

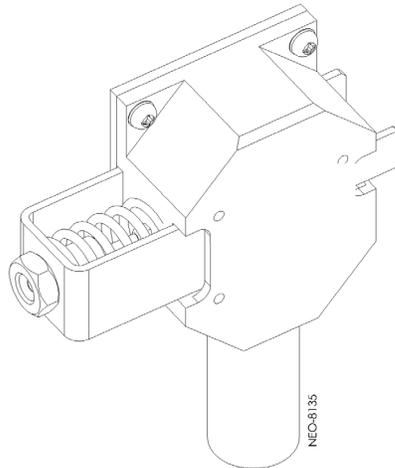


Overland  
Storage

# NEO<sup>®</sup> 8000/8000e Spare Z-Axis

## Housing Assemblies

*Remove & Replace Instructions*



February 2013  
10400202-003



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# Preface

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This document guides you through the process of removing and replacing the Upper and Lower Housing Assemblies on either a front or rear Belt Drive Assembly (BDA):

1. [Chapter 1](#) describes preparing the library for a BDA removal.
2. Select the appropriate chapter for removing, retrofitting, and replacing the appropriate BDA:
  - [Chapter 2](#) covers the removal and replacement of the of the Front Housing Assemblies.
  - [Chapter 3](#) covers the removal and replacement of the of the Rear Housing Assemblies.
3. [Chapter 4](#) deals with reassembling the library once the BDA is reinstalled.
4. [Chapter 5](#) addresses the tests that must be run to prepare the library for reactivation.

## Documentation

To access the NEO 8000 User Guide and NEO 8000e User Guides, visit:

<http://docs.overlandstorage.com/neo-series>

## Overland Technical Support

For help configuring and using your NEO tape library, email our technical support staff at:

[techsupport@overlandstorage.com](mailto:techsupport@overlandstorage.com).

You can get additional technical support information on the [Contact Us](#) web page at:

<http://docs.overlandstorage.com/support>

For a complete list of support times based on your type of coverage, visit our website at:

<http://docs.overlandstorage.com/care>

## Conventions

This document exercises several alerts and typographical conventions.

### Alerts

Convention	Description & Usage
 <b>IMPORTANT</b>	An <i>Important</i> 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.
 <b>CAUTION</b>	A <i>Caution</i> contains information that the user needs to know to avoid damaging or permanently deleting data or causing physical damage to the hardware or system.
 <b>WARNING</b>	A <i>Warning</i> contains information concerning personal safety. Failure to follow directions in the warning could result in bodily harm or death.
<b>AVERTISSEMENT</b>	Un Canadien <i>avertissement</i> 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 the names of command buttons found in the Web Management Interface.
Ctrl-Alt-r	This type of format details the keys you press simultaneously. In this example, hold down the Ctrl and Alt keys and press the r key.
NOTE	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.
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 Passwords button, and finally the User button to accomplish a task.
<i>Courier Italic</i>	A variable for which you must substitute a value
<b>Courier Bold</b>	Commands you enter 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.

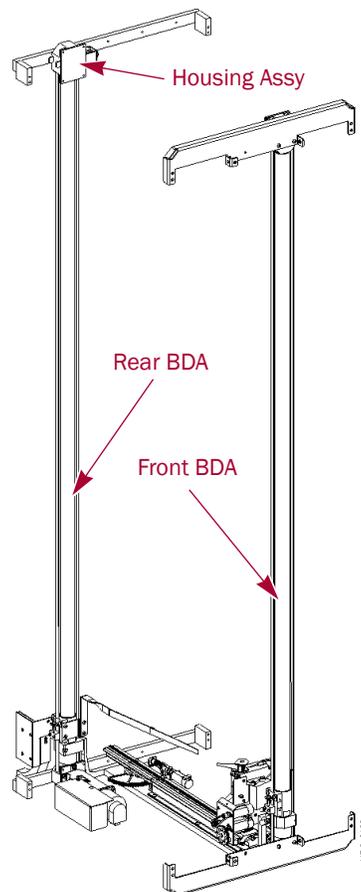
## Electrostatic Discharge Information

A discharge of static electricity can damage micro-circuitry or static-sensitive devices. To help prevent Electrostatic Discharge (ESD) damage, observe these and other standard ESD precautions:

- Make sure you are always properly grounded.
- Keep the work area free of non-conductive materials.
- Avoid touching pins, leads, or circuitry.

## Overview

A Z-Axis Belt Drive Assembly (BDA) consists of a pole with belts and pulleys that move one end of the Shuttle Assembly vertically inside the library. There are two BDAs in every library (front and rear), each with slightly different overall assemblies. Each BDA has a Housing Assembly at each end of the pole to control the belt movement and tension.



**Figure 1-1: Front and Rear BDAs with Shuttle Track Between**

This spare kit consists of the Upper and Lower Housing Assemblies that work on either BDA.



**IMPORTANT:** Overland Storage requires that the Housing Assemblies be removed and replaced by an Overland Storage authorized service provider. Improper installation may result in damage which voids existing warranties.

## Unpacking the Retrofit Kit



**CAUTION:** NEVER handle the BDA with your bare hands. Contamination from the oils on your skin can cause the BDA to stick. Always wear the provided cotton gloves.

Carefully unpack the new components noting how they are packed in the shipping carton. When this procedure is complete, repack the old parts in the same container for shipment back to Overland Storage. NEO 8000e

New screws are provided to replace the ones removed during this procedure.

Verify the kit includes these items:

Description	Bag #	Quan.	Where Used
Housing Assembly, Upper	-	1	Top of BDA
Housing Assembly, Lower	-	1	Bottom of BDA
Cotton gloves, pair	-	1	For handling the BDA at all times
Screws, M3x8mm flathead Phillips	1	2	FPA bottom rack cover trim pieces
Screws, M3x8mm panhead Phillips	2	9	8 ea. - two access panels; 2 ea. - drive divider
Screws, M4x6mm flathead Phillips	3	4	2 ea. - SPI bracket; 2 ea. - Flex Cable bracket
Screws, M4x8mm flathead Phillips	4	2	Top of FPA
Screws, M4x8mm panhead SEMS Phillips	5	6	4 ea. - top & bottom of Z-Axis; 2 ea. - bottom of FPA
Screws, M4x16mm panhead Phillips	6	4	Top & bottom of Z-Axis
Screw, 1/4" x 5/16" hexhead shoulder	7	1	Track assembly bracket
Washers, 1/4" flat	8	2	Track assembly bracket
Washers, M4 cup	9	4	Top & bottom of Z-Axis
Cable ties, 2.8"	10	3	Rotary Motor and Optical Sensor cables (includes 1 extra tie)
Cable tie mount, 0.5" x 0.5"		1	
Cable ties, 3.9"	11	4	Shuttle flex cable (2 extra ties)
Metal cable retaining clip	12	1	Shuttle flex cable
<i>NEO 8000e Spare Z-Axis Housing Assemblies Remove &amp; Replace Instructions (this document)</i>	-	1	To replace these parts

## Required Tools

These tools are required for the proper removal and replacement of the BDAs:

- #1 and #2 Phillips screwdrivers (with torque handle, if available)
- #2 stubby Phillips screwdriver
- 5/8" open-ended wrench
- 1/8" hex key
- 3mm ballhead hex key

- LOCTITE
- Torque Seal
- Flashlight

These tools are required only if you need to level the library:

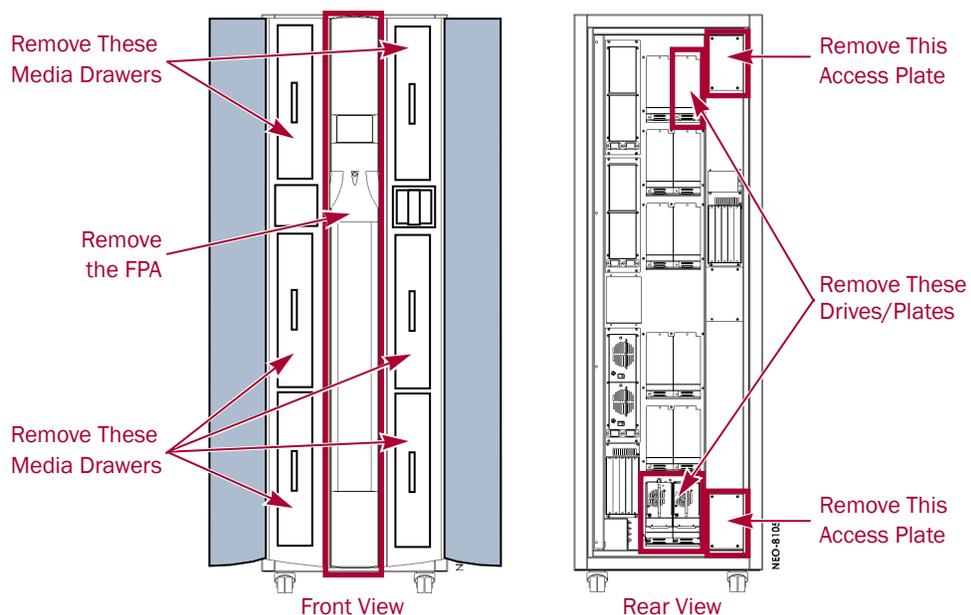
- 6" or 10" Spirit Level (15cm or 25cm)
- 10" Adjustable Wrench (260mm)

## Prepare the Library for Access

**WARNING:** This procedure requires the handling of large, heavy, awkward components. Use care when handling these components to prevent personal injury or damage to the components.

**AVERTISSEMENT:** Cette procédure nécessite la manipulation de grosses et lourdes, des composants difficiles. Faire preuve de prudence lors de la manipulation de ces composants pour éviter des blessures ou des dommages aux composants.

To simplify the replacement of the BDA, remove the Front Panel Assembly (FPA) and other key components to provide easier access or visibility to the inside of the library (Figure 1-2).



**Figure 1-2: Access Plates and Components That Need To Be Removed**

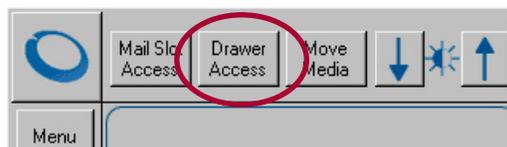
## Prepare Media Drawers for Removal

**WARNING:** Exercise care when removing the media drawers from the library units. Fully-loaded drawers weigh approximately 58 pounds (26.3 kg). Also, when the drawers are removed, the inner rails extend several inches beyond the back of the drawers. Tilting the drawers can result in the tapes falling out. Opening several drawers at once is a tip hazard.

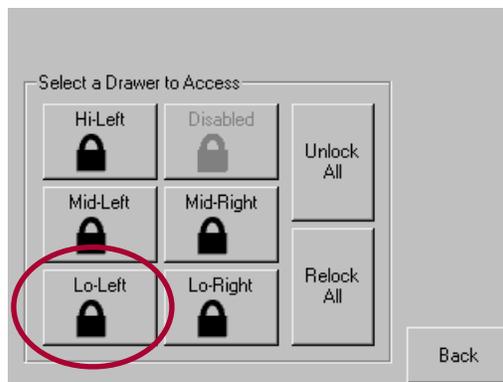
**AVERTISSEMENT:** Soyez prudent lorsque vous retirez les tiroirs de support des unités de bibliothèque. À pleine charge tiroirs pèsent environ 26,3 kg. En outre, lorsque les tiroirs sont enlevés, les rails intérieurs s'étendent au-delà de quelques centimètres à l'arrière des tiroirs. Inclinant les tiroirs peuvent se traduire par des bandes de tomber. Ouverture de plusieurs tiroirs à la fois un danger pointe.

1. **Label** all the drawers (so they can be returned to their correct positions).
2. Move the **library robotics** to the Home position on the floor:
  - a. At the front panel, select **Drawer Access** (and password, if active).

**NOTE:** If the library is partitioned, a partition selection options is displayed before the access option screen.



- b. Select the **Lo-Left drawer** to unlock it.



- c. Pull out the **drawer** a couple of inches and then push it all the way back in. The drawer automatically relocks.
    - d. Press **Back**.  
The library scans the drawer and then the robotics drops to the Home position on the floor with the picker facing the correct direction to continue.
3. At the front panel, select **Drawer Access** (and password, if active) > **Unlock All** to release all the media drawers.

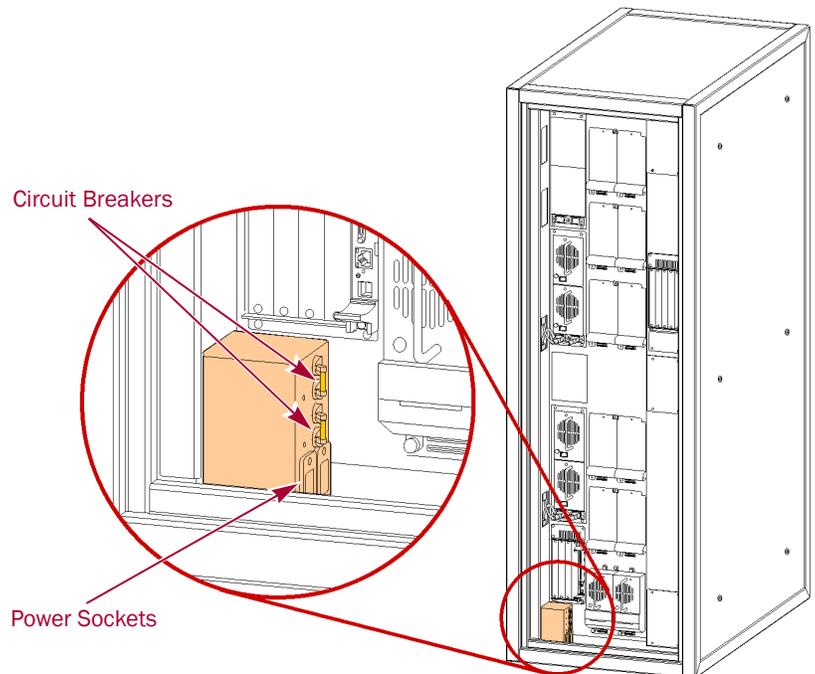
**NOTE:** If the library is partitioned, a partition selection options is displayed before the access option screen.

4. Pull **each drawer** out about 2 inches (5cm).

## Power Down the Library

- 
-  **WARNING:** Working with a powered NEO 8000e library may cause physical harm and severe damage to the unit's circuitry. Always power down a library before removing components.
-  **AVERTISSEMENT:** Travailler avec un moteur NEO 8000e bibliothèque peut causer des dommages physiques et de graves dommages aux circuits de l'appareil. Toujours mettre hors tension avant de retirer une bibliothèque des composants.
- 

1. At the rear, move the library circuit breakers to the **OFF** ("O") position (Figure 1-3).
2. **Remove** and retain the external power cords.



**Figure 1-3: Circuit Breaker and Power Cord Locations**

- 
-  **IMPORTANT:** The shuttle should now be positioned at the front of the track assembly with the track assembly on the bottom. If not, contact Overland Technical Support.
-

## Remove Media Drawers

1. Remove **each** media drawer:
  - a. Pull the **drawer** out until it stops.

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 **IMPORTANT:** If removing tapes minimize the weight on a partitioned library, be sure to keep them together on a secure surface and labeled so they can be returned to the same drawer.

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- b. Press the **drawer release** and slide the drawer out a couple of more inches.
  - c. Carefully remove the **drawer** and set it aside.
2. For safety, slide the **rails** back into the unit using the rear release button.

## Remove Panels for Access

The BDAs are removed through the front of the library. To access the Rear BDA screws, it is also necessary to remove some tape drives and panels from the library rear.

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 **CAUTION:** Always follow ESD protocols when working with or around the PWA printed circuit boards.

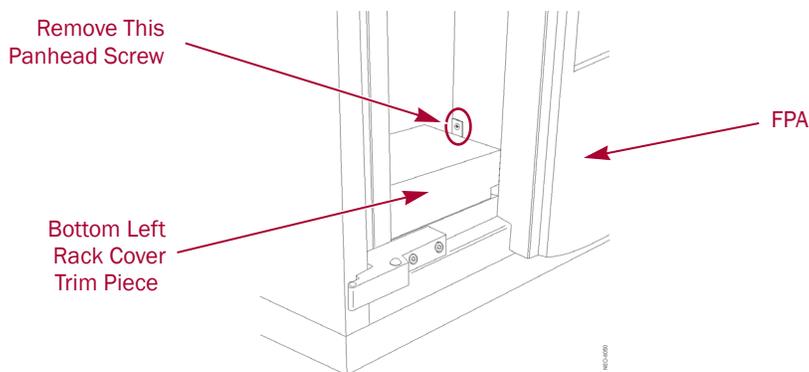
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### Front Panel Assembly Removal

1. For the older NEO 8000, remove the **trim pieces** at the drawer opening bottoms:

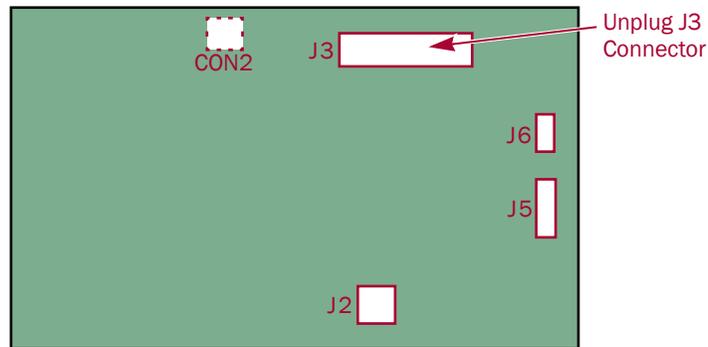
**NOTE:** On the newer NEO 8000e, the bottom FPA screws are located in front of the trim pieces.

- a. At the left bottom rack cover trim piece, remove the **screw** attaching it to the FPA (Figure 1-4).



**Figure 1-4: Remove the Bottom Left Rack Cover Trim**

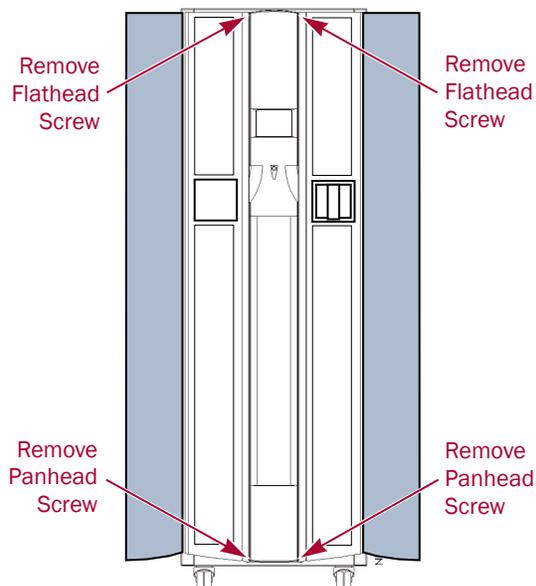
- b. Push the **trim piece** back and up to remove it.
  - c. Repeat **Steps a–b** for the **right** bottom trim piece.
2. On the back side of the FPA, remove the **J3 connector** at the top of the front panel PWA (Figure 1-5).



**Figure 1-5: Location of the J3 Front Panel PWA Connector (Rear View)**

3. Open the **retainer clamps** above the PWA to release the J3 cable from the FPA.
4. At the base of the FPA, remove the **panhead screws** on both sides (Figure 1-6).

 **IMPORTANT:** If you are keeping the old screws as backups, keep the top and bottom sets of screws separate. The **FLATHEAD** screws must be used at the **TOP** to prevent interference with the operation of the top drawers.

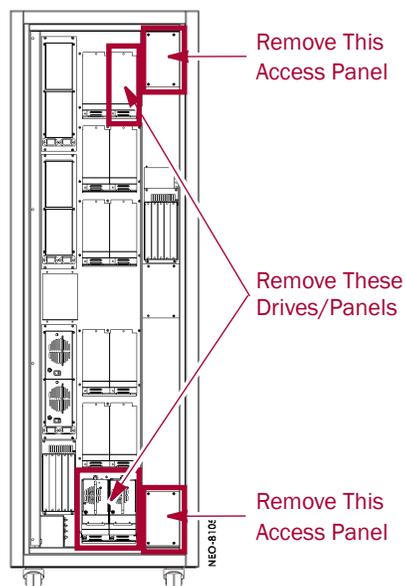


**Figure 1-6: Front Panel Assembly Screw Locations**

5. Supporting the FPA, remove the **flathead screws** at the top on each side.
6. Carefully remove the **FPA** and set it on a secure surface.

### Rear Access Panel Removal (for Rear BDA Only)

1. Facing the rear of the library (Figure 1-7), remove and retain:
  - The **top-right** access panel
  - The **bottom-right** access panel



**Figure 1-7: Remove Rear Panels or Drives for Rear BDA Replacement**

2. Remove the **drives** (or drive panels) for **drive bays 1, 2, and 11**.
3. Remove the **drive divider** between drive bays **1 and 2**.

## Next Step

Depending on which BDA is being retrofitted, proceed to one of these chapters:

- For the Front BDA, complete [Chapter 2, “Front BDA Retrofit.”](#)
- For the Rear BDA, complete [Chapter 3, “Rear BDA Retrofit.”](#)

This chapter focuses on retrofitting the Front BDA. To retrofit the Rear BDA, go to Chapter 3, “Rear BDA Retrofit.”

## Remove the Front BDA

1. Put on the supplied **cotton gloves**.

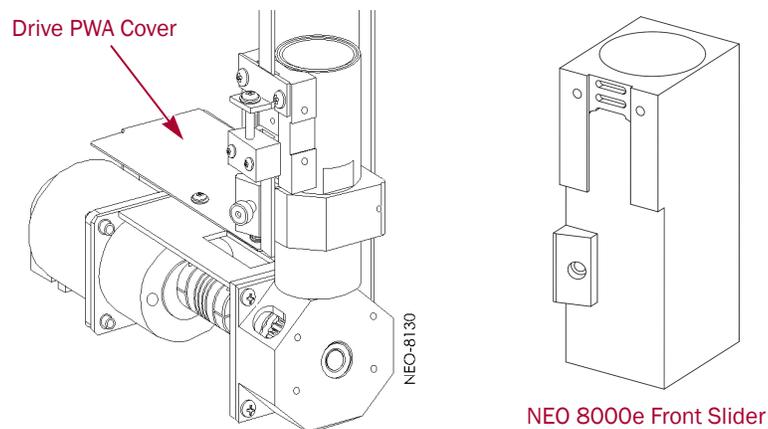
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 **IMPORTANT:** Always wear the supplied cotton gloves while working around the BDA to prevent contamination of the guide pole.

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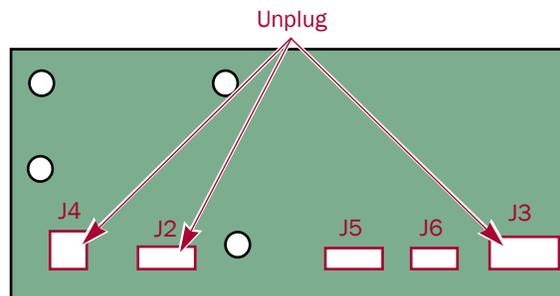
2. Disconnect the **BDA drive wiring**:

- a. At the front, remove and retain the **two screws** securing the Drive PWA cover (Figure 2-1).



**Figure 2-1: Front BDA Drive PWA Location**

- b. Unplug the **J2, J3, and J4** connectors from the Drive PWA (Figure 2-2).



**Figure 2-2: Unplug the J2, J3, and J4 Drive PWA Connectors**

- c. For protection, loosely reattach the **cover** the Drive PWA using the retained screws (don't fully tighten).
3. Detach the **track assembly bracket** from the BDA (Figure 2-3).
  - a. If necessary, push the **shuttle assembly** to the center of the track assembly to provide room.
  - b. Using the 1/8" hex key, remove and discard the **shoulder screw** and **washers**.
  - c. Set the **track assembly** on the floor of the library.

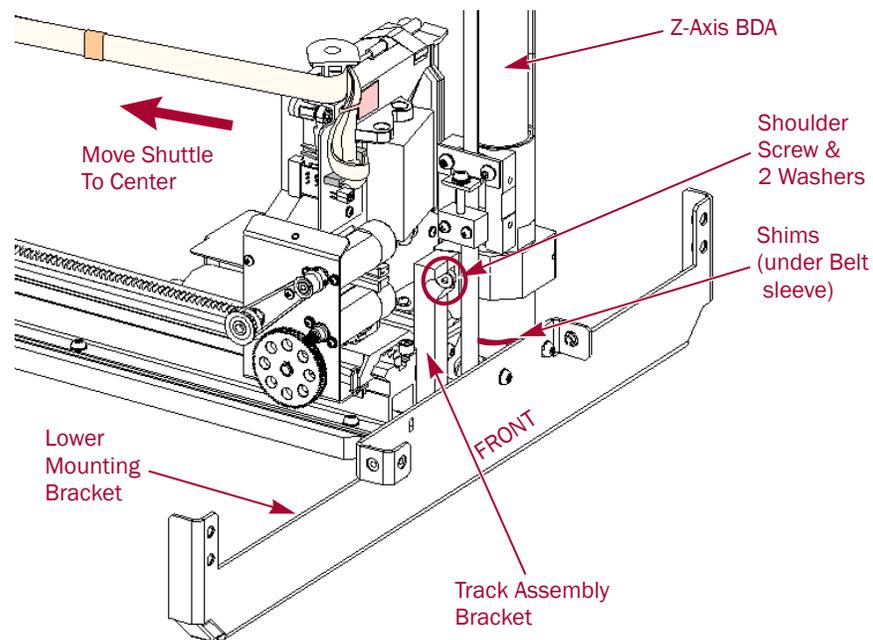


Figure 2-3: Location of Key Items

4. Remove the **two screws** holding the BDA to the **lower** mounting bracket.

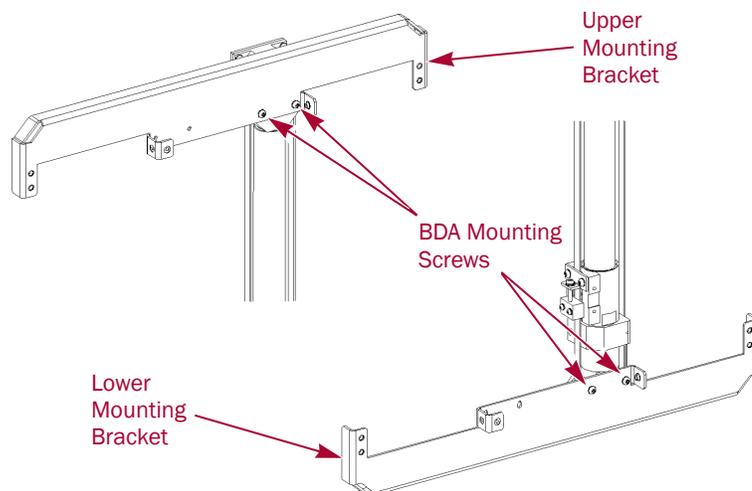


Figure 2-4: UHA and LHA Mounting Screws

5. Supporting the BDA while wearing the gloves, remove the **two screws** from the **upper** mounting bracket.

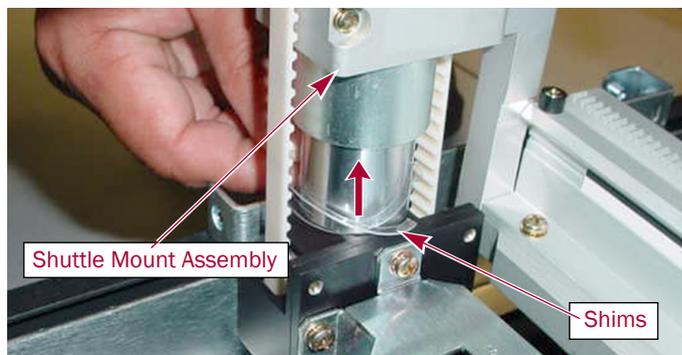
6. Remove the BDA by moving the **top** of the BDA to the **left**, and then move the **bottom** slightly to the **right** (to clear the mounting brackets) and then toward the rear.
7. Lay the BDA on a **clean, secure** surface.

## Change the Housing Assemblies

### Remove the Belt

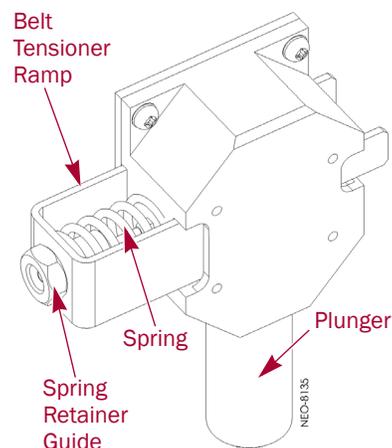
1. Slide the Shuttle Mount Assembly (SMA) up the BDA. If **any shims** are located under the SMA (Figure 2-5 on page 2-15), carefully slide them up behind the assembly.

 **CAUTION:** Keep all the shims together and safe. If a shim is damaged or lost, the library will no longer function correctly.



**Figure 2-5: Slide Shims up the BDA**

2. At the top Pulley Spring Tensioner assembly (Figure 2-6), hand tighten the **Spring Retainer Guide** until it is flush against the Belt Tensioner Ramp.



**Figure 2-6: Top Pulley Spring Tensioner**

3. Using a 5/8" wrench, continue tightening the **Spring Retainer Guide** just until the spring is fully compressed.

 **CAUTION:** Do not overtighten the spring. Stop when the gaps between the coils are no longer visible.

4. At the SMA, carefully and accurately **measure the gap** between the Fixed belt clamp and the Tensioner belt clamp (Figure 2-7).

NOTE: The gap measurement is needed to preset the belt tension during the re-installation of the belt.

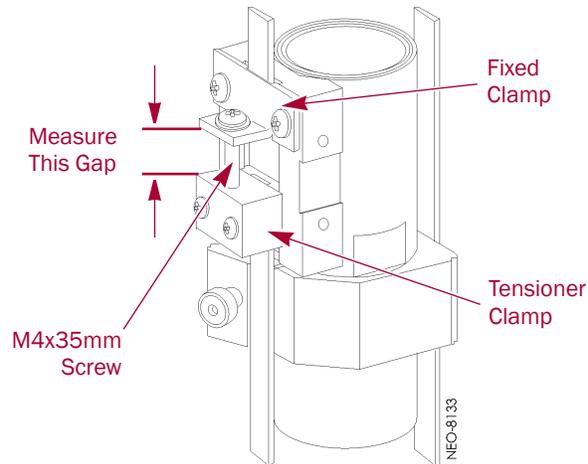


Figure 2-7: Shuttle Mount Assembly on BDA

5. Remove the long vertical M4x35mm **screw and washer** releasing the tension on the belt clamps.
6. Release the **belt**: (Figure 2-8).
  - a. Remove the **two screws** from the bottom Tensioner clamp.
  - b. Remove the **Tensioner clamp**.
  - c. Remove the **two screws** from the top Fixed clamp.
  - d. Remove the **Fixed clamp**.

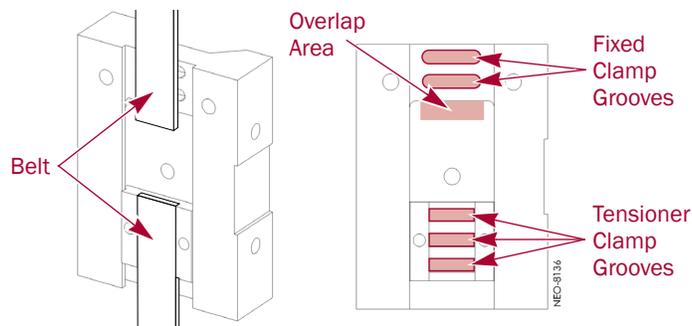


Figure 2-8: Belt Backplate Showing Clamp Grooves

7. Remove the **belt** from the BDA.



**CAUTION:** Once the belt is removed, the housing assemblies are no longer secured to the pole and can easily slide off.

With the assemblies secure, pull the **loose ends** of the belt out through the housing assemblies.

## Replace the Upper Housing Assembly (UHA)

 **IMPORTANT:** Because of different BDA guide pole diameters, you must use the existing plunger from the old UHA to attach the new UHA to the pole. **ALWAYS WEAR GLOVES** when working with the BDA pole.

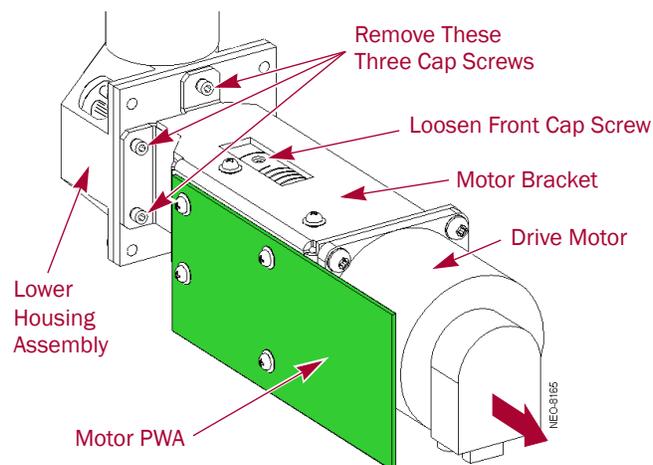
1. Slide the upper **UHA** off the BDA pole.
2. Remove the **plunger** from the bottom of the old UHA by removing and retaining the Phillips screw.
3. Using the retained Phillips screw, attach the old **plunger** to the new UHA.
4. Using the same orientation as the Lower Housing Assembly (LHA), slide the new UHA onto the **BDA pole**.

**NOTE:** The Mounting Bracket holes for both the UHA and the LHA must be on the same side.

## Replace the Lower Housing Assembly (LHA)

 **IMPORTANT:** Because of different BDA guide pole diameters, you must use the existing plunger from the old LHA to attach the new LHA to the pole. **ALWAYS WEAR GLOVES** when working with the BDA pole.

1. Slide the **LHA** (with motor) off the BDA pole.
2. Remove the **motor assembly** from the LHA:
  - a. Rotate the drive's **helical coupling** until the cap screws are visible.
  - b. Using a 7/64" hex key, loosen (but don't remove) the **front cap screw** (Figure 2-9).



**Figure 2-9: Location of the Drive Motor Screws**

- c. Using a 3mm ballhead hex key, remove and retain the **three cap screws** holding the motor bracket to the LHA.
  - d. Slide the **LHA** off.
3. Remove the **plunger** from the bottom of the old LHA by removing and retaining the Phillips screw.
4. Using the retained Phillips screw, attach the **plunger** to the new LHA.

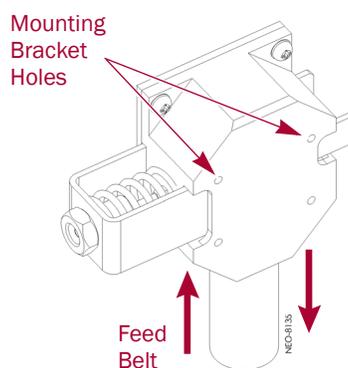
5. Attach the new LHA onto the **motor assembly**:
  - a. Slide the LHA onto the **coupling**.  
Make sure the shaft flat side is properly aligned under the cap screws.
  - b. Using a 3mm ballhead hex key, attach the motor bracket to the **new LHA** using the three retained cap **screws**.
  - c. Using a 7/64" hex key, tighten the **front cap screw** on the drive's helical coupling.
6. Using the same orientation as the UHA, slide the new LHA onto the **BDA pole**.

**NOTE:** The Mounting Bracket holes for both the UHA and the LHA must be on the same side.

## Reinstall the Belt

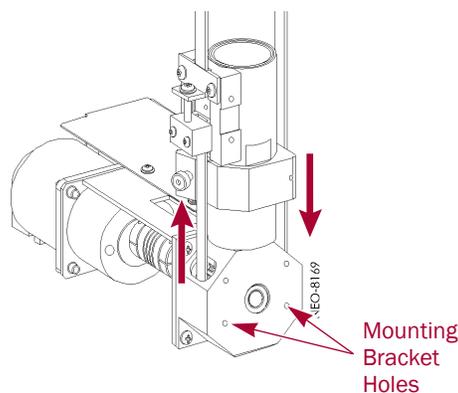
1. Feed the **belt** through the housing assemblies:
  - a. Starting with the UHA, insert the belt in the **hole** under the Tensioner Ramp and push it through until it comes out the hole on the other side (Figure 2-10).

**NOTE:** Remember that the belt teeth face inward toward the BDA.



**Figure 2-10: Belt Feed Through the UHA**

- b. Pull the end coming out of the UHA down to the LHA and insert it in the **LHA hole** opposite the belt clamp (Figure 2-11).



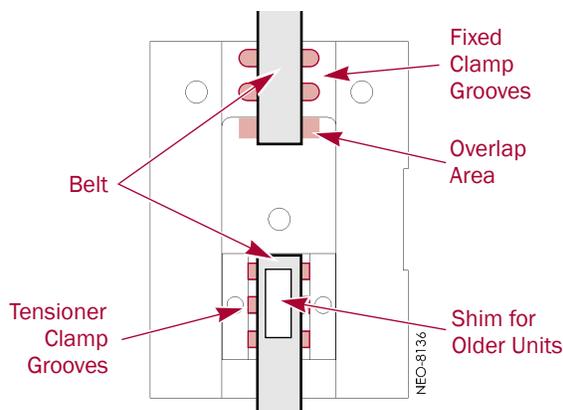
**Figure 2-11: Belt Feed Through the LHA**

- c. Push the **belt** through the LHA until it comes out the hole on the other side.

- Depending on the style of bracket you have, do **one** of the following:

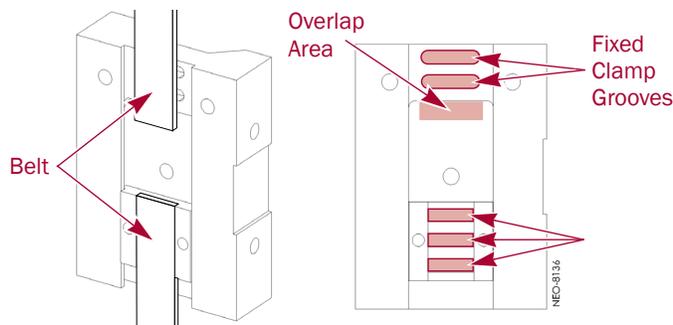
**NOTE:** Units with serial numbers below 1R542nnnnn have an older style of bracket and require a shim between the belt and the Tensioner clamp.

- Newer brackets**—place the lower end of the belt into the three Tensioner clamp grooves and, using the retained screws, reattach the clamp.
- Older brackets**—place the lower end of the belt into the three Tensioner clamp grooves, place the **shim spacer** on top of the belt (**Figure 2-12**) and, using the retained screws, reattach the clamp.



**Figure 2-12: Attaching the New Belt to the Tensioner Clamp**

- Place the upper end of the belt into the **two Fixed clamp grooves** making sure the last tooth overlaps beyond the grooves.



**Figure 2-13: Belt Backplate Showing Clamp Grooves**

There should be two teeth in the grooves and one tooth in the overlap area.

- Using the retained screws, reattach the **Fixed clamp**.
- Insert the **Tensioner clamp** into the SMA Backplate.
- Using the retained long M4x35mm **screw and washer**, reconnect the two clamps and tighten them until the previously measured gap is obtained.
- Slide the **SMA and shims** down until they touch the LHA.
- At the UHA, loosen the **Spring Retainer Guide** all the way out.

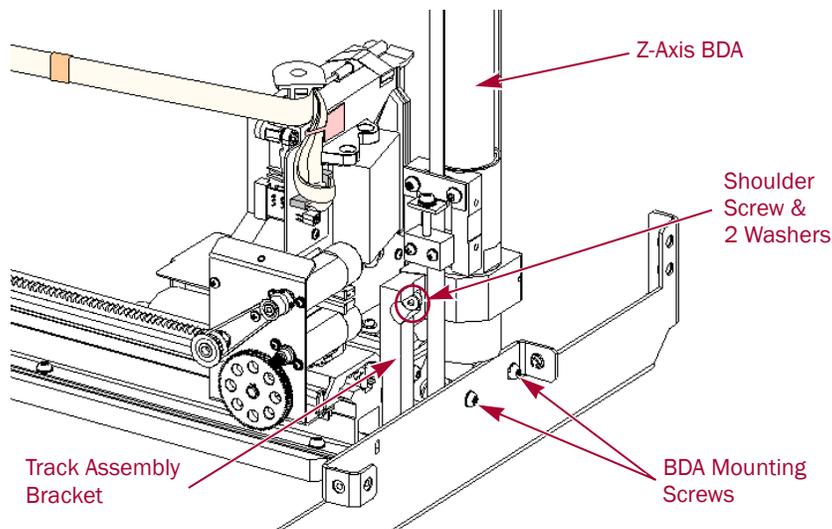
## Reinstall the Front BDA

 **IMPORTANT:** Always wear the supplied cotton gloves while working around the BDA to prevent contamination of the guide pole.

1. Holding the top of the BDA to the left and the bottom slightly to the right, **insert the assembly** into the library.
2. Supporting the **BDA**, secure it in the library as follows:

 **CAUTION:** Use care in installing the new screws that hold the BDA. They are critical to the positioning and alignment of the BDA. **DO NOT STRIP THE THREADS!**

- a. Use **two new M4x8mm panhead SEMS screws** to loosely (fingertight) reattach it to the **top** mounting bracket.
  - b. Use **two new M4x8mm panhead SEMS screws** to loosely (fingertight) reattach the BDA to the **bottom** mounting bracket.
  - c. Tighten all **four BDA screws** (9 lbs. torque).
  - d. Apply **torque seal** to all four BDA screws.
3. Reattach the **track assembly** to the BDA:
    - a. Be sure there are **two 1/4" washers** on the new bracket shoulder screw.
    - b. Apply **LOCTITE** to the threads of the **new 1/4" x 5/16" shoulder screw**.
    - c. Using the 1/8" hex key and the new screw and washers, reattach the **track assembly bracket** to the BDA ([Figure 2-14](#)).



**Figure 2-14: Location of the 1/8" Hex Shoulder Screw**

4. Attach the Drive PWA **cables** to the new BDA:
  - a. Remove and retain the **two screws** on the **Drive PWA cover**, and set it aside.

- b. On the Drive PWA, reattach the **J2**, **J3**, and **J4** cables (Figure 2-15).

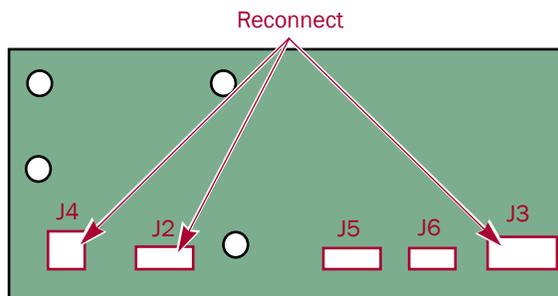


Figure 2-15: Reattach the J2, J3, and J4 Drive PWA Connectors

- c. Use the **two retained screws** to reattach the Drive PWA cover.
5. Inspect and, if necessary, very carefully clean the **BDA guide pole** using a clean, dry, lint-free cloth.
- To clean the pole, wrap the cloth around the pole (Figure 2-16) and holding the ends together, slid it up and down.

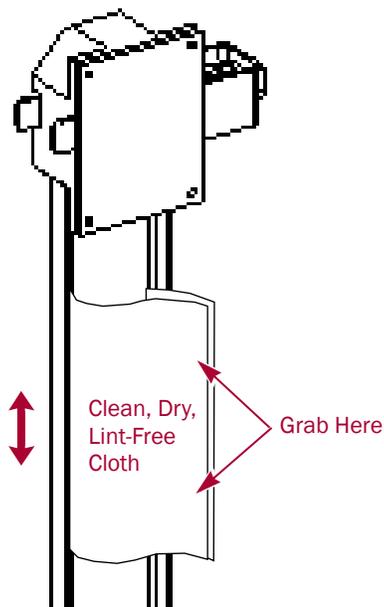


Figure 2-16: Wiping the BDA Pole with Clean, Dry, Lint-Free Cloth



**CAUTION:** Fingerprints and other contaminants can cause premature failure of the assembly.

## Next Step

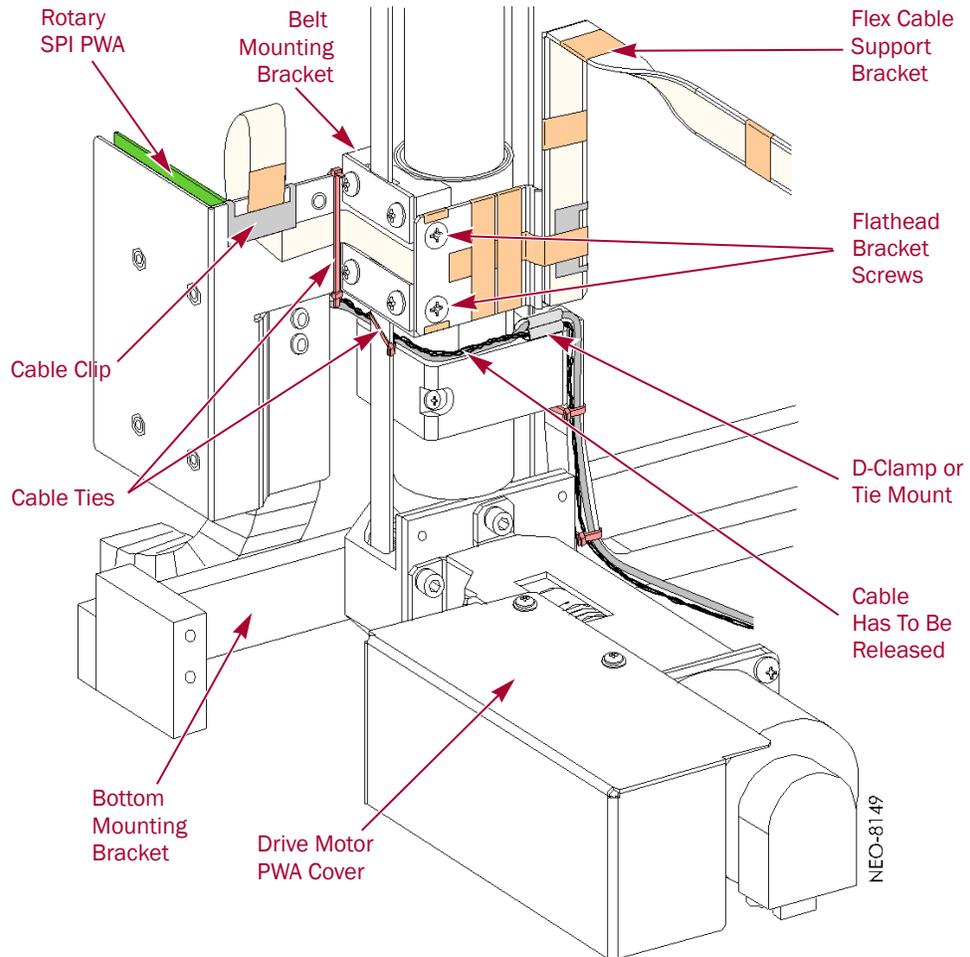
Proceed to [Chapter 4, "Reassemble the Library."](#)



This chapter focuses on retrofitting the rear BDA. To retrofit the front BDA, go to [Chapter 2, “Front BDA Retrofit.”](#)

## Remove the Rear BDA

The Rotary SPI PWA and Flex Cable Support brackets need to be removed from the rear BDA before it can be replaced ([Figure 3-1](#)).



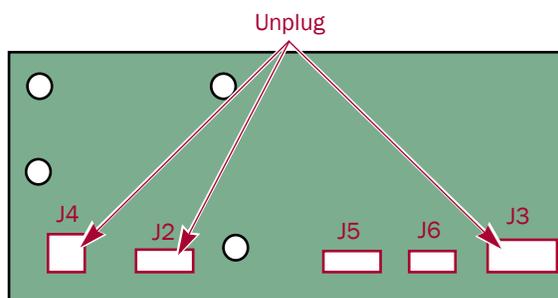
**Figure 3-1: Base of Rear BDA and Connected Components**

- Put on the supplied **cotton gloves**.



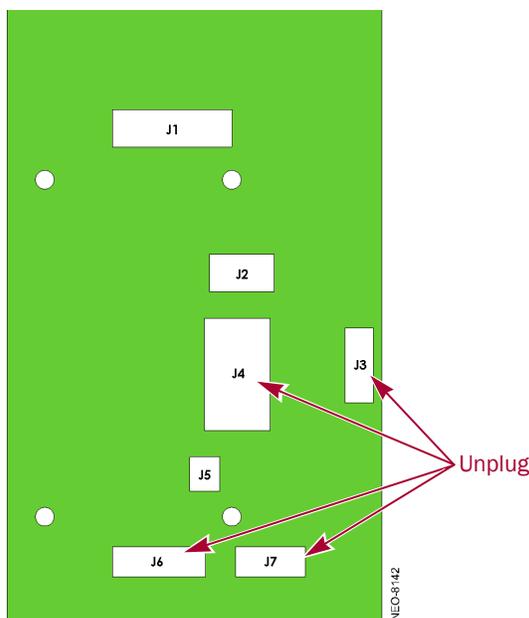
**IMPORTANT:** Always wear the supplied cotton gloves while working around the BDA to prevent contamination of the guide pole.

- Disconnect the **BDA drive**:
  - At the rear, remove and retain the **two screws** on the rear Drive PWA cover.
  - Unplug the **J2, J3, and J4** connectors from the Drive PWA (Figure 3-2).



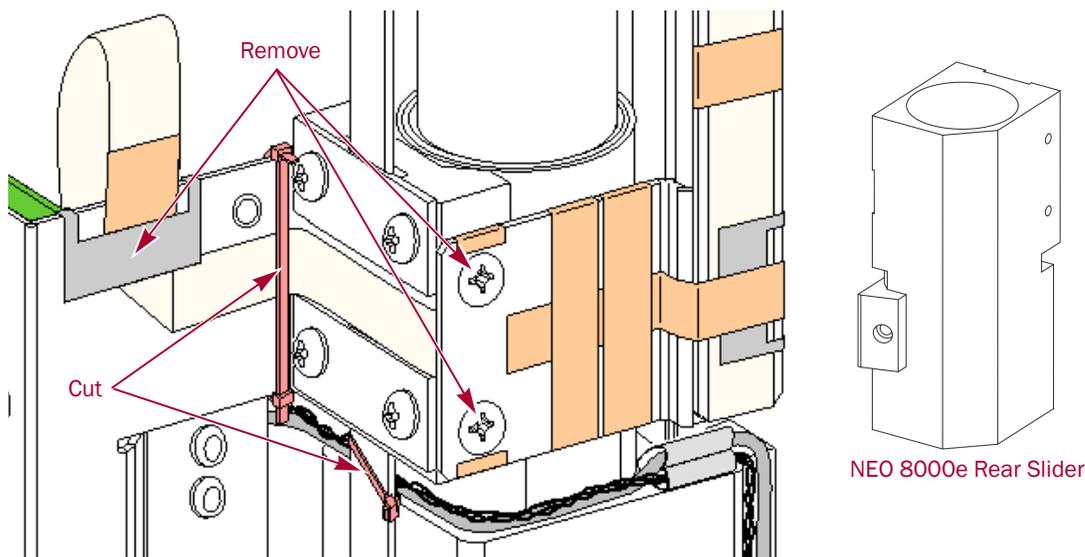
**Figure 3-2: Unplug the J2, J3, and J4 Drive PWA Connectors**

- Reattach the **cover** the Drive PWA using the retained screws.
- Disconnect all **BDA cabling**:
    - At the rear of the BDA base, unplug the **J3, J4, J6, and J7** connectors from the Rotary SPI PWA (Figure 3-3).



**Figure 3-3: Location of the Rotary SPI PWA Connectors**

- b. Remove the **cable clip** and cut the **two cable ties** holding the Shuttle Signal cable to the Rotary SPI PWA mounting bracket.

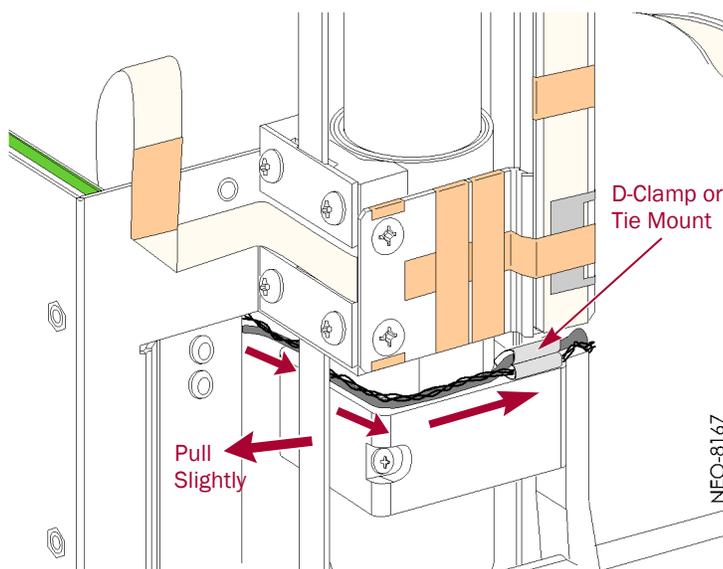


**Figure 3-4: Clip, Cable Ties, and Screws to be Removed**

- c. From the front, remove the **two screws** holding the Flex Cable Support bracket to the SMA.

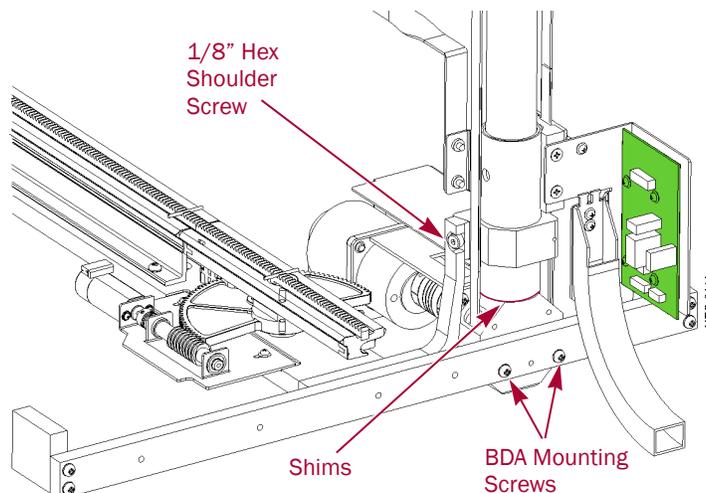
**CAUTION:** Carefully lay the bracket and cables down on the bottom of the library. DO NOT BEND the flex cable.

- d. From the rear, remove the **two screws** holding the Rotary SPI PWA mounting bracket to the SMA.  
Lay the bracket and cables down on the bottom of the library.
- e. Carefully remove the **Rotary Motor and Optical Sensor cables** from under the SMA and move them to the front removing them from the D-clamp or cutting the cable tie from the mount.



**Figure 3-5: Remove the Rotary Motor Cable and Optical Sensor Cable**

4. Detach the **track assembly bracket** from the BDA (**Figure 3-6**).
  - a. If necessary, push the **shuttle assembly** to the center of the track assembly to provide room.
  - b. Using the 1/8" hex key, remove and discard the **shoulder screw** and **washers**.
  - c. Set the **track assembly** on the floor of the library.



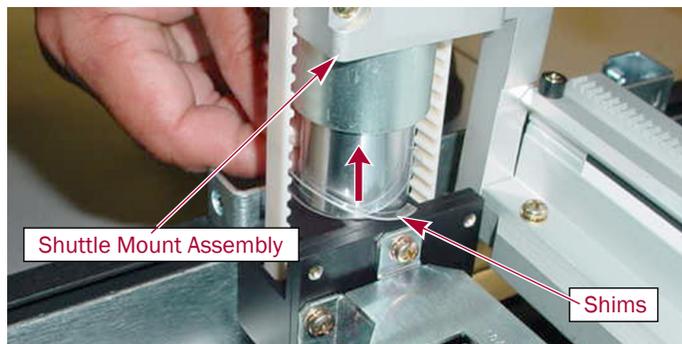
**Figure 3-6: Rear View of Rear BDA and Track Assembly**

5. From the rear, remove the **two screws** holding the BDA to the **bottom** mounting bracket.
6. Supporting the BDA while wearing cotton gloves, remove the **top two screws** from the **upper** mounting bracket.
7. Tilting the BDA to clear all the internal components, carefully remove the **BDA assembly** from the library.
8. Lay the BDA on a **clean, secure** surface.

## Change the Housing Assemblies

### Remove the Belt

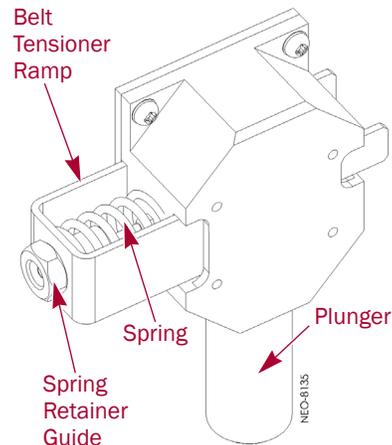
1. Slide the Shuttle Mount Assembly up the BDA. If **any shims** are located under the SMA (**Figure 3-7**), carefully slide them up behind the assembly.



**Figure 3-7: Slide Shims up the BDA**

**CAUTION:** Keep all the shims together and safe. If a shim is damaged or lost, the library will no longer function correctly.

- At the top Pulley Spring Tensioner assembly (Figure 3-8), hand tighten the **Spring Retainer Guide** until it is flush against the Belt Tensioner Ramp.



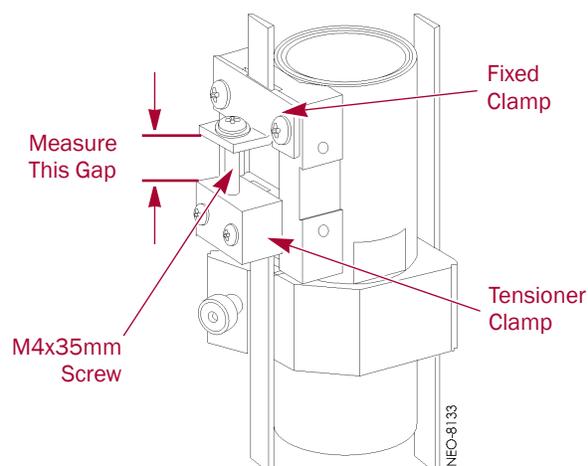
**Figure 3-8: Top Pulley Spring Tensioner**

- Using a 5/8" wrench, continue tightening the **Spring Retainer Guide** just until the spring is fully compressed.

**CAUTION:** Do not overtighten the spring. Stop when the gaps between the coils are no longer visible.

- At the SMA, carefully and accurately **measure the gap** between the Fixed belt clamp and the Tensioner belt clamp (Figure 3-9).

**NOTE:** The gap measurement is needed to preset the belt tension during the re-installation of the belt.



**Figure 3-9: Shuttle Mount Assembly on BDA**

- Remove the long vertical M4x35mm **screw and washer** releasing the tension on the belt clamps.

6. Release the **belt**: (Figure 3-10).
  - a. Remove the **two screws** from the bottom Tensioner clamp.
  - b. Remove the **Tensioner clamp**.
  - c. Remove the **two screws** from the top Fixed clamp.
  - d. Remove the **Fixed clamp**.

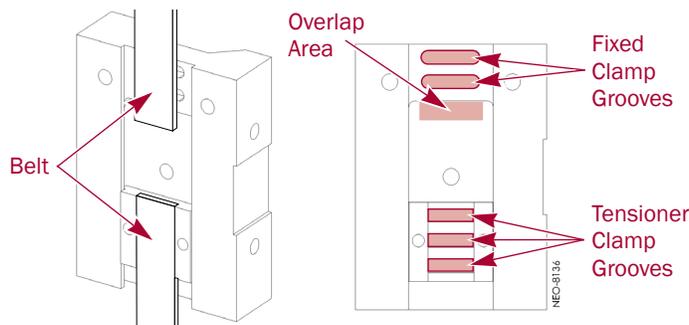


Figure 3-10: Clamp Grooves on the Backplate

7. Remove the **belt** from the BDA.



**CAUTION:** Once the belt is removed, the housing assemblies are no longer secured to the pole and can easily slide off.

With the assemblies secure, pull the **loose ends** of the belt out through the housing assemblies.

## Replace the New Upper Housing Assembly (UHA)



**IMPORTANT:** Because of different BDA guide pole diameters, you must use the existing plunger from the old UHA to attach the new UHA to the pole. **ALWAYS WEAR GLOVES** when working with the BDA pole.

1. Slide the upper **UHA** off the BDA pole.
2. Remove the **plunger** from the bottom of the old UHA by removing and retaining the Phillips screw.
3. Using the retained Phillips screw, attach the old **plunger** to the new UHA.
4. Using the same orientation as the Lower Housing Assembly (LHA), slide the new UHA onto the **BDA pole**.

**NOTE:** The Mounting Bracket holes for both the UHA and the LHA must be on the same side.

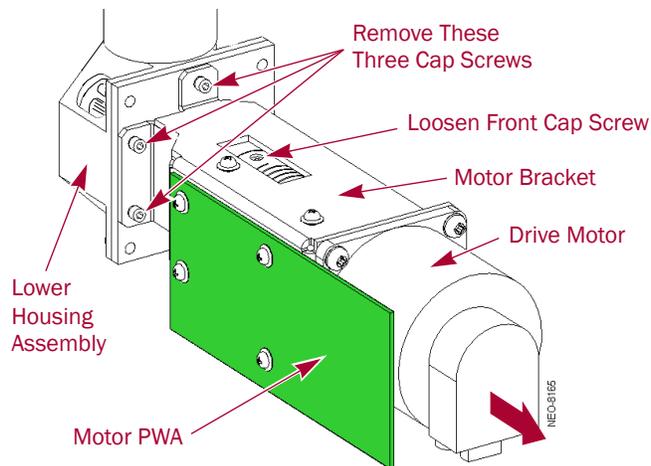
## Install the New Lower Housing Assembly (LHA)



**IMPORTANT:** Because of different BDA guide pole diameters, you must use the existing plunger from the old LHA to attach the new LHA to the pole. **ALWAYS WEAR GLOVES** when working with the BDA pole.

1. Slide the **LHA** (with motor) off the BDA pole.

2. Remove the **motor assembly** from the LHA:
  - a. Rotate the drive's **helical coupling** until the cap screws are visible.
  - b. Using a 7/64" hex key, loosen (but don't remove) the **front cap screw** (Figure 3-11).



**Figure 3-11: Location of the Drive Motor Screws**

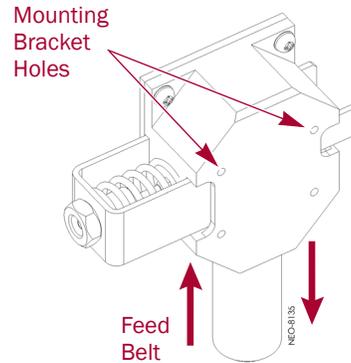
- c. Using a 3mm ballhead hex key, remove and retain the **three cap screws** holding the motor bracket to the LHA.
  - d. Slide the **LHA off**.
3. Remove the **plunger** from the bottom of the old LHA by removing and retaining the Phillips screw.
4. Using the retained Phillips screw, attach the **plunger** to the new LHA.
5. Attach the new LHA onto the **motor assembly**:
  - a. Slide the LHA onto the **coupling**.  
Make sure the shaft flat side is properly aligned under the cap screws.
  - b. Using a 3mm ballhead hex key, attach the motor bracket to the **new LHA** using the three retained cap **screws**.
  - c. Using a 7/64" hex key, tighten the **front cap screw** on the drive's helical coupling.
6. Using the same orientation as the UHA, slide the new LHA onto the **BDA pole**.

**NOTE:** The Mounting Bracket holes for both the UHA and the LHA must be on the same side.

## Reinstall the Belt

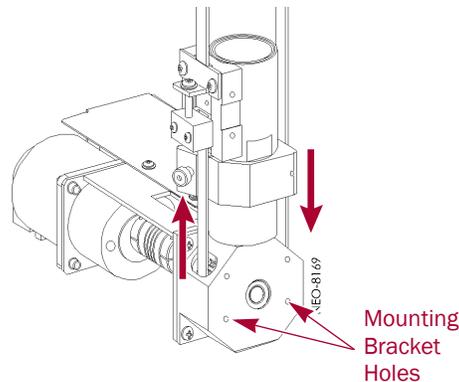
1. Feed the **belt** through the housing assemblies:
  - a. Starting with the UHA, insert the belt in the **hole** under the Tensioner Ramp and push it through until it comes out the hole on the other side (Figure 3-12 on page 3-30).

**NOTE:** Remember that the belt teeth face inward toward the BDA.



**Figure 3-12: Belt Feed Through the UHA**

- b. Pull the end coming out of the UHA down to the LHA and insert it in the **LHA hole** opposite the belt clamp (Figure 3-13).

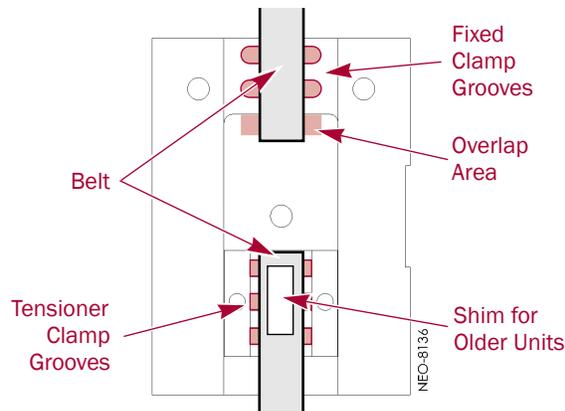


**Figure 3-13: Belt Feed Through the LHA**

- c. Push the **belt** through the LHA until it comes out the hole on the other side.
2. Depending on the style of bracket you have, do **one** of the following:

**NOTE:** Units with serial numbers below 1R542nnnnn have an older style of bracket and require a shim between the belt and the Tensioner clamp.

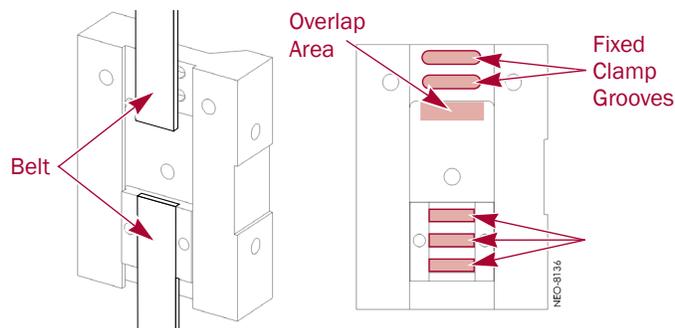
- **Newer brackets**—place the lower end of the belt into the three Tensioner clamp grooves and, using the retained screws, reattach the clamp.
- **Older brackets**—place the lower end of the belt into the three Tensioner clamp grooves, place the **shim spacer** on top of the belt (Figure 3-14 on page 3-31) and, using the retained screws, reattach the clamp.



**Figure 3-14: Attaching the New Belt to the Tensioner Clamp**

NOTE: Units with serial numbers below 1R542nnnnn have an older style of bracket and require a shim between the belt and the Tensioner clamp.

- Place the upper end of the belt into the **two Fixed clamp grooves** making sure the last tooth overlaps beyond the grooves.



**Figure 3-15: Belt Backplate Showing Clamp Grooves**

There should be two teeth in the grooves and one tooth in the overlap area.

- Using the retained screws, reattach the **Fixed clamp**.
- Insert the **Tensioner clamp** into the SMA Backplate.
- Using the retained long M4x35mm **screw and washer**, reconnect the two clamps and tighten them until the previously measured gap is obtained.
- Slide the **SMA and shims** down until they touch the LHA.
- At the UHA, loosen the **Spring Retainer Guide** all the way out.

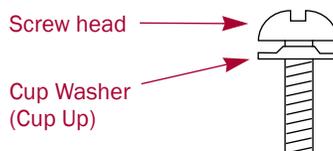
## Reinstall the Rear BDA

 **IMPORTANT:** Always wear the supplied cotton gloves while working around the BDA to prevent contamination of the guide pole.

1. Tilting the BDA to clear all the internal components, carefully insert the **rear BDA** into the library.
2. Supporting the **BDA**, secure it in the library as follows:

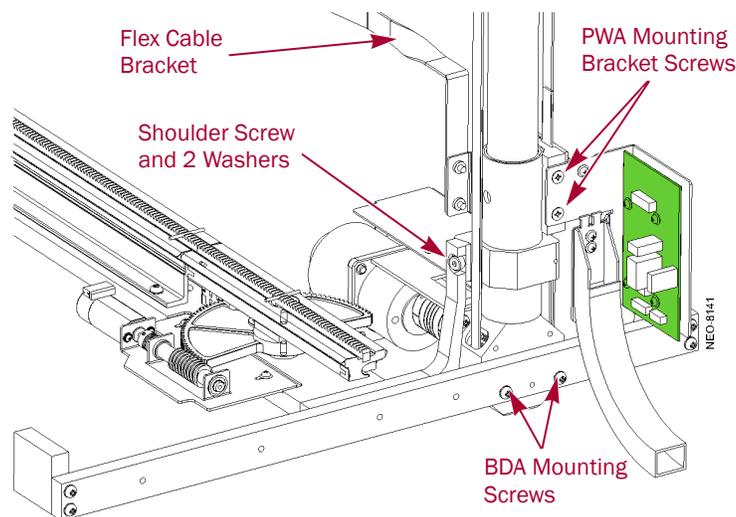
 **CAUTION:** Use care in installing the new screws that hold the BDA. They are critical to the positioning and alignment of the BDA. **DO NOT STRIP THE THREADS!**

- a. Use **two new M4x16mm panhead screws** with **M4 cup washers** to loosely (fingertight) reattach it to the **top** mounting bracket.  
If needed, insert a screw into the mounting bracket and move the BDA up to it.



**Figure 3-16: Rear BDA Screw and Cup Washer Assembly (Cup Up)**

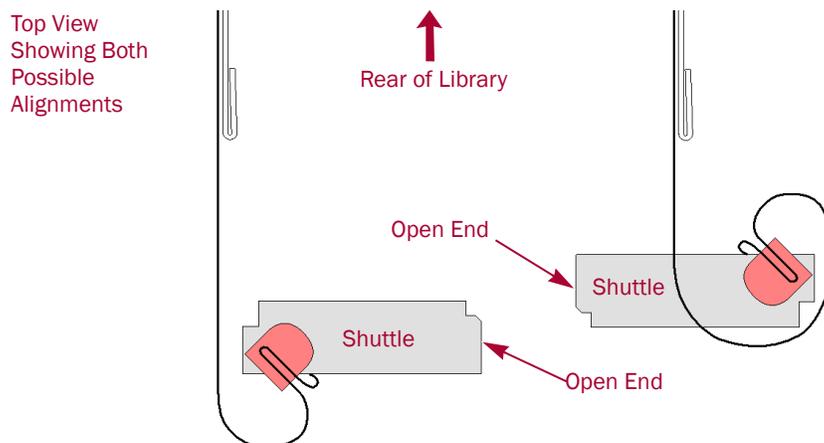
- b. Use **two new M4x16mm panhead screws** with **M4 cup washers** to loosely (fingertight) reattach the BDA to the **bottom** mounting bracket.
  - c. Tighten all **four BDA screws** (9 lbs. torque).
  - d. Apply **torque seal** to all four BDA screws.
3. Reattach the **track assembly**:
    - a. Be sure there are **two 1/4" washers** on the new bracket shoulder screw.
    - b. Apply **LOCTITE** to the threads of the **new 1/4" x 5/16" shoulder screw**.
    - c. Using the 1/8" hex key and the new screw and washers, reattach the **track assembly bracket** to the BDA (**Figure 3-17**).



**Figure 3-17: Reinstall Track Assembly to New Rear BDA**

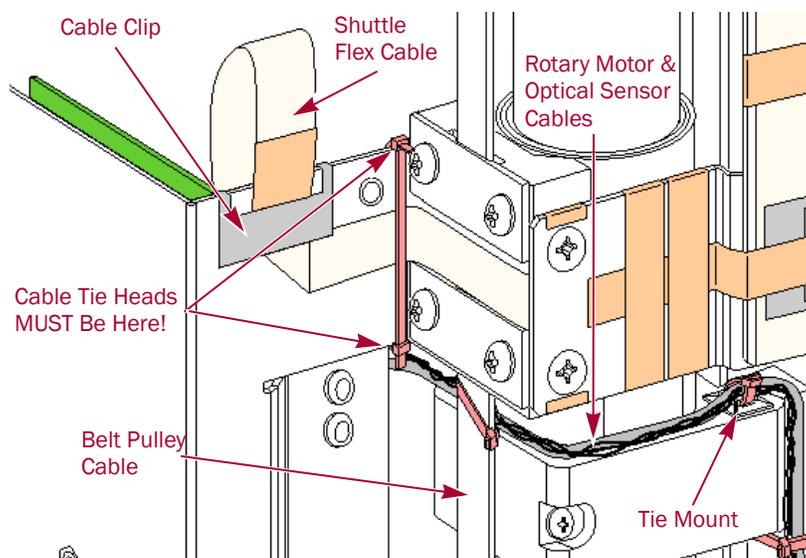
- d. From the rear, use the **two new M4x6mm flathead screws** to reattach the Rotary SPI PWA mounting bracket to the SMA.
- e. From the front, use the **two new M4x6mm flathead screws** to reattach the Flex Cable support bracket to the SMA.

**CAUTION:** Verify that the Flex cable is straight and correctly wrapped about the shuttle spooler before securing it to the bracket (Figure 3-18).



**Figure 3-18: Verify Flex Cable Wrapped Correctly Around Shuttle Spooler**

4. Reattach the cables:
  - a. Carefully route the **Rotary Motor and Optical Sensor cables** under the SMA and to the rear under the belt.
  - b. Using a **new 2.8" cable tie** to attach them to the tie mount on the new BDA.
  - c. Loop a **new 2.8" cable tie** around the belt pulley cable (where it attaches to the SMA) and **Rotary Motor and Optical Sensor cables** (Figure 3-19).

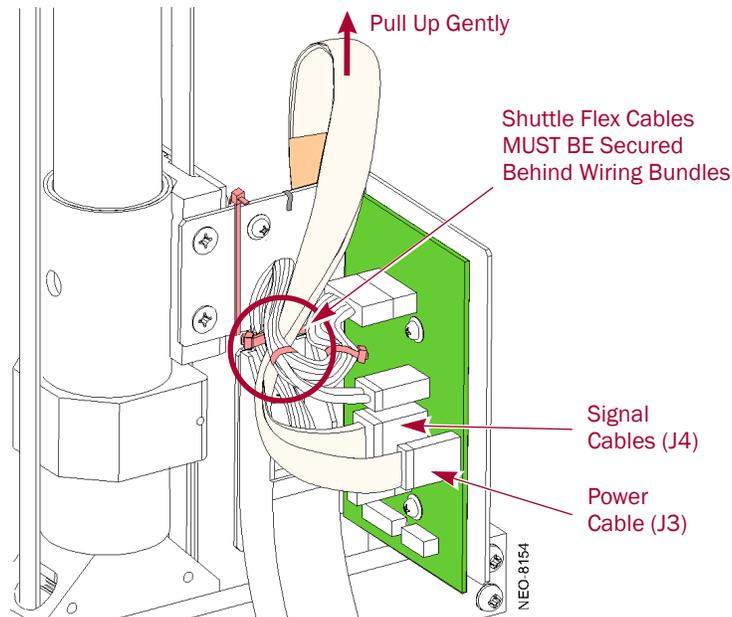


**Figure 3-19: Securing the Cables with New Cable Ties**

- d. Loop a **new cable tie assembly (two 3.9" ties)** around the Shuttle Signal cable and the SMA to secure the cable.

 **IMPORTANT:** For the Shuttle Signal cable, stick one 3.9" cable tie in the head of the other tie until it just connects. Position the head of one tie at the top and the other tie at the bottom. Insert the second tie into the other head. Keeping the heads in position so that the Shuttle Signal cable is flush against the bracket, tighten the ties.

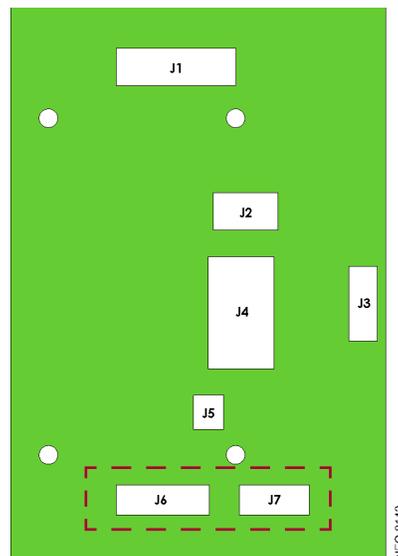
- e. Reposition the **Shuttle Flex cable** on the front of the Rotary SPI PWA mounting bracket and reattach it using the **new cable clip**.
5. With the Flex cables cleanly looped over the bracket, attach the cables to the **Rotary SPI** (Figure 3-20):



**Figure 3-20: Reattach Cables to Rotary SPI PWA**

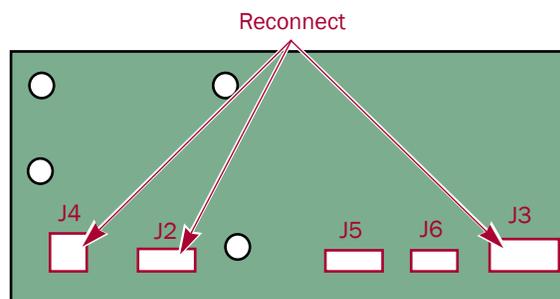
- a. Run the Shuttle Flex cables **behind the Power wiring** to hold them in place.
- b. Connect the **Signal Controller cable** to **J4**.
- c. Connect the shuttle **Power cable** to **J3**.
- d. Gently pull the cable **loop** up until the cables are fully inside the wiring bundles.

6. Reattach the **J6** and **J7** connectors to the appropriate sockets.



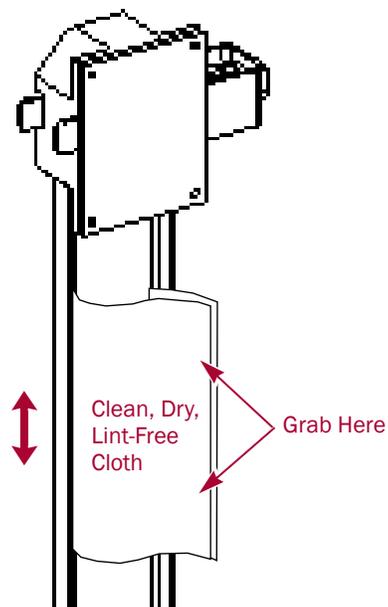
**Figure 3-21: Reattach J6 and J7 Cables**

7. Reattach the Drive PWA **cables** to the new BDA:
  - a. Remove and retain the **two screws** on the **Drive PWA cover**, and set it aside.
  - b. On the Drive PWA, reattach the **J2**, **J3**, and **J4** cables ([Figure 3-22](#)).



**Figure 3-22: Reattach the J2, J3, and J4 Drive PWA Connectors**

- c. Use the **two retained screws** to reattach the Drive PWA cover.
8. Inspect and clean, if necessary, the **BDA guide pole** very carefully using a clean, dry, lint-free cloth.  
To clean the pole, wrap the cloth around the pole ([Figure 3-23 on page 3-36](#)) and holding the ends together, slid it up and down.



**Figure 3-23: Wiping the BDA Pole with Clean, Dry, Lint-Free Cloth**



**CAUTION:** Fingerprints and other contaminants can cause premature failure of the assembly.

## Next Step

Proceed to [Chapter 4, "Reassemble the Library."](#)

# Reassemble the Library

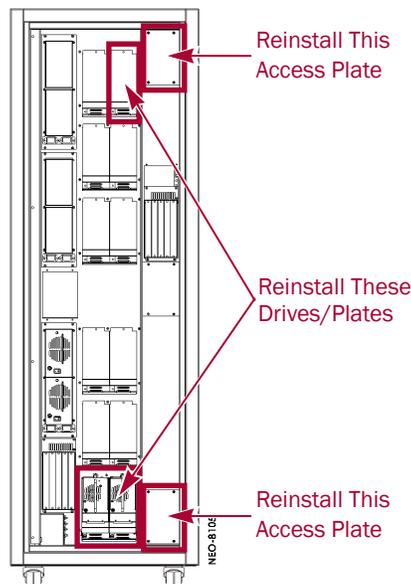
Once the retrofitted BDA is back in place, you are ready to reassemble the library.

## Reinstall the Library Panels and Components

You need to reinstall all the components removed to provide easier access.

### Rear Access Panels (Rear BDA Only)

1. Reinstall the **top-left** access panel using **four new M3x8mm flathead SEMS screws**.
2. Reinstall the **bottom-left** access panel using **four new M3x8mm flathead SEMS screws**.
3. Reinstall the **top drive (or plate)** using **four new M4x8mm panhead SEMS screws**.
4. Reinstall the **drive divider** between drive bays 1 and 2 using **one new M3x8mm flathead SEMS screws**.
5. Reinstall drives (or drive panels) for **drive bays 1, 2, and 11**. Reconnect any cables previously removed (Figure 4-1).



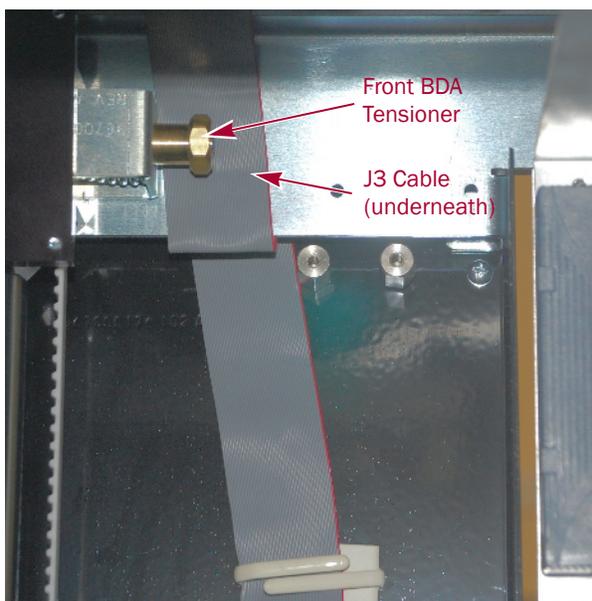
**Figure 4-1: Reinstall Rear Panels or Drives**

## Front Panel Assembly

1. Supporting the FPA next to its normal position, reattach the **J3 connector** at the top of the front panel PWA.
2. Insert the **J3 cable** back into the retainers on the back side of FPA.
3. Supporting the FPA in its normal position, use **two new M4x8mm flathead screws** at the top on each side to reattach the FPA.

**NOTE:** Only use the flathead screws when fastening the top of the FPA to the library to prevent interference with the operation of the drawers.

4. At the base of the FPA, use **two new M4x8mm panhead SEMS screws** on each side to secure the FPA.
5. For the older NEO 8000, reattach the bottom trim pieces:
  - a. At the bottom from the inside, push the **left cover** trim piece forward and down to reinsert it.
  - b. Use **one new M3x8mm panhead screw** to reattach the trim piece to the FPA.
  - c. Repeat **Steps a–b** for the **right cover** trim piece using a **new M3x8mm panhead screw**.
6. Reach inside at the top of the FPA and move the **J3 cable behind** the BDA top tensioner to keep it out of the way of the robotics.



**Figure 4-2: Position the J3 Cable Behind the Tensioner**

## Media Drawers

NOTE: Verify that the tape media is flush in the drawers before pushing them into the library.

For **each** drawer:

1. Extend the **rails** for the appropriate drawer and move the **bearings** to the front.
2. Using the label, reinsert the **drawer** onto the rails.
3. Slide the drawer **80%** into the library and back out to check it.
4. Push the **drawer** all the way in until it locks.

## Next Step

Proceed to [Chapter 5, “Verify the Library Operation.”](#)



# Verify the Library Operation

Once the library is completely reassembled, you need to verify that everything functions.

## Power On the Library System

1. **Reattach** all the power cords.
2. Set the library circuit breakers to the **ON** (“|”) position.  
The library automatically powers on and completes a POST.

## Test the Library

To confirm the library is ready for operation, a series of tests must be performed. If any test fails, contact Overland Technical Support.

### Calibration Test

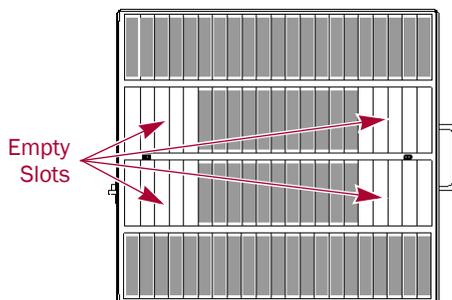
**NOTE:** The library uses Calibration Fiducial labels to accurately locate reference points on the Drawer Assemblies, the Fixed Drawer Assembly and the Mail Slot Track Assembly.

Calibration Fiducial Label locations:

- Two on the drive bay bulkhead
- Two on each Drawer
- Two on the Fixed Slots
- Two on the Mail Slot track

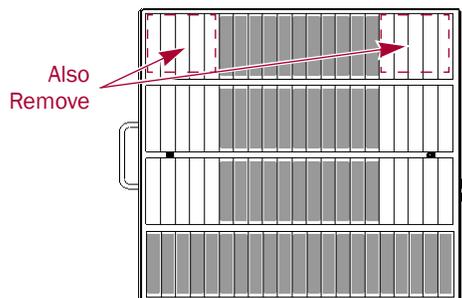
NEO 8000e libraries uses the picker to touch these fiducial label posts during a calibration routine to establish the reference points it needs.

1. Cartridges in the immediate area of the Fiducial labels must be removed to avoid any interference when touching or reading the labels:
  - Remove the cartridges in the first five and last five slots in rows two and three in **each drawer** that has cartridges.



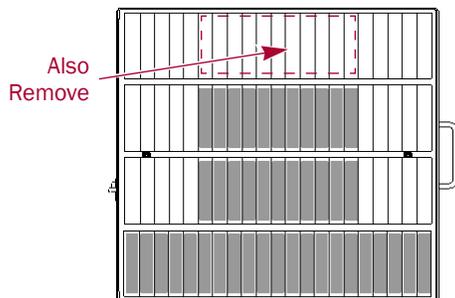
**Figure 5-1: Empty These 20 Slots in All Drawers**

- In addition, for the **middle-left drawer**, remove the first five and last five cartridges in the top row.



**Figure 5-2: Empty These 10 Slots of the Top Row of the Middle-Left Drawer**

- Also, for the **middle-right drawer**, remove all the cartridges in the top row.



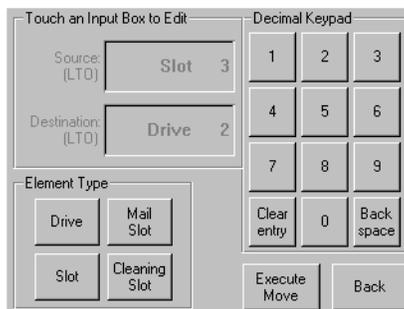
**Figure 5-3: Empty the Top Row of the Middle-Right Drawer**

- Remove the cartridges in the first five and last five slots in the **Fixed Slots**.
  - Remove the **Mail Slot Magazine**.
2. At the default front panel menu, press **Maintenance > Calibrate Robot**.
  3. Leave all elements **checked** for a full calibration of all drawers and magazines. Test requires 30-35 minutes to complete.

## Relearn Tape Drive Locations

To prevent the backup software from timing out, it is necessary to have the library learn the bays where all the tape drives are located.

1. At the front panel, press **Move Media**.



2. Move a tape to a drive:
  - a. Select a tape in a slot as the **Source**.
  - b. Select a tape drive as the **Destination**.
  - c. Press **Execute Move**.
3. Reverse the process to **move the tape** back to its slot.
4. Repeat [Steps 2–3](#) for the **remaining drives** in the library.

## Friction Diagnostic

Use the Friction Diagnostic from the front panel to validate the functionality of the new assemblies. This tests the new BDA and creates new key access settings in NVRAM.

1. Verify that **5 or more cartridges** are available from an enabled drawer or Mail Slot.
2. Move **one cartridge** to a drive and back:
  - a. Press **Move Media**.
  - b. Select a **slot** with a tape as the Source and a **drive** as the Destination.
  - c. Press **Execute Move**.
  - d. Select the same **drive** as the Source and the same **slot** as the Destination.
  - e. Press **Execute Move**.

3. Select **Menu > Diagnostics > Friction Diagnostic > Start** (Figure 5-4).

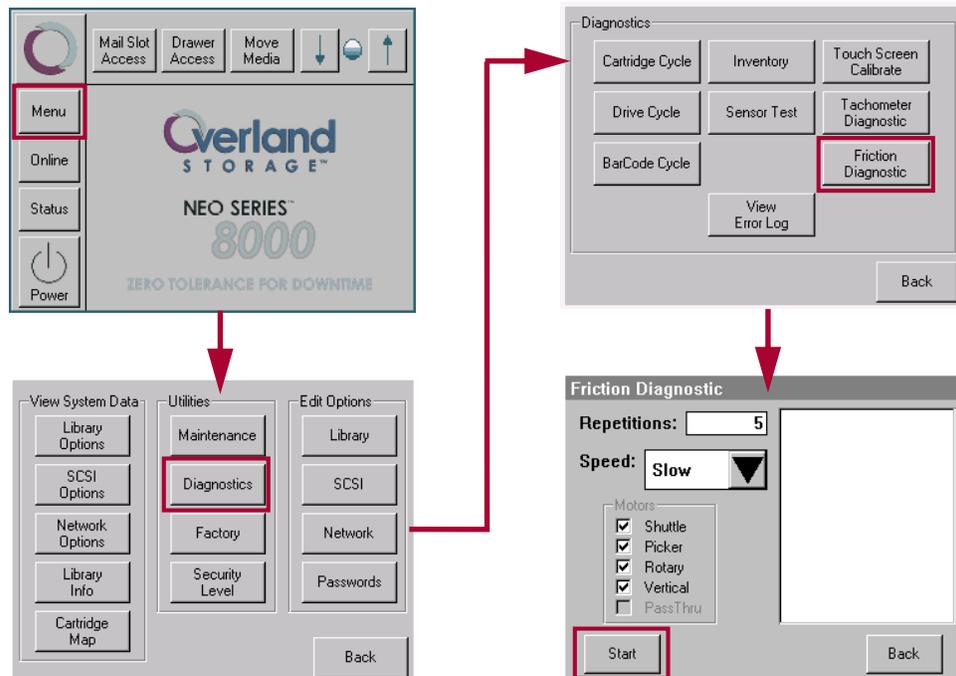


Figure 5-4: Starting the Cartridge Cycle Test

4. Allow the test to run for at least **5 repetitions**.

 **IMPORTANT:** If the test fails, contact Overland Storage Technical Support.

5. Cycle the power to save the **new NVRAM settings**.

## Daisy Chain Test

Select **Menu > Diagnostics > Daisy Chain > Start** to test fetching and stowing of tape cartridges.

The test takes at least **4 hours**.

## Reactivate the Library

You are now ready to put the library back online and enable the backup software to access it. At the front panel, press **Offline**. The button name changes to Online.