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SPLICING PROCEDURE FOR SERVOBELT LINEAR (SBL) STAGE SECTIONS

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Revisions

Revision	Description/ECO
-	INITIAL RELEASE
A	Update to reflect current process and splice tool
B	Updated to include the following: Added Table of Contents page; Defined maximum gap between bearing rails; Specified tightening of splice plates <i>after</i> rail alignment has been set; Added splicing instructions specific to linear assemblies that use molded belt trays. ECO 779.
C	Updated with new logo and address / ECO 845

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1 PURPOSE / SCOPE

The purpose of this document is to show the proper splicing process for ServoBelt Linear (SBL) stages that have multiple extrusion/rail sections. This general splicing process should be applied to both single rail and dual rail stage versions.

2 REFERENCE DOCUMENTS

103468-001 ServoBelt Linear Maintenance Manual

3 ASSEMBLIES WITH VHB TAPE BELT TRAYS & ROLLED LOWER BELTING SPLICING PROCEDURE

- 3.1** Bell-Everman ServoBelt Linear stages with multiple extrusion/rail sections are routinely labeled so that an end user performing the section splicing can easily identify the sections to be mated. Refer to the photo below for an example of the section labeling (e.g. Section 5 & Section 6).



- 3.2** Typically the section labeled Section 1 (reference photo below) will include the upper dynamic belt(s) already installed in the carriage(s), and the lower static belt partially installed awaiting the splicing of additional sections before affixing the remaining belting to the 3M VHB double-sided tape.



- 3.3** While bearing rails have been precision adjusted at the Bell-Everman factory to meet critical alignment specifications, the ends of the rails without rail caps installed still need to be aligned using a Bearing Rail Alignment Tool (supplied). This splicing and alignment process allows subsequent sections to be spliced to ensure proper alignment throughout the full travel of the linear stage.

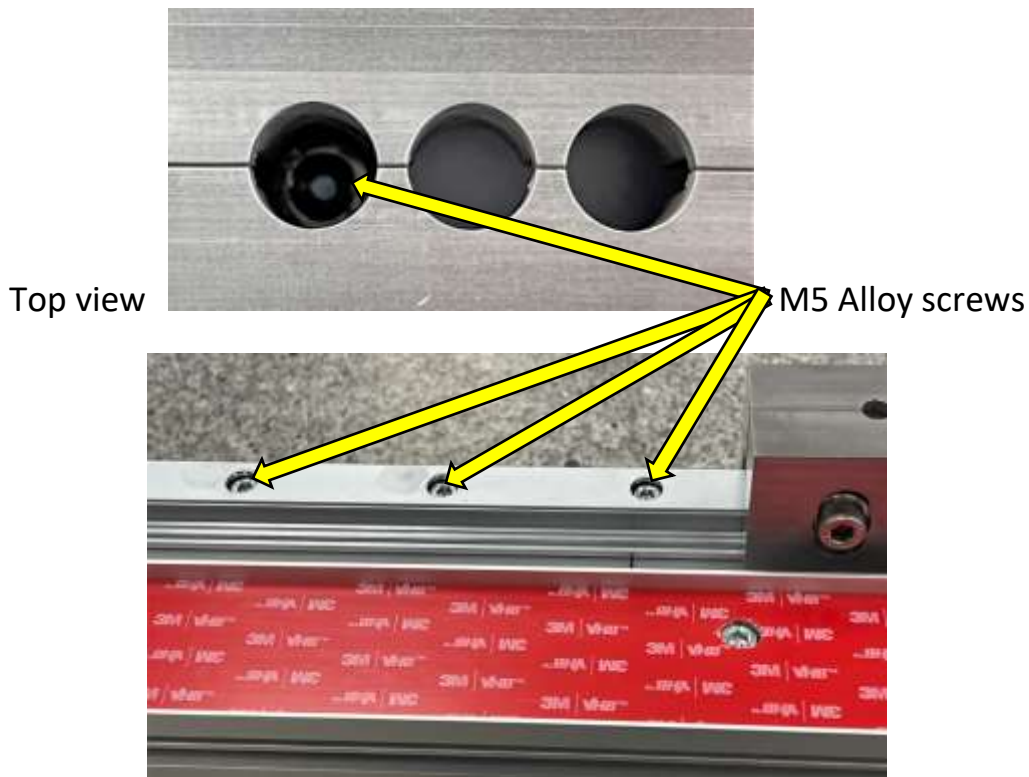
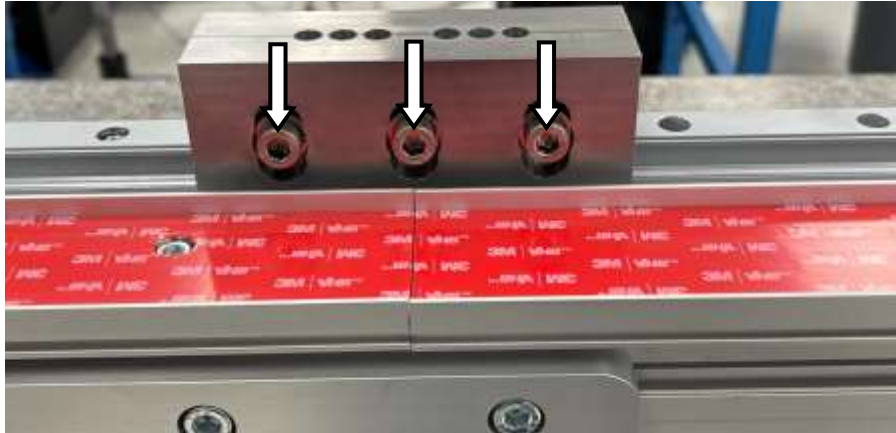


- 3.4** Begin by sliding the mated sections together as shown below.



PLEASE NOTE: The maximum allowable gap between bearings rails is no more than .004” (equivalent to a piece of paper).

- 3.5** Next place the Bearing Rail Alignment Tool (P/N 105789-001) over the rails as shown (as centered as possible across the adjoined sections) while ensuring that one of the access holes on the top left of the tool is positioned over the 1st M5 Alloy bearing rail screw without a rail cap to allow a hex head torque wrench to be inserted. With the tool properly positioned, tighten the three M8 screws (white arrows below) on the Bearing Rail Alignment tool to clamp the spliced rails together. Now torque the 1st M5 Alloy bearing rail screw through one of the top 3 access holes on the left side of the alignment tool. Moving outward from the tool, torque the other three M5 Alloy screws (yellow arrows below). It is recommended to torque all four M5 Alloy bearing rail screws to 85 in. lbs. Once this is done you can loosen the three M8 screws and remove the alignment tool. Repeat this process for all bearing rails on the mated sections that are being spliced (specifically dual rail systems).



- 3.6 Now you will tighten the Stich Plate fasteners. Ensure the stich plate is centered between sections.



Centered between sections

- 3.7 Next, use the Bearing Rail Cap Installer Tool (P/N 100647-001) or an equivalent piece of hard plastic to install rail caps in the screw holes (as shown) by pressing straight down firmly until the cap is flush or below the top of the bearing rail. **NEVER** use a hammer or similar object to install the caps as this could negatively affect the alignment of the rail.



- 3.8 Refer to Section 9 of the 103468-001 ServoBelt Linear Maintenance Manual for information related to laying down the remaining belting on the 3M VHB tape using the appropriate ServoBelt VHB Applicator tool.
(You can find the 103468-001 document on our website (www.bell-everman.com). Just click on the 'Resources' tab, followed by 'Support', then click on the 'SERVOBELT™ LINEAR MAINTENANCE MANUAL' to download the document)

4 ASSEMBLIES WITH MOLDED LOWER BELT TRAYS SPLICING PROCEDURE

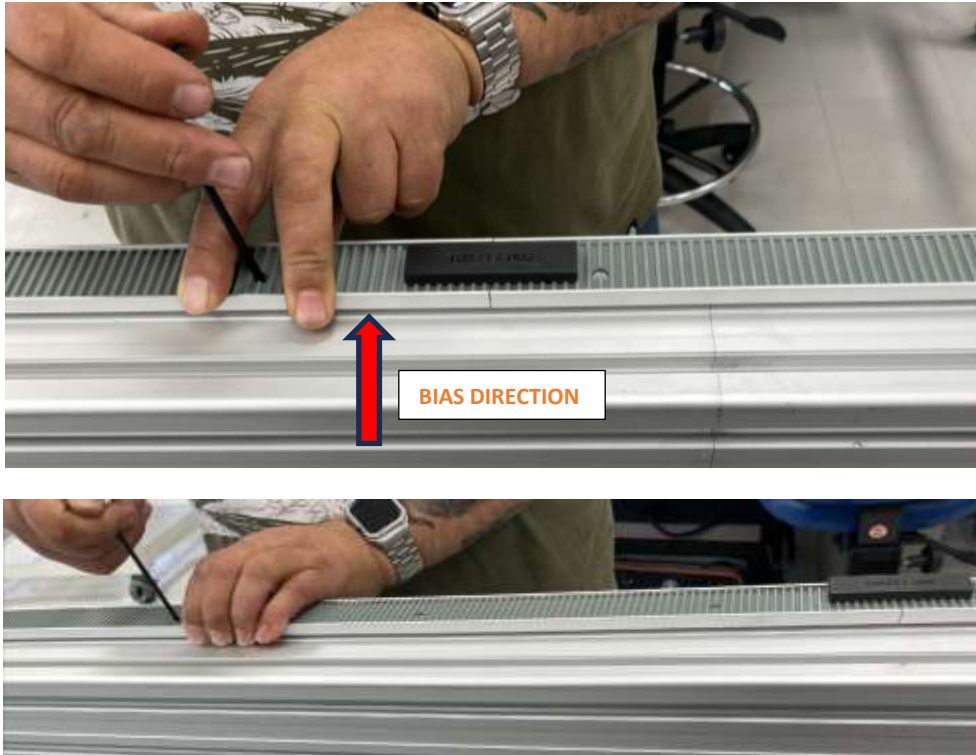
- 4.1 **Note:** This process is to be performed only after proper stage section and bearing rail alignment. (Refer to Sections 3.4 through 3.7).
- 4.2 Loosen the fasteners on all molded belt trays except for those on section 1.



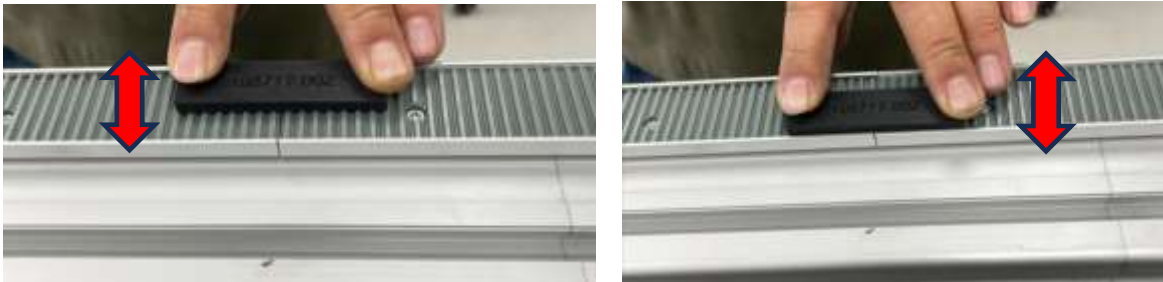
- 4.3 Align all molded belt trays with the included 108717-002 alignment tool starting with section 1 then on every section thereafter.



- 4.4** While doing this alignment you must bias each molded belt tray toward the edge of extrusion that is nearest to the tray while tightening the belt tray fasteners.



- 4.5** After tightening the fasteners, the 108717-002 alignment tool must move freely up and down the width of the molded belt tray between sections. Additionally, the belt trays must have both side edges aligned to each other to have achieved proper alignment.



PROPERLY ALIGNED TRAY EDGE
(Ensure both side edges are aligned)

- 4.6** If you experience any issues (alignment tool doesn't move freely; belt tray edges not aligned), loosen the fasteners on the problem belt tray and re-align using the process depicted in this section.