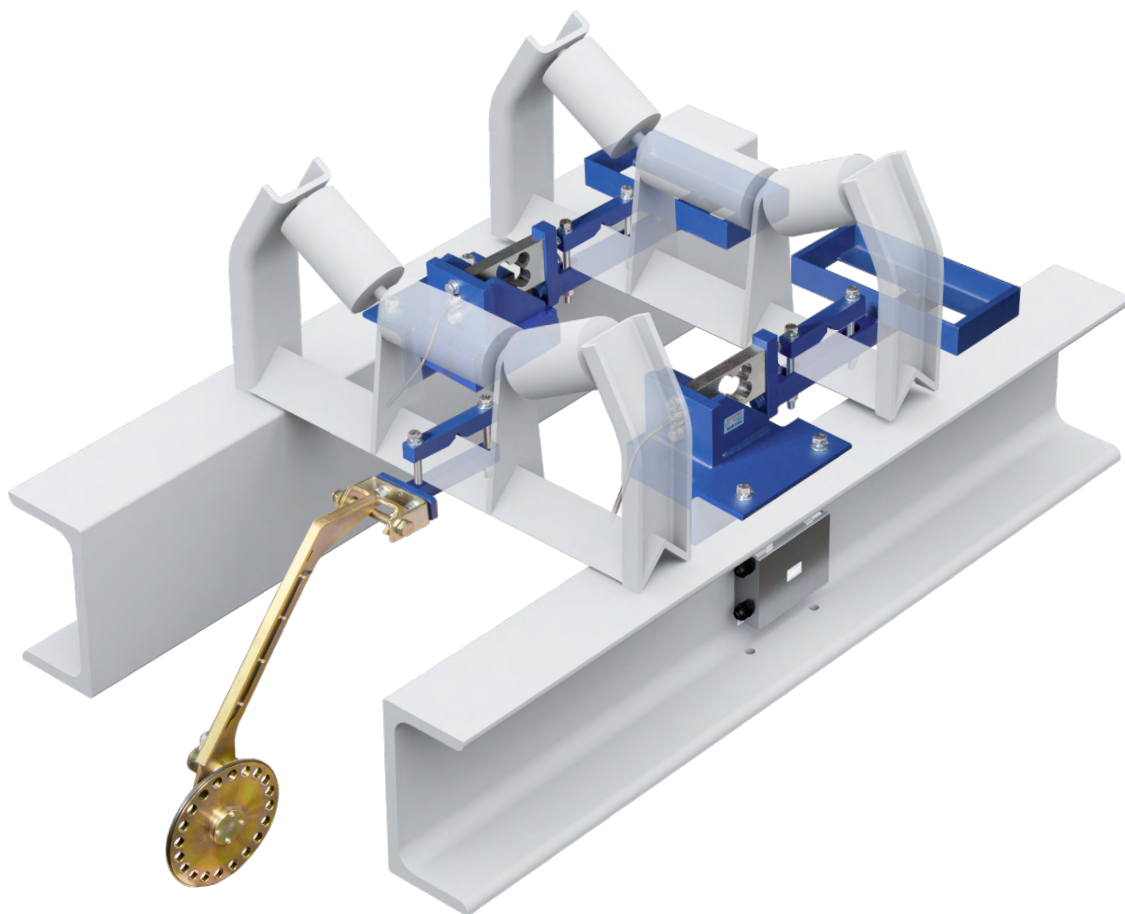


ANYLOAD

CNV100
Conveyor Belt Scale



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V1

TECHNICAL MANUAL



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All information contained in this publication is, to the best of our knowledge, accurate and complete at the time of release. ANYLOAD reserves the right to make changes to the technology, features, specifications, and design of the equipment without prior notice.

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⚠ Safety Notice ⚠

IMPORTANT: READ BEFORE PROCEEDING

The assembly and installation of belt scales involve complex procedures that require strict adherence to safety standards. This guide provides essential instructions for safely assembling and installing belt scales.

Failure to follow these guidelines may result in serious injury, property damage, or death.

1. Qualified Personnel Only:

The assembly and installation of belt scales should only be performed by trained and authorized personnel. All workers involved must have the necessary technical expertise and understanding of load-bearing structures, electrical systems, and safety protocols.

2. Personal Protective Equipment (PPE):

All personnel must wear appropriate PPE at all times during the assembly and installation process. This includes, but is not limited to, hard hats, safety glasses, gloves, steel-toed boots, and high-visibility clothing.

3. Site Preparation:

Ensure that the installation site is clear of obstructions, level, and properly graded. Verify that all underground utilities have been identified and marked to avoid accidental damage.

4. Heavy Equipment and Lifting:

Use appropriate lifting equipment, such as cranes or forklifts, to handle heavy components. Ensure that all lifting gear is properly rated for the weight of the components being handled. Always follow safe lifting practices to prevent accidents.

5. Load-Bearing Safety:

Belt scales are load-bearing structures. Proper assembly is critical to ensure the scale can safely support the maximum load it is designed to handle. All components must be installed according to the specifications provided in this guide. Any deviation may compromise the structural integrity of the scale.

6. Electrical Safety:

Belt scales often incorporate electrical components for weighing systems. Ensure that all electrical connections are made by a qualified electrician and comply with local electrical codes. Power should be turned off at the source during installation to prevent electrical shock.

7. Weather Conditions:

Avoid assembly and installation during adverse weather conditions such as extreme heat, heavy rain, snow, high winds, or lightning. Wet or icy conditions can create slip hazards and reduce the effectiveness of tools and equipment.

8. Load Testing:

After installation, the belt scale must be load-tested to ensure it operates correctly under load. This testing should be performed according to the procedures outlined in this guide and only by qualified personnel.

9. Regular Inspections and Maintenance:

Once installed, belt scales require regular inspections and maintenance to ensure ongoing safe operation. Follow the maintenance guidelines provided in this manual to address any wear and tear or potential issues before they become hazardous.

10. Emergency Procedures:

Ensure that all personnel are familiar with emergency procedures, including the location of first aid kits, fire extinguishers, and emergency contact numbers. In case of an emergency, stop all work immediately and follow established safety protocols.

Disclaimer:

ANYLOAD Weigh & Measure Inc. is not liable for any accidents, injuries, or damages resulting from assembly, installation, or failure to follow the safety guidelines provided in this guide. The responsibility for safe assembly and installation lies with the customer and/or installation personnel.

All information contained in this publication is, to the best of our knowledge, accurate and complete at the time of release. ANYLOAD reserves the right to make changes to the technology, features, specifications, and design of the equipment without prior notice.

For further guidance or clarification, please contact ANYLOAD technical support before proceeding with the installation.

Indicative Marking	Significance
⚠ WARNING ⚠	Warns of a dangerous situation which will result in serious physical injury or death if not avoided.
⚠ CAUTION ⚠	Warns of a dangerous situation which could result in physical injury or death if not avoided.
Notice	Failure to comply with information with this marking may lead to minor injury and/or damage to property if not avoided.
Important	Important information about the product.
NOTE	Application notes, tips and other information that may be helpful.
<i>For emphasis (Italics)</i>	Italics are used to emphasize key information.

	⚠ WARNING ⚠
	Only allow trained professionals to install or service this equipment. Use caution when conducting checks, tests, and adjustments that require power to be on. Neglecting these safety measures may lead to serious bodily harm.

	⚠ WARNING ⚠
	Disconnect all power to this unit / system, lock out power switches, and wait for at least 30 seconds before installing, servicing, cleaning, or removing the fuse. Neglecting these safety measures may lead to serious bodily harm and or damage to equipment.

	⚠ CAUTION ⚠ - DANGER OF BODILY HARM OR PROPERTY DAMAGE
	• Use appropriate lifting and jacking equipment to ensure safe and stable lifting. Make sure the equipment is in good working condition and has the necessary load capacity. • When a module is being moved, avoid placing any body parts between the module and any other surface. • If you must position any body parts beneath a module, ensure the module is securely supported to prevent any movement.

	⚠ CAUTION ⚠ - MINIMIZE RISK OF BODILY HARM
	• Do not replace more than one load cell at a time. • Wear appropriate personal protective equipment (PPE) such as gloves and steel-toed shoes when handling load cells and weighing systems. • Keep the scale area as clean and clear of debris or obstructions as possible to minimize the risk of slips, trips, or falls during installation or servicing.

	⚠ CAUTION ⚠ - RISK OF COMMUNICATION FAILURES
	• Make sure that no stray conductors are left unsecured. Exposed strands of wires can lead to communication failures if they bridge the connection in the terminal block. • Keep all electrical components absolutely dry on the inside and as dry as possible on the outside. • When handling load cell cables, always exercise care to avoid potential damage. Be mindful of moisture exposure, as it can compromise a cable's integrity and functionality. To prevent pinching, cuts, or abrasions, ensure that the cable is routed safely and securely, away from sharp edges and moving parts.

1 Overview

The ANYLOAD CNV100-SET is a modular, easy to install weigh frame assembly engineered to provide continuous, high-accuracy weight measurement for bulk materials on a moving conveyor belt. The CNV100 Conveyor Belt Scale consists of specialized load cells and mounting hardware designed to support the weight of a conveyor idler. By measuring the weight exerted by the material passing over the belt, the system calculates the mass flow rate. The product measures the instantaneous mass flow rate and totalizes the total weight of material delivered over a specific period. This allows facilities to monitor production levels, manage inventory, and ensure process control without stopping the belt.

The CNV100 offers exceptional versatility, making it an ideal solution for any industrial sector that requires the continuous weighing of bulk solids. In the mining and aggregate industries, it is frequently employed to track the flow of sand, gravel, crushed stone, and various ores. Agricultural operations utilize the system for the precise handling of grains, animal feed, and fertilizers, while the construction sector relies on its accuracy within cement plants and asphalt production facilities. Furthermore, the CNV100 plays a critical role in the energy sector for coal handling and biomass processing, as well as in the chemical industry for managing the flow of bulk powders and pelletized materials.

2 Technical Specifications

Item	Parameter	Specification
CNV100 Weigh Frame	Accuracy	Less than 1% total error (single idler)
	Flow rate	5000t per hour max on single idler
	Width	Fits conveyors between 16 to 98 inches in width
SPD100 Speed Sensor	Sampling Rate	10 pulses per feet 33.3 pulses per metre
	Belt Speed	Max. 800 ft/min Max. 4 m/s
	IP Rating	IP65 dust and moisture protection
	Material	Galvanized steel
108DSTP Load Cell	Safe Overload	150%
	Breaking Overload	300%
	Temperature Compensation	14°F to 122°F (–10°C to 50°C)
	IP Rating	IP68 Welded seal
	Material	17-4PH Stainless Steel

2.1 Weigh Frame

The primary function of the weigh frame is to provide secure housing for the load cells and serve as the mounting point for the conveyor idler frames. As bulk material travels over the belt, the frame ensures that the weight exerted on the idlers is accurately transferred to the load cells, which detects the weight of material flow. The ultimate purpose of this assembly is to provide the data necessary to measure the material flow rate in real-time, allowing for totalized weight tracking and process monitoring.

2.1.1 Design and Dimensions

The CNV100 features a modular "split-frame" design that offers a flexible width between 16" to 98". By utilizing one load cell per side to attach directly to the lateral sides of the conveyor stringers, the system eliminates the need for a rigid, fixed-width crossmember. This allows for universal compatibility, and the design is space efficient.

Universal Compatibility

It is compatible with a wide range of idler and belt designs, regardless of the conveyor's specific structural width. Able to accommodate belt widths between 16" to 98".

Space Efficiency

The assembly is specifically built to fit underneath the conveyor wheels (idlers), maintaining a low profile that avoids interference with the belt or supporting structure.

2.2 Speed Sensor

The speed sensor functions by utilizing high-frequency light pulses to track the exact velocity of the conveyor. It attaches directly to the conveyor frame, with a contact wheel that rests against the return belt. As the belt moves, the wheel rotates, allowing the internal optical sensor to translate this motion into measured light pulses.

The primary purpose of this component is to provide the real-time speed data required to calculate the mass flow rate. By monitoring the return belt, the sensor avoids material interference, ensuring the integrator receives a clean, accurate signal of the belt's travel speed to pair with the weight data.

A standout feature of this design is its use of optical pulse technology, which offers significantly faster and more precise readings than traditional mechanical sensors. This high-resolution feedback ensures that the mass flow calculation remains stable and accurate, even in systems with high speeds or frequent belt fluctuations.

2.3 108DSTP Load Cell

The 108DSTP is a compact, stainless steel single point load cell designed for reliable and accurate weighing applications. This load cell delivers a full-scale output of 2.0 mV/V with excellent linearity, repeatability, and hysteresis all within $\pm 0.05\%$. With a compensated temperature range of -10°C to 50°C and a safe overload capacity of 150%, it's a robust and dependable choice for industrial weighing systems.

Built from 17-4PH stainless steel and rated IP68, it's fully sealed for use in harsh or wet environments. This single point load cell is designed to maintain precision in off-centre and dynamic loading conditions, hence optimal for belt scale weighing performance.

2.3.1 Calibration

Calibration trays on the weigh frame are used to apply static test weights for calibration. Test weights are used to test repeatability and the state of the belt scale after initial calibration. For this procedure, refer to the manual of the electronics installed.

NOTE Use test weights ranging from 20 kg to 50 kg. Higher test weights are not required for this procedure.

3 Installation

This section describes and details the installation steps for the belt scale. The location must be chosen for installation of the scale carriage prior to installation. Use the following steps to assemble the carriage. Tools required for assembly include a wrench to tighten all bolts on the weigh frame and a small screwdriver to work with the junction box.

NOTE The load cell and the CNV100 Frame will be assembled prior to shipping to simplify user installation. If load cell or other parts of the frame need to be replaced, please refer to [4.2 Replacement Parts](#).

⚠ WARNING ⚠

Installation must be performed by qualified personnel. Verify the conveyor structure is suitable and isolated from power before beginning installation.

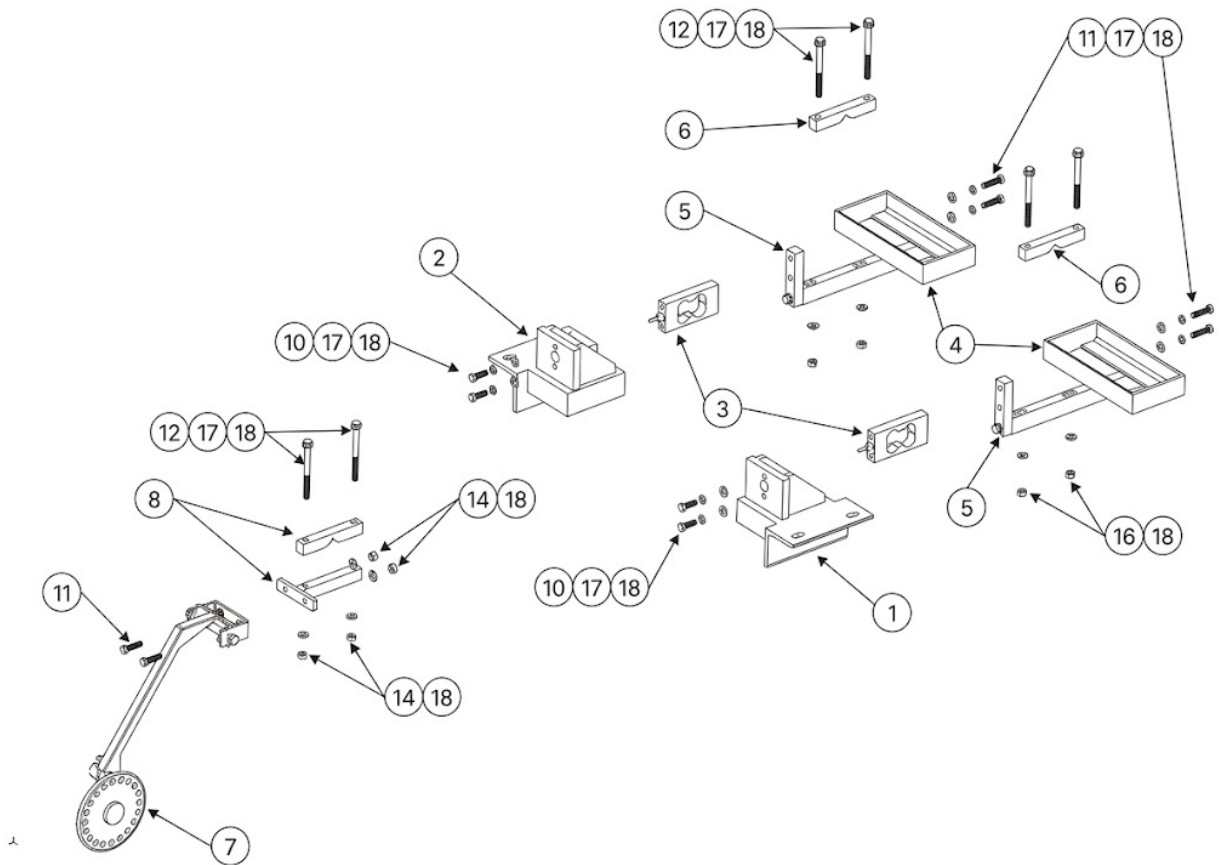


Figure 1: Exploded Parts View

3.1 Parts List

Item Name	Item No.	Description	Quantity
CNV100-FRAME-A	1	Load Cell Mounting Bracket (R)	1
	2	Load Cell Mounting Bracket (L)	1
	3	108DSTP Load Cell	2
	4	Calibration Tray	2
	5	Load Cell Mount	2
	6	Wheel Bar Mount	2
SPD100-A	7	Speed Sensor & Wheel	1
	8	Speed Sensor Idler Wheel Mount	1
Fasteners	9	M20x65 Bolts used to secure Items 1 and 2 to the frame are not shown	4
	10	M12x35	4
	11	M12x40	4
	12	M12x140	6
	13	M20 Hex Nut Nuts used to secure Items 1 and 2 to the frame are not shown	4
	14	M12 Hex Nut	10

	15	M20 Flat Washer Washers used to secure Items 1 and 2 to the frame are not shown	4
	16	M20 Spring Washer Washers used to secure Items 1 and 2 to the frame are not shown	4
	17	M12 Flat Washer	14
	18	M12 Spring Washer	14

3.2 Weigh Frame Installation

NOTE The load cell and the CNV100 Frame will be assembled prior to shipping to simplify user installation. If load cell or other parts of the frame need to be replaced, please refer to [4.2 Replacement Parts](#).

1. Select the installation location for the CNV100 Frame and mark the bracket mounting hole positions on the conveyor belt frame.

NOTE

- a. For best accuracy, install the weigh frame in a straight, level section of the conveyor with consistent idler spacing.
 - b. Ensure that the left and right sides are aligned to each other.
2. Drill two M20 holes on each conveyor belt frame for the mounting holes.

CAUTION

- a. Ensure no structural members, electrical conduits, or utilities are damaged during drilling.
3. Align the brackets with the pre-drilled holes and install them in the same orientation as shown in Figure 3.

NOTE

- a. Ensure all brackets are installed in the correct orientation to maintain proper load transfer and weighing accuracy.
4. Secure the frame to the conveyor channel using M20x65 bolts, flat washers, spring washer, and M20 hex nut. See Figures 2 to 4 for reference.

NOTE

- a. Verify all spaces are clean and free of debris before tightening.

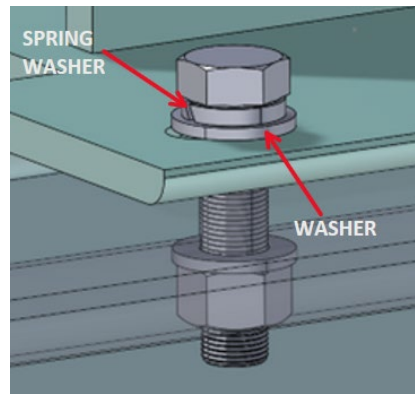


Figure 2: Bolting Configuration

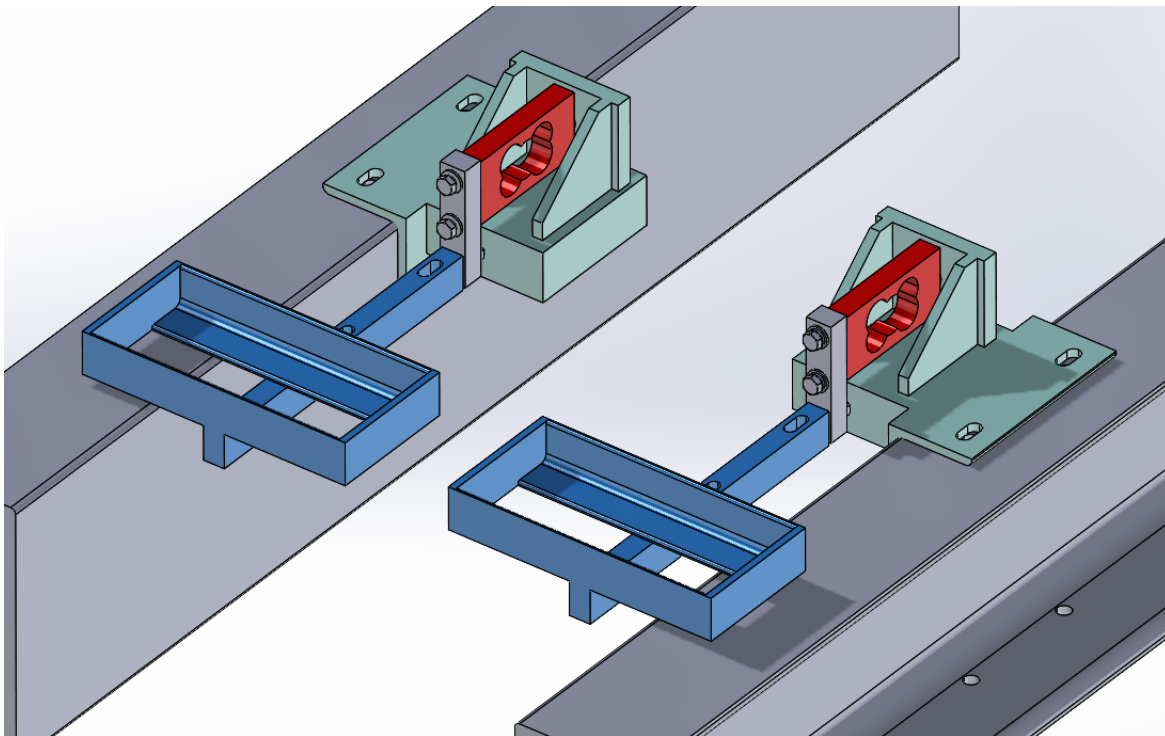


Figure 3: Calibration Trays Installed

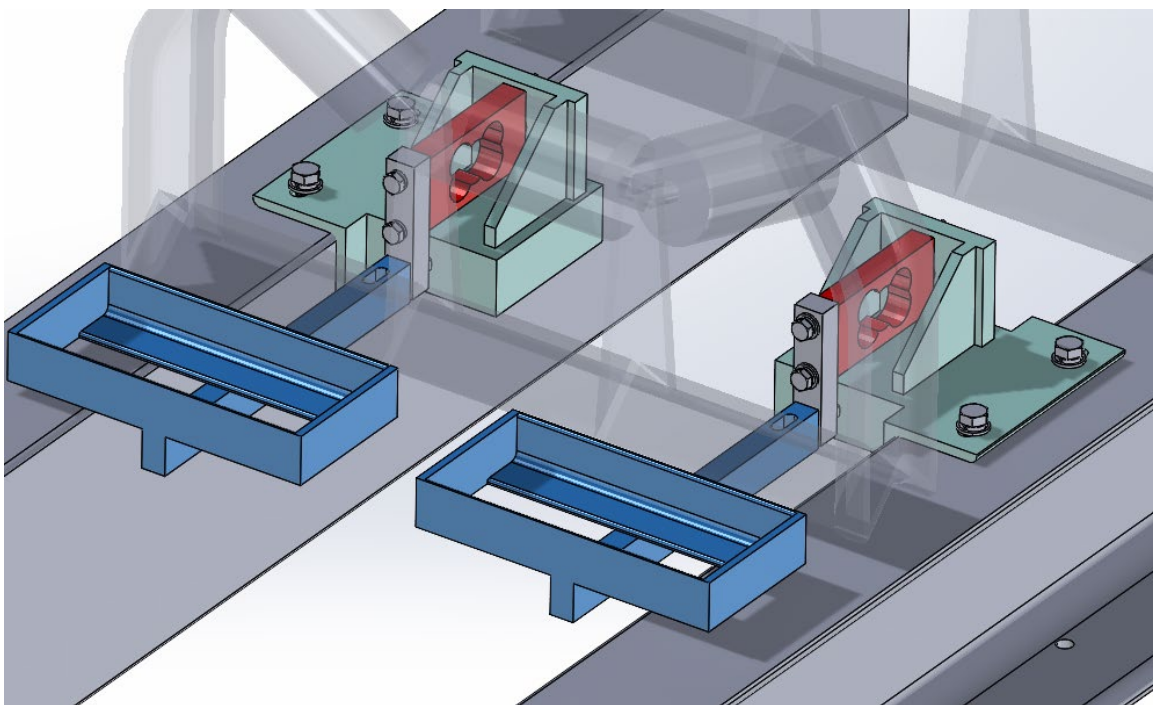


Figure 4: Calibration Trays Installed with Idler

5. Install Wheel Bar over the idler wheel bracket. Secure with M12x110 bolts, washer, spring washer and bolt. See Figure 5 and 6.
6. When in use to measure weight, loosen Idler Mount bolts. See Figure 6 for more details.

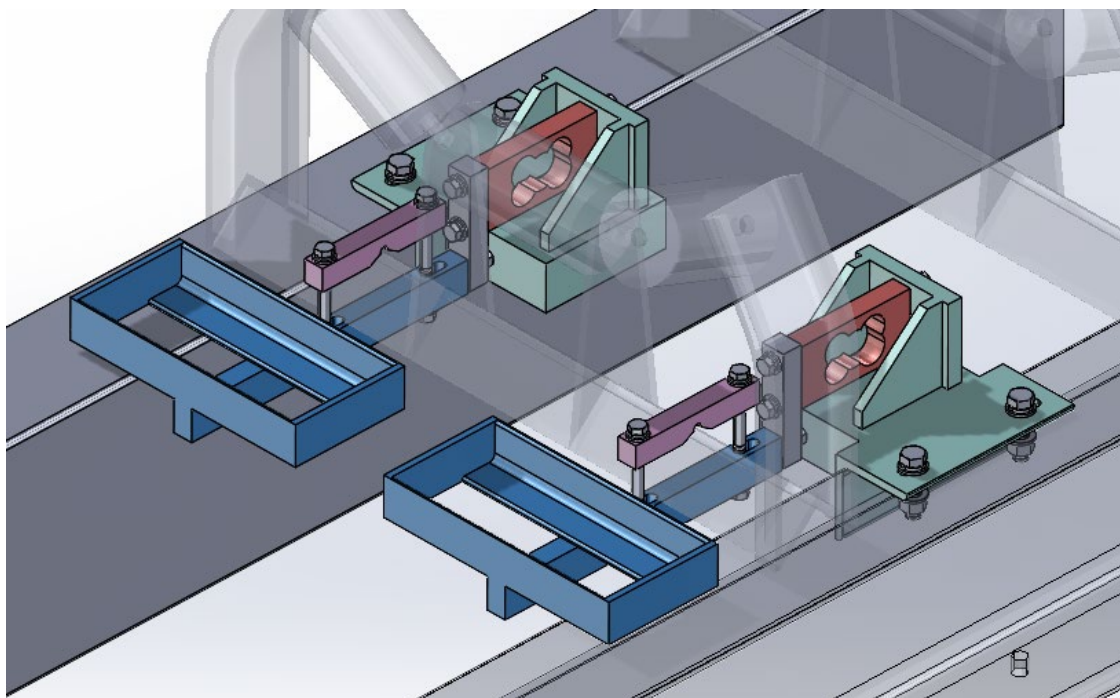


Figure 5: Weigh Frame Installed

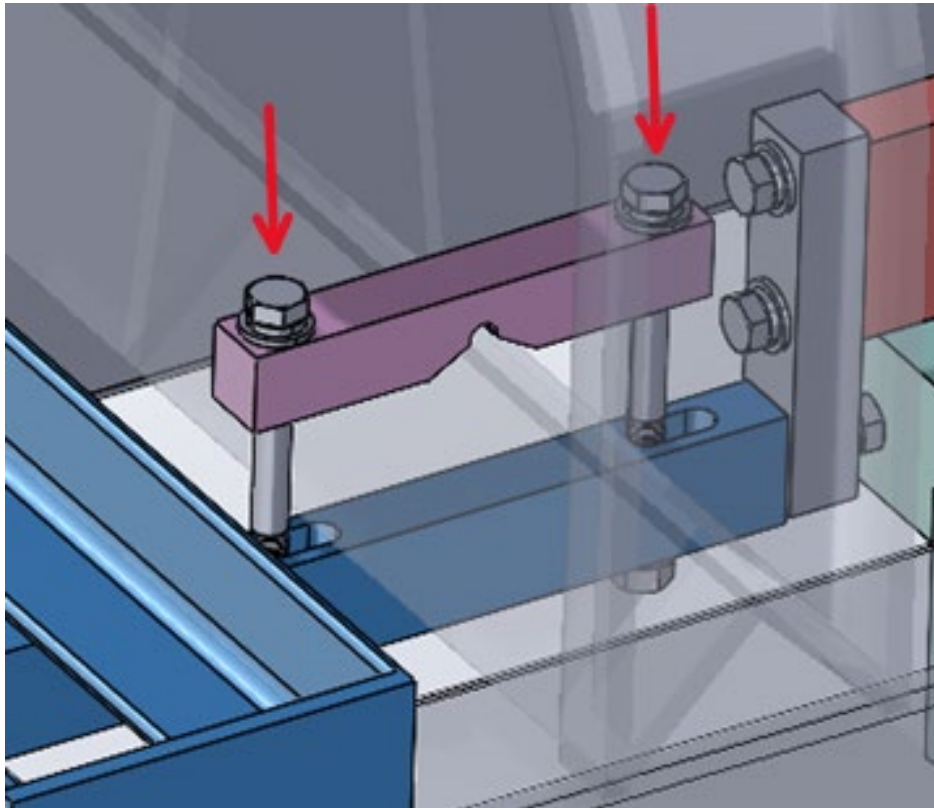


Figure 6: Lock Bolts

3.3 Speed Sensor Installation

NOTE

- a. The speed sensor cable is supplied in a fixed length. If additional cable length is required to accommodate site conditions or installation requirements, an extension cable may be connected.
1. Ensure speed sensor will be installed as close to the centre line of the belt as possible.
2. Attach speed sensor to idler wheel mounting bracket with two M12X45 bolts, spring washer, flat washer, and M12 nut.

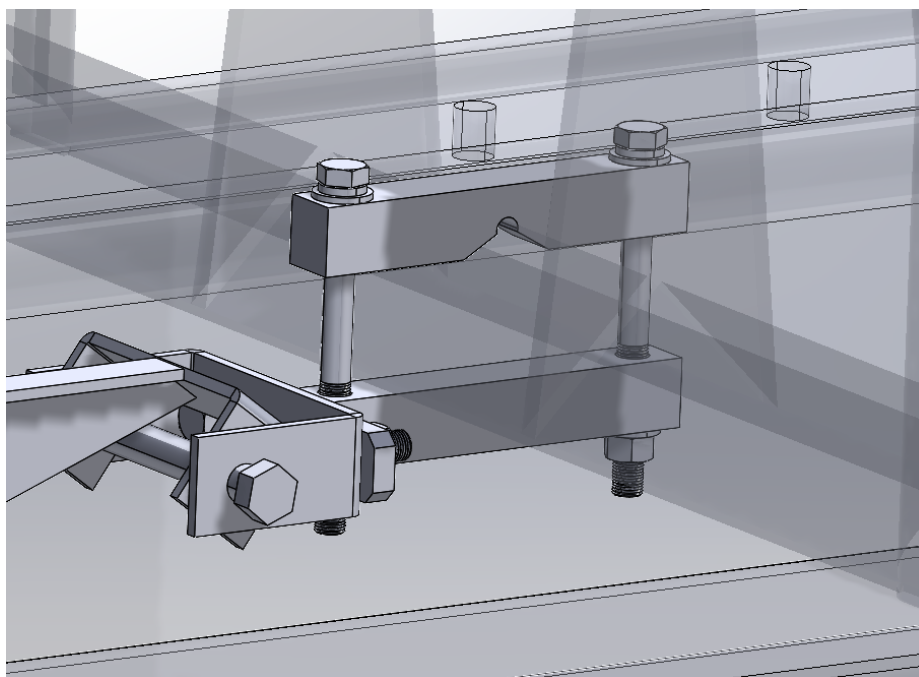


Figure 7: Speed Sensor Mount

3. Install wheel bar over the idler wheel bracket. Secure the speed sensor bracket with M12x110 bolts, spring and flat washer, and M12 nuts.

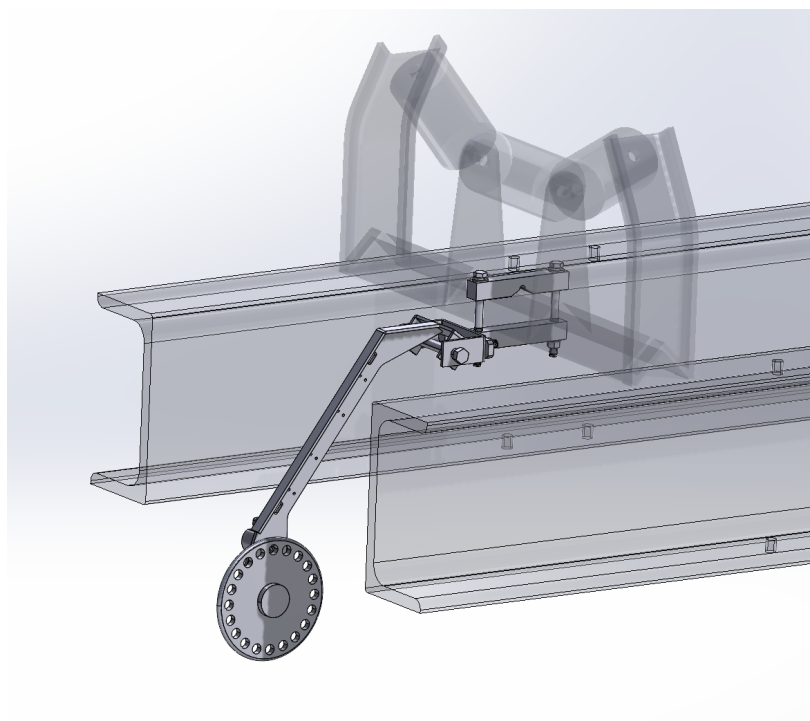


Figure 8: Speed Sensor Installation

3.4 Trough Angle Installation

Troughing angles of 35° or less are preferred for all high-accuracy installations to improve

reading precision and minimize operational errors. To ensure data integrity and optimal belt scale performance, angles exceeding 35° must be avoided in belt scale setups.

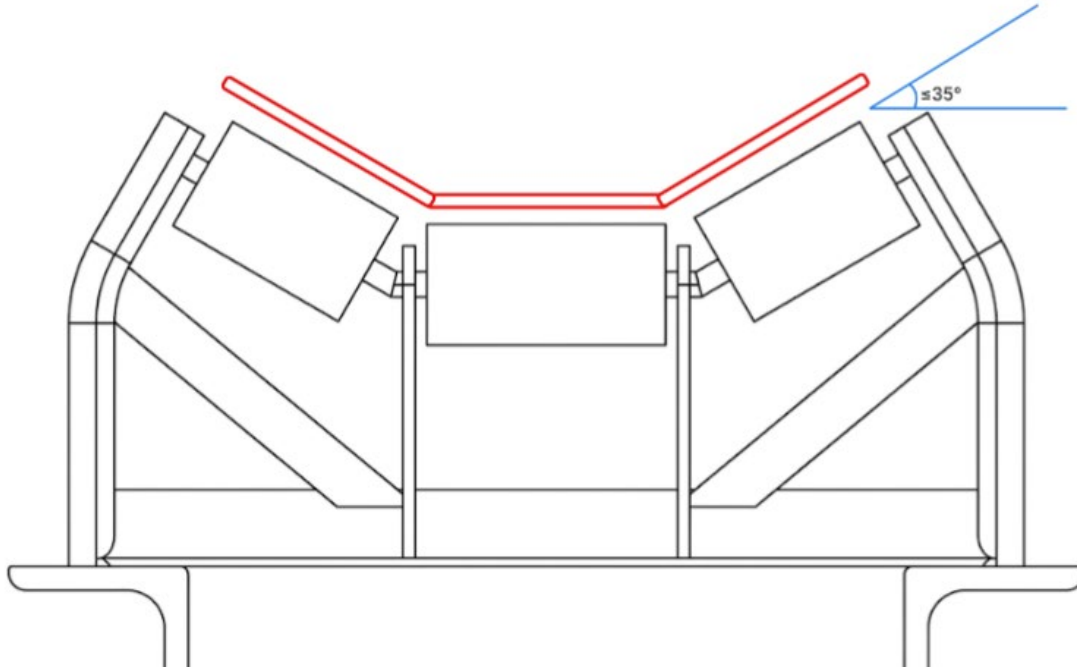


Figure 9: Trough Angle

3.5 Junction Box Installation

1. Mount the junction box in a suitable location that is protected from damage and allows easy access for wiring and maintenance.
 - a. It is recommended to install the junction box near both the speed sensor and the load cells, preferably inside the conveyor channel for protection.
 - b. The final junction box location is at the customer's discretion.
 - c. Location should be determined based on the application, cable lengths, and the placement of the integrator.
2. Wire load cells according to the load cell data sheets.
3. Terminate homerun cable at the junction box and integrator.
4. Calibrate the scale using the calibration procedure for the applicable integrator.

3.6 Commissioning

Commissioning shall be performed only by qualified service engineers with appropriate training and experience.

3.7 Mechanical Adjustments

Perform mechanical adjustments to ensure the scale is completely free of tension. Load cell adjustment may be carried out if required. Use the appropriate tools to avoid damages to the assembly.

4 Maintenance

Proper and consistent maintenance is required to avoid errors and unplanned downtime. The supplier shall not be held responsible for any consequences resulting from non-compliance with the recommended maintenance procedures.

IMPORTANT

All maintenance work shall be carried out in a manner that ensures personnel safety and prevents accidents. Isolate and disconnect the main power supply before working on electrical systems. Shut down the conveyor and remove all material prior to maintenance. Access to the conveyor work area is restricted to authorized personnel only.

4.1 Regular Maintenance

Periodic maintenance is required to maintain optimal belt scale performance. It is important to complete the following maintenance tasks on a regular basis:

- Keep the conveyor belt free of debris and material buildup.
- Inspect the weigh frame for signs of damage or wear and repair as required.

4.2 Replacement Parts

1. Align the mounting brackets with the pre-drilled holes and install them in the same orientation as shown in the reference figures below.
 - NOTE**
 - a. Ensure all brackets are installed in the correct orientation to maintain proper load transfer and weighing accuracy.
2. Secure the Load Cell Bracket Mounts to the conveyor channel using M20x65 bolts, flat washers, spring washer, and M20 hex nut. See Figures 10 to 12 for reference.

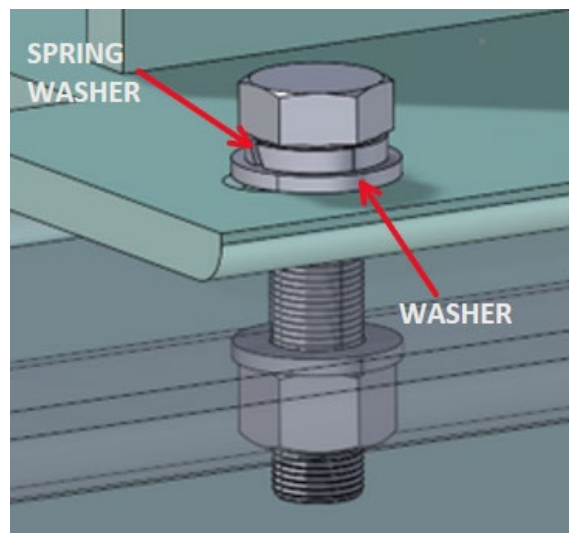


Figure 10: Bolting Configuration

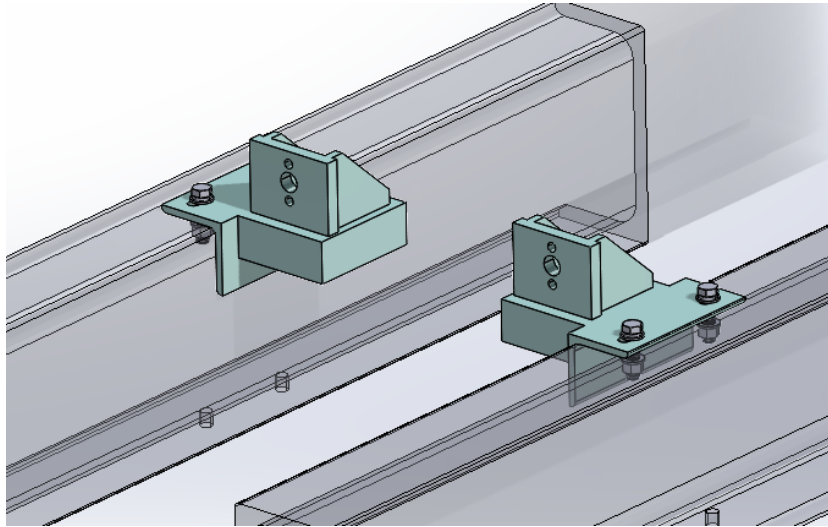


Figure 11: Load Cell Bracket Mount Back View

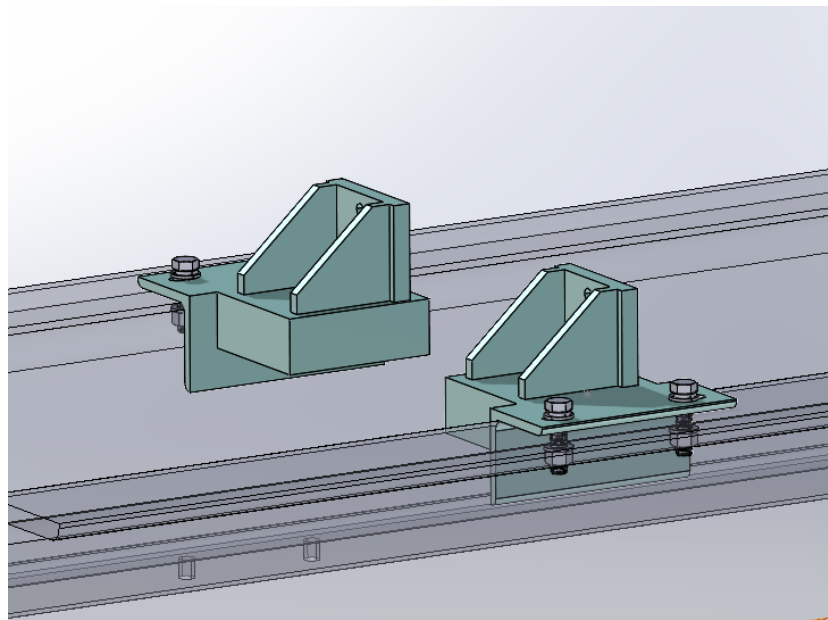


Figure 12: Load Cell Bracket Mount Front View

3. Align the load cells with the L-brackets and secure using **M12×35 bolts** with spring washer and flat washers. See Figure 13 for details.

CAUTION

- a. Avoid side loading or twisting the load cells during installation.

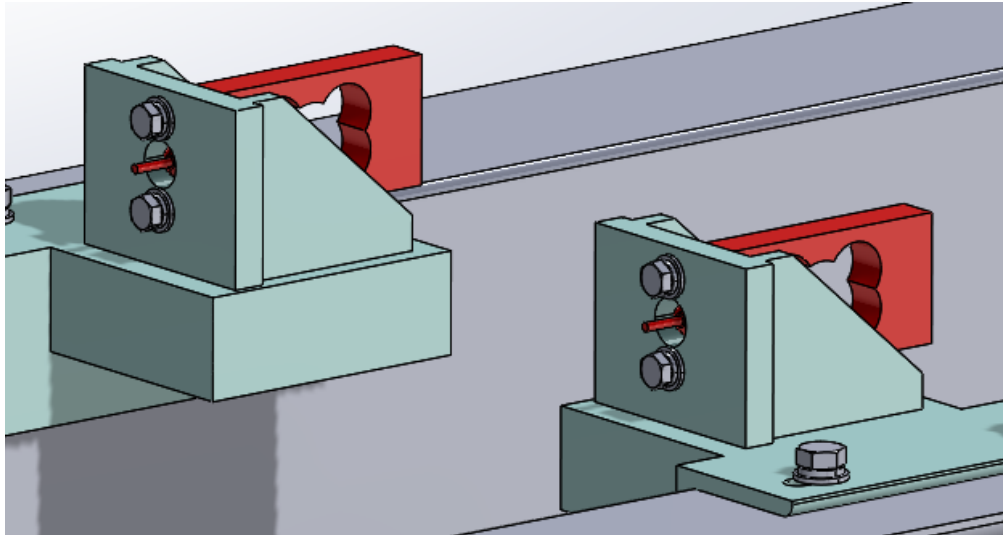


Figure 13: Load Cell Installation

4. Install the Load Cell Bracket onto the Load Cell Calibration Trays using M12x35 bolts. Refer to figure below for correct orientation.

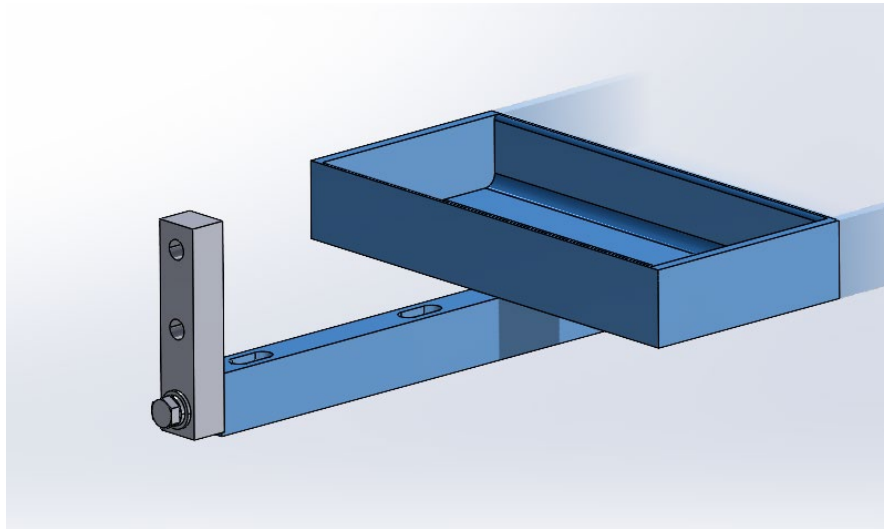


Figure 14: Calibration Tray

5. Attach the Figure 14 assembly to the load cell using M12x45 bolts, M12 nut, flat washer and spring washer. Ensure the calibration assembly is positioned beneath the belt idler frame.

NOTE

- a. Verify all mating surfaces are clean and free of debris before tightening.

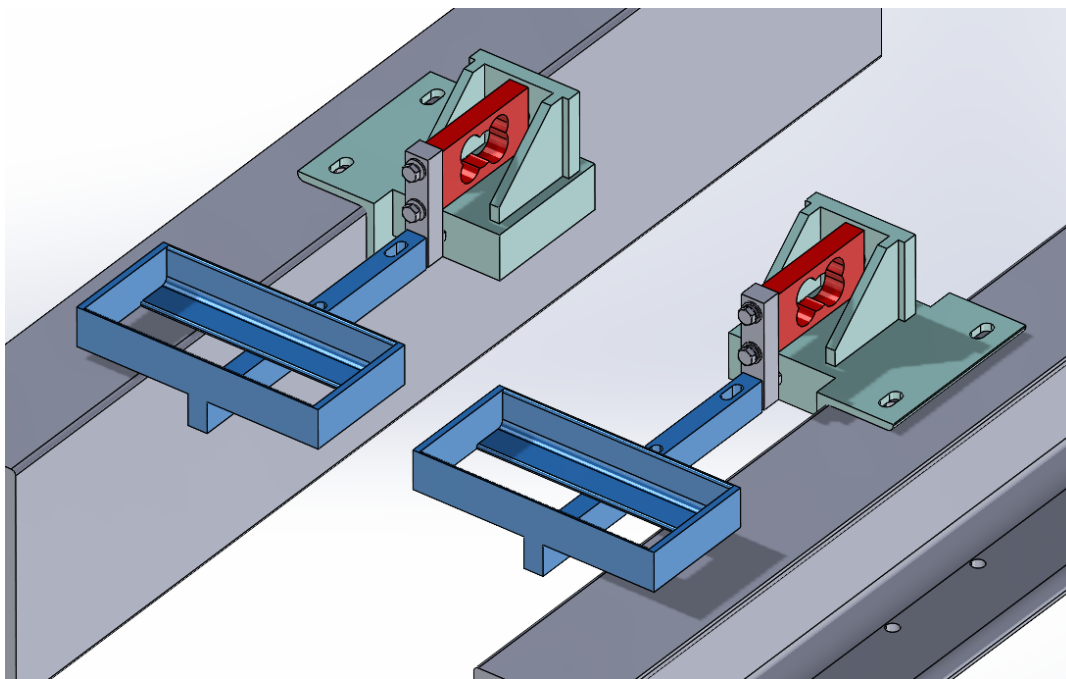


Figure 15: Calibration Trays Installed

6. Install Wheel Bar over the idler wheel bracket. Secure with M12x110 bolts, washer, spring washer and bolt. See Figure 5 and 6.
7. When in use to measure weight, loosen Idler Mount bolts. See Figure 6 for more details.

Please **Contact Our Authorized Dealer** for Technical Assistance:

Notes: