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2000827D MkII MLB Pack-Unpack Procedure

Program Name	
MLB Assembly Number	
MLB Assembly Revision	
MLB Serial Number	

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

Instructions:

TO PACK LIGHTBAND:

Read Section 2 and proceed to Section 3 of this procedure.

TO UNPACK LIGHTBAND:

Read Section 2 and proceed to Section 4 of this procedure.

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1. Revision History

Revision	Issued	Created By	Released By	Change Description
-	27-Apr-07	RW	-	Initial revision
A	01-May-08	-	-	Fixed sign off boxes and numbering
B	4-Feb-11	-	-	Fixed figure label in section 4.2.5
C	01-Feb-12	NL	AZ	Changed shipping container from box to hard custom case
D	29-Apr-15	AZ	HM	<ol style="list-style-type: none"> 1. Updated formatting (Figures, references, and Table of Contents) 2. Updated cover page 3. Updated pictures 4. Updated procedure

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 that 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 for MLB23 and MLB15

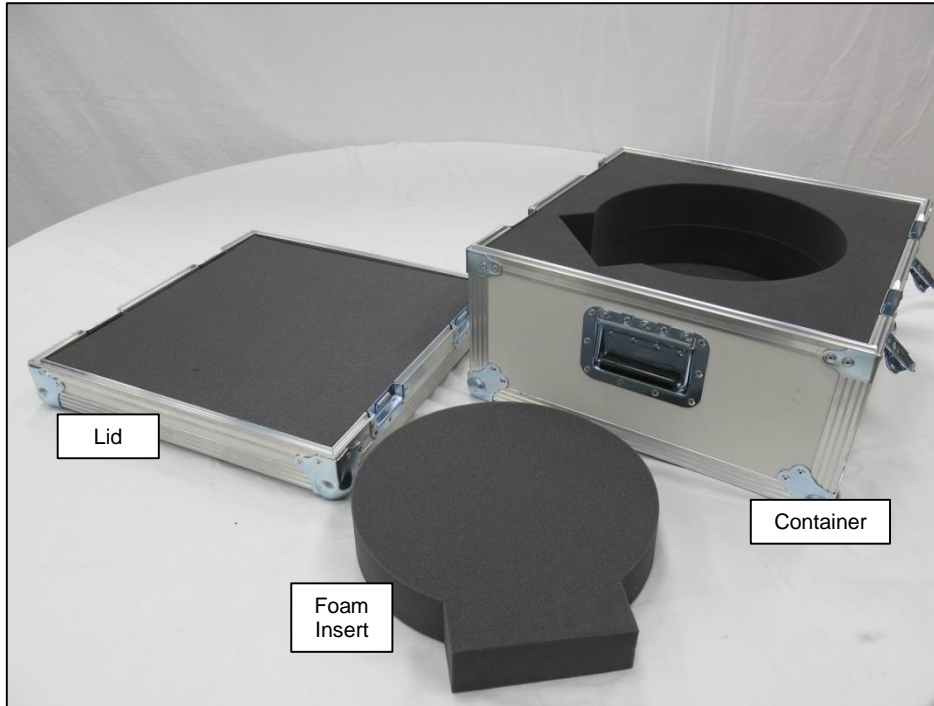


Figure 2-2: 2002200 Shipping Container for MLB11.732

3. Packing Procedure

The operator shall be familiar with PSC documents 2000785 MkII MLB User's Manual and 2000781 MLB Operating Procedure prior to performing 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 (9x12" size suggested)	1	
Antistatic Bag	1	
Kapton Tape	AR	
Torque Wrench w/ 3-4 in*lb capability, head for #4 PNH or SHC	1	
2000844 MLB Shipping Hex Standoff, #4-40 x 2.0" Female	AR	
Open-end Wrench, 1/4"	1	
7/64 inch Hex Key	1	
PNH or SHC Screw, #4-40 x 0.375"	AR	
Washer, #4	AR	

3.2 Procedure

Step	Description	Technician Date & Initials	Notes
1	Record Lightband part number, revision, and serial number on the front page of this procedure.		
2	Ensure that the Lightband is in the deployed state and removed from adjoining structures IAW PSC Operating Procedure 2000781.		

Step	Description	Technician Date & Initials	Notes
3	Place the Upper Ring on top of the Lower Ring, ensuring proper alignment IAW PSC Document 2000781. The Lightband has exposed lubricated surfaces. Use caution not to contact lubricant when handling.		
4	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. It is often helpful to gently push radially outward on the Retaining Ring during Ball Screw Rotation so that the Retaining Ring properly sets against the Leaf Assemblies. The Sliding Tube shall remain against the Motor Bracket and not back-drive after Hex Key rotation has stopped. See Figure 3-1 and Figure 3-2.		

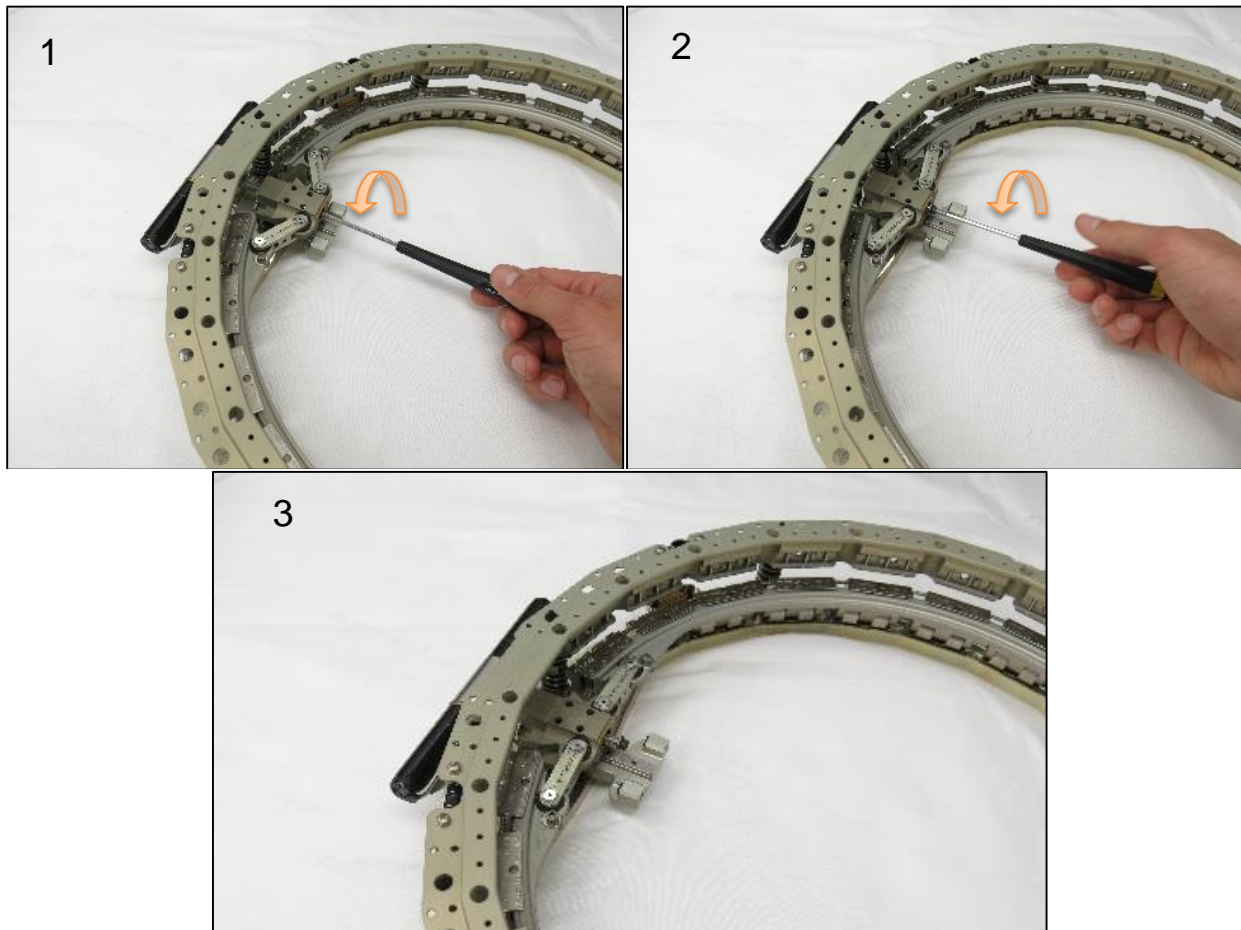


Figure 3-1: Manually rotating the Ball Screw until the Sliding Tube contacts Motor Bracket

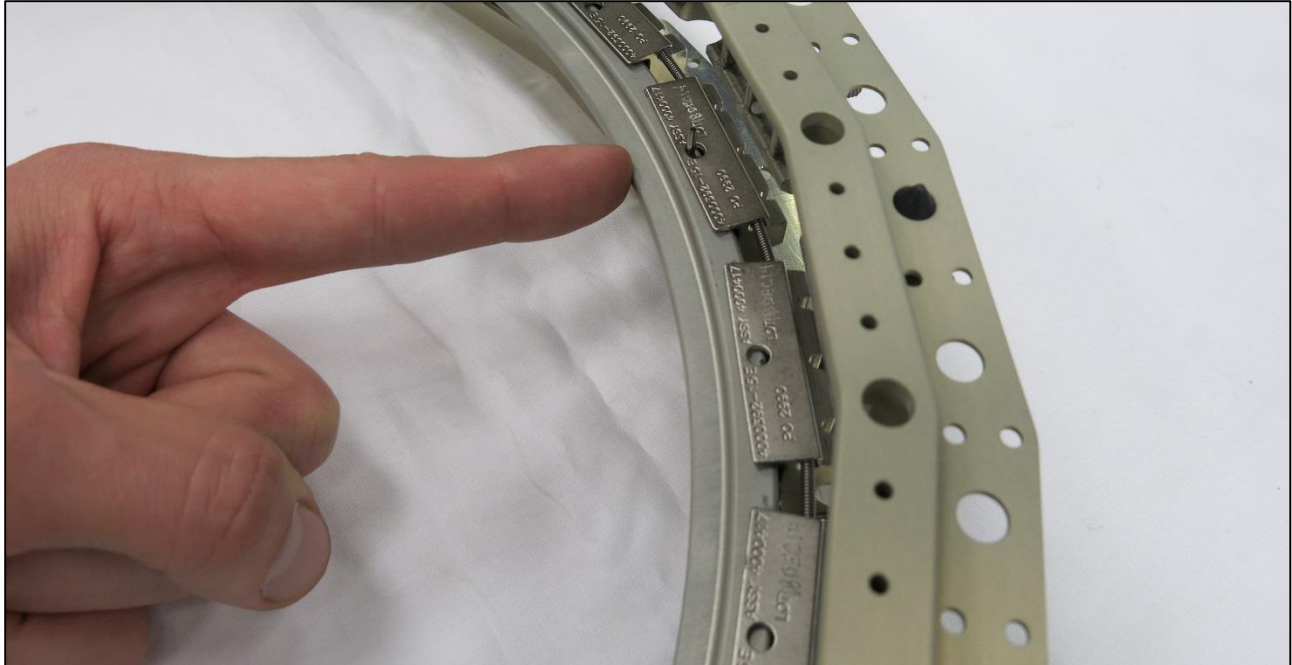


Figure 3-2: Applying force in radially outward direction during rotation of Ball Screw

5	<p>Fasten 2000844 MLB Shipping Hex Standoffs into the holes in the corners of the Lower Ring flange using #4-40 fasteners and washers. Install approximately one Hex Standoff per Separation Spring. Ensure Hex Standoffs are located as close to the Separation Springs as possible. Perform installations while the Upper Ring is in place on top the Lower Ring to ensure that the Hex Standoffs will not contact any components on the Upper Ring. Torque fasteners 3 to 4 in*lbs. See Figure 3-3 for install locations.</p>		
6	<p>Fasten 2000844 MLB Shipping Hex Standoffs to the holes in the corners of the Upper Ring flange using #4-40 fasteners and washers. Ensure the Hex Standoffs do not contact any components installed on the Upper Ring. Gradually torque the fasteners 3 to 4 in*lbs in a star pattern. Use caution as each spring will compress ~0.1 inches and generate ~3 lbf.</p>		

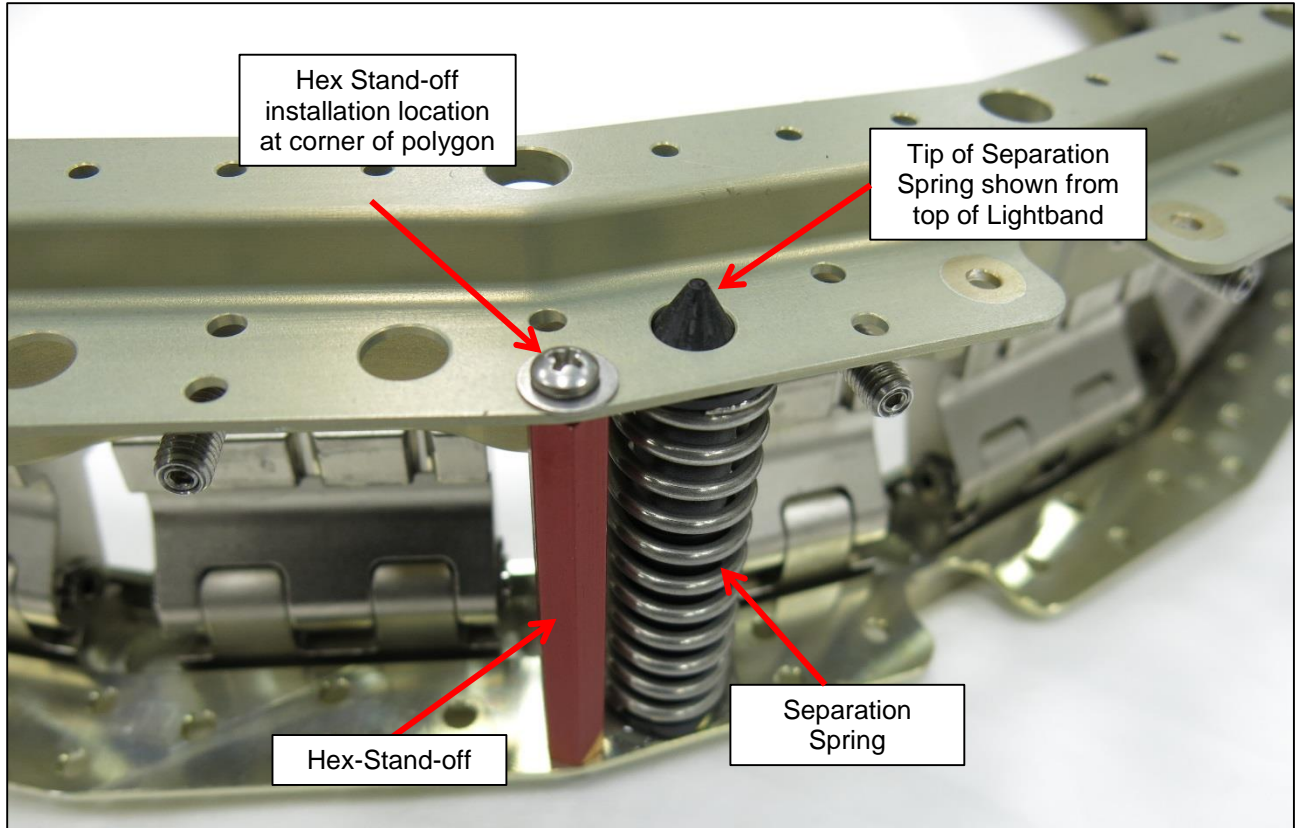


Figure 3-3: Hex Stand-Off installed adjacent to a Separation Spring

7	Place Lightband in an appropriately sized antistatic bag. Close and seal 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. Ensure Motor Bracket aligns with large square cutout in foam See Figure 3-4. Any relevant documentation shall be placed in a resealable plastic bag on top of the bagged Lightband.		
9	WHEN NOT COMPLETING THIS PROCEDURE IN CONJUNCTION WITH PSC PROCEDURE 3000208: Seal the Shipping Container.		



Figure 3-4: Lightband with Motor Bracket aligned to cut-out inside the shipping container foam

4. Unpacking Procedure

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

4.1 Required Equipment

Item	Quantity	Check
#1 Phillips Screwdriver, 5/16" – 9/64" or 3/32 Hex Key	1	
Open-end Wrench, 1/4"	1	

4.2 Procedure

Step	Description	Technician Date & Initials	Notes
1	Record name of person executing procedure.		Name: _____
2	Remove bagged Lightband from the Shipping Container. Take care not to contact or bump the Motors which extend out 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 inches and generates ~3 lb.		
5	The Lightband is now ready for operation IAW 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.		