StorageTek Nearline Enterprise

4410/9310/9360 LSM

System Assurance Guide

Part Number: ML6500
Revision: R

Nearline Enterprise 9310/4410/9360 LSM

System Assurance Guide

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Summary of Changes

Date	Edition	Description
March 1991	Original Issue	
January 2000	F	Refer to this edition for a description of the changes.
March 2000	G	Refer to this edition for a description of the changes.
April 2000	H	Refer to this edition for a description of the changes.
July 2000	I	Refer to this edition for a description of the changes.
October 2000	J	Refer to this edition for a description of the changes.
February 2001	K	Refer to this edition for a description of the changes.
March 2001	L	Refer to this edition for a description of the changes.
September 2001	M	Refer to this edition for a description of the changes.
November 2001	N	Refer to this edition for a description of the changes.
May 2002	O	Refer to this edition for a description of the changes.
September 2002	P	Updated power cord features codes and descriptions.
September 2006	R	Added information for T10000 drive support. Removed references to 9320 Cartridge Exchange Mechanism. Updated parts information for the Single Price List effort and Reduction of Hazardous Substances (RoHS) compliance.

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Preface

This guide contains information about planning, ordering, installing, and follow-up activities required during the 9310, 4410, and 9360 Automated Cartridge System (ACS) sales, delivery, and installation.

The audience for this guide includes Sun StorageTek marketing representatives, system engineers (SEs), installation coordinators, and customer services engineers (CSEs); independent consultants and service representatives; and customers involved with installation planning.

This guide provides information and a series of worksheets and checklists that, when completed and returned to the designated places, make sure that no one overlooks any aspect of the installation process. Completed worksheets and checklists promote error-free installation. Use only those checklists that apply to your system.

The *9310/11/20 ACS Installation Manual*, PN 9314, and the *Nearline Physical Planning Guide*, PN ML 0041, contain additional specifications for the installation site. This guide should be used in conjunction with those publications.

Organization

This book contains the following information:

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

Chapter 2 "Key Personnel" provides forms for recording the phone numbers of team contacts.

Chapter 3 "System Overview" provides an overview of the ACS hardware components and cartridge tapes.

Chapter 4 "Ordering the Equipment" provides worksheets to fill out when ordering the ACS. It also provides prerequisite information, model, feature, and part numbers.

Chapter 5 "Preinstallation Checklist" provides checklists to use prior to installation to make sure that all issues are resolved.

Chapter 6 "Software Configuration" provides worksheets to fill out for ACSLS/HSC, HSC, and server/HSC configurations.

Chapter 7 "IBM MVS/HSC Host Attachment" provides worksheets for this type of system configuration.

Chapter 8	"MVS-based Nearline Control Solution" provides worksheets for this type of system configuration.
Chapter 9	"UNIX-based Library Control System" provides worksheets for this type of system configuration.
Chapter 10	"VM-based Library Control System" provides worksheets for this type of system configuration.
Appendix A	"Site Planning Information" provides figures showing floor cutouts and leveling pad locations, configuration restrictions, product specifications, and other site information.
Index	The Index assists in locating information in this publication.

Alert Messages

Alert messages call the reader's 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, corruption of application software, or long-term health problems in people. A caution always precedes the information to which it pertains.

WARNING:
A warning alerts the reader to conditions that might result in injury or death. A warning always precedes the information to which it pertains.

Related Publications

Additional information is contained in the following publications, some of which are delivered with this product.

Publication	Part Number
Library Storage Module Publications	
Nearline Physical Planning Guide	ML0041
9310 Installation Manual	9314
4410 Installation Manual	99606
9360 Installation Manual	9867
Tape Drive Publications	
SD-3 Planning and Migration Guide	ML0526
SD-3 System Assurance Guide	ML0527
18 to 36-Track Cartridge Subsystem Planning/Migration Guide	ML0800
9490 System Assurance Guide	ML0040
9840/T9940/T9940 Tape Drive Planning/Migration Guide	MT6004
9840/T9840/T9940 Tape Drive System Assurance Guide	MT5003
T10000 Tape Drive System Assurance Guide	TM0002
ANSI Publications	
American National Standard Helical-Scan Digital Computer Tape Cartridge 12.65mm (0.498 in) For Information Interchange	ANSI X3.267-1996
LibraryStation Publications	
LibraryStation Operator and System Programmer Guide	31123970x
LibraryStation Configuration Guide	31123960x
LibraryStation Messages and Code	31123980x
Miscellaneous Publications	
CLS User's Guide	
ACS Common Library Service Users Guide	
LCF Installation and Customization	

Additional Information

Sun StorageTek offers several methods for you to obtain additional information. Please use one of these methods when you want to obtain the latest edition of this or any other StorageTek publication.

Sun StorageTek's External Web Site

Sun StorageTek's external Web site provides marketing, product, event, corporate, and service information. In addition, the external Web site serves as an entry point to the Customer Resource Center (CRC) and to the e-Partner site. The external Web site is accessible to anyone with a Web browser and an Internet connection.

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

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

Customer Resource Center

Sun StorageTek's Customer Resource Center (CRC) is a Web site that enables members to resolve technical issues by searching code fixes and technical documentation. (This site encompasses the former Electronic Documentation Center.) CRC membership entitles you to other proactive services, such as HIPER subscriptions, technical tips, answers to frequently asked questions, 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. StorageTek employees may enter the CRC through Portal.

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

Partners Site

The Sun StorageTek Partners site is a Web site for partners with a Sun StoragetEk Partner Agreement. This site provides information about products, services, customer support, upcoming events, training programs, and sales tools to support Sun 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 Sun StorageTek resellers.

The URL for the Sun 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 (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 site is:
http://sunsolve.central.sun.com/handbook_internal/FieldTools/.

Documents on CD

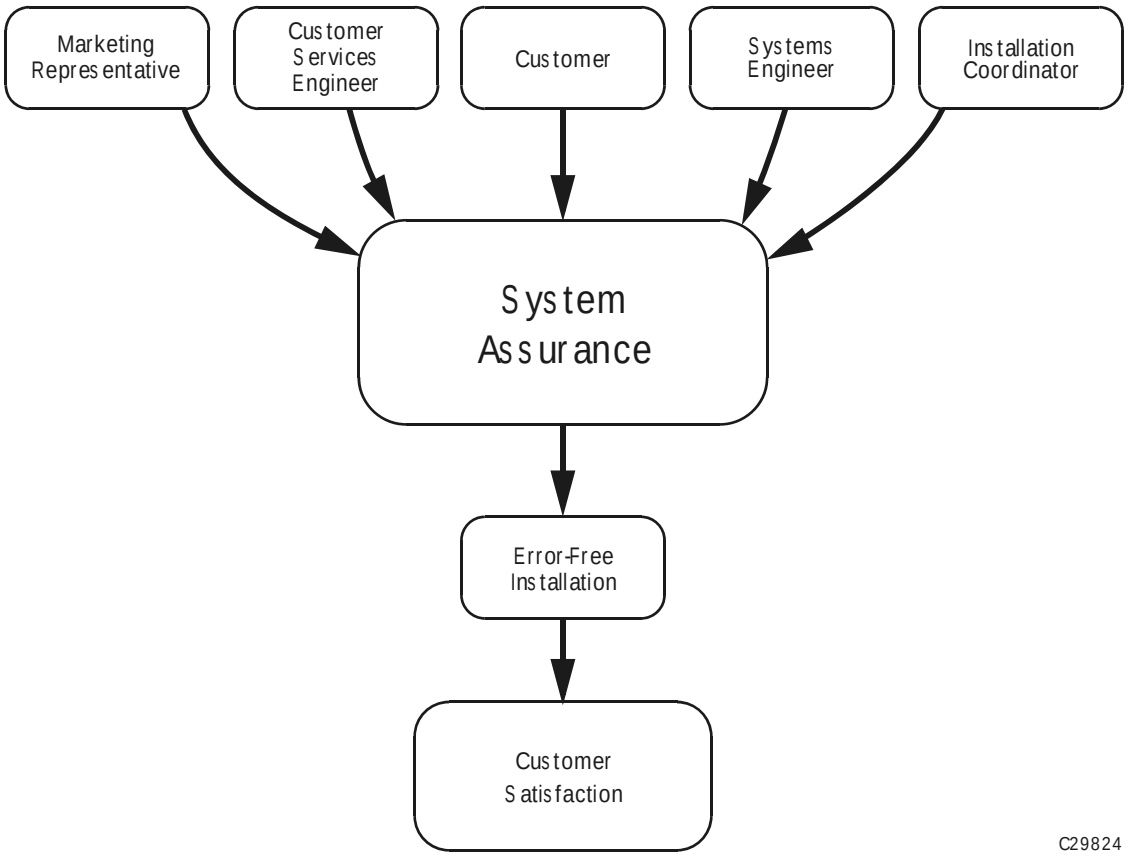
Documents on CD (3106600xx) contains portable document format (PDF) files of Sun StorageTek brand product publications. To order this Documents on CD, contact your local Customer Services Logistics Depot. *Documents on CD* is only for Sun employees.

System Assurance Process

1

The following figure shows the system assurance process. The system assurance team members appear across the top of the figure. The process is the exchange of information among the team members to make sure that no one overlooks any aspects of the sale, ordering, and installation.

Figure 1-1. The System Assurance Process



Team Responsibilities

The following table lists the responsibilities of the system assurance team members. Customer and Sun team members jointly own and control the process.

Table 1-1. Team Responsibilities

Team Member	Responsibilities
Installation coordinator (IC) (United States) Customer services 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 of team members. • Supplies or obtains all necessary support documentation. • Works with the customer to complete the work sheets in this guide. • Faxes all of the required and completed work sheets (except the sales entry form) to the appropriate orders offices. See Chapter 4, "Ordering the Equipment." • Works with the customer services engineer (CSE) and the customer to provide delivery information as listed in "Customer services 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 make sure that the customer is satisfied.
Customer services engineer (CSE)	• Prepares customer services support procedures. • Explains available levels of hardware support and criteria for problem escalation. • Installs the product at the customer site.

Table 1-1. Team Responsibilities (Continued)

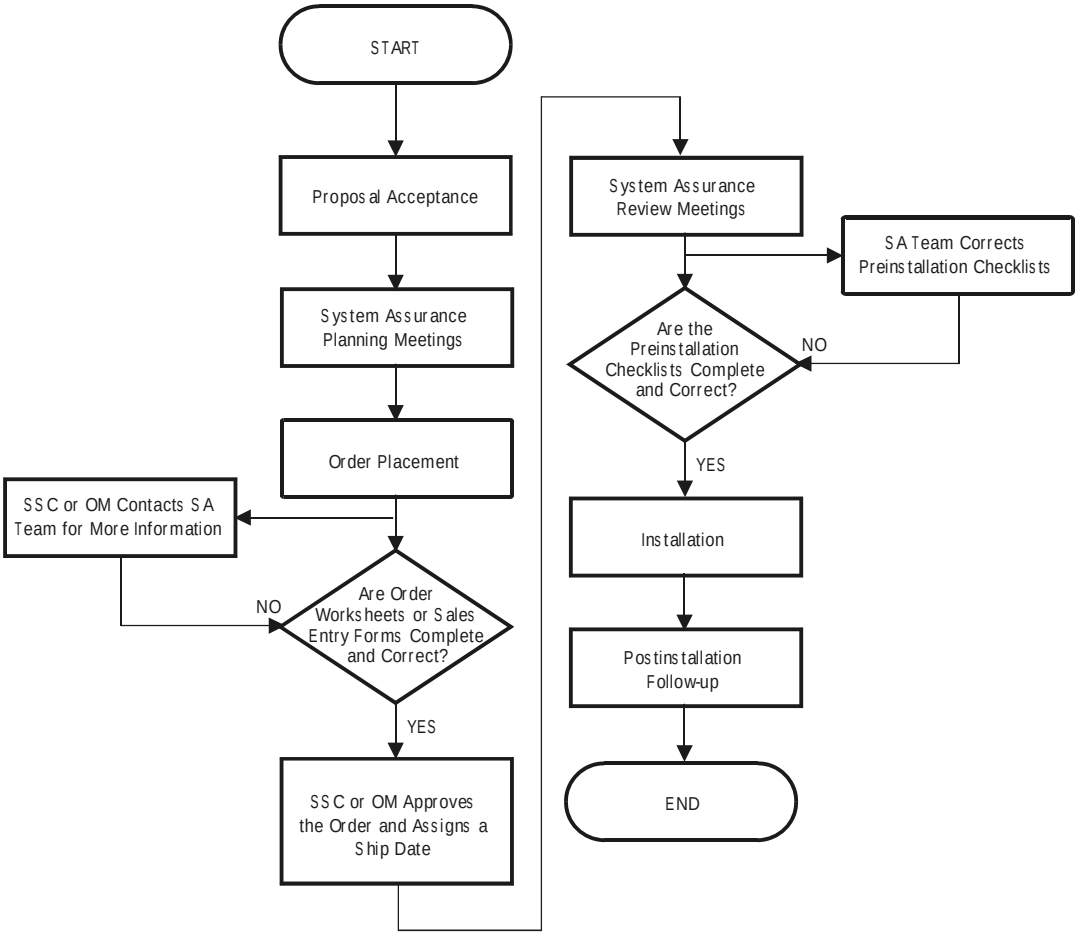
Team Member	Responsibilities
Customer	Works with the installation coordinator (IC) at the system assurance planning meetings to provide the data for the worksheets listed for the IC. Works with the systems engineer (SE) at the system assurance planning meetings to provide the data for the worksheet listed for the SE. Names a contact person for any unresolved issues in the above worksheets. Discusses the schedule and names a contact per son 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 work sheets in Chapter 7, "IBM MVS/HSC Host Attachment." • Provides data migration information.

Flowchart

The following figure shows the system assurance process flow. The text following 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



Proposal Acceptance

The system assurance process begins when the customer accepts the proposal. At this time, the installation coordinator (in the United States) or the customer services manager (internationally) schedules one or more system assurance planning meetings.

Planning Meetings

The purpose of the system assurance planning meetings is to:

- Explain system assurance as it applies to this system
- 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
- 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)

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 not, OM or SSC contacts the system assurance team for more information.

Review Meetings

The purpose of the system assurance review meetings is to:

- Complete the preinstallation checklists in Chapter 5, "Preinstallation Checklist"
- Identify additional requirements

Error Check

If the preinstallation checklists are complete and correct, the sale receives final approval and the product is shipped.

If not, the system assurance team completes or corrects the checklists.

Installation

The CSE installs the system at the customer's site.

Postinstallation Follow-Up

After 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.
- The CSE logs installation data into the Customer Services Data Collection (CSDC) system.
- The CSE attends a follow-up meeting with the customer to review the completed project.

Key Personnel

2

This chapter provides a place to record the names and telephone numbers of the key personnel on the teams. The home telephone number is optional.

Customer Team Contacts

List names and telephone numbers of the following customer team personnel:

CPU Hardware

_____

Telephone: Office_____ Home_____

Operating Systems Software

_____

Telephone: Office_____ Home_____

Communication Hardware

_____

Telephone: Office_____ Home_____

Operations

_____

Telephone: Office_____ Home_____

Delivery

_____

Telephone: Office_____ Home_____

Sun StorageTek Team Contacts

List names and telephone numbers of the following Sun StorageTek team personnel:

Marketing

_____

Telephone: Office_____ Home_____

Customer Services Engineer (CSE)

_____

Telephone: Office_____ Home_____

SDE room on site_____

Systems Engineer (SE)

_____

Telephone: Office_____ Home_____

SE, Client Operating System

_____

Telephone: Office_____ Home_____

SE, Library Control System

_____

Telephone: Office_____ Home_____

Delivery

_____

Telephone: Office_____ Home_____

Sun StorageTek Support

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

Call Center (Hardware)	
U.S. (Colorado), international	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), international	1-303-673-4430

Client Processor Team Contacts

List names and telephone numbers of the following client processor team personnel:

CPU Hardware Vendor

_____

Telephone: Office_____ Home_____

_____

Telephone: Office_____ Home_____

_____

Telephone: Office_____ Home_____

CPU Software Vendor

_____

Telephone: Office_____ Home_____

_____

Telephone: Office_____ Home_____

_____

Telephone: Office_____ Home_____

System Overview

3

This chapter is an overview of the automated cartridge system (ACS) hardware components and cartridge tapes, including specifications. For an overview of the drives, refer to the appropriate drive system assurance guide (SAG) listed in "Related Publications" on page -xv.

PowderHorn ACS

Sun StorageTek's PowderHorn ACS is a fully automated storage and retrieval system for cartridge tapes. The ACS consists of a library storage module (LSM), a library management unit (LMU), a library control unit (LCU), cartridge drives (CDs) and tape drives, and software.

A single LMU manages from 1 to 16 connected LSMs. A Pass-thru Port (PTP) mechanism in the walls of adjacent LSMs can pass cartridges from one LSM to another LSM.

Figure 3-1 on page 3-2 is an ACS with the 80-cell cartridge access port (CAP) door. Figure 3-2 on page 3-3 is a top view of the LSM, LCU and CDs.

An ACS can have 9490 or SD-3 Cartridge Subsystems attached to the LSM. The ACS includes one to four cartridge drives, each containing two to four 9490 controller transport units (CTUs) or one to four SD-3 CTUs for a possible total of 16 CTUs.

An ACS can include one to four 9741 and/or 9741E Drive Cabinets attached to the LSMs. Each drive cabinet can contain one to 20 drives for a possible total of 80 drives.

Note: For the 9741 Drive Cabinet, the maximum number of SCSI cables you may order and install per drive column is 10. This restriction is for cables entering and exiting the cabinet. It does not pertain to daisy-chained cables within the cabinet.

When using a 9741 Drive Cabinet:

- *For T9840A Tape Drives, the customer's LMU must be a 9330 model running Compatibility 12 firmware. The 9330 firmware must be at level 1.6 or higher. The 9311 firmware must be at level 3.6.08 or higher.*
- *For T9840B Tape Drives, the customer's LMU must be a 9330 running Compatibility 12 firmware. The 9330 firmware must be at level 1.9.21 or higher. The 9311 firmware must be at level 4.0.05 or higher.*

- *For T9940A Tape Drives, the customer's LMU must be a 9330 model running Compatibility 12 firmware. The 9330 firmware must be at level 1.7.03 or higher. The 9311 firmware must be at level 3.9.02 or higher.*

When using a 9741E Drive Cabinet:

- *For T9840A Tape Drives, the customer's LMU must be a 9330 model running Compatibility 12 firmware. The 9330 firmware must be at level 1.6 or higher. The 9311 firmware must be at level 3.6.08 or higher.*
- *For T9840B Tape Drives, the customer's LMU must be a 9330 running Compatibility 12 firmware. The 9330 firmware must be at level 1.9.21 or higher. The 9311 firmware must be at level 4.0.05 or higher.*
- *For T9940A Tape Drives, the customer's LMU must be a 9330 model running Compatibility 12 firmware. The 9330 firmware must be at level 1.9.07 or higher. The 9311 firmware must be at level 3.9.02 or higher.*
- *For T10000 Tape Drives, the customer's LMU must be a 9330 model running Compatibility 12 firmware. 9330 LMU firmware must be at level 1.9.73 or higher. The 9311 firmware must be at 4.4.06 or higher.*

An ACS can have 4xxx Cartridge Subsystems attached to the LSM. The ACS includes one to four cartridge drives (CDs), each containing two to four transports for a possible total of 16 transports. The control unit exists as a stand-alone unit.

Note: StorageTek no longer manufactures the 44xx Cartridge Systems. If you want to attach them, you must locate used subsystems.

Figure 3-1. PowderHorn Hardware with 80-Cell Cartridge Access Port

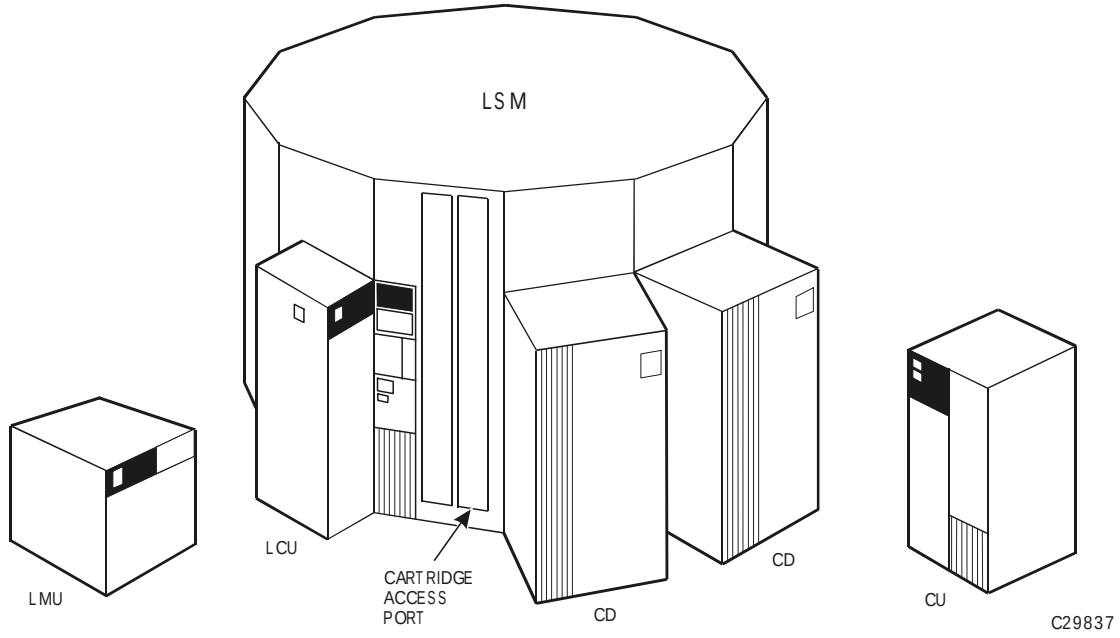
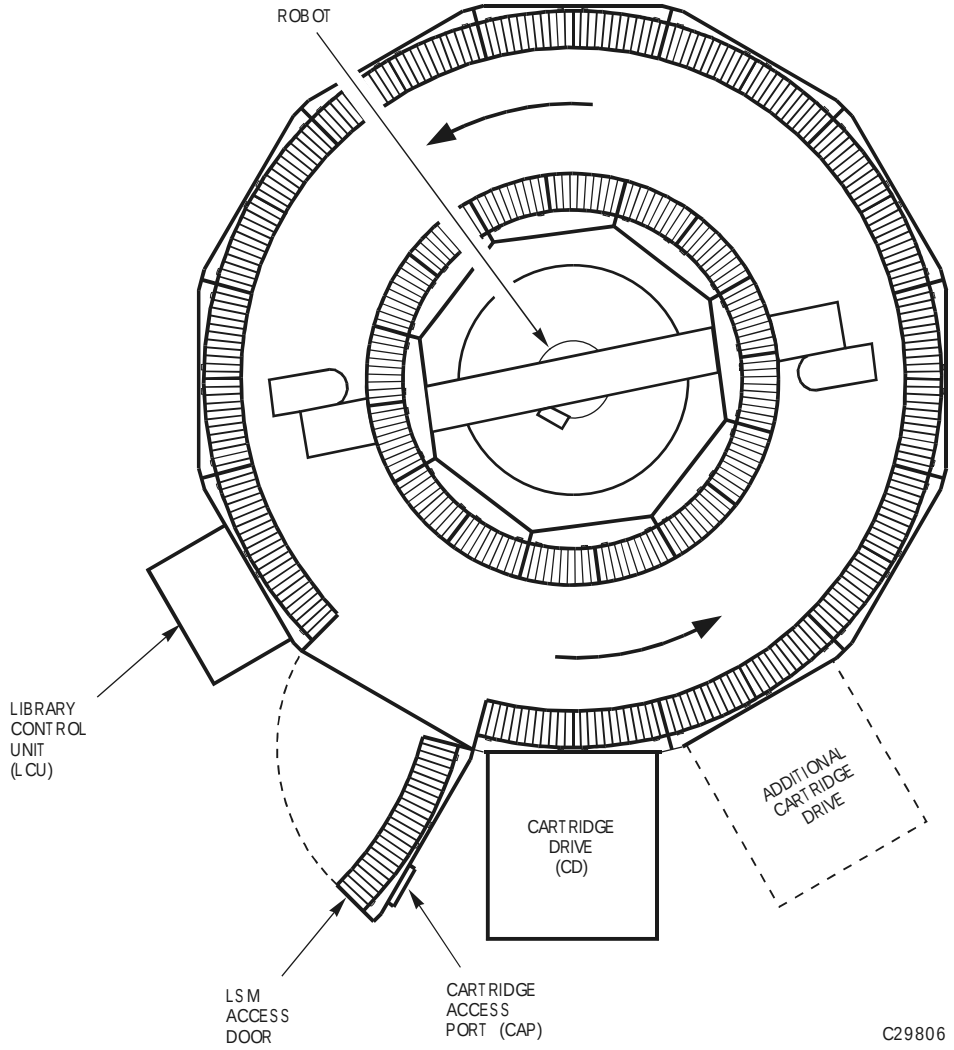


Figure 3-2. 9310 Library Storage Module–Top View



WolfCreek ACS

Sun StorageTek's WolfCreek ACS is a fully automated storage and retrieval system for cartridge tapes. The ACS consists of a library storage module (9360 LSM), an Electronics Module (EM) that includes an LCU (9312) and can include both the LCU and an LMU (9315), cartridge drives (CDs) and tape drives, and software. Some configurations include a stand-alone LMU (9330).

A single LMU manages from 1 to 16 connected LSMs. A pass-thru port in the walls of adjacent LSMs can pass cartridges from one LSM to another LSM.

An ACS can have 9490 or SD-3 Cartridge Subsystems attached to the LSM. The ACS includes one or two cartridge drives, each containing two to four 9490 controller transport units (CTUs) or one to four SD-3 CTUs for a possible total of eight CTUs. The control unit is part of the CTU.

An ACS can have T9840 or T9940A Tape Drives installed in a 9741/9741E Drive Cabinet attached to Panels 1 and 3 of the LSM. *If the ACS has a mixed drive configuration, the 9741/9741E Drive Cabinet must be installed on Panel 3, and a TimberLine or Redwood must be installed on Panel 1.* The ACS includes one or two 9741/9741E cabinets, each containing 1 to 10 drives for a possible total of 20 drives. The control unit is part of the drive.

- *To support T9840A tape drives, the customer's LMU must be running Compatibility 12 firmware. The LMU firmware must be at level 1.6 or higher. The LCU firmware must be at level 1.6.02 or higher.*
- *For T9840B Tape Drives, the customer's LMU must be a 9330 running Compatibility 12 firmware. The 9330 firmware must be at level 1.9.21 or higher. The 9311 firmware must be at level 4.0.05 or higher.*
- *To support T9940A tape drives, the customer's LMU must be running Compatibility 12 firmware. The LMU firmware must be at level 1.9.07 or higher. The LCU firmware must be at level 1.7.02 or higher.*

Notes:

1. The 9360 supports a maximum of two drive types. For example, the LSM can contain T9840A and TimberLine drives, T9840A and SD-3 drives, or TimberLine and SD-3 drives. The LSM cannot support T9840A and SD-3 and TimberLine drives.
2. The T9840A and T9840B drives count as one drive type since they use the same media ID label.

An ACS can have 4xxx Cartridge Subsystems attached to the LSM. The ACS includes one or two cartridge drives (CDs), each containing two to four transports for a possible total of eight transports. The control unit exists as a stand-alone unit.

Note: Sun StorageTek no longer manufactures the 44xx Cartridge Systems. If you want to attach them, you must locate used subsystems.

Cartridge Tapes

The ACS can store mixed media in the form of:

- Half-inch standard length cartridge tapes
- Half-inch enhanced capacity cartridge tapes (E-Cart or E-Tape)
- Extended enhanced cartridge tapes (EE tape)
- Half-inch helical scan cartridge tapes in D-3 format
- T9x40cartridge tapes in linear serpentine format

Cartridge tapes are not shipped as part of the ACS**.** Make sure that the customer orders the cartridge tape labels at least two months before installation. Printed-To-Order cartridge labels come in packets of 1,000.

When ordering labels, you must specify the VOLSER range you require.

To order and to obtain additional information about cartridge types, contact your distributor or OEM account representative.

Half-inch Standard and Enhanced

Order only half-inch 18-track or 36-track style cartridges for 4480, 4490, and 9490 tape drives. Do not order these cartridges for SD-3, or T9x40 drives.

Three types of tape are available:

- Enhanced capacity tapes, called E-Cart or E-Tape, are 12.573 ± 0.025 mm (0.495 ± 0.001 in.) wide and at least 332 m (1,089 ft) long. The physical recording density of an E-Cart is 1,944 ftpmm (49,378 ftpi), in group-coded recording (GCR), with a nominal data capacity of 800 megabytes (MB).
- Extended Enhanced capacity tapes, called EE tapes, are 12.573 ± 0.025 mm (0.495 ± 0.001 in.) wide and at least 693.4 m (2,275 ft) long. The physical recording density of an EE tape is 1,944 ftpmm (49,378 ftpi), in GCR, with a nominal data capacity of 1.6 gigabytes (GB).
- Standard length tapes, used in 18-track subsystems, are 12.65 ± 0.025 mm (0.5 ± 0.001 in.) wide and from 165 to 245 m (541 to 807 ft). The physical recording density of standard length tapes is 1,491 cpmm (37,871 cpi) in GCR, with a nominal data capacity of 200 MB in 18-track recording.

Half-inch Helical Scan

The SD-3 Cartridge Subsystem uses a tape cartridge that meets the specifications defined in the ANSI publication, *American National Standard Helical-Scan Digital Computer Tape Cartridge 12.65mm (0.498 in) For Information Interchange.*

Order only helical scan cartridges for the SD-3 drives. Do not order these cartridges for 4xxx, 9490, or T9x40 drives.

The cartridges have a unique label indicating DATA D-3 in addition to the tape length. The cartridge has a different design from the 4490-compatible cartridges. Holding the cartridge so that you can read the words DATA D-3 from left to right, the leader block is on the top left of the cartridge.

Four types of tape are available, with a unique letter on the cartridge:

- "A" is 10 GB, with 91 m (298 ft) of tape
- "B" is 25 GB, with 204 m (668 ft) of tape
- "C" is 50 GB, with 392 m (1286 ft) of tape
- "D" is a cleaning cartridge

T9840 Linear Serpentine

The T9840 Tape Drive uses a linear serpentine tape in a cartridge that is 125 x 109 x 24.5 mm (4.92 x 4.29 x 0.968 in.).

Order only linear serpentine cartridges for T9840 drives. Do not order these cartridges for 4xxx, 9490, T9940 or SD-3 drives.

Two types of tape are available:

- STK1R with 270 m (886 ft)
- STK1U cleaning cartridge

T9940 Linear Serpentine

The T9940 Tape Drive uses a linear serpentine tape in a cartridge that is 125 x 109 x 24.5 mm (4.92 x 4.29 x 0.968 in.).

Order only linear serpentine cartridges for T9940 drives. Do not order these cartridges for 4xxx, 9490, T9840 or SD-3 drives.

Two types of tape are available:

- STK1P with 700 m (2,297 ft)
- STK1W cleaning cartridge

T10000 Tape Cartridges

The T10000 Tape Drive uses a cartridge that is 125 x 109 x 24.5 mm (4.92 x 4.29 x 0.964 in.).

Order only T10000 cartridges for T10000 drives.

Four types of tape are available:

- Standard—500GB (native) capacity, black tape access door
- Sport—120 GB (native) capacity, red tape access door
- VolSafe—for Write Once, Read Many (WORM) recording, yellow tape access door
- Cleaning—CLN prefix, white tape access door

Data Migration Requirements

If you are planning to move from one recording format to another, refer to the planning/ migration guide listed in "Related Publications" on page -xv.

Ordering the Equipment

4

This chapter contains worksheets to fill out when ordering the ACS. These worksheets must be completed and sent to Shared Services or Orders Management, or the *product will not be shipped*.

This chapter also includes prerequisite information, model and feature numbers, and part numbers.

Note: Many part numbers have been revised for both the Single Price List and Reduction of Hazardous Substances (RoHS) efforts.

Where to Send Worksheets

Distribute copies of these worksheets to the customer, Sun's customer services and systems engineers. When completed, the appointed team member must either fax one copy 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). The address for Orders Management is:

Orders Management
Sun Microsystems, Inc.
One StorageTek Drive
Louisville, CO 80028-4350
USA.

PowderHorn Prerequisites

The following pages provide prerequisite information for PowderHorn installations.

Transport Elevator Cartridge Retainer

EC 19627 released a new cartridge retainer for the transport elevator. The 4480 drive serial number break-in is **003 2518**. The part number of the elevator with the new retainer is **402957606.** All PowderHorn shipments will include 16 of these retainer clips.

T9840 Drive Attachment

To attach a T9840 drive to an existing 9310 LSM:

- The customer's LMU must be a 9330 model running compatibility level 12 firmware. For T9840A, the firmware must be at level 1.6 or higher for 9330 and 3.6.08 or higher for 9311. For T9840B, the firmware must be at level 1.9.21 or higher for 9330 and 4.0.05 or higher for 9311.
- The 9310 hand must be at the proper level. The gripper assembly must be at PN 308436412 or higher (available from field bill 61428). Cartridge stop assemblies must be at PN 308456503 or higher (available from field bill 61857). Turntable assemblies at PN 308747805 or higher contain these assemblies.
- The turntable and hand must be at the proper level or they will be damaged.
- Each of the 9741/9741E power distribution units (PDUs) requires a 208 VAC outlet. The PDUs provide power to the T9x40 drives.

The minimum level software prerequisites for attaching a T9840A drive to an existing 9310 LSM are:

- NCS 2.0
- HSC 2.1
- LibraryStation 3.1
- MVS/CSC 3.1
- MVS 5.2.2
- JES3 5.1.1 or 5.2.1
- ACSLS 5.2.1 or higher

The minimum level software prerequisites for attaching a T9840B drive to an existing 9310 LSM are the same as those for T9840A except:

- NCS 4.0, which includes
  - HSC 4.0
  - MVS/CSC 4.0
  - Library Station 4.0
- ACSLS 6.0

T9940 Drive Attachment

To attach a T9940A drive to an existing 9310 LSM:

- The customer's LMU must be a 9330 model running compatibility level 12 firmware:
  - In a 9741 Drive Cabinet, this firmware must be at level 1.7.03 or higher for 9330 and 3.9.02 or higher for 9311.
  - In a 9741E Drive Cabinet, this firmware must be at level 1.9.07 or higher for 9330 and 3.9.02 or higher for 9311.
- The 9310 hand must be at the proper level. The gripper assembly must be at PN 308436412 or higher (available from field bill 61428). Cartridge stop assemblies must be at PN 308456503 or higher (available from field bill 61857). Turntable assemblies at PN 308747805 or higher contain these assemblies.
- The turntable and hand must be at the proper level or they will be damaged.
- Each of the 9741/9741E power distribution units (PDUs) must be attached to a 208 VAC outlet. The PDUs provide power to the T9940A drives.

The minimum level software prerequisites for attaching a T9940A drive to an existing 9310 LSM are:

- NCS 4.0
- HSC 4.0
- LibraryStation 4.0
- MVS/CSC 4.0
- MVS 5.2.2
- JES3 5.1.1 or 5.2.1
- ACSLS 5.3.2 and Put 0001 or ACSLS 5.4

T10000 Drive Attachment

To attach a T10000 drive to an existing 9310 LSM:

- A 9741E cabinet is required
- Drive tray feature codes are T1A93L3 (Fibre Channel) or T1A93L5 (FICON)
- The turntable must be PN 308747808 or 308747807. Depending on the number, you must take the following action:

  - If 308747808, order C/B 104517
  - If 308747807, order C/B 104517
  - If 308747806, order C/B 61419
  - If 308747805 (or lower), order C/B 103746
- Cartridge stop assemblies must be at PN 308456503 or higher (available from field bill 61857).
- You must order conversion bills:
  - YXSL9310-T10H-HW—LSM upgrade (firmware and hardware)
  - YXSL9310-T10H-SW—LMU upgrade (firmware only)
  - X9741E-T10K-9310—Hardware kit upgrade for the 9741E cabinet
- Minimum microcode levels are:
  - 9311—targeted for 4.4.06
  - 9330—TCP/IP, targeted for 2.1.02
  - 9330—3270, targeted for 1.9.73

Note: The 9310 library does *not* support dynamic World Wide Names (dWWN).

9310 Cartridge Capacity Variations

The following table lists cartridge capacity variations for the 9310.

Table 4-1. 9310 Cartridge Capacity Variations

Panel Type	Available Storage Cells
Standard outer wall	357
Drive wall (4 or 10 drives) next to door	171
Drive wall (4 or 10 drives) not next to door	173
Standard access door with 21-cell CAP	240
Access door with 80-cell CAP	0*
Standard inner wall	256
Inner wall with door	242
Inner wall with hinge	249
PTP wall	333
Window wall	72
Library Control Unit wall	319
20-drive wall	22

Note: CAP cells are not considered storage cells, since the CAP is designed for transfer of cartridges into and out of the library.

Hardware Worksheet for 9310/4410

The following worksheets list the required choices you must make. Refer to tables following the worksheet for the full list of model and feature numbers.

The italicized choices are optional or only required for certain configurations.

Note: To order drives, use the appropriate drive SAG publication listed in the "Related Publications" on page xv.

Account Name:

Account Address:

Table 4-2. Hardware Order Worksheet–9310/9311/9320/9330/4410/4420/4430

Configuration	Model Number	Feature Code	Quantity
LSM–9310 or 4410			
Standard door or large viewing window door			
CAP–21 cell or 80 cell			
Drive wall kit			
LCU–9311			
LMU–9330			
Power supply			
Power cord			
3270 host connection (1 through 16)			
No 3270 Host Connection			
No TCP/IP hosts			
1-16 TCP/IP hosts			
LMU–4430 001			
Host connection (2 through 16)			
Dual LMU			
LMU–4430 002			
RS423 connection			
PTP - 4420			

The following worksheet lists the external cables for the 9310 and 4410.

Table 4-3. External Cables–9310/4410

Description	Part Number	Quantity
LAN cable pair		
LAN cable pair		
Video coaxial cable		
50 Hz cable assembly		
RDC, CCITT cable assembly		
LMU 25-USS 9 cable assembly		
LMU 25-USS 9 cable assembly		
RDC, CCITT plenum cable assembly		
LMU plenum cable assembly		
LMU plenum cable assembly		
LCU LAN plenum cable assembly pair		
LCU LAN plenum cable assembly pair		
LSM panel cable pair, panel 1, CEM		
LSM panel cable pair, panel 2, CEM		
LSM panel cable pair, panel 3, CEM		
LSM panel cable pair, panel 4, CEM		
LSM panel cable pair, panel 5, CEM		
LSM panel cable pair, panel 6, CEM		
LSM panel cable pair, panel 7, CEM		
LSM panel cable pair, panel 8, CEM		

Enhanced Cartridge Access Port

❑ Yes ❑ No Is the customer installing an enhanced cartridge access port (CAP)?

For UNIX-based Library Control Systems, ACSLS must be at release 4.0 or above.

For VM-based Library Control Systems, the CLS must be at release 2.1 with the SPE PTF applied to support the Enhanced CAP.

Record the serial number of the LSM/LCU that will have enhanced CAP.

LSM_____	LCU _____
LSM_____	LCU _____
LSM_____	LCU_____
LSM_____	LCU_____
LSM_____	LCU _____
LSM_____	LCU_____
LSM_____	LCU_____
LSM_____	LCU_____
LSM_____	LCU_____
LSM_____	LCU _____
LSM_____	LCU_____
LSM_____	LCU _____
LSM_____	LCU _____
LSM_____	LCU _____
LSM_____	LCU _____
LSM_____	LCU_____

❑ Yes ❑ No Has anyone performed an audit on installed LSMs to determine the appropriate conversion bills needed for the enhanced CAP installation? Refer to Table 4-4 on page 4-8.

Enhanced CAP Conversion Bills

The following table lists conversion bills that you must order if your components are not at the proper level.

Table 4-4. Enhanced CAP (Clipper, 80-cell) Conversion Bills

Conversion Bill and EC	Description
CB 44240, EC 41535A	Replace old CAP door with enhanced CAP door.
CB 52142, EC 30921	For 4410, replace hand 410622607, 410298007, or lower with hand 410622610 or higher.
CB 44398, EC 41522A	Replace old LY card with LY 410264409 or higher.
CB 44412, EC 41551A	Add internal LCU cables (upper 110 J632 and lower 111 P652).

Test Equipment and Special Tools

Use the test equipment found at the account site to assemble and check out the 4400 equipment.

When you need special tools to assemble the LSM (other than those located in the CSE tool kit), have the local field depot personnel order the tools from StorageTek America's Logistics Department. These tools include items such as bubble levels, torque wrenches, floor and wall alignment tools, and pry bars. The LSM Installation Tool Kit, PN 4105358xx, contains these tools.

You can order the miscellaneous items listed in the following table.

Table 4-5. Test Equipment and Special Tools

	Description	Part Number	Quantity
❑	ESD grounding kit	4711	
❑	CSE tool kit	410535803	
❑	Reach belt gauge	308487301	
❑	Torx power bit, 15.2 in.	308782301	
❑	Grease syringe	308830101	
❑	Grease gun	410916101	
❑	Grease gun with grease	410945502	
❑	STK diagnostic system 2.3	309437207	

Table 4-5. Test Equipment and Special Tools (Continued)

	Description	Part Number	Quantity
☐	Autotrak kit	404669101	
☐	PC utilities tool	410961107	
☐	Airflow measurement tool	411022301	
☐	Theta encoder torque tool	411205101	
☐	LSM product label, ICL unique	4045136xx	
☐	LSM product label, standard	4045342xx	
☐	Cable assembly select LCU to CD select	4103263xx	
☐	Magazine storage furniture	4110051xx	

4410 Models and Features

The following tables list models and features for the 4410 program.

Table 4-6. 4410 Models

Model Number	Description
4410 A0G	Genesis extended storage library
4410 A01	Archive version
4410 00G	Genesis library
4410 001	Library storage module
4410 151	Library storage module 1,500 cartridges
4410 20G	Genesis junior library
4410 201	Library storage module 2,000 cartridges
4410 25G	Genesis junior library
4410 251	Library storage module 2,500 cartridges
4410 30G	Genesis junior library
4410 301	Library storage module 3,000 cartridges
4410 35G	Genesis junior library
4410 351	Library storage module 3,500 cartridges
4410 40G	Genesis junior library

Table 4-6. 4410 Models (Continued)

Model Number	Description
4410 401	Library storage module 4,000 cartridges
4410 45G	Genesis junior library
4410 451	Library storage module 4,500 cartridges
4410 50G	Genesis junior library
4410 501	Library storage module 5,000 cartridges

Table 4-7. 4410 Features

Feature Number	Description
CC21	21-cell cartridge access port
CC80	80-cell cartridge access port
DWK1	First drive wall kit per LSM
DWK2	Second drive wall kit per LSM
DWK3	Third drive wall kit per LSM

4411 Models

The following table lists models for the 4411 program. The 4411 has no features.

Table 4-8. 4411 Models

4411 001	Library control unit

4420 Models

The following table lists models for the 4420 program. The 4420 has no features.

Table 4-9. 4420 Models

4420 001	Pass-thru port

4430 Models and Features

The following tables list models and features for the 4430 program.

Table 4-10. 4430 Models

Model Number	Description
4430 001	Library management unit (LMU)
4430 002	LMU-UNIX storage module

Table 4-11. 4430 Features

4430 001 Feature Number	Description
2602	2 host connection
2603	3 host connection
2604	4 host connection
2605	5 host connection
2606	6 host connection
2607	7 host connection
2608	8 host connection
2609	9 host connection
2610	10 host connection
2611	11 host connection
2612	12 host connection
2613	13 host connection
2614	14 host connection
2615	15 host connection
2616	16 host connection
4432	Dual LMU capacity
4430 002 Feature Number	**Description**
2622	2 RS423 connection
2623	3 RS423 connection
2624	4 RS423 connection

9310 Models and Features

The following tables list models and features for the 9310 program.

Table 4-12. 9310 Models

Model Number	Description
9310 A0C	PowderHorn ext 6,000 cartridges, 190 exchanges per hour (EPH)
9310 A01	PowderHorn ext 6,000 cartridges, 350 EPH
9310 00C	PowderHorn 6,000 cartridges, 190 EPH
9310 001	PowderHorn 6,000 cartridges, 350 EPH
9310 150C	PowderHorn 1,500, classic
9310 151	PowderHorn 1,500, performance
9310 20C	PowderHorn 2,000 cartridges, 190 EPH
9310 201	PowderHorn 2,000 cartridges, 350 EPH
9310 30C	PowderHorn 3,000 cartridges, 190 EPH
9310 301	PowderHorn 3,000 cartridges, 350 EPH
9310 40C	PowderHorn 4,000 cartridges, 190 EPH
9310 401	PowderHorn 4,000 cartridges, 350 EPH
9310 50C	PowderHorn 5,000 cartridges, 190 EPH
9310 501	PowderHorn 5,000 cartridges, 350 EPH
9310 002	PowderHorn 6,000 cartridges, turbo
9310 A02	PowderHorn ext 6,000 cartridges, turbo
9310 152	PowderHorn 1,500 cartridges, turbo
9310 202	PowderHorn 2,000 cartridges, turbo
9310 302	PowderHorn 3,000 cartridges, turbo
9310 402	PowderHorn 4,000 cartridges, turbo
9310 502	PowderHorn 5,000 cartridges, turbo

4420 Models

The following table lists models for the 4420 program. The 4420 has no features.

Table 4-13. 4420 Models

4420 001	Pass-thru port

Table 4-14. 9310 Features

Feature Number	Description
CC21	21-cell cartridge access port
CC80	80-cell cartridge access port
DWK1	First drive wall kit per LSM
DWK2	Second drive wall kit per LSM
DWK3	Third drive wall kit per LSM
WF01	Large viewing window

9310 Dual Power Conversion Bill

The following table lists the Dual Power and CE Option conversion bill. *This bill is required for sales in Europe after Jan. 1, 2001.*

Note: The installation uses two cords, either 410573402 harmonic (no plug for international) or 411063001 (Russellstoll for North America). These need to be on hand or ordered to complete the installation. Both part numbers are listed in Table 4-23 on page 4-18.

Table 4-15. 9310 Dual Power and CE Option Conversion Bill

Marketing Part Number	Description
YXSL9310/5510DPCE	Dual Power and CE Option

9311 Model

The following table lists the model for the 9311 program. The 9311 has several power cord features.

Table 4-16. 9311 Model

9311 001	Library control unit

Table 4-17. 9311 Power Cord Features

Marketing Part Number	Description
411063701	14 ft N. American Russellstoll Cord
419728301-Z*	10 ft N. American Hubble Cord
419728701-Z*	3 m International Pigtail
411063901	4.3 m International Pigtail
410573402	3 m International IEC309 Cord

Table 4-17. 9311 Power Cord Features (Continued)

Marketing Part Number	Description
411063001	10 ft N. American Russellstoll Cord
* The "-Z" suffix denotes RoHS compliance.	

9330 Models and Features

The following tables list models and features for the 9330 program.

Table 4-18. 9330 Models

Model Number	Description
9330-001	Mainframe host attachment, 3270 and/or TCP/IP
9330-002	Open Systems host attachment, RS423 or TCP/IP

The 9330 LMU will support TCP/IP and 3270 simultaneously, however there are host limitations. Use Table 4-19 to ensure that the host connections do not exceed the limitations of the LMU.

Table 4-19. TCP/IP and 3270 Host Limitations

TCP/IP Hosts	3270 Hosts
16 TCP/IP hosts (Four LMT cards)	Zero 3270 Hosts (Zero LMB cards)
12 TCP/IP hosts (Three LMT cards)	One to four 3270 hosts (One LMB card)
8 TCP/IP hosts (Two LMT cards)	One to eight 3270 hosts (One to two LMB cards)
4 TCP/IP hosts (One LMT card)	One to twelve 3270 hosts (One to three LMB cards)
Zero TCP/IP hosts (Zero LMT cards)	One to sixteen 3270 hosts (One to four LMB cards)

Table 4-20. 9330 Features

9330 001 Feature Number	Description
9903	60 Hz power supply
9906	50 Hz power supply
4432	Dual LMU capacity

Table 4-20. 9330 Features (Continued)

2600	No 3270 host connection
2601	One 3270 host connection
2602	Two 3270 host connections
2603	Three 3270 host connections
2604	Four 3270 host connections
2605	Five 3270 host connections
2606	Six 3270 host connections
2607	Seven 3270 host connections
2608	Eight 3270 host connections
2609	Nine 3270 host connections
2610	Ten 3270 host connections
2611	Eleven 3270 host connections
2612	Twelve 3270 host connections
2613	Thirteen 3270 host connections
2614	Fourteen 3270 host connections
2615	Fifteen 3270 host connections
2616	Sixteen 3270 host connections
9952	14 ft N. American Russellstoll Power Cord
9953	10 ft N. Amer Hubble Power Cord
9954	3 m International Pigtail
9960	4.3 m International Pigtail
9961	3 m International IEC309 Power Cord
9962	10 ft N. American Russellstoll Power Cord
T000	No TCP/IP host
T101	1 TCP/IP host
T102	2 TCP/IP hosts
T103	3 TCP/IP hosts
T104	4 TCP/IP hosts
T105	5 TCP/IP hosts
T106	6 TCP/IP hosts
T107	7 TCP/IP hosts

Table 4-20. 9330 Features (Continued)

T108	8 TCP/IP hosts
T109	9 TCP/IP hosts
T110	10 TCP/IP hosts
T111	11 TCP/IP hosts
T112	12 TCP/IP hosts
T113	13 TCP/IP hosts
T114	14 TCP/IP hosts
T115	15 TCP/IP hosts
T116	16 TCP/IP hosts
9330 002 Feature Number	**Description**
T000	No TCP/IP host
T101	1 TCP/IP host
9903	60 Hz power supply
9906	50 Hz power supply
9952	14 ft N. American Russellstoll Power Cord
9953	10 ft N. American Hubble Power Cord
9954	3 m International Pigtail
9960	4.3 m International Pigtail
9961	3 m International IEC309 Power Cord
9962	10 ft N. American Russellstoll

9330 TCP/IP Conversion Bill

In addition to RS-423/232 and 3270, TCP/IP is another control interface that can be used to communicate move requests to a 9330 LMU. A TCP/IP conversion requires the LMP card be exchanged for an LBQ card and an LMB card be exchanged for an LMT card. TCP/IP can work in an LMU already running 3270; however, installing a LMT card will force one LMB card to be removed, thus allowing only twelve 3270 connections per LMU.

Note: The 4410 and 4430 do not support TCP/IP connectivity.

Table 4-21. TCP/IP and 3270 Host Limitations

TCP/IP Hosts	3270 Hosts
16 TCP/IP hosts (Four LMT cards)	Zero 3270 Hosts (Zero LMB cards)
12 TCP/IP hosts (Three LMT cards)	One to four 3270 hosts (One LMB card)
8 TCP/IP hosts (Two LMT cards)	One to eight 3270 hosts (One to two LMB cards)
4 TCP/IP hosts (One LMT card)	One to twelve 3270 hosts (One to three LMB cards)
Zero TCP/IP hosts (Zero LMT cards)	One to sixteen 3270 hosts (One to four LMB cards)

Marketing Part Number	Description
YXSL9330-TCPIP*	Adds TCP/IP interface to LMU
* The “Y” prefix denotes “used.”	

4400 External Cables

The following table lists the external cables' functions, the maximum lengths, and the number required. Check all of the cables to make sure that each cable is available and in good condition.

Table 4-22. 4400 External Cables Overview

	Function	Maximum Length	Number Required
1	3274 Terminal Control Unit to LMU	750 m (2,460 ft) (RG62 coaxial) (93 Ω)	1 per terminal control unit (supplied by the customer)
2	LMU to LCU (LAN 0 and 1)	183 m (600 ft)[1] (RG58AU coaxial) (50 Ω)	2 per LMU/LCU
3	LCU to LCU (LAN 0 and 1)	Typically 7.6 m (25 ft) (RG58AU coaxial) (50 Ω)	2 per LCU pair
4	UNIX-based workstation to LMU (ACSLS)	61 m (200 ft) RS-423	1 per workstation

[1] Total length of the LAN including all daisy-chained links is 183 m (600 ft).

Find cable information for the drive in the appropriate drive system assurance guide.

The main power cables for the LMU and LCU have Russellstoll 3720 male input power connectors attached. The LMU and LCU require customer 20 A, 220 VAC Russellstoll 3743 or 3913 female connectors.

The following table lists 4400 power cables.

Table 4-23. 4400 Power Cables

411063001	Power cord, North American, B, 10 ft
410573402	Power cord, harmonic, international, 3.15M

The following table lists 4400 external local area network (LAN) cables that connect the LMU and LSMs. The first group of cables is standard cables. The second group of cables is "plenum rated" (suitable for sites that require cables with higher flammability ratings).

Table 4-24. LMU to LCU and LCU to LCU Cables

Marketing Part Number	Description
CABLE410612401	Cable pair, LAN, 50 Ω 7.6 m (25 ft)
CABLE410612402	Cable pair, LAN, 50 Ω 15.2 m (50 ft)
CABLE410612403	Cable pair, LAN, 50 Ω 22.9 m (75 ft)
CABLE410612404	Cable pair, LAN, 50 Ω 30.5 m (100 ft)
CABLE410612405	Cable pair, LAN, 50 Ω 45.7 m (150 ft)
CABLE410612406	Cable pair, LAN, 50 Ω 61 m (200 ft)
CABLE410612407	Cable pair, LAN, 50 Ω 76.2 m (250 ft)
CABLE410612408	Cable pair, LAN, 50 Ω 91.4 m (300 ft)
CABLE410612409	Cable pair, LAN, 50 Ω 106.7 m (350 ft)
CABLE410612410	Cable pair, LAN, 50 Ω 121.9 m (400 ft)
CABLE410612411	Cable pair, LAN, 50 Ω 137.2 m (450 ft)
CABLE410612412	Cable pair, LAN, 50 Ω 152.4 m (500 ft)
CABLE410612413	Cable pair, LAN, 50 Ω 167.6 m (550 ft)
CABLE410612414	Cable pair, LAN, 50 Ω 182.9 (600 ft)
CABLE410612415	Cable pair, LAN, 50 Ω 4 m (13 ft)
CABLE411207515	Cable pair, plenum, LCU LAN, 4 m (13 ft)
CABLE411207501	Cable pair, plenum, LCU LAN, 7.6 m (25 ft)
CABLE411207502	Cable pair, plenum, LCU LAN, 15.2 m (50 ft)
CABLE411207503	Cable pair, plenum, LCU LAN, 22.9 m (75 ft)
CABLE411207504	Cable pair, plenum, LCU LAN, 1 30.5 m (100 ft)
CABLE411207505	Cable pair, plenum, LCU LAN, 45.7 m (150 ft)
CABLE411207506	Cable pair, plenum, LCU LAN, 61 m (200 ft)
CABLE411207507	Cable pair, plenum, LCU LAN, 76.2 m (250 ft)
CABLE411207508	Cable pair, plenum, LCU LAN, 91.4 m (300 ft)
CABLE411207509	Cable pair, plenum, LCU LAN, 106.7 m (350 ft)
CABLE411207510	Cable pair, plenum, LCU LAN, 121.9 m (400 ft)
CABLE411207511	Cable pair, plenum, LCU LAN, 137.2 m (450 ft)
CABLE411207512	Cable pair, plenum, LCU LAN, 152.4 m (500 ft)
CABLE411207513	Cable pair, plenum, LCU LAN, 167.6 m (550 ft)

The following table lists 4400 external video monitor cables for sites that require video monitoring of robotic activity within the LSM.

Table 4-25. Video Monitor Cables

CABLE410615201	Cable coaxial, video, 70 Ω, North American
410647502	Cable assembly, 50 Hz, international

The following table lists cables that customers and CSEs use to remotely connect to the Remote Center. These cables will run through a modem. The first group are conventional cables; the second group may be run through plenums.

Table 4-26. Remote Center Cables

Marketing Part Number	Description
CABLE410828901-Z*	Cable assy, 3.1 m (10 ft), RDC, CCITT
CABLE410828902	Cable assy, 6.1 m (20 ft), RDC, CCITT
CABLE410828905	Cable assy, 15.2 m (50 ft), RDC, CCITT
CABLE410828910	Cable assy, 30.5 m (100 ft), RDC, CCITT
CABLE410828915	Cable assy, 45.7 m (150 ft), RDC, CCITT
CABLE410828920	Cable assy, 61 m (200 ft), RDC, CCITT
CABLE410828925	Cable assy, 76.2 m (250 ft), RDC, CCITT
CABLE411049701	Cable assy, plenum, RDC, CCITT, 6.1 m (20 ft)
CABLE411049702	Cable assy, plenum, RDC, CCITT, 15.2 m (50 ft)
CABLE411049703	Cable assy, plenum, RDC, CCITT, 30.5 m (100 ft)
CABLE411049704	Cable assy, plenum, RDC, CCITT, 45.7 m (150 ft)
CABLE411049705	Cable assy, plenum, RDC, CCITT, 61 m (200 ft)
CABLE411049706	Cable assy, plenum, RDC, CCITT, 76.2 m (250 ft)
* The "-Z" suffix denotes RoHS compliance.	

The following table lists cables that CSEs use to connect LMUs to Unix-based workstations. Two types are shown: one is for 25-pin to 9-pin applications; the other is for 25-pin to 25-pin connectors, depending on the workstation.

Table 4-27. LMU to Unix-based Workstation Cables

Marketing Part Number	Description
CABLE410913831	Cable assy, LMU 25-USS 9, 6.1 m (20 ft), SPARC
CABLE410913832	Cable assy, LMU 25-USS 9, 15.2 m (50 ft), SPARC
CABLE410913833	Cable assy, LMU 25-USS 9, 30.5 m (100 ft), SPARC
CABLE410913834	Cable assy, LMU 25-USS 9, 45.7 m (150 ft), SPARC
CABLE410913835	Cable assy, LMU 25-USS 9, 61 m (200 ft), SPARC
CABLE410891202	Cable assy, LMU 25-USS 25, 6.1 m (20 ft), SPARC
CABLE410891205	Cable assy, LMU 25-USS 25 15.2 m (50 ft), SPARC
CABLE410891210	Cable assy, LMU 25-USS 25, 30.5 m (100 ft), SPARC
CABLE410891215	Cable assy, LMU 25-USS 25, 45.7 m (150 ft), SPARC
CABLE410891220	Cable assy, LMU 25-USS 25, 61 m (200 ft), SPARC
CABLE411207401	Cable assy, plenum, LMU DB25, 6.1 m (20 ft)
CABLE411207402	Cable assy, plenum, LMU DB25, 15.2 m (50 ft)
CABLE411207403	Cable assy, plenum, LMU DB25, 30.5 m (100 ft)
CABLE411207404	Cable assy, plenum, LMU DB25, 45.7 m (150 ft)
CABLE411207405	Cable assy, plenum, LMU DB25, 61 m (200 ft)

The following table lists Pass-thru Port cables.

Table 4-28. Pass-thru Port Cables

Marketing Part Number	Description
CABLE410396102	Cable pair, LSM Panel 1
CABLE410396202	Cable pair, LSM Panel 2
CABLE410396302	Cable pair, LSM Panel 3
CABLE410396402	Cable pair, LSM Panel 4
CABLE410396502	Cable pair, LSM Panel 5
CABLE410396602	Cable pair, LSM Panel 6
CABLE410396702	Cable pair, LSM Panel 7
CABLE410396802	Cable pair, LSM Panel 8

WolfCreek Prerequisites

WolfCreek LSMs must have CDs with certain elevators and targets. The elevator part number is 410911306 or above. The target part number is 308217501 or above.

T9x40 tape drives require a 9741/9741E Drive Cabinet. See "WolfCreek ACS" on page 3-4.

If you are installing T9940 drives in a 9741 Drive Cabinet, a conversion bill for the cabinet is required. See Table 4-46 on page 4-34.

Hardware Worksheet for 9360

The following worksheet lists the required choices you must make. Refer to tables following the worksheet for the full list of model and feature numbers.

Refer to Table 4-20 on page 4-14 for 9330 numbers and the tables under "4400 External Cables" on page 4-18.

The italicized choices are optional or only required for certain configurations.

Note: To order drives, use the appropriate drive SAG publication listed in the "Related Publications" on page xv.

Account Name:

Account Address:

Table 4-29. Hardware Order Worksheet–9360/30/15/12/21/22/23

Configuration	Model Number	Feature Code	Quantity
LSM–9360			
Product design			
CAP			
Wall option			
Camera			
9330-W02, 9330-002			
Power supply			
Dual LMU			
9315-001			
3270 host connection (1 through 16)			
No TCP/IP hosts			
1-16 TCP/IP hosts			
Power supply			
Dual LMU			
9315-002			
Product design			
Power supply			
Dual LMU			
9312			
Power supply			
Product design			
9321-001			
Product design			
9322-001			
9323-001			

9360 Models and Features

The following tables list models and features for the 9360 program.

Table 4-30. 9360 Models

Model Number	Description
9360-05E (see note)	500 cartridges, 90 exchanges per hour (EPH)
9360-05C (see note)	500 cartridges, 190 EPH
9360-050 (see note)	500 cartridges, 350 EPH
9360-07E (see note)	750 cartridges, 90 EPH
9360-07C (see note)	750 cartridges, 190 EPH
9360--075 (see note)	750 cartridges, 350 EPH
9360-10E	1,000 cartridges, 90 EPH
9360-10C	1,000 cartridges, 190 EPH
9360-100	1,000 cartridges, 350 EPH
Note: Not available for new equipment out of Colorado.	

Table 4-31. 9360 Features

Feature Number	Description
CC20	Standard cartridge access port (CAP); 20 cells plus PCAP
CC50	Standard CAP plus 30-cell optional CAP (total 50 plus PCAP)
WF01	Large viewing window
DR01	Drive wall
NOD1	Standard wall
CF02 (see note)	Video camera
STK0	STK product design
UNIS	Unisys product design
Note: Not available for new equipment out of Colorado.	

9312 Model and Features

The following tables list the model and features for the 9312 program.

Table 4-32. 9312 Model

9312-001	Electronic module (LCU only)

Table 4-33. 9312 Features

9903	60 Hz power supply
9906	50 Hz power supply
STK0	STK product design
UNIS	Unisys product design

9315 Models and Features

The following tables list models and features for the 9315 program.

Order a StorageTek cable part number for each unit. The customer must order the correct connector.

Table 4-34. 9315 Models

Model Number	Description
9315-001	Mainframe host attachment, 3270 and/or TCP/IP
9315-002	Open systems host attachment, RS423 or TCP/IP

Table 4-35. 9315 Features

9315 001 Feature Number	Description
4432	Dual LMU
9903	60 Hz power supply
9906	50 Hz power supply
2601	One 3270 host connection
2602	Two 3270 host connections
2603	Three 3270 host connections
2604	Four 3270 host connections
2605	Five 3270 host connections
2606	Six 3270 host connections

Table 4-35. 9315 Features (Continued)

2607	Seven 3270 host connections
2608	Eight 3270 host connections
2609	Nine 3270 host connections
2610	Ten 3270 host connections
2611	Eleven 3270 host connections
2612	Twelve 3270 host connections
2613	Thirteen 3270 host connections
2614	Fourteen 3270 host connections
2615	Fifteen 3270 host connections
2616	Sixteen 3270 host connections
T000	No TCP/IP host
T101	1 TCP/IP host
T102	2 TCP/IP hosts
T103	3 TCP/IP hosts
T104	4 TCP/IP hosts
T105	5 TCP/IP hosts
T106	6 TCP/IP hosts
T107	7 TCP/IP hosts
T108	8 TCP/IP hosts
T109	9 TCP/IP hosts
T110	10 TCP/IP hosts
T111	11 TCP/IP hosts
T112	12 TCP/IP hosts
T113	13 TCP/IP hosts
T114	14 TCP/IP hosts
T115	15 TCP/IP hosts
T116	16 TCP/IP hosts
9315 002 Feature Number	**Description**
4432	Dual LMU
9903	60 Hz power supply
9906	50 Hz power supply

Table 4-35. 9315 Features (Continued)

STK0	STK product design (9315-002)
T000	No TCP/IP host
T101	1 TCP/IP host
UNIS	Unisys product design (9315-002)

9321/22/23 Models and Features

The following tables lists models and features for the 9321/22/23 program.

Table 4-36. 9321/22/23 Models

Model Number	Description
9321-001 (see note)	9360 to 9360 pass-thru-port
9322-001	9310/4410 on left side of 9360 pass-thru-port
9323-001	9310/4410 on right side of 9360 pass-thru-port
Note: Not available for new equipment out of Colorado.	

Table 4-37. 9321-001 Features

Feature Number	Description
STK0	STK product design (9315-002)
UNIS	Unisys product design (9315-002)

WolfCreek ACS Cables

Order cables separately for *each* unit. The *customer* must order the correct power cord/ connector.

A branch-circuit fuse or circuit-breaker protection for the receptacle providing AC power to the 9330 must not exceed 20 A. This limitation is required to provide adequate short-circuit and ground-fault protection to the AC power conductors.

Table 4-38. 9330/9312/9315 Detachable Power Cord

Use	STK Cable Length	STK Plug Type	Customer Installed Item (see note 1)
North America	411063001 3.15 m (10 ft)	Russellstoll RS F35417 Cat No 3720	Russellstoll F4243B (inline connector), Cat No 3913 or F18665B (receptacle), Cat No 3743
North America	410573502 3.15 m (10 ft)	Type: IEC 309 Hubbell 320P6W or Russellstoll RS320P6W	Hubbell 320C6W (inline connector) or Hubbell 320R6W (receptacle) Russellstoll RS320C6W (inline connector) or Russellstoll RS320R6W (receptacle)
Export	410573402 (harmonized) 3.15 m (10 ft)	Type: IEC 309 Hubbell 320P6W or Russellstoll RS 320P6W	Hubbell 320C6W (inline connector) or Hubbell 320R6W (receptacle) Russellstoll RS320C6W (inline connector) or Russellstoll RS320R6W (receptacle)
Export	411063701 (harmonized) 3.15 m (10 ft)	none (see note 2)	Customer's option

Notes:

1. Order the customer cable connector or a fixed receptacle separately.
2. Use bare-wire ends for customer-installed connector.

Table 4-39. Connectors

	240 V Current	Power Plug	Cable Connector	Wall Connector
4480-M20 CU	30 A	3760	3934	3754
LCU/LSM	20 A	3720	3913	3743
4430 LMU	15 A	3720	3913	3743
9312/15/30	> 16 A	Russellstoll RS32OP6W (IEC 309)		

Table 4-40. 9330/9312/9315 External Cables

Units Connected	Cable Type	Number of Cables	Maximum Length
Terminal control unit to LMU (see note 1)	RG-62A/U coaxial (93 Ω)	1 per station (Up to 16)	750 m (2460 ft)
LMU to LCU (LAN cables) (see note 2)	RG-58A/U coaxial (50 Ω)	2 (see note 3)	182.9 m (600 ft) (see note 4)
UNIX-based workstation to LMU (ACSLS)	RS-423	1 per workstation	60.9 m (200 ft) (see note 4)

Notes:

1. The customer supplies these cables.
2. Total length of the LAN network is 183 m (600 ft). Order LAN cables separately.
3. These are two (redundant) networks.
4. The LAN has a tapped, bidirectional bus. Connect the LMU and LSMs serially in any sequence. The minimum length between gaps is 1.83 m (6 ft).

WolfCreek Local Area Network Cables

Local area network (LAN) cables connect the library storage modules (LSMs) to the library management unit (LMU). The following table lists the lengths and part numbers for these cables.

Table 4-41. LMU to LSM LAN Cables

Length		Marketing Part Numbers	Length		Marketing Part Numbers
Meters	Feet		Meters	Feet	
4.0	13	CABLE410612415	91.4	300	CABLE410612408
7.6	25	CABLE410612401	106.7	350	CABLE410612409
15.2	50	CABLE410612402	121.9	400	CABLE410612410
22.9	75	CABLE410612403	137.2	450	CABLE410612411
30.5	100	CABLE410612404	152.4	500	CABLE410612412
45.7	150	CABLE410612405	167.6	550	CABLE410612413
60.9	200	CABLE410612406	182.9	600	CABLE410612414
76.2	250	CABLE410612407			

Software Models

The following table lists models for software.

Table 4-42. Software Models

Model Number	Description
1190M11	Host software component (MVS/XA0
1190V11	Host software component (VM/SP)
1190U10	ACSLS

Hardware Worksheet for 9741

Note: While existing 9741 cabinets are supported, they cannot be ordered as new. For new cabinets, order the 9741E cabinet (see Figure 4-2 on page 4-35). *9741E cabinets are required for T10000 drives.*

The following worksheet lists the required choices you must make. The following sections list additional part numbers, and conversion bill numbers.

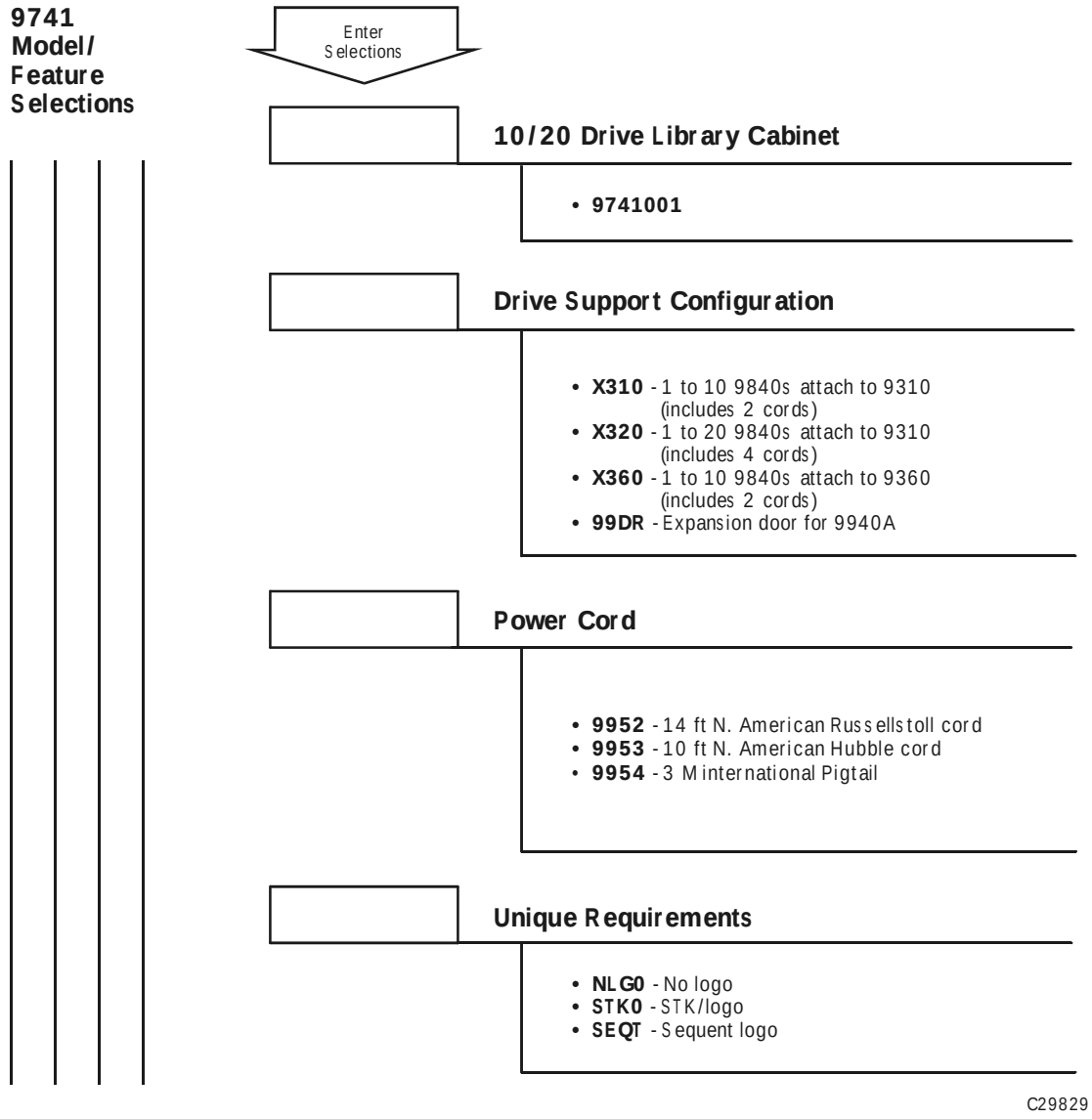
The italicized choices are optional or only required for certain configurations.

Note: To order drives, use the appropriate drive SAG publication listed in the "Related Publications" on page xv.

Account Name:

Account Address:

Figure 4-1. Hardware Order Worksheet–9741



Note: For the 9741 Drive Cabinet, the maximum number of SCSI cables you can order and install per drive column is 10. This restriction is for cables entering and exiting the cabinet. It does not pertain to daisy-chained cables within the cabinet.

9741 Fibre Hub Mounting Structure Kit

The following table lists the fibre hub mounting structure kit for the 9741 program.

Table 4-43. 9741 Fibre Hub Mounting Structure Kit

Part Number	Description
310698001	Fibre hub 1000 mounting kit for 9310 CEIs 3100148010, 3100148012

9741 Rear Deco Covers/Door Accessories

The following table lists the rear deco covers/door accessories for the 9741 program.

Table 4-44. 9741 Rear Deco Covers/Door Accessories

Part Number	Description
313308701	Rear deco cover for rear door 312793501
313324101	Rear deco cover/door for rear door 312793502

9741 External Cables

The following table lists the external cables and connectors for the 9741 program.

Table 4-45. 9741 External Cables

Part Number	Description
10083302	Cord, 3 PWR, F, IEC332, HAR, NOPLG, international
308869901	Cord, 200 to 240 V, 18, 3, SJT, IEC309M, IEC320F, Hubbell
311549801	Cord, 200 to 240 V, 18, 3, SJRS3720DP, IEC320F, Russellstoll
Power Connector	**Description**
Customer end	Russellstoll RS320C6W (IEC309) Hubbell 320C6W (IEC309)
Customer receptacle	Russellstoll RS320R6W (IEC309) Hubbell 320R6W (IEC309)

9741 Conversion Bills

The following table lists the conversion bills for the 9741 program.

Table 4-46. 9741 Conversion Bills

Part Number	Description
62168	9741 (with ten T9840s) removed from 9740 and attached to 9310
62182	Ten DLTs to ten T9840s, attached to 9310
62222	Ten T9840s to twenty T9840s, attached to 9310. This conversion bill is concurrent with conversion bill YXSL9310-20DRWL*, which contains the 9310 twenty-drive wall.
62280	9741 attached to 9360
62331	Unisys 9741 twenty drive to 9310/9360 ten drive
62353	9741-001 frame expansion
* The "Y" prefix denotes "used."	

Hardware Worksheet for 9741E

The following worksheet lists the required choices you must make. The following sections list additional part numbers, and conversion bill numbers.

The italicized choices are optional or only required for certain configurations.

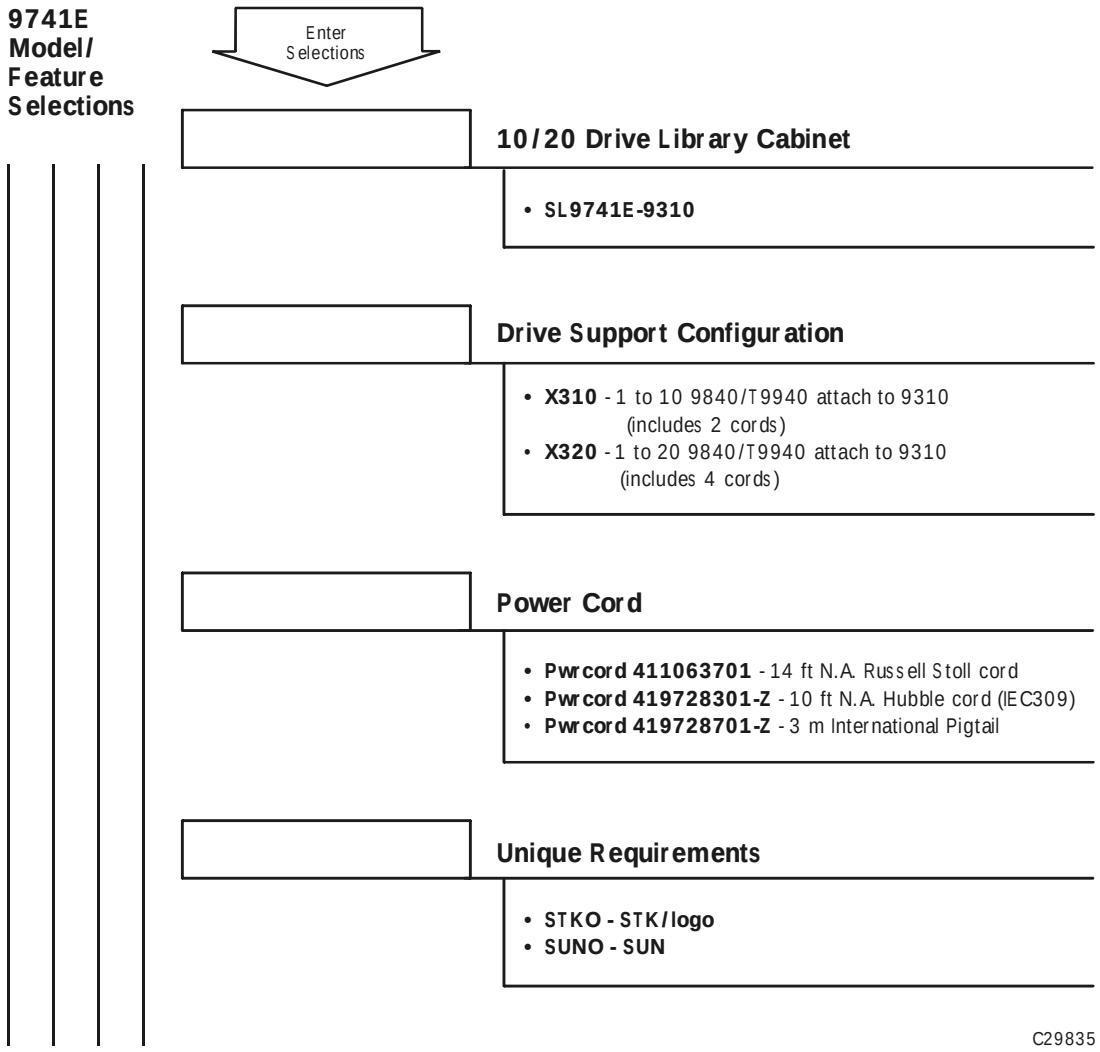
Note: A 9741E cabinet is required for T10000 drives.

To order drives, use the appropriate drive SAG publication listed in the "Related Publications" on page xv.

Account Name:

Account Address:

Figure 4-2. Hardware Order Worksheet–9741E



9741E Accessories

Table 4-47 lists the Fibre Channel mounting kits that can be installed in a 9741E Drive Cabinet. Up to eight Fibre Channel hubs or four Fibre Channel switches can be installed in a 9741E Drive Cabinet; a combination of hubs and switches is also acceptable. Table 4-47 also lists a decorative cover for the 9741E cabinet.

Table 4-47. 9741E Mounting Structure Kit

Marketing Part Number	Description
X9741-HUB-MTG*	Fibre Channel hub 1000 mounting kit
X9741-SW-MTG*	Fibre Channel switch 4108 mounting kit
X9741E-DECO-DR*	9741E Deco Cabinet Door Assembly
* The "X" prefix denotes a new part.	

Note: The hub 1000 mounting kit was designed for the Fibre Channel hub 1000 (model number SNFCH01). The 4108 switch mounting kit was designed for the Fibre Channel 4108 switch (model number SNFCS45).

9741E Special Tools

The special tools listed in Table 4-48 are used only as a service tool for the T9x40B Tape Drive. The ethernet maintenance switches can only be mounted in a 9741E Drive Cabinet.

Table 4-48. 9741E Special Tools

Part Number	Description
313332201	Maintenance Switch Mounting Kit
24100208	8 Port 10/100 Ethernet Switch
24100209	16 Port 10/100 Ethernet Switch

9741E External Cables

The following table lists the external cables and connectors for the 9741E program.

Table 4-49. 9741E External Cables

Marketing Part Number	Description
CABLE419728701-Z*	3 m International Pigtail
CABLE419728301-Z*	10 ft N. American Hubble Cord
411063701	14 ft N. American Russellstoll Cord
Power Connector	**Description**
Customer end	Russellstoll RS320C6W (IEC309) Hubble 320C6W (IEC309)
Customer receptacle	Russellstoll RS320R6W (IEC309) Hubble 320R6W (IEC309)
* The "-Z" suffix denotes RoHS compliance	

9741E Conversion Bills

The following table lists the conversion bills for the 9741E program.

Table 4-50. 9741E Conversion Bills

Marketing Part Number	Description
X9741ETO9310-10D*	9741E with ten T9x40s removed from 9740/115 V and attached to 9310
X9741ETO9310-20D*	9741E with ten T9x40s removed from 9740/115 V and attached to 9310 (20 drives)
X9741E-TO-931010*	9741E with ten T9x40s removed from 9740/230 V and attached to 9310
X9741E-TO-931020*	9741E with ten T9x40s removed from 9740/230 V and attached to 9310 (20 drives)
* The "X" prefix denotes new part.	

CAUTION:
EQUIPMENT DAMAGE. Drives can be damaged and the cabinet might tip over. NEVER MOVE THE 9741E CABINET WITH DRIVES INSTALLED.

Media

To order media, contact your selling agent for authorized Sun-approved labeled cartridges.

Preinstallation Checklist

5

Make sure that you have resolved all items listed in the following table. Circle "Yes" or "No," as appropriate, for each item. For unresolved items, assign a required action and a due date to the appropriate person.

Table 5-1. Preinstallation 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	
Options or features ordered	Yes/No	
Power cables ordered	Yes/No	
Interface cables ordered	Yes/No	
Interface adapters ordered	Yes/No	
Tapes and labels ordered	Yes/No	
Accessories and special tools ordered	Yes/No	
Pallet jack available	Yes/No	
Software Procurement		
Software prerequisites met	Yes/No	

Table 5-1. Preinstallation Checklist (Continued)

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 Does the customer want a fire suppression system?

Make sure that the customer is aware that Sun StorageTek does not supply fire suppression systems. Any fire suppression system is the customer's responsibility.

Remote Support

Sun StorageTek Customer Service representatives are available to assist you with hardware and software problem resolution. During the initial order and installation planning, make sure that you inform the customer about Sun StorageTek's local and remote support. Refer to "Customer Resource Center" on page -xvi.

Hardware support is staffed by diagnostic experts who have access to history files for solutions related to previous equipment problems. With the installation of remote equipment, hardware support can:

- Connect to the customer account by using a modem and an optional MARS+ box
- Test and diagnose the equipment problems
- Suggest ways for the operator to repair certain problems
- Dispatch a CSE with repair parts

Note: The T9x40 tape drive does not support attachment to remote equipment.

❑ Yes ❑No Does the customer want remote support?

The following table lists the remote support hardware and cables.

Table 5-2. Remote Support Hardware and Cables

Equipment	Description	Part Number	Ref Number
Modem	9600 Baud	4953	1
Modem Switches	16 Port MARS+ 32 Port MARS+	4954 4955	5 5
Cable RJ-45 to RJ-45	20 ft MARS/UUT interconnect 50 ft MARS/UUT interconnect 100 ft MARS/UUT interconnect 150 ft MARS/UUT interconnect 200 ft MARS/UUT interconnect 250 ft MARS/UUT interconnect	CABLE410828902 CABLE410828905 CABLE410828910 CABLE410828915 CABLE410828920 CABLE410828925	7 7 7 7 7 7
Modem/MARS Interconnect Cable	4 ft modem to MARS interconnect (DB-25 to DB-9)	4895	9

Software Configuration

6

This chapter provides worksheets for the software configuration.

An ACS will run under any level of an operating system's automated cartridge system library server (ACSLS) or HSC when 18-track, 36-track and SD-3 cartridge tapes are present. Handling a mixed environment of 18-track, 36-track, SD-3, T9x40 tapes requires appropriate levels of ACSLS and drive firmware.

The T9840A drive requires ACSLS 5.2.1 or higher. The T9840A or 9490EE requires HSC 2.1 or higher.

The T9840B drive requires ACSLS 6.0 or higher. The T9840B drives requires NCS 4.0 or higher (NCS includes HSC 4.0, LibraryStation 4.0, and MVS/CSC 4.0).

The T9940A drive requires ACSLS 5.3.2 and Put 0001 or ACSLS 5.4 or higher. The T9940A requires NCS 4.0 or higher (NCS includes HSC 4.0, LibraryStation 4.0, and MVS/CSC 4.0).

Table 6-1. Software Configuration Worksheet

Software	Processor 1	Processor 2
Operating System Vendor/Type		
Backup/recovery		
Archival/migration		
Performance monitoring		
Data compression		
ACSLS level		
HSC level		
Driver		
Tape Management System		
Additional		

_____

Sun StorageTek Representative (date)

_____

Customer Representative (date)

Table 6-2. ACSLS/HSC General Configuration Worksheet

	System 1	System 2	System 3	System 4
Model/features				
Power requirements				
Space requirements				
Console/ keyboard				
Mouse				
Customer ports/ cables				
Maintenance port				
Ethernet address				
Ethernet. backbone cable/ type				
Ethernet. transceiver hookup				
Internet address				
UNIX install media				
Server scratch tape				
ACS number designations				
LSM number designations				
Port A modem hookup				

Table 6-3. HSC General Configuration Worksheet

	Processor 1	Processor 2	Processor 3	Processor 4
Model/features				
Number of channels				
Channel speed				
Channel type (serial/parallel)				
Channel cable length				
CHIPID				
Device address				
POST/MPST available				
PM2/MPPM available				
LIBGEN programmer contact				

Table 6-4. Server/HSC Customer/Subsystem Configuration Worksheet

	Processor 1	Processor 2	Processor 3	Processor 4
Model/features				
Clearance space requirements with drives				
Cooling requirements				
Power requirements				
Host ID (H)				
CEM locations, types (H)				
CTU addresses (H)				
CTU cable lengths (H)				
Port numbers (S)				
LAN cable lengths (S)				
MARS box/cable				
Note: (H) =HSC, (S) =server, blank =both				

IBM MVS/HSC Host Attachment 7

Software Configuration

This chapter provides worksheets for the IBM MVS/HSC attachment configuration.

Write your current operating system information in the following worksheet:

		Current Level	Current PUT	Plan Level	Plan Date
Operating System					
	MVS/ESA				
	JES2				
	JES3				
	OS/390				
	Other				

Write your current product information in one of the following worksheets:

	Products	Current Level	Current PUT	Plan Level	Plan Date
Tape Management	CA-1, CA				
	CA, TLMS, CA				
	EPIC, CA				
	VMTAPE, IBM RMM, IBM				
	Other				

	Products	Current Level	Current PUT	Plan Level	Plan Date
Security Package	RACF, IBM				
	ACF2, CA				
	CA-TOP SECRET, CA				
	Other				

	Products	Current Level	Current PUT	Plan Level	Plan Date
Storage Management	DF/HSM, IBM				
	DMS/OS, STERLING				
	CA-ASM2, CA				
	FDR/ABR, INNOVATION Data Processing				
	Other				

	Products	Current Level	Current PUT	Plan Level	Plan Date
Reserve/ Release	GRS, IBM				
	MIM/MIA CA				
	Other				

Write any planned program product information in the following worksheet:

Product	Vendor	Level

❑ Yes ❑ No Does the customer have any software products that modify JES2 allocation (IEFAB421) or the JES3 device scheduler (IATMADL)? If yes, explain:

❑ Yes ❑ No Does the customer have any software products that modify JES2/ JES3 message handling *write to operator* (WTO Exit)? If yes, explain:

❑ Yes ❑ No Does the customer use Data Facility/System Managed Storage (DF/SMS)? If yes, explain:

❑ Yes ❑ No JES3 only? Will JES3 SETUP control the transports? Refer to the JES3 section in the *HSC System Programmers' Guide*.

❑ Yes ❑ No Does the customer have any software products that modify DETACH message, DIAGNOSE, IUCV DASD BLOCKIO, RSCS?

What are the software maintenance procedures (for example, change control system, frequency of maintenance, method such as SMP/E)?

❑ SMP/E PUT Tapes ❑ Other, describe below:

What are the major bottlenecks in the system today?

❑ Yes ❑ No Will any JCL changes be made to accommodate a library? If yes, explain:

❑ Yes ❑ No Does the customer have any special IPL considerations? If yes, explain:

VM ONLY? Does the customer have any software products that modify?

	Yes	No
DETACH MSG		
DIAGNOSE		
IUCV DASD BLOCKIO		
RSCS		

Comments:

What cartridge media are used?

	Yes	No
18-track without ICRC		
l8-track with ICRC		
Auto/Scratch Loader ACLs		
Helical Scan		
Linear serpentine		
36-track		
36-track E cartridge		
36-track EE cartridge		

❑ Yes ❑ No Does the customer use software that manipulate UNIT=AFF-Chains/GDG-chains like PoolDASD?

Explain how tape units are allocated (for example, Generics or Esoterics).

Indicate the following SYS1.PARMLIB settings:

IEAOPTxx ❑ **Next** ❑ **First** ❑ **Lowest** ❑ **Random** (Recommended SELTAPE=RANDOM)

DEVSUPxx COMPACT= ❑ **Yes** ❑ **NO**

DEVICE Preference list ❑ **Standard** ❑ **Modified**

If modified, explain:

What are the HIPER PTFs? They are **H**igh **I**mpact **Per**vasive notifications of known software problems and their corrections.

For more information, go to the Customer Resource Center Web site, click the "Tools & Services" link, and scroll down to HIPER subscriptions.

❑ **3-1/2 in. PC floppy** ❑ **None use 18/36-Trk**

❑ Yes ❑ No If the customer is installing the ACS under more than one MVS system, do the systems already share DASD? Comments:

❑ Yes ❑ No If the customer is installing T9840/T9940 Tape Drives, does the 9330 LMU have Compatibility 12 microcode (a mini mum of the EC-released version of 1.6 microcode)?

Channel Hardware Configuration

Record the customer channel hardware configuration for connecting tape drives.

The SD-3, 9490, 9490EE, T9840 and T9940A are available with the ESCON interface.

Current CPS	**1**	**2**	**3**	**4**
Processor				
CHAN#/CHPID				
CHAN SPEED				
CHAN#/CHPID				
CHAN SPEED				

StorageTek POST and PM2

❑ Yes ❑ No Is POST currently installed on the customer system? If yes, which level?

_____

❑ Yes ❑ No Can POST job streams be submitted through TSO?_____

Do Sun StorageTek CSEs have:

TSO Logon IDs _____

VM Logon IDs _____

❑ Yes ❑ No Is PM2 currently installed on the customer system? If yes, which level?____

Sun StorageTek MPST and MPPM

❑ Yes ❑ No Is MPST currently installed on the customer system? If yes, which level?

❑ Yes ❑ No Can MPST job streams be submitted through TSO?_____

Do Sun StorageTek CSEs have:

TSO Logon IDs _____

VM Logon IDs _____

❑ Yes ❑ No Is MPPM currently installed on customer system? if yes, what level?_____

Remote Software Support

Which of the following levels of remote software support will the customer allow?

_____ TSO userid that can be accessed remotely to execute jobs (for example, STCPOST, GTF)

_____ TSO userid that can be accessed remotely with read-only access to limited data sets

_____ RJE capability sign-on and job card. This capability allows you to submit batch jobs and receive output.

_____ RJE capability with sign-on card only. This allows you to receive output that has been queued to the RJE printer.

_____ No remote support allowed

MVS-based Nearline Control Solution

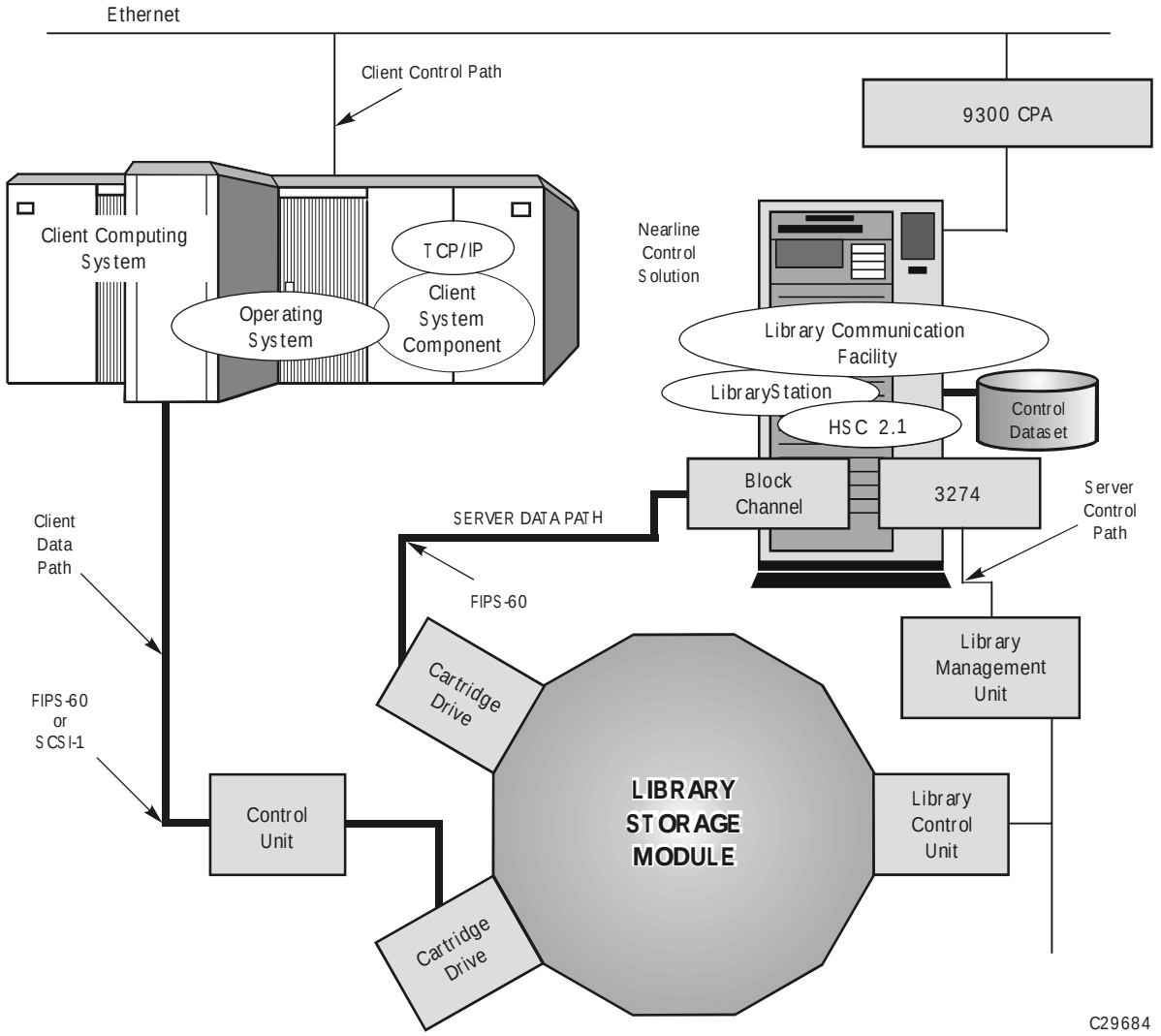
8

This chapter provides worksheets for the MVS-based Nearline Control Solution (NCS) configuration.

The MVS-based NCS, using a primary software component called LibraryStation, serves much the same function as the UNIX-based Library Control System, but in an IBM mainframe environment.

The LibraryStation software operates under IBM's MVS operating system, but accepts UNIX-based Library Control System protocols. This capability enables network clients to connect with an ACS through MVS/HSC on an IBM (or IBM-compatible) CPU. Figure 8-1 on page 8-2 is a typical configuration.

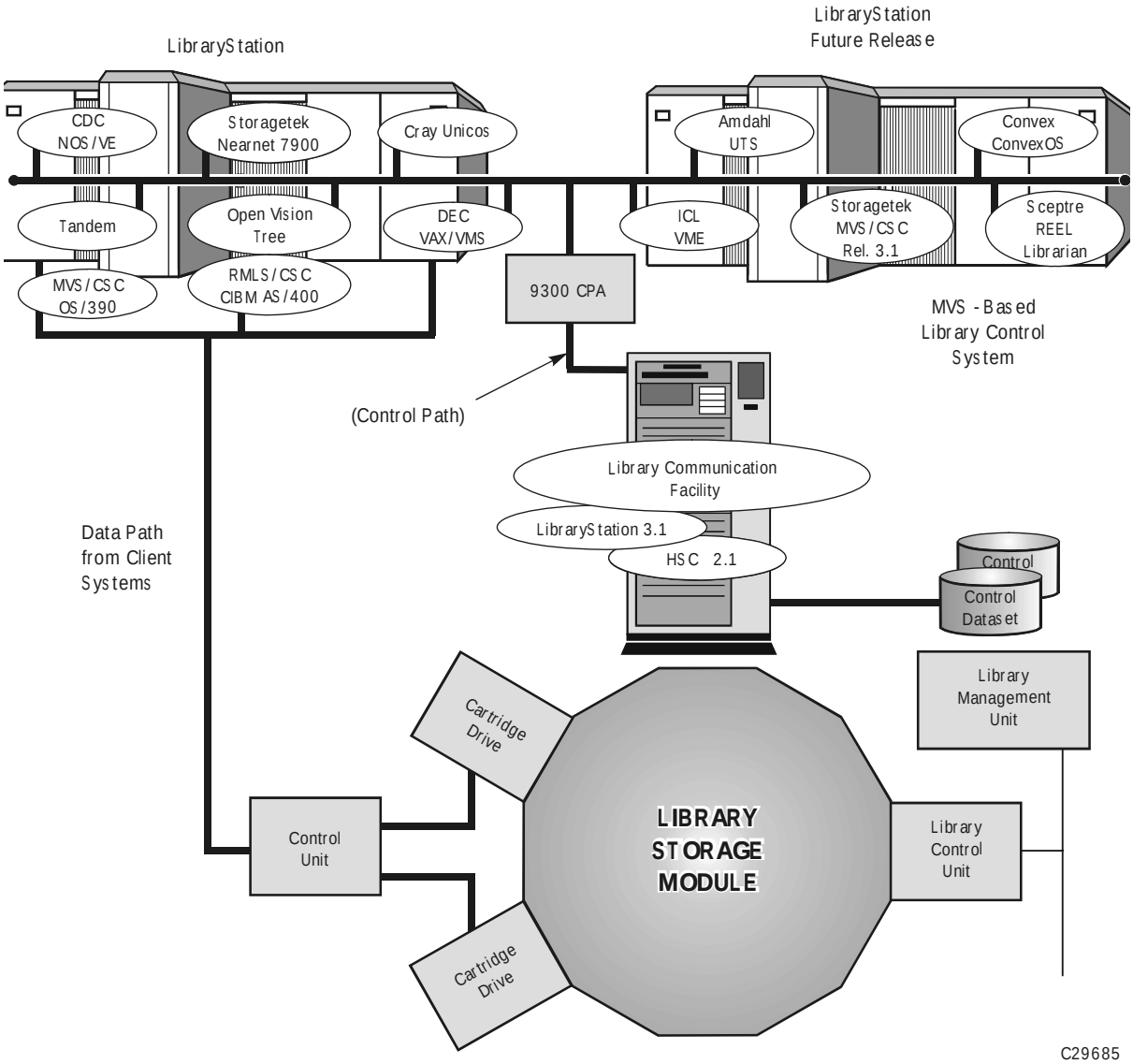
Figure 8-1. Typical MVS-based Nearline Control Solution Configuration



LibraryStation

The MVS-based Nearline Control Solution comprises the Sun StorageTek LibraryStation software, the Sun StorageTek Library Communication Facility (LCF) software, and a hardware LAN interface device called a control path adapter (CPA). LibraryStation software is the central system component that works through MVS/HSC for library access. Figure 8-2 is network client types that are supported in the current LibraryStation release and that are scheduled for a future release.

Figure 8-2. LibraryStation System



❑ Yes ❑ No Does this customer already have LibraryStation installed?_____

_____If yes, which level of LibraryStation is installed?

_____If no, which level of LibraryStation has been ordered?

❑ Yes ❑ No Has this host facility been identified as a node on the Ethernet network?_____

_____What is the Internet (IP) address of this node?

_____What is the network host-name of this node?

❑ Yes ❑ No Will this LibraryStation serve multiple clients?

Note: The minimum operating system levels for LibraryStation 3.0 support for **NCS 1.1** are HSC 2.0.1, MVS/CSC 3.0, MVS/XA Version 2.1 (SLS), MVS/ESA 3.1 (SLS), MVS/ESA 4.1 (SOS), MVS/ESA Version 4.2 or 4.3 (LU 6.2).

Note: The minimum operating system levels for LibraryStation 3.1 support for **NCS 2.0** are HSC 2.1, MVS/CSC 3.1, MVS 5.2.2, JES3 5.1.1 or 5.2.1. *These are required for T9840 drive attachment and 9490EE.*

Note: For LibraryStation 3.1, you can use IBM TCP/IP instead of LCF.

_____ What is the MVS host processor where LibraryStation will (or does) reside?

_____ What is the MVS operating system and release level?

List all clients to be served, both new and pre-existing.

New? (Y/N)	Client ID	Client Type	Description

Complete and attach the appropriate client section of this document for any *new* clients. Enter the attached section numbers.

❑ Yes ❑ No Is the customer aware that the LibraryStation installation is an SMP/E modification to HSC, and that LibraryStation operates within the HSC address space? An installation or upgrade will disrupt continuous HSC operation.

_____ Is this an original installation or an upgrade?

_____ What time is most suitable for the installation or upgrade?

❑ Yes ❑ No LibraryStation requires DASD space for a Persistent Data File (PDF), in addition to the normal HSC Control Data Set (CDS). Has an appropriate placement of the PDF been identified?

_____ If yes, where?

Network Attach Hardware

An MVS-based NCS requires a network interface device to convert the host computer from FIPS-60 (bus and tag) physical format to a supported network physical format. For Ethernet attachment, Sun StorageTek offers the 9300-001 Control Path Adapter (CPA).

❑ Yes ❑ No Is a physical LAN connection accessible at the host computer? It is the customer's responsibility to provide access to the LAN with a transceiver (AUI) cable.

❑ Yes ❑ No Is a supported CPA available or has one been ordered? At present, only the following are supported:

- The Sun StorageTek 9300-001 (at firmware level 6.8 or higher)
- The IBM 3172 Interconnect Controller
- Any device that fully complies with CETI (Continuously Executing Transport Interface) protocol or is fully compatible with the IBM 8232

_____ What type of CPA will be used? You cannot use a CPA which is, or has been used, for a Unisys attachment.

❑ Yes ❑ No Is the customer aware that an MVS IOCP generation and an operating system re-IPL will be required to identify the CPA ports?

❑ Yes ❑ No Does adequate space and power exist for the CPA? The following table lists requirements for the 9300-001 CPA.

9300-001 CPA Space and Power Requirements	
Height	152 mm (6.0 in.)
Width	432 mm (17.0 in.)
Depth	356 mm (14.0 in.)
Weight	12.7 kg (28 lb.)
Power	110/220 VAC 50 or 60 Hz
Operating Temperature	l0° to 38° C (50° to 100° F)

Network Attach Software

The Sun StorageTek Library Communication Facility (LCF) software is the host-to-TCP/IP interface between LibraryStation and the CPA.

❑ Yes ❑ No Have you ordered the Library Communication Facility?

LCF Release 2.0 or higher is required for NCS 1.1, LibraryStation 3.0. MVS/CSC Release 1 *cannot* be used. The transceiver cable should be right angle, plenum-rated.

LCF is *not* required for NCS 2.0, LibraryStation 3.1.

_____ Which release level of LCF is available or will you install?

❑ Yes ❑ No Is your customer aware that the Library Communication Facility requires a private address space and storage space on disk? Refer to *LCF Installation and Customization, for specific details.*

❑ Yes ❑ No Is your customer aware that an MVS system IPL might be necessary to add a new subsystem ID (required) for the LCF?

_____ What is the LCF subsystem ID? ACSS is the default.

❑ Yes ❑ No Will this LCF support MVS/Client System Component (MVS/CSC Rel. 2)?

Library Attach Hardware

❑ Yes ❑ No Does this customer already have an ACS attached to this MVS system where LibraryStation will reside?

If yes**,** attach an ACS configuration diagram showing revisions appropriate to this installation.

If no**,** complete the worksheets provided in Chapter 4, "Ordering the Equipment."

Library Attach Software

❑ Yes ❑ No Does this customer have the correct level of MVS/HSC currently installed?
The T9840 and 9490EE Tape Drives require HSC 2.1.
Refer to "LibraryStation" on page 8-3 for the required levels.

_____ If yes, which level of MVS/HSC is currently installed?
_____ If no, which level of MVS/HSC will you install or upgrade to?

❑ Yes ❑ No Is the customer aware that he might need an MVS/HSC Library Generation (LIBGEN) to define a modified HSC support structure or new ACS hardware being attached to LibraryStation?

Miscellaneous

❑ Yes ❑ No Has the customer been trained on the LibraryStation and the Library Communication Facility? Education is available through Sun Learning Services.

❑ Yes ❑ No Has the customer ordered all appropriate installation and support publications?

Publication Title	Order Number
LibraryStation Operator and System Programmer Guide	31123970x
LibraryStation Configuration Guide	31123960x
LibraryStation Messages and Codes	31123980x

❑ Yes ❑ No The IBM MVS RACF RACROUTE facility provides the LibraryStation security, which prevents unauthorized cartridge access from the network. RACF calls are is sued for dismount, eject, mount, and set_scratch network client requests. Have you explained security provisions and implications to the customer?

UNIX-based Library Control System

9

This chapter provides worksheets for the UNIX-based library control system configuration. Figure 9-1 on page 9-2 is a typical configuration.

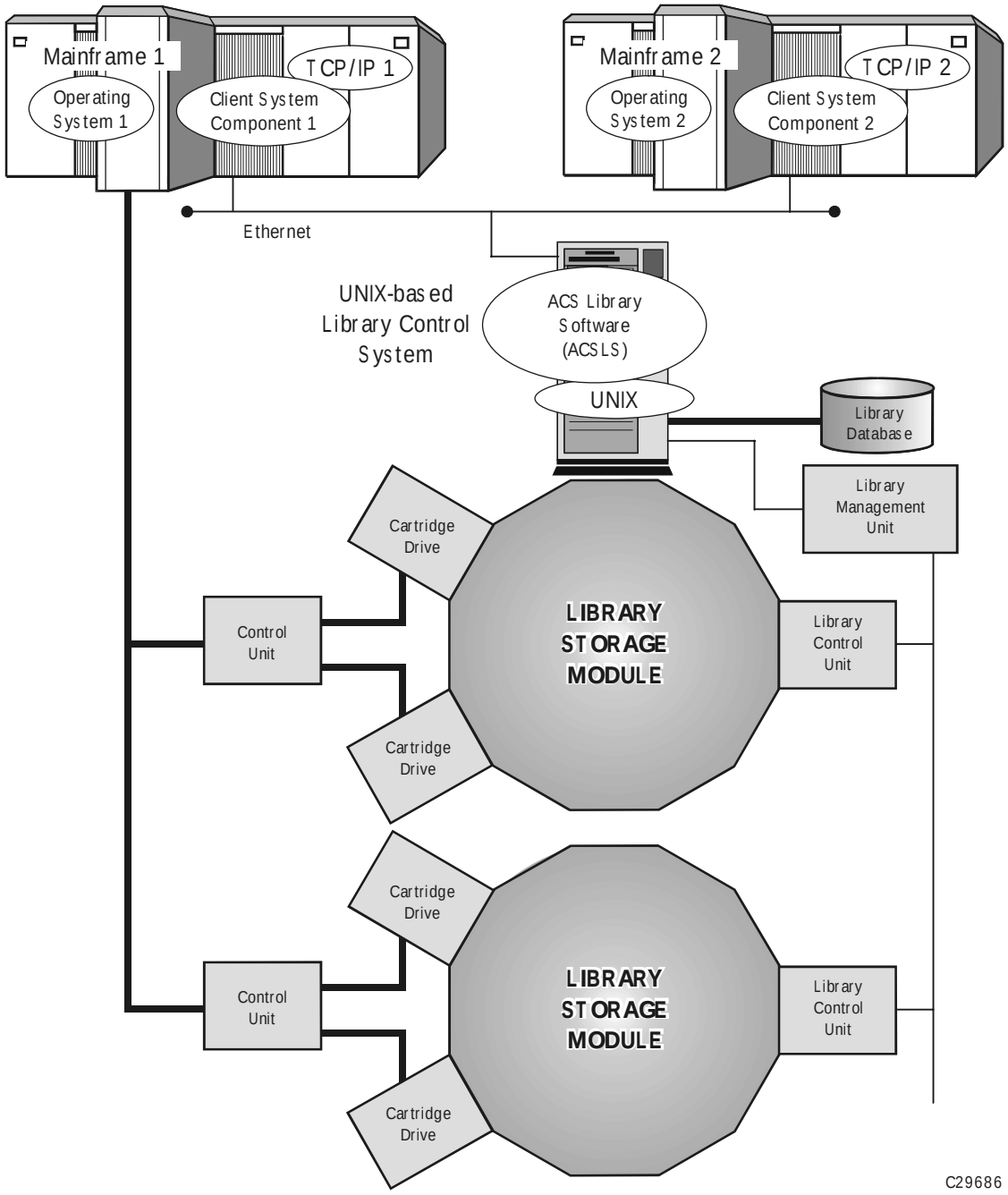
If the UNIX platform is intended to run co-host applications, the customer should have an experienced system administrator resolve conflicting resource requirements between applications.

The following table lists the currently supported software releases.

Table 9-1. UNIX LCS Software Releases

ACSLS	Solaris	AIX
5.3	2.6	4.2.3
5.2	2.5.1	4.2.1
5.1.1	2.4	3.2.5

Figure 9-1. Typical UNIX-based Library Control System Configuration



ACSLS General Information

The ACSLS Product Information Bulletin defines the operating system (OS) and hardware requirements for each ACSLS version.

❑ Yes ❑ No Does this customer have a UNIX-based library control system?

_____ If yes, which operating system is installed (for example, Solaris 2.5)?

_____ If yes, which release of ACSLS is installed?

❑ Yes ❑ No If the customer's system is configured with a 4mm tape backup system, has the customer ordered the appropriate (for example, DC600, 4mm) blank cartridge?

❑ Yes ❑ No Has the library control system been identified as a node on the Ethernet network?

_____ What is the internet (IP) address of the library control system?

_____ What is the network host-name of the library control system?

❑ Yes ❑ No Does the customer intend to run other applications on the same platform as ACSLS?
If the UNIX platform is intended to run co-host applications, the customer should have an experienced system administrator resolve any conflicting resource requirements between applications. Sun StorageTek supports only the ACSLS applications.

❑ Yes ❑ No Have the two LMU-to-library control system cables been ordered with the LMU?

You must order these cables separately. The customer cannot provide these cables.

The standard host is an Ultra-10 25-pin DTE connection.

The standard LMU host is a 4430, 9315, or 9330 25-pin DCE connection.

The following table lists the cable part numbers and descriptions.

Table 9-2. LMU to LCS Cables

Part Number	Description	Length
CABLE4108912-05	25-pin to 25-pin RS423, standard host to standard LMU	15 m (50 ft)
CABLE4108912-10	25-pin to 25-pin RS423, standard host to standard LMU	31 m (100 ft)
CABLE4108912-20	25-pin to 25-pin RS423, standard host to standard LMU	61 m (200 ft)
3106588-01	9-pin to 25-pin RS423, Ultra port-B to standard LMU	6.1 m (20 ft)
3106588-02	9-pin to 25-pin RS423, Ultra port-B to standard LMU	15 m (50 ft)
3106588-03	9-pin to 25-pin RS423, Ultra port-B to standard LMU	31 m (100 ft)
3106588-04	9-pin to 25-pin RS423, Ultra port-B to standard LMU	61 m (200 ft)

❑ Yes ❑ No Does your customer have a 10-base-T (twisted pair) transceiver cable ready to connect Ethernet to the Library Control Processor? The transceiver cable must be right angle, plenum-rated. The 4443-UX1 supports 100-base-T.

❑ Yes ❑ No Does your customer want the existing LMU that interfaces to an IBM unit (by way of 3270) to interface to this UNIX-based library control system (by way of RS423)? If yes, order the appropriate Sun StorageTek parts and have a CSE convert it.

If the existing LMU is a 4430-001 with a serial number less than 883, *you must order* C/B 43743, 3270 LMU-to-RS423 LMU. If the 4430-001 serial number is 883 or higher, *you must order* C/B 43609, Add RS423 HOST I/F (NN).

Sun Microsystems Workstation LCP

❑ Yes ❑ No Does a Sun Microsystems workstation exist for the Library Control Processor?

ACSLS library control software is released to run on most SPARC, Ultra-SPARC, and RS/6000 machines. Sun StorageTek has configured the 4443-UX1 to run ACSLS. If the customer chooses to supply his own platform, the customer should use the following location for the ACSLS version:

Logon to the Customer Resource Center, click "Current Products," and then link to "ACSLS" for the most current documentation.

If the customer supplies the SPARC platform, it must meet the following minimum requirements:

- sun4m or sun4u architecture
- 32 MB of main memory if usage does not exceed 100 mounts per hour
- 2 GB primary disk drives
- 1 GB secondary disk drive
- 10/100-base-T Ethernet
- Two RS423 ports

Features for the 4443-UX1 include:

- 2012—dual differential SCSI host bus adapter
- SSEE—single-ended SCSI host adapter and 10/100-T Ethernet
- SERX—8-port serial adapter, recommended for dual LMU
- 4MM1—4MM tape device, recommended for disaster recovery. The 4MM1 is a single-ended SCSI device and requires the SSEE adapter.

IBM RS/6000 Workstation LCP

The platform must contain the following minimum requirements:

- 64 MB of main memory
- 2 GB primary disk drives
- Token-ring adapter or Ethernet
- Two RS232 ports
- AIX SNA services 2.1 to provide token-ring attachment to the AS/400
- AIX Windows Environment/6000
- AIX version listed at:

Logon to the Customer Resource Center, click “Current Products,” and then link to “ACSLS” for the most current documentation.

Sun StorageTek 4443-UX1 LCP

❑ Yes ❑ No Does adequate power exist for the Library Control Platform?

The power specification is 180/264V, 1450 VA, single phase (47.5/66 Hz).

❑ Yes ❑ No Does adequate space exist in the data center for the 4443-UX1 Library Control Platform?

4443-UX1 Pedestal Dimensions			
Height	Width	Depth	Weight
40 cm (16 in.)	18 cm (7 in.)	44 cm (17 in.)	20 kg (44 lb)

4443-UX1 Monitor Dimensions			
Height	Width	Depth	Weight
40 cm (16 in.)	44 cm (17 in.)	40 cm (16 in.)	17 kg (38 lb)

❑ Yes ❑ No Is the environment adequate?

4443-UX1 Operating Environmental Limits	
Temperature Range	10º to 35ºC (50º to 95ºF)
Humidity Range	40% to 80% noncondensing
4443-UX1 Non-operating Environmental Limits	
Temperature Range	-20º to 60ºC (-4º to 140ºF)
Humidity Range	30% to 90% noncondensing

_____ The modem port is a 25-pin D connector for the 4443-UX1.

Which type of connector does the MODEM have installed?

❑ Yes ❑ No Have you discussed maintenance?

The 4443-UX1 *must* be under a maintenance agreement that provides two-hour response.

_____Which organization is performing maintenance?

Miscellaneous

❑ Yes ❑ No Are the appropriate customer personnel trained in Solaris System Administration?

❑ Yes ❑ No Are appropriate Solaris manuals available at the installation site or have they been ordered?

❑ Yes ❑ No Have you ordered all appropriate ACSLS installation and support manuals?

VM-based Library Control System 10

This chapter provides worksheets for the VM-based library control system configuration. Figure 10-1 on page 10-2 is a typical configuration.

Software Preconfiguration

❑ Yes ❑ No Does this system require a software preconfiguration?

❑ Yes ❑ No Will this library control system share a control data set (CDS) with another MVS or VM host running MVS or VM/ host software component?

Description of complex, using 50 characters or less:

_____

_____ MB Physical Memory size?

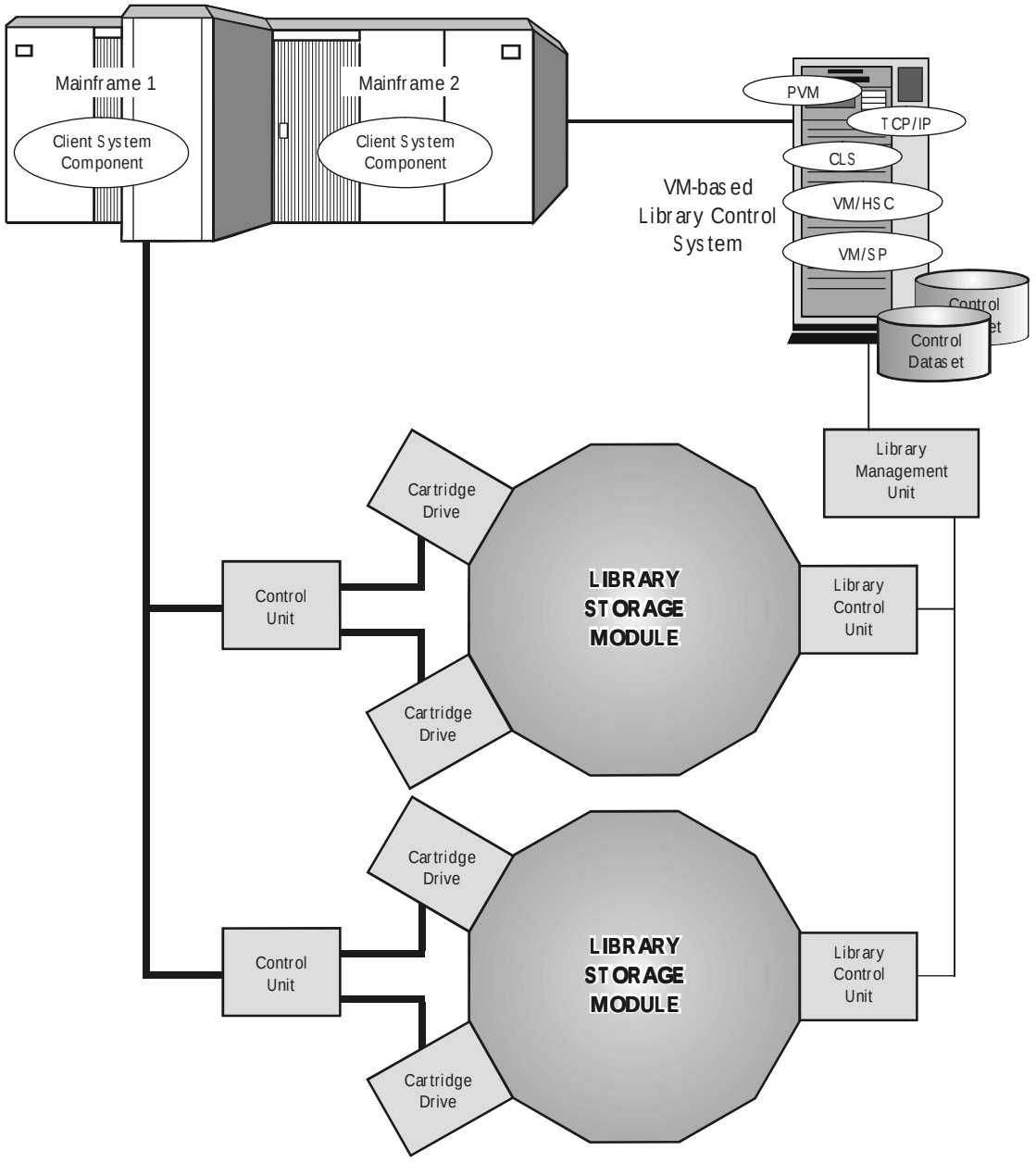
❑ Single ❑ Dual Single or Dual Server?

❑ Yes ❑ No Does the customer want to have a password for the EJECT command? If yes, provide the pass word that the operator will enter at the client system console for ejecting tapes from the library. The password must be eight characters or less, and the default is CLS:

_____

The customer may have up to 16 LSMs in the configuration. Each 4410/9310 LSM can have multiple drives and transports, as described in Chapter 3, "System Overview." Also, each LSM can have up to four cartridge exchange mechanisms (CEMs).

Figure 10-1. Typical Configuration of VM-based Library Control System



The information requested below is required to properly sysgen the VM/HSC part of the library control software. Supply the information as it applies to your customer's site. Copy this page so that you can complete a page for *each* LSM.

Notes:

1. The 9360 can have one or two cartridge drives and one or two pass-thru ports on Panel 1. Specify if this is a 9360 installation.
2. This information is not applicable to 9741 frames.

LSM	Cartridge Drive 0	Cartridge Drive 1	Cartridge Drive 2	Cartridge Drive 3
	Panel	Panel	Panel	Panel
Host address of top transport				
Host address of transport				
Host address of transport				
Host address of bottom transport				

❑ Yes ❑ No Will your customer's configuration have any pass-thru ports in this LSM? If Yes, supply the following information for this LSM:

	PTP Panel Number	Master or Slave PTP	Adjacent LSM Number
PTP 1			
PTP 2			
PTP 3			
PTP 4			

The *CLS User's Guide* contains answers to the following questions. The guide is under Configuration Database Management.

Copy this page and the next two pages, and provide the information for *each* client computing system client:

_____ Client ID (LP name). *This must be alphanumeric.* (Default=CLSLPl)

_____ Version number of LP configuration to be autologged at startup (Default = 00)

_____ Description of client ID, such as production system, for comment only)

_____ Operating system

_____ Interface link protocol (TCP/IP or 3270)

_____ Internet addresses for a library control system connected to its clients by Ethernet and CP/IP

_____ Default scratch pool (1-255) (default = 0 = entire ACS)

_____ Default scratch label type, such as standard IBM, unlabeled, ANSI, or non-standard labels (default = A)

❑ Yes ❑ No Eject notification? No, unless this client system component supports a user interface that processes enter/eject notifications.

❑ Yes ❑ No Autolog?

❑ Yes ❑ No Have you defined your scratch pools? While scratch pools are not required, it makes sense to define a logical grouping for pool ranges. Refer to the *ACS Common Library Service User's Guide* for information about how you can set up scratch pools.

If yes, complete the following table.

Description	Number	Label Type	VOLSER Range

In the following table, list:

- The client device name for each transport in the library
- The corresponding IBM address for each transport

If a client computing system has access to more than three LSMs, make copies of this page.

LSM # _____		**LSM # _____**		**LSM # _____**	
Client Device Name	IBM Address	Client Device Name	IBM Address	Client Device Name	IBM Address

LSM # _____	LSM # _____	LSM # _____

❑ Yes ❑ No If this client is using 3270 protocol, provide a CLS sign-on script. An attached hard copy is acceptable for sign-on script or check one of the following defaults. Give cursor position and text expected for sign-on. *This is case sensitive.* The *CLS Reference Guide* contains more information.

_____

_____

_____

_____

_____

_____

_____

_____What is this client's 3270 application name?

BULL Sign-on Script Example

Below is an example of a sign-on script from a BULL processor:

Common Library Services–Configuration Management

----------Communication Keywords/Script----------

Client Id: BULL Version: 01 Last chg: 09/09/93

Description: Sample

```
COMM HANDLER=CLSCOMM VIRTUAL LINE=040
TARGET NODE=CSCSY 1 HEADER LENGTH=5:
SIGNON SCRIPT TIMEOUT=015:
INPUT PRESS ENTER CURSOR 02,02
POSITION 02,0 1 DATA H:
INPUT EXPECT $%$ PRESS CLEAR CURSOR 10,15:
INPUT PRESS ENTER CURSOR 02,13
```

```
POSITION 02,01 DATA CN $ACS,XT1X:
INPUT EXPECT ENTER PASSWORD:/:
PRESS CLEAR CURSOR 10,15:
INPUT PRESS ENTER CURSOR 01,09
POSITION 01,01 DATA WHATEVER:
INPUT EXPECT CONTINUE.:
COMPLETE:
```

Unisys A Series Example

Below is an example of a sign-on script from a Unisys processor:

1. Enter the following on line 1:

COMM HANDLER = CLSCOMM VIRTUAL LINE = <line #>

TARGET NODE <node name> SIGNON SCRIPT

TIMEOUT = 060

where:

<line#> is the virtual line number and

<node name> is the name of the target node

If you need to list available lines and nodes:

   a. Enter the following from the 9370 system console:

      SMSG CLSCOMM Q SYS

   b. The system returns all configured lines and nodes in the following format:

      LINE = <#>

      NAME = <->

      where:

      <#> is the line number; <-> is the name of the node

2. Enter the following on line 2:

   INPUT EXPECT A-SERIES SIGON POSITION 1,1

   DATA SIGNON ACCEPTED CURSOR 1,15

3. Enter the following on line 3:

   COMPLETE

Unisys OS/2200 Example

```
COMM HANDLER=CLSCOMM VIRTUAL LINE=040 TARGET NODE=CSCSYS1
SIGNON SCRIPT TIMEOUT=020
INPUT EXPECT PORT PRESS CLEAR CURSOR 02,03
INPUT EXPECT } PRESS ENTER CURSOR 02,16HR>POSITION 02,02 DATA }$$OPEN
CSCAPP1
INPUT EXPECT PATH OPEN PRESS CLEAR CURSOR 01,03
COMPLETE
```

Communications Hardware

❑ Yes ❑ No Will a 3270 link exist from a client to the library control system?

If yes, provide a 3270 port on the library control system for each client.

If yes, provide an RS232 cable and a pair of modems (or modem eliminator) for each client.

❑ Yes ❑ No Will an Ethernet (IEEE 802.3) link exist from a client to the library control system?

If yes, provide at least one Ethernet interface and transceiver cable on the library control system.

❑ Single ❑ Dual Indicate single or dual LAN configuration.

❑ Yes ❑ No Is the LAN dedicated to client system component/ library control system communication?

Stand-alone IBM 9370 LCP

If the customer is purchasing a complete turnkey VM-based library control system from Sun StorageTek, the 9370 configuration includes a block mux channel. An M20 channel connection to an 18-track device is required to load software. Included in the standard configuration are standard cable lengths:

- 9370 to LMU standard 65 m (200 ft) RG62 coaxial
- 9370 to remote terminal standard 65 m (200 ft) RG62 coaxial

The 4430-001 LMU is unchanged. It connects from the 9370's 3274 output to the LMU with the standard 65 m (200 ft) RG62 coaxial cable. If you need longer cables, order them separately.

❑ Single ❑ Dual Will the library control system be a single or dual server? If it is a dual server, you will need two of everything.

❑ Yes ❑ No Does the 9370 have an attached local tape de vice, or have you made a provision for sharing a subsystem device? The device is needed for downloading software and backups.

_____ List the channel address range of the cartridge subsystem string to be attached to the 9370 for DDR Backup/Restore and to run diagnostics routines.

❑ Yes ❑ No Does the customer know that IBM will be doing the installation of the 9370-004 Library Control Platform?

❑ Yes ❑ No Does adequate electrical power exist for the Sun StorageTek 9370-004 Library Control Platform? The power requirements are listed below.

United States, Canada, and Latin America

- Four 115 V outlets
  - PS/2 Display, 1.8 m (6 ft) cord
  - PS/2 System Unit, 0.28 KVA, 1.8 m (6 foot) cord
  - BM 9370 modem
  - Protocol converter
- One dedicated 20 A circuit for 9375-060 processor

9370-004 LCP Single Phase Power Requirements	
60Hz	59.5 to 60.5 Hz
3 wire	220 or 240 nominal 193 or 208 minimum 238 or 254 maximum
Current	25 A
Power consumption	5 KVA maximum
Power connector	Russellstoll 3750
Power cord	4 m (14 (ft)

❑ Yes ❑ No Does an adequate environment exist for the Sun StorageTek 9370-004 Library Control Platform?

The IBM 9370 Model 60 and PS/2 Console emit 4580 BTU/hr (1154 Kcal/hr) and require an environment that meets the following criteria:

Temperature Range	16°C to 32°C (60° to 90°F)
Humidity Range	8% to 80%
Wet Bulb Max	23°C (73°F)

❑ Yes ❑ No Does the data center have adequate space for the Sun StorageTek 9370-004 Library Control Platform?

United States

PS/2 Console			
Height	Width	Depth	Weight
16.50 in.	16.00 in.	15.75 in.	35 lb

IBM 9375-060 Processor			
Height	Width	Depth	Weight
39.50 in.	25.50 in.	36.25 in.	564 lb

IBM 9375-060 Maintenance Access and Service Clearances	
Front	Rear
65.50 in.	30 in.

IBM World Trade Area

PS/2 Console			
Height	Width	Depth	Weight
414 mm	406 mm	398 mm	16 Kg

IBM 9375-060 Processor			
Height	Width	Depth	Weight
1,000 mm	650 mm	921 mm	258 Kg

IBM 9375-060 Maintenance Access and Service Clearances	
Front	Rear
1,650 mm	760 mm

❑ Yes ❑ No Is there a phone for remote diagnostic support of the library control platform?

_____ If yes, what is the phone number?

❑ Yes ❑ No Have you ordered the following cables (if they are necessary)? For non-U.S. turnkey customers, order LMU-9370 cable PN 4102860-02. You may order an optional secondary 3278 operator con sole from a local source, as well as a protocol converter required for 9370 remote maintenance.

Non-stand-alone 9370 LCP

In this configuration, the customer supplies the VM-based library control platform–any S/370 processor capable of running VM/SP.

It is the *customer's* responsibility to:

- Order VM/SP and PVM and/or TCP/IP directly from IBM
- Order VM/HSC and CLS, as individual products from Sun StorageTek
- Provide the VM skills to install and maintain these VM products
- Provide the coaxial cable (RG62) from the VM platform to the LMU
- Provide client computing system hardware and software to connect to the VM-based library control platform. The hardware and software include such items as 3270 link, Ethernet link, communications software, and client system component.

The customer might want to purchase a secondary console for the library control system. If the customer wants a protocol converter to permit Sun StorageTek Software Support to have dial-up capabilities to the library control system, provide the:

_____ Model number of the library control platform

_____ Connection to be used to communicate with the client

_____ Connection to be used to attach the LMU

_____ Medium for use to download software and provide backup capability for CLS and VM/HSC

_____ Device type on which the CDS will reside

Site Planning Information

A

This appendix provides site planning information for the 4400 Automated Cartridge System (ACS) and the WolfCreek (9360) ACS, and includes:

- Configuration restrictions
- Floor-space requirements
- Physical specifications
- Electrical specifications

The floor-space requirements on some of the figures are for the 4480 Cartridge Drive.

Note: The 4480 requirements are the same as for the 4490, 4791, 4780, and 4781 Cartridge Subsystems. The 9490, SD-3, and T9x40 have smaller floor-space requirements than the 4480.

Configuration Restrictions

When attaching a 9360 to a 4410/9310 LSM, certain restrictions apply:

- Connecting a 9360 to Wall Panel 2 on a 4410/9310.

  Note: This configuration restricts access to the rear of the 4410/9310 LCU. Maintenance access to the optional tape drive (Drive 1) is also restricted. Refer to Figure A-1 on page A-2, Example 1.

- Connecting a 9360 to Wall Panel 1 on a 4410/9310 is not permitted

Notes:

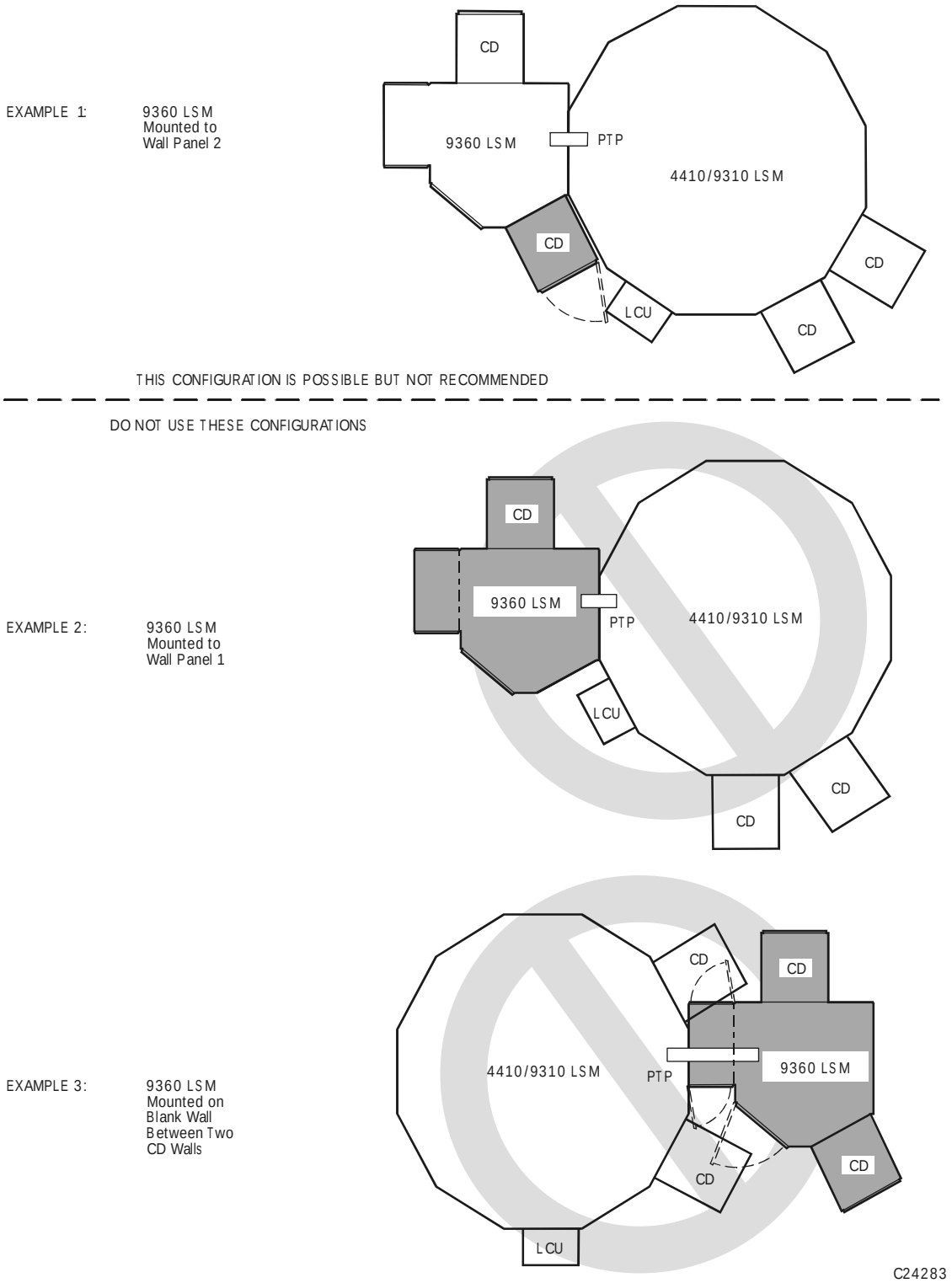
1. This configuration severely restricts access to the rear of the 4410/9310 LCU.
2. You cannot install the optional tape drive (Drive 1) for the 9360.

Refer to Figure A-1 on page A-2, Example 2.

- Connecting a 9360 to a 4410/9310 panel that is adjacent to a drive panel is not permitted.

  Note: With the drives attached to the 4410/9310 walls, you would not be able to open the doors or access the transports. Refer to Figure A-1 on page A-2, Example 3.

Figure A-1. LSM Attachment Restrictions



4400 Facility Overcurrent Protection

Branch circuit fuse or circuit breaker protection for the receptacles providing AC power to the ACS, LCU, and LMU must not exceed 20 A. This current limit ensures adequate short-circuit and ground-fault protection to the library's AC power conductors.

4400 or 9360 Computer Room Floor

Before anyone can assemble the LSM, the raised computer room floor must have been leveled with a laser to meet the requirements listed below:

1. The maximum vertical misalignment of floor tiles is 0.254 cm (0.1 in.) for proper function of floor-leveling pads located beneath the leveling screws.
2. At cartridge drive locations, the floor is level within 0.318 cm (0.125 in.) for a measured distance of 91.4 cm (36 in.) from the LSM.
3. Calculate the maximum out-of-level condition for 2 to 16 LSMs from the following formula:

   For metric (centimeter-gram-second) system:

   X = 2.54 + [(#LSM - 1) * .318]

   For U.S. (foot-pound-second) system:

   X = 1.00 + [(#LSM - 1) * .125]

   when: X = maximum out-of-level tolerance (in centimeters/inches)

   #LSM = number of LSMs in a straight line

   This formula is based on a maximum adjustment in any one LSM floor of 2.54 cm (1 in.), and a maximum step between adjacent LSM floors of 0.318 cm (.125 in.).

4400 Assembly Area

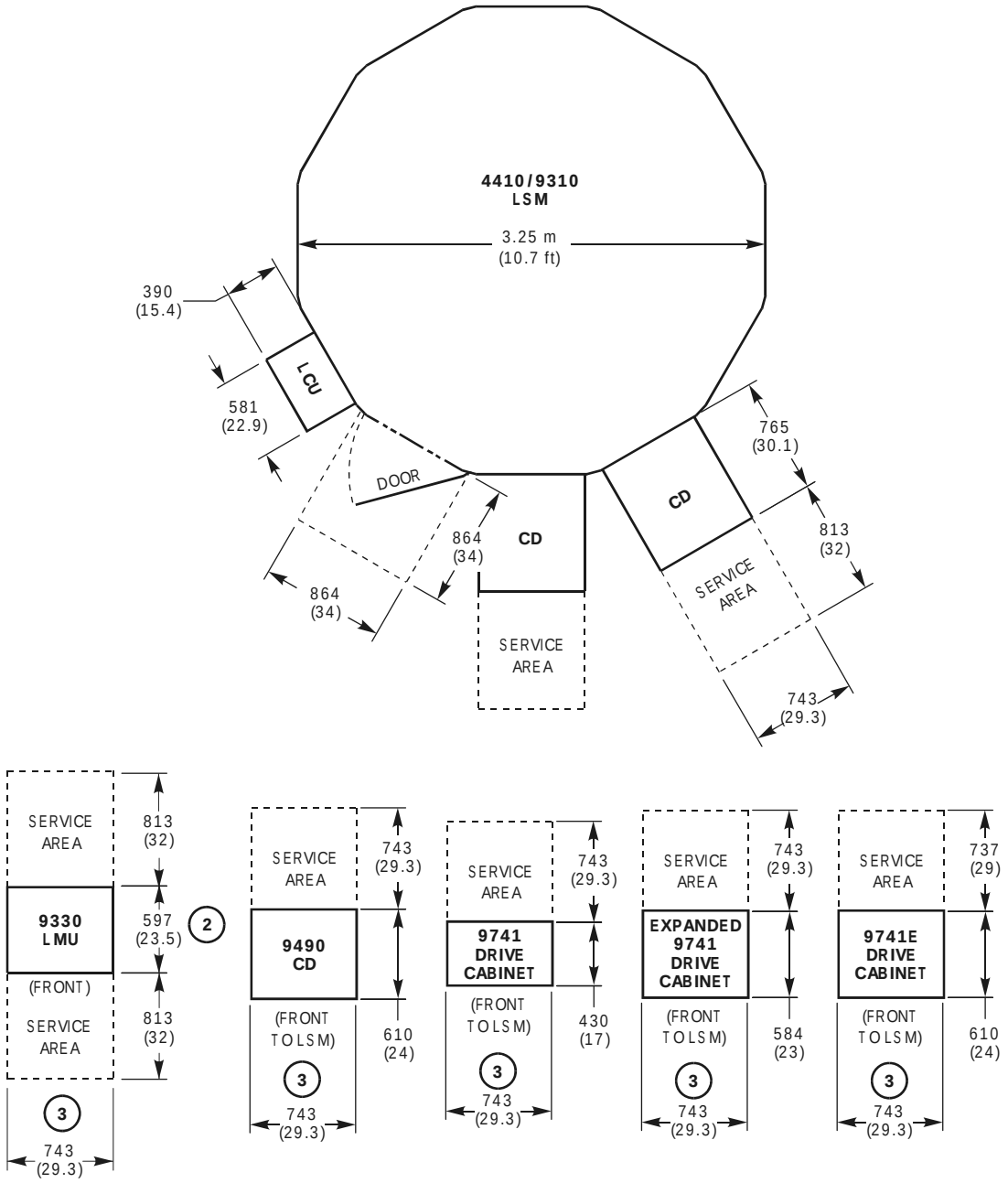
The minimum working area required in the computer room to assemble an LSM is about 35 m^2 (400 ft^2). *This is in addition to the area occupied by any pallet loads*. Coordinate with customer management personnel to make sure adequate working space is available *before* beginning the assembly process. The LSM must be assembled in the exact desired location.

The people installing the LSM will need a pallet jack to move the LSM equipment from pallets. If the customer does not have a pallet jack, rent one. The CSE is responsible for guiding each pallet into place, allowing sufficient space for unpacking the equipment, disposing of packaging material, staging the equipment, and assembling the equipment.

Use Figure A-2 on page A-5 through Figure A-8 on page A-10 to develop a floor plan. Use the full-scale templates in the special tool kit to mark the floor tiles. You will need floor tiles with ventilation holes under the center of the LSM and below each cartridge drive (CD) unit during installation.

Plan the floor tile cutouts for the LCU and CD before assembling the LSM floor.

Figure A-2. 4400 ACS Floor Space Requirements



NOTES:

1. Unless otherwise noted, dimensions are in millimeters (inches).

(2) With front and rear panels attached.

(3) With side panels attached.

C24284

Figure A-3. 4400 ACS Floor Cutout Requirements (Sheet 1 of 2)

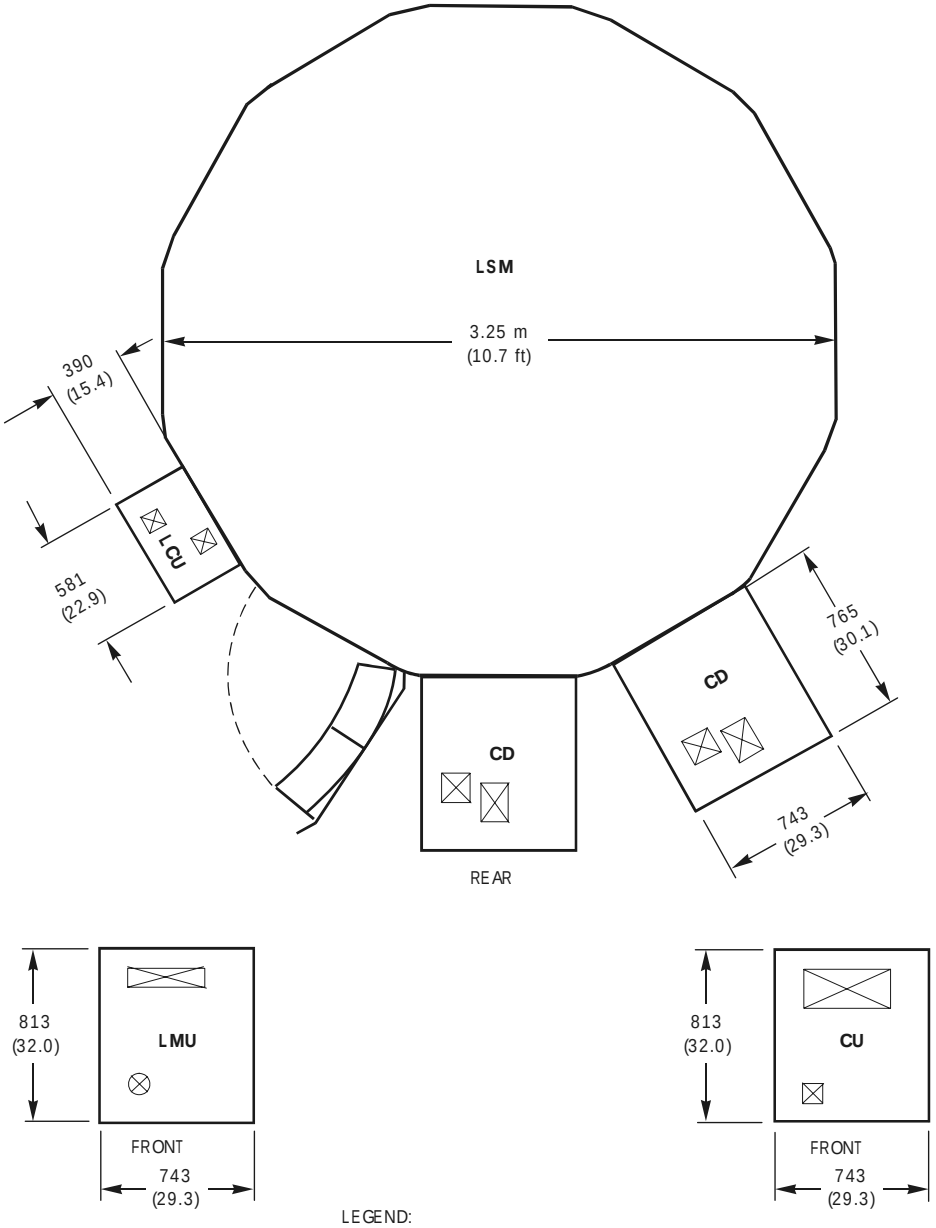
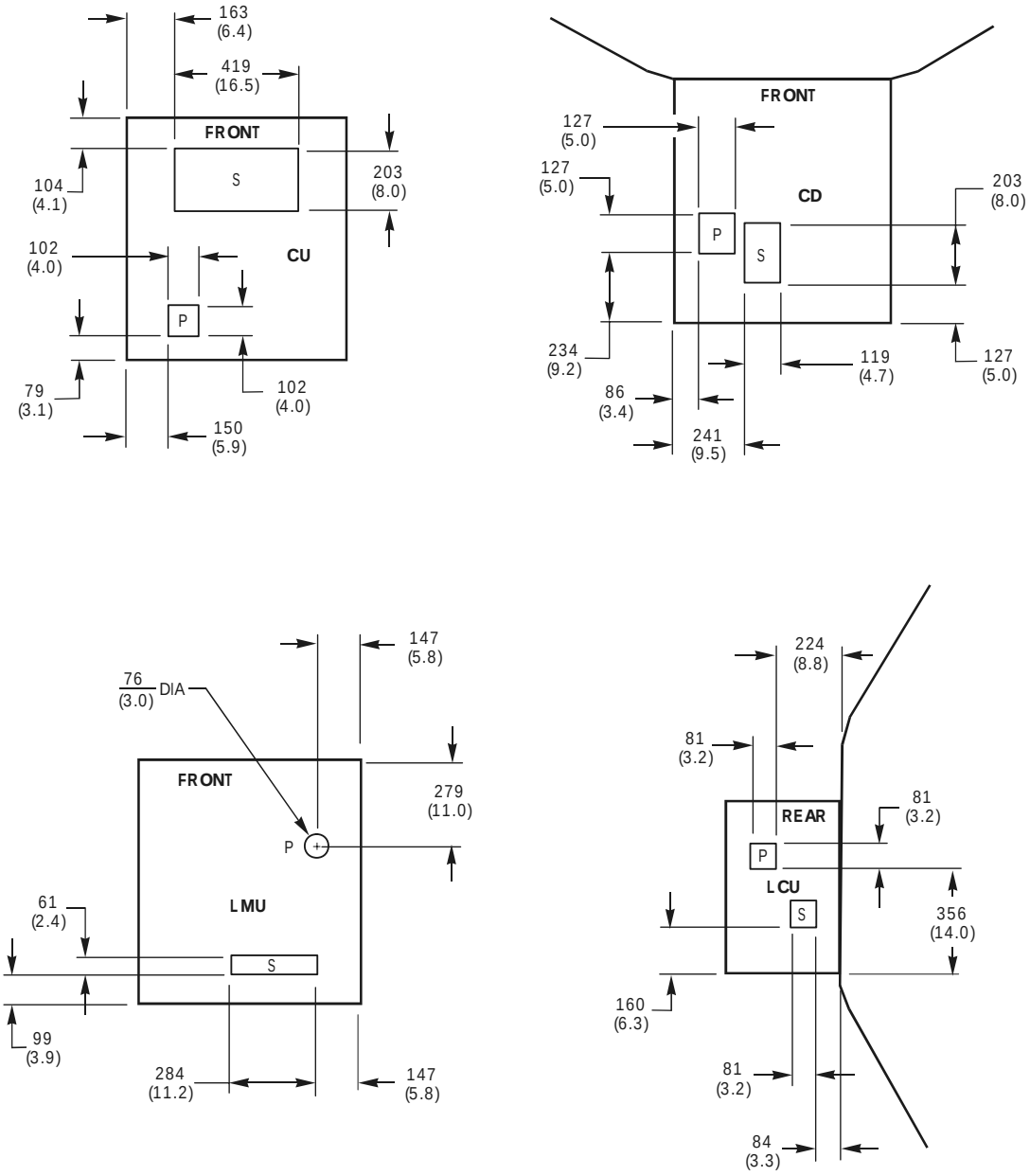


Figure A-4. 4400 ACS Floor Cutout Requirements (Sheet 2 of 2)



NOTE:
All dimensions are in millimeters (inches).

LEGEND:
P = Power Cutout
S = Signal Cutout

C24288

Figure A-5. 4400 Leveling Pad Locations (Sheet 1 of 4)

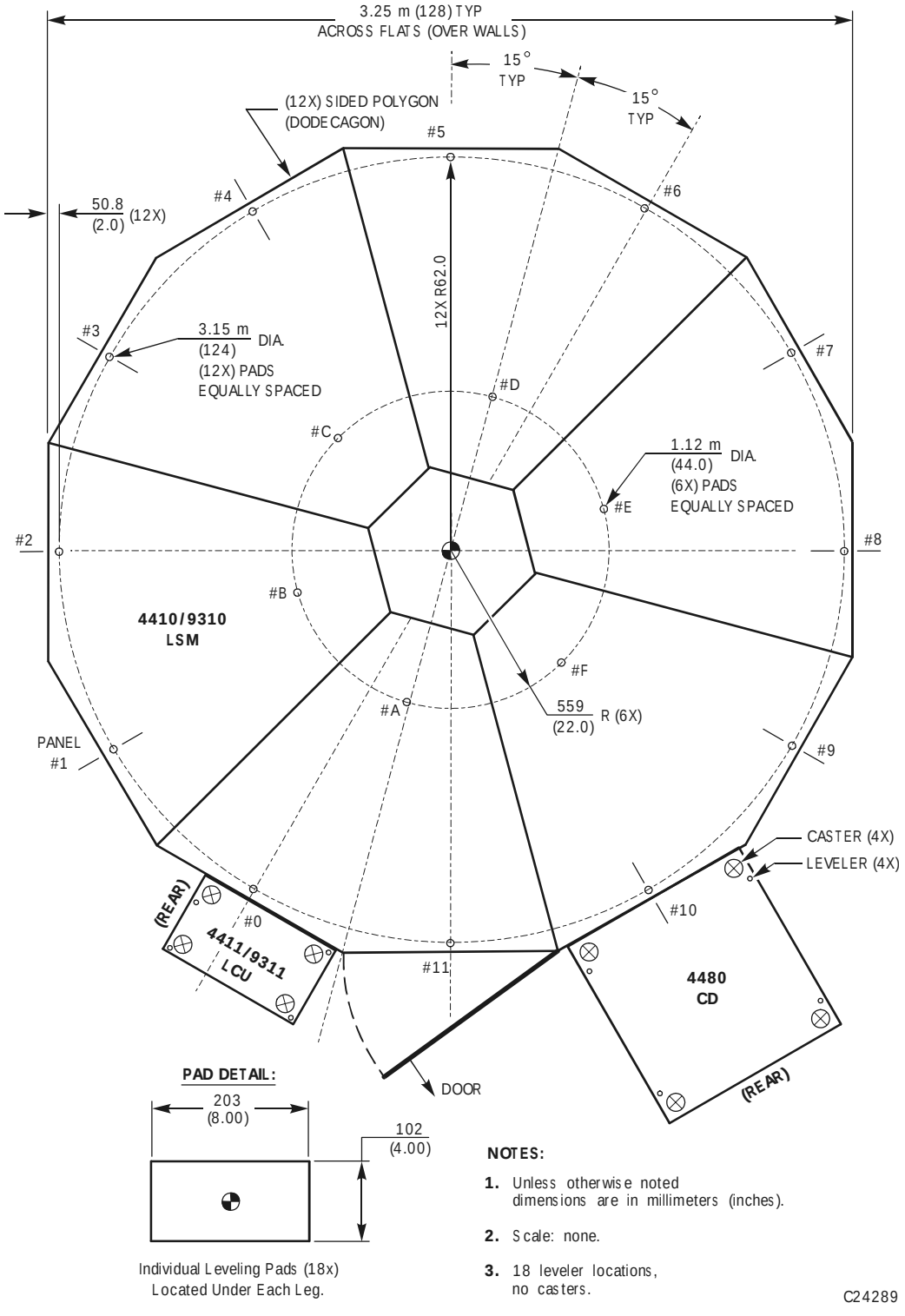
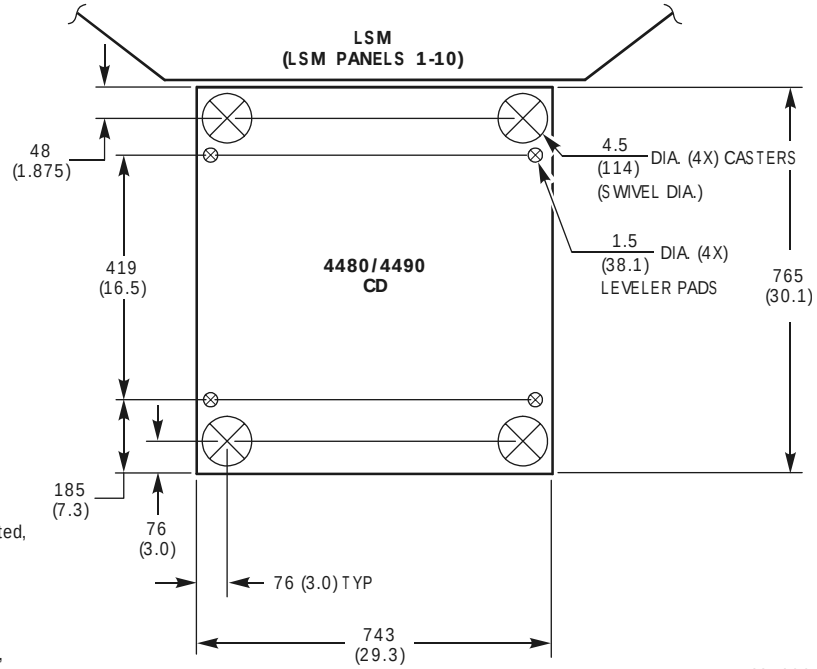


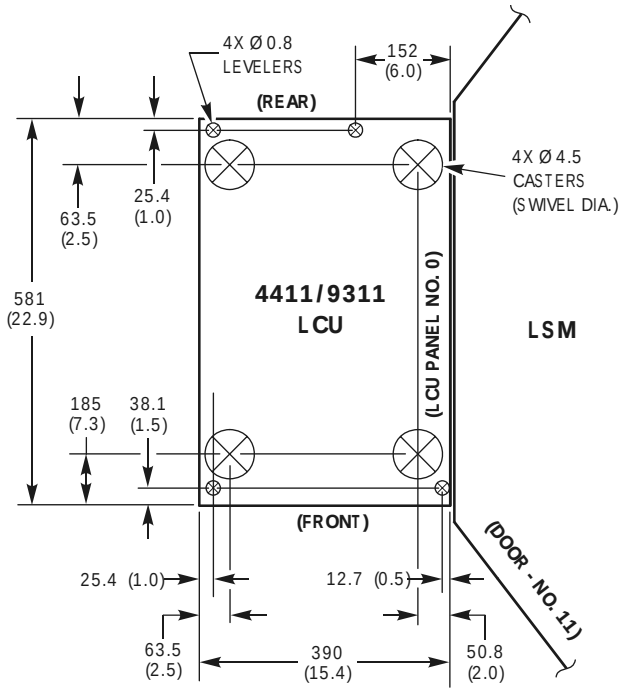
Figure A-6. 4400 Leveling Pad Locations (Sheet 2 of 4)



Notes:

1. Unless other wise noted, Dimensions in millimeters (inches).
2. Scale: none.
3. Unit ships on casters, operates on levelers.

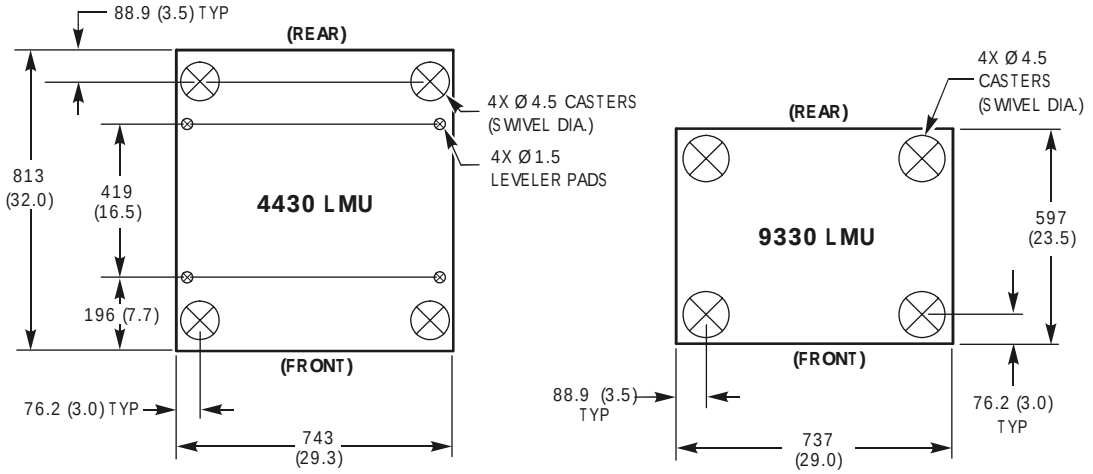
Figure A-7. 4400 Leveling Pad Locations (Sheet 3 of 4)



NOTES:

1. Dimensions in millimeters (inches).
2. Scale: none.
3. Unit ships on casters, operates on levelers.

Figure A-8. 4400 Leveling Pad Locations (Sheet 4 of 4)



NOTES:

1. Dimensions in millimeters (inches).
2. Scale: none.
3. Unit ships on casters, operates on levelers.
4. 9330 lmu has no levelers, ships and operates on casters with wheel chucks.

C24292

4400 ACS Specifications

The following tables list the specifications for the PowderHorn ACS. For drive specifications, refer to the specific drive system assurance guide.

Table A-1. 4400 ACS Physical Specifications

Library Management Unit (4430) (Width is with side panels on; depth is with front and rear panels on.)	Height	1.07 m (42.0 in.)
	Width	743 mm (29.3 in.)
	Depth	813 mm (32.0 in.)
	Service clearance	
	Front	813 mm (32.0 in.)
	Rear	813 mm (32.0 in.)
	Weight	113 kg (250 lbs)
Library Management Unit (9330) (Width is with side panels on; depth is with front and rear panels on.)	Height	930 mm (36.6 in.)
	Width	743 mm (29.3 in.)
	Depth	597 mm (23.5 in.)
	Service clearance	
	Front	813 mm (32.0 in.)
	Rear	813 mm (32.0 in.)
	Weight	97.5 kg (215 lbs)
Library Control Unit (4411/9311) (Width is with side panels on; depth is with front and rear panels on.)	Height	1.61 m (63.5 in.)
	Width	390 mm (15.4 in.)
	Depth	581 mm (22.9 in.)
	Service clearance	
	Front	390 mm (15.4 in.)
	Rear	NA
	Weight	136 kg (300 lbs)
Library Storage Module (4410/9310)	Height	2.35 m (92.5 in.)
	Diameter	3.25 m (128.0 in.)
	Service clearance	
	To open door	860 mm (34 in.)
	Weight	3,810 kg (8,400 lbs) (loaded) 2,449 kg (5,400 lb) (unloaded)
Raised Floor Loading: 244-293 kg/sq m (50-60 lb/sq ft)		

Table A-2. 4400 ACS Electrical Specifications

Library Storage Module/ Library Control Unit (4410/4411) (Voltages are selectable using jumpers.)	Volts (AC)	200 +10% 208 +10%, -15% 220 +10%, -15% 230 +10% 240 +10%, -15%
(Current is branch circuit rating. Average line current is 8.4 A at 180 VAC, 200 VAC nominal.)	Frequency Phases Current Power consumption (operating)	47 to 63 Hz Single 12 A RMS 1.1 kW
Library Management Unit (4430) (Voltages are selectable using jumpers.)	Volts (AC)	200 +10% 208 +10%, -15% 220 +10%, -15% 230 +10% 240 +10%, -15%
(Current is branch circuit rating. Average line current is 8.4 A at 180 VAC, 200 VAC nominal.)	Frequency Phases Current Power consumption (operating)	47 to 63 Hz Single 8 A RMS 0.6 kW
Library Management Unit (9330)	Volts (AC) Frequency Phases Current Power consumption (operating)	200–250, nominal 47 to 63 Hz Single 0.75 A RMS 126 W
Power Connectors (Customer supplies the female connector.)	LMU (4430) LCU (4411) LSM (4410)	US/Canada: Russellstoll 3720 (male) 3743 (box receptacle) 3913 (inline connector

Table A-3. 4400 ACS Environmental Specifications

Temperature	
Operating	16ºC to 32ºC (60ºF to 90ºF)
Storage	4.4ºC to 32ºC (40ºF to 90ºF)
Shipping	-30ºC to 49ºC (-22ºF to 120ºF)
Relative Humidity	
Operating	20% to 80%
Storage	10% to 90%
Shipping	5% to 95% noncondensing
Temperature Change	
Operating	< 5ºC/hr (< 9ºF/hr)
Storage	<15ºC/hr (<27ºF/hr)
Shipping	<15ºC/hr (<27ºF/hr)
Heat Output	
LMU (4430)	517 kcal/hr (2,050 Btu/hr)
LCU/LSM (4411/4410)	945 kcal/hr (3,750 Btu/hr)

9741 Specifications

Note: 9741 cabinets are supported by Sun StorageTek, but new orders must be 9741E cabinets.

The following tables list 9741 specifications.

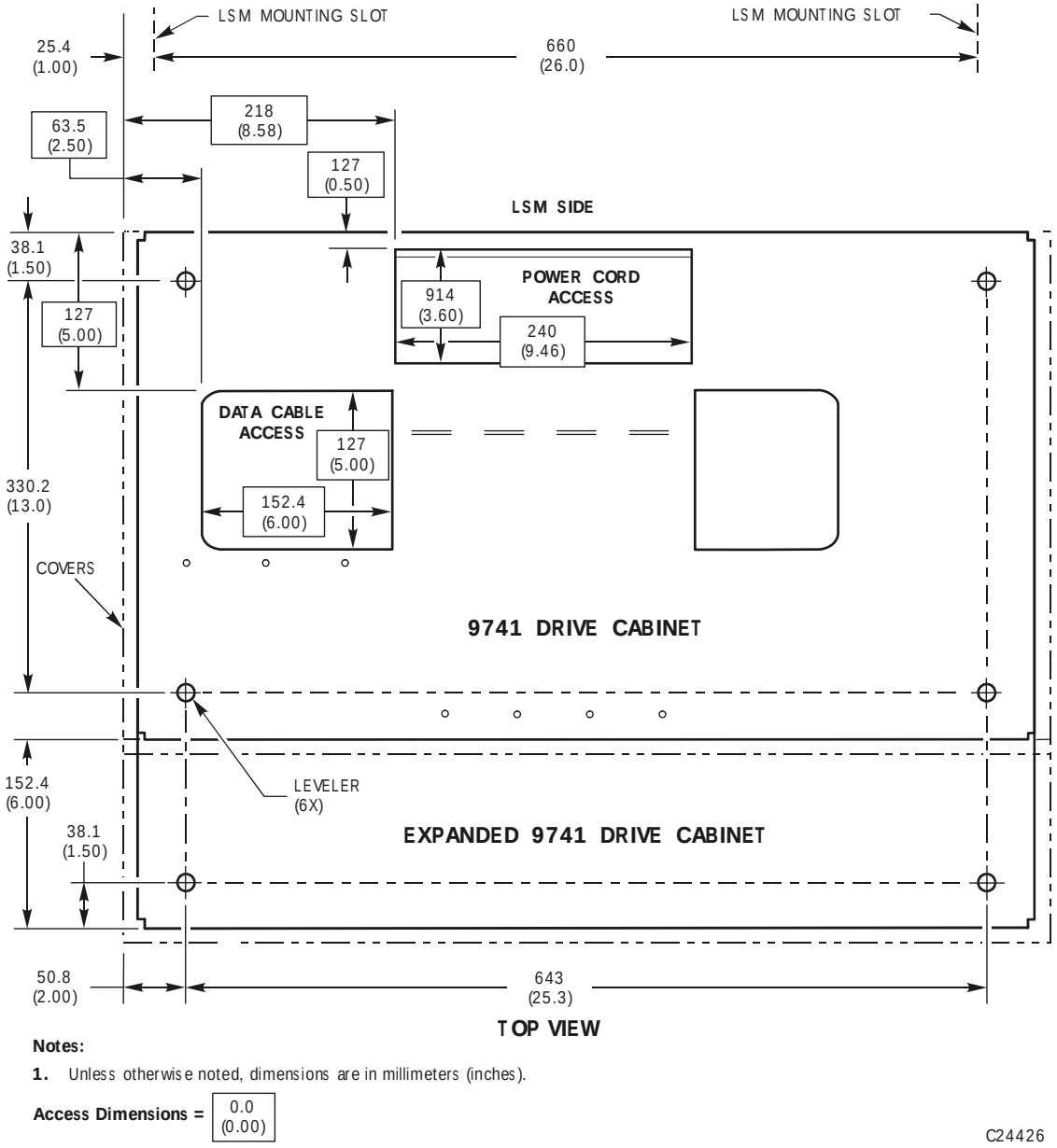
Table A-4. 9741 Physical Specifications

Height	1.83 m (72.0 in.)
Width	760 mm (30.0 in.)
Depth	430 mm (17.0 in.)
Weight	120.2 kg (265.0 lb)

Table A-5. 9741 Environmental Specifications

Temperature	
Operating	16ºC to 32ºC (60ºF to 90ºF)
Storage	4.4ºC to 32ºC (40ºF to 90ºF)
Shipping	-30ºC to 49ºC (-22ºF to 120ºF)
Relative Humidity	
Operating	20% to 80%
Storage	10% to 90%
Shipping	5% to 95% noncondensing
Temperature Change	
Operating	< 5ºC/hr (< 9ºF/hr)
Storage	<15ºC/hr (<27ºF/hr)
Shipping	<15ºC/hr (<27ºF/hr)
Heat Output	3,410 Btu/hr maximum
Power Usage	1,000 Watts maximum

Figure A-9. 9741 Drive Cabinet Floor Cutouts



The additional 152.4 mm (6 in.) area added to the front of the 9741 drive cabinet is for the expanded version of the cabinet intended to accommodate T9940 tape drives.

9741E Specifications

The following tables list 9741E specifications.

Table A-6. 9741E Physical Specifications

Height	1.83 m (72.0 in.)
Width	749 mm (29.5 in.)
Depth	584 mm (23 in.)
Weight	186 kg (409 lb)

Table A-7. 9741E Environmental Specifications

Temperature	
Operating	16ºC to 32ºC (60ºF to 90ºF)
Storage	4.4ºC to 32ºC (40ºF to 90ºF)
Shipping	-30ºC to 49ºC (-22ºF to 120ºF)
Relative Humidity	
Operating	20% to 80%
Storage	10% to 90%
Shipping	5% to 95% noncondensing
Temperature Change	
Operating	< 5ºC/hr (< 9ºF/hr)
Storage	<15ºC/hr (<27ºF/hr)
Shipping	<15ºC/hr (<27ºF/hr)
Heat Output	8,047 Btu/hr maximum

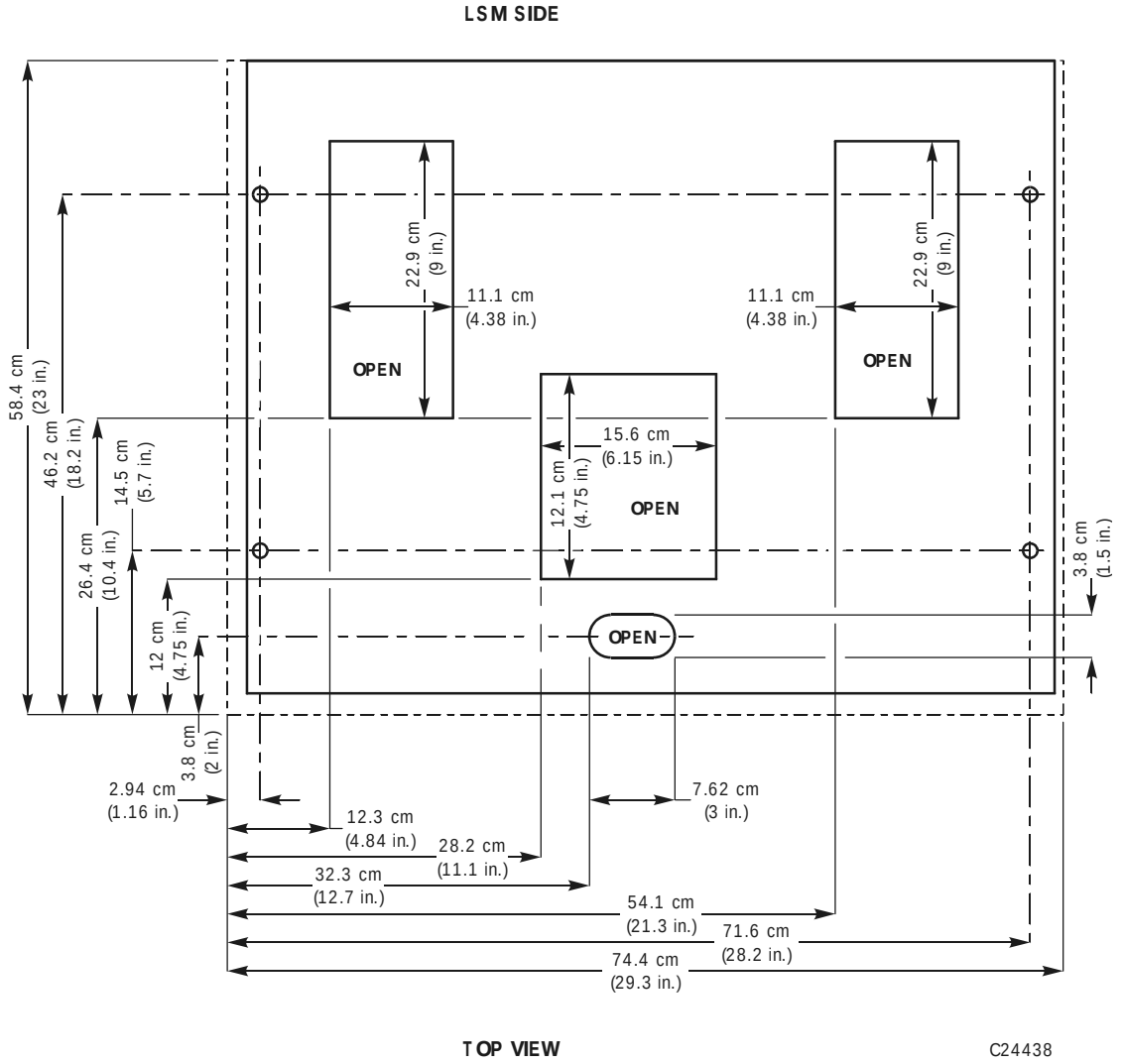
Table A-8. 9741E Power Configuration

Volts (AC)	176-264 VAC
Frequency	47 to 63 Hz
Phases	Single
Amp Service	20 Amps/per unit

Table A-9. 9741E Hardware Power Consumption

Device	Power Consumption
T9840 Drives	70 W (per drive)
T9940 Drives	85 W (per drive)
Seagate LTO Drives	25 W (per drive)
IBM LTO Drives	41 W (per drive)
Drive Cabinet Fans	105 W (two per cabinet)
Fibre Channel Hub 1000	25 W (per hub/8 maximum)
Fibre Channel Switch 4108	110 W (per switch/4 maximum
Fibre Channel Switch 4116	155 W (per switch/2 maximum
Ethernet Hub (8 Port)	12 W
Ethernet Hub (16 Port)	25 W

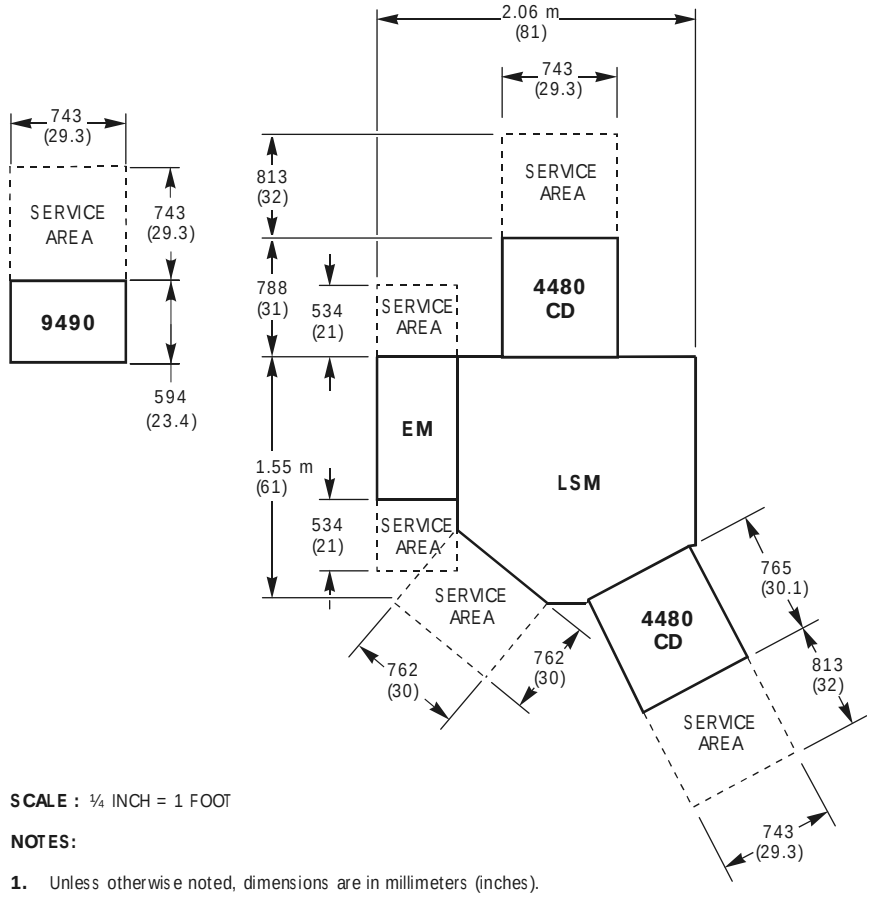
Figure A-10. 9741E Drive Cabinet Floor Cutouts



WolfCreek Floor Plans

The following figures are floor space requirements, floor cutouts, and leveling pad locations for the WolfCreek ACS.

Figure A-11. WolfCreek ACS Floor Space Requirements



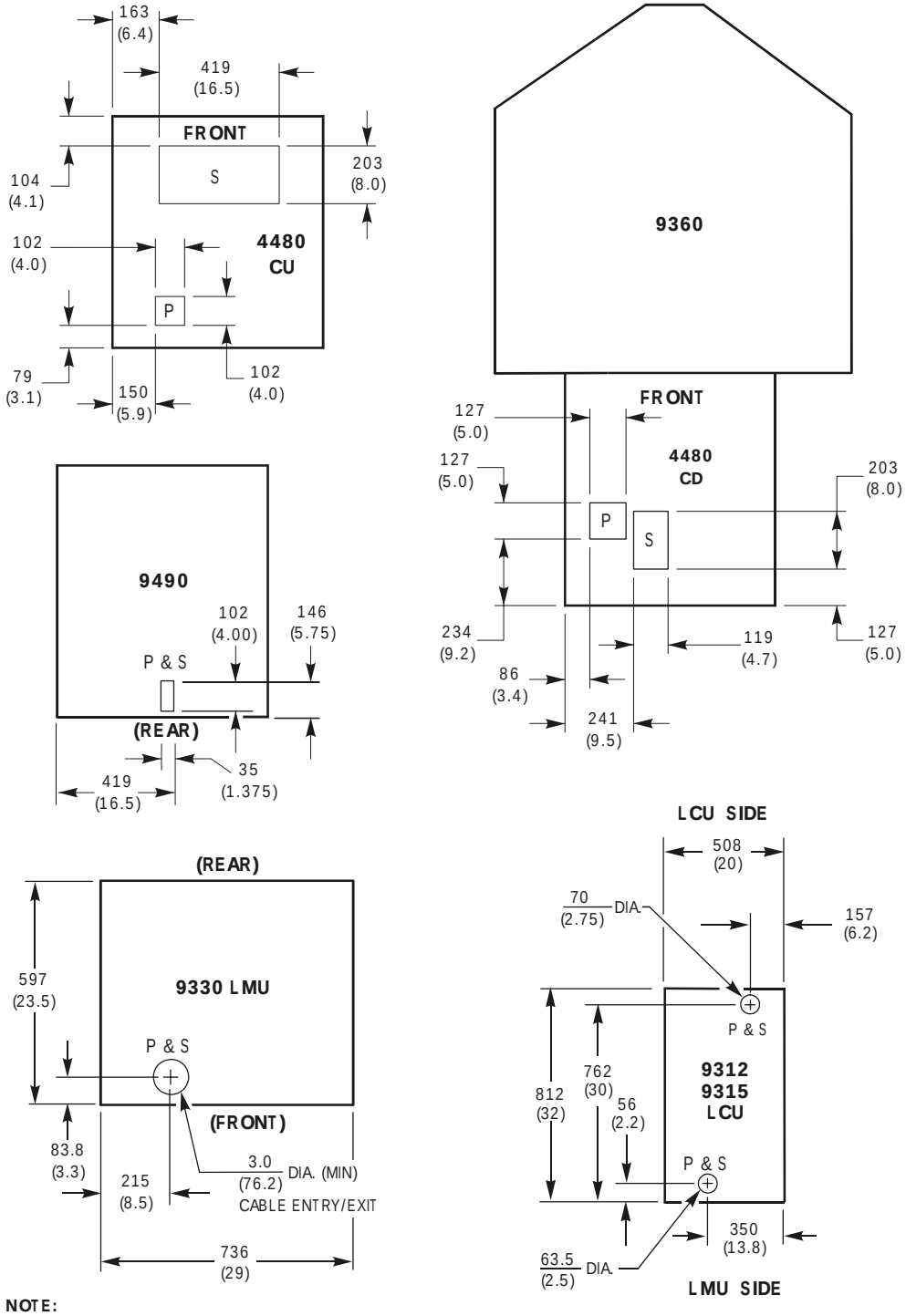
SCALE : ¼ INCH = 1 FOOT

NOTES:

1. Unless otherwise noted, dimensions are in millimeters (inches).
2. All dimensions are with front, rear, and side panels attached.

C24280

Figure A-12. WolfCreek ACS Floor Cutouts

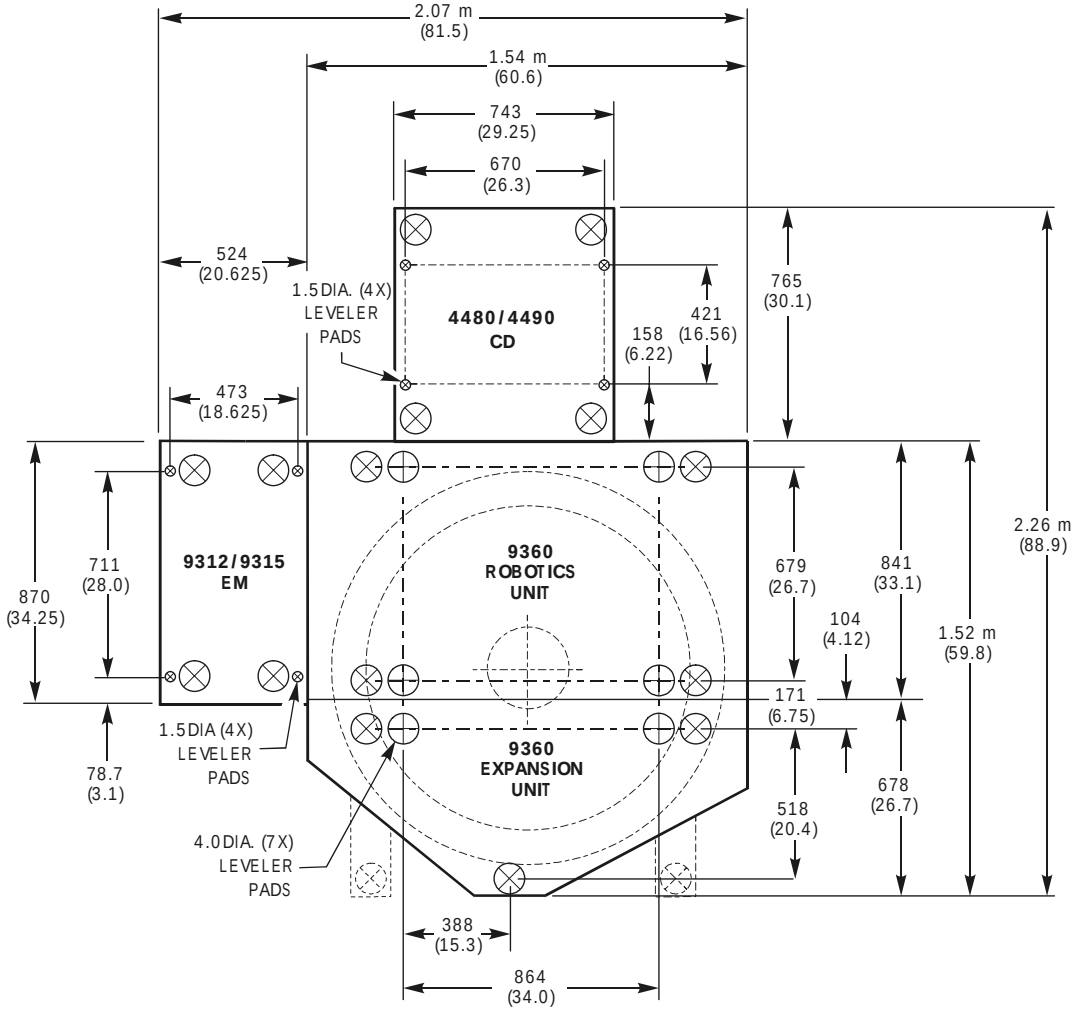


NOTE:
Unless otherwise noted, all dimensions are in millimeters (inches).

LEGEND:
P = Power Cutout
S = Signal Cutout

C24281

Figure A-13. WolfCreek Leveling Pad Locations



NOTES:

1. Unless otherwise noted, dimensions are in millimeters (inches).
2. All dimensions are with front, rear, and side panels attached.
3. Unit ships on casters; operates on levelers.

LEGEND:

⊕ ⊗ Leveling pad locations

⊗ Caster locations

C24282

WolfCreek Specifications

The following tables list the specifications for the WolfCreek ACS. For cartridge drive specifications, refer to the specific drive system assurance guide.

Table A-10. WolfCreek ACS Physical Specifications

Library Management Unit (9330)	Height	930 mm (36.6 in.)
	Width	736 mm (29.0 in.)
	Depth	597 mm (23.5 in.)
	Service clearance	
	Front	813 mm (32.0 in.)
	Rear	813 mm (32.0 in.)
	Weight	97.5 kg (215 lbs)
Electronics Module (9312/ 9315)	Height	1.8 m (72 in.)
	Width	521 mm (20.5 in.)
	Depth	864 mm (34 in.)
	Service clearance	
	Front	534 mm (21.0 in.)
	Rear	534 mm (21.0 in.)
	Weight	
	With LMU	274 kg (523 lbs)
	Without LMU	213 kg (469 lbs)
Library Storage Module (9360)	Height	1.8 m (72 in.)
	Width	1.5 m (60.5 in.)
	Depth	1.55 m (61 in.)
	Service clearance	762 mm (30 in.)
	Weight	
	Base unit	435 kg (957 lbs)
	Expansion unit with CAPs	329 kg (724 lbs)

Table A-11. WolfCreek ACS Electrical Specifications

Input voltage range Nominal voltage	170 to 265 VAC 200 to 250 VAC
Frequency	47 to 63 Hz
Phases	Single
Input current	20 A (3 wire)
Power consumption	1.85 kVA (1.2 kW)
Power configuration US/Canada 200–240 VAC Europe 200–240 VAC	 UL/CSA power cable HAR power cable

Table A-12. WolfCreek ACS Environmental Specifications

Temperature	
Operating	16ºC to 32ºC (60ºF to 90ºF)
Storage	4.4ºC to 32ºC (40ºF to 90ºF)
Shipping	-40ºC to 60ºC (-40ºF to 140ºF)
Relative Humidity	
Operating	20% to 80%
Storage	10% to 90%
Shipping	5% to 95% noncondensing
Wet Bulb Maximum	
Operating	25.6ºC (78ºF)
Storage	26.7ºC (80ºF)
Shipping	26.7ºC (80ºF)
Heat Output Maximum	
Operating	1,033 kcal/hr (4,100 Btu/hr)
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)

The following table lists the amount of heat the devices generate. Make sure that adequate cooling is available.

Table A-13. WolfCreek Heat Generation Specifications

Device	BTU/hr	Kcal/hr
LMU	2.050	516
LCU / LSM	3,750	945
CU/CD (1X8)	11,950	3,011
9360 LSM	3,100	781

Table A-14. WolfCreek Power Specifications

Name	Description
Configurations	US/Canada 200-240 VAC UI/CSA power cable Europe 200-240 VAC HAR power cable
Input voltage range	180-264 VAC
Nominal voltage	200-240 VAC
Input current	<16 A
Power consumption	0.9 kW (1.2K VA)
Maximum heat output	3100 Btu/hr. (781 kcal/hr.)
Cable machine end	Russell Stoll RS320P6W (IEC309) Hubble 320P6W (IEC309)
Cable customer end	Russell Stoll RS320C6W (IEC309) Hubble 320C6W (IEC309)
Cable customer receptacle	Russell Stoll RS320R6W (IEC309) Hubble 320R6W (IEC309)

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