



CONVEYX
SOLUTIONS, LLC

24V ROLLER

INSTALLATION, OPERATION & MAINTENANCE MANUAL

PLEASE REVIEW MANUAL BEFORE OPERATING EQUIPMENT



| | |
|---|----|
| Warnings and Safety Instructions | 3 |
| Electrical Safety | 6 |
| Conveyor Configurations | 8 |
| Operating Instructions | 16 |
| Parts Replacement and Procedures..... | 17 |
| Roller Replacement (Non-Motorized)..... | 17 |
| Motorized Roller Replacement (In Deck) | 17 |
| Parts Replacement and Procedures | 18 |
| Motorized Roller Replacement (Below Mount)..... | 18 |
| Below Mount Gear Drive (BMGD) Replacement..... | 21 |
| Round Belt Replacement | 22 |
| Replacing a Drive Card (System With PLC) | 24 |
| Driver Card - Description | 26 |
| Driver Card - Components | 27 |
| Driver Card - LED Indicators | 28 |
| Troubleshooting | 31 |
| General Preventative Maintenance Safety | 33 |
| System Maintenance Schedule | 34 |
| Warranty Statement..... | 36 |
| Return Authorization Procedures..... | 37 |

IMPORTANT REQUIRED READING

To ensure this quality product is safely and correctly utilized, all instructions within this manual must be read and understood prior to equipment start-up. Be aware of all safety labels on machinery. If you do not understand any of the safety instructions or feel there may be safety labels missing, contact your supervisor or product supplier immediately!

WARNINGS AND SAFETY INSTRUCTIONS

Failure to follow the instructions and cautions throughout this manual and warning labels on the conveyor, may result in injury to personnel or damage to the equipment.

ConveyX Solutions' equipment is powered and can be stopped by turning off the electrical power to the equipment. As with all powered machinery, the drive-related components can be dangerous so safety guards and other optional devices have been installed to prevent accidental contact with these parts along with warning labels to identify potential hazards.

Special attention must be paid to the following areas of this manual:



Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a situation which, if not avoided, could result in property damage.



Indicates helpful hints and information.

ENVIRONMENTAL STANDARDS

ConveyX Solutions' equipment is designed to be installed in a clean, dry environment. Exposure to extreme humidity, direct sunlight, blowing dirt or rain can permanently damage some components and equipment. Concrete curing agents are also known to attack and degrade the urethane conveyor components. Be sure that the concrete is properly cured at new sites before setting the conveyor on it and that proper ventilation is used to prevent curing agent fumes from impacting the conveyor. Equipment should be stored under cover to protect it from exposure to the weather and other adverse conditions from the dock door to the truck entrance. Failure to comply with these guidelines will void the warranty on any failed components that result from these environmental issues.

ANSI STANDARDS FOR CONVEYORS

It is essential for safe and efficient system operation that the safety information and guidelines presented here are properly understood and implemented. The American National Standard Institute (ANSI) booklet entitled Safety Standards for Conveyors and Related Equipment, for more information contact <https://webstore.ansi.org>.

With any piece of industrial equipment, conditions exist that might cause injury to workers. Because it is not possible to describe each potentially hazardous situation that might develop, workers must be alert at all times for unsafe conditions. To avoid injury, use maximum possible care and common sense and adhere to all safety standards.

Take special care while maintaining and inspecting electrical equipment and devices. All personnel working on or around the system should be aware of, and adhere to all CAUTION, DANGER and WARNING signs.

Labels or signs are posted to reduce the risk of injury to all personnel. Never assume that the signs and notices are applicable only to inexperienced personnel. Maintain signs in a legible condition. Contact a supervisor to post additional safety signs if necessary.

ANSI CONVEYOR SAFETY RULES

Below are the conveyor safety rules, as well as specific regulations and guidelines listed in this publication:

- DO NOT touch moving Conveyor parts.
- DO NOT walk, ride or climb on the Conveyor.
- DO NOT operate the Conveyor with chain guards or other protective guards removed.
- Keep jewelry, clothing, hair, etc., away from the Conveyor.
- Know the location and function of all start/stop devices and keep those devices free from obstruction.
- Clear all personnel from the equipment before starting the Conveyor.
- DO NOT attempt to clear product jams while the Conveyor is running.
- Allow only trained and authorized personnel to maintain or repair Conveyor equipment.
- DO NOT load the Conveyor beyond specified design limits.
- DO NOT attempt to make repairs to the Conveyor while it is running.
- DO NOT modify equipment without checking with the manufacturer.

- DO NOT operate or perform maintenance on equipment when taking any type of drug or sedative, when under the influence of alcohol or when over-fatigued.
- Report any unsafe condition to your supervisor or maintenance staff.

CEMA STANDARDS FOR CONVEYOR

The Conveyor Equipment Manufacturers Association (CEMA) provides safety information related to conveyor systems. To learn more about CEMA visit website, www.cemanet.org.

CEMA produces various Conveyor safety videos and posters, and it is recommended that the videos be made available for training and education purposes as part of a safe working environment around conveyor equipment. The videos introduce awareness of operations, personnel, maintenance technicians and safety hazard management commonly associated with the automated material-handling conveyor equipment.

The safety posters review important safety labels and are intended to be posted in public places as a day-to-day reinforcement of good safety practices. These posters can be downloaded from the CEMA website at: <http://www.cemanet.org/safety-label-posters>.

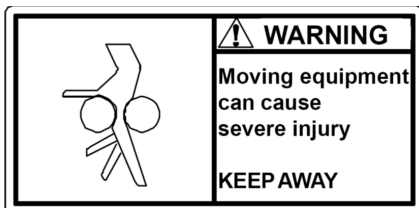
SAFETY INSTRUCTIONS



- Do not exceed the conveyor load capacity, as it may result in possible operator injury or conveyor damage.
- Avoid wearing excessively loose clothing when working with moving equipment.
- Keep long hair pulled up to prevent it from becoming caught in moving parts.
- Broken or worn parts must be replaced immediately.
- Conveyors must only be serviced by properly trained and qualified technicians.
- Conveyor's power cord must be connected to a grounded receptacle that is protected by an over current device rated at no more than 30 Amps, unless otherwise specified.
- Never service a conveyor with the power applied. Always disconnect power before servicing equipment and use the company's machine specific lockout/tag out procedures.
- Never operate conveyor with an electrical enclosure open or any guards removed.

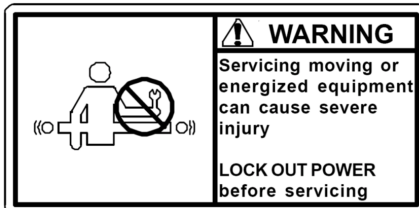
SAFETY LABELS

Safety labels have been placed at various points on the equipment to alert everyone of potential dangers. Inspect equipment for proper position of safety labels and make sure all personnel are aware of the labels and obey their warnings. As mentioned in the previous section, a safety study should be made of the conveyor application by the purchaser(s). It is the purchaser's responsibility to provide any additional guards, safety labels or other safety equipment deemed necessary based on this safety study. This page contains typical safety labels that may have been attached to your equipment.



#110479 (5" x 2 1/2")

Placed on terminating ends (both ends) where there are exposed moving parts which must be unguarded to facilitate function, i.e. rollers, pulleys, shafts, chains, etc.



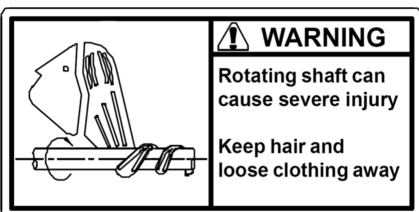
#113528 (5" x 2 1/2")

Placed next to drive (both sides) to warn maintenance personnel that conveyors must be shut off and locked out prior to servicing. Examples: drives, take-ups, and lubrication points, which require guard removal.



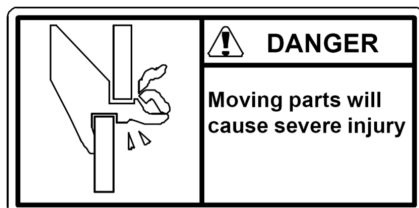
#111870 (5" x 3")

General warning of pinch point hazards.



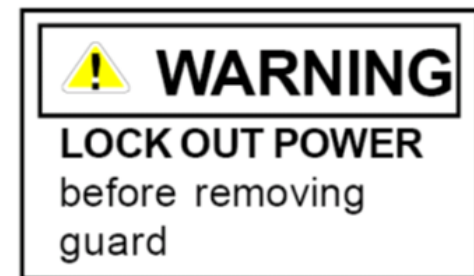
#113529 (5" x 2 1/2")

Placed next to drive (both sides) to warn personnel that the lineshaft conveyor utilizes a rotating shaft which may be hazardous if hair or loose clothing become entangled around the rotating shaft. Also used on any other conveyors where the exposed shaft may create similar hazards.



#111744 (5" x 2 1/2")

General warning to personnel that the equipment's moving parts, which operate unguarded by necessity or function, i.e., air cylinders, etc., create hazards to be avoided.



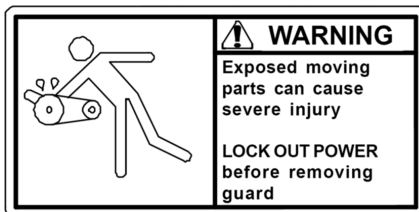
#111750 (1 3/4" x 1 1/4")

Generally placed on smaller guards to alert personnel of potential danger if guard is removed and power is not locked out.



#111752 (5" x 2 1/2")

Placed on max of 20' centers (both sides) along conveyors which provide surfaces and profiles attractive, but hazardous, for climbing, sitting, walking or riding.



#110478 (5" x 2 1/2")

Placed on all chain guards to warn that operation of the machinery with guards removed would expose chains, belts, gears, shafts, pulleys, couplings, etc. which create hazards.



#111749 (3" x 1 1/4")

Placed on shipping brace which stabilizes equipment during shipping. Brace must be removed before operating! May cause severe injury if not removed.



#113513 (5" x 2 1/2")

Placed on chain guard base so label is visible when guard cover is removed.



#110491 (10" x 7")

Placed on equipment where conveyors may start without warning.

ELECTRICAL SAFETY

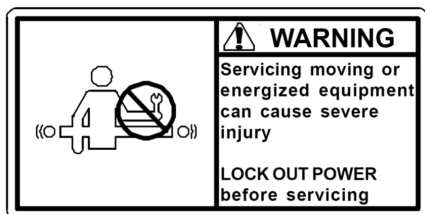
1) ELECTRICAL CODE

All electrical installations and wiring shall conform to local codes and National Electrical Code (Article 670 or other applicable articles) as published by the National Fire Protection Association and as approved by the American National Standards Institute, Inc.

When conveyor operation is not required for a maintenance procedure, Electrical power must be turned off and locked / tagged out in accordance to your company's specific procedure.

2) CONTROL STATION

Control stations should be so arranged and located that the operation of the affected equipment is visible from them. Control stations shall be clearly marked or labeled to indicate the function controlled.



A conveyor that would cause injury when started shall not be started until personnel in the area are alerted by a signal or by a designated person that the conveyor is about to start.

When a conveyor that would cause injury when started is automatically controlled or must be controlled from a remote location, an audible device or devices shall be provided that can be clearly heard at all hazardous points along the conveyor where personnel may be present. The audible warning shall be actuated by the controller device starting the conveyor and shall continue for a required period of time before the conveyor starts. A flashing light or similar visual warning may be used in conjunction with, or in place of the audible device if a visual warning is more effective.

Where system function would be seriously hindered or adversely affected by the required time delay, or where the intent of the warning may be misinterpreted (i.e., a work area with many different conveyors and allied devices), a clear, concise, and legible warning sign needs to be provided. The warning sign shall indicate that conveyors and allied equipment may be started at any time, that danger exists and that personnel must keep clear. These warning signs shall be provided along the conveyor at areas not guarded by position or location.

Emergency stop buttons, pull cords, limit switches, or similar emergency stop devices shall be furnished on several types of conveyance. These types of conveyance include: remotely-controlled conveyance, automatically-controlled conveyance, conveyance with unmanned operator stations, as well as conveyance beyond voice/visual contact from unguarded hazardous locations.

All such emergency stop devices shall be easily identifiable in the immediate vicinity of such locations unless guarded by location, position or guards. An emergency stop device is not required where the design, function, and operation of conveyance is not hazardous to personnel.

The emergency stop device shall act directly on the control of the conveyor concerned and shall not depend on the stopping of any other equipment. The emergency stop devices shall be installed so that they cannot be overridden from other locations.

Inactive and unused actuators, controllers, and wiring should be removed from control stations and panel board.

3) SAFETY DEVICES

All safety devices, including wiring of electrical safety devices, shall be arranged to operate such that a power failure or failure of the device itself will not result in a hazardous condition.

4) EMERGENCY STOPS AND RESTARTS

Conveyor controls shall be configured such that a manual reset/start is required at the same location an emergency stop was initiated before affected conveyance and equipment can resume operation.

Before restarting conveyance that has been emergency stopped, an inspection of the conveyor shall be made and the cause of the stoppage determined. The starting device and electrical power must be turned off and locked / tagged out according to your company's machine specific procedure before any attempt is made to remove the cause of the stoppage, unless operation is necessary to determine the cause or to safely remove the stoppage.

Refer to OSHA Standard Number 29 CFR 1910.147 "The Control of Hazardous Energy (Lockout/Tagout)" and ANSI Z244-1-1982, American National Standard for Personnel Protection-Lockout/Tagout of Energy Sources - Minimum Safety Requirements.

OPERATIONAL SAFETY



Only trained, qualified personnel shall be permitted to operate a conveyor. Training shall include instruction in operation under normal conditions and emergency situations.

Where safety is dependent upon stopping / starting devices, they shall be kept free of obstructions to permit access. The area around loading and unloading points shall be kept clear of obstructions that could endanger personnel.

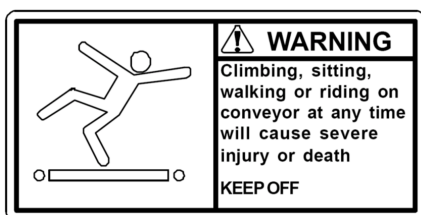
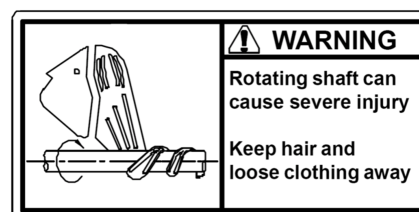
Do not ride the load-carrying element of a conveyor under any circumstances, unless the conveyor is designed and equipped with safety and control devices intended to carry personnel. For no reason shall a person ride any element of a vertical conveyor. Warning labels reading "DO NOT RIDE CONVEYOR" shall be affixed by the owner of the conveyor.

Personnel working on or near a conveyor shall be instructed as to the location and operation of pertinent stopping devices.

A conveyor shall be used to transport only a load that it is designed to handle safely. Under no circumstances shall the safety characteristics of the conveyor be altered.

Routine inspections and preventative and corrective maintenance programs shall be conducted to ensure that all safety features and guards are retained and function properly. Inspect equipment for safety labels. Make sure personnel are aware of and follow safety label instructions.

Alert all personnel to the potential hazard of entanglement in conveyors caused by items such as long hair, loose clothing and jewelry.



CONVEYOR CONFIGURATIONS

Belt Over Roller Section: Conveyor section with belt installed over roller bed to provide a solid conveying surface, useful for conveying specific products.

Curved Section: Conveyor in which rollers are set so the product travels around a set curve.

Herringbone Section: Conveyor section that has two parallel series of rollers where one or both series are skewed toward the center so product is centered and aligned while being conveyed.

Skew Section: Conveyor in which rollers are skewed to direct product laterally while being conveyed.

Spur Section: Section in which conveyor rollers decrease in between-frame (BF) length as the rollers approach the exit end. Spurs are used in diverging or converging applications to transfer product from one conveying line to another.

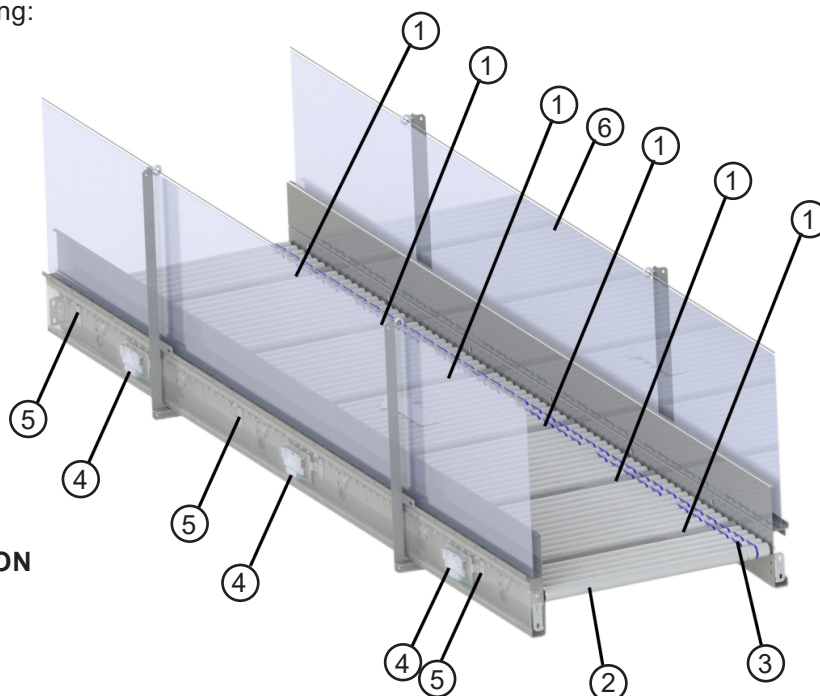
Straight Section: Section of conveyor in which rollers are parallel so product travels straight in the direction/orientation it landed on the conveyor.

PRODUCT CONFIGURATION DIAGRAMS

Various configurations of 24V Roller Conveyor are shown, here, with major components identified.

Various drive mechanisms are featured, including:

- Motor Driven Roller (In-Deck)
- Motor Driven Roller (Below Mount)
- Geared Drive (Below Mount)



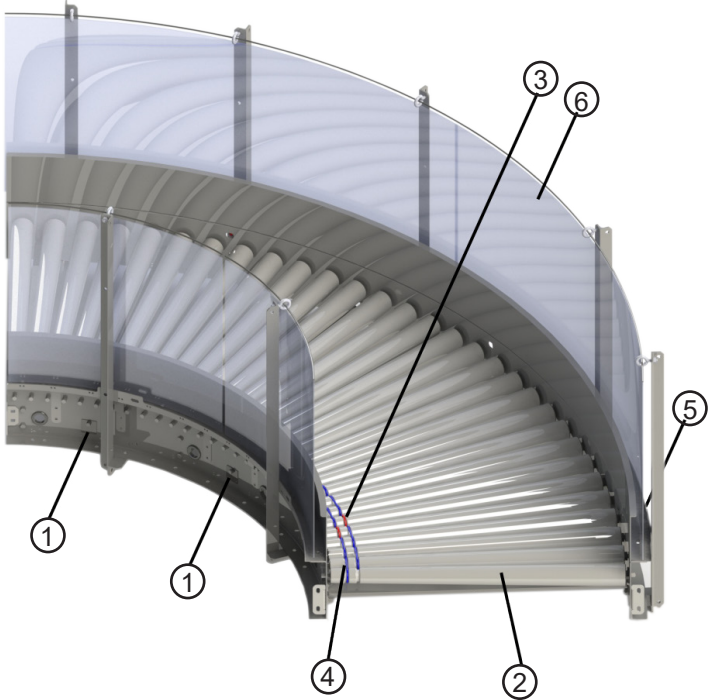
24V ROLLER CONVEYOR STRAIGHT SECTION

1. Motorized Drive Roller (MDR)
2. Non-motorized roller
3. Round belt
4. Drive card
5. Photo eye
6. Netting

PRODUCT CONFIGURATION DIAGRAMS (CONTINUED)

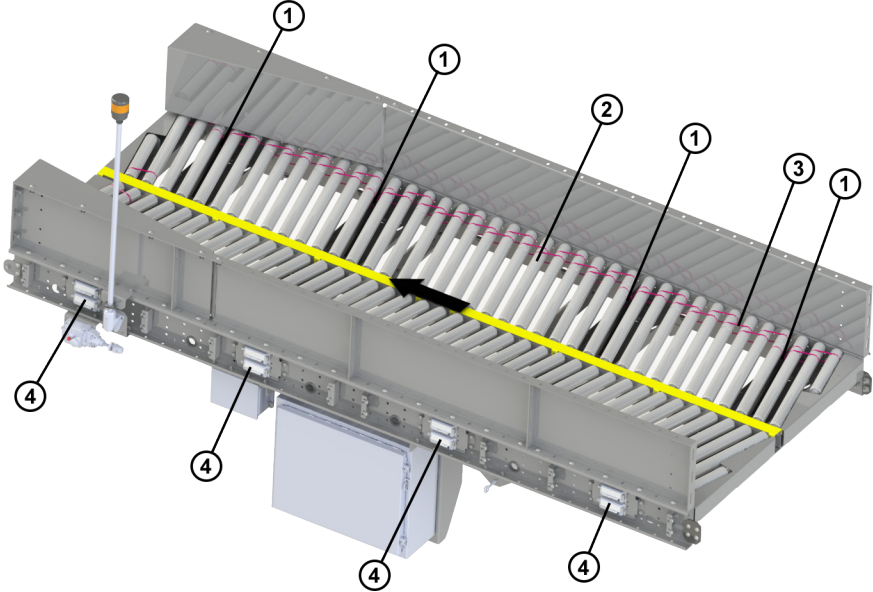
24V ROLLER CONVEYOR CURVE

- 1. Geared Drive (Below Mount)
- 2. Conveyor Roller (Idler)
- 3. Round Belt (Drive)
- 4. Round Belt (Driven)
- 5. Photo Eye (Optional, not visible in image)
- 6. Netting



24V ROLLER CONVEYOR HERRINGBONE

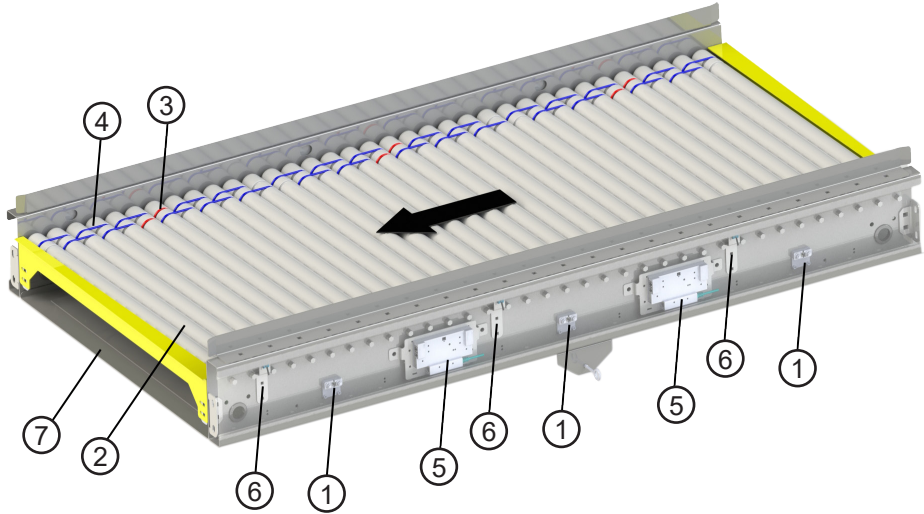
- 1. Motor Drive Roller (Below Mount)
- 2. Conveyor Roller (Idler)
- 3. Round belt (Drive)
- 4. Drive Card
- 5. Photo Eye (Optional)
- 6. Belly Pan (Optional)



PRODUCT CONFIGURATION DIAGRAMS (CONTINUED)

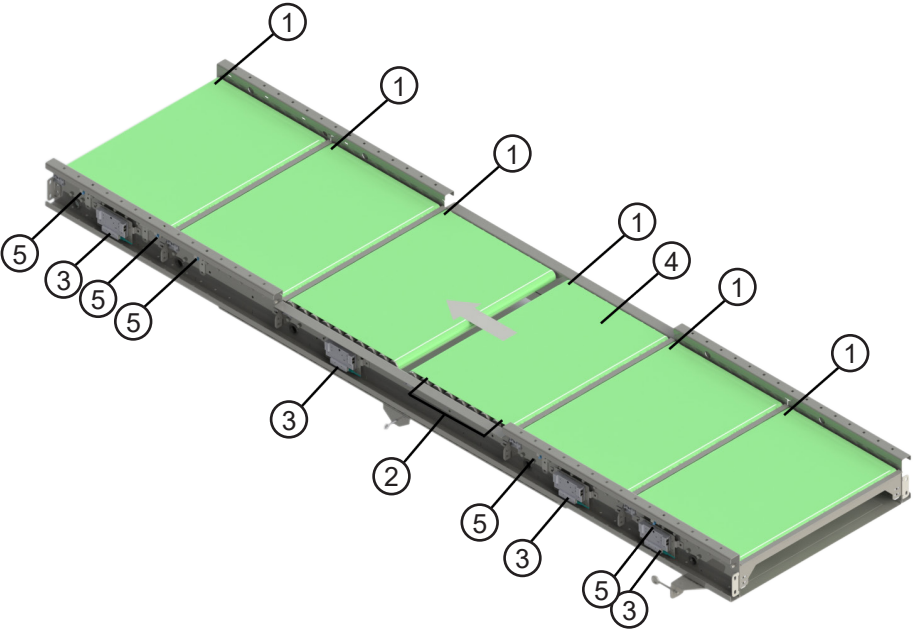
24V ROLLER CONVEYOR SKEWED

- 1. Motor Drive Roller (Below Mount)
- 2. Conveyor Roller (Idler)
- 3. Round Belt (Drive)
- 4. Round Belt (Driven)
- 5. Drive Card
- 6. Photo Eye (Optional)
- 7. Belly Pan (Optional)



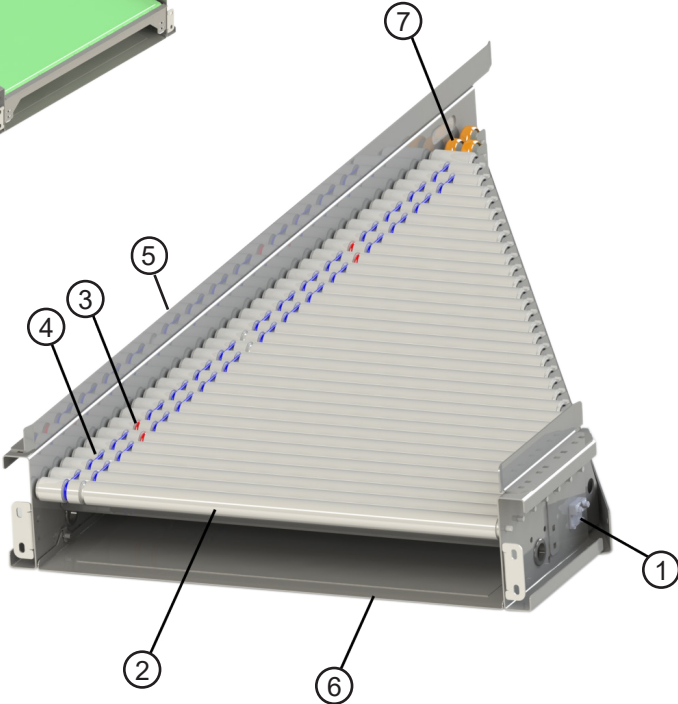
24V ROLLER CONVEYOR BELT OVER ROLLER

- 1. Motor Driven Roller (In-Deck)
- 2. Conveyor Roller (Idler)
- 3. Drive Card
- 4. Flat Belt
- 5. Photo Eyes (Optional)



24V ROLLER CONVEYOR SPUR

- 1. Motor Driven Roller (Below Mount)
- 2. Conveyor Roller (Idler)
- 3. Round Belt (Drive)
- 4. Round Belt (Driven)
- 5. Drive card (not visible in view)
- 6. Belly pan
- 7. Skatewheel



INSTALLATION

CHECKING UNIT SQUARENESS

Frame squareness can be checked by using a simple right angle square or by measuring from the same points diagonally, corner to corner, as shown below.

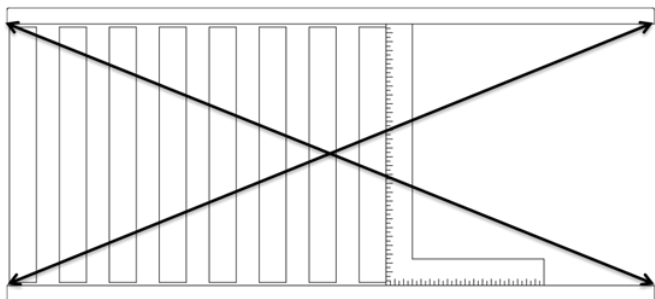


Image 1: Squaring a Conveyor Section

NOTE

Make sure frames are square (as shown) or products will skew and tumble from the conveyor. Failure to square frames may also cause premature conveyor wear and failure.

USING TURNBUCKLES TO SQUARE CONVEYOR

Bolt-together conveyor frames may be brought square by means of attaching turnbuckles to each corner and turning them down appropriately until square.

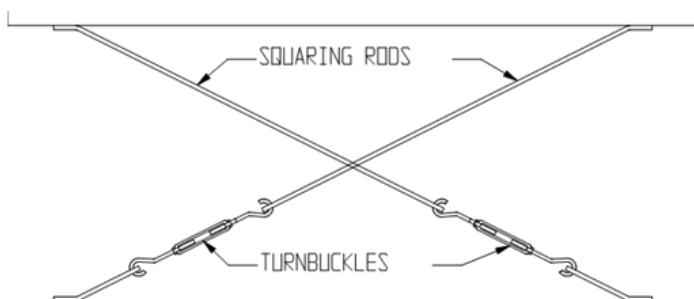


Image 2: Squaring with Turnbuckles

WARNING

Only trained professionals should attempt to square a conveyor. If frames have been damaged in freight, follow the "returns, damages, and shortages" protocol.

NOTE

For ease of installation, mount legs on each conveyor section prior to coupling.

COUPLING

1. Prior to coupling the conveyor sections, make sure the drive cards are all on the same side of the conveyors
2. Couple the sections using bolts provided per the drawings below.

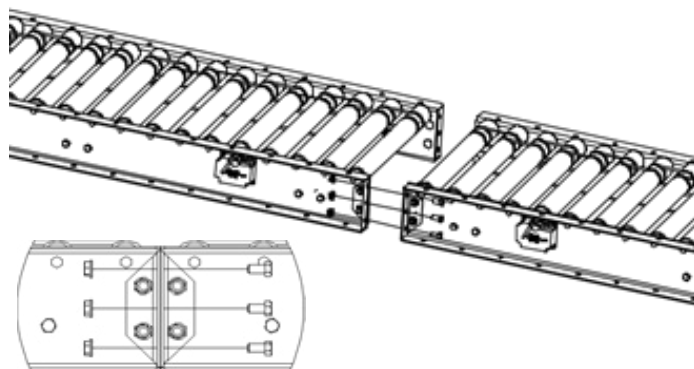


Image 3: Coupling Bed Sections

POWER CONTROL & WIRING

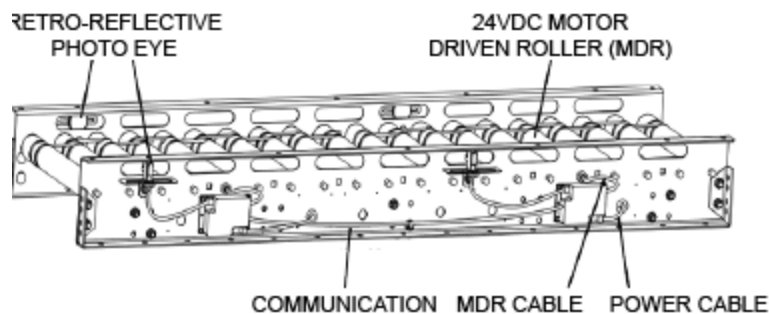


Image 4: Power and Control Wiring Components

INSTALLATION (CONTINUED)



WARNING

Only qualified installation professionals should level and install a conveyor.

PERMANENT INSTALLATION OF LEGS

To permanently install conveyor legs (to floor), secure leg supports to the floor utilizing the lag holes in the adjustable leg boot.

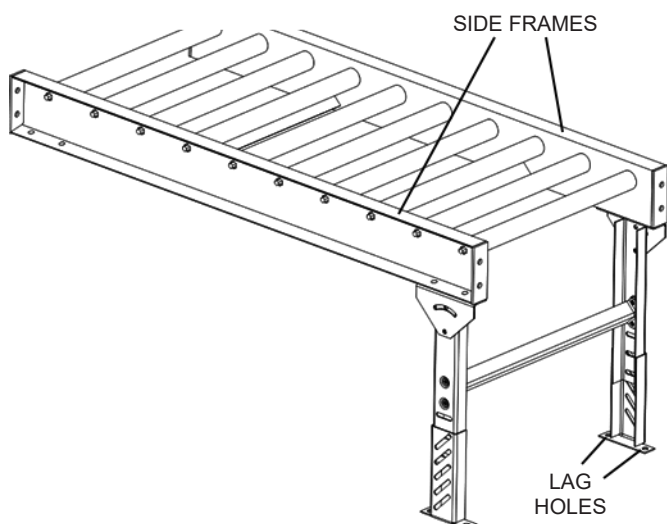


Image 5: Permanent Leg Installation

LEG ADJUSTMENT: BOLT-TOGETHER LEGS

Follow these steps to adjust the height of a conveyor with bolt-together legs:



WARNING

The conveyor electrical power must be turned off and locked out/tagged out following your company's machine-specific procedures before making any adjustments.

1. Turn off and lock out/tag out power following your company's machine-specific procedures.
2. Remove all load from the conveyor.
3. Position conveyor in the location to be installed.
4. Support conveyor with jack, hoist, or forklift.

5. Carefully loosen the fasteners within the slots.
6. Lift or lower the conveyor until it is at the desired height.
7. Ensure that the conveyor is completely level.
8. Tighten fasteners using torque appropriate for each fastener's size and gauge. (Fasteners provided.)

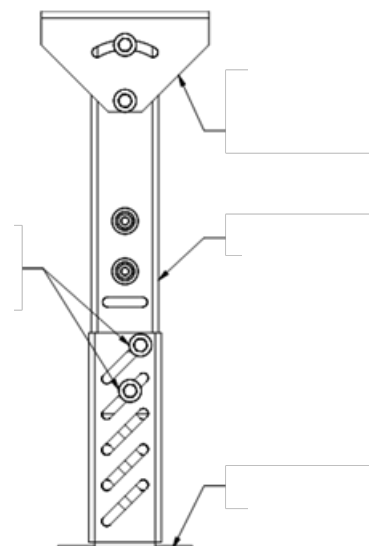


Image 6: Bolt-Together Conveyor Leg

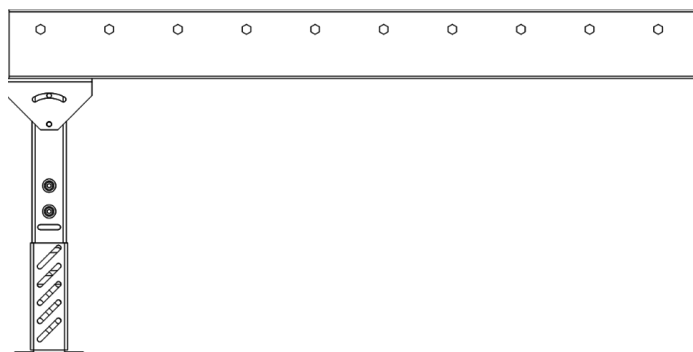


Image 7: Level Conveyor

INSTALLATION (CONTINUED)

INSTALLING KNEE BRACES

NOTE

Knee braces are recommended when the conveyor height exceeds 36" and/or when additional stability is needed.

1. After leg supports are set in place, attach the brace bracket.
2. Attach knee brace angle to the leg support and brace bracket (knee brace angle may need to be cut, drilled, or trimmed to eliminate interference with adjacent equipment).

| DETAIL | DESCRIPTION |
|--------|--------------------|
| 1 | UPRIGHT |
| 2 | SPREADER |
| 3 | BRACE BRACKET |
| 4 | KNEE BRACE BRACKET |
| 5 | PIVOT BRACKET |
| 6 | FOOT |
| 7 | HEX HEAD CAP SCREW |

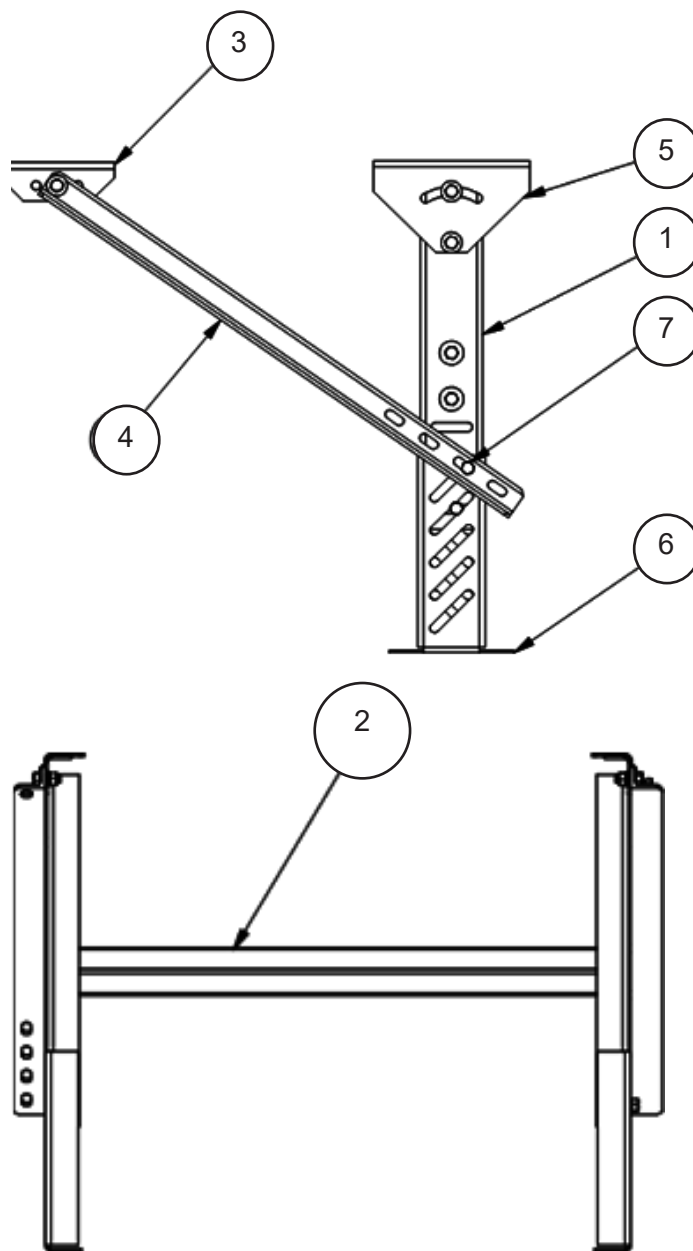


Image 8: Knee Brace Installation

INSTALLATION (CONTINUED)

INSTALLING CEILING HANGERS

When using conveyors in an overhead scenario, mount hangers at section joints.

NOTE

When installing ceiling hangers, refer to local building codes to ensure that materials comply. Only experienced material handling installers should attempt to install conveyors.

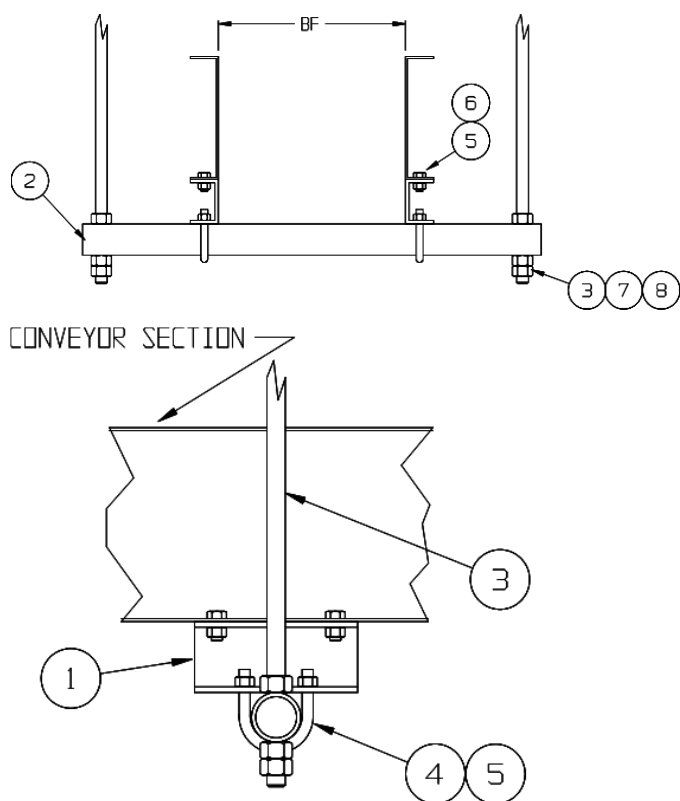


Image 9: Ceiling Hanger Installation

| DETAIL | DESCRIPTION |
|--------|--------------------|
| 1 | UPRIGHT |
| 2 | SPREADER |
| 3 | BRACE BRACKET |
| 4 | KNEE BRACE BRACKET |
| 5 | PIVOT BRACKET |
| 6 | FOOT |
| 7 | HEX HEAD CAP SCREW |

INSTALLING MULTI-TIER SUPPORTS

1. Remove the upper spreader (detail 2) from support.
2. Lower the conveyor section onto the lower spreader (detail 2) and attach using supplied fasteners.
3. Check for appropriate elevation and attach the knee bracket assembly (details 3, 4, 6, 7, 8)
4. For upper conveyor assembly, replace upper spreader and repeat steps 2 and 3.
5. Make sure all multi-tier supports are in line and square prior to conveyor start-up.

NOTE

Make sure the conveyor is stable prior to multi-tier assembly. Use of a forklift or crane may be required to ensure safe handling. Only experienced installation professionals should install conveyor.

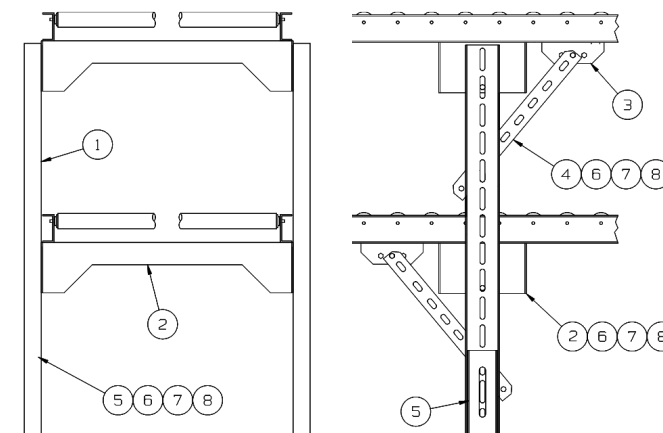


Image 10: Multi-Tier Supports

| DETAIL | DESCRIPTION |
|--------|--------------------|
| 1 | UPRIGHT |
| 2 | SPREADER |
| 3 | BRACE BRACKET |
| 4 | KNEE BRACE BRACKET |
| 5 | FOOT WELDMENT |
| 6 | WHIZ NUT |
| 7 | HEX HEAD CAP SCREW |
| 8 | FLAT WASHER |

INSTALLATION INSPECTION



Follow all lockout and tagout procedures.

NOTE

This system uses capacitive touch START/STOP buttons. The use of gloves may prevent them from functioning properly.

1. After the conveyor has been placed in the proper position, apply power and check the following:
 - Communication cables are properly connected.
 - START/STOP buttons work properly.
 - Rollers are spinning in the correct directions.
 2. While under power, visually inspect that the driver card indicator lights are functioning properly and are showing a GREEN light. If a RED light is indicated, refer to the TROUBLESHOOTING section. If the warning indicator cannot be cleared, contact the factory for further instructions.
 3. Check that all splice plates are properly installed and secure. Check that all accessories are installed correctly and secure. Verify that all conveyor bed heights are consistent with each other to ensure proper conveyance.
 4. Ensure all power drops are secure within the power masts, all power and communication cables are properly secured underneath the conveyor and not contacting the roller bed.
-

PREPARING FOR INITIAL START UP

1. Review the safety information contained in this manual before starting any equipment.
 2. Verify that conveyor sections, leg supports, etc. were installed properly.
 3. Verify that all zone-to-zone cabling is connected properly.
 4. Verify that all sensor cabling is connected properly.
 5. Verify that conveyor is not loaded with product.
 6. Verify drive rollers are securely bolted to side frame.
 7. Verify all carrier/driven rollers are attached to drive roller with proper drive bands.
 8. Check all drive rollers, photo eyes, and drive modules for proper wiring.
 9. Check all drive module DIP switch settings. DIP switches must be set before supplying power to drive modules.
-

FINAL INSPECTION

1. Using a sample package, verify that the entire conveyor system conveys without interruption or hesitation, all roller speeds are set to the proper specification and that all directions are set for proper conveyance.
2. At random, test multiple START/STOP buttons for proper function.
3. Test all gate conveyors for proper lift, function and stop and restart operations.
4. Ensure that all power supply panels are properly closed and secured.

OPERATING INSTRUCTIONS



WARNING

Conveyor must be installed in accordance with all local, city, state, and national code. Make certain that all uninvolved personnel are clear of the working area.

NOTE

Prior to operating any equipment, confirm that all safety, inspection, and installation processes have been completed and that conveyance system is ready for operation.

START UP EQUIPMENT

The following information describes a typical startup procedure. Specific startup procedures may vary based on the controls package installed. For specific startup procedures, refer to the documentation for the controls installed.

1. Ensure all emergency stops are released, if applicable.
2. Enable the main power to the controls enclosure.
3. Perform the controls startup procedure to start the equipment.
4. Monitor round belts and motorized and bed rollers during operation.



WARNING

- Only properly trained personnel may operate, troubleshoot, or service this equipment.
- Replace all safety devices and guarding prior to equipment start-up.

SHUT DOWN EQUIPMENT

The following information describes a typical shutdown procedure. Specific shutdown procedures may vary based on the controls package installed. For specific shutdown procedures, refer to the documentation for the controls installed.

1. Stop feeding products onto the equipment infeed.
2. Allow time for all products to leave the system.
3. Disable power to the equipment at the controls enclosure.

4. Remove any remaining products from the equipment as required per company and system controls operating procedures.

CAUTION

Any products that remain in the system will begin to move on re-start.

PRODUCT FLOW OVERVIEW

Motorized roller conveyors are designed to convey products downstream in accordance with the controls system integration. To ensure optimal product throughput at the desired conveyor speed do not exceed system parameters. Conveyor speeds are normally configured before equipment delivery. Stop the conveyor per the documentation provided by the party responsible for controls integration.

PACKAGE JAM CLEARANCE

The following information describes a typical jam clearing procedure.

1. Stop the conveyor per the documentation provided by the party responsible for controls integration.
2. Remove all packages from the conveyor in the area of the jam.
3. Restart the conveyor per the documentation provided by the party responsible for controls integration.
4. If the conveyor has not returned to normal operating conditions, please refer to TROUBLESHOOTING section.

NOTE

Do not exceed the rated capacity of the conveyor 25 lbs (11 kg) per linear foot. Overloading the conveyor could cause damage to the conveyor or components and could void the equipment warranty.



WARNING

All servicing, including package jam clearing, of equipment that is elevated or hanging requires additional safety procedures be followed. Please see your site's Risk Assessment and Safety Procedures.

PARTS REPLACEMENT AND PROCEDURES



WARNING

- Before starting any maintenance procedure, the **ELECTRICAL SERVICE MUST BE TURNED OFF AND LOCKED OUT.**
- Replace all safety devices and guarding prior to equipment start-up.

NOTE

For replacement part numbers, please contact **ConveyX Sales** for assistance.

ROLLER REPLACEMENT (NON-MOTORIZED)

Regularly scheduled preventative maintenance will ensure maximum component life. In the event of excessive wear or damage to a roller, complete the following procedure.

1. Identify which end of roller is spring retained (typically grooved end). Using a flathead screwdriver and a putty knife, push the opposite end of the roller's axle through the frame opening and lift the roller up and out of the frame.
2. Remove roller from urethane round belts and flat belt, if applicable. Remove roller from conveyor.
3. If replacing urethane round belts, place one or two around roller, depending on roller's position in banding pattern. Otherwise, insert roller into adjacent roller's o-band.
4. Press on spring-loaded idler shaft using putty knife and slide roller into place, so that shaft sets in the opening in the conveyor frame.

MOTORIZED ROLLER REPLACEMENT (IN DECK)

It will be necessary to replace an MDR due to faulty construction, damage accrued during operation, or it simply has reached the end of its life.

NOTE

Drive cards and MDRs cannot be brand-mixed. If there is a need to change the brand of an MDR, the drive card brand must be changed as well.

1. Shut down conveyor and lockout/tagout power.
2. Disconnect MDR power cable from the drive card.
3. Remove the MDR clamping bracket.
4. Remove MDR by pushing roller axle from one side and sliding the MDR up and out.
5. Slip round belt(s) over each end of the new MDR, if applicable, and/or slide roller into belts that are already in place (connected to existing idler rollers), if applicable.
6. To complete the installation of the new, in-deck MDR, insert end of roller axle with cable, into the frame and through MDR clamping bracket.
7. Slide a putty knife between the opposite end of roller axle and the other frame.
8. Line up axle with hole and remove putty knife.
9. Mount base bracket onto the frame and use a torque wrench to tighten M5 bolt and nut with 2.3 - 3.5 Nm (See Image 11).
10. Slide fixing block A onto the shaft and use a torque wrench to tighten M6 flange nut with 8-10 Nm.

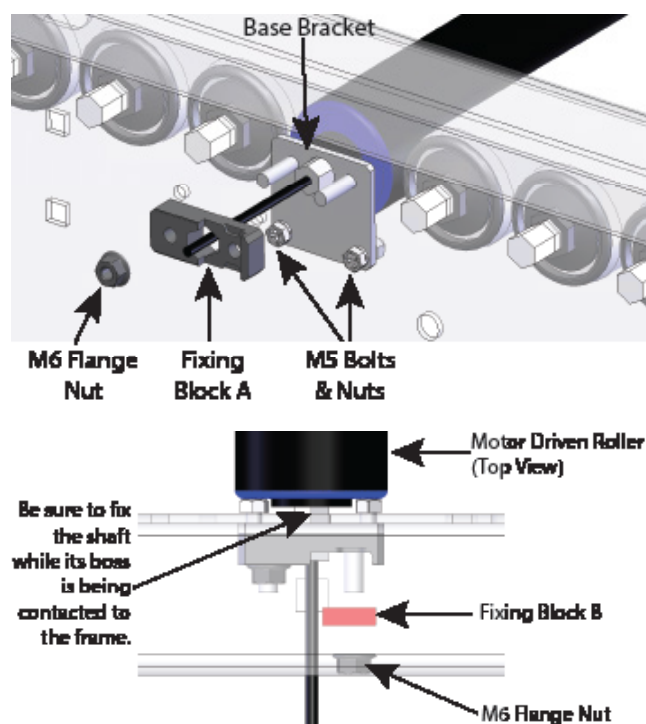


Image 11: In-Deck MDR Securement Components

(Continued on next page.)

PARTS REPLACEMENT AND PROCEDURES

11. While cable side shaft is being contacted to the frame, put fixing block B along the shaft and attach it in parallel to the frame
12. Use a torque wrench to tighten M6 flange nut with 8-10 Nm to fix fixing block B.
13. Reconnect MDR power cable to the drive card.

CAUTION

Do not use tools which can apply strong impact (e.g., impact wrench). It may cause damage of Fixing Block A. Be careful not to damage the cable. Tighten the nut slowly with specified torque manually.

Tighten the nut slowly to specified torque manually. Be sure to attach Fixing Block B in parallel with frame. Failure to do so may cause damage of Fixing Block A.

The shaft will run idle if the tightening is not proper, which may cause a break of the cable or other failures.

CAUTION

Improper grounding of MDR and/or Power Supply Common may result in premature MDR and/or driver card module failure. Proper grounding techniques must be observed. (See Image 12)



Image 12: MDR Mount to Conveyor Frame

MOTORIZED ROLLER REPLACEMENT (BELOW MOUNT)

NOTE

Drive cards and MDRs cannot be brand-mixed. If there is a need to change the brand of an MDR, the drive card brand must be changed as well.

It will be necessary to replace an MDR due to faulty construction, damage accrued during operation, or it simply has reached the end of its life.

Electrical Process:

1. Turn the main power switch counterclockwise (left) 1/4 turn into the off position and secure a lock and tag on the power switch slide out. See that the red/green START/STOP button and power panel indicator lights have faded out as an indicator that the power has been locked out, properly.
2. Disconnect the nearest upstream twist lock power supply and properly secure a lock and tag over the powered side of the twist lock. Doing so prevents others from connecting power while work is being done.
3. Once the power source and communications to this section of conveyance are terminated, move on to the mechanical process.

(Continued on next page.)

PARTS REPLACEMENT AND PROCEDURES



WARNING

- Before starting any maintenance procedure, the **ELECTRICAL SERVICE MUST BE TURNED OFF AND LOCKED OUT.**
- Replace all safety devices and guarding prior to equipment start-up.

Mechanical Process:

1. Disconnect the electrical connection nearest the MDR roller, which is located to the right of the MDR in Image 13. The motor cable edge connector is likely plugged into a motor cable extension, rather than directly into the drive card.
2. Cut zip ties (or remove hook and loop fasteners) and free wire for MDR roller removal.
3. Mark the current positions of the (2) 3/8"-16 Grade 5 Zinc plated carriage bolts in the slotted portion of the mounting bracket (Image 12 on previous page) for reference, to be used when installing replacement roller. This bracket is designed to allow for slide adjustment and quick reinstallation, later.
4. At the powered end of the MDR, completely remove the hardware securing the MDR Mounting Bracket to the spreader. (This will require removing the (2) 3/8" - 16 carriage bolts, hex nuts and 3/8" lock washers.) This will allow the entire roller to be removed from the conveyor frame, though the roller will still be attached to Mounting Bracket via the Retention Bracket. (See Image 13)
5. Using a 7/16" wrench, remove the hex shaft clamping collar nuts and lock wedges in order to free the MDR from the Retention Bracket (Images 13 & 14).
6. Prepare the MDR cable connector housing to be removed through the hole on the MDR Retention Bracket by bending the wiring so that the connector housing is running parallel to - almost in line with - the cable, itself (see Image 15). **DO NOT** push or pull the wires through the hole, but gently guide them to preserve insulation and prevent wires from coming out of the connector.
7. The previous roller is now removed, and you can proceed to the New MDR Installation Procedure.

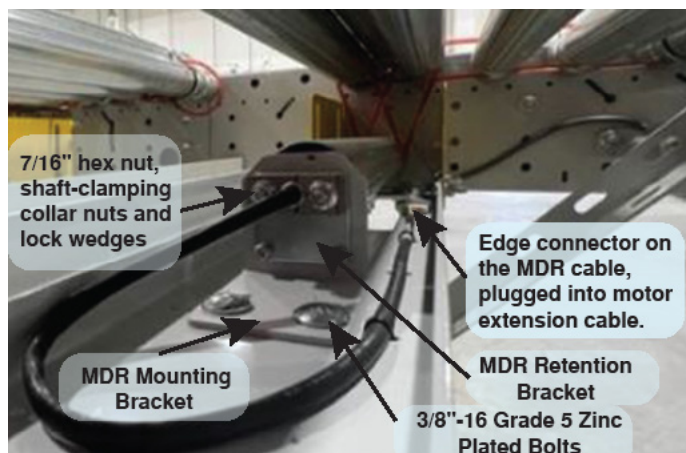


Image 13: Powered end of MDR, Pulse brand



Image 14: MDR Mount to Conveyor Frame

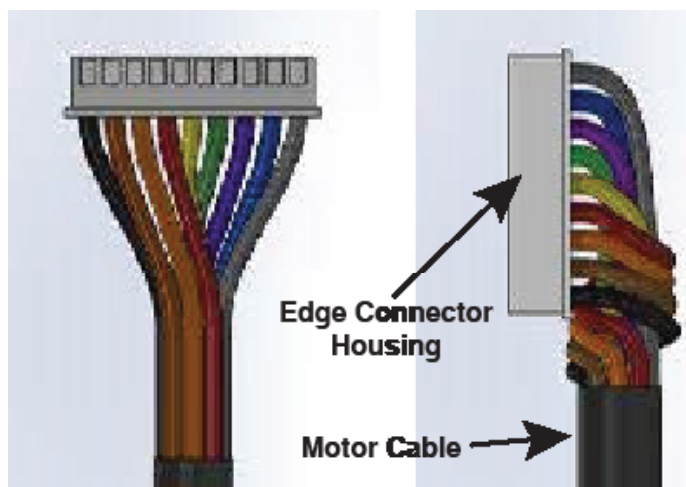


Image 15: Edge Connector Housing

(Continued on next page.)

PARTS REPLACEMENT AND PROCEDURES



WARNING

- Before starting any maintenance procedure, the **ELECTRICAL SERVICE MUST BE TURNED OFF AND LOCKED OUT.**
- Replace all safety devices and guarding prior to equipment start-up.

Installation of New, Below Mount MDR:

1. Gently feed new MDR motor cable through the hole in the Retention Bracket and secure clamping screws verifying the shaft is captured by the clamp.
2. Connect and zip tie (or secure with hook and loop fasteners) the new wires around the MDR BF spreader near what will be rotating once replaced. Multiple ties/fasteners are recommended.
3. Feed the MDR roller back into the drive belts in the reverse order the previous roller came out, making sure the hex shaft is completely captured into the mounting bracket, beyond the drive belts, at the idler end.
4. Once the hex shaft on the belt (idler) end of the MDR is secured in the shaft mounting bracket, make sure the belts are in the proper location and everything is aligned.

5. Referring to the position marks (Step 4 of the Mechanical MDR Removal Process) remount the MDR Mounting Bracket (Image 14) onto the BF spreader, securing it with (2) 3/8"-16 Grade 5 Zinc plated carriage bolts. This will take a little pressure to push the MDR roller down while securing the fasteners, simultaneously.
6. Make sure both ends of the MDR hex shaft are properly secured and recheck the marked position for alignment.



Image 14: MDR Mount to Conveyor Frame

PARTS REPLACEMENT AND PROCEDURES



- Before starting any maintenance procedure, the **ELECTRICAL SERVICE MUST BE TURNED OFF AND LOCKED OUT.**
- Replace all safety devices and guarding prior to equipment start-up.

BELOW MOUNT GEAR DRIVE (BMGD) REPLACEMENT

1. Verify that the LOTO procedures has been followed and power is disconnected from the conveyor.
2. Remove belly pan from beneath the conveyor by removing the fasteners, set aside.
3. Remove rollers mounted above the gear drive by compressing the axle at the non-grooved end of each roller, slipping each roller out of its round belts.
4. Slip round belts off of the drive sheave and set rollers and round belts aside.
5. Use scissors to cut the zip ties or hook and loop fasteners securing the drive cable to the conveyor spreader. Leave the extension cable secured, and disconnect the drive cable from the extension cable.
6. The below mount gear drive is mounted to a noise reduction/heat dissipation plate, which is mounted to the spreader, by (4) M5-0.80 x 14 socket head cap screws. From beneath the conveyor, loosen and remove the (4) cap screws. (See Image 16 and [Image 13.](#))
7. Remove the gear drive assembly (gear drive with the attached sheave), and replace with new drive assembly. Note: if preferred, the sheave can be removed from the gear drive and remounted to the replacement gear drive, as opposed to replacing entire assembly.
8. Mount new gear drive assembly to the noise reduction plate using (4) M5-0.80 x 14 socket head cap screws. (Image 18)
9. From above, connect the new motor cable to the extension cable. Use zip ties or hook and loop fasteners to secure the new motor cable to the spreader.

10. Begin the process for remounting the rollers. Place round belts onto rollers, ensuring they are correctly placed in the grooves of the roller. Place the axles at the grooved ends of the rollers into the holes on the conveyor frame. Return the axle at the opposite end of the roller back into the frame by pressing the spring-loaded idler shaft and using a putty knife to keep the axle compressed while slipping the axle into place.
11. Slip round belts around the drive sheave, placing the belts into the appropriate grooves.
12. From beneath the conveyor, replace the belly pan, securing it with the appropriate fasteners.

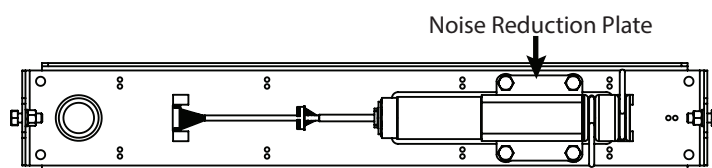


Image 16: Top View of BMGD mounted to conveyor spreader

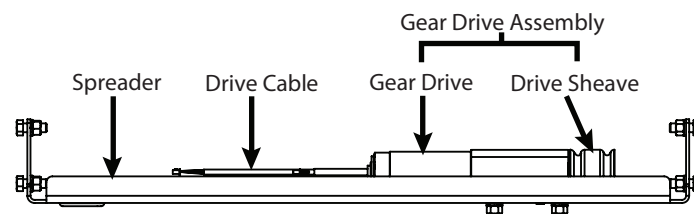


Image 17: Side view of BMGD mounted to conveyor spreader

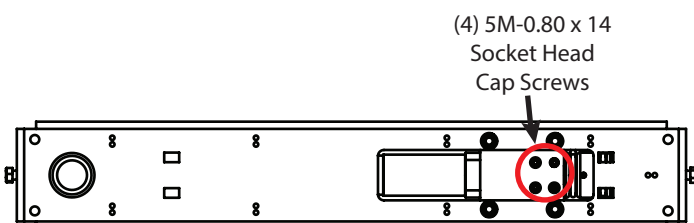


Image 18: Bottom view of BMGD mounted to conveyor spreader

PARTS REPLACEMENT AND PROCEDURES



WARNING

- Before starting any maintenance procedure, the **ELECTRICAL SERVICE MUST BE TURNED OFF AND LOCKED OUT.**
- **Replace all safety devices and guarding prior to equipment start-up.**

ROUND BELT REPLACEMENT

Regularly scheduled preventative maintenance will ensure maximum component life. In the event of excessive wear or damage to a round belt, complete the following procedure.

Roller to Roller:

1. Identify which rollers are associated with the round belts needing replacement.
2. Cut the worn or damaged round belts that need replacing and remove from the rollers.
3. Identify which end of rollers is spring retained (typically grooved end). Using a flathead screwdriver and a putty knife, push the *opposite* end of the necessary rollers' axle through the frame opening and lift the rollers up and out of the frame.
4. Replace belt(s) around rollers, ensuring the belt(s) slip into the groove(s) on the rollers.
5. Press on spring-loaded idler shaft using putty knife and slide roller into place, so that shaft sets in the opening in the conveyor frame.

NOTE

Roller-to-roller round belts may differ in length and color from the belts that connect rollers to drives. See Replacement and Spare Parts List and Diagrams at end of site manual to determine which round belts are appropriate for your application

Roller to MDR (In Deck):

1. Identify which rollers are associated with the round belts needing replacement.
2. Cut the worn or damaged round belts that need replacing and remove from the rollers.
3. To remove the idler roller, identify which end is spring retained (typically grooved end). Using a flathead screwdriver and a putty knife, push the *opposite* end of the necessary rollers' axle through the frame opening and lift the rollers up and out of the frame.
4. To remove the in-deck MDR, follow the MDR removal instructions found in [MOTORIZED ROLLER REPLACEMENT \(IN DECK\)](#).
5. Replace belt(s) around rollers, ensuring the belt(s) slip into the grooves on the rollers.
6. To remount the idler roller, press on spring-loaded idler shaft using putty knife and slide roller into place so that the shaft sets in the opening in the conveyor frame.
7. To remount the in-deck MDR, follow the remounting directions found in [MOTORIZED ROLLER REPLACEMENT \(IN DECK\)](#).

Roller to Motor Driven Roller (Below Mount):

1. Identify which rollers are associated with the round belts needing replacement.
2. Cut the worn or damaged round belts that need replacing and remove from the rollers.
3. To remove the idler roller, identify which end is spring retained (typically grooved end). Using a flathead screwdriver and a putty knife, push the *opposite* end of the necessary rollers' axle through the frame opening and lift the rollers up and out of the frame.
4. To remove the below mount MDR, follow the MDR removal instructions found in [MOTORIZED ROLLER REPLACEMENT \(BELOW MOUNT\)](#).
5. Replace belt(s) around below mount MDR, ensuring the belt(s) slip into the grooves on the roller.

(Continued on next page.)

PARTS REPLACEMENT AND PROCEDURES

WARNING

- Before starting any maintenance procedure, the **ELECTRICAL SERVICE MUST BE TURNED OFF AND LOCKED OUT.**
- Replace all safety devices and guarding prior to equipment start-up.

6. Remount the below mount MDR by following the instructions found in [Installation of New, Below Mount MDR](#).
7. Next, slip the newly place round belts around the appropriate end of the associated idler roller(s).
8. Remount the idler roller, press on spring-loaded idler shaft using putty knife and slide roller into place so that the shaft sets in the opening in the conveyor frame.

Roller to Geared Drive:

1. If a drive belt on a Below Mount Geared Drive has been identified as needing replacement, this belt can be cut to remove it from the roller and Geared Drive.
2. Remove appropriate rollers as directed in "[Roller to Roller](#)" section.
3. Replace belt(s) around rollers, ensuring the belt(s) slip into the groove(s) on the rollers.
4. Place the axle on the grooved end of the roller back into the conveyor frame, reaching beneath the roller to slip the round belts over the open end of the drive sheave on the geared drive (See Image 19).
5. Return the axle at the opposite end of the idler roller back into the frame by pressing the spring-loaded idler shaft and using a putty knife to keep the axle compressed while slipping the axle into place.

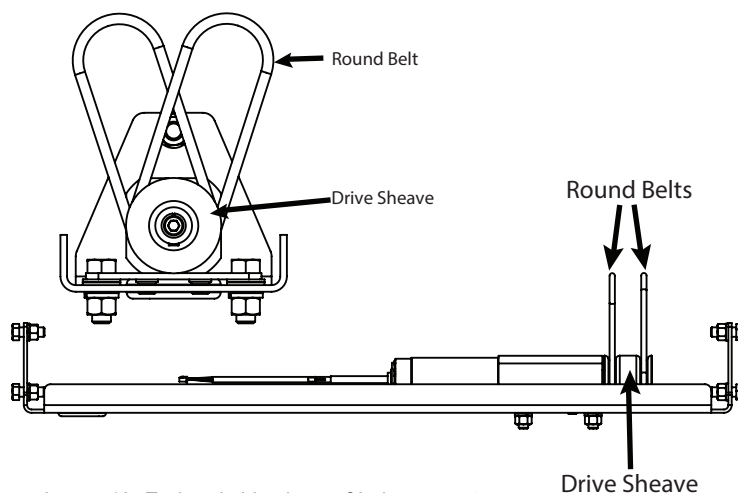


Image 19: End and side views of below mount geared drives.

PARTS REPLACEMENT AND PROCEDURES



WARNING

- Before starting any maintenance procedure, the ELECTRICAL SERVICE MUST BE TURNED OFF AND LOCKED OUT.
- Replace all safety devices and guarding prior to equipment start-up.



Image 20: ERSC and ERSC-E (UL Listed) Drive cards and Removal Tab Location.

REPLACING A DRIVE CARD (SYSTEM WITH PLC)

It may be necessary to replace one or more drive cards. This may be due to a faulty/shorted or broken drive card.

Mechanical Process:

1. Remove cover guard along the side of the conveyor frame to access drive cards.
2. Unplug the Ethernet cable, the photo eye cables, and drive cables.
3. Press bottom tab up and remove the drive card. (See Figure 20)

4. Replace the faulty drive card with a new drive card.
5. Leave the Ethernet cable, the photo eye cables, and drive cables disconnected until after the Programming Process is completed.

Programming Process:

Because the drive cards in this system are connected to a PLC, auto configuration is not necessary. Please follow these steps for programming a replaced drive card, referring to the Site IP Addresses section of this manual.

1. After physically replacing the drive card, use EasyRoll® software to reprogram the drive card.
2. In EasyRoll®, go to Advance Dialog >Network Services Tab > Discover. A default IP address, 192.168.202.20, will appear for the new card.

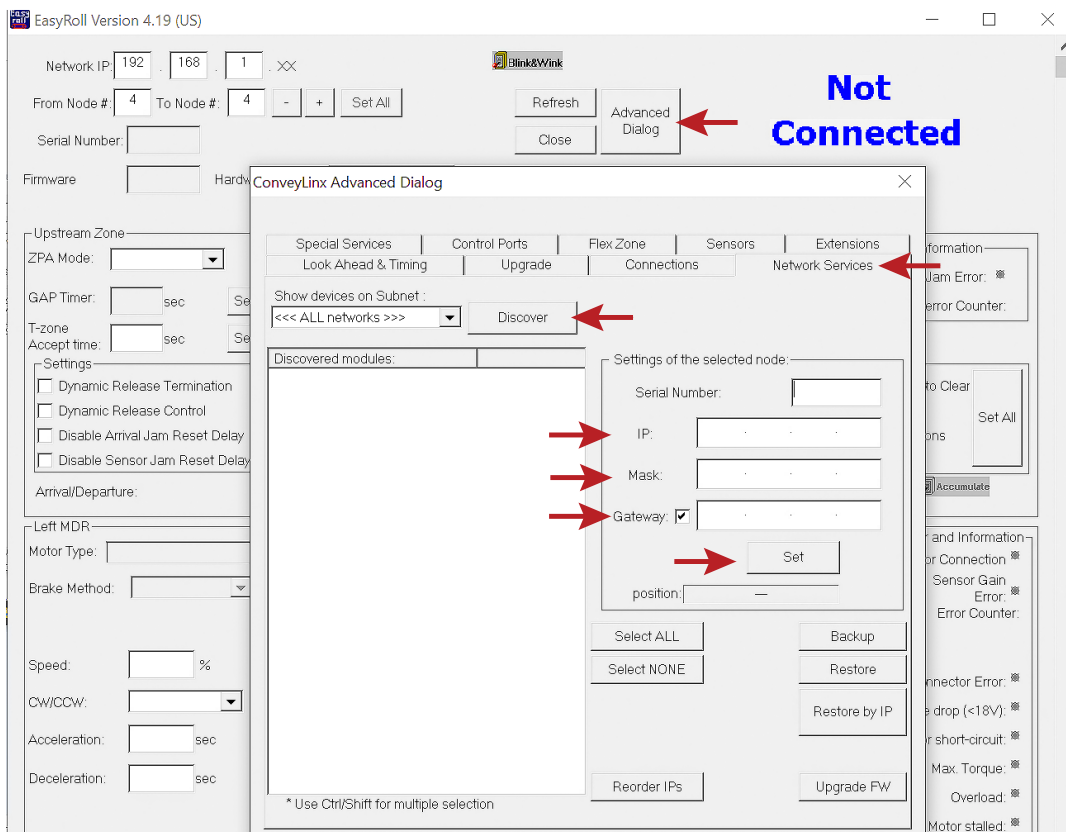


Figure 21: EasyRoll - Steps 1-4

PARTS REPLACEMENT AND PROCEDURES

3. Double click on this IP address and change the IP address to the desired address.
4. Next, change the Mask to 255.255.252.0, deselect the Gateway, and then hit the Set button. You are now ready to put the card into PLC mode. (See Figure 22.)
5. To put the drive card in PLC mode, ensure that your computer Ethernet IP address is set correctly.
6. On the main screen of the EasyRoll® software, set the Network IP address to match the first three octets of your driver card Ethernet IP address.
7. Enter the appropriate node # for the card you are replacing in the "From Node #__ to Node #__" field.

NOTE

When checking to ensure the laptop Ethernet IP address is correct, be aware that the last number of the IP address on your laptop can not match the last number on any of the devices on the equipment.

8. Once you have indicated the node number, go to Advanced Dialogue which will open up a new window

NOTE

The node number correlates with the specific driver card. By default, the first node will have an IP address of x.x.x.20. The second driver card will have an IP address of x.x.x.21. When replacing *only one* driver card, you will want to only program settings for that specific card. To do this, you will enter the specific node number (21, for example) in both the "From" and the "To" fields.

on top of the main screen. From there, click the Connections tab. Ensure that the node number is correct in the "Connections" tab and click the Refresh button to make sure you are connected to the card.

9. In the PLC I/O Mode section in this tab, check the PLC I/O Mode box, then check the Lock PLC Mode box. In the ON PLC Disconnected Outputs/Motors, select the ALL OFF option in the drop down box. Click the "Apply" button. (See Figure 22.)
10. The programming process should now be complete. Reconnect the Ethernet cable, the photo eye cables, and drive cables.

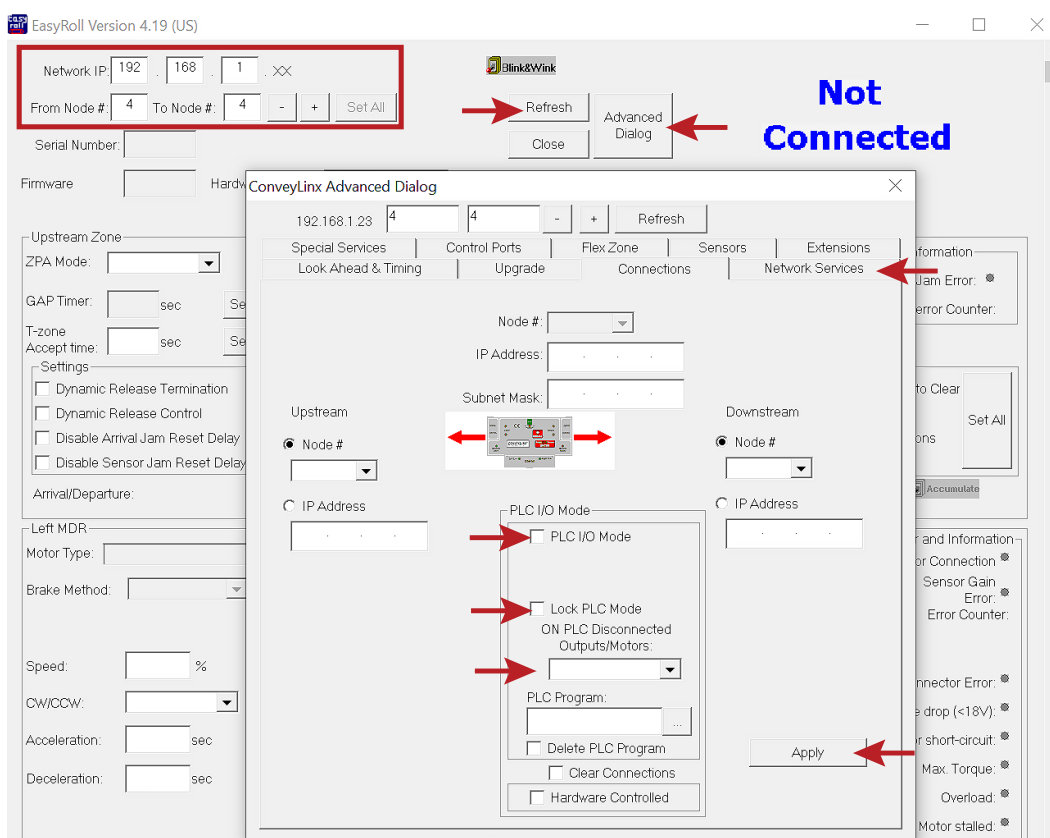


Figure 22: EasyRoll Steps 5-9

DRIVER CARD - DESCRIPTION

DESCRIPTION

ConveyX uses Pulse ERSC and ERSC-E (UL Listed) Drive Cards for our 24V Roller Conveyors in both Transportation and Zero Pressure Accumulation (ZPA) applications.

Each ERSC or ERSC-E driver card connects the following to the next, downstream card:

- Two drive motors (either PULSEROLLER Senergy Motor Driven Rollers or Pulse Gear Drives)
- Two Sensors
- Supplementary I/O
- Standard, Cat5 shielded ethernet cable

Standard configuration is initiated by pressing the "Install" button on the most upstream module in the system.

For more complex applications involving the use of PLC, the ERSC and ERSC-E Drive Cards are used to control the local sensor and motor logic while the PLC fulfills supervisory control to accomplish accumulation, notification of product arrival, the issuance of release commands and zone-specific variation of motor speeds.

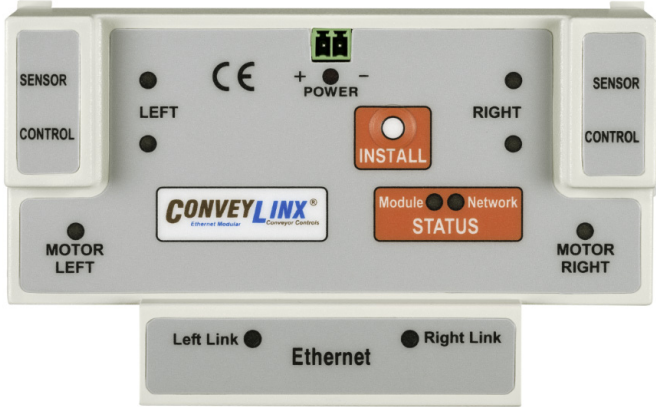


Figure 23: Pulseroller ConveyLinX ERSC Driver Card



Figure 24: Pulseroller ConveyLinX ERSC-E Driver Card (UL Listed)

DRIVER CARD - COMPONENTS

DESCRIPTION

Drive Card Components are indicated and explained in the following diagram and table. Descriptions apply to the ERSC and ERSC-E Driver Cards.

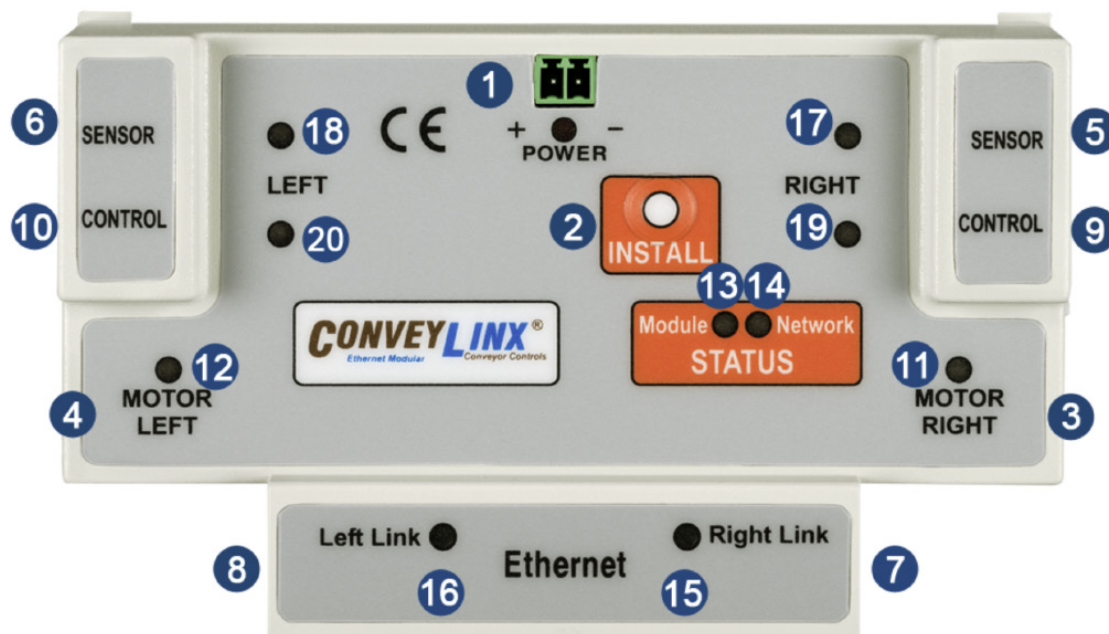


Image 25: Pulseroller's ConveyLinX® - ERSC Driver Card

| Item | Component | Component Description |
|---------|-----------------------|--|
| 1 | Power Connector | 24VDC Power Connector |
| 2 | Install Button | Used for Auto-Configuration and Auto Module Replacement |
| 3 & 4 | Motor Ports | 9-pin JST style header for MDR/PGD connection |
| 5 & 6 | Sensor Ports | RJ12 style jack for zone photo-sensor connection |
| 7 & 8 | Link Ports | RJ-45 style Ethernet network communication connection between modules |
| 9 & 10 | Control Ports | RJ-12 style ports for discreet hard-wired signal connections for non-networked interface interlocks and zone control |
| 11 & 12 | Motor Status | Motor Status LED Indicators |
| 13 | Module Status | Module Status LED Indicator |
| 14 | Module Network Status | Module Network Status LED Indicator |
| 15 & 16 | Ethernet Link Status | Ethernet Link Status LED Indicators |
| 17 & 18 | Sensor Status | Sensor Status LED Indicators |
| 19 & 20 | Control Port Status | Control Port Status LED Indicators |

DRIVER CARD - LED INDICATORS



modules contain ESD (Electrostatic Discharge) sensitive parts and components. Static control precautions are required when installing, testing, or replacing these modules. Component damage may result if ESD control procedures are not followed. Basic guidelines include:

- Touch a grounded object to discharge potential static.
- Wear approved grounding wrist strap.
- Do not touch connectors or pins on component boards.
- Do not touch circuit components inside the equipment.
- Use a static-safe workstation, if available.
- Store the equipment in appropriate static-safe packaging when not in use.

DESCRIPTION

This section details the meanings of various LED colors and patterns, in-context. Specific LED Indicator descriptions apply to both left and right sides. Concerning LED Indicator descriptions, the following terms are defined as follows:

- Blinking - 0.5 second on/off cycle
- Flashing - 0.25 second on/off cycle

| Indicator | Component Reference | LED Status | Explanation |
|---|---------------------|-------------------------------|--|
| Ethernet Link | 15 & 16 | OFF | No connection established. |
| | | Solid Green | Connection is established. |
| | | Blinking Green | Data transmission is occurring. |
| Motor Status | 11 & 12 | OFF | Motor is not running and no faults have been detected. |
| | | Solid Green | Motor is running. |
| | | Flashing Green (Intermittent) | Motor is being moved or rotated by external force. |
| | | Solid Red | Motor is not connected or motor is stalled. |
| | | Blinking Red | Motor is overloaded or over-heated |
| | | Flashing Red | Motor is stopped: Short circuit detected between at least two of the phase windings. |
| Motor is running: Over-current condition. | | | |

(Continued on next page.)

DRIVER CARD - LED INDICATORS



Static control precautions are required when installing, testing, servicing, or replacing driver cards.

| Indicator | Component Reference | LED Status | Explanation |
|----------------|---------------------|-------------------------------|--|
| Module Status | 13 | Solid Red | Module is attempting to retrieve data from neighboring modules during module boot-up or Auto-Replacement procedure. |
| | | Blinking Red | Module is starting task processes. |
| | | Blinking Green | Module is ready. |
| | | Flashing Green & Blinking Red | Auto-Replace procedure has been properly triggered. |
| | | Flashing Red & Blinking Green | Failsafe Mode |
| | | Flashing Red | Auto-Configure Mode is active. |
| | | Blinking Amber | Performing firmware upgrade check |
| | | Solid Amber | Firmware upgrade is in progress. |
| Network Status | 14 | Solid Red | Starting Inter-Module communications |
| | | Blinking Red | Establishing Inter-Module connections |
| | | Blinking Green | Inter-Module Communications have been established. |
| Sensor Status | 17 & 18 | Solid Green | Sensor is blocked. |
| | | Solid Red | Sensor Error State is active. (See Sensor Port Pin 3 in Image 26.) |
| | | Blinking Red | Arrival jam or missing sensor. |
| | | Blinking Green/Amber | Sensor jam. |
| | | Flashing Green | When sensor is blocked, indicates external device (PLC/ PC controller or EasyRoll) has accumulated the zone and inhibiting release. |

(Continued on next page.)

DRIVER CARD - LED INDICATORS

WARNING

Static control precautions are required when installing, testing, servicing, or replacing driver cards.

| Indicator | Component Reference | LED Status | Explanation |
|--|---|----------------|--|
| Control Port Status | 19 & 20 | Solid Green | If acting as Upstream Port: Wake-up signal is logically enabled on Control Port Pin 4 (See Image 26, below). |
| | | | If acting as Downstream Port: Lane Full signal is logically enabled. |
| | | | If Module is in PLC I/O Mode: Signal on Control Port Pin 4 (Image 26) is logically enabled. |
| | | Solid Red | Local Accumulate signal is logically enabled. (See Control Port Pin 3, Image 26.) |
| | | Flashing Red | Module configuration error |
| All Sensor, Control and Motor Port Status (Left and Right) | 11 12 17 18 19 20 | Flashing Red | Module in stopped state. |
| Either Left or Right Sensor, Control and Motor Port Status | Left: 12 18 20 Right: 11 17 19 | Flashing Green | ZPA zone on indicated side of module is in Maintenance Mode. (Note: Maintenance Mode is only accessible via remote PLC.) |

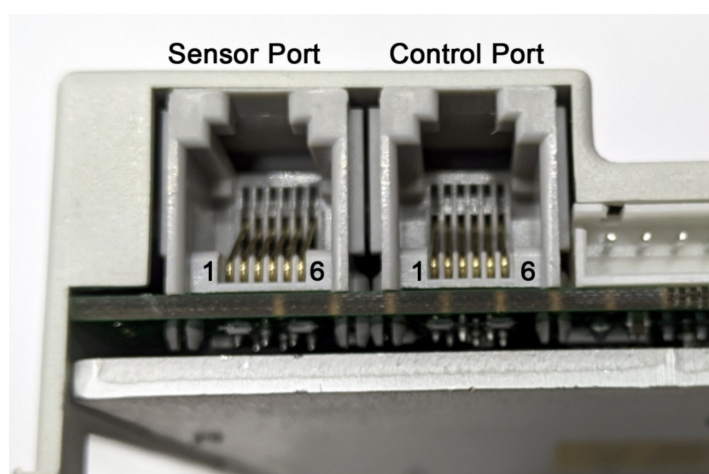


Image 26: Sensor and Control Ports on ERSC and ERSC-E Driver Cards With Numbered Pins

TROUBLESHOOTING

The troubleshooting information contained on the following pages is general in nature and is intended to provide an efficient means of pinpointing a correct solution in a timely manner.

Equipment malfunctions or failures may occur at any time. Following a regularly scheduled preventative maintenance program can help to minimize conveyor down time. Scheduled maintenance can lessen the frequency of equipment repairs by keeping components running more efficiently and in a better working environment.

Prior to performing any maintenance or replacement procedures, **the electrical service must be turned off and locked out.**

The disassembly or repair of equipment under warranty may void such warranty (motor, reducer, cable reel, etc.). Check to be sure that the warranty has not expired or will not be voided prior to performing disassembly or repair.



Before starting any maintenance procedure, the ELECTRICAL SERVICE MUST BE TURNED OFF AND LOCKED OUT.

Replace all safety devices and guarding prior to equipment start-up.

| PROBLEM | CAUSE | SOLUTION |
|--|---|---|
| Drive roller running excessively hot or repeatedly stalling. | Electrical. | Check wiring and circuits; take ampere reading; replace drive roller if necessary. |
| | Zone overloaded. | Check conveyor for excessive load, reduce if design specifications are exceeded. |
| Drive belt slipping. | Insufficient belt tension. | Replace belt with original equipment manufacturer belt. |
| | Incorrect belt type. | Replace belt with original equipment manufacturer belt. |
| Drive roller fault condition. | Insufficient belt tension or broken belt. | Replace belt with original equipment manufacturer belt. |
| General. | Drive card communication error. | Check for 24VDC power at drive cards (lights on card), if no lights, check all wiring for loose connections or damage; verify E-Stop is not pressed; check all Ethernet wiring; replace drive card. |
| | E-Stop pressed. | Clear all E-Stop pressed buttons; press RESET button. |
| | Damaged belts in spur/curve. | Check belts for wear; replace as needed. |
| | Motorized roller disconnected. | Check motor cables for damage and proper connections to extension cables and drive cards. |
| | Damaged Gear Drive | Check lights on drive cards for motor connection error; replace motor and drive card (drive card must be configured properly - contact factory). |

TROUBLESHOOTING

| PROBLEM | CAUSE | SOLUTION |
|-------------------|---|--|
| Power connection. | Power supply is off. | Turn on power supply. |
| | Power supply is not receiving AC power. | Check AC power and correct. |
| | AC power fuse is blown or breaker is tripped. | Replace fuse; check and reset breaker if needed. |
| | Power supply breaker is tripped. | Check power supply breaker and reset if needed. |
| | No power to controls or drive cards. | Check output power of power supply. |
| | Power supply voltage too high or too low. | Check output voltage of power supply. |

GENERAL PREVENTATIVE MAINTENANCE SAFETY



- **ELECTRICAL POWER MUST BE TURNED OFF AND LOCKED / TAGGED OUT** when servicing conveyor to prevent accidental restarting by other persons or interconnecting equipment (when used).
- **Only properly trained personnel may operate, troubleshoot, or service this equipment.**
- **Think before making adjustments. It may prevent an injury. Remember, all moving components are potentially dangerous.**
- **Protect yourself from unexpected starts when working on a stopped unit by locking the control panel or disconnect switch that supplies power to the unit.**
- **After maintenance, inspection, and/or repairs, replace all safety devices and guarding prior to equipment start-up.**

1) MAINTENANCE (REPAIR)

When lack of maintenance and service would cause a hazardous condition, the user shall establish a maintenance program to ensure that conveyor components are maintained in a condition that does not constitute a hazard to personnel.

When a conveyor is stopped for maintenance or service, the starting devices, prime mover, powered accessories or electrical must be locked / tagged out in accordance with a formalized procedure designed to protect all persons or groups involved with the conveyor against an unexpected restart. Personnel should be alerted to the hazard of stored energy, which may exist after the power source is locked out. Refer to OSHA Standard 19 CFR 1910.147, "The Control of Hazardous Energy (Lockout/Tagout)" and ANSI Z244-1-1982, American National Standard for Personnel Protection - Lockout/Tagout of Energy Sources - Minimum Safety Requirements, for proper tagout procedures.

2) ADJUSTMENT OR MAINTENANCE DURING OPERATION

When adjustments or maintenance must be done while equipment is in operation, only trained, qualified personnel who are aware of the hazards of the conveyor in motion shall be allowed to make adjustments, perform maintenance or service.

Conveyors shall NOT be maintained or serviced while in operation unless proper maintenance or service requires the conveyor to be in motion. If conveyor operation is required, personnel shall be made aware of the hazards and how the task may be safely accomplished.

3) LUBRICATION

Conveyors shall NOT be lubricated while in operation unless it is impractical to shut them down for lubrication. Only trained and qualified personnel who are aware of the hazards of the conveyor in motion shall be allowed to lubricate a conveyor that is operating.

Where the drip of lubricants or process liquids on the floor constitutes a hazard, drip pans or other means of eliminating the hazard must be provided by purchaser(s).

4) MAINTENANCE OF GUARDS AND SAFETY DEVICES

Guards and safety devices shall be maintained in a serviceable and operational condition. Warning signs are the responsibility of the owner of the conveyor and must be maintained in a legible / operational condition.

5) INSPECTIONS

Routine inspections with preventative and / or corrective maintenance programs shall be conducted to ensure that all safety features and devices are maintained and function properly.

All personnel shall inspect for hazardous conditions at all times. Remove sharp edges or protruding objects. Repair or replace worn or damaged parts immediately.

6) CLEANING

Where light cleaning and/or casing cleaning are required, they shall be performed by trained personnel. The conveyor electrical power must be turned off and locked / tagged out following your company's machine specific procedures. Special attention may be required at feed and discharge points.

SYSTEM MAINTENANCE SCHEDULE



WARNING

- **Before starting any maintenance procedure, the ELECTRICAL SERVICE MUST BE TURNED OFF AND LOCKED OUT.**
- **Replace all safety devices and guarding prior to equipment start-up.**

Regular preventative maintenance supports the dependability and high-quality performance of this equipment. It is recommended that preventative maintenance be performed on a regular schedule, which is outlined and described in this section. Accurate documentation of all maintenance and repairs is important, as this helps prevent expensive, unnecessary repairs, assists in the process of warranty claims, supports the safety of operation personnel, allows detection of any operating patterns that may need to be addressed, and it encourages all stakeholders to treat the equipment with care. Maintenance and Repair Records should include the date, list of equipment inspected/serviced, repairs made or parts replaced, as well as any other helpful information.

The maintenance intervals recommended here are based on usage 5 days/week, 8 hours/day under normal operating and environmental conditions. Inspection and maintenance needs vary based on load, speed, hours of daily operation, ambient temperatures, humidity, etc. It is recommended that preventative maintenance be completed frequently after equipment is first installed, and then lengthen the maintenance intervals as justified by observation of need and reflection on maintenance records.

DAILY MAINTENANCE

Walk all lines of MDR Conveyor:

- Inspect to ensure all guarding is securely in place.
- Listen for any unusual noises, squealing or rattling sounds.
- Visually check driver card indicator lights by looking through the access slots.
- Visually inspect to see that conveyor sections are clear and free of debris.

- Inspect belts for wear, debris interference, and proper placement.
- Inspect wiring and cables for damage and proper securement.
- Inspect casters, bracing and legs for damaged, missing or loose parts.
- Inspect all side guides, backstops and end stops for loose or missing fasteners and securement.
- Visually inspect for loose fasteners or missing parts.
- Inspect in and around the conveyor system for loose or fallen packages and remove.
- Verify that all START/STOP push buttons operate and light up properly.
- Check E-Stops for proper operation per company's safety device check policy.
- Run a test package across the entire length of the system looking for proper operation.

WEEKLY MAINTENANCE

- Inspect conveyor for loose bolts.
- Inspect conveyor for unrestrained wiring, loose connectors, nip points, or other hazards.
- Check that all warning labels are still legible and properly placed.
- Check photo eye sensors for damage and proper operation.
- Check that MDR bracket screws are tight and in place. If not, secure the bracket screws ensuring maximum torque is not exceeded.
- Verify all guard covers are in place and secure.
- Check all power drops and the plugs to ensure proper connection and securement.
- Remove excess cardboard dust and debris from polyurethane rollers and belts.
- Visually inspect rollers for excessive run-out, damage or rubbing.

SYSTEM MAINTENANCE SCHEDULE



WARNING

- **Before starting any maintenance procedure, the ELECTRICAL SERVICE MUST BE TURNED OFF AND LOCKED OUT.**
 - **Replace all safety devices and guarding prior to equipment start-up.**
-

QUARTERLY MAINTENANCE

- Verify the drive roller is operating within its proper heat and noise range.
- Verify that drive cards and the connectors are in place and secure.

MONTHLY MAINTENANCE

- Check for consistent polyurethane belt tension between rollers and replace polyurethane belts as needed.
- Check splice plates for proper connection, placement, and missing or loose fasteners.
- Inspect that all roller axles are properly seated through the frame hex hole and the MDR axles are properly installed in mounting brackets.
- Clean all photo eyes and check for proper alignment.

WARRANTY STATEMENT

The Seller warrants that the Equipment will be free of defects in workmanship and material (if properly installed, operated and maintained) for a period of one year or 2080 hours of use, whichever is sooner, from date of shipment to Customer, subject to the limitations hereunder set forth. If within the one year warranty period, the Seller receives from the Customer written notice of any alleged defects in the Equipment and if the Equipment is not found to be in conformity with this warranty (the Customer having provided the Seller a reasonable opportunity to perform any appropriate tests thereon) Seller will, at its option, either repair the Equipment or supply a replacement therefore.

The Seller under either option shall have the right to require Customer to deliver the Equipment to Seller's designated service center and the Customer shall pay all charges for in-bound and out-bound transportation and for services of any kind, diagnostic or otherwise, excepting only the direct and actual costs of repairing or replacing the Equipment. If after reasonable effort the Seller cannot correct said deficiencies, the Seller will make an equitable price adjustment based on actual performance, provided that such adjustment shall under no circumstances exceed the purchase price. The Seller further warrants that the parts, and components supplied by the Seller and forming a part of the Equipment will be free from defects in material and workmanship for a period of one year or 2080 hours of use, whichever is sooner, from date of shipment to the Customer. The Seller's liability shall be solely limited to the supplying of replacement parts and materials.

For a copy our full warranty included in our Terms and Conditions of Sale, contact ConveyX Solutions, LLC.

RETURN AUTHORIZATION PROCEDURES

If the component in question is included in the replacement parts package, the following procedure will apply:

- Identify the part number from the manual
- If part is indicated as wear part
 - Replace the damaged or defective part from parts inventory
 - Order additional parts as required
- If the part is indicated as a warranty part
 - Replace the damaged or defective part from parts inventory
 - Contact ConveyX Solutions, LLC for a Return Merchandise Authorization (RMA) number
 - Have conveyor serial number available when contacting CXL.
 - Send the part to the following address

ConveyX Solutions, LLC.
2380 US 23 South
Docks C, D, E
Alpena, MI 49707
 - Include the conveyor serial number and RMA number on the packaging and the packing slip
 - CXL will inspect the part and make a warranty determination
 - If the part is under warranty, CXL will...
 - Ship a replacement to Customer to replenish parts stock
 - Issue a credit for the freight

If the component in question is not included in the replacement parts package, the following procedure will apply:

- Identify the part number from the manual
- Contact CXL for an initial review to establish if part is covered under warranty and to provide a quote if needed.
 - Have conveyor serial number available when contacting CXL
- Issue a purchase order for a replacement part
- CXL will issue a Return Merchandise Authorization (RMA) number for the part to be returned.
- Send the part to the following address

ConveyX Solutions, LLC.
2380 US 23 South
Docks C, D, E
Alpena, MI 49707
- Include the conveyor serial number and RMA number on the packaging and the packing slip
- CXL will inspect the part and make a warranty determination
- If the part is under warranty, CXL will Issue a credit to Customer for the purchased part and associated freight charges



CONVEYX

SOLUTIONS, LLC

ConveyX Solutions, LLC strives to be the leading dock door conveyor solutions manufacturer in North America. Our load and unload material handling equipment is designed for unit handling applications delivering operational improvements and energy efficiency.

We build to our customers' specifications to enhance their processes with quality equipment and components. We specialize in rapid product development to exceed lead time and volume requirements.