StorageTek™
L20
Tape Library

Installation Manual

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Tape Library

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

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

Summary of Changes

EC	Date	Revision	Description
111666	August 2001	First	Initial release
111784	August 2002	Second	Refer to this edition for a description of the changes.
111797	October 2002	Third	Refer to this edition for a description of the changes.
111828	February 2003	Fourth	Refer to this edition for a description of the changes.
111854	June 2003	Fifth	Refer to this edition for a description of the changes.
111880	December 2003	Sixth	Refer to this edition for a description of the changes.
111923	July 2004	Seventh	Refer to this edition for a description of the changes.
111948	January 2005	Eighth	Refer to this edition for a description of the changes.
111976	May 2005	Ninth	Add SDLT 600 and LTO Gen 3 information.
114172	October 2006	K	Copyright, Preface: Added the latest Sun Microsystems.Inc. boilerplate verbiage. Appendix A: Added the latest cable and terminator part numbers.

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Preface

This manual describes how to install the hardware components of the L20 tape library (referred to in this manual as "the library"). For specific drive information, refer to your drive documentation.

When you have completed the hardware installation, refer to the *L20 Tape Library User's Guide* for configuration, operation, and testing procedures.

■ Organization

This manual has two chapters and two appendixes:

Chapter 1	"General Information"describes the basic components and functions of the library.
Chapter 2	"Hardware Installation" tells you how to install the hardware portions of the library. It contains a "Quick Installation Procedure" for experienced users and a "Standard Installation Procedure" that guides you through each step of the installation.
Appendix A	"Specifications and Cables" provides library specifications, cable part numbers, and agency certifications.
Appendix B	"SNMP" provides the implementation of the Simple Network Management Protocol (SNMP).

■ Alert Messages

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

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

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

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

■ Mensajes de alerta

Los mensajes de alerta llaman la atención hacia información de especial importancia o que tiene una relación específica con el texto principal o los gráficos.

Nota: Una nota expone información adicional que es de interés especial. Una nota puede señalar excepciones a las normas o procedimientos. Por lo general, aunque no siempre, las notas van después de la información a la que hacen referencia.

PRECAUCIÓN:
Una precaución informa sobre situaciones que podrían conllevar daños del hardware, de los datos o del software de aplicación. Las precauciones van siempre antes de la información a la que hacen referencia.

ADVERTENCIA:
Una advertencia llama la atención sobre condiciones que podrían conllevar problemas de salud crónicos, lesiones o muerte. Las advertencias van siempre antes de la información a la que hacen referencia.

■ Conventions

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

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

■ Related Publications

You can find additional information in the following publications:

Library Documentation	Part Number
L20 Customer Replaceable Unit (CRU) Instructions	96002
L20 Quick Start Card	96011
L20 Tape Library SCSI Reference Manual	95971
L20 Tape Library Service Manual	96041
L20/40/80 Series of Tape Libraries General Information Manual	MT9104
L20 Tape Library User's Guide	95961
L20/40/80 Tape Library Warranty Agreement—Australia/ New Zealand	31368450x
L20/40/80 Tape Library Warranty Agreement—Europe	31161830x
L20/40/80 Tape Library Warranty Agreement—USA	31368460x

Tape Drive Documentation	Part
DLT 7000 Tape Drive Product Manual	31313450x
DLT 8000 Tape Drive Product Manual	Quantum: 81-60118-0x
DLT1 Installation and Operations Guide	Benchmark: 000826-0x
DLT1 Product Specification	Benchmark: 000827-0x
SDLT 220, 320 and 600 Product Manual	CD included with drive
Hewlett Packard LTO Ultrium Publication	CD included with drive
IBM LTO Ultrium Publication	CD included with drive
Quantum's Certance LTO Ultrium Publication	CD included with drive

Other Publications	Part Number
American National Standard Dictionary for Information Processing Systems	ANSI X3/TR-1-82
American National Standard Magnetic Tape and Cartridge for Information Interchange	ANSI X3B5/87-009
Crossroads Fibre Router User's Manual	DS30110
StorageNet 3300 Fibre Channel Router User Manual	461273-01
Fibre Optics User's Guide	9433

Other Publications	Part Number
Magnetic Tape Labels and File Structure for Information Interchange	ANSI X3.27-1978
SCSI-3 Parallel Interface (SPI)	ANSI X3T9.2/91-010R7
Small Computer System Interface	ISO 9316:1989

■ Additional Information

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

Sun's External Web Site

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

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

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

Customer Resource Center

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

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

Partners Site

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

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

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

Global Services Support Tools

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

The URL for the Global Services Support Tools 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 Documents on CD, contact your local Customer Services Logistics Depot. *Documents on CD* is only for employees.

Hardcopy Publications

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

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

Safety

The following pages describe common practices concerning electrical safety, ergonomics, rack installation, fiber optics, and electrostatic discharge.

■ Safety Precautions

WARNING:
***Potential injury:* On-the-job safety is important; therefore, observe the following safety precautions while you are engaging in any maintenance activity. Failing to follow these precautions could result in serious injury.**

Remove all conductive jewelry, such as watches and rings, before you service powered-on equipment.

- Avoid electrical shock. Be careful when you work near power connectors and supplies.

- Power-off the equipment that is being serviced before you remove a field replaceable unit (FRU) or other component. Remember that dangerous voltages could still be present in some areas even though power is off.

- Ground all test equipment and power tools.

- Lift objects properly; read the information in "Lifting Techniques" on page xviii.

- Do not remove, cut, or relocate any floor tiles indiscriminately. Before you manipulate floor tiles, be sure that you understand the customer's environment and receive the customer's approval. Remember, each situation is different.

- Enforce good housekeeping practices in the equipment area to help prevent fire and accidents.

Note: Important things to investigate and to be aware of include the use of Halon® gas, under-the-floor smoke detectors, and cables to other equipment installed nearby.

Lifting Techniques

Lifting, regardless of how much or how little, can create serious back stress. If you follow these guidelines, you can reduce the risk of back injury:

- Do not twist your body to pick up something or to put it down. Twisting puts extreme pressure on your back, especially when you lift or carry objects. Instead of twisting, make the task two separate moves; first lift, and then use your feet to turn your body.

- Plan the lift: first examine the object and then determine how it will be lifted and where it will be placed.

- Choose the appropriate lifting technique. Examine the weight, size, location, frequency, and direction of the lift. Plan to avoid awkward postures, and determine if material-handling aids are needed.

- Place your feet shoulder-width apart, and place one foot a little behind the other. Keep your back straight because even light loads can significantly increase pressure on your spine when you lean forward.

- Whenever you can, grip the load with your whole hand, and use two hands.

- Carry objects at elbow height and close to your body. The farther away you hold an object, the more force it puts on your lower back.

- Lift with your legs instead of your back. Leg muscles are some of the strongest in the body. When you squat and lift with your legs, you can lift more weight safely.

- Alternate lifting tasks with tasks that are less stressful to the same muscles. This technique ensures that your muscles have some recovery time.

Shoulder, Elbow, Wrist, and Hand Safety

Follow these guidelines to minimize the possibility of injury to your shoulders, elbows, wrists, and hands.

- Work within your safety zone—the area between shoulder level and knuckle level of your lowered hands. You face less chance of injury when you work or lift in this area.

- Keep your elbows bent to keep loads close to your body and to decrease the amount of force necessary to do the job. If you use this posture, you will put less weight and pressure on your shoulder.

- Be sure to keep your wrists straight. Avoid bending, extending, or twisting your wrists for long periods of time.

- Do not use a pinch grip to lift large or heavy loads because the way you lift also can affect the tendons in your hand. When you grasp an object between your thumb and fingers, you put a lot of tension on hand and wrist tendons. Use both hands—use one for a while, and then use the other—to give them rest.

■ Rack Safety and Precautions

WARNING:
Possible personal injury:

- *Lifting hazard:* **The library (with drives) weighs approximately 29 kg (64 lb). Use at least two people and a mechanical device to lift and position the library. Make sure you read the information in "Lifting Techniques" on page xviii before beginning.**

- **Also consider the library's total weight when you are placing other equipment into the rack. To prevent an unbalanced situation, install the heaviest equipment on the bottom and the lightest equipment on the top. Failure to do so might cause the rack to become unstable and tip over.**

Observe the following safety precautions when you are installing the library into a rack:

- If the rack has front or rear doors, do *not* allow the doors to interfere with the library's ventilation. The rack's internal ambient temperature should not exceed the recommended operating temperature range of the library. The maximum rack air ambient temperature is 40°C (104°F).

- Ensure that rack doors provide adequate clearance to the library.

- Ensure that the combination of the library with other equipment in the rack does not create an overcurrent condition, whether the equipment is connected directly to the branch circuit or to a power distribution strip.

- Ensure that all equipment in the rack has reliable earth ground, whether the equipment is connected directly to the branch circuit or to a power distribution strip.

    Note: The library relies on the ground pin of the power cord for its earth ground.

■ Fiber-optic Safety

WARNING:
***Eye hazard*. Never look directly into a fiber-optic cable, a fiber-optic connector, or a laser transceiver module. Hazardous conditions might exist from laser power levels that are capable of causing injury to the eye.**

Be especially careful when using optical instruments with this equipment. Such instruments might increase the likelihood of eye injury.

The laser transceivers in fiber-optic equipment can pose dangers to personal safety. Ensure that anyone who works with this Sun StorageTek equipment understands these dangers and follows safety procedures. Ensure that the optical ports of every laser transceiver module are terminated with an optical connector, a dust plug, or a cover.

Each fiber-optic interface in this Sun StorageTek Fibre Channel equipment contains a laser transceiver that is a Class 1 Laser Product. Each laser transceiver has an output of less than 70 μW and a wavelength of 850 nm. Sun StorageTek's Class 1 Laser Products comply with EN60825-1(+A-11) and with sections 21 CFR 1040.10 and 1040.11 of the Food and Drug Administration (FDA) regulations.

The following translations are for users in Finland and Sweden who wish to identify laser safety and classification:

> CLASS 1 LASER
> LUOKAN 1 LASERLAITE
> KLASSE 1 LASER APPARAT

Laser Product Label

In accordance with safety regulations, a label on each Sun StorageTek Fibre Channel product identifies the laser class of the product and the place and date of the manufacturer. The label appears on top of a Fibre Channel tape drive and near the Fibre Channel connectors on a Fibre Channel tape library. A copy of the label is shown here:

CLASS 1 LASER PRODUCT
LASER KLASSE 1
APPAREIL A LASER DE CLASSE 1
COMPLIES WITH 21 CFR 1040.10 AND 1040.11

Fiber-optic Cable Installation

Follow these guidelines when you install fiber-optic cables:

1. **Cable routing:**

   - **Raised floor:** You may install fiber-optic cables under a raised floor. Route them away from any obstruction, such as existing cables or other equipment.

   - **Cable tray or raceway:** Place the cables in position; do not pull them through the cable tray. Route the cables away from sharp corners, ceiling hangers, pipes, and construction activity.

   - **Vertical rise length:** Leave the cables on the shipping spool, and lower them from above; do not pull the cables up from below. Use proper cable ties to secure the cable.

   - **General:** Do not install fiber-optic cables on top of smoke detectors.

2. **Cable management:**

   - Leave at least 4.6 m (15 ft) of cable at each end for future growth.

   - Use strain reliefs to prevent the weight of the cable from damaging the connector.

   - Review all information in this manual and in any related manuals about safely handling fiber-optic cables.

3. **Connector protection:**

   - Insert connectors carefully to prevent damage to the connector or fiber.

   - Leave the connector's protective cover in place until you are ready to make connections.

   - Replace the connector's protective cover when the connector is disconnected.

   - Clean the connector before making a connection. Make sure that there are no obstructions and that keyways are aligned.

Fiber-optic Cable Handling

Observe these precautions when you handle fiber-optic cables:

- Do not coil the cable to less than 96 mm (3.75 in.) in diameter.

- Do not bend the cable to less than 12 mm (0.5 in.) in radius. It is most important that a cable's bend radius be no less than 20 times the diameter of the cable.

- Do not pull on the cables; carefully place them into position.

- Do not grasp the cables with pliers, grippers, or side cutters; do not attach pulling devices to the cables or connectors.

- Keep cables away from sharp edges or sharp protrusions that could cut or wear through the cable; make sure that cutouts in the equipment have protective edging.

- Protect the cable from extreme temperature conditions.

- Install the connector's protective cover whenever the connector is not connected.

■ Electrostatic Discharge (ESD) Damage Prevention

Anyone who handles ESD-sensitive components must be aware of the damage that ESD can cause to electronic components and must take the proper precautions to prevent it. Also, anyone who performs maintenance on Sun StorageTek equipment must complete an ESD-basics course.

CAUTION:
***Potential damage to equipment:* Handle ESD-sensitive components *only* under ESD-protected conditions. To meet this requirement, always use the Field Service Grounding Kit (PN 4711) and always follow these ESD precautions and procedures when you are servicing Sun StorageTek equipment or handling ESD-sensitive components.**

ESD Precautions

Always take the following general precautions when you work with ESD-sensitive components:

- Wear ESD protection whenever you install, remove, maintain, or repair Sun StorageTek equipment.

- Keep ESD-sensitive printed-circuit components in their ESD-protective packages until you have taken all ESD-preventive steps and you are ready to install the component.

- Do not allow anyone to touch or handle an unprotected ESD-sensitive component unless that person has taken all ESD precautions.

- Reinstall all equipment covers and close all equipment doors after you have completed the work.

- If the grounding-kit work surface has been exposed to temperatures above 66ºC (150ºF) or below 4.5ºC (40ºF), acclimate the work surface to room temperature before you unroll it.

- Immediately place any component that you have removed into an ESD-protective package.

- Keep the grounding-kit work surface clean.

  Note: To clean the work surface, use a mild detergent and water, and make sure that the surface is completely dry before you use it.

- Periodically check the electrical resistance of the ground cord and the wrist-strap coil cord.

    Note: The ground cord should measure less than 1.2 MΩ, and the coil cord should measure between 0.8 and 1.2 MΩ Repair or replace the cords if they no longer meet these requirements.

ESD-Protection Procedure

Remember that each customer environment is different. Address all the customer's concerns before you work on any equipment.

Prepare the Work Area

1. Before you service the equipment, unfold the grounding-kit work surface completely and place it on a convenient surface.

2. Attach one end of the ground cord to the work surface; secure the snap fastener.

    Note: You will attach the free end in a later step.

3. Slip on an ESD wrist strap. Make sure that the strap is comfortable and makes contact with the entire circumference of your wrist.

4. Snap one end of the coil cord to the wrist band.

Access the Equipment

5. Carefully open the doors to the equipment or remove the covers from the equipment. Do not touch any internal components.

CAUTION:
Be sure that you are properly grounded before you touch any internal components.

6. Attach the free end of the coil cord to the most appropriate place:

    a. If you are working on components from a small piece of equipment, attach the free end of the coil cord to the grounding-kit work surface. In addition, be sure that you touch an unpainted metal surface on the equipment before you touch an internal component.

    b. If you are working on components from a large piece of equipment, attach the free end of the coil cord to a grounding jack or to an unpainted metal surface inside the equipment.

Replace Components

7. Remove the defective component and place it on the work surface.

8. Remove the replacement component from its ESD-protective package, and install the component in the equipment.

9. Place the defective component in the ESD-protective package.

Clean Up

10. Disconnect the ground cords from the equipment.

11. Reinstall all equipment covers and close all equipment doors.

12. Disconnect the coil cord from your wrist, and, if necessary, disconnect the ground cord from the work surface.

13. Properly store the work surface and the other Field Service Grounding Kit items.

Seguridad

Las siguientes páginas describen prácticas habituales sobre seguridad eléctrica, ergonomía, instalación en bastidor, fibras ópticas y descargas electrostáticas.

■ Precauciones de seguridad

ADVERTENCIA:
***Posibles lesiones:** **la seguridad durante el trabajo es importante; por ello, atienda a las siguientes precauciones de seguridad mientras esté realizando alguna actividad de mantenimiento. El incumplimiento de dichas precauciones puede conllevar graves lesiones.**

Antes de realizar cualquier tarea en equipos eléctricos conectados, quítese las joyas y accesorios conductores de electricidad, como relojes y anillos.

- Evite las descargas eléctricas. Tenga cuidado al trabajar en la proximidades de conectores y alimentaciones eléctricas.

- Antes de extraer unidad sustituible in situ u otro componente, apague el equipo y desconéctelo de la red eléctrica. Recuerde que, incluso si están apagados, en algunas áreas pueden quedar tensiones peligrosas.

- Ponga a tierra todos los equipos de prueba y herramientas eléctricas.

- Para levantar objetos, consulte la información de "Técnicas de levantamiento de objetos" (véase a continuación).

- No quite, corte ni cambie de lugar indiscriminadamente las baldosas. Antes de manipular baldosas, asegúrese de conocer el entorno del cliente y de recibir su autorización. Recuerde que cada situación es diferente.

- Aplique las prácticas adecuadas de limpieza en el área del equipo para prevenir incendios y accidentes.

Nota: Entre los factores importantes que deben tenerse en cuenta es la presencia de gas Halón®, detectores de humo subterráneos y cables conductores a otros equipos instalados en las proximidades.

Técnicas de levantamiento de objetos

El levantar equipos o componentes, independientemente de su peso o tamaño, puede provocar serias lesiones lumbares. Siguiendo estas directrices podrá reducir los riesgos de lesiones.

- No incline el cuerpo para levantar o bajar algo. Esta posición supone una tensión extrema para la espalda, en especial al levantar o transportar objetos. En lugar de inclinarse, efectúe dos movimientos: primero levante el componente y, a continuación, utilice los pies para girar el cuerpo.

- Planifique el levantamiento: primero examine el objeto y, a continuación, determine cómo lo levantará y dónde lo colocará.

- Seleccione la técnica de levantamiento adecuada. Examine el peso y tamaño del objeto, su ubicación y frecuencia y dirección en que vaya a levantarlo. La planificación debe hacerse de tal modo que se eviten posturas incómodas. Determine si son necesarios accesorios para la manipulación de materiales.

- Separe bien las piernas y coloque una ligeramente detrás de la otra. Mantenga la espalda recta, porque incluso pesos ligeros pueden incrementar significativamente la presión sobre la espina dorsal al inclinarse hacia adelante.

- En la medida de lo posible, sostenga la carga con toda la mano, y utilice ambas manos.

- Transporte los objetos a la altura del codo y próximos a su cuerpo. Cuanto más lejos tenga que transportar un objeto, más presión aplicará sobre la zona lumbar.

- Levante el objeto haciendo fuerza con las piernas, y no con la espalda. Los músculos de las piernas se cuentan entre los más fuertes del cuerpo. Al acuclillarse y levantar un peso con las piernas, tendrá mayor tolerancia al peso.

- Alterne estas tareas con otras menos pesadas para los mismos músculos. De este modo, los músculos dispondrán de un cierto tiempo de recuperación.

Seguridad de hombros, codos, muñecas y manos

Siga estas instrucciones para reducir al mínimo las posibilidades de lesionarse los hombros, codos, muñecas y manos.

- Trabaje dentro de su zona de seguridad, el área entre el nivel de los hombros y el nivel de los nudillos. Trabajando o levantando objetos dentro de esta área se expondrá a menos probabilidades de lesiones.

- Mantenga los codos inclinados para mantener las cargas próximas a su cuerpo y reducir la fuerza necesaria para realizar la tarea. Con esta postura, aplicará menos peso y presión sobre los hombros.

- Asegúrese de mantener las muñecas rectas. Evite doblarlas, extenderlas o torcerlas durante períodos de tiempo prolongados.

- No levante cargas grandes o pesadas con el puño cerrado, porque el modo de levantarlas también afecta a los tendones de la mano. Al tomar un objeto entre el pulgar y los dedos se aplica mucha tensión a las manos y tendones de las muñecas. Utilice ambas manos alternativamente, para permitir que descansen.

■ Seguridad y precauciones del bastidor

ADVERTENCIA:
Posibilidad de lesiones físicas:

- *Peligro de levantamiento:* **La biblioteca (conjuntamente con las unidades) pesa unos 29 kg (64 lb). Para levantar la biblioteca y colocarla en su posición se requieren como mínimo dos personas. Antes de poner manos a la obra, asegúrese de leer la información presentada en "Técnicas de levantamiento de objetos" en la página xxvi.**

- **Al colocar otros equipos en el bastidor, considere también el peso total de la biblioteca. Para evitar un desequilibrio de la carga, coloque los equipos más pesados abajo y los más ligeros arriba. De lo contrario, el bastidor podría desestabilizarse y caerse.**

Al instalar la biblioteca en el bastidor, adopte las siguientes precauciones de seguridad:

- Si el bastidor tiene puertas delanteras o traseras, *no permita* que las puertas interfieran con la ventilación de la biblioteca. La temperatura ambiente en el interior del bastidor no debe ser superior a la temperatura de servicio recomendada de la biblioteca. La temperatura ambiente máxima del interior del bastidor es de 40 °C (104 °F).

- Asegúrese de que las puertas del bastidor permitan el acceso adecuado a la biblioteca.

- Asegúrese de que la combinación de la biblioteca con otros equipos instalados en el bastidor no provoque situaciones de sobretensión, tanto si el equipo está conectado directamente al circuito derivado o a una regleta de distribución.

- Asegúrese de que todos los equipos del bastidor dispongan de una puesta a tierra fiable, tanto si el equipo está directamente conectado al circuito derivado o a una regleta de distribución

  Nota: La puesta a tierra de la biblioteca se conecta a través de la patilla de puesta a tierra del enchufe.

■ Seguridad de fibras ópticas

ADVERTENCIA:

***Riesgo para la vista*. Nunca mire directamente el interior de un cable de fibra óptica, un conector de fibra óptica o un módulo transceptor de láser. Los niveles de potencia del láser pueden conllevar situaciones de riesgo, susceptibles de lesionar la vista.**

Tenga especial cuidado al utilizar instrumentos ópticos con estos equipos. Dichos instrumentos pueden incrementar las probabilidades de lesiones oculares.

Los transceptores de láser de los equipos de fibra óptica pueden suponer un peligro para la seguridad física. Asegúrese de que toda persona que trabaje con estos equipos de Sun StorageTek entienda los peligros y siga los procedimientos de seguridad. Asegúrese de que todos los puertos ópticos de los módulos transceptores de láser estén terminados con un conector óptico, una cubierta o un tapón de protección contra el polvo.

Todas las interfaces de fibra óptica de estos equipos de canal de fibra de Sun StorageTek contienen un transceptor de láser, categorizado como Producto láser de Clase 1. Cada transceptor láser tiene una salida de menos de 70 μW y una longitud de onda de 850 nm. Los productos de láser de clase 1 de Sun StorageTek cumplen las normas EN60825-1(+A-11) y las secciones 21 CFR 1040.10 y 1040.11 de las normas de la Administración para la Calidad de Alimentos y Medicamentos (FDA).

Las siguientes traducciones están dirigidas a usuarios de Finlandia y Suecia que deseen identificar la categoría y clasificación de seguridad de los dispositivos láser:

> LÁSER DE CLASE 1
> LUOKAN 1 LASERLAITE
> KLASSE 1 LASER APPARAT

Etiqueta del producto láser

De conformidad con las normas de seguridad, cada producto de canal de fibra de Sun StorageTek lleva una etiqueta que identifica la clase de láser del producto, y el lugar y fecha de fabricación. Esta etiqueta aparece sobre la unidad de cinta de canal de fibra, así como en las proximidades de los conectores de las bibliotecas de cintas de canal de fibra. A continuación puede verse una copia de dicha etiqueta:

CLASS 1 LASER PRODUCT
LASER KLASSE 1
APPAREIL A LASER DE CLASSE 1
CUMPLE LAS NORMAS 21 CFR 1040.10 Y 1040.11

Instalación de cables de fibra óptica

Para instalar cables de fibra óptica, efectúe este procedimiento:

1. **Tendido del cable:**

    - **Tarima:** Los cables de fibra óptica pueden instalarse debajo de tarimas. Al tenderlos, manténgalos apartados de cualquier obstrucción, como por ejemplo otros cables o equipos.

    - **Escalerilla portacables o canaleta de cables:** Sitúe los cables en su posición. No tire de ellos a través de la escalerilla portacables. Al tender los cables, manténgalos apartados de esquinas afiladas, colgadores de techo, conductos, tuberías y actividades de construcción.

    - **Longitud de elevación vertical:** Deje los cables en la bobina original y bájelos desde arriba. No tire de ellos desde abajo. Utilice los fijadores adecuados para inmovilizarlos.

    - **General:** No instale cables de fibra óptica encima de detectores de humo:

2. **Instalación de los cables:**

    - Deje como mínimo 4,6 m (15 pies) de cable en cada extremo, en previsión de futuras extensiones.

    - Utilice protectores contra tirones para evitar que el peso del cable dañe el conector.

    - Repase en el presente manual, así como de manuales afines, toda la información relativa a la manipulación segura de cables de fibra óptica.

3. **Protección de los conectores:**

    - Inserte los conectores con todo cuidado para evitar dañar éstos o la fibra.

    - No quite la cubierta de protección del conector hasta que esté preparado para realizar las conexiones.

    - Al desconectar el conector, vuelva a colocar la cubierta de protección.

    - Antes de realizar una conexión, limpie el conector. Asegúrese de que no haya obstrucciones y de que las ranuras de chavetas estén alineadas.

Manipulación de cables de fibra óptica

Al manipular cables de fibra óptica, tenga en cuenta las siguientes precauciones:

- No enrolle el cable a menos de 96 mm (3,75") de diámetro.

- No curve el cable a menos de 12 mm (0,5") de radio. Sun StorageTek recomienda que el radio de curvatura de un cable no sea inferior a 20 veces el diámetro del cable.

- No tire de los cables: colóquelos con cuidado en su posición.

- No aferre los cables con alicates, pinzas ni fresas. No una los cables ni los conectores a dispositivos de tracción.

- Mantenga los cables apartados de bordes y salientes afilados que pudieran cortarlos o desgastarlos. Asegúrese de que los orificios del equipo dispongan de bordes protectores.

- Proteja los cables contra temperaturas extremas.

- En toda ocasión en que el conector no esté conectado, colóquele su cubierta de protección.

■ Prevención de daños por descargas electrostáticas (DES)

Quienes manipulan componentes sensibles a las descargas electrostáticas (DES) deben ser conscientes de los daños que éstas pueden provocar en los componentes electrónicos, con el objeto de adoptar las precauciones adecuadas para evitarlas. Asimismo, las personas que realicen tareas de mantenimiento en equipos de Sun StorageTek deben pasar un curso de fundamentos de las descargas electrostáticas.

PRECAUCIÓN:
Posibles daños a los equipos: **Manipule los componentes sensibles a las descargas electrostáticas *sólo* en las condiciones de protección adecuadas. Para cumplir este requisito, utilice siempre el Kit de puesta a tierra del servicio de campo (NP 4711) y cumpla en todo momento estas precauciones y procedimientos al realizar tareas de mantenimiento o servicio técnico de equipos de Sun StorageTek, así como al manipular componentes sensibles a las descargas electrostáticas.**

Precauciones contra descargas electrostáticas

Al trabajar con componentes sensibles a las descargas electrostáticas (DES), adopte siempre las siguientes precauciones generales:

- Utilice protección contra descargas electrostáticas a realizar tareas de instalación, desinstalación, mantenimiento o reparación de equipos de Sun StorageTek.

- Mantenga los circuitos impresos sensibles a las descargas electrostáticas dentro de sus embalajes de protección hasta haber adoptado las medidas de prevención adecuadas y esté preparado para instalar el componente.

- No permita que nadie toque o manipule un componente sensible a las descargas electrostáticas no protegido, salvo que dicha persona haya adoptado las precauciones pertinentes.

- Una vez concluido el trabajo, vuelva a colocar todas las cubiertas del equipo y cierre todas las puertas.

- Si la superficie de trabajo del kit de puesta a tierra ha estado sometida a temperaturas superiores a los 66 ºC (150 ºF) o inferiores a los 4,5 ºC (40 ºF), deje que la superficie se aclimate a la temperatura ambiente antes de desenrollarla.

- Coloque inmediatamente sobre esta superficie todo componente que haya retirado de su embalaje de protección contra descargas electrostáticas.

- Mantenga limpia la superficie de trabajo del kit de puesta a tierra.

  Nota: Para limpiarla, utilice agua y un detergente suave, asegurándose de que esté completamente seca antes de utilizarla.

- Compruebe periódicamente la resistencia eléctrica del cable de puesta a tierra y del cable en espiral de la muñequera.

  Nota: Al medir la resistencia del cable de puesta a tierra, debe ser inferior a 1,2 $M\Omega$,; la del cable en espiral debe situarse entre 0,8 y 1,2 $M\Omega$ Repare o sustituya los cables si no cumplen estos requisitos.

Procedimiento de protección contra descargas electrostáticas (DES)

Recuerde que cada entorno de cliente es diferente. Responda a todas las dudas e inquietudes del cliente antes de proceder a trabajar en un equipo.

Prepare el área de trabajo

1. Antes de reparar el equipo, desenrolle completamente la superficie de trabajo del kit de puesta a tierra y colóquela sobre una superficie adecuada.

2. Conecte un extremo del cable de puesta a tierra a la superficie de trabajo y ajuste el broche de presión.

   Nota: El otro extremo se conectará posteriormente.

3. Colóquese una muñequera antiestática. Asegúrese de que le resulte cómoda y que haga contacto con toda la circunferencia de la muñeca.

4. Conecte a la muñequera un extremo del cable en espiral.

Acceda al equipo

5. Con todo cuidado, abra las puertas o retire las cubiertas del equipo. No toque ningún componente interno.

PRECAUCIÓN:
Antes de tocar cualquier componente interno, asegúrese de estar correctamente conectado a tierra.

6. Conecte el extremo libre del cable en espiral al lugar más adecuado:

   a. Si está trabajando con componentes de un equipo de pequeñas dimensiones, conecte el extremo libre del cable a la superficie de trabajo del kit de puesta a tierra. Asimismo, asegúrese de tocar una superficie metálica no pintada del equipo antes de tocar cualquier componente interno.

   b. Si está trabajando con componentes de un equipo de amplias dimensiones, conecte el extremo libre del cable en espiral a un conector de puesta a tierra o a una superficie metálica no pintada del interior del equipo.

Sustituya los componentes

7. Sustituya el componente defectuoso y colóquelo sobre la superficie de trabajo.

8. Extraiga el componente de recambio de su embalaje de protección contra descargas eléctricas e instálelo en el equipo.

9. Coloque el componente defectuoso dentro del embalaje de protección.

Limpie

10. Desconecte los cables de puesta a tierra del equipo.

11. Vuelva a instalar todas las cubiertas y cierre todas las puertas del equipo.

12. Desconecte el cable en espiral de la muñeca. Si fuese necesario, desconecte el cable de puesta a tierra de la superficie de trabajo.

13. Pliegue correctamente la superficie de trabajo, y guárdela. Guarde también los demás componentes del Kit de puesta a tierra del servicio de campo.

General Information

This chapter provides you with general information about the L20 tape library.

■ Library Overview

The library is a self-contained, fully automated cartridge tape storage system that contains:

- Quantum Digital Linear Tape (DLT) drives:

    - DLT 7000 high voltage differential (HVD)
    - DLT 8000 HVD or low voltage differential (LVD)
    - Super DLT 220 HVD or LVD (going end-of-life)
    - Super DLT 320 HVD or LVD

- Benchmark DLT1 tape drives LVD

- IBM LTO Ultrium drives LVD

- Seagate LTO Ultrium drives HVD/LVD

    Note: Linear Tape-Open technology comprises two cartridge types: Ultrium and Accelis. Ultrium cartridges contain a single hub (or reel) of tape; this is the only type supported in the L20. Accelis cartridges contain two hubs.

The library is available as an upgradeable 10-cartridge model or a 20-cartridge model.

The library interface may be configured for single-ended, high voltage differential (HVD), or low voltage differential (LVD) SCSI interfaces. The library may also interface directly with a Fibre Channel; the SCSI drive input/output is converted for Fibre Channel protocol through the library's optional Fibre Channel router card or external fiber channel router.

Note: Make sure that you understand which type of SCSI interface on which you are operating. For example, native operation for DLT1 drives is an LVD interface. DLT1 drives are, however, also available to operate on an HVD interface.

Differences between the HVD and LVD interfaces are discussed in "Choosing HVD or LVD" on page 2-12.

■ Library Hardware Components

Figure 1-1 shows the front panel of the library.

Figure 1-1. Library Front View (L201_001)
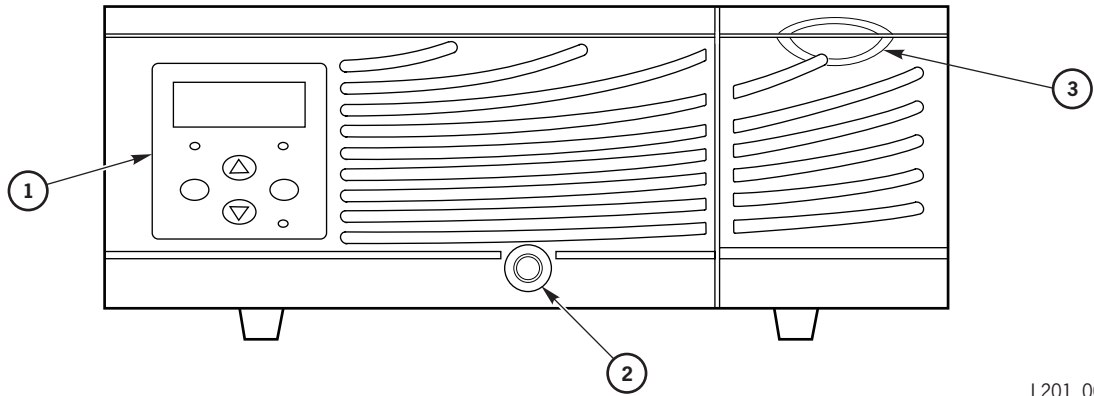
L201_001

1. Operator panel (including status display)—used for configuration and diagnostic testing
2. Lock for slide-out cartridge drawer—when open, you may access all cartridges
3. Cartridge access port (CAP)—used for entering and removing cartridges without interrupting library operation

In addition, the library can be conveniently placed on a desktop (with optional cosmetic cover and rubber feet) or mounted in a standard 483-mm (19-in.) rack.

The library must be oriented horizontally, as shown in the illustration above.

Figure 1-2 shows the rear of the library.

Figure 1-2. Library Rear View (L201_576)
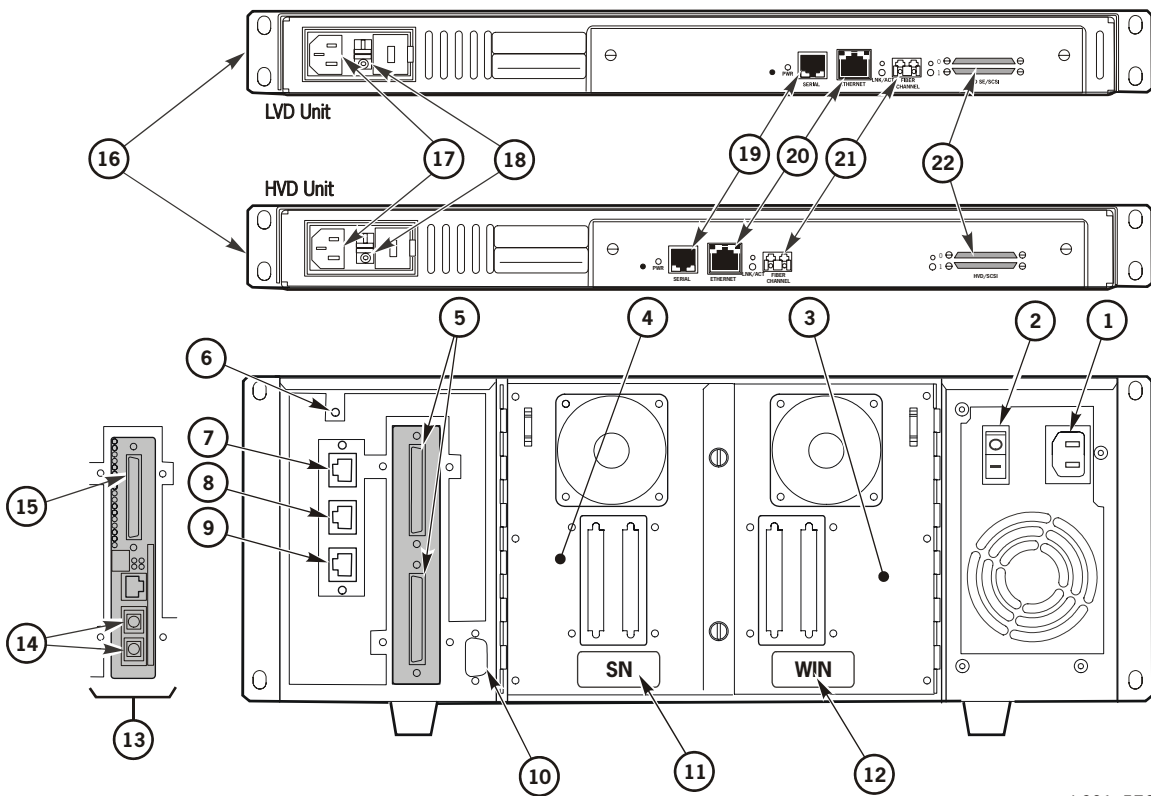
L201_576

1. Power receptacle
2. Power-on/off switch
3. Drive SCSI ports (Drive 0)
4. Drive SCSI ports (Drive 1)
5. Library SCSI ports
6. Library RESET button
7. Ethernet/Web access
8. Reserved (manufacturing)
9. Reserved (service)
10. Personality module connector—specifies library size
11. Library serial number
12. Library warranty identification number
13. Fibre Channel router card (optional)
14. Fibre Channel connectors
15. SCSI connector
16. External Fibre Channel Router (optional)
17. External Fibre Channel Router Power Receptacle
18. External Fibre Channel Router Power Switch
19. External Fibre Channel Router Serial Port
20. External Fibre Channel Router Ethernet port
21. External Fibre Channel Router Fibre Channel port
22. External Fibre Channel Router SCSI Bus ports
23. External Fibre Channel Router (LVD Unit) (Optional)
24. External Fibre Channel Router (HVD Unit) (Optional)

If the library contains only one drive, it is designated Drive 0; if there are two drives, they are designated as noted in Figure 1-2.

Figure 1-3 shows the library interior and identifies the functional components. More detailed information about the major components shown in the illustration is explained on the following pages.

Figure 1-3. Library Internal View (L201_014)
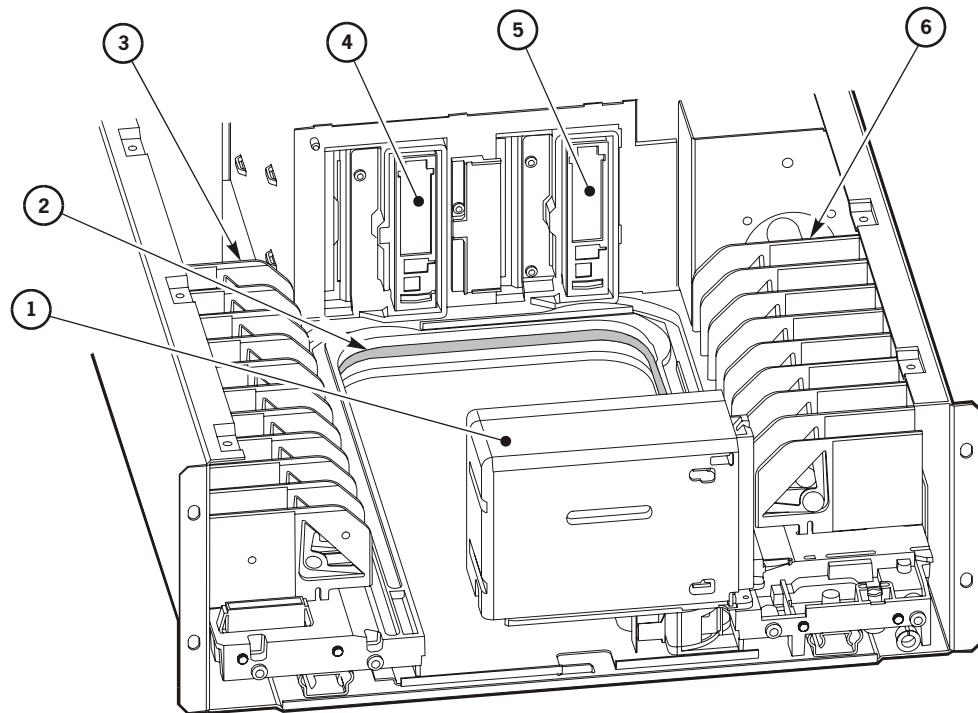
L201_014

1. Picker—moves along its U-shaped track and removes ("gets") and places ("puts") tapes into cartridge storage cells or drives.
2. U-shaped track (for robot movement)
3. Cartridge storage cells
4. Drive 0
5. Drive 1
6. Cartridge storage cells

Picker

The picker moves cartridges among the CAP, drives, and storage cells. The picker moves on a U-shaped track and contains a bar code scanner and camera.

The U-shaped track attaches to the floor of the library. The picker travels along the track and rotates 180 degrees, thereby accessing all cells in the library. Tapes are tracked by their volume labels and associated cell locations. The cartridge locations are defined during the audit and stored in two places: the library's memory and the tape management database (the host).

Cartridge Storage Cells

The tape management software locates cartridges by their cell numbers. The library may contain storage cells for 10, 15, 19, and 20 data and cleaning cartridges, depending on:

- Whether a CAP is used
- The setting of the Auto Clean feature (on or off)

The library capacity (total number of cells) is determined at the time the library is ordered.

If you choose to use the Auto Clean feature, you *must* insert a cleaning cartridge in the left-front cell, configure the library for Auto Clean, and reinitialize the library. Drives are automatically cleaned when required. For more information, refer to the *L20 Tape Library User's Guide*, part 95961.

Note: Cartridges must be properly labeled. Directions are found in the *L20 Tape Library User's Guide*, part 95961.

■ Drives and Cartridges

Refer to your drive publications and the vendor Web sites for a detailed discussion of drives and cartridges.

The library supports the following drives:

- Ultrium Linear Tape-Open (LTO) drives

  LTO technology was developed by IBM, Hewlett-Packard, and Seagate to provide a clear and viable choice in an increasingly complex array of tape storage options. LTO is an "open format' technology, which means that users will have multiple sources of product and media. The open nature of LTO technology also provides a means of enabling compatibility among different vendor's offerings.

  - Hewlett-Packard's LTO 1, LTO 2, and LTO 3
  - IBM's LTO 1, LTO 2, and LTO 3
  - Quantum's (Certance) LTO 2 and LTO 3
  - Seagate LTO 1 and LTO 2

- Digital Linear Tape (DLT) drives:
  - Quantum Corporation's DLT 7000E, DLT 8000, and Super DLT 220, 320 and 600
  - Benchmark Storage Innovations, Inc's DLT1

You may mix drive types within a library, but please observe the following cautions and tables:

CAUTION:
***Possible data corruption:* Do not mix DLT 7000 and DLT 8000 drives in the same library. If a DLT 7000 cartridge is inserted into a DLT 8000 drive, the tape can be read and written on in 7000 mode. If a DLT 8000 cartridge is inserted into a DLT 7000 drive and a read command is issued, the drive will indicate Medium Error/Calibration Error (03/8000). If a write command is issued at load point, as with most drives, the drive will write over any data present.**

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

Do *not* mix LVD and HVD operations on the same bus.

DLT1 drives use only DLTtape IV cartridges, and can read—but not write to—DLTtape IV cartridges formatted by DLT 4000 drives.

DLT1 drives use their own cleaning cartridge, part 100099401. Do *not* use this cartridge in DLT drives.

Table 1-1. LTO Drive Backward Readability

	LTO Gen 2 Drive	**LTO Gen 3 Drive**
LTO 1 media	Read and write	Read only
LTO 2 media	Read and write	Read and write
LTO 3 media	No action	Read and write

Table 1-2. Compatible Drives and Interfaces

Drive Name	Sustained Native Transfer Rate	Interface	
		HVD[1]	LVD[2]
DLT 8000	6.0 MB/s	Ultra-2 SCSI HVD Fast 40	Ultra-2 SCSI LVD 80MB/s, SE 40MB/s
SDLT 220	11 MB/s	Ultra-2 SCSI HVD Fast 40	Ultra-2 SCSI LVD 80MB/s, SE 40MB/s
SDLT 320	16 MB/s	Ultra-2 SCSI HVD Fast 40	Ultra-2 SCSI LVD 80MB/s, SE 40MB/s
SDLT 600	36 MB/s	N/A	Ultra-3 SCSI LVD 160 MB/s, SE 40 MB/s
Seagate/Certance Ultrium 1 LTO[5]	16 MB/s	Ultra-2 SCSI HVD Fast 40	Ultra-2 SCSI LVD 80 MB/s, SE 40 MB/s
Seagate/Certance Ultrium 2 LTO[5]	34 MB/s	N/A	Ultra-2 SCSI LVD 80 MB/s
Seagate/Certance Ultrium 3 LTO[5]	68 MB/s	N/A	Ultra-3 SCSI Ultra-160 LVD 160MB/s
IBM Ultrium 1 LTO	15 MB/s	Ultra-2 SCSI HVD Fast 40	Ultra-2 SCSI LVD 80 MB/s
IBM Ultrium 2 LTO	35 MB/s	N/A	Ultra-3 SCSI(Ultra-160) LVD 160MB/s
IBM Ultrium 3 LTO	80 MB/s	N/A	Ultra-3 SCSI(Ultra-160) LVD 160MB/s
HP Ultrium 1 LTO	15 MB/s	Ultra-2 SCSI HVD Fast 40	Ultra-2 SCSI LVD 80 MB/s, SE 40MB/s
HP Ultrium 2 LTO	30 MB/s	N/A	Ultra-3 SCSI Ultra-160 LVD 160MB/s
HP Ultrium 3 LTO	80 MB/s	N/A	Ultra-4 SCSI Ultra-320 LVD 160MB/s

1. The maximum burst speed of data transfer for the HVD interface is at 40 MB/s
2. The maximum burst speed of data transfer for the LVD interface varies depending upon the type of SCSI interface.
3. Certance is owned by Quantum Corporation.

■ Audit

An "audit" is the method by which the library keeps track of all cartridge locations within the library. Whenever the library is powered-off/on or the drawer is opened and closed, the camera reads the labels on the tapes and the firmware assigns their cell locations. This data is stored in the memory of the library.

Whenever an audit of the library is completed, the tape management database within the host must also be updated. *Both the library audit and the tape management software audit information must match for correct operation.*

The correct match of audit data has two implications for operation:

• Each time a library audit occurs, you must update the tape management database. This procedure assures a match of library audit information and tape management information.

• If you manually exchange a cartridge from a drive for one in storage, make sure you update the tape management database or an error will occur.

■ Personality Module

The personality module is a connector key and cable that stores the library cell capacity information. The library will not operate unless an authorized module is attached to the rear of the library (see Figure 1-2 on page 1-3). For proper initialization, you must first attach the module before turning on power to the library. You remove the personality module only to install an upgrade conversion bill (that includes a new module).

■ Tape Management Software

The tape management software provides the instructions to perform tape read/write operations and robotic move operations. When the library is in automated mode (refer to the *L20 Tape Library User's Guide*, part 95961), these operations occur without manual intervention. The software determines where the cartridge is located by accessing audit data uploaded from the library; the software then allocates the drive to receive the cartridge.

For command descriptions and instructions, refer to your system's software publications.

■ Safety Features

Safety features are incorporated into the library. If you unlock and open the slide-out cartridge drawer, an electronic interlock removes power from the picker. In addition, the covers over the logic card and the power supply in the electronics compartment prevent you from coming into contact with hazardous voltages and sensitive electronics.

Hardware Installation

2

This chapter tells you how to install the L20 tape library. Two methods are available:

- "Quick Installation Procedure" (for experienced users)
- "Standard Installation Procedure" on page 2-4 (guides you through each step of the process).

■ Quick Installation Procedure

If you are experienced with computer equipment and wish to install this library with the minimum steps, follow the directions below. If you encounter problems, follow the detailed instructions in "Standard Installation Procedure" on page 2-4.

Note: Rack installation requires special procedures, which can be found in "Rack Installation" on page 2-10.

WARNING:
Safety first: **Be sure to read the information in "Safety Precautions" on page xvii before beginning. The library (with drives) weighs approximately 29 kg (64 lb).**

ADVERTENCIA:
La seguridad es lo primero: **Antes de poner manos a la obra, asegúrese de leer la información presentada en "Precauciones de seguridad" en la página xxv. La biblioteca (conjuntamente con las unidades) pesa unos 29 kg (64 lb).**

1. Remove the library from its shipping carton and place the library on a firm, flat surface.

2. Insert the drawer key into the lock and pull out the drawer.

3. Remove the packing cushion (see Figure 2-2 on page 2-8).

4. Fully loosen the shipping screw (see Figure 2-2 on page 2-8). This captive screw cannot be removed, but *must be fully loosened* to free the picker.

5. Reach below the picker and pull it back to make sure that it is loose.

CAUTION:
Possible component damage: Make sure you follow the ESD procedure described in "Electrostatic Discharge (ESD) Damage Prevention" on page xxii for the next step.

6. Insert the personality module (see Figure 2-9 on page 2-18) into its connector at the rear of the library, and tighten it into place. *The library will not initialize unless the personality module is installed.*

7. Insert one end of the power cable into the rear of the library.

Note: Make sure that the AC power outlet is installed within 2.8 m (9.2 ft) of the equipment and is easily accessible for the library power cable.

8. Insert the other end of the power cable into the outlet.

9. Power-on the library by setting the power switch at the rear of the library to "—." The library will begin its initialization routine.

10. When initialization is complete, use the operator panel to configure the library and drives.

Note: Refer to the *L20 Tape Library User's Guide*, part 95961, for any field values that you do not understand.

11. Connect the SCSI cables to the rear of the library and drives (an example is shown in Figure 2-5 on page 2-15):

   a. If the library is to be on its *own* interface, insert one host cable to one of the library connectors and a terminator on the other library connector.

   b. If the library is to *share* its interface with the drives, insert one host cable into one of the library connectors, then connect a short SCSI ribbon cable [300 mm (11.8 in.), part 313645101)] from the other library connector to one connector on the first drive.

   If you are connecting the second drive to the same interface, connect another short SCSI ribbon cable [600mm (23.6 in.), part 313645201)].

12. Attach the HVD or LVD label (part 313611001) to the SCSI cable connector.

13. Terminate the last device in the string.

   • For HVD, terminator part 10187075
   • For LVD/SE, terminator part 10148031

Note: If your library includes the internal Fibre Channel router option, insert the SCSI cable into the top connector; insert the two Fibre Channel cables into the two bottom connectors.

14. At the operator panel:

   a. Select `Drawer Operations`

   b. Select **DRAWER MENU:** `Push select to Prepare Library for Opening Drawer` message.

CAUTION:
Possible picker damage: **Always wait for the `OK To Open Drawer` message to be displayed on the operator panel before opening the drawer. This ensures that the picker is safely seated.**

15. Unlock and pull out the drawer.

16. Insert labeled cartridges according to your configuration.
    See Figure 2-4 on page 2-11 for cartridge orientation.

17. Push in and lock the drawer.

18. Configure your tape management software at the host.

19. Place the library online.

■ Standard Installation Procedure

The procedure for the standard installation of the library takes you through each step of the installation process. The remainder of this chapter is devoted to the standard procedure for installing the library.

A task list is provided below to ensure that each step of the installation is accomplished. Check off the tasks in this list as you complete them.

❑   1.   **"Preparing for Installation"**

❑   2.   **"Preparing the Installation Location" on page 2-5**

❑   3.   **"Unpacking the Library" on page 2-6**

❑   4.   **"Inspecting the Library" on page 2-9**

❑   5.   **"Positioning the Library" on page 2-9**

❑   6.   **"Inserting Cartridges" on page 2-11**

❑   7.   **"Choosing HVD or LVD" on page 2-12**

❑   8.   **"Installing the External Fibre Channel Router" on page 2-14**

❑   9.   **"Connecting External SCSI Cables" on page 2-14**

❑   10. **"Connecting Fiber and SCSI Cables" on page 2-16**

❑   11. **"Attaching the Personality Module" on page 2-17**

❑   12. **"Installing Drives" on page 2-19**

❑   13. **"Powering-on the Library" on page 2-22**

Preparing for Installation

Make sure that you have read "Safety Precautions" on page xvii before beginning. Carefully follow the installation and operating instructions presented in the following chapters.

In general, for a successful installation you should be familiar with:

• SCSI principles (bus termination, terminating power, addressing)
• The SCSI cable plan for your installation
• The SCSI addresses (IDs) already in use by your system
• The SCSI IDs chosen for the devices to be installed (library and drives)
• Fibre Channel principles (if your library uses an optional Fibre Channel router)

Preparing the Installation Location

To prepare the installation location:

1. Make sure that the location is clean, dry, level, and adequately ventilated.

2. If you are mounting the library in a 483 mm (19-in.) standard rack, install brackets or a tray in the rack to support the weight of the library.

3. Allow sufficient space in front of the library to open the slide-out cartridge drawer and in the rear of the library to access cabling and for servicing. This space should be approximately 610 mm (24 in.), front and rear.

Make sure that the AC power outlet is installed within 2.8 m (9.2 ft) of the equipment and is easily accessible for the library power cable.

Unpacking the Library

Note: Do not damage the packing components. Keep these components and the unpacking instructions in case you ever need to replace the library.

To unpack the library, you will need a diagonal cutter (or small knife) and a common-blade screwdriver:

See Figure 2-1 on page 2-7 and Figure 2-2 on page 2-8 while performing the following:

1. Cut the packing straps and remove or cut the packing tape.

WARNING:
***Lifting hazard:* The library weighs 29 kg (64 lb). Be sure to follow the lifting instructions in "Lifting Techniques" on page xviii.**

ADVERTENCIA:
***Riesgo al levantar:* La biblioteca pesa 29 kg (64 lb). Asegúrese de seguir las instrucciones de la sección "Técnicas de levantamiento de objetos" en la página xxvi.**

2. Remove the library from its shipping container.

3. Place the library on a stable, flat surface.

4. Use the key to unlock the cartridge drawer and slide it out.

5. Remove the internal packing cushion (see Figure 2-2 on page 2-8).

6. *Fully loosen the picker shipping screw with your fingers from below (see Figure 2-2 on page 2-8). The screw is a captive-type screw and cannot be removed, but must be fully loosened to free the picker.*

7. Reach below the picker and pull it back to make sure that it is loose.

Figure 2-1. Unpacking the Library (L201_555)
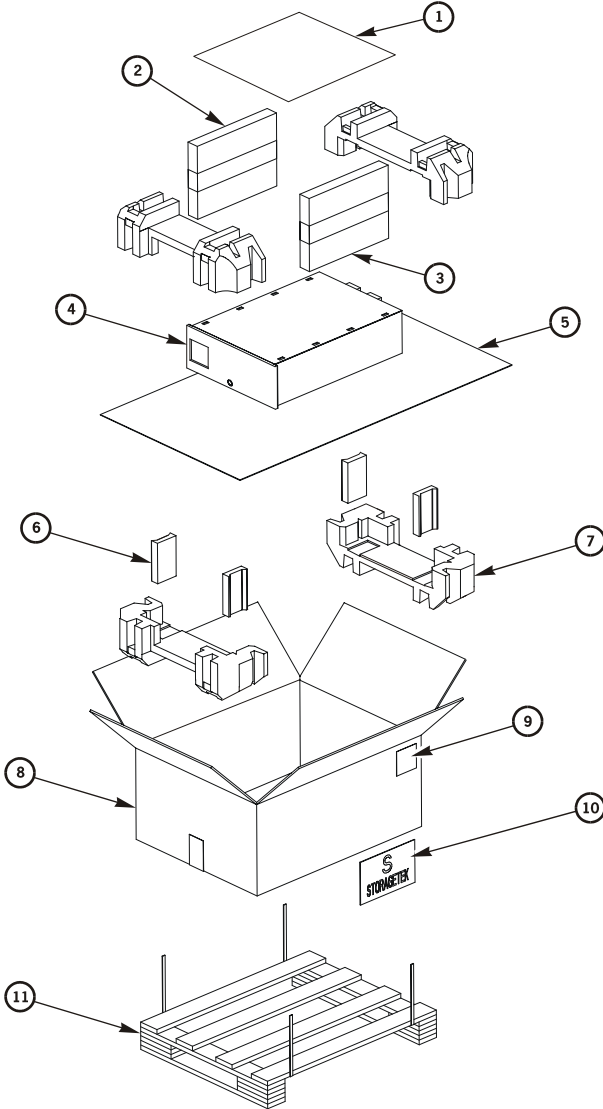
L201_555

1.	Quick Start Instructions	7.	Molded cushion
2.	Start-up kit	8.	Container
3.	Accessory kit	9.	Barcode label
4.	Library	10.	Company logo label
5.	Plastic film	11.	Pallet
6.	Rack mount spacers		

Figure 2-2. Internal Packing (L201_026)
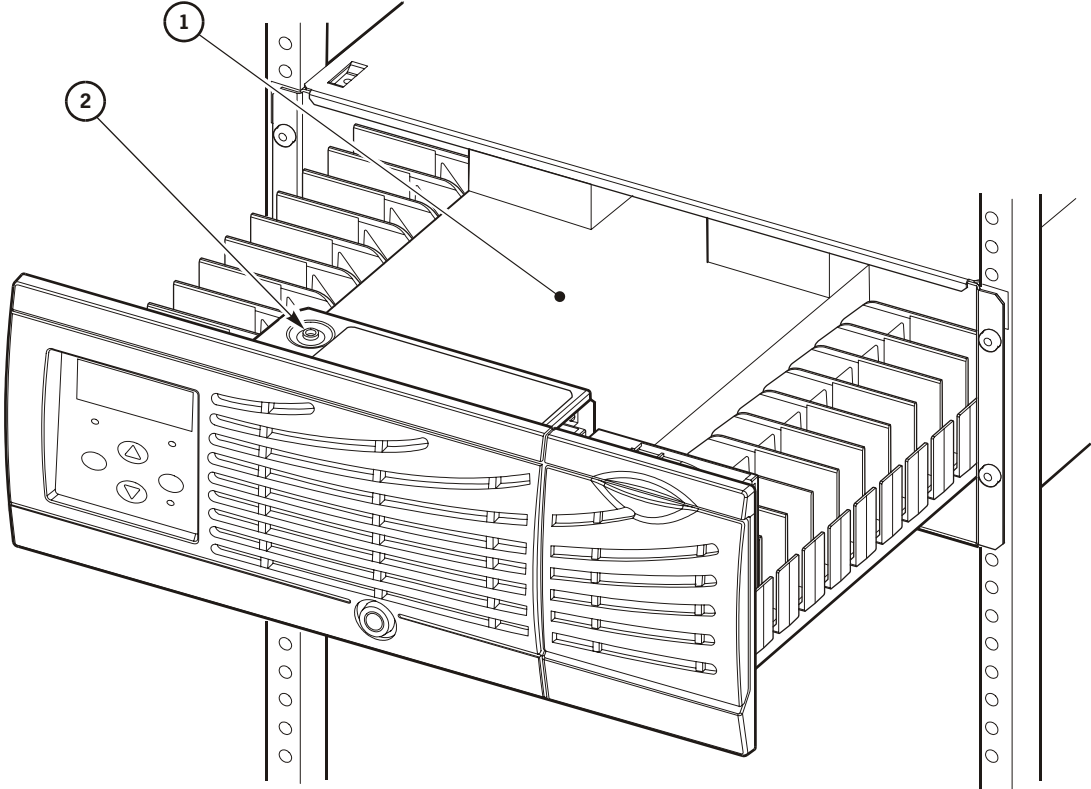
L201_026

1. Internal packing cushion
2. Shipping screw

Inspecting the Library

To visually inspect the library:

1. Check the library's exterior for any obvious physical damage or loose parts.

2. Open the slide-out cartridge drawer to check the interior; use a flashlight if necessary.

3. Make sure that the cables and accessories you require are present. Refer to your shipping bill. Some items might be shipped in a separate package. Cable part numbers are listed in Appendix A.

   _____ SCSI cables
   _____ SCSI terminators
   _____ SCSI adapters
   _____ Fibre Channel cables
   _____ AC power cord
   _____ Key (for front drawer of library)
   _____ Cartridges and labels
   _____ Personality module (in a bag taped to drive at rear of library)

   Note: If you are mounting the library in a 483-mm (19-in.) standard-width rack, you must have either brackets or a tray measuring at least 711 mm (28 in.) deep. Once the brackets or tray are installed within the rack, you may then mount the library into the rack.

4. Report any damaged, missing, or incorrect items to your sales representative.

Positioning the Library

The library can be ordered for either desktop or rack installation.

WARNING:
Lifting hazard: **Use two people. Check the path to the intended location and clear it of obstructions before you move the library. The library might be awkward and heavy to lift; the weight of the library (with drives) is 29 kg (64 lb).**

ADVERTENCIA:
Peligro de levantamiento: **Para esta tarea se requieren dos personas. Antes de mover la biblioteca, verifique el trayecto hasta la ubicación de instalación prevista y retire cualquier obstáculo. La biblioteca es pesada. Conjuntamente con sus unidades pesa 29 kg (64 lb).**

CAUTION:
Possible equipment damage: **Do not lift the library by holding the fans.**

Figure 2-3 on page 2-10 shows a rack-mounted library. Make sure that you have installed the supporting brackets or a tray in the rack before positioning the library.

Desktop Installation

If you have a desktop library, which includes the cosmetic cover and rubber feet, you can place the library on any convenient desk or table within cabling distance to your host computer.

Rack Installation

To install the library into a rack:

1. Slide the library onto the previously installed supporting brackets or tray.

2. Insert the key into the lock on the slide-out cartridge drawer and turn it counterclockwise to unlock the drawer.

3. Carefully pull out the slide-out cartridge drawer to allow enough room to expose the rack flanges.

4. Secure the library to the rack with four screws through the rack and the rack screw clip nuts.

Figure 2-3. Rack-Mounted Library Installation (L201_010)
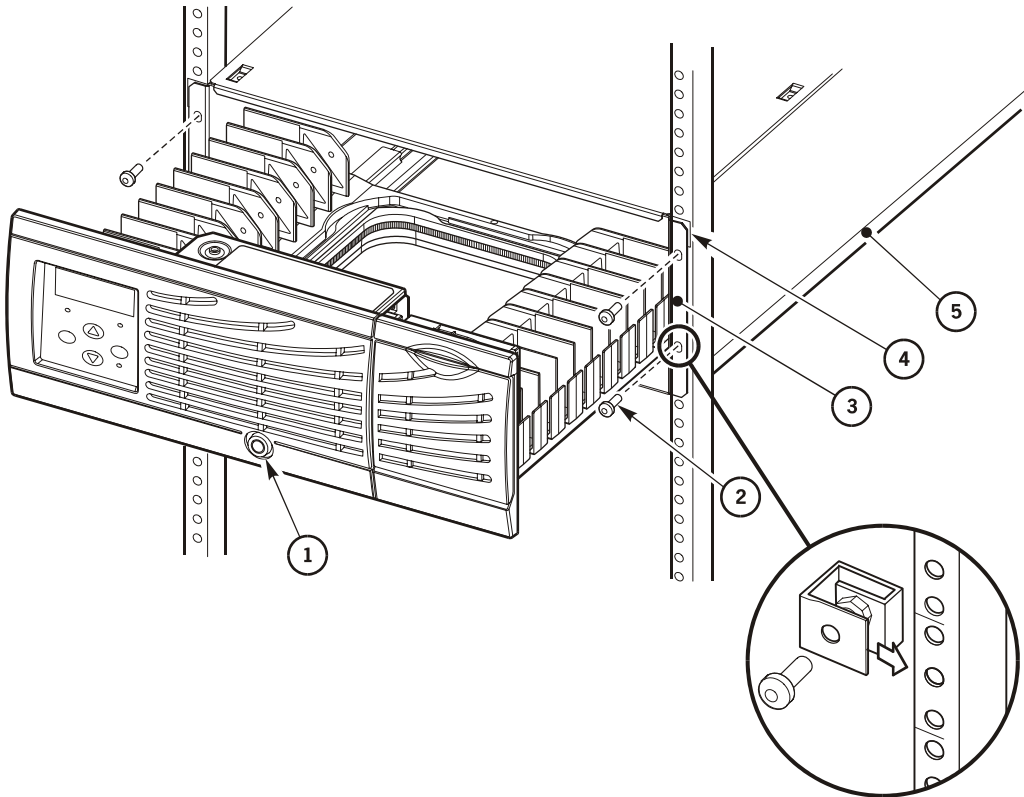
L201 010

1. Lock for slide-out cartridge drawer
2. Rack screws (4)
3. Rack-mounting flange
4. Rack screw clip nuts (4)
5. Supporting brackets or tray (required)

Inserting Cartridges

Make sure that you refer to the electrostatic discharge procedure in "Electrostatic Discharge (ESD) Damage Prevention" on page xxii before proceeding.

Inserting the cartridges correctly is critical for library operation. If the cartridges are not oriented correctly or not seated all the way into the storage cells, the library might fail on startup and display an error message on the operator panel.

Note: The following instructions assume you have correctly labeled all cartridges, as described in the *L20 Tape Library User's Guide*, part 95961.

Figure 2-4. Correct Orientation of Cartridges (L201_005)

L201_005
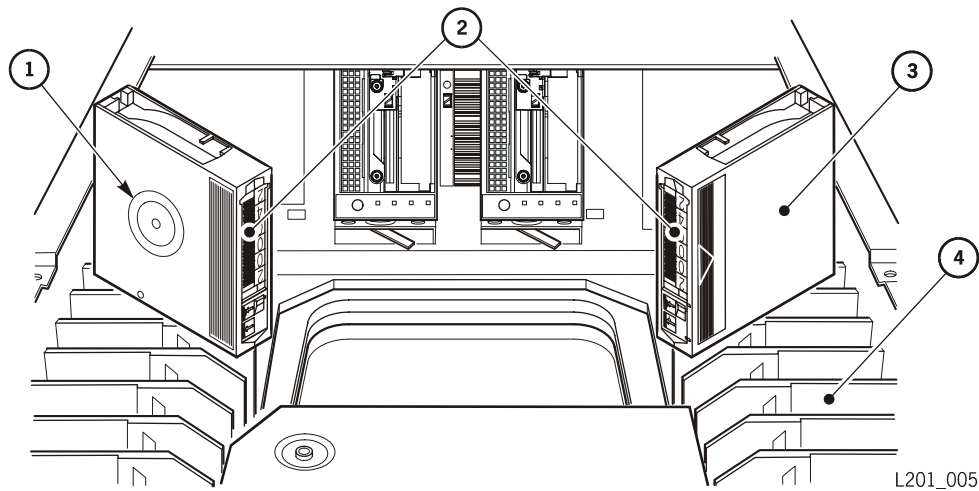
1. Bottom side of cartridge (with hub)
2. Cartridge volume labels
3. Top side of cartridge (no hub)
4. Storage cells

Depending on the model and configuration of your library, some storage cells cannot be used. In addition, the cell numbers change when the Auto Clean feature is turned on because a cleaning cartridge must be stored in the left, front cell. Using Auto Clean subtracts one cell from the total available data storage cells reported by the library to your application software.

To insert the cartridges (left and right are *as you face the front of the library*):

1. **Left side storage cells**—Place the cartridge volume label toward the center of the library, with the *bottom* of the cartridge (with the circular knurled hub showing) facing the front of the library.

2. **Right side storage cells**—Place the cartridge volume label toward the center of the library, with the *top* of the cartridge (with the hub *not* showing) facing the front of the library.

   Make sure that you seat the cartridges all the way into the storage cells.

   Note: You do not have to insert a cartridge into every storage cell. The library automatically audits cartridges and empty cells as part of its initialization routine.

3. Place one hand on the front surface of the drawer (above the lock) and push the drawer all the way in.

4. With the other hand, lock the drawer by inserting the key into the lock and turning the key clockwise.

5. Put the key in a secure place.

Choosing HVD or LVD

Your library interface is hardware configured as either high voltage differential (HVD) or low voltage differential (LVD). The HVD interface allows longer cable lengths, but throughput is slower than with LVD; the LVD interface restricts cable lengths, but provides faster throughput.

CAUTION:
Potential for equipment damage: **Do not mix LVD and HVD operation on the same bus.**

SCSI Cable Restrictions

The library and drives accept *only* SCSI Type-3 connectors. If you use SCSI Type-1 or -2 connectors, you must use a SCSI Type-1- or SCSI Type-2-to-SCSI Type-3 adapter.

Note: If you are connecting the library or drives to an LVD SCSI bus, the cable can be no longer than 12 m (39.4 ft).

Each interface requires a unique terminator. Terminators are listed on page 2-14.

Table 2-1 lists restrictions for SCSI connections that you must keep in mind.

Table 2-1. SCSI Cable Restrictions

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

Host Bus Adapter Requirements

The host bus adapter (HBA) in your server must match the library and drive's SCSI bus type. If the interface to the library is HVD, your server must contain an HVD-compatible HBA; if the interface to the library is LVD, the server must contain an LVD-compatible HBA.

Table 2-2 lists the possible problems you could encounter if you mix interfaces on the same bus.

Table 2-2. SCSI Device/Bus Types: Precautions

If you plug a . . .	Into . . .	The result is . . .
Single-ended device	Single-ended bus	Proper connection
	LVD bus	Single-ended mode
	HVD bus	Operation disabled
Low voltage differential device	Single-ended bus	Single-ended mode
	LVD bus	Proper connection
	HVD	*Potential damage*/disabled device
High voltage differential device	Single-ended bus	Disabled device
	LVD bus	*Potential damage*/disabled device
	HVD bus	Proper connection

Installing the External Fibre Channel Router

To install the optional external Fibre Channel router, refer to *StorageNet 3300 Fibre Channel Router User Manual*, Chapter 2.

If installing an external fibre channel rotuer to replace an internal fibre channel router card, remove the internal fibre channel router card. Refer to the *L20 Tape Library Service Manual, PN 96041*.

Connecting External SCSI Cables

You should be familiar with SCSI principles to correctly install cables to your system.

Note: You can connect the library and drives to the same bus (on bus) or to separate buses (off bus). However, for the on bus configuration, a bus reset will affect all devices on the bus. Library availability can be improved by ensuring that the library is on a separate bus from the drives.

Figure 2-5 and Figure 2-6 on page 2-15 show examples of how to cable a SCSI library with two drives:

1. Connect the operating system cable to the library (not for Autoloader).

2. To daisy chain the library to the first drive, install a 300 mm (11.8 in.) SCSI ribbon cable (part 313645101) from the library to the first drive.

   To attach the second drive to the same interface, install a 600 mm (23.6 in.) SCSI ribbon cable (part 313645201) from the first drive to the second drive. The length of these ribbon cables allows removal of drives without disconnecting the SCSI bus.

3. Install the terminator provided on the remaining SCSI port and on the host computer, if it requires one.

   - For HVD, terminator part 10187075
   - For LVD/SE, terminator part 10148031

4. Attach the appropriate label (part 313611001) to the SCSI cable connector for the SCSI operation type (HVD or LVD).

You can vary this cabling arrangement depending on how your system is configured. For example, you could attach one of the drives to a different bus. In this case, that drive would have its own SCSI terminator.

Figure 2-5. Connecting SCSI Cables—On Bus Example (L201_563)
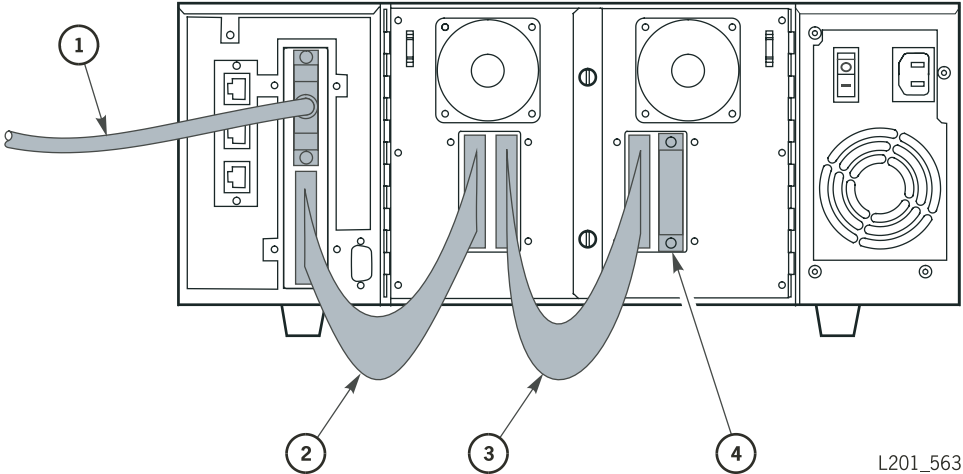
L201_563

1. SCSI cable to host system
2. 300 mm SCSI connector to LLC card, drives
3. 600 mm SCSI daisy-chain cable
4. SCSI terminator

Figure 2-6. Connecting SCSI Cables—Autoloader Example (L201_564)

L201_564
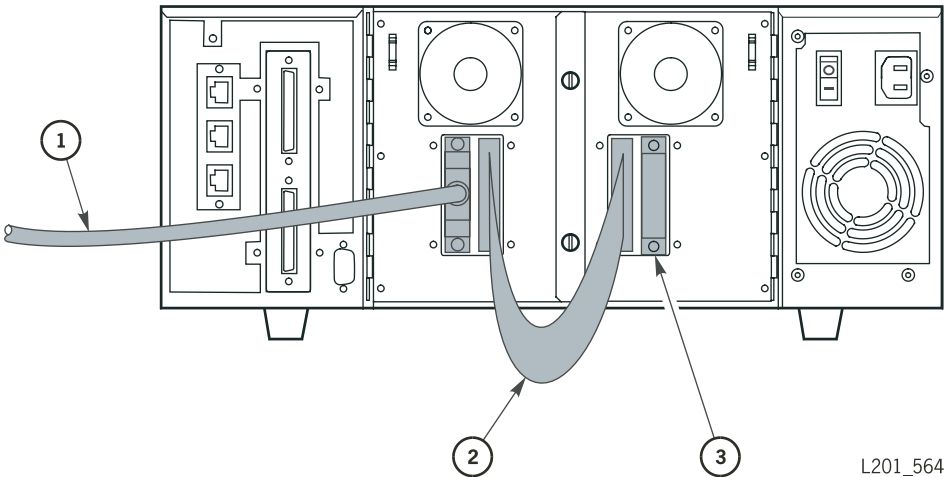
1. SCSI cable to host system
2. 600 mm SCSI daisy-chain cable
3. SCSI terminator

Connecting Fiber and SCSI Cables

For libraries with the optional Fibre Channel router card (see Figure 1-2 on page 1-3), connect the cables and terminator as shown in Figure 2-7. For libraries with the optional external Fibre Channel router, see Figure 2-8 on page 2-17.

Figure 2-7. Connecting Fiber and SCSI Cables, Fibre Channel Router Card (L201_565)
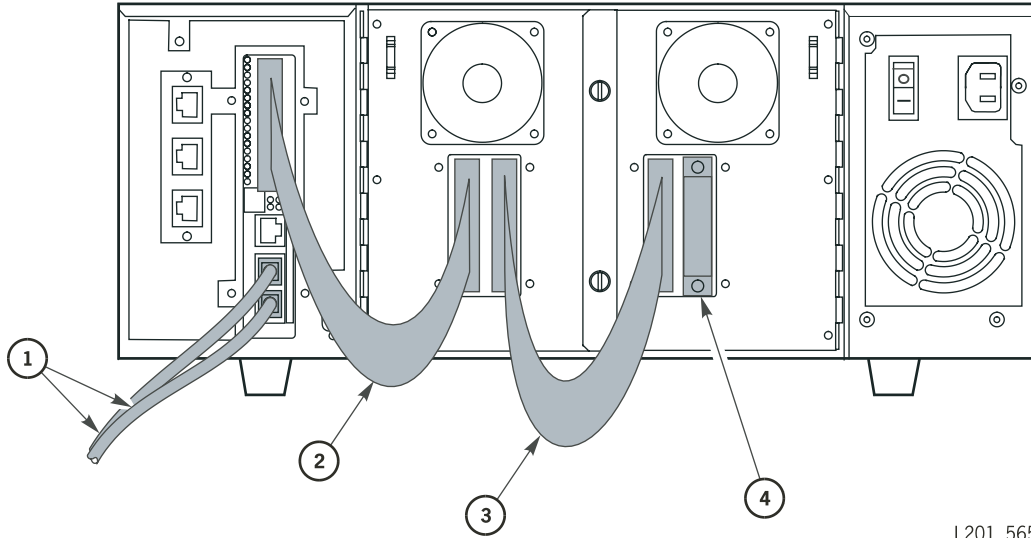
L201_565

1. Fiber cables to/from host
2. 300 mm LVD SCSI cables
3. 600 mm LVD SCSI cables
4. SCSI terminator

Figure 2-8. Connecting Fiber and SCSI Cables, External Fibre Channel Router (L201_566)
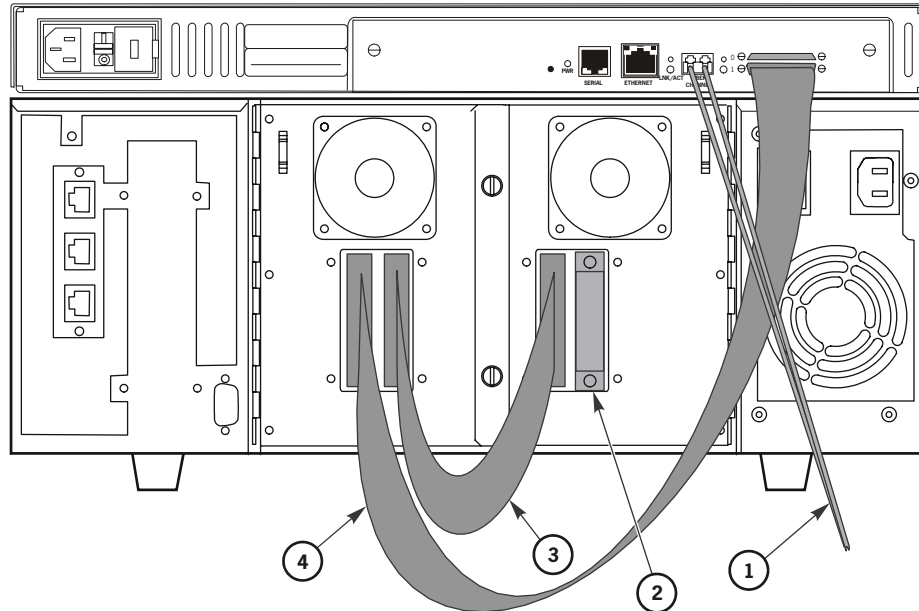
L201_566

1. Fiber cables to/from host	3. 600 mm LVD SCSI cables
2. SCSI terminator	1. 300 mm LVD SCSI cables

Attaching the Personality Module

The personality module (Figure 2-9 on page 2-18) controls the cartridge capacity and:

- *Must* be inserted into its connector for the library to initialize
- *Must* be reattached if the library is replaced

CAUTION:
Possible component damage: **Make sure that you follow the ESD procedure described in "Electrostatic Discharge (ESD) Damage Prevention" on page xxii before connecting the personality module.**

The personality module is in a bag taped to the drive at the rear of the library. Remove the personality module and attach it to its connector:

- A 10-cartridge model uses part 313603501
- A 20-cartridge model uses part 313603001
- An L20-10 upgrade uses part 313632501

Figure 2-9. Personality Module and Connector (L201_021)
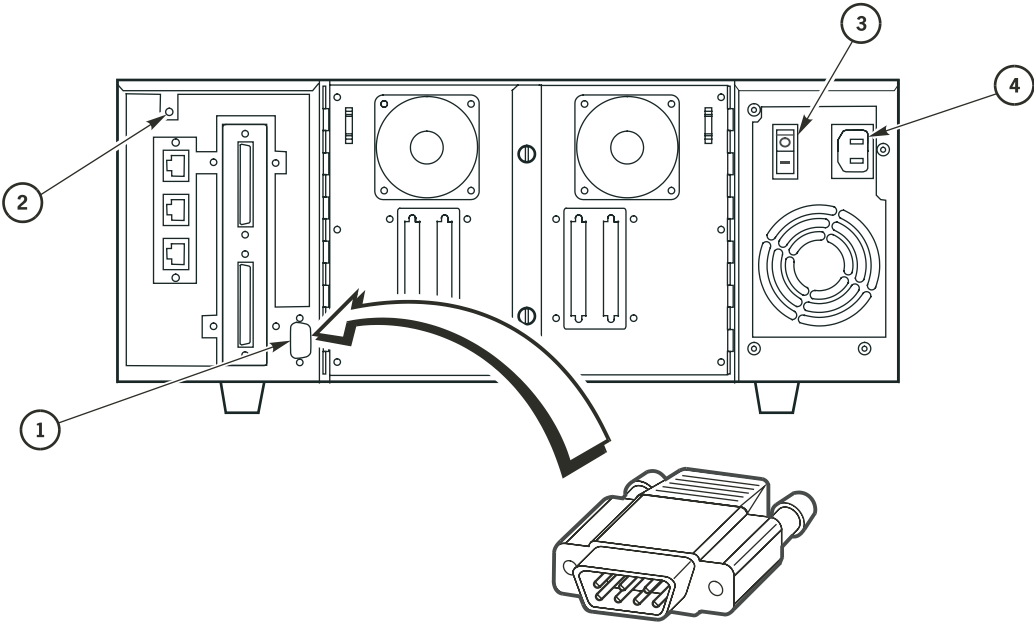
L201_021

1. Personality module connector
2. Library RESET button
3. Power-on/off switch
4. Power cord receptacle

Installing Drives

See "Drives and Cartridges" on page 1-5 for compatibility issues.

If you did not order a library with drives installed, you will need to install them.

1. At the rear of the library, turn the drive door knobs (Figure 2-10) until they unlatch and open the door where you want to install the drive.

Figure 2-10. Drive Doors (L201_042)
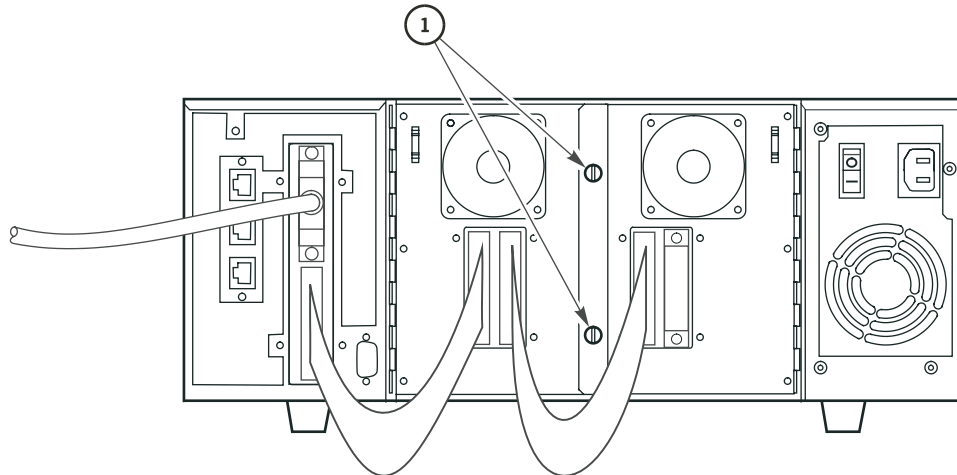
L201_042

1. Drive door knobs

WARNING:
Lifting hazard: **The drive tray assembly weighs approximately 3 kg (6 lb). Be sure that you follow the lifting instructions in "Lifting Techniques" on page xviii.**

ADVERTENCIA:
Riesgo al levantar: **El conjunto de la bandeja de la unidad pesa unos 3 kg (6 lb). Asegúrese de seguir las instrucciones de la sección "Técnicas de levantamiento de objetos" en la página xxvi.**

CAUTION:
Load/Unload problems: The **drive tray latch must be fully loosened (disengaged) before you slide the tray into the slot. If the latch arm contacts part of the library frame as it is being tightened, it cannot be rotated to its fully locked position, and the tray will not be firmly locked into the drive slot. This can cause alignment problems and the camera can have problems reading the target.**

1. Holding the drive tray assembly as shown in Figure 2-11 on page 2-20, turn the knob all the way to your right.

Figure 2-11. Drive Tray Latch Knob
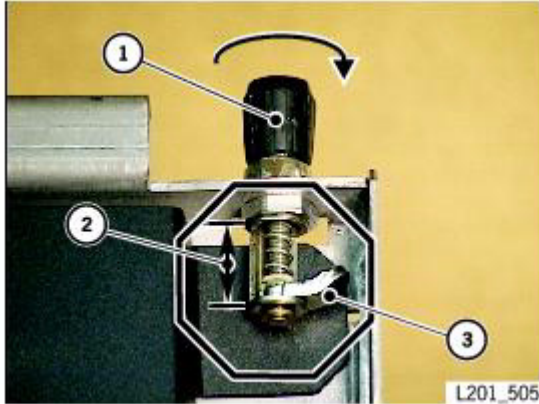
1. Knob
2. Range
3. Latch arm (shown disengaged)

2. Slide the drive tray into the empty slot and tighten the drive tray by turning the knob all the way to your right.

   Note: Be sure that the tray is securely latched by pulling back on the tray and verifying that it does not come loose.

3. Connect the library-to-drive interface connector (Figure 2-12 on page 2-21).

4. Connect the drive power cable.

5. Connect the drive SCSI connector to the back of the drive.

CAUTION:
Possible equipment damage: **Make sure that the SCSI cable does not block the fan and that you move the cable out of the way before closing the door.**

6. Close and secure the drive doors by pushing in the knobs and turning all the way to the right.

Figure 2-12. Drive Connectors (L201_002)
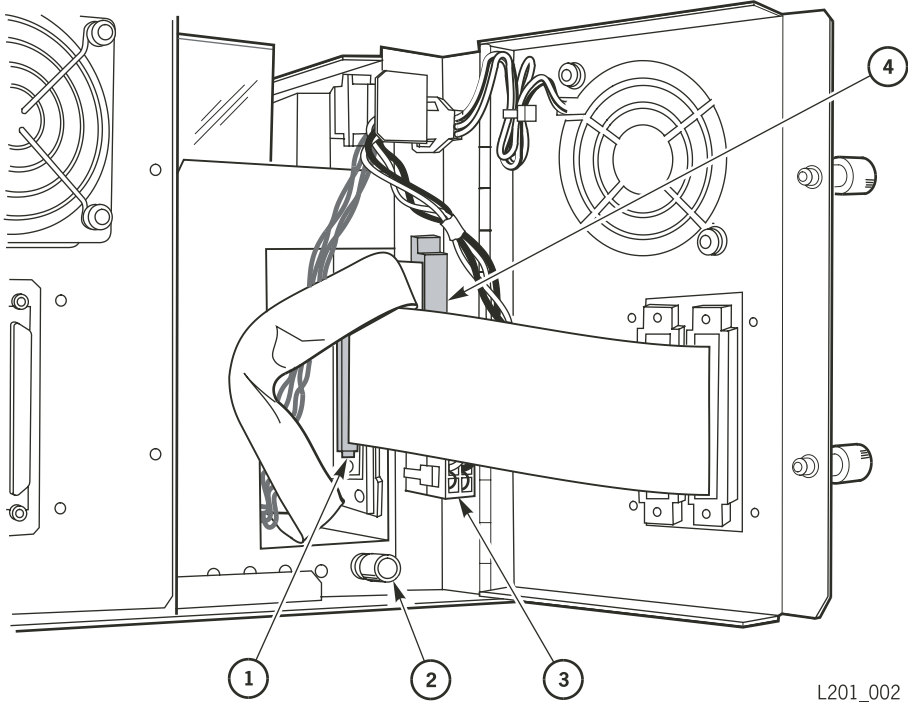
L201_002

1. Drive SCSI connector
2. Drive tray latch knob
3. Drive power cable
4. Library-to-drive interface connector

Powering-on the Library

To power-on the library (see Figure 2-9 on page 2-18 for locations):

CAUTION:
Possible equipment damage: **Make sure that the power-on/off switch is set to off (O) before performing Step 1.**

1. Close and lock the drawer.

2. Attach the power cord to the power cord receptacle at the rear of the library (see Figure 2-9 on page 2-18) and plug the cord into an electrical outlet.

3. Power-on the library using the power on/off switch.

    The operator status display shows the `Init in Progress:` message. When initialization is complete, the status display shows the state of the library.

You can now use the library operator panel to access the menus to configure the library and drives. You must fully configure the library *before* you configure the tape management software. Refer to the *L20 Tape Library User's Guide*, part 95961, for any configuration fields that you are not sure of entering.

A "Configuration Information" table is supplied on the next page.

■ Configuration Information

Record your library configuration in the following table; then make a copy of the table and give it to the customer. The customer will then refer to it when making a service call or ordering features and upgrades.

Table 2-3. L20 Tape Library Configuration Information

Library Serial Number _____
Library Warranty Number _____
Model: 10-cell ❑ 20-cell ❑   Library Capacity: 10 + CAP ❑   15 + CAP ❑   19 + CAP ❑   20 Cells ❑
Firmware Version _____
Library SCSI ID _____
Library Interface: High Voltage Differential ❑ 　　　　　　Low Voltage Differential ❑   Fibre Channel ❑
Number of Drives Installed _____
Drive 0 SCSI ID _____　　　　　　　　Drive Type _____ 　　　　　　　　　　　　　　　　　　　On Bus ❑ Off Bus ❑ 　　　　　　　　　　　　　　　　　　　HVD ❑   LVD ❑
Drive 1 SCSI ID _____　　　　　　　　Drive Type _____ 　　　　　　　　　　　　　　　　　　　On Bus ❑ Off Bus ❑ 　　　　　　　　　　　　　　　　　　　HVD ❑   LVD ❑
Fast Load: Off ❑   On ❑
Auto Clean: Off ❑   On ❑
Network: Library Name _____ 　　IP Address _____   Subnet Mask _____   Network Gateway _____

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Specifications and Cables

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A

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This appendix provides specifications for the library, plus cable part numbers and agency certifications.

For drive specifications, refer to your drive publications. For cartridge tape specifications, refer to the *L20 Tape Library User's Guide*, part 95961.

■ Power Specifications

Table A-1. Power Specifications

Item	Measurement
Input voltage	100–240 VAC, single phase
Frequency	50/60 Hz
Maximum power consumption (library)	1.4 A at 120 V *or* 0.71 A at 240 V
Maximum heat output	560 Btu/hr
Voltage-amperes	170 VA

■ Library Environment Specifications

Table A-2. Environment Specifications

Specifications	Operating	Storage	Transporting
Temperature	+10 to +40ºC +50 to +104ºF	+10 to +40ºC +50 to +104ºF	-40 to +60ºC -40 to +140ºF
Humidity	20 to 80%	10 to 95%	10 to 95%
Wet bulb (maximum, non-condensing)	+29.2ºC +84.5ºF	+35ºC +95ºF	+35ºC +95ºF
Altitude	-76 to 3,048 m (-250 to 10,000 ft)		

■ Physical Specifications

Figure A-1. Desktop Specifications (L201_345)
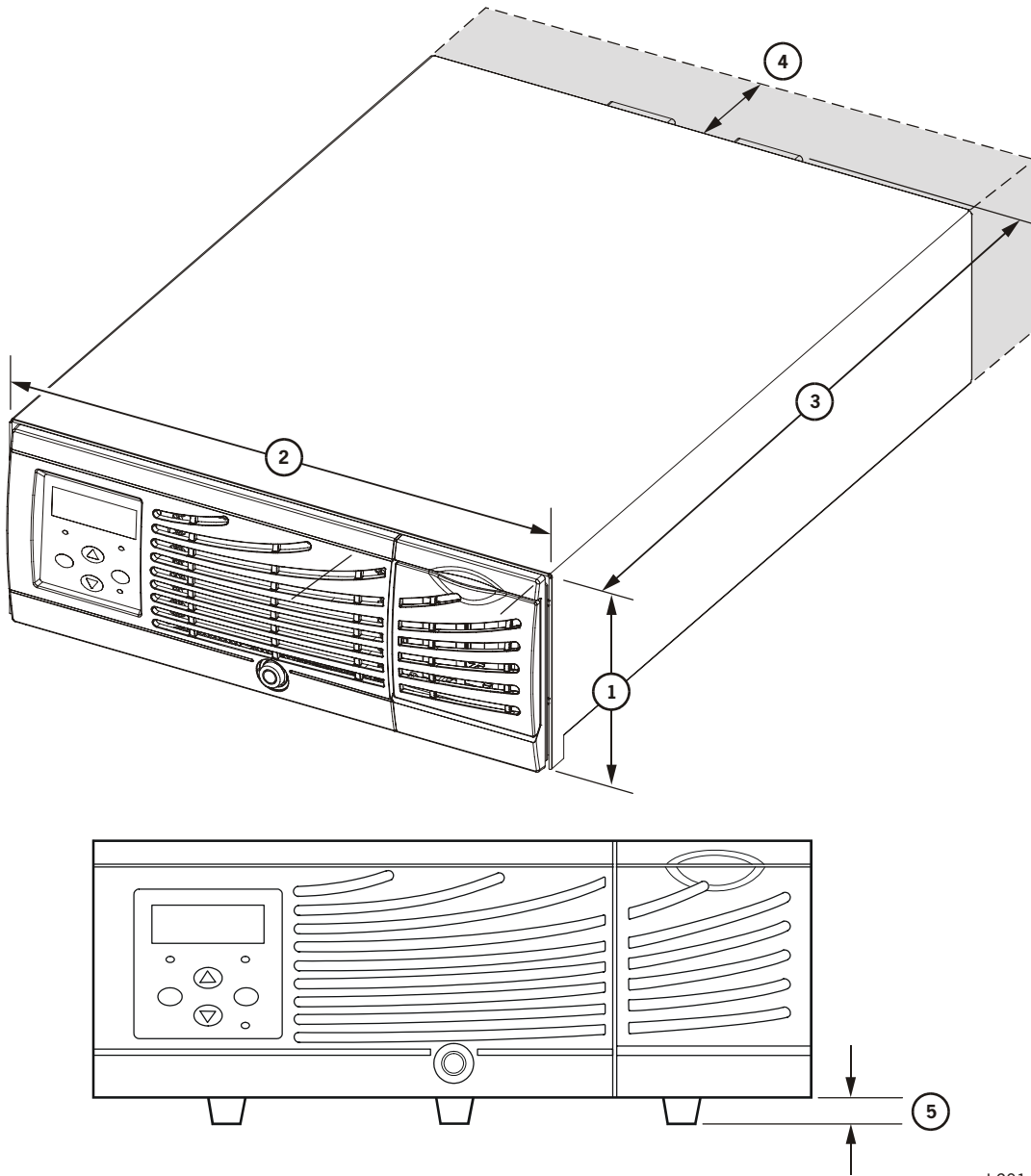
L201_345

1. 178 mm (7.0 in.) height
2. 483 mm (19.0 in.) width
3. 706 mm (27.78 in.) depth without cables

4. 102 mm (4.0 in.) dedicated fan exhaust clearance area
5. 16 mm (0.625 in.) foot height

Weight: 23.4 kg (51.6 lb) for library only; 29 kg (64 lb) for library with two drives

Figure A-2. Rack Mounted Specifications (L201_342)
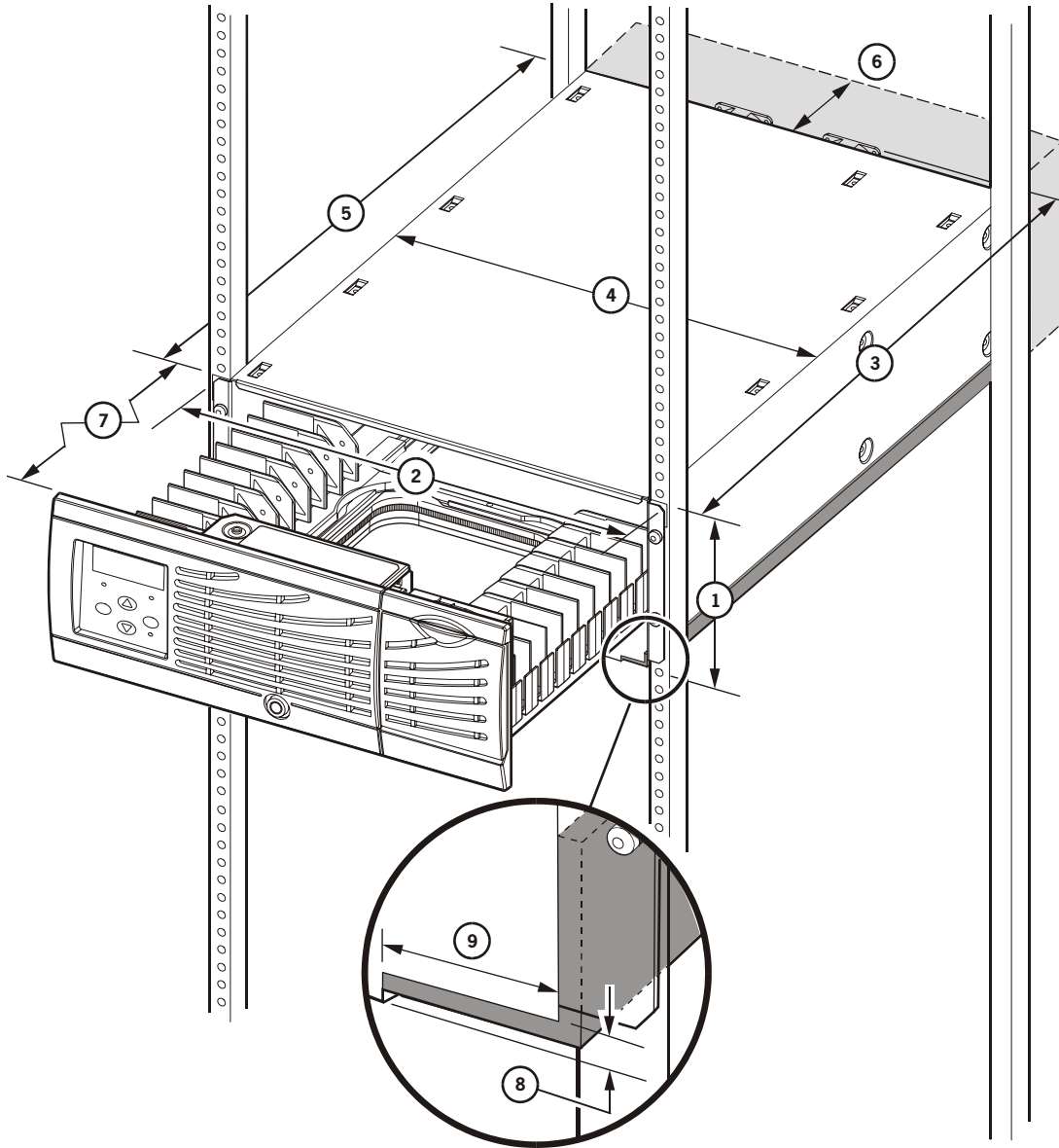
L201_342

1. 176 mm (6.94 in.) height
2. 484 mm (19.05 in.) width of front with flange
3. 706mm (27.78) depth with fan, no cables
4. 448 mm (17.65 in.) width
5. 680 mm (26.78 in.) depth, no fan or cables
6. 102 mm (4.0 in.) dedicated fan exhaust clearance area
7. 356 mm (14.0 in.) drawer travel distance
8. 2.3 mm (0.090 in.) shaded area represents optional rail support
9. 37 mm (1.44 in.)

Weight: 23.4 kg (51.6 lb) for library only; 29 kg (64 lb) for library with two drives

■ Power Cables and Receptacles

The power cable must be ordered and the correct receptacle made available. Power cables for the library are listed in the table below. All cables are 3 m (9.8 ft).

The receptacle type is listed. Refer to your vendor catalog for the part number.

Table A-3. Country-specific Power Cords

Input Voltage	Country	Part Number	Receptacle Type	Quantity
100 to 127 VAC	U.S./Canada	10187019	5-15R	
	Japan	10083243	JIS C8303	
200 to 240 VAC	Australia	10083244	AS 3112	
	Denmark	10083248	DEMKO107/ 10-1973	
	Europe	10187018	Schuko	
	Europe (Continental) See Note 2.	10187022	IEC309	
	Italy	10083245	CEI 23-16/V11	
	Korea	10083657	KSC 8305	
	South Africa	10083636	BS546	
	Switzerland	10083246	CEE 7	
	United Kingdom	10083247	BS 1363	
	U.S./Canada	10187020	6-15R	

Note: This is a harmonic no plug cord for Belgium, Denmark, Finland, France, Germany, Holland, Norway, Sweden, and Switzerland.

Table A-4. Non-country-specific Power Cords

Input Voltage	Description	Part Number	Quantity
100 to 127 VAC	SJT IEC320 14AWG, 3 m, receptacle 5-15	10187061	
250 VAC	SJT 16 AWG L6-15P, C13, 2.5 m, receptacle L6-15P	10187024	
250 VAC	18, 3, SVT, 1mm, M/SH FRT	10187055	
	3, F, IEC320 harmonized (see **Note**)	10187047	
100 to 240 VAC	International power cord pigtail	10083735	

Note: The cord has a plug on one end that attaches to the library and bare wires on the other. Buy the correct end to match your normal wall outlet and attach it to the cord.

■ SCSI Cables

SCSI cables for the library and drives are listed in the tables below. Check with your hardware coordinator for the correct cable types and lengths required.

Table A-5. Universal 68-Pin Cables

Length	Density	Part Number
3 m (9.8 ft)	MD to MD	10187008
5 m (16.4 ft)	MD to MD	10187009
10 m (32.8 ft)	MD to MD	10187010
3 m (9.8 ft)	MD to HD	10187011
5 m (16.4 ft)	MD to VHD	10187012
10 m (32.8 ft	MD to VHD	10187013

Table A-6. SCSI 68-Pin Ribbon Cables (Daisy Chaining)

Description	Length	Part Number
Library-to-drive, HVD, MD to MD	300 mm (11.8 in.)	313645101
Library-to-drive, LVD, MD to MD	300 mm (11.8 in.)	313708802
Drive-to-drive, HVD, MD to MD	600 mm (23.6 in.)	313645201
Drive-to-drive, LVD, MD to MD	600 mm (23.6 in.)	313708902

Table A-7. Miscellaneous Cables

Description	Length	Part Number
Fibre Channel router serial cable with two RJ45 connectors (RJ45 Connector and Consultive Committee on International Telephony and Telegraph (CCITT) cable)	6.1 m (20 ft	410828902
Fibre Channel router RJ45 to DB9 adapter		10410823
Shielded flat ribbon extension cable for HVD/LVD SCSI. This cable extends between the library and the SCSI cable.	1.04 m (40.8 in.	313646002
SCSI, Fast, MD to MD	20 m (65.62 ft)	10083312

■ SCSI Terminators

Table A-8. SCSI Terminator Part Numbers

Type	Part Number
HVD	10187075
SCSI Differential	10148003
SCSI LVD/SE	10148031

■ Agency Certifications

Table A-9. Agency Certifications

Category	Certification
Safety	CSA standard CAN/CSA-C22.2 no. 950-M93
	UL standard 1950, Third Edition
	EN60950
Emissions	FCC 47, Part 15, Subpart B, Class A
	VCCI Class A
	European Union CE emissions standards
	Canadian EMC Law; ICES-003
Immunity	European Union CE immunity standards

Agency Certifications

SNMP

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This appendix provides the implementation of the Simple Network Management Protocol (SNMP).

■ Overview

Sun StorageTek's L-series libraries support Version 1 of the simple network management protocol (SNMPv1). SNMP is an application layer protocol that performs network management operations over an Ethernet connection using a User Datagram Protocol (UDP/IP). Library microcode 2.11 or higher supports SNMP.

SNMP allows systems administrators to query the library for configuration, operation, and statistical information. SNMP also allows the library to inform the systems administrator of potential problems.

Systems administrators and network managers use SNMP to monitor and receive status from the library, such as:

- Operational state of the library (such as microcode level, serial number, online)
- Status of the cartridge access port (such as open, closed, number of cells)
- Library elements (number of hands, columns, panels, cells, CAPs)
- Number of storage cells and media types stored in the library
- Number and types of drives installed in the library
- Many other variables defined in the database

Figure B-1 on page B-2 illustrates a simple network block diagram that identifies the locations of the SNMP software application, DNS servers, and Library Admin. This figure also identifies the IP addresses, shows a map of DNS names (library names), and other components involved in that configuration (such as operator panel, Ethernet connections, location of the Management Information Base (MIB), and the LLC card.

Figure B-1. SNMP and DNS Network Block Diagram Example (L201_523))
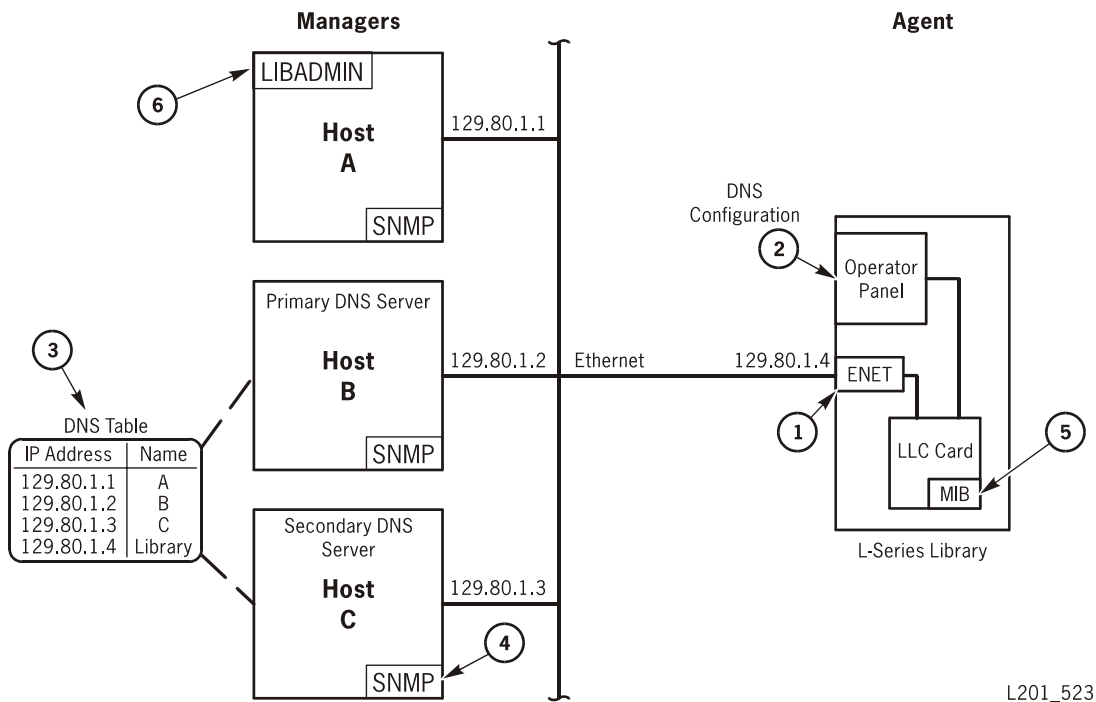
1. Ethernet connection (ENET) for the library.
2. To configure the library to support DNS.
   Note: You must enter the Domain Name Service (DNS) configuration *only* if your Simplified Network Management Protocol (SNMP) agent is set to trap *named* recipients; if SNMP is set for *numbered* recipients (by using IP addresses), no entries are required.
3. An example of a table that matches IP addresses to selected DNS names.
4. SNMP software application that implements the role of manager. Some applications include:
   HP Open View
   IBM NetView
   Sun Microsystems SunNet Manager
5. The MIB is stored on the LLC card. To view the contents of the MIB database, enter:
   http://*IP.Address/*Lseries.mib or http://*library_name/*Lseries.mib
6. Library Admin is an *optional* feature for the library. It provides the GUI-based monitoring system and is *separate* from the SNMP application. Library Admin provides an easy and convenient way to configure the library SNMP agent using a network configuration panel or screen. Library Admin also provides other beneficial functions and display screens for the library.

■ SNMP Terms

SNMP uses a manager/agent structure, a database, and a small set of commands to exchange information. SNMP terms include:

- **Agent**–A module that resides in a managed device. The agent is responsible for responding to requests from the manager and for sending *traps* to a recipient that inform the systems administrator of potential problems.

- **Community String**–Applications use community strings for access control. The manager includes the community string in its SNMP messages to an agent. The agent consequently can accept or reject the operation.

- **Managed device**–A device that hosts the services of an SNMP agent that provides monitored information and controlled operations using SNMP. L-Series libraries are managed devices.

- **Management Information Base (MIB)**–A collection of information stored in a database that contains configuration and statistical information for a managed device. For L-Series libraries, a copy of the MIB is loaded with microcode and stored on the LLC card. See "Management Information Base" on page B-4 for more information about the MIB.

- **Manager**–The thing that provides the communication link between the systems administrator and the managed devices on the network. A manager station or server allows the systems administrator to get information about the device through the MIB and to receive traps from an agent.

- **Recipient**–A location on a manager where the SNMP agent sends traps. This location is defined by the combination of either the IP address or DNS name and the port number. The default recipient port number is 162.

- **Trap**–A message that reports a problem, error, or a significant event that occurred within the device.

■ SNMP Commands

SNMPv1 offers a limited number of commands that follow a simple request/response exchange to communicate between the manager and the agent.

The **manager** issues request such as:

- Get–A request for information of a specific variable.
- GetNext–A request for the *next* specific variable.
- Set–A request to change the value of a specific variable.

The **agent** responds with:

- Get-Response–A response to the manager's Get and GetNext commands.
- Trap–An asynchronous message to the recipient about an error or event.

Refer to the SNMP software documentation for additional information.

■ Access Control

Because community strings provide a weak form of access control in SNMPv1, Sun StorageTek's embedded agent will not rely on the so called "private" community string in order to accept changes to the library's configuration. Access control and authorization for Set operations is performed by using an administrative password. Consequently, the embedded agent uses only one community string for both Get and Set operations.

■ Management Information Base

The MIB is a viewable document that contains descriptions about the characteristics for a managed device. These characteristics are the functional elements for that device which can be monitored using SNMP software.

To access and view the contents of the MIB using a Web browser, enter the IP Address or library name and Lseries.mib. For example: http://*IP.Address*/Lseries.mib or http://*library_name*/Lseries.mib.

Note: The L-series libraries implement only MIB extensions defined in the LSERIES-TAPE-LIBRARY-MIB under the **private (4)** section as shown in Figure B-2 on page B-5.

Figure B-2 on page B-5 shows the MIB hierarchy as a tree structure where the L-series MIB is located.

Figure B-2. Management Information Base Hierarchy (L201_522))

MIB Title = LSERIES-TAPE-LIBRARY-MIB
Object Name = iso.identified-organization.dod.internet.private.enterprise.storagetek.products.lsereis
Equivalent Object Descriptor = 1.3.6.1.4.1.1211.1.12

ccitt (0)   **iso (1)**   iso-ccitt (2)

standard (0)   registration-authority (1)   member-body (2)   **identified-organization (3)**

dod (6)

internet (1)

directory (1)   mgmt (2)   experimental (3)   **private (4)**   security 5)   snmpV2 (6)

enterprise (1)

storagetek (1211)

products (1)
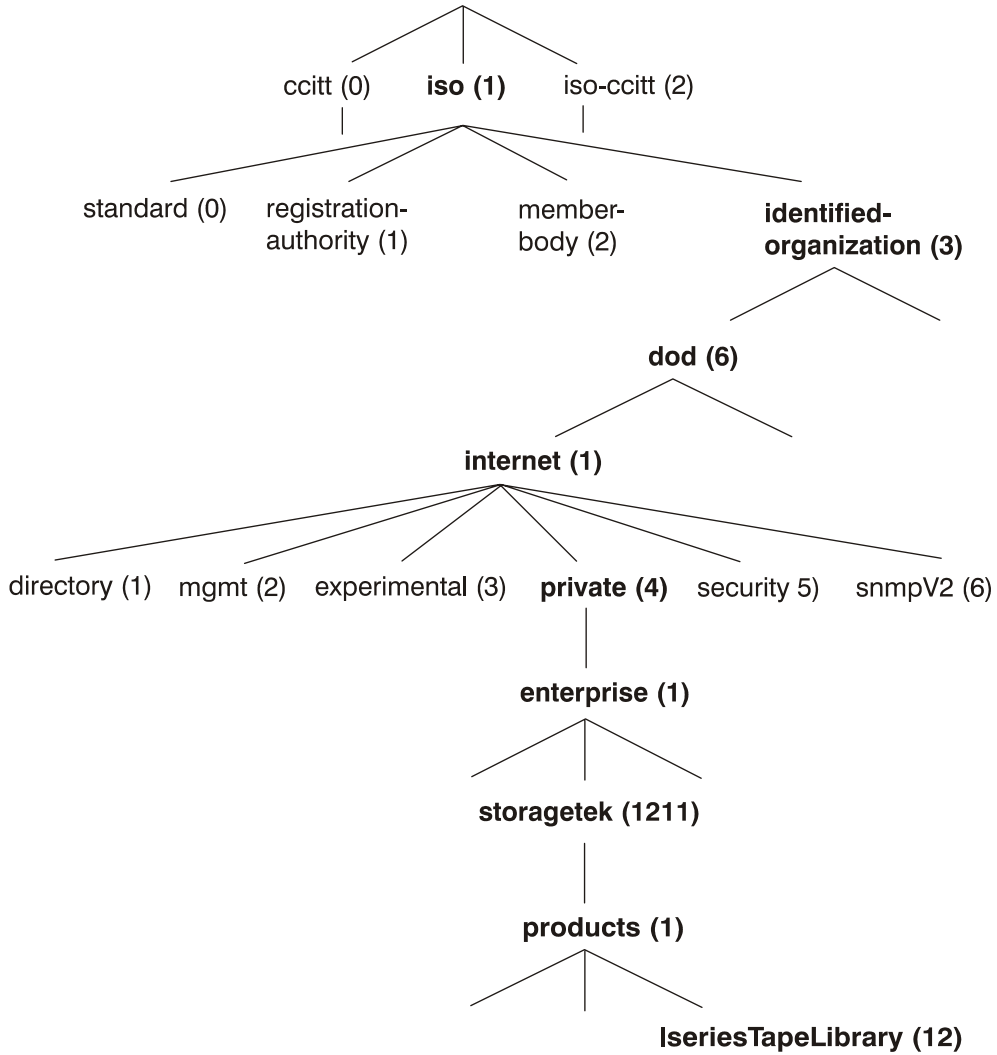
IseriesTapeLibrary (12)   L201_522

■ Configuration

Three ways to configure the library to support SNMP are:

- Library Admin, an *optional* feature for the library, but it is not required to support SNMP.

- The CLI port (command line interface)
  See Figure B-3 for examples of the help and help snmp commands.

- The SNMP software application—you can also use any SNMP application to change *some* of the agent's settings. You must be MIB-aware and refer to the L-series.mib for specific information.

Figure B-3. CLI Help and Help SNMP Commands

```
cli> help
help [command]          help on a specific command
diag                    execute diagnostics
download                download new image to prom
fsc                     manipulate fault symptom codes
network                 manipulate network information
snmp                    manipulate SNMP configuration
time                    view/modify library date & time
password                reset/modify library admin password


cli> help snmp
snmp view               display SNMP Agent settings
snmp community [string] set Community String/IP address
snmp [enable|disable]   enable of disable SNMP Agent
snmp port [port number] set Agent Listening Port Number
                        (Valid: 161, 1024-65535)
snmp grace [number]     set Write Grace Period Number
                          ( 1-5 minutes )
snmp reset              set SNMP Agent configuration parameters
                        to default values
snmp list               display SNMP Trap Recipient List
snmp add                add a member to the SNMP Trap Recipient List by
                        answering individual prompts for values.
snmp add [ipaddr|name]  add a member to the SNMP Trap Recipient List using
                        some default values
snmp add [ipaddr|name] [host port number]
                        add a member to the SNMP Trap Recipient List
                        using some default values
snmp delete [[ipaddr|name] [host port number]] | all
                        delete all or a selected member of the SNMP
                        Trap Recipient List
              Where valid [host port number] values: (162, 1024-65535)

cli> _
```

The library comes configured with some default settings, listed in Table B-1:

Table B-1. SNMP Default Settings

Setting	Default	Description
Port number	161	Valid port IDs are 161, and 1024 to 65535
Community String	public	Agent community string. When set to *public*, requests coming from *any* community string will be accepted.
Grace Period	5 minutes	Once you enter the password, you have 1 to 5 minutes to Set any values for the agent.
Trap Recipient List	Empty	This list supports up to 12 recipients with no duplicate entries.
SNMP (agent)	Disabled	Enabled or Disabled

■ Starting SNMP

To start SNMP for the library, you must:

1. Configure the library:

   a. *Enable* the agent

   b. Add recipients to the trap list (if needed)

   c. Make any optional changes to the default settings.

2. *Re-IPL* the library for the changes to take effect.

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