Compaq StorageWorks

ESL9000 Series Tape Library

Unpacking and Relocating Guide

Second Edition (June 2001)
Part Number: 243490-002
Compaq Computer Corporation

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Contents

About This Guide

This guide is designed to be used as step-by-step instructions for unpacking and relocating the *Compaq StorageWorks™ ESL9000 Series Tape Library.*

Related Documents

Document Title	Part Number
Compaq StorageWorks™ ESL9000 Series Tape Library Diagnostic Software Guide	243493-002
Compaq StorageWorks™ ESL9000 Series Tape Library Pre-Installation Site Survey	243494-002
Compaq StorageWorks™ ESL9000 Series Tape Library Reference Guide	243491-002
Compaq StorageWorks™ ESL9000 Series Pass-Through Mechanism (PTM) Installation Guide	243492-002

Text Conventions

This document uses the following conventions to distinguish elements of text:

Keys	Keys appear in boldface. A plus sign (+) between two keys indicates that they should be pressed simultaneously.
USER INPUT	User input appears in a different typeface and in uppercase.
FILENAMES	File names appear in uppercase italics.
Menu Options, Command Names, Dialog Box Names	These elements appear in initial capital letters.
COMMANDS, DIRECTORY NAMES, and DRIVE NAMES	These elements appear in upper case. **NOTE:** UNIX commands are case sensitive and will not appear in uppercase.
Type	When you are instructed to *type* information, type the information **without** pressing the **Enter** key.
Enter	When you are instructed to *enter* information, type the information and then press the **Enter** key.

Symbols in Text

These symbols may be found in the text of this guide. They have the following meanings.

WARNING: Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.

CAUTION: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

IMPORTANT: Text set off in this manner presents clarifying information or specific instructions.

NOTE: Text set off in this manner presents commentary, sidelights, or interesting points of information.

Symbols on Equipment

These icons may be located on equipment in areas where hazardous conditions may exist.

Any surface or area of the equipment marked with these symbols indicates the presence of electrical shock hazards. Enclosed area contains no operator serviceable parts.

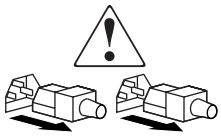
WARNING: To reduce the risk of injury from electrical shock hazards, do not open this enclosure.

Any RJ-45 receptacle marked with these symbols indicates a Network Interface Connection (NIC).

WARNING: To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.

Any surface or area of the equipment marked with these symbols indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists.

WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching.



Power supplies or systems marked with these symbols indicate the equipment is supplied by multiple sources of power.

WARNING: To reduce the risk of injury from electrical shock, remove all power cords to completely disconnect power from the system.

Any product or assembly marked with these symbols indicates that the component exceeds the recommended weight for one individual to handle safely.

WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.

Cabinet Stability

WARNING: To reduce the risk of personal injury or damage to the equipment, be sure that:

- The leveling jacks are extended to the floor.
- The full weight of the cabinet rests on the leveling jacks.
- The stabilizing feet are attached to the cabinet if it is a single cabinet installations.
- The cabinets are coupled together in multiple cabinet installations.
- Only one component is extended at a time. A cabinet may become unstable if more than one component is extended for any reason.

Getting Help

If you have a problem and have exhausted the information in this guide, you can get further information and other help in the following locations.

Compaq Technical Support

In North America, call the Compaq Technical Phone Support Center at 1-800-OKCOMPAQ. For continuous quality improvement, calls may be monitored or recorded. This service is available 24 hours a day, 7 days a week.

Be sure to have the following information available before you call Compaq:

- Technical support registration number (if applicable)
- Product serial number
- Product model name and number

- Applicable error messages
- Add-on boards or hardware
- Third-party hardware or software
- Operating system type and revision level

Compaq Website

The Compaq website has information on this product as well as the latest drivers and Flash ROM images. You can visit the Compaq website at www.compaq.com.

For the name of your nearest Compaq authorized reseller:

- In the United States, call 1-800-345-1518.
- In Canada, call 1-800-263-5868.
- Elsewhere, you can visit the Compaq website for locations and telephone numbers.

Chapter 1

Introduction

WARNING: Be sure to read this unpacking and relocating guide completely before attempting to unpack, move or relocate the library. Failure to follow the procedures in this guide could result in personal injury and/or equipment damage.

This guide outlines procedures for unpacking and relocating Compaq StorageWorks ESL9000 Series Tape Libraries. Once a library is moved to the desired installation location and unpacked, set up the library using the instructions in the *Compaq StorageWorks ESL9000 Series Tape Library Reference Guide.*

The ESL9198 Series is an automated storage and retrieval library consisting of up to 8 tape drives and up to 198 DLT or SDLT tape cartridges (see Figure 1-1).

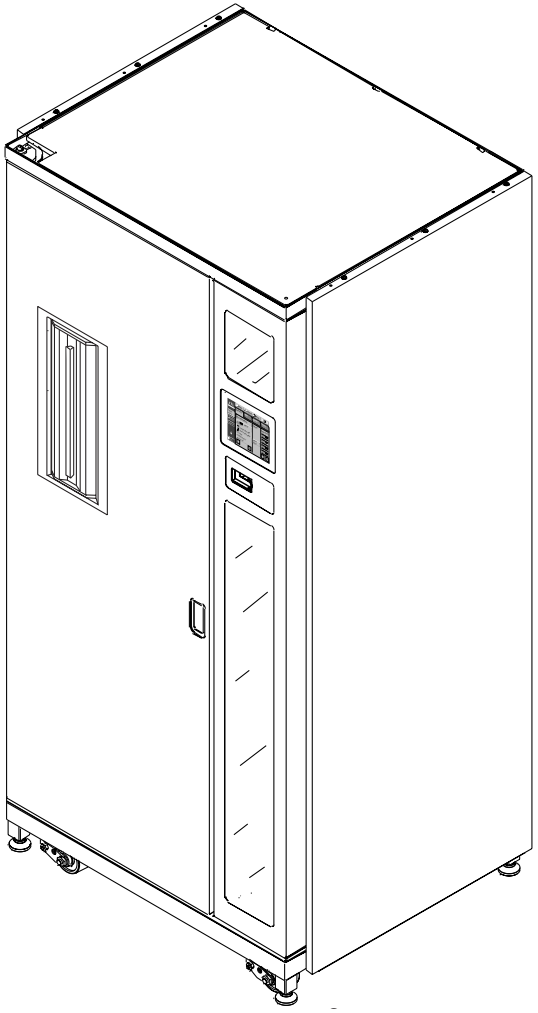


Figure 1-1. ESL9198 series tape library (front view)

The ESL9326 Series is an automated storage and retrieval library consisting of up to 16 tape drives and up to 326 DLT or SDLT tape cartridges (see Figure 1-2).

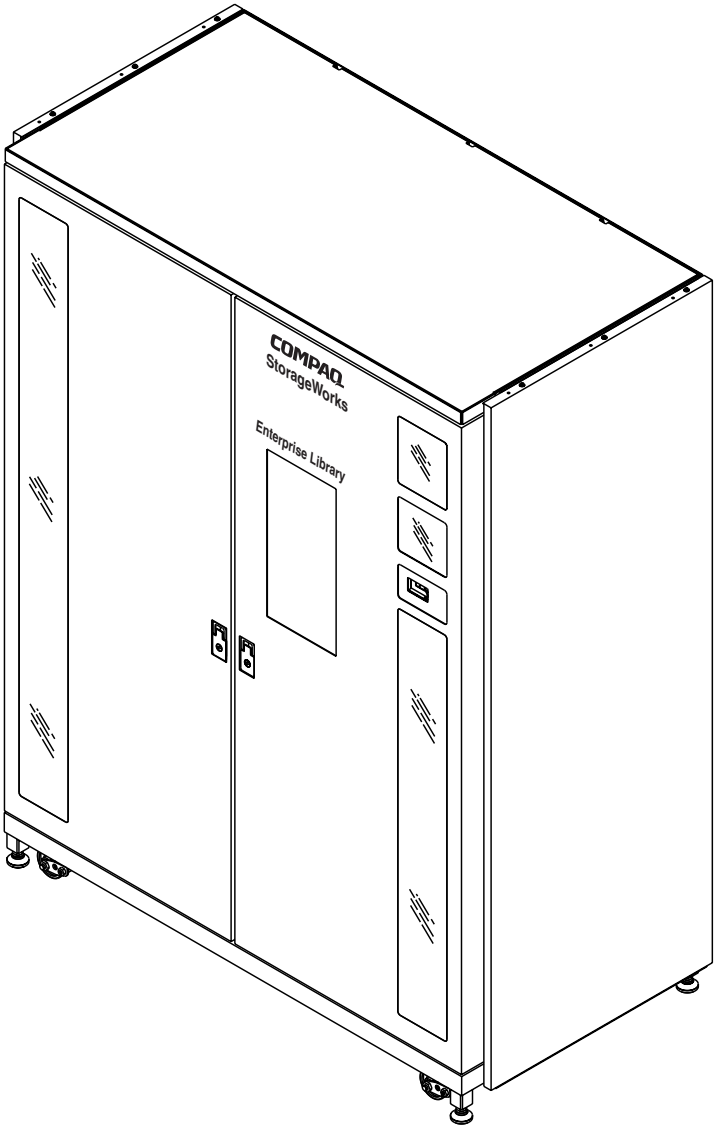


Figure 1-2. ESL9326 series tape library (front view)

Chapter 2

Selecting an Installation Location

WARNING: Be sure to read and understand the instructions in the Compaq StorageWorks ESL9000 Series Tape Library Pre-Installation Site Survey before selecting an installation site, moving, unpacking or relocating the library. Failure to follow the instructions could result in personal injury and/or equipment damage.

When choosing an installation site for a Compaq StorageWorks ESL9000 Series Tape Library, consider the following requirements:

- Floor space
- Floor clearance
- Floor strength and inclination
- Power and grounding
- Environmental conditions
- Physical distance between the library and a host workstation.

Floor Space

Figure 2-1 shows the minimum floor space required for a ESL9198 library.

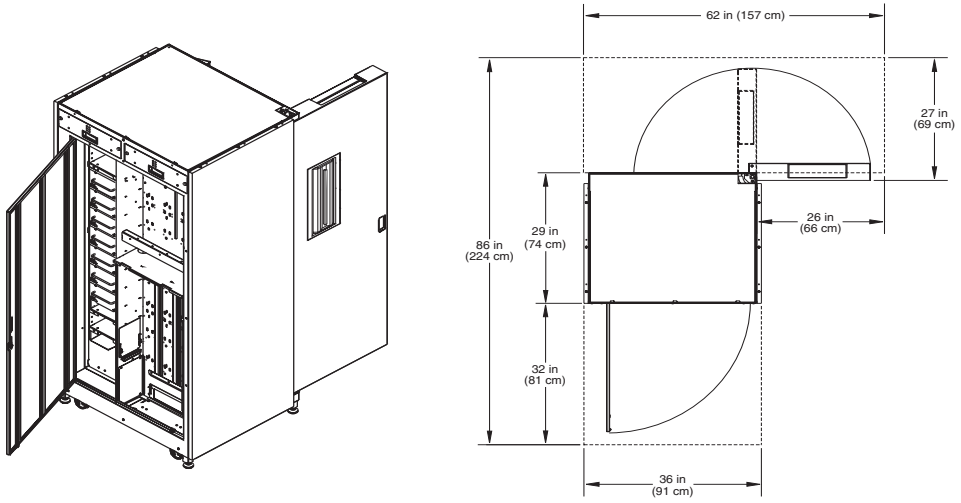


Figure 2-1. Minimum floor space requirements (ESL9198)

Figure 2-2 shows the minimum floor space required for a ESL9326 library.

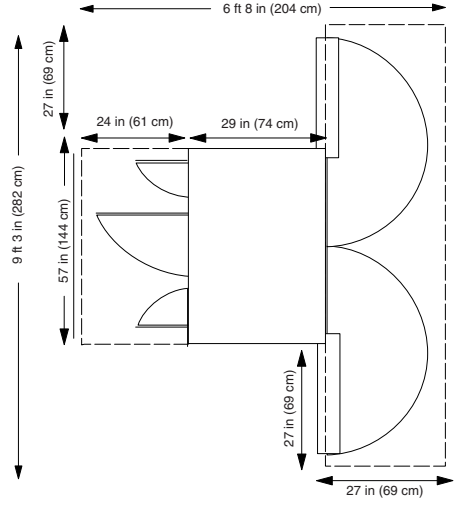


Figure 2-2. Minimum floor space requirements (ESL9326)

Floor Clearance

The library has a nominal floor clearance of 0.75 inches (19.0 mm). Place the library on a level, uncarpeted floor free of defects.

Floor Strength and Inclination

The floor at the installation site must be rated at 250 lb/ft^2 (1221 kg/m^2). This is sufficient to support a fully loaded library.

The floor must be level to within 0.25 inches (6.4 mm) over a 6 foot x 6 foot (1.83 m x 1.83 m) area.

Power and Grounding

The tape library is rated for 100-240 VAC~, 50-60 Hz, 16 A-8 A, 1600 W service. A dedicated outlet and a 20 amp circuit breaker must provide power to the tape library. In addition, it is necessary to use a harmonized 3 x 1.5mm^2 power cord approved by the associated country of use with the appropriate wall oulet. For a listing of Compaq power cords refer to Table 2-1.

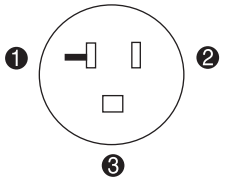


Figure 2–3. Wall outlet requirements for North America

❶ Neutral

❷ Line

❸ Ground

NOTE: The tape library contains redundant power supplies. As a result, two wall outlets are required.

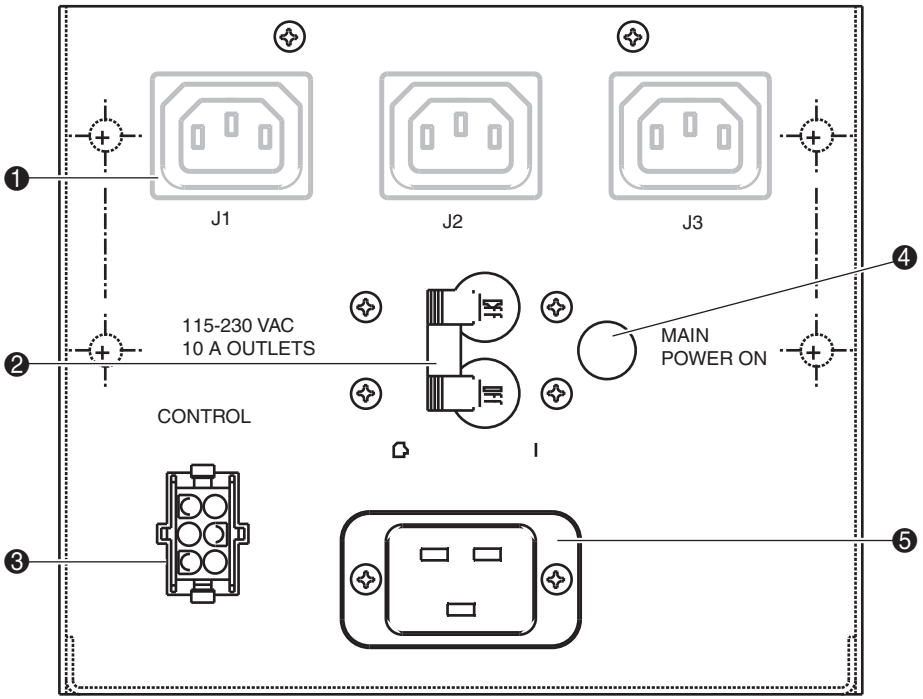
WARNING: The library must be connected to a grounded electrical outlet. Failure to properly connect the library to a grounded electrical outlet could result in personal injury and/or equipment damage.

Table 2-1 Power Cords

Country	Part Number
United States/Canada/Mexico	146210-001
New Zealand, Australia, China	146210-011
Central Europe	146210-021
United Kingdom/Hong Kong	146210-031
Italy	146210-061
Denmark	146210-081
Switzerland	146210-111

Library Power Supply

Figure 2-3 shows the library wide-range power supply and describes its components.



❶ Power receptacle (internal use only)

❷ Circuit breaker

❸ Circuit connector

❹ AC indicator light

❺ AC power connector (IEC-320 C19)

Figure 2-4. Library wide-range power supply

Environmental Conditions

The installation site must provide the following environmental conditions during normal library operation:

- Humidity: 20% to 80% non-condensing
- Temperature: 50°F to 90°F (10° to 32°C)
- Altitude: sea level to 10,000 feet (3,048 m)

NOTE: For additional library specifications (including environmental requirements during shipping and storage), see Appendix A or B.

Physical Distance Between the Library and a Host Workstation

The maximum physical distance between the library (SCSI bulkhead) and the SCSI connector on a host workstation is dictated by the Low Voltage Differential (LVD) bus characteristics (see Table 2-1 and Table 2-2).

NOTE: For the ESL9198 and most ESL9326 libraries, a SCSI bus extender is used for bus 1 (robotic controller, drive 0, drive 1.) For the other drive pairs (D2, D3), (D4, D5), (D6, D7), (D8, D9) no internal SCSI extender is used. See Table 2-1 and Table 2-2 for the maximum external SCSI bus cable lengths.

SCSI bus extenders can be purchased for other drive pairs.

Table 2-2 Physical Distances (ESL9198)

Bus	Devices	Maximum External Length
1	Robot, D0, D1	20 meters
2	D2, D3	10 meters
3	D4, D5	10 meters
4	D6, D7	10 meters

Table 2-3 Physical Distances (ESL9326)

Bus	Devices	Maximum External Length
1	Robot, D0, D1	20 meters
2	D2, D3	10 meters
3	D4, D5	10 meters
4	D6, D7	10 meters
5	D8, D9	10 meters
6	D10, D11	10 meters
7	D12, D13	10 meters
8	D14, D15	10 meters

Chapter 3

Preparing for the Installation

WARNING: Be sure to read and understand the instructions in the Compaq StorageWorks ESL9000 Series Tape Library Pre-Installation Site Survey before selecting an installation site, moving, unpacking or relocating the library. Failure to follow the instructions could result in personal injury and/or equipment damage.

Before you begin the installation procedure in this guide, read the following topics as described in this chapter:

- Providing the necessary tools and equipment
- Taking ESD precautions

Providing Necessary Tools and Equipment

Provide the following tools for unpacking the library:

- Metal shears for the cutting steel packing bands
- Ratchet with 15/16-inch socket

Provide the following tools for removing the shipping restraints:

- #2 Phillips screwdriver
- Tie wraps (various lengths)

Provide the following tools for leveling the library:

- 3/4-inch open-end wrench
- Carpenter levels (12 inches [40.4 cm] and 2 feet [60.9 cm])
- 5/32-inch hex key wrench (for opening the rear door)

Providing Tape Cartridges

You must provide all the tape cartridges used in the library. The ESL 9000 Series libraries use DLT Tape III, DLT Tape IIIXT or DLT Tape IV cartridges up to a maximum of 198 cartridges for the ESL9198 and 326 for the ESL9326. The SDLT based library can use both SDLT and DLT Tape IV media; however, only SDLT is Write/Read (W/R). DLT Tape IV cartridges are recognized as Read Only (RO).

Refer to the *Compaq StorageWorks ESL9000 Series Tape Library Reference Guide* for information about preserving tape cartridges.

Designating Host and Diagnostic Workstations

You must provide the host and diagnostic workstations that communicate with the library.

Host workstations communicate with the library using a SCSI interface and the standard SCSI-2 command set. Diagnostic workstations communicate with the library using special diagnostic software (located on the CD-ROM) and a low-speed EIA/TIA-574 (RS-232 9-pin) serial interface.

NOTE: Hosts without a direct SCSI interface require external communications bus converters.

Taking ESD Precautions

Some components within the library contain static-sensitive parts. To avoid damage to these parts while performing installation, maintenance, or replacement procedures, observe the following precautions:

- Keep the library turned off during all installation procedures.
- Keep the library power cord plugged into a grounded power outlet except when working with AC electrical components.
- Avoid contact with power supplies, EMI filters, and AC electrical components while the library is connected to a power outlet.
- Use an anti-static wrist strap.
- Keep static-sensitive parts in their original shipping containers until ready for installation.
- Do not place static-sensitive parts on a metal surface. Place them inside their protective shipping bag or on an anti-static mat.
- Avoid touching connectors and other static-sensitive components.
- Close the library door and access panel when not working on the library.

NOTE: Dry climates and cold-weather heating environments have lower relative humidity and are more likely to produce static electricity.

Chapter 4

Unpacking and Moving the Library

This chapter explains how to unpack the library and move it to its final installation location. *Compaq StorageWorks ESL9000 Series Tape Libraries* are shipped in packing materials designed to protect them from damage during transit. By following these instructions, you help ensure that a library remains undamaged through installation at the site.

Major steps in this procedure are:

- Receiving the library
- Removing the shipping container
- Moving the library
- Removing the shipping plate
- Removing the shipping restraints
- Storing the shipping materials
- Leveling the library
- Reinstalling the gripper restraint

Receiving the Library

To receive the library:

WARNING: A library can weigh up to 1300 pounds (589 kg). At least two people should move and install the library. Failure to use two people could result in personal injury and/or equipment damage.

1. Unpack the library as close to the installation site as possible.
2. Inspect the shipping pallet and shipping container for damage that may have occurred during shipment. Report any damage to the shipper.

Removing the Library Shipping Container

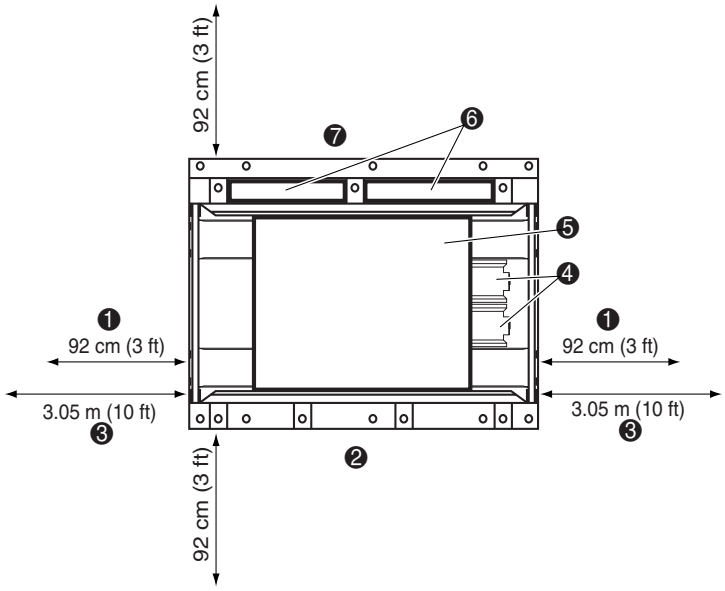
To remove the library shipping container:

1. Choose the unloading side. The library can be unloaded from either the right or the left side of the pallet.
2. Verify the minimum floor space requirements.

NOTE: Removing the ESL9198 library shipping container requires a minimum of 3 feet (92 cm) on all sides. For the side being used for the ramp, an additional 5 feet (1.5 m) is required for a total of 8 feet (2.4 m).

Removing the ESL9326 library shipping container requires a minimum of 3 feet (92 cm) on all sides. For the side being used for the ramp, an additional 7 feet (2.04 m) is required for a total of 10 feet (3.15 m).

The minimum height required for unpacking a library is 85 inches (2.16 m). Figure 4-1 shows the minimum floor space required by a library to remove its shipping container.



❶ Without ramp extensions
❷ Front
❸ With ramp extensions
❹ Ramp extensions
❺ Library
❻ Accessory kits
❼ Rear

Figure 4-1. Minimum floor space requirements (top view of unpacking site)

3. Using metal shears, cut the two steel bands that secure the library and packing material to the pallet (see Figure 4-2).

WARNING: The steel bands are under tension and will snap away from the shipping container when cut. Be sure to stand clear of the bands while cutting. Failure to stand clear of the bands could result in personal injury.

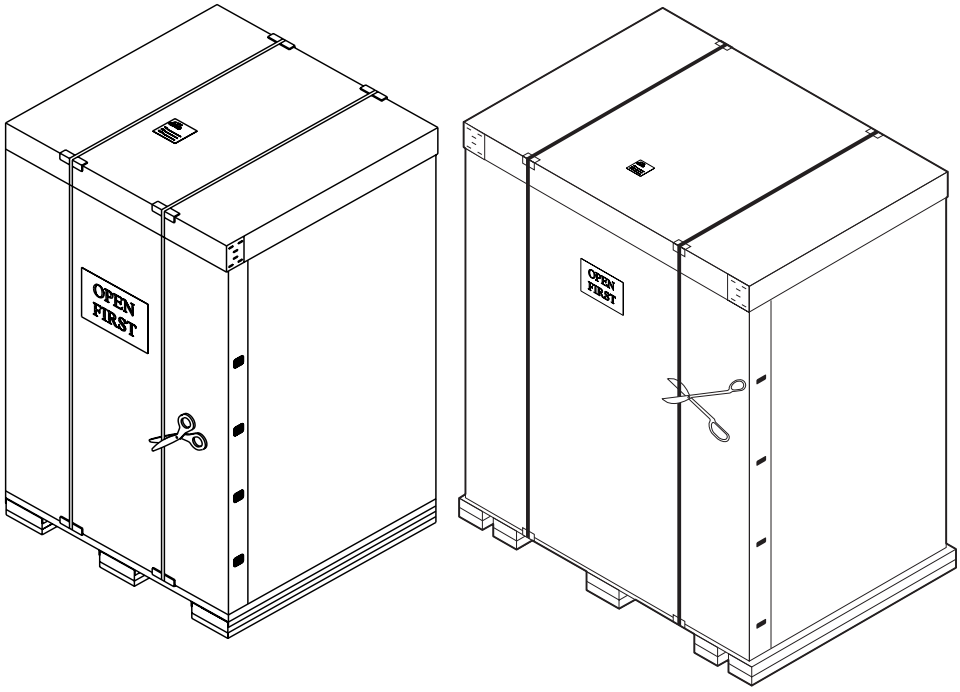


Figure 4-2. Removing the steel bands

4. Lift the top cover straight up and off the shipping container (see Figure 4-3).
5. Pull the eight retaining clips, on opposing corners of the shipping container, to their open position (❶ Figure 4-3).

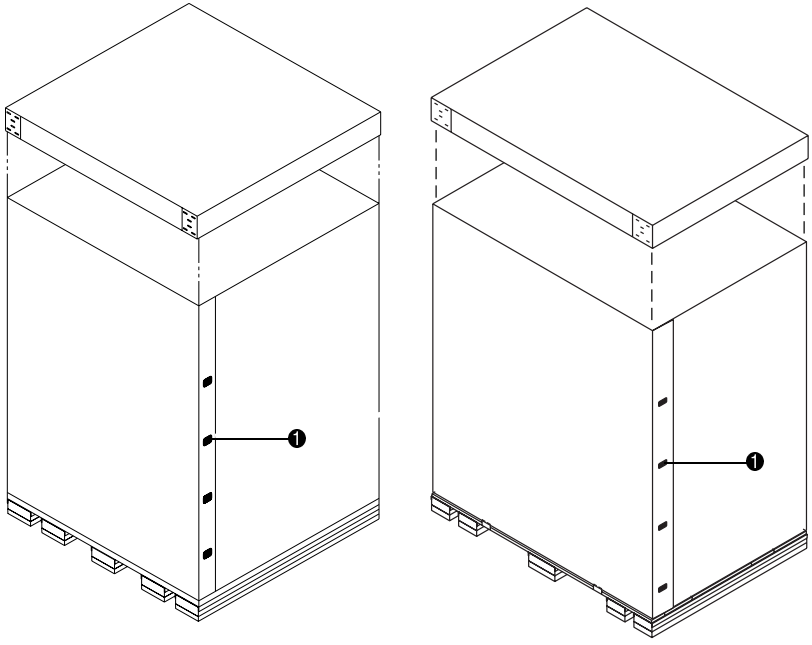


Figure 4-3. Removing the box top cover

6. Unwrap the cardboard box from the library (see Figure 4-4).

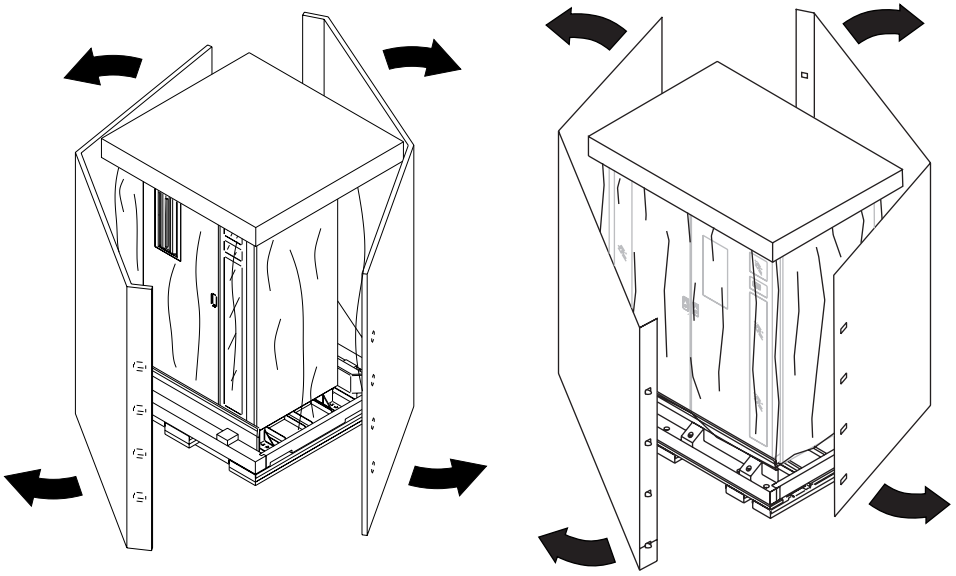


Figure 4-4. Removing the cardboard box

7. Remove the accessory kits from the rear compartment of the crate (❻ Figure 4-1).
8. Check the packing list and verify that all accessories have been received. If any part is missing or damaged, contact your authorized reseller.

9. Lift the foam cap up and off the library (see Figure 4-5).

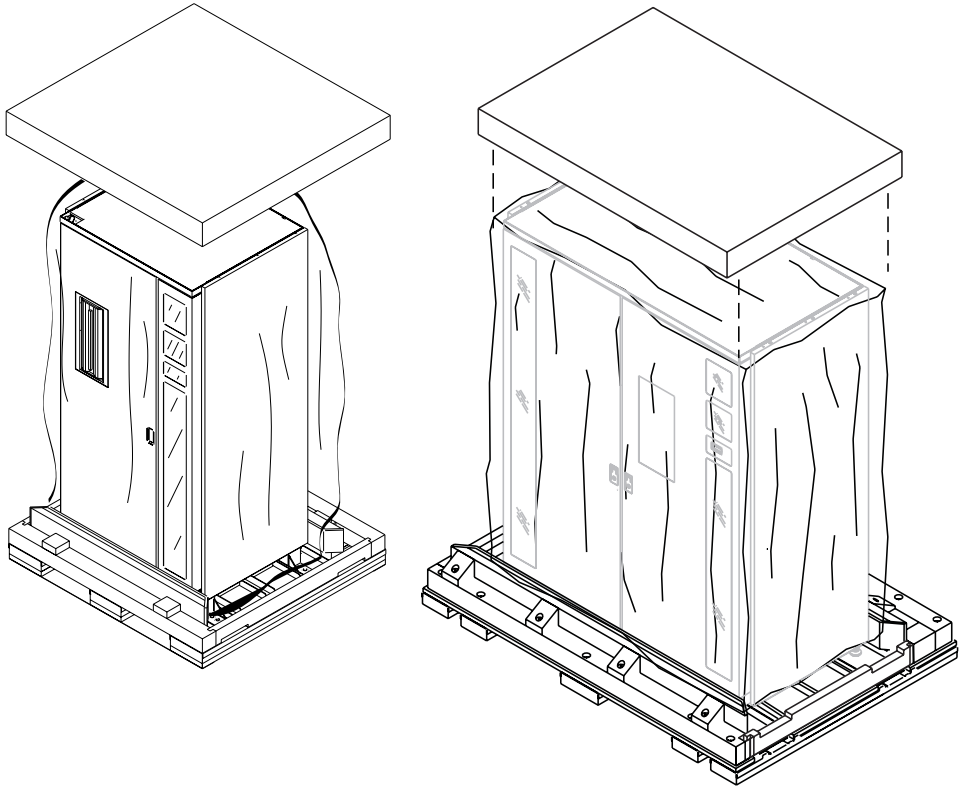


Figure 4-5. Removing the foam cap

10. On the left side of the library, lift the wooden bar out of its brackets on the pallet (see Figure 4-6).

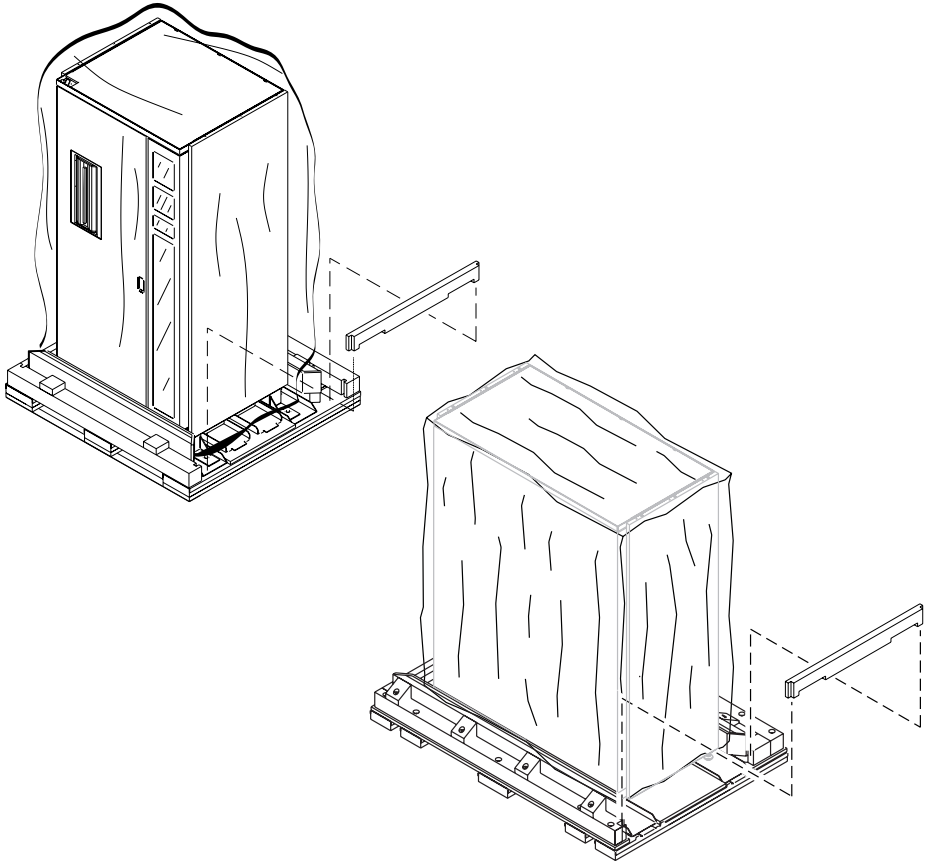


Figure 4-6. Removing the wooden bar

11. On the left side of the library, unscrew the two bolts that secure each of the two stop blocks.

12. Remove the two stop blocks from under the left side of the library (see Figure 4-7).

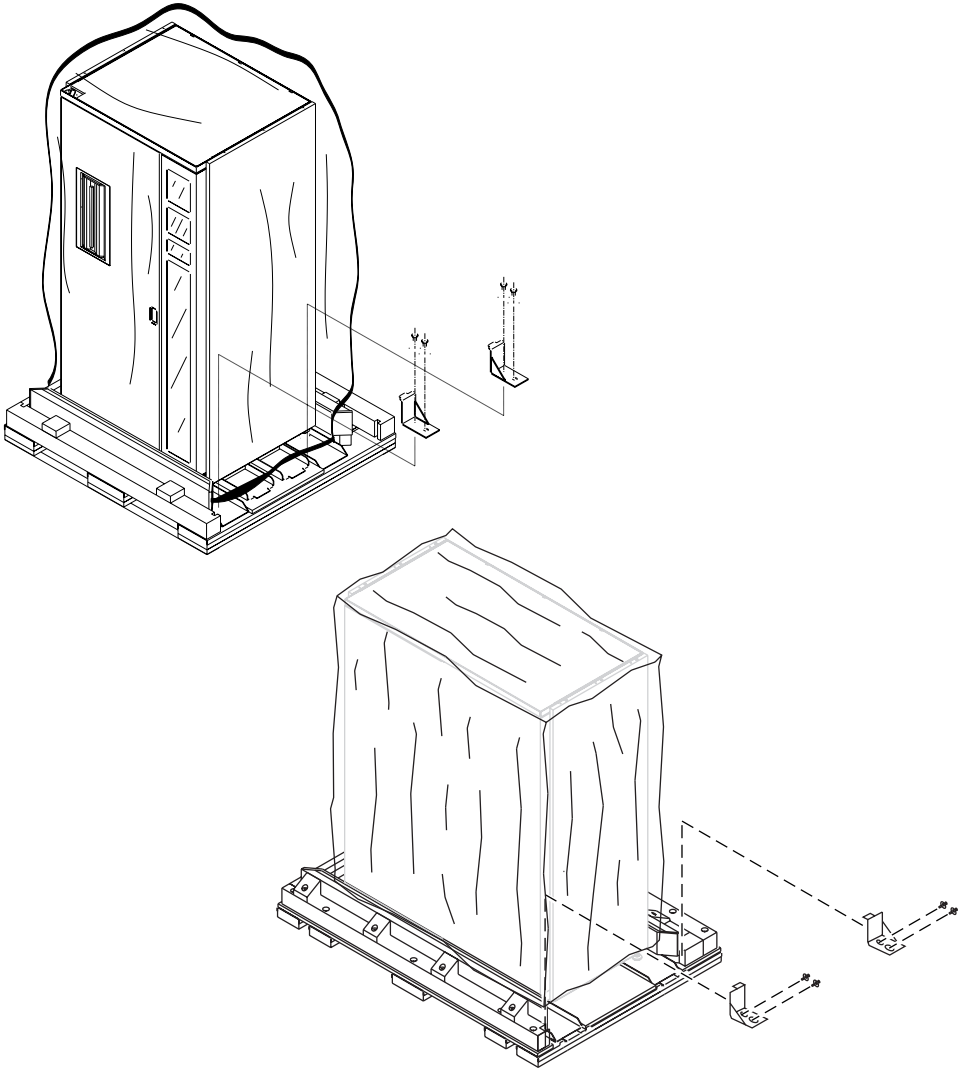


Figure 4-7. Removing the stop blocks

13. Reinsert the left wooden bar in its brackets on the pallet to hold the library in place (see Figure 4-6).
14. Repeat steps 10, 11, and 12 for the right side of the library. Do not replace the right wooden bar.

15. Slide the two ramp extensions and the foam block out from under the right side of the library (see Figure 4-8). Set the ramp extensions aside until you are ready to move the library.

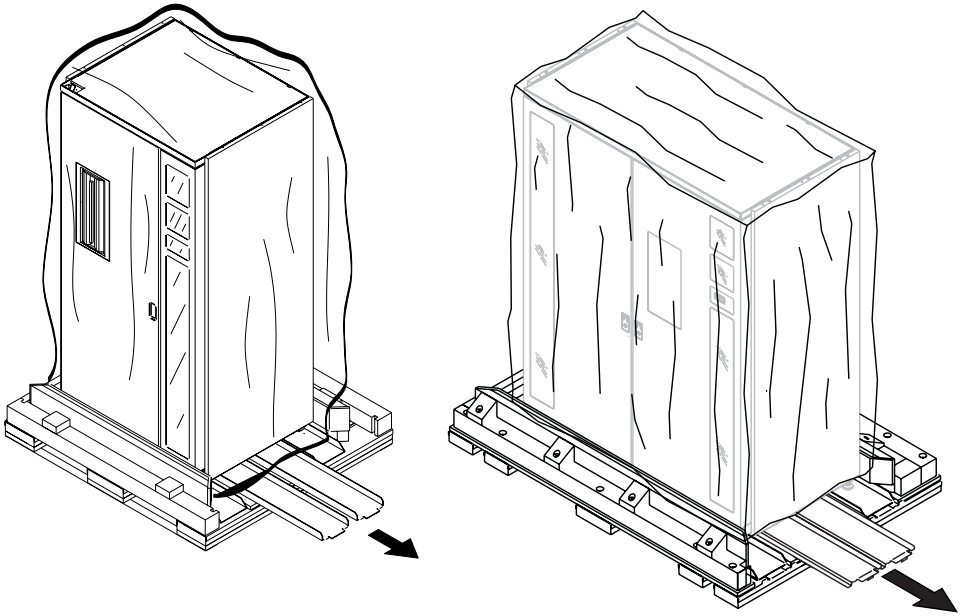


Figure 4-8. Removing the ramp extensions

16. Reinsert the right wooden bar into its brackets on the pallet to hold the library in place.

Moving the Library

To move the library to its installation site:

1. Carefully lift the shipping bag off of the library (see Figure 4-9).

NOTE: Use caution when removing the shipping bag so that it can be used to repack the library.

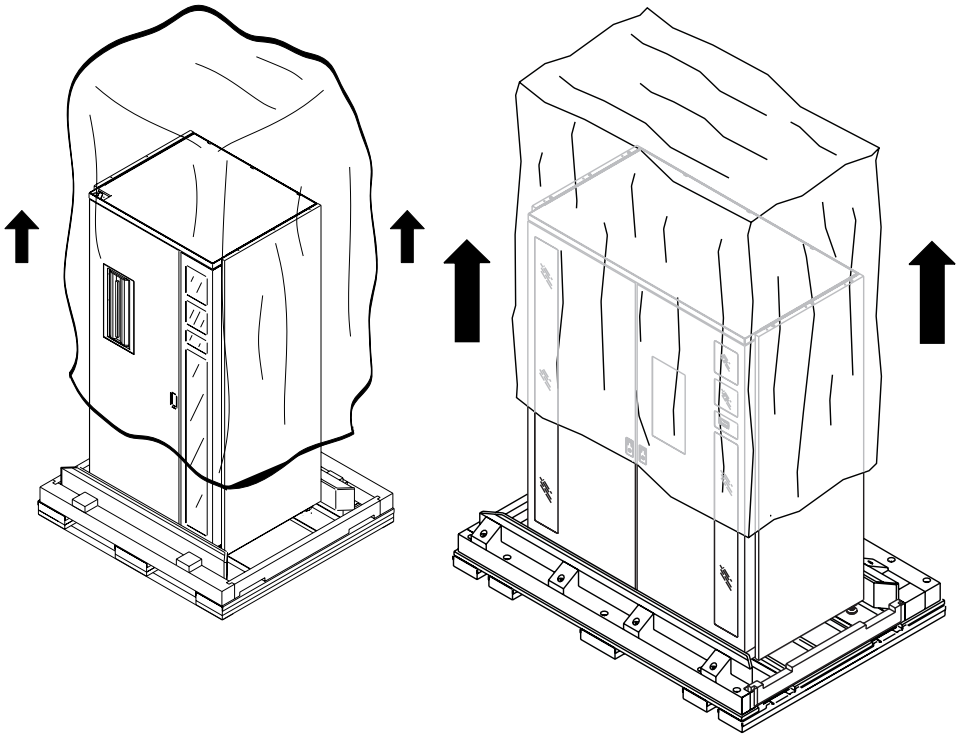


Figure 4-9. Removing the shipping bag

2. Inspect the library for any damage that might have occurred during shipment.
3. Place the two ramp extensions in the slots provided at the edge of the pallet (see Figure 4-10). The ramp can be set up on either the right side or the left side of the pallet.

NOTE: The following illustrations show the ramp setup procedure from the right side of the library.

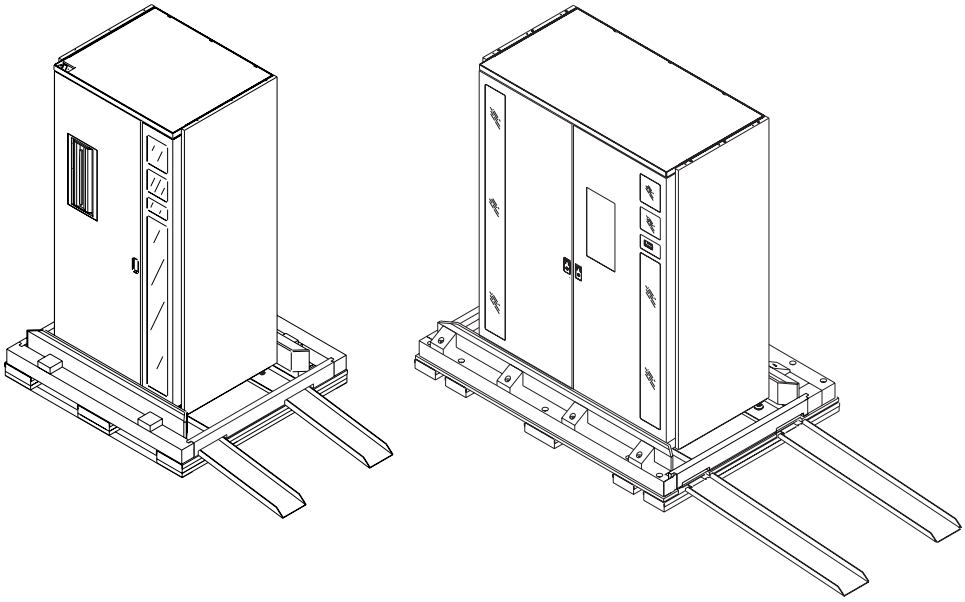


Figure 4-10. Preparing the ramp

4. Verify that the library's four leveling feet are raised. If the library is resting on the leveling feet, turn each of them to the right (using the ¾-inch open-end wrench supplied in the Accessory Kit) until they are all 1/2 inch above the pallet (see Figure 4-11).

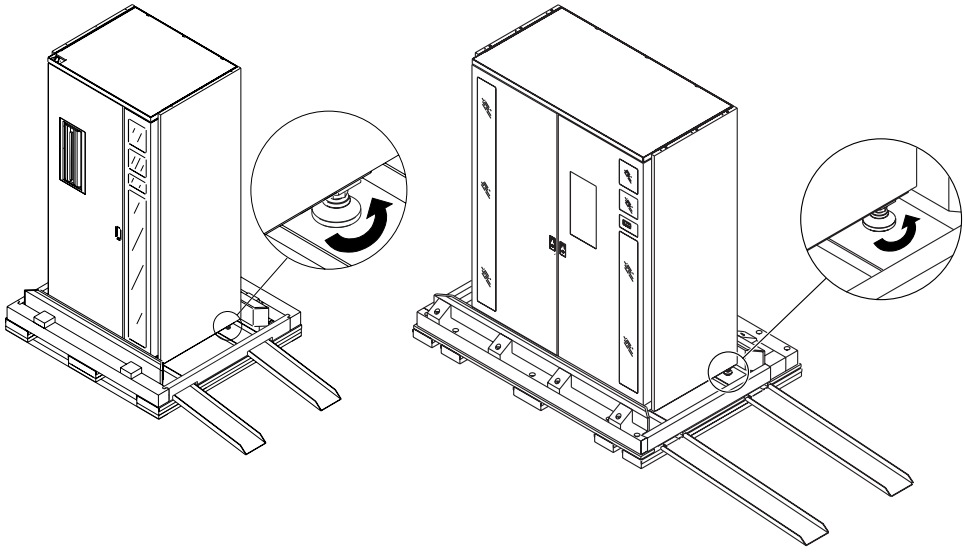


Figure 4-11. Raising the leveling feet

5. Move the wooden bar (see Figure 4-12):
   a. Remove the wooden bar from the ramp-side of the pallet.
   b. Turn the wooden bar over and place under the ramp extensions for support.

NOTE: Align the notches in the wooden bar with the ramp extensions.

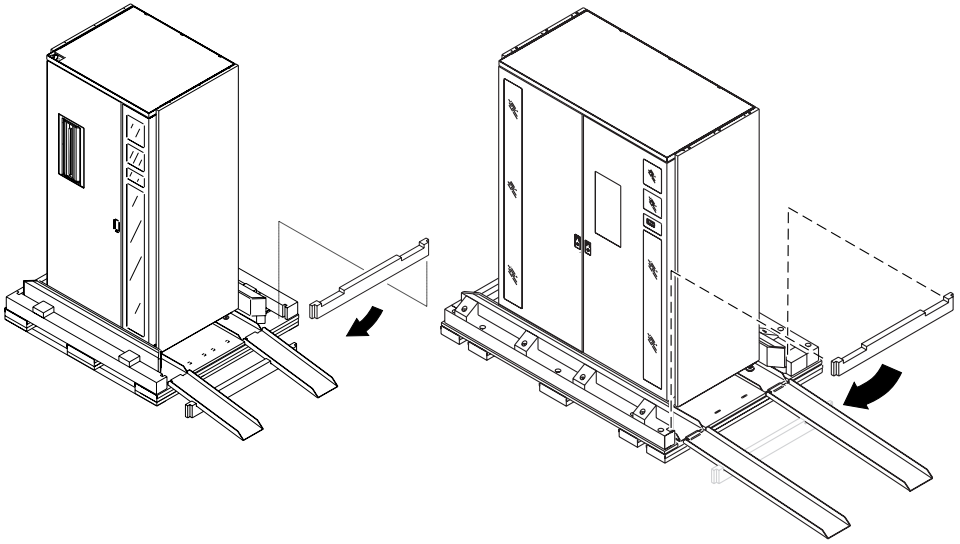


Figure 4-12. Moving the wooden bar

6. With the help of two people, slowly guide the library down the ramp (see Figure 4-13). Control the speed of its descent.
7. Move the library to its final installation site.

WARNING: A library can weigh up to 1300 pounds (589 kg). At least two people must roll it down the ramp. Failure to use two people could result in personal injury and/or equipment damage.

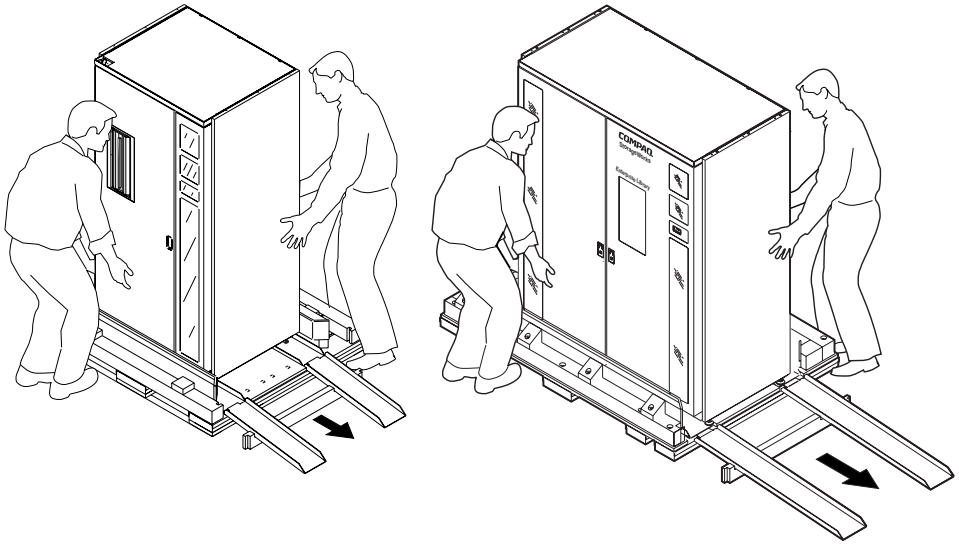


Figure 4-13. Rolling the library down the ramp

Removing the Shipping Plate

To remove the shipping plate:

1. Connect the library to a grounded power source.

   NOTE: Do not turn the library on.

2. Unlock and open the front library door:
   a. Using the key from the accessories kit, unlock the door.
   b. Lift the door handle straight up and then turn the handle counterclockwise to unlatch it.
   c. Gently pull the door handle to open the door.
3. Remove the foam pads from inside the front doors and around the robotics.

4. Remove the shipping plate that protects the load port (see Figure 4-14):

   NOTE: The load port is located inside the front door of the library and is secured with a steel plate for protection during shipment.

   a. Unscrew and remove the 12 bolts and washers securing the plate to the load port.

   b. Remove the shipping plate from the load port.

   NOTE: Save the bolts, washers, and shipping plate to use in re-packing the library.

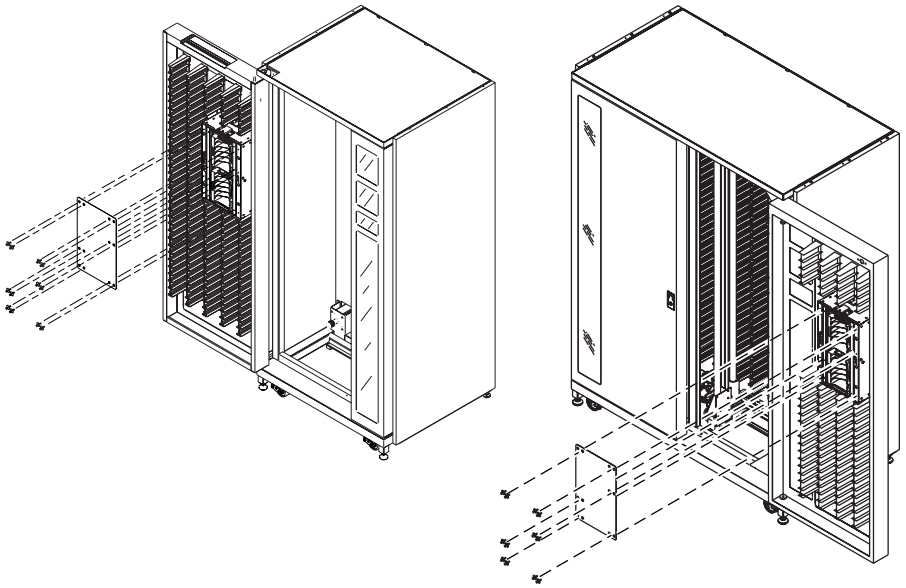
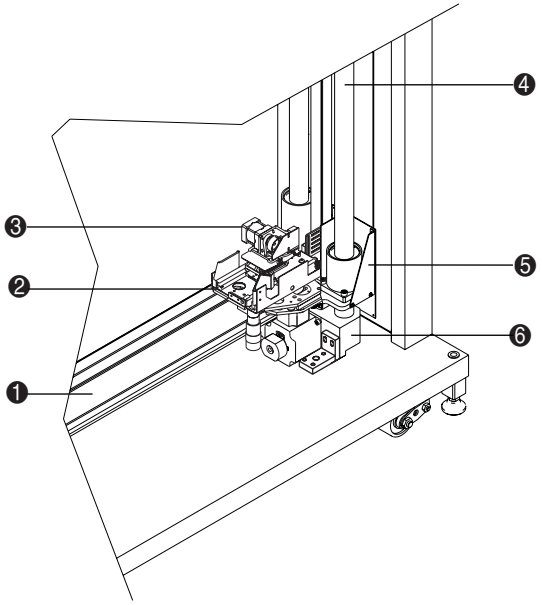


Figure 4-14. Removing the shipping plate

Removing the Shipping Restraints

Use the following procedures to remove the library shipping restraints from the Cartridge Handling Mechanism (CHM).

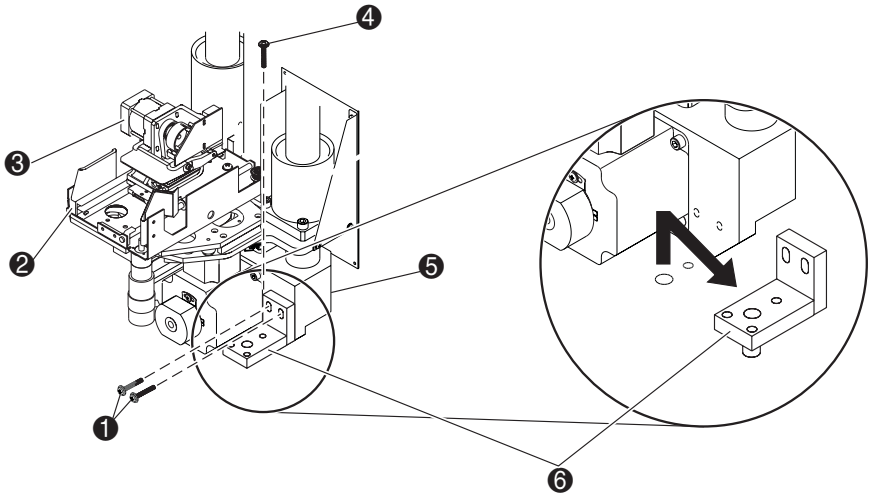
1. Locate the vertical carriage assembly ❺ as shown in Figure 4-15.



❶ Horizontal axis
❷ Extension axis assembly
❸ Gripper assembly
❹ Vertical axis
❺ Vertical carriage assembly
❻ Horizontal carriage assembly

Figure 4-15. Locating the vertical carriage assembly

2. Remove the horizontal carriage restraint ❹ as shown in Figure 4-16:
   a. Remove the two screws that secure the horizontal carriage restraint to the horizontal carriage.
   b. Remove the screw that secures the horizontal carriage restraint to the floor of the library.
   c. Remove the horizontal carriage restraint ❻.

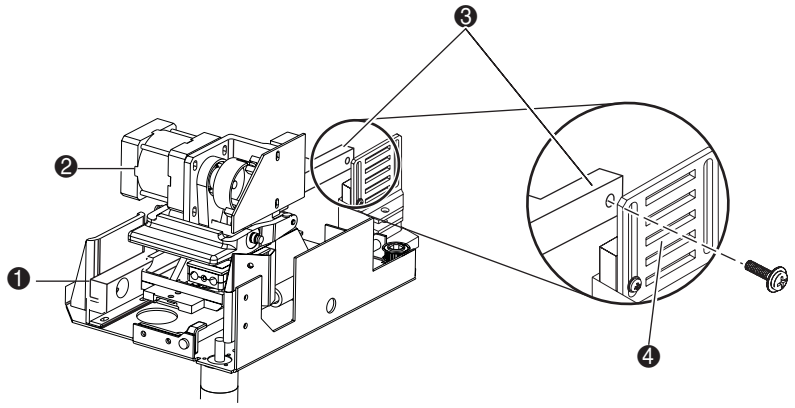


❶ Horizontal carriage restraint screws
❷ Extension axis assembly
❸ Gripper assembly
❹ Horizontal carriage restraint screw
❺ Horizontal carriage assembly
❻ Horizontal carriage restraint

Figure 4-16. Removing the horizontal carriage restraint

3. Slide the horizontal carriage assembly along the horizontal axis toward the middle of the library.

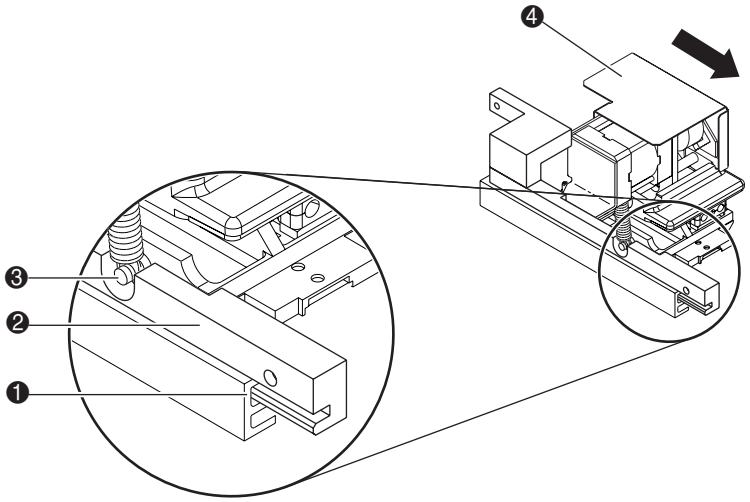
4. Remove the gripper restraint:
   a. Remove the screw that secures the gripper restraint to the belt clamp ❹ as shown in Figure 4-17.



❶ Extension axis assembly
❷ Gripper assembly
❸ Gripper restraint
❹ Belt clamp

Figure 4-17. Removing the gripper restraint screw

b. Slide the gripper assembly ❹ away from the vertical axis until the gripper assembly is fully extended and the gripper restraint ❷ disengages from the follower guide ❶ (see Figure 4-18).



❶ Follower guide

❷ Gripper restraint

❸ Spring post

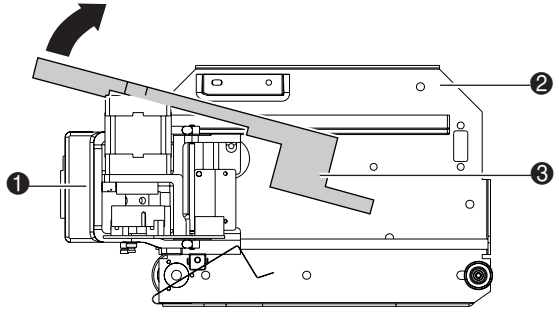
❹ Gripper assembly (view rotated)

Figure 4-18. Releasing the gripper restraint

c. Pivot the gripper restraint ❸ until it clears the motors and spring post as shown in Figure 4-19.

d. Remove the gripper restraint ❸ by gently pulling it back toward the vertical axis.

e. Slide the gripper assembly ❶ toward the vertical axis.



❶ Gripper assembly (fully extended)

❷ Extension axis assembly (top view)

❸ Gripper restraint

Figure 4-19. Removing the gripper restraint

5. Remove the vertical carriage restraint ❹ as shown in Figure 4-20:

WARNING: The vertical carriage assembly is extremely heavy.

a. Rotate the extension axis ❷ assembly 90 degrees.

b. Remove the screw that secures the vertical carriage assembly ❸ to the vertical carriage restraint ❹.

c. Gently slide the vertical carriage assembly ❸ up to eye level.

d. Squeeze the two sides of the vertical belt together, making sure to interlock the belt cogs.

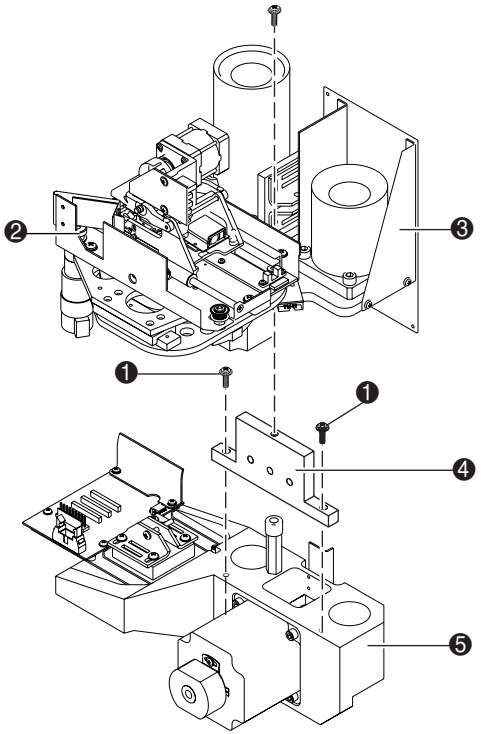
e. Secure the vertical belt to the vertical carriage assembly ❸ using a tie wrap.

f. Remove the two screws ❶ that secure the vertical carriage restraint to the horizontal carriage.

g. Remove the vertical carriage restraint ❹.

h. Remove the tie wrap installed in step 5e.

i. Gently lower the vertical carriage assembly ❸.



❶ Vertical carriage restraint screws

❷ Extension axis assembly (rotated 90°)

❸ Vertical carriage assembly

❹ Vertical carriage restraint

❺ Horizontal carriage assembly

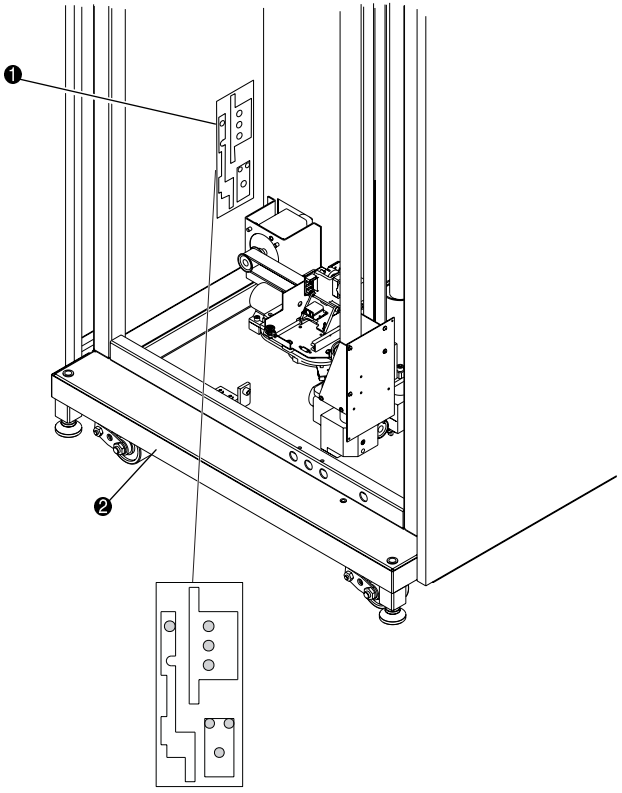
Figure 4-20. Removing the vertical carriage restraint

Storing the Shipping Materials

To store the shipping and packaging materials for future use:

1. Using the gripper, horizontal, and vertical restraint screws, secure the shipping restraints to the inside of the library as shown in Figure 4-21.

NOTE: The profile of each shipping restraint is clearly outlined on the storage label.



❶ Label with shipping restraints outlined

❷ Front of library

Figure 4-21. Storing the shipping restraints

2. Slide the two ramp extensions into their shipping position on top of the pallet.
3. Secure the ramp extensions with the foam block.
4. Re-insert the wooden bar into its brackets on the pallet.
5. Fold the shipping bag.
6. Place the shipping bag, load port shipping plate, stop blocks, foam cap, screws, and other packaging materials on the pallet.
7. Collapse the cardboard box.
8. Place the cardboard box on top of the packaging materials on the pallet.
9. Secure the pallet, packaging materials, and cardboard box for future use.

Leveling the Library

To level the library:

> **NOTE:** If a multi-unit library system is being implemented, refer to the *Compaq StorageWorks ESL9000 Series Tape Library Pass-Through Mechanism (PTM) Installation Guide* for installation instructions.

1. Using the ¾-inch open-end wrench (supplied in the Accessory Kit), rotate each foot of the library until it makes contact with the floor.
2. Rotate each foot an additional one-quarter turn to begin raising the library.
3. Center a carpenter's level on the top front edge of the library.
4. Check the gauge on the level. If the front of the library is level, proceed to step 6. If it is not level:
   a. Determine the tilt of the library.
   b. Lower the foot on the low side of the library by applying a one-quarter turn with the open-end wrench.
5. Repeat step 4 until the front is level.
6. Repeat steps 3 and 4 for the left edge, back edge, and right edge of the library.
7. Recheck the level on all top edges.
8. If necessary, repeat steps 3 and 4 until all four top edges of the library are level.

> **NOTE:** You can now configure the library for normal operation. Refer to the *Compaq StorageWorks ESL9000 Series Tape Library Reference Guide* for more information.

Reinstalling the Gripper Restraint

If the library is to be moved to a different location, use this procedure to re-install the gripper restraint:

> **NOTE:** To relocate the library or prepare it for shipment, see Appendix C "Relocation" in the *Compaq StorageWorks ESL9198 Series Tape Library Reference Guide*.

1. Pull the gripper all the way out toward you (see Figure 4-22).
2. Insert the gripper restraint ❶ into the follower guide so that it is in the same position as shown in Figure 4-22.
3. Slide the gripper and restraint to lock them into the grove (approximately half way in).
4. Rotate the gripper 90 degrees.
5. Line up the restraint and then attach it. See the section "Removing the Shipping Restraints" for attaching information.

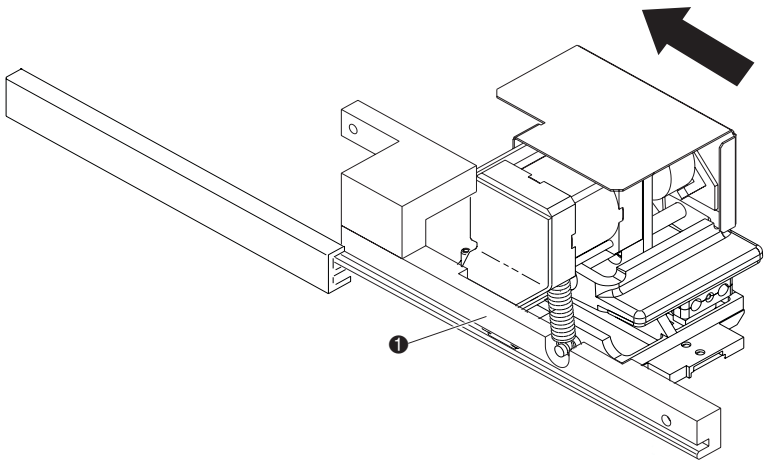


Figure 4-22. Reinstalling the gripper restraint

Appendix A

Specifications (ESL9198)

This appendix lists the physical, reliability, and environmental specifications for the Compaq StorageWorks ESL9198 Series Tape Library.

Table A-1 Physical Specifications

Description	Specification
Width	36 inches (91 cm)
Depth	29 inches (74 cm)
Footprint	7.25 square feet (0.673 sq m) Crated: 48 inches x 48 inches (122 cm x 122 cm)
Height	75 inches (191 cm) Crated: 80 inches (203 cm)
Weight	985 lb (447 kg) Crated: 1220 pounds (553 kg) 8-drive configuration without cartridges
Maximum tape drives	Up to 8
Maximum cartridges	0 through 198
Drive types	DLT 8000 (LVD), SDLT 110/220 (LVD)
Drive weight	13.5 pounds (6.12 kg)
Cartridge types	DLT Tape III, IIIXT, IV or SDLT
Cartridge weight	7.7 ounces (216 g)
SCSI bus type	Low Voltage Differential (LVD)
Host to library interface software	SCSI-2 medium changer command set

Table A-1 Physical Specifications (Continued)

Description	Specification
Power cords	2 standard, US, IEC 320 C19 male connector rated at 125 VAC (NEMA 5-20 P connector included
Host to tape drive interface software	SCSI-2
Library diagnostics	RS-232C service port for connecting to a field service computer

NOTE: To calculate the total weight of a tape library with tape drives and tape cartridges, add the following:

1. Weight of unloaded library
2. Multiply the number of drives installed by the drive weight for the weight of all drives
3. Multiply the number of tapes by the tape weight for the weight of all tapes

Table A-2 Performance Characteristics

Description	Specification
Average swap time	22 seconds, consisting of two MOVE MEDIUM commands
Inventory	Less than 5 minutes, fully loaded with labeled cartridges
MTBF	250,000 power-on hours
MSBF	1 million load/unload cycles
MTTR	Less than 30 minutes

Table A-3 Environmental Specifications

Description	Specification	
Electrical inputs	Voltage	90 VAC to 264 VAC
	Frequency	47 Hz to 63 Hz
	Power consumption	VA max 1200 W
	Electrical connection to power	IEC 320 C19 male connector inside rear door
Operating temperature	Dry bulb	59 to 90 F (15 to 32 C)
	Wet bulb	77 F (25 C) max
	Thermal transition	51.8 F (11 C) per hour

Table A-3 Environmental Specifications (Continued)

Description	Specification	
Shipping and storage temperature	Dry bulb	-40 to 151 F (-40 to 66 C)
	Wet bulb	115 F (46 C) max
	Thermal transition	54 F (30 C) per hour
Relative humidity	Operating	20% to 80% non-condensing
	Shipping and storage	5% to 95% non-condensing
Altitude	Operating	Sea level to 10,000 feet (3,048 m)
	Shipping and storage	Sea level to 12,000 feet (3,657 m)
Heat dissipation	Operating	4125 BTU/hr (1050 KCal/hr or 1200 W)
Direct Electrostatic Discharge (ESD)	Contact discharge	@ 2.0, 4.0, 6.0, 8.0 kV to all external metal panels and doors
	Air discharge	@ 2.0, 4.0, 6.0, 8.0. 10.0, 12.0, 15.0 kV to the front control panel display
RF radiated emissions (per CISPR 22: 1993 + A1: 1995 + A2: 1996	30 MHz to 230 MHz @ 40 dBuV/m (quasi-peak limit) 230 MHz to 1000 MHz @ 47 dBuV/m (quasi-peak limit)	
RF conductive emissions (per CISPR 22: 1993 + A1: 1995 + A2: 1996	0.15 MHz to 0.50 MHz @ 66 dBuV/m (quasi-peak limit) 0.50 MHz to 30 MHz @ 60 dBuV/m (quasi-peak limit)	
Harmonic current emissions (per EN 61000-3-2: 1995)	Class A	
Voltage fluctuations and flicker (per EN 61000-3-3: 1994)	Conforms to EN standard	
Radiated fields (per EN 61000-4-3: 1995)	80% AM modulation	1 kHz from 80 MHz to 1000 MHz
Radiated fields (per ENV50204: 1996)	Pulse modulation	200 MHz from 895 MHz to 905 MHz
Electric fast transients (per EN 61000-4-4: 1994	Data cables	+/- 0.5 kV
	Power cables	+/- 0.5, 1.0, kV

Table A-3 Environmental Specifications (Continued)

Description	Specification	
Power line surge (per EN 61000-4-5: 1994	Common mode coupling	+/- 0.5, 1.0, 1.5, 2.0 kV
	Differential mode coupling	+/- 0.5, 1.0, kV
Conductive fields	Data cables and power lines	80% AM modulation, 1 kHz from 0.15 MHz to 80 MHz
Power frequency magnetic field (per EN 61000-4-8: 1993	3 A/m @ 50 Hz	
Voltage dips and interruptions (per EN 61000-4-11: 1994	30% power line reduction, 60% power line reduction, 100% power line reduction	
Acoustical noise (sound power level)	Operating	8.10 Bel
	Idle	7.63 Bel
Acoustical noise (pressure @ bystander)	Operating	63 dB

Gripper Assembly

The gripper assembly includes a Class II laser bar code scanner that reads standard six to eight character, 3 of 9 bar code labels. The scanner is used to maintain an inventory of the tape cartridges within the library. For example, an inventory occurs automatically whenever the library is turned on or after the front door has been closed. An inventory can also be initiated manually from a host computer.

Appendix B

Specifications (ESL9326)

This appendix lists the physical, reliability, and environmental specifications for the Compaq StorageWorks ESL9326 Tape Library.

Table B-1 Physical Specifications

Description	Specification
Width	57 inches (145 cm)
Depth	29 inches (75 cm)
Footprint	29 inches x 57 inches (75 cm x 145 cm) Crated: 48 inches x 67 inches (122 cm x 170 cm)
Height	75 inches (191 cm) Crated: 80 inches (203 cm)
Weight	1300 pounds (589 kg) Crated: 1650 pounds (748 kg) 16-drive configuration without cartridges
Maximum tape drives	Up to 16
Maximum cartridges	0 through 326
Drive types	DLT 8000 (LVD), SDLT 110/220 (LVD)
Drive weight	13.5 pounds (6.12 kg)
Cartridge types	DLT Tape III, IIIXT, IV or SDLT
Cartridge weight	7.7 ounces (216 g)
SCSI bus type	Low Voltage Differential (LVD)
Host to library interface software	SCSI-2 medium changer command set

Table B-1 Physical Specifications (Continued)

Description	Specification
Power cords	2 standard, US, IEC 320 C19 male connector rated at 125 VAC (NEMA 5-20 P connector included
Host to tape drive interface software	SCSI-2
Library diagnostics	RS-232C service port for connecting to a field service computer

NOTE: To calculate the total weight of a tape library with tape drives and tape cartridges, add the following:

1. Weight of unloaded library
2. Multiply the number of drives installed by the drive weight for the weight of all drives
3. Multiply the number of tapes by the tape weight for the weight of all tapes

Table B-2 Performance Characteristics

Description	Specification
Average swap time	22 seconds, consisting of two MOVE MEDIUM commands
Inventory	Less than 6 minutes, fully loaded with labeled cartridges
MTBF	250,000 power-on hours
MSBF	1 million load/unload cycles
MTTR	Less than 30 minutes

Table B-3 Environmental Specifications

Description	Specification	
Electrical inputs	Voltage	90 VAC to 264 VAC
	Current (A)	16 A @100/120 VAC 8 A @ 200/240 VAC
	Frequency	47 Hz to 63 Hz
	Power consumption	VA max 1600 W
	Electrical connection to power	IEC 320 C19 male connector inside rear door
Operating temperature	Dry bulb	59 to 90 F (15 to 32 C)
	Wet bulb	77 F (25 C) max
	Thermal transition	54°F (30°C) per hour

Table B-3 Environmental Specifications (Continued)

Description	Specification	
Shipping and storage temperature	Dry bulb	-40 to 151 F (-40 to 66 C)
	Wet bulb	115 F (46 C) max
	Thermal transition	54 F (30 C) per hour
Relative humidity	Operating	20% to 80% non-condensing
	Shipping and storage	5% to 95% non-condensing
Altitude	Operating	Sea level to 10,000 feet (3,048 m)
	Shipping and storage	Sea level to 12,000 feet (3,657 m)
Heat dissipation	Operating	5500 BTU/hr (1400 KCal/hr or 1600 W)
Direct Electrostatic Discharge (ESD)	Contact discharge	@ 2.0, 4.0, 6.0, 8.0 kV to all external metal panels and doors
	Air discharge	@ 2.0, 4.0, 6.0, 8.0. 10.0, 12.0, 15.0 kV to the front control panel display
Radiated fields per IEC-801-3	Unmodulated	27 MHz to 500 MHz @ 3 V/m
Fast transients (EFT or Burst) per IEC-801-4	Data cables	@ 0.5 kV
	Power cables	@ 1.0 kV
Sound power level	Operating	7.8 Bel
	Idle	7.6 Bel
Sound pressure @ loudest bystander position	Operating	63 dB

Gripper Assembly

The gripper assembly includes a Class II laser bar code scanner that reads standard six to eight character, 3 of 9 bar code labels. The scanner is used to maintain an inventory of the tape cartridges within the tape library. For example, an inventory occurs automatically whenever the tape library is turned on or after the front door is closed. An inventory can also be initiated manually from a host computer.

Appendix C

Relocation

This appendix explains how to relocate the Compaq StorageWorks ESL9000 Series Tape Library. As used in this appendix, the term relocate means either to ship the library or simply move it to a nearby location (for example, from one area in a building to another).

The instructions in this appendix are divided into the following sections:

- Checking the new installation site
- Preparing the library for relocation
- Crating the library
- Preparing the library for operation

To ship the library or relocate it using a motor vehicle (for example, truck or forklift) follow all of the instructions in this appendix.

To move the library to a new location within the same building or facility, follow all instructions in this appendix except for those found in "Crating the Library."

NOTE: These procedures require the original packing materials of the library. If you do not have the original packing materials, contact your Compaq sales representative.

CAUTION: Relocating or shipping the library without proper packing materials can result in damage to library components.

Checking the New Installation Site

Check the new installation site for the library using the guidelines found in Chapter 2, "Selecting an Installation Location." Make sure the new location meets all applicable clearance, environmental, and power requirements.

Preparing the Library for Relocation

Take the following steps to prepare the library for relocation:

- Removing tape cartridges
- Installing internal packing materials
- Disconnecting library cables

CAUTION: Always prepare the library for relocation before any move.

Removing Tape Cartridges

To remove tape cartridges:

1. Unload all tape cartridges from the tape drives.
2. Stop all library operation.
   a. Press the **Standby** button on the control panel. This places the library off-line after the completion of any currently executing operations. When the library is off-line, the control panel displays System Off-line.
   b. Press the **Stop** button to remove power from library robotics.
3. Unlock and open the library doors.
4. Turn off the library.
5. Remove all tape cartridges from the library bins and tape drives.
6. Carefully pack all tapes for shipment.

Installing Internal Packing Materials

To install internal packing materials:

1. If the Cartridge Handling Mechanism (CHM) is not in the far right position, gently move it along the horizontal carriage until it is as far right as possible.
2. Place a foam block between the extension axis and the floor.
   a. Lift the extension axis assembly and place the large foam block between it and the floor of the library.
   b. Gently lower the extension axis assembly, resting it on the foam block.
3. See Chapter 4, Unpacking and Moving the Library for information pertaining to reattaching the shipping brackets to the CHM.
   a. Using the screws attached to the bracket, insert and tighten restraining bracket.

   NOTE: To gain access to restraining bracket, manually glide the CHM up the y-axis and hold in place, so that the motor assembly is above the library floor.
4. Insert and tighten restraining bracket.

   NOTE: Slide the CHM to the left (along the x-axis) for greater access to the area.
   a. Insert the restraining bracket onto the CHM and the library floor and secure it using the screws provided.

NOTE: More than one technician might be required to assist this operation.

5. Attach the shipping plate that protects the load port (see Figure C-1). The load port is located in the right door of the library.
   a. Attach the shipping plate and cardboard to the load port.
   b. Insert the bolts and washers that secure the plate to the load port and secure them using the screws provided during the unpacking procedure. See Chapter 4, "Unpacking and Moving the Library" for further instructions.

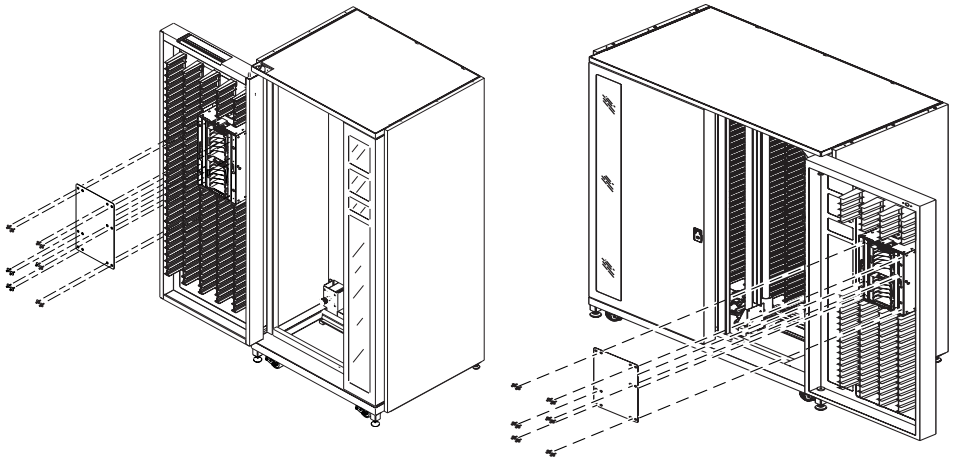


Figure C-1. Inserting the shipping plate

Disconnecting Library Cables

To disconnect library cables:

1. Disconnect SCSI cables and terminators.
2. Disconnect the power cord from the outlet and the power distribution assembly of the library.
3. Pack all cables with other library accessories.

Crating the Library

Use this section:

1. If you need to ship the library to the new site.
2. If you need to transport the library by forklift or similar means.

If you are moving the library within a facility, see "Preparing the Library for Operation," described later in this appendix.

Crating Instructions

To crate the library for a new site:

CAUTION: The library weighs approximately 985 pounds (447 kg) for the ELS9198 and approximately 1300 pounds (591 kg) for the ESL9326. Use at least two people to perform any steps that involve lifting or guiding the library. Use safe practices when lifting or guiding the library and handling the ramp.

1. Prepare the shipping pallet for the library.
   a. Attach the two ramp extensions to the pallet.
   b. Place the wooden support bar underneath the ramp extensions.
   c. Verify that the left wooden bar is attached to the pallet.
2. Place the library on the pallet.
   a. Raise the library support feet.
   b. With the help of at least one person, roll the library to a position in front of the pallet ramp.
   c. Roll the library onto the pallet.

3. Secure the library (see Figure C-2).
   a. Place the shipping bag over the library, and secure it into place.
   b. Remove the ramp sections from the pallet and slide them into the center section.
   c. Insert the foam block around the bottom of the library and the pallet.
   d. Insert and attach the stop blocks underneath the library on the right side.
   e. Attach the wooden bar on the right side of the library.
   f. Remove the wooden bar on the left side of the library.
   g. Repeat steps d and e for the left side of the library.
4. Place the accessory kits into the cutouts on the back crate panel.
5. Place the foam cap over the library.
6. Wrap the cardboard crate around the library and fasten it using the plastic restraining clips.
7. Place the top onto the crate.
8. Secure the crate with two steel restraining bands.

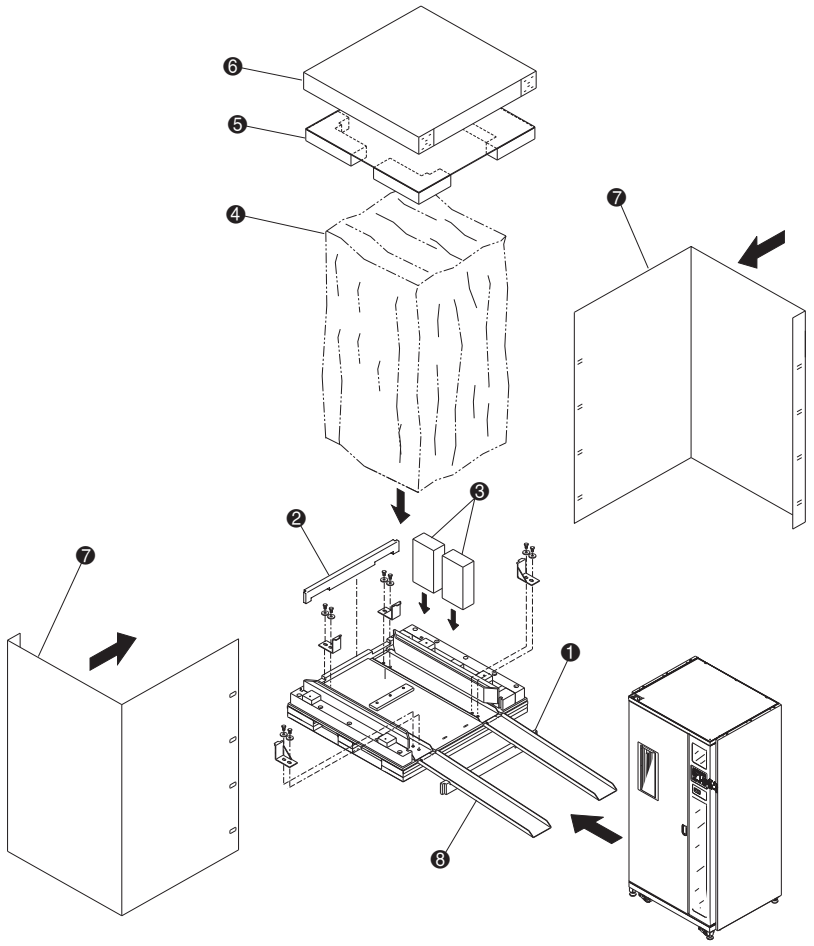


Figure C-2. Crating the library (ESL9198 shown)

❶ Right wooden bar
❷ Left wooden bar
❸ Accessory kits
❹ Shipping bag
❺ Foam cap
❻ Top
❼ Cardboard crate
❽ Ramp

Preparing the Library for Operation

After relocating the library, refer to the *Compaq StorageWorks ESL9000 Series Tape Library Reference Guide* to:

- Close the library doors and access panels
- Connect the host workstations

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