ROBOTIQ

SMART INFEED 100

Original instructions (en)

Robotiq Smart Infeed 100

User Manual

Table of Contents

Revisions

Robotiq may modify this product without notice, when necessary, due to product improvements, modifications or changes in specifications. If such modification is made, the manual will also be revised, see revision information. See the latest version of this manual online at robotiq.com/support.

2025/11/06

- Installation section updated:
  - Required Tools and Equipment
  - Mechanical Installation
  - Electrical Connections
  - Air Tube Connection
  - System Startup
- Software section updated
- Maintenance section updated
- Troubleshooting section updated
- Appendix section updated

2025/09/29

Initial release.

1. General Presentation

1.1. Introduction

The Robotiq Smart Infeed 100 is an intelligent infeed system that supplies cases to the Robotiq Palletizer. It uses a pneumatic gate to control the flow of boxes and angled rollers to ensure they are consistently positioned. Integrated photoelectric box sensors and control system detect each box's position, simplifying its integration with the robot. The manual provides information on the system's safe installation, operation, and maintenance.

1.2. Key Features

The Robotiq Smart Infeed 100 offers:

- **Angled rollers**: Bring any box to a repeatable pick position. No changeover.
- **Open side:** Keep footprint small and support wider boxes.
- **Adjustable leg height:** Match with your existing upstream conveyor.
- **Transfer plate:** Smooth box transition from gravity and motorized upstream conveyor.
- **Integrated Sensors:** Detect & count boxes. Error and recovery logic.
- **Rollers & Gate:** Prevent back-pressure interference with pick. Feed what the robot picks.
- **Auto Pick:** Automatically calculates pick position.
- **Integrated Safety:** E-Stop & finger protection
- **Seamless Integration:** Compatible with all Robotiq Palletizing Solutions.
- **Adaptable Configuration:** Automatically adapts to various case sizes, supporting single or Multi-Pick operations.
- **Immediate Operation:** Requires no sensor adjustments, features quick-connect, and is ready for upstream communication.

1.3. Main Components

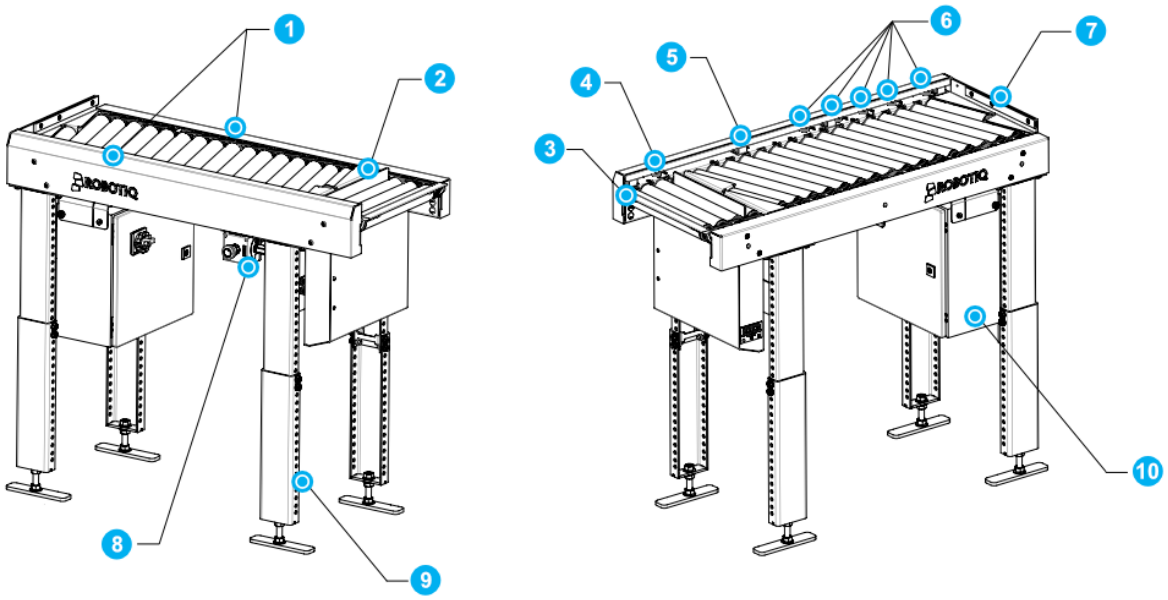


Fig. 1: Robotiq Smart Infeed 100 - Main Components

1. Side Covers
2. Gate
3. Transfer Plate
4. Photoelectric Gate Sensor
5. Side Rail
6. Photoelectric Accumulation Sensors
7. End Stop
8. E-Stop Button
9. Adjustable Legs
10. Smart Infeed Control Box

2. Safety

WARNING

Failure to follow these safety guidelines can result in serious injury or damage to the equipment. Read this section carefully before installation or operation.

2.1. Disclaimer

The intent of this section is to provide general guidelines for the safe use of the Robotiq Smart Infeed 100.

Always follow local regulations.

The installer is responsible for the safe installation and commissioning of the Robotiq Smart Infeed 100.

Robotiq accepts no liability for damage, injury or any legal responsibility incurred directly or indirectly from the use of this product.

The user (installer and operator) shall observe safe and lawful practices including but not limited to those set forth in this document.

The terms user, operator and installer, refer to anyone responsible for any of the following operations on the Robotiq Smart Infeed 100:

- Installation
- Control
- Maintenance
- Inspection
- Calibration
- Programming
- Decommissioning

The present section is based on the following international standard:

- IEC 60204-1 : Safety Of Machinery - Electrical Equipment Of Machines

This manual details the components of the Robotiq Smart Infeed 100, and the general operations regarding the whole lifecycle of the product, from installation to operation and decommissioning.

The drawings and photos in this manual are representative examples. However, discrepancies may be observed between the visual support and the actual product.

For comprehensive details on the entire palletizing cell, consult the other available manuals at www.robotiq.com/support.

2.2. Intended Use

Product is meant to be installed at the end of an accumulation conveyor. The Smart Infeed will extend this conveyor and isolate the backfeed pressure from the robot pick via a pneumatic gate. It will dispatch only the selected box count between 1 to 3 with a maximum accumulation of 800 mm to the Robotiq Palletizer. The Smart Infeed is compatible with all Robotiq Palletizer PE10, PE20, AX10, AX20, and AX30. Product will be normalized in the right or left corner depending on the hardware configuration allowing no tool or setup during product changeover.

Only use the product in its original condition without making unauthorized modifications.

Only use the product if it is in perfect technical condition.

The Solution is intended to be used with a Robotiq Palletizing Solution. DO NOT install with any other palletizing solution than the Robotiq Palletizing Solution.

Always comply with local, state, province and federal laws, regulations and directives, and always operate the product in compliance with automation safety and general machine safety guidelines.

Do not use the product to handle cases containing hazardous substances. Should hazardous substances be handled by the product, perform a risk assessment that accounts for such substances.

2.3. General Safety

- Only trained and authorized personnel should install, operate, or service the Smart Infeed 100.
- Keep the area around the Smart Infeed 100 clear of obstructions.
- Never wear loose clothing, jewelry, or long hair that could get caught in moving parts.
- Ensure all safety guards are in place before operation.
- Always wear safety shoes and protective glasses when operating the solution.

2.4. Manutention Safety

- The product weighs 124 kg and requires three people or lifting equipment to move it.
- Avoid lifting the conveyor by its transition plate or transition plate bracket.
- The product can be lifted underneath the side covers with a fork lift.

2.5. Mechanical Safety

- Beware of pinch points, especially near the stop gate, drive rollers and belt edges.
- Ensure the Smart Infeed 100 is securely anchored to the floor or support structure as per the **Anchoring** section of this manual.
- The electrical panel pivots for easier access to the top panel connection. Be cautious of the tilting motion to prevent hand pinching.
- Macro-adjustments to the Adjustable Support Stands, which involve changing holes, should only be performed when the stands are unweighted. However, fine adjustments and leveling can be made while the stands are weighted.
- The transition plate may need to be adjusted to match the customer's conveyor profile, ensuring a gap of 5 mm or less. The customer is responsible for the safe integration of the Smart Infeed 100.

2.6. Electrical Safety

- Disconnect and lock out all power sources before performing any maintenance or service.
- Verify that the supply voltage matches the voltage specified on the product's rating plate.

2.7. Pneumatic Safety

- Lock pneumatic shutoff valve before doing any service.
- The maximum permissible pressure of all pneumatic components must never be exceeded (6 bar).
- Leaky connections must be sealed to avoid breakage, unnecessary or excessive noise, loss of energy, etc.
- Loss of pressure can occur due to power failure or air supply interruption.
- Beware of the pneumatically supplied gate movement. There is a risk of pinching.
- Protective eyewear is recommended when handling pneumatic equipment.

2.8. Emergency Stop

- The Robotiq Smart Infeed is equipped with an E-Stop. When activated, the E-Stop halts all movement, including that of the connected robot.
- After releasing the E-Stop, the cell requires robot reactivation to resume operation. Depending on the Smart Infeed 100 and product status, manual intervention may be needed before restarting.
- The E-Stop offers multiple mounting locations, allowing for customer preference and optimal floor layout.
- Avoid installing the E-Stop facing the pallet. This position places the protubing E-Stop in the robot's path and makes it difficult for operators to access.

2.9. Operational Safety

- Avoid placing hands on the End Stop or guide rail while the system is operating, as conveyed products can cause pinch injuries to hands and fingers.
- Always wear protective glasses. Frequently inspect the belts and replace them if they are fraying. During operation, there is a risk of broken belts being projected.
- Avoid lifting products from the Smart Infeed 100 while it is in motion.
- If the Smart Infeed 100 is not in motion, do not remove the product manually. This action could cause the Smart Infeed 100 to restart immediately to meet the robot's demand.
- Do not place hands or tools on the conveyor belt or gate.

See **Appendix** section for more information about operational layout.

2.10. Cyber Risk

- The customer must provide a safe firewall connection to avoid unauthorized remote control of the PLC.
- The customer must set a password to avoid unauthorized access to the robot safety configurations.
- The customer must update PLC firmware when available to maintain the safety of its system.

2.11. Noise Level

Smart Infeed noise level is <70 dBa. The complete system will have a higher noise level, please check the gripper manual for appropriate ear safety selection.

3. Product Specifications

3.1. Technical Dimensions

3.1.1. Robotiq Smart Infeed 100

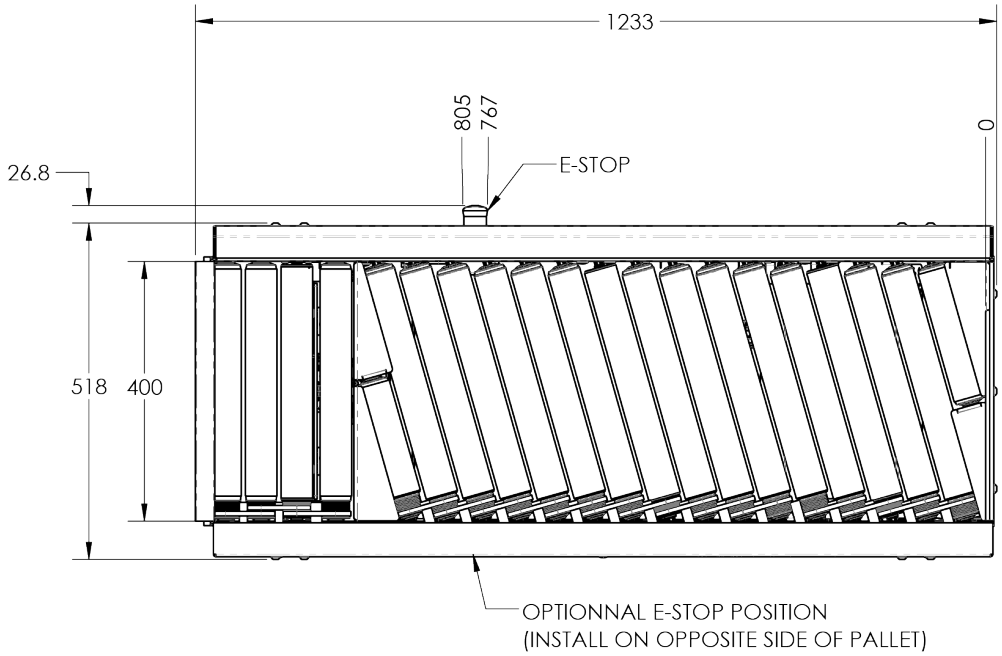


Fig. 3-1: Robotiq Smart Infeed 100 - Top View - Default "Right" Configuration

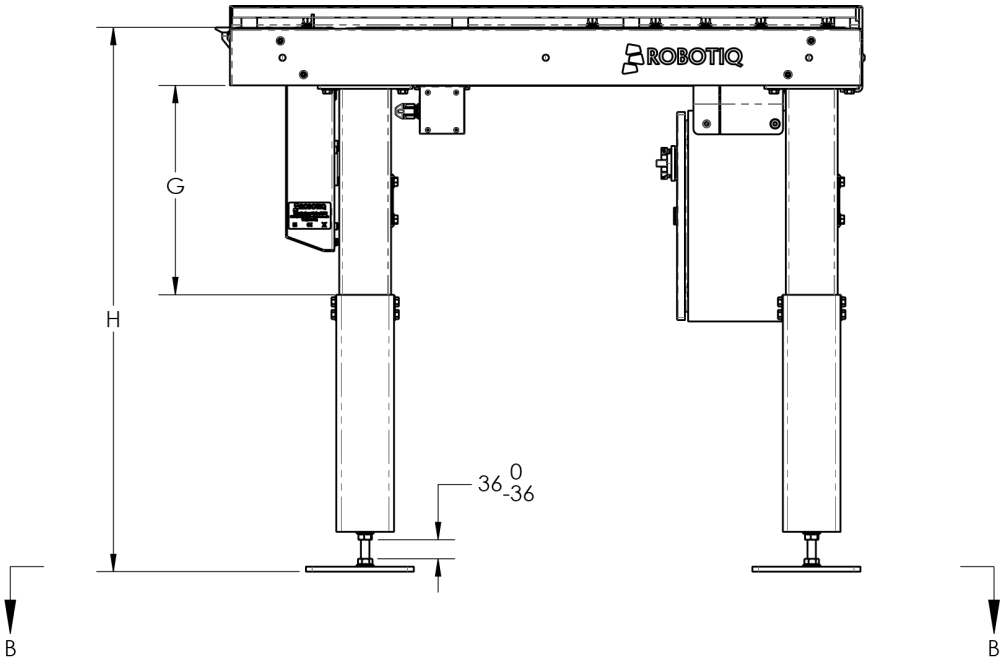


Fig. 3-2: Robotiq Smart Infeed 100 - Lateral View

3.2. Mechanical Specifications

Specification	Value	
	Metric	Imperial
Product Weight	124 kg	272.8 lb
Operating height (rolling surface)	619 to 1035 mm	24.37 to 40.75 in
Box Length	150 to 800 mm	5.9 to 31.5 in
Box Width	100 to 600 mm	3.93 to 23.62 in
Max Accumulation Length	800 mm	31.5 in
Throughput	35 boxes/min	
Upstream Conveyor Speed	Up to 30 m/min	Up to 98.4 ft/min
Gravity Conveyor Angle	Up to 5°	
Smart Infeed Speed	18 to 57 m/min	59 to 187 ft/min
Max Conveyed Load	32 kg	70.4 lb
Max Feed Pressure	1000 N	225 lb
Air Consumption	5L/min (4 bar)	1.35 gpm (60 psi)
Air Inlet	12 mm	N/A

Table 3-1: Mechanical Specifications of the Robotiq Smart Infeed100

3.3. Electrical Specifications

Specification	Value
Nominal Supply Voltage	100 VAC to 240 VAC 50-60 Hz
Nominal Current	4.5A at 120V 2.3A at 240V
Typical Current Consumption	0.9 A at 120V 0.5 A at 240V
Cable for Client Connector	M12 A-Coding, 5-Positions, Male
Client Connector Max Voltage	250Vac/dc
Client Connector Max Power 24 Vdc	140W (ohmic load)
Client Connector Max Current 250Vac	3A (AC15)

Table 3-2: Electrical Specifications of the Robotiq Smart Infeed 100

3.4. Environmental and Operating Conditions

Specification	Value	
	Metric	Imperial
Operating Ambient Temperature	0-40 °C	32-104°F
Minimum Storage/Transit Temperature	-25 °C	-12 °F
Maximum Storage/Transit Temperature	60 °C	140 °F
Humidity (Ambient Air)	10-90% RH	
IP Rating	IP 54	
Food/Clean Room	Not Compatible	
Other	Free from corrosive liquids or gases Free from explosive liquids or gases	

Table 3-3: Environmental and Operating Conditions of the Robotiq Smart Infeed 100

4. Installation

4.1. Required Tools and Equipment

This section will guide you through the installation and general setup of the Robotiq Smart Infeed 100.

Before installing:

- Read and understand the safety section
- Make sure to have the required parts, equipment and tools
- Make sure to meet the recommended environmental conditions

Required Tools:

- Not provided
  - Forklift (minimum length 0.9 m or 36”) or pallet jack
  - Drill
  - Hammer
  - Measuring Tape
  - Utility Knife
  - Level Tool
  - Pneumatic Tubing Cutter
  - Adjustable Torque Wrench
  - Square / Phillips Screwbit
  - 2 mm Flat screwdriver
  - 13 mm or ½” Hex Socket & Wrench
  - 15 mm Hex Socket & Wrench
  - 19 mm or ¾” Hex Socket & Wrench
  - 24 mm Open End Wrench
  - 5 mm Hex Key
  - 6 mm Hex Key
  - Shortest Box planned (for transition testing)
  - Largest Box planned (for conveyor pose teaching)
- Provided Hardware
  - Cable ties
  - 2x M5 x 8 mm SHCS
  - 1x Power Cable

- 1x Ethernet Cable
- 1x Safety Cable
- 4x 1/2"-13 concrete anchors
- 1x Pneumatic Connector T 12 mm OD fittings
- Electrical Panel key

- Already provided with the Palletizing Solution or Smart Infeed 100 Retrofit Kit
  - ½'' x 6'' concrete drill bit

CAUTION

Pinch Hazard: Fingers and Hands

The pivoting panel on this equipment can cause a pinch hazard for your fingers and hands. To avoid injury, be careful to keep your fingers and hands away from the pivoting panel while it is in motion.

CAUTION

Risk of Back Injury

This conveyor is too heavy to be lifted by a single person (273 lb / 124 kg), posing a significant risk of back injury. To avoid injury, the conveyor must be handled by three people. When moving the conveyor, each person should stand at one end and use proper lifting techniques to lift it together.

CAUTION

Falling Object Hazard

Failure to correctly change the conveyor's direction may result in a heavy box (32 kg / 70 lb) falling, which could cause serious foot injury.

4.2. Mechanical Installation

4.2.1. Uncrating and Inspection

a. Transport the crate to the designated working space using the forklift or pallet jack.

b. Inspect the unit for shipping damage and confirm all components listed on the packing slip are present. Report any damage or missing parts to Robotiq support at support@robotiq.com.

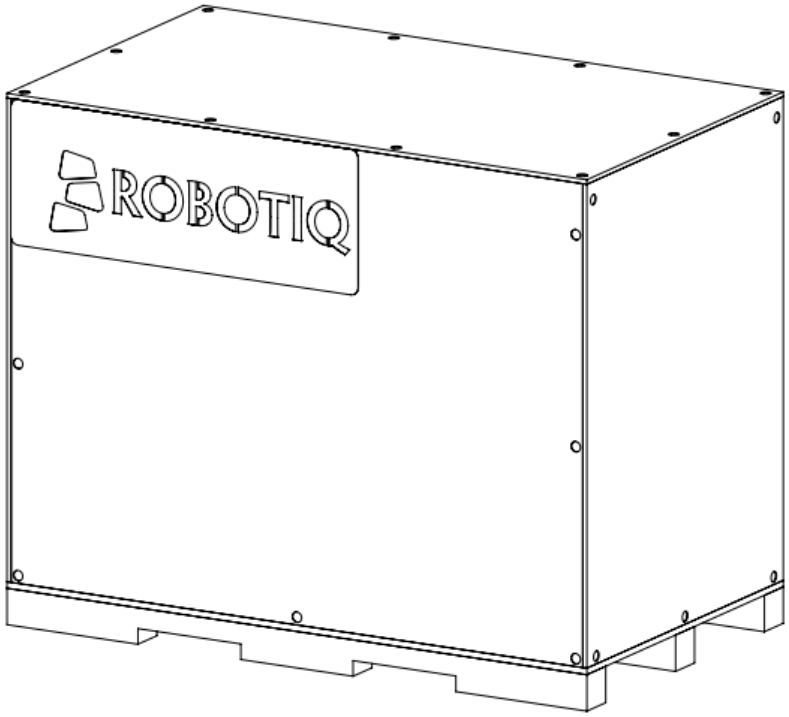


Fig. 4-1: Crate of the Robotiq Smart Infeed 100

c. Unscrew all visible external screws from the top and four side panels of the crate and remove the top and side panels. This step is best performed by two (2) people.

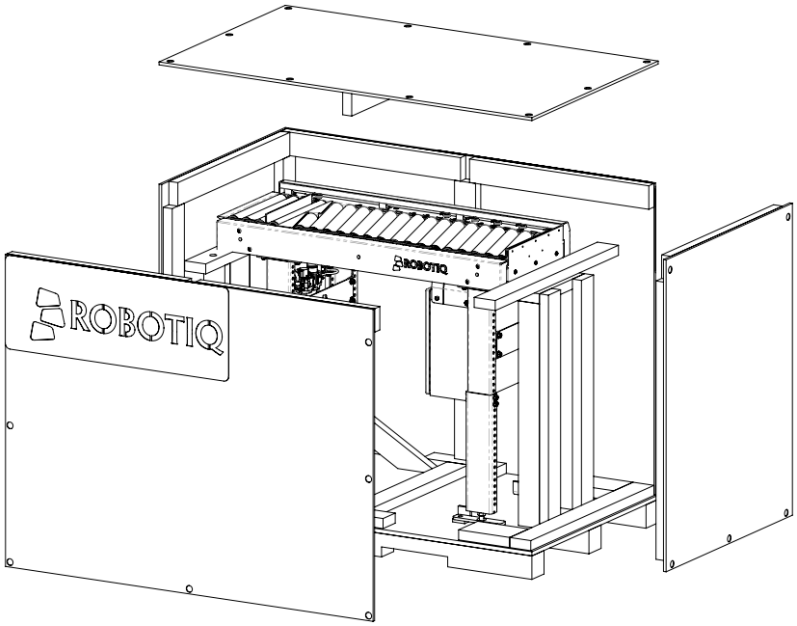


Fig. 4-2: Crate of the Robotiq Smart Infeed 100 - Side Panels Removed

d. Remove and discard the four (4) bolts that secure the Smart Infeed feet to the bottom of the crate.

e. Locate the bag containing the provided hardware. Remove the bag and set it aside for future use.

CAUTION

Do not remove the straps holding the conveyor in place.

f. Coarse Height Adjustment:

This step is more conveniently performed with 2 people.

The Smart Infeed is shipped at its maximum height adjustment with only 2 bolts per leg with protective washer.

WARNING

For structurally safe operation

Bolts are shipped with protective plastic washers that will need to be removed for final assembly.

NOTICE

For shipping, only two bolts per adjustable stand were installed. In the following step, you will have to remove the plastic washer and install 2 additional bolts provided in the supplied kit. This is a mandatory step to ensure proper stability of the adjustable stands.

At this step, you will adjust the legs at the right height to fit your upstream conveyor.

- Using a level and measuring tape, measure the required height on your existing conveyor.
- Unscrew the top bolt on the 1st leg while holding the bracket in which the bolt is screwed.
- Unscrew the lower bolt while holding the bottom of the leg. The bottom portion of the leg is now free to be adjusted.
- Adjust dimension G (gap) to match the height range provided in the table below. The feet adjustments are shipped at their lowest adjustment and you will be able to use them to fine tune to the final height at a later step.

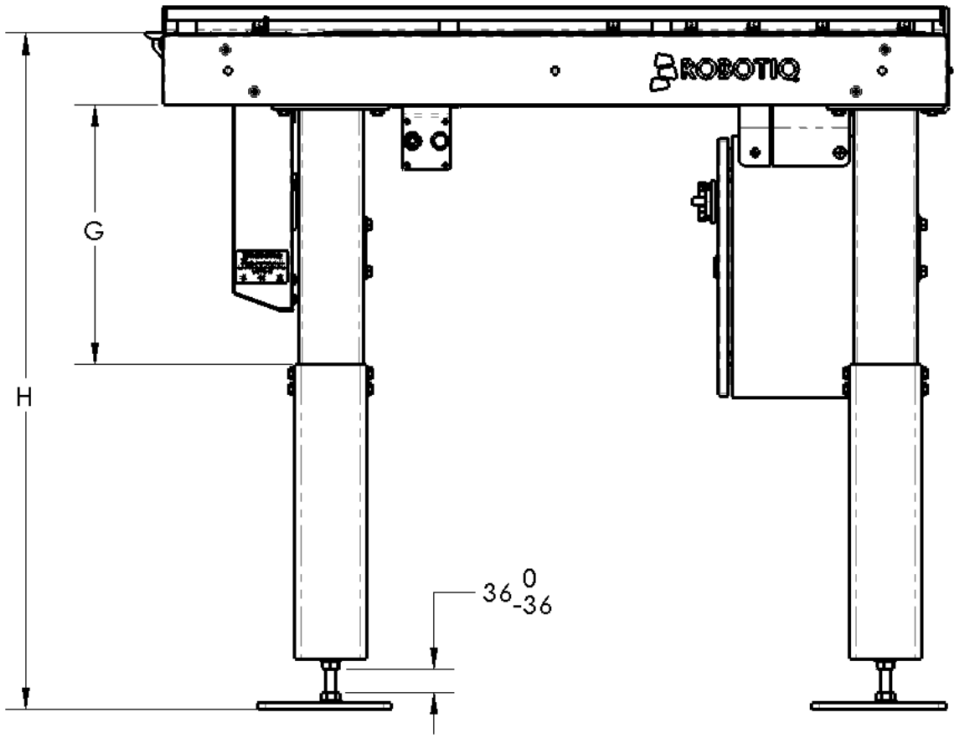


Fig. 4-3: Dimension G and Corresponding Height Range

Gap (mm)	H (mm) Rolling Surface Height	
G	**H Min**	**H Max**
397	999	1035
373	975	1011
349	951	987
325	927	963
301	903	939
277	879	915
253	855	891
229	831	867
205	807	843

181	783	819
157	759	795
133	735	771
109	711	747
85	687	723
61	663	699
37	639	675
17	619	655

Table 4-1: Dimension G and Corresponding Height Range

- Install screws with the matching holes. (Do not forget to remove the plastic washer used for shipment).
- Using additional screws provided with your kit, screw the 2 lower bolts to fix the height. Replace the bracket so that its protruded side is completing a square share. Screw the 2 higher bolts through the bracket. Torque the 4 M10 bolts to 45 Nm.
- Repeat the same steps for the other conveyor legs.

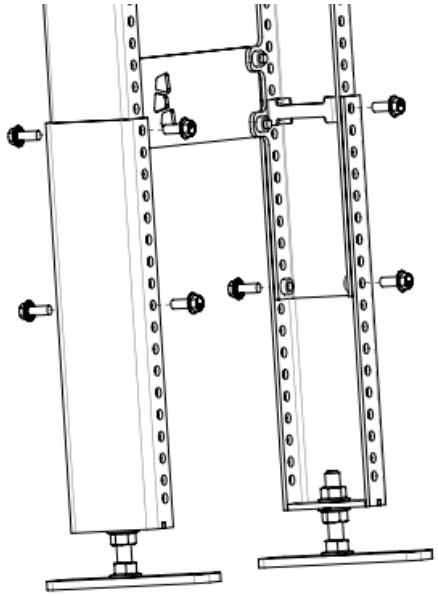


Fig. 4-4: Adjustable Legs - Bolts and brackets

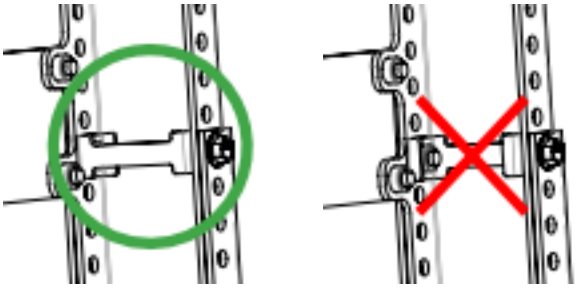


Fig. 4-5: Bracket Correct Orientation

g. Height fine-tuning:

- Once the adjustable legs are roughly at the desired height, fine-tuning (ranging from -0 to +36 mm) can be achieved using the leveling foot. You will need a 24 mm open wrench.

h. Cut the straps holding the conveyor in the crate.

i. Using a forklift, carefully lift the 124 kg (273 lb) conveyor from the side. Ensure the conveyor is stable before moving it. Pay close attention to the disconnect switch on the Robotiq control box, located underneath the conveyor.

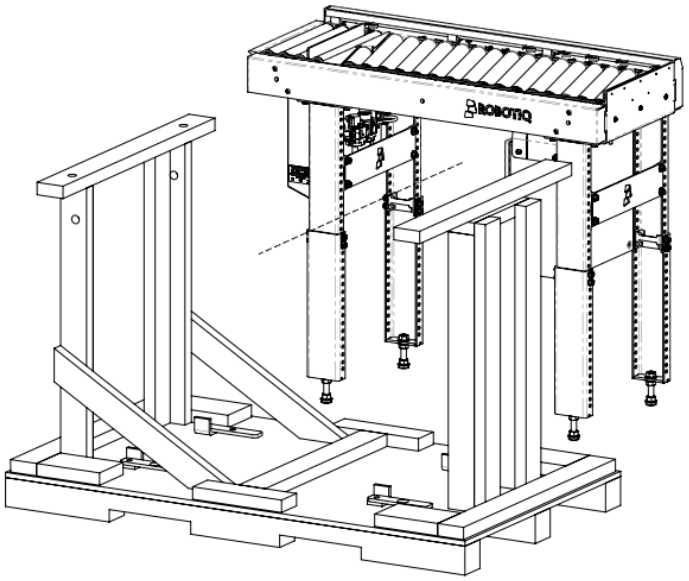


Fig. 4-6: Crate of the Robotiq Smart Infeed 100 - Lifting

j. Use the 2 provided M5 x 8 mm SHCS screws to mount the E-Stop on the side of the Smart Infeed.

There are 2 mounting options for the E-Stop:

- For a perpendicular infeed configuration, place the E-Stop on the side of the Smart Infeed that is opposite to the pallet and robot operation.
- For direct inline installations, the E-Stop can be positioned on either side. Refer to Annex A-1 in the **Appendix** section for suggested E-Stop mounting options.

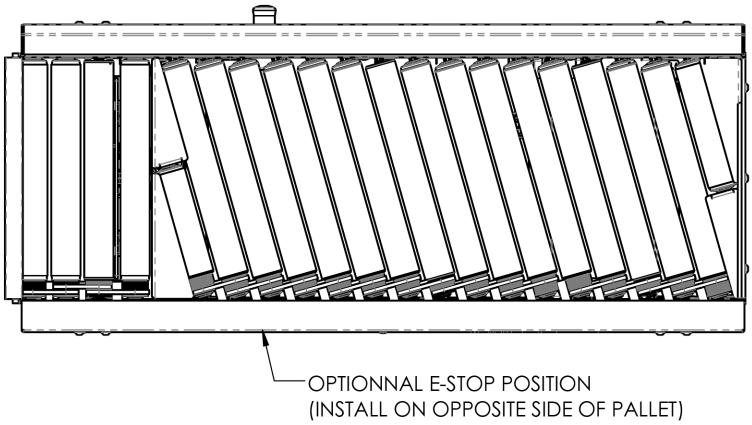


Fig. 4-7: E-Stop Positioning

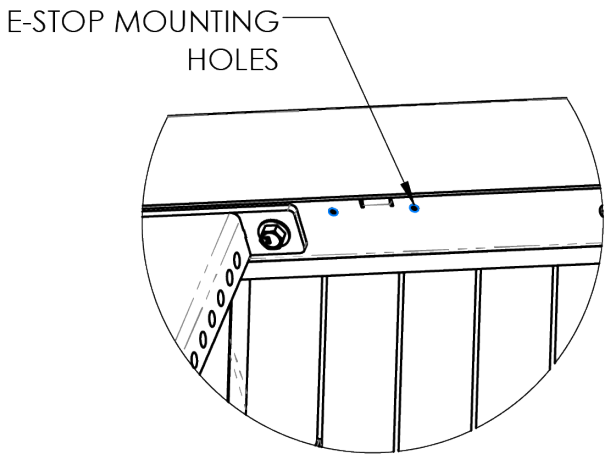


Fig. 4-8: E-Stop Mounting Holes

4.2.2. Mechanical Installation

a. Position the Smart Infeed at the desired location.

Align it so that the flow of products arriving from the upstream conveyor are entering centered or closer to the rail on the Smart Infeed.

To maximize the throughput and the product accumulation capacity of the Smart Infeed, the lateral travel distance should be limited.

The Smart Infeed product specifications assume as worst case the case where the boxes are entering centered.

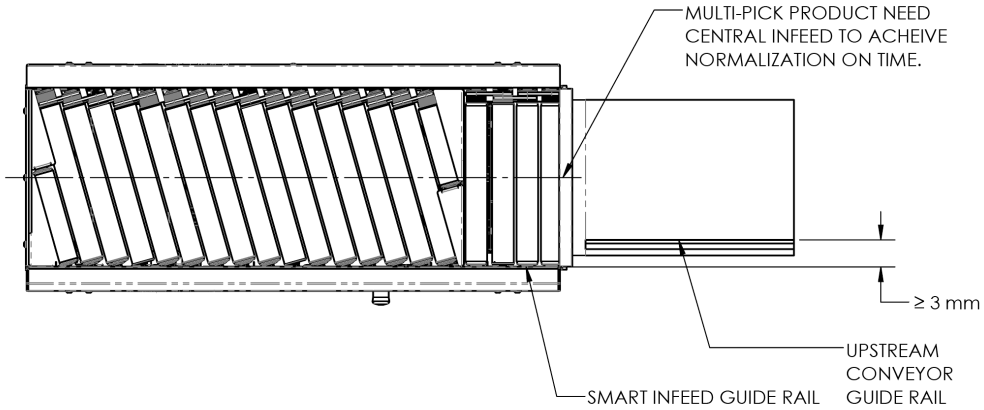


Fig. 4-9: Robotiq Smart Infeed 100 - Positioning

b. Using the leveling feet, fine-tune the adjustable stands until the Smart Infeed is level with the upstream conveyor or slightly lower (+0/-2.0 mm). Confirm the Smart Infeed's stability by ensuring all four foot plates are in contact with the ground and level the unit using an appropriate tool. Tighten the leveling feet nuts to 78 Nm.

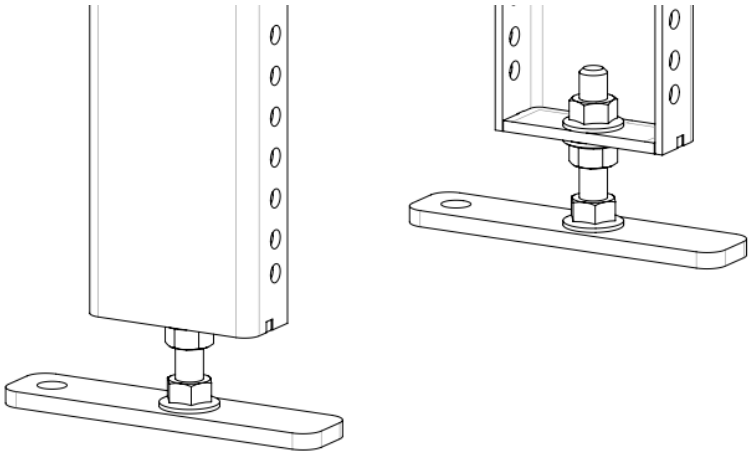


Fig. 4-10: Height Adjustment Feet

4.2.3. Palletizer Installation

Install the palletizer, but do not anchor it yet. Default conveyor distances are provided in Annex A-1 and A-2. For customized layouts, use our web configuration tool.

For detailed information, consult the manual for your Robotiq Palletizing Solution model, available at www.robotiq.com/support.

4.3. Electrical Connections

	CAUTION
	Before you proceed, confirm that the main power is off.

4.3.1. Connections to the Palletizer

a. Unscrew the side panel bolts to allow the control box to rotate. This will simplify the connection of the power, safety and Ethernet cables.

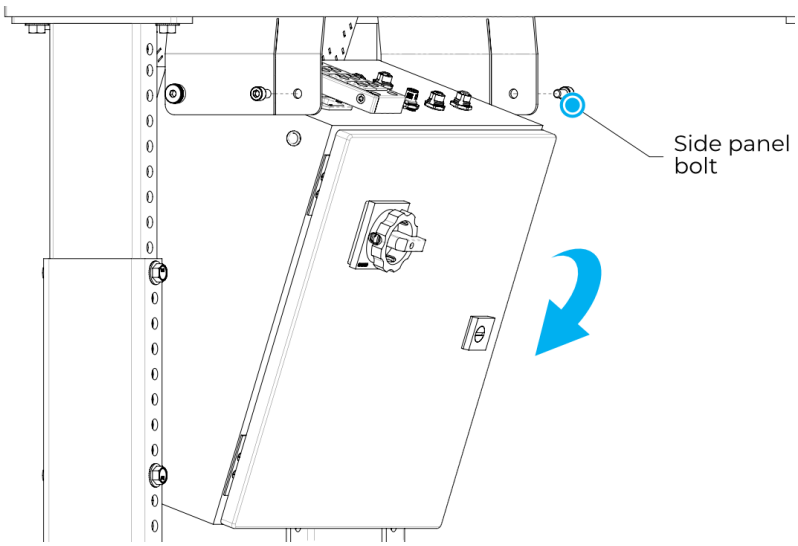


Fig. 4-11: Smart Infeed 100 Control Box Rotating

b. Open the Robotiq Palletizer base cable compartment.

c. Route the Ethernet cable and the female end of the safety cable through the channel of the palletizer base up until the Palletizer Control Box.

d. Carefully align and engage the key way, then screw the network and safety cables to their designated ports on the Robotiq Palletizer control box.

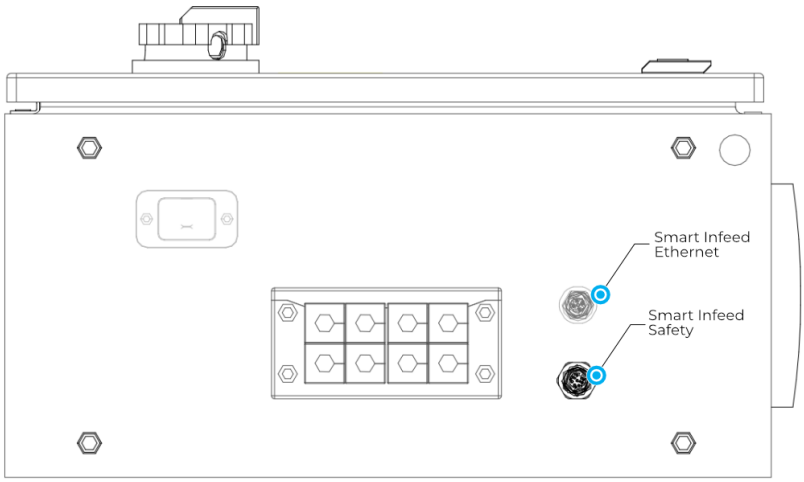


Fig. 4-12: Robotiq Palletizer Control Box - Bottom View

e. Route the cables to the top of the Smart Infeed control box. Plug the network and safety cables into their respective ports.

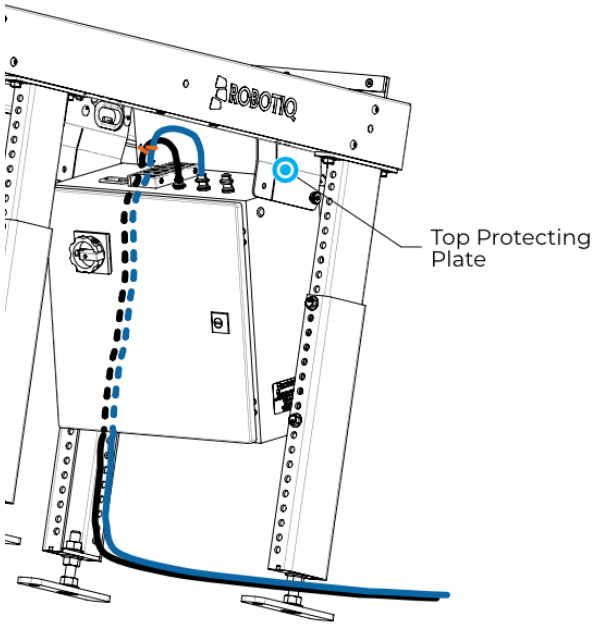


Fig. 4-13: Connections to the Smart Infeed 100 Control Box

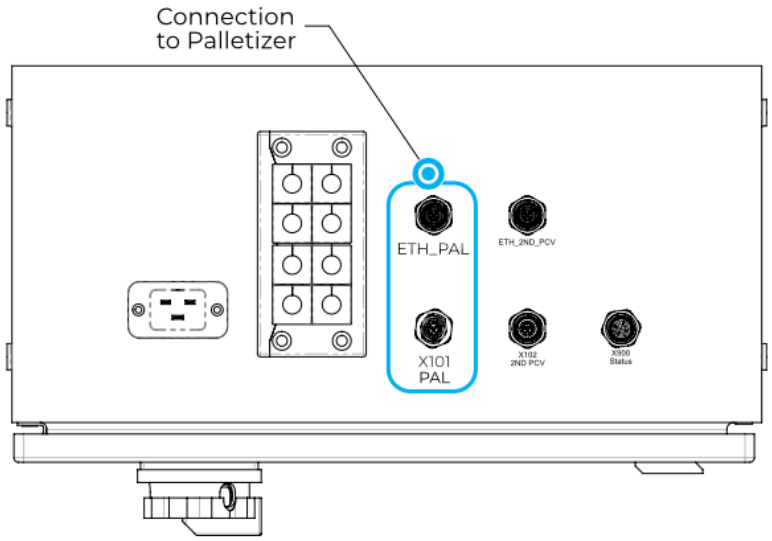


Fig. 4-14: Smart Infeed 100 Control Box - Ports

f. Secure the cables to the adjustable leg and the top protecting plate of the Smart Infeed Control Box using the provided cable ties.

g. Insert the excess cable length into the palletizer's base, securing it with tie wraps as needed.

	WARNING
	You must complete the next step to properly connect the Emergency Stop systems for both units.

h. Open the Palletizer control box door. Using the 2 mm flat head screwdriver, remove and discard the yellow jumper wires E-Stop PCV (1) and E-Stop PCV (2) located in the lower section of the Control Box. Close the Palletizer Control Box door.

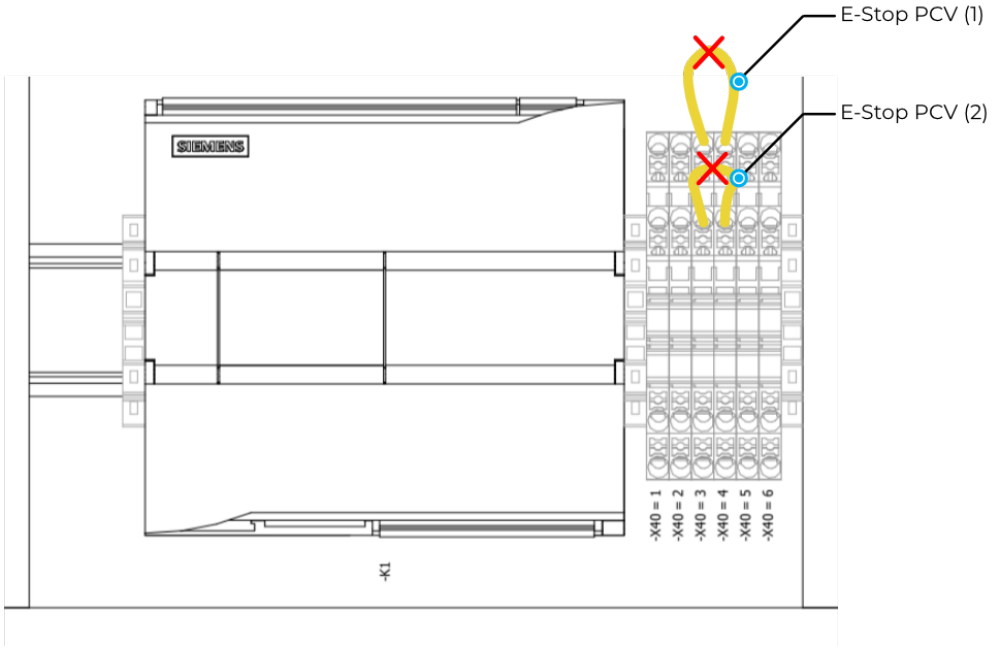


Fig. 4-15: Yellow Jumper Wires E-Stop PCV (1) and E-Stop PCV (2)

4.3.2. Power Connections

a. Route the cable from the rear of the Smart Infeed control box.

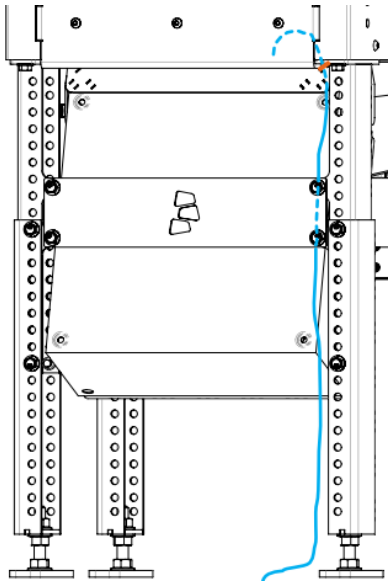


Fig. 4-16: Smart Infeed Control Box - Back

b. Plug the power cord into the power plug located on top of the Smart Infeed Control Box.

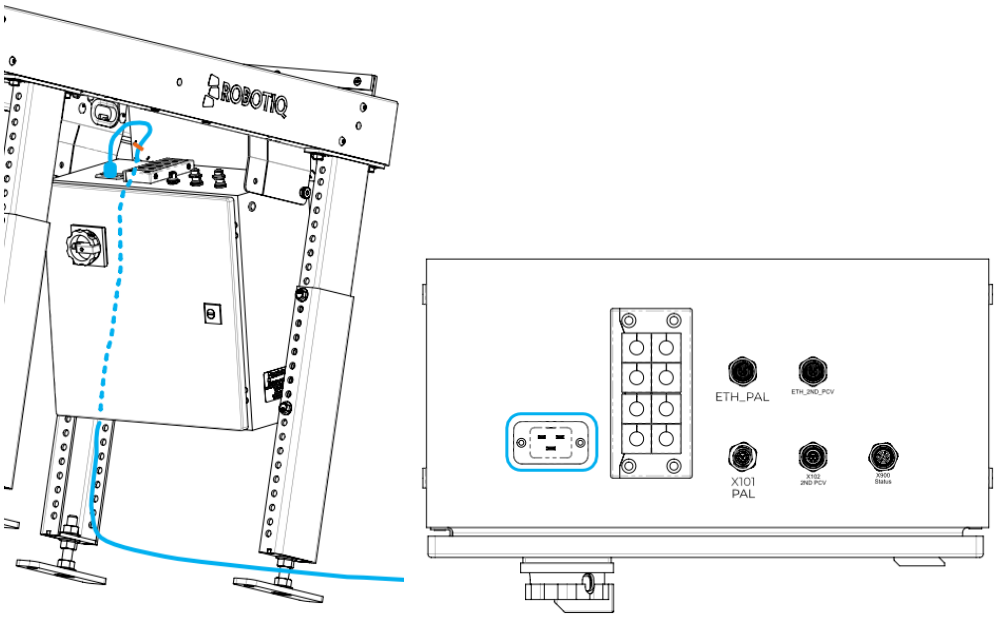


Fig. 4-17: Smart Infeed Control Box - Top

a. Route the cable along one of the Smart Infeed's adjustable legs.

b. Secure it with cable ties.

	CAUTION
	Wait until all electrical and pneumatic connections are complete before plugging the power cord into the wall outlet.

4.3.3. Electrical and Power Connections for Dual Smart Infeed Configuration

Robotiq Palletizers can connect to either one or two Smart Infeed units. If two Smart Infeed units are used, they are connected in a daisy chain manner for both network and safety. Power for each unit is supplied by a wall electrical outlet.

a. Connect the network and safety cables to their respective ports on the first Smart Infeed.

b. Route the cables to the second Smart Infeed.

c. Plug the network and safety cable into the designated ports on the second Smart Infeed.

d. Connect the power to the second Smart Infeed by following the instructions in the **Power Connections** section.

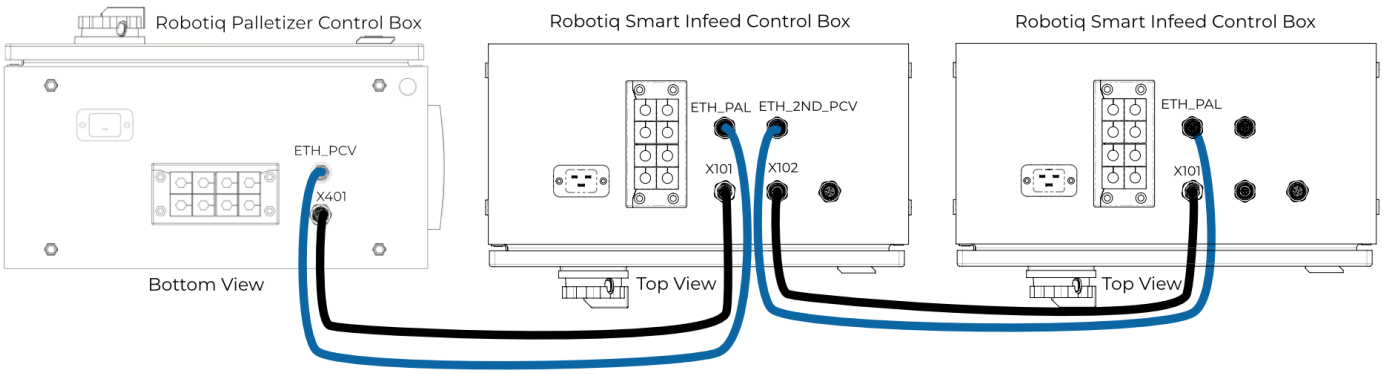


Fig. 4-18: Dual Smart Infeed Connections

4.4. Air Tube Connection

	WARNING
	This step must be performed by personnel competent in pneumatics. Protective eyewear is recommended when handling pneumatic equipment.

a. Make sure the manual shut-off valve on the Robotiq Smart Infeed is at OFF.

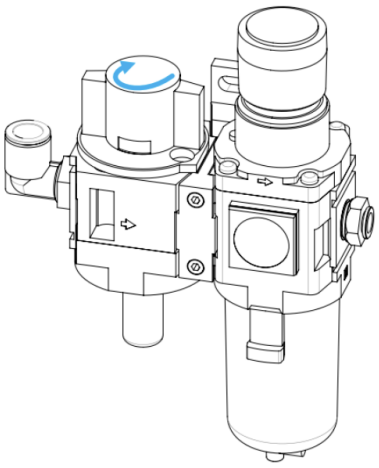


Fig. 4-19: Manual Shut-off Valve

a. Shut off the air supply to the Robotiq Palletizer.

b. Use the Palletizer shut off valve to purge the air line by turning it on and off repetitively. Leave it at the OFF position when done.

c. Access the Ø12 mm main infeed line. For AX models, open the cable compartment (Fig. 4-20) on the Palletizer base. For PE models, open the UR Control Box Bay (Fig. 4-21).

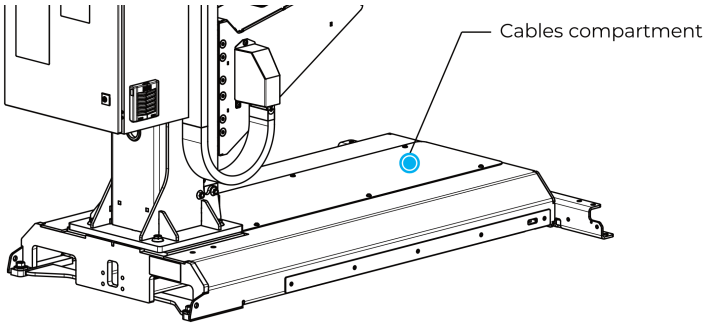


Fig. 4-20: AX - Cables Compartment

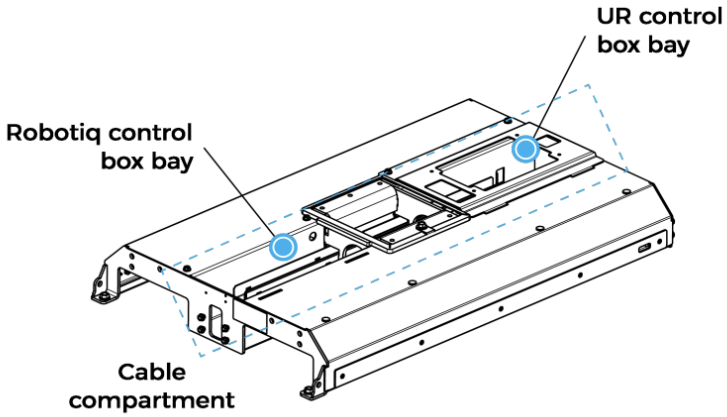


Fig. 4-21: PE - UR Control Box Bay

d. Using the tubing cutter, cut the main line and install the supplied Ø12 mm T-fitting approximately 200 mm from the entry point, making sure to reconnect both sides of the Palletizer tube.

e. Route the provided Ø12 mm hose from the Smart Infeed, where it comes pre-connected, to the cable compartment of the Palletizer base. Remove the dust cap and trim as needed.

f. Connect the Ø12 mm hose to the remaining outlet on the T-fitting.

g. Use cable ties to secure the hose as needed.

h. Pressurize the line and both systems by turning on both shut off valves and check for leaks.

i. Make sure the pressure is between 4 to 6 bar (60 to 87 psi) for the Smart Infeed.

j. Turn off the pneumatic shut-off valve of the Smart Infeed.

k. Once both the electrical and pneumatic connections are completed, close the palletizer base and screw back in place the Robotiq Smart Infeed Control Box

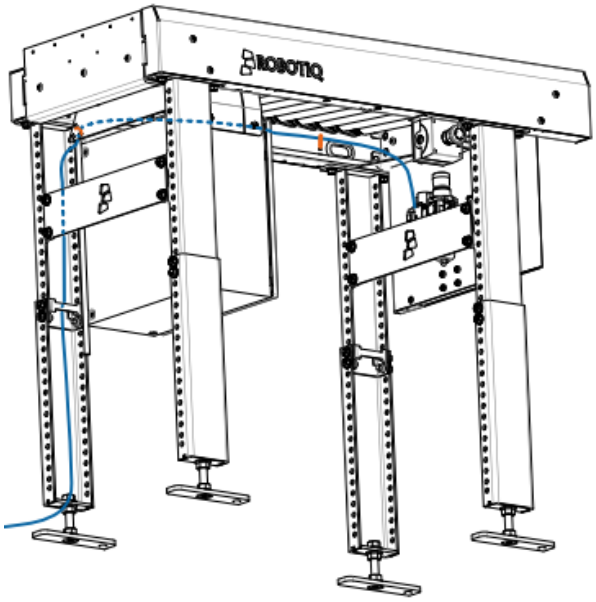


Fig. 4-22: Air Tube Connections - Overview

4.5. System Startup

4.5.1. Hardware

a. Connect the power cord to the wall outlet.

b. Ensure the E-Stop button is released.

c. Turn on the log out/tag out on the Smart Infeed control box and the Palletizer. You can verify the power is properly on by looking at the sensors on the side of the rail of the Smart Infeed.

d. Turn the pneumatic shut off valve on.

4.5.2. Software Startup

a. Start the palletizer user interface by pressing the push button on the robot teach pendant.

b. Install Copilot on your palletizer. Refer to your palletizer's manual for detailed instructions on installing the Copilot URCap.

c. Add and configure the Smart Infeed 100 under Installation --> URCaps --> Copilot --> Configuration tab. Refer to the **Software** section for detailed instructions.

d. Once ready to use, you will be able to use the “Start feed test” button for Step 4.6. **Performance Checks and Fine-Tuning** section.

WARNING

Impact and Pinch Hazard

A moving box traveling at 1 m/s can cause severe impact injuries to your fingers or hands if they are caught between the box and the gate or the end stop. Always keep your hands and fingers clear of all moving parts and pinch points on the conveyor system.

WARNING

Eye Injury Hazard

Failure of a conveyor belt or a pneumatic fitting can cause parts to be forcefully ejected, posing a serious risk of eye injury. A broken belt or a detached hose can strike you in the eye. To prevent this, you must always wear safety glasses when operating or working near this equipment. Additionally, it is recommended to perform visual inspections of the belts more frequently than the standard maintenance schedule to prevent a potential rupture.

WARNING

Entanglement Hazard

Moving parts, such as conveyor belts, can catch and wrap around loose clothing or long hair, leading to serious injury.

To prevent entanglement, you must:

- Avoid Loose Clothing: Do not wear loose sleeves or other clothing that could get caught.
- Remove Jewelry: Remove all necklaces, chains, and bracelets.
- Secure Long Hair: Tie back and secure long hair completely.

WARNING

Pinch Point Hazard

This conveyor has multiple pinch points between belts, rollers, and fixed parts, as well as between the rollers and the gate/end stop. Placing your fingers in these areas can result in severe injury. To avoid injury, never place your hands or fingers on the end stop, on the gate, under the belts, or near the rollers while the conveyor is in operation. Always keep hands and fingers clear of all moving parts.

4.6. Performance Checks and Fine-Tuning

4.6.1. Transfer Plate

To validate the default transfer plate positioning:

- Place the smallest box on the running upstream conveyor.
- Ensure the gate is down and the shut-off valve is off.
- Observe the box's transfer to the Smart Infeed. Verify that the product transfers correctly, without getting stuck before, on, or after the transfer plate. Also, ensure there is no product rotation, which can occur at the transition plate due to uneven left-to-right contact.
- Adjust the Transfer Plate positioning if necessary.

a. To adjust the transfer plate, begin by removing the two side covers. Use a 5 mm hex key to unscrew the 8 x M8 screws that secure the covers.

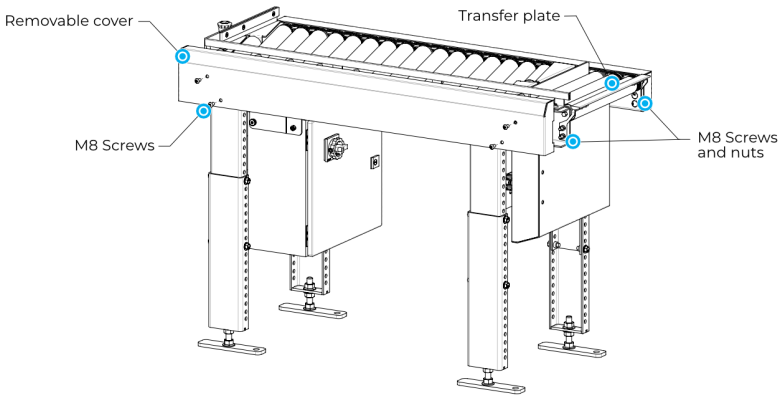


Fig. 4-23: Robotiq Smart Infeed 100 - Side Covers and Transfer Plate

b. Once the covers are off, adjust the transfer plate to bridge the gap between the Smart Infeed and the upstream conveyor. To do this, loosen the four M8 nuts using a 13 mm socket. It's recommended to leave the side cover open to confirm proper adjustment before closing them.

For safety, a maximum gap of 5 mm is recommended. Once the adjustment is complete, torque the four M8 nuts of the transfer plate to 20 Nm. Test again the box transfer test to confirm your adjustments. When adjustment is confirmed, place back the side covers. Torque to 20 Nm. Reopen the air shut off valve.

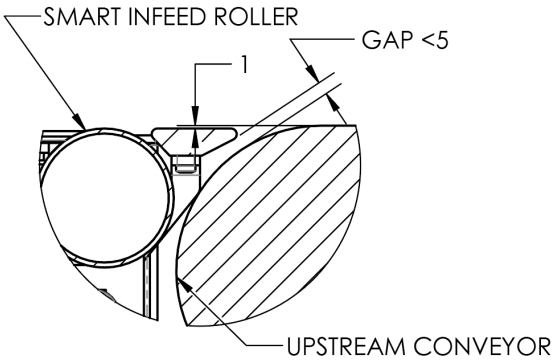


Fig. 4-24: Transfer Plate

4.6.2. Smart Infeed Speed

At this stage, validate the speed of the Smart Infeed using your smallest box.

You may need to adjust the Smart Infeed's speed for two primary reasons:

- To increase speed: If the gate isn't separating boxes correctly.
- To decrease speed: If boxes are unstable (e.g., very tall and slim) while traveling on the Smart Infeed.

To do so:

- Place your smallest box on your running upstream conveyor and observe how the gate and rollers let through one box at a time on the Smart Infeed.
- The Smart Infeed will automatically detect the box, accelerate it, and then decelerate to stop it precisely at the pick position.
- The system will send a signal (e.g., Object Ready) to the robot controller, indicating the box is ready for picking.
- If the desired box separation or a stable box travel is not achieved, adjust the conveyor speed. This is done with a speed slider in the Configuration menu of the URCaps Installation Tab as shown in Fig. 4-25. The speed can range from 18 to 57 m/s, with a default of 42 m/s. In the interface, this corresponds to 61%.

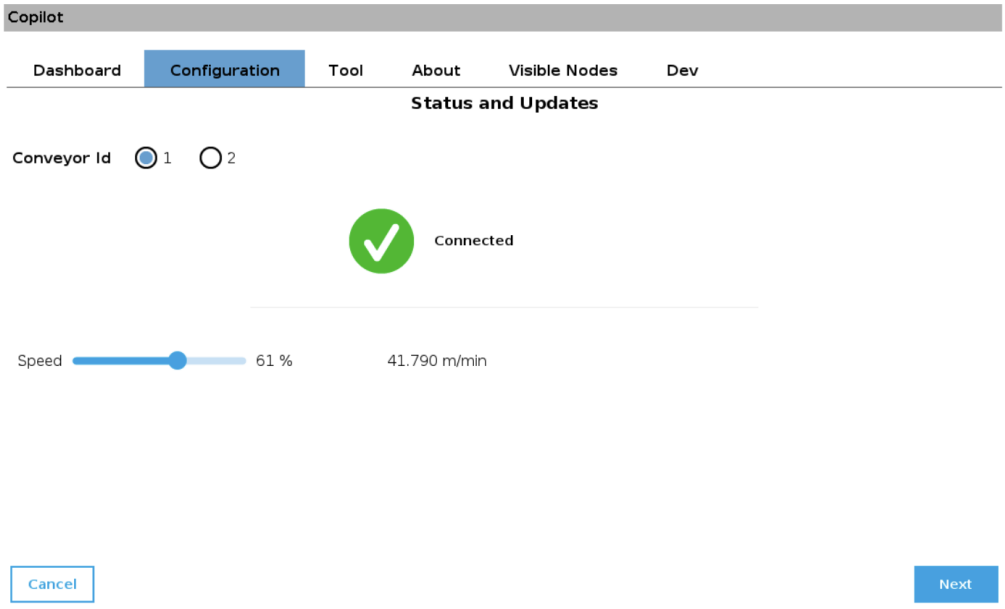


Fig. 4-25: Copilot URCap - Configuration - Speed

4.7. Anchoring

a. Once the setup is complete, use the conveyor foot as a drilling jig to accurately mark and drill the four holes in the concrete. A ½" concrete drill bit is required for this step (included with your Palletizing Solution or Smart Infeed Retrofit Kit).

b. Fasten the conveyor legs to the floor using the four provided concrete anchors. Torque to 68-74 Nm using a 19 mm or 3/4" socket.

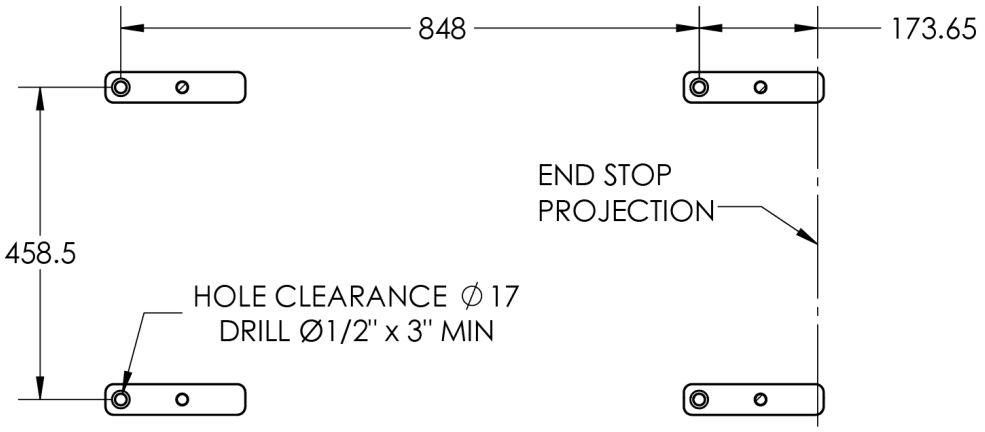


Fig. 4-26: Smart Infeed 100 Anchoring Layout

c. Fasten the Palletizer securely to the floor using the supplied concrete anchors (4 anchors for PE20 and AX20/30, 6 anchors for PE10 and AX10). Torque them to 68 to 74 Nm. Refer to Annex A-1 and A-2, and the Anchor section of the Palletizing manual for more details.

5. Software

The Smart Infeed 100 is configured through the Copilot URCap interface. Please refer to the Software section of your Palletizing System manual for detailed information regarding the Copilot software.

5.1. Safety Configuration

Before adding the conveyor:

- In the Installation tab, tap Safety Configuration, then I/O.
- Set config_out[0], config_out[1] to System Emergency Stop and Apply.

5.2. Adding a Conveyor

1. To add a conveyor, go to Installation --> URCaps --> Copilot --> Configuration and tap "Add conveyor".

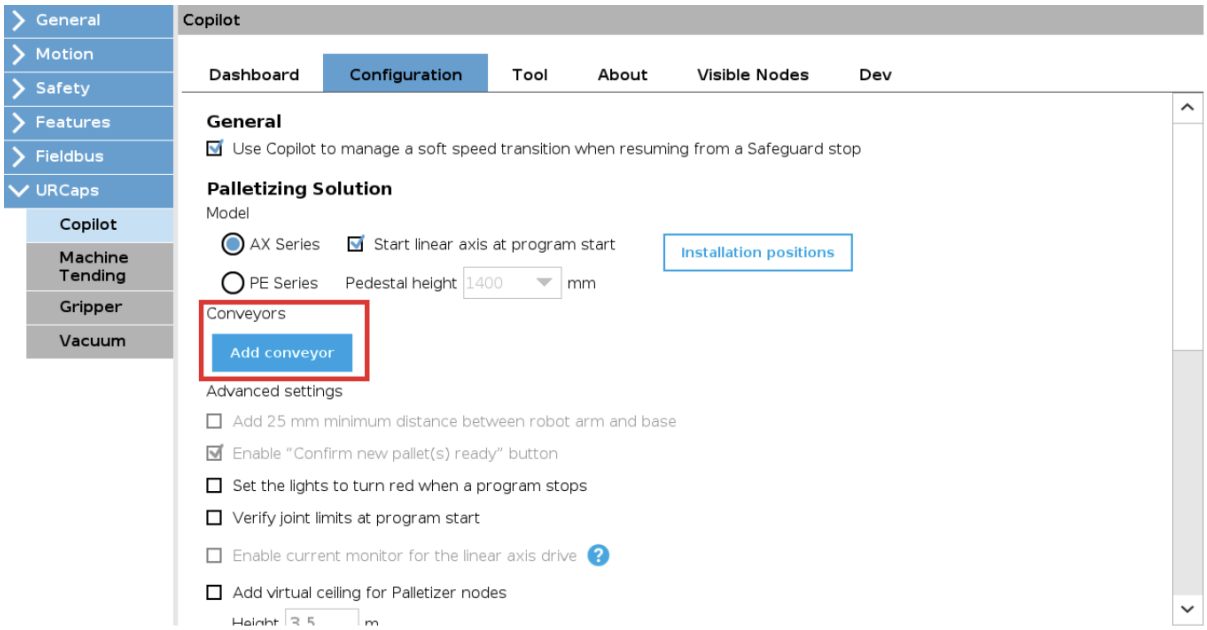


Fig. 5-1: Copilot - Configuration - Add Conveyor

2. Read the instructions carefully and confirm that all requirements have been met. Once confirmed, tap "Next".

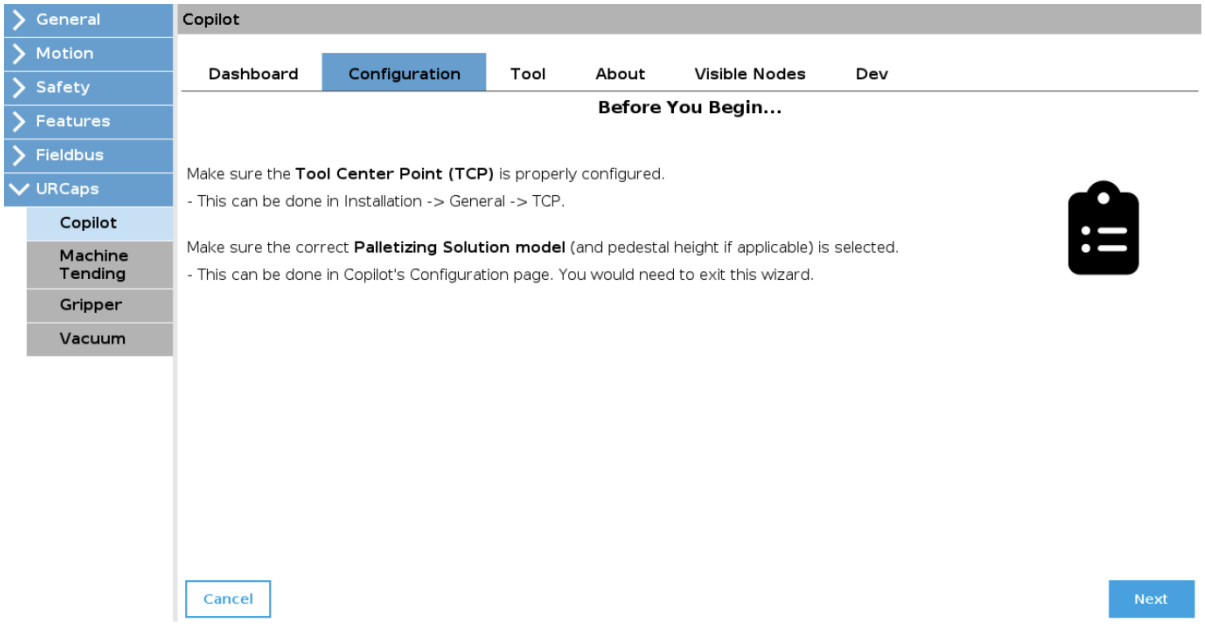


Fig. 5-2: Copilot - Configuration - Add Conveyor Instructions

3. Select Robotiq Smart Infeed as the conveyor type, then tap "Next".

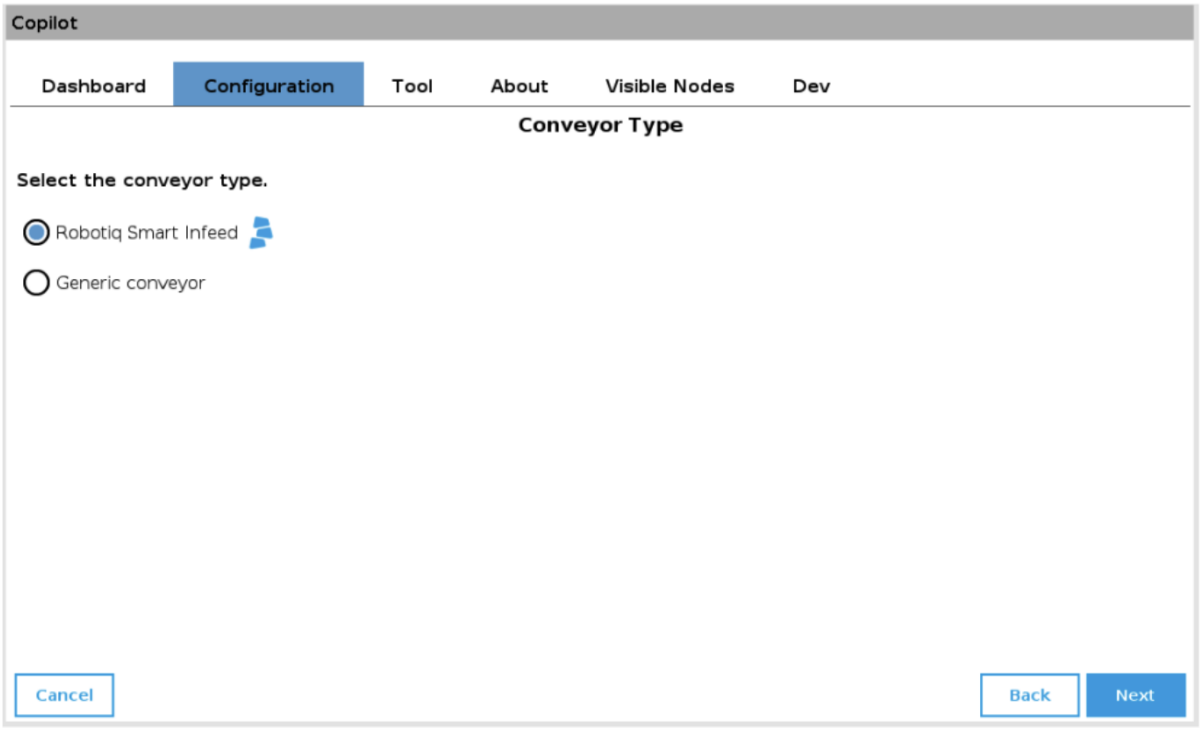


Fig. 5-3: Copilot - Configuration - Select Conveyor Type

4. Choose your conveyor ID. You can connect as many as two Smart Infeeds to your Palletizer.
5. Adjust the conveyor speed as needed. The factory setting is 61% (42 m/min). See **Smart Infeed Speed** section for more information.
6. When finished, tap "Next".

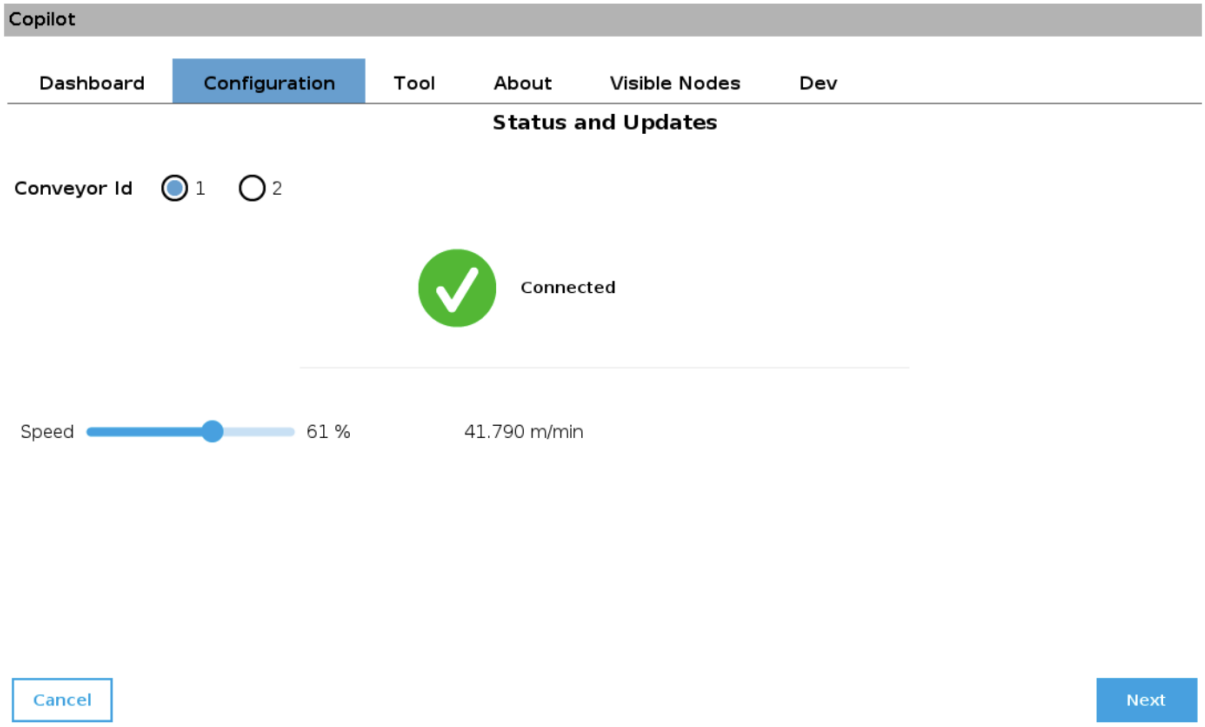


Fig. 5-4: Copilot - Configuration - Conveyor ID

	**CAUTION** Occasionally, an update for the conveyor may be necessary to prevent errors. When an update is available, a button will appear on the Status and Updates page. Click this button and follow the on-screen instructions to update the conveyor software. After the update is complete, the conveyor will function as intended.

7. Based on your system, select the corner to which the box is normalized, then tap "Next".

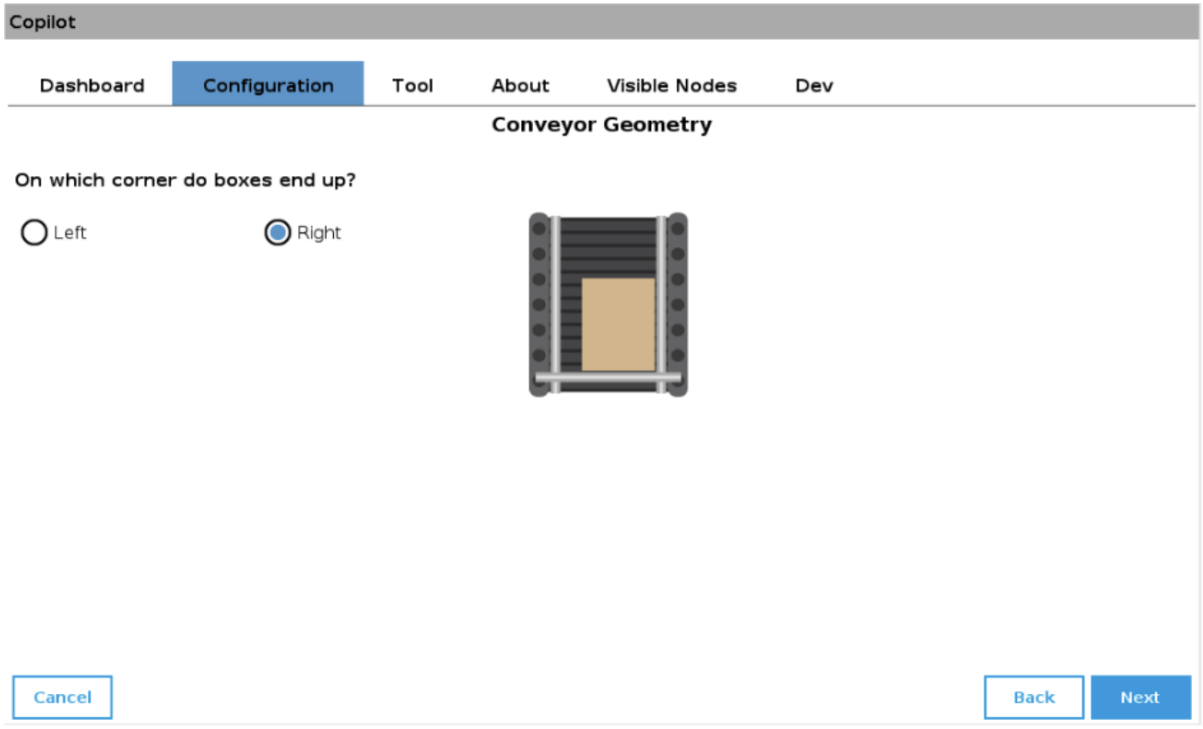


Fig. 5-5: Copilot - Configuration - Conveyor Geometry

8. To teach a box using the Conveyor Pose interface, follow these steps:
    a. **Prepare the Box:**
        - Select the largest box. A high quality and square box is recommended to ensure a precise pick position.
        - Place it at the furthest picking corner meeting the end stop and the guard rail.
    b. **Input Box Information:**
        - Choose between "short side leading" or "long side leading".
        - Enter the precise dimensions of the box.
    c. **Teach Position:**
        - Center the TCP (Tool Center Point) precisely on the top surface of the teaching box.
        - Tap "Teach Position".

d. Once the position is taught, tap "Next."

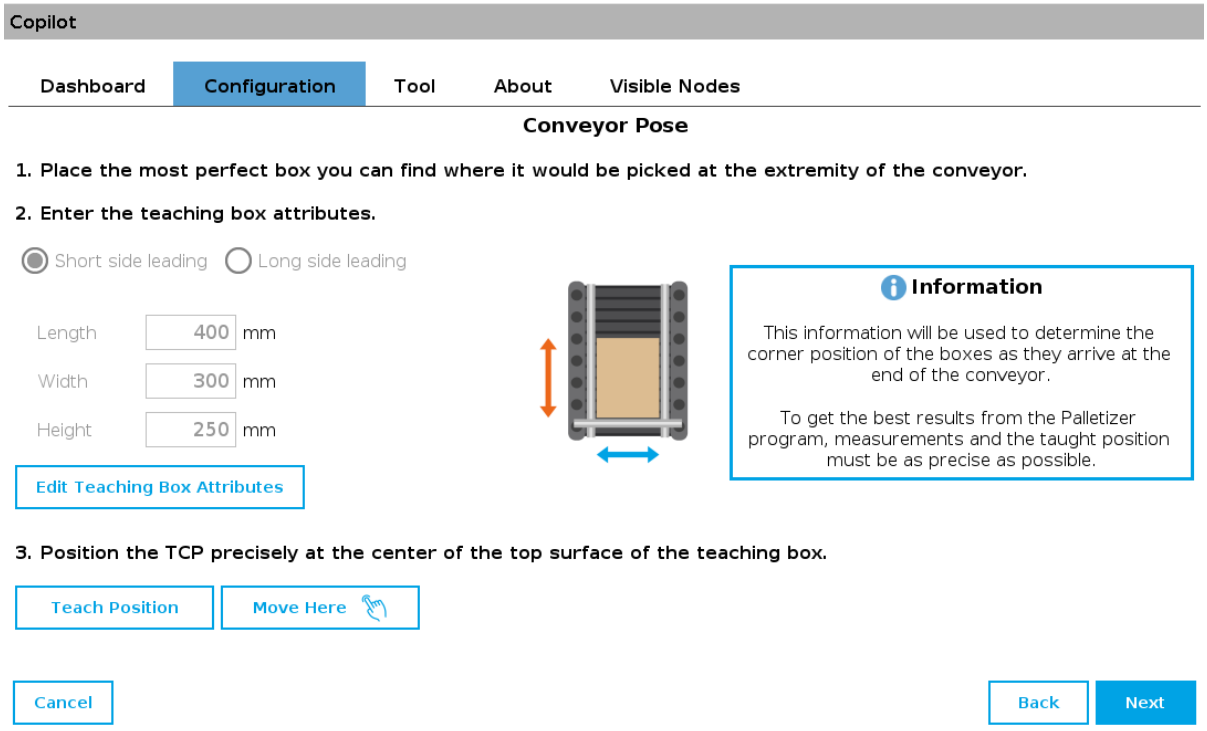


Fig. 5-6: Copilot - Configuration - Conveyor Pose

9. Next, select the conveyor's orientation. Then, tap "Finish".

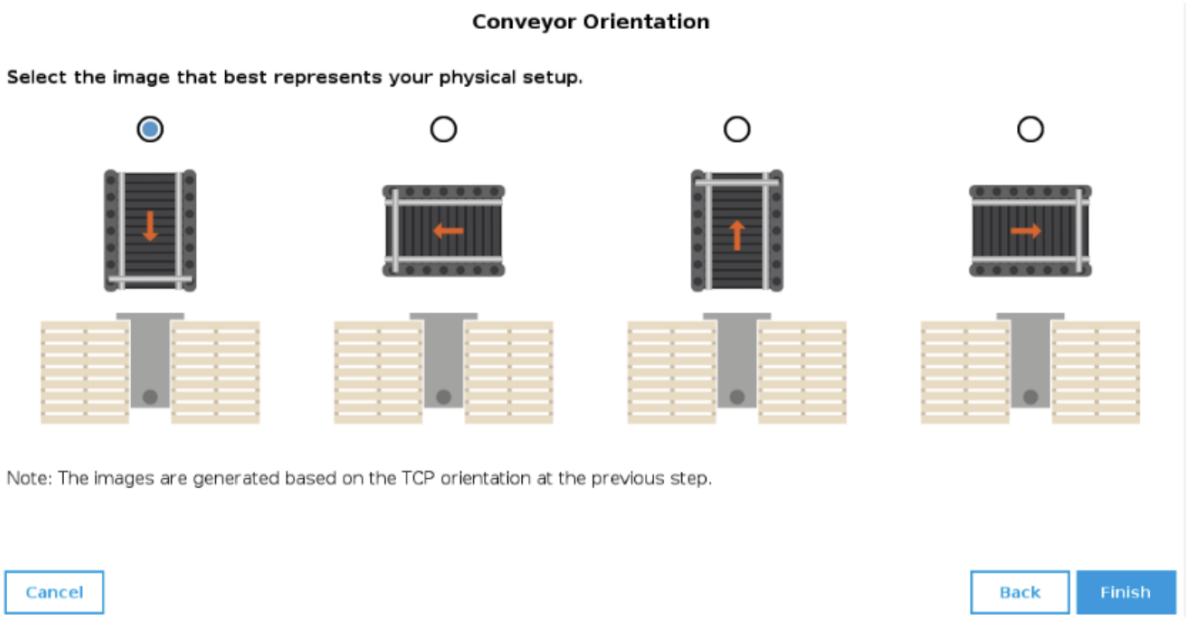


Fig. 5-7: Copilot - Configuration - Conveyor Orientation

10. Your Smart Infeed will now be listed among the available Conveyors.

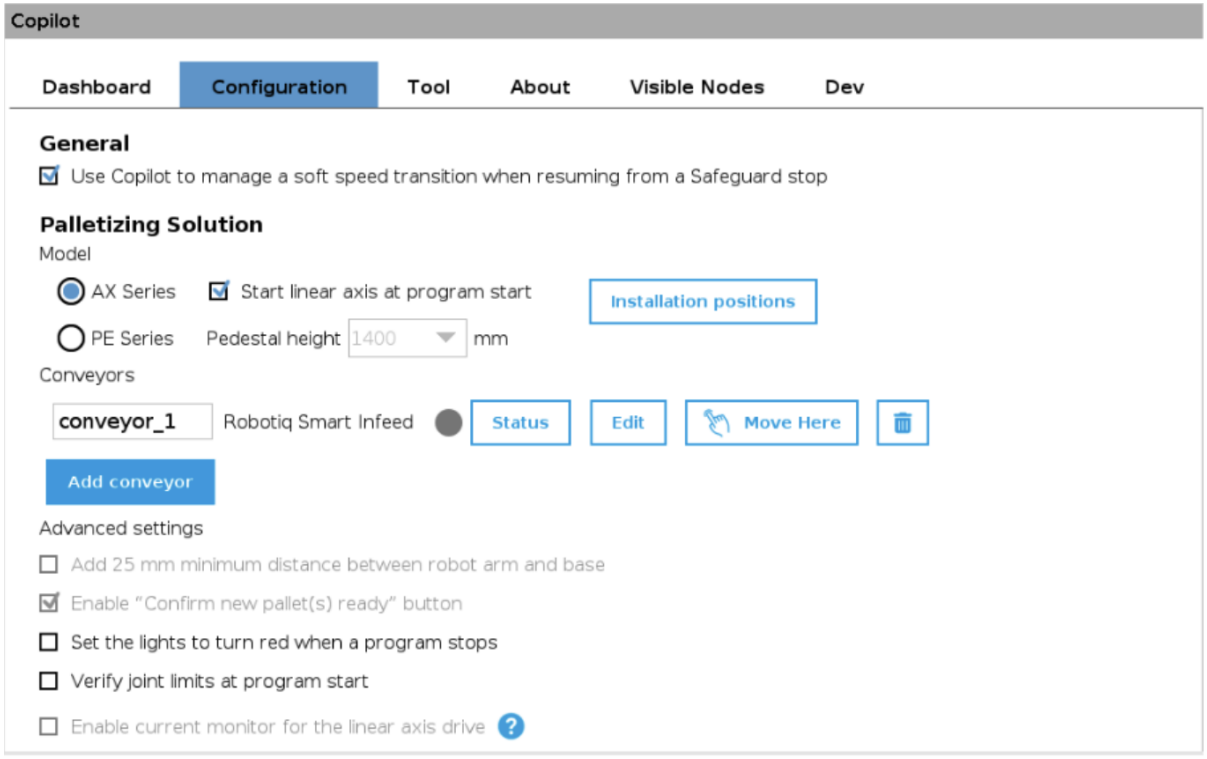


Fig. 5-8: Copilot - Configuration - List of Available Conveyors

	NOTICE
	You will be able to select it directly from the Box edit menu of the Palletizer node.

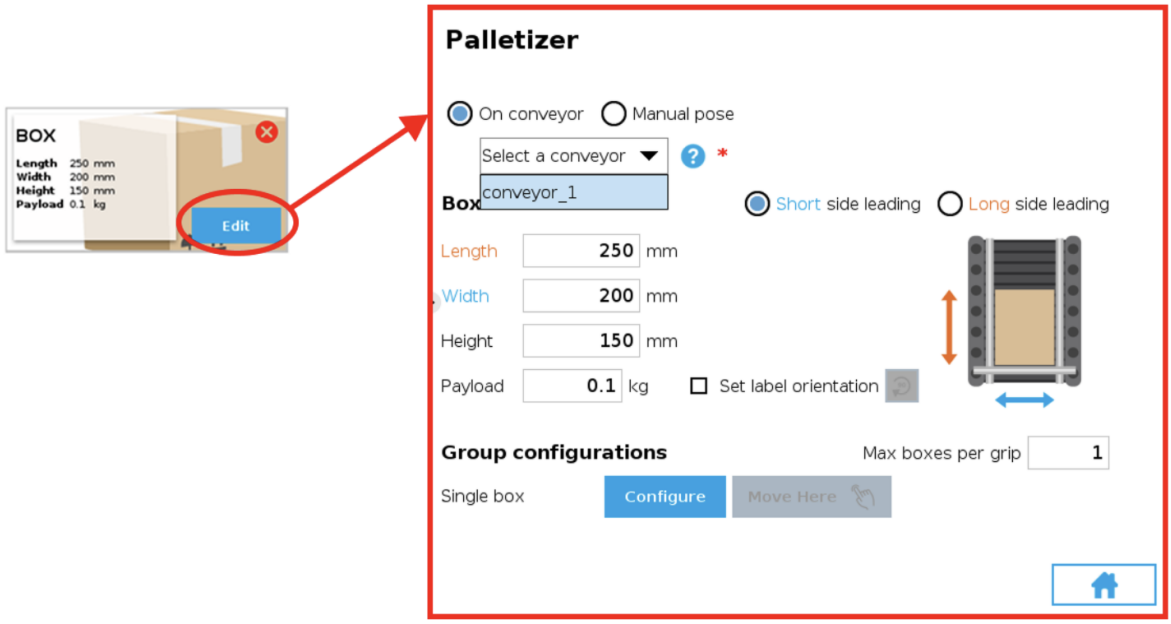


Fig. 5-9: Palletizer Node - Box - Edit - Select a Conveyor

5.3. Integrating the Smart Infeed in a Palletizer Node

5.3.1. Box Attributes and Feed Test

1. Go to Robot Program --> Palletizer.

Fig. 5-10: Palletizer Node

2. Access the Palletizer node, then tap the "Edit" button from the box tile (see Fig. 5-9).
3. Enter all box attributes.

4. Tap the "Configure" button to set up the single box row.

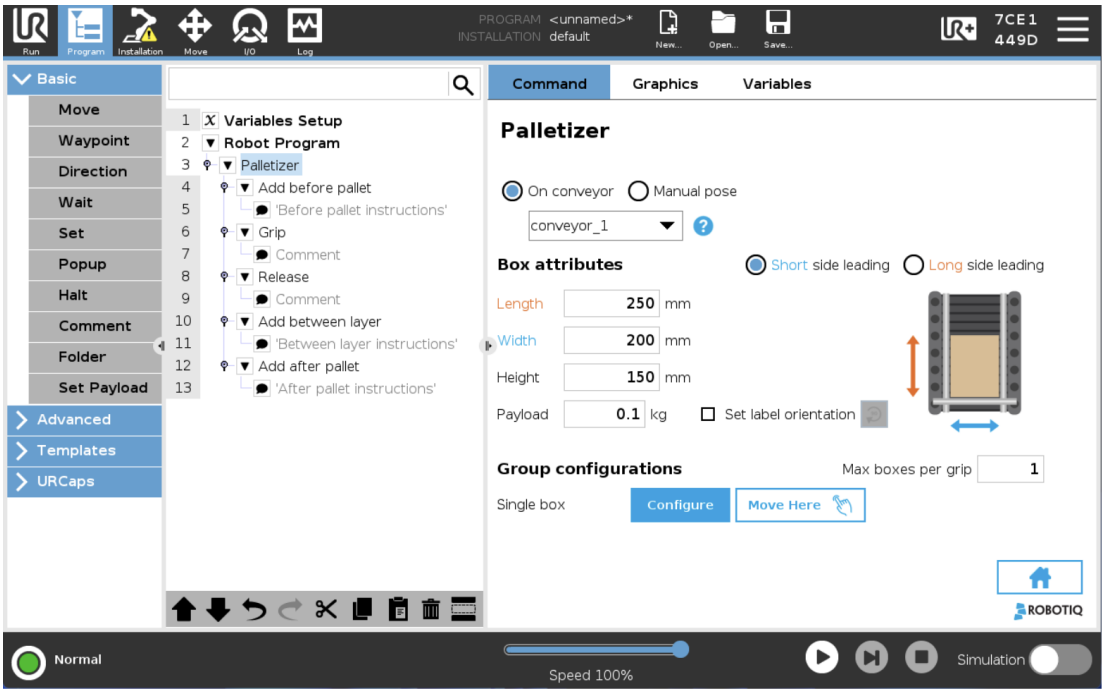


Fig. 5-11: Palletizer Node - Box Edit

5. Allow one box to pass.
   - Please remove any boxes on the Smart Infeed before starting the test, then line up the expected number of boxes at the Smart Infeed entrance. The system will automatically feed boxes as needed to maintain the expected number of boxes on the Smart Infeed.
   - Tap the "Start feed test" button.

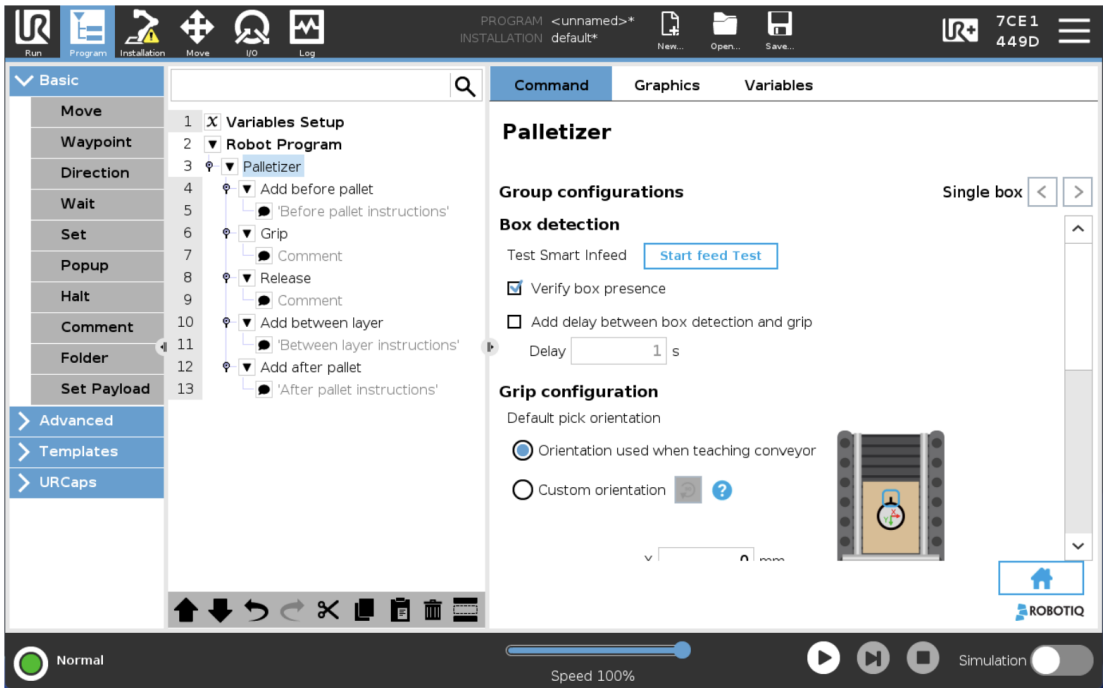


Fig. 5-12: Palletizer Node - Edit Box - Group Configuration

6. The following pop-up will appear, closing it or pushing stop button will stop the test:

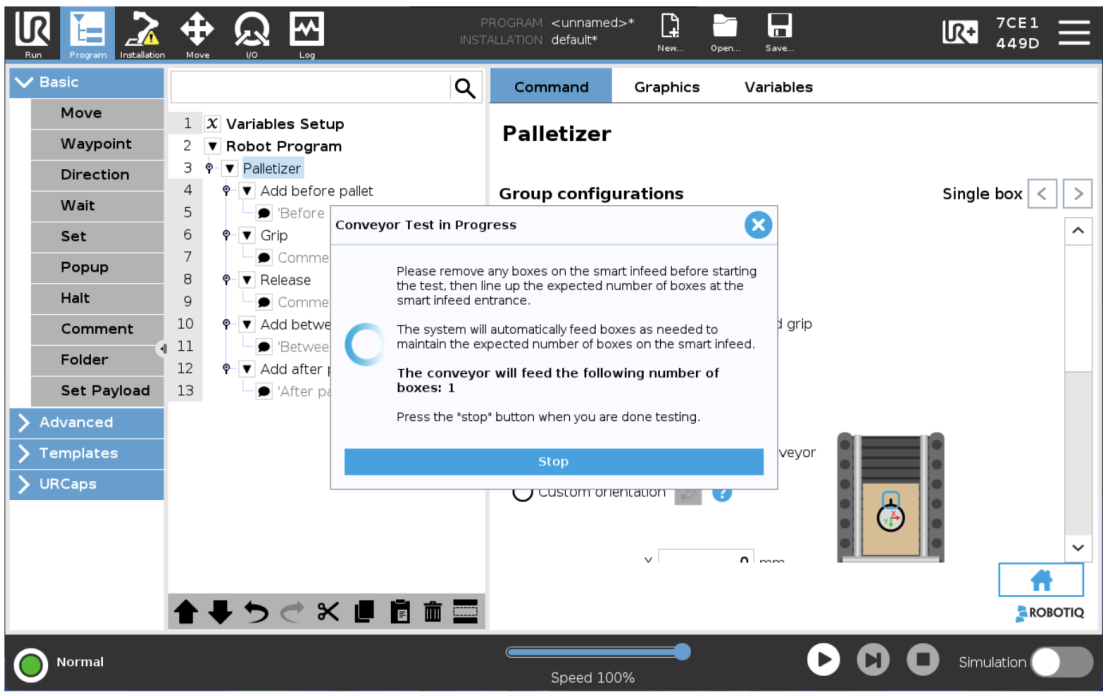


Fig. 5-13: Palletizer Node - Edit Box - Group Configuration - Test Pop-up

7. Test to let through 2 boxes (if length permits).
   - To test multiple boxes (more than one), access the box edition page and navigate to the group configurations section. Be aware that product length and their combined length might limit the max boxes per grip.
   - Increase the value of "Max boxes per grip".
   - New group configurations will appear, allowing associated box count test.

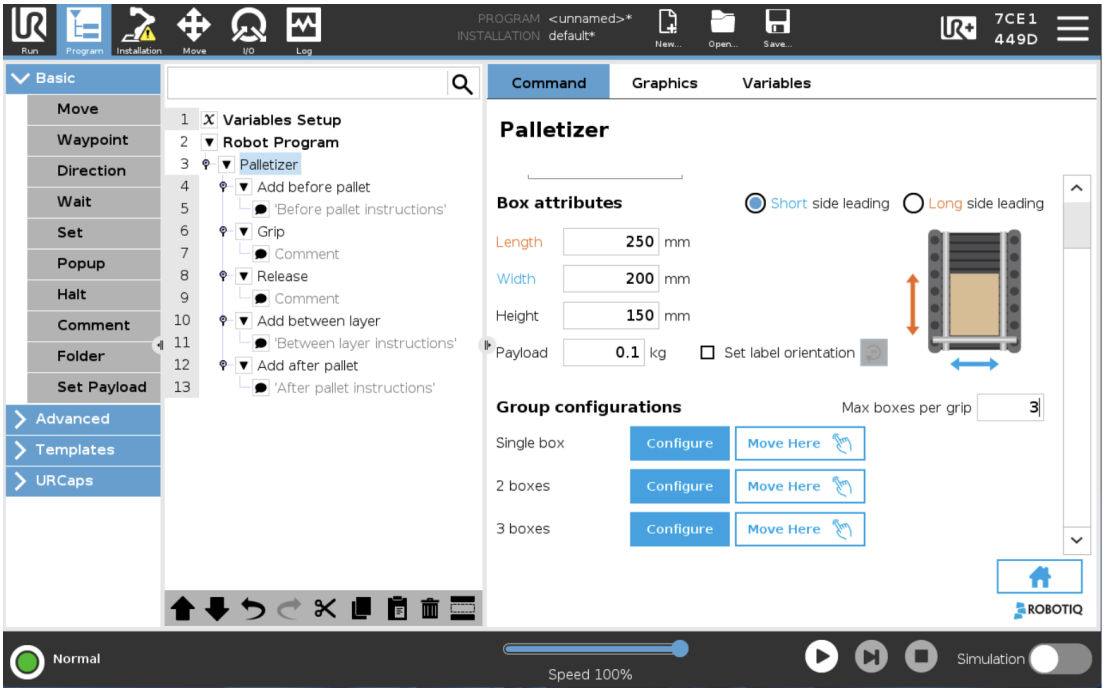


Fig. 5-14: Palletizer Node - Edit Box - Test Multiple Boxes

8. Follow the same instructions as for a single box, adjusting for the desired number of boxes to be tested.

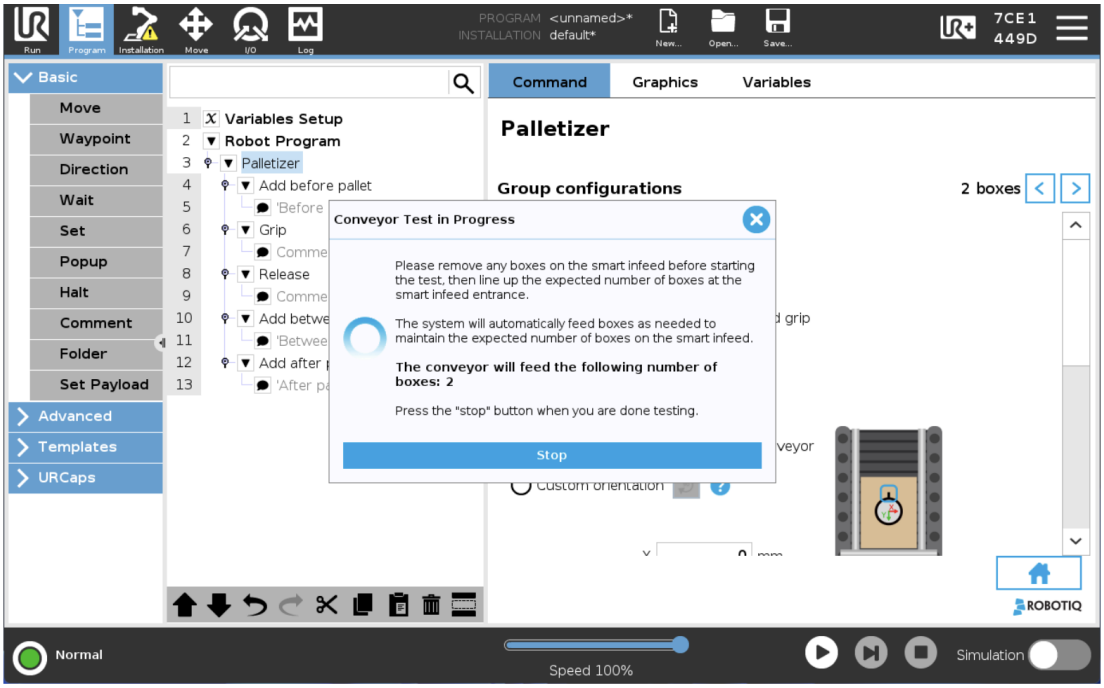


Fig. 5-15: Palletizer Node - Edit Box - Test Multiple Boxes Popup

5.3.2. Pick Position Test

Autopick Functionality: The Smart Infeed includes an Autopick feature that automatically determines the most efficient way to pick boxes for palletizing. This eliminates the need for manual robot position teaching for individual boxes.

For comprehensive details on the Autopick feature and how to teach a group of boxes, please refer to your palletizer manual.

1. Access the Palletizer node, then tap the "Edit" button from the box tile.

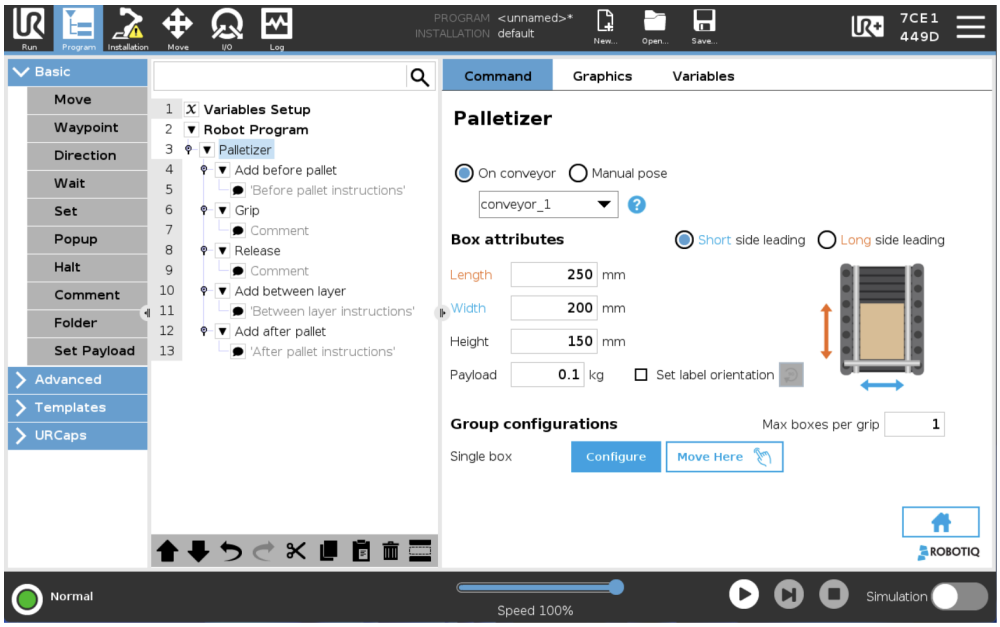


Fig. 5-16: Palletizer Node - Box Edit

2. Under the group configurations section, tap the "Configure" button for a specific group configuration.

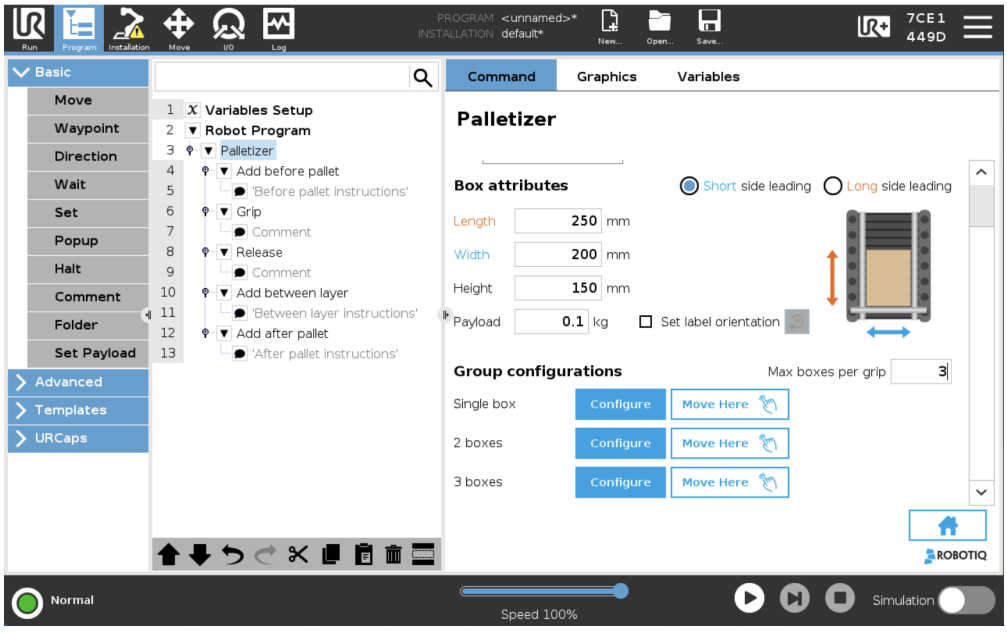


Fig. 5-17: Palletizer Node - Group Configurations

3. Tap and hold the "Move Here" button. The gripper will now move to the pick position.

- If the suggested pick position is not adequate, you can override the default value with specific grouping TCP offset.
- Validate all group configurations for the specified box.
- Specific steps associated with the Smart Infeed are now completed, please refer to your palletizer manual for further details about pallet and pattern configuration.

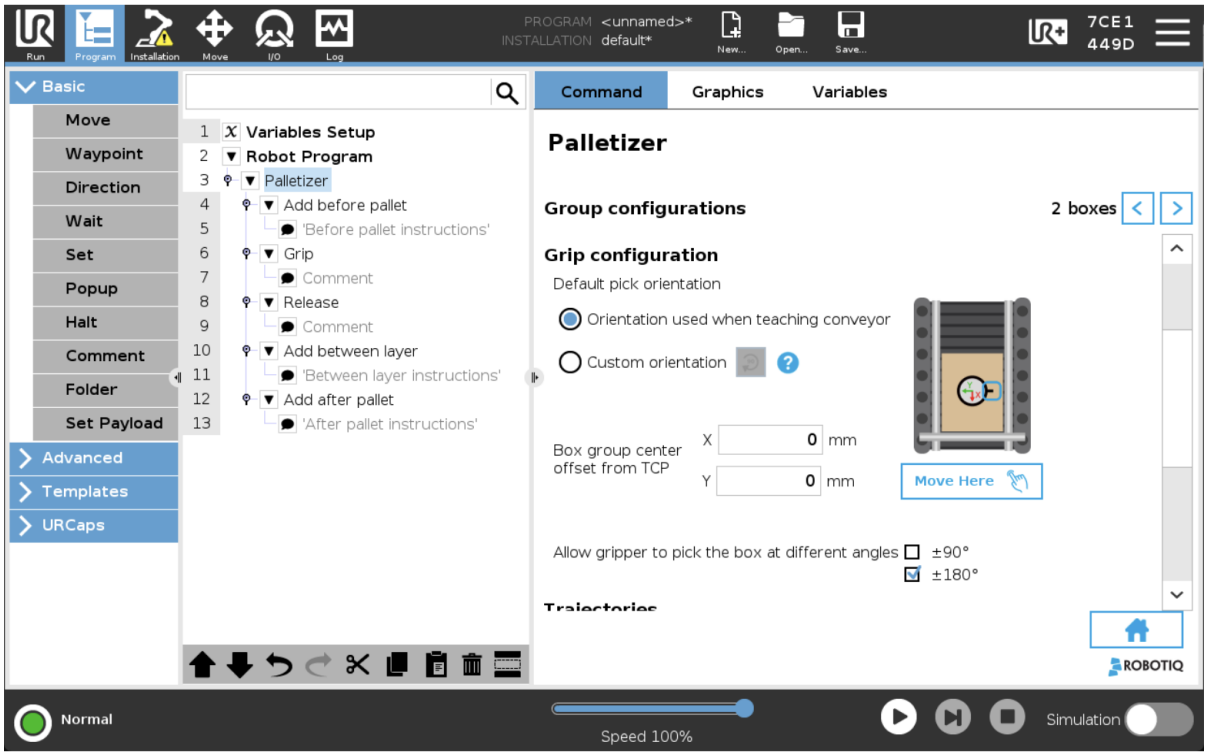


Fig. 5-18: Palletizer Node - Grip Configuration

6. Operation

6.1. System Logic Overview

Watch this video to see the Robotiq Smart Infeed 100 in operation.

In dual or triple pick operations, the process remains the same, with the only difference being that the conveyor will dispatch 2 or 3 boxes before the robot can begin its pick operation. If no box is detected at the gate, the rollers in the accumulation zone will stop and then resume once a box is identified.

6.2. Shutdown Procedure

a. Press the STOP button in the software interface.

b. If required, turn off the main power using the main disconnect switch.

7. Maintenance

WARNING

Pneumatic Pressure Hazard

To prevent injuries from an unexpected release of pneumatic pressure, always lock out tag out the pneumatic valve before performing any system maintenance.

7.1. Power Off and Lock Out Procedure

- Pneumatic power to the solution must be shut off and locked out upstream, or entirely disconnected.
- Before maintaining the solution, the system must be depressurized.
- To switch off the electrical power to the equipment located after the Robotiq control box, turn the main isolator to the off position and secure it there.
- Alternatively, you can disconnect the main power cable from the power outlet.

7.2. Maintenance Tasks

Regular maintenance ensures maximum up-time and performance.

Task	Frequency	Procedure
Belt Inspection	Every month	Depending on the payload and rate, replace the belt as needed. • Replace any belts that are cracked or frayed. • Inspect and adjust belt alignment as needed. • If slipping occurs, first clean the belt and pulley with isopropyl alcohol. If the issue persists after cleaning, replace the belt.
Gate Inspection	Every 6 months	Inspect the gate for any excessive play. • One side features a floating linear guide. A play of less than 0.25 mm is considered normal when the unit is new. • The opposite side features a rigid linear guide, ensuring no perceptible play. Consider linear guide replacement when play exceed 1 mm.

Cleaning	Weekly	Clean the roller, belt, pulley, sensor, and frame, using isopropyl alcohol to remove any stubborn residue. Residue can negatively impact belt capacity.
Drive System	Every 6 months	Periodically check the motor and gearbox for any unusual noises, vibrations, or lubricant leaks. Inspect the mounting bracket for dents or looseness. If necessary, replace the mounting hardware.
Rollers	Every 6 months	If a malfunction occurs, a roller can be replaced directly.
Sensor	If needed	Immediate replacement is required for a damaged sensor.
Guide Rail	6 months	Inspect for any areas of increased friction or excessive wear, such as localized bumps. Replace if necessary.
Storage	Select environments that are cool, dry, and well-shaded.	

7.3. Fasteners

Designation	Location	Torque	
		Metric	**Imperial**
M10 Bolts - Adjustable Stand Screw	Stand	45 Nm	33 lb-ft
M16 Leveling Foot Lock Nuts	Stand	80 Nm	59 lb-ft
E-Stop M5 Mounting Screws	Side Chanel	7 Nm	5.2 lb-ft
M8 Side Covers Screws	Side Chanel	20 Nm	14.7 lb-ft
M8 Transition plate adjustment screws	Side Chanel	20 Nm	14.7 lb-ft

M4 Torx Transition Mounting screw	Side Chanel	0.6 Nm	0.4 lb-in
Nip Guard Screws	Side Chanel	5.5 Nm	4 lb-ft
Ø1/2 Concrete Anchor Screws	Stand	68-74 Nm	50-54 lb-ft
Angled Motor Bracket Mounting Screw	Motors	9 Nm	6.6 lb-ft
Angled Motor Bracket Clamping Screw	Motors	9 Nm	6.6 lb-ft
Straight Motor Mounting screw	Motors	5.4 Nm	4 lb-ft
Straight Motor Clamping Nut	Motors	9 Nm	6.6 lb-ft
Rail, Linear Guide & Cylinder Mounting M8 Screws	Gate	20 Nm	14.7 lb-ft
Upper Tie Rod Air Cylinder Lock Nut	Gate	80 Nm	59 lb-ft
Tie Rod Shoulder Bolt	Gate	78 Nm	57.5 lb-ft
Valve Mounting Screw	Gate	1 Nm	0.7 lb-ft (8.8 lbf-in)
Electrical Panel Rotation lock screw	Infeed Control Box	20 Nm	14.7 lb-ft

Table 7-1: Torque Settings for Fasteners on Robotiq Smart Infeed 100

8. Troubleshooting

NOTICE

Conveyor Behavior and Manual Box Removal

The conveyor's speed is automatically adjusted to maintain an accurate count of boxes. If you need to manually remove a box from the line, you will notice the conveyor's speed decrease temporarily. This is a normal function that allows the system to reset its count and continue to operate correctly.

Problem	Cause	Solution
Conveyor Does Not Start	No power; E-stop activated	Verify all power connections. Reset the E-stop button, then resume operation using the user interface.
Detection Issues	Sensor damage, loss of signal	Remove guard and check sensor wiring, detection adjustment. Replace Sensor and cable if needed.
	Sensor adjustment	Adjust the sensor using the adjustment screw after removing the guard and unscrewing the bottom nut. Please be aware that certain substrates may interfere with detection. At maximum sensitivity, the sensors can detect aluminum or highly reflective materials above 400 mm. The factory default settings are: • 200 mm for cardboard boxes at the Gate Sensor. • 100 mm for cardboard boxes in the accumulation zone.
	Box deformation	If boxes are excessively deformed or have rounded corners, you may need to increase the sensor sensitivity.
Inaccurate Positioning	Box does not reach corner	Products entering the infeed are too far from the guide rail. Centered infeed is required.
	Box Over Rotation	**Potential for Undesired Rotation** If the length-to-width ratio of the product exceeds 2, undesired rotation may occur when the long side is leading. **Troubleshooting Transition Issues** Should an issue arise during the transition, inspect the conveyors for unevenness. Adjust as needed using the leveling feet's fine adjustment mechanism.
Software Cannot Connect	Incorrect IP address; Network	Check network settings and cable connections.

	cable unplugged	Refer to A-4: Wiring Diagrams.
Gate Not Moving	Air Loss	Check Air Supply Check Valve open & pressure gauge (4 to 6 bars)
	Valve Override active	Press the valve override port with a flat screwdriver. Put light through the other opening to ease screwdriver alignment. Remove Valve Override
Box Separation Not Achieved Properly	Gate raised underneath box	The sensor detected the trailing edge of your box. This may be due to intermittent detection issues, unstable products during gate passage. Please investigate potential causes such as substrate incompatibility, product instability and excessive acceleration (reduce speed if possible)
		Upstream conveyors provide acceleration above 3 m/s² causing insufficient gap for separation. Reduce upstream conveyor speed if possible. Decrease coefficient of friction of upstream accumulation conveyor. Remove 1st roller V-Belt.
	Gate raised too late	Increase Smart Infeed speed. If possible, reduce upstream conveyor speed. If separation is not yet achieve, measure the upstream conveyor speed and call Robotiq support.
	Sensor issues	Before use, remove the guard and confirm reliable box detection. Note that a highly deformed box may create a gap between the gate and the sensor.

Table 8-1: Smart Infeed 100 -Troubleshooting Guidelines

9. Warranty

9.1. Conditions

Robotiq warrants the Smart Infeed 100 and all its components against defects in material and workmanship for a period of one (1) year from the date of reception when utilized as intended. Robotiq also warrants that this equipment will meet applicable specifications under normal use.

WARNING

The warranty applies under the following conditions:

- Usage is made in accordance with the operating and storage conditions specified in the Environmental and Operating Conditions section.
- The product and all its components have been properly installed as specified in the Installation section and following subsections.
- Maintenance is performed in accordance with the conditions specified in the Maintenance section.
- Usage complies with the recommended payload, force and speed values specified in the Mechanical Specifications section.

The warranty will come to an end when the following condition is reached:

- One (1) year

During the warranty period, Robotiq will repair or replace any defective Smart Infeed 100 and any of its components, as well as verify and adjust the equipment free of charge if it needs to be repaired or if the original adjustment is erroneous. If the equipment is sent back for verification during the warranty period and found to meet all pertaining specifications, Robotiq will charge standard verification fees.

9.2. Warranty Void and Exclusions

The warranty will become void if:

- The unit has been tampered with, repaired or worked on by unauthorized individuals.
- The screws and hardware, other than as explained in this guide, have been removed.
- The unit has been opened other than as explained in this guide.
- The unit serial number has been altered, erased, or removed.
- The unit has been misused, neglected, or damaged.

This warranty is in lieu of all other expressed, implied, or statutory warranties, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

Robotiq shall not be liable for damages resulting from the use of the Smart Infeed 100, nor from special, incidental, or consequential damages. Robotiq shall also not be responsible for any failure in the performance of other items to which the Smart Infeed 100 and any of its components is connected or the operation of any system of which it may be a part.

This warranty excludes failure resulting from: improper use or installation, normal wear and tear, accident, abuse, neglect, fire, water, lightning or other acts of nature, causes external to the Smart Infeed 100 and any of its components or other factors beyond Robotiq's control. It also excludes all consumable parts, such as belts, and their normal wear.

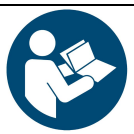
Robotiq reserves the right to make changes in the design or construction of any of its products at any time without incurring any obligation to make any changes whatsoever on units already purchased.

10. Harmonized Standards

The standards listed in the table below were followed, as far as applicable, for the design and production of the Robotiq Smart Infeed 100.

Standard	Description
European Machinery Regulation (EU) 2006-42-CE	Machinery Directive
2014/30/EU	EMC Directive
2011/65/EU + 2015/863	RoHS Directive
2012/19/EU	WEEE Directive

Table 10-1: Smart Infeed 100 Applicable Standards



NOTICE

The EC Declaration of Incorporation is available at http://robotiq.com/support.

11. Appendix

A-1: Recommended Default Layout (-90 or 90°)

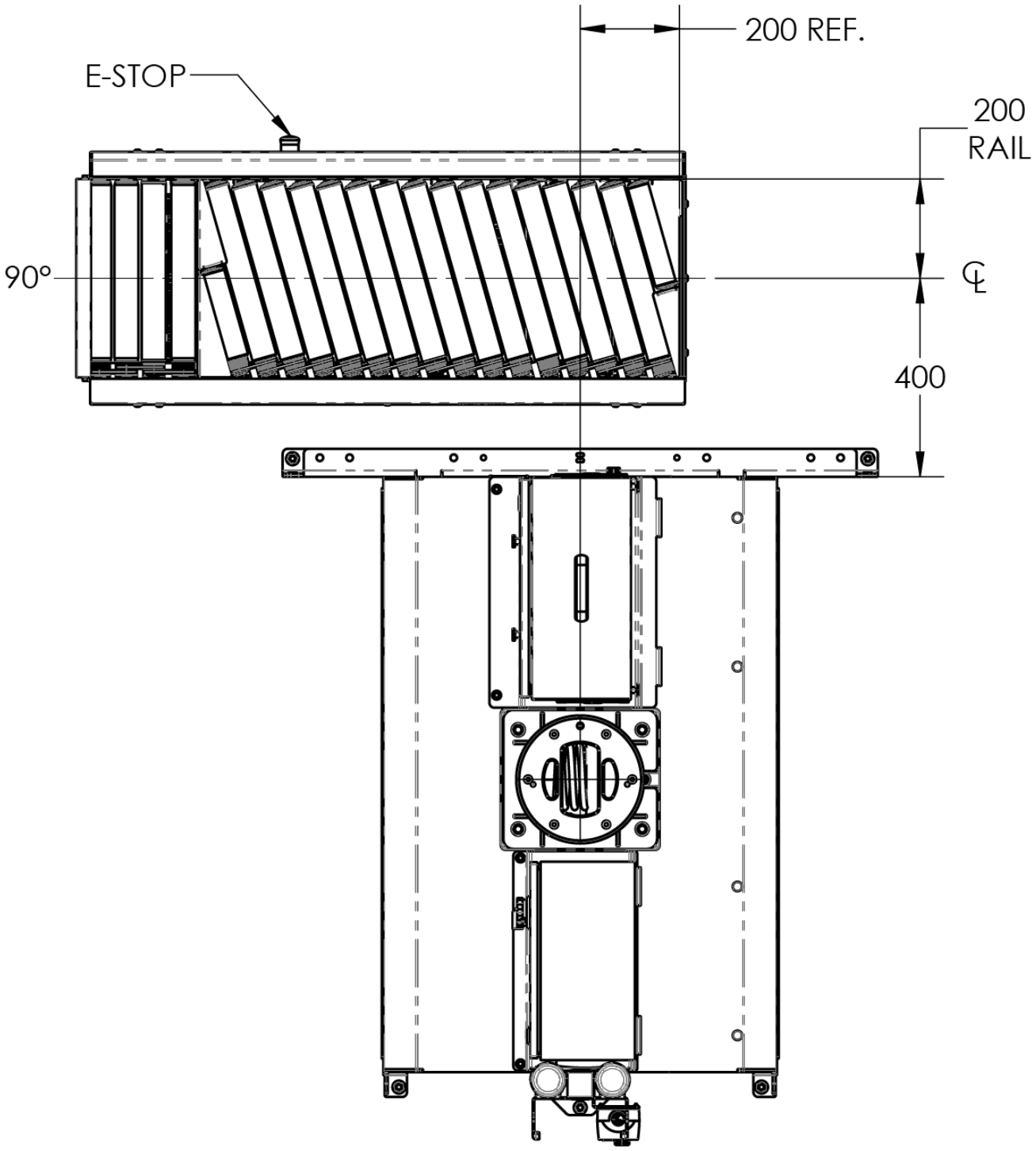


Fig. 11-1: Recommended Default Layout (90°) - Top View

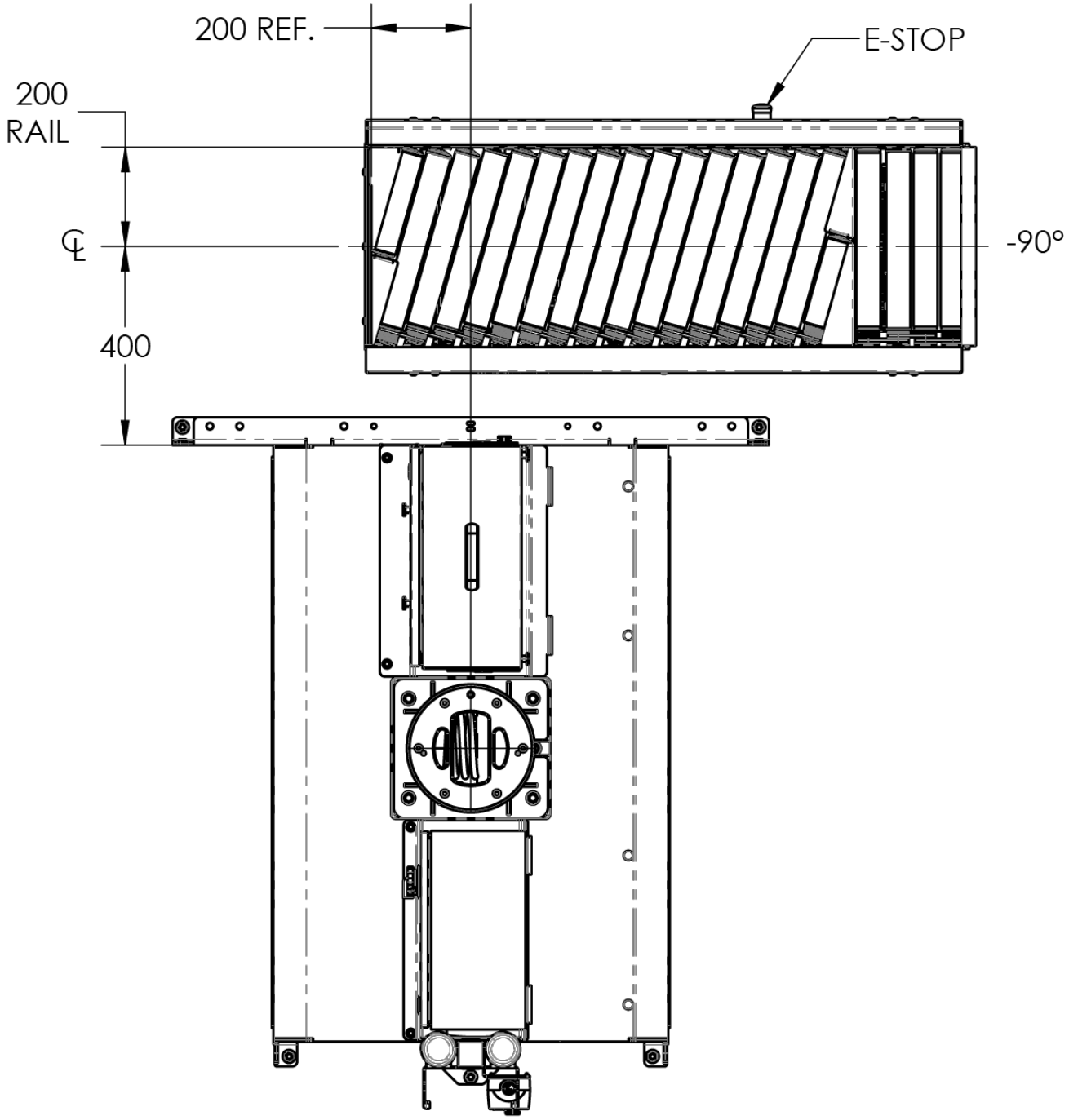


Fig. 11-2: Recommended Default Layout (-90°) - Top View

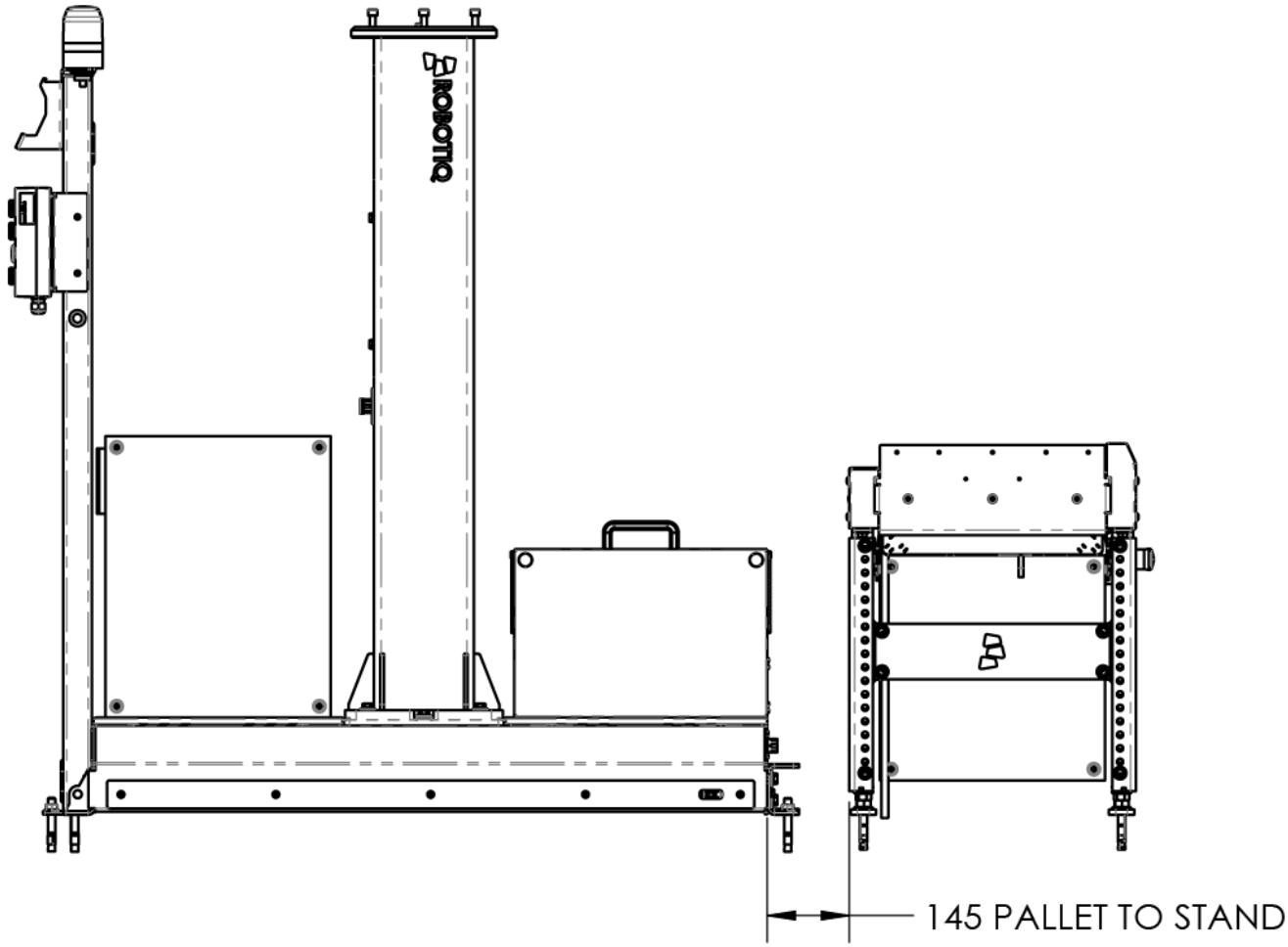


Fig. 11-3: Recommended Default Layout (-90 or 90°)- Lateral View

A-2: Recommended Default Layout (0°)

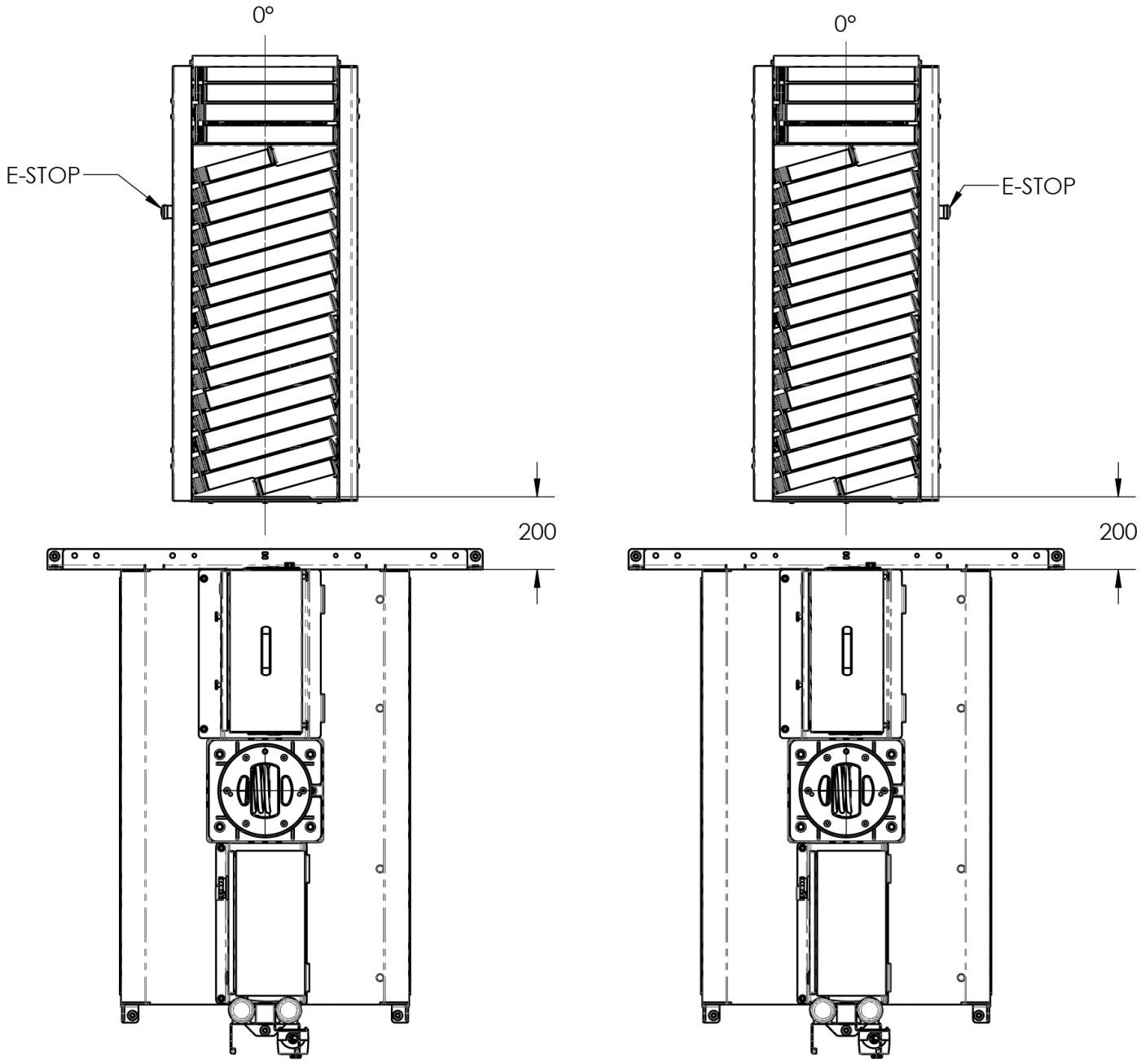


Fig. 11-4: Recommended Default Layout (0°) - Top View

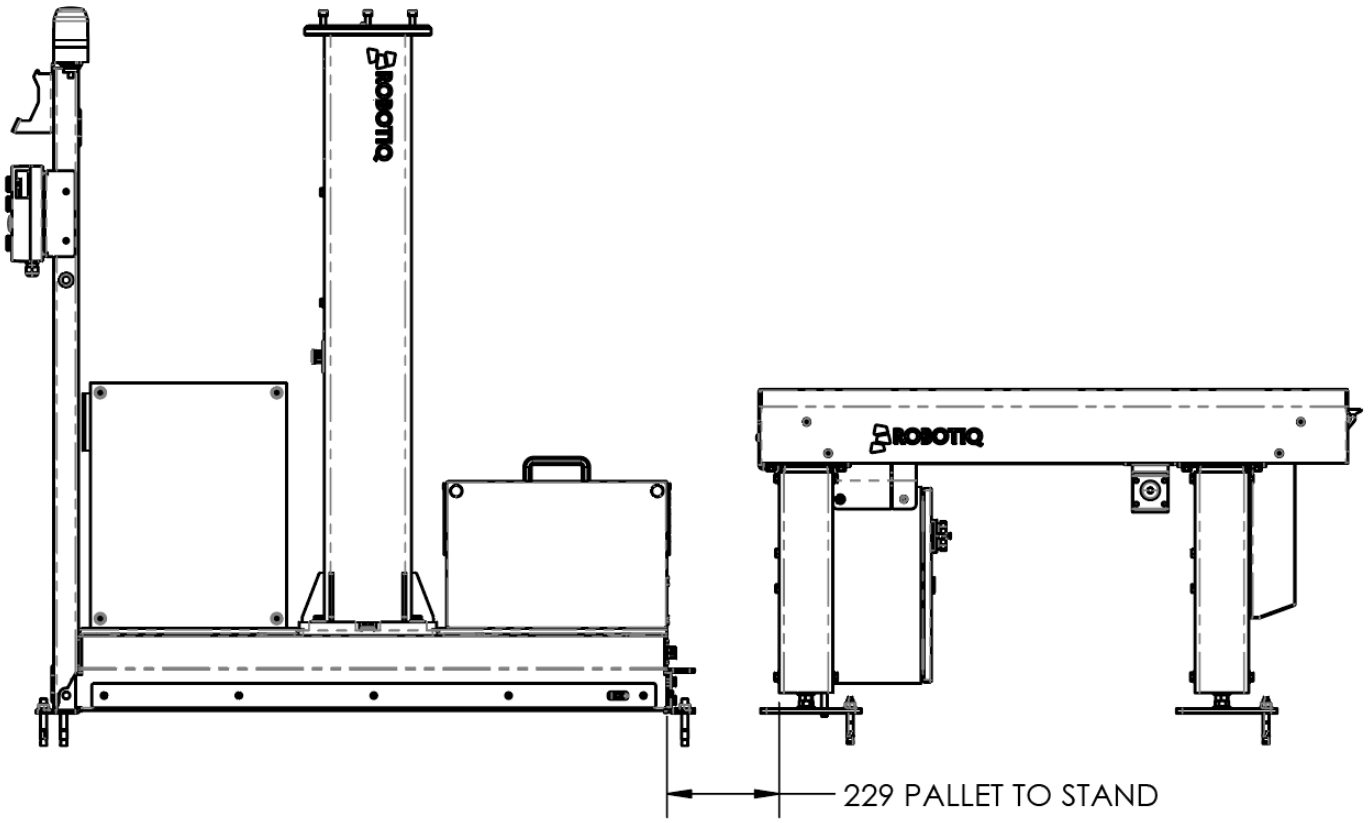


Fig. 11-5: Recommended Default Layout (0°) - Lateral View

A-3: Operational Layout on Conveyor Side

Access to the conveyor should be made through the access zone as indicated in the following figures. A UR safety plane should be added at the end of the robot's operating zone to ensure the safety of the access area. For more details regarding the distances of the operating zone, please refer to the palletizer manual.

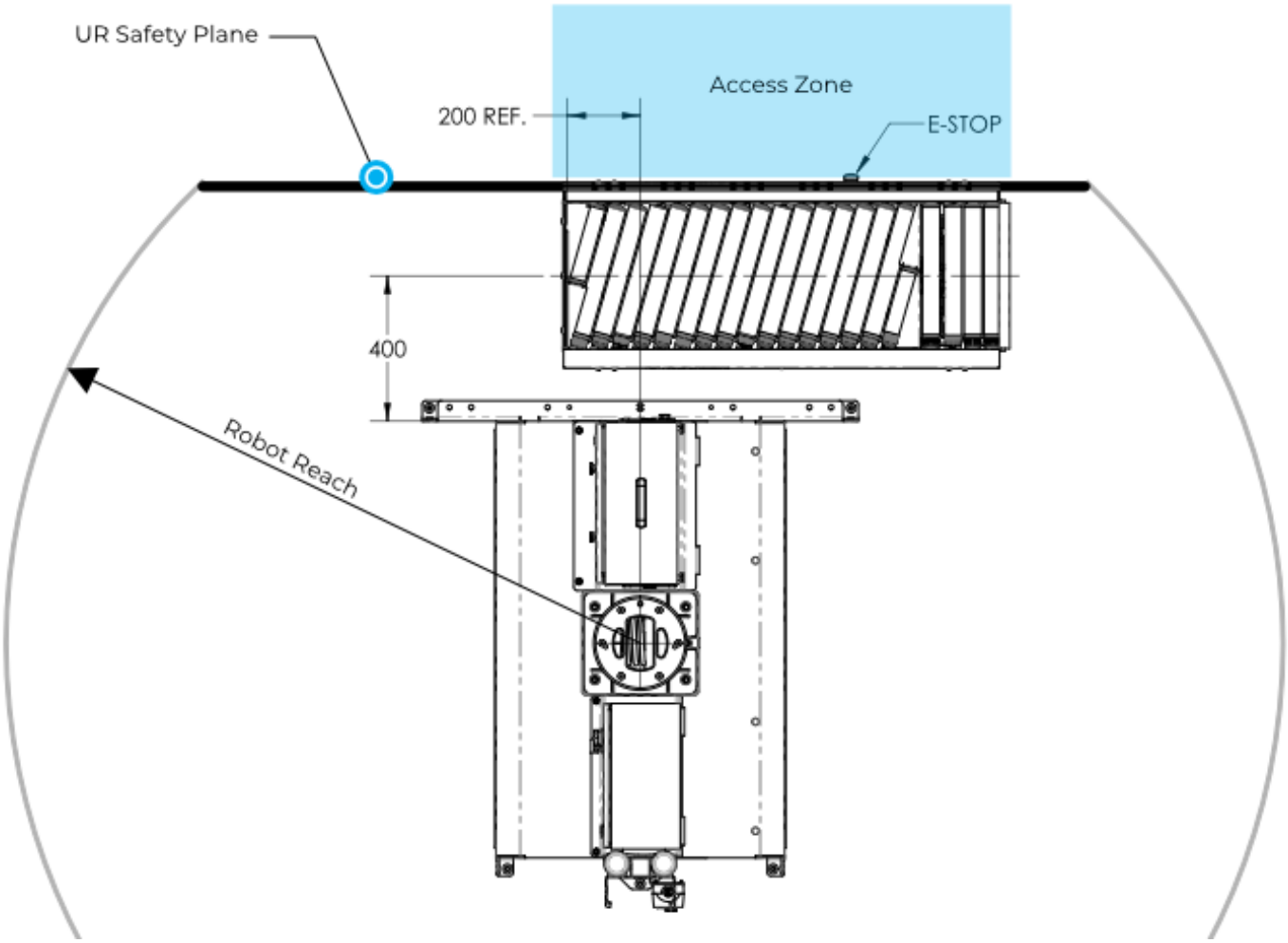


Fig. 11-6: Access Zone for the -90 deg configuration

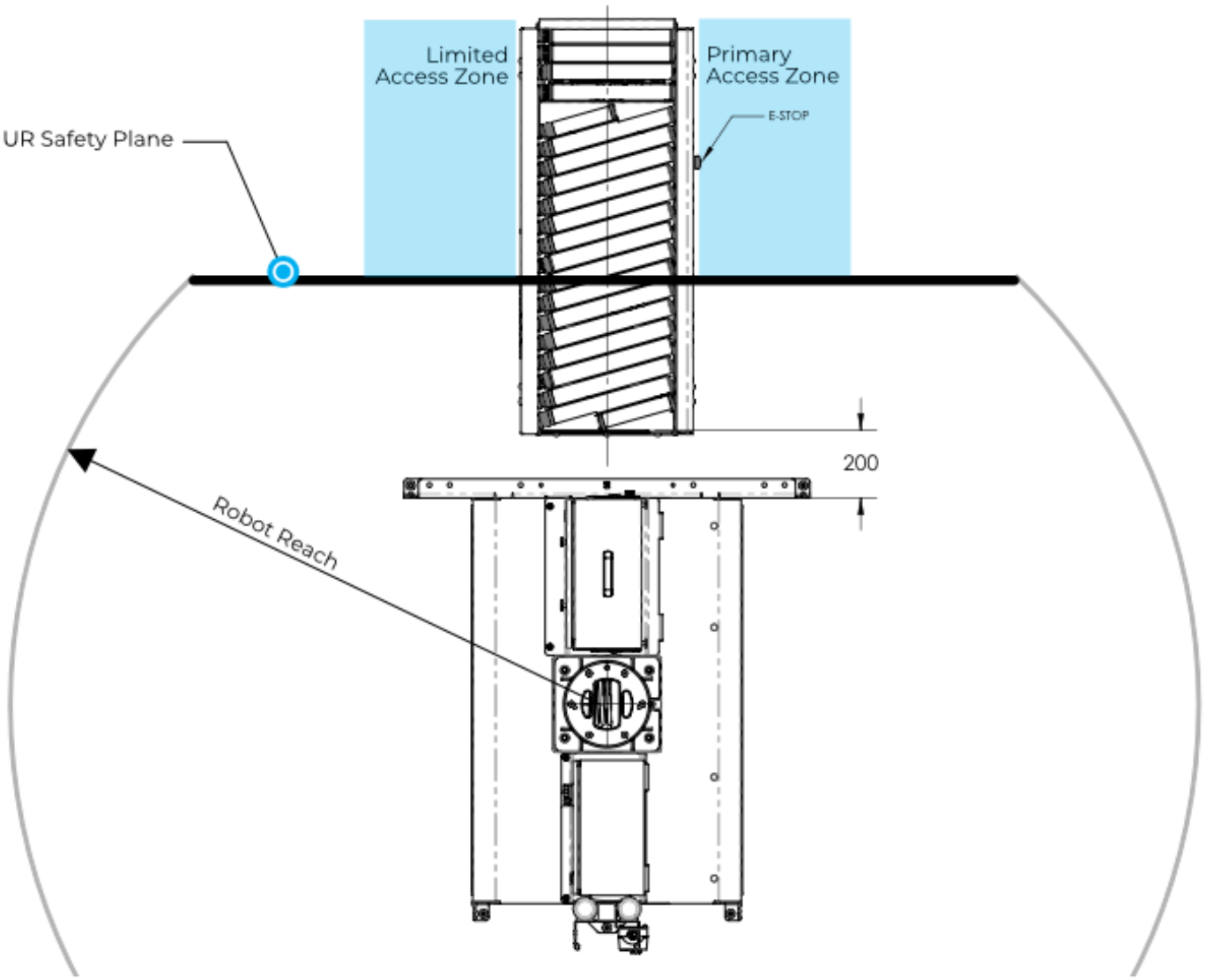


Fig. 11-7: Access Zone for the 0 deg configuration

A-4: Wiring Diagrams

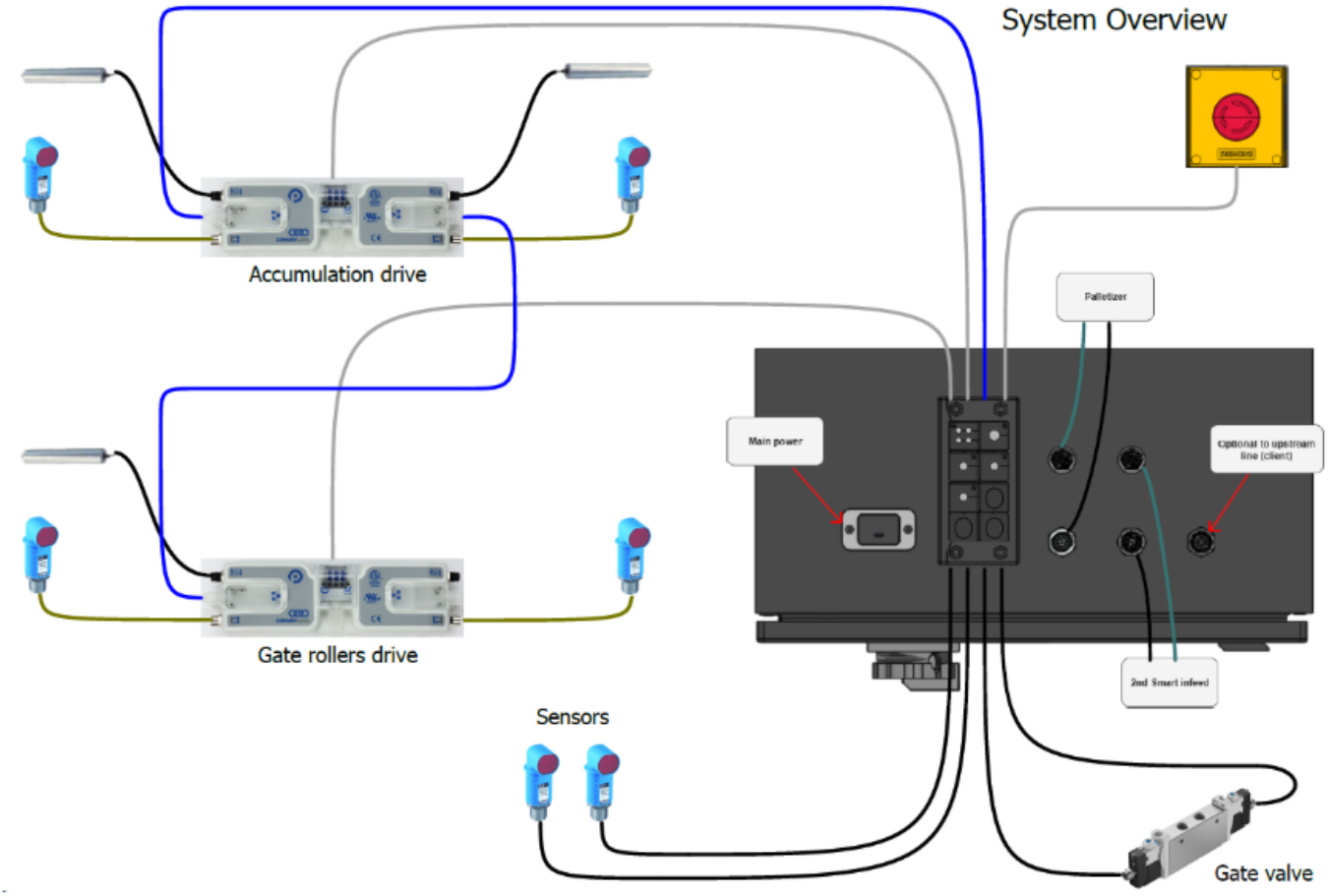


Fig. 11-8: Wiring Diagram - System Overview

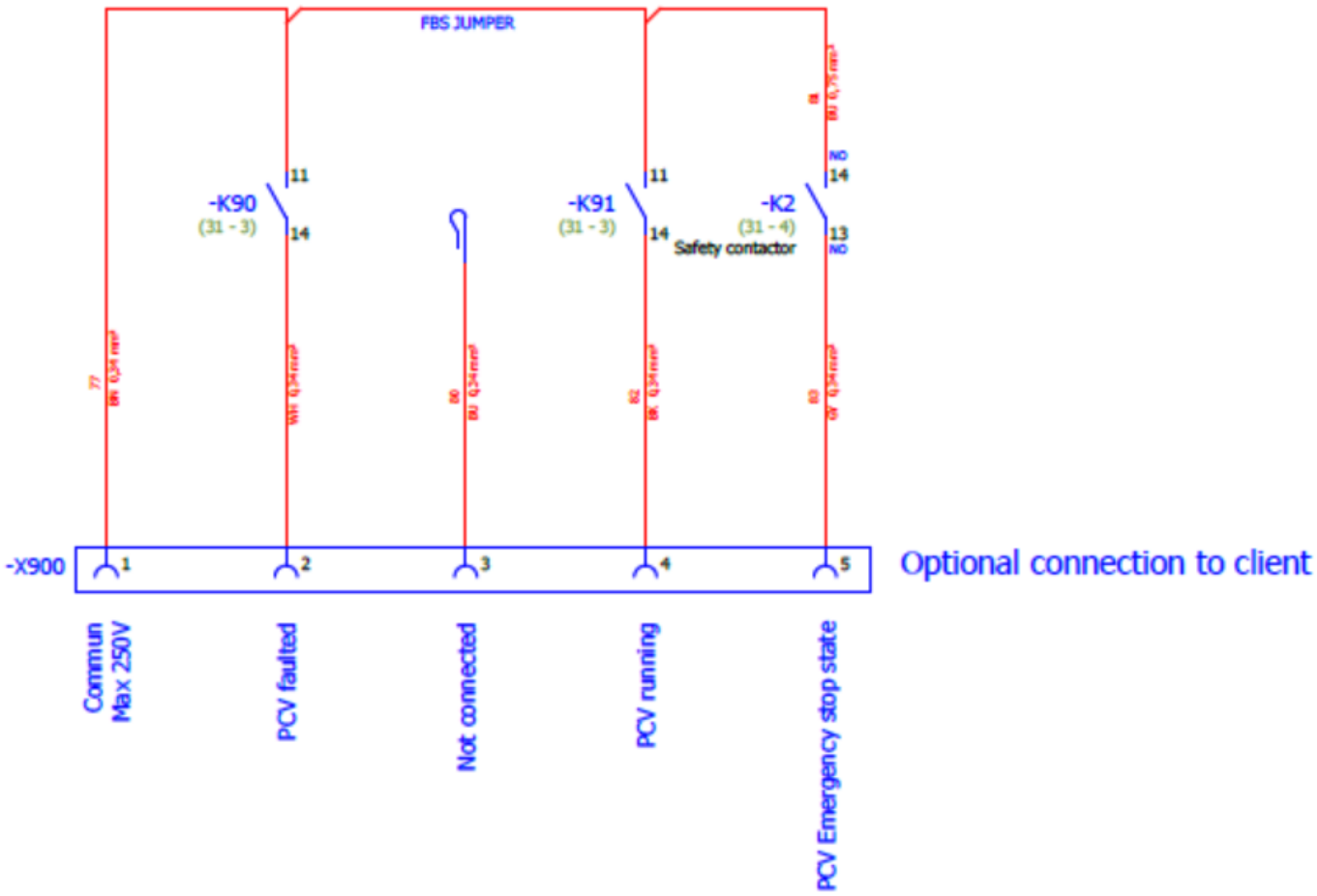


Fig. 11-9: Wiring Diagram - Smart Infeed Control Box

A-5: Pneumatic Diagram

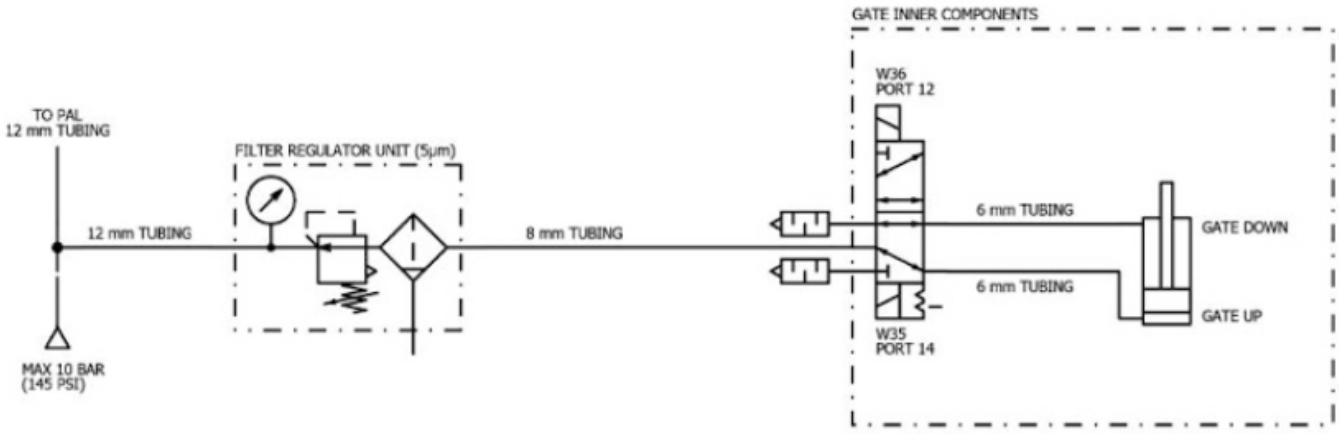


Fig. 11-10: Pneumatic Diagram

A-6: Optional Accessory Mounting Point

Three M8 clearance holes are provided for installing guard rail posts or aluminum extrusions, allowing for specialized applications that require additional guides.

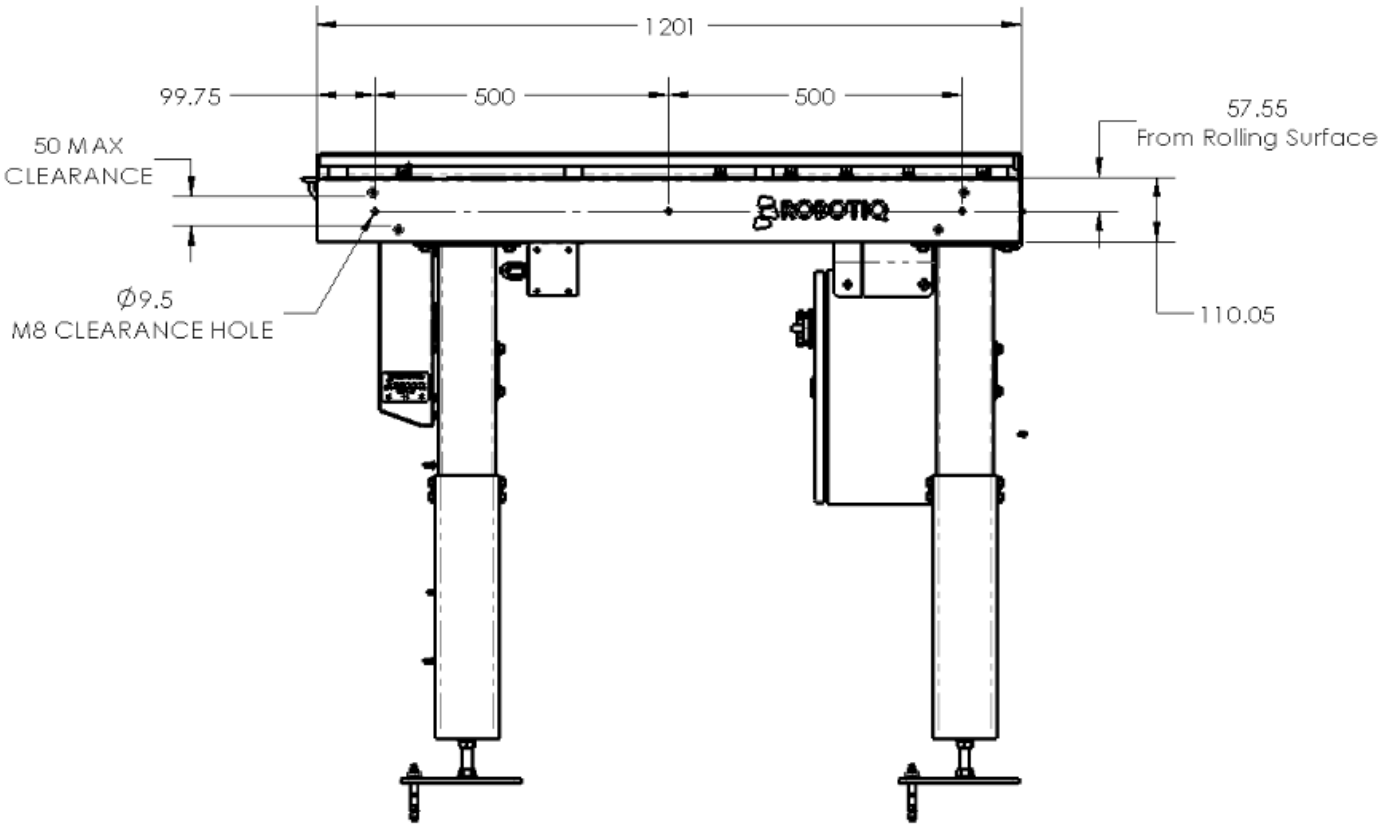


Fig. 11-11: Optional Accessory Mounting Point

A-7: Spare Parts List

Item	Description	Ordering Number
V-BELTS REPLACEMENT KIT	R-00207 x 16 Hard Poly-V Belt 3 grooves 57 mm pitch R-00208 x 1 Hard Poly-V Belt 3 grooves 63.5 mm pitch	SOL-INF100-BELT-REP-KIT
GATE LINEAR BEARING KIT	R-00204 x 2 Bearing Plain Lin 20x45 Zinc J200 Non Floating R-00205 x 2 Bearing Plain Lin 20x45 Zinc J200 Floating	SOL-INF100-GATE-BEARING-KIT
GATE CYLINDER AND VALVE KIT	R-00199 x 1 Pneu Valve Solenoid 5/2 700 G1/8 R-00197 x 1 Pneu Cyl Double-Acting 50x30 G1/4 Aluminium R-00200 x 1 Pneu Rod Eye M16x1.5 R-00194 x 1 Pneu Clevis Flange 50 R-00196 x 2 Pneu Conn L G1/4 x 6 PLASTIC R-00236-230 x 2 Pneu Tube 6 x 1 TPE-U (PU) Black 7 bar R-00231 x 2 Screw M2.5-0.45 x 40 (17) SHCS Hex SS 18-8	SOL-INF100-GATE-CYL-VALVE-KIT
CABLE COMMUNICATION KIT FOR SMART INFEED	R-00185 x 1 Cable PAL Ethernet M12-M12 d-coded 5m R-00186 x 1 Cable PAL Safety M12 12pin a-coded 5m	SOL-INF100-PAL-CABLE-COMM-KIT
IDLER REPLACEMENT KIT	PCV-082 x 1 PCV SHORT ROLLER SKEWED SECTION PCV-083 x 13 PCV ROLLER SKEWED SECTION PCV-084 x 1 PCV IDLER SKEWED SECTION PCV-087 x 3 PCV ROLLER STRAIGHT SECTION (motors are not included in this kit)	SOL-INF100-IDLER-REP-KIT

SKEWED MOTOR	PCV-A26 x 1 PCV TOP ANGLED MOTOR MOUNT PCV-086 x 1 PCV MOTOR SKEWED SECTION	SOL-INF100-SKEWED-MOTOR
STRAIGHT MOTOR	PCV-085 x 1 MDR MOTOR INFEED Ø48.6 mm BF 400mm (include motor mount)	SOL-INF100-STRAIGHT-MOTOR
MOTOR DRIVE	R-00193 X 1 Elec MDR Drive Conveylinx Ai2	SOL-INF100-MOTOR-DRIVE
POWER SUPPLY	R-00275 X 1 Power Supply 6EP3336-3SB00-0AX0	SOL-INF100-POWERSUPPLY
PHOTOELECTRIC SENSOR	R-00192 X 1 Elec Photoelectric sensors, Sensing range : 10-400mm Right Angle, M12 R-00188 X 1 Cable box sensor M12-M8 4pin 1.5m	SOL-INF100-PHOTOELEC-SENSOR

Table 11-1: Spare Parts List

12. Contact

Robotiq
www.robotiq.com ## Contact Us **Phone** 1-888-ROBOTIQ (762-6847) (01) 418-380-2788 Outside US and Canada **Technical support and engineering** option 3 **Sales** option 2 **Head office** Robotiq: 966, chemin Olivier Suite 500 Lévis, Québec G7A 2N1 Canada