Sun StorageTek™ L180/L700x/L1400x Tape Libraries

Ordering and Configuration Guide

MT9112

Revision: N

L180/L700x/ L1400x Tape Libraries

Ordering and Configuration Guide

We welcome your feedback. Please contact the Sun Learning Services Feedback System at:

SLSFS@Sun.com

or

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Broomfield, CO 80021
USA

Please include the publication name, part number, and edition number in your correspondence if they are available. This will expedite our response.

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Summary of Changes

Date	Revision	Description
May 2001	First	Refer to this edition for a description of the changes.
September 2001	Second	Refer to this edition for a description of the changes.
December 2001	Third	Refer to this edition for a description of the changes.
March 2002	Fourth	Refer to this edition for a description of the changes.
September 2002	Fifth	Refer to this edition for a description of the changes.
February 2003	Sixth	Refer to this edition for a description of the changes.
September 2003	Seventh	Refer to this edition for a description of the changes.
April 2004	Eighth	Refer to this edition for a description of the changes.
December 2004	Ninth	Refer to this edition for a description of the changes.
July 2005	K	Refer to this edition for a description of the changes.
March 2006	L	Refer to this edition for a description of the changes.
September 2006	M	Refer to this edition for a description of the changes.
May 2007	N	Added LTO Gen 4 and DLT-S4 information. **Chapter 4** Deleted reference to RMPJ feature. Added several power cords. **Chapter 7** Added feature codes for L-Series Library Admin software. **Appendix A** Revised overall dimensions of two libraries connected by a PTP. **Appendix C** Revised model numbers for the L1400 library.

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Contents

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Tables

Preface

This guide contains information about how to plan for, order, and install the Sun StorageTek L180, L700e, or L1400M Tape Libraries. The L1400M Tape Libraries are enhanced versions of the L700e library; therefore, most of the information presented for the L700e applies to the L1400M libraries. For information on how the L1400M libraries differ from the L700e, refer to Appendix C, "L1400M Library Differences." This guide also includes information on how to follow up on the sales, delivery, and installation steps.

The audience for this guide includes Sun Microsystems account and territory executives, system engineers (SEs), service representatives, independent consultants, and customers involved with installation planning.

How to Use This Guide

This guide provides a series of worksheets and checklists that, when you complete them properly, ensure that no aspect of the installation process is overlooked. This promotes customer satisfaction and error-free installation. Use only those checklists that are applicable to your customer's system. However, you *must* complete certain worksheets (noted below) for the product to be shipped. See Chapter 3, "Equipment Planning," for more information.

Note: Chapter 3, "Equipment Planning," provides flow charts and instructions for faxing the following worksheets:

- Library Configuration Worksheet
- Site Survey
- Product Checklist

Organization

This guide contains:

Chapter 1 "The System Assurance Process" provides detailed information for understanding the system assurance process.

Chapter 2 "Key Personnel" provides a convenient worksheet for recording names and phone numbers of key personnel on the system assurance teams.

Chapter 3 "Equipment Planning" contains planning and general information for ordering the StorageTek L180 or L700e Tape Libraries.

Chapter 4 "Power" describes the tape libraries' main power components, features, and optional features.

Chapter 5	"Tape Drives" describes the tape libraries' compatible tape drives.
Chapter 6	"External Cables" describes the tape libraries' external cable options.
Chapter 7	"Software" describes the software available for the tape libraries.
Chapter 8	"Order Worksheets" contains worksheets for ordering the StorageTek L180 or L700e Tape Library and accessories.
Chapter 9	"Pre-installation Checklist" provides checklists to use before installation to ensure that no issues remain unresolved.
Appendix A	"Site Planning Information" provides product specifications and site requirements.
Appendix B	"Solution Variables" contains a worksheet to record solution information.
Appendix C	"L1400M Library Differences" identifies how the L1400M Tape Library differs from the L700e.
"Index"	"Index" assists in locating information in this guide.

Alert Messages

Alert messages call your attention to information that is especially important or that has a unique relationship to the main text or graphic.

Note: A note provides additional information that is of special interest. A note might point out exceptions to rules or procedures. A note usually, but not always, follows the information to which it pertains.

CAUTION:
A caution informs the reader of conditions that might result in damage to hardware, corruption of data, or corruption of application software. A caution always precedes the information to which it pertains.

WARNING:
A warning alerts the reader to conditions that might result in long-term health problems, injury, or death. A warning always precedes the information to which it pertains.

Conventions

Typographical conventions highlight special words, phrases, and actions in this publication.

Item	Example	Description of Convention
Buttons	MENU	Text and capitalization follow label on product
Commands	Mode Select	Initial cap
Document titles	*System Assurance Guide*	Italic font
Emphasis	*not* or *must*	Italic font
File names	`fsc.txt`	Monospace font
Hypertext links	Figure 2-1 on page 2-5	Blue (prints black in hardcopy publications)
Indicators	*Open*	Text and capitalization follow label on product
Jumper names	TERMPWR	All uppercase
Keyboard keys	<Y> <Enter> or <Ctrl+Alt+Delete>	Text and capitalization follow label on product; enclosed within angle brackets
Menu names	Configuration Menu	Capitalization follows label on product
Parameters and variables	Device = *xx*	Italic font
Path names	`c:/mydirectory`	Monospace font
Port or connector names	SER1	Text and capitalization follow label on product; otherwise, all uppercase
Positions for circuit breakers, jumpers, and switches	ON	Text and capitalization follow label on product; otherwise, all uppercase
Screen text (including screen captures, screen messages, and user input)	`downloading`	Monospace font
Switch names	Power	Text and capitalization follow label on product
URLs	http://www.storagetek.com	Blue (prints black in hardcopy publications)

Related Publications

The following list contains the names and part numbers of publications that provide additional information about the L180, L700e, and L1400x Tape Libraries.

Library Documentation	Part Number
APC Uninterruptible Power Supply manuals and online information.	Available from APC or see www.apc.com
L180 Tape Library Field Replaceable Units Parts List	300074601
L180 Tape Library Illustrated Parts Catalog	95898
L180 Tape Library Installation Manual	95896
L180 Tape Library Operator's Guide	95895
L180 Tape Library Service Manual	95897
L180/L700x/L1400x Tape Libraries and PTP Interface Reference Manual, SCSI and Fibre Channel	95869
L180/L700x/L1400x Tape Libraries General Information Manual	MT9111
L180/700x/L1400x Tape Libraries Uninterruptible Power Supply Reference Manual	96047
L700x/L1400x Tape Libraries and Pass-Thru Port Installation Manual	95843
L700x/L1400x Tape Libraries and Pass-Thru Port Operator's Guide	95845
L700x/L1400x Tape Libraries and Pass-Thru Port Service Manual	95846
L700x/L1400x Tape Libraries Illustrated Parts Catalog	95847

Tape Drive Documentation	Part Number
T9x40 Tape Drive System Assurance Guide	MT5003
T9840 Tape Drive User's Reference Manual	95739
T9940 Tape Drive Operator's Guide	95989
T10000 Tape Drive Systems Assurance Guide	TM0002
T10000 Tape Drive Operator's Guide	96174
DLT1 Installation and Operations Guide	Benchmark 000826-0x
DLT1 Product Specification	Benchmark 000827-0x
DLTTM7000 Tape Drive Product Manual	31313450x
DLTTM8000 Tape Drive Product Manual	Quantum 81-60118-0x
SDLT 220 and SDLT 320 Product Manual	CD included with drive
Hewlett Packard Ultrium Tape Drive Manual	CD included with drive

Tape Drive Documentation	Part Number
International Business Machines (IBM) Ultrium Tape Drive Manual	CD included with drive
Certance Ultrium Tape Drive Product Manual	CD included with drive

Additional Information

Sun Microsystems, Inc. (Sun) offers several methods for you to obtain additional information.

Sun's External Web Site

Sun's external Web site provides marketing, product, event, corporate, and service information. The external Web site is accessible to anyone with a Web browser and an Internet connection.

The URL for the Sun external Web site is: http://www.sun.com

The URL for Sun StorageTek™ brand-specific information is: http://www.storagetek.com

Customer Resource Center

The Sun StorageTek product Customer Resource Center (CRC) is a Web site that enables members to resolve technical issues by searching code fixes and technical documentation for StorageTek brand products. CRC membership entitles you to other proactive services, such as HIPER subscriptions, technical tips, answers to frequently asked questions, addenda to product documentation books, and online product support contact information. Customers who have a current warranty or a current maintenance service agreement may apply for membership by clicking on the `Request Password` button on the CRC home page. Sun employees may enter the CRC through the SunWeb PowerPort.

The URL for the CRC is http://www.support.storagetek.com

Partners Site

The StorageTek Partners site is a Web site for partners with a StorageTek Partner Agreement. This site provides information about products, services, customer support, upcoming events, training programs, and sales tools to support StorageTek Partners. Access to this site, beyond the Partners Login page, is restricted. On the Partners Login page, Sun employees and current partners who do not have access can request a login ID and password and prospective partners can apply to become StorageTek resellers.

The URL for the StorageTek Partners site is: http://members.storagetek.com

The URL for partners with a Sun Partner Agreement is: http://www.sun.com/partners/

Global Services Support Tools

Global Services Support Tools site (also called Field Tools) provides tools that aid in the sales and support of Sun StorageTek brand products and services. This is an internal Web site for Sun employees.

The URL for the Global Services Support Tools is http://wwssto.stortek.com

Hardcopy Publications

You may order paper copies of publications listed on the CRC or included on the *Documents on CD*.

Service publications have *numeric* part numbers. To order paper copies of service publications, contact your local Customer Services Logistics Depot.

Marketing publications have *alphanumeric* part numbers. To order paper copies of marketing publications, do one of the following:

Visit the SunWeb PowerPort and select alphabetical listings under "L" or select `Online Forms`. Then search for Literature Distribution. Follow the instructions on the Literature Distribution Web page.

Send e-mail to DistrL@louisville.stortek.com

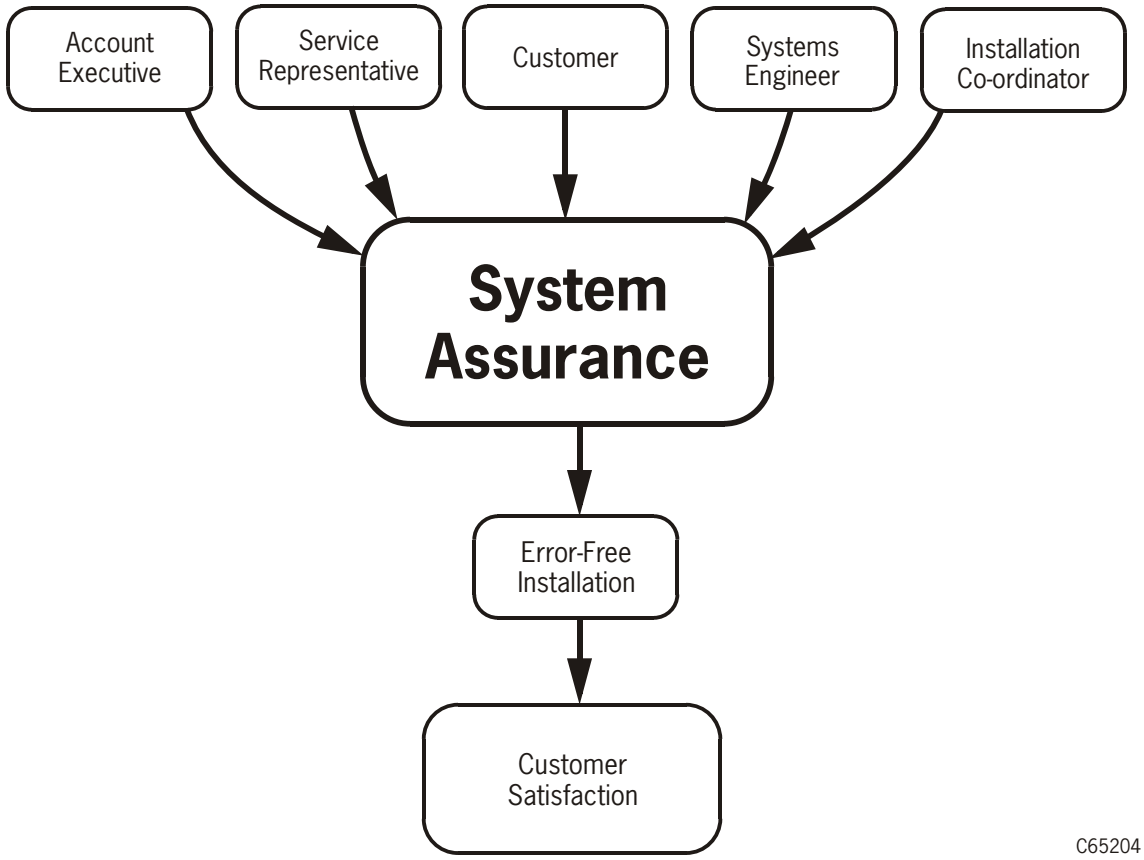
The System Assurance Process

1

This chapter contains information that is applicable to the L180, L700 and the L1400. Differences between the L700 and L1400 are shown in Appendix C.

The system assurance process is outlined in Figure 1-1. System assurance team members appear across the top of the figure. The process is the exchange of information among team members to ensure that no aspects of the sale, ordering, or installation are overlooked. This process promotes an error-free installation and contributes to customer satisfaction.

Figure 1-1. The System Assurance Process (C65204)



System Assurance Team Responsibilities

Table 1-1 lists the responsibilities of the system assurance team members. The team ensures that all aspects of the process are planned carefully and performed efficiently. Customer and Sun Microsystems team members jointly own and control the process.

Table 1-1. Team Member Responsibilities

Team Member	Responsibilities
Installation coordinator (IC) (United States) Customer service manager (international)	• Leads the system assurance team in most cases. • Coordinates the system assurance process and oversees the use and implementation of this guide. • Schedules meetings between team members. • Supplies or obtains all necessary support documentation. • Works with the customer to complete the following worksheets: **Key personnel** (see Chapter 2, "Key Personnel") **Equipment planning** (see Chapter 3, "Equipment Planning") **Site survey** (see Chapter 3, "Equipment Planning") **Pre-installation checklist** (see Chapter 9, "Pre-installation Checklist") • Faxes all of the required and completed worksheets (except the sales entry form) to the appropriate orders offices. See Chapter 3, "Equipment Planning". • Works with the service representatives and the customer to provide delivery information as listed in "Service Representatives" responsibilities in this table.
Account executive (United States)	• Leads the system assurance team in some cases. • Is responsible for the customer account. • Faxes the sales entry form to the Shared Services Center. • Follows up with the customer to ensure customer satisfaction.
Service representative	• Prepares customer service support procedures. • Explains available levels of hardware support and criteria for problem escalation. • Installs the product at the customer site.

Table 1-1. Team Member Responsibilities (Continued)

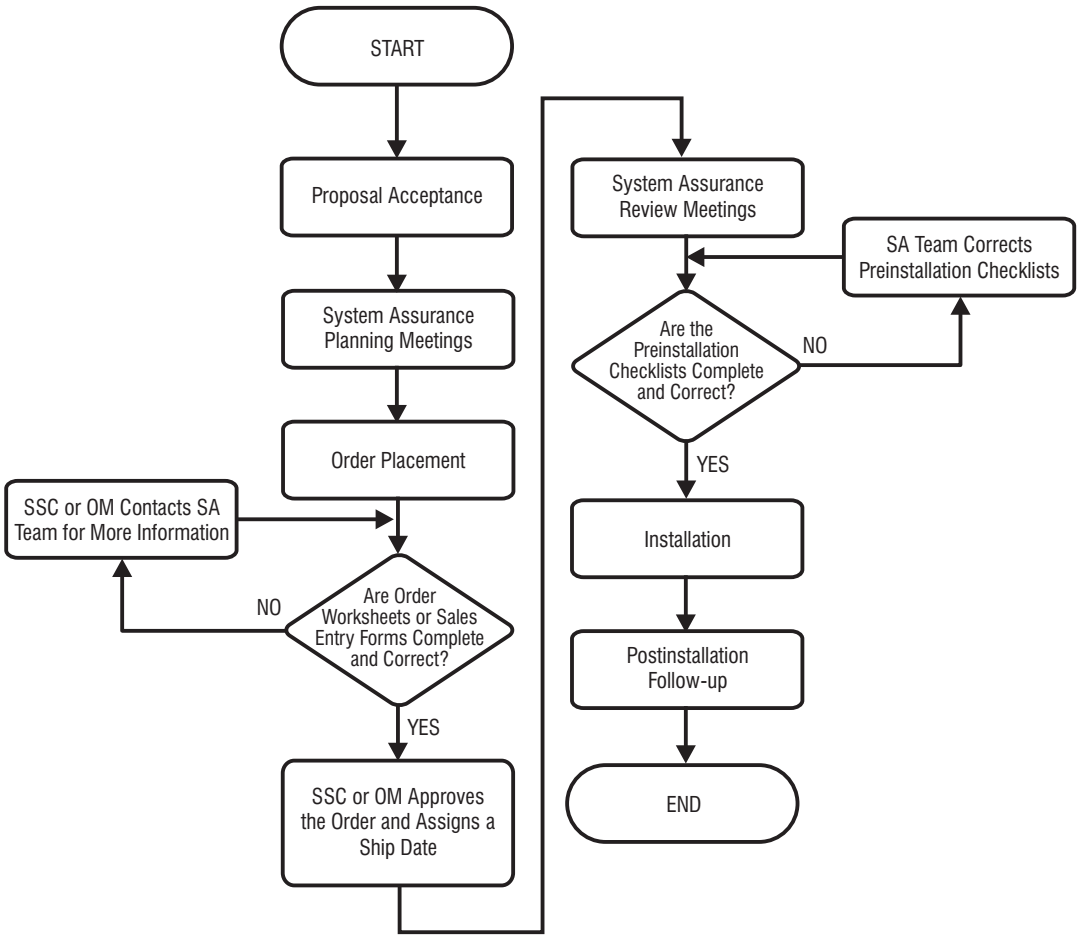
Team Member	Responsibilities
Customer	• Works with the IC at the system assurance planning meetings to provide the data for the worksheets listed for the IC. • Works with the systems engineer (SE) at the system assurance planning meetings to provide the data for the worksheet listed for the SE. • Names a contact person for any unresolved issues in the above worksheets. • Discusses the schedule and names a contact person for all scheduling matters.
Systems engineer (SE)	• Explains available levels of software support and criteria for problem escalation. • Works with the customer to complete the **Solution variables** (see Appendix A, "Site Planning Information") worksheet. • Provides data migration information.

The System Assurance Flowchart

Figure 1-2 shows the system assurance flow. The text that follows the figure describes the steps in more detail.

No two installations are the same; however, following this flowchart promotes a smooth system assurance process and an error-free installation.

Figure 1-2. The System Assurance Flowchart (C65205)



Proposal Acceptance

The system assurance process begins when the customer accepts the proposal. At this time, the installation coordinator or the customer service manager schedules one or more system assurance planning meetings.

System Assurance Planning Meetings

The purpose of the system assurance planning meetings is to:

- Explain system assurance as it applies to the Sun StorageTek L180, L700e or L1400 Tape Library
- Establish the system assurance team
- Establish the responsibilities of the team members
- Establish the schedule for the system assurance process
- Define hardware and software requirements
- Complete the configuration worksheets, order worksheets, and other required worksheets (see Chapter 8, "Order Worksheets")

Order Placement

Depending on the customer, the appointed team member must now either:

- Fax the completed worksheets to Orders Management (OM)
- Transfer information from the completed worksheets to the sales entry form and fax the sales entry form to the Shared Services Center (SSC)

See Chapter 3, "Equipment Planning," to determine which option to use and to locate the appropriate fax number.

Sales Entry Form or Order Worksheet Error Check

If the sales entry form or order worksheets are complete and correct, OM or SSC approves the order and assigns a ship date; if they are not, OM or SSC contacts the system assurance team for more information.

System Assurance Review Meetings

The purpose of the system assurance review meetings is to:

- Complete the preinstallation checklists (see Chapter 9, "Pre-installation Checklist")
- Identify additional requirements

Pre-installation Checklist Error Check

If the preinstallation checklist is complete and correct, the sale is approved and the product is shipped; if they are not, the system assurance team completes or corrects it.

Installation

The service representative installs the Sun StorageTek L180, L700e or L1400 Tape Library at the customer's site.

Postinstallation Follow-up

To follow up the installation:

- The Error-Free Delivery Team tracks any exceptions to the original shipment.
- The system assurance team leader completes the reader's comment form at the back of this guide or online.
- The service representative logs installation data into the Customer Service Data Collection (CSDC) system.
- The service representative attends a follow-up meeting with the customer to review the completed project.

Key Personnel

2

This chapter contains information that is applicable to the L180, L700 and the L1400.

This chapter enables you to record the names and phone numbers of the key personnel on the teams. The home phone number is optional.

Customer Team

List names and phone numbers of the following people:

Server Hardware Contact

_____

Phone office:_____ home:_____

Operating Systems Software Contact

_____

Phone office:_____ home:_____

Communication Hardware Contact

_____

Phone office:_____ home:_____

Operations Contact

_____

Phone office:_____ home:_____

Installation Coordinator

_____

Phone office:_____ home:_____

Sun Microsystems Team

List names and phone numbers of the following persons.

Account Executive

_____

Phone office:_____ home:_____

Systems Engineer

_____

Phone office:_____ home:_____

Service Representative

_____

Phone office:_____ home:_____

SDE room on site:

Installation Coordinator

_____

Phone office:_____ home:_____

Hardware and Software Support

Sun Microsystems provides the following phone numbers for hardware and software support:

Call Center (Hardware)	
U.S. In Colorado	1.303.673.4056
U.S. Outside Colorado (customers)	1.800.525.0369
U.S. Outside Colorado (service representative)	1.800.735.2778
Software Support	
U.S. Outside Colorado	1.800.678.4430
U.S. In Colorado	1.303.673.4430

Channel Partner Team

List names and phone numbers of the following people:

Account Executive

_____

Phone office:_____ home:_____

Systems Engineer

_____

Phone office:_____ home:_____

Service Representative

_____

Phone office:_____ home:_____

SDE room on site:

Installation Coordinator

_____

Phone office:_____ home:_____

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Equipment Planning

3

This chapter contains information that is applicable to the L180, L700 and the L1400. Any differences for the L1400 are shown in Appendix C.

This chapter helps you plan for installing StorageTek's L180, L700e or L1400 Tape Library. The planning process lists the steps to complete when ordering. Configuration worksheets record the customer's hardware and software.

Planning worksheets record the equipment that the team must order to install a library. This guide provides:

- Component descriptions and guidelines
- Order sheets

Other worksheets might be required. This guide does not provide the following worksheets, but you can obtain them from installation consultants, or through PowerPort, or on Microsoft Outlook:

- Site survey
- Product checklist

Customer needs dictate which worksheets to complete and which departments to contact.

The Planning Process

To plan for your Sun StorageTek L180, L700e or L1400 Tape Library:

1. Make photocopies of the blank worksheets provided in this guide.
2. Obtain other required worksheets not provided in this guide.
3. Review the customer's existing hardware and software.
4. Select the correct equipment and configuration for the customer's needs.
5. Enter the information on the worksheets.
6. Review the items with the customer.
7. If necessary, transfer the appropriate information from the worksheets to a sales entry form.
8. Fax the worksheets or sales entry form to the appropriate orders department.

Fax Numbers and Addresses

The orders department, fax number, and documents to fax depend on the customer.

Customers, VADs, and VARs

Domestic

Domestic customers, value-added distributors (VADs), and value-added resellers (VARs) must:

1. Transfer the information from the hardware planning worksheet, the cables worksheet, and the cartridge tapes and labels worksheet to a sales entry form. Use Seibel Sales Enterprise software to place the order directly. The Siebel tool identifies a valid configuration, generates an accurate quote, and produces an error-free sales entry form.
2. Fax all of the following forms:

   - Sales entry form
   - Library configuration worksheet
   - Site survey
   - Product checklist

   to the following number:

   Shared Services Center
   Fax: 678-969-4015, 4016, or 4017

   5390 Triangle Parkway, Suite 300
   Norcross, GA 30092
   Voice: 678-969-4000 or toll free (from U.S. only) 1-800-951-0730

European

Customers, VADs, VARs, OEMs, distributors, and subsidiaries in Europe, must fax the European Sales Order Form (ESOF) from the Account Management application, along with any input following the site survey, to compare with the Systems, Applications, and Products (SAP) order:

to the following number:

StorageTek European Trade Corp. (SETC)
Fax: 31-347-323-750

Ir. D. S. Tuynmanweg 6
Vianen, The Netherlands 4131
Voice: 31-347-323-752

Media Orders

For information on ordering tape media (for example, data, diagnostics, and cleaning cartridges, and labels), go to the following URL:

http://www.storagetek.com/products/category_page2002.html

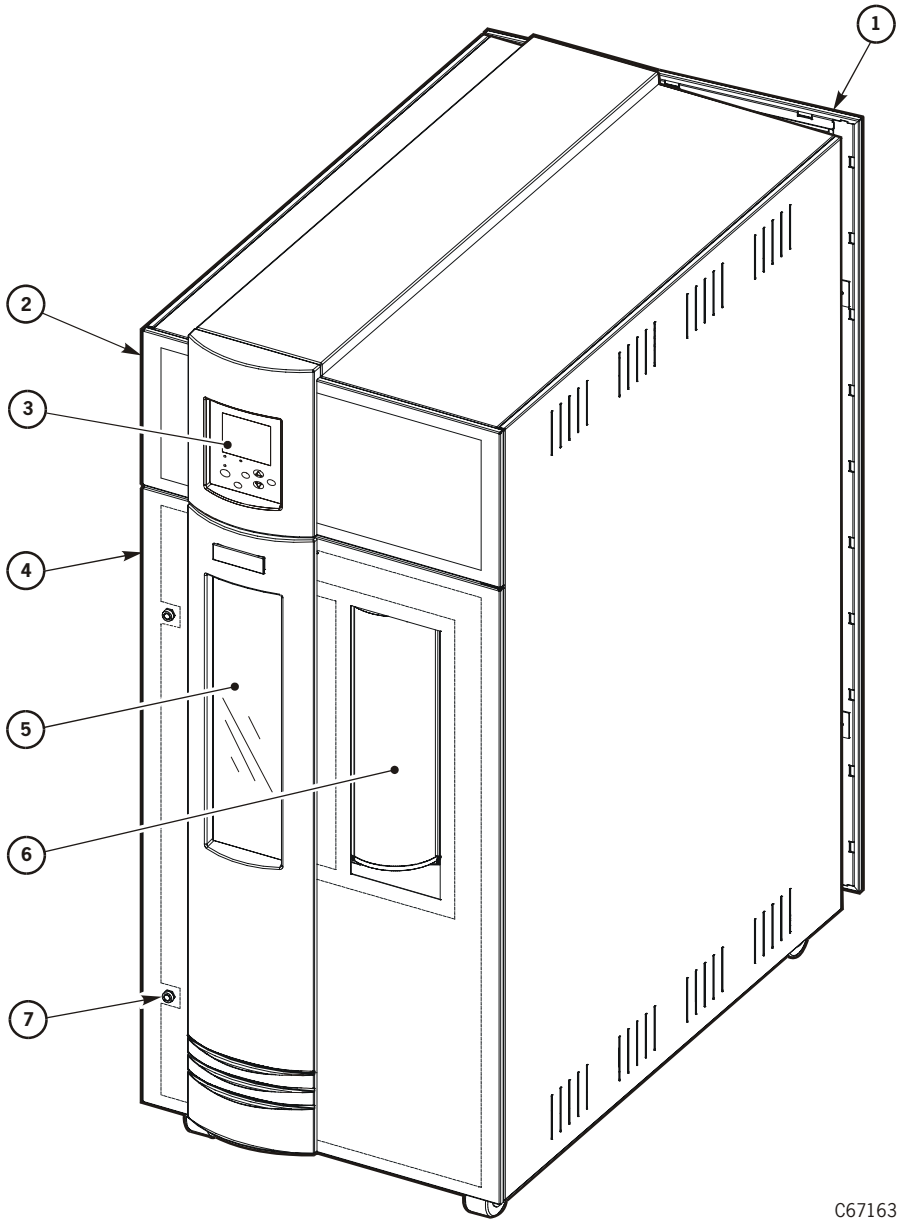
Also see "Tape Drives" on page 8-5 for more media ordering information.

General Library Information

L180

The L180 Tape Library can store up to 84, 140, or 174 cartridges, depending on model and features selected, and can perform of up to 450 exchanges per hour. Capacity includes cartridges in the reserved cells dedicated to cleaning and diagnostic cartridges, but not in the cartridge access port (CAP). The CAP holds two five-cartridge magazines. Figure 3-1 on page 3-4 shows the L180 Tape Library.

Figure 3-1. L180 Tape Library (C67163)

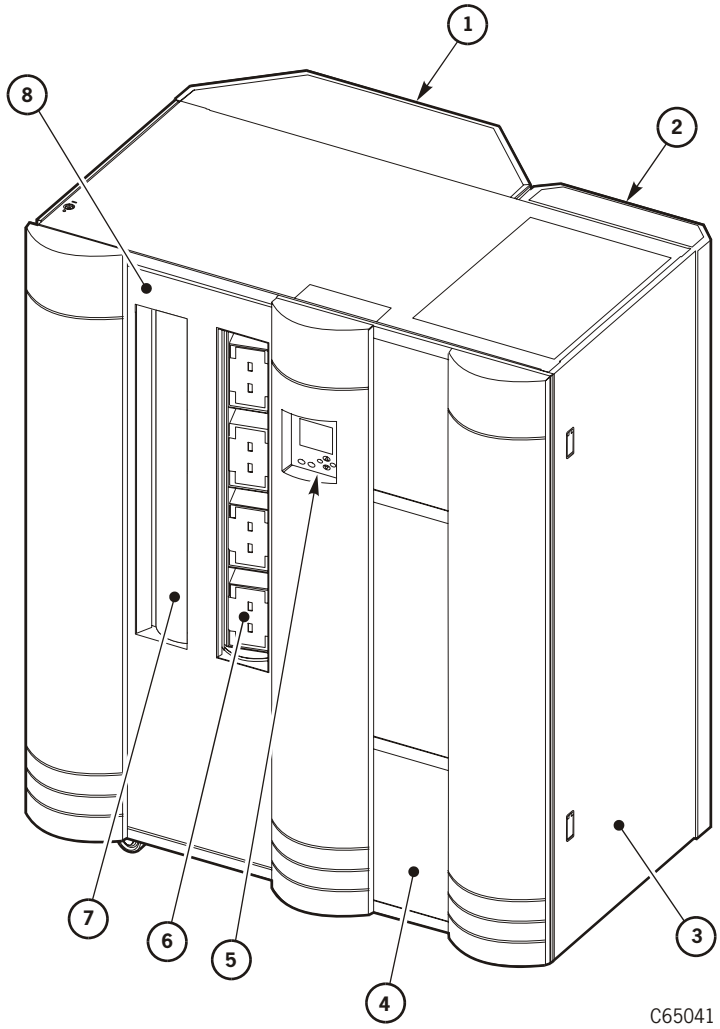


1. Rear door
2. Rack door
3. Operator panel
4. Front door
5. Window
6. CAP (shown closed)
7. Front door latches (2X)

L700e

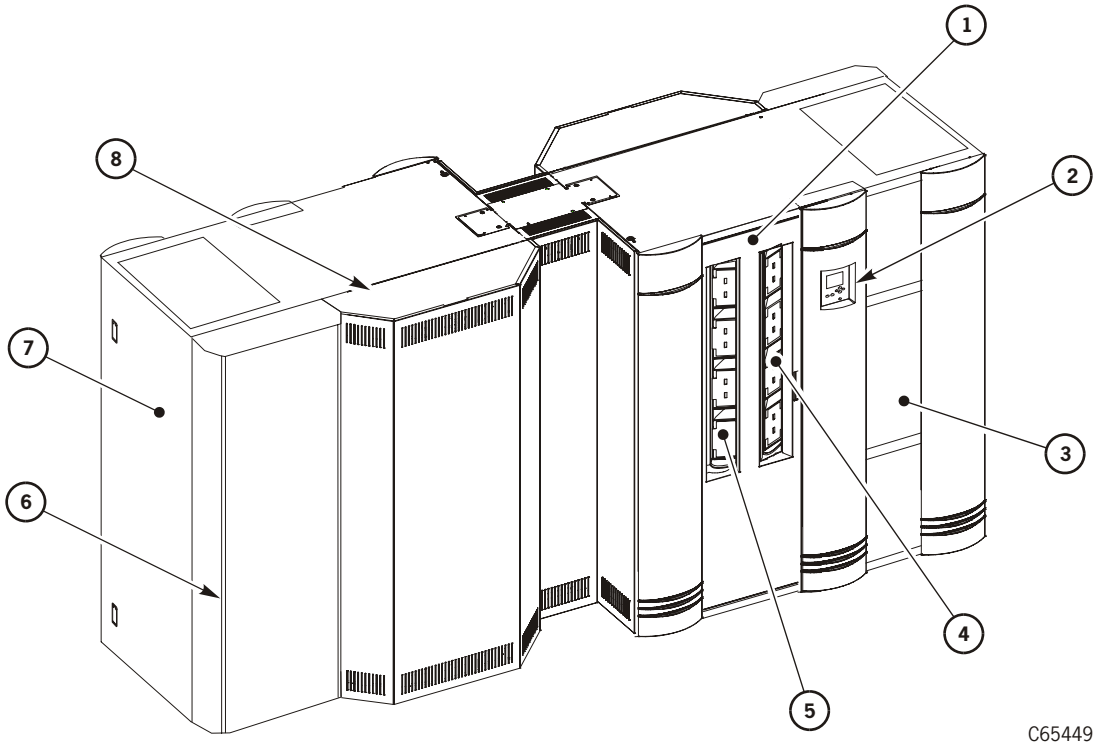
The L700e Tape Library can store up to 216, 384, or 678 cartridges, depending on model and features selected, and can perform up to 450 exchanges per hour per library. Capacity does not include cartridges in the diagnostic and cleaning-cartridge cells, or in the cartridge access port (CAP). Each CAP holds four five-cartridge magazines (20 cartridges total) or you can order two CAPs (40 cartridges total). Figure 3-2 shows a single L700e Tape Library. Figure 3-3 on page 3-6 shows two L700e libraries connected with a pass-thru port (PTP), this configuration can store up to 1,344 cartridges.

Figure 3-2. L700e Tape Library (C65041)



1. Expansion frame (optional)
2. Rear rack access door
3. Side access door
4. Right front access door
5. Operator panel
6. Optional CAP B or viewing window (standard)
7. CAP A (standard)
8. Left front access door

Figure 3-3. L700e Tape Library (C65041)



1. Left front access door
2. Operator panel
3. Right front access door
4. Optional CAP B or viewing window (standard)
5. CAP A (standard)
6. Rear rack access door
7. Side access door
8. Expansion frame (optional)

Power

4

This chapter contains information that is applicable to the L180, L700 and the L1400. Differences between the L700 and L1400 are shown in Appendix C.

The library power system consists of:

- One or two DC power supplies that provide power to the library
- One or two AC power distribution units (PDUs)

Refer to Table 4-1 on page 4-2 for a full description of power characteristics for the L180 and L700e Tape Libraries. Optional redundant power systems are also available, see "Redundant Power Systems" on page 4-7 for more information.

DC Power Supplies

If the library has two DC power supplies, one supply powers the library during normal operation. If a fault is detected, the second DC power supply assumes control, and the library posts the error to the FSC log.

AC Power Distribution Units

Each PDU:

- Operates within a line voltage of 100 to 127 VAC or 200 to 240 VAC at 50 or 60 Hz
- Distributes AC voltage to a library DC power supply
- Is protected from overcurrent by circuit breakers

If the library has the second, optional DC power supply, it also must have the optional PDU and a second power cord. See "Site Power Considerations" on page 4-2 to determine if this optional power equipment is necessary for your customer's installation. See "Redundant Power Systems" on page 4-7 for details on redundant power supply

Note: The L180 library must have a two-cable L180 Tape Library drive tower for a dual PDU configuration to supply power redundancy to half the drives. Libraries with serial number 5525 and later have two-cable drive towers. Older L180 Tape Libraries may be retrofitted.

Table 4-1. L180 and L700e Tape Library Power Characteristics

Description	Value/Part Identification
Power drops for library and PDU 1, each: (47 to 63 Hz AC range. 3-wire cables supplied. International cables are supplied without cable connectors)	U.S./Canada: 100 to 127 VAC, single phase International: 200 to 240 VAC, single phase
Library 100 to 127 VAC domestic plug feature code 9930	NEMA 5-15P—ordered with library
Library 100 to 127 VAC domestic plug	NEMA 5-15P—supplied with PDU
Library 100 to 127 VAC domestic wall receptacle	NEMA 5-15R—supplied by customer
International plugs and receptacles for library and, if applicable, for PDU	Supplied by customer according to local electrical codes, see Table 4-4 on page 4-6.
Power consumption for library without drives[1] (see note)	1.0 A @ 120 V; 0.5 A @ 240 V; 120 W
Heat output for library without drives	410 Btu/hr

1. Up to six (L180)/twelve (L700) T9840/T9940/T10000 tape drives or 10 (L180)/20 (L700)DLT, SDLT, or LTO Ultrium tape drives take power from the standard library PDU. Calculate power ratings for the L180 or L700e Tape Library, and (separately) for the PDU, by adding the number of drives connected to each. The PDU alone has zero load.

Site Power Considerations

In the L180 and L700e Tape Libraries, some combinations of input voltage and current, drive type, and plug type limit the number of drives that can be installed. See the following paragraphs for details.

At 100 to 127 VAC

You may install the maximum number of drives in the L180 Tape Library if the power source at the site is 100 to 127 VAC: 10 LTO Ultrium tape drives, 10 DLT or SDLT tape drives (with or without Power Factor Correction [PFC]) or six T9840/T10000 Tape Drives. You may do so even if the library is connected to a single AC circuit. However, drive tower power redundancy requires a second AC source. See Table 4-2 on page 4-3 for a summary of the maximum number of tape drives you may install in the L180 Tape Library if it is connected to a single 120 VAC circuit.

You may install the maximum number of drives (T9840/T9940/T10000, DLT with power factor correction (PFC), SDLT, or LTO Ultrium) in the L700e Tape Library if the power source at the site is 100 to 127 VAC, the current capacity is at 20 A, and the power cords have locking plugs. For all other configurations, see Table 4-3 on page 4-3 for a summary of the maximum number of tape drives you may install in the L700e Tape Library if it is connected to a single 120 VAC circuit. Maximum configuration of drives with non-PFC supplies requires two AC circuits. Please note the differences between the Power Factor Correction (PFC) and non-PFC drive configurations.

Table 4-2. L180 Maximum Number of Drives on Single AC Circuit

Voltage	120 VAC[1]		220 VAC[1]	
Current Capacity	15 A or 20 A		10, 15, or 20 A	
Phase	Single Phase		Single or Two Phase	
Power Cord Rating	15 A or 20 A		10 or 15 A	
Plug Style	Non-locking	Locking[2]	Non-locking	Locking[2]
	Maximum Number of Drives			
T9840/T9940/T10000	6	6	6	6
DLT w/non-PFC	10	10	5	10
DLT w/PFC [3]	10	10	10	10
LTO Ultrium	10	10	10	10

1. Numbers in this table include library robotics requirements. It is recommended that site power be sized to accommodate expansion to the maximum number of tape drives.
2. Use locking plugs for non-power factor corrected (non-PFC) DLTs mixed with T9840s, LTO Ultriums, or PFC DLTs.
3. PFC power supplies have less leakage current and lower RMS current demand on the AC input.

Table 4-3. L700e Maximum Number of Drives on Single AC Circuit

Voltage	120 VAC[1]				220 VAC[1]			
Current Capacity	15 A		20 A		10 or 15 A (International)		15 A or 20 A	
Phase	Single Phase		Single Phase		Single Phase		Two Phase	
Power Cord Rating [2]	15 A		15 A or 20 A		10 or 15 A (International)		15 A	
Plug Style	Non-locking	Locking[3]	Non-locking	Locking[3]	Non-locking	Locking[3]	Non-locking	Locking[3]

Table 4-3. L700e Maximum Number of Drives on Single AC Circuit (Continued)

Voltage	120 VAC[1]				220 VAC[1]			
	Maximum Number of Drives				Maximum Number of Drives			
T9840/T9940/ T10000	12	12	12	12	9	12	9	12
DLT w/non-PFC	10	10	10	13	5	16	5	20
DLT w/PFC [4]	16	16	20	20	20	20	20	20
LTO Ultrium	16	16	20	20	20	20	20	20

1. Numbers in this table include library robotics requirements. It is recommended that site power be sized to accommodate expansion to the maximum number of tape drives.
2. Two power cords are required if over 10 DLT, SDLT, or LTO Ultrium tape drives, or six T9840/T10000 tape drives are installed.
3. Use locking plugs for non-power factor corrected (non-PFC) DLTs mixed with T9840s/T10000s, LTO Ultriums, or PFC DLTs.
4. PFC power supplies have less leakage current and lower RMS current demand on the AC input.

At 200 to 240 VAC

You may install the maximum number of drives in the L180 Tape Library if the power source at the site is 200 to 240 VAC, except with DLT drives with non-PFC supplies. At 200 to 240 VAC, the maximum configuration of DLT drives with non-PFC supplies (five drives) requires the library to connect to two AC circuits (see "AC Power Distribution Units" on page 4-1). See Table 4-2 on page 4-3 for a summary of the maximum number of tape drives that you may install in the L180 Tape Library if it is connected to a single 220 VAC circuit. Please note the differences between the PFC and non-PFC drive configurations.

You may install the maximum number of drives in the L700e Tape Library if the power source at the site is 200 to 240 VAC, the current capacity is 15 or 20 A, two phase, with power cords with locking plugs. For all other configurations, see Table 4-3 on page 4-3 for a summary of the maximum number of tape drives you may install in the L700e Tape Library if it is connected to a single 220 VAC circuit. Maximum configuration of drives with non-PFC supplies requires two AC circuits. Please note the differences between the PFC and non-PFC drive configurations.

Notes:

- All new DLT tape drives ship with the PFC power supply (85 W).
- You must use a locking plug on the library's power cord when the library contains a non-PFC DLT tape drive.
- Two power cables are required when installing more than 10 DLT, 10 SDLT, 10 LTO Ultrium, 6 T9840, 6 T9940, or 6 T10000 drives (T9940 fit in the L700e only).

Use Table 4-2 on page 4-3 and Table 4-3 on page 4-3 to determine:

- How many drives may be installed in the library
- Whether the library's power cord requires a locking plug or might require a locking plug in the future
- Whether the library's configuration requires the optional PDU and a second power cord or might require this equipment in the future
- How many AC circuits the customer must supply for the library

When you have made your determination, see Table 4-4 on page 4-6 to determine which power cables to order.

Power Cable Information

For each library, the customer must order a general power cable and supply the correct receptacle (see Table 4-4 on page 4-6). Additional power cables for specific wiring, source power, or country requirements can be ordered separately as options. Power characteristics for the tape library are listed in Table 4-1 on page 4-2.

CAUTION:
Electrocution hazard: **The tape library must have a reliable ground connection. Using a plug without a ground pin may cause an electrical shock when touching the tape library chassis.**

Table 4-4. L180 and L700e Tape Library Power Cables

Input Voltage	Country	If the Library Contains...	
		T9840/T9940/T10000, Newer DLT, SDLT, or Ultrium Tape Drives, or a mix of these drives	**Older DLT Tape Drives (those with non-PFC power supply)**
100 – 127 VAC 15 A	U.S./Canada	Nema 5–15P PWRCORD10187021-Z	Nema 5–15P PWRCORD10187021-Z
	Japan	JIS 8303 PWRCORD10187028-Z	JIS 8303 PWRCORD10187028-Z
	Taiwan	BSMI	IEC320 PWRCORD10187084-Z
200 – 240 VAC 10 or 15 A	Australia	AS 3112 PWRCORD10187029-Z	Locking[1], IEC 60309 PWRCORD10187022-Z
	Europe[2]	CEE 7/7 PWRCORD10187027-Z	Locking, IEC 60309 PWRCORD10187022-Z
	Italy	CEI.23 PWRCORD10187030-Z	Locking, IEC 60309 PWRCORD10187022-Z
	South Africa	BS 546 or BS 1363 PWRCORD10187032-Z	Locking, IEC 60309 PWRCORD10187022-Z
	South Korea	KS 8305 PWRCORD10083656	Locking, IEC 60309 PWRCORD10187022-Z
	Taiwan	BSMI	IEC320 PWRCORD10187085-Z
	United Kingdom	BS 1363 PWRCORD10187031-Z	Locking[1], IEC 60309 PWRCORD10187022-Z
200—240 VAC 10 or 15 A	U.S./ Canada	NEMA 6–15 PWRCORD10187025-Z	NEMA L6–15P PWRCORD10187026-Z
		North America	PWRCORD419728301-Z
	Europe	Harmonized (No Plug)	PWRCORD419728701-Z

1. Use locking plugs for DLTs or DLTs mixed with T9840/T9940/T10000s or LTO Ultriums.
2. Europe includes Germany, Norway, Sweden, Denmark, Finland, the Netherlands, Belgium, France, and Switzerland.
3. Suffix “-Z” indicates ROHS-compliant component.

External Cable Information

Order external cables, such as SCSI, ESCON, FICON, or Fibre Channel, through Orders Administration as required.

Power Cables, Drives, and Robot

Drive power cables are not needed. Installing a drive in a library includes inserting a power plug on the drive tray into a panel-mounted receptacle. The receptacle lets service personnel replace a faulty drive (that is, "hot-swap" a drive) while other drives are running.

Redundant Power Systems

Customers can order an optional, load-sharing, redundant power supply for higher availability. L700e libraries with two drive towers must have two PDUs. Hot-swappable power supplies feature drawer connectors.

Note: Redundant power is for the robotics, *not* for the tape drives.

An APC uninterruptible and redundant AC power supply option is available that will provide full AC redundancy to the L180 or L700e library during a power outage. This is an optional feature designed to mitigate the effects of blackouts, brownouts, sags and surges in AC power. The APC power option consists of two uninterruptible power supply (UPS) units, an Ethernet interface, a redundant switch, and a power outlet strip. The UPS units provide power conditioning by filtering out small fluctuations and disturbances in the AC line voltage. The redundant switch alternates between the two UPS units to provide power to the library. The power strip allows you to connect up to eight additional components to the APC power option. If site power fails, the APC power option will supply power to the equipment until the UPS batteries are exhausted. (See Table 4-5 on page 4-8 for APC runtimes.) The APC power option must be connected to two separate AC power circuits.

When ordering the APC power option, make sure you have the correct power connections:

- For the L180 Library, the domestic APC power option (YXSL180-RAC-DOM) uses an L5-15P, locking, 120 volt, 15 amp plug that requires a power source with an L5-15R receptacle.
- For the L700e Library, the domestic APC redundant AC power option uses an L5-30P, locking, 120 volt, 15 amp plug that requires a power source with an L5-30R receptacle.
- For the L180 or L700e Library, the international APC power option uses Hubbell 316P6W plug that requires a power source with a Hubbell 316R6W receptacle.

When selecting the APC power option, you must also order the auxiliary rack area cooling fan to cool the AC power option components as well as other rack components. See Table 8-3 on page 8-3 for ordering information.

Note: The rack area cooling fan can also be ordered to provide protection for rack area components that generate excess heat.

Table 4-5 shows APC runtimes during a site outage.

Table 4-5. APC Runtimes

Load/Watts	VA	APC Runtime (per APC unit)	
		L180	L700
65	100	4 hours 10 minutes	5 hours, 52 minutes
130	200	2 hours 16 minutes	3 hours, 31 minutes
195	300	1 hour 28 minutes	2 hours, 27 minutes
260	400	1 hour 3 minutes	1 hour, 50 minutes
325	500	47 minutes	1 hour, 26 minutes
390	600	36 minutes	1 hour, 10 minutes
455	700	28 minutes	58 minutes
520	800	23 minutes	44 minutes
585	900	18 minutes	41 minutes
650	1000	15 minutes	36 minutes
780	1200	11 minutes	26 minutes
910	1400	8 minutes	21 minutes
1040	1600		16 minutes
1300	2000		10 minutes
1430	2200		9 minutes
1625	2500		5 minutes

Tape Drives

5

This chapter contains information that is applicable to the L180, L700 and the L1400. Differences between the L700 and L1400 are shown in Appendix C.

The StorageTek L180 Tape Library accommodates 1 to 6 StorageTek T9840/T9940/ T10000 tape drives, 1 to 10 LTO Ultrium tape drives, Digital Linear Tape (DLT) drives, Super DLT (SDLT) drives, DLT-S4 drives, or a combination of the drive types.

The StorageTek L700e Tape Library accommodates 1 to 12 StorageTek T9840/T9940/ T10000 tape drives, 1 to 20 LTO Ultrium, DLT tape drives, SDLT drives, DLT-S4 drives, or a combination of drive types. Adding a second drive tower reduces the number of cells by 60.

Note: For T9840/T9940 Tape Drive ordering information, refer to *T9x40 Tape Drive System Assurance Guide*, MT5003. For T10000 Tape Drive ordering information, refer to *T10000 Tape Drive Systems Assurance Guide*, TM0002.

CAUTION:
Equipment Damage. **For the L180 Tape Library, the IBM LTO Fibre Channel drive requires FB 101593. The field bill includes a new coupler retainer clip, part number 313769501. Without the field bill, the coupler on the back of the drive tray is too close to the bay door, causing the attached external fiber cable to bend sharply when the bay door is closed. The field bill instructs you to insert the coupler into the new clip.**

Possible data loss**: StorageTek does not advise mixing DLT 7000 and DLT 8000 drives in the same library. If a DLT cartridge is first written by a DLT 8000 drive and is then inserted into a DLT 7000 drive, the drive will indicate an error if a read command is issued and will write over any data present if a write command is issued.**

Data loss: **StorageTek does not advise mounting SDLT 320-formatted cartridges into SDLT 220 drives. An SDLT 220 drive will overwrite the 320 data. To avoid this, carefully manage the locations of the cartridges within your library, and designate the correct drive type for your read/ write operations.**

A DLT, SDLT, or LTO tape drive occupies one drive tower slot; a T10000, T9840, or T9940 (L180 requires YXSL180-T9940B-DR feature, see Table 8-4) tape drive occupies 1 1/2 slots. The library can mix the tape drive models. For example, you can have 3 T9840/ T10000 tape drives, 2 DLT tape drives, and 3 LTO Ultrium tape drives in the L180. The maximum combinations of drives per tower are shown in Table 5-1 on page 5-2.

SCSI Drives ship with one interface 'Y' cable (installed by a technician), one terminator, a drive tray assembly which includes the drive, tray, a drive chassis, a power supply for the tape drive, and hardware to mount the drive to the tray.

Table 5-1. Drive Combinations per Drive Tower

Number of T9840/T9940/T10000	DLT, SDLT, or LTO Ultrium
0	10
1	8
2	7
3	5
4	4
5	2
6	1

Note: For the L180, the total cannot exceed 10 slots. For the L700e, the total cannot exceed 20 slots, and more than 10 drive slots requires the second drive tower.

If the customer is using a SCSI data path to the tape drives, you will need SCSI 68-pin connectors to connect to the drives. The drive shipment does *not* contain a cartridge but *does* contain labels for cleaning and diagnostic cartridges.

If the customer is using a Fibre Channel data path to the tape drives, you will need SC-type Fibre Channel connectors, or for the T9840B, T9940B, and T10000 tape drive, LC-type connectors that support 2-Gigabit transfer rates. An LC-to-SC adapter cable is available.

Table 5-2 lists compatible tape drives.

Table 5-2. Compatible Tape Drives

Model	Number of Drives[1]	
	L180	**L700e/L1400M**
LTO Ultrium 1, 2, 3 and 4 tape drive Differential/Fibre Channel[2]	1 to 10	1 to 20
SDLT 600	1 to 10	1 to 20
DLT 7000[3] Fast/Wide Differential	1 to 10	1 to 20
DLT 8000 Fast/Wide Differential	1 to 10	1 to 20
SDLT Fast/Differential	1 to 10	1 to 20
DLT-S4[4]	1 to 10	1 to 20
StorageTek T9840 Differential/Fibre Channel/ ESCON/FICON	1 to 6	1 to 12
StorageTek T9940 Differential/Fibre Channel	not compatible[5]	1 to 12
StorageTek T10000 Fibre Channel[6]	1 to 6	1 to 12

1. The library accepts a combination of tape drives. For drive combinations, see Table 5-1 on page 5-2.
2. LTO 1—3 currently available; check availability for LTO 4.
3. The DLT 7000 tape drive is being phased out in favor of newer technologies. Customers that require DLT 7000 functionality can order a DLT 7000E, which is a DLT 8000 tape drive in DLT 7000 emulation mode.The SDLT 220 is also being phased out.
4. The DLT-S4 is available as of April 2007.
5. T9940 tape drives are compatible with L180s which have the extended drive bay door.
6. The T10000 requires library firmware version 3.09.

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External Cables

6

This chapter contains information that is applicable to the L180, L700 and the L1400. Differences between the L700 and L1400 are shown in Appendix C.

Note: Part/Model numbers that end with "Z" or "-Z" indicate RoHS compliance. Part/Model numbers that begin with "Y" indicate used items.

Several interfaces are available for the library or its supported drives:

- Multi-initiator small computer system interface (SCSI) connection
- Fibre Channel connection (requires feature code 1FC2)
- Enterprise System Connection (ESCON)
- Fibre connection (FICON)

Note: ESCON is for T9840B tape drives only, and requires library firmware version 3.01 or later. FICON is for T9840B and T9840C tape drives and requires library firmware version 3.07 or later.

In addition, the SCSI connection can be converted to Fibre Channel through a router; thus, users can interface with the L180 or L700e Tape Library through either a *direct* or *indirect* connection to a SCSI client.

Control and Data Path (SCSI and Fibre Channel)

The customer may choose to separate the control path and the data paths. The control path transfers client commands for library robotic operations and connects to an ACSLS host using HVD or LVD SCSI communications, or fiber-optic communications. The data path transfers data to and from the drives. Alternatively, the customer can combine both control and data paths. Customers now have two alternatives for a consolidated control and data path: SCSI and Fibre Channel.

The following paragraphs and tables detail the various communication cables provided by StorageTek. When applicable, the table has a short description of the interface cards required on the library and on the ACSLS 44SB-150 server.

If the customer uses SCSI, consider performance characteristics when determining the number of drives per SCSI path.

Note: No more than 11 (L180) or 21 (L700e) cables may be connected to the library and its drives.

If the customer uses Fibre Channel, router or bridge connections might limit the number of devices in a daisy-chain configuration. Because the L180 and L700e Tape Libraries are

strictly configured to employ fiber-optic cables only, the library Fibre Channel control and data path cables must use fiber-optic connectors.

SCSI Direct Connection

For *direct* client-to-library SCSI connection, a server connects to the drives and library through a multi-initiator SCSI bus. The library may have a control path that is separate from the data path to or from the drives (the drives are then "off bus"), or the control path may be daisy-chained to the data path (the drives are then "on bus"). The connection from the server to the library or drives is a SCSI Type-3, 68-pin cable.

SCSI Indirect Connection

An *indirect* connection to the library occurs when the library connects to a client through a network; for example:

- A library connected to a UNIX-based server
- The server connected to an Ethernet local area network (LAN)
- A cable connected between the Ethernet LAN and the client

A SCSI Type-3 68-pin cable connects the server to the library. The server may have its own control-side path or may be daisy-chained to a shared data bus with one or more drives.

SCSI Restrictions

The library and drives support *only* SCSI Type-3 connectors. If you use SCSI Type-1 or -2 cable connectors, you must order a SCSI-1- or SCSI-2-to-SCSI-3 adapter so that components can connect properly.

Table 6-1 lists additional restrictions for SCSI connections that you should keep in mind.

Table 6-1. SCSI Cable Restrictions

Application	Length Restriction
Single-ended (library only)	Stub length: 0.1 m (4 in.) 5 to 10 MHz data-transfer rate: 3 m (10 ft) 1 to 5 MHz data-transfer rate: 6 m (20 ft)
Differential	Stub length: 0.2 m (10 in.) 1 to 10 MHz data-transfer rate: 25 m (82 ft)
Low Voltage Differential	Stub length: 0.1 m (3.9 in.) 108 GB data transfer rate: 12 m (39.37 ft)

SCSI HVD or LVD Considerations

With the advent of LTO Ultrium tape drives, customers now have choices as to the type of SCSI interface on which they wish to operate: high voltage differential (HVD) or low voltage differential (LVD). The HVD interface allows longer cable lengths but throughput is lower than LVD; the LVD interface restricts cable lengths, but provides faster throughput and more devices on the bus.

Table 6-2 lists the different types of operation available and the required modifications for each operation type.

Table 6-2. HVD and LVD Modifications

Low Voltage Differential	High Voltage Differential
Library – MPW card attached to MPV card (if MPC card and not MPCL card installed)	Library – None
IBM Ultrium – None	HP Ultrium – Rancho converter
HP Ultrium – None	HP Ultrium – Paralan converter
Certance Ultrium – Set by model number	Certance Ultrium – Set by model number
Host Server – LVD Host Bus Adapter	Host Server – HVD Host Bus Adapter

Daisy-Chain SCSI Cables

If the drives will be linked to a common path or if the library will be linked to a common path with the drives, see Table 6-3 for daisy-chain cables.

Table 6-3. Daisy-Chain Cables

Length	Description	Part Number [1]
300 mm (11.8 in.)	SCSI Daisy-Chain Cable [2]	CABLE10187004-Z
340 mm (13.5 in.)	SCSI Daisy-Chain Cable, rack mount	CABLE10083616
500 mm (19.7 in.)	SCSI Daisy-Chain Cable [3]	CABLE10187005-Z

1. Suffix “-Z” indicates ROHS-compliant component.
2. For DLT, SDLT, or LTO Ultrium tape drives in consecutive slot positions
3. For T9840/T9940 tape drives in consecutive slot positions

SCSI Connectors

See Table 6-4 through Table 6-9 on page 6-6 and Figure 6-1 on page 6-7 for SCSI connectors for the library.

68-pin MD to 68-pin VHDC Cables

StorageTek offers the following cables for operating systems that support the VHDC (very high density connector) cables at the host channel card. The smaller, VHDC connector is connected to the client channel card (Table 6-4 and Table 6-5 on page 6-4).

Table 6-4. 68-Pin Mini-D to 68-Pin VHDC HVD Cables

Length	Above Floor PN	Plenum PN
3 m (9.8 ft)	CABLE10083594	Not available
12 m (39.4 ft)	CABLE10083596	

Notes:

Used with HVD connection between L180/L700 and 44SB-150 Sun Server for ACSLS. Requires feature 2012.

An L180/L700 with an MPC card is configured by default for HVD SCSI. If your library is equipped with an MPCL card and an HVD connection is required, then the HVD attachment kit must be ordered to configure the MPCL card for HVD. A 44SB-150 with the "2012" feature will support an HVD connection to the library.

PN Suffix "-Z" indicates ROHS-compliant component.

Table 6-5. 68-Pin Mini-D to 68-Pin VHDC Universal Cables

Length	Above Floor PN	Plenum PN
3 m (10 ft)	CABLE10187011-Z	Not available
5 m (18 ft)	CABLE10187012-Z	
10 m (40 ft)	CABLE10187013-Z	

Notes:

Used with LVD connection between L180/L700 and 44SB-150 Sun Server for ACSLS. Requires the LVD feature.

An L180/L700 library with an MPCL card (standard configuration) is configured by default for LVD SCSI. If your library is configured with an MPC card and an LVD connection is desired, then the LVD attachment kit must be ordered to configure the MPC card for LVD. A 44SB-150 with the LVD feature will support an LVD SCSI connection to the library.

PN Suffix "-Z" indicates ROHS-compliant component.

68-pin High Density Jackscrew Cables

Use SCSI 68-pin high density jackscrew cables for secure connections between the library and drives (Table 6-6).

Table 6-6. 68-pin High Density Jackscrew Cable

68-Pin High Density Jackscrew Cable Part Numbers		
Length	**Above Floor**	**Plenum (see note)**
3 m (10 ft)	CABLE10083309	CABLE10083313
20 m (65 ft)	CABLE10083312	CABLE10083316

Notes:

Plenum-rated cables can withstand higher temperatures and can be used on both under floor and riser applications.

PN Suffix "-Z" indicates ROHS-compliant component.

68-pin MD to 68-pin Mini-Centronics Cable

When connecting to a RISC System/6000 or other system that uses a 68-pin mini-Centronics cable, you must use one of the cables listed in Table 6-7 (cables not shown in Figure 6-1 on page 6-7).

Table 6-7. 68-pin MD to 68-pin Mini-Centronics Cables

68-pin MD to 68-pin Mini-Centronics Cable Part Numbers		
Length	**Above Floor**	**Plenum (see note)**
12 m (39.4 ft)	CABLE10187002-Z	CABLE10083397

Note:

Plenum-rated cables can withstand higher temperatures and can be used on both under floor and riser applications.

PN Suffix "-Z" indicates ROHS-compliant component.

Centronics 50-pin Latch to 68-pin Jackscrew Cables

When connecting to a system that uses a Centronics 50-pin spring-latch connector, you must order one of the cables listed in Table 6-8.

Table 6-8. Centronics 50-pin to 68-pin Jackscrew Cable Part Numbers

Centronics 50-pin to 68-pin Jackscrew Cable Part Numbers		
Length	**Above Floor**	**Plenum (see note)**
24 m (78 ft)	Not available	CABLE10083373

Notes:

Plenum-rated cables can withstand higher temperatures and can be used on both under floor and riser applications.

PN Suffix "-Z" indicates ROHS-compliant component.

SCSI Terminators

Table 6-9 lists SCSI terminators.

Table 6-9. SCSI Terminators

Description	Part Number
SCSI Terminator, HVD, single-ended.	CABLE10187074-Z
SCSI Terminator, HVD, differential.	CABLE10187075-Z
LVD/single-ended differential	CABLE10148031-Z

Note: PN Suffix "-Z" indicates ROHS-compliant component.

LVD Cables

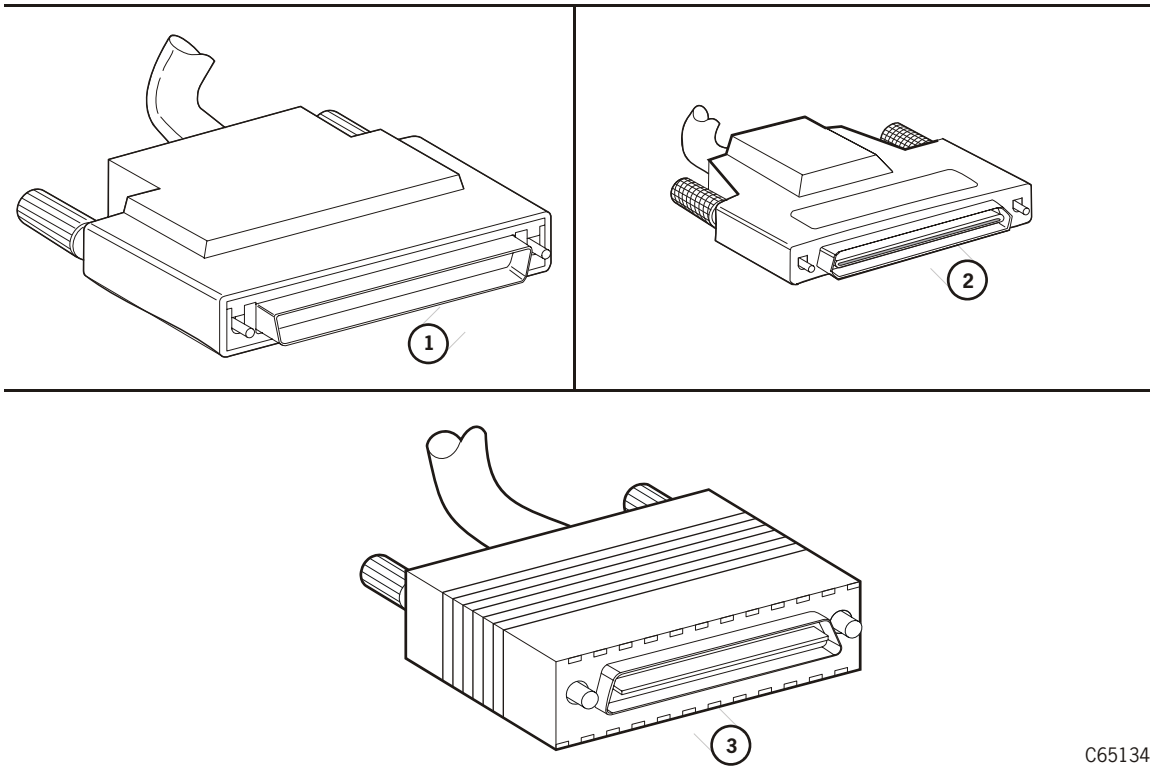
LVD SCSI drives require universal cables (Table 6-10 on page 6-7) which feature an external "paddle" on the connector. The cable connector must be no longer than 12m (39.4 ft). The customer's server must have a designated LVD host bus adapter (HBA).

Table 6-10. Universal Cables for LVD Drives

Length	Part Number
300 mm (11.8 in.) drive to drive	CABLE10187004-Z
500 mm (19.7 in)	CABLE10187005-Z
3 m (9.8 ft)	CABLE10187008-Z
5 m (16.4 ft)	CABLE10187009-Z
10 m (32.8 ft)	CABLE10187010-Z
Note: PN Suffix "-Z" indicates ROHS-compliant component.	

Figure 6-1 shows four common SCSI connector types. See the preceding tables for part numbers.

Figure 6-1. SCSI Connector Types (C65134)



1. 68-pin high-density jackscrew connector (standard)
2. 68-pin very-high-density jackscrew connector (68 VHDC)
3. 68-pin MiniCentronics connector

SCSI External Cables

Your selection of external interface cables depends on the platform. These cables are available through Sun Microsystems and will fit most applications for data and the control path. Plenum-rated cables can withstand higher temperatures. See Table 6-11 on page 6-8.

Note: When planning your cable needs, be sure to allow sufficient length for cables to attach to the drives within the library frame. For example: in an L700e frame, allow up to 4 m (13 ft) for connecting a cable to the uppermost drive within the cabinet.

Table 6-11. Interface Cables, Tape Library-to-Client

Description	Part Number
3 m (9.8 ft) 68 MD to 68 VHDCI	CABLE10083594
3 m (9.8 ft) 68 MD to 68 VHDCI	CABLE10187011
5 m (16.4 ft) 68 MD to 68 VHDCI	CABLE10187012
6 m (19.7 ft) 68 MD to 68 VHDCI	CABLE10187003
10 m (32.8 ft) 68 MD to 68 VHDCI	CABLE10187013
12 m (39.3 ft) 68 MD to 68 VHDCI	CABLE10083596
Note: PN Suffix "-Z" indicates ROHS-compliant component.	

Diagnostic Interface Cables

Table 6-12 describes the diagnostic interface cables and adapter.

Table 6-12. Diagnostic Interface Cables and Adapter

Description–Standard Material	Part Number
6 m (19.7 ft) external interface cable assembly with RJ-45 connector	CABLE410828902
15 m (49.2 ft) external interface cable assembly with RJ-45 connector	CABLE410828905
76 m (250 ft) external interface cable assembly with RJ-45 connector	CABLE410828925

Notes:

For diagnostic purposes, all L180 and L700e Tape Libraries are shipped with one 3 m (9.8 ft) external interface cable assembly with RJ-45 connector, CABLE410828901-Z.

PN Suffix "-Z" indicates ROHS-compliant component.

Fibre Channel Operation

As in SCSI operation, the customer may choose to separate the control and data paths. The customer may also combine both paths. Consider performance characteristics when determining the number of drives per Fibre Channel path.

The L180 and L700e Tape Libraries support native Fibre Channel control and data paths. Although Fibre Channel can operate over copper wire, StorageTek has chosen to deliver Fibre Channel in the L180 and L700e Tape Libraries over fiber optic cable only.

The library Fibre Channel and data path cables may also be routed through fiber bridges, hubs, or switches. Many of these fiber devices can be placed within the rack area of the library, giving the customer a compact, single location for fiber interface.

Library Fibre Channel Components

To operate the library (control) interface on Fibre Channel, you must order the Fibre Channel feature, IFC2, which contains an industry standard compact PCI (CPCI) bus and a fiber connector card (MPU card). These components can easily be installed by the service representative.

On the 44SB-150 (Sun server), you will need to add STK Model number HBAJ-001 or HBAJ-002 which is a PCI fibre-channel host-bus adapter for the SunBlade 150.

Fibre Interface

The L180 and L700e Tape Libraries and T9840, T9940, T10000, and LTO drives support Fibre Channel operation. (For LTO Fibre Channel, see your service representative.) The library supports two topologies:

- Switched Fabric
- Arbitrated Loop

Switched Fabric Topology

This is the recommended topology for the library.

The Switched Fabric provides:

- Dynamic interconnections between the nodes connected to the fabric
- Multiple simultaneous Fibre connections

If the library is connected to a Fibre Channel switch/router or fabric-capable host, it will configure to a switched fabric topology. A switched fabric topology can support approximately 16 million ports logged into the fabric.

With this topology:

- Any node can communicate with any other node.
- A mix of attachments with different speeds and capabilities are allowed.
- A fabric element such as a Fibre switch or router is required.
- A fabric can consist of a single fabric element or multiple elements.

Arbitrated Loop Topology

While the library supports this Fibre Channel topology, StorageTek does not recommend it. The best implementation for a private arbitrated loop includes a Fibre Channel hub.

The Arbitrated Loop provides:

- Multiple connections for devices that share a single loop
- Only point-to-point connections between an initiator and target during communications

If the library is connected to an arbitrated loop, it will configure itself to work with the arbitrated loop. An arbitrated loop can connect up to 126 ports.

On this loop:

- Only point-to-point communication is possible between one initiator and one target at any time. (Other links on the loop act as repeaters.)
- The characteristics (such as speed and medium) of all the ports must be compatible.

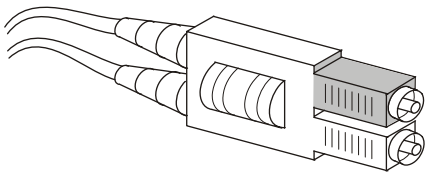
Fibre Channel Cables

Table 6-13 lists the Fibre Channel cable and connector specifications that the L180 and L700e Tape Libraries support. Figure 6-2 on page 6-10 shows an SC connector.

Table 6-13. Fibre Channel Cables and Connectors

Distance		FC-0 Code	Cable	Type	Connector
Meters	Feet				
2–500	6.5–1640	100-M5-SN-I	50 µm Multimode	Shortwave laser without OFC	Keyed Duplex SC

Figure 6-2. Fibre Channel SC Connector for Fiber Optic Cable (C67283)



Note: Open Fibre Control (OFC) cables incorporate a safety mechanism that prevents damage to the human eye when the connection (link) is disconnected.

SC connectors are the standard for 1 Gb Fibre Channel devices such as the library and the T9840 Tape Drive. Part numbers with these connectors are listed in Table 6-14.

Table 6-14. Fiber-optic Cables: 50 µm Multimode, SC-to-SC Connectors

Description—Plenum Rated	Part Number
10 m (32.8 ft)	CABLE10800294-Z
50 m (164 ft)	CABLE10800295-Z
100 m (328 ft)	CABLE10800296-Z
250 m (820 ft)	CABLE10800129
500 m (1640 ft)	CABLE10800130
Note: PN Suffix "-Z" indicates ROHS-compliant component.	

LC connectors are the industry standard for all 2 Gb-capable Fibre Channel devices such as the T9840B and T10000 Tape Drive. Table 6-15 through Table 6-17 on page 6-12 list the 2 Gb-capable cables and adapters.

Table 6-15. LC to SC Cables

Description	Length	Part Number
Optical Cable, LC to SC Duplex, Riser	10 m (32.8 ft)	CABLE10800317-Z
Optical Cable, LC to SC Duplex, Riser	50 m (164 ft)	CABLE10800318-Z
Optical Cable, LC to SC Duplex, Riser	100 m (328 ft)	CABLE10800319-Z
Optical Cable, LC to SC Duplex, Plenum	10 m (32.8 ft)	CABLE10800320-Z
Optical Cable, LC to SC Duplex, Plenum	50 m (164 ft)	CABLE10800321-Z
Optical Cable, LC to SC Duplex, Plenum	100 m (328 ft)	CABLE10800322-Z

Notes:

An MPU card is required when using these cables for connection between an HBAJ-001 or HBAJ-002 on the 44SB-150 Sun Server and an L180/L700 library.

PN Suffix "-Z" indicates ROHS-compliant component.

Table 6-16. LC to LC Cables

Description	Length	Part Number
Optical Cable, LC to LC Duplex, Riser	10 m (32.8 ft)	CABLE10800310-Z
Optical Cable, LC to LC Duplex, Riser	50 m (164 ft)	CABLE10800311-Z
Optical Cable, LC to LC Duplex, Riser	100 m (328 ft)	CABLE10800312-Z
Optical Cable, LC to LC Duplex, Plenum	10 m (32.8 ft)	CABLE10800313-Z
Optical Cable, LC to LC Duplex, Plenum	50 m (164 ft)	CABLE10800314-Z
Optical Cable, LC to LC Duplex, Plenum	100 m (328 ft)	CABLE10800315-Z

Notes:

An MPU2 card is required when using these cables for connection between an HBAJ-001 or HBAJ-002 on the 44SB-150 Sun Server and an L180/L700 library.

PN Suffix "-Z" indicates ROHS-compliant component.

Table 6-17. LC to SC Adapter Kit

Description	Part Number
LC to SC adapter kit (1 Gb limitation)	312105301
Adapter Kit, LC to SC Cabling.	CABLE315447901-Z
LC to SC 2m (6.6 ft) Duplex	CABLE10800343-Z
SC Duplex coupler	CABLE10800344-Z

Note: PN Suffix "-Z" indicates ROHS-compliant component.

ESCON Cables

See the *T9x40 Tape Drive System Assurance Guide*, MT5003, for information on ordering ESCON cables for the T9x40x tape drive.

Software

7

This chapter contains information that is applicable to both the L700 and the L1400. Any differences for the L1400 are shown in Appendix C.

The StorageTek Library Management System consists of three distinct software products that are ordered separately for the L180 and L700e.

- L-Series Library Admin
- Framework Library Monitor
- Library Manager

StorageTek L-Series Library Admin

This product provides tape library monitoring for L-Series libraries using an embedded web server and any web browser on the network connected to the L180 or L700e.

Ordering the L-Series Library Admin is optional but highly recommended for every L180 or L700e Tape Library customer.

Note: The L-Series Library Admin is included, however, with all L1400M base library orders.

The model numbers for the L-Series Library Admin are **legacy Sun part SG-XMONLIBSWL700; legacy STK** part HRZNLSA and include the Personality Module, CD-ROM, CD insert, and installation instructions.

Feature codes for the L-Series Library Admin are:

- **CDRM**: This is the CD-ROM that contains help text and information about how to use the L-Series Library Admin.
- **LS3X**: The Library Size 3 feature is the pricing feature that pertains to the L180 library. The X specifies that this feature code is a quantity related feature. This implies that if the customer has more than one L180 Tape Library, you must order the quantity of LS3X features that match the number of tape libraries that the customer wants the L-Series Library Admin installed on.
- **LS4X**: The Library Size 4 feature is the pricing feature that pertains to the L700e library. The X specifies that this feature code is a quantity related feature. This implies that if the customer has more than one L700e Tape Library, you must order the quantity of LS4X features that match the number of tape libraries that the customer wants the L-Series Library Admin installed on.

StorageTek Framework Library Monitor

The StorageTek Framework Library Monitor provides SNMP (Simple Network Management Protocol) based tape library (L-Series and TimberWolf) monitoring from within a system management framework. The product interfaces with the three most popular framework products today:

- Computer Associate's (CA's) Unicenter TNG
- Hewlett-Packard's (HP's) OpenView Network Node Manager
- IBM's Tivoli NetView

The StorageTek Framework Library Monitor interfaces with the framework products event management and notification capabilities to send an e-mail or page to the designated individual when a problem occurs within the tape library.

The Framework Monitor is supported only in a direct SCSI attached library environment (see your service representative for Fibre Channel support availability). This applies only to the robotics control path; Fibre Channel attached drives are functional (data path is independent of the Framework Monitor). Check with Sales Support as to the availability of the Fibre Channel support.

Note: The Framework Library Monitor product is a plug-in to one of the three supported network frameworks—CA Unicenter, Tivoli NetView, or HP OpenView—and cannot function without one of the supported network frameworks.

StorageTek Library Manager

The StorageTek Library Manager allows sharing of SCSI based libraries (TimberWolf and L-Series) across multiple, heterogeneous applications and servers. These servers could be running backup applications and must support the ACS API (ACSLS client software component or CSC). The products certified with Library Manager are:

- VERITAS Netbackup
- HP Omniback
- Legato Networker
- CA ArcserveIT
- SGI TMF

For additional certified products, StorageTek employees can go to:

https://extranet.stortek.com/isvrel/

Order Worksheets

8

This chapter contains information that is applicable to both the L700 and the L1400. Any differences for the L1400 are shown in Appendix C.

Note: Part/Model Numbers that end with "Z" or "-Z" indicate RoHS compliance. Part/Model numbers that begin with "Y" indicate used items.

Use the following worksheets to order the L180 or L700e Tape Library. Photocopy the worksheet if ordering more than one library. Use both model and feature/conversion kit numbers when completing the sales entry form.

Tape Library Worksheets

Select the model of the L180 (Table 8-1) or L700e (Table 8-2) Tape Library you require. See "General Library Information" on page 3-3 for more information. The part/model numbers represent such things as country-specific power cords and SCSI cables, OEM branding, language-specific documentation, and other local requirements

Table 8-1. L180 Tape Library Worksheet

Configuration	Part/Model Number[1, 2]	Quantity
STK L180 with 84 cells, HV	YSL180-80-HV-STK	
STK L180 with 140 cells, HV	YSL180-140-HV-STK	
STK L180 with 174 cells, HV	YSL180-174-HV-STK	
NCR L180 with 84 cells, HV	YSL180-80-HV-NCR	
NEC L180 with 84 cells, LV	YSL180-80-LV-NCR	
NCR L180 with 140 cells, HV	YSL180-140-HV-NCR	
NCR L180 with 174 cells, HV	YSL180-174-HV-NCR	
Sun L180 with 84 cells, HV	YSL180-80-HV-SUN	
HP L180 with 84 cells, HV	YSL180-80-HV-HP	
Hitachi L180 with 84 cells, HV	YSL180-80-HV-HIT	

1. Suffix "-Z" indicates ROHS-compliant component.
2. Prefix "Y" indicates used item.

Table 8-2. L700e Tape Library Worksheet

Configuration	Part/Model Number[1]	Quantity
STK L700e[2] with 228 cells, HV, SCSI	SL700E30-STK-Z	
STK L700e[2] with 396 cells, HV, SCSI	SL700E40-STK-Z	
STK L700e[2] with 690 cells, HV, SCSI	SL700E70-STK-Z	
NCR L700e[2] with 228 cells, HV, SCSI	SL700E30-NCR-Z	
NCR L700e[2] with 396 cells, HV, SCSI	SL700E40-NCR-Z	
NEC L700e[2] with 228 cells, HV, SCSI	SL700E30-NEC-Z	
Hitachi L700e[2] with 228 cells, HV, SCSI	SL700E30-HDS-Z	
L1400/L700e Pass-through Port[3]	SL1400/700E-PTP-Z	

1. Suffix "-Z" indicates ROHS-compliant component.
2. The L700e replaces the L700 Tape Library. The L700e features a modification to the frame that allows for the installation of a pass-thru port (PTP), which will enable two L700e libraries to be connected. The addition of the PTP reduces the cell count by 6 in each library. Adding a second drive tower reduces the cell count by 60.
3. The PTP connects two L700e libraries and reduces the overall cell count by 12. You will need either StorageTek Library Manager 2.0 or ACSLS version 6.0.1 software with the special program enhancement (SPE) for PTP operation as the library-to-host interface.

Optional Features/Conversion Kit Worksheets

Select the features/conversion kits you require. Features listed in Table 8-3 may be available for L180, L700, and/or L1400 libraries. Table 8-4 lists L180-specific conversion kits. See Chapter 4, "Power" for more information on the power options of the L180 and L700e Tape Libraries.

Table 8-3. L700e/L1400 and/or L180 Conversion Kit Worksheet

Feature	Part Number [1, 2]	Quantity
L700e 168 cartridge slot upgrade conversion kit.	XL700-168CRT-Z	
L700/L180 IBM NUMAQ installation kit.	XL700/180-IBM-Z	
L1400/L700 second drive tower (20 drive upgrade) conversion kit[3].	XL1400L700-2NDT-Z	
L1400/L700 power distribution unit conversion kit.	XL1400L700-PDU-Z	
L1400/L700 domestic redundant power supply conversion kit[4].	XL1400L700-RMPS-Z	
L1400/L700 additional cartridge access port conversion kit.	XL1400L700-CAP-Z	
L1400/L700 294-slot expansion frame conversion kit.	XL1400L700-EXDR-Z	
L1400/L700 domestic rack cooling, 115 VAC, conversion kit.	XL1400L700-DFAN-Z	
L1400/L700 Europe rack cooling, 230 VAC, conversion kit.	XL1400L700-EFAN-Z	
L700e Native 2 GB FC control interface card and cage conversion kit. (Requires microcode 3.02 or later.)	XL700-IFC2-Z	
L700/L180 HVD to LVD SCSI control interface conversion kit. (If MPCL card is installed.)	XLIBL700-LV04-Z	
L1400/L700 rack rail conversion kit, Sun.	XL1400L700-RAIL-Z	

1. Suffix "-Z" indicates ROHS-compliant component.
2. Prefix "Y" indicates used item.
3. More than 10 DLT or LTO Ultrium, or 6 T9840/T9940/T10000 drives requires a second drive tower (L700e only). A second drive tower reduces the cell count by 60.
4. A redundant power supply produces redundancy for the robotics. The second PDU is included in the kit and allows for dual power cords.

Table 8-4. L180 Conversion Kit Worksheet

Feature	Part Number [3,4]	Quantity
SL180 Interface conversion kit with 1 GB Fibre card.	YXSL180-1GB-FC	
SL180 redundant power supply conversion kit (includes PDU).	YXSL180-PWR	
SL180 add 56 cartridges.	YXSL180-56CART	
SL180 add 34 cartridges (YXSL180-56CART is a prerequisite conversion kit).	YXSL180-34CART	
SL180 domestic rack area cooling fan, 115 VAC, conversion kit[1].	YXSL180-COOL-115	
SL180 Europe rack area cooling fan, 230 VAC, conversion kit[1].	YXSL180-COOL-230	
Sun L180 cartridge expansion from 84 to 174.	YXSL180-80-180SUN	
SL180 CPCI interface kit with LVD SCSI (MPW)[2]	YXSL180-LVD-SCSI	
Redundant AC power option for domestic (115 VAC)	YXSL180-RAC-DOM	
Redundant AC power option for international	YXSL180-RAC-INTL	
Sun SL180 CPCI interface kit with 1 GB Fibre	YXSL180-1GBFC-SUN	
L180 power supply, Sun	YXSL180-PWR-SUN	
Sun rackmount rail kit.	RAILKIT-RACK-SUN	
SL180 Power Supply, Japan	YXSL180-PWR-JAPAN	
Install Drive Door for Fibre Drives.	YXSL180-FC-DR	
HVD to LVD	YXSL700/180HVD-LVD	
SL180 CPCI interface kit with 2 GB Fibre	YXSL180-2GBFC	
Extended door for 9940 drives.	YXSL180-T9940B-DR	
CPCI interface kit with 2 GB Fibre, Sun	YXSL180-2GBFC-SUN	
Extended door for 9940 drives, Sun.	YXSL180-9940DRSUN	
SL180 CPCI interface kit with 2 GB Fibre, RoHS	YXSL180-2GBFC-Z	

1. Engineering has found that certain rack-mounted equipment might require additional cooling when installed in the rack space of the L180 Tape Library. The conversion bills add a fan assembly to the library's rear door. To determine whether a customer installation will require one of these conversion bills, please use Figure 8-1 on page 8-12 and Figure 8-2 on page 8-13 as guidelines.
2. The MPW conversion bill includes an internal SCSI cable, a pass-though terminator, and the MPW card and cage. The bill requires earlier microcode than 3.02, and the MPC card installed.
3. Suffix "-Z" indicates ROHS-compliant component.
4. Prefix "Y" indicates used item.

Tape Drives

Use the following worksheets (Table 8-5 and Table 8-7 on page 8-6) to record the types and number of tape drives for the library. See Chapter 5, "Tape Drives" for more information.

DLT Tape Drive Worksheet

Use Chapter 5, "Tape Drives" to help complete this worksheet.

Note: The drive tray feature is TX40 for all models.

Table 8-5. DLT Tape Drive Worksheet

Tape Drive Description	Part Number	Quantity
SDLT320 SCSI L180/SL700/SL1400 Drive. Model SDLT-321, BRLV, L180/700E.	SD32-SC-L7-1400-Z	
SDLT600[1] SCSI L180/SL700/SL1400 Drive. Model SDLT601, BRLV, L180/700E	SD600-SC-L7-1400-Z	
SDLT600[1] FC L180/SL700/SL1400 Drive. Model SDLT601, BRFC, L180/700E	SD600-FC-L7-1400-Z	
DLT-S4[2] SCSI L180/SL700/SL1400 Drive. Model DLTS4, BRLV, L180/L700E	DLTS4-SC-L7-1400-Z	
DLT-S4[2] FC L180/SL700/SL1400 Drive. Model DLTS4, BRFC, L180/L700E	DLTS4-FC4G-L7-14-Z	

1. Requires library firmware 3.08.01, or higher.
2. Check library firmware release notes for required version.

LTO Ultrium Tape Drive Worksheet

CAUTION:
Equipment damage. **The IBM LTO Fibre Channel drive requires FB 101593. The field bill includes a new coupler retainer clip, part number 313769501. Without the field bill, the coupler on the back of the drive tray is too close to the bay door, causing the attached external fiber cable to bend sharply when the bay door is closed. The field bill instructs you to insert the coupler into the new clip.**

Use Chapter 5, "Tape Drives" to help complete this worksheet. LTO2 Tape Drives are shown in Table 8-6 on page 8-6, and LTO3 Tape drives are shown in Table 8-7 on page 8-6.

Table 8-6. LTO2 Ultrium Tape Drive Worksheet

Tape Drive Description	Part Number	Quantity
LTO2 IBM Fibre interface, AS400 SL700/1400 Drive. Model LTO2-AS4, FC AS400, L180/700E	LTO2-IBFCAS4-L70Z	
LTO2 IBM Fibre interface, SL700/1400 Drive. Model LTO2-001, FC 2GB, L180/700	LTO2-IBFC-L700Z	
LTO2 IBM SCSI interface, SL700/1400 Drive. Model LTO2-001, LVD, L180/700.	LTO2-IBSC-L700Z	
LTO2 HP SCSI interface, SL700/1400 Drive. Model LTO2-001, LVD, L180/700.	LTO2-HPSC-L700Z	
LTO2 HP Fibre interface, SL700/1400 Drive. Model LTO2-001, FC 2GB, L180/700.	LTO2-HPFC-L700Z	
LTO2 HP SCSI interface NEC, SL700/1400 Drive. Model LTO2-001, LVD, L180/700, NEC.	LTO2-HPSC-NECL70Z	

Table 8-7. LTO3 Ultrium Tape Drive Worksheet

Tape Drive Description	Part Number	Quantity
LTO3 Tape Drives		
LTO3 IBM Fibre interface 4GB, SL700/1400 Drive. Model LTO3-001, 4GB FC, L180/700E.	LTO3-IB4FC-L700Z	
LTO3 HP SCSI interface, SL700/SL1400 Drive. Model LTO3-001, LVD, L180/700E.	LTO3-HPSC-L700Z	
LTO3 HP Fibre interface 2GB, SL700/SL1400 Drive. Model LTO3-001, FC, L180/700E.	LTO3-HP2FC-L700Z	
LTO3 HP Fibre interface 4Gb, SL700/SL1400 Drive. Model LTO3-001, HP, 4GB FC, L180/700E.	LTO3-HP4FC-L700Z	

Table 8-8. LTO4 Ultrium Tape Drive Worksheet

Tape Drive Description	Part Number	Quantity
LTO4 Tape Drives*		
LTO4 IBM Fibre interface 4GB, SL700/1400 Drive. Model LTO4-001, 4GB FC, L180/700E.	LTO4-IB4SC-L700Z	
LTO4 IBM SCSI interface 120 MB, SL700/1400 Drive. Model LTO4-001, LVD, L180/700E.	LTO4-IBSC-L700Z	
LTO4 HP SCSI interface, SL700/SL1400 Drive. Model LTO4-001, LVD, L180/700E.	LTO4-HPSC-L700Z	
LTO4 HP Fibre interface 2GB, SL700/SL1400 Drive. Model LTO4-001, FC, L180/700E.	LTO4-HP2FC-L700Z	

Table 8-8. LTO4 Ultrium Tape Drive Worksheet (Continued)

Tape Drive Description	Part Number	Quantity
LTO4 HP Fibre interface 4Gb, SL700/SL1400 Drive. Model LTO4-001, HP, 4GB FC, L180/700E.	LTO4-HP4FC-L700Z	
* Check for availability on LTO 4.		

T9840/T9940 Tape Drive Worksheet

For T9840/T9940 Tape Drive ordering information, refer to the *T9x40 Tape Drive System Assurance Guide*, MT5003.

CAUTION:
StorageTek engineering has found that the L180 or L700 Tape Library, with T9840 Fibre Channel attached drives installed, might exceed allowable EMI limits. For the L180, field bill, FB62296, EC111409, addresses this problem for approximately 120 field-installed L180 Tape Libraries with T9840 Fibre Channel attached drives. For the L700, refer to field bill 101327, EC 140055. The field bill gives instructions for replacing the existing, right-side hinged, louvered door panel now covering the drives with a new, perforated screen door.

Note: The 9940 tape drives require the extended door.

Table 8-9 shows the serial numbers of those libraries affected, and the field bill numbers.

Table 8-9. L180 and L700 Tape Libraries Needing Door Replacements

Library	Serial numbers	Field Bill / Sun Marketing Part Number
L180	0 - 18, 300 - 324, 5000 - 5020	62296/YXSL180-FC-DR
L700	0 - 5676	101327
Note: A remote possibility exists that here are a few units with serial numbers greater than those mentioned that also need door replacements.		

T10000 Tape Drive Worksheet

For T10000 Tape Drive ordering information, refer to the *T10000 Tape Drive System Assurance Guide*, TM0002.

Ordering Cartridges

Contact your authorized selling agent for StorageTek-approved labeled cartridges.

Note:

- You must select the volume serial number (VOLSER) range and other label options when ordering cartridges.
- If you choose to order additional labels, order them from any standard media vendor (such as those listed above).

Labels used in StorageTek libraries can be made by any vendor that produces a label that meets the StorageTek Label Specification. Some vendors (not all inclusive) are:

- EDP/Colorflex http://www.colorflex.com
- NetC http://www.netcllc.com
- WrightLine/American Eagle Systems http://www.americaneaglesys.com
- Dataware http://www.datawarelabels.com

These Web sites contain links to third party sites. These links are provided as a convenience to you and not as an endorsement by StorageTek. StorageTek is not responsible for the content of these linked Web sites and does not make any representations regarding the content or accuracy of any content on such Web sites.

For technical questions, contact the StorageTek Sales Support at:

Telephone: 1.800.ask4stk (1.800.275.4785)
E-mail: sales_support@storagetek.com.

External Cables

Use the following worksheet to record the cables you require.
See Chapter 6, "External Cables" for more information.

SCSI Cables and Adapters Worksheet

See Chapter 6, "External Cables" to help complete this worksheet (Figure 8-10).

Table 8-10. SCSI Cables and Adapters Worksheet

Part Number	Quantity

Fiber Cable Worksheet

See Chapter 6, "External Cables" to help complete this worksheet (Table 8-11).

Table 8-11. Fiber Cables Worksheet

Part Number	Quantity

Software

Use the information in Chapter 7, "Software" to complete the software worksheets (Table 8-12 through Table 8-14 on page 8-10).

Table 8-12. StorageTek L-Series Library Admin Worksheet

Description	Model	Required Feature	Quantity
StorageTek L-Series Library Admin for L180 and L700e	HRZNLSA	CDRM	
		LS3X (1 per tape library) for the L180	
		LS4X (1 per tape library) for the L700e	

Table 8-13. StorageTek Framework Library Monitor Worksheet

Description	Model	Required Feature	Quantity
StorageTek Framework Library Monitor	HRZN-001	CDRM	N/A
		FS3X (1 per tape library) for the L180	
		FS4X (1 per tape library) for the L700e	

Table 8-13. StorageTek Framework Library Monitor Worksheet

Description	Model	Required Feature	Quantity
At least one of the following framework features (corresponding to the framework the customer has installed) must be ordered:			
		FW01(CA Unicenter)	
		FW02 (HP OpenView)	
		FW03 (Tivoli NetView)	
		FW04 (Other Framework)	
Note: The feature FW04 (Other Framework) is for those customers who have their own SNMP application and wish to do their own SNMP integration with the library SNMP agent.			

Table 8-14. StorageTek Library Manager Worksheet

Description	Model	Feature	Quantity
StorageTek Library Manager	HRZN-003	CDRM	N/A
		WN2K (Windows 2000)	
		NT00 (Windows NT)	
		SLRS (Solaris)	
		FS3X (1 per tape library) for the L180	
		FS4X (1 per tape library) for the L700e	
		LBAT (Library Attach)	
Note: Library Attach is required only for Windows NT/2000 platforms. ISVs use this product as the NT/2000 Client Software Component to interface with ACSLS, Library Manager, and Library Station.			

Accessories

Select the accessories (Table 8-15) you would like in addition to the library.

Table 8-15. Accessories Worksheet

Description	Part Number	Quantity
L180 DFT package kit.	SL180-PKG-STK	
DLT Cart Kit, Volser 000-019	XDLT-20CART-KIT	
SDLT Cart Kit, Volser 020-039	XSDLT-20CART-KIT	
LTO Cart Kit, Volser 040-059	XLTO-20CART-KIT	
9840 Cart Kit, Volser 680-699	X9840-20CART-KIT	
Rackmount Rail Kit	RAILKIT-RACK-Z	
Clip Nuts Kit	CLIPNUTS-KIT-Z	
1. Suffix "-Z" indicates ROHS-compliant component.		

Special Tools Worksheet

Select the special tools (Table 8-16) you require to install or maintain the library.

Table 8-16. Tools Worksheet

Description	Part Number	Quantity
Cover latch release tool	310229501	
Cable assembly drive tool	313717501	
Key, front door	310293301	
Service tool kit	4019	
ESD grounding kit	4711	
3/4-inch wrench	WR08	
Diagonal cutters		
Laptop computer (486 or higher)		
Torx driver set		
Phillips screwdriver		
Customer unique (see note)		
Note: To replace an MPC card in a Sun library, a personality key, 309884901, is required.		

Cooling Recommendations

Figure 8-1 through Figure 8-4 on page 8-14 show the cooling recommendations for different power requirements and temperatures.

Figure 8-1. L180 Recommendations for Equipment Rated to 35°C (C65344)

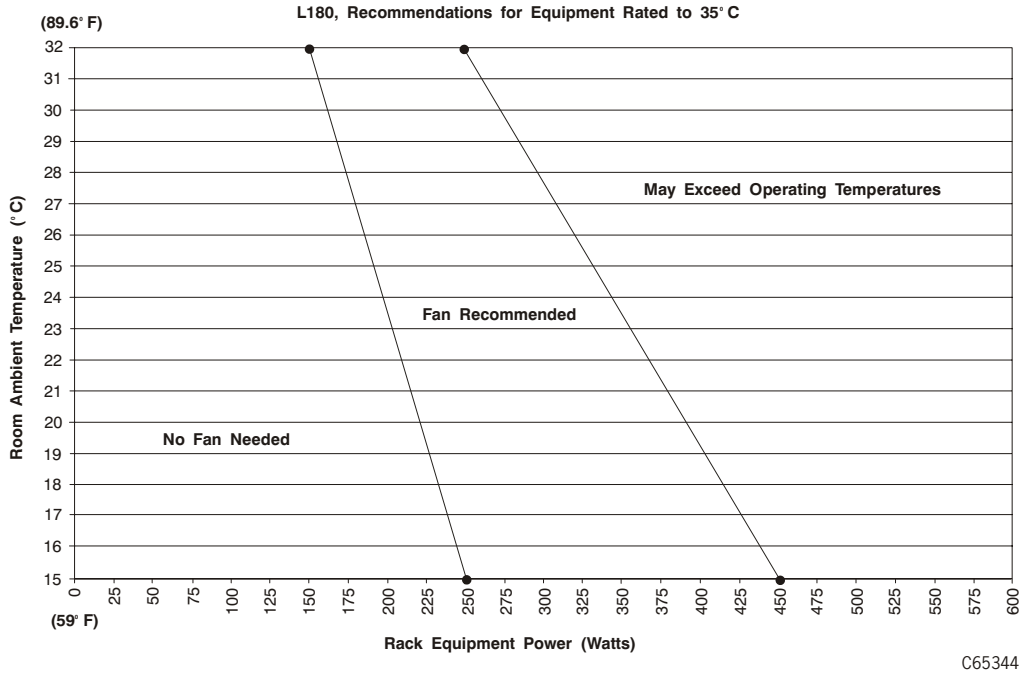


Figure 8-2. L180 Recommendations for Equipment Rated to 40°C (C65345)

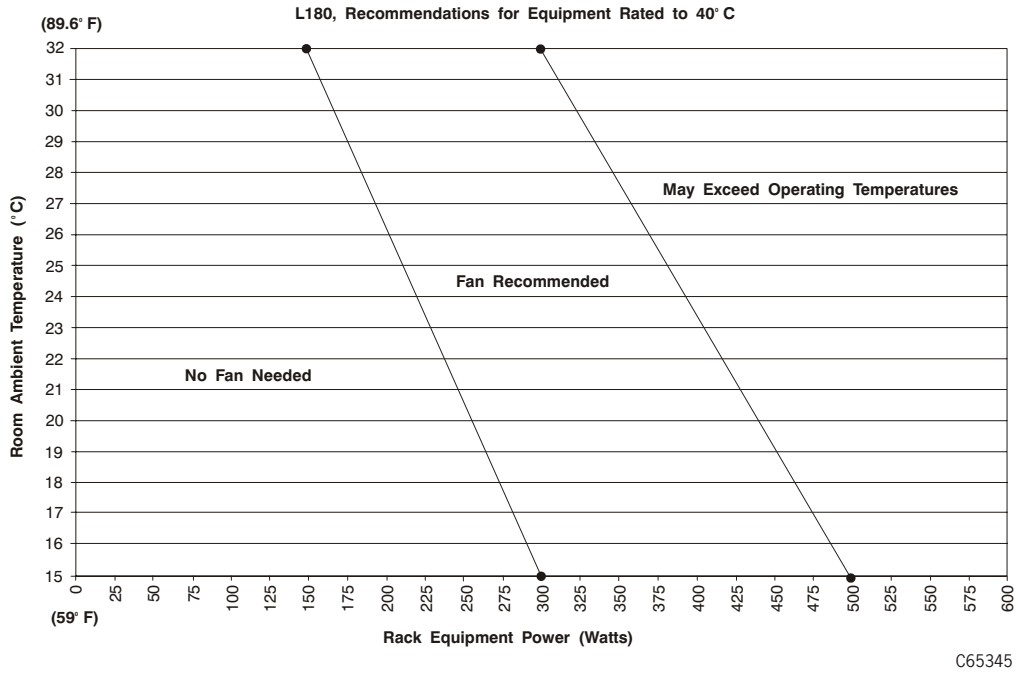


Figure 8-3. L700e Recommendations for Equipment Rated to 35°C (C65342)

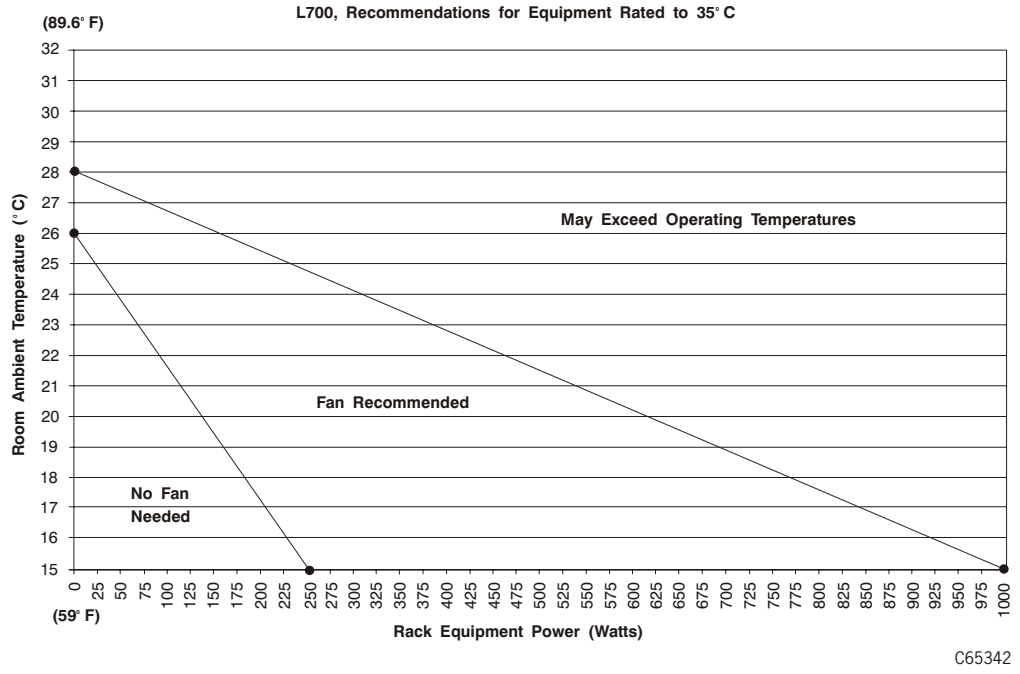
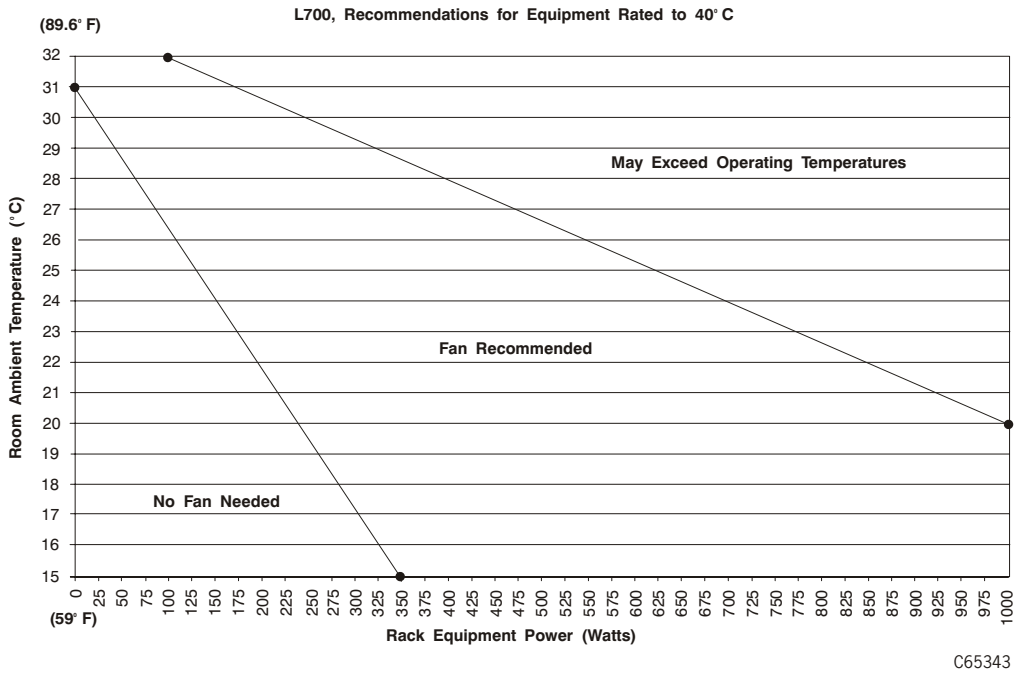


Figure 8-4. L700e Recommendations for Equipment Rated to 40°C (C65343)



Note: If you order the Redundant Power option, you must also order the rack area cooling unit.

Environmental Planning

Environmental planning refers to the readiness of the physical location and connections where the StorageTek L180 or L700e Tape Library will be installed. When the Preinstallation Checklist and Solution Variable information (see note) have been completed, attach a copy of them to this document and have the appropriate system assurance team members sign below. See Appendix A, "Site Planning Information," for information about the L180 and L700e Tape Libraries' physical, power, and environmental specifications.

_____

StorageTek representative (date)

_____

Customer representative (date)

Note: These worksheets can be obtained from the individual installation consultants or are available through Portal from the Knowledge Map or on Microsoft Exchange.

Schedule Planning

After completing schedule planning, attach a copy of the proposed schedule to this document and have the appropriate system assurance team members sign below.

_____

StorageTek account executive (date)

_____

Customer representative (date)

Pre-installation Checklist

9

This chapter contains information that is applicable to both the L700 and the L1400. Any differences for the L1400 are shown in Appendix C.

Verify that you have resolved all issues listed in Table 9-1. Circle "Yes" or "No" for each item. For unresolved issues, assign an action, a due date, and an appropriate person.

Table 9-1. Pre-installation Checklist

Item Description	Yes/No	Action/Due Date/Person Responsible
Site Preparation		
Floor plans completed	Yes/No	
Clearance adequate	Yes/No	
Cooling adequate	Yes/No	
Power requirements met	Yes/No	
Cable lengths determined	Yes/No	
Cable routing established	Yes/No	
Future expansion considered	Yes/No	
Dock facilities scheduled	Yes/No	
Hardware Procurement		
Subsystems ordered	Yes/No	
Power cables ordered	Yes/No	
Options or features ordered	Yes/No	
Interface cables ordered	Yes/No	
Interface adapters ordered	Yes/No	
Cartridges and labels ordered	Yes/No	
Software Procurement		
Software prerequisites met	Yes/No	
Software Installation		
Scheduled	Yes/No	
Completed	Yes/No	
Hardware Installation		
Delivery schedule completed	Yes/No	
Dock hours scheduled	Yes/No	
Pre-staging area set	Yes/No	
Installation team identified	Yes/No	
Site access arranged	Yes/No	
Installation hours defined	Yes/No	

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Site Planning Information

A

This chapter contains information that is applicable to both the L700 and the L1400. Any differences for the L1400 are shown in Appendix C.

This appendix provides the following specifications for the L180 and L700e Tape Libraries:

- Environmental requirements
- Power specifications
- Physical specifications

Note: The L180 and L700e Tape Library site planning information can change. For current information, contact your StorageTek sales representative.

Environmental Requirements

Table A-1 describes environmental requirements for the L180 and L700e Tape Libraries.

Table A-1. Environmental Requirements

Temperature	
Operating	15° to 32°C (59° to 90°F)
Storage	10° to 40°C (50° to 104°F)
Shipping	-40° to 60°C (-40° to 140°F)
Relative Humidity	
Operating	20% to 80% (noncondensing)
Storage	10% to 95% (noncondensing)
Shipping	10% to 95% (noncondensing)
Wet Bulb Maximum	
Operating	29°C (84°F)
Storage	35°C (95°F)
Shipping	35°C (95°F)
Altitude	
Operating	0 to 3.05 km (0 to 10,000 ft)
Storage	0 to 3.05 km (0 to 10,000 ft)
Shipping	0 to 15.24 km (0 to 50,000 ft)

Power Specifications

Table A-2 through Table A-4 on page A-3 list the power specifications for the L180 and L700e Tape Libraries and drive towers.

Table A-2. L180 and L700e Library Power Specifications

Power cable	**U.S./Canada:** 100 to 127 VAC UL/CSA power cable **International:** 200 to 240 VAC HAR power cable
Input voltage range	100 to 127 VAC / 200 to 240 VAC
Power configuration (library without drives)	**U.S./Canada:** Single-phase 100 to 127 VAC, 50/60 Hz, 15 A service, 3-wire **International:** Single-phase 200 to 240 VAC, 50/60 Hz, 10 A service, 3-wire
Power consumption	Library only: 120 W Tape drives: Refer to specific manuals
Maximum heat output	Library only: 410 Btu/hr Tape drives: Refer to specific manuals

Table A-3. L700e Single Drive Tower

Power cable	**U.S./Canada:** 100 to 127 VAC UL/CSA power cable **International:** 200 to 240 VAC HAR power cable
Input voltage range	100 to 127 VAC / 200 to 240 VAC
Power configuration	**U.S./Canada:** Single-phase 100 to 127 VAC, 50/60 Hz, 15 A service, 3-wire **International:** Single-phase 200 to 240 VAC, 50/60 Hz, 10 A service, 3-wire
Power consumption	Library only: 1.0 A @ 120 V; 0.5 A @ 240 V
Maximum heat output	Library only: 410 Btu/hr

Table A-4. L700e Optional Second Drive Tower

Power cable	**U.S./Canada:** 100 to 127 VAC UL/CSA power cable **International:** 200 to 240 VAC HAR power cable
Input voltage range	100 to 127 VAC / 200 to 240 VAC
Power configuration	**U.S./Canada:** Single-phase 100 to 127 VAC, 50/60 Hz, 15 A service, 3-wire **International:** Single-phase 200 to 240 VAC, 50/60 Hz, 10 A service, 3-wire
Power consumption	Library only: 1.0 A @ 120 V; 0.5 A @ 240 V
Maximum heat output	Library only: 410 Btu/hr

Physical Specifications

The physical specifications for both libraries and components are listed in Table A-5 through Table A-7 on page A-4.

Table A-5. L180 Weights and Measures

Height	1.65 m (65.1 in.)
Width with covers	0.71 m (28.3 in.)
Depth	1.25 m (49.3 in.)
Weight with covers, without drives or cartridges	274.4 kg (605 lb)

Table A-6. L700e Weights and Measures

Height	1.83 m (72 in.)
Width with covers	1.56 m (61.3 in.)
Depth (see note)	95.3 cm (37.5 in.)
Depth with expansion frame	1.12 m (44.1 in.)
Weight with cover, without drives or cartridges	345 kg (761 lb)
Note: Building entry requirements: The local service person can easily reduce the depth of the library to 737 mm (29 in.) to accommodate movement through building doors.	

Table A-7. Component Weights and Measures

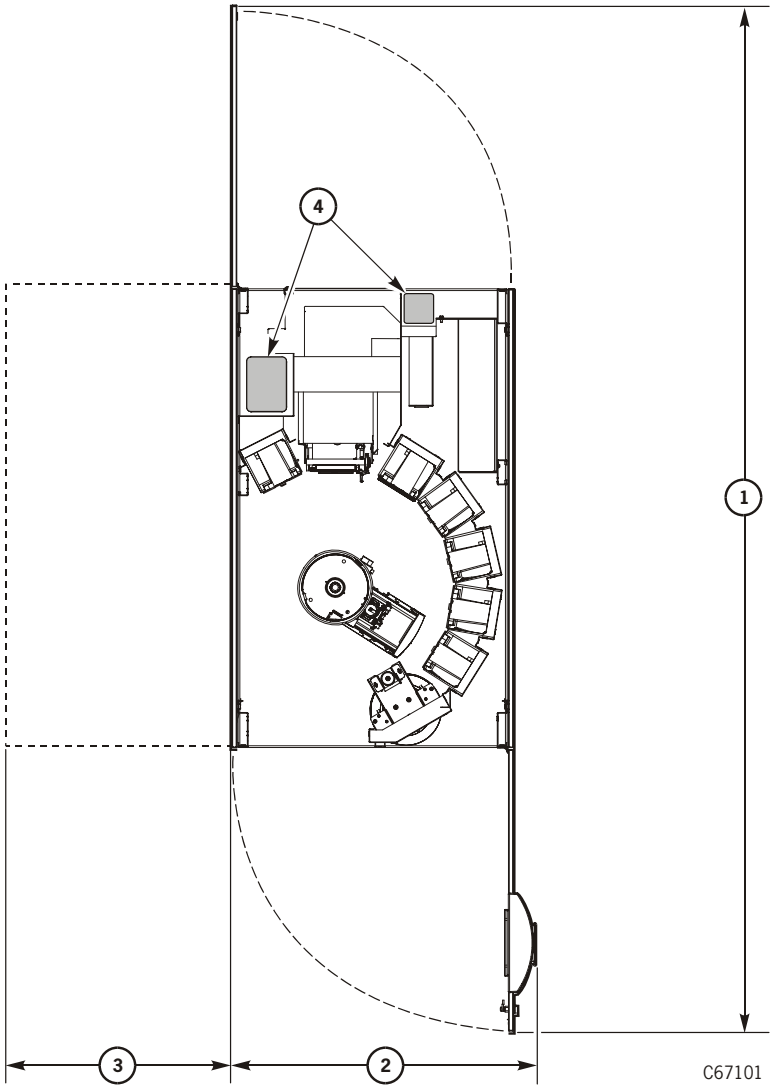
DLT 7000 tape drive capacity	35 GB native
DLT 8000 tape drive capacity	40 GB native
SDLT 220 tape drive capacity	110 GB native
SDLT 320 tape drive capacity	160 GB native
SDLT 600 tape drive capacity	300 GB native
DLT-S4 tape drive capacity	800 GB native
T9840 tape drive capacity	20 GB native
T9940 tape drive capacity	60 GB native
T9940B tape drive capacity	200 GB native
T10000 tape drive capacity	500 GB native
LTO 1 Ultrium tape drive capacity	100 GB native
LTO 2 Ultrium tape drive capacity	200 GB native
LTO 3 Ultrium tape drive capacity	400 GB native
LTO 4 Ultrium tape drive capacity	800 GB native
DLT tape drive and tray weight	5.3 kg (11.7 lb)
SDLT drive and tray weight	3.17 kg (7 lb)
T9840 tape drive and tray weight	7.4 kg (16.3 lb)
T9940 tape drive and tray weight	9.6 kg (21.2 lb)
T10000 tape drive and tray weight	8.3 kg (18.3 lb)
IBM LTO Ultrium tape drive and tray weight	5.8 kg (12.7 lb)
HP LTO Ultrium tape drive and tray weight	5.0 kg (11.0 lb)
Certance LTO Ultrium tape drive and tray weight	5.5 kg (12.1 lb)
LTO Ultrium cartridge weight	280 g (9.9 oz)
DLT or SDLT cartridge weight	223 g (7.8 oz)
T9840 cartridge weight	262 g (9.2 oz)
T9940 cartridge weight	262 g (9.2 oz)
T10000 cartridge weight	272 g (9.6 oz)
Pass-thru port (PTP)	43 kg (92 lb)

Physical Dimensions

The physical dimensions for the L180 and L700e Tape Libraries are detailed below.

Figure A-1 on page A-6 provides information on the L180 Tape Library dimensions, floorspace requirements, and cable access. Figure A-2 on page A-7 shows the locations of the wheel assembly mounting studs and cable cutouts for use when securing the L180 Tape Library in a permanent position. Permanent positioning might be necessary when the L180 Tape Library is located in an unstable geographic area that is susceptible to volcanoes or earthquakes or when the L180 Tape Library is operating on a water-borne or airborne vessel that rocks and sways.

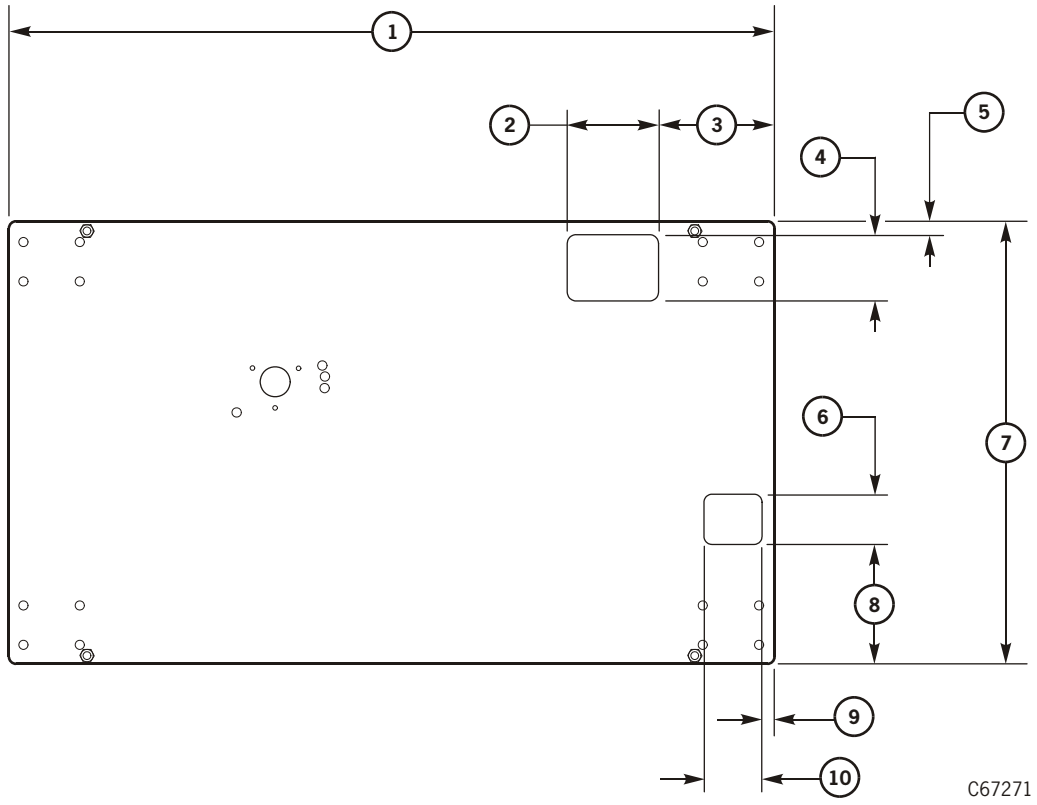
Figure A-1. L180 Library Layout and Floorspace Requirements (C67101)



1. 2.6 m (8.5 ft)
2. 0.8 m (2.6 ft)
3. When positioning the library, consider that a minimum of 1.0 m (3.3 ft) will be required for removing the side panel during service calls.

   Note: For regular operation, allow a minimum of 51 mm (2 in.) of space on each side for air flow.
4. Cable access holes

Figure A-2. L180 Top View of Library Showing Cable Access Dimensions (C67271)



1. 1.17 m (46 in.)
2. 140 mm (5.5 in.)
3. 174 mm (6.85 in.)
4. 102 mm (4.0 in.)
5. 22 mm (0.87 in.)
6. 75 mm (2.95 in.)
7. 686 mm (27.0 in.)
8. 189 mm (7.45 in.)
9. 22 mm (0.86 in.)
10. 130 mm (5.1 in.)

Note: For regular operation, allow a minimum of 51 mm (2 in.) of space on each side for air flow.

Figure A-3 on page A-9 provides information on the L700e Tape Library dimensions. Figure A-4 on page A-10 shows the cable cutouts and floor space requirements. Figure A-5 on page A-11 shows two L700e Tape Libraries connected with a PTP. Figure A-6 on page A-12 shows the locations of the wheel assembly mounting studs for use when securing the L700e Tape Library in a permanent position. Permanent positioning might be necessary when the L700e Tape Library is located in an unstable geographic area that is susceptible to volcanos or earthquakes or when the L700e Tape Library is operating on a water-borne or airborne vessel that rocks and sways.

CAUTION:
Frame damage: **Do *not* attempt to use the holes for the shipping bolts to permanently fix the library's position. The frame may bend.**

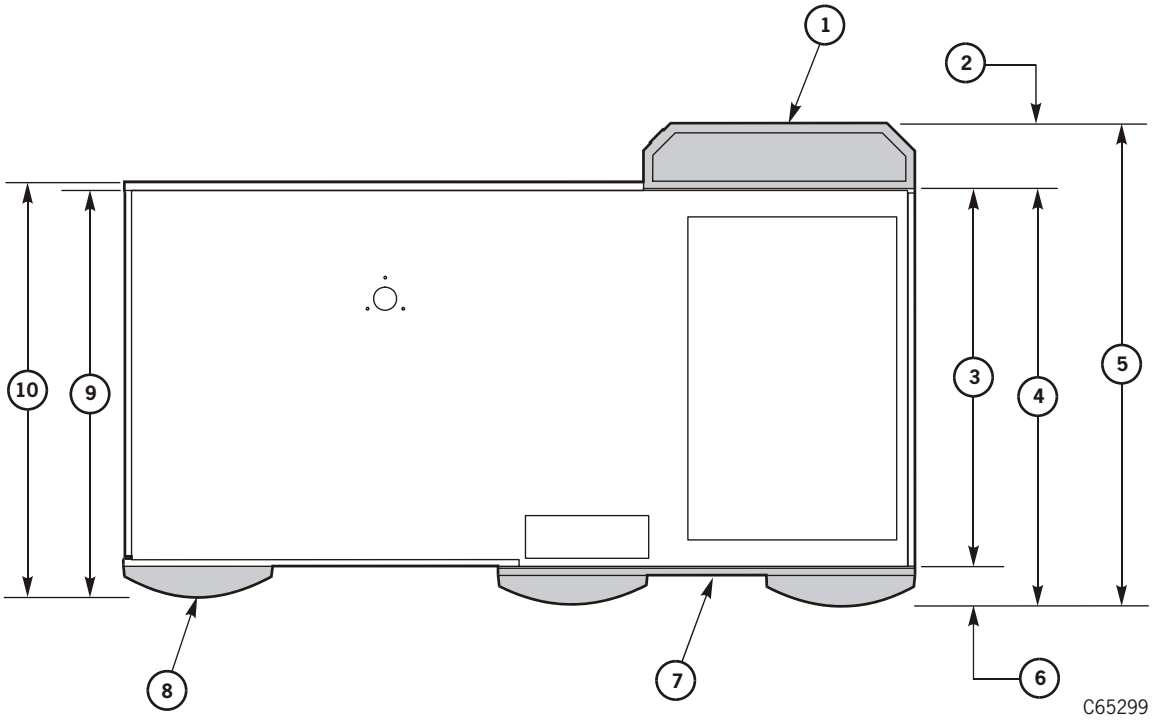
***Bodily injury/equipment damage*: A licensed seismic engineer must be consulted to verify seismic zone exposures and adequate site preparation.**

Be sure to:

1. Provide cooling clearances: 150 mm (6 in.) above the library, 114.3 mm (4.5 in.) below the library, and 100 mm (4 in.) on the sides.
2. Allow service area access: 2.3 m (7.6 ft) wide by 2.1 m (6.9 ft) deep.
3. Plan for any unique cable paths that may be needed.

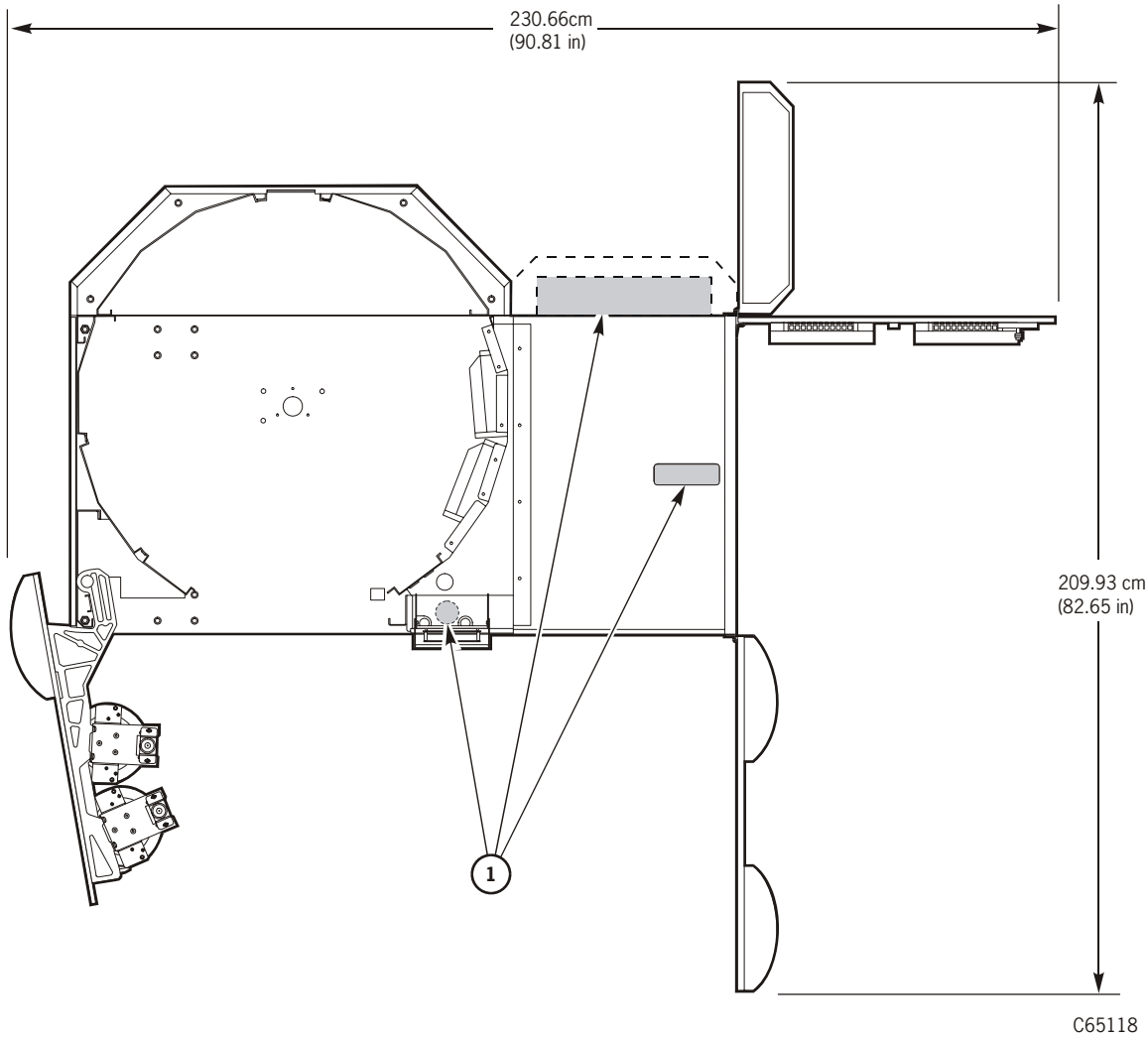
Note: The right front door, rear rack door, and plastic cover on the front left door can be removed to fit the library through spaces as small as 736 mm (29 in.).

Figure A-3. L700e Physical Dimensions—Detailed (C65299)



1. Rear door
2. Rear door - depth = 114 mm (4.5 in.)
3. Frame - depth = 737 mm (29 in.)
4. Rear door and rear wall panel removed—depth = 826 mm (32.5 in.)
5. Rear door and front facade—depth = 953 mm (37.5 in.)
6. Front facade—depth = 89 mm (3.5 in.)
7. Right front access door with facades—depth = 89 mm (3.5 in.)
8. Left front access door with facade—depth = 76 mm (3 in.)
9. Left front access door with facade, rear panel removed—depth = 800 mm (31.5 in.)
10. Left front access door with facade, rear panel attached—depth = 826 mm (32.5 in.)

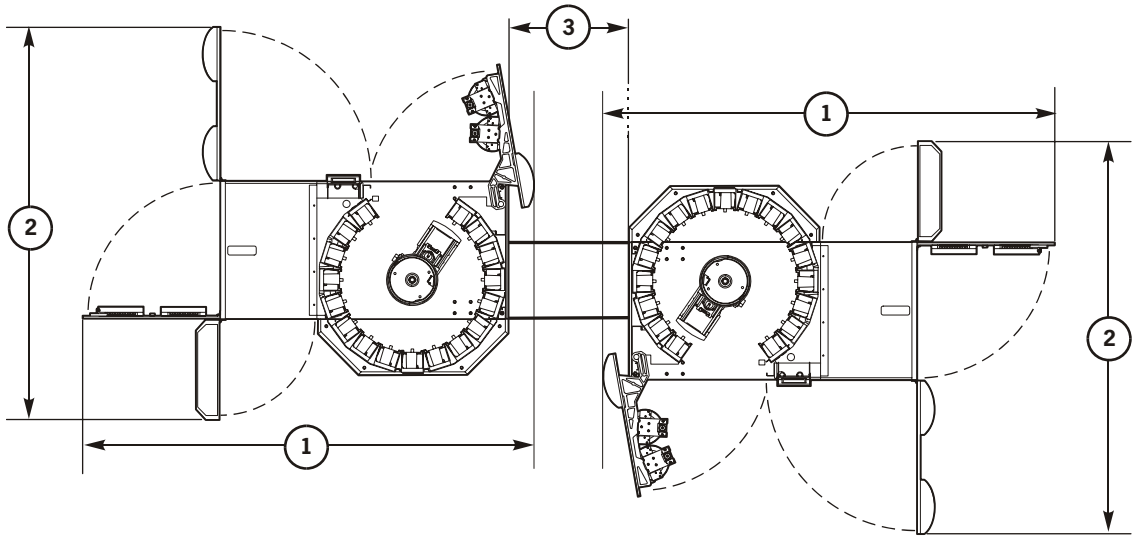
Figure A-4. L700e Top View of Library and Cable Access Locations (C65118)



1. Cable access holes

Note: The library requires 150 mm (6 in.) of clearance at the top and 100 mm (4 in.) on the sides for air flow.

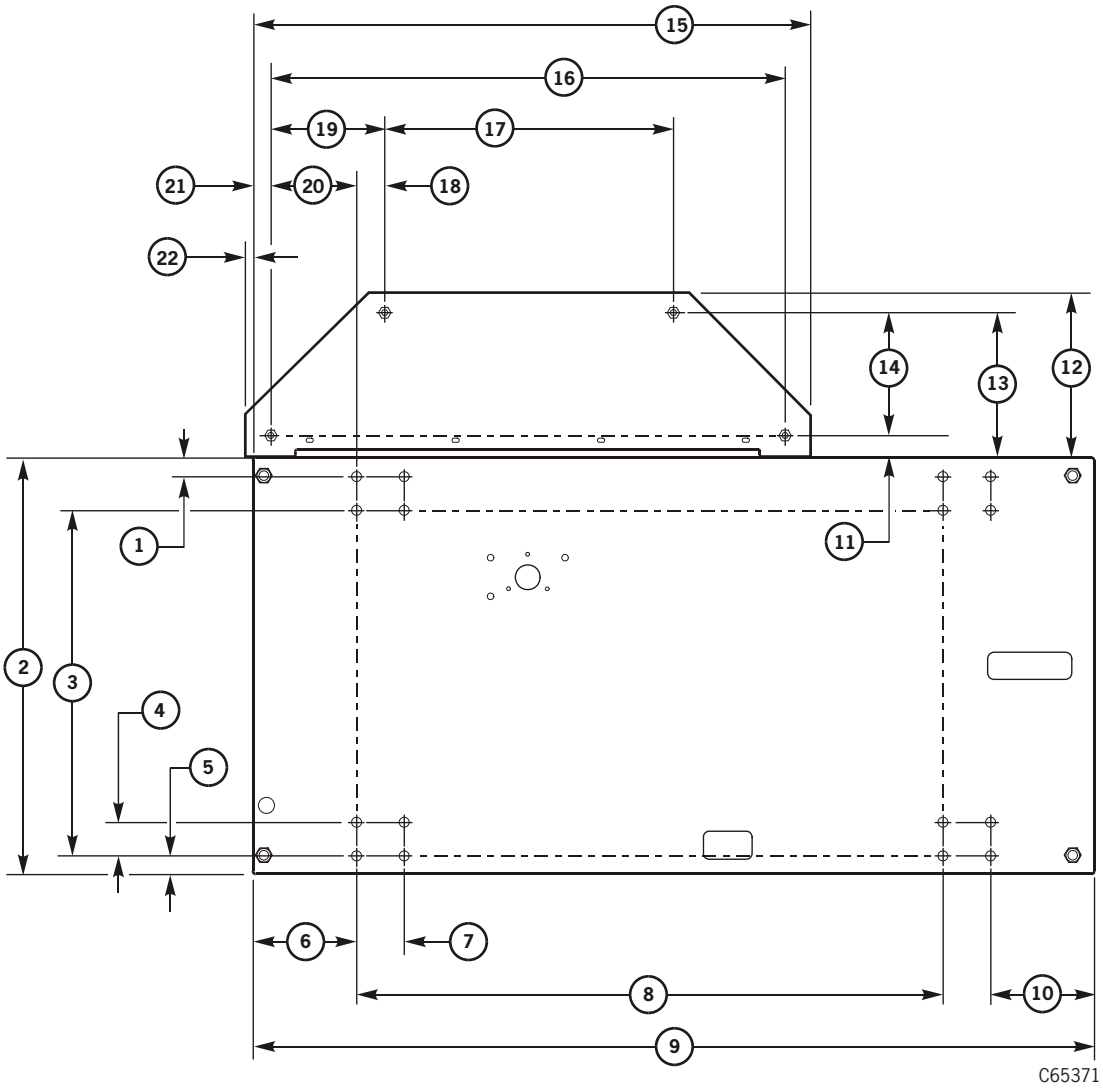
Figure A-5. Two L700e with PTP (C65433)



1. 230.66 cm (90.81 in.)
2. 209.93 cm (82.65 in.)
3. 33.55 cm (13.21 in.)

Note: Total service area = 469.47 cm (184.83 in.)—there is a 12.7 cm (5 in.) overlap on each side, between Numbers 1 and 3 above).

Figure A-6. L700e Library Floor—Wheel Stud Locations (C65371)



1. 31.28 mm (1.25 in.)
2. 736.6 mm (29 in.)
3. 612.8 mm (24.1 in.)
4. 60.3 mm (2.4 in.)
5. 31.8 mm (1.3 in.)
6. 186.5 mm (7.3 in.)
7. 85.7 mm (3.4 in.)
8. 1.07 m (42 in.)
9. 1.5 m (60 in.)
10. 186.6 mm (7.3 in.)
11. 38.1 mm (1.5 in.)
12. 297.4 mm (11.7 in.)
13. 260.4 mm (10.25 in.)
14. 222.25 mm (8.75 in.)
15. 1.0 m (39.5 in.)
16. 0.93 m (36.5 in.)
17. 520.7 mm (20.5 in.)
18. 47.27 mm (1.86 in.)
19. 203.2 mm (8.0 in.)
20. 155.9 mm (6.14 in.)
21. 30.73 mm (1.21 in.)
22. 15.75 mm (0.62 in.)

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Solution Variables

B

This chapter contains information that is applicable to both the L700 and the L1400. Any differences for the L1400 are shown in Appendix C.

Record information about your solution variables in Table B-1.

Table B-1. Solution Variables

Variable	Description
Storage Management Software	
Server Brand	
Model	
Operating System Version	
Client 1 Brand	
Model	
Operating System Version	
Client 2 Brand	
Model	
Operating System Version	
ACSLS Version (if running)	
Server Brand	
Operating System Version	

Visit the Connectivity Matrix Web site at https://extranet.stortek.com/isvrel/ to determine if the desired solution is certified.

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L1400M Library Differences

C

This appendix identifies how the L1400M Tape Library differs from the L700e tape library. The major headings coincide with the chapter titles in this manual.

General Library Information

L1400M Library Solution

This offering consists of three library models: L1400M, L1400M1, and L1400P1. The L1400M1 is sold as the first library. The L1400P1 is sold as the second library connected to an L1400M1 with a pass-thru port (PTP).

Note: The L1400M1 and the L1400P1 are marketed under the names L1400M and L1400, respectively.

- L1400M Tape Library
  - A single, rebranded and enhanced L700e library.
  - Sold as the first library in an L1400M library solution.
  - Ships with 678 slots installed. Connecting to an L1400P1 with a pass-thru port (PTP) reduces this capacity by six slots.
  - Sold with customer access to 200 cartridge slots. Additional slots (from 201 to 1,344) are sold in 100 slot increments. The L1400P1 library is required to scale beyond 678 slots.
  - StorageTek L-Series Library Admin (hard-bundled with the library).
  - StorageTek Backup Resource Monitor (BRM) (optional).
  - StorageNet 3300 Fibre Channel Router (LVD) (SNFC14M) (nested in the Configurator tool)[1].
  - Requires the following included components:
    - SNFC14M-000 (SN3300 LVD Fiber Channel Router)
    - SNFC14M-CABL (LVD SCSI Cable)
    - L1400M0-LV04 (LVD SCSI Interface Kit)

1.The StorageNet 3300 Fibre Channel Router provides fibre channel connectivity for the control path. Fibre channel is the only connection available.

- L1400M1 Tape Library
  - A single, rebranded and enhanced L700e library.
  - Sold as the first library in an L1400M library solution **(SL1400M1-STK-Z) or, for ACSLS environments, SL1400MA-STK-Z must be ordered)**.
  - Ships with 678 slots installed. Connecting to an L1400P1 with a pass-thru port (PTP) reduces this capacity by six slots.
  - Sold with customer access to 200 cartridge slots. Additional slots (from 200 to 1,344) are sold in 100 slot increments. The L1400P1 library is required to scale beyond 678 slots.
  - StorageTek L-Series Library Admin (hard-bundled with the library).
  - StorageTek BRM (optional).
  - L1400M Interface Controller (serves the same function as the SN3300 router used in the L1400M0 library).
  - Requires the following **included** component:
    - L1400M1-EXDR - Expansion Door
- L1400P1 Tape Library
  - A single, rebranded and enhanced L700e library.
  - Sold as a second library in a PTP solution **(SL1400P1-STK-Z)**.
  - The PTP is hard-bundled with the library.
  - Ships with 672 slots installed (six slots are lost to the PTP, which is included with this library model).
  - Access to these slots requires purchase of upgraded capacity under the L1400M1 library.
  - The L1400P1 library is required to scale above 678 slots.
  - StorageTek L-Series Library Admin (hard-bundled with the library).
  - StorageTek BRM (optional).
  - Requires the following **included** components:
    - L1400M1-EXDR - Expansion Door
    - SL1400/700E-PTP-Z - Pass-Thru Port

All other information regarding the L1400M libraries is the same as for the L700e.

Software

The L1400M1 Tape Library ships with StorageTek L-Series Library Admin. StorageTek BRM is optional. For more information on L-Series Library Admin, refer to "StorageTek L-Series Library Admin" on page 7-1

StorageTek Backup Resource Monitor

BRM is an optional software solution that simplifies the complexity and management of the backup environment through centralized visualization of backup applications, fabric switches, and tape libraries.

BRM's web browser-based graphical user interface provides complete visibility of backup operational information at a summary or detailed level including job statistics, policies, schedules, event codes, media statistics, fabric configuration, and tape library utilization.

BRM provides robust backup application support for Veritas NetBackup, Legato NetWorker, and IBM Tivoli Storage Manager. BRM supports fabric switches from Brocade and McData, and provides comprehensive reporting on StorageTek L-series and ACSLS attached tape libraries.

BRM automatically collects vital information about the backup environment, and stores it in an open, industry-standard MS-SQL database, facilitating historical trending and capacity forecasting functions.

Key features of BRM are:

- Comprehensive, automated, and secure data collection
- Centralized web-based graphical user interface
- Asset Management and Tracking
- Detailed Backup and Restore Reports
- Backup Storage Area Network Topology Visualization
- Backup Exception Reports
- Library Media Inventory Listing
- Media Trending and Forecasting
- Fabric Switch Configuration and Port Status
- Tape Library Configuration, Utilization, and Events
- Backup Media Search Functions

Order Worksheets

L1400M Tape Library Worksheets

Select the configuration and/or features of the L1400 library that you require (Table C-1). See "General Library Information" on page 3-3 for more information.

Use Table C-2 on page C-5 to select L1400 library capacity options.

Table C-1. L1400 Tape Library Worksheet

Configuration/Feature	Part/Model Number	Quantity
L1400M for ACSLS, 200 Cartridges.	SL1400MA-STK-Z	
L1400M for non-ACSLS hosts, 200 Cartridges.	**SL1400M-STK-Z**	
L700E30 to L1400P1 Upgrade conversion kit.	XL700E30-SL1400PZ	
L700E40 to L1400P1 Upgrade conversion kit.	XL700E40-SL1400PZ	
L700E70 to L1400P1 Upgrade conversion kit.	XL700E70-SL1400PZ	
L1400M, 200 Cartridges, LibAdm (Library Manager).	SL1400M1-STK-Z	
L1400P1 with Pass-thru Port, 0 Cartridges, LibAdm (Library Manager),	SL1400P1-STK-Z	
L1400 Partitioning conversion kit[1]	XSL1400-PART	
MPCL card for L700 to L1400M1 Upgrade conversion kit.	XL700-MPCL-Z	
PTP Install, Conversion to L1400P1 conversion kit.	XSL1400-PTP-P1-Z	
L1400M0/A to L1400M1 Upgrade conversion kit.	XSL1400M0/A-M1-Z	
L700E30 to L1400M1 Upgrade conversion kit.	XL700E30-SL1400MZ	
L700E40 to L1400M1 Upgrade conversion kit.	XL700E40-SL1400MZ	
L700E70 to L1400M1 Upgrade conversion kit.	XL700E70-SL1400MZ	

1. Requires L1400M1 library (or L1400M0 library with SN3300 version 5.6.43, or higher).

Tape Library Optional Features / Conversion Kit Worksheet

Select the library capacity you require (Table C-2 on page C-5).

Note: The L1400M/L1400M1 library ships with the first 200 slots included. The L1400P1 library is required to scale beyond 678 slots; however, all capacity is added as feature of the L1400M0/L1400M1 library.

After you have completed your order, you must go to the StorageTek Software Keys website to request a software key. You will need the sales order number for the conversion bill or the customer site ID, and an email address where the key will be sent. It can take up to two business days to receive the key.

After receiving your key, refer to *L700x/L1400x Tape Libraries and Pass Thru Port Installation Manual*, PN 95896 or *L700x/L1400x Tape Libraries and Pass Thru Port Operator's Guide*, PN 95845 to configure library capacity.

The URL for the L1400 Software Key Order form is:

http://www.support.storagetek.com/GlobalNavigation/Support/ToolsAndServices/Tools/swkeys/GENERALPUBLIC/L1400MKey_Order.htm

Table C-2. L1400 Tape Library Capacity Options Worksheet

Capacity Upgrade	Part Number	Quantity
Slot upgrade, 200 to 300	XSL1400-UPG-300	
Slot upgrade, 300 to 400	XSL1400-UPG-400	
Slot upgrade, 400 to 500	XSL1400-UPG-500	
Slot upgrade, 500 to 600	XSL1400-UPG-600	
Slot upgrade, 600 to 700 (678[1])	XSL1400-UPG-700	
Slot upgrade, 700 to 800	XSL1400-UPG-800	
Slot upgrade, 800 to 900	XSL1400-UPG-900	
Slot upgrade, 900 to 1000	XSL1400-UPG-1000	
Slot upgrade, 1000 to 1100	XSL1400-UPG-1100	
Slot upgrade, 1100 to 1200	XSL1400-UPG-1200	
Slot upgrade, 1200 to 1300	XSL1400-UPG-1300	
Slot upgrade, 1300 to 1344	XSL1400-UPG-1344	

1. Maximum capacity if only one frame is installed.

Tape Library Mandatory Model Features

The L1400M, L1400M1, and L1400P1 libraries **include** the following required features/ conversion kits.

Description	L1400…		
	M0	**M1**	**P1**
LVD SCSI Interface Kit	X		
SN3300 LVD Fibre Channel Router	X		
LVD SCSI Cable	X		
Expansion Door		X	
			X
Pass-through Port			X

Software

StorageTek L-Series Library Admin is standard with the L1400M/L1400M1 library. StorageTek BRM is available as an option.

For other software, refer to Chapter 8, "Order Worksheets."

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