mechanism (CHM) in front of a tape drive, cleaning cartridge slot, or a particular element.

1. **Disable security (the display panel reads Set Security On when security is disabled).**
   If the display panel reads Set Security Off, security is turned on. See "To enable or disable security" on page 2-22.
2. **Put the tape library into LCD Interface mode:**
   a. **Press Escape until the primary menu is displayed.**
   b. **Select the Interface Menu by pressing ↓ or ↑, then Enter.**
   c. **Select the Control Mode Menu by pressing ↓ or ↑, then Enter.**
   d. **Select LCD Interface mode by pressing ↓ or ↑, then Enter.**
3. **Select the Maintenance Menu by pressing ↓ or ↑, then Enter.**
4. **Select the Diagnostics Menu by pressing ↓ or ↑, then Enter.**
5. **Select Position to Element by pressing ↓ or ↑, then Enter.**
   The following screen is displayed:

```
Set Destination              0
  ↑ Increase
  ↓ Decrease
                        ↓
```

6. **Select the element address where you want to position the CHM (shown in the upper right corner) by pressing ↑ or ↓, then Enter.**
   See Figure 2-4 on page 2-27. The CHM moves in front of the element index you indicated.

The system displays a message similar to the following when the move is complete.

```
POSITION TO 3:

Status:  Complete
```

7. **To run the test again with a different element index, press Escape to return to the Diagnostics Menu and repeat steps 4 and 5.**

To abort the Position to Element diagnostic, press Escape and then Enter.

▼ To run the Park test

The Park test moves the CHM to the top (or right) of the long axis (park position).

1. **Disable security (the display panel reads Set Security On when security is disabled).**
   If the display panel reads Set Security Off, security is turned on. See "To enable or disable security" on page 2-22.
2. **Put the tape library into LCD Interface mode:**
   a. **Press Escape until the primary menu is displayed.**
   b. **Select the Interface Menu by pressing ↓ or ↑, then Enter.**
   c. **Select the Control Mode Menu by pressing ↓ or ↑, then Enter.**
   d. **Select LCD Interface mode by pressing ↓ or ↑, then Enter.**
3. **Select the Maintenance Menu by pressing ↓ or ↑, then Enter.**
4. **Select the Diagnostics Menu by pressing ↓ or ↑, then Enter.**
5. **Select Park by pressing ↓ or ↑, then Enter.**

To abort this diagnostic, press Escape and then Enter.

▼ To run the Move Cartridge test

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

Note – If you insert a cartridge into a tape drive, the drive does not automatically eject the cartridge.

The system displays an error message if there is no cartridge in the source element slot or if the destination element slot is full. Select another element address. See Figure 2-4 on page 2-27.

---

1. **Disable security (the display panel reads Set Security On when security is disabled).**
   If the display panel reads Set Security Off, security is turned on. See "To enable or disable security" on page 2-22.
2. **Put the tape library into LCD Interface mode:**
   a. **Press Escape until the primary menu is displayed.**
   b. **Select the Interface Menu by pressing ↓ or ↑, then Enter.**
   c. **Select the Control Mode Menu by pressing ↓ or ↑, then Enter.**
   d. **Select LCD Interface mode by pressing ↓ or ↑, then Enter.**
3. **Select the Maintenance Menu by pressing ↓ or ↑, then Enter.**
4. **Select the Diagnostics Menu by pressing ↓ or ↑, then Enter.**
5. **Select Move Cartridge by pressing ↓ or ↑, then Enter.**
   The system displays the following screen:

```
Set Source                    0
  ↑ Increase
  ↓ Decrease
```

6. **Select the element index of the cartridge slot (shown in the upper right corner) from which you want the CHM to pick the cartridge by pressing ↑ or ↓, then Enter.**
   See Figure 2-4 on page 2-27. The system displays the following screen:

```
Set Destination
  ↑ Increase
  ↓ Decrease
```

7. **Select the element index of the cartridge slot (shown in the upper right corner of the display panel) from which you want the CHM to place the cartridge by pressing ↑ or ↓, then Enter.**
   The CHM moves the cartridge from the source to the destination.

▼ To run the Scan test

The Scan test scans all tape bar code labels. The information is stored in CHM memory and the results of the scan are displayed on the Label Information screen. To view the results, see "To display bar code label information" on page 2-55 in the Inventory Menu (a submenu of the Library Info Menu).

1. **Disable security (the display panel reads Set Security On when security is disabled).**
   If the display panel reads Set Security Off, security is turned on. See "To enable or disable security" on page 2-22.

2. **Put the tape library into LCD Interface mode:**

   a. **Press Escape until the primary menu is displayed.**

   b. **Select the Interface Menu by pressing ↓ or ↑, then Enter.**

   c. **Select the Control Mode Menu by pressing ↓ or ↑, then Enter.**

   d. **Select LCD Interface mode by pressing ↓ or ↑, then Enter.**

3. **Select the Maintenance Menu by pressing ↓ or ↑, then Enter.**

4. **Select the Diagnostics Menu by pressing ↓ or ↑, then Enter.**

5. **Select Scan by pressing ↓ or ↑, then Enter.**
   The element where the bar code scanner is currently located is scanned.

To abort this diagnostic, press Escape and then Enter.

▼ To run the Scan With Range test

The Scan With Range test scans a range of bar code labels and stores the information in the CHM memory. Scan errors and label information are displayed on the Label Information screen. See "To display bar code label information" on page 2-55 in the Inventory Menu (a submenu of the Library Info Menu).

1. **Disable security (the display panel reads Set Security On when security is disabled).**
   If the display panel reads Set Security Off, security is turned on. See "To enable or disable security" on page 2-22.
2. **Put the tape library into LCD Interface mode:**
   a. **Press Escape until the primary menu is displayed.**
   b. **Select the Interface Menu by pressing ↓ or ↑, then Enter.**
   c. **Select the Control Mode Menu by pressing ↓ or ↑, then Enter.**
   d. **Select LCD Interface mode by pressing ↓ or ↑, then Enter.**
3. **Select the Maintenance Menu by pressing ↓ or ↑, then Enter.**
4. **Select the Diagnostics Menu by pressing ↓ or ↑, then Enter.**
5. **Select Scan With Range by pressing ↓ or ↑, then Enter.**
   The system displays the following screen:

```
Set Scan Start                0
  ↑ Increase
  ↓ Decrease
```

6. **Select the element index (shown in the upper right corner) where you want the bar code scanner to begin scanning by pressing ↑ or ↓, then Enter.**
   The system displays the following screen:

```
Set Scan Stop                 0
  ↑ Increase
  ↓ Decrease
```

7. **Select the element index (shown in the upper right corner) where you want the bar code scanner to end scanning by pressing ↑ or ↓, then Enter.**
   The test scans a range of bar code labels and stores the information in the cartridge inventory.

To abort this diagnostic, press Escape and then Enter.

▼ To run the Home Gripper test

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

1. **Disable security (the display panel reads Set Security On when security is disabled).**
   If the display panel reads Set Security Off, security is turned on. See "To enable or disable security" on page 2-22.
2. **Put the tape library into LCD Interface mode:**
   a. **Press Escape until the primary menu is displayed.**
   b. **Select the Interface Menu by pressing ↓ or ↑, then Enter.**
   c. **Select the Control Mode Menu by pressing ↓ or ↑, then Enter.**
   d. **Select LCD Interface mode by pressing ↓ or ↑, then Enter.**
3. **Select the Maintenance Menu by pressing ↓ or ↑, then Enter.**
4. **Select the Diagnostics Menu by pressing ↓ or ↑, then Enter.**
5. **Select Home Gripper by pressing ↓ or ↑, then Enter.**
   The gripper on the CHM opens and closes.

To abort this diagnostic, press Escape and then Enter.

▼ To run the Home CHM test

The following actions occur during the Home CHM test:

- Retracts the short axis
- Moves to the top (tower unit) or right (tabletop and rack-mounted units) of the long axis
- Moves in front of the tape drive
- Opens and closes its gripper

1. **Disable security (the display panel reads Set Security On when security is disabled).**
   If the display panel reads Set Security Off, security is turned on. See "To enable or disable security" on page 2-22.
2. **Put the tape library into LCD Interface mode:**
   a. **Press Escape until the primary menu is displayed.**
   b. **Select the Interface Menu by pressing ↓ or ↑, then Enter.**
   c. **Select the Control Mode Menu by pressing ↓ or ↑, then Enter.**
   d. **Select LCD Interface mode by pressing ↓ or ↑, then Enter.**
3. **Select the Maintenance Menu by pressing ↓ or ↑, then Enter.**
4. **Select the Diagnostics Menu by pressing ↓ or ↑, then Enter.**
5. **Select Home CHM by pressing ↓ or ↑, then Enter.**

To abort this diagnostic, press Escape and then Enter.

▼ To run the Cycle Pick/Place test

The Cycle Pick / Place test picks a cartridge from the element you specify and places it back in the same element. You can specify the number of times you want this test repeated.

1. **Disable security (the display panel reads Set Security On when security is disabled).**
   If the display panel reads Set Security Off, security is turned on. See "To enable or disable security" on page 2-22.
2. **Put the tape library into LCD Interface mode:**
   a. **Press Escape until the primary menu is displayed.**
   b. **Select the Interface Menu by pressing ↓ or ↑, then Enter.**
   c. **Select the Control Mode Menu by pressing ↓ or ↑, then Enter.**
   d. **Select LCD Interface mode by pressing ↓ or ↑, then Enter.**
3. **Select the Maintenance Menu by pressing ↓ or ↑, then Enter.**
4. **Select the Diagnostics Menu by pressing ↓ or ↑, then Enter.**

5. **Select Cycle Pick/Place by pressing ↓ or ↑, then Enter.**
   The system displays the following screen:

```
Set Source                0
  ↑ Increase
  ↓ Decrease
```

6. **Select the element index of the cartridge slot from which you want the CHM to pick and place the cartridge (shown in the upper right corner) by pressing ↑ or ↓, then Enter.**
   The system displays this screen:

```
Set Cycles                10
  ↑ Increase
  ↓ Decrease
```

7. **Select the number of cycles (in increments of ten) you want the Cycle Pick/Place to run by pressing ↑ or ↓, then Enter.**
   The test picks a cartridge from the element you specify and places it back in the same element.

To abort this diagnostic, press Escape and then Enter.

▼ To run the Cycle Gripper test

The Cycle Gripper test opens and closes the gripper the number of times you specify. For best results, move the CHM to the home position by first running Home CHM (as described in the following procedure) so you can see the movement of the gripper through the library window.

1. **Disable security (the display panel reads Set Security On when security is disabled).**
   If the display panel reads Set Security Off, security is turned on. See "To enable or disable security" on page 2-22.

2. **Put the tape library into LCD Interface mode:**

   a. **Press Escape until the primary menu is displayed.**

   b. **Select the Interface Menu by pressing ↓ or ↑, then Enter.**

   c. **Select the Control Mode Menu by pressing ↓ or ↑, then Enter.**

   d. **Select LCD Interface mode by pressing ↓ or ↑, then Enter.**

3. **Select the Maintenance Menu by pressing ↓ or ↑, then Enter.**
4. **Select the Diagnostics Menu by pressing ↓ or ↑, then Enter.**
5. **Select Home CHM by pressing ↓ or ↑, then Enter.**
   The system moves the CHM at the bottom of the long axis.
6. **Return to the Diagnostics Menu by pressing Escape.**
7. **Select Cycle Gripper by pressing ↓ or ↑, then Enter.**
   The system displays the following screen:

```
Set Cycles                10
  ↑ Increase
  ↓ Decrease
```

8. **Select the number of cycles (in increments of ten) you want the Cycle Gripper test to run by pressing ↑ or ↓, then Enter.**
   The test opens and closes the gripper the number of times you specify.

To abort this diagnostic, press Escape and then Enter.

▼ To run the Cycle S Axis test

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

1. **Disable security (the display panel reads Set Security On when security is disabled).**
   If the display panel reads Set Security Off, security is turned on. See “To enable or disable security” on page 2-22.
2. **Put the tape library into LCD Interface mode:**
   a. **Press Escape until the primary menu is displayed.**
   b. **Select the Interface Menu by pressing ↓ or ↑, then Enter.**
   c. **Select the Control Mode Menu by pressing ↓ or ↑, then Enter.**
   d. **Select LCD Interface mode by pressing ↓ or ↑, then Enter.**
3. **Select the Maintenance Menu by pressing ↓ or ↑, then Enter.**
4. **Select the Diagnostics Menu by pressing ↓ or ↑, then Enter.**

5. **Select Cycle S Axis by pressing ↓ or ↑, then Enter.**
   The system displays this screen:

```
Set Cycles                10
  ↑ Increase
  ↓ Decrease
```

6. **Select the number of cycles (in increments of ten) you want the Cycle S Axis test to run by pressing ↑ or ↓, then Enter.**

To abort this diagnostic, press Escape and then Enter.

▼ To run the Cycle L Axis test

The Cycle L Axis test positions the CHM in front of the fixed cartridge slot and moves the CHM back and forth on the long axis the number of times you specify.

1. **Disable security (the display panel reads Set Security On when security is disabled).**
   If the display panel reads Set Security Off, security is turned on. See "To enable or disable security" on page 2-22.

2. **Put the tape library into LCD Interface mode:**

   a. **Press Escape until the primary menu is displayed.**

   b. **Select the Interface Menu by pressing ↓ or ↑, then Enter.**

   c. **Select the Control Mode Menu by pressing ↓ or ↑, then Enter.**

   d. **Select LCD Interface mode by pressing ↓ or ↑, then Enter.**

3. **Select the Maintenance Menu by pressing ↓ or ↑, then Enter.**

4. **Select the Diagnostics Menu by pressing ↓ or ↑, then Enter.**

5. **Select Cycle L Axis by pressing ↓ or ↑, then Enter.**
   The system displays this screen:

```
Set Cycles                10
  ↑ Increase
  ↓ Decrease
```

6. **Select the number of cycles (in increments of ten) you want the Cycle L Axis test to run. Press ↑ or ↓, then Enter.**

To abort this diagnostic, press Escape and then Enter.

▼ To run the Cycle Solenoid test

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

1. **Disable security (the display panel reads Set Security On when security is disabled).**
   If the display panel reads Set Security Off, security is turned on. See "To enable or disable security" on page 2-22.
2. **Put the tape library into LCD Interface mode:**
   a. **Press Escape until the primary menu is displayed.**
   b. **Select the Interface Menu by pressing ↓ or ↑, then Enter.**
   c. **Select the Control Mode Menu by pressing ↓ or ↑, then Enter.**
   d. **Select LCD Interface mode by pressing ↓ or ↑, then Enter.**
3. **Select the Maintenance Menu by pressing ↓ or ↑, then Enter.**
4. **Select the Diagnostics Menu by pressing ↓ or ↑, then Enter.**
5. **Select Cycle Solenoid by pressing ↓ or ↑, then Enter.**
   The system displays the following screen:

```
Set Cycles                10
  ↑ Increase
  ↓ Decrease
```

6. **Select the number of cycles, in increments of ten, (up to 250) you want the Cycle Solenoid test to run by pressing ↑ or ↓, then Enter.**
   You will hear a clicking sound.

To abort this diagnostic, press Escape and then Enter.

2.3.4 Library Information Menu

The Library Information Menu consists of the following submenus:

SCSI Menu	Contains SCSI mode parameters, reservations, and sense data.
Statistics	Contains data about CHM operations and elements.
System Sensors	Contains information about the mechanical sensors.
Command history	Displays the contents of the history buffer.
Inventory Menu	Contains information about bar code labels and elements.
Drive Info Menu	Displays the drive status.

2.3.4.1 SCSI Menu

The SCSI Menu consists of the following submenus:

SCSI mode parameters	Displays data the library reports in response to a mode sense command.
SCSI reservations	SCSI reservations indicates if the library elements are reserved for exclusive use by a host computer. Elements are reserved and released through the SCSI commands (RESERVE and RELEASE)
SCSI sense data	SCSI sense data tells you about recent SCSI activities.

▼ To check or set the SCSI Mode Parameters

1. **Select the Library Info Menu by pressing ↓ or ↑, then Enter.**
2. **Select the SCSI Menu by pressing ↓ or ↑, then Enter.**
3. **Select SCSI Mode Parameters by pressing ↓ or ↑, then Enter.**
4. **Check the settings of the various operating mode parameters. Scroll up by pressing ↑ or scroll down by pressing ↓.**

The SCSI mode parameters screen provides the current (Cur), default (Def), and saved (Sav) values for the following parameters.

Current (Cur)	The value currently active (either the power-on default or a temporary value set by the latest MODE SELECT command.
Default (Def)	The original value set at the factory.
Saved (Sav)	The value specified as the power-on default by a MODE SELECT command. After specifying a value with the MODE SELECT command, this value takes effect each time you power on the tape library.

The mode parameters for this menu are:

CHM Addr	The element address of the cartridge handling mechanism.
Stor Addr	The element address of the fixed slot. The remaining cartridge slots are numbered consecutively—starting from the topmost slot (for the tower unit) or the rightmost slot (for the tabletop and rack-mounted units).
CTS Addr	The element address of the first cartridge tape subsystem (CTS). The remaining CTS is numbered sequentially.
CTS Num	The number of CTSs installed.

Parity	Parity checking on the SCSI bus. When the parity option is on (the default), the tape library checks all data coming across the SCSI bus for parity.
Pty Retry	The number of retries when a parity error is detected.
Security	Indicates whether the SCSI security feature is on or off.
Write Line 1 - 4	Indicates whether the text displayed on each of the four lines on the main menu is defined for the LCD Mode page.

See Figure 2-4 on page 2-27 for the default element addresses for the tape library.

SCSI Reservations

The SCSI Reservations screen indicates if the library elements are reserved for exclusive use by a host computer. Elements are reserved and released through SCSI commands (RESERVE and RELEASE).

Multiple hosts can reserve different elements within a single tape library. For example, host 1 may reserve cartridge slots 1 through 5 for its exclusive use while host 2 may reserve slots 6 through 10.

To view SCSI reservations:

1. **Select the Library Info Menu by pressing ↓ or ↑, then Enter.**
2. **Select the SCSI Menu by pressing ↓ or ↑, then Enter.**
3. **Select SCSI Reservations by pressing ↓ or ↑, then Enter.**
   The first screen is the unit reservations screen. Press ↓ to scroll past the last item in the Unit Reservation screen.

Use the following keys when viewing the SCSI reservations screen.:

↓	To view an element with a higher address.
↑	To view an element with a lower address.

The information in the SCSI Reservations screen is described in Table 2-5.

Table 2-5 SCSI Reservations Screen Display

Screen Option	**Description**
Unit Reservation	Displays the reservation status of the tape library and the SCSI ID of the host (if reserved):
1	Reserved
0	Not reserved
Elem Reservations	Displays the element addresses currently set by the MODE SELECT command. Displays the default element addresses if no element addresses were set.
Elem Addr	Element address
Elem Type	Element category. There are three categories: CHM, CTS (tape drive), and cartridge slot. If the element is a cartridge slot, its number is indicated as “Slot n.”
Host ID	Displays the SCSI ID of the host that currently has the element reserved. If there is no reservation, “-NONE-” is displayed.
Res ID	Element ID that the element is reserved under. This is a number assigned to the element by a host when the reservation was made. If there is no reservation, “-NONE-” is displayed.

SCSI Sense Data

SCSI Sense Data is displayed in the console window on the Sun system. See Table 2-2 on page 2-7 for a description of SCSI Sense Data.

2.3.4.2 *Statistics*

The statistics menus enable you to review the statistics for the tape library and for each element. See Figure 2-4 on page 2-27 for the default element addresses.

▼ To review statistics for the tape library

1. **Select the Library Info Menu by pressing ↓ or ↑, then Enter.**
2. **Select Statistics by pressing ↓ or ↑, then Enter.**
   The system displays the System Stat screen followed by the Element Stat screen.
3. **Press: ↓ or ↑ to scroll though the screens.**

```
SYSTEM STAT TOTALS:
Moves          7107
Pick Retry        0
Put Retry         0 ↓
```

```
ELEM STATS, INX=0   ↑
Total Puts          0
Retries: Pick       0
Put    0   Scan     0
```

The system statistics displayed are:

Moves	Number of times the CHM has picked a cartridge and placed it in a slot or CTS.
Pick Retry	Number of times the CHM retried picking a cartridge.
Put Retry	Number of times the CHM retried placing a cartridge.
Scans	Number of times the tape library scanned a bar code label.
Scan Retry	Number of times the tape library retried scanning a bar code label.
Scan Fail	Number of times the tape library failed to scan a bar code (tries six times before logging a failure).

The element statistics displayed are:

Total Puts	Number of times a cartridge was placed in that element since the library was turned on.
Retries: Pick	Number of times the library retried picking from that element.
Retries: Put	Number of times the library retried placing a cartridge in that element.
Retries: Scan	Number of times the library retried scanning that element.

2.3.4.3 *System Sensors*

The System Sensors display lets you check the current status of the internal mechanical sensors.

▼ To check the status of the sensors

1. **Select the Library Info Menu by pressing ↓ or ↑, then Enter.**
2. **Select System Sensors by pressing ↓ or ↑, then Enter.**
   The system displays the Digital Sensors screen followed by the Analog Sensors screen. Use ↓ and ↑ to scroll though the screens:

```
DIGITAL SENSORS
 Door Closed                1
 Key Lock                   1
 Gripper Home               0 ↓
```

```
ANALOG SENSORS              ↑
  Temperature:  23C
  +12V:     11816 mV
  -12V:     12233 mV
```

Digital System Sensors

Table 2-6 lists the digital system sensor descriptions.

Table 2-6 Digital System Sensor Descriptions

Sensor	Sensor Position 1	Sensor Position 0
Door Closed	Door is closed.	Door is open.
Key lock	Door locked.	Door is unlocked.
Gripper Home	Gripper is located in the home position.	Gripper is not located in the home position.
Cart seated	Cartridge is correctly seated in the CHM.	Cartridge is not correctly seated in the CHM.
Vertical Mode	Tabletop and rack-mounted units	Tower unit.

Analog System Sensors

Table 2-7 lists the analog system sensor descriptions.

Table 2-7 Analog System Sensor Descriptions

Temperature	Indicates the temperature of the tape library in degrees C.
+12V	Indicates the output of the 12-volt power supply in milliVolts.
-12V	Indicates the output of the negative 12-volt power supply in milliVolts.
+24V	Indicates the output of the 24-volt power supply in milliVolts.

2.3.4.4 *Command History*

Use the Command History command to display the 300 most recent history events (000 - 299).

▼ To display the most recent history events

1. **Select the Library Info Menu by pressing ↓ or ↑, then Enter.**
2. **Select Command History by pressing ↓ or ↑, then Enter.**
   The system displays a screen similar to the following:

```
000      MOVE    19:37:45
   Move from 8 to 82
complete
1861    9-29-94 04441
```

3. **Press ↑ and ↓ to scroll through the entries.**
   The most recent event in the history buffer is displayed at the bottom of the screen.
4. **To exit Command History, press Escape.**

Table 2-8 describes what the Command History information means.

Table 2-8 Field Descriptions of Command History

Shown in sample	Field Name	Description
000	IDX (Index)	Line number of this event within the history buffer (000 - 299). 000 - most recent event
MOVE	From	Process name that caused this event.
19:37:45	Time	Time, according to the internal clock, the event took place.
Move from 8 to 82 complete	Description	Event description.
1861	Line	Line number of the source code that caused this event.
9-29-94	Date	The date, according to the internal calendar, the event took place.
04441	Seq	Sequence number of this event across all system buffers.

2.3.4.5 *Drive Info Menu*

Tape drive information available from the Drive Info Menu includes:

- Tape drive type
- Tape cartridge present or not
- Cleaning status (if it needs cleaning or not)

▼ To display information from the Drive Info Menu

1. Select the Library Info Menu by pressing ↓ or ↑, then Enter.

2. **Select the Drive Info Menu by pressing ↓ or ↑, then Enter.**
   The system displays this screen:

```
Drive 1 Status          ↑
Drive 2 Status          ↓
```

3. **Display information about the selected tape drive by pressing ↑ or ↓, then Enter.**
   For each tape drive (CTS) present, the system displays this screen:

```
CTS 1 STATUS
 Type            8505XL
 Present         1
 Accessible      1              ↓
```

The following chart describes the tape drive information displayed on the previous screen:

CTS 1	Top tape drive.
CTS 2	Second tape drive.
Type 8505XL	Model number (8505XL) of the tape drive. Displays 8 mm if a drive is not present.
Present 1 0	Indicates if a tape drive is installed. Tape drive present. Tape drive not present.
Accessible 1 0	Indicates if the tape drive is accessible to the CHM. A cartridge is protruding from the tape drive or the drive is empty. A cartridge is loaded in the tape drive or the drive status is unknown.
Clean 1 0	Cleaning status. Drive needs to be cleaned or the cleaning tape is used up. Drive is clean.
Warning	Not currently used.

Occupied	Indicates if a cartridge is installed.
1	Cartridge loaded in the tape drive.
0	No cartridge loaded in the tape drive.

Occupied Valid	Indicates if the occupied status is reliable or not.
1	The occupied information is reliable.
0	The door has been opened or another interruption has occurred so the occupied information may not be reliable.

▼ To determine the meaning of the tape drive LEDs

♦ **See Section 2.2, “Tape Drive LEDs,” on page 2-8.”**

Cleaning Tape Drives

Tape drives need to be cleaned once every 30 motion hours.

Note – When cleaning the tape drive, use a Sun approved 8 mm cleaning cartridge.

Each drive keeps track of tape motion hours internally. When 30 tape motion hours have elapsed, the following activities occur:

- The top/right and bottom/left LEDs on the tape drive flash steadily. Depending on the SCSI bus activity, the middle LED may also be flashing. See Figure 2-5 on page 2-54.
- The tape drive informs the library that it needs cleaning. The library displays “CTS needs cleaning” on the LCD main screen.
- The tape drive informs the host system via the SCSI bus that cleaning is required.

You can determine if a tape drive (CTS) needs cleaning by:

- Looking through the library window and checking if the top/right and bottom/left LEDs on the tape drive are flashing slowly.
- Looking for the ”CTS needs cleaning” display on the display panel.

You can clean a tape drive two ways:

- By installing a cleaning cartridge in the fixed cartridge slot and using the Clean Drive 1 or Clean Drive 2 options.
- By opening the front door and manually inserting a cleaning cartridge into the tape drive.

▼ To clean the tape drive using the display panel

1. **Disable security (the display panel must read Set Security On when security is disabled or turned off).**
   If the display panel reads Set Security Off, security is turned on. See "To enable or disable security" on page 2-22.
2. **Open the front door of the tape library and insert a cleaning cartridge into the fixed cartridge slot.**
   The SCSI bus will be interrupted and the tape library will go though POST.
3. **Eject a tape from the drive, if necessary, by pressing the Unload button.**
   See Figure 2-5 on page 2-54.
4. **Put the tape library into LCD Interface mode:**
   a. **Press Escape until the primary menu is displayed.**
   b. **Select the Interface Menu by pressing ↓ or ↑, then Enter.**
   c. **Select the Control Mode Menu by pressing ↓ or ↑, then Enter.**
   d. **Select LCD Interface mode by pressing ↓ or ↑, then Enter.**
5. **Select the Maintenance Menu by pressing ↓ or ↑, then Enter.**
6. **Select the Clean Drive Menu by pressing ↓ or ↑, then Enter.**
   a. **Select Clean Drive 1 to clean tape drive 1 (the right drive in the tabletop and rack-mounted units or the top drive in the tower unit).**
   OR
   b. **Select Clean Drive 2 to clean tape drive 2 (the left drive in the tabletop and rack-mounted units or the bottom drive in the tower unit).**

The following activities occur:

- The CHM picks the cleaning cartridge from the fixed cartridge slot and inserts it into the specified tape drive.
- The tape drive automatically performs the cleaning process. The cleaning cartridge is ejected after 3 to 4 minutes when the cleaning process is complete.
- After ejecting the cleaning cartridge, the CHM automatically picks the cartridge from the tape drive and replaces it in the fixed cartridge slot.

Note – Replace the cleaning cartridge if the tape drive ejects the cleaning cartridge within a minute.

7. **Confirm that cleaning was completed. Look at the LEDs on the tape drive. The top/right and bottom/left LEDs should be off.**
   If the LEDs are still flashing, replace the cleaning cartridge and clean the tape drive again.

   If the LEDs are still flashing after the second cleaning, there is a problem with the tape drive.

▼ To manually clean a tape drive

1. **Open the front door of the tape library.**
2. **Eject a tape from the drive, if necessary, by pressing the Unload button.** See Figure 2-5.

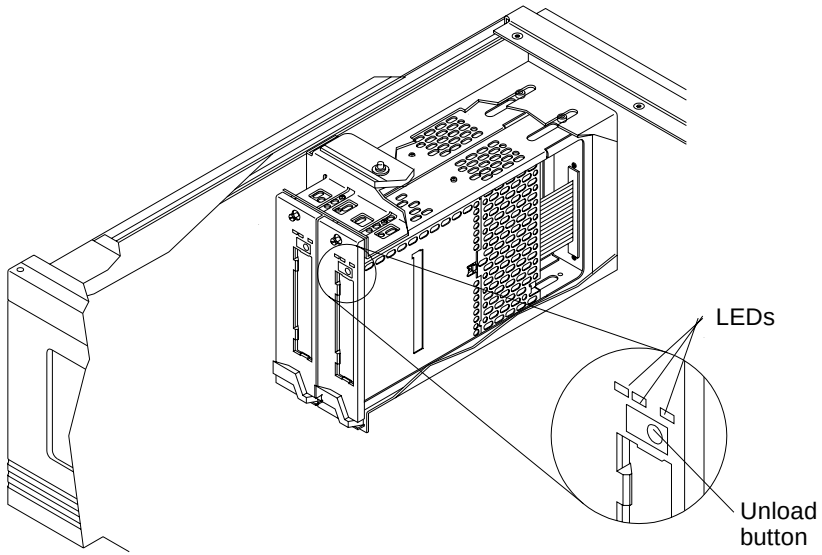


Figure 2-5 Tape Drive Unload Button

3. **Manually insert a cleaning cartridge into the appropriate tape drive.** The tape drive automatically ejects the cleaning cartridge when cleaning is complete. This takes 3 to 4 minutes.

2.3.4.6 *Inventory Menu*

The library maintains a cartridge inventory in NVRAM containing information about these element locations:

- CHM (medium transportation element)
- Data cartridge elements (storage elements)
- CTSs (tape drives or data storage elements)

Use the Inventory Menu to display:

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

2.3.4.7 *Label Info*

The Label Info command displays bar code label information.

▼ To display bar code label information

1. **Select the Library Info Menu by pressing ↓ or ↑, then Enter.**
2. **Select Inventory Menu by pressing ↓ or ↑, then Enter.**
3. **Select Label Information by pressing ↓ or ↑, then Enter.**
4. **Display information for each element index by pressing ↑ or ↓.**
   The system displays this screen:

```
ELEM LABEL, INX= 0:
 Label:
 Valid/Error: 0/0
 Send Vol Match: 0 ↓
```

Part of the Select Label Information screen is shown and described below:

```
Label:
Valid/Error: 0/0
```

Label Valid

Label Error

The following chart explains the information on the Label Information screen.

INX	Element index for which information is being displayed.
Label	If the element location contains a bar code that has been scanned, the Label field contains the cartridge label.
Label Valid	Indicates whether the field is accurate:
1	Label field is accurate.
0	Label field is not accurate.

The Label Error field (see Table 2-9) indicates whether the bar code was unable to read the cartridge label.

Table 2-9 Label Error Field Error Messages

If:	**Then:**
0	Bar code scan was successful, a reset condition occurred, or the door was open.
60	The bar code scanner could not read the bar code label because there was no label on the cartridge.
61	The bar code scanner could not read the bar code label because the label was unreadable.
62	The bar code scanner could not read the bar code label because the magazine or tape drive was not installed.
65	The bar code scanner could not read the bar code label because a Direct Memory Access (DMA) overrun occurred.
69	The bar code scanner could not read the bar code label because the label was upside down or misplaced.

The Send Volume Match flag indicates whether the cartridge label matched the template sent with the last SEND VOLUME MATCH (B8h) command:

0 Label did not match the template.
1 Label matched the template.

2.3.4.8 *Occupied Info*

The Occupied Info command displays information for each element index.

▼ To display element occupied information

1. **Select the Library Info Menu by pressing ↓ or ↑, then Enter.**
2. **Select Inventory Menu by pressing ↓ or ↑, then Enter.**
3. **Select Occupied Info by pressing ↓ or ↑, then Enter.**
   This screen is displayed:

```
ELEM OCCUP, INX = 0:
 Addr/Src:      0/255
 O/V/P/A:  o/1/1/1
 CTS/Warning: 0/0    ↓
```

4. **Display information for each element index by pressing ↑ or ↓.**

The following chart explains the element index information.

INX	Displays the element index.
Addr (Address)	Shows the SCSI address of this element.
Src (Source Element Index)	Shows the index of the last storage element from which the cartridge was moved.
O (Occupied)	Indicates whether the tape library considers the specified element location to contain a data cartridge, as follows:
0	Element location does not contain a data cartridge.
1	Element location contains a data cartridge.

V (Occupied Valid)	Indicates whether the Occupied flag is accurate.
0	Occupied flag is questionable (may not be accurate).
1	Occupied flag is accurate.
P (Cartridge Magazine or Tape Drive Present)	Indicates if a cartridge magazine or tape drive is installed. If the element index references a storage element, this flag indicates whether the magazine is installed. If the element index references a tape drive, this flag indicates whether that particular drive is installed. The values for this flag are:
0	Not installed.
1	Installed.
A (Tape Drive Accessible)	Indicates whether a drive is empty, a cartridge is loaded in the drive, or the cartridge is ejected:
0	Cartridge may be loaded in the drive.
1	Drive is empty or the cartridge is ejected and ready to be picked.

2.3.4.9 *Position Info*

The Position Info command displays information about each element position.

▼ To display element position information

1. **Select the Library Info Menu by pressing ↓ or ↑, then Enter.**
2. **Select Inventory Menu by pressing ↓ or ↑, then Enter.**
3. **Select Position Info by pressing by pressing ↓ or ↑, then Enter.**
   The following screen is displayed:

```
ELEM POS,    INX= 0:
 Long Axis:    104
 Depth           0
                  ↓
```

4. **Display the following information for each element index by pressing ↓ or ↑.**

The following chart displays the information for each index:

INX	Displays the element index.
Long Axis	Indicates the distance the CHM has to move along the long axis from its home position to the specified element location.
Depth	For storage elements the Depth field indicates the distance the CHM has to move along the short axis from its home position to touch the magazine or a data cartridge in the magazine (not used for the tape drives or the CHM).

Diagnostics 3

This chapter is organized in the following major sections:

3.1 SunDiag System Exerciser

The SPARCstorage Library must be in one of the three sequential modes (Sequential CTS1, Sequential CTS2, or Dual Sequential) to use the SunDiag system exerciser. Any of the sequential modes causes the unit to automatically get the next tape and load it into the drive.

▼ To set the SPARCstorage Library to one of the Sequential Modes to run SunDiag

1. **Make sure the tape library is in the ready state.**
   There should be no hardware errors and the door should be closed.

2. **Disable security (the display panel reads Set Security On when security is disabled or turned off).**
   If the display panel reads Set Security Off, security is turned on. See “To enable or disable security” on page 2-22.

3. **Press Escape until the primary menu is displayed.**
   See Figure 2-1 on page 2-10.

4. **Select the Interface Menu by pressing ↓ or ↑, then Enter.**

5. **Select the Control Mode Menu by pressing ↓ or ↑, then Enter.**

6. **Select Sequential CTS1 (Cartridge Tape Subsystem 1), Sequential CTS2 (Cartridge Tape Subsystem 2), or Dual Sequential (for two drive models) mode by pressing ↓, then Enter.**

7. **Set the Restart and Loop options to ON by pressing → or ←.**
   See "To set the restart option" on page 2-19 and "To set the loop option" on page 2-20. The restart and loop options are under the Sequential Options menu which is under the Configuration Menu.

```
→Loop:                    ON  ←
 Restart:                 ON

                              ↓
```

8. **Open and close the door of the tape library.**
   This action causes the unit to inventory cartridge locations and places a tape in the tape drive (each tape drive in Dual Sequential Mode).

9. **Press Escape until you get to the primary menu.**

10. **Select Main Screen by pressing Enter.**
    Leave the unit in Main Screen mode for normal operation.

11. **Start the SunDiag system exerciser.**
    See the *SunDiag User's Guide* for instructions on how to use SunDiag.

12. **When you are finished running SunDiag, put the tape library in the control mode it was in before (Control Mode Menu under the Interface Menu).**
    SCSI control mode is the normal operation mode.

3.2 Diagnostics Menu

To run diagnostics, use the Diagnostics Menu. For procedures, see Section 2.3.3.3, "Diagnostics Menu," on page 2-27."

Part 3— Preparing for Service

Safety and Tool Requirements 4

This chapter is organized in the following major sections:

4.1 Safety Precautions

For your protection, observe the following safety precautions when servicing the equipment:

- Follow all warnings and instructions marked on the equipment.
- Ensure that the voltage and frequency of your power source matches the voltage and frequency inscribed on the equipment's electrical rating label.
- Never push objects of any kind through openings in the equipment as they may touch dangerous voltage points or short out components that could result in fire or electric shock.
- Use properly grounded power outlets only.
- Refer servicing of equipment to qualified personnel.

To protect both yourself and the equipment, observe the precautions listed in Table 4-1.

Table 4-1 Safety Precautions

Item	Problem	Precaution
AC power cord	Electric shock	Unplug the AC cord from the AC wall socket before working inside the tape library.
Wrist strap	ESD	Wear a conductive wrist strap or foot strap when handling tape drives, printed circuit boards, or other electrical parts.
ESD mat	ESD	An approved ESD mat provides protection from static damage when used with a wrist strap. The mat also cushions and protects electrical parts.
Cover panels	System damage and overheating	Attach all cabinet cover panels after performing any service work on the tape library.

4.2 Symbols

The following symbols mean:

 **WARNING**	Risk of electrical shock. To reduce the risk, follow the instructions.
 **WARNING**	Risk of personal injury. To reduce the risk, follow the instructions.
 **CAUTION**	Risk of equipment damage. To reduce the risk, follow the instructions.
 **AC**	A terminal to which alternating current or voltage may be applied.
ON	The principal and standby switches are in the ON position.
 **OFF**	The principal switch is in the OFF position.

4.3 System Precautions

Before you begin, carefully read each of the procedures in this manual.

Persons who remove any of the outer panels to access this equipment must observe all safety precautions and ensure compliance with skill level requirements, certification, and all applicable local and national laws.

All procedures contained in this document must be performed by qualified service-trained maintenance providers.

Caution – Do not make mechanical or electrical modifications to the equipment. Sun Microsystems, Inc. is not responsible for regulatory compliance of a modified Sun product.

Caution – To ensure reliable operation of your Sun product and to protect it from overheating, openings in the equipment must not be blocked or covered. A Sun product should never be placed near a radiator or heat register.

Warning – Sun products are designed to work with single-phase power systems having a grounded neutral conductor. To reduce the risk of electrical shock, do not plug Sun products into any other type of power system. Contact your facilities manager or a qualified electrician if you are not sure what type of power is supplied to your building.

Warning – Your Sun product is shipped with a grounding type (3-wire) power cord. To reduce the risk of electric shock, always plug the cord into a grounded power outlet.

Not all power cords have the same current ratings. Household extension cords do not have overload protection. Do not use household extension cords with your Sun product.

Caution – Power off the tape library before performing any of the procedures described in this book. The AC power cord must remain plugged in to ensure a proper ground.

Caution – Improper handling by unqualified personnel can cause serious damage to this equipment. Unqualified personnel who tamper with this equipment may be held liable for any resulting damage to the equipment.

Caution – There is a lithium battery soldered on the SMC controller card. When the lithium battery needs to be replaced, replace the entire SMC controller card. Do not dispose of the SMC controller card, with the lithium battery in fire.

4.4 Tools and Equipment Required

- Antistatic wrist strap
- ESD mat
- Screwdriver, flatblade, medium sized
- Screwdriver, flatblade, long-handled
- Screwdriver, flatblade, short-handled
- Screwdriver, Phillips
- Screwdriver, TORX
- TORX bits, T-20, T-15, and T-10
- Container for screws

Part 4— Subassembly Removal and Replacement

Internal Access 5

This chapter describes how to gain internal access to the following tape library units:

5.1 Rack-Mounted Unit

To service the tape library, you must remove it from the expansion cabinet and remove the top cover.

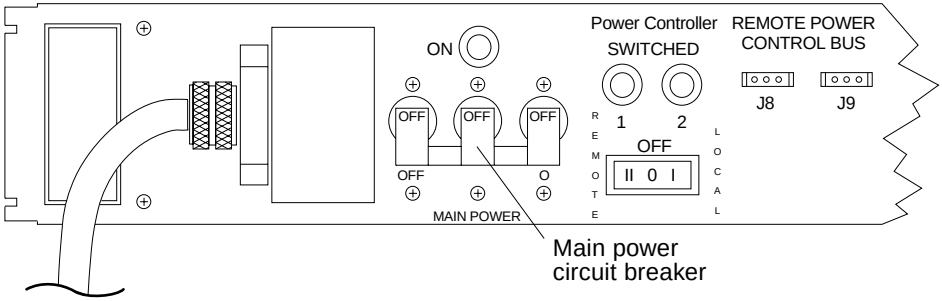
5.1.1 Preparing to Remove the Tape Library

1. **Follow normal shutdown procedures.**
2. **Obtain a Phillips screwdriver.**

3. **Turn the front panel key switch on the expansion cabinet to the STANDBY (|) position.**

4. **Turn the main power circuit breaker to the OFF position at the rear of the unit.**
   See Figure 5-1.

Warning – The power must be turned off at the main circuit breaker or risk of electrical shock to personnel exists.



(rotated 90 degrees for clarity)

Figure 5-1 AC Distribution Unit Power Switch

5. **Extend the anti-tilt bar from the cabinet bottom by grasping it underneath the front edge and pulling it out to its fully-extended position.**
   See Figure 5-2.

6. **Remove the front bezel by pulling on both sides of it.**
   See Figure 5-2.

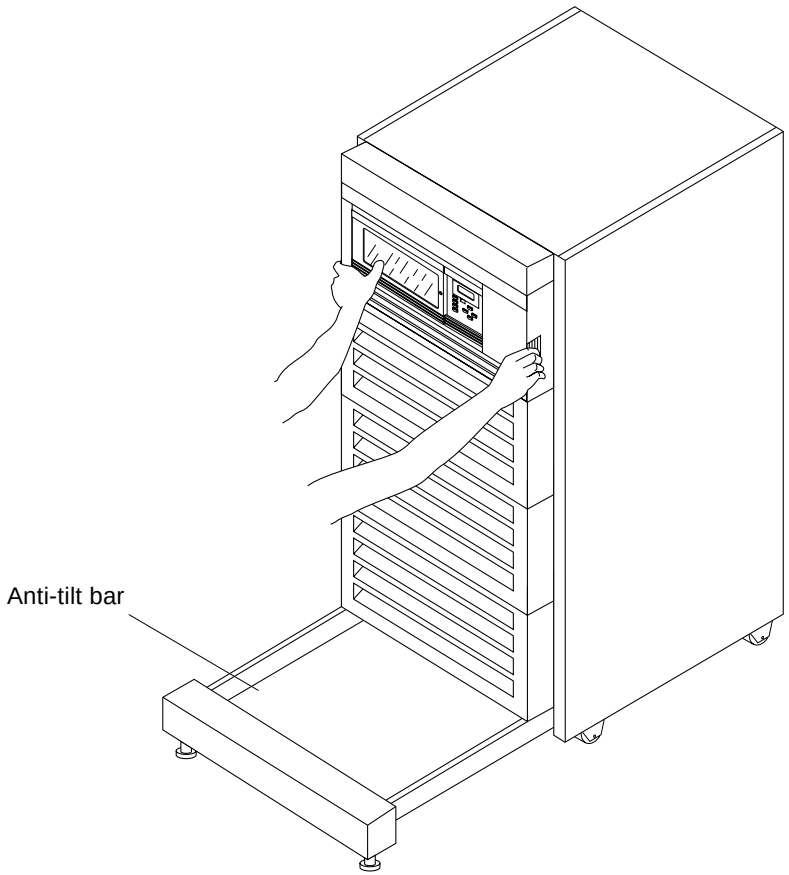


Figure 5-2 Extending the Anti-Tilt Bar and Removing the Front Bezel

7. **Remove the vented rear panel.**
   See Figure 5-3.

   a. **Remove the two Phillips screws at the top of the vented rear panel.**

   b. **Pull the top of the vented rear panel away from the cabinet.**
      Continue lifting the panel until the bottom is clear.

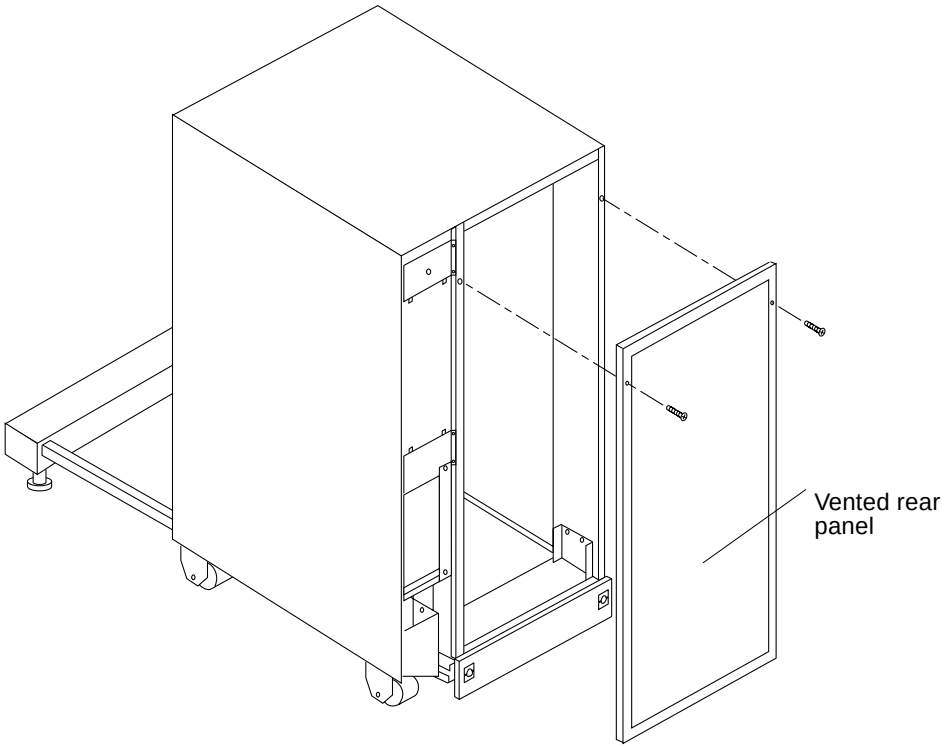


Figure 5-3 Removing the Vented Rear Panel

5.1.2 Removing the Tape Library

Warning – The tape library weighs 90 pounds (40.86 kg). To avoid personnel injury or damage to the tape library, use two or more people to remove the tape library from the expansion cabinet.

1. **Prepare the system for removal of the tape library.**
   Follow the steps in the section Section 5.1.1, “Preparing to Remove the Tape Library,” on page 5-1.

2. **Disconnect the power cord from the power connector at the rear of the unit.**
   See Figure 5-4.

3. **Disconnect the SCSI cable(s) at the rear of the unit.**
   Do not disconnect the SCSI terminator or the SCSI jumper plug. See Figure 5-4.

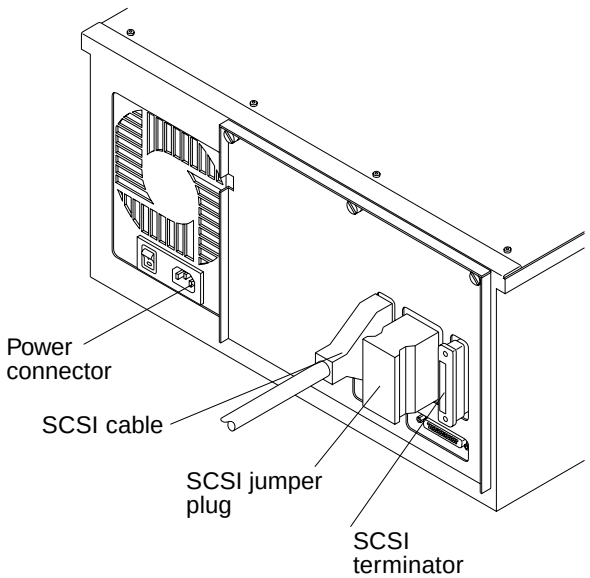


Figure 5-4 Rear View of the Tape Library Showing the SCSI Connectors and the Power Connector

4. **Remove the four Phillips screws that secure the mounting brackets to the tape library (two screws for each mounting bracket).**
   See Figure 5-5.

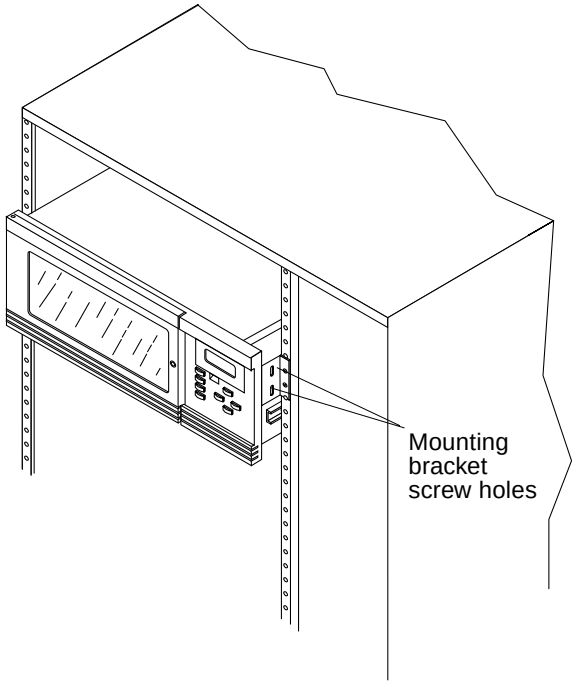


Figure 5-5 Location of the Mounting Brackets

5. **Fully extend the tape library until the two slide rail buttons (one on each side) click.**
   See Figure 5-6.

6. **Dismount the tape library from the slide rails.**
   See Figure 5-6.

Warning – The tape library weighs 90 pounds (40.86 kg). To avoid personnel injury or damage to the tape library, use two or more people to remove the tape library from the expansion cabinet.

   a. **Press the button in the center of the slide rail.**

   b. **Pull the tape library away from the expansion cabinet.**

   c. **Place the tape library on a work surface.**

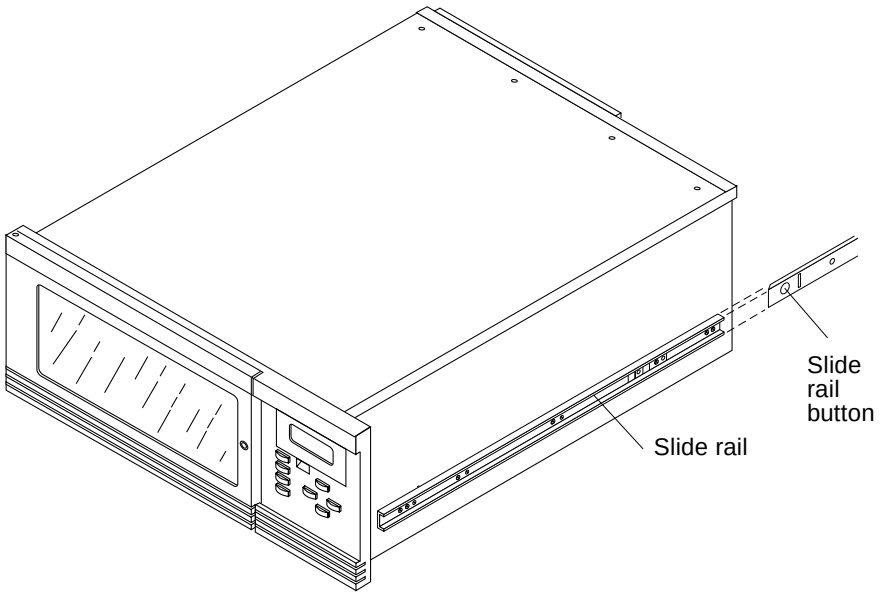


Figure 5-6 Dismounting or Mounting the Tape Library from the Slide Rails

5.1.3 Removing the Top Cover

1. **Obtain a TORX T-10 screwdriver.**
2. **Remove the four TORX T-10 screws from the top cover.**
3. **Pull up on the handle and slide the top cover away from the front panel.** Lift the cover off the chassis. See Figure 5-7.

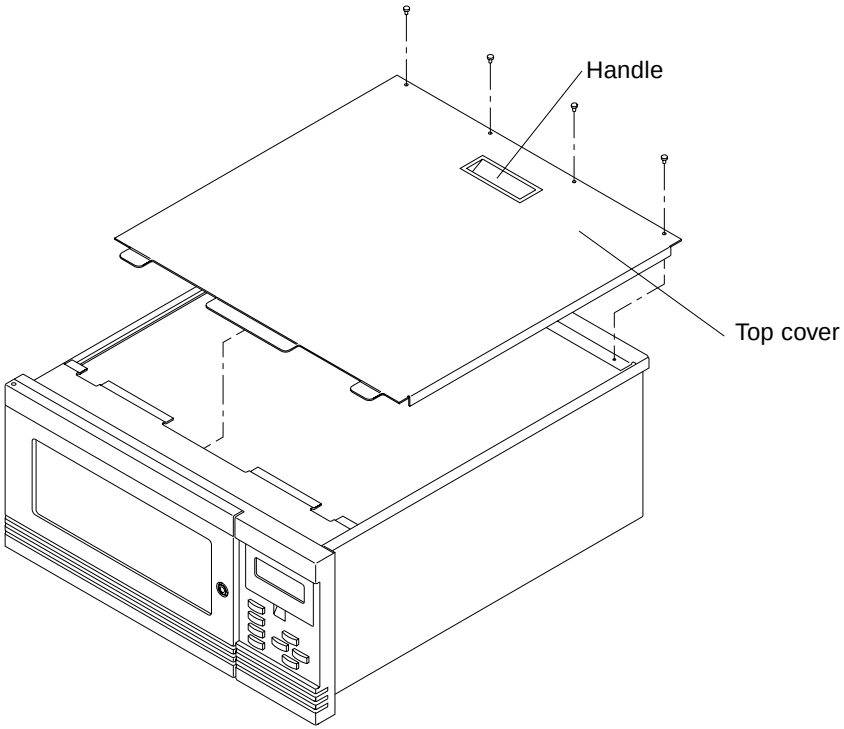


Figure 5-7 Removing and Replacing the Top Cover on the Rack-Mounted Unit

5.1.4 Replacing the Top Cover

1. **Position the top cover on top of the library with the handle toward the back.**
   See Figure 5-7 on page 5-8.
2. **Slide the tabs into the slots on the front panel and position the cover over the chassis.**
3. **Replace the four TORX T-10 screws securing the top cover to the chassis.**

5.1.5 Installing the Tape Library

Warning – The tape library weighs 90 pounds (40.86 kg). To avoid personnel injury or damage to the tape library, use two or more people to remove the tape library from the expansion cabinet.

1. **Mount the tape library on the slide rails.**
   a. **Push both slide rails completely into the cabinet.**
   b. **With another person, position the tape library on the rails and slide it towards the cabinet until you hear a click.**
      See Figure 5-6 on page 5-7.
2. **Press the button in the center of the slide rails and push the tape library completely into the cabinet.**
   See Figure 5-6 on page 5-7.
3. **Install the four Phillips screws in the mounting brackets at the sides of the tape library (two screws for each mounting bracket).**
   See Figure 5-5 on page 5-6.
4. **Reconnect the SCSI cable(s) at the rear of the unit.**
   See Figure 5-4 on page 5-5.

5. **Route the power cord to the power distribution unit.**

   a. **Reconnect the power cord to the tape library.**

   a. **Route the power cord down the right side and along the bottom of the cabinet.**

   b. **Route the power cord up through the cutout to the power distribution unit at the side of the cabinet.**

   c. **Plug the tape library power cord into the power distribution unit.** See Figure 5-8.

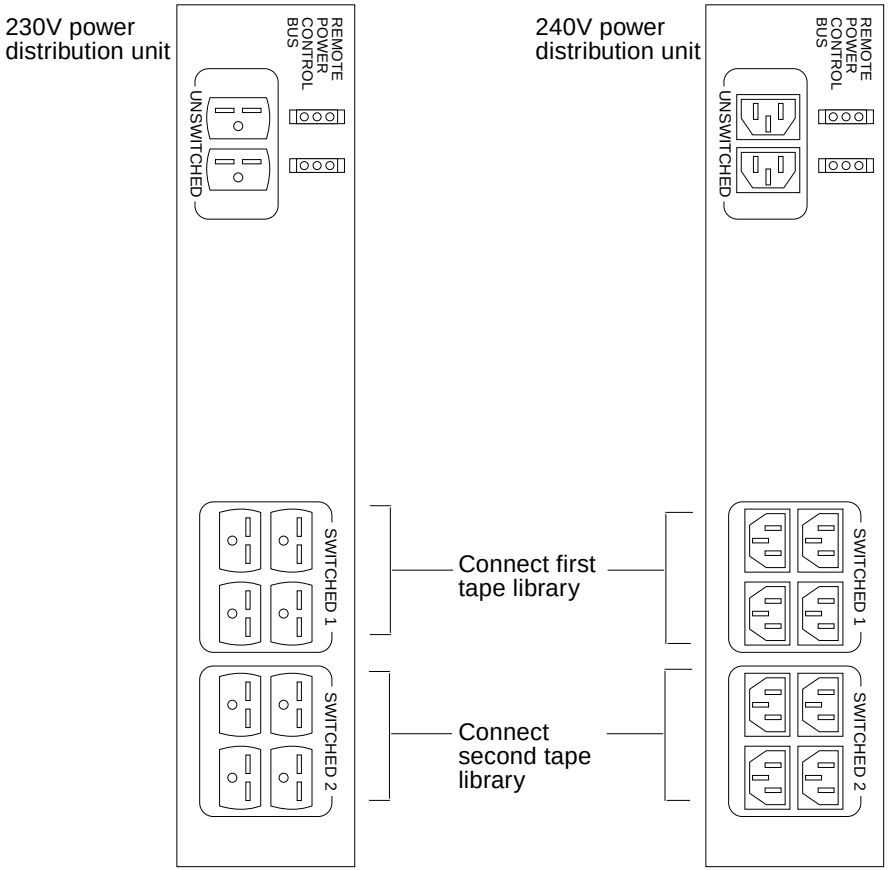


Figure 5-8 230 Volt and 240 Volt Power Distribution Units

6. **Install the vented rear panel.**
   See Figure 5-9.

   a. **Place the bottom of the vented rear panel in the groove on the top of the kick panel.**

   b. **Swing the top of the vented rear panel towards the cabinet until the top of the panel is touching the cabinet.**

   c. **Lift up the vented rear panel slightly and insert the two Phillips screws at the top of the vented rear panel.**

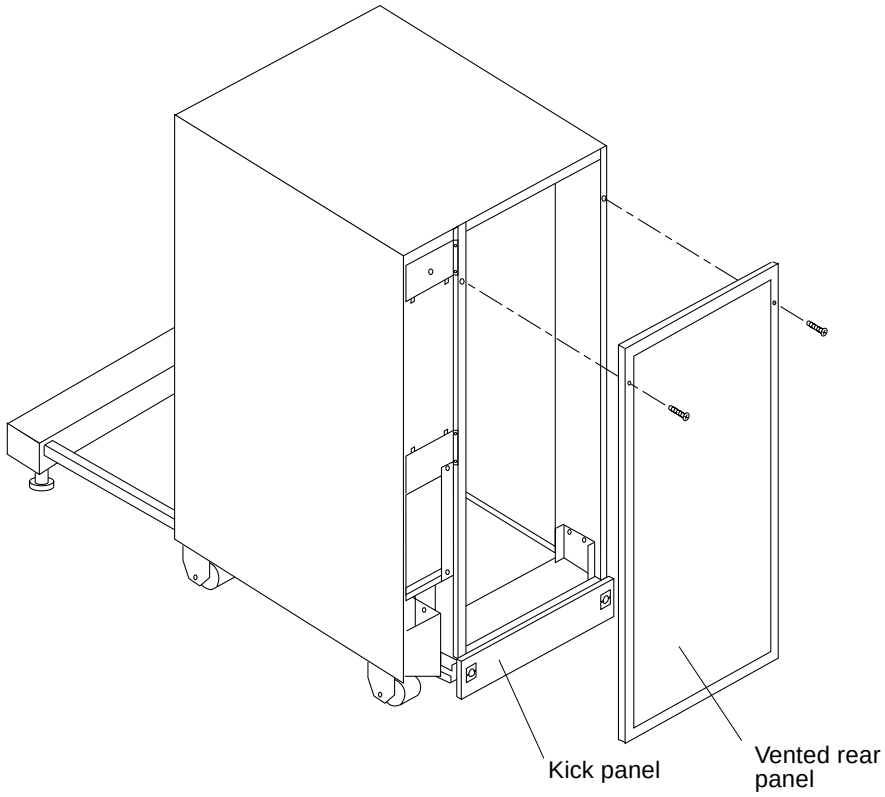


Figure 5-9 Installing the Vented Rear Panel

7. **Replace the front bezel by pushing on both sides of the top front panel on the cabinet until it clicks into place. See Figure 5-2 on page 5-3.**

8. **Retract the anti-tilt bar by pushing it back beneath the cabinet.**
   See Figure 5-2 on page 5-3.

5.2 Tower Unit

5.2.1 Removing the Top Cover

1. **Turn off the power but leave the power cord connected to the wall outlet.**
2. **Attach a wrist strap to your wrist and to a metal portion at the rear of the chassis.**
3. **Obtain a the following tools and equipment:**
   - T-20 TORX screwdriver
   - T-10 TORX screwdriver
   - Container for screws
4. **Remove the two TORX T-20 screws from the back of the top cover.**
5. **Push up on the top cover from the rear and pull it towards the rear until the front lip of the cover disengages from the front panel.**
   Remove the top cover. See Figure 5-10.

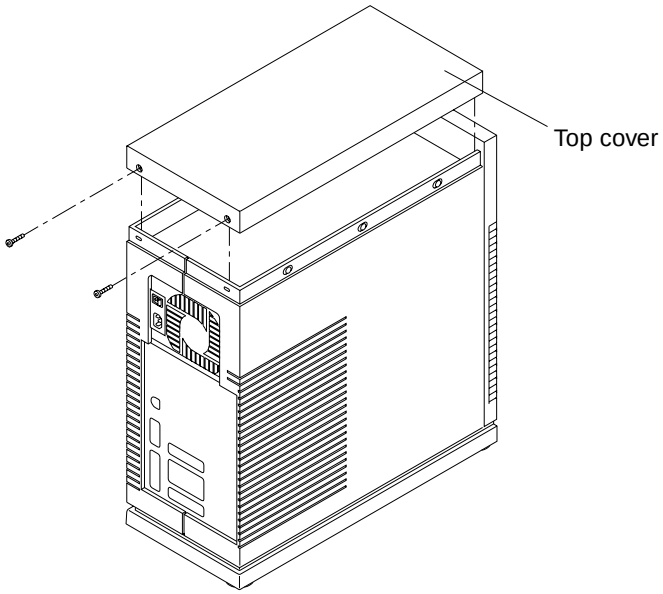


Figure 5-10 Removing and Replacing the Top Cover to the Tower Unit

5.2.2 Removing the Right Plastic and Metal Panels

1. **Remove the right plastic panel.**

   a. **Remove the three TORX T-20 screws from the top of the right panel (from the rear).**
   See Figure 5-11.

   b. **Slide the right panel toward the rear and lift up to remove it.**
   The tabs will disengage from their slots. See Figure 5-11.

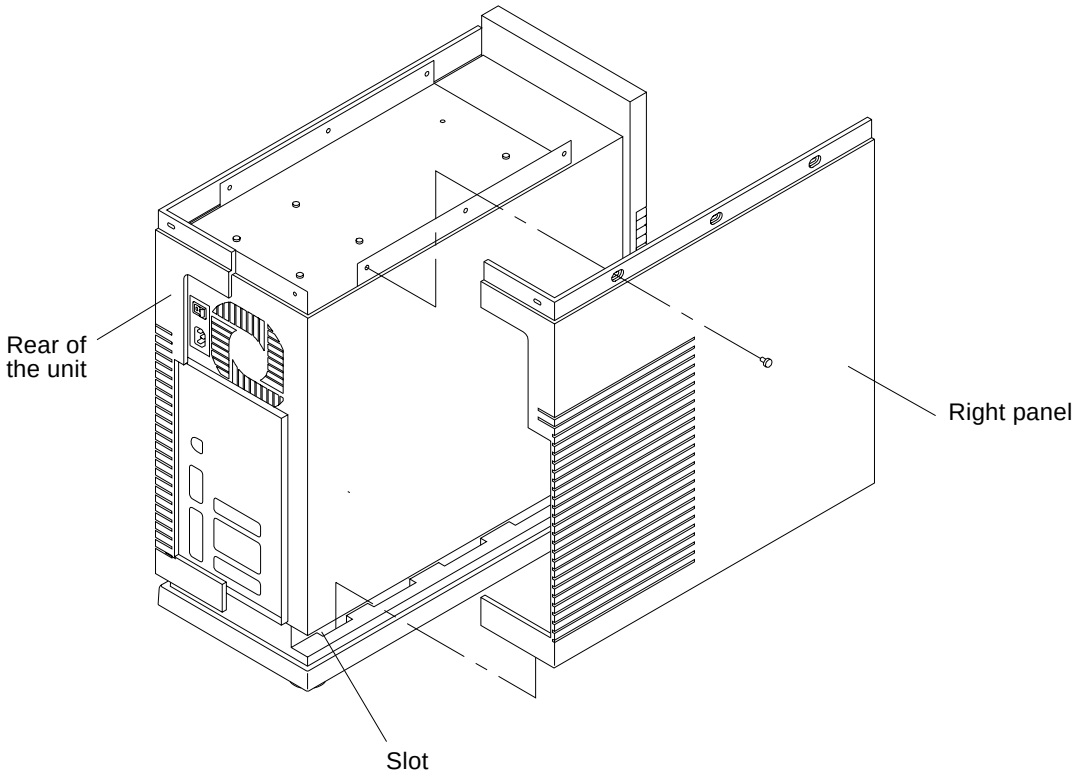


Figure 5-11 Removing and Replacing the Right Panel

2. **Remove the right metal panel.**

   a. **Remove the four TORX T-10 screws securing the metal panel to the chassis.**
   See Figure 5-12.

   b. **Pull out on the handle to remove the metal panel.**

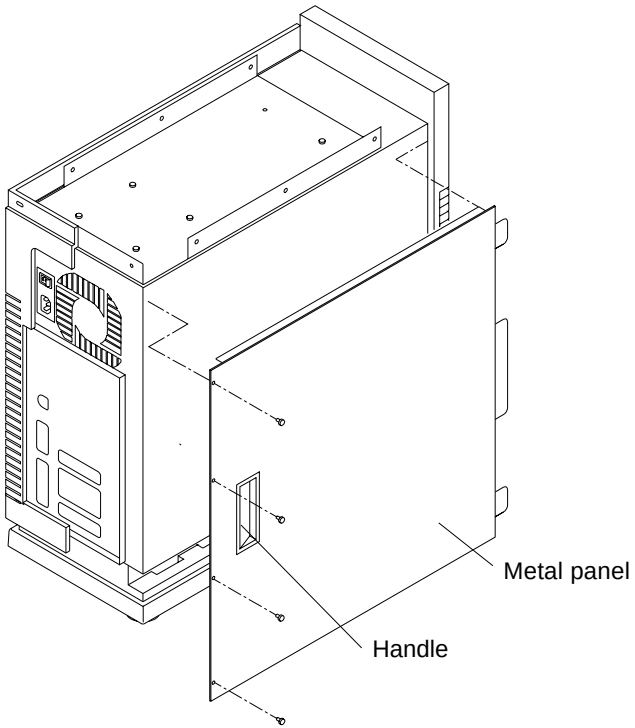


Figure 5-12 Removing the Metal Panel

5.2.3 Replacing the Right Plastic and Metal Panels

1. **Replace the metal panel to the right side of the library. Insert the tabs into the slots at the front of the unit and secure the four TORX T-10 screws.**
   See Figure 5-12 on page 5-15.
2. **Position the right plastic panel on the right side of the library, using the tabs along the bottom as guides.**
   See Figure 5-11 on page 5-14.
3. **Insert the three TORX T-20 screws.**
   See Figure 5-11 on page 5-14.

5.2.4 Replacing the Top Cover

1. **Replace the top cover, lining up the two screw holes in the cover with the two holes on the rear edge.**
   See Figure 5-10 on page 5-13.
2. **Insert and secure the two TORX T-20 screws.**

5.3 Tabletop Unit

1. **Turn off the power but leave the power cord connected to the wall outlet.**
2. **Attach a wrist strap to your wrist and to a metal portion at the rear of the chassis.**
3. **Obtain a the following tools and equipment**:
   - Phillips screwdriver
   - T-10 and T-15 TORX wrench
   - Container for screws
4. **Remove both side panels.**
   Remove the six captive Phillips screws that secure each side panel to the chassis.
5. **Remove the external top cover.**
   Remove the three TORX T15 screws that secure the top cover to the back panel. Lift off the top cover and set it aside.
6. **Remove the four TORX T-10 screws from the internal top cover.**
7. **Pull up on the handle and slide the internal top cover away from the front panel.**
   Lift the cover off the chassis. See Figure 5-7.

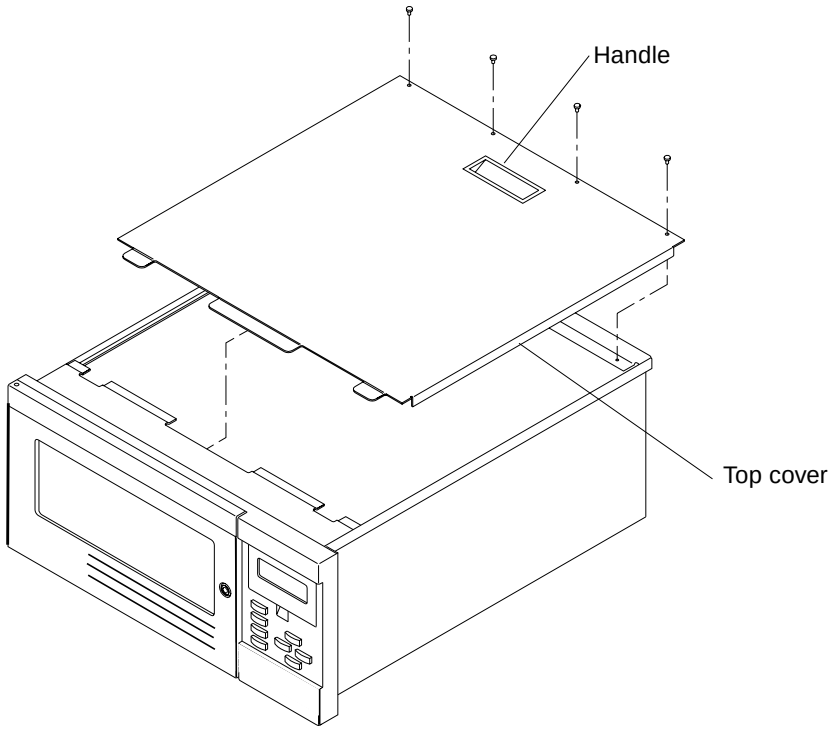


Figure 5-13 Removing and Replacing the Top Cover on the Tabletop Unit

Removing and Installing Replacement Parts 6

This chapter describes how to remove and install these replacement parts:

6.1 Tape Drive in the Drive Carrier or Drive Blank

In this section, *drive carrier* refers to a tape drive installed in a drive carrier.

Caution – If you operate the tape library with only one tape drive, you must have a *drive blank* installed in the outside drive carrier slot (the left slot in the table top and rack-mounted units or the bottom slot in the tower unit).

Failure to install a drive blank will interrupt the SCSI bus, and failure to install the drive blank in the outer slot will disrupt air flow within the library.

Before you begin any procedure in this section, make sure you:

- **Obtain a long medium size flatblade screwdriver.**

6.1.1 Removing the Drive Carrier or Drive Blank

1. **Make sure the power is on.**
2. **Make sure data cartridges are not in the tape drives. The top/right and bottom/left LEDs on the tape drives must be off.**

If the top / right and bottom / left LEDs are steadily flashing:

a. **Open the front door.**

b. Push the Unload square button on the tape drive.
See Figure 6-1.

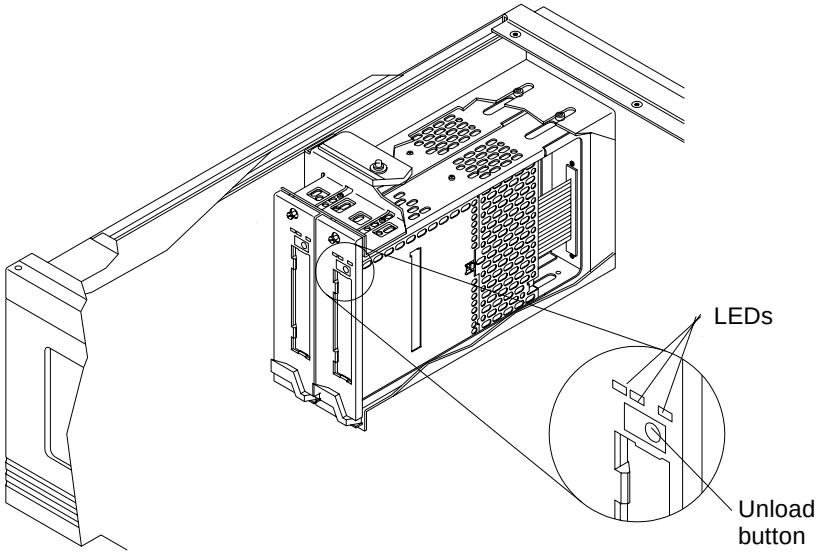


Figure 6-1 Location of the Unload Button

c. Wait 10 to 90 seconds.

d. Remove all data cartridges.

3. Turn off the power but leave the power cord connected to the wall outlet.

4. Attach a wrist strap to your wrist and to the metal chassis.

5. **Loosen the two captive screws on the drive carrier faceplate.**
   See Figure 6-2.

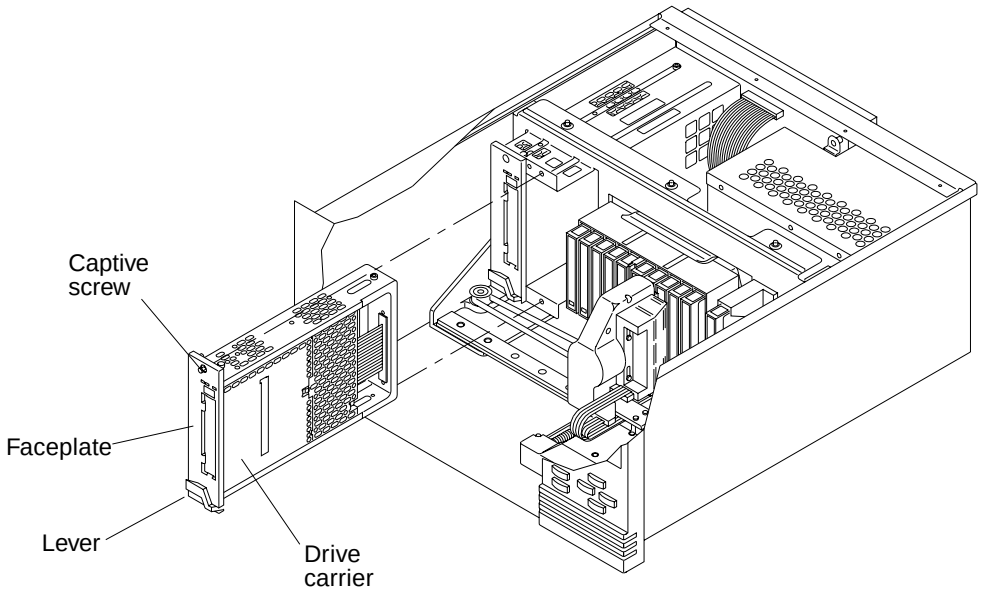


Figure 6-2 Screws on the Drive Carrier Faceplate

6. **Pull out the lever on the faceplate using your finger.**
   See Figure 6-2. Do not try to pull out the lever without first loosening the screws.

7. **Pull the drive carrier out of the slot.**
   See Figure 6-2.

6.1.2 Installing the Drive Carrier or Drive Blank

If you are installing two drive carriers, it does not matter which one you insert first.

1. **Insert the drive carrier into the slot with the lever toward the bottom (table top and rack-mounted units) or on the right (tower unit). See Figure 6-3.**

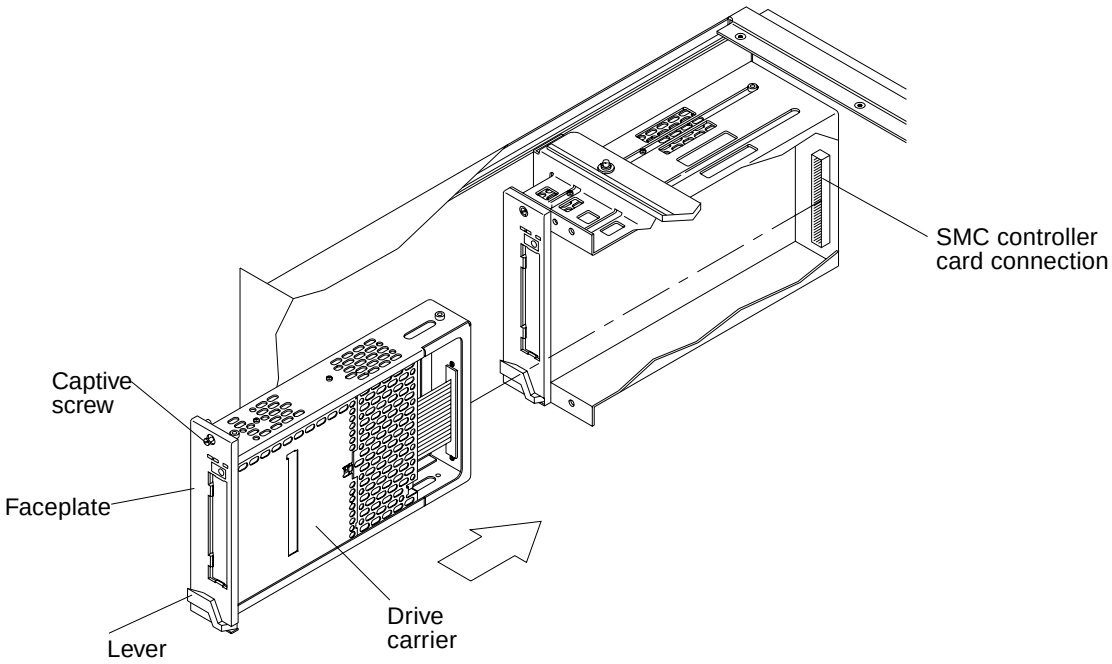


Figure 6-3 Inserting the Drive Carrier

2. **Push the drive carrier into the slot until the rear surface of the bezel is flush with the frame. When the tape drive reaches the SMC controller card connection, you will feel some resistance. Push firmly until it is seated.** Make sure the lever closes all the way when the connection is made. See Figure 6-3.

3. **Tighten the two captive screws on each end of the drive carrier faceplate.** See Figure 6-3.
4. **Remove the wrist strap.**

6.2 Power Supply

6.2.1 Preparing to Remove and Replace the Power Supply

1. **Turn off the power and disconnect the power cord.**
2. **Obtain the following tools:**
   - long flatblade screwdriver
   - T-20 TORX screwdriver
   - Phillips screwdriver

6.2.2 Removing the Power Supply

1. **Position the unit with the back facing you.**

2. **Disconnect the following at the rear of the unit. See Figure 6-4.**
   - SCSI jumper plug
   - SCSI terminator
   - SCSI cable(s)

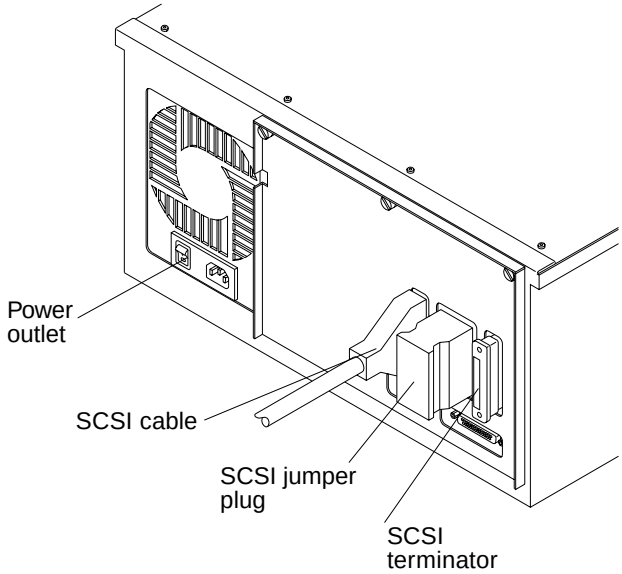


Figure 6-4 Disconnecting the SCSI Jumper Plug, SCSI Terminator, and SCSI Cable

3. **Remove the three captive Phillips screws from the back cover plate and lift off the back cover plate.**
   See Figure 6-5.

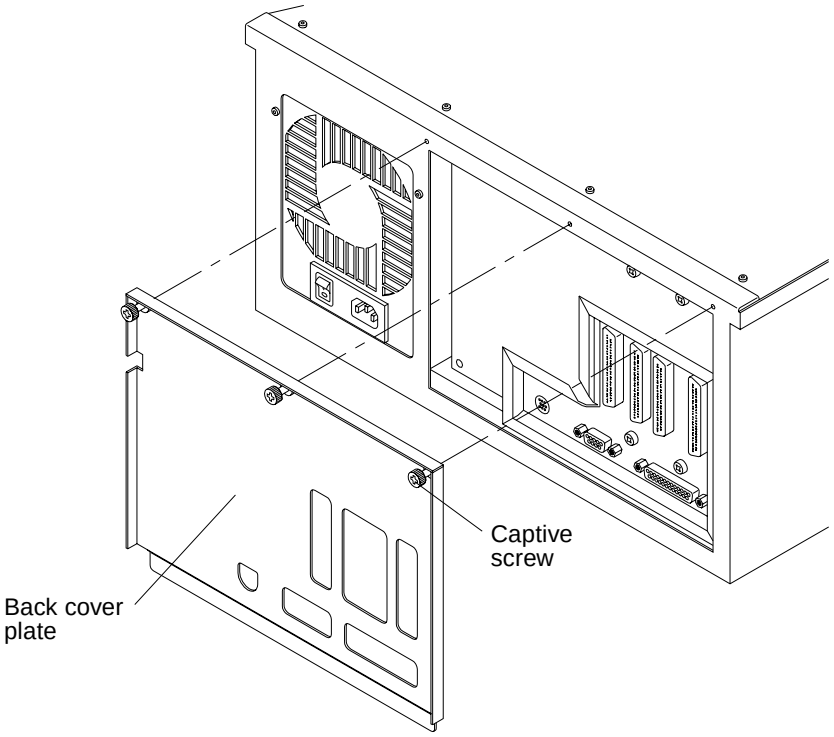


Figure 6-5 Removing the Back Cover Plate

4. **Loosen the two captive flathead screws that secure the power supply to the floor of the chassis (table top and rack-mounted units) or the side of the unit (tower unit).**
   See Figure 6-6.

5. **Remove the TORX T-20 screw inside the chassis connecting the power supply to the grounding block on the back side of the chassis.**
   See Figure 6-6.

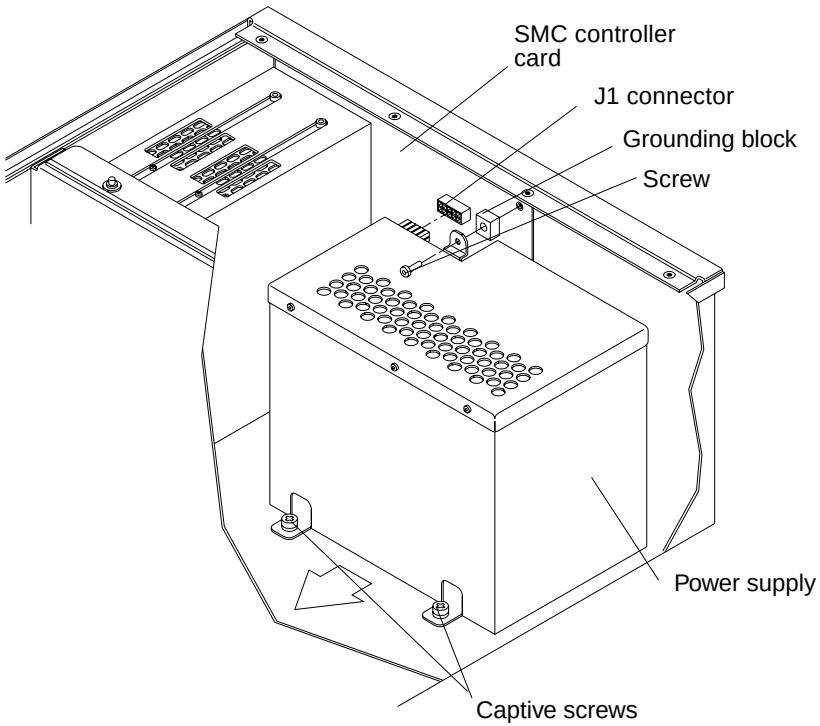


Figure 6-6 Removing the Screws Inside the Chassis from the Power Supply

6. **Remove the two TORX T-20 screws that attach the power supply to the back of the chassis.**
   See Figure 6-7.

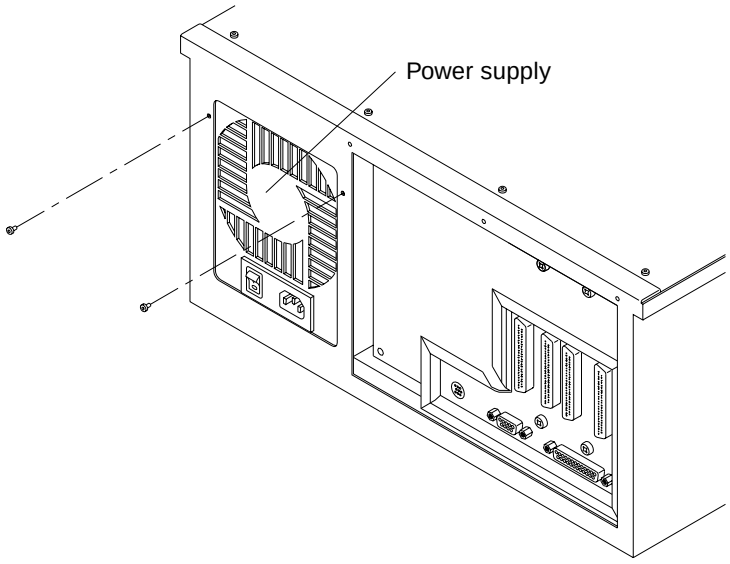


Figure 6-7 Removing the Power Supply Screws from the Back of the Chassis

7. **Push the power supply away from the chassis. As you push, you will disconnect the power supply from the J1 connector on the SMC card.**
   See Figure 6-6.

8. **Tilt the power supply away from the back panel using both hands. Lift it out of the tape library.**

6.2.3 Installing the Power Supply

1. **Perform the steps in the section Section 6.2.1, “Preparing to Remove and Replace the Power Supply,” on page 6-6.**
2. **Lower the power supply into the tape library, tilting it away from the back panel to get it past the motor.**
3. **Align the tabs at the bottom (table top and rack-mounted units) or the side (tower unit) of the power supply with the slots in the chassis.**
4. **Press the power supply connection into the J1 connector on the SMC card.**
   J20 is on the back of the SMC controller card and J1 is on the front of the SMC controller card. Secure the connection using your thumb to press against the SMC controller card. See Figure 6-6 on page 6-9.
5. **Replace the two Phillips screws on both sides of the fan that secure the power supply to the back of the chassis.**
   See Figure 6-7 on page 6-10.
6. **Replace the Phillips ground screw.**
   This action makes the ground connection between the power supply and the back chassis. See Figure 6-6 on page 6-9.
7. **Replace the two captive screws securing the back of the power supply to the floor of the chassis using a long flatblade screwdriver.**
   See Figure 6-6 on page 6-9.
8. **Replace the back cover plate by securing the three captive screws.**
   See Figure 6-5 on page 6-8.

9. **Install the SCSI jumper plug in the middle two SCSI connectors on the back panel.**
   Align the arrow on the jumper plug with the arrow on the back panel. See Figure 6-8.

10. **Replace the SCSI terminator and the SCSI cable(s) on the back panel.**
    See Figure 6-8.

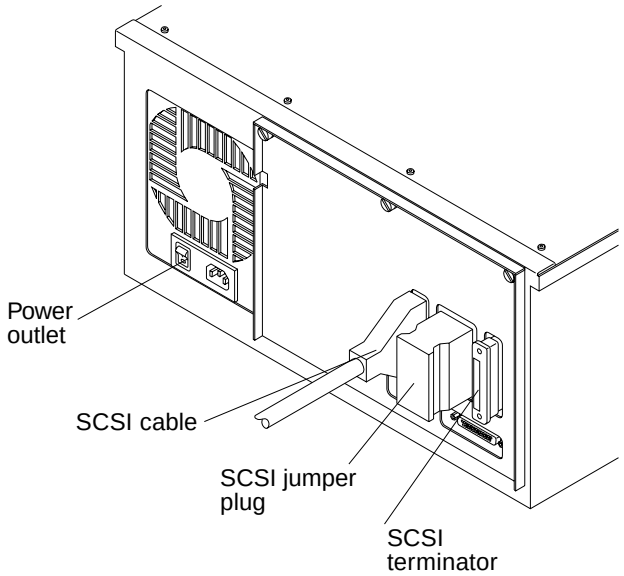


Figure 6-8 Connecting the SCSI Jumper Plug, SCSI Cable, and SCSI Terminator

6.3 Fuse

6.3.1 Removing and Replacing the Fuse

1. **Turn off the power.**
2. **Obtain a small short screwdriver.**
3. **Open the fuse drawer by inserting a screwdriver into the slot and pulling the drawer out.**
4. **Pull the old fuse out of the fuse slot.**
   See Figure 6-9.

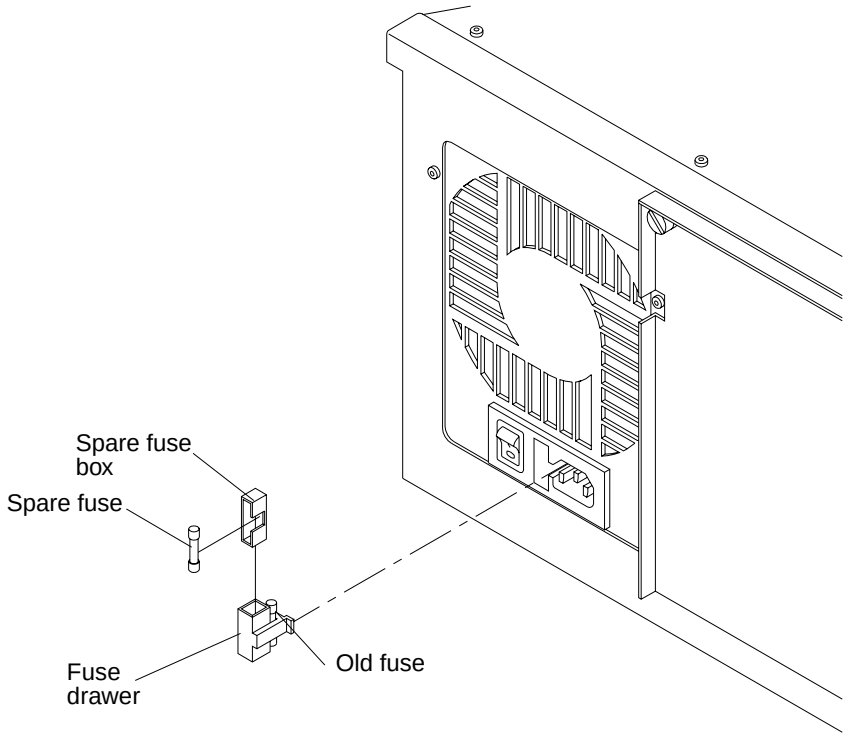


Figure 6-9 Removing and Replacing the Fuse

5. **Push open the spare fuse box using a small screwdriver and remove the spare fuse.**
   See Figure 6-9.

6. **Install the 2.5A fuse in the fuse slot.**
   See Figure 6-9.

7. **Insert the fuse drawer into the back panel. Push in until you hear it snap into place.**
   See Figure 6-9.

8. **Turn the power on.**

9. **Order another spare fuse.**
   See Section 7.1, “Replacement Parts.”

6.4 SMC Controller Card

6.4.1 Preparing to Remove and Install the SMC Controller Card

1. **Turn off the power but leave the power cord plugged into a wall outlet.**
2. **Remove the service access cover (table top and rack-mounted units) or the right plastic and metal panels (tower unit).**
   See Section 5.1.3, “Removing the Top Cover,” on page 5-8 and Section 5.2.2, “Removing the Right Plastic and Metal Panels,” on page 5-14.

ADD REFERENCE TO TABLE TOP SECTION

3. **Attach a wrist strap to your wrist and to a metal portion at the rear of the chassis.**
4. **Open the door.**
5. **Obtain the following tools:**
   - Medium sized long flatblade screwdriver
   - T-20 TORX screwdriver
   - Phillips screwdriver

6.4.2 Removing the SMC Controller Card

1. **Move the cartridge handling mechanism (CHM) to the up position (tower unit) or to the right (rack-mounted unit) by firmly sliding the CHM along its path (away from the drive carriers).**
   See Figure 6-10. You should have access to the drive carriers.

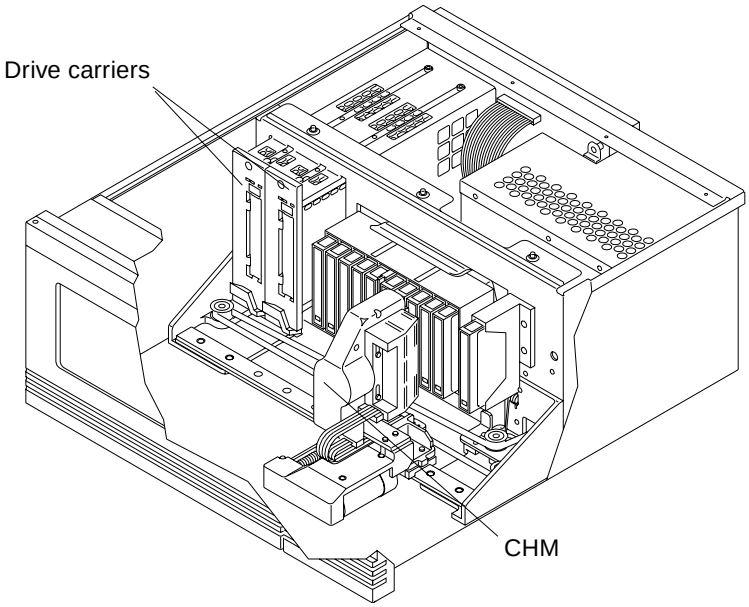


Figure 6-10 Moving the Cartridge Handling Mechanism (CHM) to the Right

2. **Slide both drive carriers (or drive blanks) out slightly loosening them from their SCSI connectors on the SMC controller card.**
   See Figure 6-11.

   a. **Loosen the two captive screws on the drive carrier faceplate.**

   b. **Pull out the lever on the faceplate using your finger.**
      Do not try to pull out the lever without first loosening the screws.

   c. **Pull the drive carrier or drive blank slightly out of the slot.**
      The drive carriers must disconnect from the connectors on the SMC controller card.

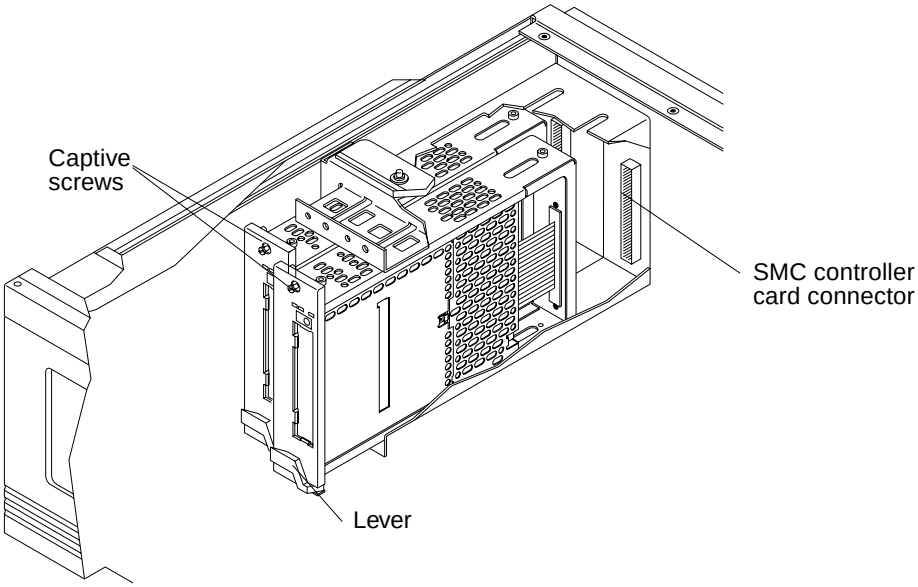


Figure 6-11 Disconnecting the Drive Carriers from the SMC Card

3. **Disconnect the following from the rear panel.**
   See Figure 6-12.

   - SCSI jumper plug
   - SCSI terminator
   - SCSI cable

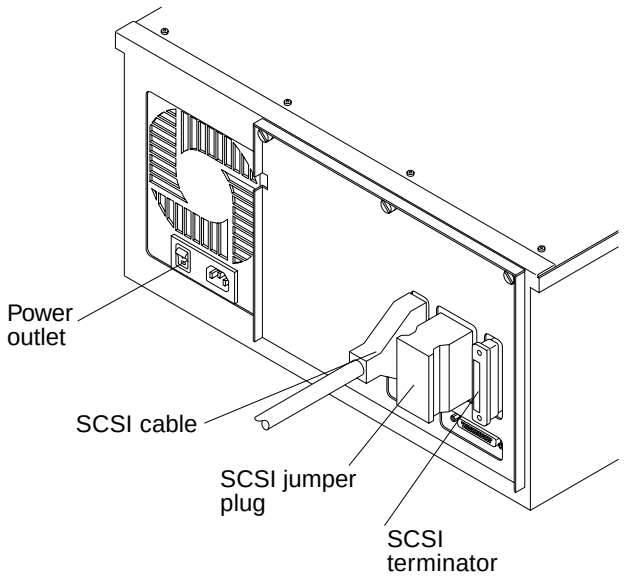


Figure 6-12 Location of the SCSI Jumper Plug, SCSI Terminator, and SCSI Cable(s)

4. **Loosen the three captive Phillips screws from the outer cover on the back panel. Remove the outer cover.**
   See Figure 6-13.

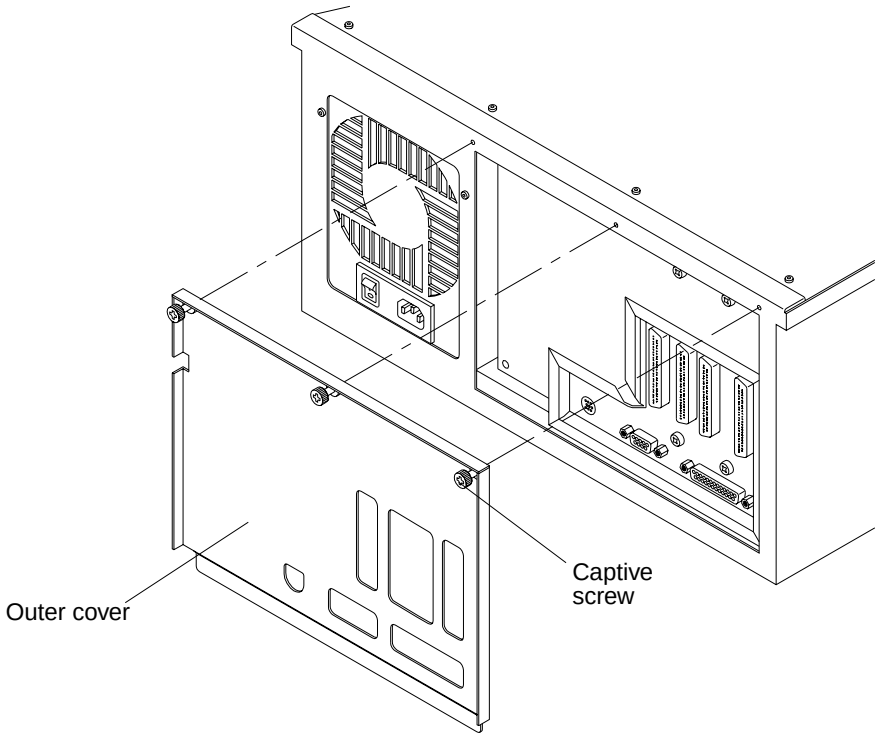


Figure 6-13 Removing or Replacing the Outer Cover from the Back Panel

5. **Remove the six T-20 TORX screws securing the SMC controller card to the chassis.**
   See Figure 6-14.

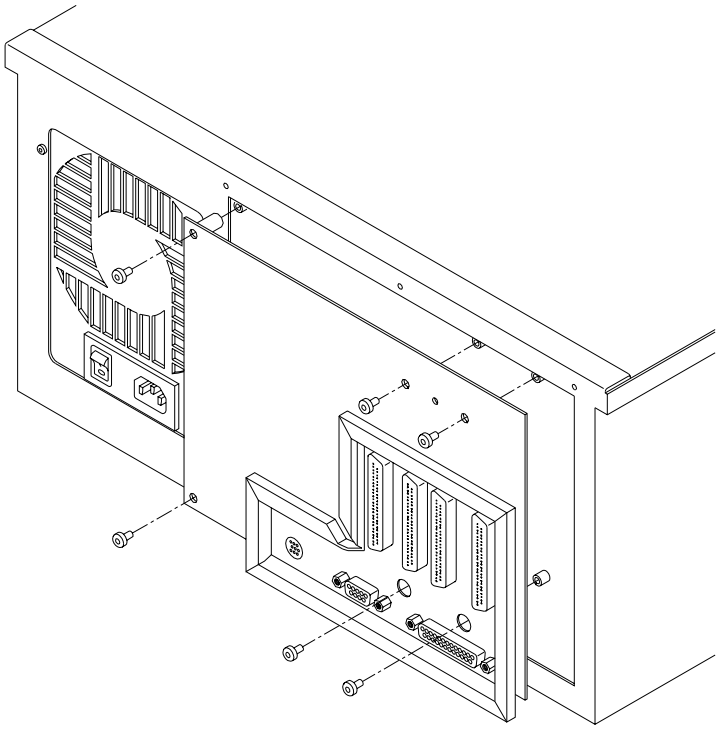


Figure 6-14 Removing or Replacing the SMC Card

6. **Disconnect the display panel cable from the J10 connector (outside connector) on the SMC controller card.**
   See Figure 6-15.

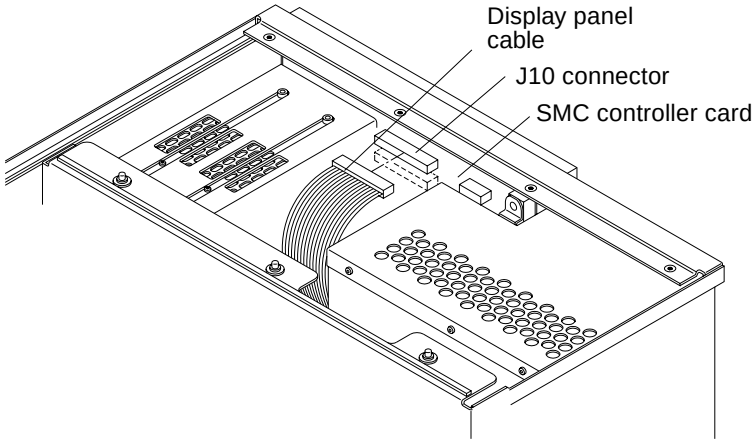


Figure 6-15 Disconnecting or Connecting the Display Panel Cable

7. **Disconnect the CHM cable from the J9 inner connector on the SMC controller card.**
   See Figure 6-16.

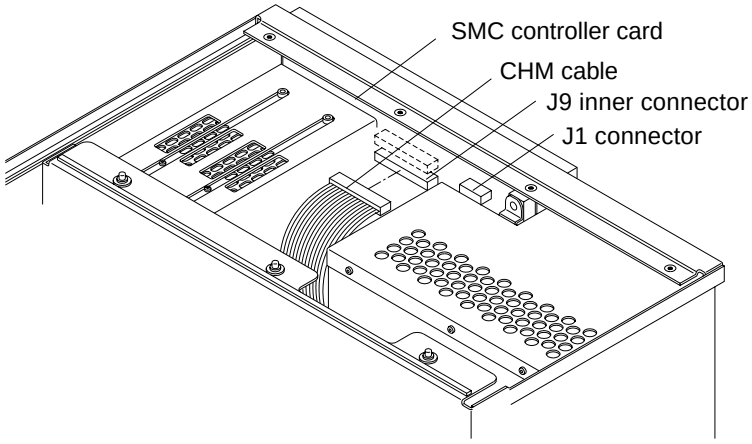


Figure 6-16 Disconnecting or Connecting the CHM Cable

8. **Lift the SMC controller card out from the back of the unit.**
   The alignment pins disengage the J1 connector. The ESD shield is part of the SMC card; do not remove it.

6.4.3 Install the SMC Controller Card

1. **Perform these steps while holding the SMC controller card in your hand:**
   a. **Insert the CHM cable into the J9 connector (inside connector) on the SMC controller card.**
      See Figure 6-16 on page 6-22.
   b. **Insert the display panel cable into the J10 connector (outside connector) on the SMC controller card.**
      See Figure 6-15 on page 6-21.
2. **Position the SMC card in its slot using the two locating pins and four screw holes on the drive carrier frame as guides. Push against it until you feel the SMC controller card snap onto the locating pins.**
3. **Locate the J1 connector on the inside upper-right corner of the SMC controller card (J20 is on the back of the SMC controller card) that connects to the power supply. Press against it until you feel the connection snap into place.**
   See Figure 6-16 on page 6-22.
4. **Replace the six TORX T-20 screws securing the SMC controller card to the chassis.**
   See Figure 6-14 on page 6-20.

5. **Push the drive carriers (or drive blanks) into their slots until you feel the connectors on the back of the drive carriers seated in the SMC controller card.**
   See Figure 6-17. This action repositions the drive carriers.

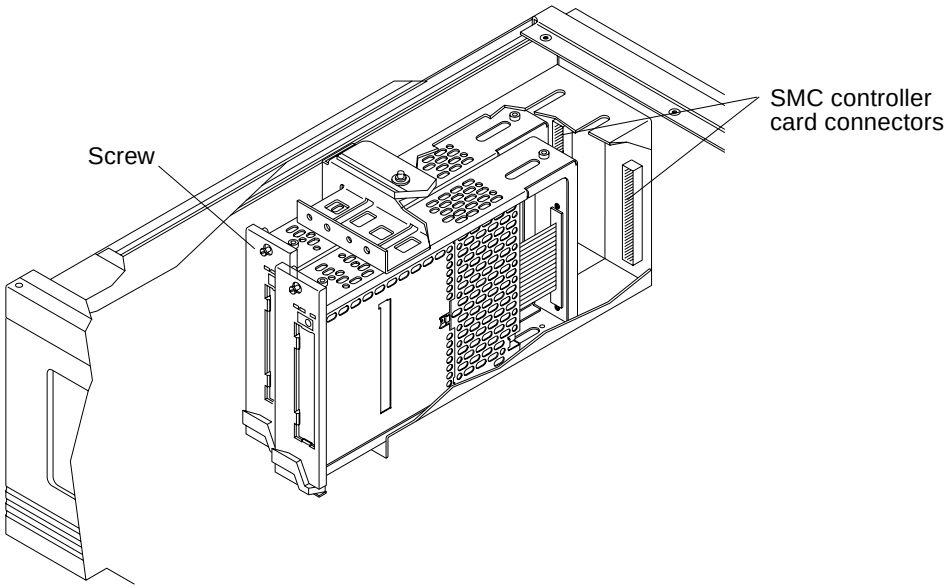


Figure 6-17 Inserting the Drive Carriers

6. **Replace the two flathead screws on both sides of the drive carriers.**
   See Figure 6-17.

7. **Replace the outer cover over the back of the SMC controller card.**
   See Figure 6-13 on page 6-19.

   a. **Position the outer cover over the card with the screws at the top.**
      Make sure the screws go inside the frame.

   b. **Tighten the three captive screws.**

8. Connect the following on the rear panel. See Figure 6-18.

- SCSI terminator
- SCSI jumper plug
- SCSI cable(s)

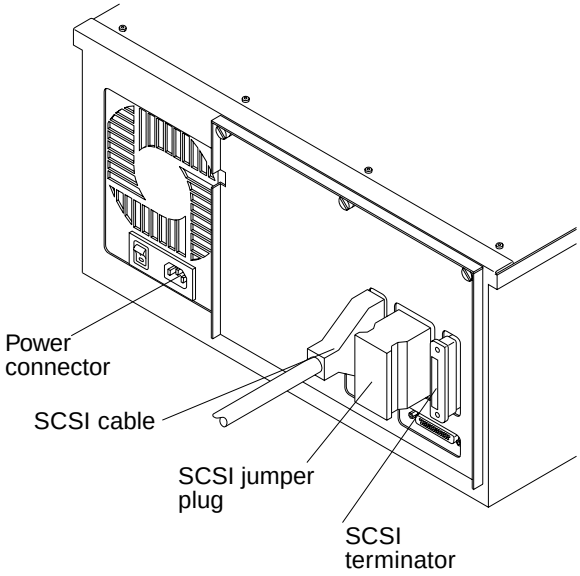


Figure 6-18 Location of the SCSI Terminator, SCSI Jumper Plug, and SCSI Cable

6.5 Bar Code Scanner

6.5.1 Preparing to Remove and Install the Bar Code Scanner

1. **Turn off the power but leave the power cord connected to the wall outlet.**
2. **Attach a wrist strap to your wrist and to a metal portion at the rear of the chassis.**
3. **Remove the top cover (table top and rack-mounted units) or the right panel (tower unit).**
   See Section 5.1.3, “Removing the Top Cover,” on page 5-8 and Section 5.2.2, “Removing the Right Plastic and Metal Panels,” on page 5-14.

ADD REFERENCE TO TABLE TOP SECTION

4. **Lay the tape library on a work bench on its side (horizontally) with the opening at the top.**
   See Figure 6-19 on page 6-27.
5. **Open the door.**
6. **Obtain the following tools:**
   - T-10 TORX bit
   - T-15 TORX bit

6.5.2 Removing the Bar Code Scanner

1. **Locate the bar code scanner mounted on the cartridge handling mechanism (CHM).**
   If the CHM is not at the left, move the CHM to the left by firmly sliding the CHM along its path. See Figure 6-19.

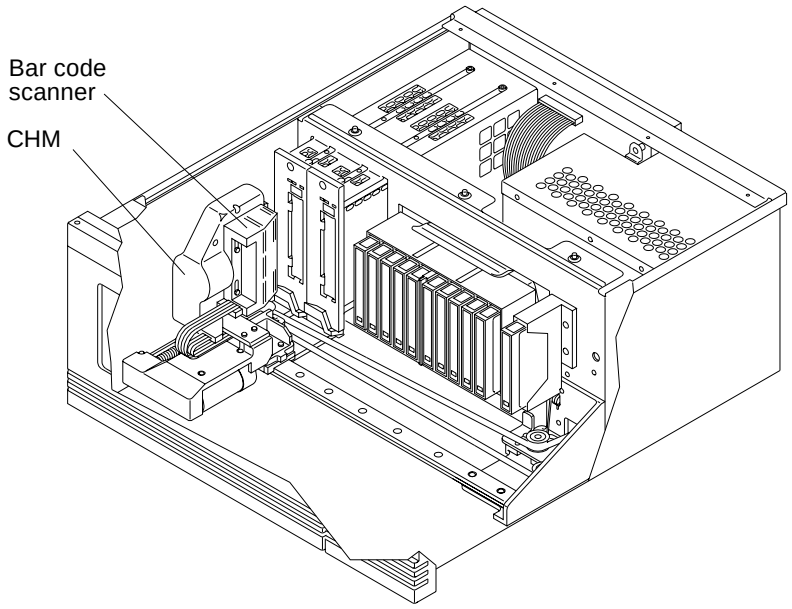


Figure 6-19 Bar Code Scanner Location

2. **Remove the strain relief plate on the CHM using a T-10 TORX bit.**
   See Figure 6-20.

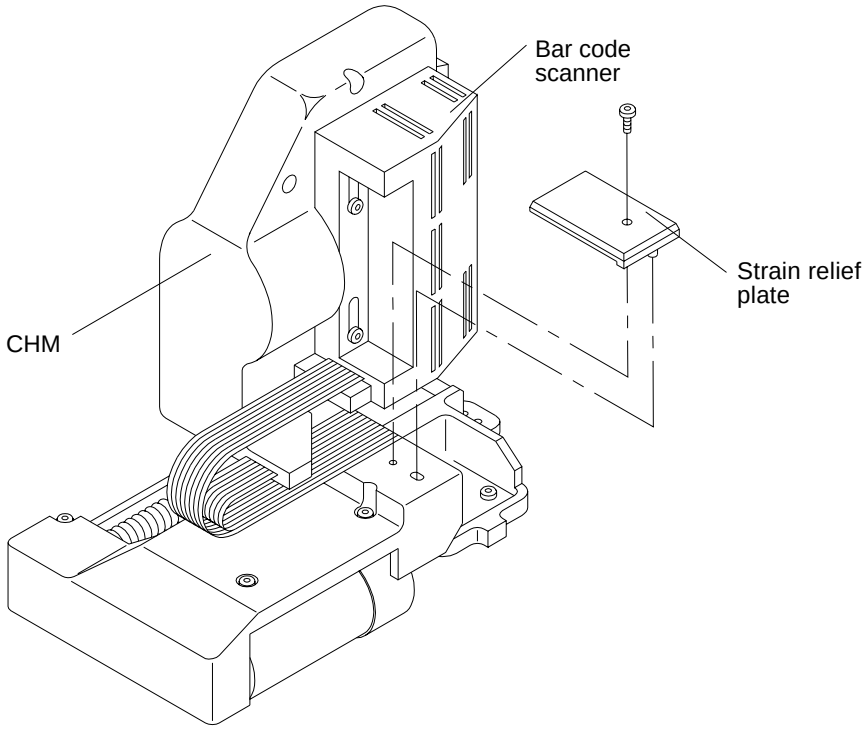


Figure 6-20 Removing or Installing the Strain Relief Plate

3. **Remove the TORX T-10 screw from the ground cable. Remove the ground cable.**
   See Figure 6-21.

4. **Disconnect the gripper flex cable from the J3 connector by pressing the tab on the latch.**
   See Figure 6-21.

5. **Press against the latch (towards the cable) on the bar code scanner cable using your finger or a long screwdriver.**
   This action disconnects the bar code scanner cable from the J2 connector. See Figure 6-21.

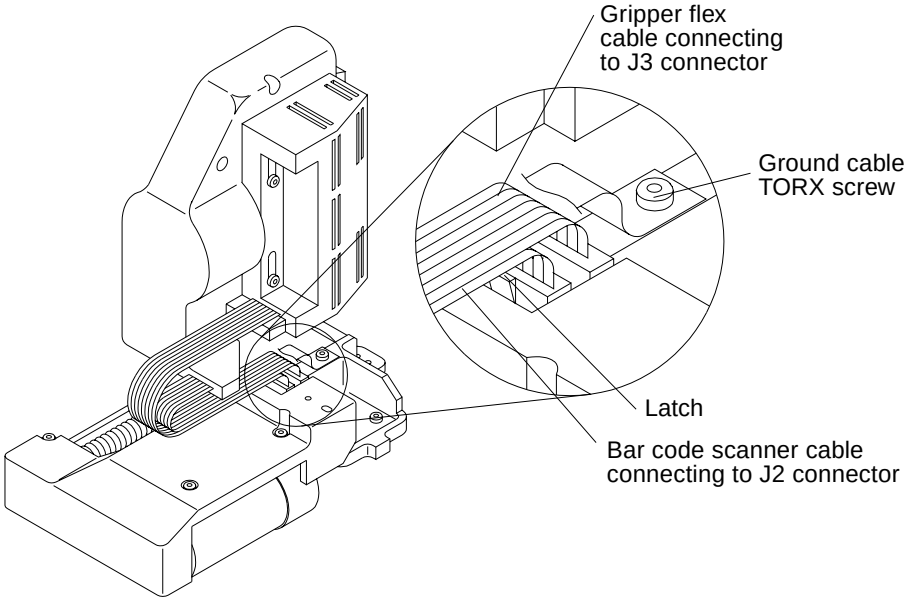


Figure 6-21 Disconnecting the Gripper Flex and Bar Code Scanner Cables

6. **Remove the two TORX T-10 screws securing the bar code scanner to the CHM.**
   This action removes the bar code scanner from the CHM. See Figure 6-22.

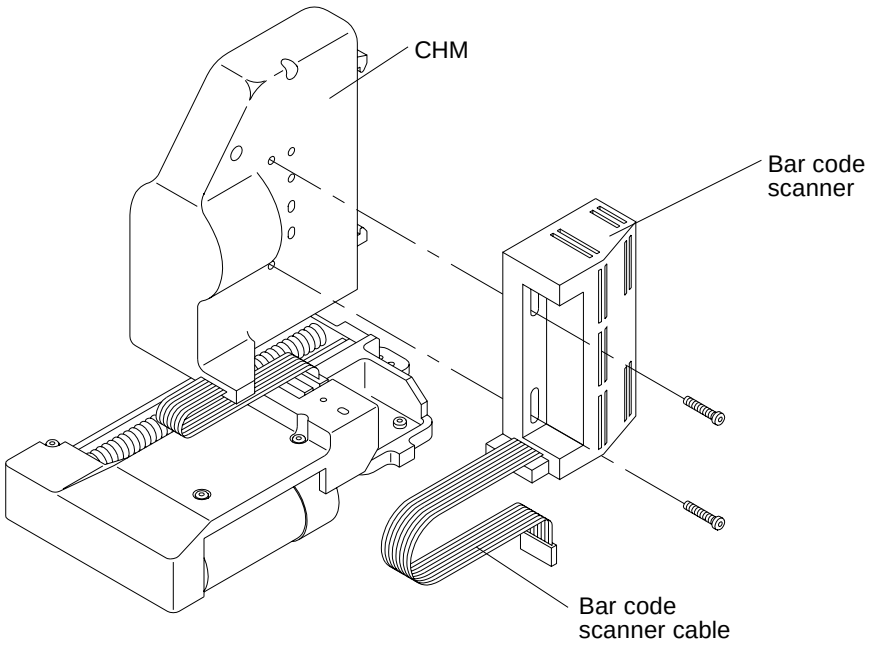


Figure 6-22 Removing or Installing the Bar Code Scanner

6.5.3 Installing the Bar Code Scanner

Note – You must have Solstice Backup or a similar application to use the bar code scanner.

1. **Locate the four alignment holes on the CHM.**
   See Figure 6-23.

2. **Match up the two locating pins on the bar code scanner with the first and third alignment holes (starting from the outside) on the CHM.**
   See Figure 6-23. This action aligns the bar code scanner. Do not use the second and fourth holes.

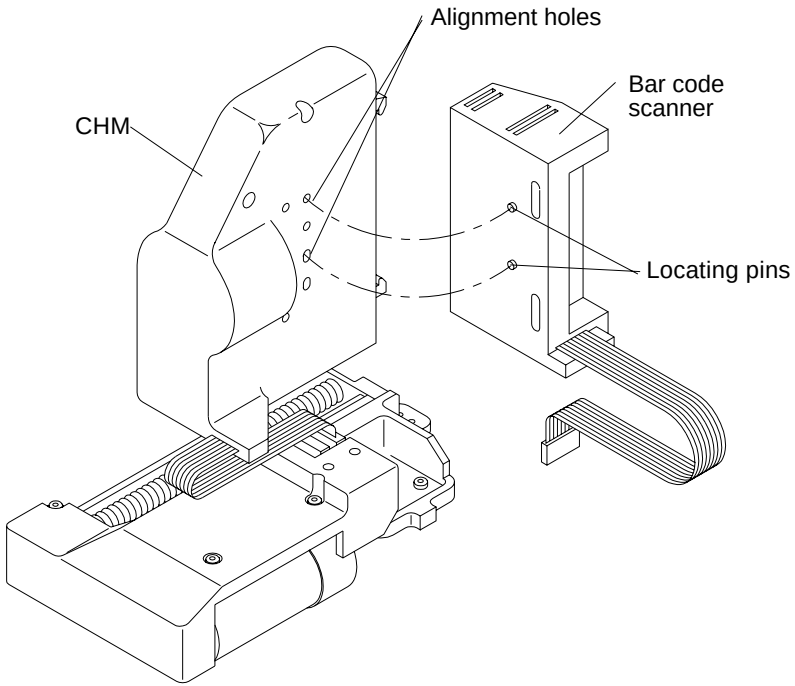


Figure 6-23 Inserting the Bar Code Alignment Pins Into the First and Third Holes

3. **Insert and secure the two TORX-10 screws at the bottom of each screw slot.**
   See Figure 6-24. This action attaches the bar code scanner to the CHM.

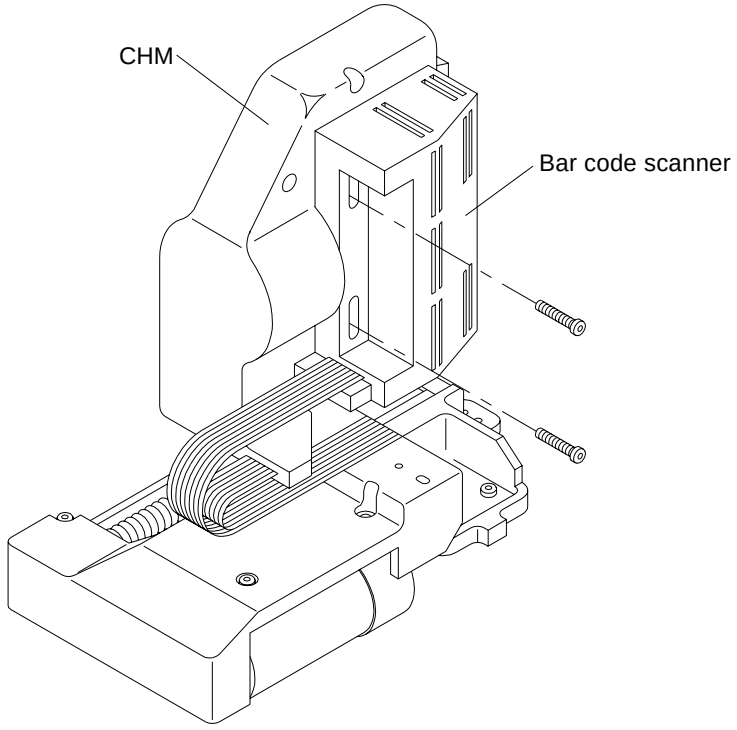


Figure 6-24 Attaching the Bar Code Scanner

4. **Connect the bar code scanner cable on the bar code scanner to the J2 connector.**
   See Figure 6-21. Make sure that the cable is secure.

5. **Replace the gripper flex cable to the J3 connector.**
   See Figure 6-21.

6. **Replace the ground cable by securing the TORX screw.**
   See Figure 6-21.

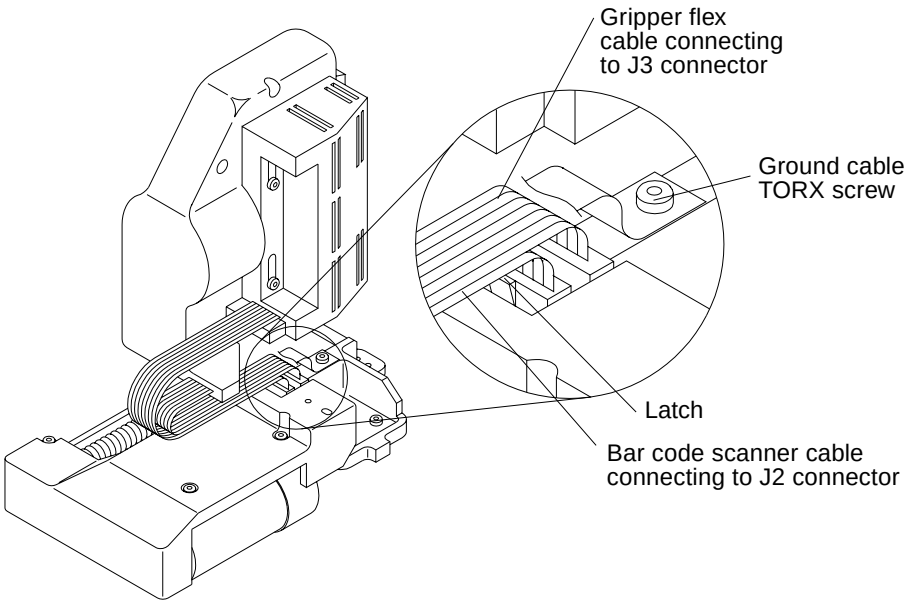


Figure 6-25 Reconnecting the Gripper Flex and Bar Code Scanner Cables

7. **Replace the strain relief plate over the three cables using a T-10 TORX bit.**
   See Figure 6-20.

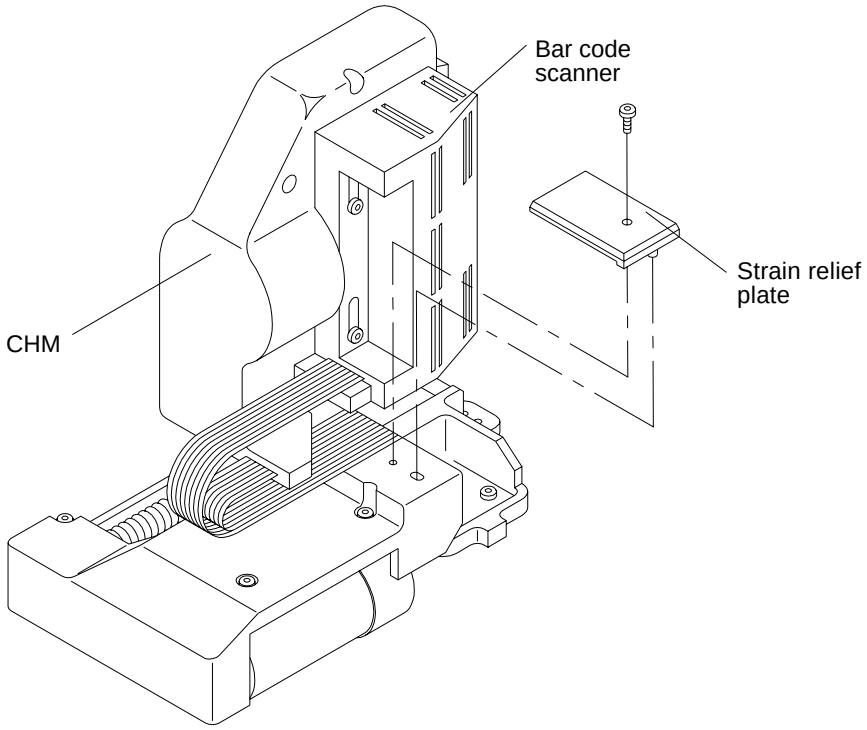


Figure 6-26 Installing the Strain Relief Plate

8. **Replace the top cover (table top and rack-mounted units) or the right plastic and metal panels (tower unit).**
   See Section 5.1.4, “Replacing the Top Cover and Section 5.2.3, “Replacing the Right Plastic and Metal Panels.

ADD REFERENCE TO TABLE TOP SECTION

9. **Detach the wrist strap from your wrist and the metal chassis.**
10. **Turn on the power.**

11. **Run the Scan and Scan With Range diagnostics to make sure the bar code scanner is working properly.**
    See “To run the Scan test” on page 2-33 and “To run the Scan With Range test” on page 2-34.

Part 5— Illustrated Parts Breakdown

Illustrated Parts Breakdown 7

This chapter lists the replacement parts and their part numbers. This chapter also provides illustrations of the replacement parts.

7.1 Replacement Parts

Table 7-1 lists the replacement parts and their part numbers.

Table 7-1 Replacement Parts List

Part Number	Description
F370-1894	Power supply
F370-1895	Fuse
F370-1896	SMC controller card
F370-1874	Bar code scanner
F370-1881	Tape drive in carrier
F370-1903	SCSI jumper plug
F370-1090	Vertical front panel
F370-1910	Horizontal front panel
F370-1924	Vertical front panel (logoless)
F370-1923	Horizontal front panel (logoless)

Table 7-1 Replacement Parts List *(Continued)*

Part Number	Description
F370-1925	Front panel, stacked usit (logoless)
F370-1914	Front panel, stacked unit
F370-1915	SPARCstorage Library, tower-unit (empty)
F370-1916	SPARCstorage Library, rack-mounted unit (empty)
F370-1917	SPARCstorage Library, stacked unit (empty)
F370-1926	SPARCstorage Library, tower unit (empty, logoless)
F370-1927	SPARCstorage Library, rack-mounted unit (empty, logoless)
F370-1928	SPARCstorage Library, stacked unit (empty, logoless)
250-1007	Wrist strap
250-1318	Cleaning tape
370-1906	TORX-10 screwdriver

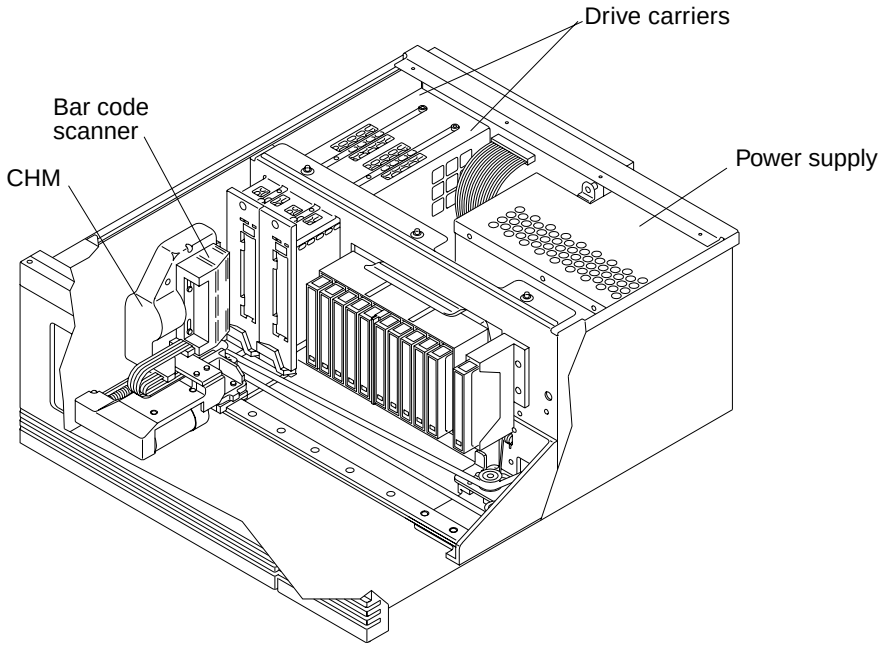


Figure 7-1 Interior of the Tape Library

See the following figures for close up views of the drive carriers, power supply, CHM, bar code scanner, and the SMC controller card.

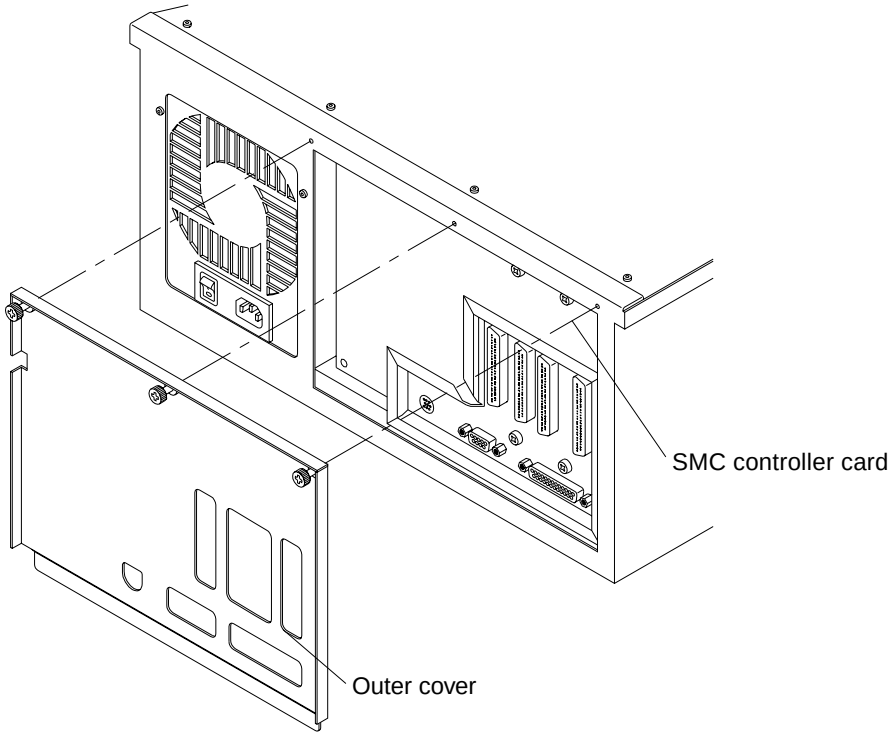


Figure 7-2 Location of the Outer Cover and the SMC Controller Card

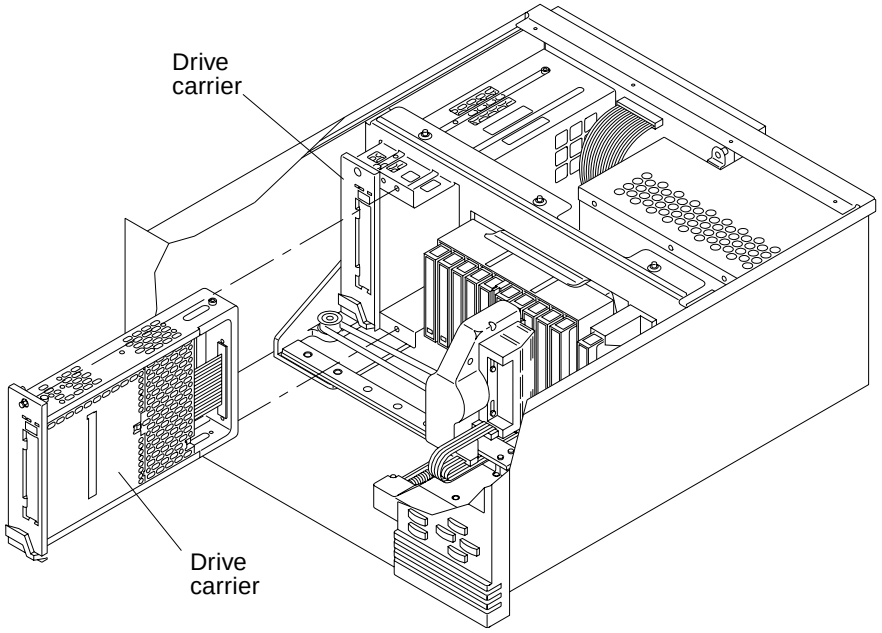


Figure 7-3 Location of the Drive Carriers

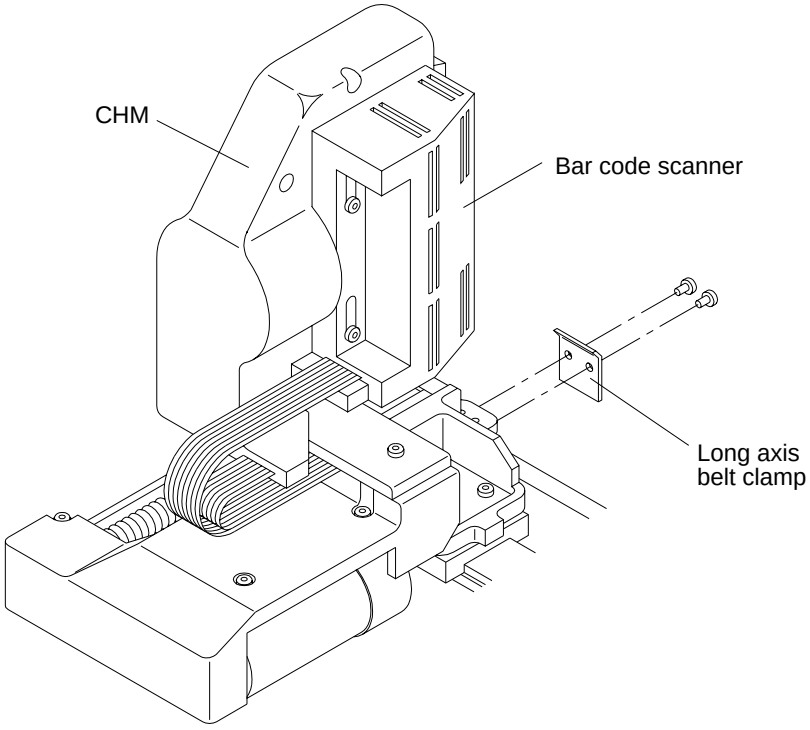


Figure 7-4 Close Up of the CHM and the Bar Code Scanner

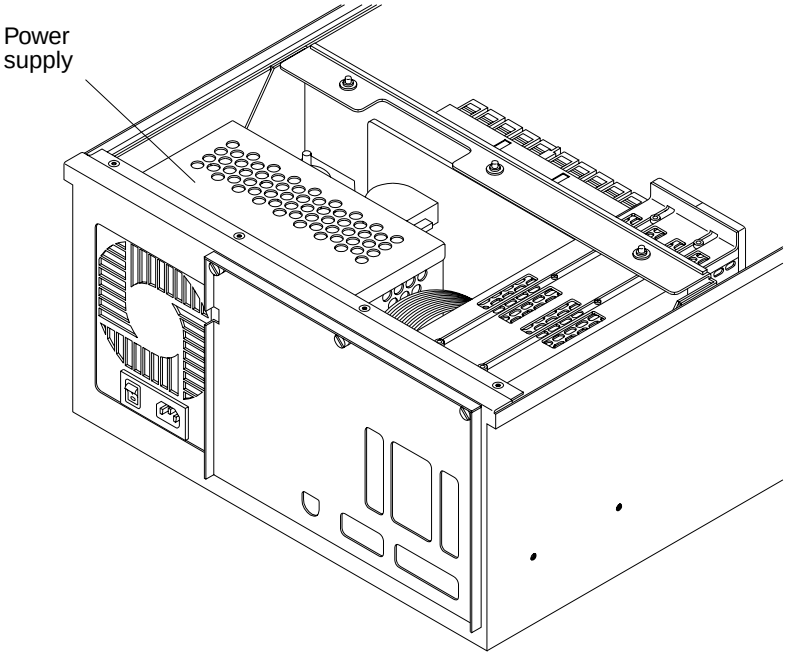


Figure 7-5 Location of the Power Supply

Part 6— Appendixes, Glossary, Index

Product Specifications A

This appendix lists the following specifications:

A.1 Tape Drive Specifications

The tape drive(s) in the SPARCstorage Library are 5.25-inch high, half-height tape drives. They have the capability of synchronous data transfer. The top / right and bottom / left tape drive LEDs slowly flash when the tape drive needs cleaning. Table A-1 and Table A-2 list the tape drive specifications.

Table A-1 Tape Storage Capacity, Transfer Rate, and Search Speed

Specifications	Non-Compressed Mode	Compressed Mode (typical)
Tape storage capacity (160 meter tape cartridge)	7 Gbytes	14 Gbytes
Tape storage capacity (112 meter tape cartridge)	5 Gbytes	10 Gbytes
Tape library capacity (ten 160 meter tape cartridges)	70 Gbytes	140 Gbytes
Transfer rate (per drive)	500 Kbytes / second	1 Mbyte / second
Transfer rate (two drives)	1 Mbyte / second	2 Mbytes / second
Search speed	37.5 Mbytes / second	75 Mbytes / second

Table A-2 Tape Drive Performance Specifications

Reliability **Mean cycles between failures**	200,000 cycles
Rewind time (112 meter tape)	170 seconds
Buffer size	1 Mbyte
Cartridge access time (average)	< 10 seconds

During one full cycle, the cartridge handling mechanism (CHM) completes the following:

- Picks the tape cartridge from a cartridge slot
- Places the cartridge in a tape drive
- Removes the cartridge from the tape drive
- Replaces the cartridge in the cartridge slot

A.2 SPARCstorage Library Specifications

A.2.1 External Dimensions

Table A-3, Table A-3, and Table A-5list the external dimensions of the different models of the SPARCstorage Library.

Table A-3 External Dimensions of the Rack-Mounted Unit

	Inches	Millimeters	Description
Height	8.65	219.8	From the top to the bottom of the cover
Width of cover	17.63	447.7	N / A
Width of front bezel	10.00	482.6	N / A
Length	21.13	536.7	From the back of the cover to the end of the front bezel

Table A-4 External Dimensions of the Tabletop Unit

	Inches	Millimeters	Description
Height	9.38	23.8	N / A
Width	19.5	49.5	N / A
Length	21	53.3	N / A

Table A-5 External Dimensions of the Tower Unit

	Inches	Millimeters	Description
Height	22.00	558.8	From the top to the bottom of the cover
Width	9.45	240.0	N / A
Length	21.40	543.6	From the back of the cover to the end of the front bezel

A.2.2 Weight

Table A-6 lists the weight (with and without two tape drives) of the SPARCstorage Library.

Table A-6 Weight of the Tower, Tabletop, and Rack-Mounted Units

Weight	With 2 Tape Drives	Without 2 Tape Drives
Rack-mounted unit	63.4 lbs. (28.76 kg.)	55.7 lbs. (25.27 kg.)
Tabletop unit	82 lbs.	74.4
Tower unit	82.0 lbs. (37.20 kg.)	74.4 lbs. (33.75 kg.)

A.2.3 Environmental Specifications

Table A-7 lists the environmental specifications of the SPARCstorage Library.

Table A-7 Environmental Specifications of the SPARCstorage Library

Specification	Operating	Storage or Non-Operating	Transportation
Ambient Temperature Range	+5° C to +40° C (+41° F to +104° F)	+20° C to +60° C (–4° F to +140° F)	+20° C to +60° C (–4° F to +140° F)
Temperature Variation	1° C (2° F) per minute maximum 10° C (18° F) per hour	1° C (2° F) per minute maximum 20° C (36° F) per hour	1° C (2° F) per minute maximum 20° C (36° F) per hour
Relative Humidity (Non-Condensing)	20% - 80%	10% - 90%	10% - 90%
Wet Bulb (Maximum)	26° C (79° F)	29° C (84° F)	29° C (84° F)
Altitude	-304.8 m to +4572 m (-1,000 ft. to +15,000 ft.)	-304.8 m to +4572 m (-1,000 ft. to +15,000 ft.)	-304.8 m to +12,192 m (-1,000 ft. to +40,000 ft.)

In Table A-7, note that all operating specifications include a tape data cartridge.

- For the storage specifications, the SPARCstorage Library has not been unpacked yet and remains in the plastic bag.
- For the non-operating specifications, the SPARCstorage Library has been unpacked but not installed.

- For the transportation specifications, the SPARCstorage Library has not been unpacked yet and the transportation period does not exceed 72 hours.
- For the temperature variation specifications, the tape data cartridge must acclimate in the environment it is going to be used for at least 24 hours.

A.2.4 Power Specifications

A.2.4.1 AC Input Voltages

The SPARCstorage Library includes an internal power supply capable of accepting 90 to 259 VAC at 48 to 62 Hz. The SPARCstorage Library has automatic input voltage selection.

A.2.4.2 AC Input Power

The SPARCstorage Library can operate continuously when the AC power experiences intermittent operation, voltage surges, and voltage spikes. The SPARCstorage Library includes an AC line filter to reduce conducted emissions. Table A-8 lists AC power characteristics.

Table A-8 AC Power Characteristics for the SPARCstorage Library

AC Power Characteristics	Nominal Line Voltage
Intermittent Operation	100% line dropout for 0.5 cycles 50% line reduction for 1.5 cycles 20% line reduction for 2.5 cycles
Line Discontinuities (Voltage Surges)	±500 volts
Line Discontinuities (Voltage Spikes)	±1.5 Kilovolts

A.2.4.3 AC Power Consumption

The power consumption varies depending on the function being performed and the installed tape drives. The SPARCstorage Library consumes a minimum of 60 watts and a maximum of 110 watts (true power).

A.2.4.4 Fuse

The SPARCstorage Library operates with a sand-filled, time-delay, high-breaking capacity, 2.5 amp, 250 volt fuse. The fuse drawer, located in the power entry module, contains one fuse and a pull-out compartment with one spare fuse.

A.2.5 Safety and Regulatory Compliance Specifications

A.2.5.1 Safety Agency Standards

The SPARCstorage Library complies with and is certified to the applicable requirements of the following domestic and international product safety standards:

- UL Standard 1950, 2nd Edition, Information Technology Equipment including electrical business equipment
- CSA Standard C22.2 No. 950-M89
- IEC 950/EN60950, Safety of Information Technology Equipment, including electrical business equipment (TUV)

A.2.5.2 Electrostatic Discharge (ESD)

When properly installed with a shielded SCSI cable, the SPARCstorage Library can withstand discharges of the following:

- Up to 15,000 volts air-gap discharge applied to all non-metallic surfaces assessable during normal use
- Up to 8,000 volts direct discharge applied to metallic surfaces accessible during normal use

In each case, there is no degradation or non-recoverable loss of function due to damage of equipment or firmware.

Functional Description B

This appendix covers the SPARCstorage Library elements and their default addresses.

B.1 Elements

The SPARCstorage Library operates by moving cartridges to and from elements. Elements are physical locations in the SPARCstorage Library that can accept a cartridge. The SPARCstorage Library contains fourteen elements:

- Cartridge handling mechanism (CHM)
- Ten slots in the cartridge magazine
- One fixed slot
- Two tape drives

Each element in the SPARCstorage Library has an element address that enables the SPARCstorage Library to identify the elements and move cartridges between them.

You may need to identify locations in the SPARCstorage Library by their element addresses when:

- Performing diagnostics
- Setting certain options
- Checking SCSI parameters

B.2 Default Element Addresses

Figure B-1shows the default addresses for each element. You can change these addresses by using a SCSI-2 MODE SELECT command.

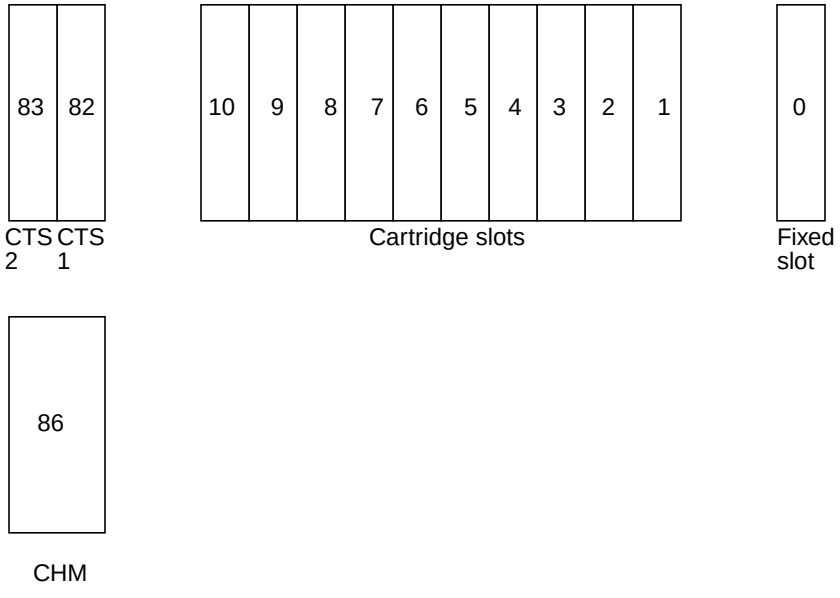


Figure B-1 Default Element Addresses in the SPARCstorage Library

SCSI Targeting

C

This appendix describes the following topics:

C.1 Relationship of the SPARCstorage Library to the SCSI Bus

The Small Computer System Interface (SCSI) is a standard specification allowing a host computer system and targets, such as the SPARCstorage Library, to communicate across a SCSI bus. The physical components of the SCSI system consist of the following:

- Initiator or host
- SCSI targets
- SCSI bus

C.1.1 Initiator or Host

A SCSI host adapter card, such as the SSHA, SBE/S, or FSBE/S, installed in a computer system, allows the computer to act as the initiator of commands on the SCSI bus. The initiator has a unique SCSI ID on the SCSI bus used to identify itself during SCSI communication.

The host can send commands, messages, and data across the SCSI bus to targets, such as the SPARCstorage Library. The host can also receive data, messages, and status from the targets.

C.1.2 SCSI Targets

The tape drives and the SPARCstorage Library are SCSI targets and are capable of receiving commands from the host. Each SCSI target has a unique SCSI ID used to identify itself and communicate on the SCSI bus. Because the SPARCstorage Library and the tape drives are different types of devices, they respond to different sets of SCSI commands.

To set the SCSI IDs for the tape drives and the tape library, see Section 2.3.2.1, "Set SCSI IDs," on page 2-16.

Table C-1 shows the default SCSI IDs for the SPARCstorage Library, the tape drives, and the host.

Table C-1 Default SCSI IDs for the SPARCstorage Library, the Tape Drives, and the Host

Device/Unit	SCSI ID	Description
SPARCstorage Library	2	Includes the cartridge handling mechanism (CHM), the data cartridge magazine, and the fixed cartridge slot.
Tape drive (first)	4	Accessed by the SPARCstorage Library.
Tape drive (second)	5	Accessed by the SPARCstorage Library.
Computer system (host) or SCSI host adapter SBus card	7	Allows the host to act as the initiator of commands on the SCSI bus.

C.1.3 SCSI Bus

The SCSI cable connected to the SCSI host adapter card (such as the SSHA, FBE/S, or SBE/S), the SPARCstorage Library, and other devices on the SCSI bus provides a pathway to pass the commands between the host computer system and the targets.

C.2 SCSI Guidelines

Follow these SCSI guidelines when connecting devices to a SCSI bus:

- Terminate the SCSI bus at both ends. Connect a regulated SCSI terminator to the last device on the SCSI bus.
- The tape drives are single-ended. Make sure that all devices on the same SCSI bus as the SPARCstorage Library are also single-ended.
- Make sure that the SCSI bus length does not exceed 6 meters (19.7 feet).

Error Codes D

This appendix describes in detail the error codes displayed in the console window of the Sun system. Table 2-2 in Section 2.1, “Error Codes” provides an overview of the SCSI sense key error messages.

The tables in this appendix contain the following information:

ASC	Additional Sense Code. Corresponds to byte 12 of the sense data returned in response to the REQUEST SENSE command.
ASCQ	Additional Sense Code Qualifier. Corresponds to byte 13 of the sense data returned in response to the REQUEST SENSE command.
LCD Number	For hardware error conditions (see Table D-2) this is the numerical code that appears in the console window of the Sun system when the error occurs.
Description	Provides an explanation of the error.

D.1 Not Ready—Sense Key 2h

During a Not Ready condition, the tape library returns a Check Condition status in response to each motion command until the Not Ready condition is removed. During this time, the sense key is set to Not Ready and the ASC and ASCQ are set to codes specifying that the tape library is not ready. All commands except tape motion commands, perform normally.

Table D-1 lists Not Ready sense key (2h) error conditions.

Table D-1 Not Ready Sense Key (2h) ASC and ASCQ Values

ASC Byte 12	ASCQ Byte 13	Description
	01h	The tape library is performing an initialization after a reset or the door was closed.
	83h	The front door is open.
04h	84h	The tape library is executing ROM boot code and cannot execute the command
	89h	The tape library is in 25-pin, 9-pin, or 4-pin serial port mode.
	8Dh	The tape library is in LCD Interface mode.
	8Eh	The tape library is in Sequential CTS1, Sequential CTS2, or Dual Sequential modes.

D.2 Hardware Error—Sense Key 4h

The tape library returns a sense key of Hardware Error (4h) when a hardware-related error occurs. After Hardware Error occurs, the tape library will not accept motion commands. For each additional motion command, the tape library returns the same Hardware Error. The tape library executes all other commands normally.

Table D-2 lists Hardware Error (4h) conditions. To determine the corrective actions for the display panel numbers, see Table 2-1 in Section 2.1, “Error Codes.”

Table D-2 Hardware Error Sense Key (4h) ASC and ASCQ Values

ASC Byte 12	ASCQ Byte 13	Display Panel Number	Description
15h	80h	10	The CHM dropped a cartridge.
15h	81h	14	The CHM could not successfully pick a cartridge.
15h	83h	13	The CHM could not successfully place a cartridge.
15h	84h	25	The CHM stalled while trying to pick a cartridge from the tape drive.
15h	85h	26	The gripper could not open.
3Bh	81h	71	Firmware error.
3Fh	80h	N / A	The tape library is unable to erase the flash EEPROM 1.
3Fh	81h	N / A	The tape library is unable to erase the flash EEPROM 2.
3Fh	82h	N / A	The tape library is unable to write zeros to the flash EEPROM 1.
3Fh	83h	N / A	The tape library is unable to write zeros to the flash EEPROM 2.
3Fh	84h	N / A	The tape library is unable to program the flash EEPROM 1.
3Fh	85h	N / A	The tape library is unable to program the flash EEPROM 2.
3Fh	86h	N / A	The flash EEPROM checksum was bad.
40h	80h	01	Internal clock failure.
40h	81h	02	Internal RAM failure.
40h	82h	03	Internal ROM failure.
40h	83h	04	+24-volt power supply failure.
40h	85h	06	+12-volt power supply failure.
40h	86h	07	-12-volt power supply failure.
40h	87h	08	Digital / analog converter failure.
40h	88h	72	The front door is open or the door solenoid is malfunctioning.

Table D-2 Hardware Error Sense Key (4h) ASC and ASCQ Values *(Continued)*

ASC Byte 12	ASCQ Byte 13	Display Panel Number	Description
40h	89h	77	The tape library was not in the correct control mode when the command was executed. To invoke commands from the Maintenance Menu, the tape library must be in LCD Interface mode. To run the SunDiag system exerciser, the tape library must be in one of the Sequential modes (Sequential CTS1, Sequential CTS2, or Dual Sequential). Under normal operation, the tape library must be set to SCSI Interface mode.
40h	90h	20	The gripper home sensor did not clear.
40h	91h	21	A gripper error occurred.
40h	92h	22	A gripper motion took longer than the maximum time allocated for it. When motion functions do not complete in the allocated time, current to the servo motors is cut off.
40h	A0h	30	The CHM could not move along the short axis.
40h	A2h	32	The motor on the short axis failed.
40h	A3h	36	The tape library could not reset the servo chip for the short axis.
40h	A4h	37	The servo busy bit on the short axis failed.
40h	A5h	73	The CHM could not reach its destination on the short axis.
40h	B0h	40	The CHM could not move on the long axis.
40h	B1h	41	The CHM could not return to home position on the long axis.
40h	B2h	42	The motor on the long axis failed.
40h	B3h	46	The tape library could not reset the servo chip for the long axis.
40h	B4h	47	The servo busy bit on the long axis failed.
40h	B5h	70	The CHM could not reach its destination on the long axis.
40h	E4h	99	One of the motors is stalled. The tape library must wait for it to cool down before operations can resume.

Table D-2 Hardware Error Sense Key (4h) ASC and ASCQ Values *(Continued)*

ASC Byte 12	ASCQ Byte 13	Display Panel Number	Description
40h	E5h	76	The CHM could not reach its destination on the long axis.
40h	01h	17	There was a cartridge in the grab base during power up, before a cartridge move, or before a diagnostic test.
840h	00h	75	Firmware error.

D.3 Illegal Request—Sense Key 5h

Table D-3 lists the Illegal Request (5h) error conditions.

Note – In Table D-3, the Command Descriptor Block (CDB) is the structure used to communicate commands from an initiator to a target.

Table D-3 Illegal Request Sense Key (5h) ASC and ASCQ Values

ASC Byte 12	ASCQ Byte 13	Description
1Ah	00h	The parameter list length was not valid.
20h	00h	The operation code (OP code) for the Command Descriptor Block (CDB) was invalid.
21h	01h	An invalid element address was specified for the CDB.
24h	00h	There were invalid fields in the CDB.
25h	00h	The logical unit number specified in the Identify message or in the CDB is not zero.
26h	02h	There was an invalid field in the parameter list.
3Bh	0Dh	The destination element was occupied for a MOVE MEDIUM command.
3Bh	0Eh	The source element was empty for a MOVE MEDIUM command.

Table D-3 Illegal Request Sense Key (5h) ASC and ASCQ Values *(Continued)*

ASC Byte 12	ASCQ Byte 13	Description
3Bh	85h	The destination for the MOVE MEDIUM command cannot be the CHM.
3Bh	86h	The source for the MOVE MEDIUM command cannot be the CHM.
3Bh	87h	A cartridge is stuck in the tape drive.
3Bh	90h	The source cartridge is loaded inside the tape drive and is not accessible.
3Dh	00h	There were invalid bits in the identify message. Either one of the reserved bits was nonzero or the LUNTAR field was nonzero.
3Fh	87h	The tape library cannot execute a read or write firmware command. The write firmware operation is in progress.
3Fh	88h	The tape library cannot execute a read or write firmware command. The read firmware operation is in progress.
53h	02h	A media load or unload operation was prevented with a PREVENT/ALLOW MEDIUM REMOVAL command.
80h	01h	There was a cartridge in the grab base during power up, before a cartridge move, or before a diagnostic test.
80h	03h	The source cartridge magazine is not installed.
80h	04h	The destination cartridge magazine is not installed.
80h	05h	The source tape drive is not installed.
80h	06h	The destination tape drive is not installed.
85h	01h	The bar code scanner is not installed.

D.4 Unit Attention—Sense Key 6h

The tape library does not stack Unit Attention conditions. The tape library reports only the last Unit Attention condition when there are two or more Unit Attention conditions. A Unit Attention condition remains in effect for a particular initiator until that initiator clears it.

Table D-4 lists combinations of ASC and ASCQ values for the Unit Attention sense key (6h).

Table D-4 Unit Attention Sense Key (6h) ASC and ASCQ Values

ASC Byte 12	ASCQ Byte 13	Description
28h	00h	The door was opened then closed.
28h	89h	The tape library was placed in SCSI Interface mode after operating in one of the serial port modes.
28h	8Dh	The tape library was placed in SCSI Interface mode after operating in LCD mode.
28h	8Eh	The tape library was placed in SCSI Interface mode after operating in one of the sequential modes (Sequential CTS1, Sequential CTS2, or Dual Sequential).
29h	00h	A power-on, SCSI bus reset, or device reset message occurred.
2Ah	01h	Mode parameters have been changed. Issue a MODE SENSE (1Ah) command to determine what the new mode parameters are.
3Fh	01h	New microcode was loaded.

D.5 Aborted Command—Sense Key Bh

Table D-5 lists the combinations of ASC and ASCQ values for the Aborted Command sense key (Bh).

Table D-5 Aborted Command Sense Key (Bh) ASC and ASCQ Values

ASC Byte 12	ASCQ Byte 13	Description
43h	00h	The tape library received a message at an invalid time.
45h	00h	A reselect failure occurred. The host system rejected the Identify message sent by the tape library after the tape library reselected the host.
57h	00h	One of the following conditions occurred: The message system was disabled and the tape library discovered a parity error on the SCSI bus. The message system was enabled and the initiator rejected a Restore Data Pointers message that the tape library sent to recover from a parity error. All parity error retries were exhausted.
48h	00h	One of the following conditions occurred: The tape library received an Initiator Detected Error message at an inappropriate time. The initiator rejected a Restore Data Pointers message that the tape library sent in response to the Initiator Detected Error message.

Glossary

bus

The SCSI cable that serves as a link for passing signals between the computer system and the SPARCstorage Library.

CDB

Command descriptor block. The structure used to communicate commands from an initiator to a target.

CHM

Cartridge handling mechanism. The robotic assembly that retrieves and replaces cartridges.

CTS

Cartridge tape subsystem.

element

An element can be either the CHM, a slot in the cartridge magazine, the fixed cartridge slot, or a tape drive. Each element has a unique address so the initiator can identify it.

element address

Enables the SPARCstorage Library to identify the elements and move cartridges between them.

host

The computer system that acts as the initiator of an operation.

initiator

A host computer system that requests an operation to be performed by the target.

magazine

A cartridge holder in the SPARCstorage Library that accommodates up to ten data cartridges.

power-on self-test (POST)

The process that occurs when the SPARCstorage Library performs its initial power-on diagnostics.

small computer systems interface (SCSI)

An industry standard bus used to connect disk and tape devices to a workstation.

SCSI address

See SCSI ID.

SCSI bus

See bus.

SCSI ID

A unique identifier assigned to each device or subsystem on the SCSI bus. Also referred to as SCSI *address*.

target

A bus device (usually a controller) that performs an operation requested by an initiator. The SPARCstorage Library is a target.

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Reader Comments

We welcome your comments and suggestions to help improve this manual. Please let us know what you think about the *SPARCstorage Library Service Manual*, part number *802-2143-11*.

- The procedures were well documented.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
❑	❑	❑	❑	❑

Comments _____

- The tasks were easy to follow.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
❑	❑	❑	❑	❑

Comments _____

- The illustrations were clear.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
❑	❑	❑	❑	❑

Comments _____

- The information was complete and easy to find.

Strongly Agree	Agree	Disagree	Strongly Disagree	Not Applicable
❑	❑	❑	❑	❑

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