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2000827E MkII MLB Pack-Unpack Procedure

Sales Order	
MLB Assembly Number & Revision	
MLB Serial Number	

**READ THIS PROCEDURE BEFORE REMOVING LIGHTBAND
FROM THE SHIPPING CONTAINER**

Instructions:

To pack the Lightband:
Read Section 2 and proceed to Section 3.

To unpack the Lightband:
Read Section 2 and proceed to Section 4.

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1. Revision History

Rev	Issued	Created By	Released By	Change Description
-	27Apr07	RW	-	Initial revision
A to D	01May08 To 29Apr15	-	-	See prior revisions for change details.
E	6Dec19	RH	BR	<ul style="list-style-type: none"> • Entire document: Minor grammatical changes. Included header row in every table. • Cover Page: Replaced Program Name with Sales Order. • Fig 2-1: Removed reference to specific sizes. • Fig 2-2: Updated with newest revision container • Section 3.1: Added detail to requirement equipment. • Fig 3-2: Added axis arrow. • Fig 3-4: updated with newest revision container. • Section 4.1: Added equipment.

2. Introduction

This procedure describes the steps to pack and unpack a Mark II Motorized Lightband (MLB) into and out of a shipping container, respectively. This procedure shall be completed each time the MLB is packed or unpacked.

The typical shipping container used is a custom hard case with foam insert (PSC PN: 2002200). Lightbands shall only be shipped in these containers unless otherwise approved by PSC. Doing otherwise without PSC's approval will void the Lightband warranty. The intent of this procedure is to demonstrate how to properly pack and unpack the Lightband to minimize the risk of the Lightband being damaged during shipping and handling.



Figure 2-1: Typical shipping containers

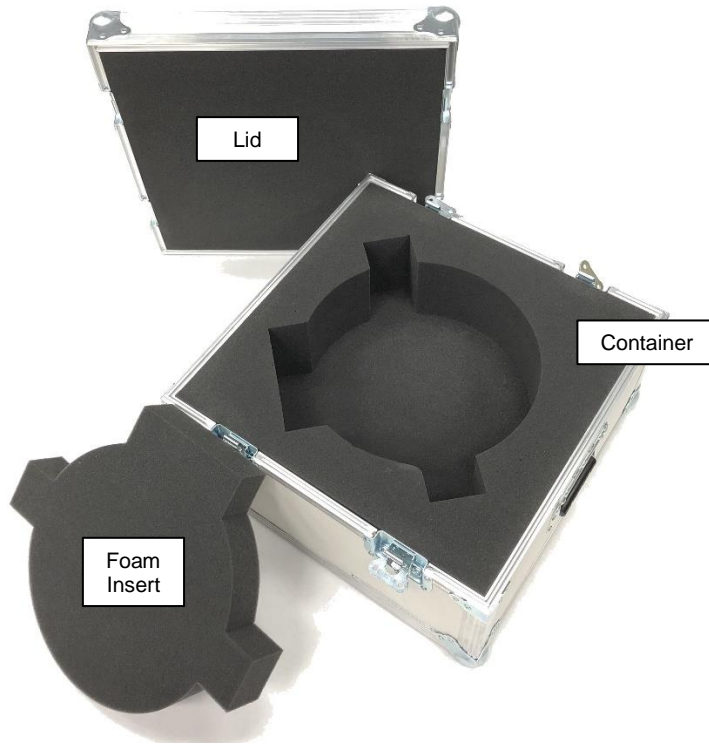


Figure 2-2: Shipping container components (11.732 size shown)

3. Packing the MLB

The operator shall be familiar with PSC documents 2000785 MkII MLB User Manual and 2000781 MkII MLB Operating Procedure prior to executing this procedure.

3.1 Required Equipment

Item	Quantity	Check
Lightband	1	
2002200 MkII Shipping Container (or equivalent; approved by PSC)	1	
Plastic resealable bag for documentation (9 x 12 inch suggested)	1	
Antistatic Bag	1	
Kapton Tape	AR	
Torque Wrench w/ 4 in*lb capability and appropriate driver (#1 Phillips for PNH screw or 3/32 inch hex for SHC screw)	1	
2000844 MLB Shipping Hex Standoff	~1/spring	
¼ inch Open-end Wrench (to hold Hex Standoff while torquing)	1	
7/64 inch Hex Key with ball driver (to rotate Ball Screw)	1	
PNH or SHC Screw, 4-40 UNC X 0.31 inch (to fasten Hex Standoff)	2 per standoff	
Washer, #4	2 per standoff	

3.2 Packing Procedure

Step	Description	Date & Initials	Notes
1	Complete cover page.		
2	Ensure the Lightband is in the deployed state and removed from adjoining structures per PSC Operating Procedure 2000781 (available at www.planetarysystemscorp.com).		
3	Place the Upper Ring on the Lower Ring, ensuring proper alignment per PSC Operating Procedure 2000781. The Lightband has exposed lubricated surfaces. Avoid lubricant when handling.		
4	<p>Manually rotate the Ball Screw with a 7/64 inch hex key until the Sliding Tube makes contact with the Motor Bracket. Rotation direction is counter-clockwise when looking along the Y_{LB} axis from the origin towards the Motor Bracket. Maximum torque shall not exceed 1.0 in*lb. Gently pushing outward on the $-Y_{LB}$ side of the Retaining Ring during rotation helps the Retaining Ring properly seat against the Leaf Assemblies.</p> <p>Upon completion of Ball Screw rotation, the Sliding Tube shall remain firmly against the Motor Bracket and not back-drive. See Figure 3-1 and Figure 3-2.</p>		

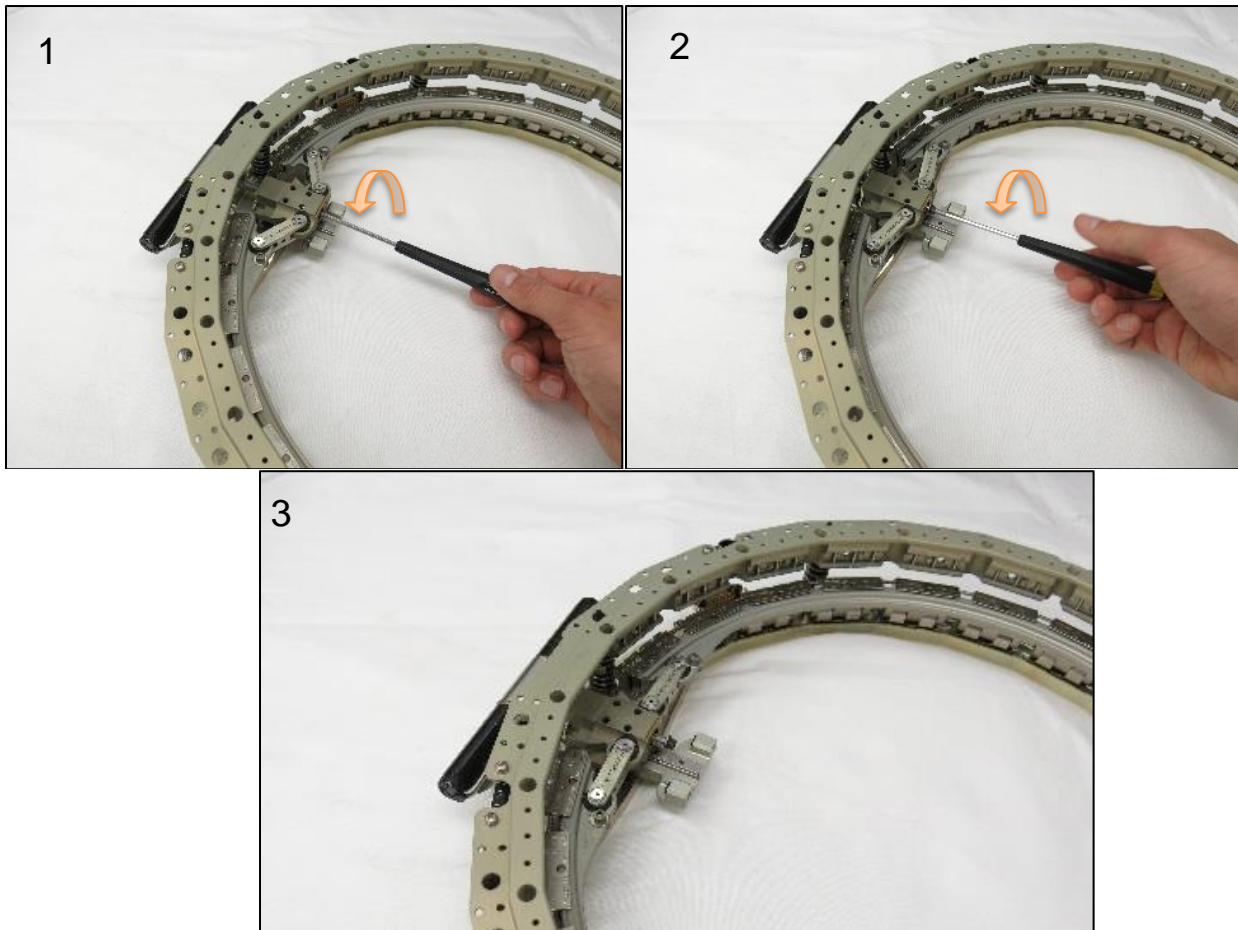


Figure 3-1: Manually rotating the Ball Screw until the Sliding Tube contacts the Motor Bracket

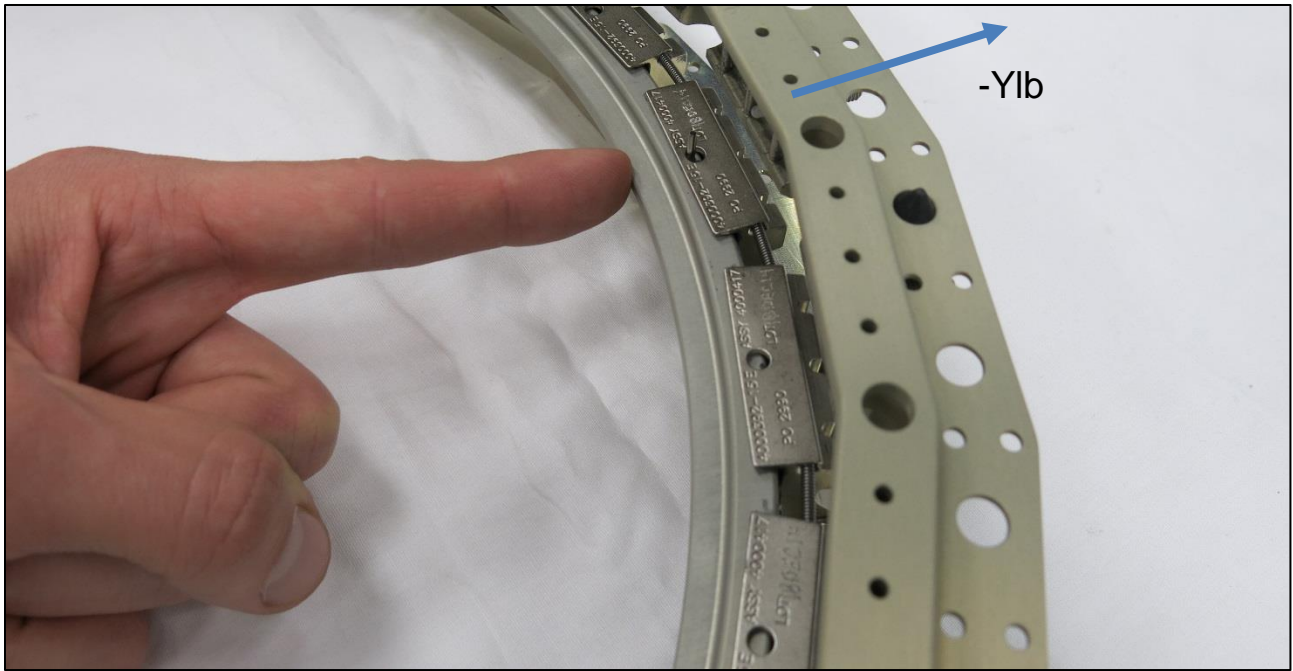


Figure 3-2: Applying force to Retaining Ring in radially outward direction during Ball Screw rotation

Step	Description	Date & Initials	Notes
5	Fasten 2000844 MLB Shipping Hex Standoffs to the corner holes of the Lower Ring flange using 4-40 UNC fasteners and washers. Install approximately one Hex Standoff as close to each Separation Spring as possible. Perform installations while the Upper Ring is on the Lower Ring to ensure the Hex Standoffs will not contact any components on the Upper Ring. Torque fasteners 3 to 4 in*lb. See Figure 3-3 for installation locations.		
6	Fasten 2000844 MLB Shipping Hex Standoffs to the corner holes of the Upper Ring flange using 4-40 UNC fasteners and washers. Ensure the Hex Standoffs do not contact any components on the Upper Ring. Gradually torque the fasteners 3 to 4 in*lb in a star pattern. Use caution as each spring will compress ~0.1 inch and generate ~3 lbf. See Figure 3-3 for installation locations.		

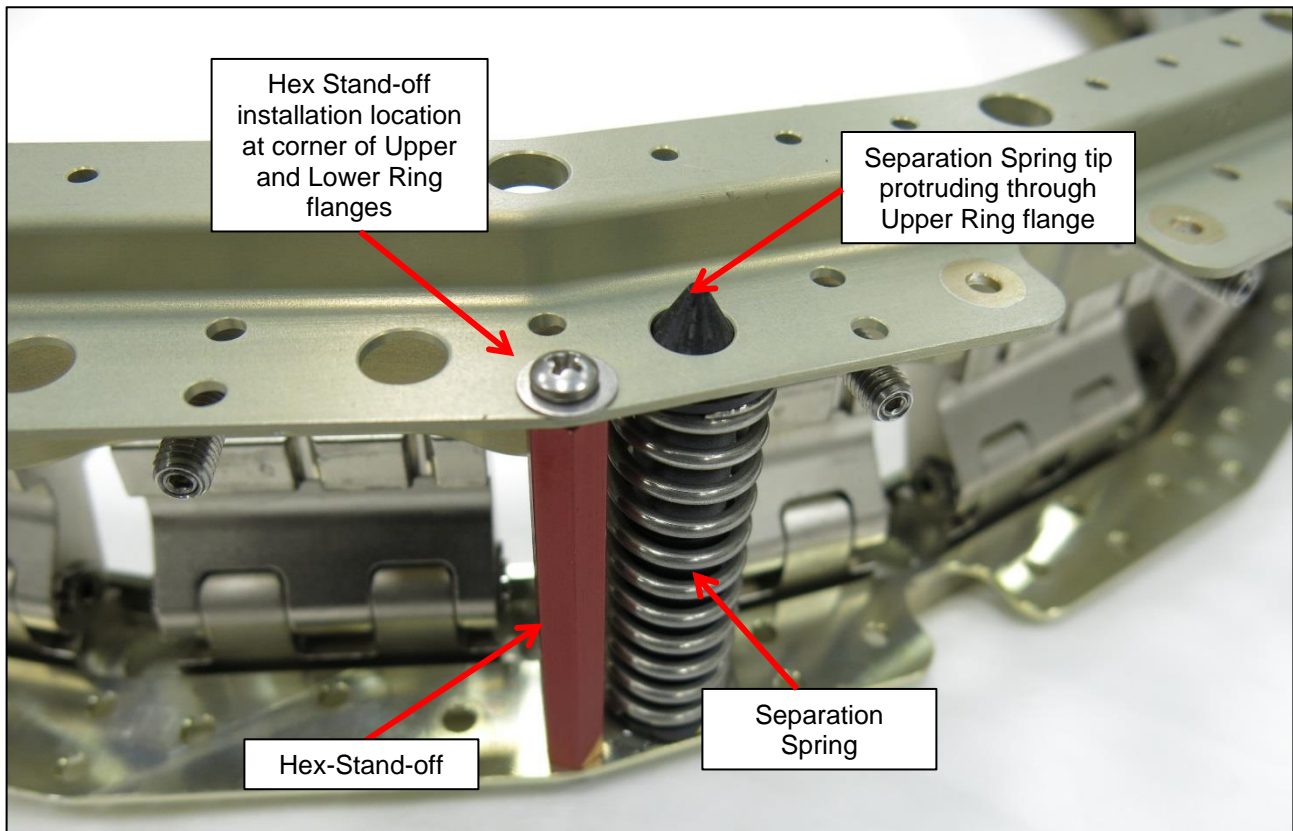


Figure 3-3: Hex Stand-Off installed as close to a Separation Spring as possible.

Step	Description	Date & Initials	Notes
7	Place the Lightband in an appropriately sized antistatic bag. Close and seal the bag with Kapton tape as needed. Leave courtesy strips at the end of each piece of tape to assist unpacking.		
8	Place bagged Lightband inside foam cutout in the lower half of Shipping Container. The Lightband shall be above the foam insert. Ensure Motor Bracket aligns with large rectangular cutout in foam. See Figure 3-4. All documentation required per PSC Shipping Procedure 3000208 shall be placed in a resealable plastic bag on top of the Lightband.		
9	Place the lid on the Shipping Container and close all 4 latches.		



Figure 3-4: Lightband installed in shipping container

4. Unpacking the MLB

The operator shall be familiar with PSC documents 2000785 MkII MLB User Manual and 2000781 MkII MLB Operating Procedure prior to performing this procedure.

4.1 Required Equipment

Item	Quantity	Check
#1 Phillips Screwdriver (for PNH screw) or 3/32 inch hex key (for SHC screw) to remove Hex Standoff fasteners	1	
¼ inch Open-end Wrench (to hold Hex Standoff while torquing)	1	
Bag or tray (to store removed hardware)	1	
Small tweezers (to assist in removing small fasteners and washers)	1	

4.2 Unpacking Procedure

Step	Description	Date & Initials	Notes
1	Record name of person executing procedure.		Name: _____
2	Remove the bagged Lightband from the Shipping Container. Take care not to contact or bump the Motors which protrude from the Lightband Rings.		
3	Remove tape securing the antistatic bag, open bag, and remove the Lightband from the antistatic bag.		
4	Near each Separation Spring is a 2000844 MLB Shipping Hex Standoff. Remove all Hex Standoffs (see Figure 3-3) and hardware and store accordingly. Loosen each fastener gradually in a star pattern as each spring is compressed ~0.1 inch and generates ~3 lb.		
5	The Lightband is now ready for operation per PSC Document 2000781 MkII MLB Operating Procedure (available at www.planetarysystemscorp.com). Operating the Lightband before receiving training from PSC shall void the Lightband warranty.		