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Field Instruction:
Installing or Replacing a Tape Drive

StorageLibrary T24 LTO

www.tandbergdata.com

This document explains how to install or replace a tape drive in a StorageLibrary T24 LTO (T24). Please read the entire section that you are using prior to beginning the procedure.

PREPARING FOR INSTALLATION OR REPLACEMENT

If your library is installed in a rack, it is *not* necessary to remove the library from the rack to complete this procedure. It is also not necessary to disconnect the Ethernet cable from the back of the library.

4 **Obtain these items**—a #2 Phillips screwdriver and a small flat-blade screwdriver.

4 **Ensure that the environment is free of conditions that could cause electrostatic discharge (ESD)**—If possible, use an antistatic mat and a grounded static protection wristband during installation. If a mat and wristband are not available, touch a known grounded surface, such as a computer's metal chassis.

⚠	**Warning**	Before performing any installation or maintenance procedures, be sure that the library's power switch is off and that the power cord is disconnected from the library and the outlet.
⚠	**Warnung**	Vor der Ausführung von Installations- oder Wartungsarbeiten ist darauf zu achten, daß der Library-Netzschalter auf "Aus" gestellt ist und daß das Anschlußkabel vom Library und der Steckdose entfernt ist.
⚠	**Advertencia**	Antes de realizar cualquier procedimiento de instalación o de mantenimiento, comprobar que el interruptor de alimentación de la biblioteca está apagado y que el cable de alimentación no está enchufado ni a la biblioteca ni a la toma de corriente.

GENERAL INFORMATION

The library accommodates Ultrium 4 (LTO-4), Ultrium 3 (LTO-3), or Ultrium 2 (LTO-2) tape drives in half-height (HH) or full-height (FH) configurations. It will NOT accommodate LTO-1 tape drives.

!	**Important**	The tape drives must be specially configured (at the factory) for use in the libraries. Purchase tape drive kits only from Tandberg Data or Tandberg Data-approved suppliers.
		The T24 accommodates one full height SCSI or Fibre Channel tape drive, or one or two half height SCSI, SAS, or HP Fibre Channel tape drives. You can mix HH SCSI, SAS, and Fibre Channel tape drives only if they are from the same manufacturer (for example, if they are both IBM tape drives).

Glossary of Abbreviations	
HH = Half Height (tape drive)	T24 = StorageLibrary T24 LTO
FH = Full Height	SAS = Serial Attached SCSI
TD = Tape Drive	FC = Fibre Channel

INSTALLING A TAPE DRIVE

To install a tape drive (or tape drives), follow all the steps in the following sections:

▶ Preparing for installation

▶ Removing an existing drive (if applicable)

▶ Installing the tape drive(s)

▶ Completing the installation

! Important	You must update your T24 library to the current firmware (v. V1C260 or higher) before you install your new drive. The firmware allows the library to auto-configure the tape drive installation upon power up, eliminating the step of manually configuring the library after tape drive installation.
	If your library code is not updated to v. V1C260 or higher, you will need to contact Tandberg Data technical support for manual configuration instructions.

PREPARING FOR INSTALLATION

1. Update library firmware to v. V1C260 or higher (see Important note above).

2. Power off the host.

3. Power off the library (press the **0** on the back of the unit).

4. Disconnect the power cord, the interface cable(s), and the terminator (applies to SCSI only).

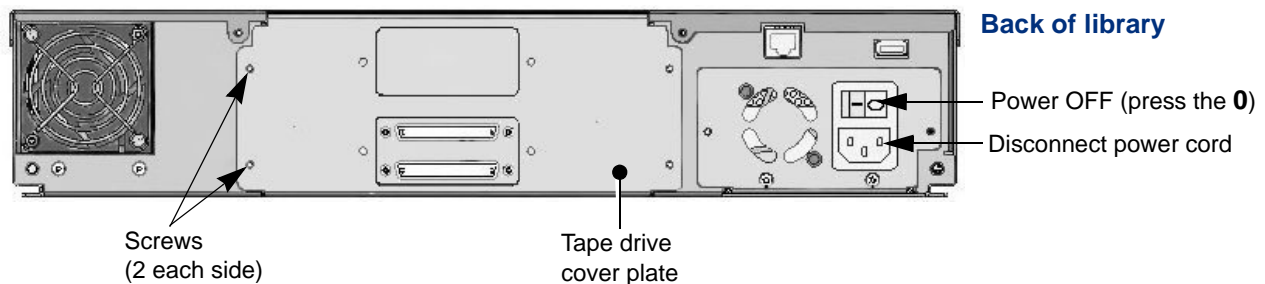5. Remove the tape drive cover plate. Set the plate and the screws aside.

Back of library

Power OFF (press the **0**)

Disconnect power cord

Screws
(2 each side)

Tape drive
cover plate

Figure 1   *Preparing for tape drive installation*

6. Remove the internal cooling plate. This step is necessary if you are installing one full-height or two half-height tape drives. **If you are installing only one half-height drive, go on to step 7.**

> **!** **Important**   Remove the internal cooling plate if you are installing a total of two HH drives or one FH drive, but leave the empty tape drive bay covered if you are installing a single HH drive (bottom slot). The plate is required for proper cooling.

Remove the two screws (**A**) holding the tape drive cooling plate (**B**). Remove the plate, and discard it and the screws.

Cooling plate (**B**)

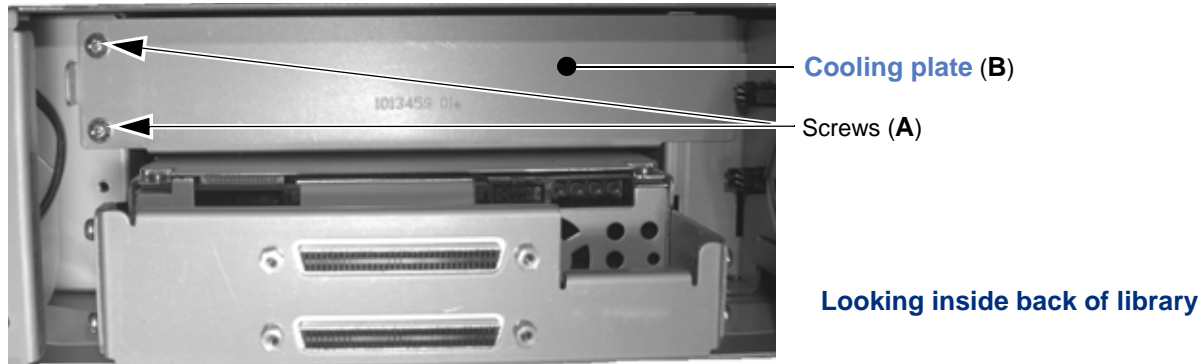Screws (**A**)

Looking inside back of library

Figure 2   *Removing tape drive cooling plate*

7. Disconnect the power cables to the power supply.

REMOVING AN EXISTING DRIVE (IF APPLICABLE)

Complete the steps in this section if you are replacing a tape drive that is currently installed.

1. Pull the tape drive a short distance out of the library, then disconnect the serial cables from the tape drive(s) that you are replacing.

2. Disconnect the power cables on the back of the drive.

3. While holding the cables out of the way, pull the tape drive straight out of the library.

> ⚠ **Caution**   Be certain to support the tape drive as you remove it from the library. LTO Ultrium tape drives weigh several pounds each.

4. Disconnect the serial cable from the library and discard it. **Do not reuse the serial cable**.

INSTALLING THE TAPE DRIVE(S)

! Important	You can mix HH SCSI, SAS, and Fibre Channel tape drives only if they are from the same manufacturer (for example, if they are both IBM tape drives).

1. Locate the serial cable that came in your replacement kit and attach it to the appropriate serial connector *inside the library*. For example, if you are installing a bottom drive (one drive only), attach the serial cable to the "Drive 1" connector inside the library. Note the key tabs on the serial connector face down. See "Serial Cable Routing" on page 8 for more information.

2. While holding the cables to the side, slide the new tape drive directly into the library, leaving it a short distance out to access the cables. Use care not to damage the cables. Install the tape drives from bottom to top—fill the bottom slot first (Drive 1), and if applicable, the top slot (Drive 2) next.

3. Connect the serial cable(s) to the appropriate connector located on the side of the tape drive carrier. See "Serial Cable Routing" on page 8 for correct routing information.

4. Slide the tape drive(s) the remaining distance into the library.

5. Connect the power cable(s) to the tape drive(s). Ensure that the power cable is not wrapped around the serial cable. See "Power Cable Routing" on page 8 for correct routing information.

! Important	If you are installing two **HP HH Fibre Channel** drives or adding a second drive, verify that the library power cable reaches the tape drive power connectors for both drives. If the cables do not reach, you must use the power jumper cables supplied with the drive kit.
	Follow the Field Instruction for connecting the jumper power cables that shipped with your tape drive.

6. Verify all serial and power connections are secure, including the serial connection on the back of the tape drive(s).

COMPLETING THE INSTALLATION

1. Attach the interface cover plate (if applicable) and the tape drive cover plate that came with your replacement kit. See "Tape Drive and Interface Cover Plates" on page 10 for more information.

! Important	If you have one bottom HH drive installed, the top (unused) drive interface cover plate must be attached. The library requires both the interface cover plate and tape drive cover plate for ESD protection. Do not leave any openings uncovered.

RESUMING OPERATION

1. Connect the interface cable(s), and the terminator (applies to SCSI only).

    Notes: You must install a terminator on the device at the physical end of the SCSI bus. If one of the tape drives in the library terminates the SCSI bus, you must install the required terminator on one of the tape drive's SCSI connectors. If there are additional devices on the SCSI bus, ensure that only the device at the physical end of the bus is terminated.

    The library communicates with the host through the interface of one of the tape drives via the Automation Drive Interface (ADI) serial interface. See the tape drive's *Product Manual* for tape drive information. See Automation/Drive Interface for ADI information: www.T10.org

2. Reconnect the power cord and power on the library (press the **I** on the back of the unit).

3. Power on the host.

The library is now ready to resume operation. The new tape drive defaults to the following SCSI IDs:

Tape Drive Configuration		SCSI ID
Single half-height tape drive		3
Two half-height tape drives	Upper tape drive	4
	Lower tape drive	3
Full-height tape drive		3

! **Important**   You may need to reconfigure your backup application to recognize the new tape drive. Refer to your application's documentation for instructions.

CONFIRMING THE INSTALLATION

You may want to perform a few load and unload operations and back up several megabytes of data to ensure that the library and the newly installed tape drive (or tape drives) are communicating correctly.
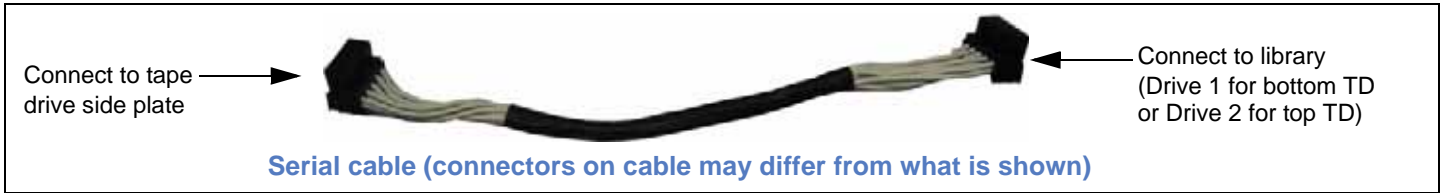
You can download and install the following utility tools from www.tandbergdata.com. The readme file that accompanies the program (or the online help for the Windows version) provides instructions for using the tools.

	Detect the library
Use LibTool to:	View the library's cartridge inventory
	Move tapes into and out of the tape drive
Use LTOTool to:	Detect the tape drive
	Perform a Read/Write test

For questions regarding software configuration, installation, or operation (including how to perform a backup operation) — contact your software provider.

SERIAL AND POWER CABLE CONNECTIONS

This section provides information about connecting and routing serial and power cables.

Connect to tape drive side plate

Connect to library
(Drive 1 for bottom TD
or Drive 2 for top TD)

Serial cable (connectors on cable may differ from what is shown)

! Important	Be sure to use the serial cable that came with your replacement kit. The serial cables are specifically configured (at the factory) for use with the individual tape drives.

Connect the supplied serial cable and the library power cable to the tape drives following these guidelines.

! Important	If you are installing two **HP HH Fibre Channel** drives or adding a second drive, verify that the library power cable reaches the tape drive power connectors for both drives. If the cables do not reach, you must use the power jumper cables supplied with the drive kit. Follow the Field Instruction for connecting the jumper power cables that shipped with your tape drive.

Tape Drive	Cable	Cable routing	Figure reference
Half height (SCSI, SAS, FC)	**Serial**	From the library connection (Drive 1 for bottom drive, Drive 2 for top drive) to the tape drive side plate.	Figure 3 on page 8
Full height (SCSI and FC)		From the Drive 1 library connection to the tape drive side plate.	Figure 3 on page 8
Half height SAS	**Power Supply**	Middle connector connects to bottom drive. End connector (top drive) routes under and through tape drive carrier.	Figure 4 on page 8
Half height IBM SCSI		End connector (bottom drive) routes through top of tape drive carrier. Middle connector connects to top drive.	Figure 5 on page 8
Half height HP SCSI		Middle connector connects to bottom drive. End connector (top drive) routes under and through tape drive carrier.	Figure 6 on page 9
Half height Fibre Channel		Middle connector (bottom drive) routes across tape drive carrier. End connector (top drive) routes under and through tape drive carrier. **Note:** A power jumper cable may be needed. See Important note above.	Figure 7 on page 9
Full height (SCSI, SAS, FC)		End connector routes through top of tape drive carrier.	Figure 8 on page 9

SERIAL CABLE ROUTING

The following illustrations demonstrate correct serial cable routing for half-height and full-height tape drive configurations.
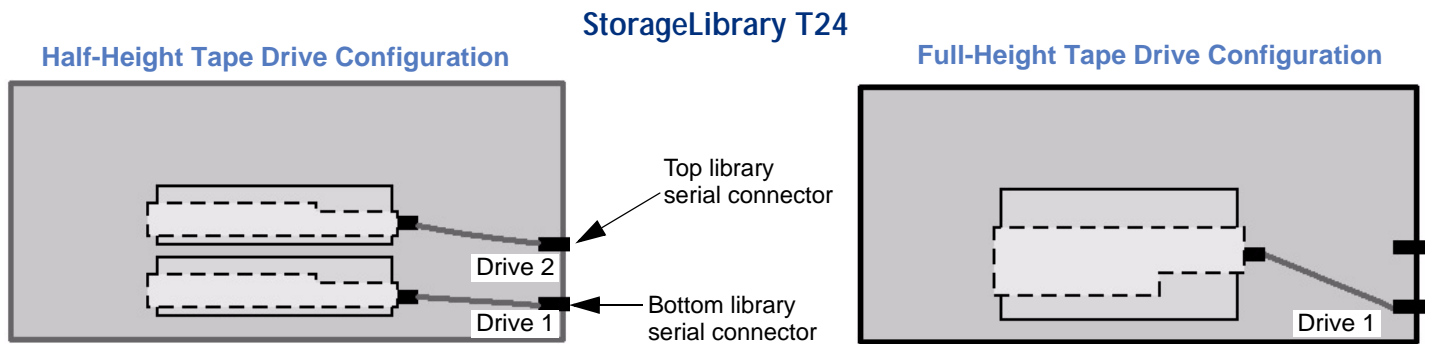

Figure 3   *Serial cable routing*

Note: Do not switch the internal connectors–the bottom tape drive must be connected to the bottom serial connector (Drive 1), the top tape drive (HH) must be connected to the top serial connector (Drive 2). The top connector is not used with an FH configuration.

POWER CABLE ROUTING

The following illustrations show correct power cable routing for all tape drive configurations in a T24 library. Connect the supplied power cable(s) to the tape drives following these guidelines.
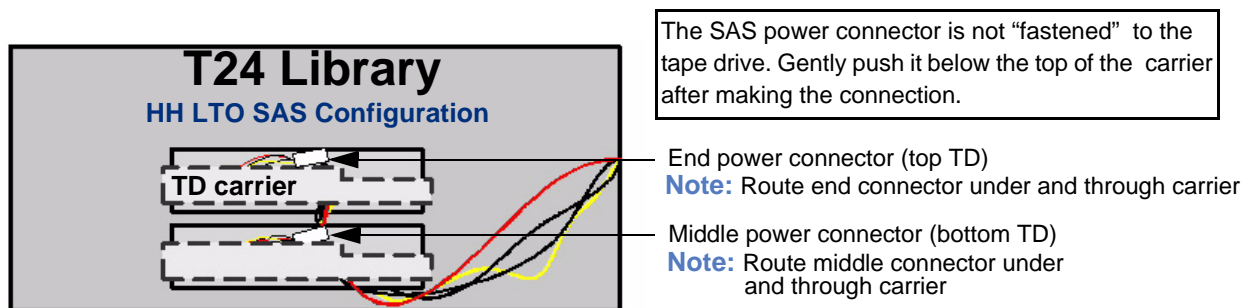
Figure 4   *power cable routing—**half-height SAS tape drive** (Note: The above illustration shows an IBM configuration. HP HH SAS drives may differ slightly.)*
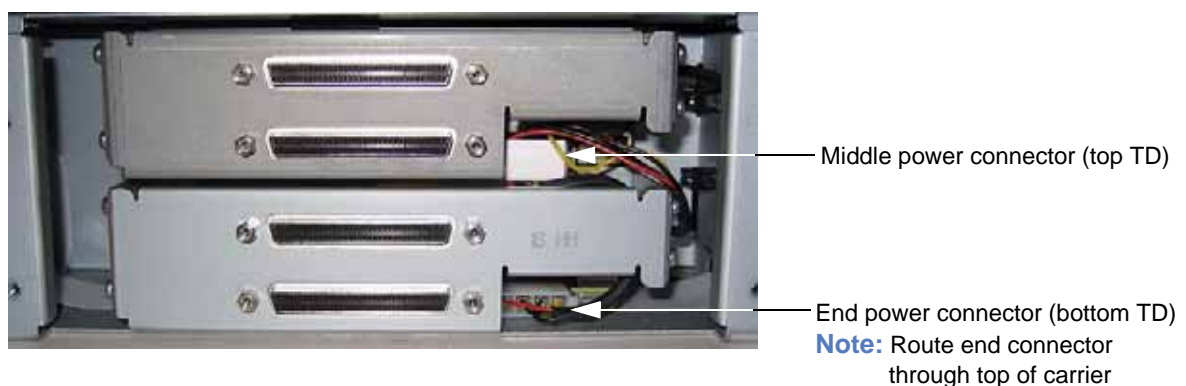

Figure 5   *power cable routing—**IBM half-height SCSI tape drive***

End power connector (top TD)
Note: Route end connector
under and through carrier

Middle power connector (bottom TD)

Figure 6   *power cable routing— **HP half-height SCSI tape drive***

End power connector (top TD)
Note: Route end connector
under and through carrier

Middle power connector (bottom TD)
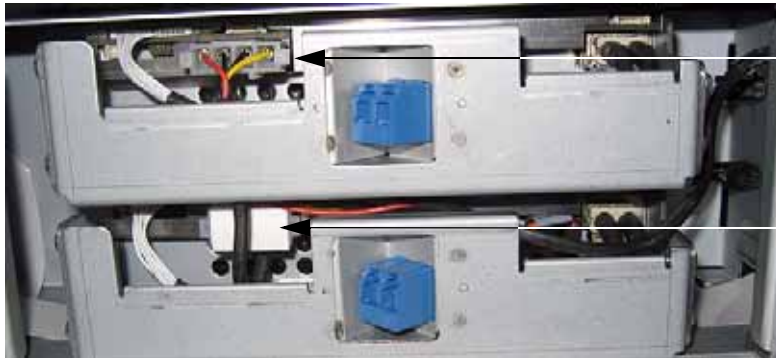
Figure 7   *power cable routing—**HP half-height Fibre Channel tape drive (LTO-4 tape drives pictured)***

Middle power connector (not used)

End power connector (bottom TD)
Note: Route end connector
through top of carrier

Figure 8   *power cable routing—**IBM full-height Fibre Channel or SCSI (pictured) tape drive***

TAPE DRIVE AND INTERFACE COVER PLATES

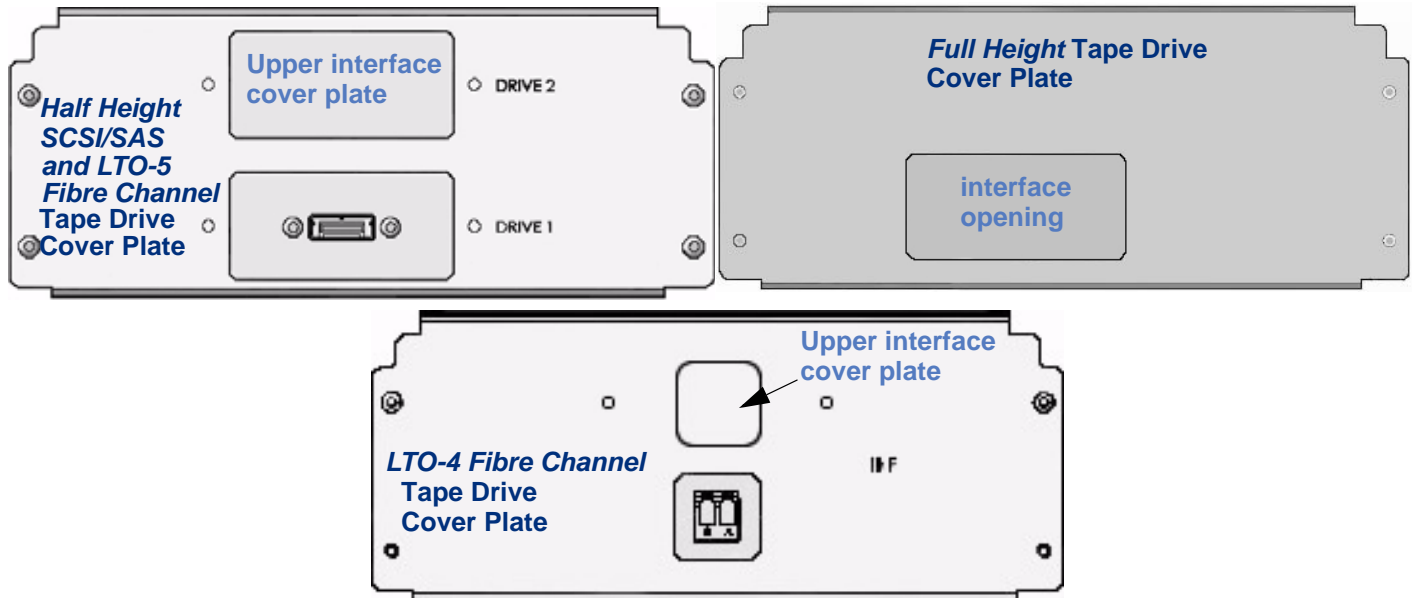This section provides reference illustrations of tape drive and interface cover plate configurations.

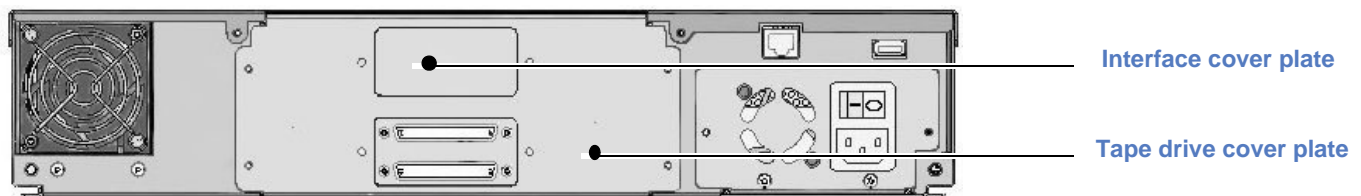
Figure 9   *tape drive interface cover plates*

Figure 10   *Interface cover plate location*

! Important	If you have one bottom HH drive installed, the top (unused) drive interface cover plate must be attached. The library requires both the interface cover plate and tape drive cover plate for ESD protection. Do not leave any openings uncovered.

NOTES

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