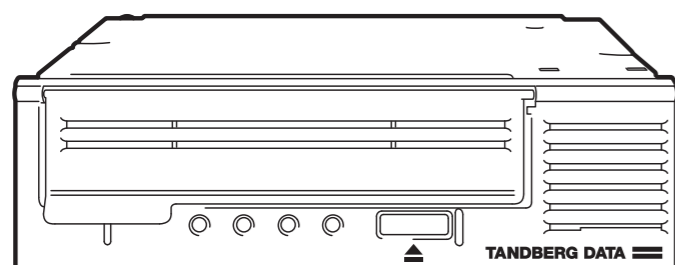


Tandberg LTO-2, LTO-3 and LTO-4  
HH SCSI Internal Tape Drives

# QUICK START



## 1 Introduction

This poster describes how to install your Tandberg LTO half-height tape drive.

- Use the fixing screws supplied with the tape drive
- Connect to an Ultra320 SCSI HBA for LTO-4/LTO-3 or Ultra160 SCSI HBA (or higher) for LTO-2 using a supported SCSI cable
- Use the correct driver

**WARNING:** To avoid personal injury or damage to the server or tape drive, disconnect your server from the mains power supply before installing the tape drive.

To avoid damage to server or tape drive observe all recommended anti-static and power-grounding precautions, as specified in your server and tape drive manuals.

## 2 Preparing the host

**IMPORTANT:** Refer to [www.tandbergdata.com](http://www.tandbergdata.com) for detailed compatibility information about operating systems and software applications.

### SCSI HBA

We recommend an Ultra320 host bus adapter for LTO-4/LTO-3. We recommend an Ultra160 or Ultra320 host bus adapter for LTO-2. If necessary, install a new HBA before you connect the tape drive. Ensure that you are connecting to a supported HBA running the recommended firmware version.

Your tape drive will work with lower-rated LVDS SCSI but performance may be degraded. Single-ended SCSI will degrade performance and limit cable length. **Do not** attach to narrow or HVD SCSI.

### Drivers

For Windows systems, download the latest drivers from [www.tandbergdata.com](http://www.tandbergdata.com). For other operating systems, patch to the latest version of the operating system, following the instructions in the patch documentation.

### Backup software

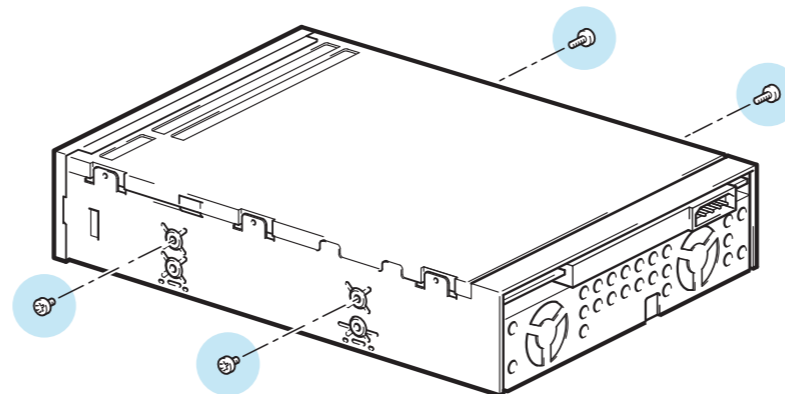
Always **upgrade** your software application to ensure it works correctly with the tape drive. We do **NOT** recommend native backup applications, such as Windows Backup, because they do not support the full features of the tape drive and may cause performance problems.

**NOTE:** Some backup applications require you to use their own drivers. Refer to the documentation of your software application to ensure you are using the recommended driver.

## 3 Attach mounting hardware – all servers

Screw packs are labeled for each server type; always use the specific screws for your server. **Follow the instructions in the screw pack. You may damage your tape drive if you use screws that are too long, because the Tandberg LTO half-height tape drive allows only 3mm of the engagement of the screw into the drive.**

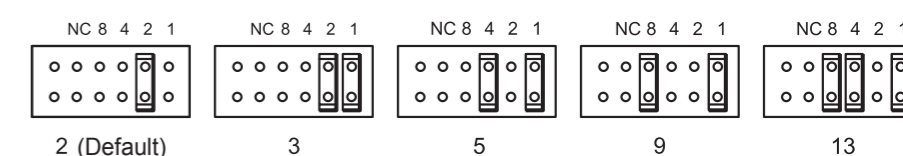
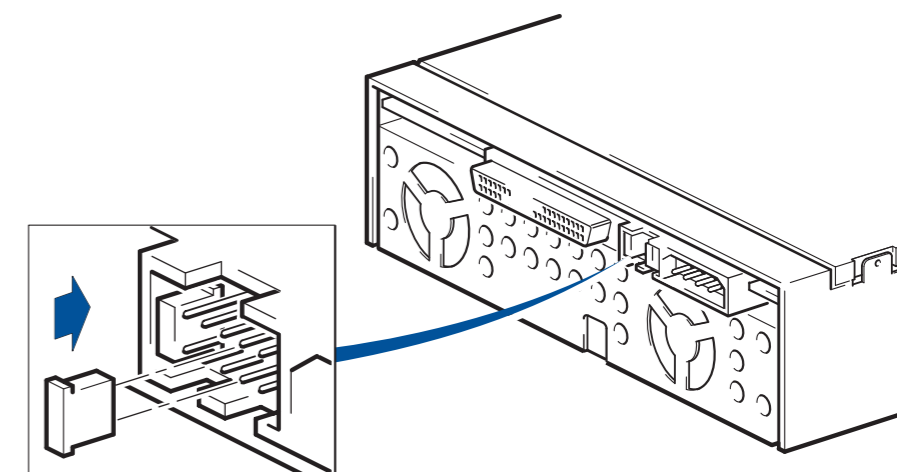
- |  |     |
|--|-----|
| Use screws supplied with new tape drive                | YES |
| Do not use screws attached to server                   | NO  |
| Do not use screws attached to device you are replacing | NO  |



## 4 Check the drive's SCSI ID

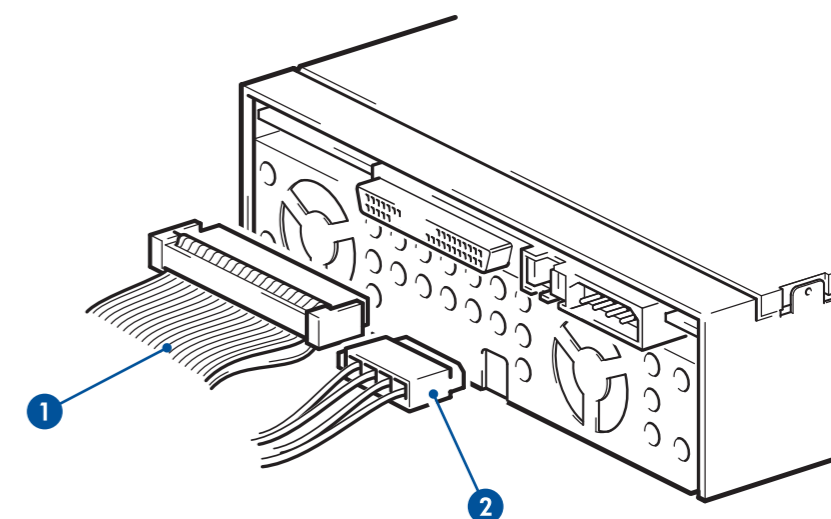
Your Tandberg LTO HH tape drive is shipped with a default SCSI ID of 2. Each device on the SCSI bus must have a unique SCSI ID number. The drive can be assigned any unused ID between 0 and 15. Do not use SCSI ID 7, which is reserved for the SCSI controller. SCSI ID 0 is typically assigned to the boot disk and should also not be used unless the tape drive is on a dedicated SCSI bus.

**CAUTION:** Static electricity can damage electronic components. Always wear an antistatic wriststrap if possible. If not, to equalize the electromagnetic charges, touch a bare metal part of the server (such as the back plate) before you remove the tape drive from its bag.



## 5 Connecting the tape drive

**CAUTION:** Turn off and remove the power cords from the server and all attached accessories.



1 SCSI cable 2 Power cable

### SCSI cable and termination

Check your server or HBA documentation to ensure that the SCSI bus and cabling are the correct specification for your tape drive: an Ultra320 bus for Tandberg LTO-4 and LTO-3 drives, an Ultra160 or Ultra320 SCSI bus for Tandberg LTO-2 drives. We recommend that you attach the SCSI ribbon cable supplied with the tape drive to the SCSI host bus adapter. Daisy-chaining multiple devices is not recommended. If you do so, do not mix drive families (only daisy-chain with other LTO tape drives) and attach no more than two devices to the same SCSI bus. If the drive is the last device on the SCSI chain, make sure that the SCSI cable is terminated correctly.

### Power cable

Attach a spare power cable from the server's internal power supply to the power connector (2).

## 6 Power on the tape drive and verify connection

- Plug in the host server or workstation and all attached devices.
- Turn on any other devices you turned off earlier. Turn on the server.
- Check the Ready LED on the front panel to make sure the tape drive is ready for use.
- Verify the connection.

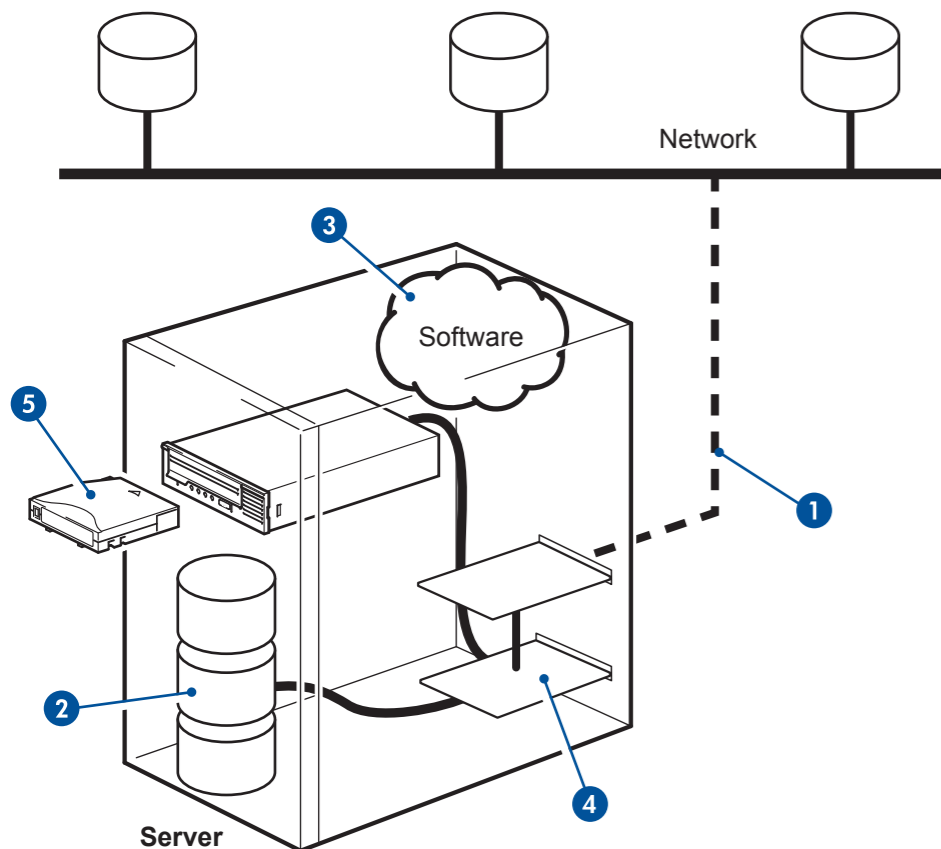


## 7 Checking the performance of your product

If performance is not meeting expectations and you are not meeting your backup window, check for bottlenecks in your system architecture.

**NOTE:** See [www.tandbergdata.com](http://www.tandbergdata.com) for recommended backup applications, SCSI HBAs and for software configuration and performance advice.

### What causes bottlenecks?



1. Tandberg Data recommends direct attach for LTO-4 and LTO-3 tape drives. If you back up over a network, anything less than Gigabit Ethernet may limit performance.
2. A single disk may limit backup performance. Have disks in parallel (e.g. RAID5) if possible or, if your backup application supports interleaving of data, back up streams from multiple sources.
3. Use the latest version of your backup application. Native backup applications, such as Windows backup, may limit performance.
4. Connect the tape drive to a dedicated SCSI bus.  
**SCSI card:** Use a PCI-express or a 64-bit PCI expansion slot. Use an Ultra320 SCSI HBA in a 64-bit/66MHz or better expansion slot for LTO-4/LTO-3. Use an Ultra160 or higher for LTO-2.
5. For optimum performance use LTO-4 1.6 TB R/W and WORM for Tandberg LTO-4 tape drives, LTO-3 800 GB and 800 GB WORM with Tandberg LTO-3 tape drives, LTO-2 400 GB cartridges with Tandberg LTO-2 tape drives.

## 8 Hardware encryption and your Tandberg LTO-4 tape drive

Your Tandberg LTO-4 tape drive provides the ability to hardware encrypt your data, applying the strongest level of AES industry-standard encryption and protecting the data from unauthorized access and use. Encryption is supported only on Tandberg LTO-4 1.6 TB media; media encrypted on a Tandberg LTO-4 drive can only be read on a compatible Ultrium tape drive that supports hardware encryption.

Hardware encryption can be used with or without compression and without speed or capacity penalties.

**IMPORTANT:** Hardware encryption is a powerful feature, but should be used with care. If you need to import your media onto another machine or to recover after disaster you will be required to enter an encryption key.

- Hardware encryption is turned off by default and is switched on by settings in your backup application, where you also generate and supply the encryption key.
- Your backup application must support hardware encryption for it to work. The software supplied with the tape drive provides this support. See [www.tandbergdata.com](http://www.tandbergdata.com) for an up-to-date list of backup software.
- You should keep a record or backup of your encryption keys and store them in a secure place separate from the computer running the backup software.
- If you are unable to supply the key when requested to do so, neither you nor Tandberg Data Support will be able to access the encrypted data.

## 9 Choosing and looking after media

Your high-performance tape drive works best with high-performance Tandberg LTO media. For optimum performance always use a data cartridge that matches the specification of your tape drive (see table).

Table: Tandberg LTO data cartridge compatibility

	LTO-1 200 GB*	LTO-2 400 GB*	LTO-3 800 GB*	LTO-3 800 GB* WORM	LTO-4 1.6 TB*	LTO-4 1.6TB* WORM
Tandberg LTO-4 HH	No	Read only	Read/Write	Write Once Read Many	Read/Write (Recommended)	Write Once Read Many (Recommended)
Tandberg LTO-3 HH	Read only	Read/Write	Read/Write (Recommended)	Write Once Read Many (Recommended)	No	No
Tandberg LTO-2 HH	Read/Write	Read/Write (Recommended)	No	No	No	No

\* Capacity assumes 2:1 compression.

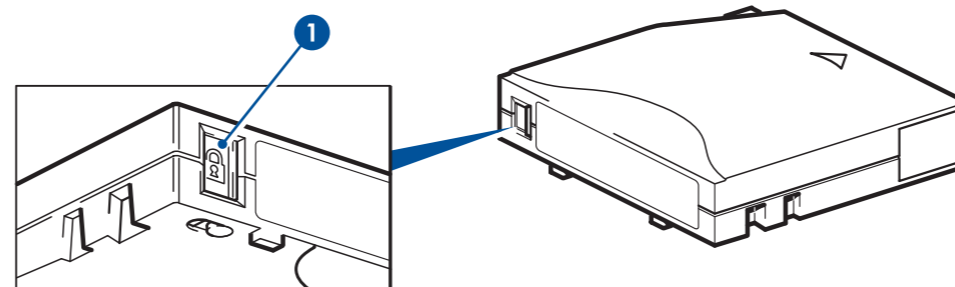
The recommended cleaning cartridge is the Tandberg LTO universal cleaning cartridge. This cartridge is designed to work with any Ultrium drive and may be used for up to 50 cleans.

### It pays to look after your media

Many tape drive and backup failures are caused by damaged or badly handled tape media.

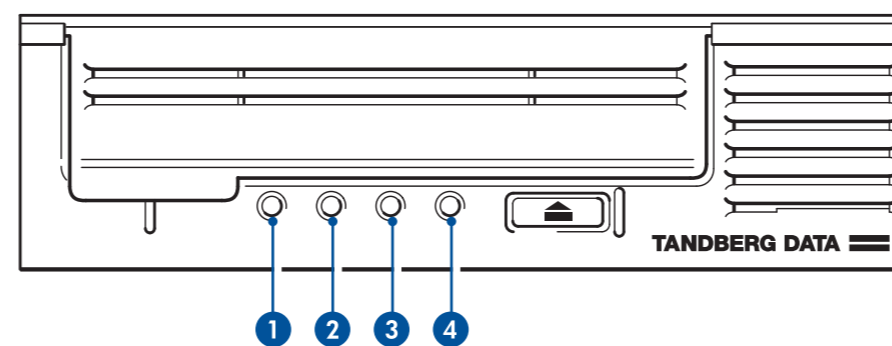
- Keep media in the case provided.
- Follow the temperature, humidity and acclimitization guidelines on the media packaging.
- Avoid dropping it or rough handling, as this is likely to damage the cartridge.
- Inspect it regularly for damage.
- Do not exceed normal cartridge life (260 full volume backup or restore operations).

For detailed information on media care and best practice and to order online, refer to [www.tandbergdata.com](http://www.tandbergdata.com).



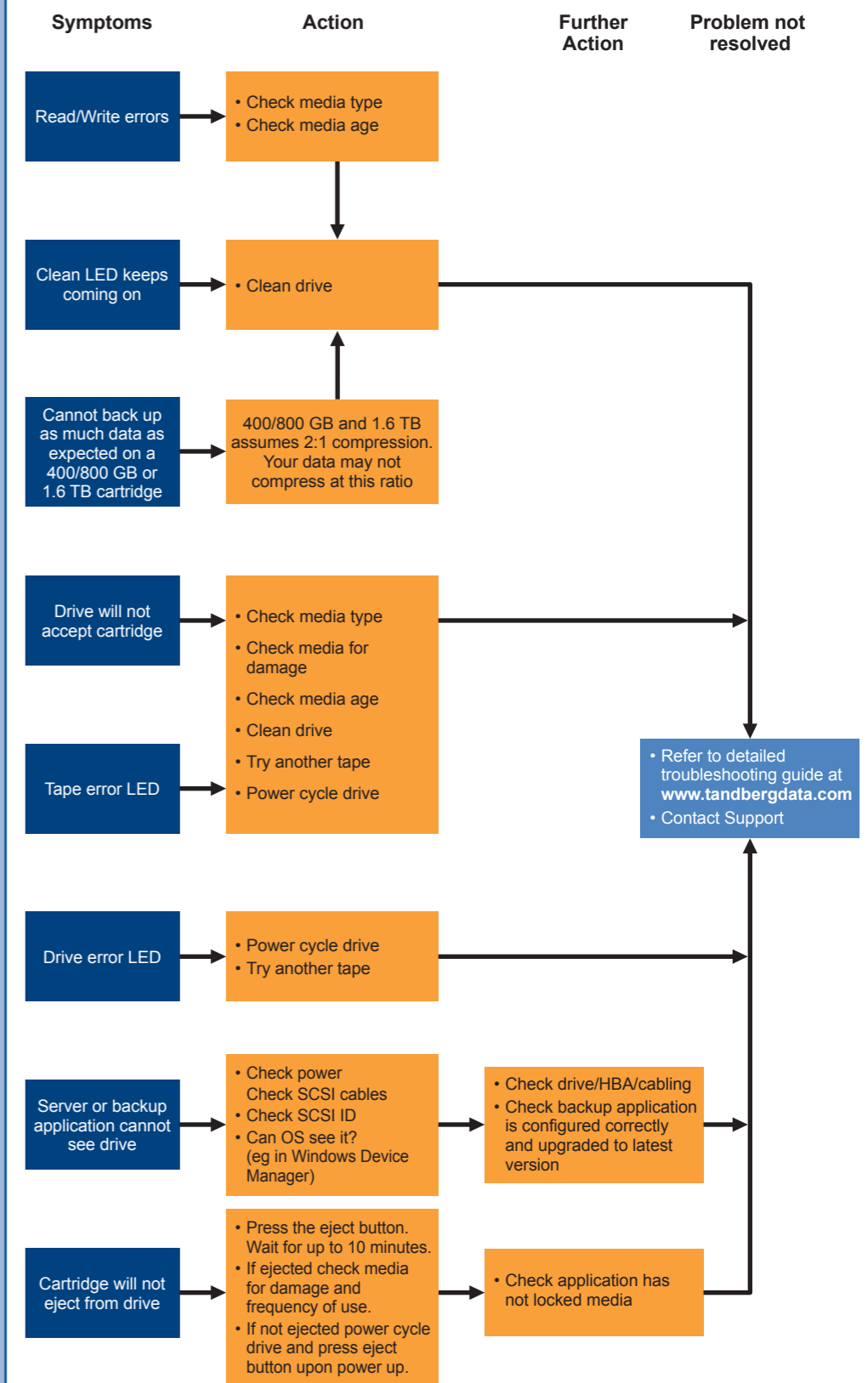
1 Write-protect switch

## 10 Understanding the LEDs



- 1 **Clean** – amber
  - On: cleaning cartridge in use
  - Off: the drive does not require cleaning
  - Flashing: the drive needs cleaning
- 2 **Tape** – amber
  - Off: no fault has been detected
  - Flashing: the cartridge currently in the drive is faulty (damaged or unsupported). Discard the cartridge.
- 3 **Drive** – amber
  - Off: no fault has been detected
  - Flashing: the drive mechanism has detected a hardware error
- 4 **Ready** – green
  - On: the drive is ready for use
  - Off: the drive power is off or there was a failure during self-test
  - Flashing: the drive is busy

## 11 Troubleshooting



## 12 Other sources of information

There is a more detailed "User Guide" on [www.tandbergdata.com](http://www.tandbergdata.com).

If you need technical support or have any problem with your LTO-2 HH, LTO-3 HH or LTO-4 HH tape storage solution, phone, fax and addresses can be found under [www.tandbergdata.com](http://www.tandbergdata.com) **SUPPORT**.