StorageTek®

PART NUMBER
96002

EDITION NUMBER
13

L20
TAPE LIBRARY

CUSTOMER REPLACEABLE UNIT (CRU) INSTRUCTIONS

PRODUCT TYPE
HARDWARE

L20
Tape Library

Customer Replaceable Unit (CRU)
Instructions

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Thirteenth Edition (January 2005)
This edition contains 48 pages. See "Summary of Changes" on page iii for the revision history and summary of changes made to this publication.

A Reader's Comment Form at the back of this publication lets you communicate suggestions or requests for change. StorageTek encourages and appreciates reader feedback.

Summary of Changes

EC	Date	Edition	Description
111512	August 2000	First	Initial Release
111741	March 2002	Seventh	Refer to this and previous editions for the changes.
111763	June 2002	Eighth	Refer to this and previous editions for the changes.
111828	February 2003	Ninth	Refer to this and previous editions for the changes.
128725	April 2003	Tenth	Refer to this and previous editions for the changes.
128788	June 2003	Eleventh	Refer to this and previous editions for the changes.
111880	December 2003	Twelfth	Revised Figures 1-1 and 1-2 to reflect the new drive door knobs. Added an index.
111948	January 2005	Thirteenth	To meet Argentina marking requirements the Safety sections were translated into Spanish.

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Preface

The customer replaceable unit (CRU) instructions explain how to remove and replace drives and your library under the interactive maintenance agreement.

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

Additional Information

StorageTek offers several methods for you to obtain additional information.

StorageTek's External Web Site

StorageTek'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 StorageTek external Web site is http://www.storagetek.com

Customer Resource Center

StorageTek's CRC is a Web site that enables members to resolve technical issues by searching code fixes and technical documentation. 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.

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

Partners Site

StorageTek's Partners site is a Web site that provides information about products, services, customer support, upcoming events, training programs, and sales tools to support StorageTek's Partners. Access to this site, beyond the Partners Login page, is restricted. On the Partners Login page, 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 Partners site is http://members.storagetek.com

Hardcopy Publications

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

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

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

- Visit StorageTek's PowerPort and select alphabetical listings under "L" or select Online Forms. Then search for Literature Distribution. Follow the instructions on the Literature Distribution Web page.
- Send an e-mail to: DistrL@louisville.stortek.com.

Safety

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

WARNING:
Potential injury: **On-the-job safety is important; therefore, observe the following safety precautions. Failing to follow these precautions could result in serious injury.**

Remove all conductive jewelry, such as watches and rings, before you access CRUs.

- Avoid electrical shock. Be careful when you work near power connectors and supplies.
- Power-off the equipment before you remove a customer replaceable unit (CRU). Remember that dangerous voltages could still be present in some areas even though power is off.
- Lift objects properly; read the information in "Lifting Techniques."
- Enforce good housekeeping practices in the equipment area to help prevent fire and accidents.

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 xiii 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.

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 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 accessing 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 remove 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 access 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.

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 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 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. 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 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. StorageTek recommends 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.

Seguridad

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

ADVERTENCIA:
Posibles lesiones: **La seguridad laboral es importante. Por consiguiente, tenga siempre en cuenta las siguientes precauciones de seguridad. El incumplimiento de dichas precauciones puede conllevar graves lesiones.**

Antes de realizar cualquier tarea en las unidades sustituibles del cliente, 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 una unidad sustituible del cliente (CRU), apague y desconecte el equipo. Recuerde que, incluso si están apagados, en algunas áreas pueden quedar tensiones peligrosas.
- Para levantar objetos, consulte la información de "Técnicas de levantamiento de objetos" (véase a continuación).
- Aplique las prácticas adecuadas de limpieza en el área del equipo para prevenir incendios y accidentes.

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 xxi.**
- **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.

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 Storage Tek 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 acceder a equipos de 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:

- Al desmontar equipos de StorageTek, utilice protectores contra descargas electrostáticas.
- 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 MΩ ; la del cable en espiral debe situarse entre 0,8 y 1,2 MΩ 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 acceder al 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.

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 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 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 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 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. 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.

CRU Replacement

1

This chapter describes removing and replacing a tape drive assembly and the L20 library assembly. Tape drives are located behind the two drive doors at the rear of the library, as shown in Figure 1-1 on page 1-3.

CAUTION:
Warranty caution: **There are no customer replaceable parts inside the library. Do not remove the library cover as this may void your warranty.**

Removing and Replacing a Drive

Drives are hot-swappable. This means they can be replaced without removing power from the library, and the drives on the other SCSI buses can continue their data processing. This is possible because each drive has a SCSI connector attached to the back of the drive. Only the drive that is being replaced must be powered-off, and that drive's SCSI bus must be quiesced (see Caution on page 1-2*).*

You must follow the precautions listed in "Drive Removal" *below.*

CAUTION:
Possible drive damage: **Read the instructions in** **"Safety" on page xiii** **before beginning.**

Drive Removal

Observe these precautions before beginning:

- Back up the server before removing the drive.
- If the drives are daisy-chained, stop all data processing on the channel to which the drives are connected before disconnecting the drives.
- Make sure there is no activity on the SCSI bus before disconnecting the external SCSI cables. Stop all processes on the host.
- Make sure all signals are terminated at each end of the SCSI bus. Do not mix single-ended, high voltage differential, or low voltage differential terminators.

Your standard, daisy-chained, external SCSI cables are long enough so that they do not interfere with removing and replacing the drive tray; you can replace drives without disconnecting the external SCSI cables. Therefore, when following these instructions, do not remove the external SCSI cables.

CAUTION:
Possible data loss or system problem: **If you must disconnect the external SCSI cables, make sure that you quiesce the system first (stop all processes on the drives on the SCSI bus with the drive you are replacing).**

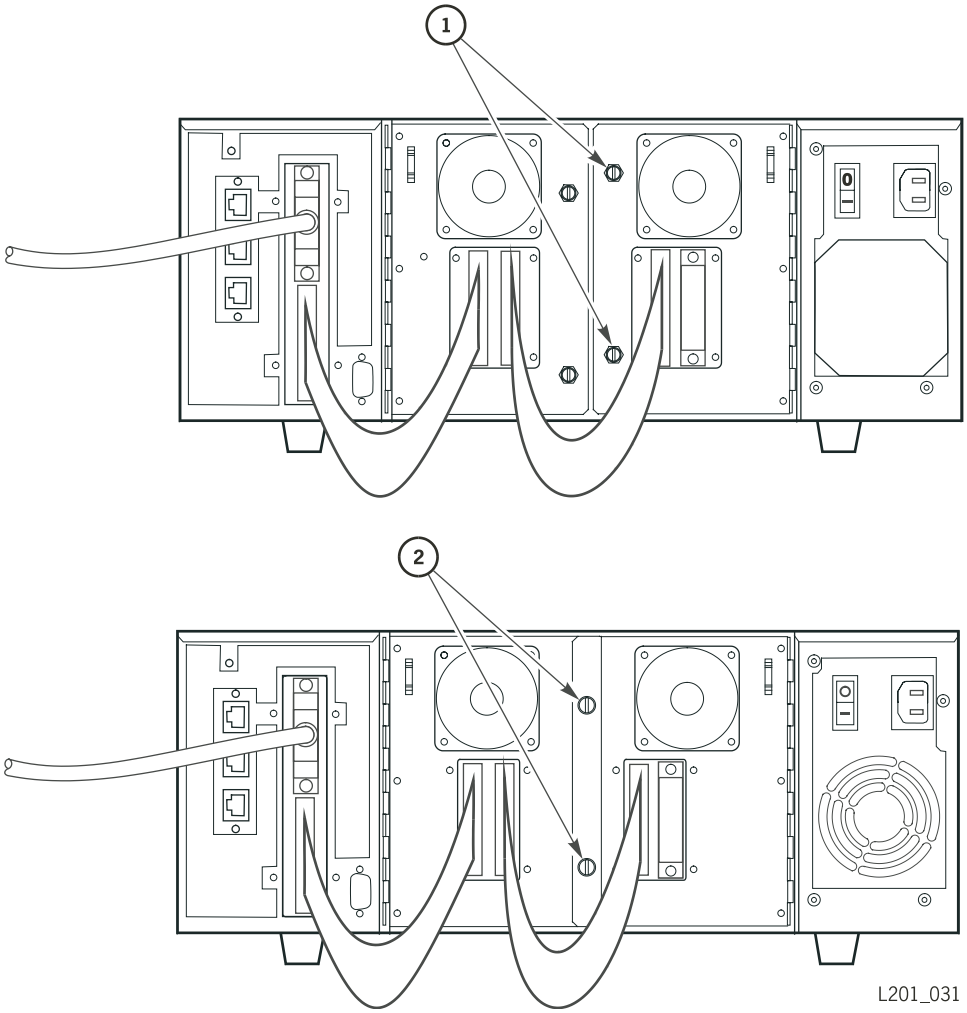
To remove a drive:

1. Be sure that the library is idle and safe to work on, as previously described.

   Note: You do not need to remove power from the library to remove a drive.

2. At the rear of the library (see Figure 1-1 on page 1-3), turn the drive door knobs until they unlatch and open the door behind the drive you want to remove.

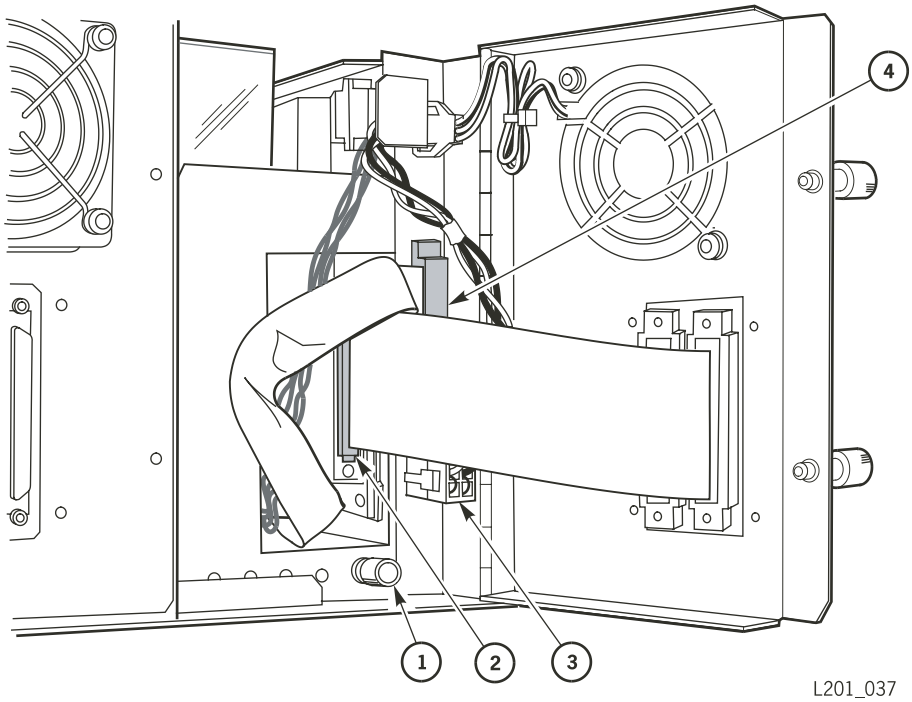
Figure 1-1. Drive Doors (L201_031)



1. Drive door knobs, older model
2. Drive door knobs, newer model

3. Disconnect the SCSI connector from the back of the drive.
4. Disconnect the library-to-drive interface connector.
5. Disconnect the drive power cable from the library.

Figure 1-2. Drive Connectors (L201_037)



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

6. Unlatch the drive tray by turning the drive tray latch knob all the way to your left.

Note: As shown in Figure 1-3, the latch allows a range of motion for both engaging and disengaging. The knob must be turned *continually* left—until the knob stops—to disengage from the library frame.

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

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

7. Pull out the drive tray and set it aside.

Drive Replacement

To replace a drive:

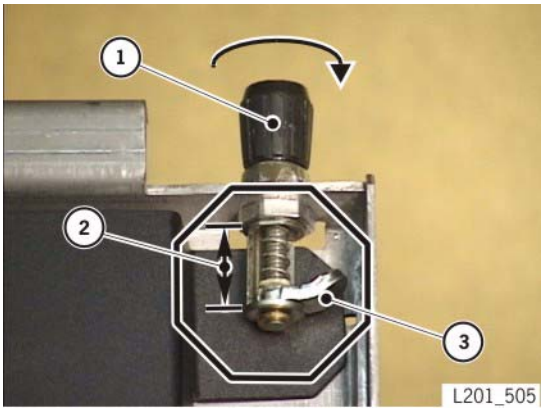
WARNING:
Lifting hazard: **The drive tray assembly weighs approximately 3 kg (6 lb). Be sure that you follow the lifting instructions in "Lifting Techniques" on page xiii.**

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 xxi.**

CAUTION:
Load/Unload problems: **The 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 new drive tray assembly as shown in Figure 1-3, turn the knob all the way to your right.

Figure 1-3. Drive Tray Latch Knob



1. Knob
2. Range of motion
3. Latch arm (shown disengaged)

2. Slide the replacement 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.

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 SCSI cable does not block the fan before closing the door.**

***Possible cable damage:* Make sure you move the SCSI cable out of the way before you close the drive door.**

6. Close the rear drive door and secure it with the drive door knobs. If your library is the newer model, push in the knobs and turn to the right.

If you are using the same SCSI ID for the new drive as for the old one, the library will automatically assign that same address to the new drive and begin functioning as before. If the operator wants to assign a new address, have the operator follow the drive configuration procedures in the *L20 User's Guide*, part number 95961.

7. Refer to Chapter 2, "Return Shipment," for instructions about returning the defective drive you replaced.

Note: Do *not* return cables with your shipment.

Removing and Replacing the Library

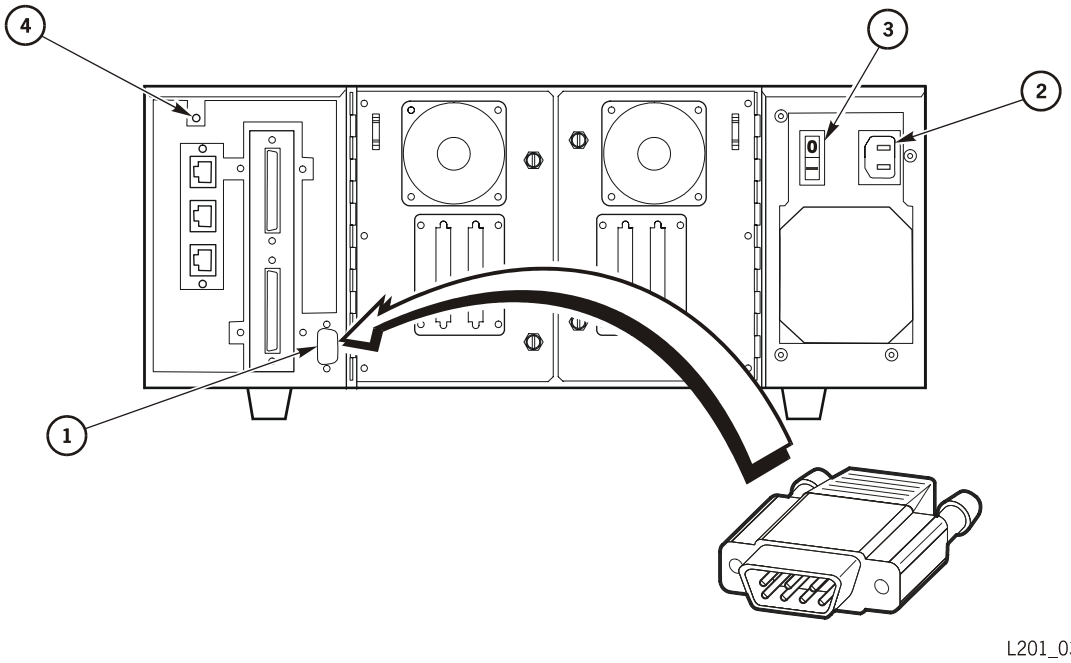
Note: If the library must be replaced, you must first follow the directions in "Removing and Replacing a Drive" on page 1-1.

Observe these precautions before beginning:

CAUTION:
***Possible data loss or system problem:* Before you disconnect the external SCSI cables, make sure that you stop the system first.**

- Stop all data processing on the channel to which the library is connected before disconnecting the library.
- Make sure all signals are terminated at each end of the SCSI bus. Do not mix single-ended, high voltage differential, or low voltage differential terminators.

Figure 1-4. Library Rear View (L201_033)



1. Personality Module
2. Power receptacle
3. Power switch
4. Reset button (recessed)

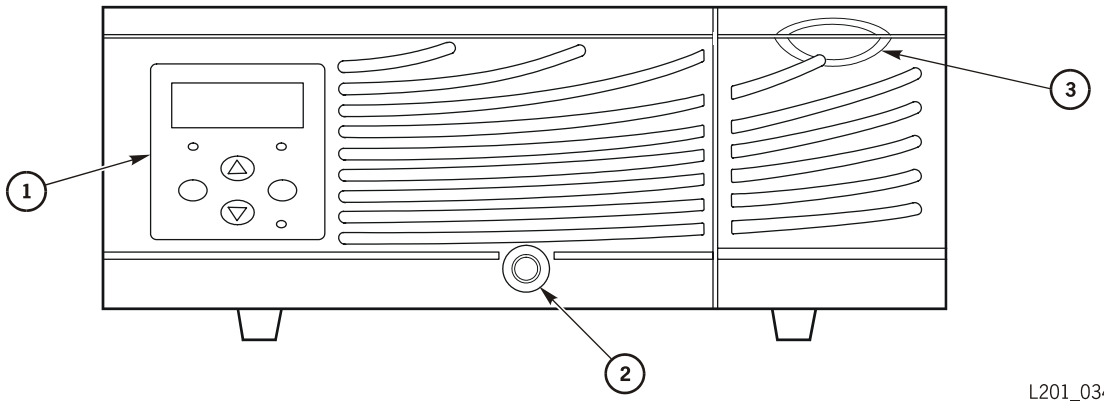
Tabletop Configuration

1. Locate the library power switch (Callout 3 in Figure 1-4 on page 1-7) and turn off the library power.
2. Disconnect the library power cord from the receptacle (Callout 2 below).
3. Remove the personality module from its connector.

CAUTION:
***Initialization fault:* You *must* keep the personality module and re-attach it to the replacement library.**

4. Disconnect the SCSI host cable (and terminator, if applicable) from the rear of the library.
5. Remove any drives that may be contained within the library (see "Removing and Replacing a Drive" on page 1-1).
6. Using Figure 1-5 as a reference, open the slide-out cartridge drawer by inserting the key and turning it to your left.

Figure 1-5. Library Front View (L201_034)



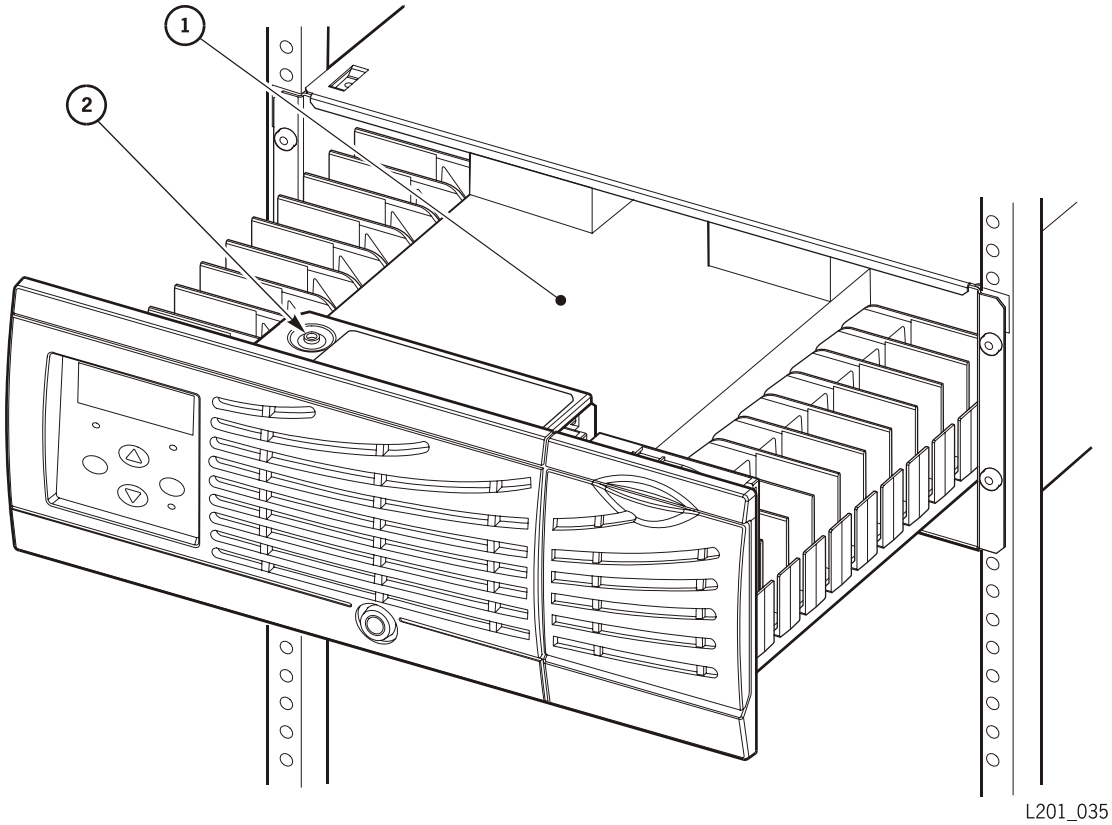
1. Operator panel
2. Drawer lock
3. CAP

7. Pull out the slide-out drawer and remove all the tape cartridges.

CAUTION:
***Shipping damage:* The shipping foam and shipping screw must be correctly installed for proper credit on your return component.**

8. Place the shipping cushion inside the library (see Figure 1-6 on page 1-9).

Figure 1-6. Library Shipping (L201_035)



1. Shipping foam
2. Shipping screw

9. Move the picker to the location shown in Figure 1-6 and screw down the shipping screw.
10. Close and lock the slide-out drawer.
11. Refer to Chapter 2, "Return Shipment," for instructions about returning the defective library.

Note: Do *not* return cables or the personality module with your shipment.

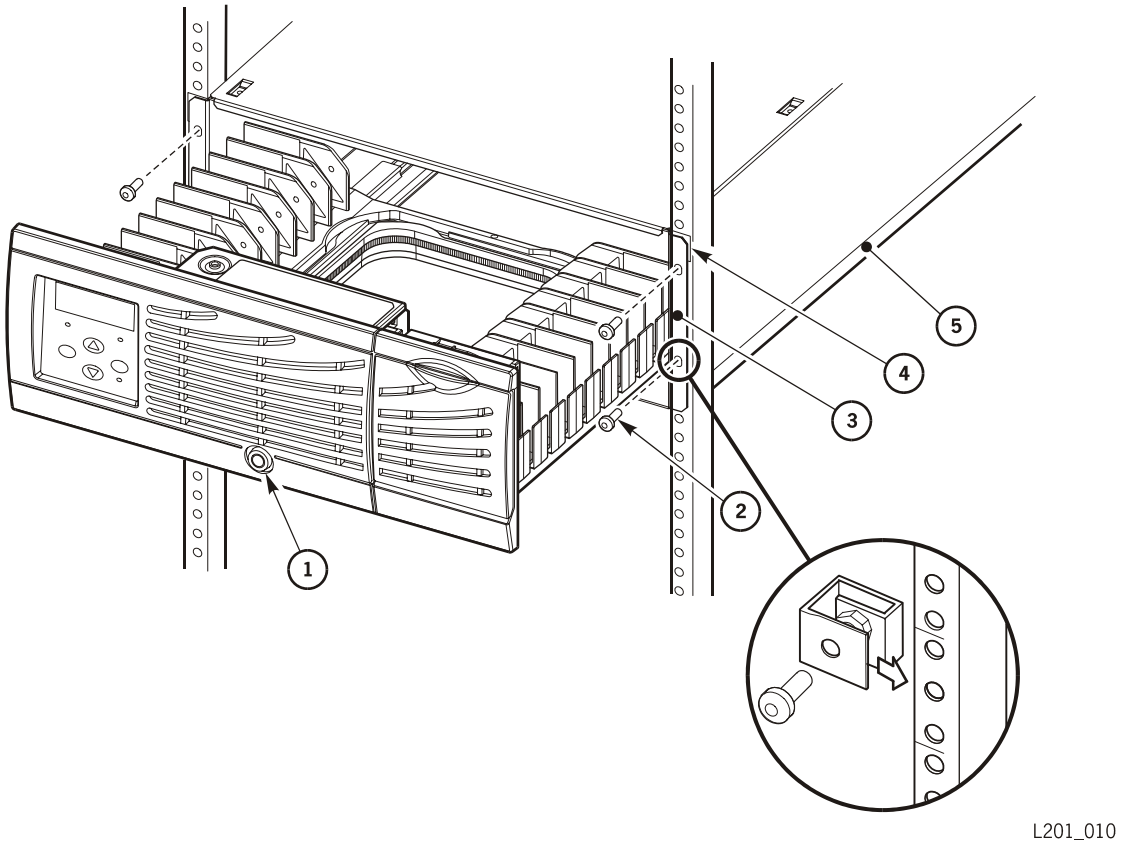
12. After packing and returning the library, refer to the *L20 User's Guide*, part number 95961, for installation and configuration information for your replacement drive.

Rack Mount Configurationl

Refer to the preceding library removal section and follow Steps 1 through 10.

1. Refer to "Tabletop Configuration," on page 1-8 and perform steps 1 through 10.
2. Refer to Figure 1-7 for the location of the four rack screws. Remove these screws.

Figure 1-7. Rack-Mounted Library (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)

WARNING:
Possible personal injury: **The L20 library weighs approximately 24 kg (52 lb). To remove the library from a rack will require more than one person.**

3. Slide out the library from the supporting brackets.
4. Refer to Chapter 2, "Return Shipment," for instructions about returning the defective library.

Note: Do *not* return cables or the personality module with your shipment.

5. After packing and returning the library, refer to the *L20 Installation Manual*, part 96052, and the *L20 User's Guide*, part 95961, for installation and configuration information for your replacement library.

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Return Shipment

2

Note: The library CRU does not include the drives, cartridges, external cables, or personality module. Do *not* return them with your shipment.

For shipping the library, packing components are shown in Figure 2-1 on page 2-2.

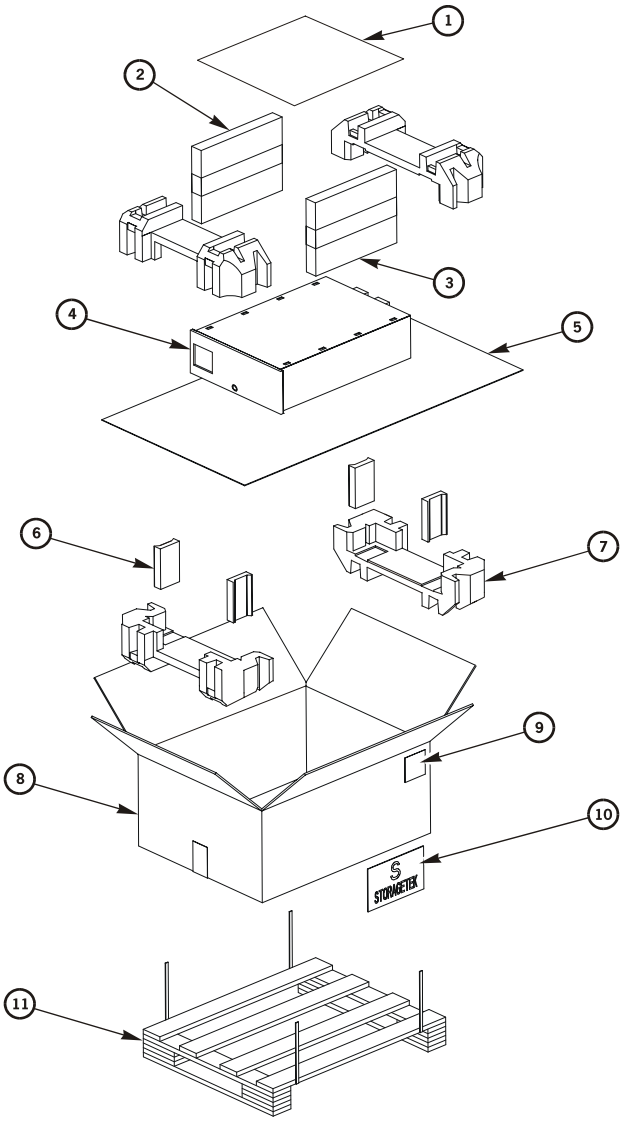
CAUTION:
Shipping damage: To ensure proper credit for the returned CRU, you must package the CRU correctly, and you must write your RMA (return material authorization) number (obtained from the invoice/packing list) and returned product serial number on the outside of the packaging.

Use the original packing material or, if you no longer have the material, use the CRU shipping material and box to carefully pack the defective CRU for return shipment.

Refer to your *L20/40/80 Tape Library Warranty Agreement* for the procedures to return drives:

- For *European* customers, refer to your warranty instructions for the address to return parts.
- *For United States customers only:* Arrange a pick-up with Associated Global Systems by calling **1.720.858.0500**.

Figure 2-1. Packing the Library (L201_555)



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

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