20 Gbyte 4mm Tape Auto-Loader Desktop Storage Module Installation and User's Guide

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This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded Cables: Connections between the workstation and peripherals must be made using shielded cables in order to maintain compliance with FCC radio frequency emission limits.

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Preface

This guide describes how to install, configure, use, and maintain the 20-Gbyte 4mm Tape Auto-Loader Desktop Storage Module.

First read the “Safety Agency Compliance” section at the end of this Preface. Then refer to the specific chapters to find the information you need.

Who Should Use This Guide

Sun™ customers and technicians should use this guide. It is designed so that nontechnical users can connect the tape auto-loader to their system, and use its data storage capabilities.

The guide also contains service information about removing, cleaning, and replacing tape auto-loader components.

After the hardware connections are made, perform the necessary software steps.

Related Books

Hardware

Refer to the service and installation manuals for your SPARCsystem.

Software

Refer to one or more of the following documents for descriptions of software commands and procedures:

- *Solaris 1.x (SunOS 4.x) Handbook for SMCC Peripherals*
- *Solaris 2.x Handbook for SMCC Peripherals*
- On-line *AnswerBook*® documentation that comes with the Solaris® operating environment
- Other software documentation you received with your system

Definitions of Typefaces and Symbols

This guide uses a number of typographical conventions, described below:

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. `system% You have mail.`
`AaBbCc123`	What you type, contrasted with on-screen computer output	`system% 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.
Code samples are included in boxes and may display the following:		
%	UNIX C shell prompt	`system%`
$	UNIX Bourne and Korn shell prompt	`system$`
#	Superuser prompt, all shells	`system#`

Safety Agency Compliance

Before beginning any procedure, read the instructions and cautions in this section. They explain how to work safely with the internal components on your system.

Safety Precautions

For your protection, observe the following safety precautions when setting up your 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. Dangerous voltages may be present. Conductive foreign objects could produce a short circuit that could cause fire, electric shock, or damage to your equipment.

Symbols

The following symbols, which appear in this guide, mean:

Caution – Risk of personal injury or equipment damage. Follow the instructions to reduce the risk of personal injury or equipment damage.

Warning – Hazardous voltages are present. Follow the instructions to reduce the risk of electric shock and danger to personal health.

On – The principal on/off switch is in the *on* positio

Off – The principal on/off switch is in the *off* position

Cautions and Warnings

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 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.

Before you begin, carefully read the procedures in this guide.

Modification to Equipment

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

Placement of a 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.

Power Cord Connection

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 – Not all power cords have the same current ratings. Household extension cords do not have overload protection and are not meant for use with computer systems. Do not use household extension cords with your Sun product.

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.

Warning – It is not safe to operate Sun products without the system unit cover in place. Failure to take this precaution may result in personal injury and system damage.

Introducing the Tape Auto-Loader 1

The 20 Gbyte 4mm tape auto-loader (see Figure 1-1) is a high-performance, digital data storage (DDS) cartridge device that meets the high-capacity data storage demands of Sun™ SPARC® systems. It uses up to four standard 4mm DDS data cartridges (see Figure 1-2), which are inserted into a tape magazine. The tape magazine is then loaded into the drawer of the auto-loader. The unit can run in either low density mode (native mode) or high density mode (compression mode).

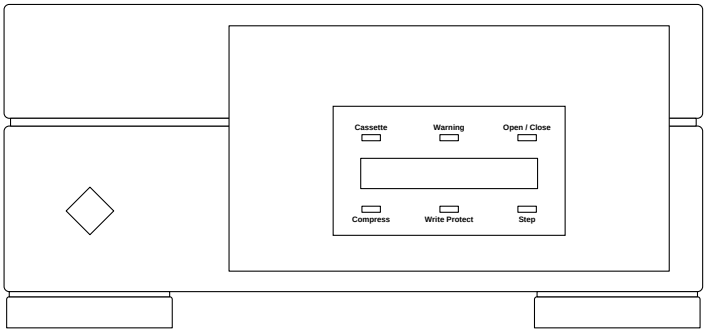


Figure 1-1 Tape Auto-Loader—Front View

The Tape Auto-Loader is supported on Solaris 2.1 and later operating environments. The computer systems the Tape Auto-Loader can be connected to are the SPARCstation IPC, SPARCstation LX, SPARCclassic, SPARCstation IPX, SPARCstation 2, SPARCstation ELC, SPARCstation 10, SPARCserver 10, and SPARCserver 1000.

Note – If you are using the Solaris® 2.1 operating environment, the drive can write only in high (compression density) mode, but it can read in either the low or high density modes.

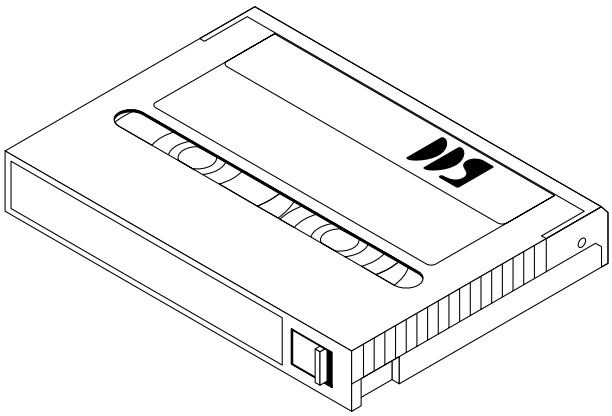


Figure 1-2 Typical DDS-Certified Tape Cartridge

1.1 Task Map for Connecting a Tape Auto-Loader

Figure 1-3 is a flow chart of the tasks you must complete to connect the Tape Auto-Loader. After completing these tasks, you will be ready to use the Tape Auto-Loader with your SPARC system.

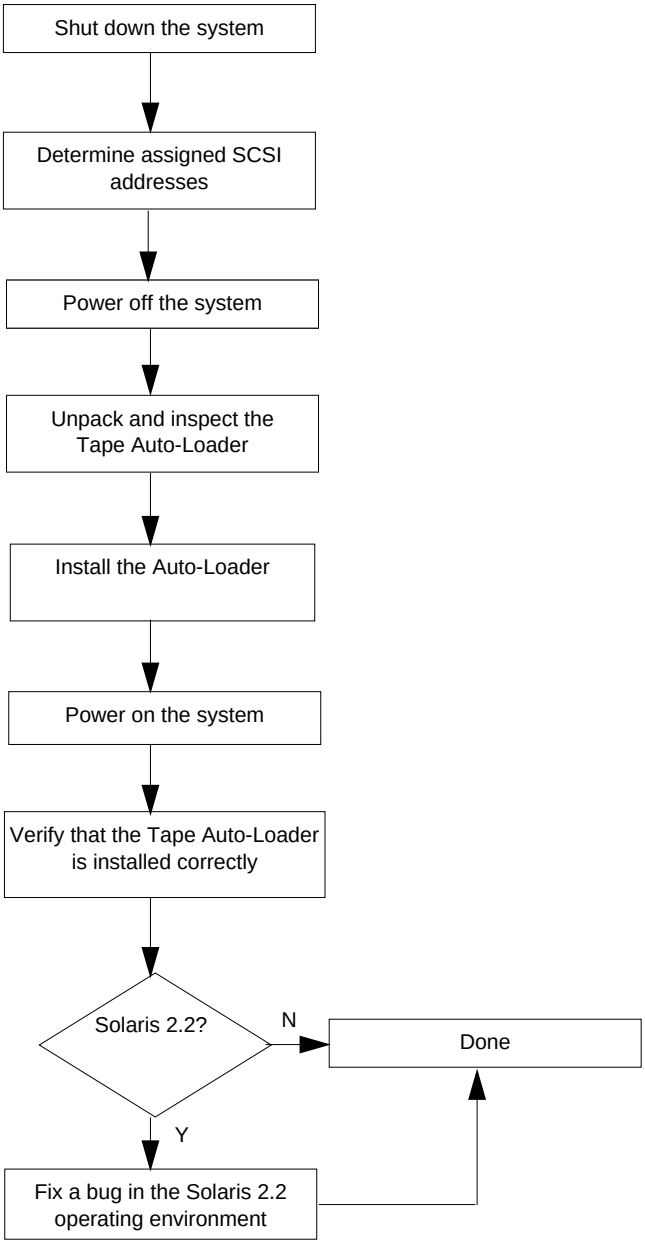


Figure 1-3 Flow Chart of Tape Auto-Loader Installation

1.2 Verifying the Tape Auto-Loader Temperature

Exposure to a sudden temperature or humidity change can cause condensation within the tape drive which could damage it. At the installation site, allow the drive to remain in its packing container until the auto-loader temperature matches that of the surrounding air. Use Table 1-1 as a guide for allowable times before unpacking the drive based on the temperature of the tape auto-loader upon receipt.

Table 1-1 Acclimation Times for a Tape Auto-Loader

Temperature Differential from Internal and External Temperatures		**Acclimation Time**
Degrees (F)	Degrees (C)	Hours
+/-15	+/-8.3	1
+/-20	+/-11.1	2
+/-30	+/-16.6	4
+/-40	+/-22.2	6
+/-50	+/-27.7	7
+/-60	+/-33.3	8

Note – Before using the tape drive, the tape cartridge and drive should be at room temperature for 24 hours. See Section 3.1.2, “Buttons.”

Caution – Do not shake, bump, or drop the tape auto-loader when moving it. Physical shock or incorrect positioning can damage the tape auto-loader. Store or transport the tape auto-loader in the right-side up position only.

Connecting the Tape Auto-Loader 2

This chapter describes how to unpack and the 20 Gbyte 4mm Tape Auto-Loader and connect it to a SPARC system.

2.1 Unpacking and Inspecting the Tape Auto-Loader

1. **Inspect the shipping carton before opening it.**
   If the carton is damaged, arrange for a carrier agent to be present when you remove the equipment.

2. **Remove the contents from the shipping carton.**
   Keep the carton and the packing material. You will need this material if you want to ship your tape auto-loader elsewhere.

3. **Check the contents. You should have the following:**
   - 20 Gbyte 4mm Tape Auto-Loader
   - Power cord
   - SCSI cable
   - Tape magazine
   - 90-meter DDS-certified tape cartridge
   - Cleaning tape

Note – If the unit is not installed in the United States, Asia, Canada, or Europe, you may have to use a separate, no charge localized power cord. Consult your Sun sales representative for further ordering information.

Figure 2-1 shows the Tape Auto-Loader and related parts.

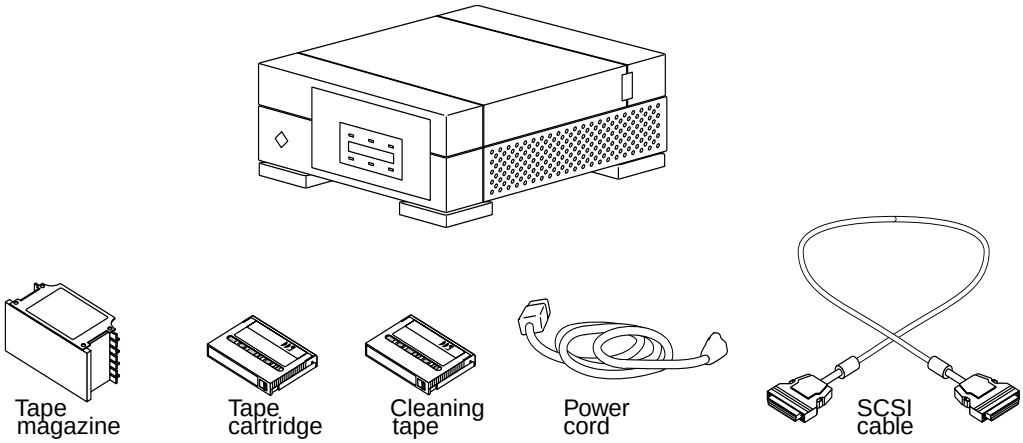


Figure 2-1 Tape Auto-Loader and Related Parts

2.1.1 Removing the Front Restraint

If your unit came shipped with a restraint belt that secures the front of the tape auto-loader drawer to prevent movement or damage during shipping, remove it.

Caution – Do not cut or damage the restraint belt. Keep the restraint belt and faceplate. You must install them before transporting the unit.

1. **Place the tape drive assembly on an anti-static mat.**
   Position the unit with the bottom facing up and so that you have access to the front bezel.

2. **Remove the restraint belt and faceplate from the auto-loader.**
   See Figure 2-2. Use a flatblade screwdriver or a letter opener to lift the buckle and loosen the belt.

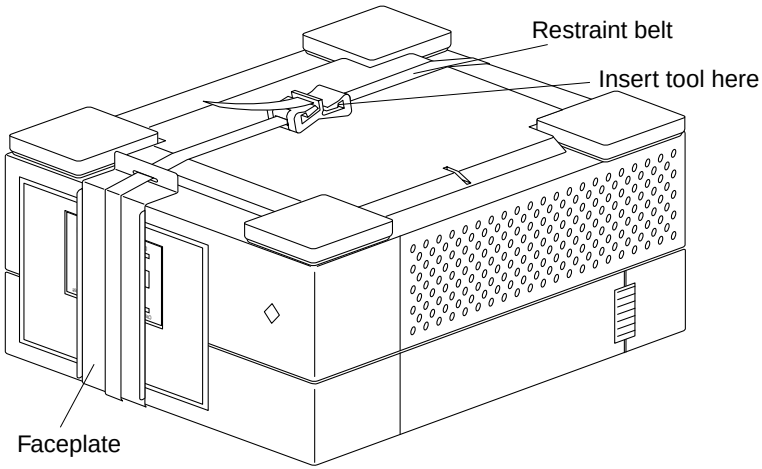


Figure 2-2 Restraint Belt

Note – Save the restraining belt and the faceplate. Should you need to transport the auto-loader to another location, the restraint belt and faceplate must be installed to prevent damage during shipment.

2.1.2 Determining SCSI Bus Length

To find the total SCSI bus length for your configuration, add the cable and internal bus lengths for the SPARC system and each device. The length must not exceed 6 meters (19.7 feet). Table 2-1lists the SCSI cable lengths and the internal SCSI buses for supported systems, the Tape Auto-Loader, and selected SCSI peripherals.

The total length of a SCSI bus includes:

- The length of the external SCSI cable *plus*
- The length of the internal SCSI buses for the devices and the system

Note – Reliable operation is guaranteed only up to the maximum SCSI bus length of 6 meters (19.7 feet).

Table 2-1 SCSI Bus Lengths for Tape Auto-Loader, Selected SCSI Peripherals, and SPARC Systems

Devices	**Meters**	**Inches**
	SCSI Bus Length	**SCSI Bus Length**
Desktop Storage Module (disk unit)	0.3	11.8
Desktop Storage Module (tape unit)	0.4	15.7
Desktop Storage Packs (disk, tape, CD-ROM)	0.3	11.8
Tape Auto-Loader	0.4	15.7
SPARCstation 2	0.5	19.7
SPARCstation IPC and IPX	0.5	19.7
SPARCstation ELC	0.2	7.9
SPARCstation 10, LX, SPARCclassic	0.9	35.4
SPARCserver 1000	1.07	42
SBus cards (SBE/S, FSBE/S, SBus SCSI Host Adapter)	0.1	3.9
Cables		**Maximum Cable Length**
SCSI cable, Part Number 530-1793	0.8	31.5
SCSI cable, Part Number 530-1836	2.0	78.6
SCSI cable, Part Number 530-1852	4.0	157.2

2.2 Setting the SCSI Address Switch

1. **Shut down the computer system.**
   See Section A.1, “Shutting Down the Computer System.”

2. **Determine the assigned SCSI addresses of the computer system.**
   See Section A.2, “Determining Assigned SCSI Addresses.”

3. **Select the SCSI address for the Tape Auto-Loader.**
   See Table 2-2. Although you can set the SCSI address on Solaris 2.1 and later releases to any SCSI address from 0-6, it is suggested to set the SCSI address to 4 or 5.

Table 2-2 SCSI Addresses for the Tape Auto-Loader

Recommended SCSI Addresses for Solaris 2.1 and Later Releases
4*
5*
*** Do not set two SCSI devices on the same SCSI bus the same SCSI address.**

4. **If necessary, change the SCSI address on the Tape Auto-Loader. Locate the SCSI address switch on the rear of the auto-loader and check the number in the window.**
   See Figure 2-3 and Table 2-2.

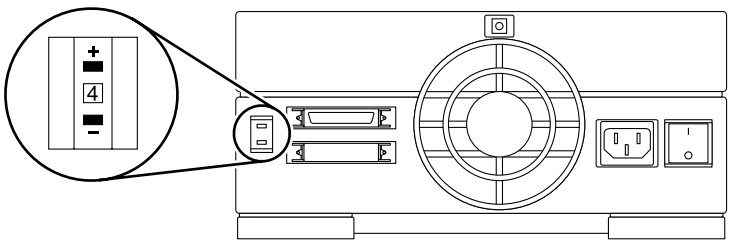


Figure 2-3 SCSI Address Switch Location

Note – The SCSI address shown in Figure 2-3 is an example. The SCSI address you set may be different.

5. **Set the correct SCSI address by pressing the button until you reach the proper address.**
   See Figure 2-4 and Table 2-2. Any SCSI address change can only take effect after powering up the unit.

   - To increase the address shown, press the button marked “+”
   - To decrease the address shown, press the button marked “-”

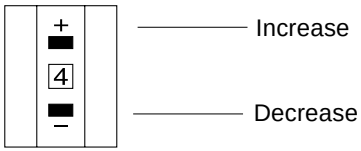


Figure 2-4 Setting the SCSI Address Switch

2.3 Connecting the Tape Auto-Loader

There are two methods of connecting the Tape Auto-Loader—direct connection or daisy-chaining. A direct connection is when the auto-loader is connected with a SCSI cable directly to the SPARC system. A daisy-chain connection is when the auto-loader is connected to a SCSI peripheral instead of the SPARC system.

Follow the steps in Section 2.3.1, “Direct Connection” if you do not have any other SCSI peripherals connected to your system. If you have SCSI peripherals connected to the system, follow the steps in Section 2.3.2, “Daisy-Chain Connection.”

2.3.1 Direct Connection

1. **Make sure you have determined the assigned SCSI addresses and set the SCSI address on the Tape Auto-Loader.**
   See Section A.2, “Determining Assigned SCSI Addresses” and Section 2.2, “Setting the SCSI Address Switch.”

2. **Make sure you have halted the computer system and turned off power (O position) to the computer system and all connected peripherals.**
   See Section A.1, “Shutting Down the Computer System.”

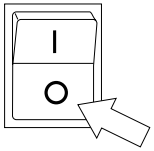


Figure 2-5 Power Switch to the Off Position

3. **Connect the SCSI cable to either one of the two SCSI ports on the back of the Tape Auto-Loader.**
   An icon on the rear panel of the unit identifies the SCSI ports (see Figure 2-6).

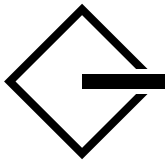


Figure 2-6 SCSI Icon on Rear Panel

4. **Connect the other end of the SCSI cable to the SCSI port of the SPARC system's back panel or to the SBus card SCSI host adapter port (if you are using an additional SCSI bus).**
   See Figure 2-7.

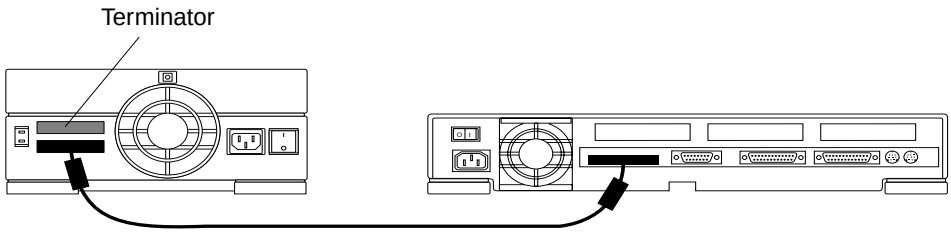


Figure 2-7 An Example of Direct Connection

5. **Install a regulated SCSI terminator to the SCSI connector of the Tape Auto-Loader.**

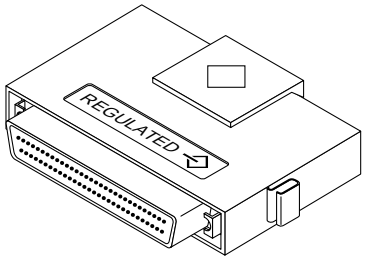


Figure 2-8 Regulated SCSI Terminator

6. **Connect the power cord to the power input plug on the Tape Auto-Loader and to the wall outlet.**

7. **Position the unit next to the SPARC system, leaving enough space so that the side and back vents are not blocked.**
   See Figure 2-9).

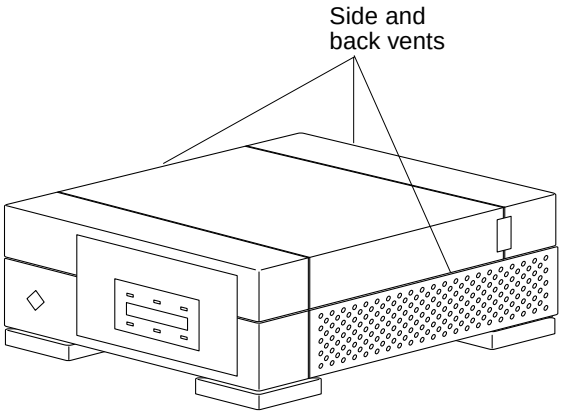


Figure 2-9 Tape Auto-Loader Vents

8. **Power on the units.**
   See Section A.3, “Configuring the System.”

9. **Perform software configuration steps.**
   See Section A.3, “Configuring the System.”

2.3.2 Daisy-Chain Connection

SCSI devices can be daisy-chained. Daisy-chaining is a means of connecting more than one peripheral device to a computer system. A SCSI cable connects the computer system to the nearest device, and then a separate SCSI cable connects the first device to the second device. This process is repeated as required.

Daisy-chaining lets you connect your computer system to connect to more than one type of device. If you want more than one external device on a bus, you will need to daisy-chain.

To connect the Tape Auto-Loader in a daisy-chain:

1. **Make sure you have determined the assigned SCSI addresses and set the SCSI address on the Tape Auto-Loader.**
   See Section A.2, "Determining Assigned SCSI Addresses" and Section 2.2, "Setting the SCSI Address Switch."

2. **Make sure you have halted the computer system and turned off power (O position) to the computer system and all connected peripherals.**
   See Section A.1, "Shutting Down the Computer System." See Figure 2-5.

3. **Connect the SCSI cable to either one of the two SCSI ports on the back of the Tape Auto-Loader.**
   An icon on the rear panel of the unit identifies the SCSI ports. See Figure 2-6.

4. **Stack the unit on top of the SCSI peripheral.**
   Leave enough space for the side and back vents so they are not blocked. See Figure 2-9.

5. **Remove the SCSI terminator from the SCSI port of the SCSI peripheral just beneath the Tape Auto-Loader.**

6. **Connect the other end of the SCSI cable to the SCSI port of the SCSI peripheral just beneath the Tape Auto-Loader.**

7. **Connect the regulated SCSI terminator (supplied) to the available SCSI connector on the Tape Auto-Loader.**
   You must use a regulated SCSI terminator P/N 501-1785 supplied with the unit.

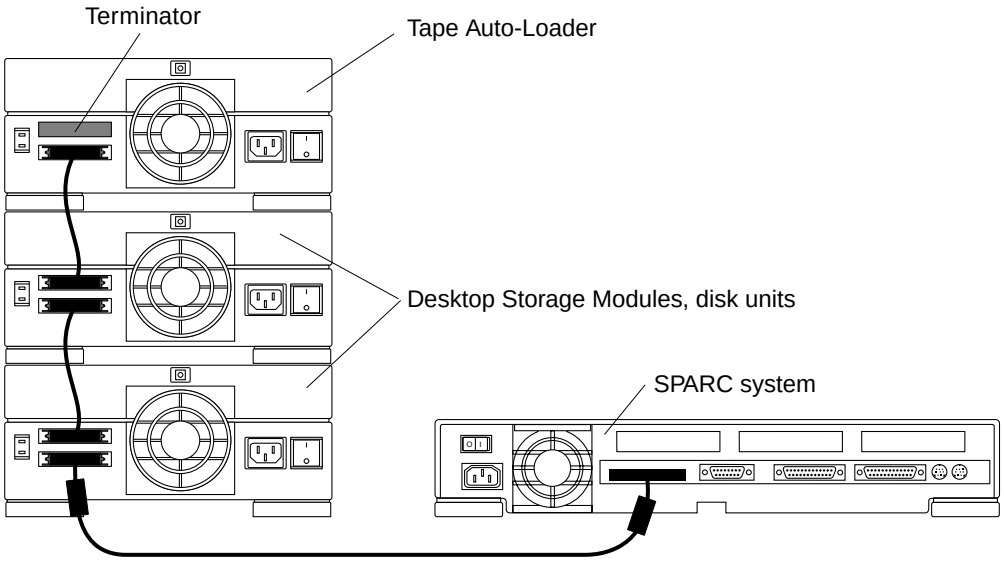


Figure 2-10 Connecting the Tape Auto-Loader in a Daisy-Chain

8. **Connect the power cord to the power input plug on the Tape Auto-Loader and to the wall outlet.**

9. **Power on the units.**
   See Section A.3, “Configuring the System.”

10. **Perform software configuration steps.**
    See Section A.3, “Configuring the System.”

2.4 DIP Switches

The tape auto-loader has three sets of DIP switches that allow you to choose between several functions. The DIP switches are preset at the factory to default settings. They do not need to be changed or reset unless you have special requirements, such as the language used. To verify or change a DIP switch setting, see Appendix B, “Verifying DIP Switches.”

Using the Tape Auto-Loader 3

This chapter describes the tape auto-loader features and how to use them. Figure 3-1 shows a Tape Auto-Loader with the drawer open.

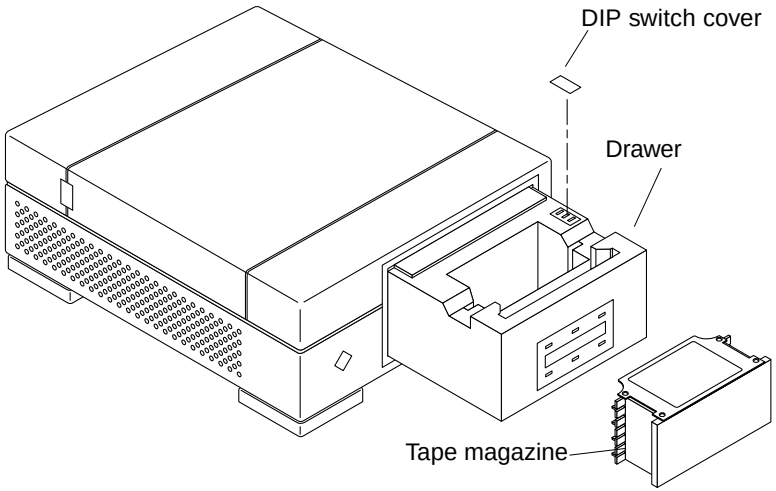


Figure 3-1 Tape Auto-Loader with the Drawer Open

Caution – It is extremely important to use a head cleaning tape to clean the auto-loader after every 24 hours of operation or the unit can become damaged. If you use new tapes over 50% of the time in this unit, it is wise to clean up to twice as often. New tapes tend to shed some particles for the first few times. The cleaning operation will remove these particles from the tape head and the tape path.

3.1 Front Panel

The front panel of the tape auto-loader has the following features. See Figure 3-2:

- Four LEDs
- Two buttons
- A message window

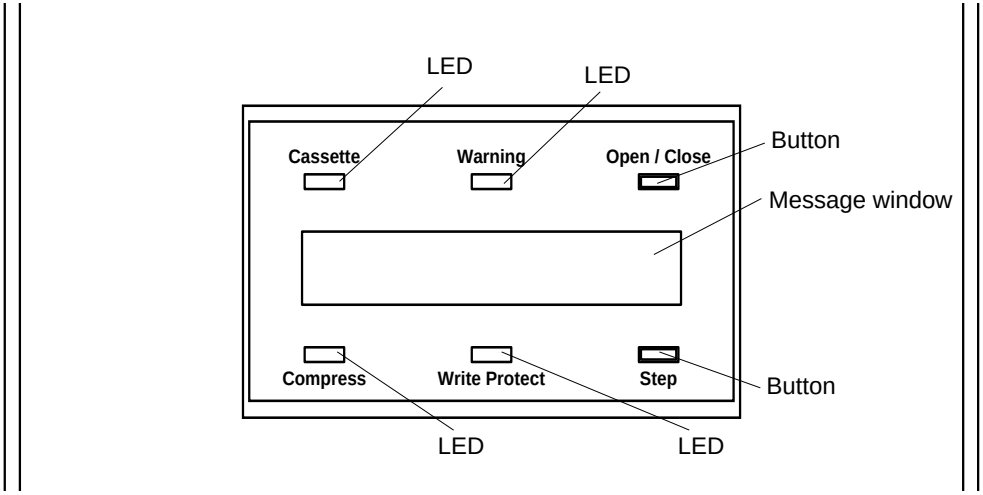


Figure 3-2 Auto-Loader Front Panel Detail

3.1.1 LEDs

The auto-loader front panel has four LEDs:

- Cassette LED — gives the activity status of the auto-loader.
- Warning LED — tells of errors in the activity of the auto-loader.
- Compress LED — tells when data compression is being used.
- Write Protect LED — tells if the tape cartridge is write-protected.

The status of the drive can only be determined by looking at the Cassette and Warning LEDs at the same time. The Compress and Write Protect LEDs light up independently to give information only on the particular functions related to these LEDs.

Some general rules about the Cassette and Warning LEDs are:

- There is a problem if the Warning LED is blinking (except during the power-on self-test).
- Do not interrupt the auto-loader if the Cassette LED is blinking.
- If the Cassette LED is on steadily (not blinking), a tape cartridge is in the drive and the drive is ready for operation.

Table 3-1 explains the different states of the Cassette and Warning LEDs.

Table 3-1 Cassette and Warning LEDs

Mode	LED Indicator		Status	Action Required
	Cassette	Warning		
Diagnostic	Fast flash*	Fast flash*	Power-on self-test in progress or completed unsuccessfully	If both LEDs continue to flash after power-on self-test is completed, call your local Sun service representative
	----	Fast flash*	Hardware error or drive detection failure	Call your local Sun service representative
Normal Operation	On	----	Tape cassette loaded, drive ready	None
	Fast flash*	----	SCSI or tape activity	None
	----	Slow flash†	Media warning	Replace the tape cartridge
	----	Fast flash*	Unable to write to media; unrecoverable error	Replace the tape cartridge
Unload Operation	Fast flash*	----	Eject button pushed; unload in progress	None
Cleaning	Fast flash*	----	Cleaning operation in progress	None

Table 3-1 Cassette and Warning LEDs

Mode	LED Indicator		Status	Action Required
	Cassette	Warning		
Cleaning	----	Fast flash*	Cleaning cartridge is used up; replace with new one	Replace the cleaning cartridge

* A fast flash is approximately four flashes per second.

† A slow flash is approximately one flash per second.

Table 3-2 defines the different states of the Compress and Write Protect LED indicators.

Table 3-2 Compress and Write Protect LEDs

LED	Status	Meaning
Compress	**On**	Data compression is being used on the tape cartridge currently loaded in the tape drive
	Off	Data compression is *not* being used on the tape cartridge currently loaded in the tape drive
Write Protect	**On**	The tape cartridge currently loaded in the tape drive is write-protected
	Off	The tape cartridge currently loaded in the tape drive is *not* write-protected

3.1.2 Buttons

The auto-loader front panel has two buttons:

- Open/Close button — opens or closes the magazine drawer.
- Step button — lets you manually cycle the auto-loader to the next tape cartridge in the tape magazine.

3.1.3 Message Window

A message window on the front panel of the auto-loader displays status messages. The displayed messages are described in Table 4-1 and Table 4-2 in Section 4.4, “Explanation of Message Window Status Displays.

3.2 Tape Cartridges

The auto-loader uses standard DDS-certified 4mm tape cartridges. Each cartridge or cassette provides up to 5 Gbytes of data storage capacity. The auto-loader uses data-grade DDS media. Look for the DDS label on the tape cartridge to be sure that you are using the proper grade of tape.

Note – Audio-grade tape cartridges are not recommended.

The auto-loader requires high quality DDS data grade media for reliable operation. The auto-loader uses 60m and 90m media; 120m media is not supported as it is designed for the DDS-2 class tape drive. Sun *strongly* recommends that you use only the DDS media brands that have been tested and approved by Sun. These include:

- Fuji (all 60m and 90m) media
- Archive, Conner, and Sony (all 60m) media
- Archive, Conner, and Sony (90m) media with date codes as follows:
  - Date code ending with 53, 63, 73, 83, 93
  - Date code with the letter O, N, or D preceeding the last digit in the code
  - Date code ending with the number 4

Note – The date code is on the tape edge adjacent to the write-enable tab.

Any DDS media that can be purchased through Sun, Sun Express, or Conner Express are acceptable for the auto-loader. You must use 90-meter DDS media if you want to utilize the 5 Gbyte data storage capacity.

Table 3-3 lists tape storage capacities. Figure 3-3 shows a typical 4mm DDS-certified tape cartridge.

Table 3-3 Tape Storage Capacity

Media Length	Low Density Mode	High Density Mode
60 Meters	1.3 Gbyte	3.25 Gbyte*
90 Meters	2.0 Gbyte	5.0 Gbyte*

* High density mode uses the data compression capability of the drive. Compression varies depending on the type of data stored. Typical compression is 2.5:1.

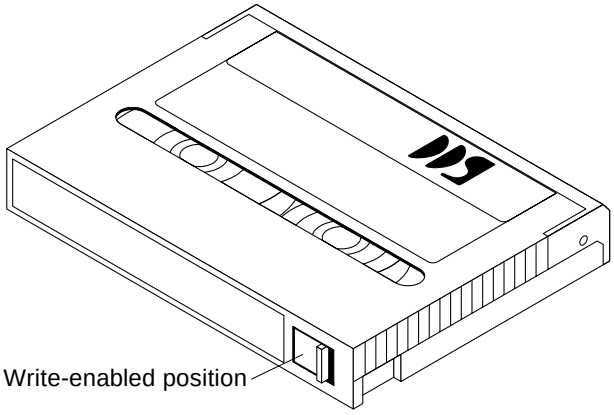


Figure 3-3 Typical 4 mm Tape Cartridge

3.2.1 Automatic Formatting

When you insert a new tape cartridge, the drive formats the tape automatically in about 30 seconds. Do not interrupt the drive while it is formatting, since that may destroy the ability of the tape to store data.

3.2.2 Acclimation of the Tape Cartridge at Room Temperature

The tape cartridge should be the same temperature as the drive for 24 hours before using it. If the cartridge is at a different temperature than the drive, let the cartridge stand at room temperature for 24 hours before using it.

Note – Only use the labels that were included with your tape cartridges.

Make sure that the label corners are within the depressed area and firmly adhere to the cartridge shell.

3.2.3 *Write-Protecting Tapes*

You can write-protect the data saved on a tape cartridge to prevent the data from being over-written or erased. When the write-enable switch is open (pushed aside so it is no longer visible), the tape is in read-only mode and no new data can be saved on the tape cartridge.

To write-protect a tape cartridge:

1. **Locate the write-enable tab.**
   See Figure 3-3.
2. **Use a ballpoint pen or similar instrument to slide the write-enable tab open (the white tab is not visible).**
   The tape cartridge is write-protected.

To write-enable the tape cartridge:

- **Use the tip of a ballpoint pen to push the write-enable tab closed (the white tab is visible).**

3.2.4 Handling and Storing Tapes

When handling and storing tape cartridges, note the following guidelines:

- Keep tape cartridges away from anything magnetic.
- Store tape cartridges in a clean, dust-free environment (either in the tape case or in the tape magazine).
- Store tape cartridges on their edges (rather than flat).
- Keep tape cartridges out of direct sunlight and away from sources of extreme heat or cold.
- Make sure the tape cartridge is at room temperature for at least 24 hours before using it.
- Avoid touching the exposed surface of the tape.

Tapes can be left inside the magazine. Additional tapes or tape magazines from SunExpress or your authorized Sun supplier.

3.3 Using the Tape Auto-Loader

Insert up to four tape cartridges into the tape magazine, and then load the tape magazine into the auto-loader.

Caution – If you drop the tape magazine, you can break parts off of the tape magazine. In some cases, breaking parts off will result in an error 70 (magazine position lost) error.

Note – If you are using the Solaris® 2.1 operating environment, the drive can write only in high (compression density) mode, but it can read in either the low or high density modes.

3.3.1 Inserting a Tape in the Tape Magazine

1. **Verify that the tape cartridge write-protect tab is set correctly.**
   See Figure 3-3:

   - Write-enable when the white tab is visible
   - Write-protect when the white tab is not visible

2. **Insert the tape cartridge into the tape magazine as shown in Figure 3-4.**

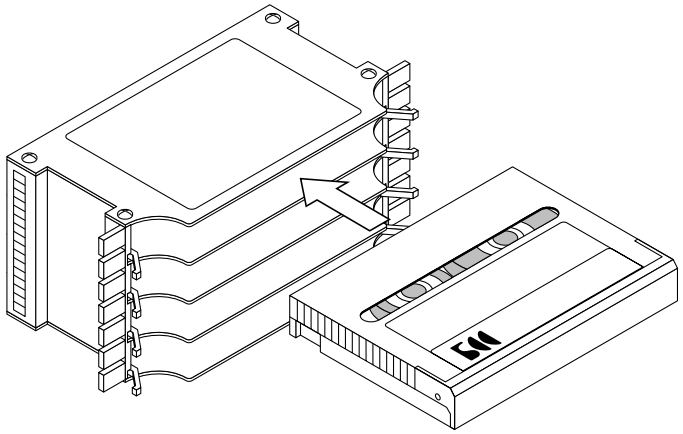


Figure 3-4 Inserting a Tape in the Tape Magazine

You can look through the holes at the front of the tape magazine (Figure 3-5), to determine if the loaded tapes are write-enabled or not. The tape cartridge is write-enabled if the white tab is visible. If the white tab is not visible, the tape is write-protected. See Figure 3-5.

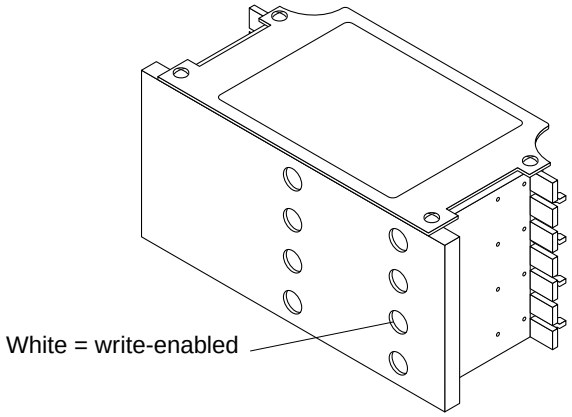


Figure 3-5 Checking for Visible Write-Enable Tab

3.3.2 Loading a Tape Magazine in the Auto-Loader

1. **Press the Open/Close button located on the auto-loader front panel to open the drawer.**
   See Figure 3-6.

   When you press the button, the tape magazine ejects in 30 – 90 seconds.

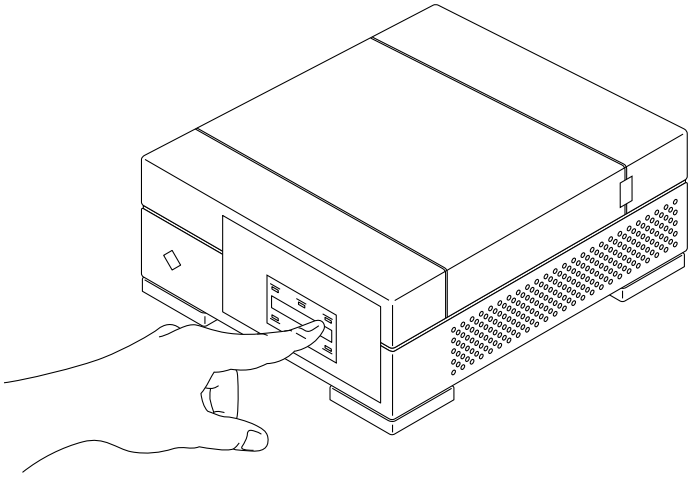


Figure 3-6 Location of the Open / Close Button on the Auto-Loader

2. **Position the tape magazine with the label facing up and the front of the magazine facing the front of the auto-loader.**
   See Figure 3-7.

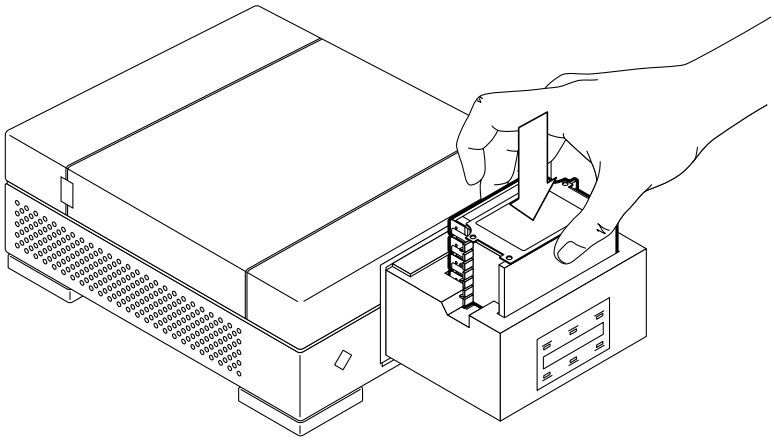


Figure 3-7 Inserting the Tape Magazine

3. **Gently place the tape magazine into the drawer.**
   See Figure 3-7. The tape magazine automatically drops completely into the drawer, the drawer closes, and the following messages display in the message window:

```
Scanning
Closing
<#> Tapes
Load <#> [Cassette LED flashes]
Ready <#> [Cassette LED comes on]
```

Note – After a write command is issued, it is about 15 to 20 seconds before the drive begins writing data onto a rewound tape cartridge. During this time, the drive loads and positions the tape. If the tape must first be rewound, this process takes much longer. You can issue tape motion commands as soon as the LED signals ready, but command execution is delayed until the cartridge loads.

3.3.3 *Cycling to a Different Tape in the Tape Magazine*

- **Press the Step button until you see the correct tape cartridge number display in the message window.**
  See Figure 3-8. The message “Sel <#>” displays in the window; continue pressing the Step button until the correct tape cartridge is shown in the “Sel <#>” message.

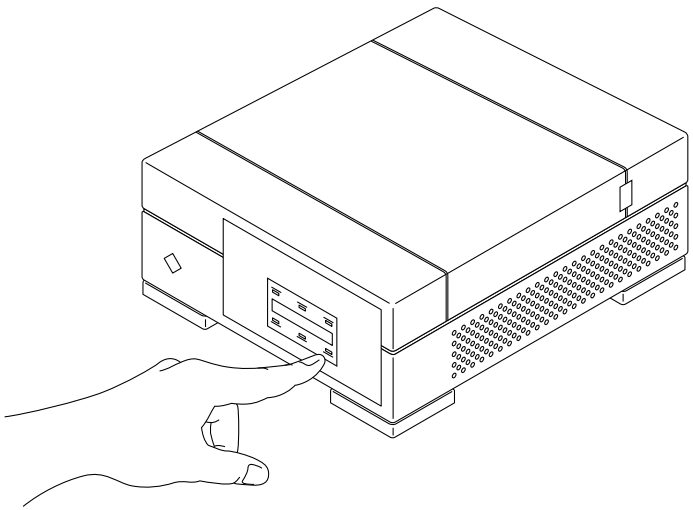


Figure 3-8 Pressing the Auto-Loader Step Button

After you select the tape cartridge, the message “Sel <#>” flashes five times and then the following messages display in the message window:

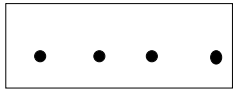
```
Sel <# selected>
Load <# selected>
Eject <# of cartridge in the tape drive> [Cassette LED flashes]
Load <# selected> [Cassette LED flashes]
Ready <# selected> [Cassette LED comes on]
```

This entire sequence takes roughly 20 seconds to complete.

3.3.4 Removing a Tape Magazine from the Auto-Loader

1. **Check the LEDs on the auto-loader front panel to make sure you do not unintentionally abort a tape drive activity.**
   - There is no tape activity and it is safe to eject the tape magazine from the auto-loader if the Cassette LED is either on or off but not flashing.
   - A flashing Cassette LED indicates that a tape cartridge is being accessed. and it is not safe to eject the tape magazine from the auto-loader. Halt the tape activity using the appropriate command before unloading the tape magazine.

If there is no cartridge in the unit, the display shows the following:



2. **Press the Open/Close button located on the auto-loader front panel to open the drawer.**
   See Figure 3-9.

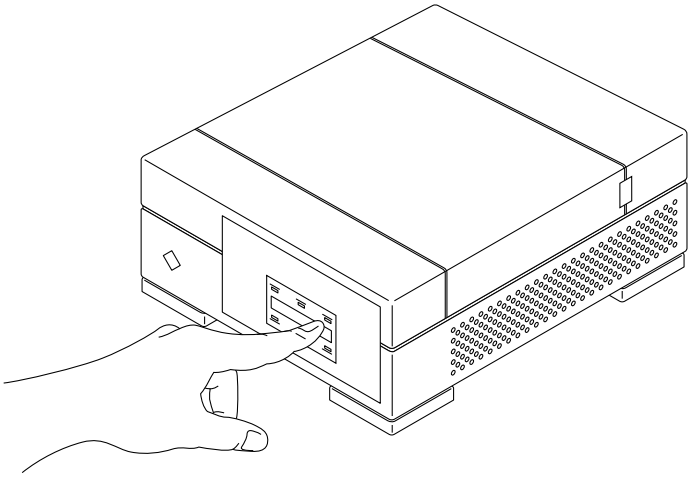


Figure 3-9 Location of the Open/Close Button on the Auto-Loader

The tape magazine ejects 30 to 90 seconds after you press the Open/Close button *unless* one of the following conditions exists:

- The drive is not powered up.
- A command was issued to the drive preventing media removal. In this case, the tape rewinds and unloads, but does not eject. The Solaris operating environment does not support or use this command.

It takes up to 90 seconds from the time you press the Open/Close button until the tape magazine ejects; repeatedly pressing the Open/Close button does *not* shorten the eject time. After you press the Open/Close button, the following messages display in the window:

```
Eject <#> [Cassette LED flashes]
Opening [Cassette LED goes off]
Ejecting
Dismount
```

3. **Remove the tape magazine from the auto-loader.**
   When you remove the tape magazine from the auto-loader, the following message appears in the message window:

```
Operator
```

Caution – Do *not* force the drawer open under any circumstances. If the tape magazine does not eject after you have performed the preceding instructions, follow the procedure given in Section 3.4, “Emergency Tape Ejection.”

3.3.5 Removing a Tape Cartridge from the Tape Magazine

1. **Remove the tape magazine from the auto-loader.**
   See Section 3.3.4, “Removing a Tape Magazine from the Auto-Loader.”

2. **Press the plastic locking tabs on both sides of the tape magazine to free the tape cartridge you want to remove while removing the tape cartridge from the magazine.**
   See Figure 3-10.

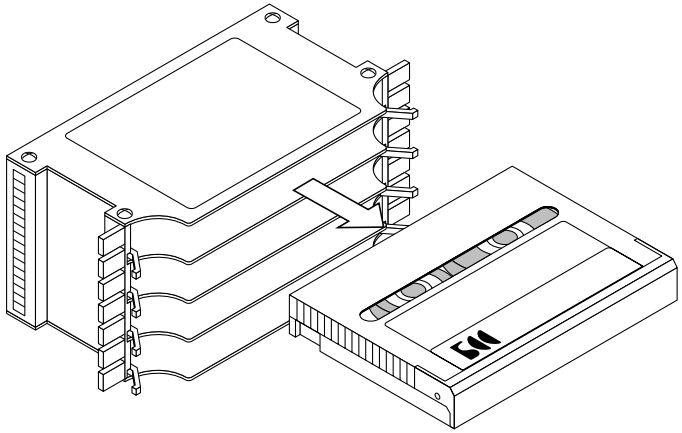


Figure 3-10 Removing a Tape Cartridge from the Tape Magazine

3.4 Emergency Tape Ejection

Follow these procedures to eject the tape magazine or cartridge if the normal procedure fails:

1. **Power cycle the drive:**
   a. **Safely power off the auto-loader.**
   b. **Wait at least 10 seconds.**
   c. **Press** *and hold* **the Open/Close button while powering on the drive.** It could take up to a minute before the drawer opens; make sure to hold down the Open/Close button the entire time. The following messages display in the message window:

```
Eject <#> [Cassette LED flashes]
Opening [Cassette LED goes off]
Ejecting
Dismount
```

2. **Remove the tape magazine or tape cartridge from the auto-loader.** The following message displays in the message window:

```
Operator
```

Caution – If you were unable to eject the magazine or cartridge using the preceding instructions, contact your local Sun service representative; do *not* try to force the drawer open.

3.5 Backup Tools

To make tape backups of your system, see Section A.5, “Backup Tools.”

3.6 Rewinding a Tape

To rewind a tape, see Section A.4, “Rewinding a Tape.”

Troubleshooting 4

4.1 Inspecting the Tapes and Magazine for Debris

To ensure that your tape auto-loader performs properly, visually inspect the tape cartridges and tape magazine, checking for any black powdery residue that may have built-up due to use and tape wear. Deposits of dirt or debris can cause error messages and degrade performance. The openings on the side of the tape magazine must remain free of dirt or any blockage.

1. **Remove the tape magazine from the auto-loader.**
2. **Remove the tape cartridge(s) from the magazine.**
3. **Visually inspect the inner and the outer surfaces of the tape magazine and the small openings (see Figure 4-1) for dust.**
   The openings on each side of the tape magazine must be open and free of dust.

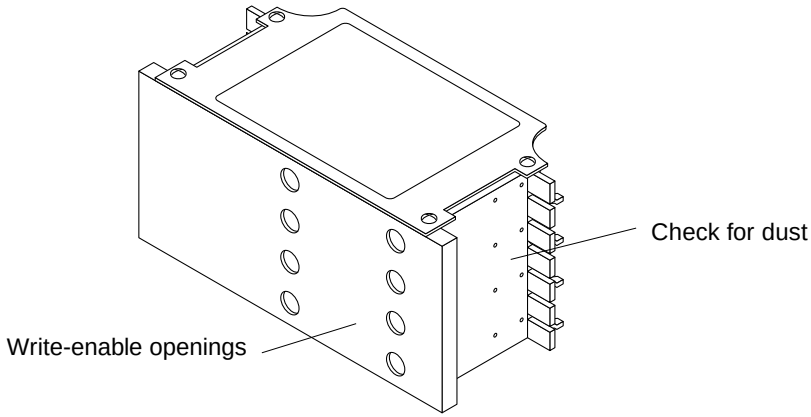


Figure 4-1 Checking the Tape Magazine

4. **Remove any dust or debris from the outer grooved surfaces of the tape cartridge and the write-enable openings with a dry swab designed for cleaning tape heads.**

4.2 Cleaning the Tape Drive Heads and Tape Path

Clean your tape drive after every 24 hours of data transfer and only with a DDS cleaning cartridge. If you use new tapes more than 50% of the time, clean your tape drive after every 12 hours of data transfer with a DDS cleaning cartridge. Follow the instructions on the cleaning cartridge kit designed for this tape drive. The cleaning cartridge is good for 30 - 50 uses.

You can put a cleaning tape in one of the magazine slots. The unit will load and clean the tape drive each time the slot is selected. This provides an easy method to periodically clean the tape drive.

Caution – It is extremely important to use a head cleaning tape to clean the auto-loader after every 24 hours of operation or the unit can become damaged.

Caution – Do not use the cleaning cartridges or fluids designed for use in audio devices. These cartridges can damage the tape drive.

To clean the tape drive:

1. **Insert the cleaning cartridge into the tape magazine as you would a normal tape cartridge.**
2. **Insert the tape magazine into the auto-loader.**
   The following messages are displayed:

```
Scanning
Closing
<#> Tape
Load <#> [Cassette LED flashes]
Clean <#> [Cassette LED flashes]
Eject <#>
Sel Slot
```

If the cleaning cartridge has been used for more than 30 cleaning cycles (depending on the brand), the Warning LED blinks rapidly. Press the Open/Close button to eject the tape magazine and replace the old cleaning cartridge with a new cleaning cartridge.

3. **Press the Open/Close button to eject the tape magazine after the cleaning cartridge is automatically ejected following the cleaning cycle.**

4. **Remove the cleaning cartridge from the tape magazine.**
   You can now use the tape drive.

4.3 Cleaning the Magazine Drive Rollers

Clean the magazine drive rollers with a cotton swab and ethyl alcohol after every 10,000 tape cartridge insertions (2,500 tape magazine insertions). In a particularly dirty environment, you may need to clean the rollers more frequently, especially if you see certain error messages often.

1. **Check the LEDs on the auto-loader front panel to make sure you do not unintentionally abort a tape drive activity.**
   - If the Cassette LED is on or off, then there is no tape activity and it is safe to eject the tape magazine from the auto-loader.
   - If the Cassette LED is flashing, then a tape cartridge is being accessed and it is not safe to eject the tape magazine from the auto-loader. Halt the tape activity using the appropriate command before unloading the tape magazine.

2. **Press the Open/Close button located on the auto-loader front panel to open the drawer.**
   See Figure 4-2.

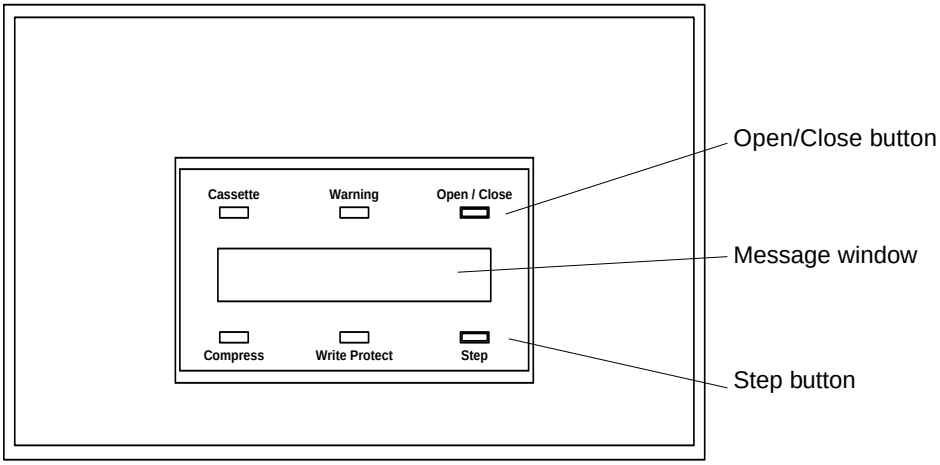


Figure 4-2 Location of the Buttons and Message Window on the Auto-Loader

3. **Use two cotton swabs; dip one swab in ethyl alcohol to clean the surface and use the other swab to dry the surface.**

4. **Press the Step button three times rapidly within a three-second period.** See Figure 4-2.

   The following message displays in the message window and the cassette rollers rotate for about 10 seconds:

```
Clean 1
```

5. **While the cassette rollers rotate, wipe the rollers with the wet cotton swab, then wipe them with the dry cotton swab.**

Note – Figure 4-3 shows the rollers on the right side of the unit; another set of rollers are on the left side. Make sure that you clean all the rollers.

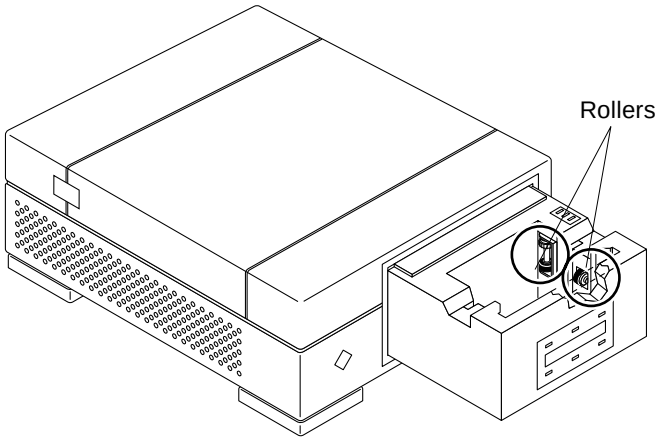


Figure 4-3 Tape Magazine Rollers

6. **Press the Step button three times rapidly.**
   The following message displays in the message window and the left magazine rollers rotate for about 10 seconds:

```
Clean 2
```

7. **While the left magazine rollers rotate, wipe the rollers with a wet cotton swab, then wipe them with the dry cotton swab.**

8. **Press the Step button three times rapidly within a three-second period.**
   The following message appears in the message window and the right magazine rollers rotate for about 10 seconds:

```
Clean 3
```

9. **First wipe the right magazine rollers with a wet cotton swab as they rotate, then wipe them with the dry cotton swab.**

4.4 Explanation of Message Window Status Displays

A message window on the front panel gives the status of the auto-loader. Table 4-1 shows typical status messages you may see in the message window.

Table 4-1 Typical Status Messages in the Message Window

Message	Meaning	Action Required
. . . .	There is no tape magazine loaded in the auto-loader	Press the Open/Close button and insert the tape magazine, if necessary
<#> Tapes	<#> of tapes are present in the tape magazine	None
Chk Mag	There is an error in the way the tape magazine was loaded or the way a tape cartridge was loaded into the tape magazine	Press the Open/Close button to eject the tape magazine and correct the error
Closing	The auto-loader is closing the drawer	None
Dismount	The operator is being asked to remove the tape magazine from the drawer	Remove the tape magazine from the drawer
Eject <#>	Tape cartridge <#> is being ejected from the tape drive	None
Eject ^	The operator is being asked to press the Open/Close button	Press the Open/Close button
Ejecting	The auto-loader is ejecting the tape magazine	None
Load <#>	Tape cartridge <#> is being loaded into the tape drive	None
Load <#>?	The operator is being asked if the slot number chosen is correct	If the slot number shown is incorrect, press the Step button until the correct number is shown; otherwise, no action is necessary
Opening	The auto-loader is opening the drawer	None
Operator	The operator is being asked to perform the next task (such as loading the tape magazine into the auto-loader)	Perform the next task
Read <#>	Tape cartridge <#> is having information read from it	None
Ready <#>	Tape cartridge <#> is ready to have information written to or read from it	None
Rewind <#>	Tape cartridge <#> is being rewound	None
Scanning	The auto-loader is scanning the tape magazine	None

Table 4-1 Typical Status Messages in the Message Window *(Continued)*

Message	Meaning	Action Required
Search <#>	The tape drive is searching for information on cartridge <#>	None
Sel <#>	Tape cartridge <#> has been selected	None
Sel Slot	The operator is being asked to choose the tape cartridge to be loaded first	Press the Step button until the correct tape slot is shown in the message window
Slot <#>	The tape cartridge in slot <#> is inserted backwards in the tape magazine	Press the Open/Close button to eject the tape magazine and reinsert the tape cartridge correctly
Write <#>	Tape cartridge <#> is having information written to it	None

Table 4-2 defines typical error messages you may see in the message window.

Table 4-2 Typical Error Messages in the Message Window

Error Message	Meaning	Action Required
Error 10	The auto-loader could not scan to the first detectable slot in the tape magazine	Press the Open/Close button to reset the error and attempt retry Inspect magazine for damage If the problem persists, clean the rollers
Error 11	A timeout occurred while the auto-loader was moving the tape magazine to a different tape slot	Press the Open/Close button to reset the error and attempt retry If the problem persists, clean the rollers.
Error 20	The auto-loader could not eject the tape magazine	Press the Open/Close button to reset the error and attempt retry
Error 30	The auto-loader could not position the tape magazine to the specified tape slot (the tape magazine was moving up)	Press the Open/Close button to reset the error and attempt retry. If the problem persists, clean rollers
Error 31	The auto-loader could not position the tape magazine to the specified tape slot (the tape magazine was moving down)	Press the Open/Close button to reset the error and attempt retry. If the problem persists, clean rollers
Error 40	The auto-loader could not insert the tape cartridge	Press the Open/Close button to reset the error and attempt retry

Table 4-2 Typical Error Messages in the Message Window *(Continued)*

Error Message	Meaning	Action Required
Error 41	The cassette insertion rollers could not engage	Press the Open/Close button to reset the error and attempt retry. If the problem persists, clean rollers
Error 42	The cassette insertion rollers could not disengage	Press the Open/Close button to reset the error and attempt retry. If the problem persists, clean rollers
Error 50	The tape drive could not eject the tape cartridge	Press the Open/Close button to reset the error and attempt retry. If the error message comes up again, power cycle the auto-loader and hold down the Open/Close button for 20 - 30 seconds while the drive is powering up
Error 51	The cassette rollers could not engage	Press the Open/Close button to reset the error and attempt retry. If the problem persists, clean rollers
Error 52	The cassette rollers could not disengage	Press the Open/Close button to reset the error and attempt retry. If the problem persists, clean rollers
Error 60	The drawer could not close	Clear any obstacles from the path of the drawer and press the Open/Close button to reset the error and attempt retry
Error 61	The drawer could not open	Clear any obstacles from the path of the drawer and press the Open/Close button to reset the error and attempt retry Remove the mylar restraint and the two screws from the bottom of the tape drive.
Error 70	The auto-loader could not find the tape magazine	Press the Open/Close button to reset the error and attempt retry Inspect the magazine for damage.
Error F0	The tape cartridge or tape magazine is completely stuck	Eject the tape cartridge or tape magazine. If this fails to eject the cartridge or magazine, call a qualified service representative; do *not* force the drawer open

4.5 Backup Tools

To make tape backups of your system, see Section A.5, “Backup Tools.”

4.6 Rewinding a Tape

To rewind a tape, see Section A.4, “Rewinding a Tape.”

Removing and Replacing Field Replaceable Units

5

This chapter explains how to remove and install the cover, tape drive, power supply, I/O and fan assembly. This chapter also explains how to prepare the tape drive for shipment and how to prepare the unit for shipment.

5.1 Removing the Tape Auto-Loader Cover

Caution – Make sure that the power switch on the auto-loader is in the *off* (O) position and that the power cord remains plugged in to the auto-loader and to the power source.

1. **Loosen the captive screw in the lock block.**
   Put the lock block aside.

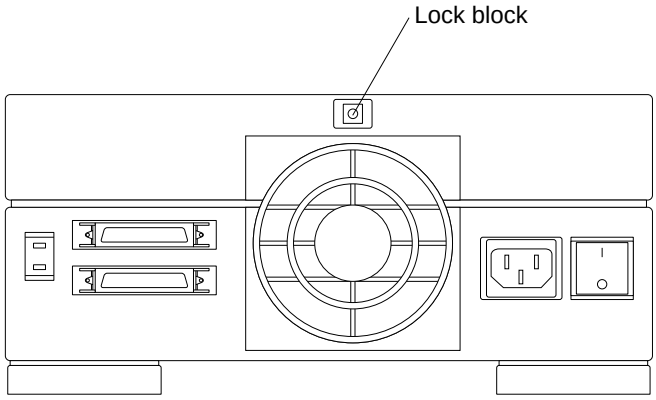


Figure 5-1 Lock Block Location

2. **Grasp the cover, placing your fingers over the latch buttons at the sides of the auto-loader enclosure and press the latch buttons.**
   This action releases the latches at the sides of the cover. See Figure 5-2.

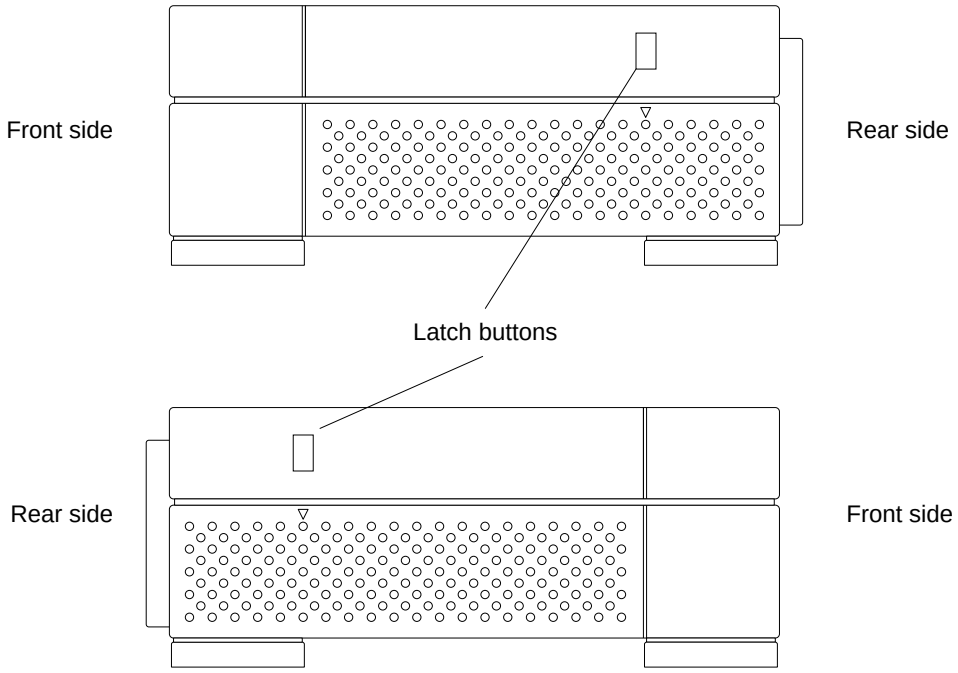


Figure 5-2 Cover Latches

3. Lift the rear of the cover up slightly and push it forward (Figure 5-3).

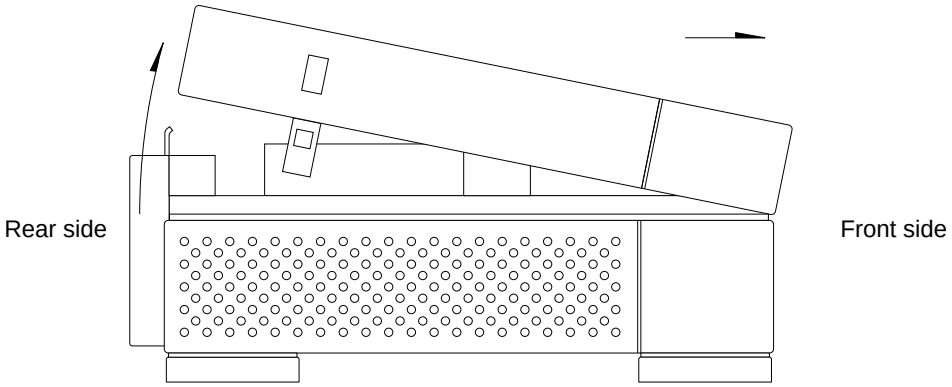


Figure 5-3 Removing the Cover

4. Set the cover aside.

Warning – Before powering up the auto-loader again, be sure to cover and close the unit properly.

5.2 Removing the Tape Drive

Caution – The tape drive contains electronic components that are extremely sensitive to static electricity. Ordinary amounts of static from your clothes or work environment can destroy the components.

Do not touch the components themselves or any metal parts. Wear a wrist grounding strap when handling the drive.

Caution – Do not disconnect the power cord from the power outlet of the system unit or from the wall outlet. This connection provides the ground path necessary to safely remove and install the tape auto-loader.

Make sure that the power of the system unit is turned off by checking that the green light-emitting diode (LED) at the front of the chassis is not lit and that the fan is not running.

1. **Place an anti-static mat next to the auto-loader.**
2. **Remove the Tape Auto-Loader cover. See Section 5.1, "Removing the Tape Auto-Loader Cover."**
3. **Attach a wrist strap. Unwrap the first two folds of the wrist strap and wrap the adhesive side firmly against your wrist.**
   See Figure 5-4.

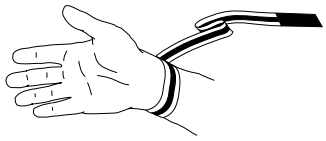


Figure 5-4 Wrist Strap

4. **Peel the liner from the copper foil at the opposite end of the wrist strap and attach the copper end of the wrist strap to the top of the of the power supply.**
   See Figure 5-5.

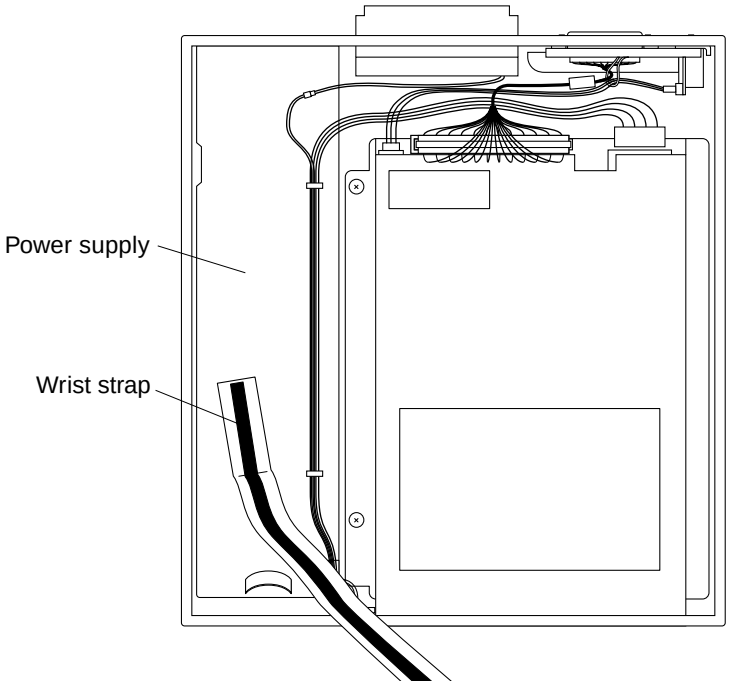


Figure 5-5 Power Supply Location

5. **Two captive screws secure the tape unit baseplate to the chassis base (Figure 5-6). Using a Phillips-head screwdriver, turn the captive screws counterclockwise to loosen.**

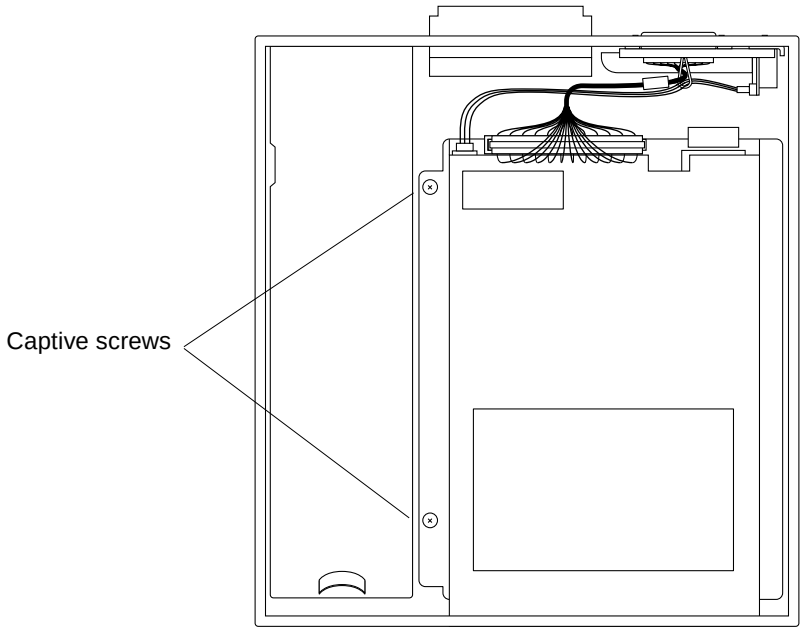


Figure 5-6 Baseplate Captive Screw Locations

6. **Move the tape drive towards the rear of the chassis.**
7. **Disconnect the power cable from the tape drive.**

8. **Disconnect the SCSI data cable and the SCSI ID switch cable from the tape drive.**
   Figure 5-7 shows the tape drive connector locations.

Note – Pull the connectors; do not pull on the cables.

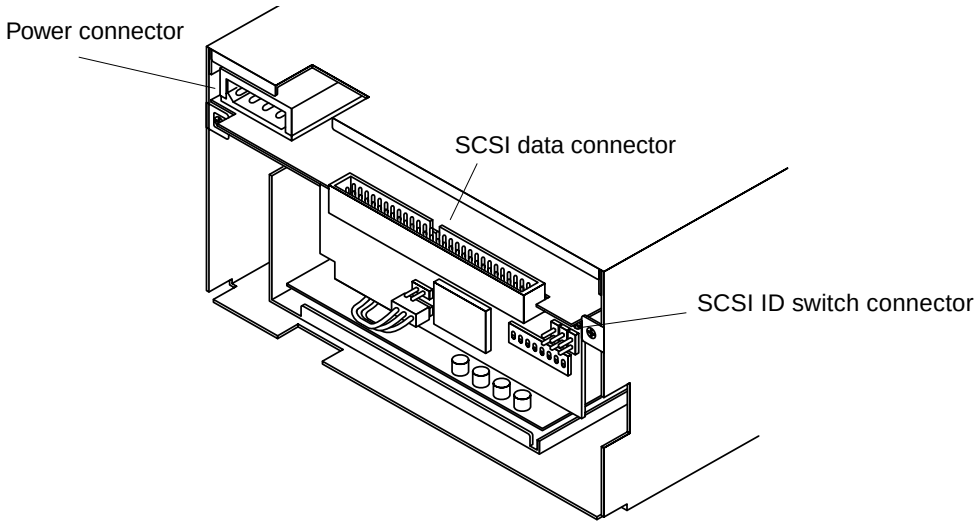


Figure 5-7 Auto-Loader Internal Connector Locations

9. **Tilt the tape drive assembly up toward the power supply and lift it away from the Tape Auto-Loader chassis.**

10. **Place the tape drive assembly on the anti-static mat.**
    If you removed the tape drive assembly to access the defective power supply or I/O bracket assembly, see the Section 5.5, “Removing the Power Supply” or Section 5.7, “Removing the I/O Bracket and Fan Assembly” in this chapter.

11. **If you removed a defective tape assembly, you must remove the bracket from the drive. Carefully turn the tape drive upside down, so you can access the base bracket and screws.**

12. **Remove the four screws that secure the bracket to the base of the tape drive (see Figure 5-8).**
    Put the screws and bracket aside. You will need to install the bracket on the replacement tape drive.

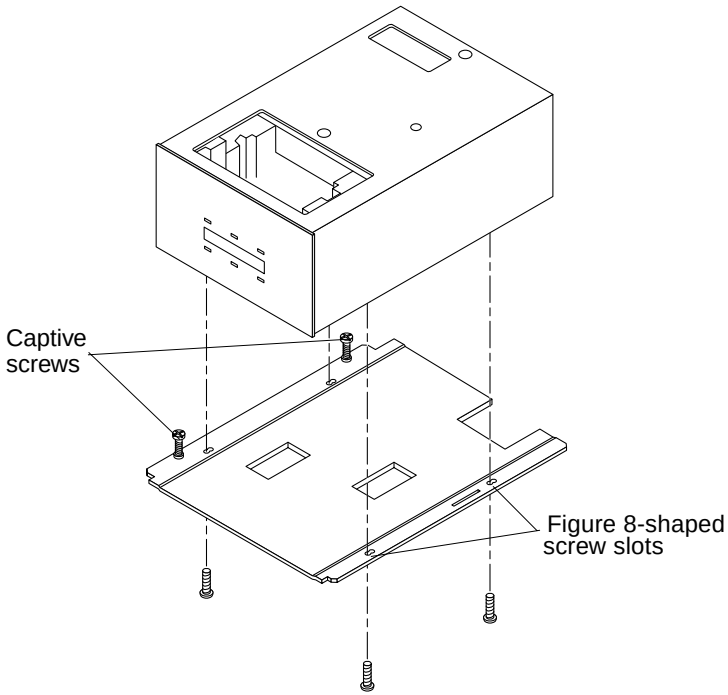


Figure 5-8 Tape Drive Base Bracket Assembly

Read the following section if you removed a defective tape drive assembly and need to install a replacement tape drive.

5.3 Preparing the Replacement Tape Drive

The power cord should still be connected to both the power outlet of the auto-loader and to the wall outlet.

5.3.1 Removing the Tape Drive Restraint

Replacement tape units are shipped with a mylar (plastic) restraint on the base of the tape unit that must be removed before installing a replacement tape drive. The mylar restraint and screws must be placed on the failing unit for shipment.

1. **Turn the auto-loader upside down on an antistatic surface. Remove the two screws that secure the mylar (plastic) sheet in the auto-loader.** See Figure 5-9. There should be six screws at the bottom of the auto-loader. Remove only the two screws that protrude slightly from the bottom of the auto-loader.

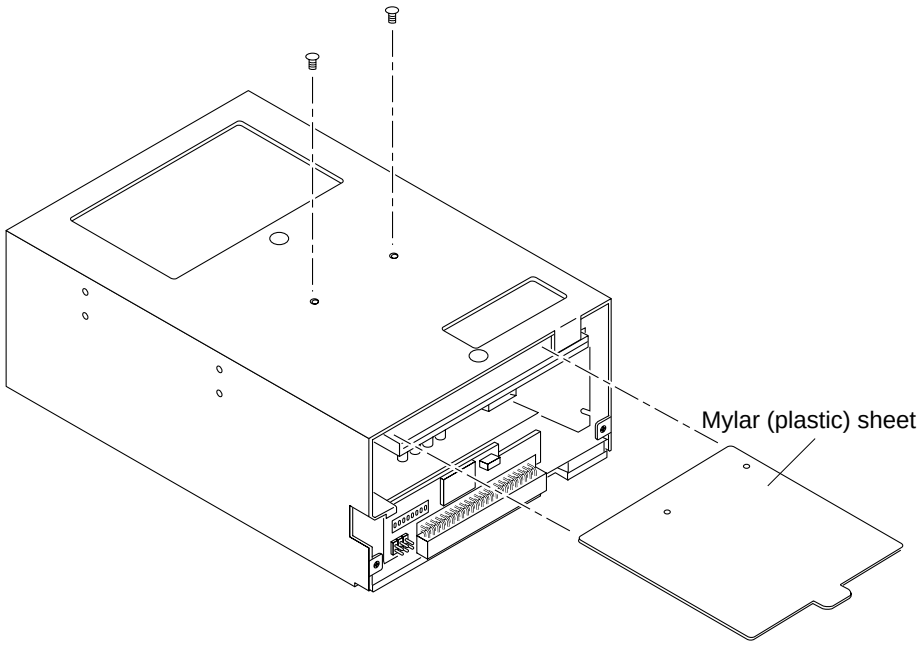


Figure 5-9 Removing the Mylar Sheet from the Tape Auto-Loader

2. **Grasp the clear plastic tab at the rear of the auto-loader and pull the mylar (plastic) sheet out of the unit.**
   Keep the mylar sheet and the two screws in a safe place. When you ship a tape drive, you must install the mylar sheet and two screws before shipping the tape drive.

5.3.2 Installing the Tape Drive Base Bracket

1. **Place the new tape drive on an anti-static surface.**
2. **Carefully turn the tape drive upside down, so you can access the base bracket and screws.**
   Position the drive so that the drive front is toward you and the drive connectors are facing away from you.
3. **Place the base bracket on the bottom of the tape drive.**
   Position the bracket so that the side with the two captive screws is on the right side of the drive.
4. **Align the four holes on the bottom of the tape drive with the upper part of the figure 8-shaped screw slots (labeled "S") on the tape drive bracket.**
5. **Secure the bracket to the tape drive using four screws. Install all four screws loosely before tightening.**
   See Figure 5-8.

5.4 Replacing the Tape Drive

1. **Normally, there is no jumper installed at JP4 on the rear panel. Verify that the JP4 jumper is either installed vertically or remove it.**
   If there is a jumper installed in the JP4 position, the jumper must either be in a vertical position or it must be removed.
2. **Verify that the internal and rear DIP switches are set correctly.**
   See Figure B-6, Table B-4, Table B-2, Table B-3, and Figure B-5 in Appendix B, "Verifying DIP Switches."
3. **Position the tape drive assembly in the chassis so that the connectors are pointing to the rear of the unit and the drive is close to the power supply.**
   See Figure 5-10.

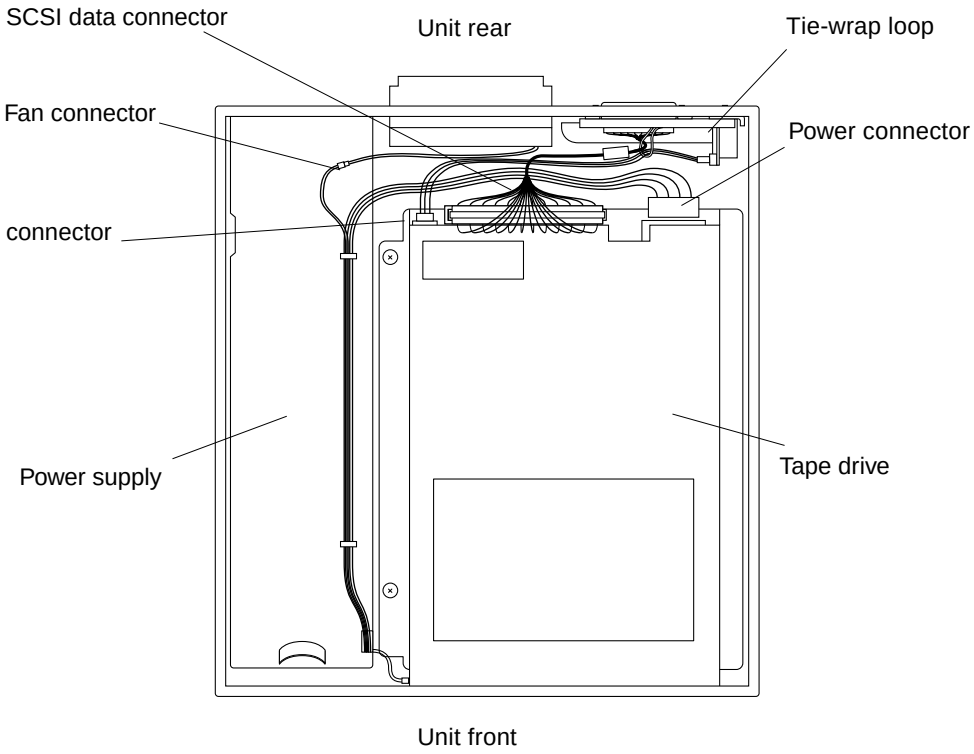


Figure 5-10 Tape Drive in the Chassis

4. **Move the tape drive forward, so the front surface of the tape drive is flush with the front surface of the chassis.**

Note – The SCSI data and SCSI ID cables are loosely secured to the I/O back panel with a tie-wrap at the factory. This keeps the SCSI data and ID cables in place, but leaves space to connect the internal cables to the tape unit.

Connect the cables in sequence to ensure proper routing (fan, power, SCSI ID, SCSI data).

---

5. **Connect the power to the fan connector.**

6. **Plug the DC power harness into the power connector at the upper left rear of the tape unit (see Figure 5-11).**

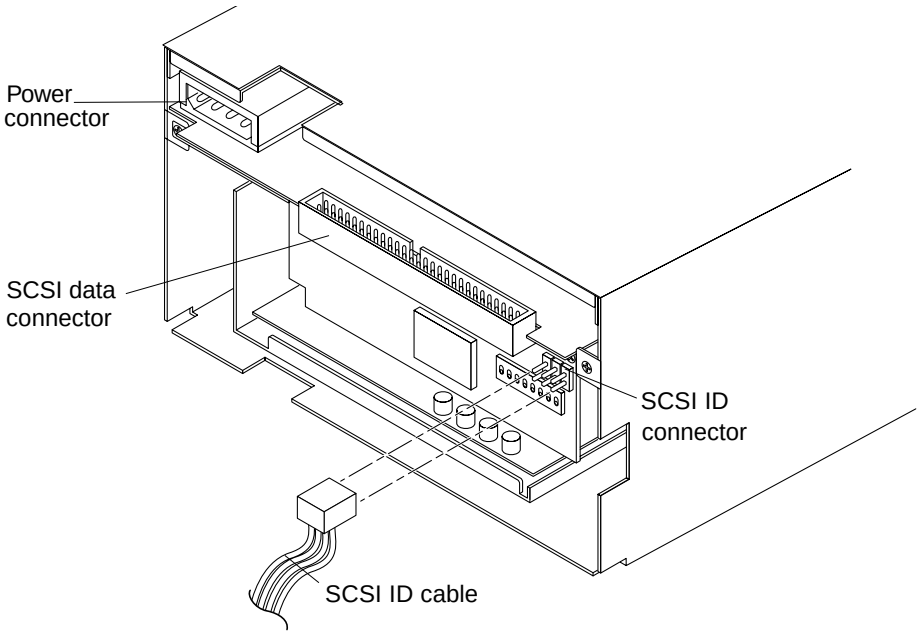


Figure 5-11 Auto-Loader Internal Connectors

7. **Tilt the drive up slightly and plug the SCSI ID (address) cable into the SCSI ID connector at the rear of the drive.**
   The SCSI ID connector is not keyed. Position the plug so that the ribbon cable hangs down from the plug and the colored edge is to pin 1.

8. **Connect the internal SCSI data cable to the tape drive.**
   See Figure 5-12.

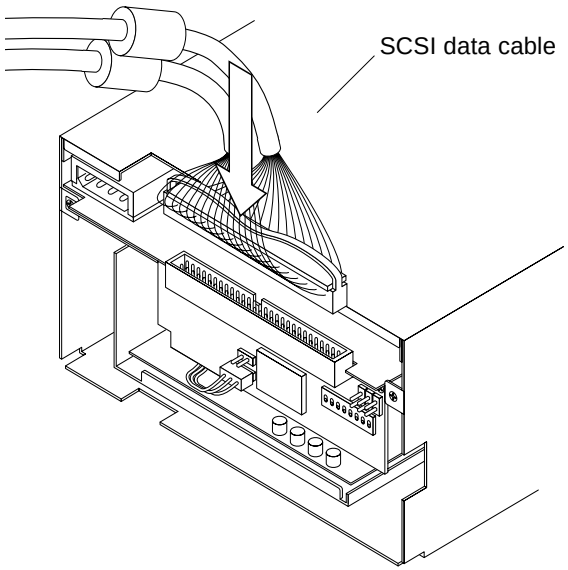


Figure 5-12 Connecting the Internal SCSI Data Cable

9. **Position the right edge of the baseplate against the right side of the enclosure. The baseplate is then pitted under two vertical ribs on the right edge.**

10. **Tighten the captive screws on the tape drive baseplate bracket clockwise until the bracket is secured to the chassis.**
    You may need to shift the drive assembly back and forth slightly to align the screw holes with the captive screws. See Figure 5-13.

Note – Do not use a power screwdriver to tighten the captive screws.

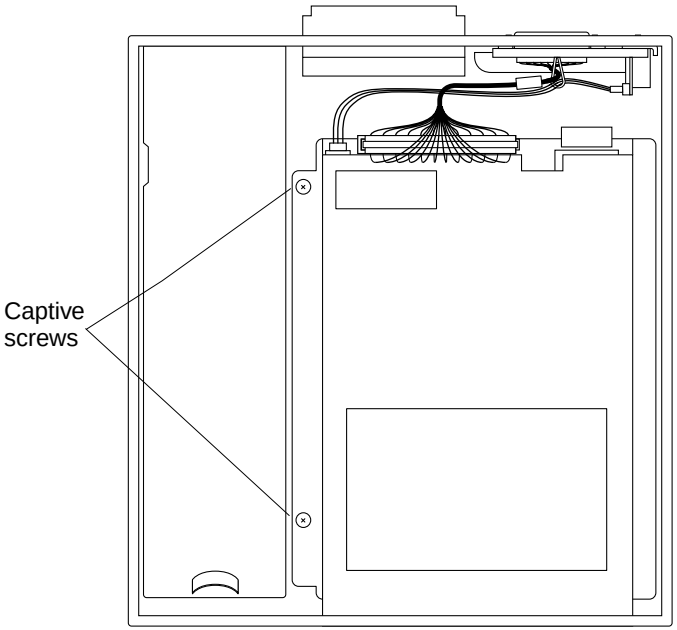


Figure 5-13 Baseplate Captive Screws

11. **Lift the tape drive slightly, to make sure that it is securely fastened to the chassis.**

12. **Remove the wrist strap.**

13. **Replace the auto-loader cover and lock block. See Section 5.9, “Replacing the Tape Auto-Loader Cover.”**
    See Figure 5-14.

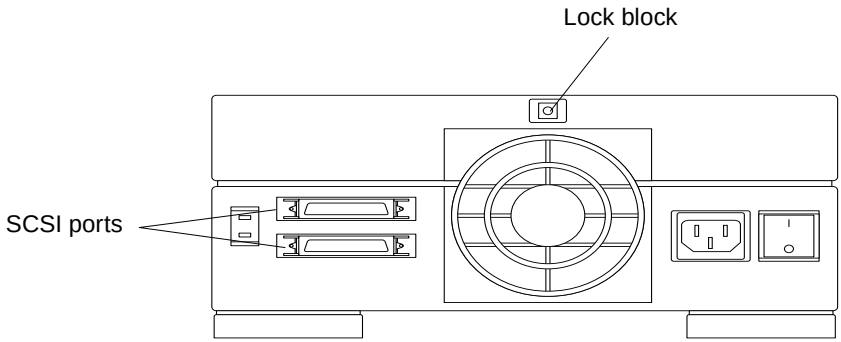


Figure 5-14 Auto-Loader Lock Block

14. **Connect the external power and SCSI cables to the auto-loader.**
    See Section 2.3, “Connecting the Tape Auto-Loader” in Chapter 2.

5.5 *Removing the Power Supply*

1. **Remove the auto-loader cover.**
   See Section 5.1, “Removing the Tape Auto-Loader Cover.”
2. **Remove the tape drive.**
   See Section 5.2, “Removing the Tape Drive.”)
3. **Unplug the auto-loader power cord from the rear of the unit.**
4. **Locate the power supply.**
   See Figure 5-15.

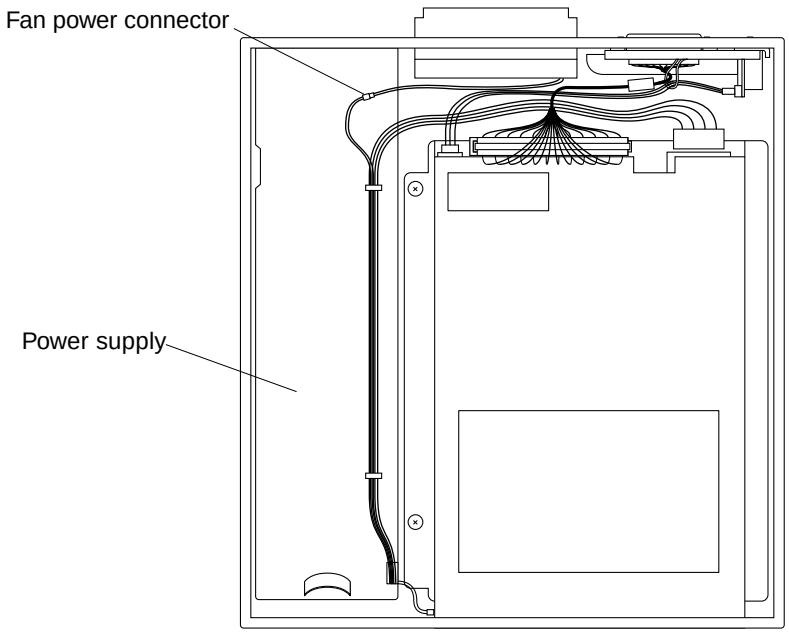


Figure 5-15 Power Supply Location

5. **Disconnect the power supply cable from the fan power connector (Figure 5-15). The fan assembly is mounted on the I/O bracket assembly.**

6. **Grasp the looped plastic handle on the top of the power supply and lift the unit up and out of the auto-loader chassis.**
   See Figure 5-16. Place the power supply aside.

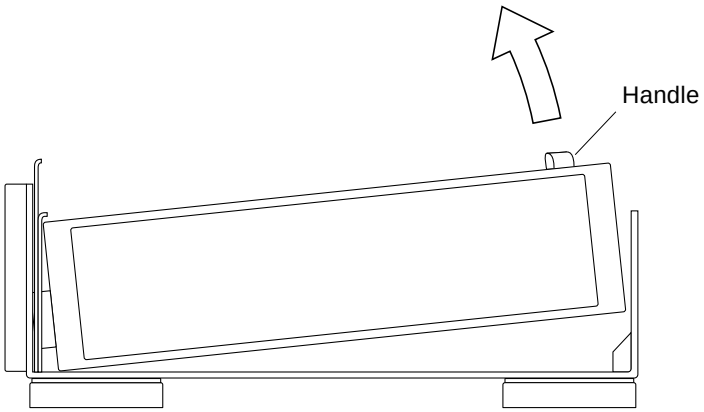


Figure 5-16 Removing the Power Supply

5.6 Replacing the Power Supply

1. **Position the power supply so the looped plastic handle on the power supply is at the front of the auto-loader.**
   See Figure 5-17.

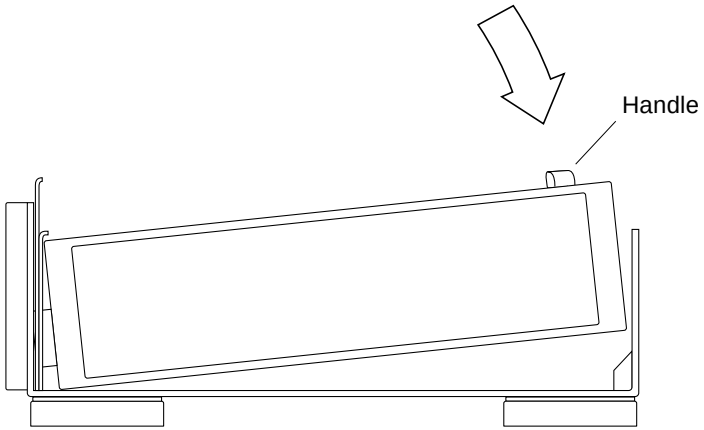


Figure 5-17 Replacing the Power Supply

2. **Lower the rear of the power supply into the chassis.**
3. **Gently push the power supply into the chassis until it snaps into place.**
4. **Connect the power supply cable to the fan power cable (Figure 5-15).**
   The fan assembly is mounted on the I/O bracket assembly. The connectors are keyed, and they can be connected one way only.
5. **Replace the drive, connect the internal cables, remove the wrist strap, and replace the cover.**
   See Section 5.4, “Replacing the Tape Drive” and Section 5.9, “Replacing the Tape Auto-Loader Cover.”

5.7 Removing the I/O Bracket and Fan Assembly

1. **Disconnect the external SCSI cable from the back of the auto-loader enclosure.**
2. **Remove the cover.**
   See Section 5.1, “Removing the Tape Auto-Loader Cover” in this chapter.
3. **Remove the power supply.**
   See Section 5.5, “Removing the Power Supply.”
4. **Remove the tape drive assembly.**
   See Section 5.2, “Removing the Tape Drive.”
5. **Locate the I/O bracket assembly.**
   See Figure 5-18.

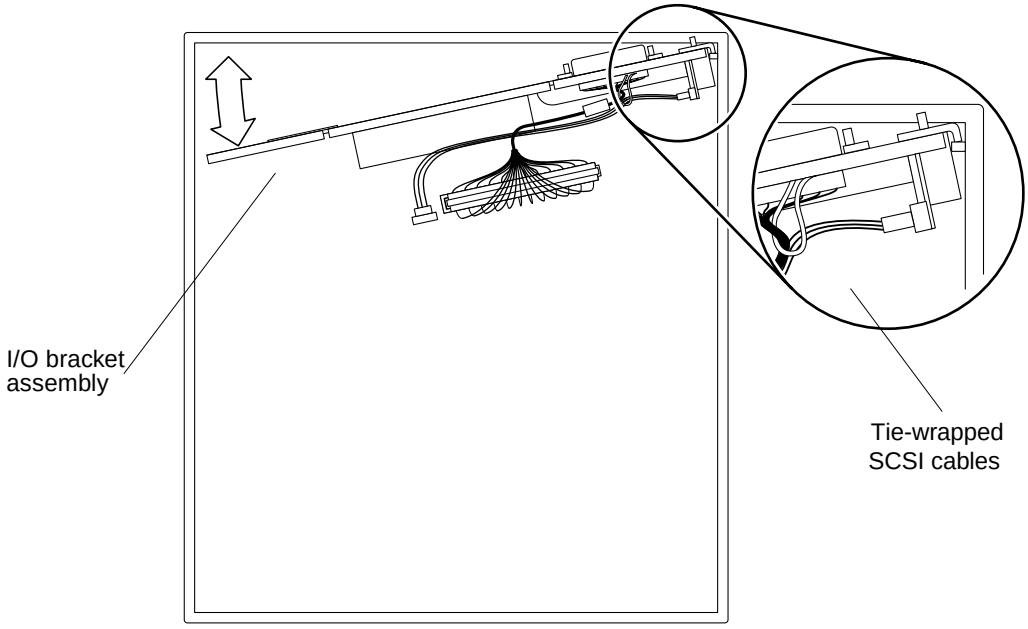


Figure 5-18 I/O Bracket and Fan Assembly

Note – A tie-wrap secures the SCSI data and ID cables to a metal loop on the I/O bracket. Make sure that the cover closes properly without catching or pinching any cables.

Note – If you are installing a new I/O bracket assembly, you need to cut the tie-wrap and put these cables aside to be installed with the replacement I/O bracket.

6. **Grasp the left side of the I/O bracket assembly. Lift the I/O bracket assembly straight up and away from the auto-loader chassis.**
   Put the I/O bracket assembly aside.

5.8 Replacing the I/O Bracket and Fan Assembly

1. **Lower the I/O bracket assembly into the rear of the auto-loader enclosure and slide it at an angle until it is pressed against the corner.**
   See Figure 5-19.

2. **Swing the left side of the bracket towards the rear of the auto-loader until the bracket is pressed firmly against the rear of the auto-loader chassis.**

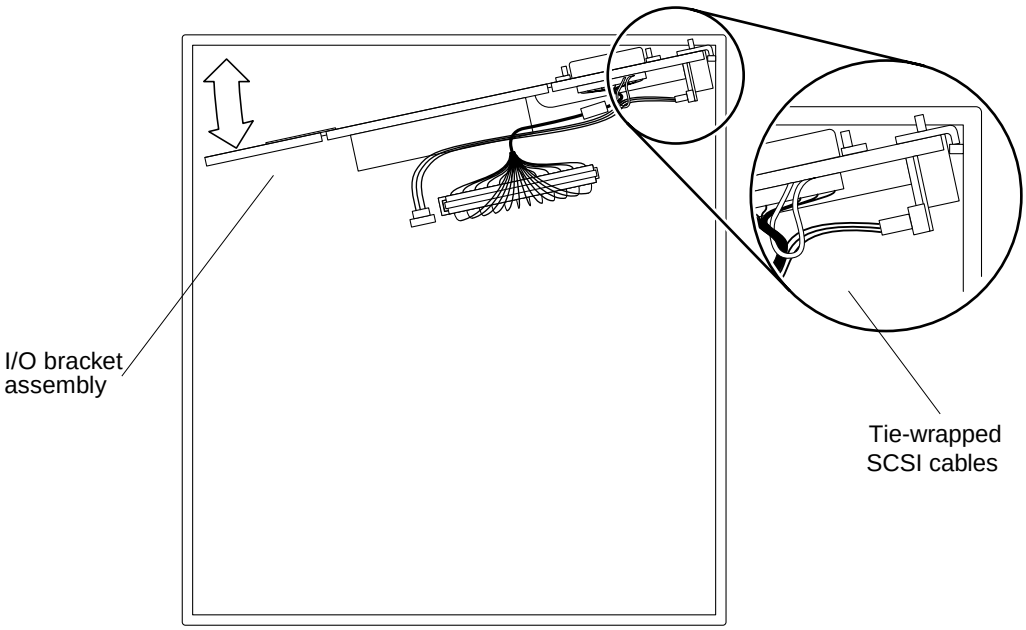


Figure 5-19 Replacing the I/O Bracket and Fan Assembly

3. **Replace the power supply.**
   See Section 5.6, “Replacing the Power Supply”).

4. **Replace the drive and connect the internal cables.**
   See Section 5.4, “Replacing the Tape Drive”).

5. **Replace the cover.**
   See Section 5.9, “Replacing the Tape Auto-Loader Cover”).

6. **Connect the external SCSI cable and power to the rear of the unit.**

5.9 Replacing the Tape Auto-Loader Cover

1. **Hold the cover so that the front of the cover is positioned over the front of the base.**
2. **The front of the chassis base has three small plastic hooks that need to fit over three matching plastic tabs in the front of the cover.**
3. **Tilt the rear of the cover up and slide the cover towards the rear of the Tape Auto-Loader.**
4. **Hook the three retaining tabs at the front of the cover to the base.**
   If the tabs do not hook properly on your first attempt, remove the cover and attempt to position the tabs until the tabs are hooked.

Caution – To avoid damaging the cover, do not force the retaining tabs or cover latches.

5. **Lower the rear of the cover until you hear the latching tabs snap into place on the inside of the enclosure.**
   See Figure 5-20.

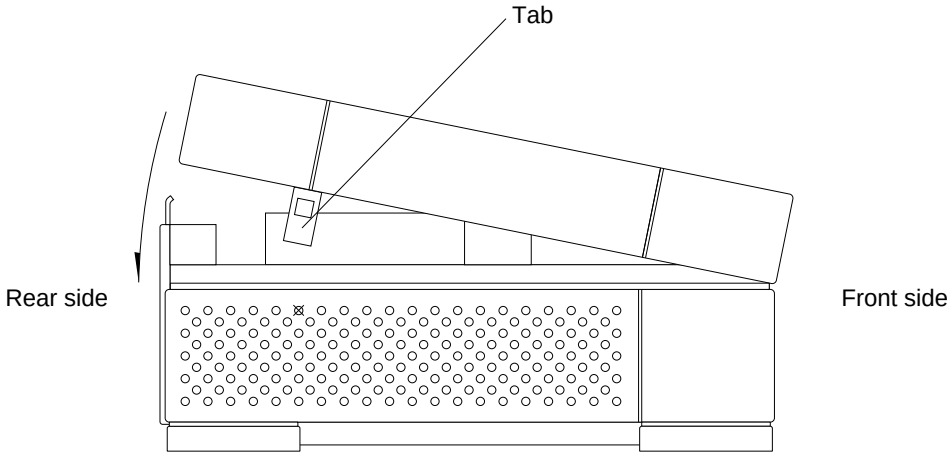


Figure 5-20 Closing the Cover and Securing the Latches

6. **Lift up on the rear of the cover to verify that the cover is securely fastened to the base.**

7. **Install the lock block at the rear of the cover.**
   See Figure 5-1. Tighten the screw and secure the lock block.

5.10 Shipping the Tape Auto-Loader Desktop Storage Module

If you need to return the entire unit to Sun, if the unit came with a restraint belt, you must attach the restraint belt to the unit before shipping the unit.

To attach the restraint belt to the unit:

1. **Place the tape drive assembly on an anti-static mat.**
   Position the unit with the bottom facing up and so that you have access to the front bezel.

2. **Install the restraint belt and faceplate on the auto-loader.**
   See Figure 2-2.

5.11 Shipping the Tape Auto-Loader Drive Unit

If you are returning just the tape drive to Sun, you must install the mylar sheet which came in the replacement drive in the defective drive before shipping the drive back to Sun.

To install the mylar (plastic) sheet:

1. **Turn the auto-loader upside down on an antistatic surface. Insert the mylar (plastic) sheet under the cover of the tape drive.**

2. **Align the holes in the mylar sheet with the holes on the bottom of the tape drive.**

3. **Insert the two screws into the holes on the bottom of the tape drive.**
   See Figure 5-9.

Hardware Overview 6

6.1 Hardware Overview

Table 6-1lists field replaceable units and part numbers. These part numbers are correct as of the publication date of this document, however, they are subject to change. Consult your authorized Sun sales representative or service provider to confirm part numbers before ordering new or replacement parts.

Table 6-1 Replacement Parts List

Replacement Part	Part Number
Tape Drive, 20Gbyte, 4mm	370-1616
Tape Magazine	370-1683
DDS-Tape Cartridge	370-1612
Cleaning Tape Cartridge	370-1613
Assembly, I/O Bracket*	540-2145
Power Supply	300-1080
External Cable, SCSI (.8 m)	530-1793
External Cable, SCSI (2 m)	530-1836
External Cable, SCSI (4 m)	530-1852
Internal Cable, SCSI “Y”	530-2125
Internal Cable, Address Select (ribbon)	530-2117
*** Contains the fan and internal cables**	

Figure 6-1 shows a top-down view of the unit with the cover removed.

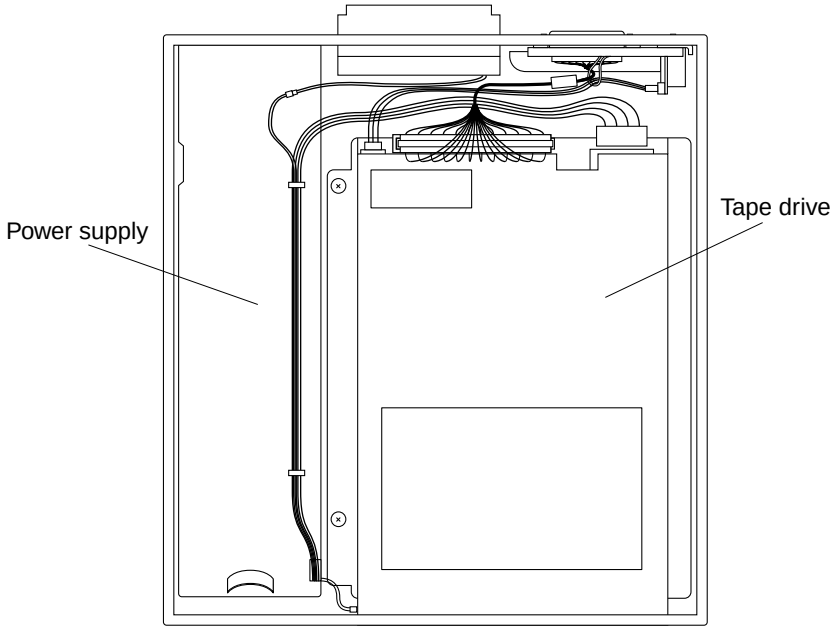


Figure 6-1 Top View of a Tape Auto-Loader with the Cover Removed

Figure 6-2 is an exploded view of the Tape Auto-Loader.

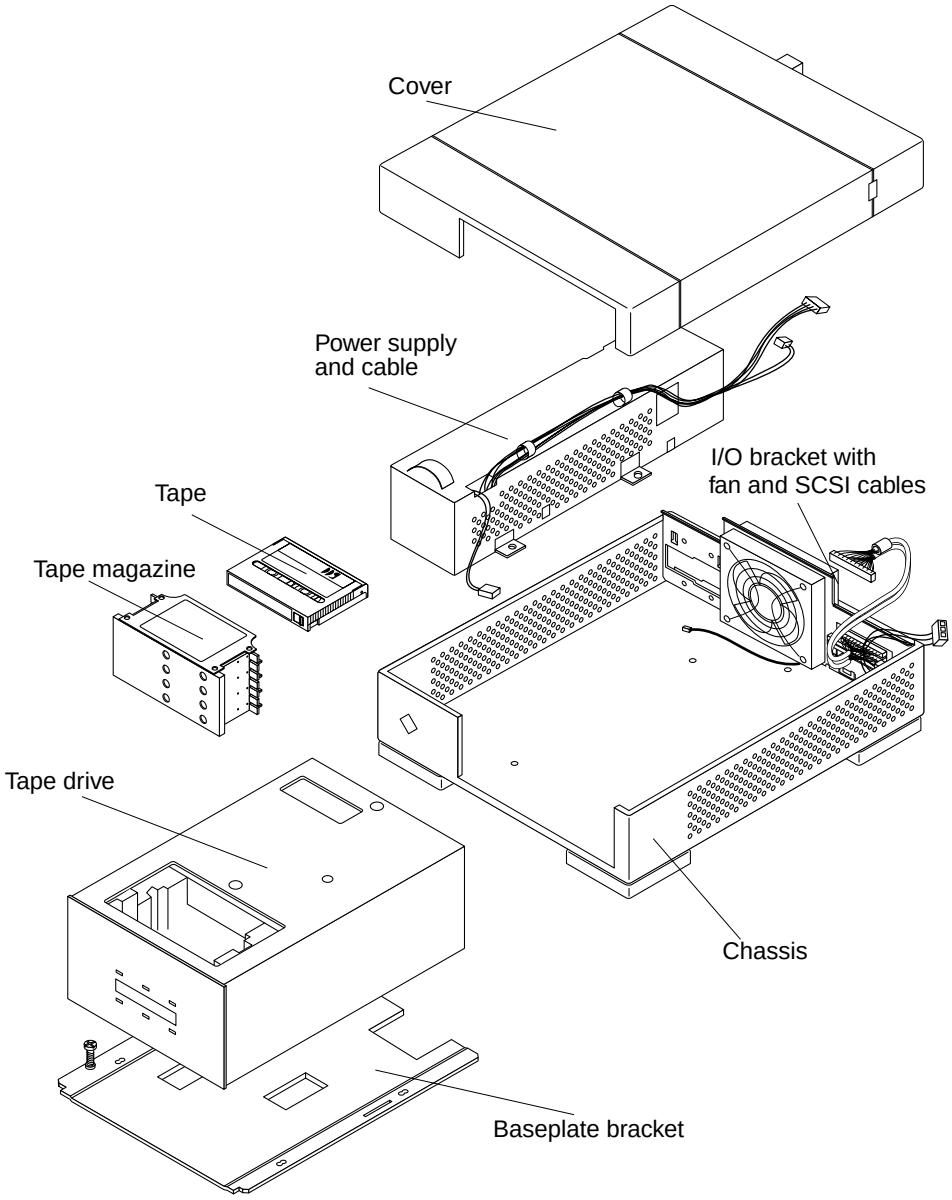


Figure 6-2 Tape Auto-Loader—Exploded View

6.2 Hardware Specifications

Table 6-2 lists the physical specifications for the Tape Auto-Loader.

Table 6-2 Physical Specifications

Dimension	Metric	U.S. Measurement
Height	82 mm	3.2 inches
Width	146 mm	5.7 inches
Depth	221 mm	8.0 inches
Weight	5.7 kg	12.5 pounds

6.3 Cabling

Cables supplied with Sun equipment should be long enough to meet your needs. If you need another length, ask your Sun sales representative about the availability of alternate length cables.

Some of the cables supplied with your Sun equipment must be specific lengths to conform with engineering and safety standards. For example, the SCSI cable supplied with your Tape Auto-Loader conforms to the SCSI bus length specification.

Warning – To avoid possible damage to the Tape Auto-Loader, use only the cables supplied with your unit or cables recommended by Sun.

6.4 Grounding and Power Requirements

The Tape Auto-Loader uses nominal input voltages of 100–120 VAC or 200–240 VAC. The Tape Auto-Loader automatically selects the correct input voltage. 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.

When planning equipment placement, remember that each of the following items requires that a separate power cord be plugged into a power outlet:

- System
- Monitor (if not using a power cord connected to a system outlet)
- Tape Auto-Loader
- Other external drives or peripherals

Warning – Do not use household extension cords with the Tape Auto-Loader. Not all power cords have the same current ratings. Household extension cords do not have overload protection, and are not meant to be used with computer systems and external storage devices.

Solaris 2.x Commands A

This appendix contains Solaris 2.x software commands and boot PROM monitor commands. The *Solaris 2.x Handbook for SMCC Peripherals* contains the software commands for all versions of the Solaris 2.x operating environment. Besides the instructions in this chapter, also refer to the *Solaris 2.x Handbook for SMCC Peripherals*.

A.1 Shutting Down the Computer System

This section describes two ways to shut down the computer system. Use `halt` if your system does not have users on it. Use `shutdown` if your system has users on it because the `shutdown` command notifies users that the system is going to be shut down.

1. **Save all your work.**
   Consult your software documentation for ending a work session.

2. **Exit from the windowing environment and wait for the operating system prompt.**
   See the documentation supplied with your windowing system.

3. **Type `su` to become superuser. Type your superuser password.**
   The system returns the # prompt.

4. **Type** `touch /reconfigure`**.**
   The `touch /reconfigure` command performs the same function as the `boot -r` command. It ensures that the operating environment checks for the presence of any newly installed devices when you power on or boot your system.

Note – Subsequent boot operations remove the `/reconfigure` file. You must type `touch /reconfigure` each time you install a new device in your system.

- If you have a server system and need to notify users that the system is going to go down, follow step 5.
- If you have a standalone system, follow step 6.

5. **If you have users on your system, shut down the system with this command. Type `/usr/sbin/shutdown -y -g30 -i0`.**
   The `0` in `g30` and `i0` are zeros. A message is sent notifying all users who are logged in that they have 30 seconds (`-g30`) before the system begins to shut down. The `ok` or `>` prompt is displayed once the system is shut down.

```
nevada% su
Password: <superuserpassword>
nevada# cd /
nevada# touch /reconfigure
nevada# /usr/sbin/shutdown -y -g30 -i0
.
.
.
ok
```

Go to step 7.

6. **If you have a standalone system, shut down the system. Type** `/usr/sbin/halt`.

```
nevada% su
Password: <superuserpassword>
nevada# cd /
nevada# touch /reconfigure
nevada# /usr/sbin/halt
Type b (boot), c (continue), or n (new command mode)
Halted
>
```

7. **If you are setting up the Tape Auto-Loader you will need to determine the assigned SCSI addresses. DO NOT turn the power off to the system. Instead, see Section A.2, "Determining Assigned SCSI Addresses."**

8. **Turn off power to all units:**

   a. **Press the switch on the system to the Off ○ position.**

   b. **Turn the monitor power switch off. ○**

   c. **Turn the power switch off to all peripherals connected to the system. ○**

A.2 Determining Assigned SCSI Addresses

If you have internal or external SCSI devices connected to your system, complete the following steps to determine SCSI addresses of SCSI devices connected to or installed in your computer system.

To determine assigned SCSI addresses:

1. **Shut down the operating system.**
   See Section A.1, "Shutting Down the Computer System."

Note – Do not turn the power switch off on the computer system.

---

2. **If you see the > prompt, type n.**
   If you see the ok prompt instead, go to step 3.

   The ok prompt is returned.

```
> n
ok
```

3. **At the ok prompt, reset the system. Type reset.**
   The operating system will boot (if autoboot is enabled).

```
ok reset
Operating system will boot (if autoboot enabled)
```

4. **After the word Testing appears, abort the boot of the operating system.**
   Press the L1(STOP)-a keys simultaneously. You will see the ok prompt.

```
ok reset
System reboots (if autoboot is enabled)
Testing
Press L1(Stop)-a keys simultaneously
ok
```

5. **Determine the assigned SCSI addresses.**
   - To determine the SCSI addresses of SCSI devices connected *only* to the built-in SCSI host adapter port of your system, go to the section “Built-In SCSI Port.”
   - To determine the SCSI addresses of *all SCSI buses* (the built-in SCSI host adapter port *and* all installed SBus cards containing a SCSI host adapter port), go to the section “All SCSI Ports.”

A.2.1 Built-In SCSI Port

To determine the SCSI addresses assigned to the built-in SCSI port:

1. **Type** `probe-scsi`**.**

```
ok probe-scsi
Target 3 Unit
   0 Disk <Manufacturer information.......>
Target 4
   Unit 0 Removable Tape <Manufacturer information.......>
Target 6
   Unit 0 Removable Read Only Device <Manufacturer
   information......>
```

The `probe-scsi` command returns the SCSI targets (SCSI addresses) and their unit number assigned by the system.

The unit number (unit 0) refers to the SCSI logical device number.

2. **Write down the SCSI addresses (3, 4, and 6 in the previous example).**

A.2.2 All SCSI Ports

To determine the SCSI addresses of *all SCSI buses* (all SCSI ports either built into the system or SBus cards with a SCSI host adapter port):

1. **Determine the boot PROM release by typing** `.version`**.**

```
ok .version
Release 2.6   Version .........
```

The `.version` command returns the release of the boot PROM in your system.

- If you have boot PROM release 2.6 or greater in your system, complete the steps in the section “Boot PROM Release 2.6 or Greater.”
- If you have boot PROM release lower than 2.6 in your system, complete the steps in the section “Boot PROM Release of at Least 2.0 but Lower Than 2.6.”

A.2.3 Boot PROM Release 2.6 or Greater

Follow these steps if you have boot PROM release 2.6 or greater.

1. **Type** `probe-scsi-all`**.**
   See Code Example A-1.

```
ok probe-scsi-all
/iommu@f,e0000000/sbus@f,e0001000/esp@3,200000
Target 6
    Unit 0 Removable Read Only device <Manufacturer
    information.......>
/iommu@f,e0000000/sbus@f,e0001000/dma@1,81000/esp@1,80000
Target 2
    Unit 0 Disk <Manufacturer information.......>
/iommu@f,e0000000/sbus@f,e0001000/espdma@f,400000/esp@f,800000
Target 1
    Unit 0 Disk <Manufacturer information.......>
Target 3
    Unit 0 Disk <Manufacturer information.......>
ok
```

Code Example A-1 Example of the `probe-scsi-all` Command

The `probe-scsi-all` command returns the SCSI targets (SCSI addresses) assigned to each SCSI device for every SCSI host adapter port (SCSI bus) and their unit number. The unit number refers to the SCSI logical device number.

Each SCSI host adapter port returned by the `probe-scsi-all` command (refer to Code Example A-1) is identified by a unique system hardware pathname. For example:
`/iommu@f,e0000000/sbus@f,e0001000/esp@3,200000`

In the first listing, ending with `esp@3,200000:`

`3`	Refers to the physical SBus slot number in which the SBus card is installed.
`200000`	Refers to the device address offset.
`Target 6`	Refers to the SCSI target (SCSI address) the CD-ROM drive (removable read only device) is set to.

In the second listing, ending with `esp@1,80000`:

`1`	Refers to the physical SBus slot number in which the SBus card is installed.
`80000`	Refers to the device address offset.
`Target 2`	Refers to the SCSI target (SCSI address) the disk drive is set to.

In the last listing, ending with `espdma@f,400000/esp@f,800000`:

`f`	Means that the SCSI host adapter port is built into the computer system. This may vary from system to system.
`400000`	Refers to the device address offset.
`Target 3`	Refers to the SCSI target (SCSI address) an internal disk drive is set to.
`Target 1`	Refers to the SCSI target (SCSI address) an internal disk drive is set to.

2. **Look at the entries beginning with `esp@` or `dma@` and with a number following `esp@` or `dma@`.**

   a. **If you have a single processor system such as a SPARCstation 2, IPC, ELC, or IPX, these systems have their built-in SCSI ports set at SCSI address 0 (`esp@0, . . .`).**
   Look for a number *1 or greater* following `esp@`.

   b. **If you have a multiprocessor system such as a SPARCstation 10, SPARCclassic, SPARCstation LX, or a SPARCserver 1000 series system, these systems have their built-in SCSI host adapter port set to SBus address f (`esp@f, . . .`).**
   Look for a number 0 *or greater* following `esp@`.

3. **Write down the SCSI targets returned by the `probe-scsi-all` command for the possible SCSI host adapter ports you might connect the Tape Auto-Loader to.**

A.2.4 Boot PROM Release of at Least 2.0 but Lower Than 2.6

Follow these steps if you have boot PROM release of at least 2.0 but lower than 2.6.

1. **Change to the `/sbus` directory. List the contents of the directory. Type `cd /sbus` then type `ls`.**
   You'll see a listing something like this returned by the `ls` command.

```
ok cd /sbus
ok ls
ffd496c0   espdma@f,400000
ffd4f240   dma@1,81000
ffd53f30   cgsix@2,0
ffd2690    lebuffer1,40000
ffd4f160   SUNW,DBRdcf,801000
ffd4err0   SUNW,bpp@f,4800000
ffd4cd60   ledma@f,400010
ffd566b0   esp@3,200000
ffd564f0   dma@1,200000
```

Code Example A-2 Sample Listing of `/sbus`

2. **Look at the entries beginning with `esp@` or `dma@` and with a number following `esp@` or `dma@`.**

   a. **If you have a single processor system such as a 2, IPC, ELC, or IPX, these systems have their built-in SCSI host adapter ports set at SCSI address 0 (`esp@0, . . . .`).**
   Look for a number *1 or greater* following `esp@`.

   b. **If you have a multiprocessor system such as a SPARCstation 10, SPARCclassic, SPARCstation LX, or a SPARCserver 1000 series system, these systems have their built-in SCSI host adapter port set to SBus address f (`esp@f, . . . .`).**
   Look for a number 0 *or greater* following `esp@`.

   In the `dma@1,81000` example:

`1`	Refers to the physical SBus slot number the SBus card containing the SCSI host adapter port (FSBE/S SBus card in this example) is installed in.
`81000`	Refers to the device address offset.

In the `esp@3,200000` example:

`3`	Refers to the physical SBus slot number the SBus card containing the SCSI host adapter port (SBus SCSI Host Adapter card in this example) is installed in.
`200000`	Refers to the device address offset.

In the `espdma@f,400000` example:

`f`	Means that the SCSI host adapter port is built into the computer system. This may vary from system to system.
`400000`	Refers to the device address offset.

3. **Write down the identifier for the SBus card, the physical SBus slot, and the device address offset. For example,** `dma@1,81000`**.**

4. **Select the SBus device (card) you want to obtain SCSI addresses for. Next, list the SCSI devices connected to the SBus card.**
   To do this, complete steps a and b.

   a. **Select the SBus card (refer to Code Example A-2). Type the** *complete path name* **of the SBus card beginning with "** `/iommu/sbus/....`**" After the complete path name, type** `select-dev`**.**

   b. **List all SCSI devices connected to the SBus card. Type** `show-children`**.**
   Refer to Code Examples A-3 and A-4.

Code example 2-3 shows selecting an FSBE/S or SBE/S SBus card in SBus slot 1 and displaying the SCSI devices connected to the SBus card. The `show-children` command shows that one disk drive, set to SCSI target (address) 2, is connected to the SBus card.

Note – Press the space bar after every quotation mark (").

```
ok " /iommu/sbus/dma@1,81000/esp@1,80000" select-dev
ok show-children
Target 2
    Unit 0 Disk <Manufacturer information.......>
```

Code Example A-3 SCSI Devices Connected to an FSBE/S or SBE/S Installed in SBus Slot 1

Code example A-4 shows selecting the SBus SCSI Host Adapter SBus card in SBus slot 3 and displays the SCSI devices connected to the SBus card. The `show-children` command shows that one CD-ROM drive (removable read only media) set to SCSI target (address) 6 is connected to the SBus card.

Note – Press the space bar after every quotation mark (“).

```
ok " /iommu/sbus/esp@3,200000" select-dev
ok show-children
Target 6
    Unit 0 Removable Read Only device <Manufacturer
    information.......>
```

Code Example A-4 SCSI Devices Connected to an SBus SCSI Host Adapter Installed in SBus Slot 3

A.3 Configuring the System

If you typed `touch /reconfigure` *before you shut down the system*

1. **Turn on power to the on (| position) in this order.**
   - Tape Auto-Loader (or unit with SCSI terminator attached)
   - Continue turning on SCSI peripherals ending with the SCSI peripheral directly connected to the computer system
   - Monitor
   - Computer system

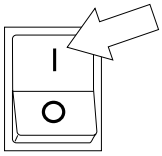


Figure A-1 Power Switch in the On Position

After you power on the system after installing the Tape Auto-Loader, the Solaris 2.x operating environment automatically configures the system by assigning a device address to the tape drive if:

- SCSI address is correctly set
- Operating environment has been properly shut down as described in Section A.1, “Shutting Down the Computer System.”

If you did not type `touch /reconfigure`

If you did not type the `touch /reconfigure` command (as explained in this manual) BEFORE you shut down the system (`/reconfigure` is removed during the boot operation):

1. **Turn on power to the on (| position) in this order.**
   - Tape Auto-Loader (or unit with SCSI terminator attached)
   - Continue turning on SCSI peripherals ending with the SCSI peripheral directly connected to the computer system
   - Monitor
   - Computer system

   See Figure A-1.

2. **After the system banner appears, abort the boot of the operating system by typing the `Stop(L1)-a` keys simultaneously (or the `Break` key for tty terminals).**

3. **If you see the > prompt, type `n` to get to the `ok` prompt.**

4. **At the** `ok` **prompt, type** `boot -r`**.**

```
> n
ok boot -r
.
.
.
Login: <loginname>
```

The operating system will reboot and the newly installed tape drive will be recognized by the operating system.

A.3.1 Fixing a Bug in the Solaris 2.2 Operating Environment

If you are running the Solaris 2.2 operating environment (SunOS 5.2) (use `uname -rs` to determine the operating system your system is running,) you must add a line to the `/etc/system` file to work around an existing bug in that version of the operating system; do *not* follow the procedures in this section if your system is running on any operating environment other than Solaris 2.2.

The following procedure will turn off the soft error reporting function in the driver; you must perform this procedure to avoid possible system failures when the tape drive is accessed. Once performed, this one-time procedure will reside on the system for all future reboot operations.

Note – This procedure applies only to the Solaris 2.2 version of the operating environment.

To modify the `/etc/system` file:

1. **Enter the following boldfaced commands to become superuser and change directories**:

```
prompt% su
Password: <superuser password>
prompt# cd /etc
```

2. **Enter the following boldfaced commands to use the vi editor to edit the** `system` **file, move to the last line of the file and activate the insert mode:**

```
prompt# vi system
G
o
```

3. **Type the following line into the file:**

```
set st:st_report_soft_errors_on_close=0
```

The example below shows the placement of this line in the file:

```
set:

     Set an integer variable in the kernel or a module to a new
     value.
     This facility should be used with caution.  See system(4).

     Examples:

     To set variables in 'unix':

        set nautopush=32
        set maxusers=40

     To set a variable named 'debug' in the module named
     'test_module'

        set test_module:debug = 0x13

set nfs:nfs_fastpath=0
set st:st_report_soft_errors_on_close=0     <added line>
```

4. **Press the Escape key and type the following to save the changes and exit the vi editor:**

```
:wq
```

Note – The system must be rebooted to invoke the changes made in the preceding steps.

To reboot the system:

1. **Type `su` to become superuser.**
2. **Type your superuser password.**
   You will see the # prompt.
3. **Type `fastboot` at the # prompt.**
   This command halts the system then reboots it.

A.4 Rewinding a Tape

To rewind a tape:

♦ **Type**

```
% mt -f /dev/device name rewind
```

See Table A-1 in Section A.5.1, “Device Address for Built-In SCSI Support” for the device name.

A.5 Backup Tools

To back up data files and file systems or partitions on a tape cartridge, use any of the following commands:

- `cpio`
- `dd`
- `ufsdump`
- `ufsrestore`
- `tar`

For an explanation of each command, its options and arguments, refer to the sections that follow or to the on-line *man* pages. Although you can use any of these commands, you may want to use the `ufsdump` and `ufsrestore` commands because they are easy to use.

Before you can use these commands, you need to find out whether the tape is ready to receive data by displaying the status of the tape drive.

Note – If you have a 5.0 Gbyte 4mm DDS device, use a blocking factor of 96 instead of the default factor of 20 to optimize performance. The blocking factor of 96 translates to 48 Kbytes per transfer.

A.5.1 Device Address for Built-In SCSI Support

Table A-1 shows the device address for the first and second tape drives in a SCSI chain. Use the device addresses when using a program to backup and restore files to and from tape described later in this chapter.

Table A-1 Device Address for Built-In SCSI Support

Tape Drive	**Recommended SCSI Addresses for Solaris 2.1 and Later Releases**	**Device Address for Built-In SCSI Support**
First tape drive	4	`/dev/rmt/0u` or `/dev/rmt/0c` or `/dev/rmt/0h` or `/dev/rmt/0m` or `/dev/rmt/0l` or `/dev/rmt/0`
Second tape drive	5	`/dev/rmt/1u` or `/dev/rmt/1c` or `/dev/rmt/1h` or `/dev/rmt/0m` or `/dev/rmt/1l` or `/dev/rmt/1`

A.5.2 Displaying the Status of a Tape Drive

1. **Insert the tape into the magazine.**
   See Section 3.1.2, “Buttons” in Chapter 3, “Using the Tape Auto-Loader.”

2. **Enter**

```
% mt -f /dev/rmt/0 status
```

This command looks for and “finds” the tape drive whose device address or device name is `/dev/rmt/0`. It then displays the status of the tape drive.

Note – If you have more than one tape drive connected to your system, you execute the same command but change the device address from `dev/rmt/0` to `/dev/rmt/1`, `/dev/rmt/2`, etc.

If the status is displayed as follows, your system is able to access the tape.

```
Conner tape drive:
  sense key(0x0)= nosense     residual= 0 retries= 0
  file no= 0    block no= 0
```

`sense key= nosense` indicates that your system was able to access the tape and there were no errors. You can then use any of the backup commands described in the following sections.

If the status is displayed as follows after you have just inserted a tape cartridge, your system is not able to access the tape.

```
Conner tape drive:
  sense key(0x6)= unit attention     residual= 0 retries= 0
  file no= 0    block no= 0
```

In this case, execute the `mt -f /dev/rmt/0 status` command again until the `sense key(0x6)= unit attention` advisory message is replaced with the `sense key(0x0)= nosense` message.

If the status is displayed as follows, your system is unable to access the tape.

```
/dev/rmt/0: no tape loaded or drive offline
```

In this case, turn on your tape drive, insert a tape, and then execute the `mt -f /dev/rmt/0 status` command again.

A.5.3 `cpio` *Command*

The `cpio` command copies files from a hard disk to a tape as well as from a tape to a hard disk.

If you need more than one tape to back up files that are resident on your hard disk, use this command. This feature of the `cpio` command is referred to as *multiple-volume interchange*.

If you need to back up only a few files, you can use the `tar` command or the `ufsdump` command. The `tar` command supports only *single-volume interchange*.

The following example shows how to copy the files in your working directory called `/work` and all directories "below" your working directory to a tape drive whose device address or device name is `/dev/rmt/0`.

```
example# cd /work
example# ls -R | cpio -ocB > /dev/rmt/0
```

The next example explains how to copy the files that are located on your tape back to your hard disk.

```
example# cd /work
example# cpio -icdB < /dev/rmt/0
```

- The `c` option indicates that header information has been written in ASCII format for portability.
- The `d` option indicates that as many directories as needed will be created.

- The B option, which you must use whenever you copy files or files systems to and from a tape drive, indicates that the input has a blocking factor of 5120 bytes to the record.

Note – You must use the same blocking factor when you retrieve or copy files from the tape to the hard disk as you did when you copied files from the hard disk to the tape. Therefore, you must specify the B option.

A.5.4 dd *Command*

This command converts and copies files that have various data formats. The most common usage of this command is to transfer a file system or partition from your hard disk to a tape. You can also use it to copy files from one hard disk to another.

The following example shows how to write the file system or partition /user/sunsystem to a 4mm tape drive whose device address or device name is /dev/rmt/0. The blocking factor is 96 in this example. This example has been optimized for the Tape Auto-Loader.

```
example# dd if=/user/sunsystem of=/dev/rmt/0 bs=96b
```

A.5.5 ufsdump *Command*

The ufsdump command copies a file system that is resident on a hard disk to a tape.

Note – This command does not allow you to copy files from different file systems or partitions. All files have to be part of one file system or one partition. If you wish to copy files from different file systems or partitions, use the ufsdump command or the tar command.

The following example explains how to copy all files that are located on a disk drive in partition `/dev/rdsk/c0t3d0s2` to a file (often referred to as a *dump file*) called `/dev/rmt/2c` in compressed mode.

```
example# ufsdump 0ubf 96 /dev/rmt/2c /dev/rdsk/c0t3d0s2
```

- The `0` option represents the dump level. A level 0 dump copies the entire file system to a dump file, which in this case is called `/dev/rmt/2`. You can specify any number between 0 and 9.
- The `u` option updates the dump record by adding an entry to the file `/etc/dumpdates` for each file system that has been successfully copied. It updates the `/etc/dumpdates` file by adding the name of every file system, the date the file system was copied, and the dump level that was specified at that time.
- The *b* option specifies the blocking factor that is to be used when the files are copied to the tape. The default blocking factor is 20. The blocking factor is 96 in this example. This example has been optimized for the Tape Auto-Loader.
- The `f` option specifies the device address or device name of the tape drive, which is `/dev/rmt/2` in this example.
- `/dev/rdsk/c0t3d0s2` is the device name or address of the source device where files are located that you want to copy. In this example it is the second partition on the third hard disk that is connected to your system.

A.5.6 `ufsrestore` *Command*

The `ufsrestore` command copies file systems from a tape to a hard disk. It can only copy file systems that were previously copied from a hard disk to a tape with the `ufsdump` command.

The following example explains how to copy all files that are located on a tape drive in the `/man` directory and whose device address or device name is `/dev/rmt/0` to a hard disk. However, you must first go to the directory into which you wish to copy the file systems or partitions before you attempt to

retrieve or extract any files. In this example, the directory into which all files systems or partitions will be copied is `disk2`, and the blocking factor is 96. This example has been optimized for the Tape Auto-Loader.

```
example# cd /disk2
example# ufsrestore irfb 96 /dev/rmt/0
```

Note – You must use the same blocking factor when you retrieve or copy files from the tape to the hard disk as you did when you copied files from the hard disk to the tape. Therefore, you must specify the `b` option.

The system responds with a `ufsrestore` prompt. If you enter a question mark, a list of available arguments is displayed.

```
Available commands are:
  ls [arg] - list directory
  cd arg - change directory
  pwd - print current directory
  add [arg] - add ‘arg’ to list of files to be extracted
  delete [arg] - delete ‘arg’ from list of files to be extracted
  extract - extract requested files
  setmodes - set modes of requested directories
  quit - immediately exit program
  what - list dump header information
  verbose - toggle verbose flag (useful with “ls”)
  help or ‘?’ - print this list
IF no ‘arg’ is supplied, the current directory is used
```

You can now list the directories that are resident on the tape by entering `ls`.

```
ufsrestore > ls
4lib/     dict        mail    openwin      spool
5bin      games       man/    preserve     src
adm       include/    net     pub          tmp
```

You are now ready to select the directories or files by using the `add` argument.

```
ufsrestore > add man
```

You can copy the `man/` directory from the tape to the hard disk. An asterisk is displayed next to the `man/` directory.

```
ufsrestore > ls
4lib/      dict        mail     openwin      spool
5bin       games      *man/     preserve     src
adm        include/    net      pub          tmp
```

Now you can extract or copy the files located in the `man/` directory on the tape.

```
ufsrestore > extract
```

This completes the extraction or copying of the files in the `man/` directory located on the tape.

A.5.7 `tar` *Command*

The `tar` command copies file systems or individual files from a hard disk to a tape (writing to tape) or from a tape to a hard disk (reading from tape). If you need more than one tape to back up files that are resident on your hard disk, use the `cpio` command or the `ufsdump` command. The `tar` command only supports *single-volume interchange.*

The following example explains how to copy files from a hard disk to a tape.

```
example# tar cvbf 96 /dev/rmt/1 filename
```

- In this example the `tar` command copies files to a tape drive whose device name or address is `/dev/rmt/1` by using the `c` option.
  - The `f` option allows you to designate the device name or address of the source drive, which is the tape drive in this example.

- The v option allows the system to display information about each file it copies.
- The b option allows you to designate the blocking factor, which in this example is 96. This example has been optimized for the Tape Auto-Loader.

The next example explains how to copy files from a tape to the current working directory located on a hard disk.

```
example# tar xvbf 96 /dev/rmt/1
```

- In this example the tar command copies files to your current working directory located on the hard disk by using the x option.
  - The f option allows you to designate the device name or address of the destination drive, which are all the files on the tape cartridge in this example.
  - The v option allows the system to display information about each file it copies.
  - The b option allows you to designate the blocking factor, which in this example is 96. This example has been optimized for the Tape Auto-Loader.

Note – You must use the same blocking factor when you retrieve or copy files from the tape to the hard disk as you did when you copied files from the hard disk to the tape.

Verifying DIP Switches B

The tape auto-loader has three sets of DIP switches that allow you to choose between several functions. The DIP switches are preset at the factory to default settings. They do not need to be changed or reset unless you have special requirements. If you change one or more DIP switches, the change will only take effect after powering off the unit and powering it on again.

Tables in this section list the DIP switch settings and functionality. In the tables, the default settings are in **bold** type. The *drawer* DIP switches let you choose between the following functions:

- **Horizontal** vs. vertical messages in the message window
- **Auto-insertion for the first cartridge** vs. no auto-insertion
- **Cycle to the first cartridge after the last cartridge is ejected** vs. stopping after the last cartridge

---

Note – The drawer dip switch function “Cycle to the first cartridge after last cartridge is ejected” is primarily for read operations. The unit will always load the first tape even if the tape has data on it. Applications must be careful not to overrun the number of tape cartridges installed.

If you mostly do write operations, change this switch to “Stop After Last Cartridge.”

Note – The drawer DIP switch function “Horizontal vs. vertical messages” in the message window should be changed if you run the unit on its side. The auto-loader must be operated on its left side or in the horizontal position. DO NOT run the unit on the right side. If you run the unit on the left side, it must be installed on the optional base for proper airflow.

The *internal* DIP switches let you choose between the following functions:

- Change the language in the message window to **English**, French, German, or Spanish
- **High-intensity display** vs. normal-intensity display in the message window
- **Self-test for the auto-loader** vs. no self-test

The *rear* DIP switches let you enable or disable the following functions:

- SCSI address
- SCSI-1 or SCSI-2 functionality
- SCSI bus parity
- Data compression (default)
- Self-test at power on

B.1 Drawer DIP Switch Settings

To change the settings on the drawer DIP switches:

1. **Turn the unit ON. Toggle the on/off switch on the left rear of the auto-loader to the ON (|) position.**
2. **Press the Open/Close button located on the auto-loader front panel to open the drawer.**
   See Figure B-1.

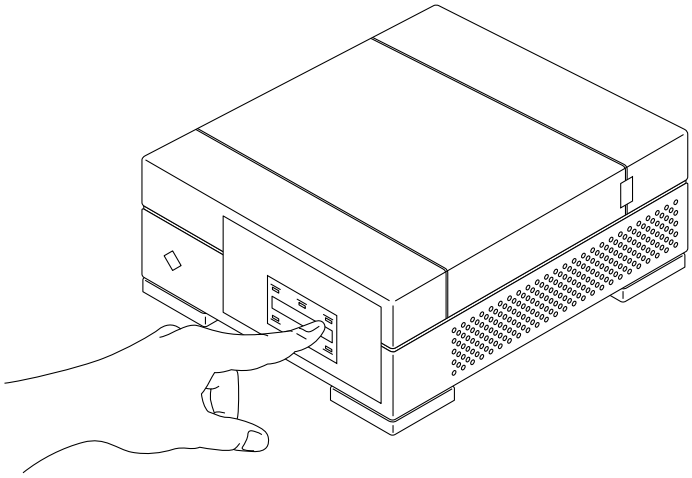


Figure B-1 Auto-Loader Open / Close Button

3. **Lift and remove the small cover over the drawer DIP switches.**
   See Figure B-2.

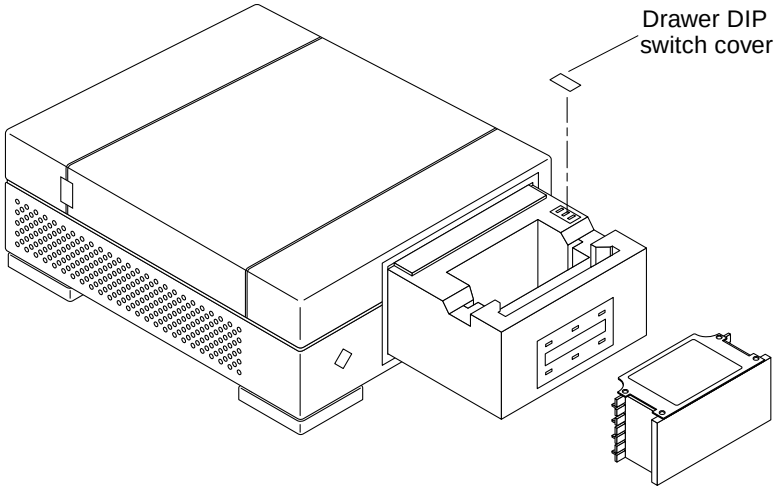


Figure B-2 Drawer DIP Switch Cover

4. **Locate the DIP switches on the right side of the drawer.**
   See Figure B-3.

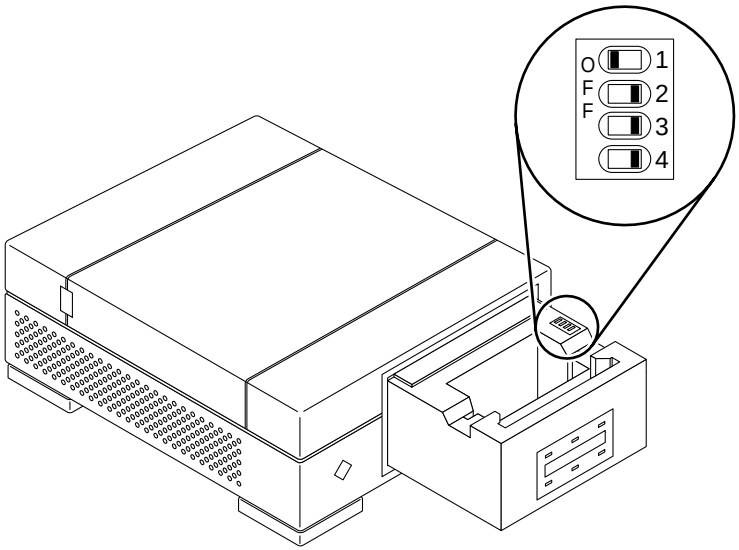


Figure B-3 Drawer DIP Switches and Default Settings

5. **Change the settings on the drawer DIP switches.**
   Table B-1 gives the settings for the drawer DIP switches.

Note – Default DIP switch settings are shown in **bold** type. Switch 3 in the ON position will always cause the unit to load the first tape after ejecting the last tape. You run the risk of overwriting data on the first tape if the fourth tape is filled.

Table B-1 Drawer DIP Switches and Functions

	1	2	3	4
OFF	**Horizontal message window display**	Do not auto-insert first tape cartridge	Stop after last tape cartridge	Not used
ON	Vertical message window display	**Auto-insert first tape cartridge**	**Go to first tape cartridge after last tape cartridge**	**Not used**

Note – Switch 3 in the ON position will always cause the unit to load the first tape after ejecting the last tape. You run the risk of overwriting data on the first tape if the fourth tape is filled.

6. **Replace the small drawer DIP switch cover and press it firmly into place.**

Note – This cover is required for ESD compliance.

7. **Press the Open/Close button located on the auto-loader front panel to close the drawer.**
   a. **If no more changes are required to DIP switch settings, you need to power cycle the drive to activate the DIP switch changes.**
   b. **If you need to change other DIP switch settings, go to the appropriate section in this appendix.**

B.2 Internal DIP Switch Settings

Warning – You must be a qualified service provider to perform the procedures in this section.

To change the settings on the internal DIP switches:

1. **Remove the top cover of the auto-loader.**
   See Section 5.1, “Removing the Tape Auto-Loader Cover.”
2. **Attach a wrist strap.**
   See step 3 in Section 5.2, “Removing the Tape Drive.”
3. **Make sure that the power cord is connected to the power plug and to the wall outlet.**

4. **Press the Open/Close button located on the auto-loader front panel to open the drawer.**
   See Figure B-4.

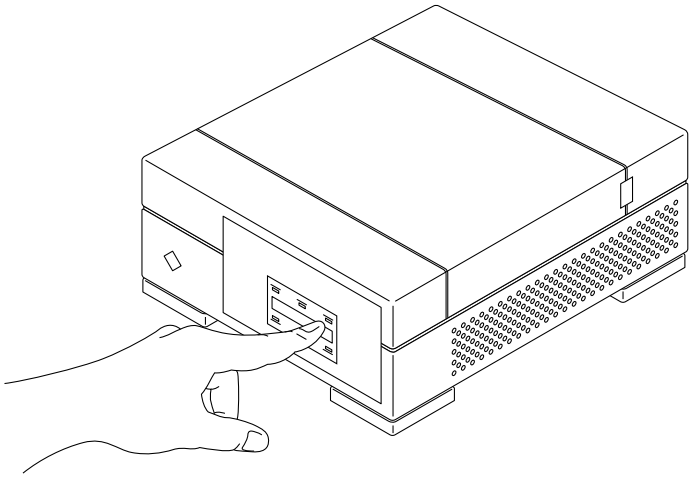


Figure B-4 Auto-Loader Open / Close Button

5. **Locate the DIP switches through the cut-out on top of the auto-loader.** See Figure B-5.

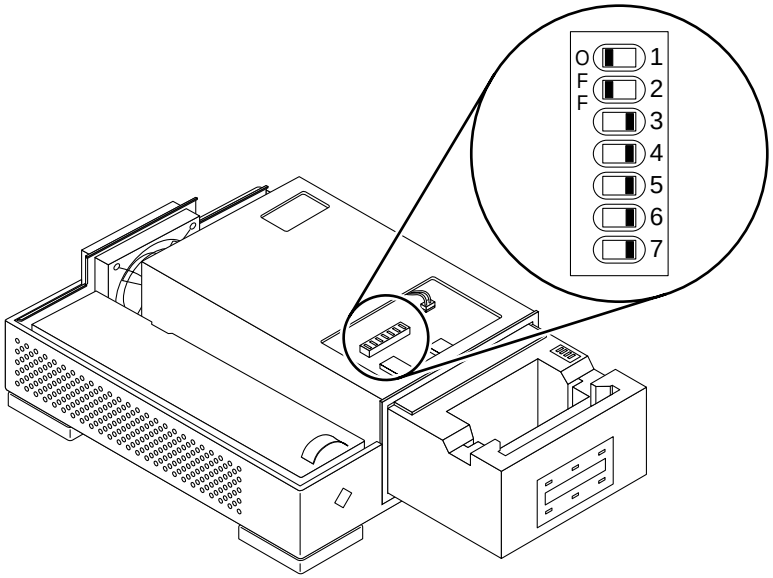


Figure B-5 Internal DIP Switches and Default DIP Switch Settings

6. **DIP switches 1 and 2 determine the language that is displayed in the message window. English is the default setting. To change the DIP switch setting and display a different language, see Table B-2.**

Table B-2 DIP Switches that Control the Message Window Displayed Language

	1	2
English	**OFF**	**OFF**
French	OFF	ON
German	ON	OFF
Spanish	ON	ON

7. **To change the settings of the remaining internal DIP switches, refer to Table B-3.**
   Internal DIP switches 3, 6, and 7 are reserved and are not used at this time.

Table B-3 Internal DIP Switches and Functions

	3	4	5	6	7
OFF	Reserved	Normal-intensity display	No self-test on auto-loader	Reserved	Reserved
ON	**Reserved**	**High-intensity display**	**Self-test on auto-loader**	**Reserved**	**Reserved**

8. **Remove the wrist strap.**
9. **Press the Open/Close button located on the auto-loader front panel to close the drawer.**
   a. **If no more changes are required to DIP switch settings, you need to power cycle the drive to activate the DIP switch changes.**
      See Section B.3, “Rear DIP Switch Settings.”
   b. **If you need to change other DIP switch settings, go to the appropriate section in this chapter.**

B.3 Rear DIP Switch Settings

Warning – You must be a qualified service provider to perform the procedures in this section.

To change the settings on the rear DIP switches:

1. **Remove top cover of the auto-loader.**
   See “Removing the Tape Auto-Loader Cover” in Chapter 5.
2. **Attach a wrist strap.**
   See “Step 3 in Section 5.2, “Removing the Tape Drive” in Chapter 5.
3. **Remove the tape drive assembly from the auto-loader.**
   See “Removing the Tape Drive” in Chapter 5.

4. **Make sure that the power cord is connected to the unit and to the wall outlet.**
   See Section 2.3, “Connecting the Tape Auto-Loader.”

5. **To change the settings of the remaining internal DIP switches, refer to Table B-4 and Figure B-6.**
   Rear DIP switch 7 is reserved and must be set to the OFF position.

Table B-4 Rear DIP Switch Settings

	1, 2, 3	4	5	6	7	8
OFF	**SCSI address=0 OFF=logic 0**	SCSI-1	Disable SCSI bus parity	**Data compression enabled**	**Reserved**	Self-test at power on disabled
ON	ON=logic 1	**SCSI-2 functionality enabled**	**Enable SCSI bus parity**	Data compression disabled	Reserved	**Self-test at power on enabled**

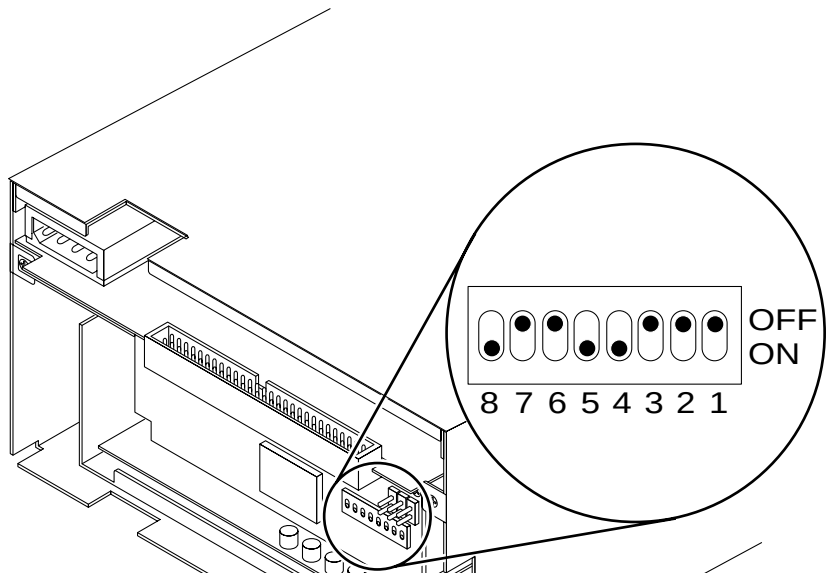


Figure B-6 Rear DIP Switches—Location and Default Settings

6. **Replace the drive and connect the internal cables.**
   See Section 5.4, “Replacing the Tape Drive.”

7. **Replace the cover.**
   See Section 5.9, “Replacing the Tape Auto-Loader Cover.”

8. **Power cycle the drive to activate the new DIP switch settings:**

   a. **Power off the auto-loader. Toggle the on/off switch on the left rear of the auto-loader to the OFF (O) position.**

   b. **Wait at least 10 seconds.**

   c. **Turn the on/off switch to the ON (|) position to power on the auto-loader.**

   d. **Wait for the tape auto-loader drive to power up completely. This takes about 30 seconds.**

Compliance Statements C

Before beginning any procedure, read the enclosed instructions and cautions. They explain how to work safely with the internal components of your system. These instructions have been translated to French, German, and Spanish, and can be found in this appendix. The English version is at the back of the Preface, at the front of this book.

C.1 Conformité aux Normes de Sécurité

Cette appendice traite des mesures de sécurité qu'il convient de suivre pour l'installation d'un produit Sun Microsystems, Inc.

C.1.1 Mesures de Sécurité

Pour votre protection, veuillez prendre les précautions suivantes pendant l'installation du matériel:

- Suivre tous les avertissements et toutes les instructions inscrites sur le matériel.
- Vérifier que la tension et la fréquence de la source d'alimentation électrique correspondent à la tension et à la fréquence indiquées sur l'étiquette de classification de l'appareil.

- Ne jamais introduire d'objet quel qu'il soit dans une des ouvertures de l'appareil. Vous pourriez vous trouver en présence d'éléments haute tension. Tout objet conducteur introduit de la sorte pourrait produire un court-circuit qui entraînerait des flammes, des risques d'électrocution ou des dégâts matériels.

C.1.2 Symboles

Vous trouverez ci-dessous la signification des différents symboles utilisés:

Attention – Risques de blessures corporelles et de dégâts matériels. Veuillez suivre les instructions.

Avertissement – Présence de tensions dangereuses. Pour éviter les risques d'électrocution et de danger pour la santé physique, veuillez suivre les instructions.

Marche – Le commutateur marche/arrêt principal est en position de *marche*.

Arrêt – Le commutateur marche/arrêt principal est en position *d'arrêt*.

C.1.3 Modification du Matériel

Ne pas apporter de modification mécanique ou électrique au matériel. Sun Microsystems, Inc., n'est pas responsable de la conformité réglementaire d'un produit Sun qui a été modifié.

C.1.4 Positionnement d'un Produit Sun

Attention – Pour assurer le bon fonctionnement de votre produit Sun et pour l'empêcher de surchauffer, il convient de ne pas obstruer ni recouvrir les ouvertures prévues dans l'appareil. Un produit Sun ne doit jamais être placé à proximité d'un radiateur ou d'un registre de chaleur.

C.1.5 Connexion du cordon d'alimentation

Avertissement – Les produits Sun sont conçus pour fonctionner avec des alimentations monophasées munies d'un conducteur neutre mis à la terre. Pour écarter les risques d'électrocution, ne pas brancher de produit Sun dans un autre type d'alimentation secteur. En cas de doute quant au type d'alimentation électrique du local, veuillez vous adresser au directeur de l'exploitation ou à un électricien qualifié.

Avertissement – Tous les cordons d'alimentation n'ont pas forcément la même puissance nominale en matière de courant. Les rallonges d'usage domestique n'offrent pas de protection contre les surcharges et ne sont pas prévues pour les systèmes d'ordinateurs. Ne pas utiliser de rallonge d'usage domestique avec votre produit Sun.

Avertissement – Votre produit Sun a été livré équipé d'un cordon d'alimentation à trois fils du type avec prise de terre. Pour écarter les risques d'électrocution, toujours brancher ce cordon dans une prise mise à la terre.

C.1.6 Couvercle

Attention – Il est dangereux de faire fonctionner un produit Sun sans le couvercle en place. Si l'on néglige cette précaution, on encourt des risques de blessures corporelles et de dégâts matériels.

C.2 Sicherheitsbehördliche Vorschriften

In diesem Anhang werden die Sicherheitsmaßnahmen beschrieben, die bei der Installation eines Produkts von Sun Microsystems, Inc., zu befolgen sind.

C.2.1 Sicherheitsmaßnahmen

Beachten Sie zu Ihrem eigenen Schutz die folgenden Sicherheitsmaßnahmen, wenn Sie Ihre Geräte aufbauen:

- Beachten Sie alle auf den Geräten angebrachten Warnungen und Anweisungen.
- Vergewissern Sie sich, daß Spannung und Frequenz Ihrer Stromquelle mit der Spannung und Frequenz übereinstimmen, die auf dem Etikett mit den elektrischen Nennwerten des Geräts angegeben sind.
- Stecken Sie niemals irgendwelche Gegenstände in Öffnungen in den Geräten. Es können gefährliche Spannungen vorliegen. Leitfähige fremde Gegenstände könnten einen Kurzschluß verursachen, der zu Feuer, Elektroschock oder einer Beschädigung Ihrer Geräte führen könnte.

C.2.2 Symbole

Die verwendeten Symbole haben die folgende Bedeutung:

Vorsicht – Gefahr von Personenverletzung und Geräteschaden. Anweisungen befolgen.

Warnung – Gefährliche Spannungen. Zur Reduzierung des Elektroschockrisikos und der Gesundheitsgefährdung die Anweisungen befolgen.

Ein – Der Hauptschalter steht auf *Ein.*

Aus – Der Hauptschalter steht auf *Aus.*

C.2.3 Änderung der Geräte

Nehmen Sie keine mechanischen oder elektrischen Änderungen an den Geräten vor. Sun Microsystems, Inc., ist nicht verantwortlich für die Einhaltung behördlicher Vorschriften, wenn an einem Sun-Produkt Änderungen vorgenommen wurden.

C.2.4 Aufstellungsort eines Sun-Produkts

Vorsicht – Um einen zuverlässigen Betrieb Ihres Sun-Produkts zu gewährleisten und es vor Überhitzung zu schützen, dürfen die Öffnungen im Gerät nicht blockiert oder bedeckt werden. Ein Sun-Produkt sollte niemals in der Nähe eines Heizkörpers oder einer Heizluftklappe aufgestellt werden.

C.2.5 Anschluß des Stromkabels

Warnung – Sun-Produkte sind für den Betrieb mit Einphasen-Stromsystemen mit einem geerdeten Mittelleiter vorgesehen. Um die Elektroschockgefahr zu reduzieren, schließen Sie Sun-Produkte nicht an andere Arten von Stromsystemen an. Wenden Sie sich an Ihren Anlagenleiter oder einen qualifizierten Elektriker, wenn Sie sich nicht sicher sind, welche Art von Strom Ihr Gebäude erhält.

Warnung– Nicht alle Stromkabel besitzen die gleichen Stromnennwerte. Haushaltsverlängerungsschnuren haben keinen Überlastungsschutz und sind nicht zum Gebrauch mit Computersystemen bestimmt. Benutzen Sie keine Haushaltsverlängerungsschnuren für Ihr Sun-Produkt.

Warnung – Ihr Sun-Produkt wird mit einem Erdungs-Netzkabel (3-Leiter) geliefert. Um die Elektroschockgefahr zu reduzieren, schließen Sie das Kabel nur an eine geerdete Steckdose an.

C.2.6 Abdeckung

Vorsicht – Der Betrieb von Sun-Produkten ohne obere Abdeckung ist nicht sicher. Bei Nichteinhalten dieser Vorsichtsmaßregel kann es zu Personenverletzung und Systemschäden kommen.

C.3 Conformidad Con La Agencia de Seguridad

Este apéndice presenta las precauciones de seguridad a seguir cuando se instala un producto de Sun Microsystems, Inc.

C.3.1 Precauciones de Seguridad

Para su protección, observe las siguientes preocupaciones de seguridad al instalar su equipo:

- Siga todos los avisos e instrucciones marcados en el equipo.
- Asegúrese de que el voltaje y la frecuencia de su fuente de alimentación sean iguales al voltaje y frecuencia indicados en la etiqueta de la capacidad eléctrica nominal del equipo.
- No introduzca jamás objetos de ninguna clase por las aberturas del equipo porque pueden estar presentes voltajes peligrosos. Cualquier objeto conductor extraño puede producir cortocircuito que podría causar incendio, electrochoque o daños a su equipo.

C.3.2 Símbolos

Los siguientes símbolos significan:

Precaución– Peligro de lesión personal y daño al equipo. Siga las instrucciones.

Aviso – Hay presentes voltajes peligrosos. Siga las instrucciones para reducir el riesgo de electrochoque y los peligros contra la salud.

Encendido (On) – El interruptor principal de encendido/apagado está en la posición de *encendido*.

Apagado (Off) – El interruptor principal de encendido/apagado está en la posición de *apagado*.

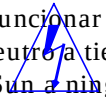
C.3.3 Modificaciones al Equipo

No haga modificaciones mecánicas o eléctricas al equipo. Sun Microsystems, Inc., no se hace responsable del cumplimiento de las regulaciones de un producto Sun si ha sido modificado.

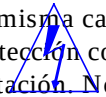
C.3.4 Colocación de un Producto Sun

Precaución – Para lograr un funcionamiento seguro de su producto Sun y protegerlo contra el calentamiento excesivo, no se deben bloquear o cubrir las aberturas del aparato. Ningún producto Sun se debe colocar jamás cerca de un radiador o una fuente térmica.

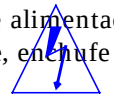
C.3.5 Conexión del cable de alimentación



Aviso – Los productos Sun han sido diseñados para funcionar con sistemas de alimentación monofásicos que tengan un conductor neutro a tierra. Para reducir el riesgo de electrochoque, no enchufe los productos Sun a ningún otro tipo de sistema de alimentación. Si no está seguro del tipo de alimentación eléctrica que se suministra a su edificio, consulte al administrador de la propiedad o a un electricista profesional.



Aviso– No todos los cables de alimentación tienen la misma capacidad nominal de corriente. Las extensiones tipo casero no tienen protección contra sobrecargas y no están destinadas a usarse con sistemas de computación. No use extensiones caseras con su producto Sun.



Aviso – Su producto Sun se le provee con un cable de alimentación con salida a tierra (trifilar). Para reducir el riesgo de electrochoque, enchufe siempre el cable a un tomacorriente con conexión a tierra.

C.3.6 Cubierta

Precaución –Los productos Sun no pueden funcionar sin riesgo si la cubierta no está colocada en su sitio. Si no toma esta precaución, correrá el riesgo de lesionarse personalmente y dañar el equipo.

Glossary

bus

A signal route to which several parts of a computer system may be connected so that signals can pass between them.

EMI

Electromagnetic interference

ESD

Electrostatic discharge

grounding strap

See *wrist strap*.

I/O

Input/Output. For example, an input/output device.

LED

Light emitting diode.

replacement part

A part of the Desktop Storage Module that can be ordered and replaced by Sun field service representatives or customers with self-maintenance contracts.

SCSI

An acronym for Small Computer Systems Interface.

SCSI bus

A signal route to which several parts of a computer system may be connected so that signals can pass between them. The total length of the SCSI bus includes the length of the external SCSI cable plus the length of the internal SCSI buses for the device(s) and the system. The SCSI bus length cannot exceed 6 meters (19.7 feet).

SCSI address

A unique number assigned to each drive on the SCSI bus. There are eight available addresses: 0 - 3 for disk, 4 - 5 for tape, 6 for CD-ROM, and 7 is reserved for the SCSI processor.

SCSI address switch

A switch located on the back of the Tape Auto-Loader which sets the drive address. Each drive on the SCSI bus must have a separate and unique SCSI address.

tape

A 4 mm DDS-certified tape.

terminator

A device resembling a cable without a cord which you connect to the last unused SCSI connector in the SCSI bus. You must use a regulated terminator.

wrist strap

A device that provides grounding for static electricity between your body and the chassis of the module. Electric current and voltage do not pass through the wrist strap.

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Revision History

Revision	Dash	Date	Comments
801-5401	10	November 18, 1993	Initial release (FCS)
801-5401	11	April 19, 1994	Second release

Reader Comments

We welcome your comments and suggestions to help improve the *20 Gbyte 4mm Tape Auto-Loader Desktop Storage Module Installation and User's Guide*, Part Number 801-5401-11 Please take time to let us know what you think about this manual.

■ The tasks were well documented and easy to follow.

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

Comments _____

■ The information provided in the *20 Gbyte 4mm Tape Auto-Loader Desktop Storage Module Installation and User's Guide* was complete.

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

Comments _____

■ The information I needed was easy to find.

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

Comments _____

■ The manual was useful to me.

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

Comments _____

■ Do you have additional comments about the *20 Gbyte 4mm Tape Auto-Loader Desktop Storage Module Installation and User's Guide*?

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