FURIO

Barcode Positioning System

Upgrade Guide

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3. We will not ship crap.
4. We will be great to work with.
5. We will do something extra for our customers, as an apology, when something big goes wrong and it's our fault.
6. We will keep our promises.
7. We will treat the competition with respect.
8. We will cooperate with and help other friendly companies.
9. We will go above and beyond in times of crisis. *If there's no one to authorize the required action in times of company or customer crisis - do what you know in your heart is right. (You may rent helicopters if necessary.)*

BPS Upgrade Guide

- Ross Part Number: **5100DR-380-02**
- Release Date: May 30, 2025.

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Welcome

Welcome to the BPS Upgrade Guide.

This manual provides a general overview of the system and procedure required to upgrade your Furio system to include a Barcode Positioning System (BPS).

IMPORTANT: Initial setup and commissioning must be performed by Ross Video personnel only. Unauthorized attempts by customers or third parties to unpack, assemble, or commission any portion of the robotics system may result in equipment damage and/or serious injury. Any such attempts may void product warranties.

Text Formatting Conventions

Special text formats are used in this Technical Manual to identify parts of the user interface, text that a user must enter, or a sequence of menus and sub-menus that must be followed to reach a particular command.

Text Format	Meaning
Bold text	Bold text is used to identify a user interface element such as a dialog box, menu item, or button. For example: In the **Presets** panel, tap **ADD**.
`Courier text`	Courier text is used to identify text that a user must type. For example: In the address bar, type `localhost` and press **Enter**.
Italic text	Italic text is used to identify the titles of referenced guides, manuals, or documents. For example: For more information, refer to the ***SmartShell User Guide (5100DR-002-xx)***.
>	Menu arrows are used in procedures to identify a sequence of menu items that you must follow. For example, if a step reads "**Display** > **Widgets**," you would tap the **Display** menu and then tap **Widgets**.

Contacting Technical Support

At Ross Video, we take pride in the quality of our products, but if problems occur, help is as close as the nearest telephone.

Our 24-hour Hot Line service ensures you have access to technical expertise around the clock. After-sales service and technical support is provided directly by Ross Video personnel.

During business hours (Eastern time), technical support personnel are available by telephone any time. Emergency after hours calls are answered by an answering service (live person) who will patch your call to the on-call support specialist. In the event that the on-call person is assisting another customer, the answering service will contact the back-up support specialist.

Our team of highly trained staff is available to react to any problem and to do whatever is necessary to ensure customer satisfaction.

- **Toll Free Technical Support 24/7:** 1-844-652-0645 (North America), or +800 1005 0100 (International)
- **Technical Support:** (+1) 613-652-4886
- **E-mail for Technical Support:** techsupport@rossvideo.com
- **ROSS VIDEO | HELP CENTER:** https://support.rossvideo.com/hc/en-us
- **E-mail for General Information:** solutions@rossvideo.com
- **Ross Video Website:** http://www.rossvideo.com

Safety Instructions

Table 1 contains important safety instructions and notices. Before using this product and any associated equipment, read and keep these instructions and notices. Heed all warnings and follow all safety instructions

Important: Before operating or servicing any Furio system, please refer to and carefully read the ***Furio Safety Guide (5100DR-304-02)*** to ensure safe handling and operation.

Table 1 - Safety Instructions and Notices

Caution	This equipment must be operated by trained personnel only. This equipment must be operated in a controlled and restricted-access environment only.
Warning	The safe operation of this product requires that a protective earth connection be provided. A grounding conductor in the equipment's supply cord provides this protective earth. To reduce the risk of electrical shock to the operator and service personnel, this ground conductor must be connected to an earthed ground. Use only power cords specified for this product and certified for the country of use. Do not defeat safety purpose of the grounding-type plug. A grounding type plug has two blades and a third grounding prong. The third prong is provided for your safety. If the provided plug does not fit in to your outlet, consult an electrician for replacement of the obsolete outlet. Protect power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and points where they exit from the apparatus.
ESD	**ESD Susceptibility** — This symbol on the equipment or within the equipment manual indicates that an electrical or electronic device or assembly is susceptible to damage from an ESD event.
Warning	**Hazardous Voltages** — This symbol on the equipment or within the equipment manual indicates the presence of uninsulated “dangerous voltage” within the product enclosure that may be of sufficient magnitude to constitute a risk of shock to persons.
Warning	WARNING – TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE Do not use this apparatus near water. Do not block any ventilation openings. Install in accordance with manufacturer’s instructions. Do not install near heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat. Only use attachments/accessories specified by the manufacturer. Unplug this apparatus during lightning storms to avoid damaging power surges. Clean only with a dry cloth.
Warning	Refer all servicing to qualified personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug damage, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
Warning	To reduce the risk of fire, replacement fuses must be the same type and rating.
Warning	This product contains safety critical parts, which if incorrectly replaced may present a risk of fire or electrical shock. Components contained within the product’s power supplies and power supply area are not customer-serviceable and should be returned to the factory for repair.

Caution	Ensure that proper cable management techniques are used at all times. Bundle and wrap cables neatly, and provide adequate strain relief and slack where necessary. Test your cable installation by slowly moving the robotic units through their entire range of motion and observing the cables, to ensure that they do not become taut, or snag on anything. Inspect cables periodically for damage, and to ensure that proper cable management is maintained.
Warning	Damaged or improper cables may cause electric shock and/or fire. Ensure that all cables and connectors are of suitable type for their purpose, and that all power cable conductors are of adequate gauge for the voltage and current required. Inspect all cables periodically to check for damage. If a cable becomes damaged, turn off power to the system immediately, and then replace the damaged cable.
Warning	Serious injury can result from collisions between people and robots. If a robot or payload hangs low enough that it can collide with people in the studio, special precautions should be taken to prevent such collisions. Methods of reducing the risk of such collisions and injuries include, but are not limited to, the following: • Erecting signs at studio entrances to remind people about the presence of moving robots and other studio hazards. • Training personnel about safety procedures. • Showing personnel and guests the location of equipment, and explaining that robotic camera systems and cables attached to them may move at any time. • Escorting guests at all times while in the studio. • Erecting safety barriers to keep personnel away from the path of the robot(s). • Ensuring adequate lighting when working in the studio. • Marking safe paths and/or restricted areas, to keep people away from moving robots. • Ensuring that the Operator has a good view of the entire track and that they visually monitor the movement of robots and people to ensure they do not collide.
Caution	Loose or overtightened bolts may cause equipment damage. When servicing, tighten bolts to specified torque.
Warning	Moving parts may present a pinching hazard. Keep all personnel away from robots when they are operational. When a robotic head, dolly, or lift moves, fingers touching or near the unit, payload, or cable trolleys may become pinched. When installing or adjusting the payload, ensure that power to the system is turned off.
Warning	When servicing or moving equipment, always observe safe handling practices. Get help to move heavy items. Use safe lifting techniques. If working at heights, use proper equipment and techniques. Follow all safety rules of your workplace.
Caution	Loose payloads may slip, causing equipment damage and injury. Periodically check all bolts that fasten the payload, to ensure that they are tightened to specified torque. If the payload is loose or slips, ensure that it is properly balanced and fastened before operating the robot.
Caution	Imbalanced payloads may cause equipment damage. Ensure payloads are properly balanced. If you adjust a payload, always rebalance it.
Caution	Failure to inspect and maintain equipment may result in equipment damage and loose parts falling. Ensure that qualified personnel conduct all scheduled inspection and maintenance tasks described in this manual. If the system malfunctions, discontinue use until it has been repaired and deemed safe.
Warning	Do not move, modify, or remove any safety features, including track reflectors, safety bumpers, safety warning labels, and emergency stop (E-STOP) buttons.
Warning	Ensure that the Operator has a good view of the entire track at all times. Ensure there is an emergency stop box (E-STOP button) for each dolly within easy reach of the Operator, and that they know how to use it.

Furio Studio BPS Upgrade Procedure

This guide provides detailed instructions for upgrading the Wiredraw system to the Barcode Positioning System (BPS) on Furio dollies on both standard and integrated rails. Instructions for each specific setup will be distinguished where applicable.

Follow the step-by-step procedures to ensure a smooth and efficient upgrade process.

Before You Begin

Before commencing the replacement process, read and understand all instructions.
For any questions, contact **Ross Video Technical Support**: techsupport@rossvideo.com.

Notice: The images in this guide do not show the lift column attached to the dolly base.
It is **not necessary to remove the lift column** from the dolly base to complete the BPS upgrade, this is merely shown for demonstration purposes only.

Minimum Software Requirements

Operating BPS on a Furio Dolly System requires **SmartShell v7.0b** or higher with template files properly configured.

Note: Update virtual environment settings when switching to BPS (if applicable).

BPS Upgrade Kit Contents

The following items are provided within the **BPS Kit (FRO-DLY-BPS)**:

- **M6 screws, 10 mm long (x4)**
- **Furio Studio BPS (fully assembled)**

Required Tools

The following tools (not included) are required to complete the upgrade procedure:

- **3 mm hexagonal wrench**
- **4 mm hexagonal wrench**
- **5 mm hexagonal wrench**
- **6 mm hexagonal wrench**

Procedure Overview

The instructions for this upgrade procedure include:

10. "**Testing the BPS Unit**" on page 11
    - "**Power Off the Dolly**" on page 11
    - "**Test the BPS Unit**" on page 11
    - "**Power Off the Dolly and Disconnect the BPS Unit**" on page 12
11. "**Installing the Barcode Tape**" on page 13
    - "**Attach the Tape Jig to the Rail**" on page 13
    - "**Install the Barcode Tape**" on page 14
12. "**Installing the BPS to the Dolly Base**" on page 16
    - "**Power Off the Dolly**" on page 11
    - "**Remove the Wiredraw**" on page 16
    - "**Remove the FRU (Optional)**" on page 17
    - "**Remove the Side Cover Plates**" on page 18
    - "**Install the BPS Unit**" on page 18
    - "**Install the FRU**" on page 20
    - "**Power On the Dolly**" on page 22
    - "**Test the Install**" on page 22
    - "**Troubleshoot & Further Assistance**" on page 22

Testing the BPS Unit

To ensure the BPS functions properly before full installation, perform this test prior to the upgrade procedure.

Power Off the Dolly

1. Using SmartShell, drive the dolly as close to the wiredraw as possible.
2. Power off the dolly using the power switch located on the FRU.
   Tip: Alternatively, power off the dolly and push the dolly as close to the wiredraw as possible.
3. Flip the power switch on the FRU. This controls the power to the dolly, the robotic lift (if present), and the robotic head.
   Important: Always turn the dolly power switch OFF before connecting or disconnecting any cables.

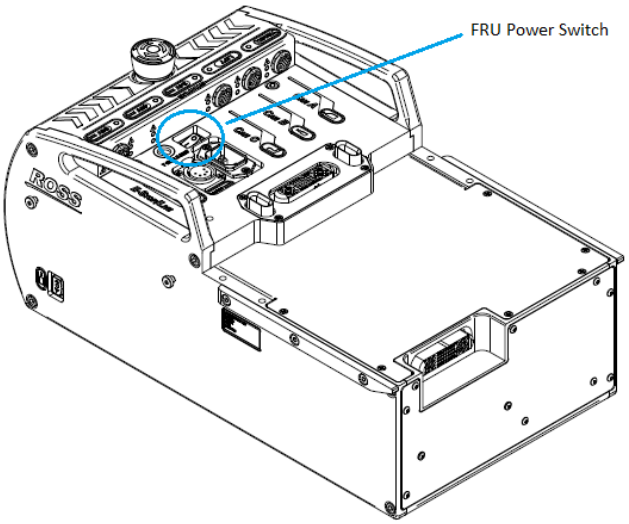

Figure 1 - *FRU Power Switch*

Test the BPS Unit

1. With the FRU power off, disconnect the existing CAN A wiredraw cable.
2. Connect the BPS CAN cable to the CAN A input on the FRU.
   Refer to **Figure 2**.

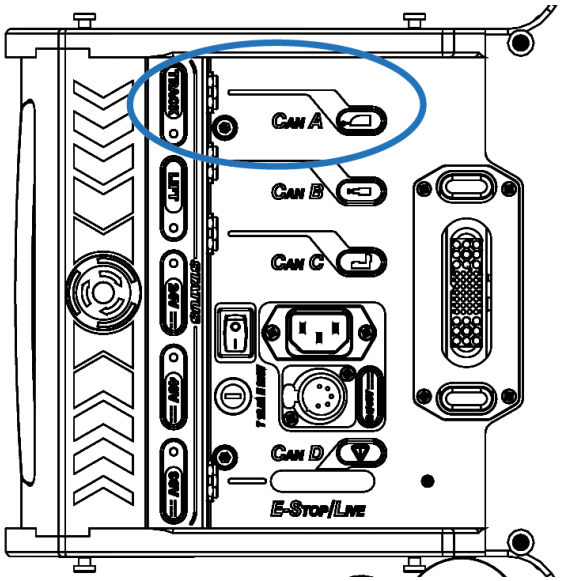

Figure 2 - *CAN A Input on FRU*

3. Turn on the FRU power and wait 30 seconds for the BPS system to initialize.
   Note: Verify that all status LEDs on the FRU and other components indicate normal operation (typically green).
4. Confirm the BPS laser is active. Point the BPS at a nearby surface.
   A a thin red laser line indicates functionality.
   Important: Avoid eye or skin exposure to direct beam.

Power Off the Dolly and Disconnect the BPS Unit

1. Power off the FRU
2. Disconnect the BPS CAN cable from CAN A on the FRU.
3. Disconnect the main AC power supply to ensure there is no power going to the dolly during the repair process.
4. Safely disconnect the power supply from the AC mains to ensure there is no power going to the dolly during the repair process.

Installing the Barcode Tape

Before installing the barcode tape and BPS, ensure the dolly is powered off and the steps in "**Power Off the Dolly**" on page 11 are complete.

Attach the Tape Jig to the Rail

1. Obtain the Tape Jig and loosen its screws using a 4 mm hexagonal wrench. Refer to **Figure 3**.

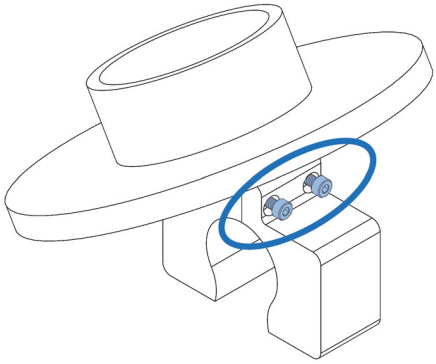

Figure 3 - *Tape Jig Screws*

2. Obtain the Tape alignment jig and loosen its screws using a 3mm hexagon wrench. Refer to **Figure 4**.

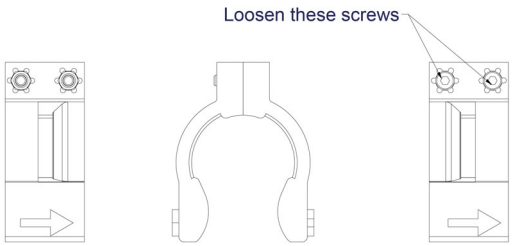

Figure 4 *Tape Alignment Jig*

3. Place the Tape Jig at the end of the rail opposite the dolly (the dolly will be moved in a later step).
4. Tighten the Tape Jig to the side of the rail that faces the drive wheel, as this is where the BPS sensor will go.
5. Place the barcode tape in the round mount.
6. Refer to **Figure 5** for examples of tape jig orientations. Install the tape jig in the orientation that best suits the requirements of your specific installation.

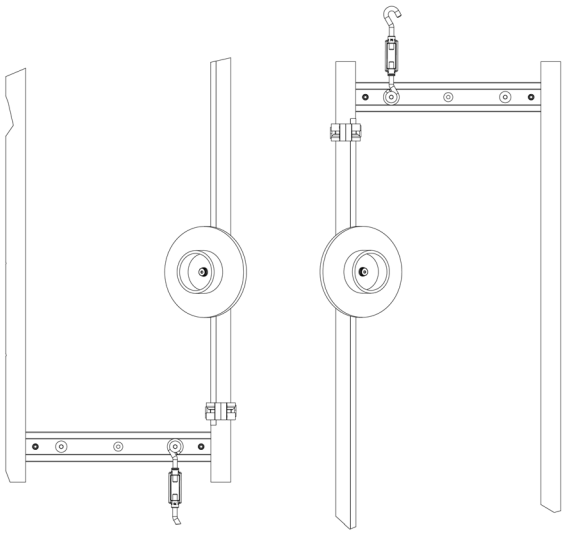

Figure 5 - *Examples of Tape Jig Orientations*

Install the Barcode Tape

1. Pull the barcode tape out of the Tape Jig, remove the backing paper, and feed it through the tape alignment jig as shown. Refer to **Figure 6**.
2. Tighten the screws on the tape alignment ring.
   Note: The barcode tape does not need to start immediately after the bumper. You can leave a gap of a few barcodes in length (approximately 50 to 170 mm from the BPS). However, ensure that the BPS scanner can still read the barcodes when the dolly is positioned as far back on the track as possible.

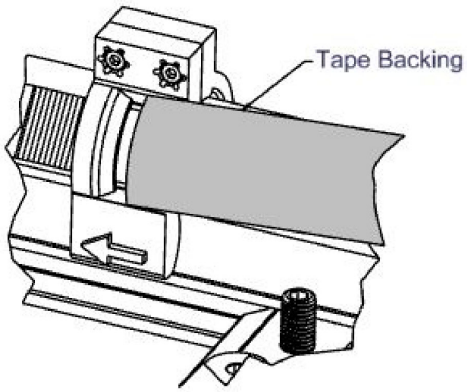

Figure 6 - *Tape Position as dictated by Alignment Jig*

3. For both integrated and standard rails, place the barcode tape along the convex upper portion of the rail, as shown in **Figure 7**.

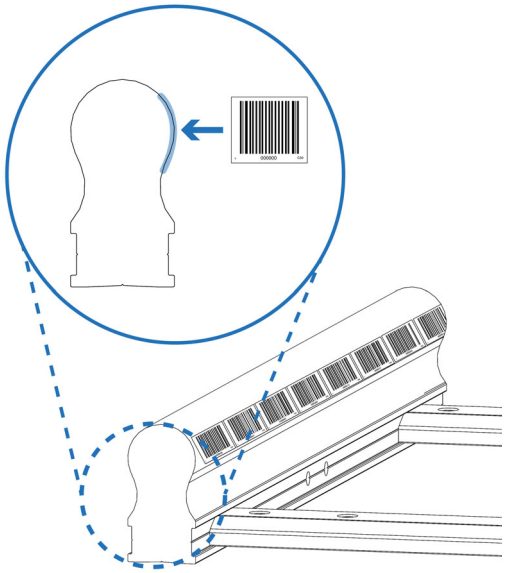

Figure 7 *Barcode Tape Position*

4. Advance the tape alignment jig along the rail slowly, removing the backing paper as you apply the tape along the rail, ensuring there are no creases in the tape as it gets applied along the rail. **IMPORTANT:** Ensure the barcode tape installation is leveled.

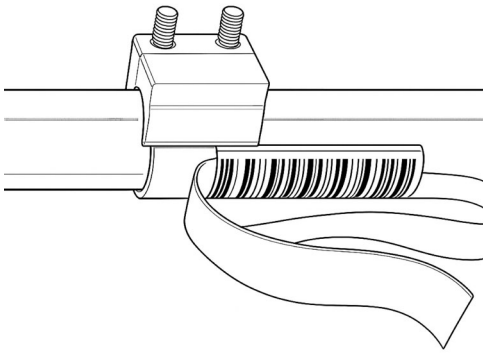

Figure 8 *Barcode Tape Position on Rail*

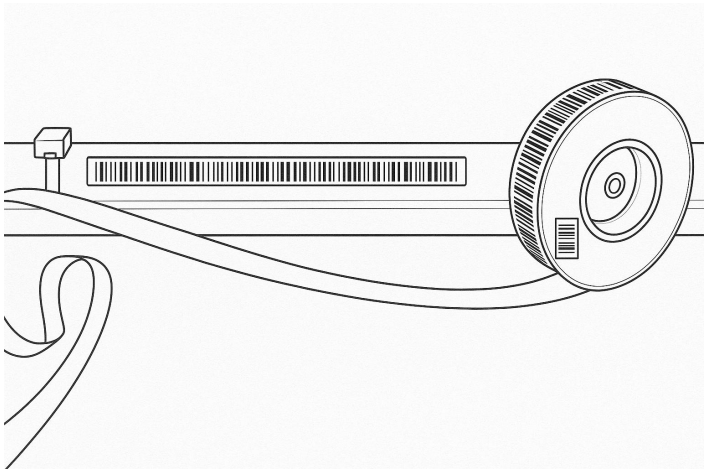

Figure 9 *Barcode Tape Position on Rail with Tape Jig and Tape Alignment Jig*

5. Before placing the final length of barcode tape, remove the Tape Jig and Tape Alignment Jig, then move the dolly past the area still requiring barcode tape.
6. Affix the Tape Jig and Tape Alignment Jig back on the rail and apply the final barcode tape, ensuring the entire rail length is covered.
   IMPORTANT: Some systems have multiple dollies on a shared track, and as a result may require barcode tape on both rails depending on the positioning of the dollies. Barcode tapes must **always** go on the inside rail near the drive wheel.

Installing the BPS to the Dolly Base

Remove the Wiredraw

1. Move the dolly as close to the wiredraw as possible before detaching the cable.
2. Use a 6 mm hexagonal wrench to remove the bolt that secures the wiredraw cable to the dolly while holding the wiredraw.

   Note: Grasp the cable end tightly, but do not wrap it around your hand or bend it.

   IMPORTANT: Handle the wiredraw cable with care to avoid permanently damaging the cable and wiredraw unit. NEVER allow the cable to snap back into the wiredraw unit. If you release the cable and it snaps back into the wiredraw unit, the unit may be irreparably damaged.
3. Hold the cable close to the floor and parallel to the track to avoid rubbing the steel cable against the wiredraw enclosure box, protecting the cable from damage.
4. Slowly walk the cable back to the wiredraw unit. Do not allow it to snag or rub against anything, except the part of the rail it normally contacts (curved tracks only).
5. Use a 5 mm hexagonal wrench to remove the two screws securing the wiredraw to the side plate. Refer to **Figure 10**.

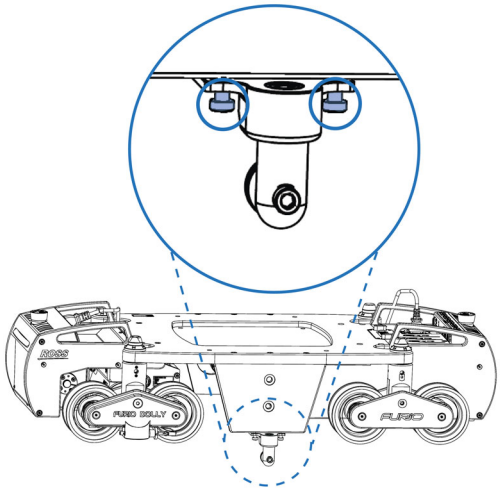

Figure 10 - *Two Screws that Secure the Wiredraw*

6. Once the wiredraw unit is removed completely, dispose of it if a separate bumper kit has been ordered.
   If no bumper kit is available, retain the wiredraw for further use.

Remove the FRU (Optional)

This step is optional. Remove the FRU at your own discretion.

1. Disconnect all cables from the FRU.

   Tip: Ensure that each cable is labeled, so they're easy to reconnect later.

2. Use a 5 mm hexagonal wrench to remove the four screws that secure the FRU to the dolly.

   Refer to **Figure 11**.

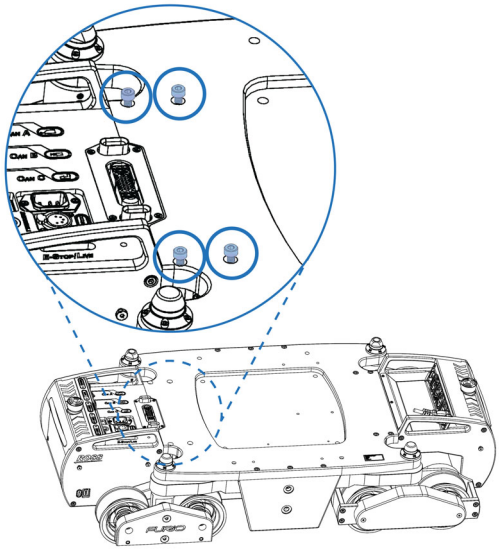

Figure 11 - *Four Screws that Secure the FRU*

3. Grasp the handles on the FRU, and then slowly slide it out from the body of the dolly.

   Tip: The FRU has two runners that ride on guide rails within the body of the dolly. Be prepared to catch the FRU as it disengages from the body of the dolly.

Remove the Side Cover Plates

1. Locate the side cover plate on the same side as the drive wheel.
2. Using a 5 mm hexagonal wrench, remove the three screws securing the side cover plate as shown in **Figure 12**.

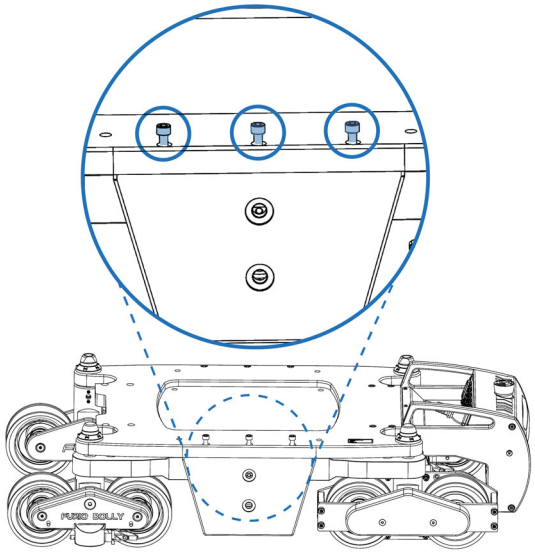

Figure 12 - *Three Screws that Secure the Side Plate*

3. Remove the side cover plate and store it nearby for reassembly.
4. Repeat **steps 1-3** for the side cover plate on the opposite side of the dolly.

Install the BPS Unit

1. Secure one of the side plates to the BPS assembly using a 4 mm hexagonal wrench and two of the M6 screws provided in the BPS Kit per side cover plate (four total).
   This plate should be attached to the side that is opposite to the bar code reader.
   Refer to **Figure 13**.

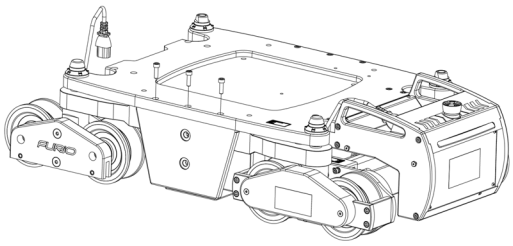

Figure 13 *Three Screws that Secure the Side Plate*

IMPORTANT: Do not over-tighten the screws.

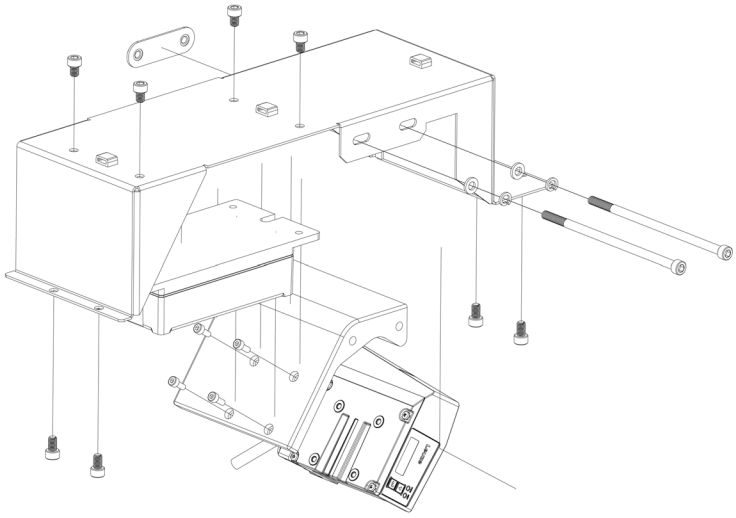

Figure 14 *BPS Installation*

2. Slide the BPS unit underneath the dolly opposite the drive wheel, ensuring the scanning sensor faces the drive wheel. Refer to **Figure 15**.

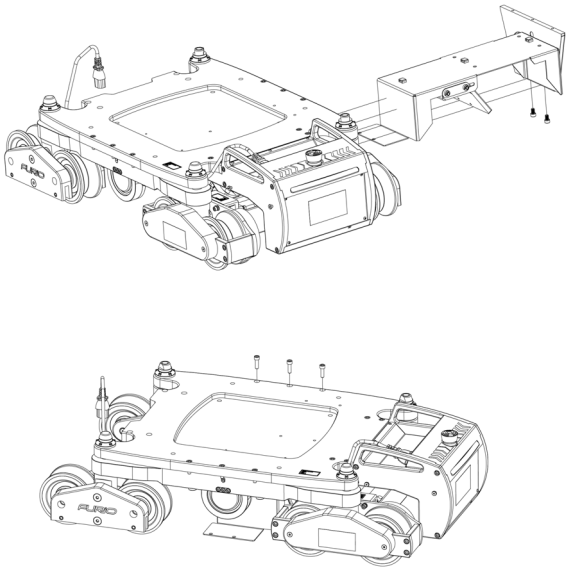

Figure 15 - *BPS Installation Orientation*

Note: The BPS unit only has one installation orientation. If your installation does not fit properly, ensure that the scanning sensor is near the drive wheel. Refer to **Figure 15**.

3. Reinstall the other side cover plate using a 5 mm hexagonal wrench to tighten the three screws from Furio Studio BPS Upgrade Procedure“Remove the Side Cover Plates” above. Refer to **Figure 16**.

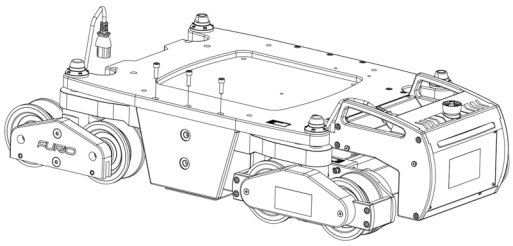

Figure 16 - *Three Screws that Secure the Side Plate*

4. Reinstall the opposite side cover plate by tightening the remaining three screws.
5. Secure the BPS bracket to the side cover plate on one side of the dolly using a 4 mm hexagonal wrench and two of the M6 screws provided in the BPS Upgrade Kit. Refer to **Figure 17**.
   IMPORTANT: Do not over-tighten the screws.

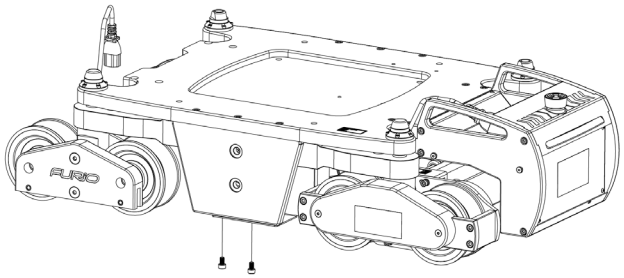

Figure 17 - *Two BPS Bracket Screws Secured to the Side Plate*

6. Secure the BPS bracket to the opposite side cover plate, fasten until the bracket is tightly held in place.
7. Return to the side cover plate attached in **Step 4** and tighten, ensuring the BPS unit is level across the dolly base.

Install the FRU

1. Align the runners of the FRU with the guide rails within the body of the dolly, and then slowly slide the FRU into place. Continue until the FRU is fully inserted.

   Tip: When the FRU is fully inserted, the four mounting holes on the top of the dolly base align perfectly with the mounting holes on the FRU.
2. Insert and tighten the four mounting screws you removed in "**Remove the FRU (Optional)**" on page 17, using a 5 mm hexagonal wrench. Refer to **Figure 18**.

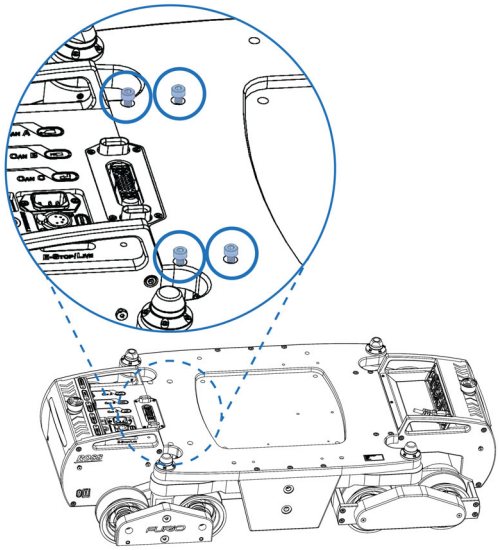

Figure 18 - *Four Mounting Screws that Secure the FRU*

3. Feed the BPS CAN cable through the space between the passive wheel and the FRU opposite the drive wheel. Refer to **Figure 19**.

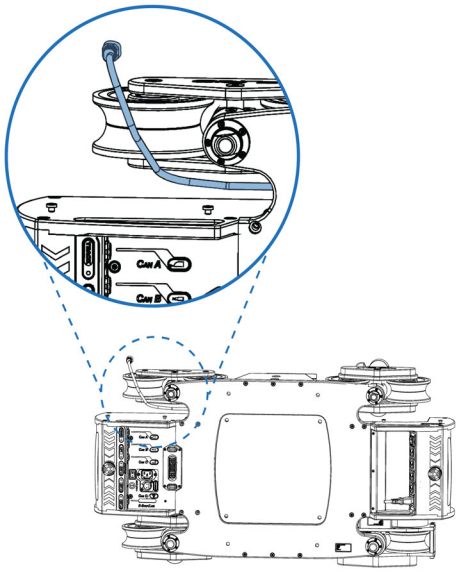

Figure 19 - *BPS CAN Cable Connection to FRU*

4. Use the cable ties and cable tie mount from the BPS Upgrade Kit to tie excess cable length into a neat coil, ensuring there is enough length to reach the FRU without dragging below the dolly or contacting the wheels.
5. Connect the BPS CAN cable to the CAN A input on the FRU. Refer to **Figure 20**.

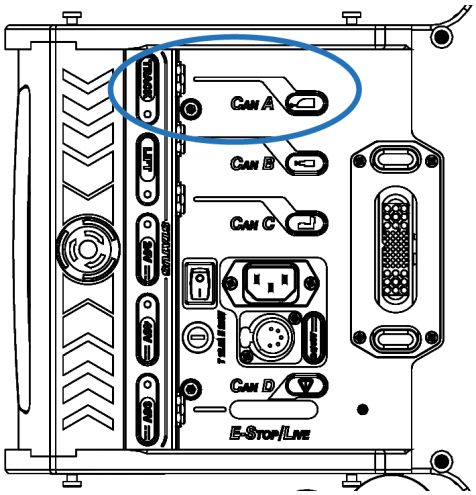

Figure 20 - *CAN A Input on FRU*

6. Reconnect all remaining cables to the FRU.
   IMPORTANT: Ensure that all cables are reconnected to their original positions.

Power On the Dolly

1. Ensure all connections are secure and reconnect the power supply to the dolly.
2. Turn on the power switch of the dolly and allow it to boot up.
   Note: Verify that all status LEDs on the FRU and other components indicate normal operation (typically green).
3. Wait for the BPS system to initialize. The system will perform a self-check and display a ready status once complete.

Test the Install

1. Open the SmartShell control station and select the dolly you have upgraded.
2. Command the dolly to move along the entire track, ensuring it passes over all sections of the barcode tape.
3. Ensure that the positional data is consistent and matches the expected values for the track positions.
4. Monitor the SmartShell interface for any error messages or warnings during the test movements.
5. Run the dolly back and forth multiple times.

Troubleshoot & Further Assistance

In the event of BPS reading error, perform the following:

- **Retry Tape Installation:** If errors persist or the system does not function properly, reapply barcode tapes, ensuring they are level.
- **Laser Position Adjustment**
  - To adjust laser position for Furio Studio BPS, the FRU must be removed from the Dolly.
  - The BPS must be plugged into the FRU and powered to activate the laser.
  - Adjust laser position by loosening screws and sliding reader head towards the wheels to increase its height on the tape or towards the center of the dolly to lower its height. Refer to the figure below.
  - Tighten screws once desired height is achieved.
  - Reinstall FRU.
- **Contact Support:** If problems continue, contact Ross Video technical support for further assistance.

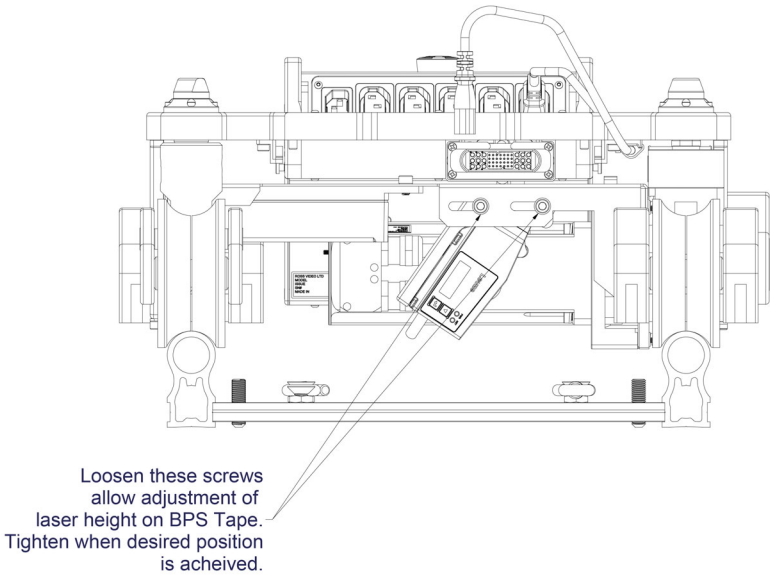

Figure 21 *Furio Studio BPS Laser Height Adjustment (FRU removed)*

Furio SkyDolly
BPS Upgrade Procedure

This guide provides step-by-step instructions for installing the Barcode Positioning System (BPS) on the SkyDolly system. Follow these procedures to ensure a smooth installation process.

Before You Begin

Before commencing the replacement process, read and understand all instructions.
For any questions, contact **Ross Video Technical Support**: techsupport@rossvideo.com.

Minimum Software Requirements

Operating BPS on a Furio SkyDolly System requires **SmartShell v7.0b** or higher with template files properly configured.

Note: Update virtual environment settings when switching to BPS (if applicable).

BPS Upgrade Kit Contents

The following items are provided within the **BPS Upgrade Kit** (**FRO-SKY-BPS**):

- **BPS unit**
- **BPS bracket (attached to BPS unit)**
- **Gateway**
- **CAN cable**
- **Velcro fasteners**

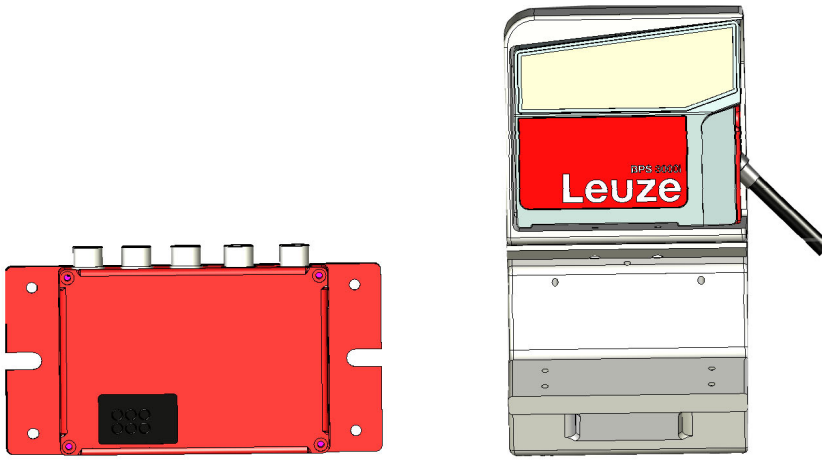

Figure 22 *Gateway, BPS Unit, BPS Bracket, and CAN Cable (not all kit components shown)*

Required Tools

The following tools (not included) are required to complete the upgrade procedure:

- **3 mm hexagonal wrench**

Procedure Overview

The instructions for this upgrade procedure include:

1. "**Preparing the Dolly**" on page 26
   - "**Record Preset Positions**" on page 26
   - "**Power Off the Dolly**" on page 26
   - "**Remove the Wiredraw**" on page 26
2. "**Installing the Barcode Tape**" on page 27
   - "**Attach the Tape Jig to the Rail**" on page 27
   - "**Install the Barcode Tape**" on page 27
3. "**Installing the BPS to the Dolly Base**" on page 29
   - "**Install the BPS**" on page 29
   - "**Power On the Dolly**" on page 31
   - "**Verify Laser Positions**" on page 32
   - "**Offset Calibration Using Preset Positions**" on page 32
   - "**Perform Final Verifications**" on page 32
4. "**Troubleshoot & Further Assistance**" on page 33

Preparing the Dolly

Record Preset Positions

Before commencing the installation, record two preset positions of the SkyDolly to ensure it can be accurately repositioned after the BPS is installed.

Complete the following:

1. Record at least two preset positions using SmartShell. One of these presets should ideally be the "0" position of the dolly on the track to facilitate future offset calculations.
2. Note the track values for these presets as displayed in SmartShell (top left window).
3. Mark the positions on the track and dolly using tape and pencil for precise repositioning.

Power Off the Dolly

1. Move the dolly as close to the wiredraw as possible.
2. Use the SmartShell control station to bring the dolly to a complete stop.
3. Flip the main power switch **OFF**.
   This controls the power to the dolly, the robotic lift (if present), and the robotic head.
   Note: The power switch is located on the dolly and may be difficult to access. Customers typically leave dollies powered ON for long periods.
   Important: Always turn the dolly power switch **OFF** before connecting or disconnecting any cables.
4. Safely disconnect the power supply from the AC mains to ensure there is no power going to the dolly during the upgrade process.

Remove the Wiredraw

Although the existing wiredraw system will be replaced by BPS, it is recommended to leave the wiredraw box in place in case future reconnection is needed.

1. Move the dolly as close to the wiredraw as possible before detaching the wiredraw cable from the dolly.
2. Carefully detach the wiredraw cable, ensuring the bracket remains in place.
   Note: Grasp the cable end tightly, but do not wrap it around your hand or bend it.
   IMPORTANT: Handle the wiredraw cable with care to avoid permanently damaging the cable and wiredraw unit. NEVER allow the cable to snap back into the wiredraw unit. If you release the cable and it snaps back into the wiredraw unit, the unit may be irreparably damaged.
3. Hold the cable close to the rail and parallel to the track to avoid rubbing the steel cable against the wiredraw enclosure box, protecting the cable from damage.
4. Slowly walk the cable back to the wiredraw unit. Do not allow it to snag or rub against anything, except the part of the rail it normally contacts (curved tracks only).
5. Secure the wiredraw ring to prevent it from interfering with the dolly's movements.

Installing the Barcode Tape

Attach the Tape Jig to the Rail

1. Obtain the Tape Jig and loosen its screws using a 4 mm hexagonal wrench. Refer to **Figure 23**.

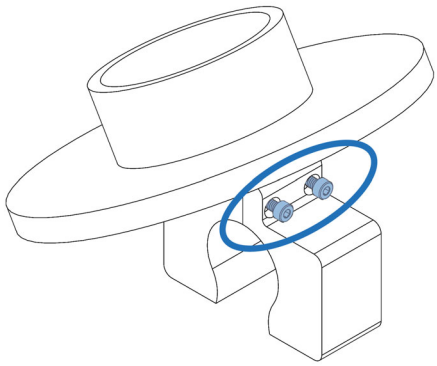

Figure 23 - *Tape Jig Screws*

2. Place the Tape Jig at the end of the rail opposite the dolly (the dolly will be moved in a later step).
3. Tighten the Tape Jig to the side of the rail that faces the drive wheel, as this is where the BPS sensor will go.
4. Place the barcode tape in the round mount.
5. Position the Tape Jig on the outside of the rail.

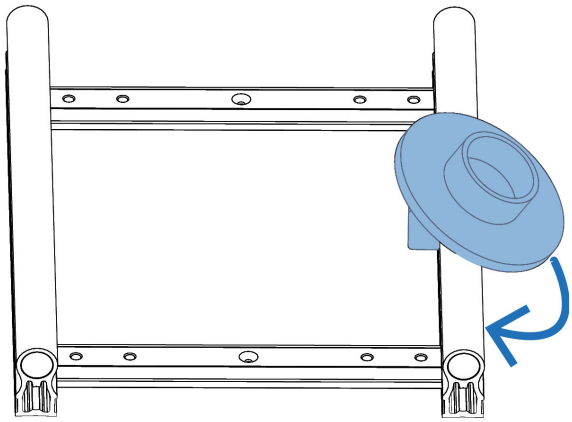

Figure 24 - *Tape Jig Orientation for Furio SkyDolly*

Install the Barcode Tape

1. Place the barcode tape roll in the provided Tape Jig, ensuring the jig is not fully tightened so that it can move along the rail.
   Note: Place the barcode tape roll in the provided tape jig, ensuring the jig is not fully tightened so that it can move along the rail.
2. Begin applying the barcode tape as close as possible to the wiredraw housing, positioning it in the concave section of the lower rail. Refer to **Figure 25**.
   Important: Smooth out any bubbles that may appear by using a cutter blade to pierce and remove them. Ensure the tape is laid continuously without any intermediate cuts or overlaps.

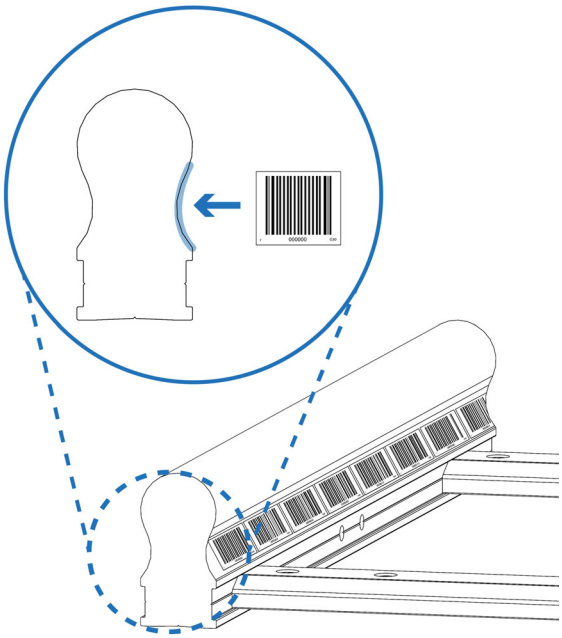

Figure 25 - *Barcode Tape Location on Rail*

3. Pull the Tape Jig gently along the rail as you continue to press the barcode tape into place.
   IMPORTANT: Although the Tape Jig holds the tape, it does not align it. Ensure the barcode tape installation is leveled.
4. Before placing the final length of barcode tape, remove the Tape Jig and move the dolly past the area still requiring barcode tape.
5. Affix the Tape Jig back on the rail and apply the final barcode tape, ensuring the entire rail length is covered.
   IMPORTANT: Some systems have multiple dollies on a shared track, and as a result may require barcode tape on both rail depending on the positioning of the dollies. Barcode tapes must **always** go near the drive wheel.

Installing the BPS to the Dolly Base

Install the BPS

1. Insert the BPS Unit into the BPS Bracket.
   Note: Depending on the setup, BPS Upgrade Kits are available to support either inner or outer rail scanning. Refer to **Figure 26** and **Figure 27**.

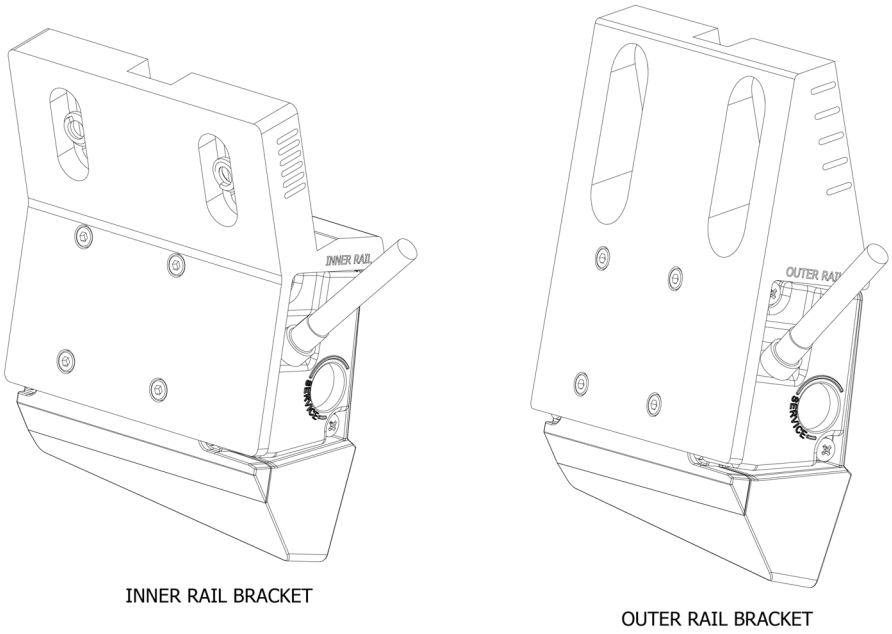

Figure 26 *BPS for Inner Rail Scanning (Left) vs. Outer Rail Scanning (Right)*

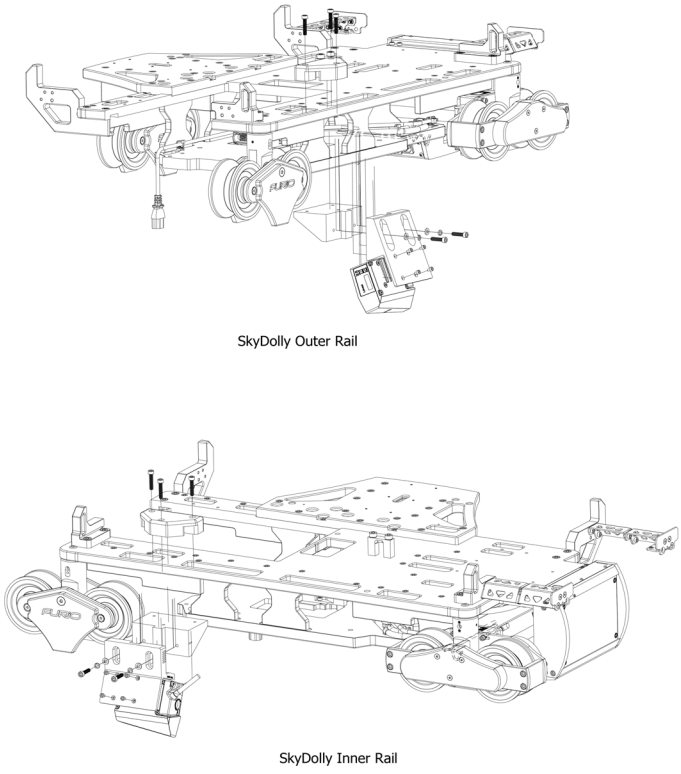

Figure 27 *BPS for Inner Rail Scanning (Left) vs. Outer Rail Scanning (Right) Mounted on SkyDolly*

2. Use the M6 screws provided to connect BPS to the SkyDolly base with the 5 mm hexagonal wrench. Ensure the scanning sensor faces the drive wheel.
Note: The BPS unit should be installed beside the passive wheel near the FRU, not the drive wheel.

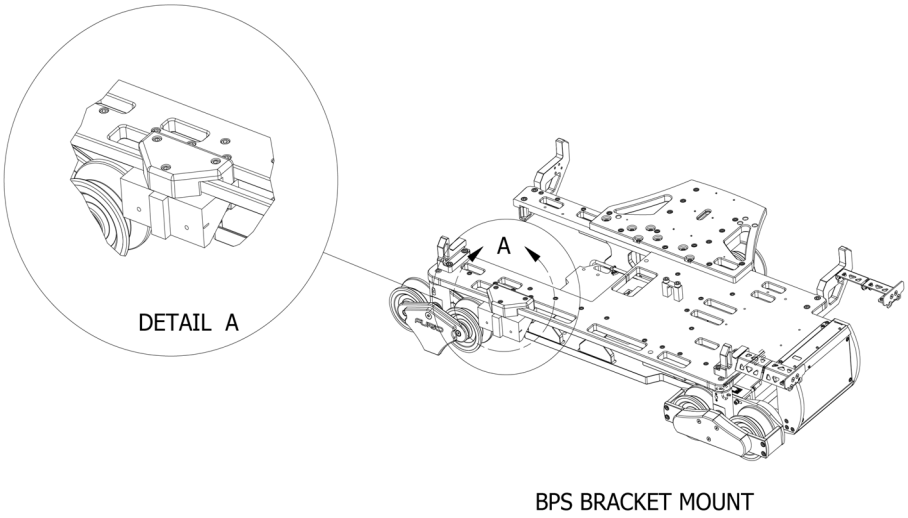

Figure 28 *BPS Unit and Bracket Mounting Location on SkyDolly*

3. Attach the red Gateway box to the top of the dolly using the supplied Velcro fasteners.

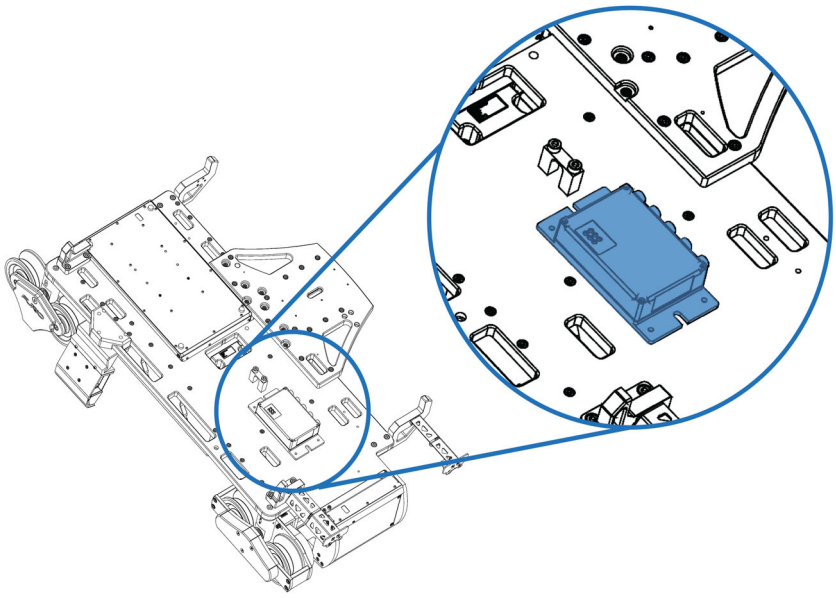

Figure 29 *Red Gateway Box Mounted Atop SkyDolly*

4. Disconnect the existing CAN track cable (from the wiredraw box) and connect the new CAN cable from the red Gateway box.

Power On the Dolly

1. Ensure all connections are secure and reconnect the power supply to the dolly.
2. Turn on the power switch of the dolly and allow it to boot up.
3. Wait for the BPS system to initialize.
   The system will perform a self-check and display a ready status once complete.

Verify Laser Positions

1. Once the dolly is on, verify that the laser covers the side of the track correctly.
2. Power off and reposition laser angle if necessary, then power on and confirm laser position.

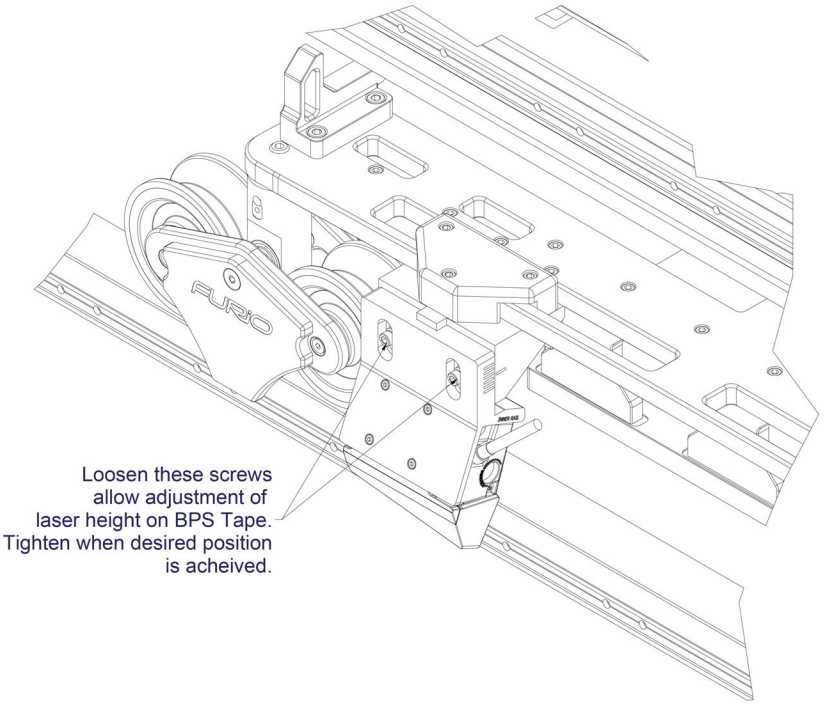

Figure 30 *SkyDolly BPS Laser Height Adjustment*

Offset Calibration Using Preset Positions

1. Place the dolly at the first preset position recorded, ideally at the "0" position.
2. Power on the SkyDolly and SmartShell.
   Caution: Do not recall a preset at this point to avoid unintended movement.
   Note: The track value displayed in SmartShell. This value represents the offset needed to align the track to "0."
3. Adjust the track offset via the web interface using the noted value.
   For example, if the track value displayed is – 2300.0, add this value to the current offset in the web interface (e.g., if the current offset is – 100.0, the new offset will be (– 100.0) + (– 2300.0) = 2200.0).
4. Select Save to save the new offset value and reboot the system.
5. Wait one minute, then restart SmartShell.
   Verify that the track value reads "0." If not, repeat the offset adjustment.
6. Move the dolly to the second preset position and verify that the track value matches the recorded value.

Perform Final Verifications

1. Conduct a final verification of various existing presets.
   Use the **RUN** function rather than **CUT** to avoid abrupt movements.
2. Ensure that all presets correspond accurately to the expected positions.

Troubleshoot & Further Assistance

In the event of BPS reading error, perform the following:

- **Retry Tape Installation**: If errors persist or the system does not function properly, reapply barcode tapes, ensuring they are level.
- **Contact Support:** If problems continue, contact Ross Video technical support for further assistance.