OVERLAND TANDBERG

NEO® S-Series Tape Libraries

Service Guide

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Preface

Topics in Preface

- Audience and Purpose
- Conventions
- Regulatory Information
- Product Documentation
- Firmware Updates
- Technical Support

Audience and Purpose

This guide is intended for system and network administrators charged with servicing or upgrading a NEO S-Series Tape Library. The instructions are intended for the trained Administrators and technicians who need physical and functional knowledge of the S-Series tape library. Administrators should be familiar with the basic concepts and tasks of network administration.

The main components are:

- Base Module
- Expansion Modules

General Product Warnings and Cautions

High Voltage

WARNING: To reduce the risk of electric shock or damage to equipment, always remove any power cords while working with the unit. If the device has more than one power cord, disconnect ALL power cords before servicing.

WARNUNG: Um das Risiko eines elektrischen Schlags oder Schäden am Gerät zu vermeiden, ziehen Sie stets den Netzstecker, bevor Sie an der Einheit arbeiten. Wenn das Gerät über mehr als einen Netzstecker verfügt, dann ziehen Sie ALLE Netzstecker, bevor Sie das Gerät in Betrieb nehmen.

AVERTISSEMENT: Pour réduire le risque de choc électrique ou endommagement de l'équipement, retirez toujours les cordons électriques en travaillant avec l'appareil. Si l'appareil a plus d'un cordon d'alimentation, débranchez tous les cordons d'alimentation avant l'entretien.

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Heavy Units in Boxes

WARNING: Due to the weight of the appliance, it is recommended that at least two people be used to lift the unit out of the box to prevent injury.

WARNUNG: Um Verletzungen zu vermeiden, empfehlen wir aufgrund des Gewichts des Geräts, dass mindestens zwei Personen das Gerät aus der Verpackung heben.

AVERTISSEMENT: En raison du poids de l'appareil, il est recommande d'utiliser deux personnes au moins pour soulever l'appareil hors de la boîte pour éviter les blessures.

Heavy Unit Installation/Removal

WARNING: It is recommended that a mechanical lifter (or at least two people) be used during rack installation or removal to prevent injury.

WARNUNG: Um Verletzungen zu vermeiden, empfehlen wir zur Rack-Installation oder -Deinstallation die Nutzung einer mechanischen Hebehilfe (oder mindestens zwei Personen).

AVERTISSEMENT: Pour éviter toute blessure il est recommande qu'un monte-charge (ou deux personnes au moins) soit utilisé lors de l'installation ou de l'enlèvement du support.

Rack Tipping

WARNING: Use care during rack installation or removal to prevent accidental tipping of the rack, causing damage or personal injury.

WARNUNG: Seien Sie vorsichtig bei der Rack-Installation oder -Entnahme, um ein versehentliches Kippen des Racks zu vermeiden und das Rack nicht zu beschädigen bzw. sich selbst zu verletzen.

AVERTISSEMENT: Soyez prudent lors de l'installation ou de l'enlèvement du support afin d'empêcher le renversement accidentel de la crémaillère, pour éviter dommages et blessures.

General Guidelines

CAUTION: Follow the following guidelines when installing the unit:

- Ventilation – Place the product in a location that does not interfere with proper ventilation.
- Power sources – Connect the product to a power source only of the type directed in the operating instructions or as marked on the product.
- Power cord protection – Place the AC line cord so that it is not possible to be walked on or pinched by items placed upon or against it.
- Object and liquid entry – Insure that objects do not fall onto and that liquids are not spilled into the product's enclosure.

Ventilation – Place the product in a location that does not interfere with proper ventilation.

Electrostatic Discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

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Preventing Electrostatic Damage. To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly. See the next section.

Grounding Methods. There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm (±10 percent) resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an authorized reseller install the part. For more information on static electricity, or assistance with product installation, contact your authorized reseller.

Product Warranty

The customer should only perform the service and repair actions on the tape library components listed in this document. Any other actions needed should only be performed by an authorized service center.

The warranty for the tape library shall not apply to failures of any unit when:

- The tape library is repaired or modified by anyone other than the manufacturer's personnel or approved agent.
- The tape library is physically abused or used in a manner that is inconsistent with the operating instructions or product specification defined by the manufacturer.
- The tape library fails because of accident, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, modification, or service by anyone other than the factory service center or its approved agent.
- The tape library is repaired by anyone, including an approved agent, in a manner that is contrary to the maintenance or installation instructions supplied by the manufacturer.
- The manufacturer's serial number tag is removed.
- The tape library is damaged because of improper packaging on return.

CAUTION: Warranty becomes immediately void in the event of unauthorized repairs or modifications of any kind.

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Conventions

This document exercises several alerts and typographical conventions.

Alerts

Convention	Description & Usage
NOTE: Text	A **Note** indicates neutral or positive information that emphasizes or supplements important points of the main text. A note supplies information that may apply only in special cases, for example, memory limitations or details that apply to specific program versions.
IMPORTANT	An **Important** note is a type of note that provides information essential to the completion of a task or that can impact the product and its function.
CAUTION	A **Caution** contains information that the user needs to know to avoid damaging or permanently deleting data or causing physical damage to the hardware or system.
WARNING	A **Warning** contains information concerning personal safety. Failure to follow directions in the warning could result in bodily harm or death.
WARNUNG	Eine *Warnung* enthält Informationen zur persönlichen Sicherheit. Das Nichtbeachten der Anweisungen in der Warnung kann zu Verletzungen oder zum Tod führen.
ADVERTISSEMENT	Un Canadien avertissement comme celui-ci contient des informations relatives à la sécurité personnelle. Ignorer les instructions dans l'avertissement peut entraîner des lésions corporelles ou la mort.

Typographical Conventions

Convention	Description & Usage
Button_name	Words in this special boldface font indicate command buttons found in the **Remote Management Interface** (RMI) or **Operator Control Panel** (OCP).
Ctrl-Alt-R	Denotes the keys that you press simultaneously. In this example, hold down the **Ctrl** and **Alt** keys and press the **R** key.
Menu Flow Indicator (**>**)	Words with a greater than sign between them indicate the flow of actions to accomplish a task. For example, **Setup > Passwords > User** indicates that you should press the **Setup** button, then the **Password** button, and finally the **User** button to accomplish a task.
Courier Italic	Used to exemplify a variable for which you must substitute a value.
`Courier Bold`	Represents commands or text in a command-line interface (CLI).

Information contained in this guide has been reviewed for accuracy, but not for product warranty because of the various environments, operating systems, or settings involved. Information and specifications may change without notice.

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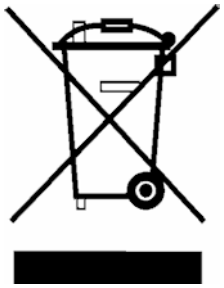
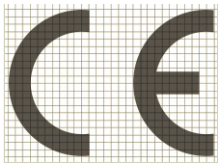
Regulatory Information

Disposal of Waste Equipment by Users in Private Households in the European Union and Norway



This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your equipment by handling it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at this time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service, or the shop where you purchased the product.

CE Mark



The CE mark is a mandatory conformity mark on many products placed on the single market in the European Economic Area (EEA). The CE marking certifies that a product has met EU consumer safety, health or environmental requirements.

CCL Mark

CSA C22-2 No. 60950-1 – Electrical safety – UL 60950-1
68475

FCC (United States)

The computer equipment described in this manual generates and uses radio frequency (RF) energy. If the equipment is not installed and operated in strict accordance with the manufacturer's instructions, interference to radio and television reception might result.

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Part 15, Class A, of the FCC Rules, is designed to provide reasonable protection against radio and television interference in a residential installation. Although the equipment has been tested and found to comply with the allowed RF emission limits, as specified in the above-cited Rules, there is no guarantee that interference will not occur in a particular installation. Interference can be determined by turning the equipment off and on while monitoring radio or television reception. The user may be able to eliminate any interference by implementing one or more of the following measures:

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- Reorient the affected device and/or its receiving antenna.
- Increase the distance between the affected device and the computer equipment.
- Plug the computer and its peripherals into a different branch circuit from that used by the affected device.
- If necessary, consult an experienced radio/television technician for additional suggestions.

Canadian Verification

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations (ICES-003, Class A).

Product Documentation

NEO product documentation and additional literature are available online at the Overland-Tandberg Knowledge Base:

https://www.overlandtandberg.com/knowledgebase/

Use the these options to access the information you need:

- Product Type = Library and Tape
- Product Family = NEO S-Series
- Model = (select your model)
- Document Type = (select your document)

Firmware Updates

The latest release of the NEO S-Series firmware can be obtained from the *Downloads and Resources* page at the Overland Storage website:

http://support.overlandstorage.com/support/neo-series.htm

Follow the appropriate instructions to download the **latest** software file.

For additional assistance, search at:

https://support.overlandstorage.com/touchpoint/logIn/default.aspx

Technical Support

You can get additional technical support information on the Contact Us web page at:

https://www.overlandstorage.com/company/contact-us/index.aspx

For a complete list of support types, levels, and times, visit our website at:

http://support.overlandstorage.com/support/overland_care.html

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Contents

Preface

General Product Warnings and Cautions 3
High Voltage 3
Heavy Units in Boxes 4
Heavy Unit Installation/Removal 4
Rack Tipping 4
General Guidelines 4
Product Warranty 5

Chapter 1: Overview

Possible Tools Needed 11
Electrostatic Discharge 11
Grounding Methods 11
Identify a Failed Component 12

Chapter 2: Library Troubleshooting

Troubleshooting Table 13
Fibre Channel Troubleshooting 15
SAS Troubleshooting 16
Remove Stuck Tape Cartridges 17
Emergency Magazine Release 18
Upgrade the Library Firmware 18
General Diagnostic Tests 18
System Test 18
Slot-to-Slot Test 19
Library Verify Test 19
Operations During the Library Health Check (LHC) 19

Chapter 3: Replacing Parts

Add or Replace a Tape Drive 21
Add a New Tape Drive 22
Replace an Existing Tape Drive 23
Replace the Library Controller 24
Prepare the Unit 24
Remove the Library Controller 24
Install the Library Controller 24
Reassemble the Unit 25
Update the System Firmware 25
Add or Replace a Power Supply 26
Add a Redundant Power Supply 26
Replace a Power Supply 27
Replace a Magazine 28

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Unlock a Magazine with OCP or RMI 28
Remove the Magazine Manually 29
Install New Magazine 30
Replace the Base Chassis 30
Prepare the Unit 30
Remove Components 31
Remove Old Base Chassis from Rack 31
Move Components to New Base Chassis 31
Install New Base Chassis in Rack 31
Reinstall the Tape Magazines 32
Reconnect Cables and Verify Firmware Version 32
Package Chassis for Shipment 32

Chapter 4: Event Codes and Acronyms

Error Overview 35
Error Messaging 35
Error Structure 35
Error Reporting 35
Main Error Codes 36
Sub-error Codes Related to the Robotic 43
Sub-error Codes Related to the Library 45
Acronyms and Abbreviations 46

Chapter 5: Technical Specifications

Hardware Specifications 47
Operating Environment 48
Maximum Storage Capacity and Data Transfer Rates 48
Logins and Default Passwords 49

Index

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1 Overview

Possible Tools Needed

- #2 Phillips screwdriver – securing or removing the round-hole rack adapter bracket, securing retention inserts in square-hole racks.
- Small Flat Head screwdriver or Torx tool – retracting the locking screen when moving a library cover, using the magazine manual release.
- T10 Torx tool – removing drive bay covers.
- Small Flat Head screwdriver – removing a magazine access door.
- Clip Nut installation tool – inserting or removing clip nuts in square-hole racks while installing or removing rack rails.

Electrostatic Discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly. See the next section.

Grounding Methods

There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm (± 10 percent) resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.

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- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an authorized reseller install the part.

NOTE: For more information on static electricity, or assistance with product installation, contact your authorized reseller.

Identify a Failed Component

Using the Operator Control Panel (OCP) or Remote Management Interface (RMI):

1. Activate the UID (Unit Identification) LEDs from the **Maintenance > UID LED Control** screen or page. This illuminates the blue LED on the front and rear of the Base Module to identify the library containing the failed component.
2. Identify the module within the library that contains the failed component:
   a. In the upper left corner of the **Home** screen, locate the module that indicates an error.
   b. Click or tap the module status area for information on the failed component.

NOTE: If dealing with a failed drive power board, there are two drive power boards in each module. The screen indicates whether the left or right drive power board (as seen from the rear of the library) has failed. On the failed board itself, the amber LED may be illuminated and visible through the grating.

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2 Library Troubleshooting

> **CAUTION:** The library is designed to operate when installed in a rack using the rack rail kit. Operating the library without installing it in the rails, such as on a table or rack shelf, could result in library errors. Placing any weight on top of the library might also cause errors.

This chapter provides information for verifying correct installation and troubleshooting the library.

Topics in Library Troubleshooting:

- Troubleshooting Table
- Fibre Channel Troubleshooting
- SAS Troubleshooting
- Remove Stuck Tape Cartridges
- Emergency Magazine Release
- Upgrade the Library Firmware
- General Diagnostic Tests

Troubleshooting Table

Problem	Solution
Power	
Library does not power up.	• Check all power cord connections. • Make sure the power switch on the front panel is in the <ON> position. • Make sure there is power to the outlet. Try another working outlet. • Replace the power cord. • Contact your service representative.
No display messages appear.	• Make sure the power cord is connected. • Make sure the power switch is on. • Power cycle the library. • Download the library firmware. • Contact your service representative.
Errors Displayed on Operator Control Panel	
Exclamation mark (!) in library operator panel inventory display	Export the tape cartridge marked with the exclamation mark (!). The tape cartridge is either damaged, incompatible with the tape drive, or the wrong type for the attempted operation.

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Problem	Solution
There is an error code on the LCD	Look up the error code, try to resolve the failure, and power cycle. See Chapter 4, "Event Codes and Acronyms."
Performance	
Poor throughput performance	• Try a new tape. A marginal tape can cause performance problems due to bad spots on the tape requiring retries. • Backing up data that compresses poorly or is already compressed will lower performance. • Check the size of the files. Small file size can impact performance. • Confirm that the backup application is utilizing block sizes of at least 32KB, preferably 64KB. Refer to the backup application documentation for details. • Check the network bandwidth from the host computer. If you are backing up data over a network, consider comparing to a local-only backup. • Make sure the backup server has enough memory to handle the bandwidth of the backup or restore. • Clean the tape drive with OCP or RMI.
Cleaning	
Cannot load the cleaning cartridge	• Make sure you are using an Ultrium universal cleaning cartridge. • Contact your service representative.
Media	
Cleaning or data tape incompatible with drive.	Cleaning or data tape incompatible with drive.
Cannot write to or read from tape.	• Make sure that the tape is write enabled (move the write-protect switch to the enabled position). • Make sure you have the appropriate data tape for your library model. • Make sure you are using an Ultrium tape that has not been degaussed. Do not degauss Ultrium tapes. • Make sure that the tape has not been exposed to harsh environmental or electrical conditions and is not physically damaged in any way. • Many backup applications do not read or write to tapes that were created using a different backup application. In this case, perform an erase, format, or label operation on the tape. • Make sure you understand any data protection or overwrite protection schemes that your backup application may be using, which could prevent you from writing to a given tape. • Retry the operation with a different, known good tape. • Clean the tape drive with OCP or RMI.
<Media Attention> LED issues	
Contamination by loose debris.	Avoid contamination by ensuring that the library is installed in a clean, contamination-free environment. Tapes should be stored vertically in their plastic cases. Continue cleaning the tape drive as needed.
Non-acclimated media.	A tape should be acclimated for at least 24 hours before being used, particularly if it has been stored at a substantially different temperature or level of humidity than the library.
Tape cartridge is incompatible.	Use only tapes that are compatible with the tape drive type.
Expired cleaning cartridge.	Make sure you are using an Ultrium universal cleaning tape. (max. 50 cleans)

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Problem	Solution
Bad/defective/contaminated media.	If the <Media Attention> LED is cleared and –although the tape drive has been cleaned – immediately re-displays each time a particular tape is reloaded that tape should be suspected as being defective. • Export the tape and load a known good tape. In some cases, a tape can be worn out, have a defective tape memory, or have been formatted as a Firmware Upgrade Cartridge. • Any tape that is suspected of being defective or contaminated should NOT be reused in any drive.
Tape cartridge movement	
Tape cartridge stuck in tape drive.	• Power cycle the library, allow it to complete initialization, which in rare cases can take as long as 10 minutes, and then retry unloading the tape using the library operator control panel. • Allow the tape drive to complete all operations. This may take as long as ten minutes if you reset or cycle power up the library while the cartridge is positioned at the physical end of the media. • Make sure that the backup software is not reserving the slot or preventing the tape drive from ejecting the tape. The backup software needs to cancel the reservation and any hold it has on the tape drive. Temporarily disconnecting the library from the host server and power cycling eliminates the host and its software as a problem source. • Contact your service representative.
Tape stuck in storage slot.	See Remove Stuck Tape Cartridges.

Fibre Channel Troubleshooting

Use the **Status > Drive Status** screen to check the link connection for your tape drive.

If the screen shows **Logged Out**:

- Verify that the correct Fibre speed is selected or is set to **Automatic**. If you are unsure of the speed of the HBA or switch that the drive is connected to, try **Automatic**.
- Check that the correct port type is selected. **Loop** requires additional configuration. If you are unsure of the correct port type, try **Automatic**.

If the screen shows **No Link**, the **Speed Status** is "**–**", and the Link LED on the back of the drive is OFF:

- The speed is probably set incorrectly. Try setting the speed to **Automatic**.
- If there are still issues, change the port type to **Auto Detect**.

If the screen shows **No Light**:

- The cable is not plugged in correctly. Check that it is connected correctly to Port A of the tape drive.
- The cable is damaged. FC cables are delicate. If the cable has been bent or twisted sharply, it might be broken and must be replaced.

If the screen shows **ALPA Conflict**:

- There might be a conflict with the ALPA address on Loop ports. Select **Soft** for the Loop mode to allow the system to select an available address each time the tape drive connects to the FC fabric.

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- If your server configuration does not support changing addresses, try using the **Hard Auto-Select** option for the Loop mode. This option allows the system to select an available address when it first connects, and then retain that address for future connections.

SAS Troubleshooting

Frequent causes of SAS detection issues:

- Improper SAS cable connections.
- Application software configuration errors.
- An incorrectly configured operating system.

If the application software or operating system does not communicate with the library after installation, determine the extent of the detection problem:

- Does the application software detect the tape drive?
- Does the application software detect the library?
- Does the operating system detect the tape drive?
- Does the operating system detect the library?
- Does the operating system detect the library, but list it as a generic device?

Based on the extent of the detection problem, check the following:

- If neither the application software or operating system detects the tape drive, or they do not detect both the tape drive and the library:
  - Verify that all SAS cables are securely connected on both ends.

    If the mini-SAS connectors that connect to the tape drive and some HBAs will not plug in, check the key. The mini-SAS connector on the tape drive is keyed for location four, which is the standard location for end devices. If the connector on the cable is keyed in a different location, not only will the connector not plug in, but the cable probably will not work.
  - Check the length and integrity of your SAS cabling.

    For reliable operation, do not use a SAS cable longer than six meters. Do not use a cable adapter or converters between the HBA and the library.
  - Check the SAS connectors for damage or debris.
  - Verify that your HBA is supported by the host computer and qualified with the library.
  - Verify that your HBA has the latest firmware.
- If the application software or operating system detects the tape drive, but not the library:
  - Verify that multiple LUN support is enabled on the HBA.

    The library uses two Logical Unit Numbers (LUNs) to control the tape drive (LUN 0) and robotics (LUN 1). The library requires an HBA with multiple LUN support, and multiple LUN support must be enabled on the host computer. When multiple LUN support is not enabled, the host computer can see the tape drive, but not the library.

    NOTE: Many RAID or array controllers do not provide multiple LUN support.
- If the application software or operating system does not detect any devices on the HBA:

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- Verify that the SAS host adapter is installed correctly.

  For installation and troubleshooting instructions, see the manual that came with your host adapter. Pay particular attention to any steps describing configuration settings. Ensure that the host adapter is properly seated in the motherboard slot and that the operating system correctly detects the host adapter.
- Verify that the proper device driver is installed for the SAS host adapter.

- If the library is detected by the operating system, but not by the application software, verify that the backup application is installed correctly.

  For instructions verifying proper installation, see the backup application documentation. Some backup software packages require an additional module to communicate with the robotics.
- If the library is detected by the operating system, but is listed as an unknown or generic device, make sure that the proper device driver, if applicable, is installed for the device.

  Check your application provider website for the latest drivers and patches.

  NOTE: Many backup applications use their own drivers. Before installing a driver, make sure that it is not in conflict with the application software.

Remove Stuck Tape Cartridges

CAUTION: When the library is moved, any tape cartridge can become dislodged from the magazines and damage the tape cartridges left in the library and library robotic. To avoid damaging the libraries, remove the tape cartridges before moving the libraries.

Indications for a stuck tape cartridge are:

- Cartridge cannot be removed via OCP or RMI.
- Robotic movement blocked when pulling a cartridge (see Chapter 4, “Event Codes and Acronyms”).
- Strange noises of the robotic; no read/write operation possible in the drive.

To remove a stuck tape cartridge:

1. Unlock the **magazine** (with or without mailslot):
   - If the OCP or RMI is working, unlock the magazine as described in Unlock a Magazine with OCP or RMI on page 28.
   - If the procedure fails or if the magazine needs to be opened while the power is off, follow the procedure in Remove the Magazine Manually on page 29.
2. If applicable, pull just the **mail slot** out to access the tape cartridge. Otherwise, supporting the magazine’s bottom, remove the entire magazine.

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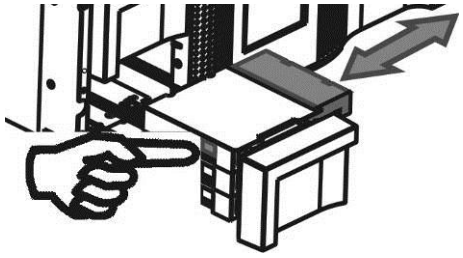
3. To remove the tape cartridge from the mail slot area:
   In the following figure, a triple mailslot is shown as an example.



   a. Use the **finger holes** to push the tape out of the mail slot.
   b. If required, insert a **new tape** cartridge.
   c. Repeat this process until **all stuck tapes** are removed.
4. Push the **mail slot** or insert the **magazine** back into the library.

Emergency Magazine Release

CAUTION: Whenever possible, use the OCP or RMI to release the magazines. Use the manual release only in the case of emergency.

If you cannot remove the complete magazines via the OCP or RMI, see Remove the Magazine Manually on page 29.

Upgrade the Library Firmware

The firmware version for the libraries must be compatible with all implemented devices. Verify that the library has the latest released version of firmware loaded.

NOTE: After upgrading the library firmware, the library system restarts automatically.

To upgrade the library firmware, see Update the System Firmware on page 25.

General Diagnostic Tests

Available tests to determine the health of the library:

System Test

The System Test is a general test to verify the usability and reliability of the library. The duration is depending on the test cycles defined.

To run the system test, navigate with RMI or OCP:

- RMI screen: **Service > General Diagnostic > System Test**
- OCP screen: **Main Menu > Service > Service Library > Run Tests > System Test**

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Slot-to-Slot Test

The Slot-to-Slot test shuffles the tapes between the slots to exercise the robotic. At the end of the test the tapes are not returned to their original slots.

To run the Slot-to-Slot test, navigate with RMI or OCP:

- RMI screen: **Service > General Diagnostic > Slot to Slot**
- OCP screen: **Main Menu > Service > Service Library > Run Tests > Slot to Slot Test**

Library Verify Test

NOTE: The library will remove any tape from the tape drives and go offline when running the test. Verify that any applications using the library have completed before starting the test.

The Library verify test is a diagnostic routine called Library Health Check (LHC).

This routine allows:

- to functionally test all library and drive hardware with the exception of external interfaces (SCSI).
- to verify a newly installed machine.
- to verify repair actions.

To run Library verify test, navigate with OCP:

OCP screen: **Main Menu > Service > Service Library > Library Verify**

Operations During the Library Health Check (LHC)

1. The user starts the test from the master library OCP. The administrator password is required. The test requires user interaction and can only be run from the OCP.
2. The master library performs a self-test, verifies that it can communicate with the tape drives and the library extender, and then the lower library performs a self-test.
3. The library returns any tapes from the tape drives to their home slots. If the home slot for a tape is unknown, the library will move the tape to the mail slot and prompt the user to remove it.
4. The library prompts the user to enter the number of cycles to run the test. The library runs up to 10 cycles.
5. The library opens the mail slot in the extended library, which will generally be in the lower library, and prompts the user to insert a scratch tape.
6. The user inserts a scratch tape into the lowest-numbered mail slot. If no mail slots are enabled or the user closes the mail slot without inserting a tape into the lowest-numbered mail slot, the library will perform a shortened version of the test, skipping Step 7.
7. The library loads the scratch tape into the first tape drive, unloads the scratch tape from the tape drive, and returns the scratch tape to the mail slot. If the user selected to test all of the tape drives, the library will load the scratch tape into each tape drive before returning it to the mail slot.
8. The library moves the tape from the four top-row corner slots of both libraries to the tape drive load point and then returns the tape to its slot. If none of the top-row corner slot positions of either library contains a tape, the test stops and the library displays an error message.

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9. If additional cycles remain to be run, the test will return to Step 7 if there is a tape in the mail slot or Step 8 if there is not a tape in the mail slot.
10. At the conclusion of the test, the library pops open the mail slot and waits for the user to remove the scratch tape.
11. The library displays the test completion status, including any recoveries or errors that may have occurred.

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3 Replacing Parts

This chapter provides instructions for servicing the NEO S-Series Tape Library. Any removed parts should be returned to Overland-Tandberg for service.

Topics in Replacing Parts:

- Add or Replace a Tape Drive
- Replace the Library Controller
- Add or Replace a Power Supply
- Replace the Base Chassis

Add or Replace a Tape Drive

Only individuals who are informed about the procedures and risks should replace or upgrade this tape drive assembly. Read all troubleshooting documentation and procedures before proceeding with repair or upgrade procedures.

WARNING: To reduce the risk of electric shock or damage to equipment, always remove any power cords while working with the library.

WARNUNG: Um das Risiko eines elektrischen Schlags oder Schäden am Gerät zu vermeiden, ziehen Sie stets den Netzstecker, bevor Sie an der Einheit arbeiten.

AVERTISSEMENT: Pour réduire le risque de choc électrique ou endommagement de l'équipement, retirez toujours les cordons électriques en travaillant avec l'appareil.

CAUTION: While working with the library, observe standard Electrostatic Discharge (ESD) precautions to prevent damage to micro-circuitry or static-sensitive devices.l

WARNING: Hazardous moving parts exist inside this product. Do not insert tools or any portion of your body into the drive bay openings.

WARNUNG: Im Inneren dieses Produktes befinden sich gefährliche bewegliche Teile. Führen Sie keine Werkzeuge oder Körperteile in die Öffnungen der Laufwerksschächte ein.

AVERTISSEMENT: Ce produit comporte des pièces mobiles dangereuses à l'intérieur. Veuillez ne pas insérer d'outils ou une partie du corps dans les ouvertures de chargeur de lecteur.

To replace a tape drive:

- Make sure the tape cartridge has been removed from the tape drive. Use the operator control panel (OCP) or the remote management interface (RMI) to move the cartridge to a storage slot or mailslot.
- If you are replacing the tape drive in a single drive library or the master drive in a multi-drive library, verify that backups are not occurring on the drive you are replacing.

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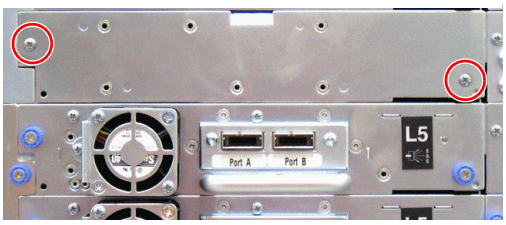
- If you determine that backups are occurring on the master drive, verify that the autoloader or library can not be accessed through this drive while the drive is being replaced.

The tape drives are hot-swappable.

Add a New Tape Drive

NOTE: If you are replacing an existing tape drive, proceed with Replace an Existing Tape Drive on page 23.

1. Verify the **location** for the tape drive.
   - If this is the first tape drive, install it in the **bottom drive bay**.
   - Otherwise, install the new drive in the **next higher** empty drive bay.
2. Using a Phillips screwdriver, **remove** the two screws securing the **drive bay cover**.

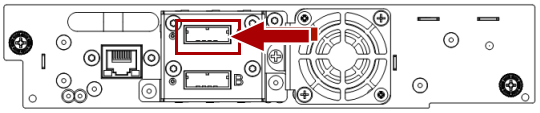


3. While supporting the bottom of the **new tape drive assembly**, slowly insert the drive into the drive bay until it is flush with the back panel of the device.

CAUTION: Support the bottom of the tape drive when removing it to avoid damaging any of the internal connections.

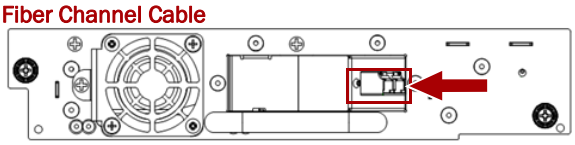
4. Finger-tighten the captive **thumbscrews** until the tape drive is secure.
5. Attach the **SAS** or **FC cables** to the connectors on the tape drive.
   - If you are installing an **SAS fanout cable**, attach one **mini-SAS connector** into the connector on the tape drive and use the **other ends** to connect tape drives (or coil and secure them to the rack to minimize stress on the connectors).

SAS Cable



   - If you are installing an **FC cable**, connect the **FC cable connector** to the connector on the tape drive and then configure the **FC interface**.

Fiber Channel Cable



NOTE: Overland recommends the default settings of **Port Speed: Automatic** and **Port Type: Auto Detect** so the tape drive will use the appropriate configuration.

6. Use the OCP or RMI to **power on** the new tape drive.

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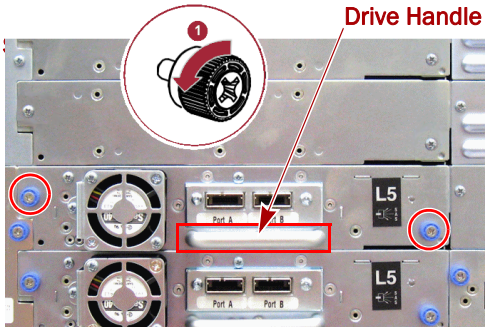
Replace an Existing Tape Drive

To replace an existing tape drive:

1. Use the OCP or RMI to **power off** the tape drive.

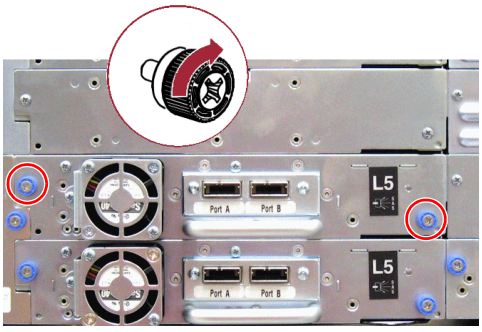
2. Verify that the **LED** of the tape drive assembly being replaced is OFF, then label and remove the FC or SAS cables from the tape drive.
3. Loosen the blue captive **thumbscrews** on the tape drive being replaced.



4. While supporting the drive bottom, use the tape drive handle and pull straight back to remove the **old tape drive** from the library.

> **CAUTION:** Support the bottom of the tape drive when removing it to avoid damaging any of the internal connections.

5. While supporting the drive bottom, slowly insert the **new tape drive** into the drive bay until it is flush with the back panel of the device.
6. Finger-tighten the blue captive **thumbscrews** to secure the tape drive.



7. Reconnect the **FC or SAS cables** to the tape drive.
8. Use the OCP or RMI to **power on** the tape drive.

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Replace the Library Controller

WARNING: To reduce the risk of electric shock or damage to equipment, always remove any power cords while working with the library.

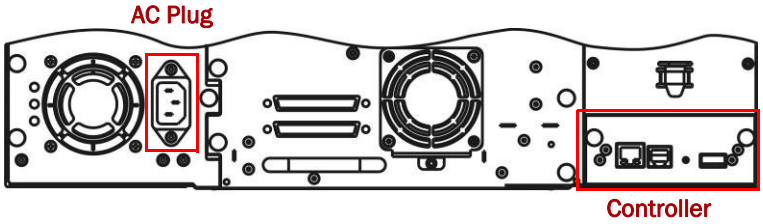
WARNUNG: Um das Risiko eines elektrischen Schlags oder Schäden am Gerät zu vermeiden, ziehen Sie stets den Netzstecker, bevor Sie an der Einheit arbeiten.

AVERTISSEMENT: Pour réduire le risque de choc électrique ou endommagement de l'équipement, retirez toujours les cordons électriques en travaillant avec l'appareil.

CAUTION: While working with the library, observe standard Electrostatic Discharge (ESD) precautions to prevent damage to micro-circuitry or static-sensitive devices.

Prepare the Unit

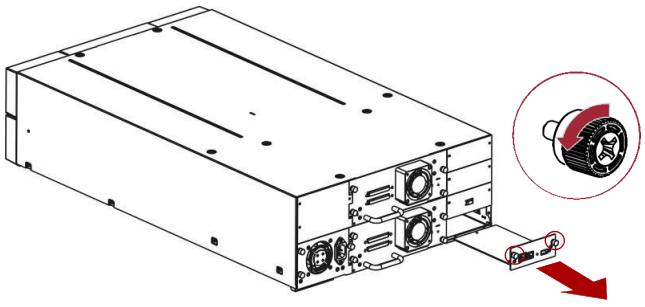
1. Verify that all host processes are **idle**.
2. Power off the library by depressing the **power button** on the front panel.
3. From the module containing the failed controller, unplug the **AC power cables**.



4. Remove the **Ethernet cables** and any **USB device** from the library controller being replaced.

Remove the Library Controller

1. Loosen the **two blue captive thumbscrews** on the controller.
2. Using the thumbscrews, slowly remove the **controller** from the library.



3. Set aside the old **controller** for return to Overland.

Install the Library Controller

1. Position the new controller on the **alignment rails**.

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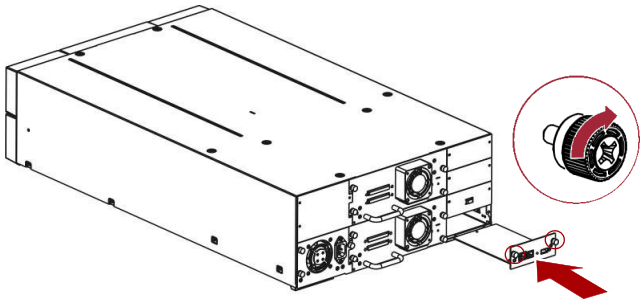
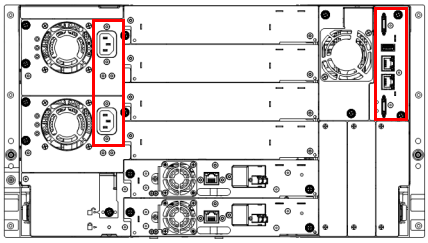
2. Slide the **controller** slowly into the library until it is flush with the back panel of the library.



3. **Finger-tighten** the blue captive thumbscrews to secure it to the library.

Reassemble the Unit

1. Reconnect the **Ethernet cables** and any **USB device**.
2. Plug in the **AC power cables**.



3. Press the Base Module **power button** for one to two seconds to power on the library.
   The **green LED** is shown when the library completes its Power-on Self-test (POST).
4. Confirm that the **library** recognizes the **new controller** by selecting **Status > Library Status**.
   Check the event log to make sure any library controller events have cleared.

> **IMPORTANT:** If you are asked whether or not to retain the serial number, always select **Yes**.

5. Use the RMI or OCP to verify that the library controller has the current **firmware**.
   If the firmware needs to be updated, continue with Update the System Firmware.

Update the System Firmware

1. Download the latest firmware from:
   ftp://ftp.overlandstorage.com/Firmware/Neo_Series/NeoS/
2. Select the **folder** for the model chassis being replaced.
3. If necessary, select the **drive type folder**.
4. Load the firmware file (FBI) on a **USB stick**.
5. Attach the **USB stick** to the port on the back panel of the new chassis.

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6. Use the OCP or RMI to upload the firmware upgrade.
   - From OCP, select **Main Menu > Service > Service Library > FW Upgrade by USB.**
   - From RMI, select **Service > Firmware > Upgrade Library Firmware > Upgrade.**
7. Click **Browse** to select the firmware file.
8. Click **Upload**.
9. Once the update is complete, **verify** the firmware version.

Add or Replace a Power Supply

WARNING: To reduce the risk of electric shock or damage to equipment, always remove any power cords while working with the library.

WARNUNG: Um das Risiko eines elektrischen Schlags oder Schäden am Gerät zu vermeiden, ziehen Sie stets den Netzstecker, bevor Sie an der Einheit arbeiten.

AVERTISSEMENT: Pour réduire le risque de choc électrique ou endommagement de l'équipement, retirez toujours les cordons électriques en travaillant avec l'appareil.

CAUTION: While working with the library, observe standard Electrostatic Discharge (ESD) precautions to prevent damage to micro-circuitry or static-sensitive devices.l

The power supply unit (PSU) bays are located at the rear of the library.

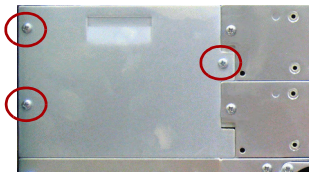
- 2U library – There is only one power supply bay.
- 4U library – There are two power supply bays. Always install the first power supply in the lower bay.

The unit can run with one power supply. If redundant a power supply is desired for fault tolerance, install a second power supply in the bay directly above the existing power supply.

Add a Redundant Power Supply

NOTE: If you are replacing an existing power Supply, proceed with Replace a Power Supply on page 27.

1. Verify that all host processes are **idle** and power off the library by depressing the **power button** on the front panel.
2. Using a Phillips screwdriver, remove the **three screws** securing the cover plate on the upper power supply bay.



   Set the **cover plate and screws** aside, saving them for possible future use.
3. Position the **new power supply** onto the alignment rails in the bay.
4. Slide the **power supply** into the library until it is flush with the back panel of the library.

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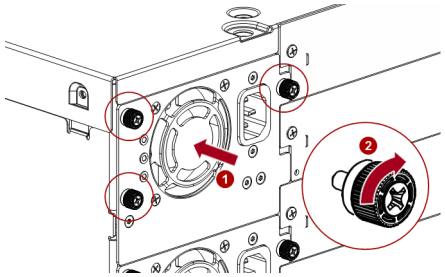
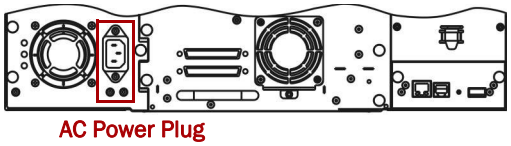


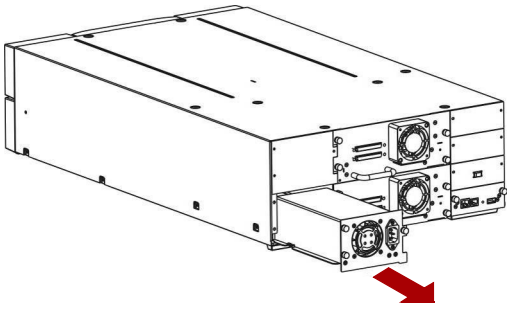
5. Finger-tighten the **blue captive thumbscrews** to secure the power supply.
6. Attach the supplied **AC power cord** to the new power supply.
7. Plug the power cord into a **different AC circuit** than the other PSU to operate in failover mode.
8. Press the **power button** to power the library back on.

Replace a Power Supply

1. Use the PSU LEDs to locate the **failed power supply** on the rear of the library.
2. Verify that all host processes are **idle** and power off the library by depressing the **power button** on the front panel.
3. Unplug the **AC power cord** from the PSU being replaced.



4. Remove the **old PSU**:
   a. Finger-loosen the **three blue captive thumbscrews** on the power supply.
   b. Using the thumbscrews, slowly pull the **power supply** approximately 4 inches (10 cm) out of the library.
   c. While using one hand to support the bottom of the power supply, completely **remove** the **power supply** from the module and set aside.



5. Install the **replacement PSU**:
   a. Position the **new power supply** onto the alignment rails in the bay.

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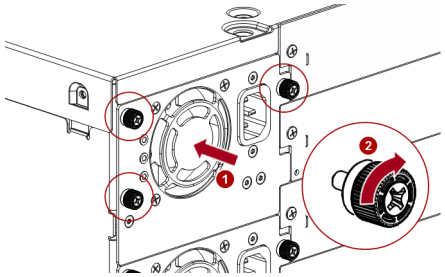
b. Slide the **power supply** into the library (1) until it is flush with the back panel of the library.



c. Finger-tighten the **blue captive thumbscrews** (2) to secure the power supply.

d. Attach the supplied **AC power cord** to the new power supply and plug it into the same AC circuit previously used.

6. Press the Base Module **power button** for one to two seconds to power on the library.

Replace a Magazine

WARNING: To reduce the risk of electric shock or damage to equipment, always remove any power cords while working with the library.

WARNUNG: Um das Risiko eines elektrischen Schlags oder Schäden am Gerät zu vermeiden, ziehen Sie stets den Netzstecker, bevor Sie an der Einheit arbeiten.

AVERTISSEMENT: Pour réduire le risque de choc électrique ou endommagement de l'équipement, retirez toujours les cordons électriques en travaillant avec l'appareil.

CAUTION: While working with the library, observe standard Electrostatic Discharge (ESD) precautions to prevent damage to micro-circuitry or static-sensitive devices.l

Unlock a Magazine with OCP or RMI

NOTE: As a best practice, perform this procedure while applications are idle. While the magazine is extended, the library robotic assembly cannot move media.

Unlock the magazine using the OCP or RMI. Only one magazine or mailslot can be open at a time.

NOTE: If these methods fail, or if a magazine needs to be removed when the power to the device is off, you can release the magazine manually. See Remove the Magazine Manually on page 29.

1. Open the **magazine access door**.
2. Log in as an administrator in **OCP** or **RMI**.
3. Unlock the magazine.

NOTE: If not removed, the magazine and mailslot will relock after 30 seconds.

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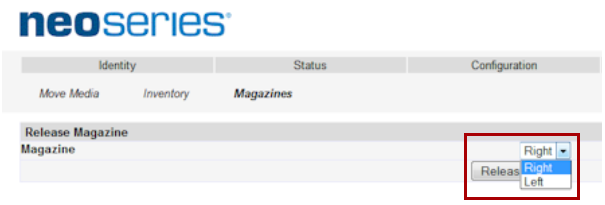
- In OCP, from the **Main Menu** screen, select **Commands** > **Unlock Magazines**.

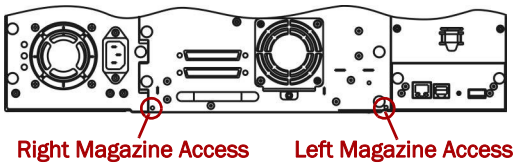
- In RMI, select **Operations > Magazines**, then select the magazine from the drop-down menu.



Remove the Magazine Manually

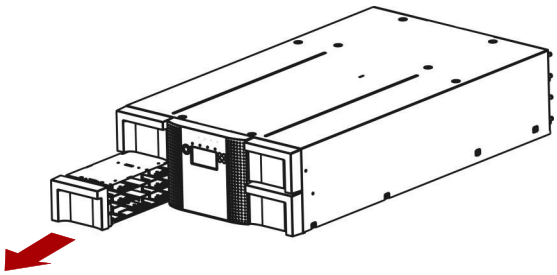
NOTE: This procedure requires two people.

1. Press the **power button** on the front bezel to power down the library.
2. Push a **small metal pin** or a **straightened paper clip** into the magazine access hole.



NOTE: For the 4U, all magazines on one side are released via the access hole and should be removed at the same time.

3. While one person presses and holds the **pin** or **paper clip** in the hole, the second person, supporting the **magazine** underneath, gently pulls it out of the unit.
4. Remove the **tape cartridges**, noting their locations within the magazine.



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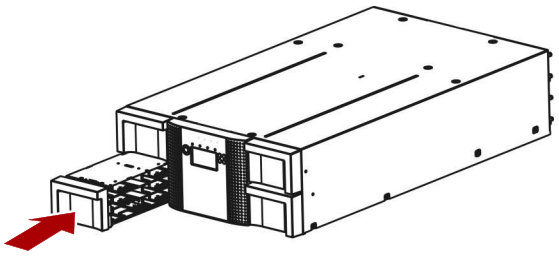
Install New Magazine

1. Load the **tape cartridges** into the new magazine in the same locations that they were in the old magazine.
2. Supporting the magazine underneath, position the **new magazine rails** onto the alignment rails.



3. Using the handle, push the **magazine** slowly into the library until the magazine release latch snaps into place.

   The magazine automatically locks into place when it is correctly installed.

Replace the Base Chassis

WARNING: To reduce the risk of electric shock or damage to equipment, always remove any power cords while working with the library.

WARNUNG: Um das Risiko eines elektrischen Schlags oder Schäden am Gerät zu vermeiden, ziehen Sie stets den Netzstecker, bevor Sie an der Einheit arbeiten.

AVERTISSEMENT: Pour réduire le risque de choc électrique ou endommagement de l'équipement, retirez toujours les cordons électriques en travaillant avec l'appareil.

CAUTION: While working with the library, observe standard Electrostatic Discharge (ESD) precautions to prevent damage to micro-circuitry or static-sensitive devices.l

Prepare the Unit

CAUTION: In the NEOs library, do not replace both the library controller and the chassis at the same time as the serial numbers for both cannot be updated when both are replaced simultaneously. If you receive a new library controller and chassis for the same unit, first install the new library controller in the old chassis as directed in the *Spare Library Controller Replacement Instructions*, then follow these provided instructions to replace the chassis.

The following items are included in the new chassis and should not be removed from the old chassis:

- Center bezel with the OCP
- Magazine access doors
- Robotic assembly
- Spooling mechanism

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Remove Components

1. Remove all tape magazines to reduce the unit's weight.
   - If the OCP or RMI is working, remove the magazine as described in Unlock a Magazine with OCP or RMI on page 28.
   - If the procedure fails or if the magazine needs to be opened while the power is off, follow the procedure in Remove the Magazine Manually on page 29.
2. If needed, power down the library by pressing the **power button** on the front panel.
3. Label and remove the **cables** on the rear of the library.

Remove Old Base Chassis from Rack

WARNING: It is recommended that a mechanical lifter (or at least two people) be used during rack installation or removal to prevent injury.

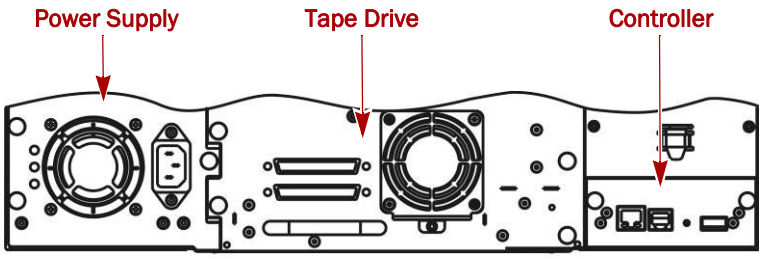
WARNUNG: Um Verletzungen zu vermeiden, empfehlen wir zur Rack-Installation oder -Deinstallation die Nutzung einer mechanischen Hebehilfe (oder mindestens zwei Personen).

AVERTISSEMENT: Pour éviter toute blessure il est recommande qu'un monte-charge (ou deux personnes au moins) soit utilisé lors de l'installation ou de l'enlèvement du support.

1. Release the **screws** on both side flanges that secure the Base Chassis to the rack.
2. With a mechanical lifter positioned in front of the library, release the **rail locks** and slide the **Base Chassis** out onto the lifter.
3. Place the old chassis on an **ESD-safe** surface.
4. Unpack the **new chassis** and place next to the old chassis.

Move Components to New Base Chassis

1. Move the **power supplies** from the old chassis to the new chassis (see Add or Replace a Power Supply on page 26).



2. Move the **tape drives** from the old chassis to the new chassis (see Add or Replace a Tape Drive on page 21).
3. Move the **library controller** from the old chassis to the new chassis (see Replace the Library Controller on page 24).

Install New Base Chassis in Rack

1. Slide out the **middle** rack rails on both sides.
2. Using the mechanical lifter, position the **new chassis** in front of the rack.
3. Insert the chassis **inner rails** into the middle rack rails and slide the chassis into the rack until it is flush with the front.

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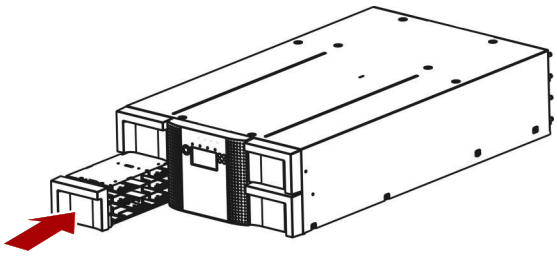
4. Secure the chassis to the rack with the **captive screws** on both side flanges.
5. After the appliance is secured in the rack, verify that all **drives** are secure in their bays and have not become unseated.

Reinstall the Tape Magazines

1. Supporting the magazine underneath, position the **magazine rails** onto the alignment rails in the appropriate bay.

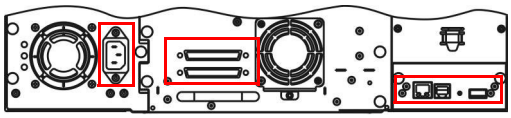


2. Using the handle, push the **magazine** slowly into the library until the magazine release latch snaps into place.

   The magazine automatically locks into place when it is correctly installed.
3. Repeat Steps 1–2 for the **remaining magazines**.

Reconnect Cables and Verify Firmware Version

1. Reconnect all the **cables** to the same ports from which they were removed.



2. Reattach the **power cords**.
3. Press the Base Module **power button** for one to two seconds to power on the library.

   The **green LED** is shown when the library completes its Power-on Self-test (POST).

Package Chassis for Shipment

WARNING: It is recommended that a mechanical lifter (or at least two people) be used during rack installation or removal to prevent injury.

WARNUNG: Um Verletzungen zu vermeiden, empfehlen wir zur Rack-Installation oder -Deinstallation die Nutzung einer mechanischen Hebehilfe (oder mindestens zwei Personen).

AVERTISSEMENT: Pour éviter toute blessure il est recommande qu'un monte-charge (ou deux personnes au moins) soit utilisé lors de l'installation ou de l'enlèvement du support.

CAUTION: Before transport the library, it is recommended that the shipping lock and the yellow label is replaced from the rear panel on the top cover of the library.

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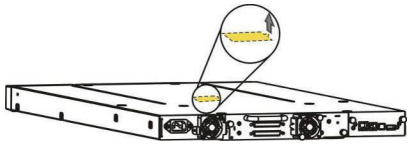
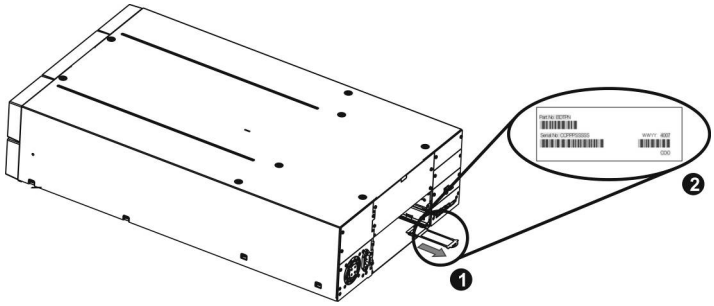
Before sending back the old library:

1. Place **shipping lock** in the unit:
   a. Remove the **yellow label** that is covering the securing slot for the shipping lock on the top of the library.

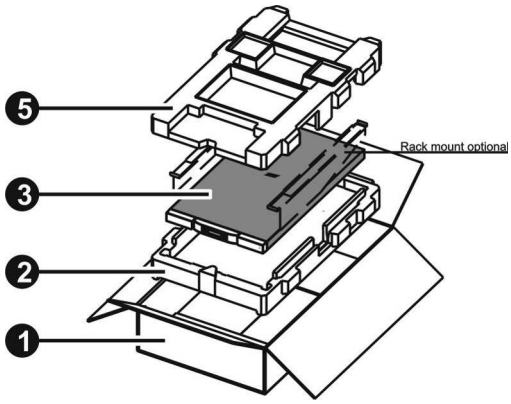


   b. Remove the **shipping lock** from the holder on the back of the unit and place it in the slot on top of the unit to secure the robotics.
   c. Replace the **yellow label** (or use any other tape) over the shipping lock to secure it.
2. At the rear, extend the **pull-out tab** with the product ID label and note the **part number and serial number** of the unit.

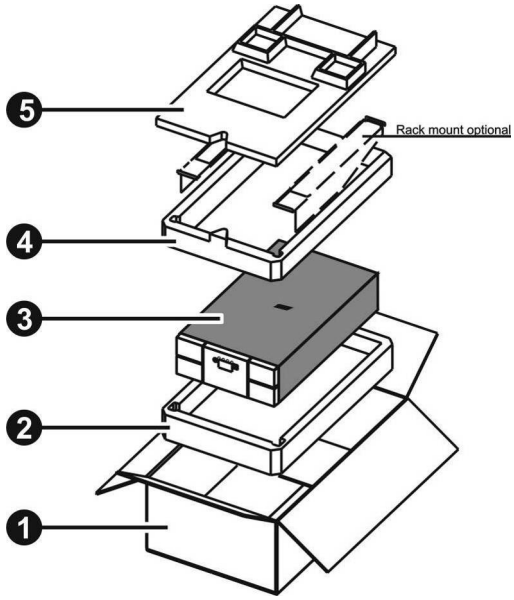


3. Use the appropriate figure for **packaging** your library for shipment.

Packaging the 1U or 2U Library



Packaging the 4U Library



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Step #	Description
1	Packaging box
2	Bottom shell
3	Library
4	Middle shell (4U only)
5	Top shell

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4

Event Codes and Acronyms

This appendix details the event codes and key acronyms for the NEO tape libraries.

Topics in Event Codes and Acronyms:

- Error Overview
- Main Error Codes
- Sub-error Codes Related to the Robotic
- Sub-error Codes Related to the Library
- Acronyms and Abbreviations

Error Overview

Error Messaging

The internal error messaging between the different modules and tasks contain the following information:

- Error code
- Sub-error code
- Affected source element
- Affected target element
- Affected library in stacked mode (Master/Slave)
- Additional information depending on context and error code

Error Structure

The error messaging is a fixed 4-byte structure with the following content:

- Error type
- Error code
- Sub-error code
- Internal code (active command code)

Error Reporting

In case of an error or a warning, a popup message appears on the OCP or the RMI.

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Main Error Codes

Error Code	Description	User Action	Critical Component Status
80	Bar Code Reader Error, cannot initialize BCR	Retry operation; after several occurrences contact technical support	Robotic probably defect • Flexi cable to BCR not properly connected. • Flexi cable to BCR damaged. • Bar code engine defect.
81	Bar Code Reader Error, no response from BCR	Retry operation; after several occurrences contact technical support	Robotic probably defect • Flexi cable to BCR not properly connected. • Flexi cable to BCR damaged. • Bar code engine defect.
82	EEPROM Error, no response from EEPROM (located on robotic controller)	Retry operation; after several occurrences contact technical support	Robotic probably defect Robotic controller not working (hardware problem, EEPROM defect).
83	Robotic controller generic problem	Reset the unit and retry operation. After several occurrences contact technical support	Robotic probably defect Robotic hardware not working (cables, distribution boards, robotics controller).
84	Setting of gripper motor parameters failed	Reset the unit and retry operation. After several occurrences contact technical support	Robotic probably defect • Elevator distribution board defect. • Cabling incorrect.
85	Setting of slider motor parameters failed	Reset the unit and retry operation. After several occurrences contact technical support	Robotic probably defect • Elevator distribution board defect. • Cabling incorrect.
86	Setting of elevator motor parameters failed	Reset the unit and retry operation. After several occurrences contact technical support	Robotic probably defect • Elevator distribution board defect. • Cabling incorrect.
87	Setting of rotation motor parameters failed	Reset the unit and retry operation. After several occurrences contact technical support	Robotic probably defect Robotics controller defect.
88	Setting of sled motor parameters failed	Reset the unit and retry operation. After several occurrences contact technical support	Robotic probably defect Robotics controller defect.
89	Gripper blocked	Run ‘Library Verify Test’, after several occurrences contact technical support	Robotic probably defect • Gripper motor not connected or defect. • Gripper motor voltage to low. • Robotics controller or distribution boards defect. • Check gripper mechanism according stiffness in movement.

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Error Code	Description	User Action	Critical Component Status
8A	Slider blocked	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Slider Motor not connected or defect. • Slider motor voltage to low. • Robotics controller or distribution boards defect. • Check slider mechanism according stiffness in movement.
8B	Elevator blocked	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Elevator motor not connected or defect. • Elevator motor voltage to low. • Robotics controller or distribution boards defect. • Check elevator mechanism according stiffness in movement
8C	Rotation blocked	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Rotation motor not connected or defect. • Rotation motor voltage to low. • Rotation home sensor defect. • Rotation sensor connecting cable damaged. • Robotics controller or distribution boards defect.
8D	Sled blocked	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Sled motor not connected or defect. • Sled motor voltage to low. • Sled home sensor defect. • Sled sensor connecting cable damaged. • Robotics controller or distribution boards defect. • Check sled mechanism (guide rail, duck tail) according stiffness in movement.
8E	Cannot find gripper block within the expected range	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Elevator distribution board defect. • Cabling incorrect. • Check gripper gears.
8F	Cannot find slider block within the expected range	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Elevator distribution board defect. • Cabling incorrect. • Check slider gears.
90	Cannot find elevator block within the expected range	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Elevator distribution board defect. • Cabling incorrect. • Check elevator gears.
91	Cannot find rotation block within the expected range	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Cabling incorrect. • Check rotation gears.

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Error Code	Description	User Action	Critical Component Status
92	Cannot find sled block within the expected range	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Cabling incorrect. • Check sled gears.
93	Gripper outside range, Gripper has reached a position beyond the expected range	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Elevator distribution board defect. • Cabling incorrect. • Check gripper gears.
94	Slider outside range, Slider has reached a position beyond the expected range	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Elevator distribution board defect. • Cabling incorrect. • Check slider gears.
95	Elevator outside range, Elevator has reached a position beyond the expected range	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Elevator distribution board defect. • Cabling incorrect. • Check elevator gears.
96	Rotation outside range, Rotation has reached a position beyond the expected range	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Cabling incorrect. • Check rotation gears.
97	Sled outside range, Sled has reached a position beyond the expected range	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Cabling incorrect. • Check sled gears.
98	Cartridge present sensor not found	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Robotics controller defect. • Cartridge present sensor defect (mechanics, electronics). • Cabling incorrect.
99	Sled home sensor not found	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Robotics controller defect. • Slider home sensor defect (mechanics, electronics). • Cabling incorrect.
9A	Rotation home sensor not found	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Robotics controller defect. • Rotation home sensor defect (mechanics, electronics). • Cabling incorrect.
9B	Sled position sensor (prism sensor) not found,	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Robotics controller defect. • Sled home sensor defect (mechanics, electronics). • Cabling incorrect.

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Error Code	Description	User Action	Critical Component Status
9C	Gripper range out of specification	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Gripper motor not connected or defect. • Robotics controller or distribution boards defect. • Check gripper mechanism according stiffness in movement
9D	Slider range out of specification	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Slider motor not connected or defect. • Robotics controller or distribution boards defect. • Check slider mechanism according stiffness in movement.
9E	Elevator range out of specification	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Elevator motor not connected or defect. • Robotics controller or distribution boards defect. • Check elevator mechanism according stiffness in movement.
9F	Rotation range out of specification	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Rotation motor not connected or defect. • Robotics controller or distribution boards defect. • Check rotation mechanism according stiffness in movement.
A0	Sled range out of specification	Run 'Library Verify Test', after several occurrences contact technical support	Robotic probably defect • Sled motor not connected or defect. • Robotics controller or distribution boards defect. • Check sled mechanism according stiffness in movement.
A1	Open Mail Slot (Import/Export Element) failed	Retry operation, after several occurrences contact technical support	Mail Slot release mechanism defect
B0	Robotic controller response timeout. A command did not complete in the required amount of time.	Reset the unit and retry operation. After several occurrences contact technical support	Robotic probably defect • No communication from library controller to robotic controller. • Robotic hardware not working (cables, distribution boards, robotics controller). • Download robotic firmware fails.
B1	NACK received from robotic controller	Reset the unit and retry operation. After several occurrences contact technical support	Robotic probably defect • Communication from library controller to robotic controller disturbed. • Robotic hardware not working (cables, distribution boards, robotics controller). • Download robotic firmware fails.

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Error Code	Description	User Action	Critical Component Status
B2	Robotic controller communication failed	Reset the unit and retry operation. After several occurrences contact technical support	Robotic probably defect • No communication from library controller to robotic controller. • Robotic hardware not working (cables, distribution boards, robotics controller). • Download robotic firmware fails.
B3	Robotic controller urgent stop due to a released magazine	Check if magazine are completely inserted and retry operation. After several occurrences contact technical support	Magazines released Magazine present sensor defect.
B4	Cartridge did not transport completely Gripper could not pick cartridge and CP sensor not present After pushing the cart CP sensor still present		• CP sensor defect • Cartridge sticks in slot/drive
B5	Robotic controller doesn't respond on command	Reset the unit and retry operation. After several occurrences contact technical support	Robotic probably defect • No communication from library controller to robotic controller. • Robotic hardware not working (cables, distribution boards, robotics controller). • Download robotic firmware fails.
C0	Network initialization failed	Check network cable and network configuration. If the error recurs, contact technical support	Library controller probably defect probably a hardware problem, check library controller
C1	Telnet Interface initialization failed	Check network cable and network configuration. If the error recurs, contact technical support	Library controller probably defect, probably a hardware problem, check library controller
C2	Web server initialization failed	Check network cable and network configuration. If the error recurs, contact technical support	Library controller probably defect, probably a hardware problem, check library controller
C6	Ping command did not reached target	Check network cable and network configuration. If the error recurs, contact technical support	Library controller probably defect, probably a hardware problem, check library controller
C7	Cannot Upgrade from USB	Retry of Firmware upgrade, if not successful contact technical support	Library controller probably defect, probably a hardware problem, check library controller
C8	Cannot Upgrade from FTP	Retry of Firmware upgrade, if not successful contact technical support	Library controller probably defect, probably a hardware problem, check library controller
C9	Cannot Upgrade Robotic from Flash	Retry of Firmware upgrade, if not successful contact technical support	Library controller probably defect, probably a hardware problem, check library controller
D0	ROM error. ROM checksum incorrect	Retry of Firmware upgrade, if not successful contact technical support	Library controller probably defect, probably a hardware problem, check library controller

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Error Code	Description	User Action	Critical Component Status
D1	RAM error. Power on Self Test (POST) has failed,	Retry operation; after several occurrences contact technical support	Library controller probably defect, RAM defect, check library controller
D2	NVRAM error. R/W operation to NVRAM has failed	Retry operation; after several occurrences contact technical support	Library controller probably defect, probably a hardware problem, check library controller
D3	CTC Error. Timer unit has failed during POST.	Retry operation; after several occurrences contact technical support	Library controller probably defect, probably a hardware problem, check library controller
D4	UART Error. Frame overrun or Parity Error on serial Interface.	Retry operation; after several occurrences contact technical support	Check library and robotics controller
D5	Display Error Communication to display failed	Retry operation; after several occurrences contact technical support	Check library controller and OCP
D6	Memory Error, Stack and heap overflow.	Retry operation; after several occurrences contact technical support	Library controller probably defect
D7	Fatal system error	Retry operation; after several occurrences contact technical support	Library controller probably defect probably hardware problem, check library controller
D8	Data base error	Retry operation; after several occurrences contact technical support	Library controller probably defect, probably hardware problem, check library controller
D9	No SCSI IC detected	Retry operation; after several occurrences contact technical support	SCSI controller probably defect, check SCSI controller and library controller
DA	In Library Verify Test the bar code reader has read different bar code data for the same cartridge label	Check bar code label on scratch cartridge and run Library Verify Test again. If the error recurs, contact technical support	
DB	Warning event! See section below		
DC	I²C Bus Failure	Retry operation; after several occurrences contact technical support	Failure in I²C bus communication. • Check library controller and connections to OCP and backplane. • Check OCP. • Check backplane. • Check drive sleds.
DD	Warning event! See section below		
DE	Warning event! See section below		
DF	Warning event! See section below		
E0	Incompatible magazine detected	Check type of lowest left magazine	Magazine type not supported

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Error Code	Description	User Action	Critical Component Status
E2	Unsupported hardware detected – Library firmware upgrade required	Library Extender was installed without upgrading the library firmware. Upgrade library code to revision which supports this feature	
EB	Power supply health check failed due to a power supply failure. Please contact service.	Contact technical support	Power supply probably defect
F0	Drive Over temperature Condition The sub code indicates which drive is affected Example: Sub code 01: drive #1	Check ambient temperature conditions and check all fans, after several occurrences contact technical support	Drive probably defect
F1	Drive Communication Error, Library controller has lost communication to drive The sub code indicates which drive is affected Example: Sub code 01: drive #1	Retry operation; if not successful contact technical support	Communication cable between drive and drive sled controller defect. • Drive sled controller defect • Check cabling drive sled controller-backplane • Check cabling backplane library controller • Drive defect / check drive
F2	Drive sled not present The sub code indicates which drive sled is affected Example: Sub code 01: drive sled #1	Retry operation; if not successful contact technical support	Drive probably defect • Check if drive sled is completely inserted • Drive sled controller defect. • Drive defect.
F3	Drive Hardware Error The sub code indicates which drive is affected Example: Sub code 01: drive #1	Cycle Power, after several occurrences contact technical support	Drive probably defect
F4	Drive Load Timeout Drive has run in a timeout while loading a tape The sub code indicates which drive is affected	Retry operation; if not successful contact technical support	Drive probably defect • Drive leader bent. • Drive initialize repeatedly. • Drive defect (no function).
F5	Drive Unload Timeout Drive has run in a timeout while unloading a tape The sub code indicates which drive is affected	Retry operation; if not successful contact technical support	Drive probably defect • Drive leader bent. • Drive initialize repeatedly. • Drive defect (no function).
F8	Invalid drive command	Retry operation; if not successful contact technical support	Drive probably defect
F9	Invalid drive parameter	Retry operation; if not successful contact technical support	Drive probably defect
FA	SDCI microcode error	Retry operation; if not successful contact technical support	Drive probably defect

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Error Code	Description	User Action	Critical Component Status
FB	Drive logged out	Retry operation; if not successful contact technical support	Drive probably defect
FC	Internal SCSI command failed with check condition	Retry operation; if not successful contact technical support	Drive probably defect
FD	Internal SCSI command timeout	Retry operation; if not successful contact technical support	Drive probably defect

Sub-error Codes Related to the Robotic

01	Mechanical initialization failure
02	Connection to slave robotic failed
03	Error motor initialization
04	Error during gripper close
05	Error slider home positioning
06	Error elevator home movement
07	Error during sled movement to rotation position
08	Error during rotation initialization, get range failed
09	Error elevator init
0A	Error during rotation to far position
0B	Error first sled init, move to sensor failed
0C	Error during sled movement to rotation position
0D	Error during rotation to drive position
0E	Error slider init, get range failed
0F	Error during slider forward movement
10	Error gripper init, get range failed
11	Error during slider home movement
12	Error during rotation to FAR position
13	Error sled init, move to sensor failed
14	Error during sled move – check shipping lock
20	Error Inventory scan
21	Error during gripper close
22	Error slider home movement
23	Error during move gripper to scan POS
24	Error reading bar code label
25	Error during move sled to scan position
26	Error during move elevator to scan position
27	Error during sled preposition movement
29	Error during closing gripper

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2A	Error slider preposition movement
2B	Error during opening gripper
2C	Error during sled movement up to sensor
2D	Error slider preposition backwards movement
30	Error slot preposition
31	Error during sled movement in <FLMoveRotation> function
32	Command sending to robotic failed
33	Error during elevator movement in <FLMoveRotation> function
34	Error during rotation in <FLMoveRotation> function
35	Error during elevator movement in <FLMoveSled> function
36	Error during sled movement in <FLMoveSled> function
37	Error during sled positioning to sensor in <FLMoveSled> function
38	Error during sled positioning to mail slot in <FLMoveSled> function
39	Error during sled positioning without sensor
3A	Error during elevator movement without sensor
3B	Error slot position sensor not found
40	Movement to/from slot failed
41	Error during first slider movement
42	Error during first gripper movement
43	Error during second slider movement
44	Error during second gripper movement, get range failed
45	Error during third slider movement, move home failed
46	Error during set hold current to avoid torsion
50	Preposition to drive failed
51	Elevator movement to home sensor failed
52	Sled movement to home sensor failed
53	Error during sled movement to drive position
54	Error during rotation to drive position
55	Error during elevator movement in drive position
56	Error during sled movement to rotation position
57	Error during rotation to end position
60	Move from/to drive failed
61	Error during first slider movement
62	Error during first gripper movement
63	Error during second slider movement
64	Error during second gripper movement, get range failed
65	Error during third slider movement, move home failed
70	Release magazine failed
71	Error during sled movement to rotation position
72	Error during rotation to unlock position

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73	Error during move sled to block
80	Opening mail slot failed
81	Error during movement to mail slot open position
82	Error during moving back - sensor was found
90	Movement to home position failed
91	Elevator movement to home position failed
92	Error during sled movement to rotation position
93	Error during rotation to home or far position
94	Sled movement to home sensor position failed
95	Sled movement to transport position failed
99	Error during rotation movement to rotation min position
A0	Movement to mail slot failed
A1	Sled movement to sensor failed
A2	Sled movement to rotation position failed
A3	Elevator movement to home position failed
A4	Error during rotation to far position
A5	Sled movement to mail slot position failed
A6	Error during elevator movement to position
A7	Error during mail slot detection
B0	EEPROM on robotics controller not accessible or error during r/w operation
B1	Save/restore configuration settings: not enough internal memory available for creating the file and restoring the file respectively
B2	Save/restore configuration settings: restore buffer corrupted, checksum calculation failed
B3	Save/restore configuration settings: data base field corrupted
B4	Save/restore configuration settings: invalid personality
B5	Save/restore configuration settings: invalid file

Sub-error Codes Related to the Library

All libraries	
81	Tape drive wake up failed
88	Error accessing slot status
90	Robotic load not reached tape present sensor
91	No activity after <Load> command
92	Timeout while loading tape
93	No activity after <Load> command
94	Timeout drive unload
95	Tape drive terminated unsuccessfully
96	Tape not ejected at robot unload

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97	Slot not free at robot unload
98	Tape not seated in <Load> phase 1
1U library only	
C0	Check magazine failed
C1	Error during rotation movement
C2	Error during elevator movement
C3	Error during sled movement
C4	Error during sled movement to sensor

Acronyms and Abbreviations

Acronym	Meaning
FC	Fibre Channel
FH	Full Height
GUI	Graphical User Interface
HBA	Host Bus Adapter
HH	Half Height
LUN	Logical Unit Number
OCP	Operator Control Panel
RMI	Remote Management Interface
SAN	Storage Area Network
SAS	Serial Attached SCSI
SNMP	Simple Network Management Protocol
SSH	Secure Shell
SSL	Secure Socket Layer
UID	Unit Identification
USB	Universal Serial Bus
WORM	Write Once, Read Many
WWPN	World-Wide Port Name

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5

Technical Specifications

NOTE: These specifications are accurate at the time of publication. Refer to the Overland-Tandberg website for the latest figures.

Hardware Specifications

Form factor	1U (StorageLoader)	2U (T24)	4U (T48)
Product Dimensions (H x W x D)	1.73 x 18.98 x 31.85 in. (4.4 x 48.2 x 80.9 cm)	3.44 x 17.60 x 29.13 in. (8.8 x 44.7 x 74.0 cm)	1.73 x 17.60 x 29.13 in. (17.5 x 44.7 x 74.0 cm)
Packaged Dimensions (H x W x D)	9.25 x 23.19 x 38.94 in. (23.5 x 58.9 x 98.9 cm)	9.76 x 23.54 x 39.09 in. (24.8 x 59.8 x 99.3 cm)	12.99 x 23.03 x 38.98 in. (33.0 x 58.5 x 99.0 cm)
Shipping Weight (without Rail Kit)	25.4 lbs. (11.52 kg)	33.0 lbs. (14.97 kg)	47 lbs. (21.31 kg)
Product Weight (without media)	1 HH drive unit: 25.13 lbs. (11.4 kg)	1 FH drive unit: 32.41 lbs. (14.7 kg) 2 HH drive units: 34.39 lbs. (15.6 kg)	1 FH drive unit: 46.96 lbs. (21.3 kg) 2 FH drive units: 53.57 lbs. (24.3 kg) 2 HH drive unit: 48.94 lbs. (22.2 kg) 4 HH drive units: 57.54 lbs. (26.1 kg)
Product Weight (with media)	1 HH drive unit: 28.88 lbs. (13.1 kg)	1 FH drive unit: 44.53 lbs. (20.2 kg) 2 HH drive units: 46.52 lbs. (21.1 kg)	1 FH drive unit: 67.46 lbs. (30.6 kg) 2 FH drive units: 74.08 lbs. (33.6 kg) 2 HH drive units: 69.23 lbs. (31.4 kg) 4 FH drive units: 77.82 lbs. (35.3 kg)

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Operating Environment

Environment	Characteristics	Specification
Operating	Temperature	10°C to 35°C
	Max. temperature rise	10°C / hour
	Humidity	20% to 80% R.H. (non condensing)
	Maximum wet bulb	26°C
	Max. humidity rise	10% / hour
	Altitude operating	0 to 10.000 ft (3000 m) at 25°C ambient
Non Operating Storage and Shipping	Temperature	-30 °C to +60°C
	Max. temperature rise	20°C / hour
	Humidity	10% to 90% RH (non condensing)
	Altitude	-22 to 33000 feet (-7 to 10000 m)

Maximum Storage Capacity and Data Transfer Rates

Numbers for the 1U, 2U, and 4U models. Host interface is 6 Gb/s (SAS) and 8 Gb/s (FC).

Characteristics	Specification
NEO S-Series tape library with LTO-5 drives	
Maximum storage capacity (8/24/48 data cartridges)	Native 12/36/72 TB Compressed: 24/72/144 TB (assuming 2:1 compression)
Maximum data transfer rate (single LTO-5 drive)	Native: 140 MB/s (504 GB/h) Compressed: 280 MB/s (1 TB/h) (assuming 2:1 compression)
NEO S-Series tape library with LTO-6 drives	
Maximum storage capacity (8/24/48 data cartridges)	Native 20/60/120 TB Compressed: 50/150/300 TB (assuming 2.5:1 compression)
Maximum data transfer rate (single LTO-6 drive)	Native: 160 MB/s (576 GB/h) Compressed: 389 MB/s (1.4 TB/h) (assuming 2.5:1 compression)

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Characteristics	Specification
NEO S-Series tape library with LTO-7 drives	
Maximum storage capacity (8/24/48 data cartridges)	Native 48/144/260 TB Compressed: 120/360/720 TB (assuming 2.5:1 compression)
Maximum data transfer rate (single LTO-7 drive)	Native: 278 MB/s (1.0 TB/h) Compressed: 750 MB/s (2.7 TB/h) (assuming 2.5:1 compression)
NEO S-Series tape library with LTO-8 drives	
Maximum storage capacity (8/24/48 data cartridges)	Native 96/288/576 TB Compressed: 240/720/1400 TB (assuming 2.5:1 compression)
Maximum data transfer rate (single LTO-8 drive)	Native: 278 MB/s (1.0 TB/h) Compressed: 750 MB/s (2.7 TB/h) (assuming 2.5:1 compression)

Logins and Default Passwords

To login, select the access type and enter the correct password. There are three levels of access:

- **Guest** – Standard user level, default password "**`std001`**".
- **Admin** – Administrator user level, default password "**`adm001`**".
- **Service** – Access by service personnel only.

Each level affects which areas you have access to and what actions you can initiate from those areas.

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Index

Symbols

> (menu flow indicator) **6**

Numerics

1U library
  packaging **33**
  sub-error codes **46**
2U library
  packaging **33**
4U library
  packaging **33**

A

abbreviations **46**
access levels **49**
acronyms **46**
alert definitions **6**

B

base chassis
  install components **31**
  remove components **31**
  replace **30**

C

cables
  connect drive **22**
  remove **23**
cartridges
  remove **31**
connect
  drive cable **22**
conventions, typographical **6**
customer support **8**

D

data transfer rates **48**
default passwords **49**
drive bay cover **22**

E

electrostatic discharge **11**
emergency manual release **29**

F

firmware **25**

G

grounding methods **11**

H

hardware specifications **47**

I

identify a failed component **12**
install
  chassis in rack **31**
  components in chassis **31**
  library controller **24**
  magazine **30, 32**
  tape drive **22**

L

library controller
  install **24**
  reassemble **25**
  remove **24**
  replace **24**

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Library Health Check **19**
Library Verify Test **19**

M

magazine
  install **30, 32**
  remove manually **29**
  replace **28**
  unlock **28**
manual release **29**
maximum storage capacity **48**
menu flow indicator **6**

O

operating environment **48**
operating environment specifications **48**
Overland-Tandberg Technical Support **8**

P

passwords, default **49**
power off **23**
power supply
  2U library **26**
  4U library **26**
  replace **26**
product documentation **8**

R

rack
  remove from **31**
reassemble
  library controller **25**
reassemble the library **25**
remove
  cables **23**
  cartridges **31**
  components from base chassis **31**
  drive bay cover **22**
  from rack **31**
  library controller **24**
remove manually
  magazine **29**
replace
  base chassis **30**
  library controller **24**
  magazine **28**
  power supply **26**
  tape drive **21**

S

Slot-to-Slot Test **19**
software update **8**
specifications
  data transfer rates **48**
  maximum storage capacity **48**
  operating environment **48**
system firmware **25**
System Test **18**

T

tape drive
  install **22**
  replace **21**
technical support **8**
Test
  Library Verify **19**
  Slot-to-Slot **19**
  System **18**
tools needed **11**
troubleshooting **13**
  cartridges **15**
  cleaning **14**
  media **14**
  Media Attention LED **14**
  OCP error messages **13**
  performance issues **14**
  power **13**
typographical conventions **6**

U

unlock magazine **28**
update the system firmware **25**

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