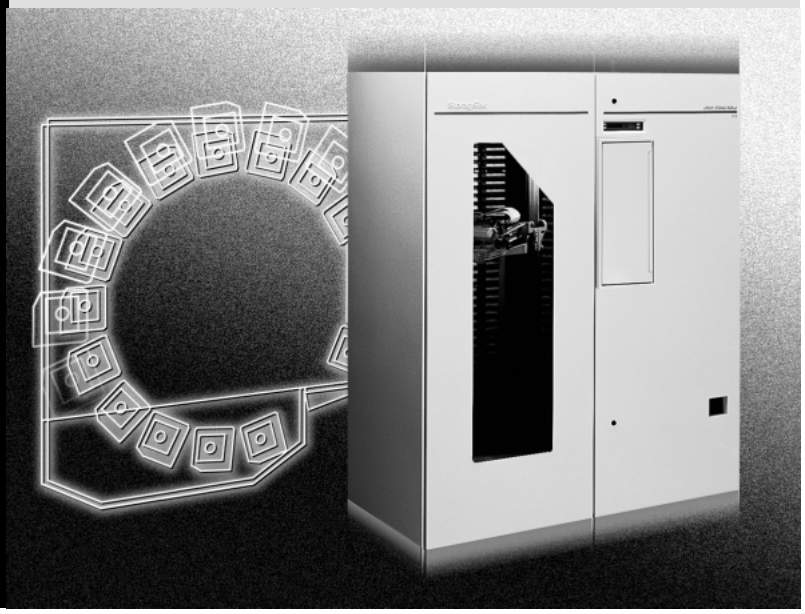
Document MR0012

9710 Library Storage Module

System Assurance Guide



StorageTek

9710 Library Storage Module

System Assurance Guide

Information contained in this publication is subject to change. In the event of changes, the publication will be revised. Comments concerning its contents should be directed to:

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Storage Technology Corporation
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USA

List of Pages

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Summary of Changes

Date	Reissue Level	Change
Dec. 1999	J	**throughout:** Incorporated template 103199 and updated boilerplate. Changed personnel references to reflect new Customer Service organization. Indicated support of 9840 Fibre Channel drives. **Chapter 3:** Removed note about AS/400 not supporting 9840 or DLT drives. Added host interface graphics (Figure 3-2 through 3-6). Added illustration of I/O panel that shows Fibre Channel plate in lower left corner. **Chapter 4:** Expanded power cable table with new power cable part numbers. Corrected drawing of Centronics 50-pin connector. Added new in-country media services telephone numbers. Added note clarifying feature codes 1603 and 2016. **Appendix A:** Updated weight specifications.

Contents

Figures

Tables

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Preface

This guide contains information about planning, ordering, installing, and follow-up activities required during StorageTek TimberWolf 9710 Library Storage Module sales, delivery, and installation.

The audience for this guide includes StorageTek marketing representatives, solutions delivery systems specialists (SDSSs), ssolutions delivery installation consultants (SDICs), solutions delivery engineers (SDEs), independent consultants, service representatives, and customers involved with installation planning.

How to Use This Guide

This guide provides a series of worksheets and checklists that, when completed properly, ensure that no aspect of the installation process has been overlooked. This promotes error-free installation and customer satisfaction. Use only those checklists that are applicable to your system. However, certain worksheets (noted below) *must* be completed for the product to be shipped. Refer to Chapter 4 for more information.

Note: If the following worksheets are not completed and sent to Orders Administration, the *product will not be shipped*.

- Library Configuration Worksheet
- Site Survey
- Product Checklist

How This Guide is Organized

This guide contains the following information:

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

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

Chapter 3 "Product Overview" provides an overview of the LSM, drive configurations, and interfaces

Chapter 4 "Ordering the Equipment" contains worksheets to complete when ordering the 9710 Library

Chapter 5 "Pre-installation Checklist" provides checklists to ensure no unresolved issues exist at installation.

Appendix A "Site Planning Information" provides LSM specifications and floor space layout.

Index The Index assists in locating information in this publication.

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Conventions

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

Item	Example	Description
Button	MENU	Physical buttons or switches, onscreen buttons, and softkeys appear in Helvetica font and in all capital letters.
Emphasized text	*not* or *must*	Important or emphasized words and phrases appear in italics.
Filenames	`dictionary.txt`	Filenames appear in `Courier` font.
Indicators/ LEDs	*Open*	Indicators and LEDs appear with initial capital letters and in italics.
Keyboard keys	[Y], [Enter] or [Ctrl+Alt+Delete]	Keyboard keys appear within brackets, in Helvetica font, with initial capital letters or as the key appears on the keyboard.
Screen captures or messages	`downloading`	Screen captures or messages appear in `Courier` font.
Parameters or input	Device = *xx*	Names of variables that require values assigned appear in italics.
Pathnames	`P:\Printshp\Pubs` or `home/gandalf/litdist`	Pathnames appear in `Courier` font.
Positions for switches, jumpers, and circuit breakers	ON	Switch, jumper, and circuit breaker positions appear in default font and all capital letters.

Item	Example	Description
URLs and hypertext links	www.stortek.com/techpubs	Universal Resource Locator (URL) and hypertext links appear in blue text and underlined.

Related Publications

Additional information is contained in the following publications:

9710 Publication	Part Number
9710 Library Storage Module Installation Manual	9640

Quantum™ DLT Publications	Part Number
DLT4000 Cartridge Subsystem Product Manual	313127601 (StorageTek) 81-60043-0x (Quantum)
DLT7000 Tape Drive Product Manual	313134501 (StorageTek) 81-60000-0x
DLT8000 Tape Drive Product Manual	81-60118-0x (Quantum)

9840 Publications	Part Number
9840 Tape Drive System Assurance Guide	MT 5003
9840 Tape Drive Installation Manual	95879

4890 Publications	Part Number
4890 Maintenance Manual	*9512952900*
4890 Product Manual	*9512941000*

Obtaining Information

You may have access to the following additional sources of information.

Customer Resource Center

StorageTek's Customer Resource Center (CRC) is an online service that provides technical information such as software publications, user documentation, maintenance fixes, and answers to frequently asked questions. The CRC is for

StorageTek employees and for contract customers and partners with a login and password.

The location of the CRC is http://www.support.storagetek.com

Documents on CD

Documents on CD is a compact disc that contains portable document format (PDF) files of StorageTek's tape, library, and OPENstorage disk publications. This CD is for StorageTek employees only. Contact the Logistics Depot to order the CD or get onto the distribution list.

Electronic Document Center

StorageTek's Electronic Document Center (EDC) is an online service that provides links to technical publications about StorageTek products, pre-sales planning, and strategic tools. The EDC is for StorageTek employees only.

The location of the EDC is http://gandalf.stortek.com/dynaweb/prod

KnowledgeMap

StorageTek's KnowledgeMap is an online service that provides product information, general resources, white papers, and answers to frequently asked questions. It also contains information about networks, platforms, and sales support. The KnowledgeMap is for StorageTek employees and distributors.

The location of the KnowledgeMap is http://wwfokm.stortek.com/

Partners Page

StorageTek's Partners Page is an online service that provides information about events, education, products, and connectivity. The Partners Page is for StorageTek employees and partners with a login and password.

The location of the Partners Page is http://www.storagetek.com/Partners/

StorageTek Storefront

The Storefront is StorageTek's external web site. The Storefront provides information about topics such as news bulletins, products, services, integrated solutions, customer support, and upcoming events. The storefront is accessible to all persons with a web browser.

The location of the Storefront is http://www.storagetek.com

Comments and Suggestions

A Reader's Comment Form at the back of this publication is for communicating suggestions or requests for change. We encourage and appreciate reader feedback.

Education

The following paragraphs describe how to locate the training available for the 9710 Library.

If you have questions about registering for courses (including tuition and schedules), call the registrar at 303-673-6262.

Consult the current *Corporate Education Course Catalog* or view `EDUCATION` announcements on the intranet using Netscape for the latest offerings and schedules.

StorageTek employees should follow these steps to register:

1. Start Netscape.
2. Type the following URL: http://intwww.stortek.com
3. At the right side of the screen click on `alphabetical`.
4. Click on `W` for Workforce Development.
5. Scroll down and click on `Workforce Development Home Page`.

This takes you to the StorageTek Workforce Development web page. Make your selections from here.

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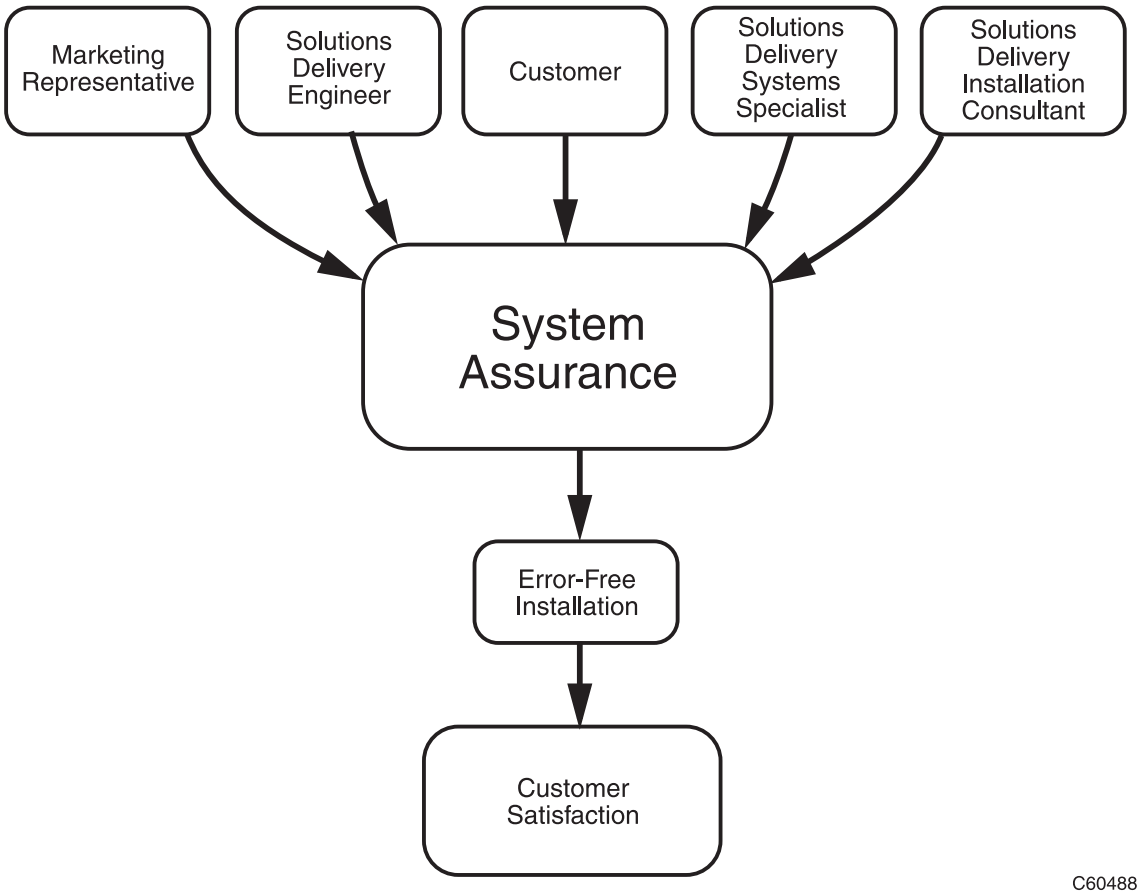
The System Assurance Process

1

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

Figure 1-1. The System Assurance Overview



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 carried out efficiently. Customer and StorageTek team members jointly own and control the process.

Table 1-1. Team Member Responsibilities

Team Member	Responsibilities
Solutions Delivery Installation Consultant (SDIC) (United States) Solutions Delivery Manager (SDM) (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** (Chapter 2) • **Hardware configuration** (Chapter 4) • **Site survey** (Chapter 4) • **Receiving dock information** (Chapter 5) • **Inside delivery information** (Chapter 5) • **Access and administrative issues** (Chapter 5) • Faxes all of the required and completed work sheets (except the sales entry form) to the appropriate orders offices. See Chapter 4. • Works with the solutions delivery engineer (SDE) and the customer to provide delivery information as listed in “Solutions delivery engineer” responsibilities in this table.
Marketing representative (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.

Table 1-1. Team Member Responsibilities (Continued)

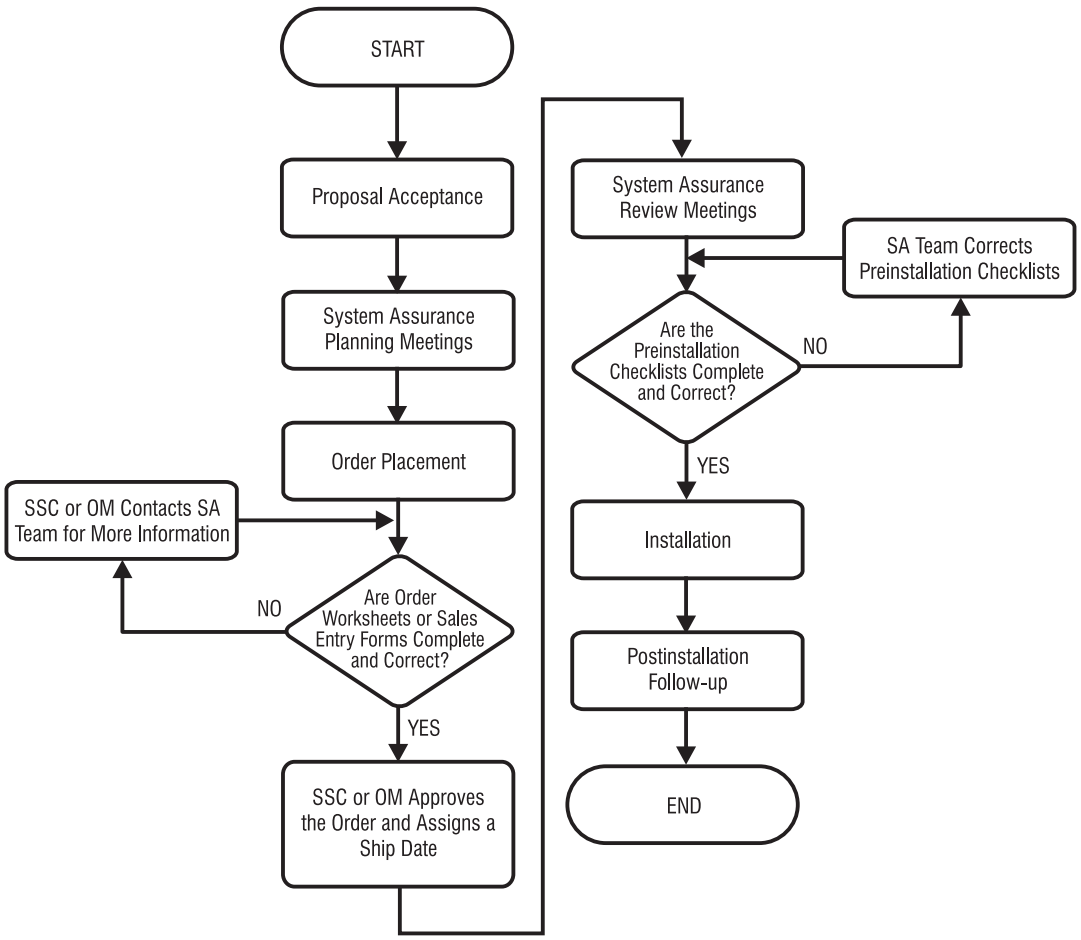
Team Member	Responsibilities
Solutions Delivery Engineer (SDE)	• Prepares customer service support procedures. • Explains available levels of hardware support and criteria for problem escalation. • Installs the product at the customer site.
Customer	• Works with the solutions delivery installation consultant (SDIC) at the system assurance planning meetings to provide the data for the worksheets listed for the SDIC. • Works with the solutions delivery systems specialist (SDSS) 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 per son for all scheduling matters.
Solutions Delivery Systems Specialist (SDSS)	• Explains available levels of software support and criteria for problem escalation. • Works with the customer to complete the work sheet. • Provides data migration information.

The System Assurance Flowchart

Figure 1-2 shows the system assurance process flow. The following pages describe 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 Process Flow



Proposal Acceptance

The system assurance process begins when the customer accepts the proposal. At this time, the solutions delivery installation consultant (in the United States) or the solutions delivery manager (internationally) 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 9710 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 (Chapter 4)
- Set the dates and times for one or more system assurance review meetings

Order Placement

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

- Fax the completed worksheets to Orders Management (OM), or
- 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 4 for which of the above options and fax numbers to use.

Sales Entry Form or Order Worksheet 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 correct, 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 pre-installation checklists (Chapter 5)
- Identify additional requirements

Preinstallation Checklist Error Check

If the preinstallation checklists are complete and correct, the sale is approved and the product is shipped. If they are not correct, the system assurance team completes or corrects them.

Installation

The SDE installs the 9710 Library at the customer's site.

Post-installation Follow-up

The following actions 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 to submit any comments on this guide. Refer to the end of the "How This Guide is Organized" on page xi for the fax number, address, and URL.
- The SDE logs installation data into the Customer Services Data Collection (CSDC) system.
- The SDE attends a follow-up meeting with the customer to review the completed project.

Schedule Planning

When schedule planning is completed, attach a copy of the proposed schedule to this guide, and have the system assurance team members sign below.

_____

StorageTek Representative (date)

_____

Customer Representative (date)

Key Personnel

2

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 telephone numbers of the following people:

CPU Hardware Contact

_____

Phone office:_____ home:_____

Operating Systems Software Contact

_____

Phone office:_____ home:_____

Communication Hardware Contact

_____

Phone office:_____ home:_____

Operations Contact

_____

Phone office:_____ home:_____

Delivery Contact

_____

Phone office:_____ home:_____

StorageTek Team

List names and telephone numbers of the following people:

Marketing Representative

_____

Phone office:_____ home:_____

Solutions Delivery Systems Specialist

_____

Phone office:_____ home:_____

Solutions Delivery Engineer

_____

Phone office:_____ home:_____

SDE room on site:

Solutions Delivery Installation Consultant

_____

Phone office:_____ home:_____

StorageTek Hardware and Software Support

StorageTek provides the following phone numbers for hardware and software support:

Call Center (Hardware)	
U.S.-Colorado	1.303.673.4056
U.S.-Outside Colorado (Customers)	1.800.525.0369
U.S.-Outside Colorado (SDEs)	1.800.735.2778
Software Support	
U.S.-Outside Colorado	1.800.678.4430
U.S.-Colorado	1.303.673.4430

Client Processor(s) Teams

List names and telephone numbers of the following CPU vendor people:

Hardware Contacts

_____

Phone office:_____ home:_____

_____

Phone office:_____ home:_____

_____

Phone office:_____ home:_____

Software Contacts

_____

Phone office:_____ home:_____

_____

Phone office:_____ home:_____

_____

Phone office:_____ home:_____

Channel Partner Team

List names and telephone numbers of the following people:

Marketing Representative

_____

Phone office:_____ home:_____

Solutions Delivery Systems Specialist

_____

Phone office:_____ home:_____

Solutions Delivery Engineer

_____

Phone office:_____ home:_____

SDE room on site:

Solutions Delivery Installation Consultant

_____

Phone office:_____ home:_____

Product Overview

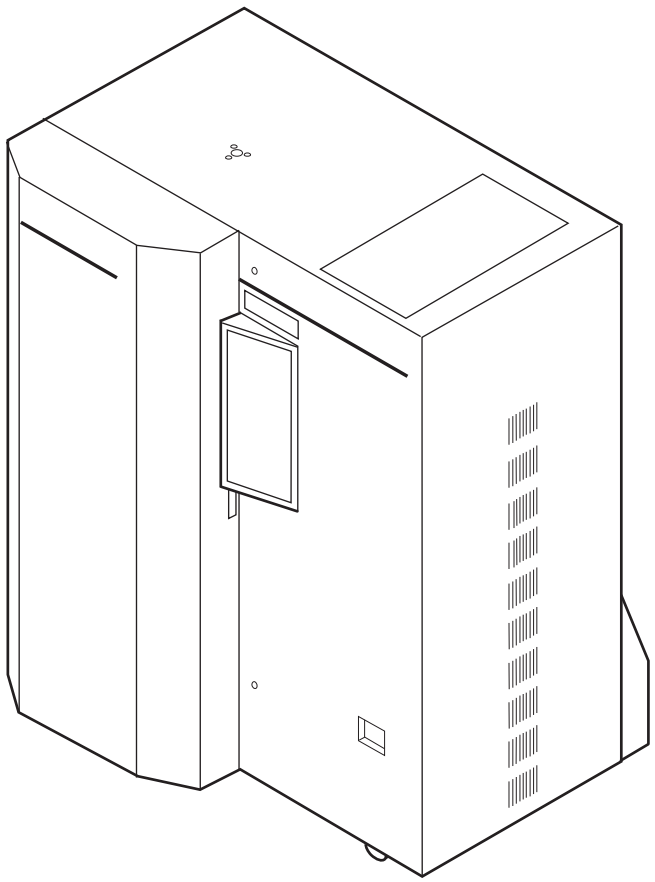
3

This chapter provides an overview of the LSM, drive configurations, and interfaces.

The 9710 library consists of:

- An LSM that stores 224 to 588 tape cartridges
- A cartridge access port (CAP) that stores up to 14 cartridges
- 9840, Digital Linear Tape (DLT), or 4890 drives installed behind the LSM right, front door.

Figure 3-1. 9710 LSM with Expansion Door



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Drive Configurations

The LSM is shipped standard with no drive plates and with two 14-pack arrays above the drive wall (Panel 2). If fewer than four drives are ordered, two 14-pack arrays are installed above the three drives. If fewer than seven drives are ordered, one 14-pack array is installed above the six drives.

If the LSM is to contain more than six drives, you must also install the optional power distribution unit (PDU) and the PRM logic card.

CAUTION:
You may not install 9840 drives and 4890 drives within the same LSM.

Follow these rules for the cartridge drives, their associated arrays, and the cartridges used in the drives:

- Install drives from bottom to top.
- Allow no empty drive slots between installed drives.
- If *fewer than six* drives are installed, install the optional arrays on Panel 2.
- Do not use DATA D3 (helical recording) cartridges.

When mixing 4890 and DLT drives within the same LSM:

- No more than six 4890 drives may be installed
- The DLT drives must be installed *above* the 4890 drives.

When installing *only* DLT drives:

- A maximum of 10 drives may be installed per LSM.

When mixing 9840 and DLT drives within the same LSM:

- No more than six DLT drives may be installed
- The DLT drives must be installed *above* the 9840 drives.
- You may mix SCSI and Fibre Channel drives.

When installing *only* 9840 drives:

- A maximum of 10 drives may be installed per LSM.
- You may mix SCSI and Fibre Channel drives.

Power Distribution Unit (PDU)

The standard 9710 can support up to 10 drives, but has power connections for only six drives. When you order the 9710 mounting hardware kits for more than six drives, you must also order the PDU. The PDU gives you power connections for four additional drives.

The PDU is a pass-through AC connector box with a power drop cable at one end and receptacles for four drives at the other end. The box is mounted in the 9710, but must be connected to a separate customer power drop. The international version comes without a cable plug, and cable leads are stripped.

The PRM card is shipped with the PDU, even though it is not part of the PDU. The card is mounted in the 9710 to provide data communication paths for the additional drives.

Host Interfaces

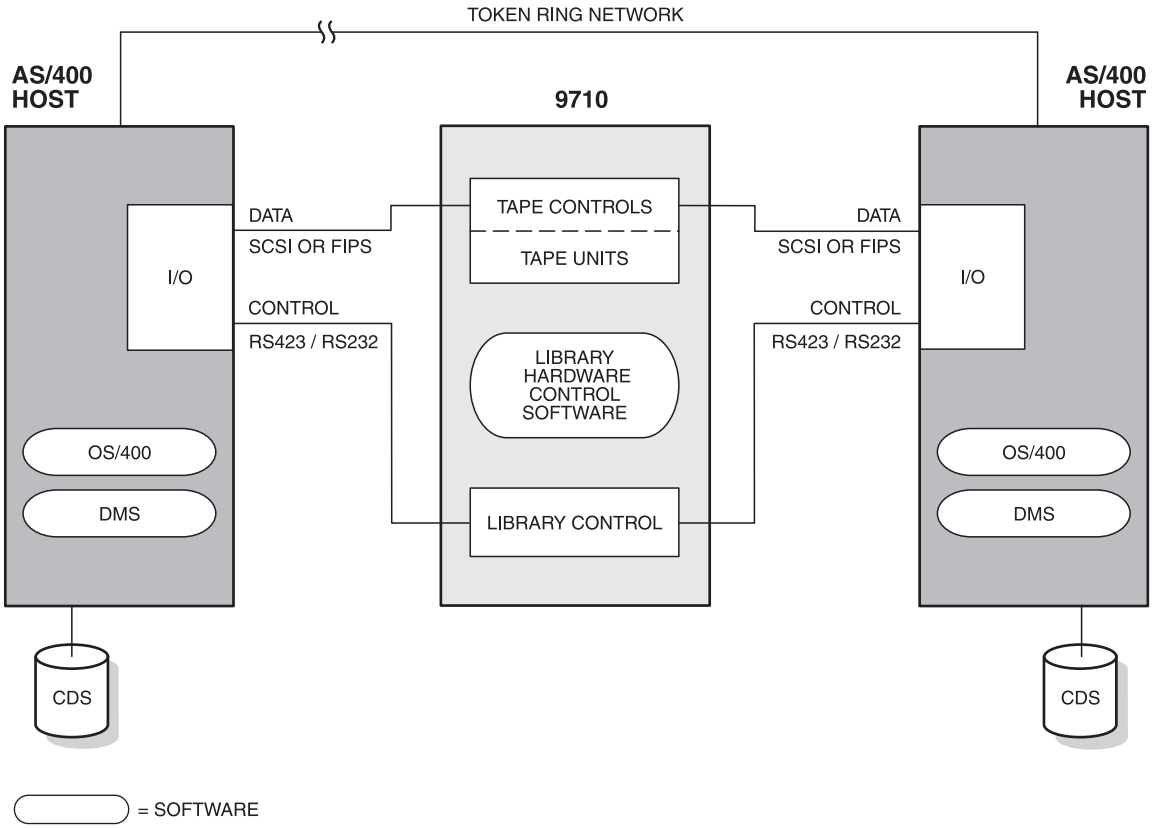
The LSM provides two host ports for AS/400 direct connections. Two internal LSM cables are supplied for this configuration (see Figure 3-2 on page 3-4). Other configurations with the AS/400 might include a RISC/6000 server (see Figure 3-3 on page 3-5). Direct connections in non-AS/400 (open systems) configurations are also supported (see Figure 3-4 on page 3-6).

For host indirect connections to the LSM, a server [Unix-based, using Automated Cartridge Server Library (ACSLS) software or a RISC System/6000, using the Advanced Interactive Executive (AIX) operating system] is connected between the host and the LSM. An example of an indirect connection is an LSM hooked to a Unix server, with the server connected to an Ethernet LAN network. A cable is run from the Ethernet LAN to the host (see Figure 3-5 on page 3-7).

The connection from the server to the LSM is a SCSI Type-3 68-pin cable. The server may have its own control-side path (through a connection on the optional PRS circuit card), or may be daisy-chained to a shared data bus with one or more drives.

Figure 3-6 on page 3-8 shows the generic software requirements for the subsystems in either a direct connection or an indirect connection to the LSM.

Figure 3-2. Direct Connection for AS/400 Control



NOTE:
Use only SCSI connections for 9840 drives.

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Figure 3-3. Client Configuration (Indirect Connection) with AS/400

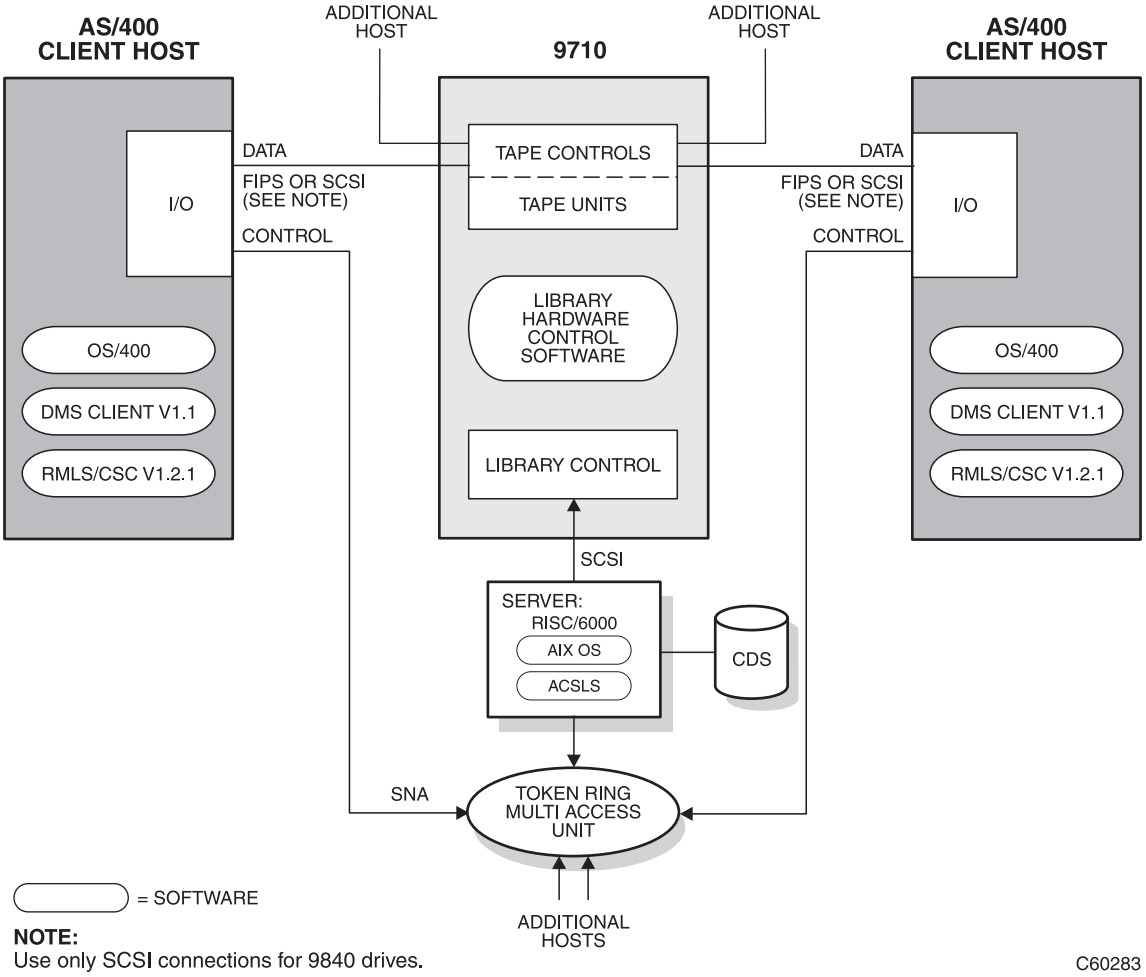


Figure 3-4. SCSI Direct Connection (Open Systems) with Common Bus

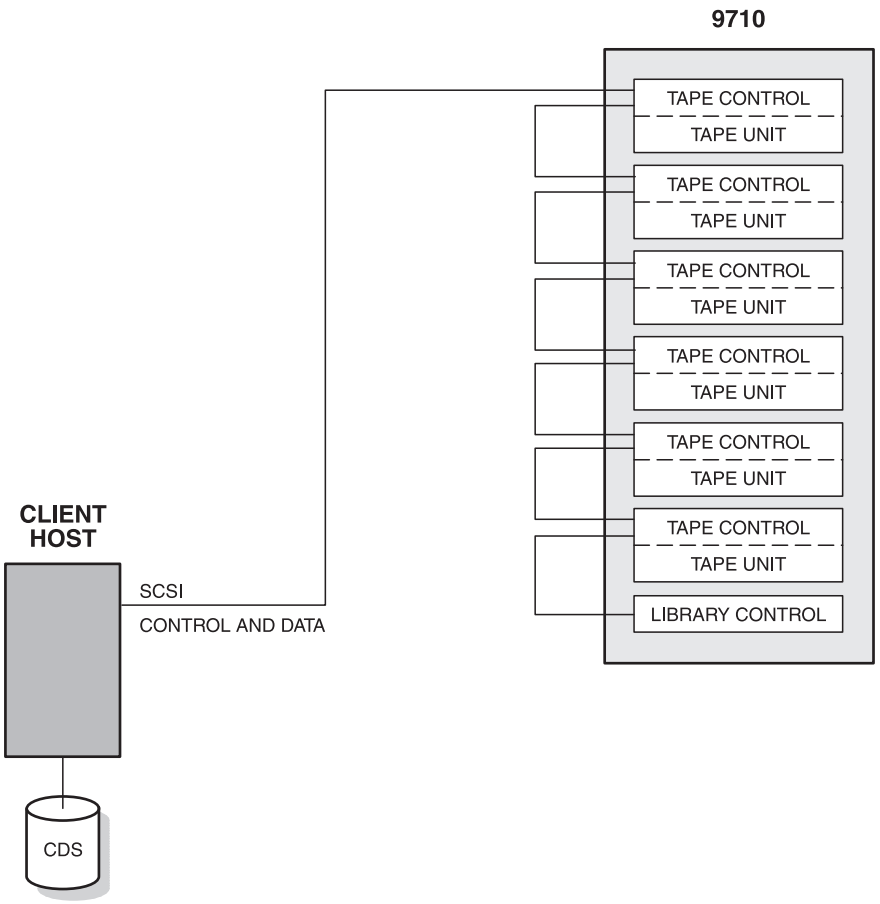


Figure 3-5. Host-Indirect Connection

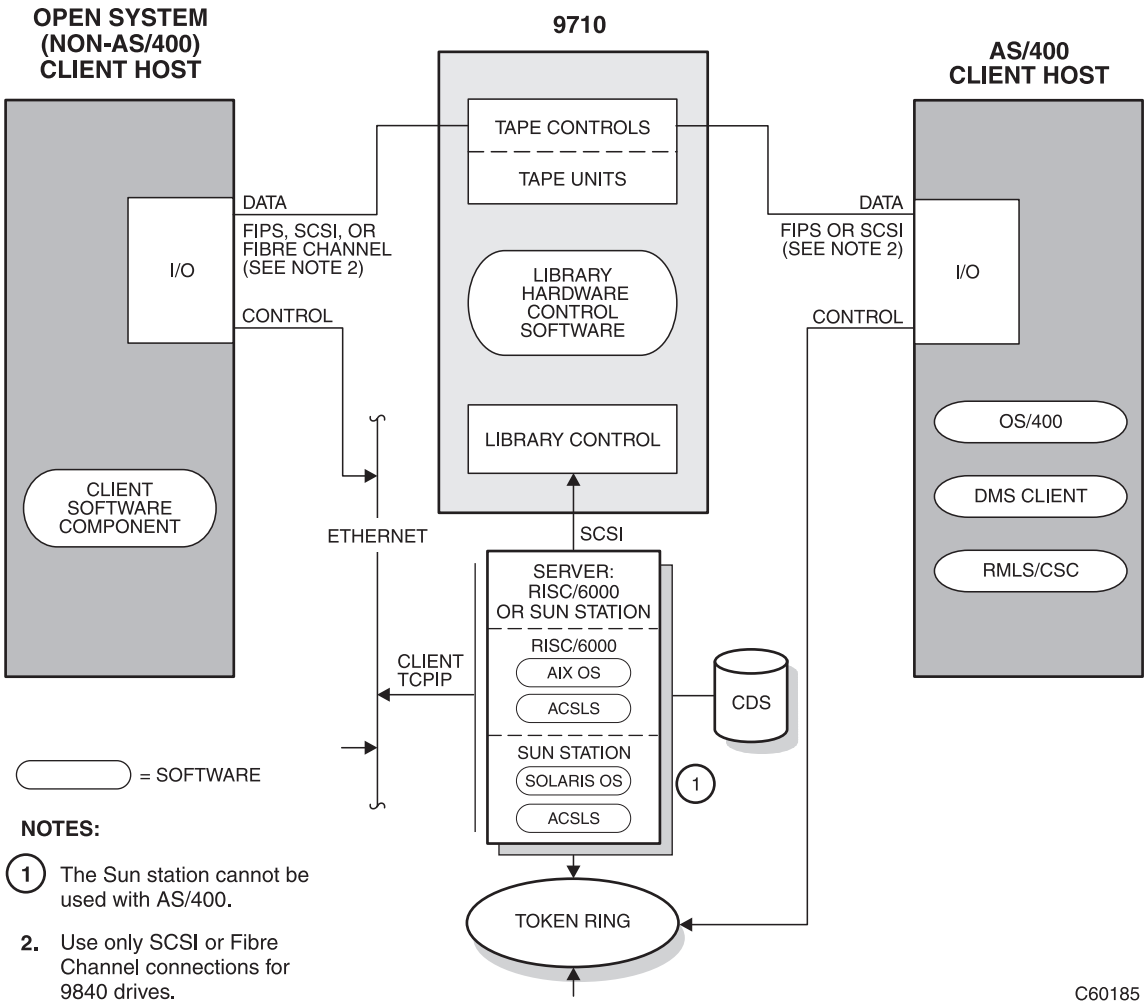
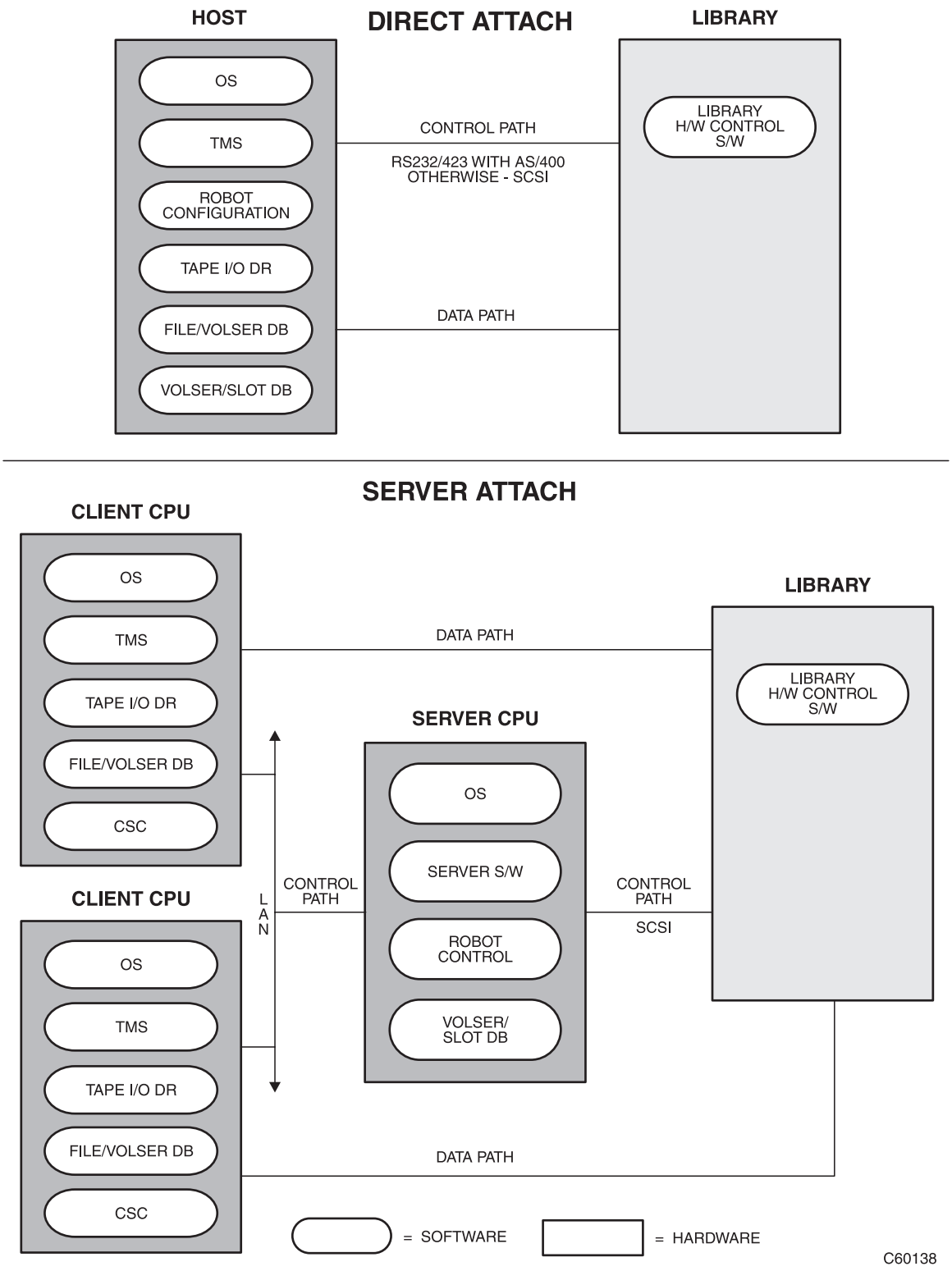


Figure 3-6. Subsystem Generic Software Types



Data Interfaces

Refer to the *9840 Tape Drive System Assurance Guide*, MT 5003, for 9840 data interface information.

The LSM has three data interfaces available:

- Small Computer System Interface (SCSI) for all drives
- Federal Information Processing Standard (FIPS) interface for 4890s
- Fibre Channel for 9840s

4890 Data Buses

You may order FIPS bus drives, SCSI bus drives, or both. FIPS and SCSI are not available on the same drive.

Two FIPS data bus terminal blocks are present on a drive. Each bus in this definition includes the Data In, Data Out, Tag In, and Tag Out lines. You can use the two terminals for two data buses, use only one terminal block and terminate the other, or use the second terminal block for daisy chaining.

Note: The AS/400 I/O port does not allow daisy chaining of the 4890 Drives.

Each SCSI drive has two SCSI data bus connectors. You may use only one SCSI data bus input per drive. The other connector must be terminated, or it can be used for daisy chaining in a non-AS/400 environment, but it cannot be used for a second data bus.

DLT Data Buses

Each DLT has two SCSI data bus connectors. You can use only one SCSI data bus input per drive. The other connector must be terminated, or it can be used for daisy chaining, but it cannot be used for a second data bus.

I/O Cabling Limits

Examine Figure 3-7 on page 3-11 and Figure 3-8 on page 3-12 while you read the following discussion.

Only one SCSI control line can exist. The other SCSI port, on both the SCSI card and the I/O tower, is reserved for daisy chaining; it should be terminated on the SCSI control interface card.

Two RS423/RS232 control lines can exist on the I/O tower. Each control may be connected to a separate AS/400.

Six FIPS data buses can exist on the I/O tower. Each bus in this definition includes the Data In, Data Out, Tag In, and Tag Out lines. If you are using two-bus FIPS drives, each connected at the I/O tower to two FIPS buses, then no

more than three FIPS drives can exist in the 9710. The remaining available drive slots can be used by SCSI drives.

Twenty SCSI data buses can exist on the I/O tower: 10 in and 10 out.

Twenty Fibre Channel data buses can exist on the I/O tower (with 9840 drives only): 10 in and 10 out.

The 3270 ports on the I/O tower currently are not used.

RS423

The 9710 uses RS423 electronics in its control interface, rather than RS232. The RS423 and RS232 protocols are the same, but the RS423 electronics can drive a signal to greater distances.

The maximum RS423 cable length is 60 m (200 ft).

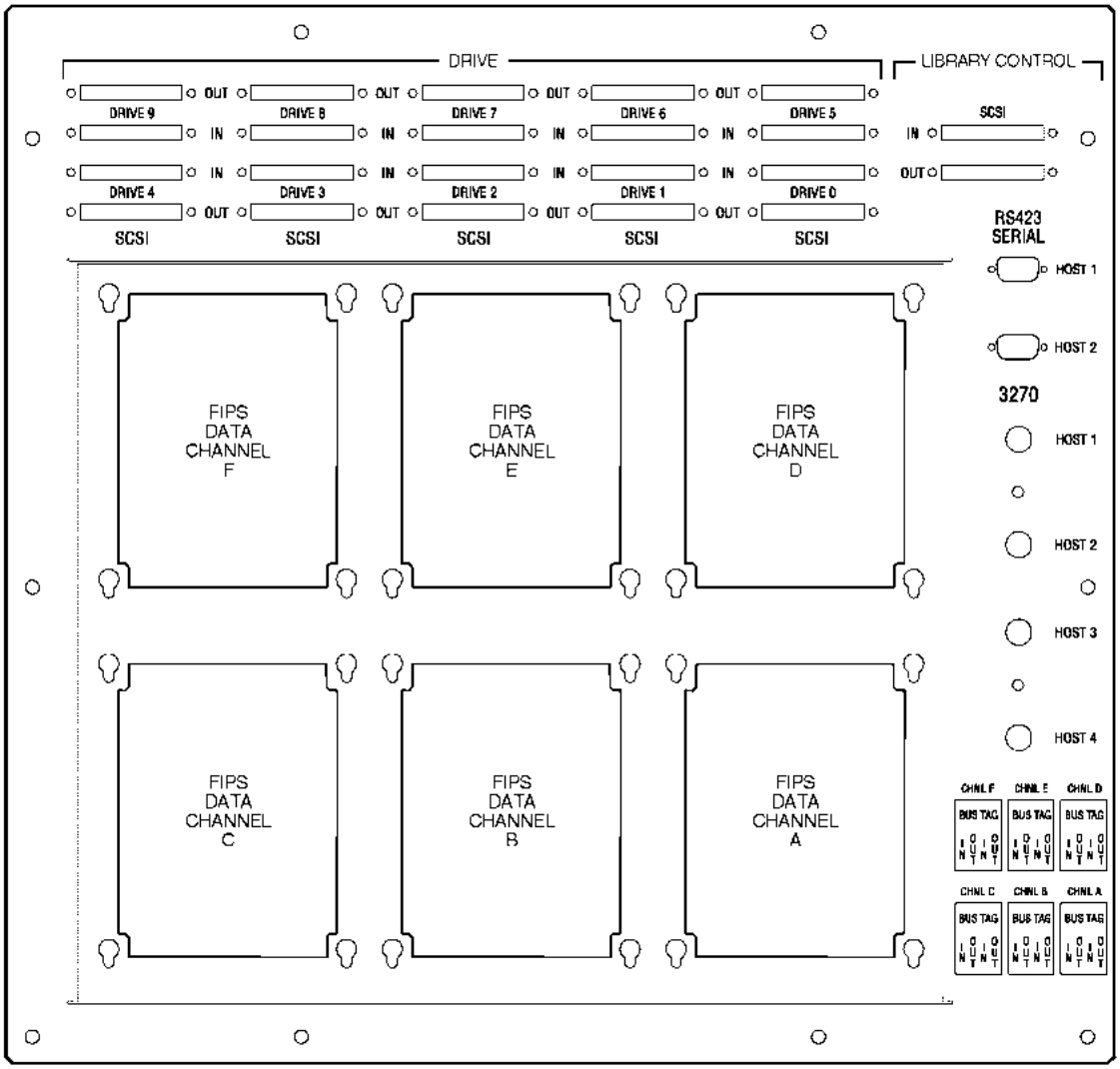
SCSI Library Robotic Interface

The fast/narrow interface is single-ended or differential, and supports up to eight devices including the host.

The fast/wide interface is differential only, and supports up to 16 devices including the host.

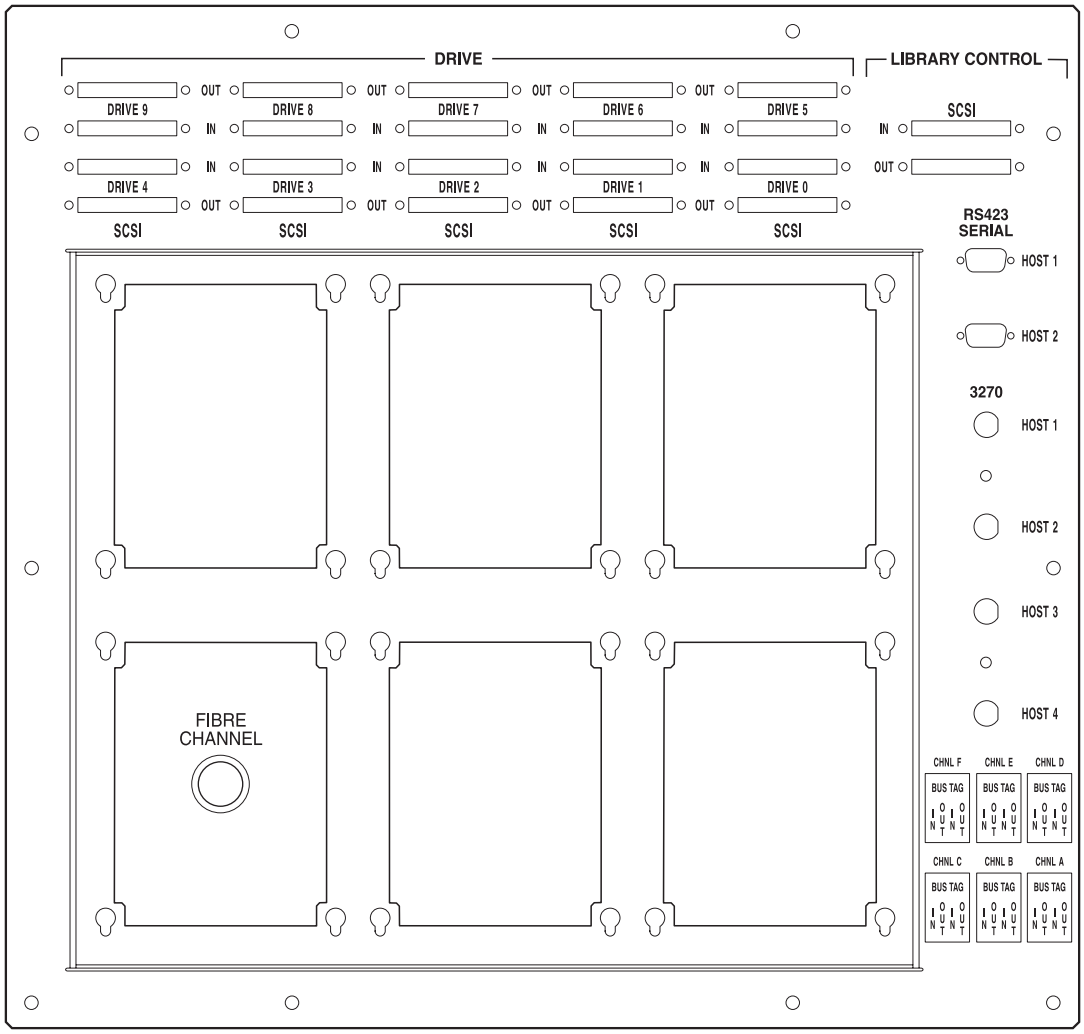
Both interfaces are provided with the fast/wide 68-pin connector.

Figure 3-7. 9710 I/O Panel (Showing FIPS)



Note: The 3270 control interface ports shown in Figure 3-7 on page 3-11 are not presently used. One of the two SCSI control interface ports is used for the control line; the other is reserved for daisy chaining.

Figure 3-8. 9710 I/O Panel (Showing Fibre Channel)



Note: The 3270 control interface ports shown in Figure 3-8 on page 3-12 are not presently used. One of the two SCSI control interface ports is used for the control line; the other is reserved for daisy chaining.

Ordering the Equipment

4

This chapter provides the worksheets to use when ordering the 9710 LSM.

The Ordering Process

To order a 9710 LSM:

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 order worksheets to a sales entry form.
8. Fax the order worksheets or sales entry form to the appropriate orders department.

Fax Numbers and Addresses

The orders department, the fax number, and the documents to fax depend on the customer. The department addresses and voice phone numbers are for your information.

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

1. Transfer the information from the hardware order worksheet and the cables order worksheet to a sales entry form.

   You are encouraged to use the software tool Galileo to identify a valid configuration, generate an accurate quote, and produce an error-free sales entry form.

2. Fax the following forms to Atlanta Shared Services Center:

   - Sales entry form

- Library configuration worksheet
- Site survey
- Product checklist

Atlanta Shared Services Center
Fax: 1-678-969-4015, **4016**, or **4017**

5390 Triangle Parkway, Suite 300
Norcross, GA 30092
Voice: 1-678-969-4000 or 1-800-903-7278 (toll-free in the U.S. only)

Original equipment manufacturers (OEMs), distributors, and subsidiaries in Canada, Japan, Australia, South Asia, and Mexico must fax the following forms to Orders Management:

- Hardware order worksheet
- Cables order worksheet
- Site survey

Orders Management
Fax: 1-303-673-2640 for distributors or subsidiaries
Fax: 1-303-673-7654 for OEM

One StorageTek Drive
Louisville, CO 80028-4350
Voice: 1-303-673-5513

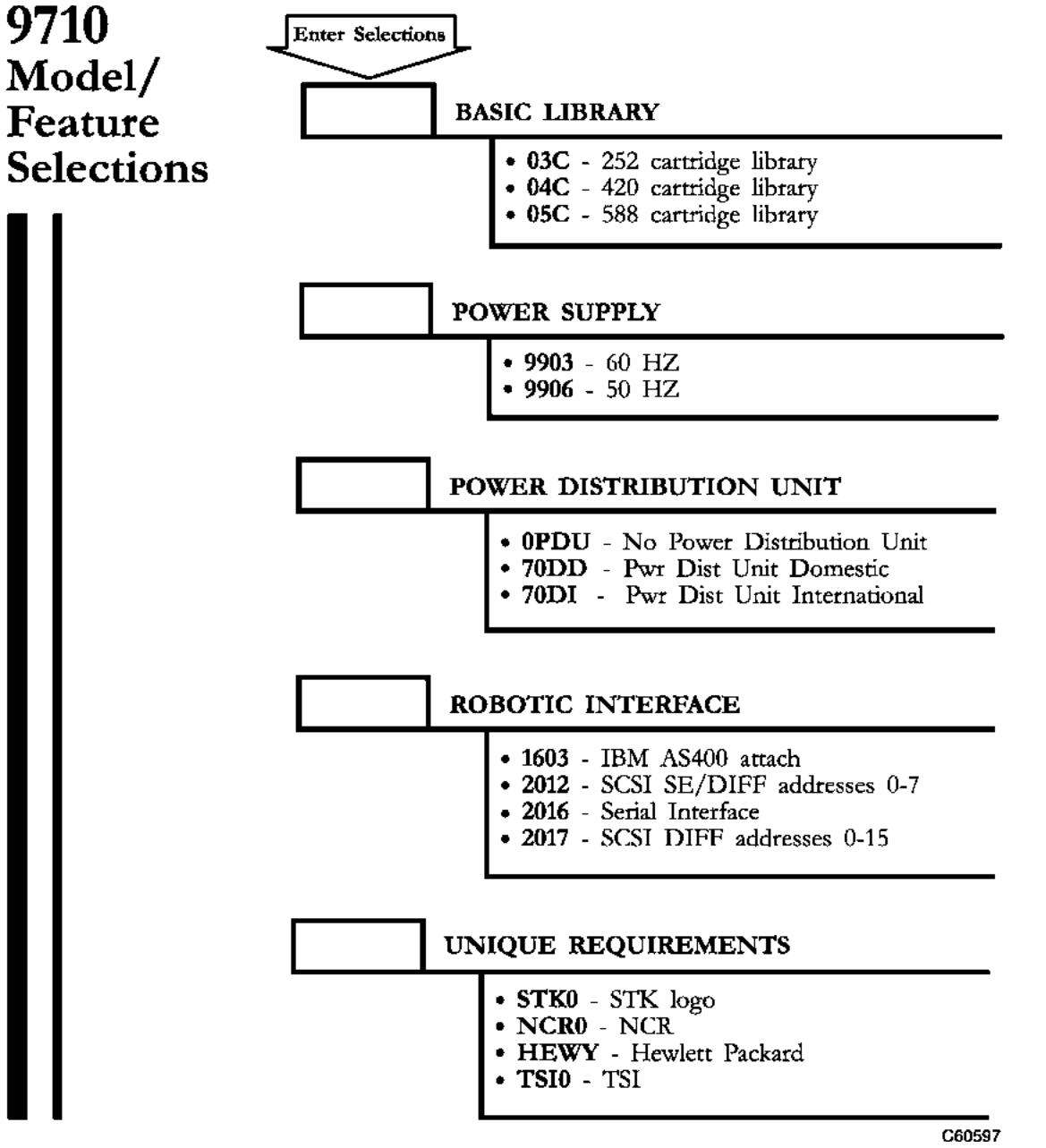
Hardware Order Worksheets

Use the following paragraphs and worksheets to plan your order.

For 9840 Drive information, refer to *9840 Tape Drive System Assurance Guide*, MT 5003.

CAUTION:
You may not install 9840 drives and 4890 drives within the same LSM.

Figure 4-1. 9710 Model/Feature Selections



Note: Both feature codes 1603 and 2016 include two serial ports and do not include a SCSI card.

DLT Drives

Figure 4-2 on page 4-5 lists the DLT8000 model and feature number. Figure 4-3 on page 4-6 and Figure 4-4 on page 4-7 list the DLT7000 and DLT4000 feature numbers. The drives will ship with either a SCSI Fast/Narrow Differential interface or a SCSI Fast/Narrow Single-Ended interface. You will need SCSI Fast/Wide 68-pin connectors to connect to the differential drives.

Note: The DLT8000 is only available with a differential interface.

Each kit contains one DLT drive, differential terminator, slides, drive mounting tray, drive actuator mechanism, drive chassis, DLT power supply, cooling, hardware to mount the drive to the tray, and the drive power cord.

Note: If more than six drives are ordered, the customer must order the PDU. The PDU feature code includes the PDU, the appropriate power cord, the PRM card, and an additional drive-to-LSM interface cable.

Figure 4-2. DLT8000 Model and Feature Selections

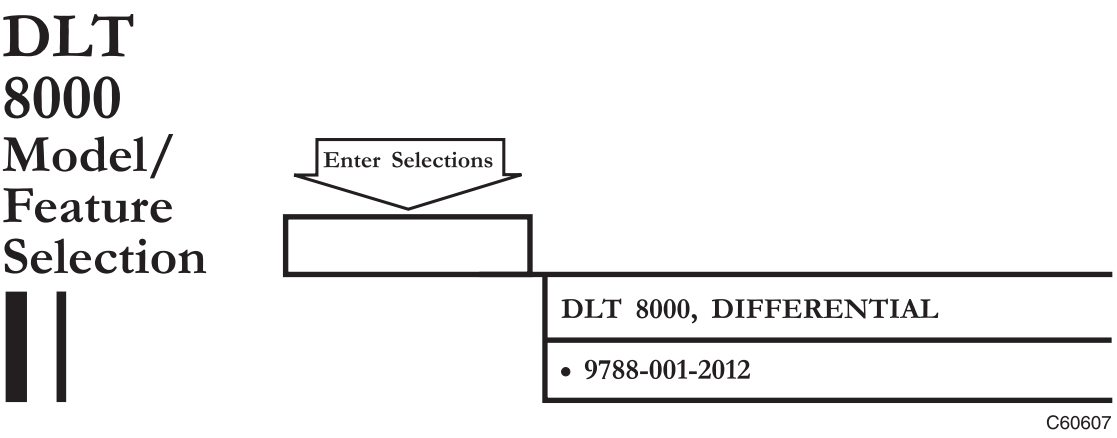


Figure 4-3. DLT7000 Feature Selections

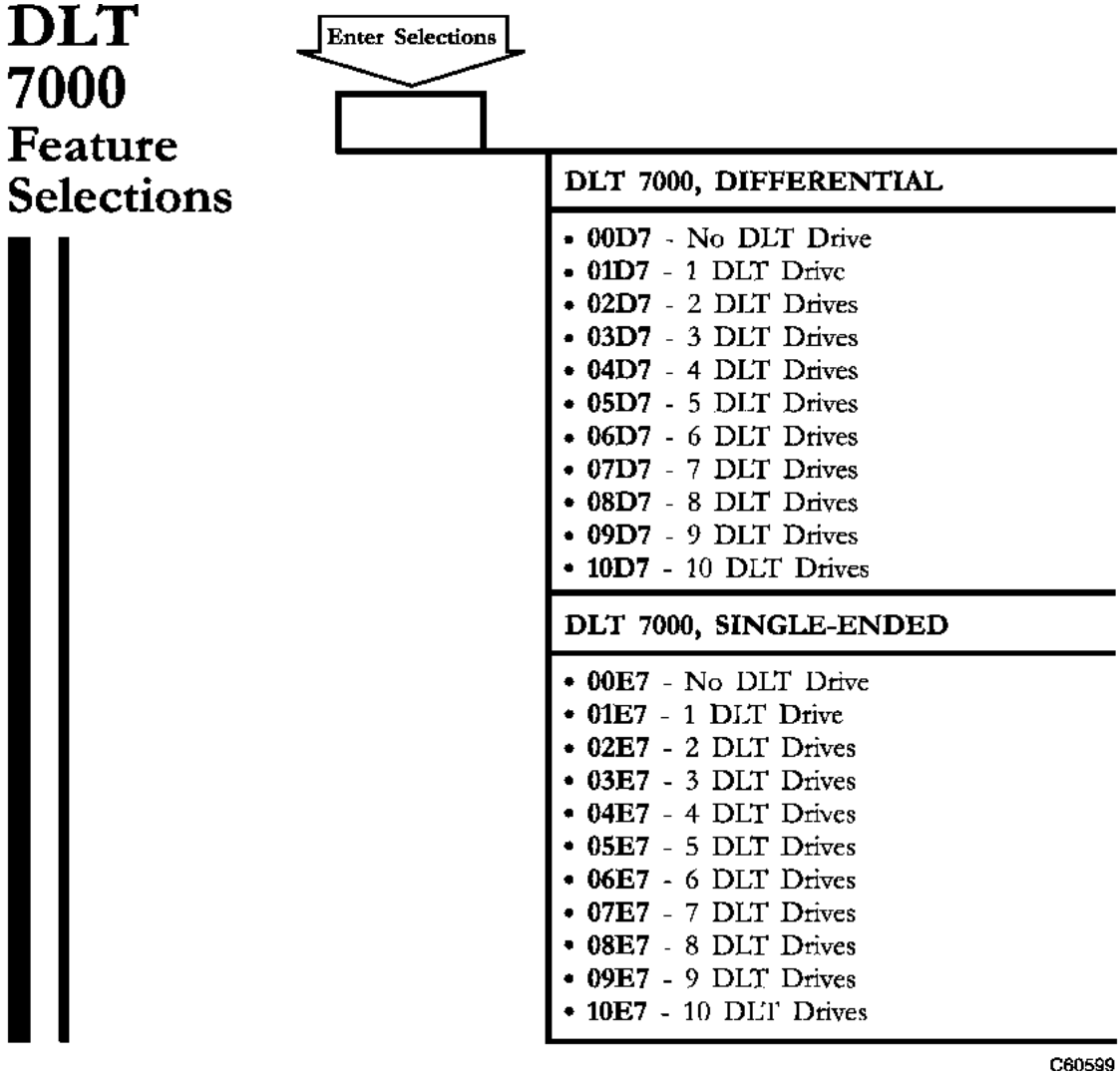
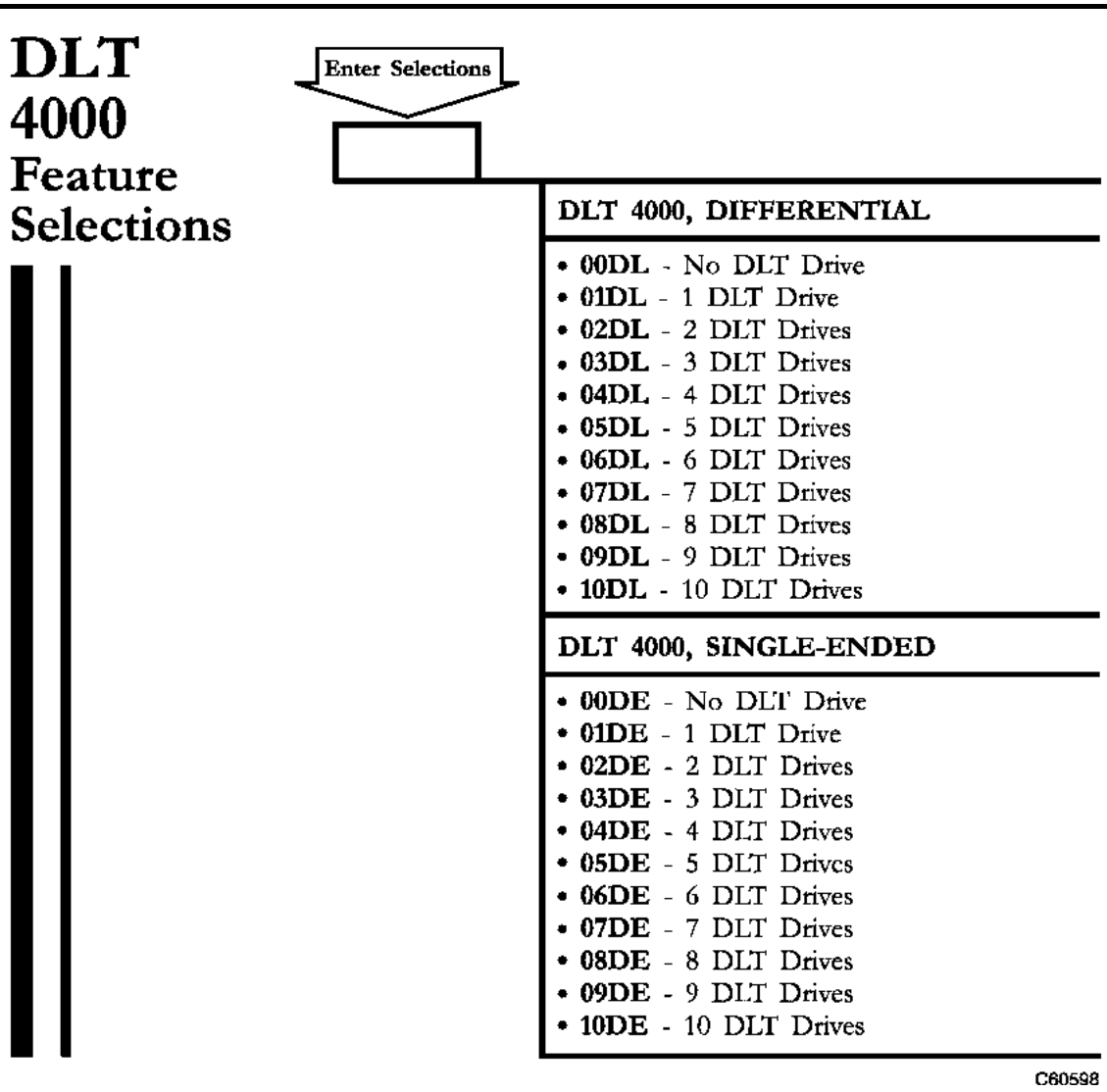


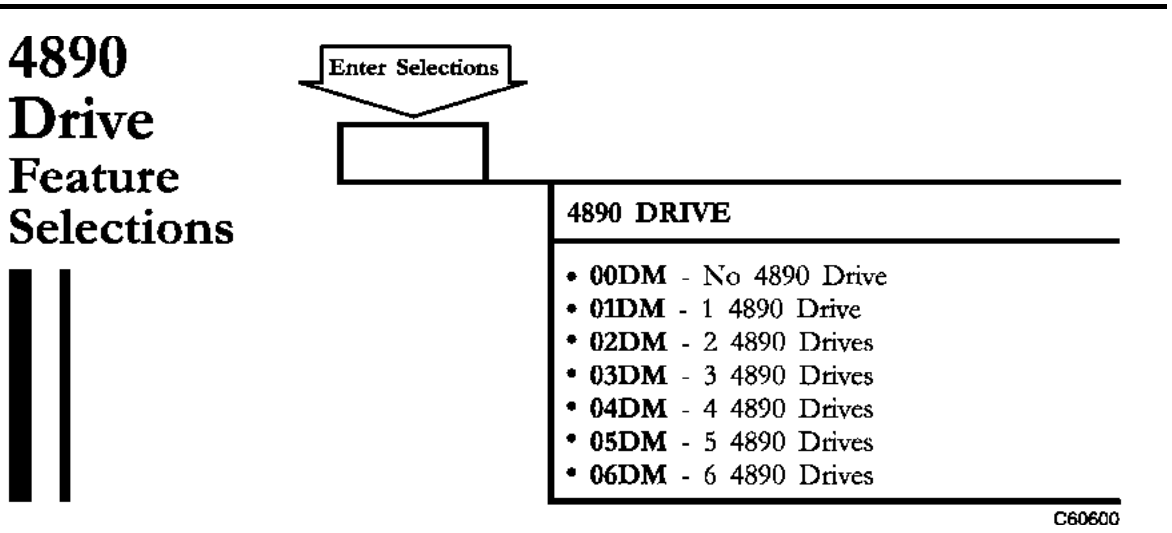
Figure 4-4. DLT4000 Feature Selections



4890 Drives

Figure 4-5 lists the 4890 drive feature numbers.

Figure 4-5. 4890 Drive Feature Selections



CAUTION:
You may not install 9840 drives and 4890 drives within the same LSM.

PDU Power Cables

The PDU power cables are included when you order the PDU feature code. They are listed below in case you still want to order them separately.

Table 4-1. PDU Cables

	Description	Part Number	Quantity
❑	Cable assembly, international, 200–240 V, 10 A, 3 m (10 ft), 2-wire and ground. For main PDU	411063801	_____
❑	Cable assembly, international, 200–240 V, 10 A, 2.4 m (8 ft), harmonized cord 1.5 mm^2, EuroPlug. For optional PDU	10083241	_____
❑	Cable assembly, South Korea, 100–127 V, VCTF cord 3 x 1.25 mm^2, KSC 8305 plug. For optional PDU	10083657	_____
❑	Cable assembly, domestic, twisted lock, 200–240 V, 20 A, 2.5 m (8.2 ft), 14 AWG SJT cord. For main PDU	10083638	_____
❑	Cable assembly, domestic, twisted lock 200–240 V, 15 A, 2.5 m (8.2 ft), 16 AWG SJT cord. For optional PDU	10083639	_____
❑	Cable assembly, domestic, 100–127 V, 20 A, 3 m (10 ft), 14 AWG SJT cord, NEMA 5-20P (IEC 320 plug). For main PDU	310287201	_____
❑	Cable assembly, domestic, 100–127 V, 15 A, 2 m (7 ft), 16 AWG SJT cord, NEMA 5-15P (IEC 320 plug). For optional PDU	10083242	_____
❑	Cable assembly, domestic, twisted lock, 100–127 V, 20 A, 2.5 m (8.2 ft), 14 AWG SJT cord. For main PDU	10083641	_____
❑	Cable assembly, domestic, twisted lock, 100–127 V, 15 A, 2.5 m (8.2 ft), 16 AWG SJT cord. For optional PDU	10083642	_____

Serial Cables, 9710 to Host

If the robot is controlled by a serial RS423 connection, the 9710-end of the cables requires a female DB9 connector.

Table 4-2. Serial Cables, 9710 to Host

	Description	Part Number	Quantity
❑	Cable assembly, DB9 (F)-DB24 (F), 4 m (13 ft)	310227101	_____
❑	Cable assembly, DB9 (F)-DB24 (F), 6 m (20 ft)	310227201	_____
❑	Cable assembly, DB9 (F)-DB24 (F), 12 m (39.4 ft)	310227301	_____
❑	Cable assembly, DB9 (F)-DB24 (F), 24 m (79 ft)	310227401	_____

SCSI Cabling

The following pages contain SCSI cable and adapter information.

Cable Restriction

Maximum allowed cable lengths (including the lengths already inside the 9710) are:

- Single-ended: up to 6 m (20 ft) for up to 5 mega transfers per second
- Single-ended: up to 3 m (9.5 ft) above 5 mega transfers per second
- Differential: up to 25 m (82 ft)

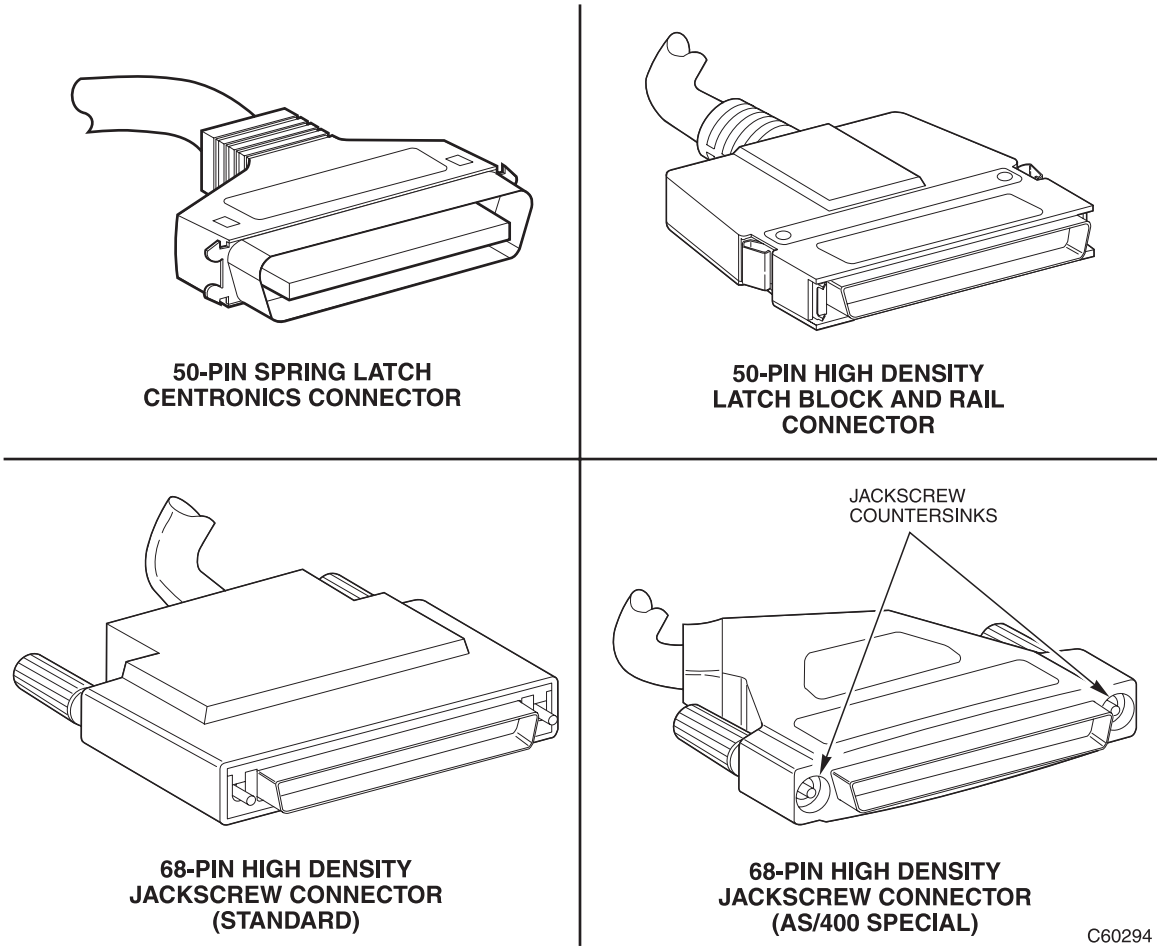
Note: The LSM supports *only* the SCSI Type 3 connector at the LSM I/O panel (tailgate). Customers using SCSI Type 1 or 2 cable connectors must order a SCSI-1- or 2-to-SCSI 3 adapter for the LSM-end of their cables to correctly mate with the LSM.

Table 4-3 lists additional restrictions for SCSI connections.

Table 4-3. SCSI Cable Restriction

Application	Length Restriction
Single-Ended	Stub length: 0.1 m (4 in.)
	5–10 MHz data transfer rate: 3 m (10 ft)
	1–5 MHz data transfer rate: 6 m (20 ft)
Differential	Stub length: 0.2 m (10 in.)
	1–10 MHz data transfer rate: 25 m (82 ft)

Figure 4-6. SCSI Connector Types



Cable Length Subtraction

When considering the length of an external SCSI interface bus, you must subtract the length of bus already inside the 9710 from the maximum allowed cable length. The individual cable measurements inside the 9710 are:

- From I/O tower to drive: 1.2 m (4 ft)
- Daisy chains between drives: 0.5 m (18 in.) each
- From I/O tower to library control: 2.4 m (8 ft)
- From drive to library control (library control can be daisy chained from the drive data bus):
  - 0.5 m (18 in.), or
  - 1.2 m (4 ft), or
  - 1.8 m (6 ft)

The total length of cable that must be subtracted from each bus is shown in Table 4-4. For the IBM AS/400 system, always subtract 1.2 m (4 ft) from the control or data bus. The AS/400 does not allow daisy chains.

Table 4-4. SCSI Cable Length Subtraction

Number of drives on the same data bus	Are data and control on the same bus? (Yes/No)	Subtract this value from maximum allowed cable length
1 (always 1 for AS/400)	no (always no for AS/400)	1.2 m (4.0 ft) from drive bus 2.4 m (8.0 ft) from control bus
2	no	1.7 m (5.5 ft) from drive bus 2.4 m (8.0 ft) from control bus
3	no	2.1 m (7.0 ft) from drive bus 2.4 m (8.0 ft) from control bus
4	no	2.6 m (8.5 ft) from drive bus 2.4 m (8.0 ft) from control bus
5	no	3 m (10.0 ft) from drive bus 2.4 m (8.0 ft) from control bus
6	no	3.5 m (11.5 ft) from drive bus 2.4 m (8.0 ft) from control bus
7	no	4 m (13.0 ft) from drive bus 2.4 m (8.0 ft) from control bus
8	no	4.4 m (14.5 ft) from drive bus 2.4 m (8.0 ft) from control bus
9	no	5 m (16.0 ft) from drive bus 2.4 m (8.0 ft) from control bus

Table 4-4. SCSI Cable Length Subtraction (Continued)

Number of drives on the same data bus	Are data and control on the same bus? (Yes/No)	Subtract this value from maximum allowed cable length
10	no	5.3 m (17.5 ft) from drive bus 2.4 m (8.0 ft) from control bus
1	yes	2.4 m (8.0 ft) from bus [1]
2	yes	3 m (9.5 ft) from bus [1]
3	yes	3.4 m (11.0 ft) from bus [1]
4	yes	3.8 m (12.5 ft) from bus [1]
5	yes	4.3 m (14.0 ft) from bus [1]
6	yes	4.7 m (15.5 ft) from bus [1]
7	yes	5.2 m (17.0 ft) from bus [1]
8	yes	5.6 m (18.5 ft) from bus [1]
9	yes	6 m (20.0 ft) from bus [1]
10	yes	6.6 m (21.5 ft) from bus [1]

Note: [1] Calculated for a control interface daisy chain cable of 0.5 m (18 in.). Add 0.8 m (2.5 ft) for a 1.2 m (4 ft) cable, and 1.1 m (4.5 ft) for a 1.8 m (6 ft) cable.

9710 to Host

There are many external SCSI cables, depending on the platform. These cables are available through StorageTek. These are “standard” and will fit most applications for data and the control path.

Table 4-5. SCSI Cables 9710 to Host

x	Description	Part Number	Quantity
❑	Type CL2[1] SCSI External Interface Cable 3 m (10 ft)	10083309	_____
❑	Type CL2P[2] SCSI External Interface Cable 3 m (10 ft)	10083313	_____
❑	Type CL2 SCSI External Interface Cable 6 m (20 ft)	10083310	_____
❑	Type CL2P SCSI External Interface Cable 6 m (20 ft)	10083314	_____
❑	Type CL2 SCSI External Interface Cable 15 m (49 ft)	10083311	_____
❑	Type CL2P SCSI External Interface Cable 15 m (49 ft)	10083315	_____
❑	Type CL2 SCSI External Interface Cable 20 m (65 ft)	10083312	_____
❑	Type CL2P SCSI External Interface Cable 20 m (65 ft)	10083316	_____
❑	SCSI Daisy Chain Cable 250 mm (10 in.)	313109302	_____
❑	SCSI Daisy Chain Cable 460 mm (18 in.)	310292001	_____

Notes:
1. Standard cable materials
2. Plenum-rated cable materials

Daisy Chain

Table 4-6. Specialized Daisy Chain Cables

x	Description	Part Number	Quantity
❑	SCSI cable assembly, 1,830 mm (72 in.) 1–6 control	310254001	_____
❑	SCSI cable assembly, 2,130 mm (84 in.) 1–6 control	313115701	_____
❑	SCSI cable assembly, 460 mm (18 in.)	310292001	_____
❑	SCSI cable assembly, 1,220 mm (48 in.) 7–10 control	310292101	_____
❑	SCSI cable assembly, 250 mm (10 in.) 9840	313109302	_____
❑	SCSI cable assembly, 460 mm (18 in.) 9840	310292001	_____

Daisy Chain Terminators

Table 4-7 lists available terminators if your configuration requires additional terminators.

Table 4-7. Daisy Chain Terminators

x	Description	Part Number	Quantity
❑	Terminator, fast/wide SCSI, 68-pin, single ended	10148002	_____
❑	Terminator, fast/wide SCSI, 68-pin, differential	10148003	_____

PRS Card

When installing a PRS in the 9710, the cables listed below are required from the PRC to the drives.

Table 4-8. PRS Card Cables

Drive Location	Cable Length	Part Number	Quantity
9	1220 mm (48 in.)	310292101	_____
8	1220 mm (48 in.)	310292101	_____
7	1220 mm (48 in.)	310292101	_____
6	1830 mm (72 in.)	310254001	_____
5	1830 mm (72 in.)	310254001	_____
4	1830 mm (72 in.)	310254001	_____
3	1830 mm (72 in.)	310254001	_____
2	1830 mm (72 in.)	310254001	_____
1	2130 mm (84 in.)	313115701	_____
0	2130 mm (84 in.)	313115701	_____

Robotics Control, Internal

The SCSI control card can be connected directly to the I/O panel or can be daisy chained to a tape drive.

Table 4-9. Robotics Control Cables, Internal

x	Description	Part Number	Quantity
❑	SCSI cable assembly, 68 (M) pin to 68 pin (F), 2,440 mm (96 in.) PRS to I/O panel	310294201	_____
❑	SCSI cable assembly, 68 (M) pin to 68 pin (M), 40 mm (18 in.) PRS to drive (daisy chain)	310292001	_____
❑	SCSI cable assembly, 68 (M) pin to 68 pin (M), 1,220 mm (48 in.) PRS to drive (daisy chain)	310292101	_____
❑	SCSI cable assembly, 68 (M) pin to 68 pin (M), 1,820 mm (72 in.) PRS to drive (daisy chain)	310254001	_____

AS/400 Data Path

The AS/400 special SCSI cables come in two models: above floor, and under floor (plenum). They must be used with the AS/400, and any other system which has similarly designed SCSI connectors.

Note: If you already have standard 68–68 pin SCSI cables on site, then order only the IBM AS/400 Interposer connector, Part Number 05H3834. This IBM adapter connects standard 68–68 pin SCSI cables to the AS/400. In that case, do not order any additional cables.

Table 4-10. SCSI Cables and Adapters for AS/400 Path

x	Description	Part Number	Quantity
❑	IBM 68–68-pin AS/400 interposer connector is an adapter connector to attach standard 68–68-pin SCSI cables to the AS/400. Order this connector if you already have standard SCSI cables on site. If you do not, order only the cables below.	05H3834 (order from IBM)	_____
❑	AS/400 special 68–68-pin SCSI cable, 3 m (10 ft) goes above floor	100821102	_____
❑	AS/400 special 68–68-pin SCSI cable, 3m (10 ft) goes under floor (plenum)	100821111	_____
❑	AS/400 special 68–68-pin SCSI cable, 6 m (20 ft) goes above floor	100821103	_____
❑	AS/400 special 68–68-pin SCSI cable, 6 m (20 ft) goes under floor (plenum)	100821112	_____
❑	AS/400 special 68–68-pin SCSI cable, 24 m (78.7 ft) goes above floor	100821109	_____
❑	AS/400 special 68–68-pin SCSI cable, 24 m (78 ft) goes under floor (plenum)	100821118	_____

Sun Sparc Workstation

Table 4-11. SCSI Cables and Adapters for Sun Sparc Workstation

x	Description	Part Number	Quantity
❑	StorageTek 3 m (10 ft) cable to attach the 9710 directly to the Sun/Sparc workstation motherboard, or to a station with SBE/S (fast/narrow, differential) or RSBE/S (fast/narrow, single-ended)	10083522	_____
❑	Standard 68–68-pin SCSI cable. With this workstation interface feature, standard SCSI cables can be used without adapters: DWIS/S (fast/wide, differential)		_____

RS/6000, Bull DPX/20

Table 4-12. SCSI Cables and Adapters for RS/6000 and Bull DPX/20

x	Description	Part Number	Quantity
❑	StorageTek 3 m (10 ft) cable to attach the 9710 directly to the Sun/Sparc workstation motherboard, or to a station with IBM RISC System/6000 with interface feature code 2420 (fast/narrow, single-ended)	10083522	_____
❑	StorageTek 3 m (10 ft) cable to attach the 9710 directly to the Sun/Sparc workstation motherboard, or to a station with BULL DPX/20 with fast/narrow, single-ended feature	10083522	_____
❑	IBM 68–68-pin (RISC System/6000) Interposer connector. This is an IBM adapter connector to attach standard 68–68-pin SCSI cables to RISC System/6000 with interface feature code 2416 (fast/wide, differential). Use with one of the standard 68–68-pin cables.	50G0460 (order from IBM)	_____
❑	IBM 68–68-pin (RISC System/6000) Interposer connector. This is an IBM adapter connector to attach standard 68–68 pin SCSI cables to BULL DPX/20 with fast/wide differential feature. Use with one of the standard 68–68-pin cables.	50G0460 (order from IBM)	_____
❑	68–68-pin special SCSI cable RISC System/6000 with IBM245 differential fast/wide adapter 12 m (40 ft). Use this cable in place of the IBM (50G0460) interposer and standard cables above, if a 12 m (40 ft) cable length is satisfactory.	100821105	_____

SCSI Adapters

Table 4-13. Adapters, SCSI

x	Description	Part Number	Quantity
❑	SCSI adapter, narrow to wide bus (50-to-68 pin)	10148010	_____

Single-Ended Narrow or Fast/Narrow to Wide

Table 4-14. Single-Ended Narrow or Fast/Narrow to Wide SCSI

x	Description	Part Number	Quantity
❑	Cable assembly, 50 (M) D Squeeze Lock, 68 (M) D Screw Lock, 3 m	10083522	_____

High Density 68-68 Pin Standard Jackscrew

Table 4-15. High Density 68-68 Pin Jackscrew SCSI

x	Cable Length Metric (English)	Above Floor Cable P/N	Plenum (under floor Cable P/N)	Quantity
❑	3 m (10 ft)	10083309	10083313	_____
❑	6 m (20 ft)	10083310	10083314	_____
❑	15 m (49 ft)	10083311	10083315	_____
❑	20 m (66 ft)	10083312	10083316	_____

Note: Above floor cable is UL style CL2, plenum cable is UL style CL2P

AS/400 Serial Cables

Table 4-16. AS/400 Serial Cables

x	Description	Part Number	Quantity
❑	Cable assembly, serial AS/400, 4 m (13 ft)	310227101	_____
❑	Cable assembly, serial AS/400, 6 m (20 ft)	310227201	_____
❑	Cable assembly, serial AS/400, 12 m (39 ft)	310227301	_____
❑	Cable assembly, serial AS/400, 24 m (79 ft)	310227401	_____

Sequent Cables

Cables specific to Sequent are listed below.

Table 4-17. Sequent Cables

x	Description	Part Number	Quantity
❑	SCSI DIFF, TM 68-pin, 5 m (16.4 ft)	308398701	_____
❑	SCSI DIFF, TM 68-pin, 10 m (33 ft)	308398801	_____
❑	SCSI DIFF, TM 68-pin, 0.3 m (1 ft)	308398901	_____
❑	SCSI DIFF, TM 68-pin, 1.2 m (4 ft)	308399001	_____
❑	SCSI DIFF, TM 68-pin, 7.5 m (25 ft)	308399101	_____
❑	SCSI DIFF, TM 68-pin, 15 m (49 ft)	308399201	_____
❑	SCSI, DIFF, Terminator, 68-pin,	308399301	_____

FIPS Cabling

The following pages contain FIPS cable and adapter information.

FIPS Cables

The two types of FIPS cables are Bus and Tag, and Internal Style. The Bus and Tag cables come in pairs. The Internal Style cable is a single cable with a shorter length limit.

A Y (serpentine) adapter cable may have to be used, depending on the AS/400 IOP and FIPS cable types. Cabling configurations are shown in Figure 4-7. Part numbers are listed below. The flagged 4-digit IBM part numbers must be ordered from IBM.

Figure 4-7. FIPS AS/400 Cabling Configurations

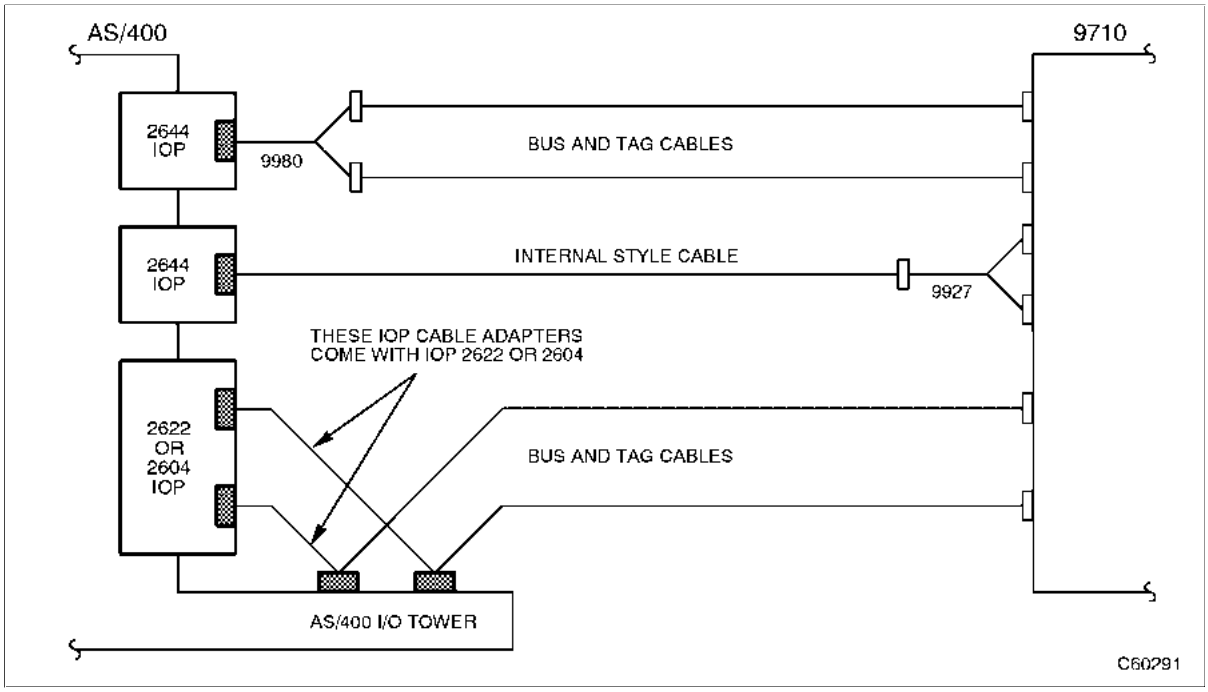


Table 4-18. FIPS Cables

	Description	Part Number	Quantity
❑	Serpentine cable adapter, AS/400 IOP side (see usage in Figure 4-7 on page 4-24).	9980 (order from IBM)	_____
❑	Y cable adapter, tape side (see usage in Figure 4-7 on page 4-24)	9927 (order from IBM)	_____
❑	Internal Style cable 1.7 m (5.6 ft)	9928 (order from IBM)	_____
❑	Internal Style cable 6.6 m (22 ft)	9929 (order from IBM)	_____
❑	Internal Style cable 24 m (79 ft)	9930 (order from IBM)	_____
❑	Bus and tag cable pair 3 m (10 ft)	305436010	_____
❑	Bus and tag cable pair 15.24 m (50 ft)	305436050	_____
❑	Bus and tag cable pair 23 m (75 ft)	305436075	_____
❑	Bus and tag cable pair 31 m (100 ft)	305436100	_____
❑	Bus and tag cable pair 61 m (20 ft)	305436200	_____
❑	Bus and tag cable pair 91.44 m (300 ft)	305436300	_____
❑	Bus and tag cable pair 122 m (400 ft)	305436400	_____

FIPS Terminators

The following table lists available terminators if your configuration requires additional terminators.

Table 4-19. FIPS Terminators

x	Description	Part Number	Quantity
❑	Terminator, FIPS, Bus	10041793	_____
❑	Terminator, FIPS, Tag	10041794	_____

FIPS Drive to I/O

The FIPS cable is listed below.

Table 4-20. FIPS Cables

x	Description	Part Number	Quantity
❑	FIPS cable assembly from drive to I/O panel	310259302	_____

Modem Cables

If the client plans on using a modem for remote support, make sure that one of the following modem cables is ordered.

Table 4-21. Modem Cables

x	Description	Part Number	Quantity
❑	6 m (20 ft)	4108289-02	_____
❑	15 m (50 ft)	4108289-05	_____
❑	31 m (100 ft)	4108289-10	_____
❑	46 m (150 ft)	4108289-15	_____
❑	61 m (200 ft)	4108289-20	_____
❑	76 m (250 ft)	4108289-25	_____

Table 4-22. Remote Diagnostic Support for PC Use

x	Description	Part Number	Quantity
❑	Cable assembly, RJ45 8 pin (M) - RJ45 8 pin (M), 6 m (20 ft)	410828902	_____
❑	Cable assembly, RJ45 8 pin (M) - RJ45 8 pin (M), 15 m (50 ft)	410828905	_____
❑	Cable assembly, RJ45 8 pin (M) - RJ45 8 pin (M), 76 m (250 ft)	410828925	_____
❑	Adapter, RJ45 9 pin (F) - DB9 (F)	10410823	_____

Cartridge Tapes and Labels

The Media Service Center in Atlanta handles orders for cartridge tapes and labels. To obtain additional information about cartridge tapes and labels call the Media Service Center at 1-800-905-8502, or fax 1-877-888-0609; from 8:00 a.m. to 8:00 p.m. United States Eastern Standard Time Monday through Friday.

Note: For the LSM to initialize properly, diagnostic and cleaning cartridges must be in place. We recommend that you order the necessary cartridges ahead of time.

For 9840 drives, order PN 310319401 (data cartridges used for diagnostics) and PN 310324601 (cleaning cartridges).

Order cartridge tapes and labels by including the order on the sales entry form, if used; the media portion of the order will be routed to the appropriate department.

Orders for domestic customers, valued-added distributors (VADs), and value-added resellers VARs):

5390 Triangle Parkway, Suite 300
Norcross, GA 30092
Voice: 1-800-905-8502
Media Service Center
Fax: 1-877-888-0609

Orders from distributors, original equipment manufacturers (OEMs), and Canada, Japan, Australia, South Asia, or Mexico subsidiaries:

Orders Management
Fax: 1-303-673-2640 for distributors or subsidiaries
Fax: 1-303-673-7654 for OEM
One StorageTek Drive
Louisville, CO 80028-4350
Voice: 1-303-673-5513

Table 4-23. In-Country Media Supply Services (Sheet 1 of 2)

Region	Country	Telephone Number
North America	United States	1-800-905-8502
	Canada	1-800-668-1843 extension 605
	Mexico	525 258 8000

Table 4-23. In-Country Media Supply Services (Sheet 2 of 2)

Region	Country	Telephone Number
EAME	Austria	0800 20 16 31
	Belgium	0800 75 327
	Denmark	8088 0744
	Finland	08001 13361
	France	0800 82 83 57
	Germany	0800 181 6238
	Holland	0800 022 8496
	Ireland	1800 55 33 54
	Italy	167 790 852
	Norway	800 11 220
	South Africa	0800 99 5820
	Spain	900 99 33 66
	Sweden	020 798711
	Switzerland	0800 83 87 65
	United Kingdom	0800 731 8852
World	Brazil	55 11 5185 2850
	Japan	3 3746 9824
	Singapore	65 774 9248
	Kuala Lumpur	60 3 233 6102
	China	86 10 6841 2211
	Thailand	662 656 8873
	Hong Kong	852 8200 0791

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Pre-installation Checklist

5

On the following pages, verify that all issues have been addressed and resolved. Circle either "Yes" or "No" for each item. For unresolved issues, assign a required action with a due date to the appropriate person.

Table 5-1. Pre-installation Checklist

Item Description	Yes/No	Action Required/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	
Tapes and labels ordered	Yes/No	
Software Procurement		
Software prerequisites met	Yes/No	

Table 5-1. Pre-installation Checklist (Continued)

Item Description	Yes/No	Action Required/Due Date/Person Responsible
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	

Fire Suppression System

❑ Yes ❑ No

Ensure customer is aware that StorageTek does not supply fire suppression systems. Any fire suppression system for the 9710 is the customers' responsibility.

Hardware Support Services

❑ Yes ❑ No

StorageTek offers an exclusive remote service to customers which is available 24 hours a day 7 days a week if a problem with the equipment occurs.

Table 5-2 lists the remote support hardware and cables to provide remote support for the customer.

Table 5-2. Remote Support Hardware and Cables

Equipment	Description	Part Number	Ref Number
Modem	9600 Baud	4953	1
Modem	16 Port MARS+	4954	5
Switches	32 Port MARS+	4955	5

Table 5-2. Remote Support Hardware and Cables (Continued)

Equipment	Description	Part Number	Ref Number
Cable RJ-45 to RJ-45	20 ft MARS/UUT interconnect	410828902	7
	50 ft MARS/UUT interconnect	410828905	7
	100 ft MARS/UUT interconnect	410828910	7
	150 ft MARS/UUT interconnect	410828915	7
	200 ft MARS/UUT interconnect	410828920	7
	250 ft MARS/UUT interconnect	410828925	7
Modem/ MARS Interconnect Cable	4 ft modem to MARS interconnect (DB-25 to DB-9)	4895	9

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Site Planning Information

A

This appendix provides specifications and floor space requirements.

The following table lists the dimensions and weight of the LSM. Refer to your drive publications for the weight of the drives and cartridges and add the weights to the weights in the table.

Table A-1. 9710 Dimensions and Weights

Height	1830 mm (72 in.)
Width with covers	1490 mm (59 in.)
Depth	790 mm (32 in.)
Depth with expansion door	1020 mm (40 in.)
Weight of base unit with arrays	339 kg (747 lbs)
Weight of base unit with expansion door and arrays	375 kg (826 lbs)

Table A-2. LSM Power Specifications

Power cable	**U.S./Canada:** 100 VAC UL/CSA power cable **International:** 200–240 VAC HAR power cable
Input voltage range	100–254 VAC
Nominal voltage	120 or 240 VAC
Power configuration	**U.S./Canada:** Single phase 100 VAC, 47–63 Hz, 20 A Service, 3-wire **International:** Single phase 200–240 VAC, 47–63 Hz, 10 A Service, 3-wire
Power consumption	200 W
Maximum heat output	683 Btu/hr

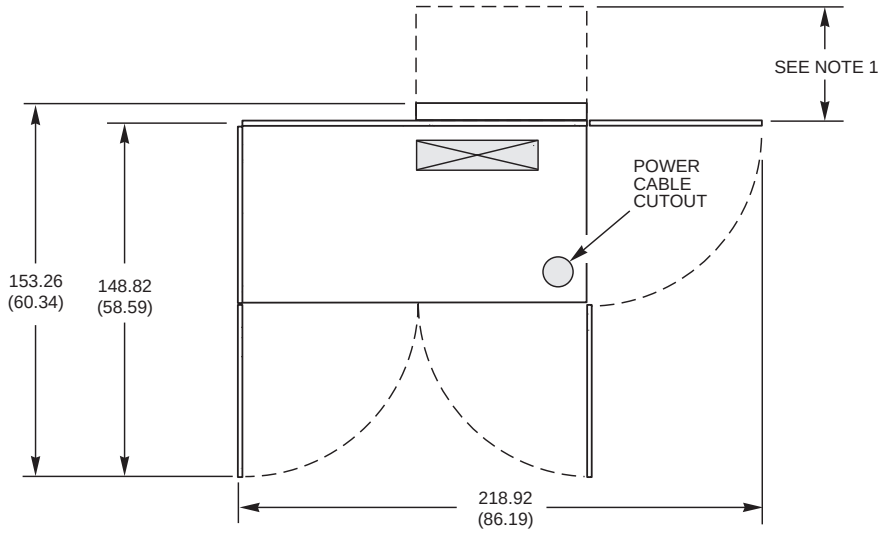
Table A-3. Optional Power Distribution Unit (PDU) Specifications

Power cable	**U.S./Canada:** 120 VAC UL/CSA power cable **International:** 200–240 VAC HAR power cable
Input voltage range	100–254 VAC
Nominal voltage	120 or 240 VAC
Power configuration	**U.S./Canada:** Single phase 120 VAC, 47–63 Hz, 6 A Service, 3-wire I**nternational:** Single phase 200–240 VAC, 47–63 Hz, 3 A Service, 3-wire
Power consumption	38 W
Maximum heat output	128 Btu/hr

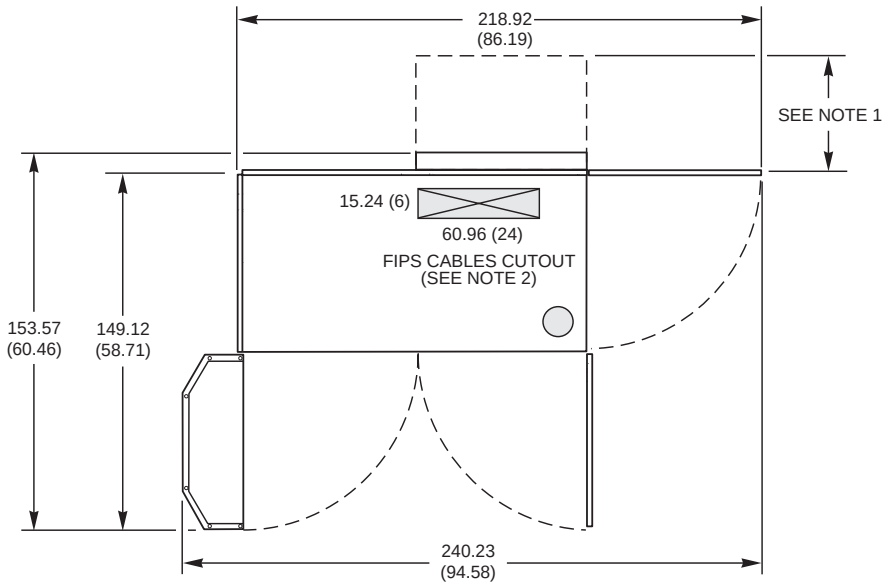
Table A-4. LSM Environmental Specifications

Temperature	
Operating	15° to 32°C (59° to 90°F)
Storage	10° to 40°C (50° to 104°F)
Shipping	10° to 40°C (50° to 104°F)
Relative Humidity	
Operating	20% to 80% (noncondensing)
Storage	10% to 95% (noncondensing)
Shipping	10% to 95% (noncondensing)
Wet Bulb Maximum	
Operating	29.2°C (84.5°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)

Figure A-1. 9710 Layout and Floor Space Requirements



LSM BASIC UNIT SERVICE AREA REQUIREMENTS



LSM EXPANDED UNIT SERVICE AREA REQUIREMENTS

NOTES:

1. 91.44 cm (3.0 ft) access required during installation. Library may then be pushed back against a wall and stablilized.
2. Cable cutout is optional as cables may be routed above the floor. For raised floor installation, a 15.24 x 61cm (6 X 24 in.) cutout is recommended if FIPS cables are used.
3. The dimensions in parentheses are in inches.

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Table A-5. Power Characteristics

Description	Value / Part Identification	Picture
Power drops for 9710 and PDU [1], each: (47-63 Hz AC range. 3-wire cables supplied. International cables are supplied without cable connectors)	U.S./Canada: 120 VAC, single phase International: 200-240 VAC, single phase	
9710 120 VAC domestic plug feature code 70DD	NEMA 5-20P, supplied with 9710	 5-20P
PDU 120 VAC domestic plug	NEMA 5-15P, supplied by client	 5-15P
9710 120 VAC domestic wall receptacle	NEMA 5-20R, supplied by client	 5-20R
PDU 120 VAC domestic wall receptacle	NEMA 5-15R, supplied by client	 5-15R
International plugs and receptacles for 9710 and, if applicable, for PDU	May be supplied by client according to local electrical codes. See power specifications below. See Table 4-1 on page 4-9.	
Current input for library without drives [1]	1.250 A at 120 VAC 0.625 A at 240 VAC 2.000 A at 120 VAC	
Current input for each 4890 drive [1]	1.000 A at 240 VAC 0.60 A at 120 VAC 0.30 A at 240 VAC	
Power usage for library without drives [1]	Watts 150 peak / 100 Continuous KVA 0.15 Peak / 0.10 Continuous	

Table A-5. Power Characteristics (Continued)

Description	Value / Part Identification	Picture
Power usage for library without drives [1]	Watts 150 peak / 100 Continuous KVA 0.15 Peak / 0.10 Continuous	
Power usage for each 4890 drive [1]	Watts 270 Peak / 230 Continuous KVA 0.27 Peak / 0.23 Continuous	
Power usage for each DLT drive [1]	Watts 70 Peak / 60 Continuous KVA .070 Peak / .060 Continuous	
Heat output for library without drives	680 BTU/hr	
Heat output for each 4890 drive	880 BTU/hr	
Heat output for each DLT drive	257 BTU/hr	

Note: [1] Up to six drives take power from the 9710. Four additional drives take power from the PDU box. Power ratings for the 9710, and (separately) for the PDU, are figured by also adding the number of drives connected to each. The PDU box by itself has zero load.

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