Technical Support Bulletin

TSB-1313

Rev A

INSTALLING REV D ROBOTS ON REV C RAILS

Product(s) Affected:

PreciseFlex 400 Rev D robots (manufactured August 2025 and later) and PreciseFlex 3400 Rev D robots (manufactured December 2024 and later) do not automatically recognize Linear Rails manufactured before March 2023.

When looking at the linear rail interface panel, look for the serial number in the bottom left. The date code is the second set of digits (FXB-**YYMM**-XX-XXXXX) in a YYMM format. Rail serial numbers that are dated before March of 2023 (FXB-**2303**-….) are possibly affected.

Figure 1 - Example of Where to Find the Linear Rail Serial Number

PreciseFlex 400 and PreciseFlex 3400 Rev D robots have the following date codes in their serial numbers.

- PreciseFlex 400 Rev D F0D-**2508**-XX-XXXX Aug 2025 and later
- PreciseFlex 3400 Rev D F3D-**2412**-XX-XXXX Dec 2024 and later

Risk ☐ Human Safety - personal injury may occur ☐ Application Safety – application specific damage may occur ☐ Product Safety - product damage may occur ☒ No Safety Risk	**Repair Method** ☒ Repair In Application ☐ Repair removed from application ☐ Repair Center ☐ No Repair Required
Priority ☐ Urgent - Immediate Proactive Action Required ☐ Next Visit - Prompt Action Required ☒ As Required ☐ Information Only	**Parts Disposition** ☐ Return Old Parts for Analysis ☐ Return Old Parts for Repair ☐ Dispose of Old Parts in Appropriate Manner ☒ No Parts Required
Action ☐ Mandatory – All Affected Installations ☒ Recommended ☐ On Failure ☐ No Action Required	**Distribution** ☐ Brooks Field Service, Support, Repair ☐ Brooks and OEMs ☐ Brooks, OEMs, and End Users ☒ Brooks and Specific Groups/OEMs/End Users
Reason ☒ Hardware Issue ☒ Software Issue ☐ Operation Issue ☐ Maintenance Issue ☐ Information or Documentation ☐ Other	**Billing** ☐ Retrofit – no charge ☐ Upgrade – billable ☐ Standard Warranty ☐ Other Warranty, see explanation below ☒ No Billing

Purpose of this TSB

This TSB instructs customers in how to identify the robot to rail incompatibility issue and provides instructions on how to upgrade the GSB software to resolve the issue.

Symptoms

Installing a PreciseFlex 400 Rev D robot, or a PreciseFlex 3400 Rev D robot, on a PreciseFlex Linear Rail manufactured before March 2023 may result in the following errors: “No connection:3” and “E-Stop asserted”

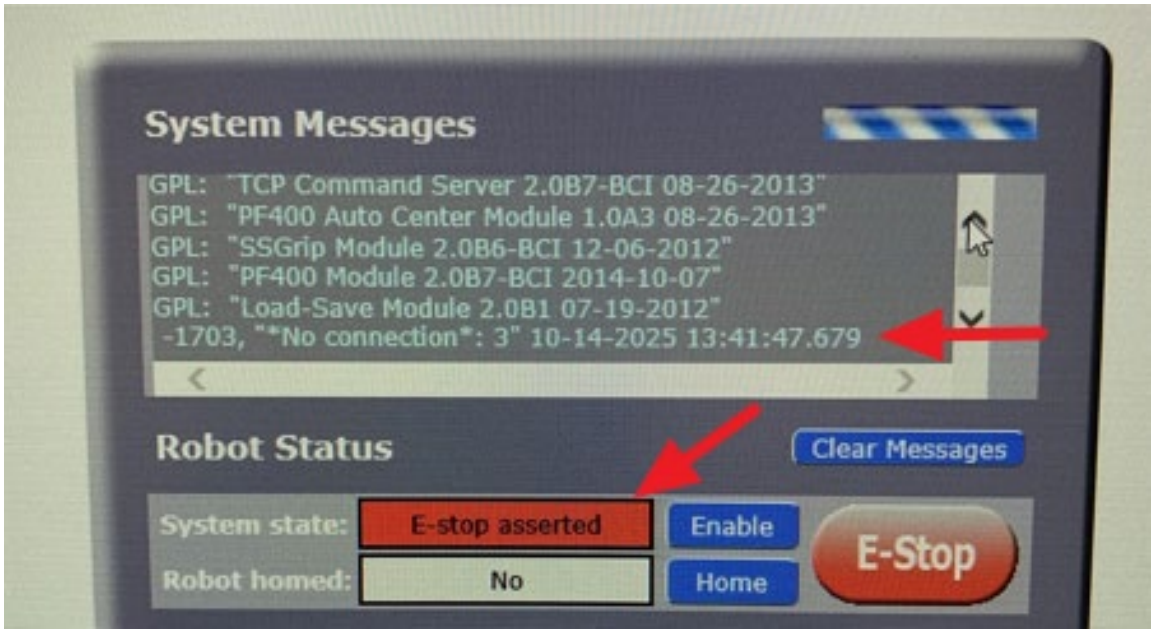


Figure 2 - "No connection : 3" Error found in the System Messages under Control Panels > Operator Control Panel

Figure 3 - "E-stop asserted" Error found in the Control Panels > Virtual Pendant

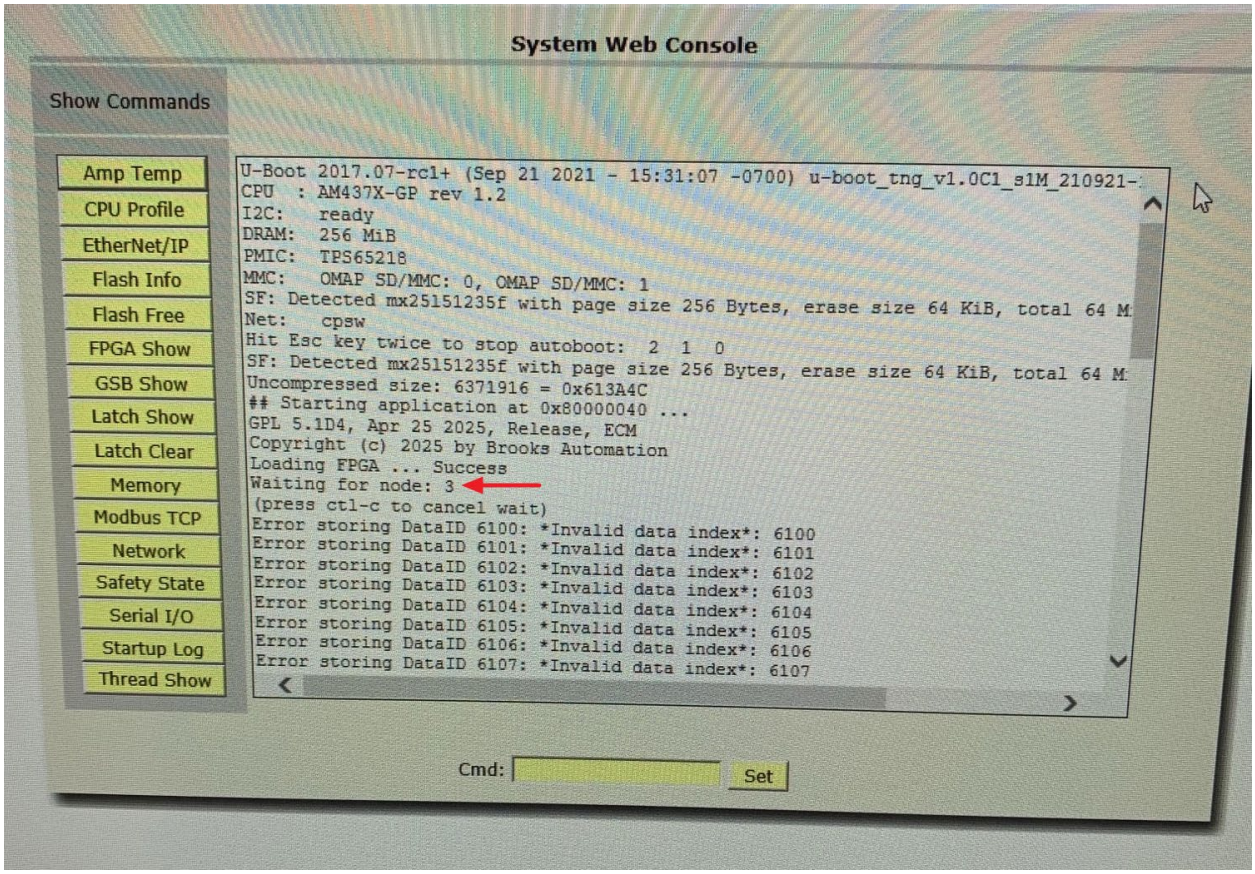


Figure 4 - "Waiting for node 3" Message Found in the System Web Console under Control Panels > System Information > System Console and pressing "Startup Log"

Additional Warranty Information

N/A

Cause

The processors used in PreciseFlex 400 and 3400 robots were recently updated due to a component obsolescence. This necessitated changing the robot from Rev C to Rev D which was communicated via Product Change Notice PCN6000-0006 (for the PreciseFlex 400), and PCN6000-0004 (for the PreciseFlex 3400). The first robots with the new Rev D components are PreciseFlex 400 serial number F0D-2507-**1A**-05080 and PreciseFlex 3400 serial number F3C-2412-**10A**-04800.

Rev C robots use a Power PC (PPC) processor which communicates over RS-485 at a 3.125MHz baud rate. Rev D robots use an Advanced RISC Machines (ARM) processor which communicates over RS-485 at a 4.00 MHz baud rate.

The General Servo Board (GSB) is used in all the PreciseFlex robots and in the PreciseFlex linear rails. Originally the GSB3 boards used in the earlier linear rails were programmed to communicate at 3.125MHz, which matched the PPC processors. With Rev D robots and the new processor, the GSB3 in linear rails are configured to communicate at 4.0MHz – this was accomplished with software version GSB 1.6A5 which can communicate at either baud rate. This GSB software update was embedded in the controller GPL OS update version 4.2K2.

Linear rails shipped with earlier versions of GPL OS (serial numbers FXB-**2303**-XX-XXXXX) are unable to communicate with Rev D robots. To resolve this the GSB software in the linear rail needs to be updated.

	Rev C Robot (PPC)	Rev D Robot (ARM)
Linear Rails with SN Less Than FXB-2303…	**Already Compatible**	**May Require Software Update**
Linear Rails with SN of At Least FXB-2303…	**Already Compatible**	**Already Compatible**

In the following diagram you can see the main controller (1) resides in the robot outer link, while the GSB (2) resides in linear rail.

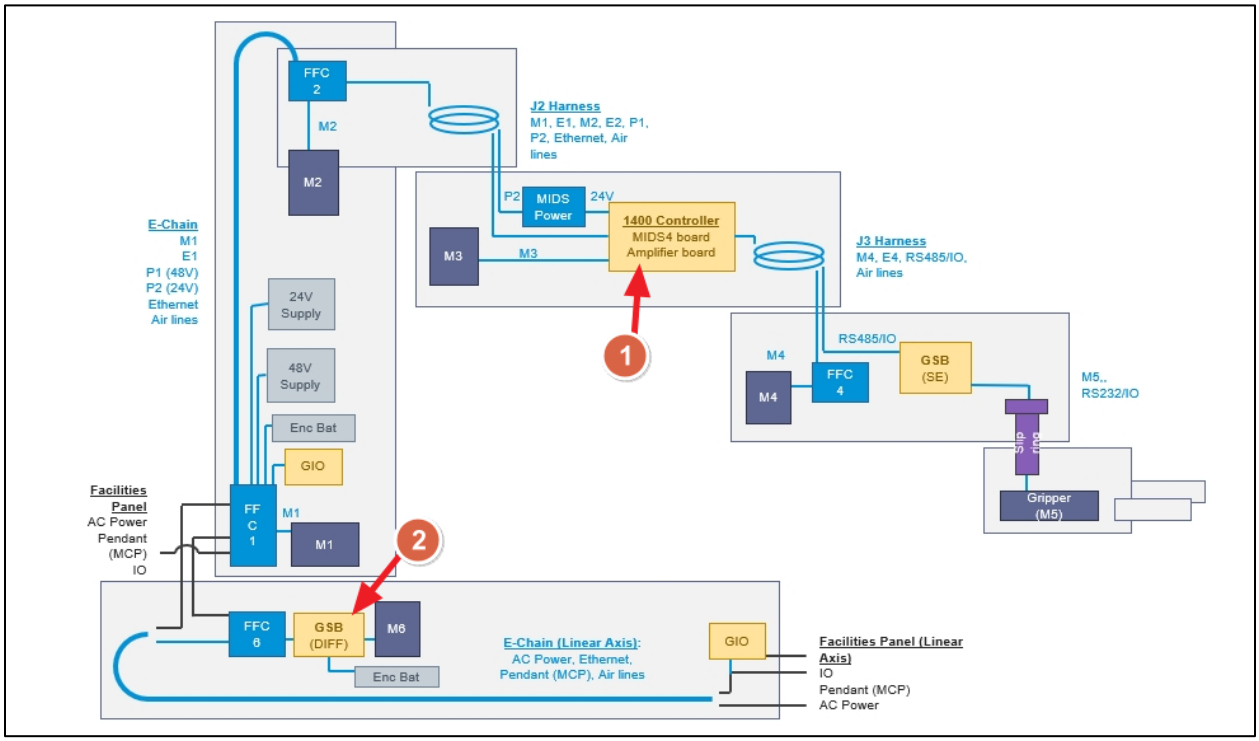


Figure 5 - Robot Architecture Showing the Separate Remote GSB in the Rail

Resolution

- Option A: Update the GSB software by connecting it temporarily to a Rev C Robot
- Option B: Replace the Linear Rail GSB with a new version having the software update

Tools Required

There are no special tools required to perform this update.

Software Required

See “Procedure” section of this TSB.

Procedure

Below are ways to update the GSB3 software to version 4.2K2 (GSB03 1.6A5) or later. This will resolve the compatibility issue.

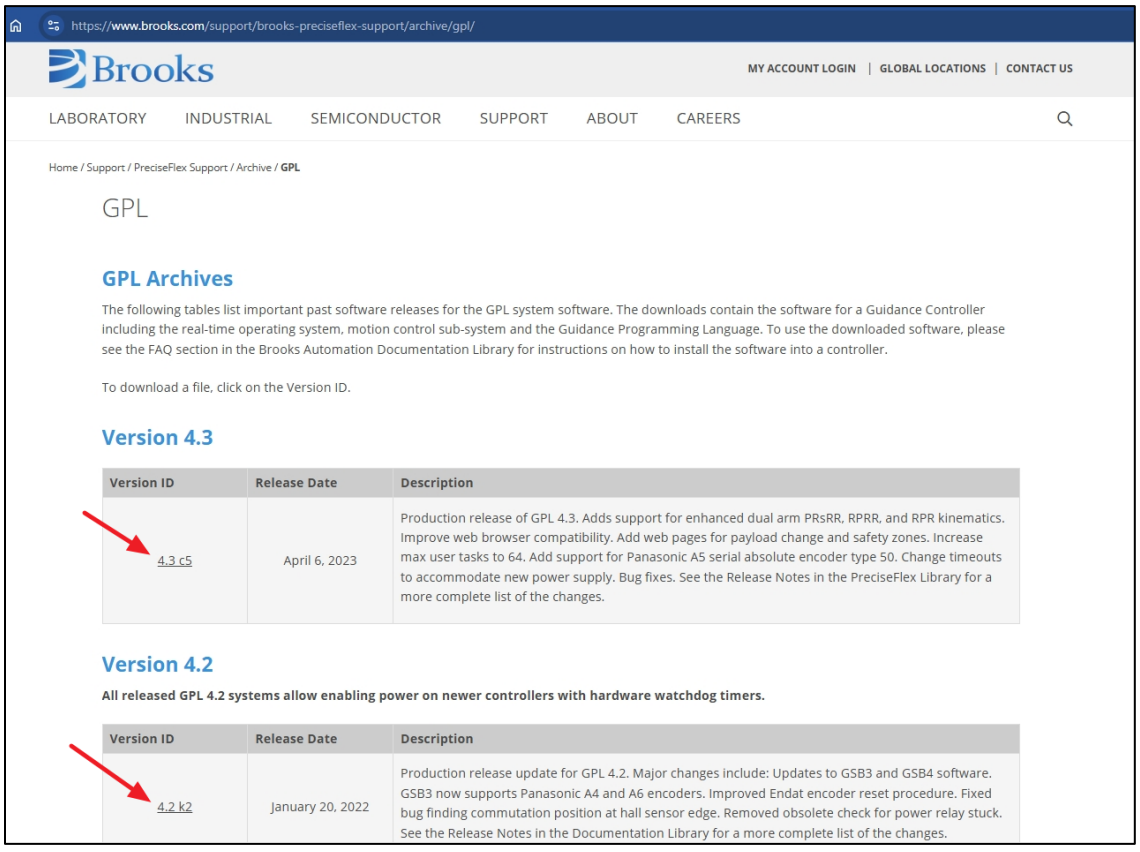
Note: When the GSB is removed from the linear rail, or the GSB loses power from the backup battery, the robot and linear rail must be recalibrated. Please see the robot service manual for steps on how to recalibrate the robot.

The instructions for removing the GSB from the rail can be found in the **Linear Rail User Manual** (PN 663245 Rev A) *Appendix F: Replacing the Controller.* For your convenience it has been attached to the end of this document.

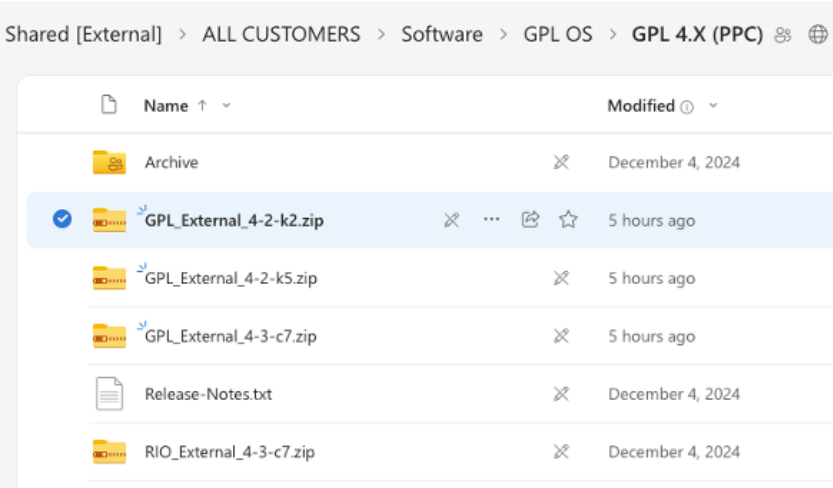
The GPL OS Software update can be found on the support site or at the *All Customers* OneDrive folder under Software / GPL OS / GPL 4.X (PPC). Please email support, Support_PreciseFlex@brooks.com, if you need help accessing the files. The software update can be performed via the web browser, please follow the robot service manual instructions.

Support Site:

https://www.brooks.com/support/brooks-preciseflex-support/archive/gpl/



All Customers OneDrive Folder:



Option A: **Update the GSB software from a Rev C Robot**
If you have access to a Rev C PreciseFlex 400 or 3400 robot, install the Rev C Robot (with GPL OS 4.2K2 or later) onto the linear rail. During the boot process the robot will update the GSB software to version GSB03 1.6A5. After enabling high power and homing the robot, power off the robot, disconnect power, remove the Rev C robot from the linear rail, then install the Rev D robot. It should power up and recognize the linear rail.

If the Rev C robot is not GPL OS 4.2K2 or newer, perform a software update while it is on the rail. Then power cycle the robot and Enable Power and Home the Robot.

Option B: **Replace the Linear Rail GSB with one**
Replace the GSB with one that has the latest software version (part number G1X0-EA-T1101-4D). Follow the instructions in the Linear Rail Service Manual on how to remove the linear rail GSB and replace it with the new one. If none are available, one can be ordered from the factory.

Contact PreciseFlex Service (Support_PreciseFlex@brooks.com) .

Revision History:

Revision	ECO	Date	Action	Author
A	EC168633	11/15/25	Initial Release	Terese Q. Hibbert

If you have any questions, comments, or suggestions regarding this document, please contact Brooks Automation Technical Support at the number or email listed below.

Brooks Location	Contact & Number	
North America - Livermore	Kelvin Chung, Technical Support Engineer +1 408-224-2838	Support_PreciseFlex@brooks.com

Excerpt from the Linear Rail User Manual

Appendix F: Replacing the Controller

Tools Required

- 2.5 mm hex driver or hex L wrench
- 2.0 mm hex driver

Spare Parts Required

- G1100T secondary controller for legacy rails ("GSB3-DIFF") or secondary controller for c- series rails. See the PreciseFlex Linear Rail Spare Parts List.

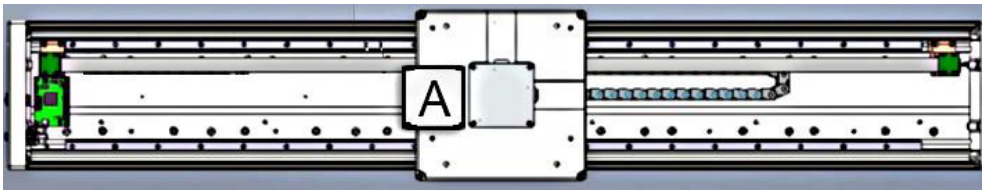
NOTE: Note this part has differential encoder inputs and is NOT the same part as the GSB3-SE for the gripper, which has single-ended encoder inputs.

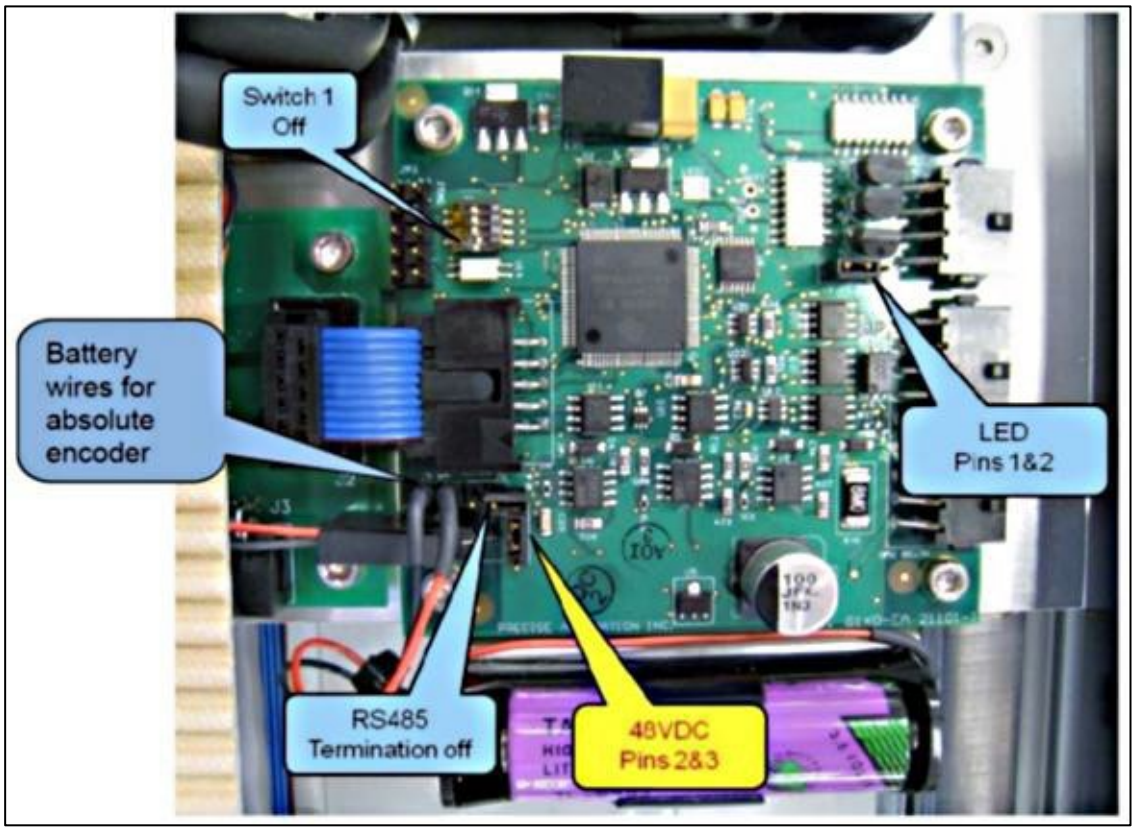
DANGER
Electrical Shock

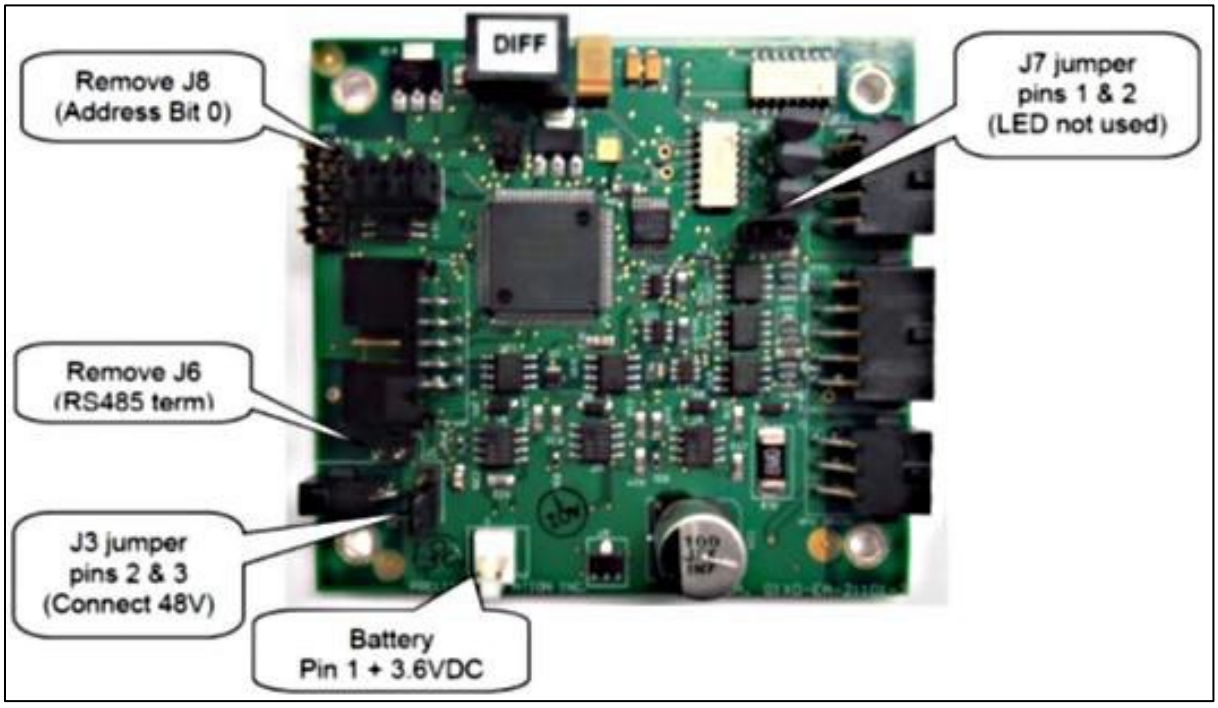
Disconnect the AC power before replacing the controller. Removing the front cover allows access to the AC power terminals.	

To use the Tension Meter, perform the following procedure.

Step	Action
1.	Remove the PreciseFlex linear rail cover by sliding the carriage to one end of travel and removing the 4 M4 X 30 SHCS from the end caps retaining the cover. It may also be necessary to loosen the connector end cap by loosening the bottom two screws attaching the connector end cap to the linear rail extrusion so the cover can be lifted up and removed.
2.	Remove the cable covers on the robot mount plate.

3.	Remove the robot mount plate (A). 
Step	**Action**
4.	Replace the PreciseFlex linear rail controller board. Be sure all jumpers are set as shown below and the battery wires are re-connected as shown. It will be necessary to recalibrate the robot if this board is replaced and the absolute encoder battery wires are disconnected.




DIFF
Remove J8
(Address Bit 0)
J7 jumper
pins 1 & 2
(LED not used)
Remove J6
(RS485 term)
J3 jumper
pins 2 & 3
(Connect 48V)
Battery
Pin 1 + 3.6VDC