SPARCstorage Library Installation Manual

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Before You Start 1

This manual explains how to install a SPARCstorage Library in a 56-inch Data Center Expansion Cabinet. Procedures described in this manual are:

- Preparing the SPARCstorage™ Library
- Preparing the 56-inch Data Center Expansion Cabinet
- Installing the SPARCstorage Library
- Reassembling the 56-inch Data Center Expansion Cabinet

1.1 SCSI Cable Length

Your system performs reliably with a maximum SCSI bus length of 20 feet (6 meters). The internal signal path of your system unit and the external SCSI cables must not exceed this maximum length.

1.2 Shutting Down Your System

Refer to the installation manual you received with your system for instructions on powering off the system:

- SPARCcenter™ 2000 system — *SPARCcenter 2000 Installation Manual* (P / N 800-6975-xx)
- SPARCserver™ 1000 system — *SPARCserver 1000 System Installation Manual* (P / N 801-2893-xx)

1.3 Help with UNIX Commands

If you need help with UNIX commands, refer to the *Solaris Handbook for SMCC Peripherals* that came with your operating system.

Preparing the SPARCstorage Library 2

2.1 Inspecting the SPARCstorage Library

Warning – The tape library shipping weight is approximately 90 pounds (40.86 kg). Use safe lifting procedures when unpacking and installing the tape library to prevent damage to the equipment or injury to personnel.

After unpacking, Inspect the tape library for evidence of damage. If damaged, keep all contents and packing materials for the carrier's agent to inspect and do not proceed with the installation. Once you have unpacked the tape library from the shipping carton, check the contents against the packing slip to make sure you have all of the following items:

- SPARCstorage Library with at least one tape drive installed
- Power cord
- SCSI cable
- Tape cartridge holder and top cover
- Cleaning cartridge
- Regulated SCSI terminator
- Box of data tapes
- Manuals
- SCSI jumper plug
- Bezel
- Slide rails and attaching hardware
- Locking brackets and attaching hardware
- Key

Save the packing materials for future use.

Note – If the tape library is *not* installed in the United States or Canada, you may have to use a country-kit power cord. Consult your Sun sales representative for further information.

2.2 Removing Internal Packing Material

Warning – Before performing any of the following steps, be sure that the power switch is off. To avoid damaging the tape library, be sure that the work area is free of conditions that could cause electrostatic discharge (ESD).

To gain internal access to the library:

1. **Locate the key in your accessory kit.**
2. **Insert the key vertically into the lock and turn it clockwise 90 degrees.**
3. **Pull the front door open.**
4. **Reach in through the open door and pull out the large piece of packing material.**
   See Figure 2-1.
5. **Pull the Cartridge Handling Mechanism (CHM) towards you to free it from the second piece of packing material that is inserted in the removable cartridge holder.**
6. **Push the CHM up toward the right side of the tape library and remove the packing material that is in the holder.**
   Keep the packing material in case the tape library needs to be transported.

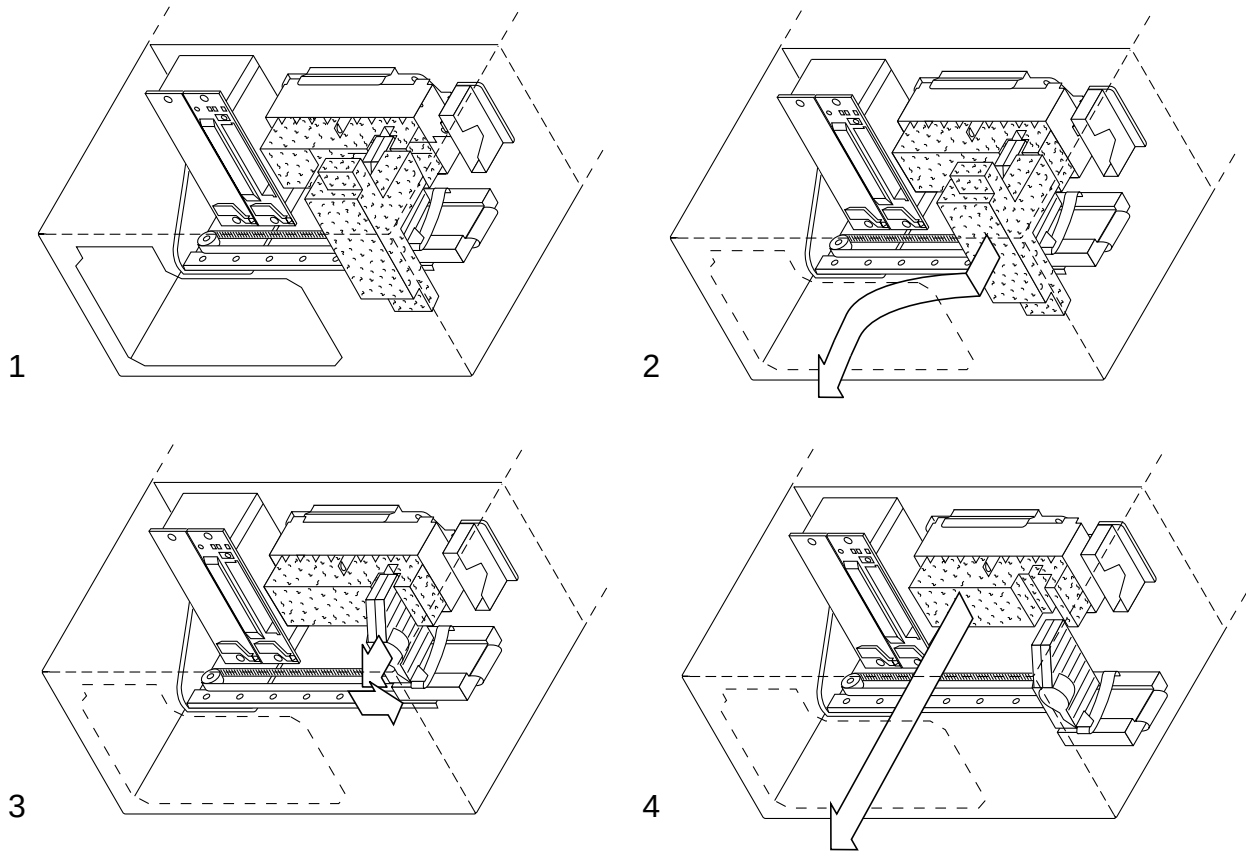

Figure 2-1 Removing Packing Material

2.3 Installing Slide Rail Runners on the SPARCstorage Library

1. **Separate runners from slide rails.**

   a. **Locate the slide rails that were shipped with the SPARCstorage Library.**

   b. **Fully extend one slide rail until it locks.**

   c. **Press the rail release button in the center of the rail**
   See Figure 2-2. This action releases the two-part portion.

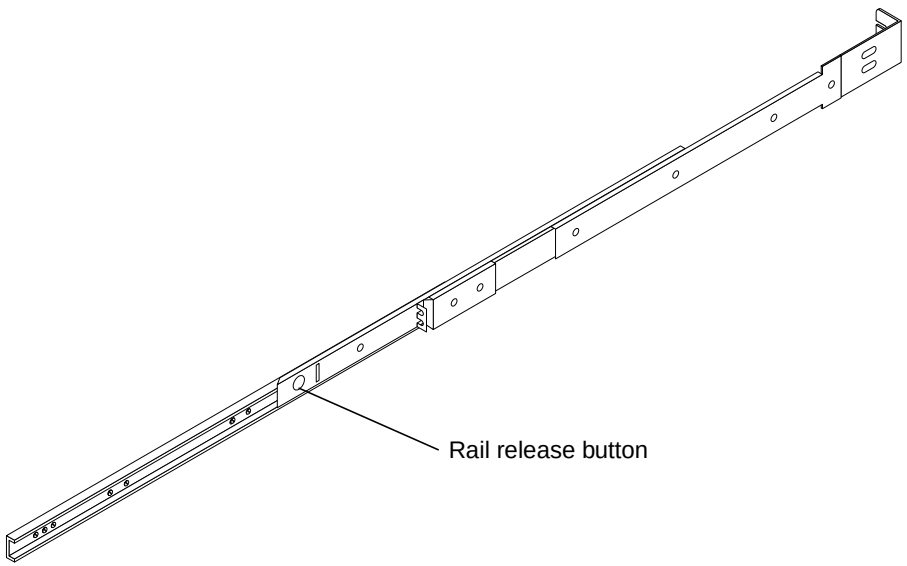

Figure 2-2 Rail Release Button on the Slide Rail

   d. **Continue extending the slide rail until it separates from the runner.**

   e. **Repeat Step b through Step d for the other slide rail.**

2. **Install runners on the SPARCstorage Library.**
   See Figure 2-3.

   a. **Locate the slide rail runners that you separated from the slide rails.**

   b. **Position the runners on the sides of the tape library, just behind the front panel by aligning each runner with the three predrilled holes on each side of the tape library.**

   c. **Attach the runners with the 8-32 Phillips screws provided.**

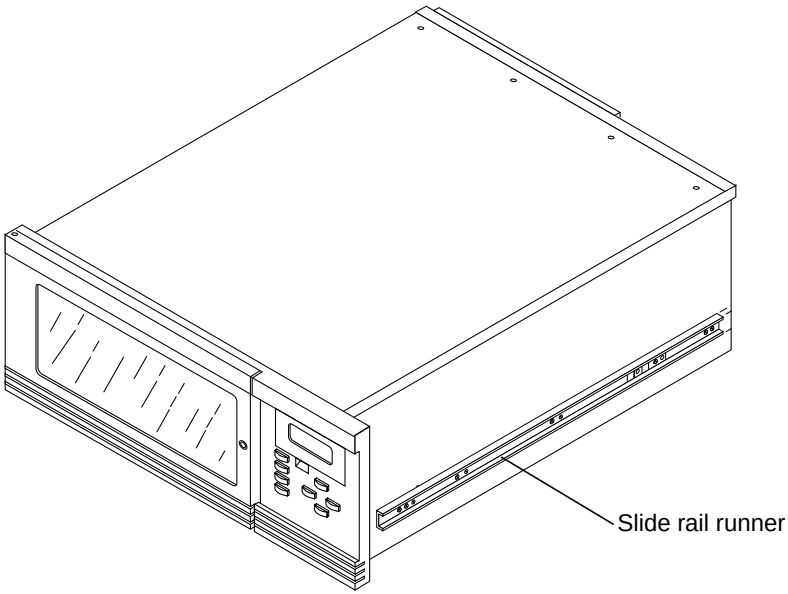

Figure 2-3 Installing Slide Rail Runners

Preparing the Expansion Cabinet 3

3.1 Powering Off the Expansion Cabinet

1. **Turn front panel key switch to the standby position.**
   See Figure 3-1.

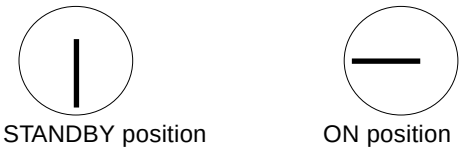

Figure 3-1 Key Switch Positions

2. **Turn the AC distribution unit power switch to Off.**
   The switch is at the rear of the cabinet. See Figure 3-2.

Warning – The power must be turned off at the AC distribution unit or risk of electrical shock to personnel exists.

Caution – Do not disconnect the power cord from the facilities outlet when working on the system. This connection provides a ground path that prevents damage from electrostatic discharge.

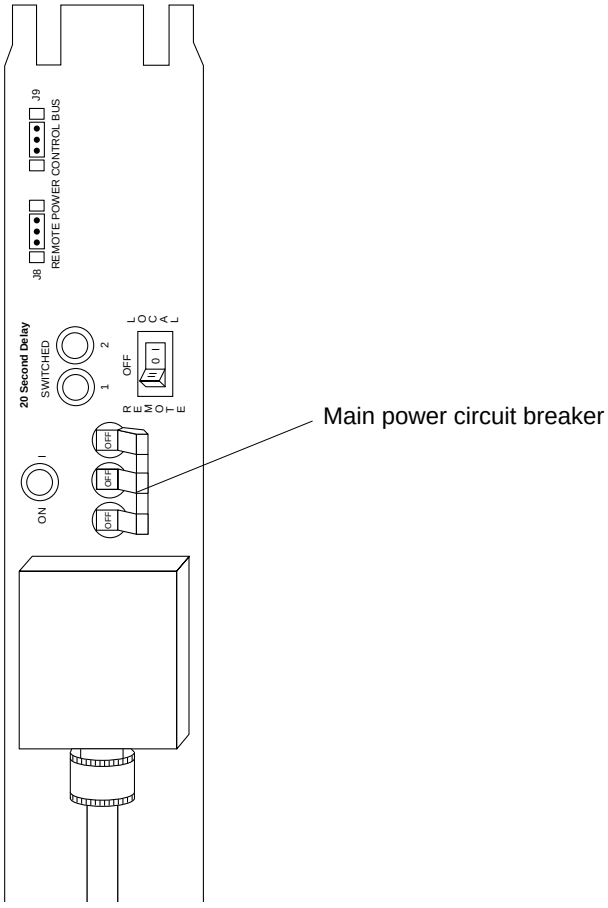

Figure 3-2 AC Distribution Unit Power Switch

3.2 Removing Panels from the Expansion Cabinet

3.2.1 Extending the Anti-Tilt Bar

- **Grasp the anti-tilt bar underneath the bottom front edge of the cabinet and pull it out to its fully-extended position.**
  See Figure 3-3.

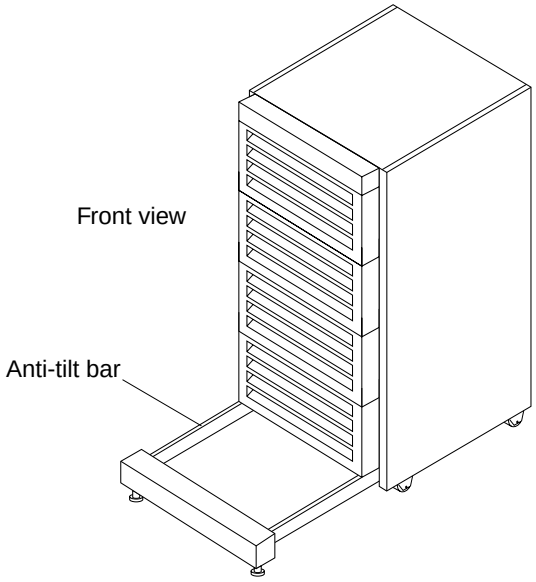

Figure 3-3 Extending the Anti-Tilt Bar

3.2.2 Removing the Panels

Follow the instructions in this section to remove the necessary panels from your cabinet.

3.2.2.1 Removing the Front Panel

1. **Determine where you will be installing the tape library.**
   Tape libraries can be installed behind either of the top two front panels.

2. **Pull on both sides of the front panel on the cabinet to remove the panel, and set it aside.**
   See Figure 3-4. The procedure is the same for the remaining front panels for all cabinets.

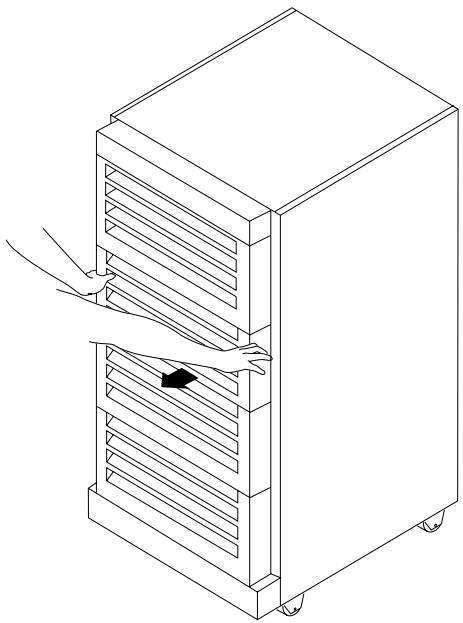

Figure 3-4 Removing a Front Panel from the 56-Inch Data Center Expansion Cabinet

3.2.2.2 Removing the Vented Rear Panel

1. **Face the rear of the cabinet and remove the two Phillips screws at the top of the vented rear panel.**
2. **Pull the top of the vented rear panel away from the cabinet.**
3. **Lift the vented rear panel until the bottom is clear and lift the panel away.**
   See Figure 3-5. Set the vented rear panel aside.

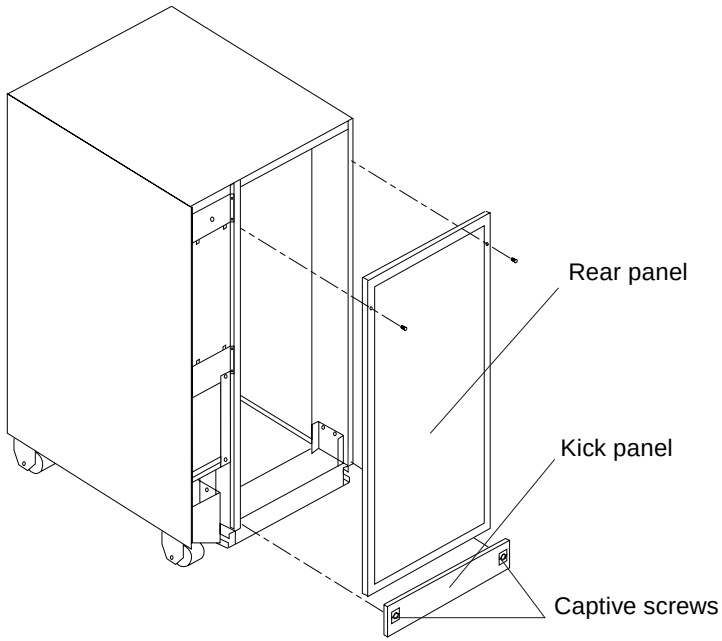

Figure 3-5 Removing the Vented Rear Panel and Kick Panel

3.2.2.3 Removing the Kick Panel

1. **Use the Phillips screwdriver to loosen the two captive screws that secure the kick panel to the unit.**
2. **Remove the kick panel and set it aside**
   See Figure 3-5.

3.2.2.4 *Removing the Side Panels*

Note – You do not have to remove the side panels to install the tape library, but you may want to remove them to make the installation of the tape library slide rails easier.

1. **Use the flat-blade screwdriver to unfasten the two captive screws at the bottom of the side panel**
   See Figure 3-6.

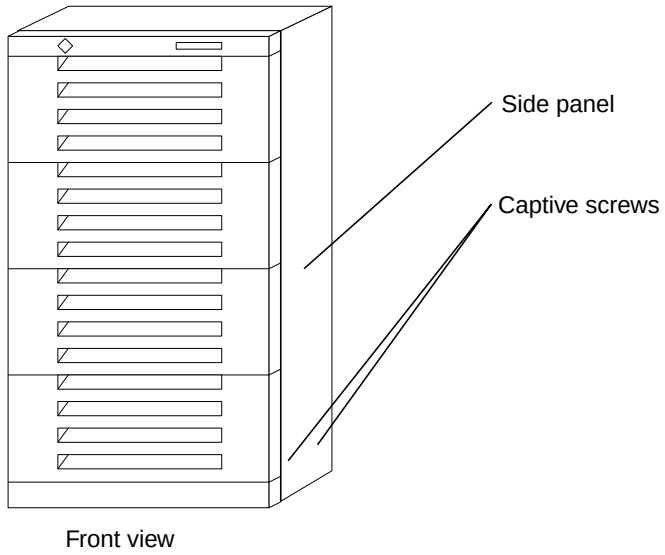

Figure 3-6 Removing a Side Panel

2. **Firmly grasp the outer edges of the side panel with both hands and lift up on the panel to release the catches at the top.**
   Set the panel aside.

3.3 Installing Locking Brackets on the Expansion Cabinet

1. **Locate the two locking brackets shipped with the tape library.**

2. **Use Table 3-2 to select the mounting holes in the rail faces on the front of the expansion cabinet.**
   See Figure 3-7. The mounting holes are numbered from the bottom up beginning with one, and are stamped on the rail face in increments of ten.

Table 3-1 Mounting Locking Bracket Holes on the 56-Inch Data Center Expansion Cabinet

Mounting Rails	Mounting Holes
First tape library	Holes 55 and 58
Second tape library	Holes 75 and 78

3. **Loosely attach a locking bracket to the rail face on each side of the expansion cabinet using the 10-32 Phillips screws provided.**
   These screws will be tightened later, after the tape library has been installed.

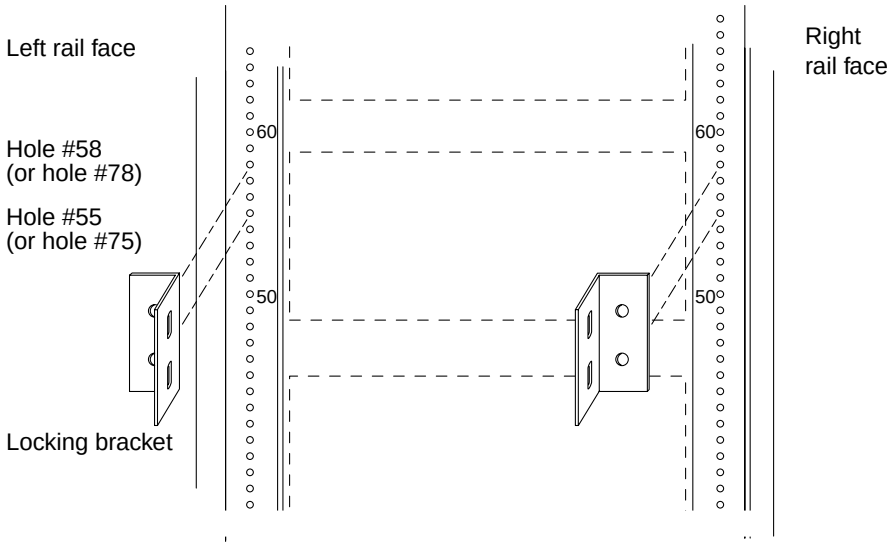

Figure 3-7 Locating the Locking Brackets on the Rail Faces

3.4 Installing Slide Rails in the Expansion Cabinet

1. **Place both slide rails inside the cabinet, with the bent brackets towards the rear of the cabinet and facing inside the cabinet.**
   See Figure 3-8.

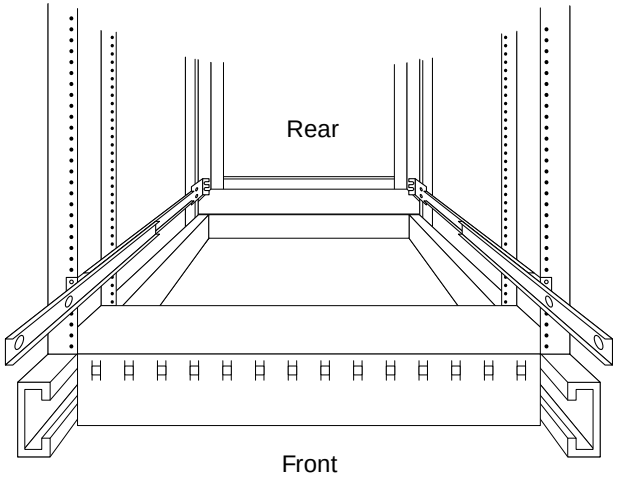

Figure 3-8 Placing the Slide Rails inside the Cabinet

2. **Select the mounting holes to use for the slide rails as listed in Table 3-2.**
   The mounting holes are numbered up from the bottom beginning with one, and are stamped on the rail face in increments of ten.

Table 3-2 Mounting Rail Holes on the 56-Inch Data Center Expansion Cabinet

Mounting Rails	Mounting Holes
First tape library	Holes 51 and 52
Second tape library	Holes 71 and 72

3. **Standing at the front of the cabinet, position the front part of the slide rail over the proper hole positions.**
   See Figure 3-9.

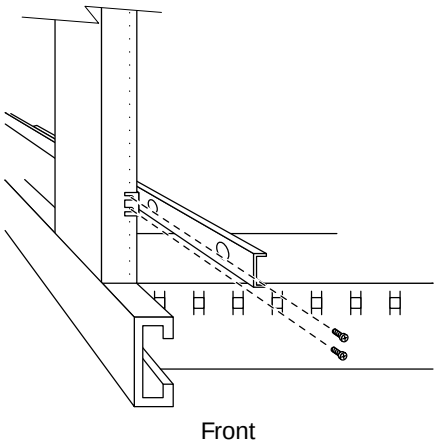

Figure 3-9 Securing the Front Part of the Slide Rail to the Cabinet

4. **Use a Phillips screwdriver and two 10-32 screws to loosely secure the front part of the slide rail to the cabinet.**
   See Figure 3-9.

5. **Repeat Step 3 and Step 4 for the other slide rail.**

6. **Standing at the rear of the cabinet, position the bracket of one slide rail over the proper hole positions.**
   See Figure 3-10.

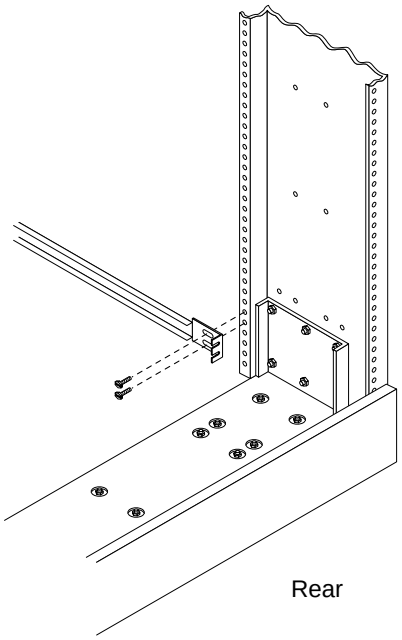

Figure 3-10 Securing the Bent Bracket to the Cabinet

7. **Loosely secure the bent bracket to the cabinet using a Phillips screwdriver and two 10-32 screws.**
   See Figure 3-10.
8. **Repeat Step 6 and Step 7 for the other slide rail.**
9. **With the slide rails correctly positioned, tighten all the screws at the cabinet front and the rear.**

Installing the SPARCstorage Library 4

4.1 Installing the SPARCstorage Library in an Expansion Cabinet

Warning – The tape library shipping weight is approximately 90 pounds (40.86 kg). Use two or more people to install the tape library in the cabinet.

1. **Mount the tape library on the slide rails.**
   a. **Completely push both slide rails into the cabinet.**
   b. **Position the tape library on the rails and slide it towards the cabinet until you hear a click.**
      See Figure 4-1.

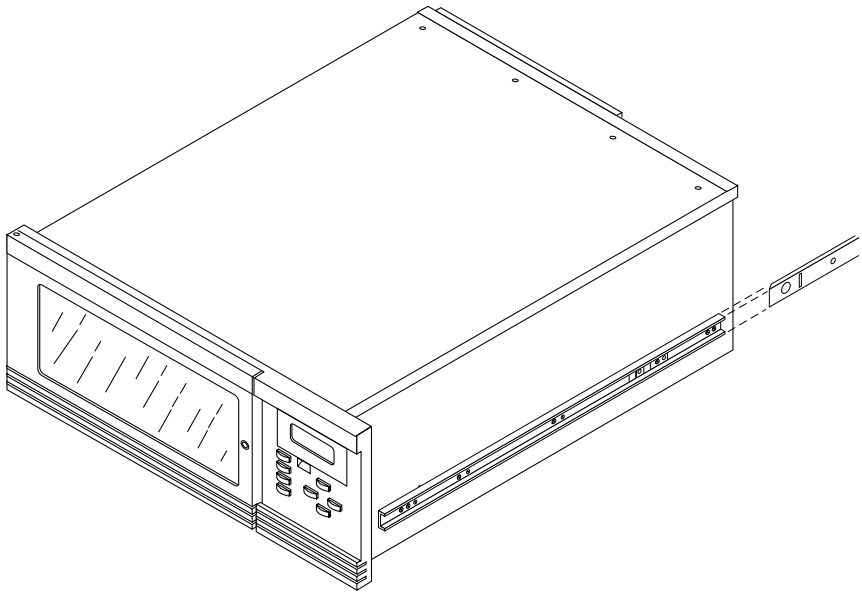

Figure 4-1 Positioning the Tape Library on the Slide Rails

2. **Press the buttons in the center of the slide rails and completely push the tape library into the cabinet.**

3. **Loosely install two 10-32 screws in each locking bracket using a Phillips screwdriver.**
   See Figure 4-2.

4. **Tighten all screws to secure the locking brackets to the expansion cabinet rail faces and the tape library.**

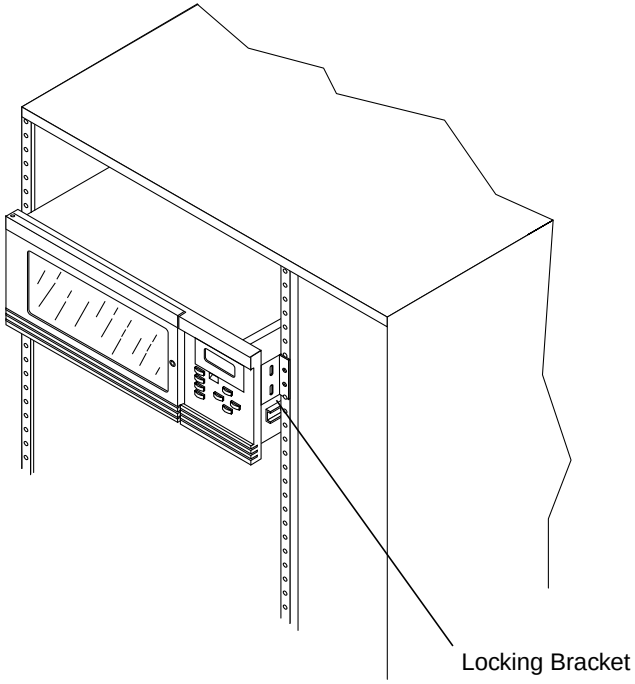

Figure 4-2 Securing the Front of the Tape Library in the Cabinet

4.2 Installing Cables

4.2.1 Installing the Power Cable

Note – The SPARCstorage Library has autoranging voltage selection, so you do not need to change the voltage setting.

To plug the power cord into the SPARCstorage Library:

1. **Locate the power cord for the SPARCstorage Library.**
   There are two power cords in the shipping kit – one for 230V and one for 240V. Choose the correct cord for your system. Match the connector on the cord to the connector type on the power sequencer.

2. **Plug the female end of the power cord into the power receptacle at the rear of the tape library.**
   See Figure 4-3.

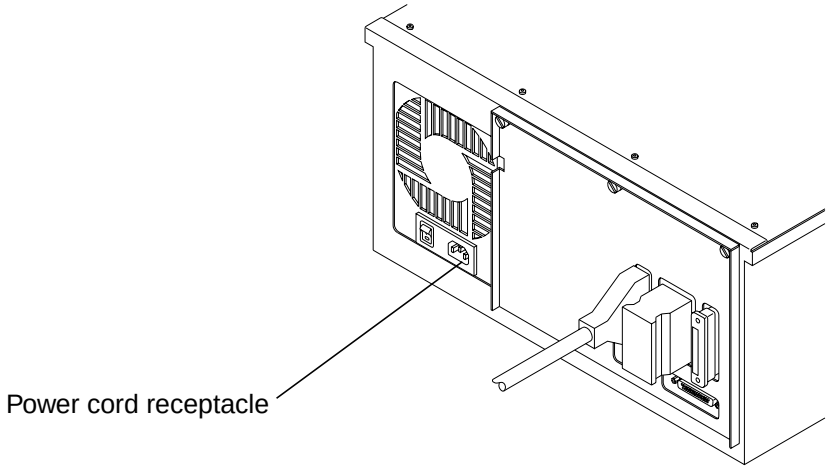

Figure 4-3 Location of the Power Receptacle on the SPARCstorage Library

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

4. **Route the power cord up through the cut-out to the power distribution unit at the side of the cabinet.**

5. **Plug the power cord for the tape library into the power distribution unit**
   See Figure 4-4 and Figure 4-5.

Warning – The power distribution unit serves as the primary disconnect device for the SPARCstorage Library. Do not plug the tape library into a power source other than the power distribution unit. Personal injury may result if you work on a tape library that is plugged into another power source, since that power source may still be active when you work on the tape library.

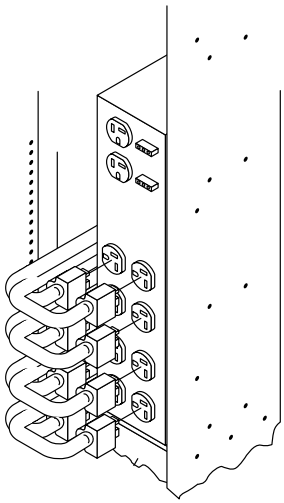

Figure 4-4 Plugging the Tape Library into the Power Distribution Unit

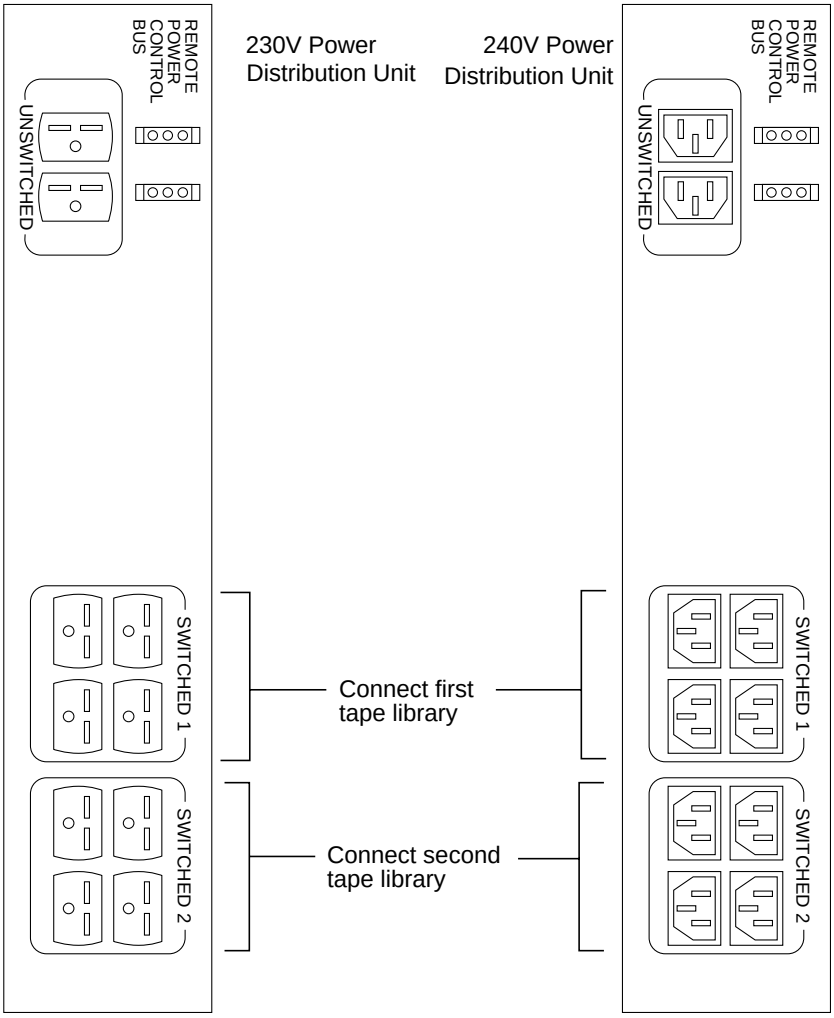

Figure 4-5 Power Distribution Unit for a 56-Inch Data Center Expansion Cabinet

4.2.2 Installing the SCSI Cable

1. **Connect a 4-meter SCSI data cable to the tape library.**
2. **Route the SCSI data cable down the left side and along the bottom of the expansion cabinet.**
3. **Route the SCSI data cable over the edge of the bottom panel of the expansion cabinet.**
   See Figure 4-6. The cable will be routed between the bottom panel and the kick panel when you replace the kick panel.

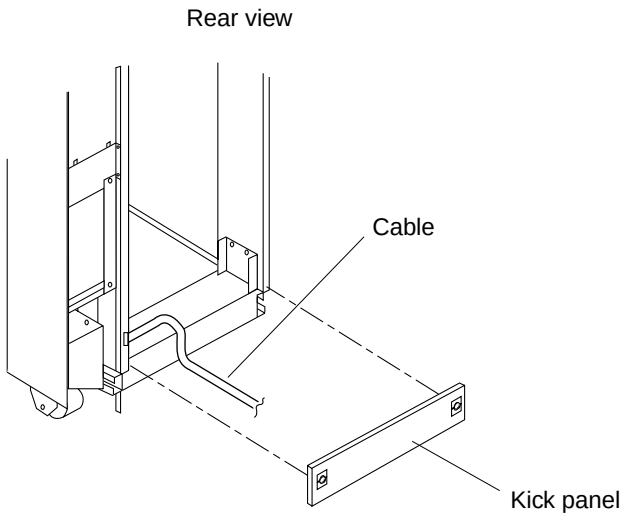

Figure 4-6 Routing the Cable Out of the 56-Inch Data Center Expansion Cabinet

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Note – You may want to use tie wraps as cable restraints for the data cables connected to the tape library. Pass a tie wrap through the slit in the base of the cabinet and secure the cable(s) in the wrap.

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4. **Route the SCSI data cable over to the system cabinet and connect it to the appropriate host adaptor card.**
   See Figure 4-7. You must have an FSB/S or a SBE/S SCSI host adaptor card in your system.

5. **Install the SCSI jumper block in the middle two SCSI connectors on the tape library.**
   See Figure 4-7

6. **Install the SCSI terminator in the right SCSI port on the back panel of the tape library.**
   See Figure 4-7

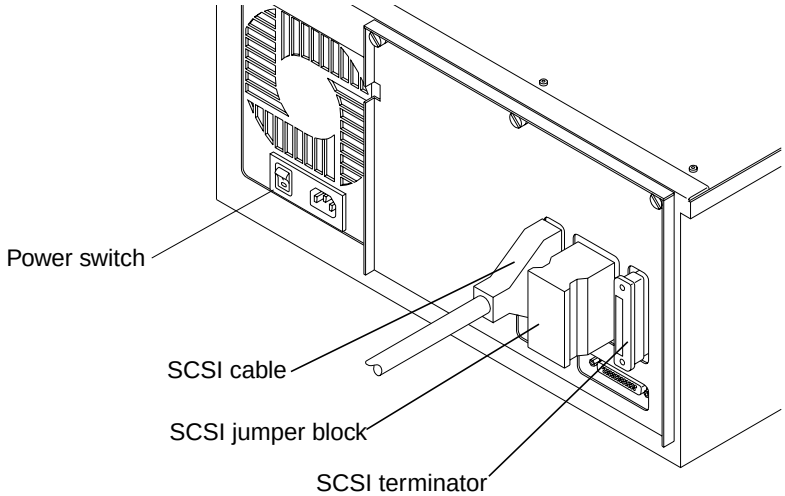

Figure 4-7 SCSI Connectors on the Tape Library Rear Panel

4.3 Powering On the SPARCstorage Library

This section describes how to power on the SPARCstorage Library. The power switch and connector for the power cord are located on the back of the SPARCstorage Library, as shown in Figure 4-7.

To power on the SPARCstorage Library:

1. **Make sure that the power switch on the back of the SPARCstorage Library is in the off (0) position.**

2. **Close and lock the door.**

3. **Press the power switch to the on (|) position.**
   When you power on the SPARCstorage Library, the following events occur:

   - The LCD panel illuminates.
   - The CTSs perform their power-on self-tests.
   - The SPARCstorage Library performs its 40-second power-on self-test.

   During this test, the SPARCstorage Library first engages the locking solenoid in the front door and then the CHM does the following tests:

   - Performs a home on the Short and Long axes.
   - Verifies its full range of motion by moving along the long axis.
   - Moves to the park position.

Failure to Power On

If the SPARCstorage Library does not power on as described, check the following:

- If the LCD is not illuminated, check the following:
- Is the power switch in the on position?
- Is the power cord inserted correctly?
- Is the fuse good?

- If the LCD is illuminated:
  - Is there an error message or error code on the LCD?
  - Is the SPARCstorage Library's door closed and locked?
  - Is the cartridge magazine correctly installed on its mounting plate?

4.4 Powering On the System

Refer to the installation manual you received with your system for instructions on safely powering on the cabinet:

- SPARCcenter 2000 system — *SPARCcenter 2000 Installation Manual* (P / N 800-6975-xx)
- SPARCserver 1000 system — *SPARCserver 1000 System Installation Manual* (P / N 801-2893-xx)

You may have to enter a specific software command when booting the system so that the system will recognize the new tape library; refer to the manual you received with your software for more information.

For example, if your system is running on the Solaris 2.x software environment, you would enter the following command to boot the system so that it would recognize the new tape library:

```
boot -r <return>
```

4.5 Setting SCSI IDs

The tape library is configured with default SCSI IDs for the CHM and for each tape drive. This section describes how to view the default settings and change them, if necessary. SCSI IDs can be viewed and changed from the operator panel.

Note – Use `probe-scsi-all` at the `ok` prompt to determine the SCSI IDs that are currently set.

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

Table 4-1 shows the default SCSI IDs for the SPARCstorage Library, the tape drives, and the host.

Table 4-1 Default SCSI IDs for the SPARCstorage Library, the Tape Drives, and the Host

Device/Unit	SCSI ID	Description
SPARCstorage Library	2	Includes the cartridge handling mechanism (CHM), the removable cartridge holder, and the fixed cartridge slot.

Table 4-1 Default SCSI IDs for the SPARCstorage Library, the Tape Drives, and the Host

Device/Unit	SCSI ID	Description
Tape drive (first)	4	Inner tape drive
Tape drive (second)	5	Outer tape drive
Computer system (host) or SCSI host adapter SBus card	7	Allows the host to act as the initiator of commands on the SCSI bus.

Under the Solaris 2.x software environment, you can set the SCSI IDs of the tape drives and of the tape library to any SCSI ID available from 0 to 6. SCSI IDs 4 and 5 are most commonly used for tape drives. SCSI IDs 1 and 2 are good choices for the robotic portion (LIB) of the tape library. SCSI ID 7 is reserved for the host or the SCSI host adaptor card.

Caution – The tape library and each installed tape drive must have an unique SCSI ID.

To view or change the SCSI IDs:

1. **Locate the LCD and keypad on the front panel.**
2. **Press Escape until the Primary Menu is displayed.**
3. **Select the Configuration Menu by pressing ↑ or ↓, then pressing Enter.**
4. **Select Set SCSI IDs by pressing ↑ or ↓, then pressing Enter.**
5. **Set the SCSI IDs for Drive 1 (the inner tape drive), Drive 2 (the outer tape drive), and the tape library (LIB).**
   - Press either ↑ or ↓ to increase or decrease the SCSI ID value.
   - Press ← or → to select a drive or the tape library.
   - Press Enter to make the selection active, or Escape to not change anything.

4.6 Testing the Installation

If the SPARCstorage Library has been stored for six months or more, you need to perform some “warm-up exercises” on the tape drives and the SPARCstorage Library. The exercises involve inserting tapes into the tape drives and using your application software to write and read data.

4.6.1 *Tape Cartridge Placement in the Removable Holder*

To place the tape cartridges in the removable cartridge holder:

1. **Make sure the write-protect switch is write-enabled (switch is to the right) on the tape cartridges.**

2. **Using the holder's single mounting guide for orientation, insert a cartridge into the holder.**
   See Figure 4-8. Very little force is needed to install a cartridge into the cartridge holder. If the cartridge does not snap into place easily, check the orientation of the cartridge.

The holder can contain up to ten cartridges.

Caution – Only use a holder designed for 8mm tape cartridges.

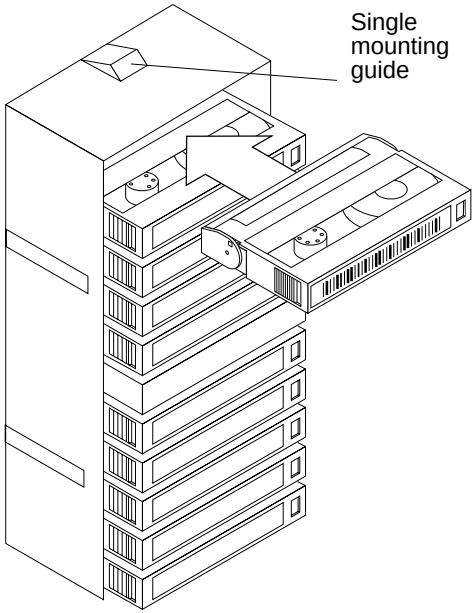

Figure 4-8 Inserting a Tape Cartridge

4.6.2 Installing a Removable Cartridge Holder

1. **Locate the roller on the right end of the holder's mounting plate on the interior back wall of the tape library.**

Caution – Only use a holder designed for 8mm tape cartridges.

2. **Position the holder near the mounting plate so that its single mounting guide is on the right side.**
3. **Place the holder's two mounting guides on its left side into the matching holes in the left side of the mounting plate.**
4. **Snap the holder into place by pressing against the end of the holder near the roller.**

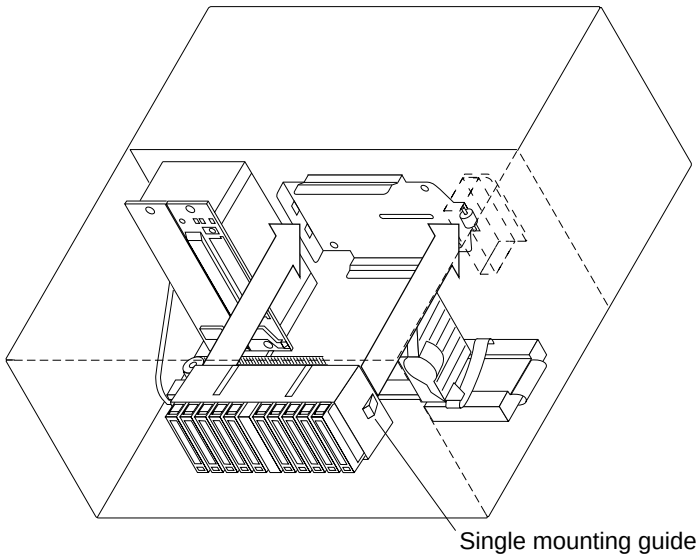

Figure 4-9 Installing the Magazine

4.6.3 Installing a Cartridge in the Fixed Holder

Perform the following procedure to place another tape or a cleaning cartridge into the fixed cartridge holder.

Note – The 8mm cleaning tape cartridge contains a shed-free fabric tape that traps and removes debris from the tape drive heads and tape paths. Its regular use helps maintain data integrity and improves the reliability of the tape drive. Do not use cleaners designed for 8mm video applications.

1. **Hold the cartridge with the write-protect switch down.**
   See Figure 4-10.

2. **Insert the cartridge into the fixed cartridge slot until it snaps into place.**

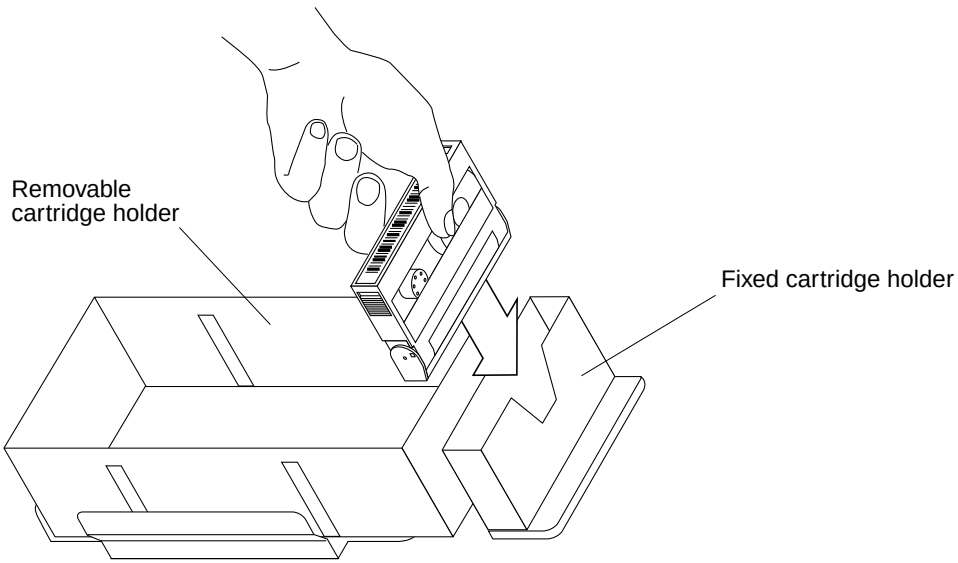

Figure 4-10 Inserting a Cartridge in the fixed holder

3. **Close the door and lock it by turning the key counterclockwise 90 degrees.**

4.6.4 Testing the Tape Drives

1. **Insert a non-vital data cartridge into the first tape drive.**
   Make sure the cartridge is not write-protected.

Note – If you need to manually eject a cartridge from the tape drive, press the eject button on the drive carrier faceplate. This operation could take up to two minutes to complete. The green LED on the internal drive will blink while the unload operation is in progress.

---

2. **Close and lock the door.**
   The tape drive will load the tape and position it at the logical beginning of tape (LBOT) in about 35 seconds. All three LEDs on the tape drive will be off for the first eight seconds, then the left LED will flash. When the left LED stays lit, the drive is ready.

Note – If the amber LED remains on or flashing, an error has occurred. For more information, refer to your tape drive documentation.

---

3. **Using your backup software, write approximately 500 Mbytes of data to the tape.**
4. **Using your software, rewind the tape and read the data you just wrote.**
5. **Repeat steps 1 through 4 for the other tape drive, if installed.**

4.6.5 Testing the SPARCstorage Library

After you have finished testing the tape drives, follow these steps to test the SPARCstorage Library:

1. **Locate 11 non-vital data cartridges.**
2. **Follow the instructions in Section 4.6.1, “Tape Cartridge Placement in the Removable Holder” to insert the cartridges in the magazine and the fixed cartridge slot.**
3. **Using your backup software, perform 11 pick-and-place cycles in which the CHM picks each of the 11 data cartridges from its slot, places each in a tape drive, then returns the cartridge to its slot.**

Reassembling the 56-inch Data Center Expansion Cabinet 5

5.1 Installing the Side Panels

1. **Locate the side panel.**
2. **Firmly grasp the outer edges of the side panel with both hands and place the panel against the side of the cabinet with the top of the panel above the top of the cabinet.**
3. **Slide the panel down until the top of the panel catches on the top of the cabinet.**

4. **Use the flat-blade screwdriver to fasten the two captive screws at the bottom of the side panel (see Figure 5-1).**

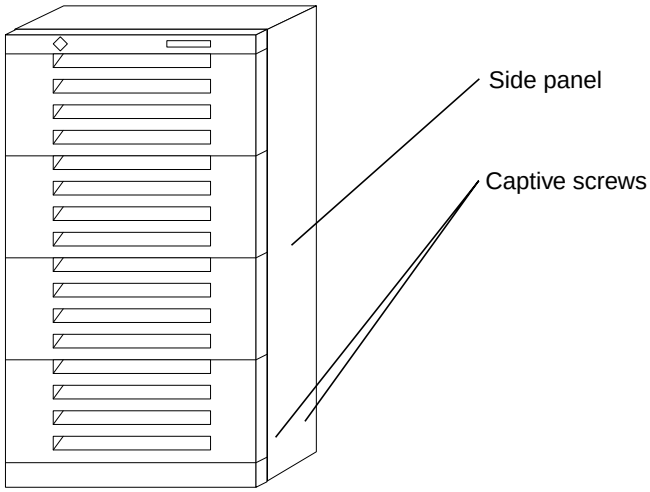

Figure 5-1 Installing the Side Panel

5.2 Installing the Kick Panel

To install the kick panel:

1. **Locate the kick panel at the rear of the cabinet.**
2. **Align the two screw holes in the kick panel with the bottom holes on the cabinet.**
   See Figure 5-2.

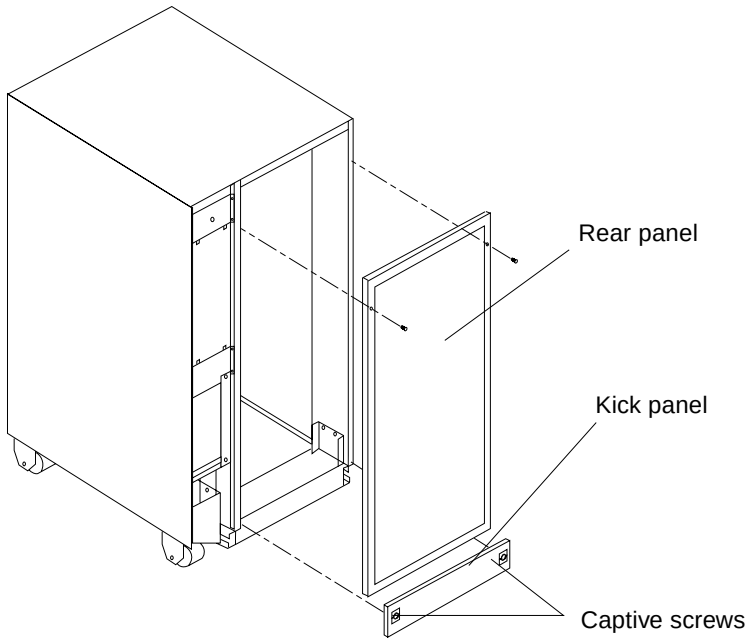

Figure 5-2 Installing the Vented Rear Panel and Kick Panel

3. **Tighten the two captive screws to secure the kick panel to the cabinet.**
   See Figure 5-2.

5.3 *Installing the Vented Rear Panel*

1. **Locate the vented rear panel.**
   See Figure 5-2.
2. **Place the bottom of the vented rear panel in the groove on the top of the kick panel.**
3. **Swing the top of the vented rear panel towards the cabinet until the top of the panel is touching the cabinet.**
4. **Secure the two screws at the top of the vented rear panel.**
   See Figure 5-2.

5.4 Installing the New Front Panel Bezel

1. **Align the ball studs with the studs on each side of the panel.**
2. **Push on both sides of the front panel bezel until it clicks into place.** See Figure 5-3.

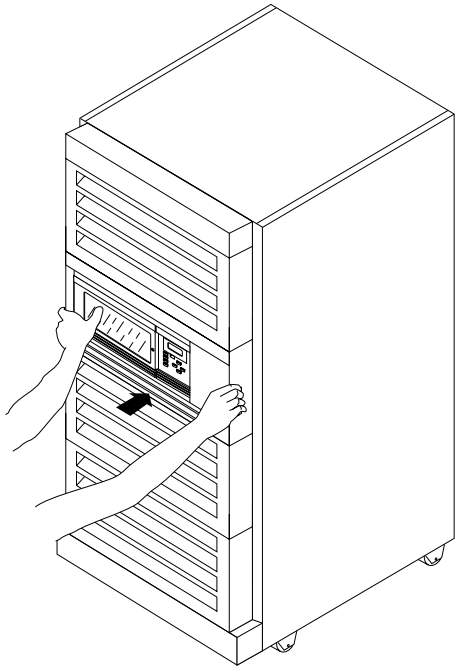

Figure 5-3 Replacing the Front Panel on the 56-Inch Data Center Expansion Cabinet

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We welcome your comments and suggestions to help improve this manual. Please let us know what you think about the *SPARCstorage Library Installation Manual*, part number *802-2344-10*.

- The procedures were well documented.

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