Compaq StorageWorks

ESL9000 Series Pass-Through Mechanism (PTM)

Installation Guide

Third Edition (August 2001)
Part Number: 243492-003
Compaq Computer Corporation

© 2001 Compaq Computer Corporation.

Compaq, the Compaq logo, and StorageWorks Registered in U. S. Patent and Trademark Office.

SANworks, Tru64 UNIX, and OpenVMS are trademarks of Compaq Information Technologies Group, L.P. in the United States and other countries.

Microsoft, MS-DOS, Windows, Windows NT are trademarks of Microsoft Corporation in the United States and other countries.

Intel, Pentium, Intel Inside, and Celeron are trademarks of Intel Corporation in the United States and other countries.

Motif, OSF/1, UNIX, the “X” device, IT DialTone, and The Open Group are trademarks of The Open Group in the United States and other countries.

All other product names mentioned herein may be trademarks of their respective companies.

Confidential computer software. Valid license from Compaq required for possession, use or copying. Consistent with FAR 12.211 and 12.212, Commercial Computer Software, Computer Software Documentation, and Technical Data for Commercial Items are licensed to the U.S. Government under vendor's standard commercial license.

Compaq shall not be liable for technical or editorial errors or omissions contained herein. The information in this document is provided “as is” without warranty of any kind and is subject to change without notice. The warranties for Compaq products are set forth in the express limited warranty statements accompanying such products. Nothing herein should be construed as constituting an additional warranty.

Compaq service tool software, including associated documentation, is the property of and contains confidential technology of Compaq Computer Corporation. Service customer is hereby licensed to use the software only for activities directly relating to the delivery of, and only during the term of, the applicable services delivered by Compaq or its authorized service provider. Customer may not modify or reverse engineer, remove, or transfer the software or make the software or any resultant diagnosis or system management data available to other parties without Compaq’s or its authorized service provider’s consent. Upon termination of the services, customer will, at Compaq’s or its service provider’s option, destroy or return the software and associated documentation in its possession.

Printed in the U.S.A.

Compaq StorageWorks ESL9000 Series Pass Through Mechanism (PTM) Installation Guide
Third Edition (August 2001)
Part Number 243492-003

Contents

About This Guide

Related Documents v
Text Conventions vi
Symbols in Text vii
Symbols on Equipment viii
Cabinet Stability ix
Getting Help ix
Compaq Technical Support ix
Compaq Website x
Compaq Authorized Reseller x

Chapter 1

Introduction

Preparing for the PTM Installation 1-2
PTM Upgrade Parts 1-3
PTM Assembly Parts 1-4
Multi-Unit Trim Parts 1-4
PTM Required Tools 1-5

Chapter 2

Installing a PTM

Attaching the Libraries 2-1
Attaching Procedure 2-2
Installing the PTM 2-8
Installation Instructions 2-8
Installing Library Cosmetics 2-15
Cabling the PTM 2-21

QSPI Bus 2-21
Cabling Instructions 2-21

Chapter 3

PTM Configuration and Calibration

Installing Firmware 3-2
Configuring a PTM Using the Control Panel 3-4
Configuring a Multi-Unit Library System
Using the Control Panel 3-6
Calibrating the PTM
Using the Control Panel 3-9
Configuring the PTM
Using Diagnostic Software 3-10
Configuring a Multi-Unit Library System
Using Diagnostic Software 3-15
Calibrating the PTM
Using Diagnostic Software 3-18
Bringing the Multi-Unit Library System Online 3-19

Index

About This Guide

This guide is designed to be used as step-by-step instructions for installing and configuring a Pass-Through Mechanism (PTM) for Compaq StorageWorks™ ESL9000 Series Tape Libraries.

Related Documents

Document Title	Part Number
Compaq StorageWorks™ ESL9000 Series Tape Library Diagnostic Software Guide	243493-003
Compaq StorageWorks™ ESL9000 Series Tape Library Pre-Installation Site Survey	243494-003
Compaq StorageWorks™ ESL9000 Series Tape Library Unpacking and Relocating Guide	243490-003
Compaq StorageWorks™ ESL9000 Series Tape Library Reference Guide	243491-003

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.

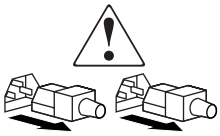
WARNING: To reduce the risk of injury from electrical shock hazards, do not open this enclosure.

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.

Compaq Authorized Reseller

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

The Compaq StorageWorks Pass-Through Mechanism (PTM) enables the transfer of a single tape cartridge between two Compaq StorageWorks ESL9000 Series Tape Libraries. The PTM can be used to connect up to five libraries (one PTM for every two libraries) creating a multi-unit tape library system.

CAUTION: All libraries running firmware 1.30 or earlier that upgrade to 1.40 or later that wish to use Multi-Unit Single LUN (MUSL) functionality must reinitialize NVRAM and use the new memory module (P/N 6220340-06). To support the new memory module, boot block version 1.30 must be installed. If a library is configured in Single mode, then there is no need to upgrade the boot block or memory module, but the NVRAM must still be reinitialized.

All libraries running 1.40 or later that wish to use MUSL functionality must have PTMs installed, as well as proper backplanes (P/N 6310520-04 or newer) and QSPI cables and QSPI terminators.

If the tape drive autoclean feature is to be supported, make sure that at least one cleaning tape exists in each library that supports autocleaning.

The PTM installation procedure consists of the following steps:

- Preparing for the PTM installation
- Attaching the libraries
- Installing the PTM
- Installing the library cosmetics
- Cabling the PTM
- Configuring and calibrating the PTM

Preparing for the PTM Installation

Before beginning the installation procedure:

1. Verify the packing slip for all required tools.
2. Make sure that you have the required upgrade parts and tools. One upgrade kit is required for this procedure (P/N 6312500 and 161268-B21).
3. Make sure the library is functional by running SysTest from the Operator control panel (refer to Chapter 5 of the *Compaq StorageWorks ESL9000 Series Tape Library Reference Guide*).
4. Perform a calibration and inventory using the Operator control panel (refer to Chapter 4 of the *Compaq StorageWorks ESL9000 Series Tape Library Reference Guide*.

PTM Upgrade Parts

Table 1-1 lists the required PTM Upgrade Parts (P/N 161268-B21):

Table 1-1 PTM Upgrade Parts (P/N 161268-B21)

Part Number	Quantity	Description
6312661-01	1	PTM assembly (see Table 1-2)
6312026	1	Lower cabinet attachment channel
6312027	1	Upper cabinet attachment plate
6312028	2	Upper cabinet spacer plate
0685521	8	Washers .265 x 0.87 x 0.090
0615113	8	Screws 1/4C x 0.75 (black)
0615112	16	Screws 1/4C x 0.75
6310881	1	Interconnect cable
6310876	2	Queued Serial Peripheral Interface (QSPI) terminator
6207311	1	Diagnostic software, V4.10
6316323	1	Right side plate adapter
6316341	1	PTM cable cover
0615018	6	Screws SMPC 6C x 0.312
6316342	1	Bin shelf opening cover
0685538	9	Push-in clips
6316600	1	Library firmware, V1.45

PTM Assembly Parts

Table 1-2 lists the required PTM Assembly Parts (P/N 6312661):

Table 1-2 PTM Assembly (6312661)

Part Number	Quantity	Description
6310170	1	PTM assembly
6312061	1	PTM cable cover
0615031	4	Screws 10F x 0.50
0905057	4	Screws 10F x 0.625
0685023	4	Washers 0.203 x 0.438 x 0.032
0605060	1	Bushing 2-inch

Multi-Unit Trim Parts

Table 1-3 lists the required Multi-Unit Trim Parts (P/N 161268-B22):

Table 1-3 Multi-Unit Trim Parts

Part Number	Quantity	Description
6312029	1	Male cosmetic panel
6312030	1	Female cosmetic panel
0615079	4	Screws 6C x 0.50
0845139	13	Hex nuts 6c x 0.31
0725101	1	Foam gasket
6312067	1	External cosmetic channel
6312068	1	Internal cosmetic channel
6312069-01	1	Cosmetic angle
6312069-02	1	Cosmetic angle
0615112[1]	16	SCR SMHC ¼ x 0.75 (silver)

1. Two are used for the Trim Kit and 14 are used for the Top Attachment Plate.

PTM Required Tools

The following tools are required to perform the PTM installation procedure:

- 12-inch straight edge ruler
- #2 Phillips screwdriver
- 5/16-inch open end wrench
- Torque wrench capable of 30-in/lb with #2 Phillips bit, 5/16-inch socket, and 4-inch minimum extension
- Torque wrench capable of 70-in/lb with 7/16-inch socket and 2-inch minimum extension
- Torque wrench capable of 5-in/lb with 5/32-inch socket
- 1/4-inch drive ratchet with 1/4-inch socket
- 12-inch (30 cm) level

Chapter 2

Installing a PTM

This chapter describes how to install a PTM for a Compaq StorageWorks ESL9000 Series tape library. Sections in this chapter include:

- Attaching the libraries
- Installing the PTM
- Cabling the PTM

Attaching the Libraries

Up to five tape libraries can be attached using the PTM upgrade parts. All of the tape libraries must be physically attached to one another. Repeat the following procedure for all libraries in the configuration.

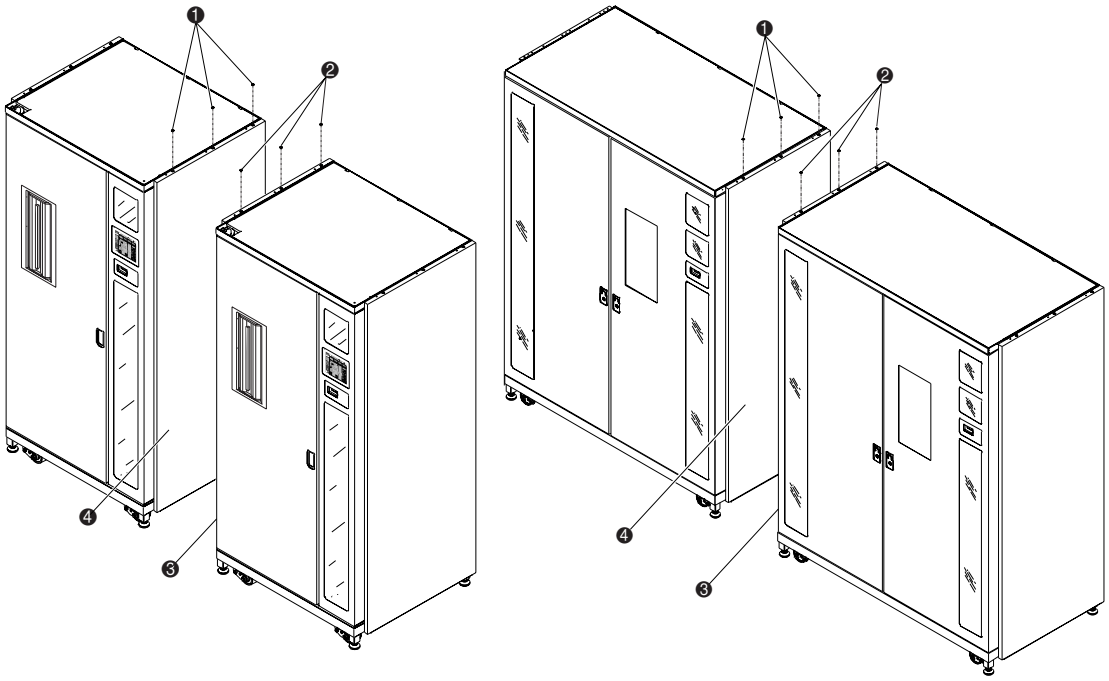
> **NOTE:** It is recommended that all ESL9000 Series Tape Libraries in the MUSL set use the same drive types. Check with your application software vendor if you want to mix drive types in the MUSL library.

Attaching Procedure

To attach the first two libraries:

> **WARNING:** Two people are required to perform the procedure. Failure to use two people might cause personal injury and/or equipment damage.

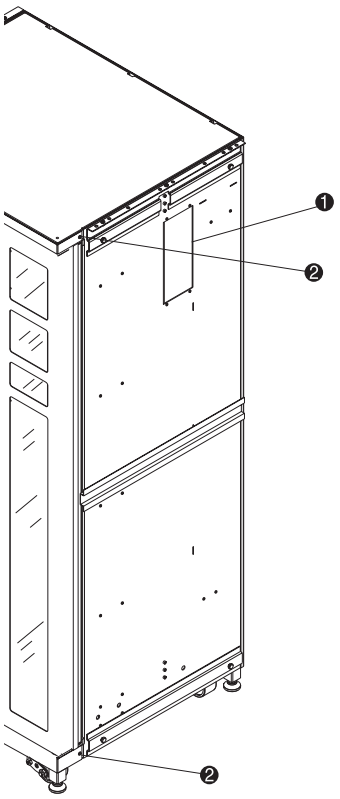
1. Power off and unplug the libraries from their power source.
2. Raise the leveling feet on both the right and left libraries so they rest on the caster wheels.
3. Remove the left side panel ❸ on the right library and right side panel ❹ on the left library (see Figure 2-1).
   a. Remove the three screws at the top of the panel ❶ or ❷.
   b. Lift the panel upward. Note that a sharp force upward may be required to dislodge the panel from the retainer posts.



❶ Three screws (left library)
❷ Three screws (right library)
❸ Left panel of right library
❹ Right panel of left library

Figure 2-1. Removing the side panel

4. Remove the PTM access panels ❶ on the left and right sides of the libraries (see Figure 2-2)



❶ PTM access panel

❷ Cosmetic anchor screw holes

Figure 2-2. Cosmetic anchor screw hole locations

5. Remove the existing screws (❷ Figure 2-2) and install four new screws (P/N 0615079) in the two libraries to be connected. Do not tighten, leave one-quarter inch clearance between the SEM washer and the trim pieces.
6. Install the lower cabinet attachment channel on the left library (❶ Figure 2-3) using three bolts (P/N 0615113) and washers (P/N 0685521). Do not fully tighten. Allow the lower cabinet attachment channel to float freely.

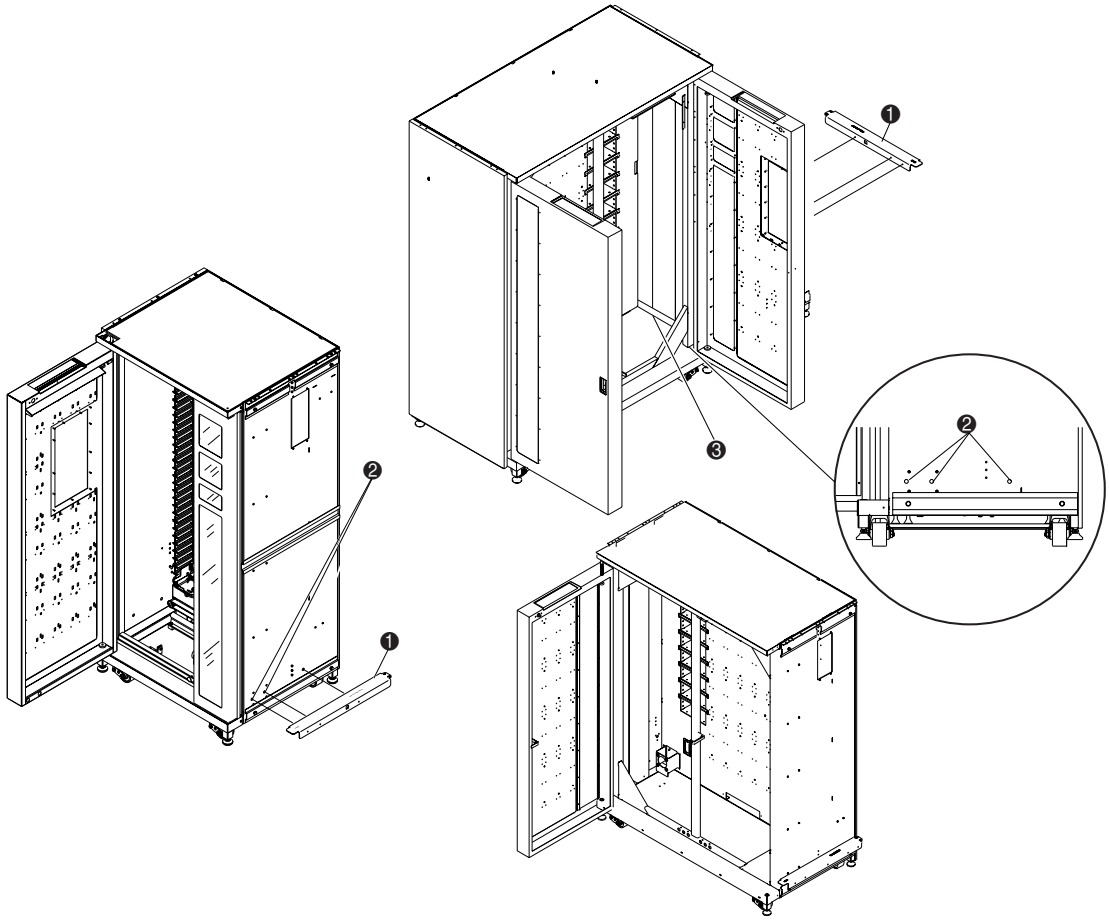


Figure 2-3. Installing the lower cabinet attachment channel (left tape library)

❶ Lower cabinet attachment channel
❷ Lower cabinet mounting holes (right side of tape library)
❸ Inside ribbon cable cover

7. Slowly move the libraries together until the lower cabinet attachment channel on the left library makes contact with the right library (see Figure 2-4).

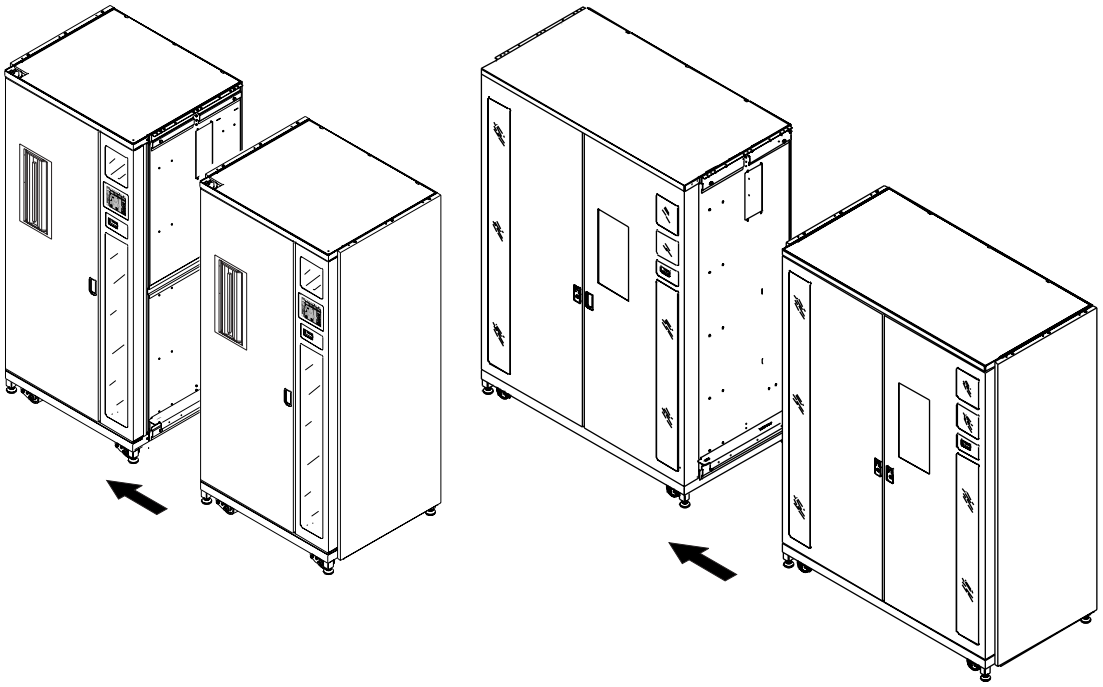
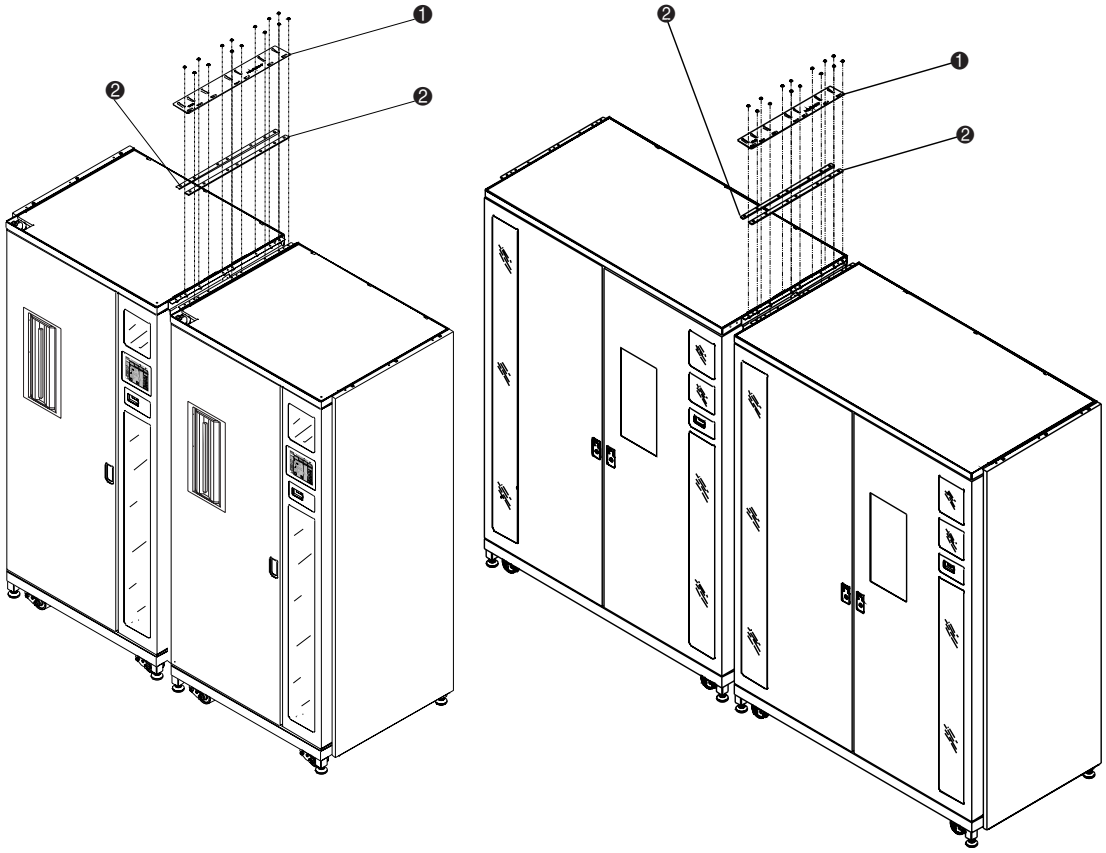


Figure 2-4. Attaching the library cabinets

8. Attach the right library to the lower cabinet attachment channel with five bolts (P/N 0615113) and washers (P/N 0685521). Do not fully tighten and allow the lower cabinet attachment channel to float freely.
9. Lower the leveling feet on both libraries.
10. Using the 12 inch (30 cm) level, level both libraries appropriately while maintaining the following:
    a. The tape cartridge bin walls should be coplanar within 0.06 inch (1.5 mm).
    b. The front surfaces of the two libraries should be coplanar within 0.25 inches (6.4 mm).
    c. The top surfaces of the two libraries should be coplanar within 0.06 inches (1.5 mm).

11. Tighten the lower cabinet attachment channel screws in both libraries to a torque value of 70 in/lb.
12. Install the two spacers (P/N 6312028) and the upper cabinet attachment plate (P/N 6312027) as shown in Figure 2-5 with seven screws and washers on each side.



❶ Upper cabinet attachment plate

❷ Spacers

Figure 2-5. Upper cabinet attachment plate and spacers

NOTE: The upper cabinet attachment plate might distort when the screws are tightened. This is normal.

The library attachment is now complete. Repeat this procedure for attaching additional libraries.

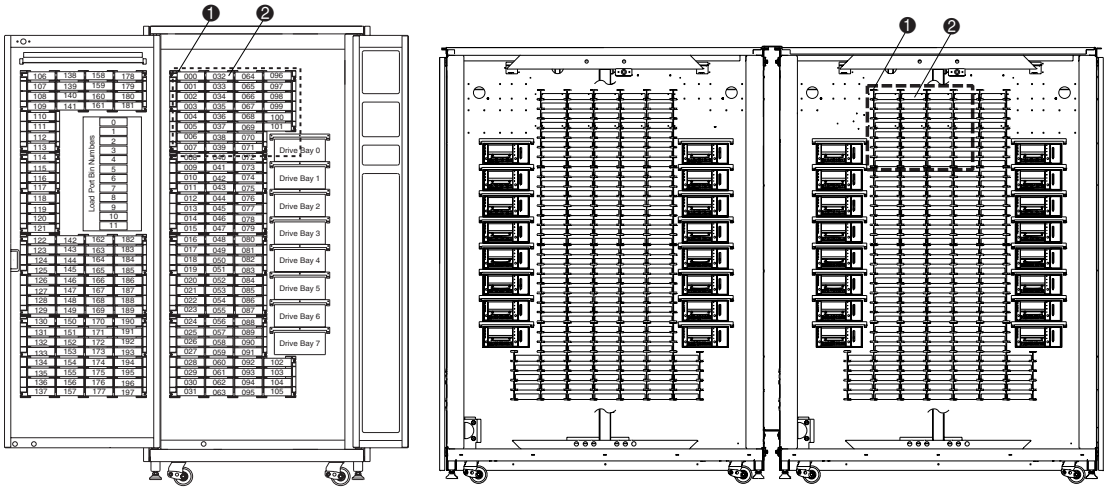
Installing the PTM

This section describes how to install the PTM assembly. Also included are instructions for installing library cosmetics.

Installation Instructions

To install the PTM assembly:

1. Remove the 32 tape cartridges and the four bin shelf modules from the right tape library as shown in Figure 2-6. Save all hardware for reinstallation at a later time.

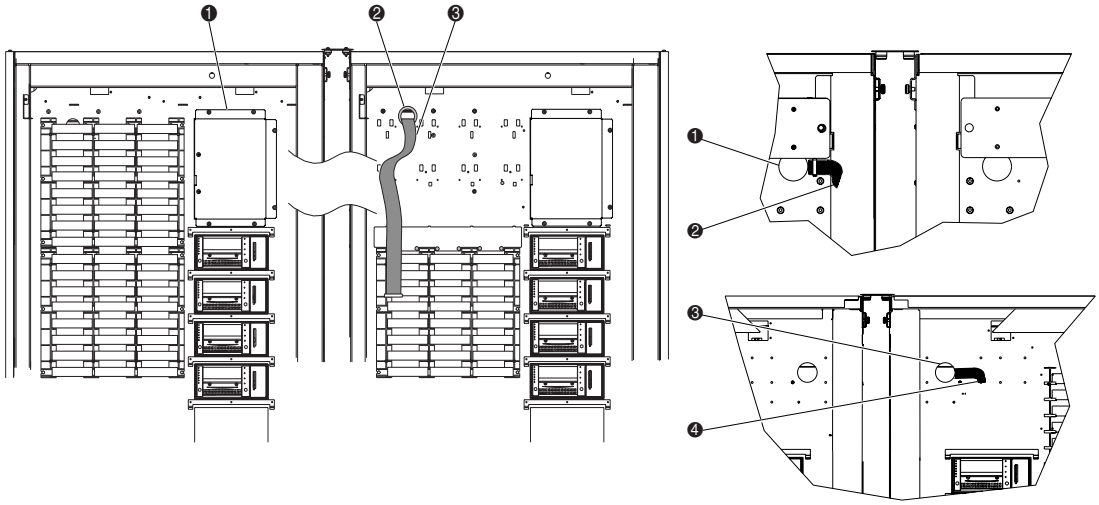


❶ Bin shelf modules

❷ Tape cartridges

Figure 2-6. Bin locations

2. Remove the cable hole plug on the right library and install the supplied 2-inch bushing into the cable hole (see Figure 2-7).
3. Reach through the hole and pull the PTM cable through the hole, leaving approximately 18 inches (46 cm) of cable on the front side of the bin wall (see Figure 2-7).
4. Using six screws, install the PTM adapter plate on the left ESL9198 library (❶ Figure 2-7).

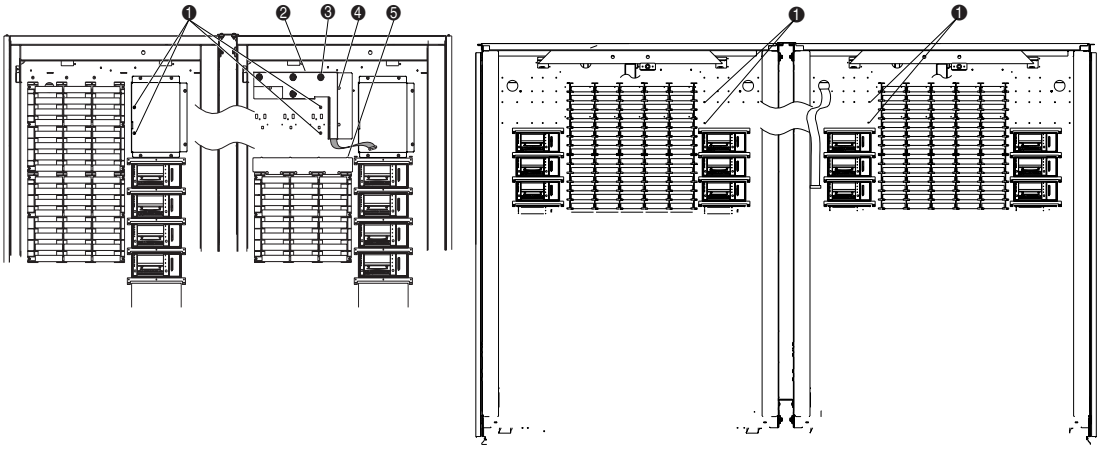


❶ PTM adapter plate
❷ 2-inch bushing
❸ PTM cable

❶ Cable hole (rear of tape library)
❷ PTM cable (rear of tape library)
❸ Bushing (front of tape library)
❹ PTM cable (front of tape library)

Figure 2-7. PTM cable routing

5. For the ESL9198 library, attach the PTM cable cover with three push-in clips and four screws (P/N 0905057) and washers (P/N 0685023) to the bin wall to cover the cable and cable hole, making sure the PTM cable is routed correctly under the raised channel in the cable cover (see Figure 2-8).
6. For the ESL9198 library, install the bin shelf openings cover using six push-in clips (see Figure 2-8).
7. Install two screws (P/N 0905057) and washers (P/N 0685023) in the top two mounting locations (❶ Figure 2-8). Do not fully tighten, leave approximately 1/4-inch space in between the washer and the bin wall.



❶ Left and right library PTM mounting locations

❷ PTM cable cover

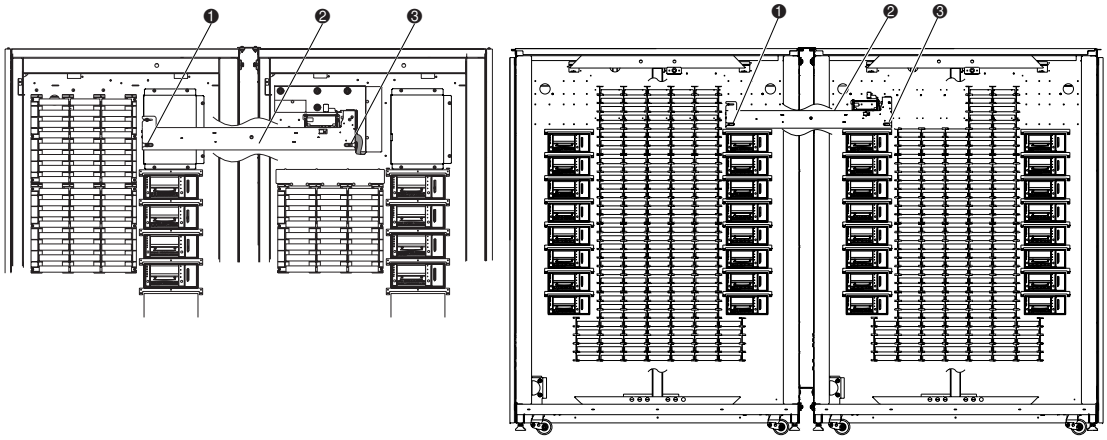
❸ Screws and washers (4)

❹ Push-in clips (3)

❺ Bin shelf openings cover and push-in clips (6)

Figure 2-8. Library mounting points

8. Holding the PTM right side up, slide it through the right library PTM cutout and into the left library (see Figure 2-9).



❶ Lower PTM mounting tab locations

❷ PTM

❸ Bottom mounting tab

Figure 2-9. PTM installation

9. Slide the PTM mounting tabs onto the screws previously installed in Step 7.
10. Install the two screws (P/N 0905057) with washers (P/N 0685023) in the bottom mounting tabs of the PTM, one in each library (❶ Figure 2-9).

11. Connect the PTM cable to the PTM (❶ Figure 2-10).

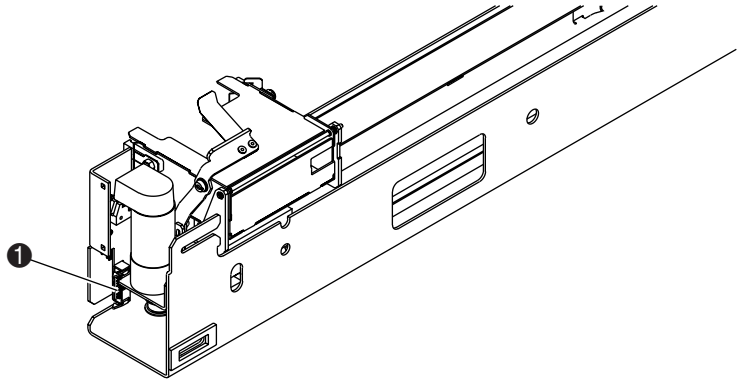
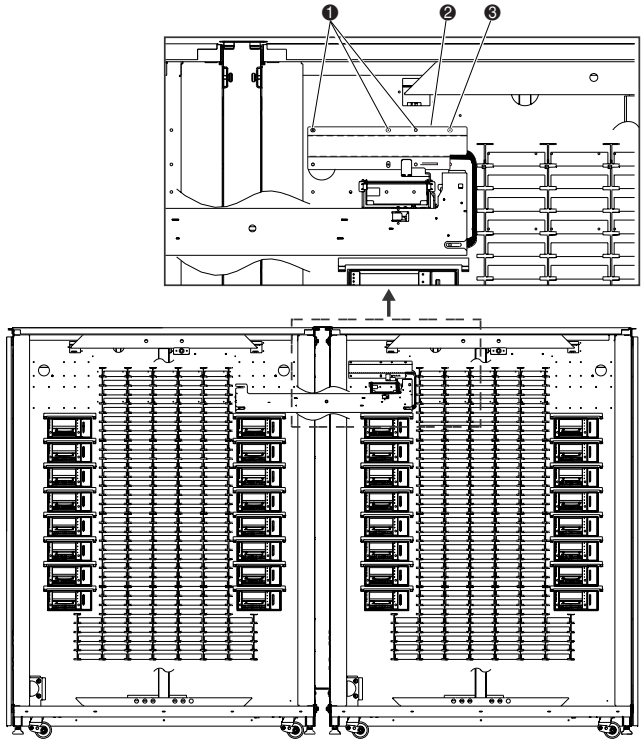


Figure 2-10. Connecting the PTM cable (shown isolated from the cabinet for clarity)

12. Route the cable through the clips provided on the bottom of the PTM. Push the excess cable through the cable hole in the bin wall.

13. For the ESL 9326, attach the pass-through cable cover (P/N 6312061) with four screws (P/N 0685023) to the bin wall to cover the cable and cable hole (see Figure 2-11). Tighten the screws to a torque value of 30 +/- 3-in/lb. (3.39 +/- .339 Nm)



❶ Screws

❷ PTM cable cover

❸ Screw

Figure 2-11. Pass-through cable cover

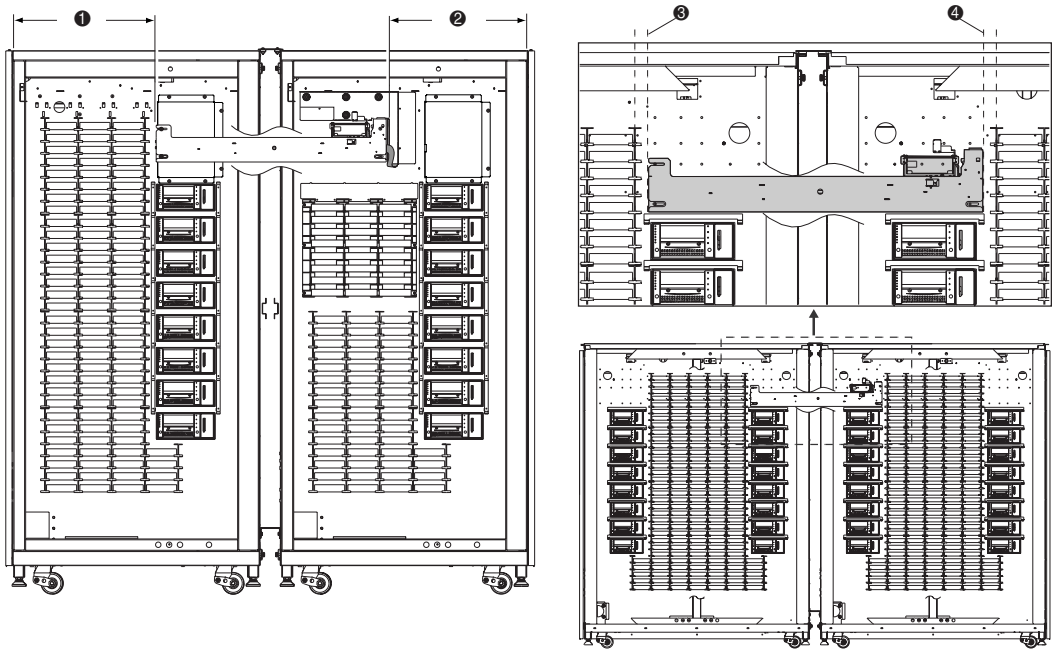
14. For the ESL9326, reinstall the tape cartridge bins that were previously removed.

15. Center the PTM (see Figure 2-12):

    For the ESL9198, center the PTM between the left and right library inside walls. The distance between the inside wall and the PTM in the left library ❶ and the distance between the inside wall and the PTM in the right library ❶ should be 14.06 (+/- 0.06) inches (35.7 cm +/- 0.15 cm).

    For the ESL9326, center the PTM between the library bin shelves. The distance between the bin shelves and the PTM in the left library ❸ and the distance between the bin shelves and the PTM in the right library ❹ should be equal within 0.06 of an inch (0.15 cm).

16. Tighten the screws that hold the PTM in place.



❶ Left tape library bin-to-PTM distance (9326)
❷ Right tape library bin-to-PTM distance (9326)
❸ Inside wall-to-Bin distance (9198)
❹ Right side Inside wall-to-PTM (9198)

Figure 2-12. Centering the PTM

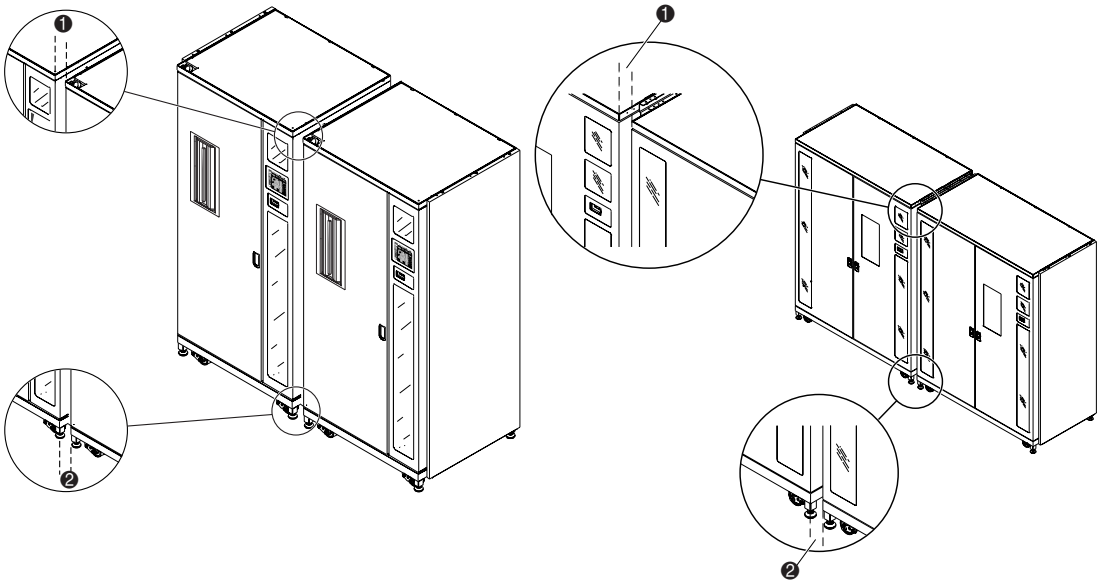
The PTM installation is complete. Repeat the procedure for additional libraries.

Installing Library Cosmetics

Cosmetic panels are installed to fill the gaps between the two libraries at the front and at the rear.

To install the front cosmetic panels:

1. Measure the distance between the libraries at the top ❶ and bottom ❷ of the cabinets (see Figure 2-13).

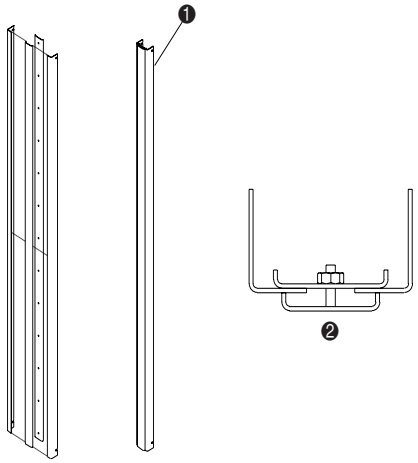


❶ Top measurement

❷ Bottom measurement

Figure 2-13. Space between libraries

2. Loosely assemble the four front cosmetic panels as shown in Figure 2-14. Do not tighten the nuts at this time.



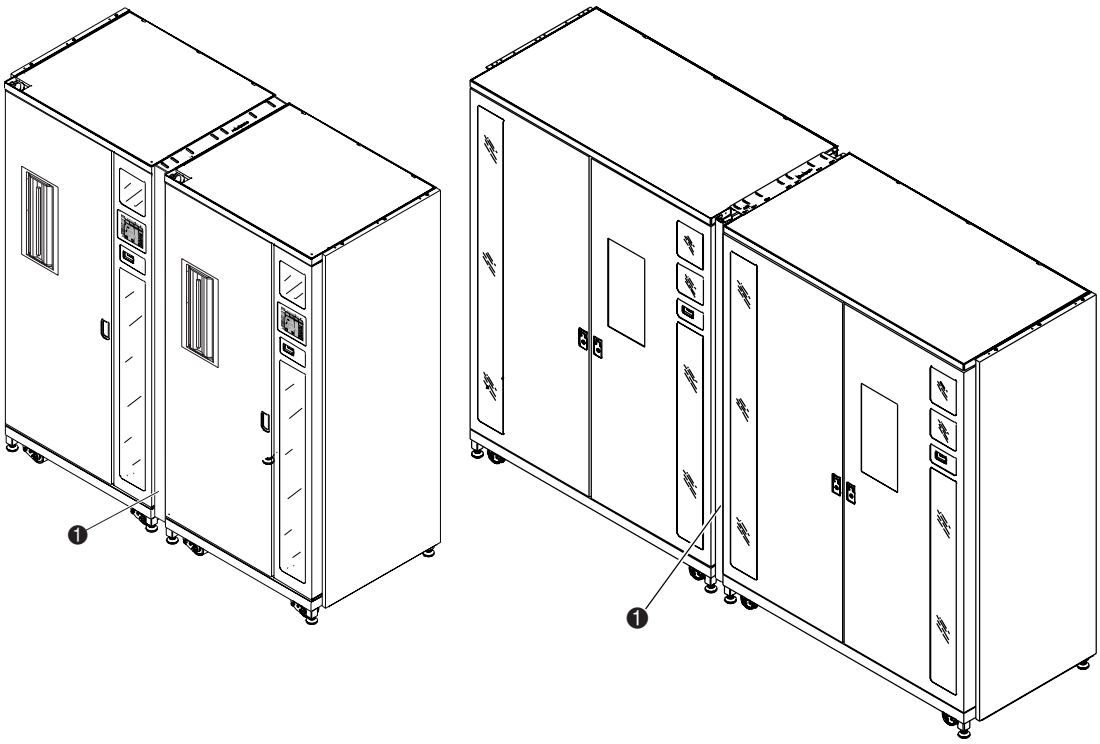
❶ Assembled front cosmetic panel

❷ Top view

Figure 2-14. Assembling the front cosmetic panel

3. Adjust the width of the top of the assembly to be 1/16 of an inch less than the top measurement found in step 1. This enables the cosmetic assembly to slide in between the libraries for installation.
4. Tighten the nut closest to the top of the assembly to a torque value of 5 in/lb. (.565 Nm)
5. Adjust the width of the bottom of the assembly to be 1/16 of an inch less than the bottom measurement found in step 1.
6. Tighten the nut closest to the bottom of the assembly to a torque value of 5-in/lb. (.565 Nm)
7. Tighten the remaining nuts on the assembly to a torque value of 5-in/lb. (.565 Nm)

8. Install the cosmetic panel assembly into the front gap between the libraries (❶ Figure 2-15). Ensure sure that the open slots in the cosmetic angles engage all four screws (❷ Figure 2-2).

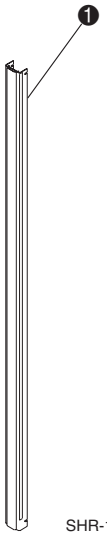


❶ Front cosmetic panel installed

Figure 2-15. Installing the front cosmetic panel

9. Tighten the four screws.

10. On the left and right side of the front cosmetic assembly, install two 67.5 inch (171 cm) pieces of foam gasket material as shown in Figure 2-16.



❶ Foam gasket (right side of assembly shown uninstalled for clarity)

Figure 2-16. Installing the foam gasket

The front cosmetic panel installation is complete. Repeat the procedure for additional libraries.

To install the rear cosmetic panels:

1. Assemble the male ❷ and female ❸ cosmetic panels as shown in Figure 2-17.

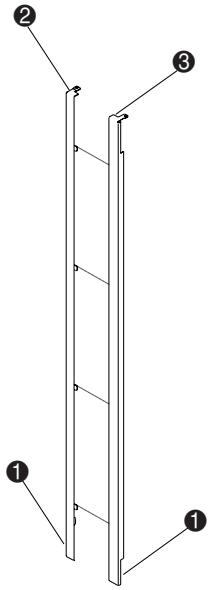
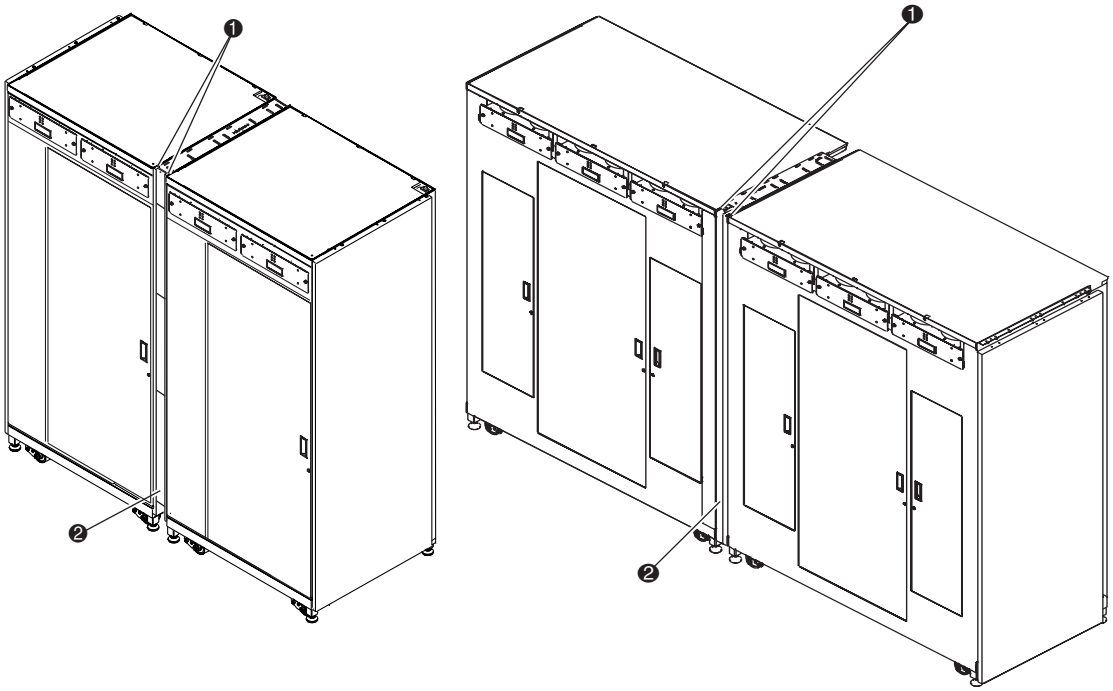


Figure 2-17. Assembling the rear cosmetic panel

2. Moving the two panels as a unit, install the two lower restraints ❶ into the mating slots in the lower cabinet attachment channel and lower the set of panels until the upper frames of the cosmetic panels rest on each of the two library frames.

3. Install the screws (P/N 0615112) to fasten the rear cosmetic panel to the upper cabinet attachment plate (❶ Figure 2-18).



❶ Screws (2)

❷ Rear cosmetic panel installed

Figure 2-18. Installing the rear cosmetic panel

The rear cosmetic panel installation is complete. Repeat the procedure for additional libraries.

Cabling the PTM

This section provides the instructions for connecting a QSPI cable to a multi-unit library system. This section also includes a QSPI bus description.

QSPI Bus

The QSPI bus is a full-duplex synchronous serial interface for communicating with peripherals and other micro-controller units. The QSPI bus is a standard Motorola bus that ESL9000 multi-unit library systems use as a custom control language to communicate between master and slave libraries.

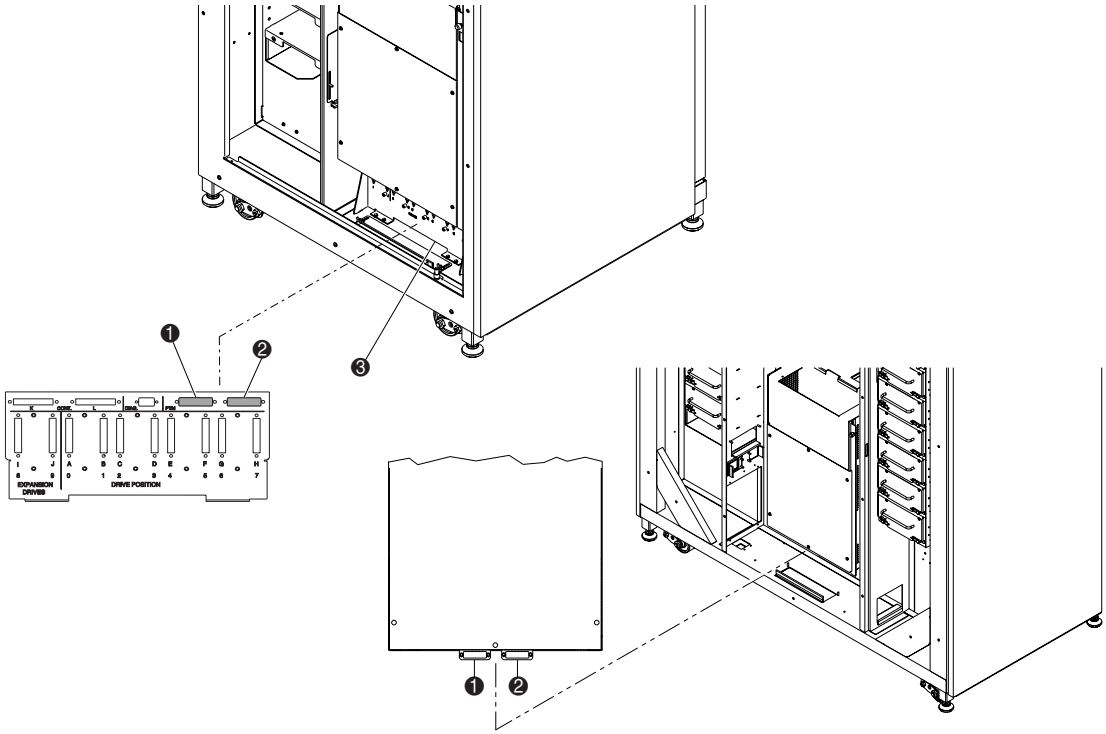
NOTE: The QSPI bus must be terminated at both ends for proper operation.

Cabling Instructions

To cable the libraries:

1. Using a 5/32-inch hex key wrench, open the rear access door of each library being connected.

2. Locate the QSPI connectors at the bottom of the PCI chassis (see Figure 2-19).



❶ Left QSPI connector

❷ Right QSPI connector

❸ SCSI bulkhead

Figure 2-19. PTM connector locations

3. Install a QSPI terminator on the left QSPI connector ❷ for the left library.
4. Connect one end of the interconnect cable to the right QSPI connector ❸ on the left library.
5. Route the interconnect cable through the bottom of the library and then connect it to the left QSPI connector on the right library.
6. If there are no other libraries in the configuration, install a terminator in the right QSPI connector of the right library. If there are additional libraries in the configuration, continue connecting the libraries using the interconnect cable. Note that the final library in the configuration will have a QSPI terminator on the right QSPI connector.

Chapter 3

PTM Configuration and Calibration

After the PTM has been successfully installed, the libraries must be configured and calibrated to operate correctly as a multi-unit library system.

CAUTION: All libraries running firmware 1.30 or earlier that upgrade to 1.40 or later that wish to use Multi-Unit Single LUN (MUSL) functionality must reinitialize NVRAM and use the new memory module (P/N 6220340-06). To support the new memory module, boot block version 1.30 must be installed. If a library is configured in Single mode, then there is no need to upgrade the boot block or memory module, but the NVRAM must still be reinitialized.

All libraries running 1.40 or later that wish to use MUSL functionality must have PTMs installed, as well as proper backplanes (P/N 6310520-04 or newer) and QSPI cables.

If the tape drive autoclean feature is to be supported, make sure that at least one cleaning tape exists in each library that supports autocleaning.

Installing Firmware

All libraries that make up multi-unit library systems must be running the new 1.42 robotic firmware. Refer to the *Compaq StorageWorks ESL9000 Series Tape Library Diagnostic Software Guide* for more information.

To install the firmware:

1. Copy the firmware image (zip file) to your portable PC in the Tapelib directory.
2. Unzip the firmware image.
3. Connect your portable PC to the diagnostic connector at the rear of the tape library.
4. Make sure that the tape library is in the Offline state.

IMPORTANT: You must use native MS-DOS when using the flash download function. Refer to the *Compaq StorageWorks ESL9000 Series Tape Library Diagnostic Software Guide* for more information.

---

5. Start the diagnostics by entering TAPELIB/b9600. After a few seconds, the diagnostic screen appears.
6. To verify that the diagnostic software is communicating properly with the tape library, select the Config tab, the Report System, then press the **Enter** key. If the communication is working properly, the current tape library configuration will be reported. If it is not, check the RS-422 cable connections and make sure the tape library is in the Offline state.
7. If the current firmware level is 1.22 or less, go to step 8. Otherwise, make sure that the library is set to either Slave or Single Unit. If the tape library is set to Master, flash download problems may occur. To check this, select the Config tab and then:
   a. Select Multiple Unit
   b. Select Report
   c. If the tape library is set to Master, press the **Escape** key to go back, reselect Multiple Unit, and select Slave. Press the **Enter** key.
8. Before downloading the multi-unit firmware you must reinitialize NVRAM. To do this, select the Config tab and then:
   a. Select Initialization
   b. Select Init Non-Vol Ram and press the **Enter** key.
   c. An informational screen appears and prompts you to continue. Enter Y and press the **Enter** key.

9. Press the **Escape** key to get out of the Initialization function and then:
   a. Select Flash Download and press the **Enter** key.
   b. Select the firmware image that was supplied with the upgrade kit and press the **Enter** key.
   c. A warning screen appears prompting you to continue. Enter Y and press the **Enter** key. The flash download operation takes from 45 to 60 minutes to complete.
10. After the flash download completes, the control panel displays ATL3000. This is due to a firmware issue whereby Compaq model number is not retained. The Compaq model number must be entered using the Tapelib diagnostic software.

To set the model to (6310080) Compaq ESL9000 Series, do the following:

1. Press the **Standby** button on the control panel to place the tape library in the Offline state.
2. Reinitialize the NVRAM as follows:
   a. Select Initialization
   b. Select Init Non-vol Ram and press the **Enter** key.
   c. An informational screen appears and prompts you to continue. Enter Y and press the **Enter** key.
3. Press the **Escape** key, select Configure System, and press the **Enter** key.
   a. Select the model number 6310XXX, enter 6310080, and press the **Enter** key.
   b. Select the number of bins and press the **Enter** key.
   c. Select the number of drives and press the **Enter** key.
   d. Select the SCSI ID (0) and press the **Enter** key.
4. Verify the new configuration by selecting Report System. Check that the values displayed are what you entered. If it is ok, press the **Escape** key to exit Tapelib.
5. Verify that the control panel is now displaying Compaq StorageWorks ESL9198 or ESL9326D.
6. Repeat this procedure for all tape libraries that make up the multi-unit tape library system.

The following instructions must be completed on each one of the libraries connected using a PTM. You can configure and calibrate the libraries using the control panel or connect a PC running the diagnostic software to the diagnostic port.

Configuring a PTM Using the Control Panel

To configure a PTM from the control panel:

CAUTION: This procedure must be done using the control panel or diagnostic software any time a PTM is added or removed from a multi-unit library system.

1. From the Operator tab, select Configure Library (see Figure 3-1).

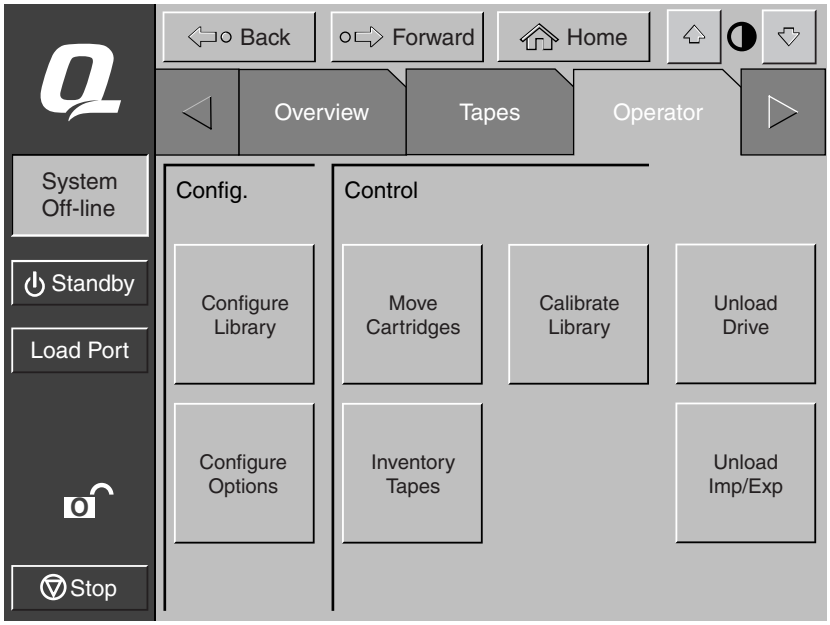


Figure 3-1. Configure Library menu

2. Go to the PTM field on the screen and set the PTM field to None, Left, Right, or Both (see Figure 3-2).

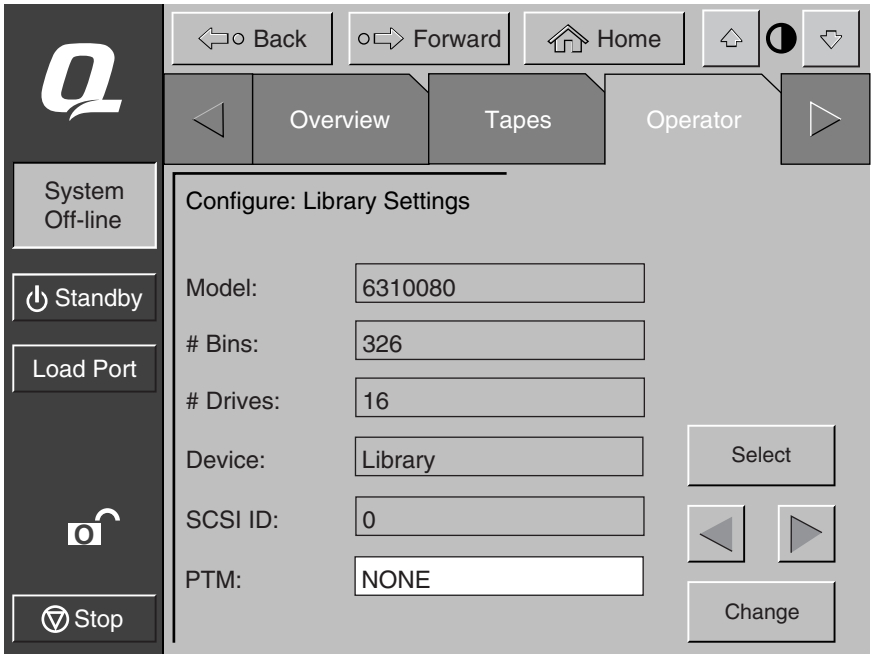


Figure 3-2. PTM selection screen (ESL9326 shown)

Configuring a Multi-Unit Library System Using the Control Panel

To configure libraries in a multi-unit system using the control panel:

1. At the control panel, place each library in the off-line position.
2. Select the Multi-Unit (MUSL) tab (see Figure 3-3).
3. Touch the **Configure Multi-Unit** button.

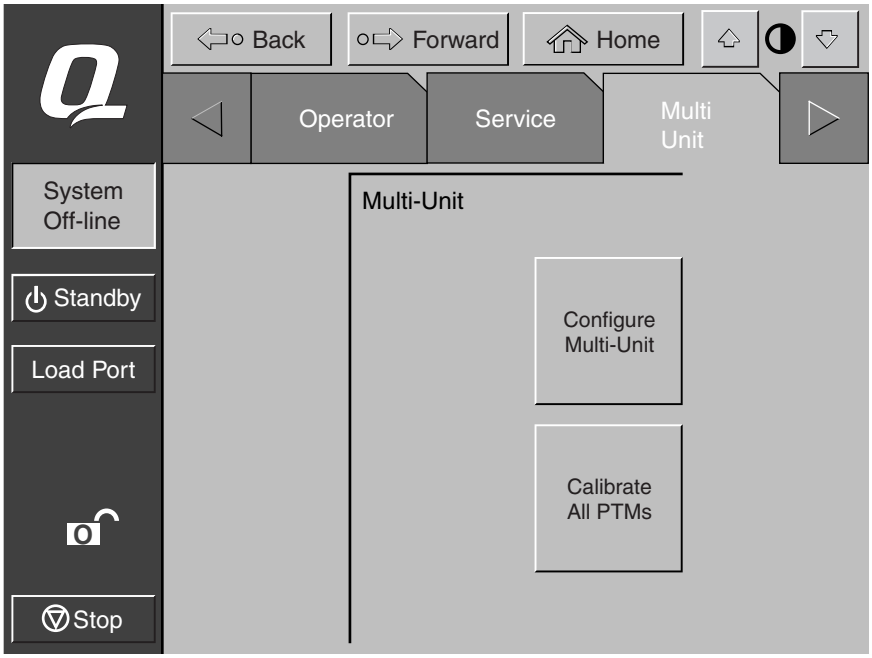


Figure 3-3. Multi-Unit screen

NOTE: When configuring PTMs in multiple libraries, each PTM must be configured separately.

4. Enter Single, Master, or Slave in the Library Unit field (see Figure 3-4). The library connected to the host is the master library. Any library in the multi-unit system can be a master. The remaining libraries are slaves.

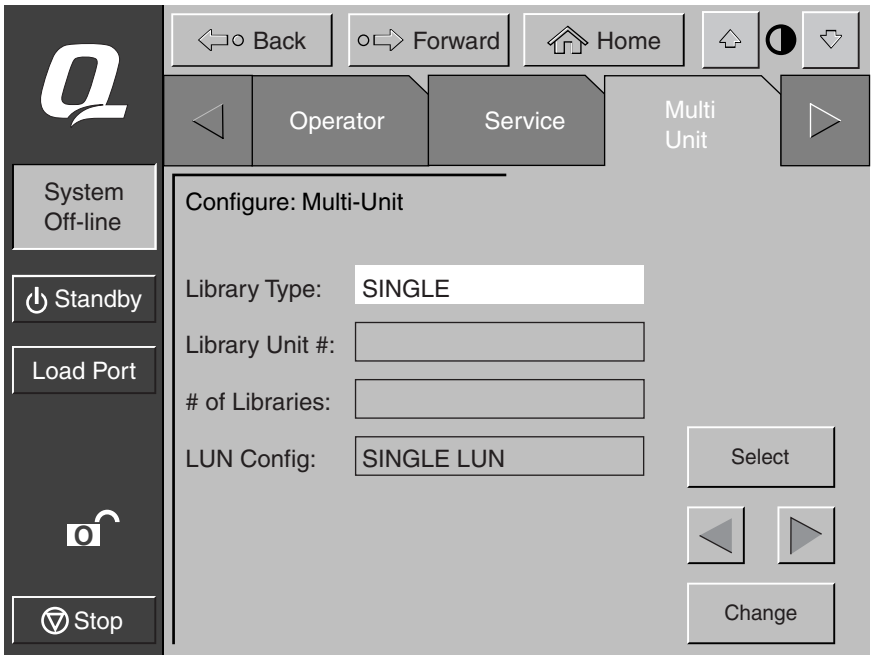
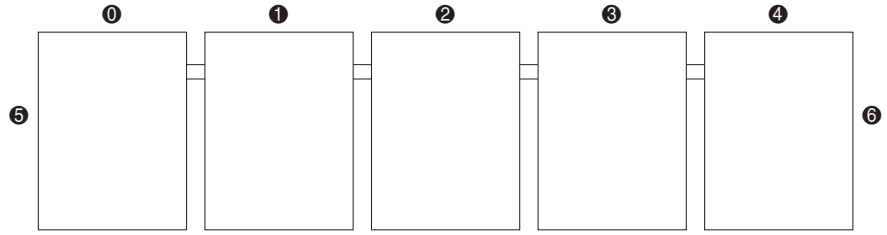


Figure 3-4. Configure Multi-Unit (MUSL) screen

CAUTION: When configuring multiple libraries in MUSL mode, there can be only one master library.

5. Enter a number (0-4) in the Library Unit # field (see Figure 3-4).



1. Library 0
2. Library 1
3. Library 2
4. Library 3
5. Library 4
6. Left-hand side
7. Right-hand side

Figure 3-5. Library numbering (front view from control panel)

6. Enter a number (1-5) in the # of Libraries field for the number of libraries in the multi-unit library system (see Figure 3-4).
7. Enter Single LUN in the LUN Config field
8. Repeat Steps 2 through 7 for all libraries in the system.

Calibrating the PTM Using the Control Panel

To calibrate the PTM using the control panel on the Master Library.

1. From the Multi Unit tab, touch the **Calibrate all PTMs** button (see Figure 3-6). All of the PTMs in all of the libraries are now automatically calibrated.
2. Once calibrated, place each library On-Line starting with the slave units from right to left. Bring the master unit On-Line last. When the master library comes on-line, it issues a MODE SENSE command and retrieves configuration information from the slave libraries. When complete, all libraries read on-line from the control panel.

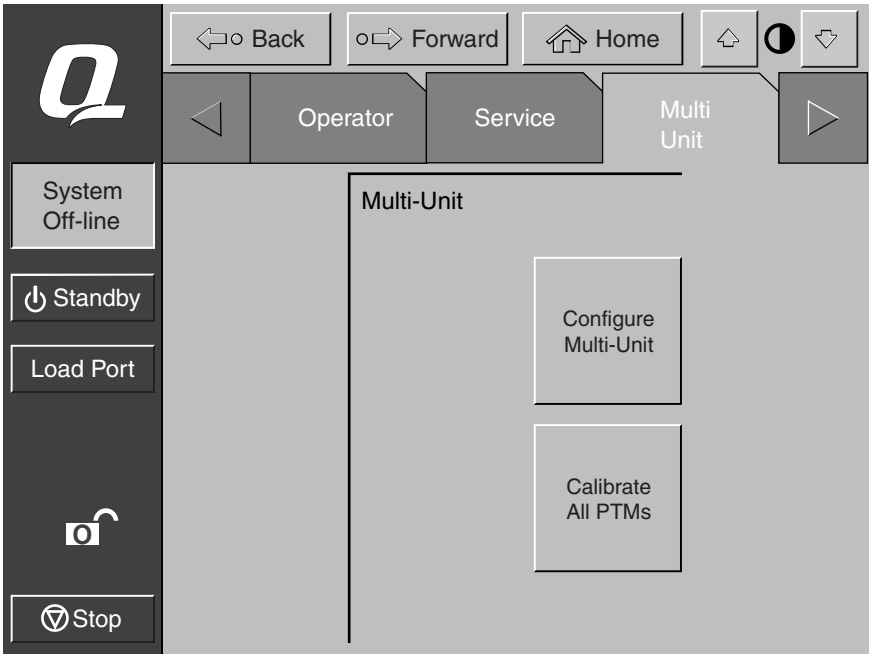
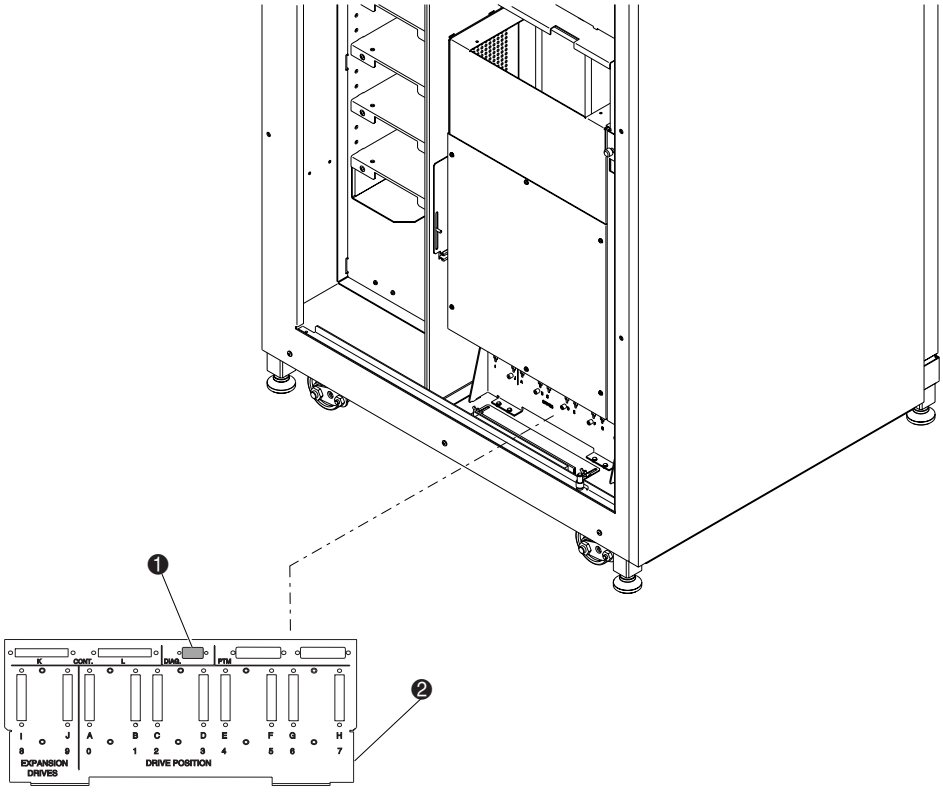


Figure 3-6. Calibrate All PTMs screen

Configuring the PTM Using Diagnostic Software

To configure a PTM using the diagnostic port:

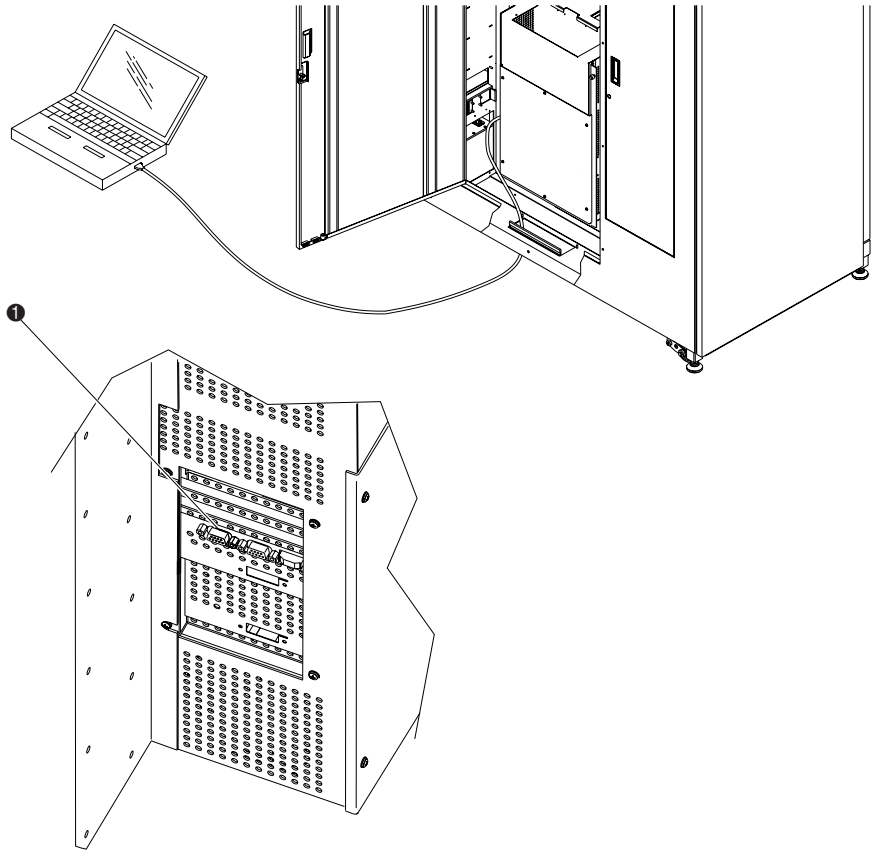
1. Connect a diagnostic PC to the library using a RS-232 DB9 connector (see Figure 3-7 for ESL9198 and Figure 3-8 for ESL9326.



❶ Diagnostic port

❷ SCSI bulkhead

Figure 3-7. Diagnostic port connection (ESL9198)



❶ Diagnostic port (left side of tape library)

Figure 3-8. Diagnostic port connection (ESL9326)

2. Launch the diagnostic software from a PC.

CAUTION: This procedure must be done using the control panel or diagnostic software any time a PTM is added or removed from a multi-unit library system.

3. From the User Test Menu, select User Input Cmnd (see Figure 3-9).

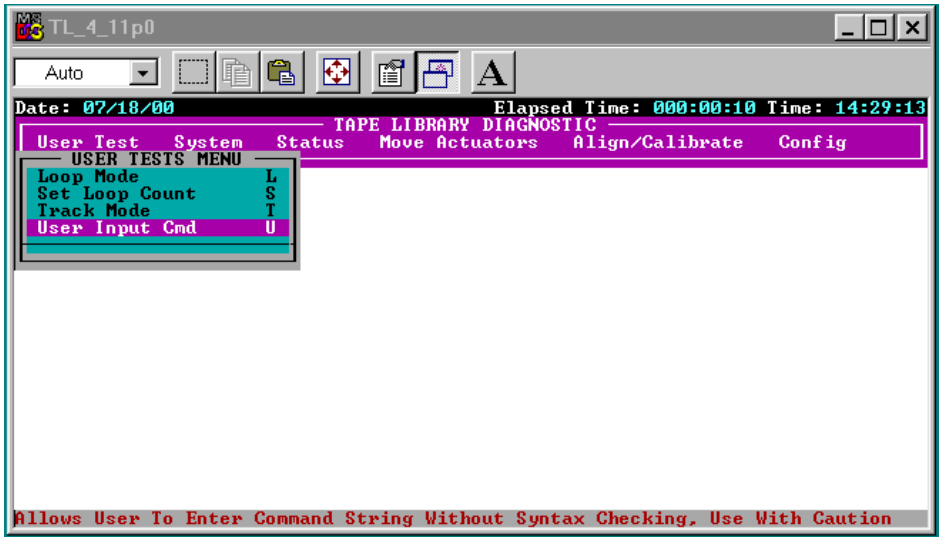


Figure 3-9. User Test menu

4. Enter your password. The case-sensitive default is kvision (see Figure 3-10).

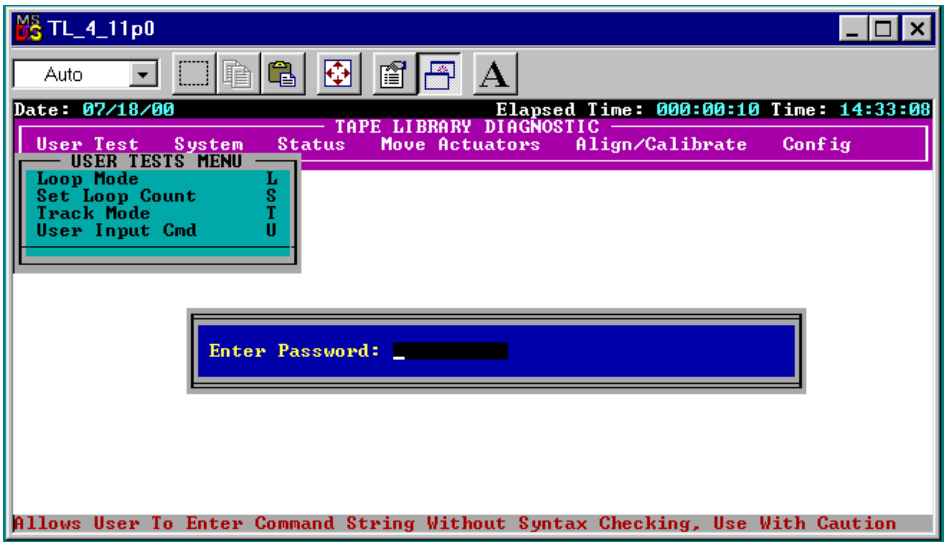


Figure 3-10. Password dialog box

5. After the command line dialog box appears, (see Figure 3-11) type:

   CONFIG PASSTHRU_____(None/Left/Right/Both)

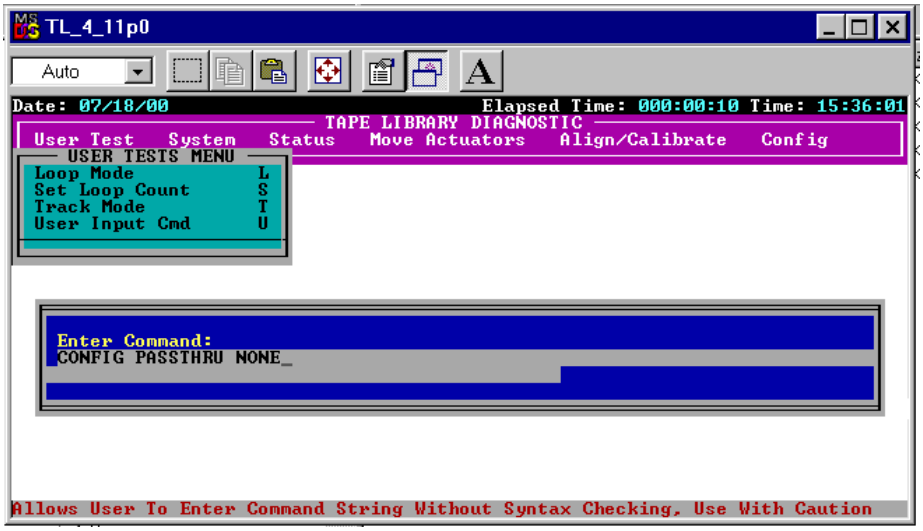


Figure 3-11. Command Line dialog box

Configuring a Multi-Unit Library System Using Diagnostic Software

To configure libraries in a multi-unit system using diagnostic software:

1. Launch the diagnostic software on the PC.
2. From the Config Menu, select Multiple Unit (see Figure 3-12).

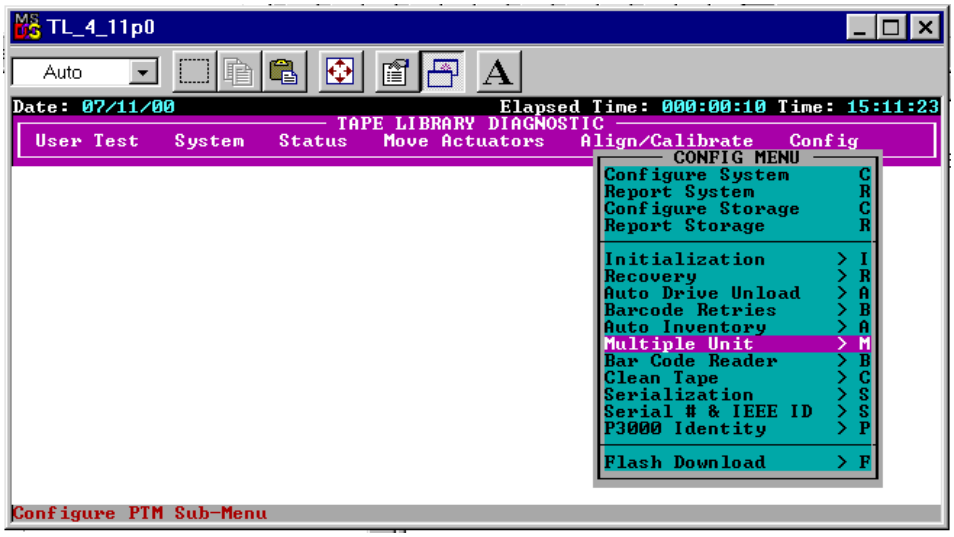


Figure 3-12. Multi-Unit Configuration menu

3. From the Multi-Unit sub-menu, select Master Unit or Slave Unit for the library configuration (see Figure 3-13). The library connected to the host is the master library. Any library in the multi-unit library system can be a master. The remaining libraries are slaves.

CAUTION: When configuring multiple libraries in MUSL mode, there can be only one master library.

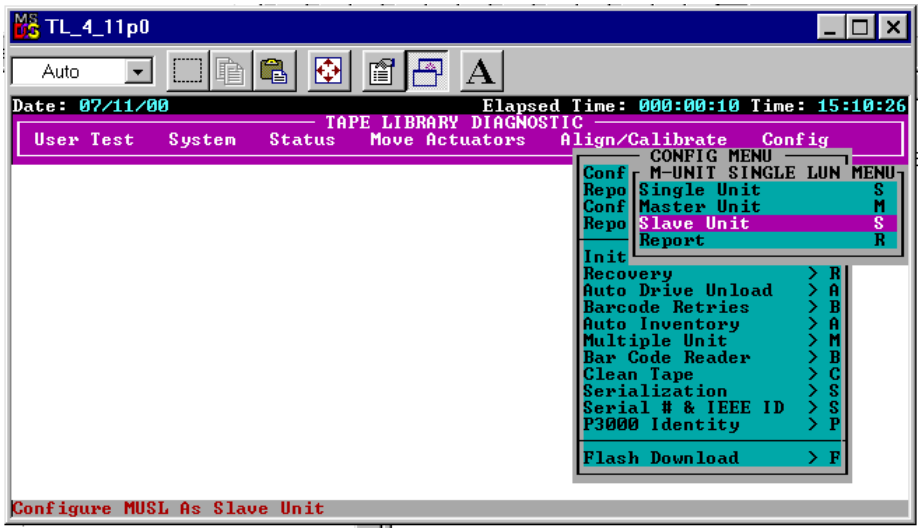


Figure 3-13. Multi-Unit Configuration sub-menu

4. After selecting Master Unit or Slave Unit, enter the Unit # (0-4) for the library and # Units (1-5) for the number of libraries in the multi-unit library system (see Figure 3-14).

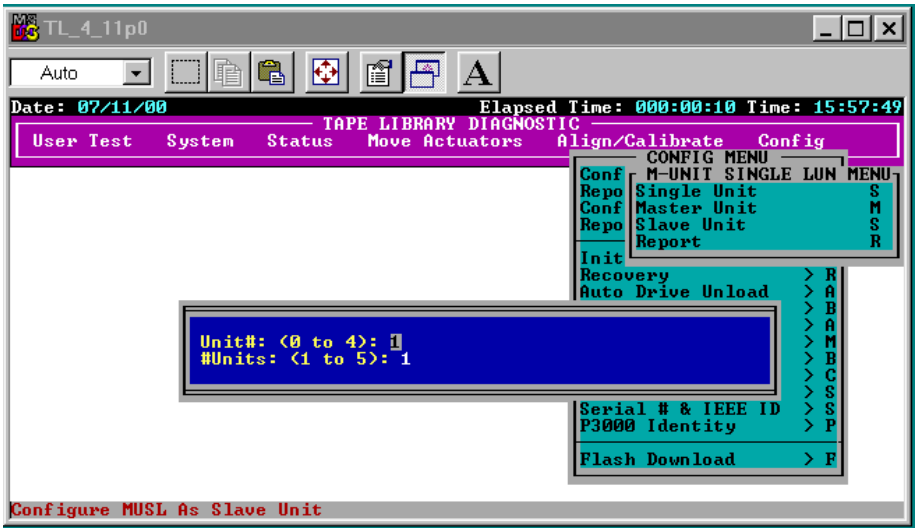


Figure 3-14. Configuration sub-menu dialog box

5. Repeat steps 1 through 4 for all the libraries in the multi-unit library system.

Calibrating the PTM Using Diagnostic Software

To calibrate the PTM using diagnostic software:

1. Ensure the diagnostic PC is connected to the Master Library.
2. From the Align/Calibrate menu, select Calibrate (see Figure 3-15).

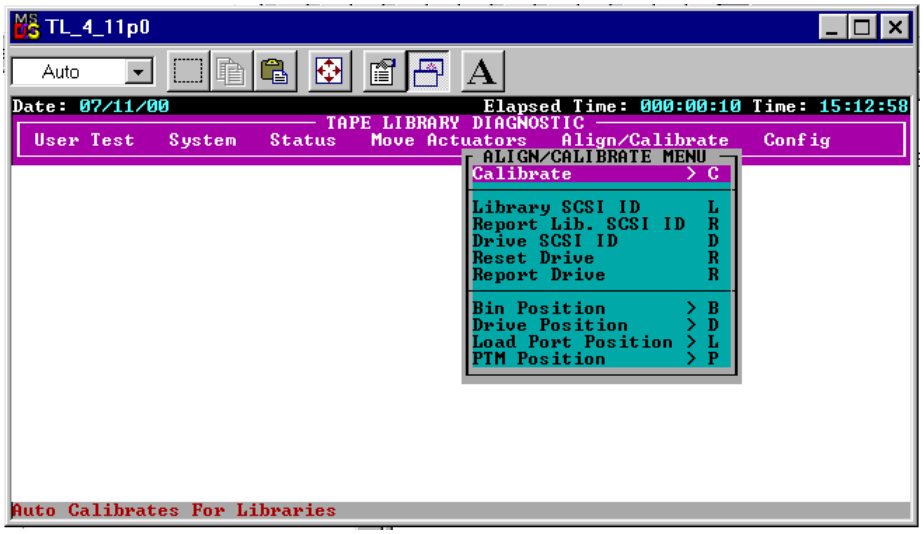


Figure 3-15. Align/Calibrate menu

3. Select either Selected PTM (left or right in a particular library) or ALL PTM (see Figure 3-16).
4. Select ALL PTM to automatically calibrate all the PTMs in all of the libraries.

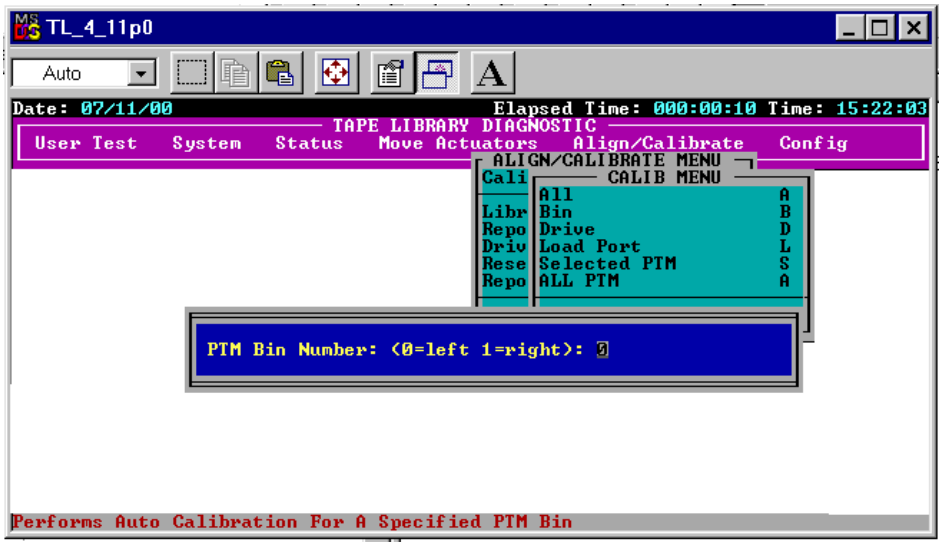


Figure 3-16. Calibration dialog box

Bringing the Multi-Unit Library System Online

Before bringing the multi-unit library system on-line, check the configuration of each individual library to ensure that their settings are correct. Set each library to System On-line using the control panel starting with the right-most library and continuing to the last library on the left. This eliminates any possibility that one library could inventory an adjacent library with a populated PTM before the adjacent library can retract its PTM to its home position

When the master library comes on-line, the master library issues a MODE SENSE command and retrieves configuration information from the slave libraries. When this action completes, all libraries will read online from the control panel.

Index

2-inch bushing 2-9

A

align/calibrate menu 3-18
assembly parts 1-4
attaching libraries 2-1
attaching library cabinets 2-6
attaching procedure 2-2
authorized reseller x

B

bin shelf modules 2-8
bin shelf openings cover 2-10
bin-to-PTM distance 2-14
bottom mounting tab 2-11
bushing 2-9
buttons
    Calibrate all PTMs 3-9
    Configure Multi-Unit 3- 6

C

cabinet stability ix
cable hole 2-9
cabling the PTM 2-21
calibrate all PTMs screen 3-9
calibrating the PTM 3-9
calibration
    with diagnostic software 3-18
calibration dialog box 3-19
centering the PTM 2-14
command line dialog box 3-14
commands
    MODE SENSE 3-9, 3-19
Compaq authorized reseller x
Compaq website x
configuration 3-4
    multi-unit 3-6
    PTM using diagnostic software 3-10
    using diagnostic software 3-10
    with control panel 3-4
configuration sub-menu dialog box 3-17
configure library menu 3-4
configure multi-unit screen 3-7
connectors
    QSPI 2-22
control panel
    calibration 3-9
    multi-unit configuration 3-6
cosmetic anchor screw holes 2-4

D

diagnostic port
    ESL9198 3-10
    ESL9326 3-11
diagnostic software
    calibration 3-18
    configuration with 3-10

F

firmware 1-1
foam gasket 2-18
front cosmetic panel
  assembled 2-16
  installed 2-17

G

getting help ix

H

help
  additional sources ix
  Compaq authorized resellers, telephone numbers x
  Compaq website x
  technical support telephone numbers ix
http
  //www.compaq.com x

I

Installation 2-1

L

library bin shelves 2-14
library cabinets
  attaching 2-6
library mounting points 2-10
library numbering 3-8
lower cabinet attachment channel 2-5
lower cabinet mounting holes 2-5
lower PTM mounting tab locations 2-11

M

menu
  align/calibrate 3-18
  configure library 3-4
  multi-unit configuration 3-15
  multi-unit configuration sub-menu 3-16
  user test 3-12
multi-unit configuration menu 3-15
multi-unit configuration sub-menu 3-16
multi-unit screen 3-6
multi-unit trim parts 1-4
MUSL screen 3-7

O

operator tab 3-4

P

parts
  assembly 1-4
  trim 1-4
  upgrade 1-3
pass-through mechanism 1-1
  attaching the libraries 2-1
  installing
    cabling 2-21
    instructions 2-8
    library cosmetics 2-15
    prepararation 1-2
    presteps 1-2
    required tools 1-5
  multi-unit trim parts 1-4
  upgrade parts 1-3
password dialog box 3-13
PTM 1-1
PTM adapter plate 2-9
PTM cable 2-9
  connecting 2-12
PTM cable cover 2-10, 2-13
PTM configuration using diagnostic software 3-10
PTM connector locations 2-22
PTM Installation
  preparation 1-2
PTM mounting locations 2-10
PTM selection screen 3-5
push-in clips 2-10

Q

QSPI bus 2-21
QSPI connectors 2-22

R

rear cosmetic panel 2-19

assembling 2-19
installed 2-20
related documents v
ribbon cable cover
inside 2-5

S

screen
calibrate all PTMs 3-9
configure multi-unit 3-7
configure MUSL 3-7
multi-unit 3-6
PTM selection 3-5
screws 2-13
screws and washers 2-10
SCSI bulkhead 2-22, 3-10
side panel
removal 2-3
spacers 2-7
symbols
in text vii
on equipment viii
symbols in text vii

T

tape cartridge bins
locations 2-8
tape cartridges 2-8
technical support ix
telephone numbers x
text conventions vi
tools 1-5

U

uncrating 1-2
upgrade parts 1-3
upper cabinet attachment plate 2-7
user test menu 3-12