



CONVEYX
SOLUTIONS, LLC

MOD-LINX

INSTALLATION, OPERATION & MAINTENANCE MANUAL

PLEASE REVIEW MANUAL BEFORE OPERATING EQUIPMENT

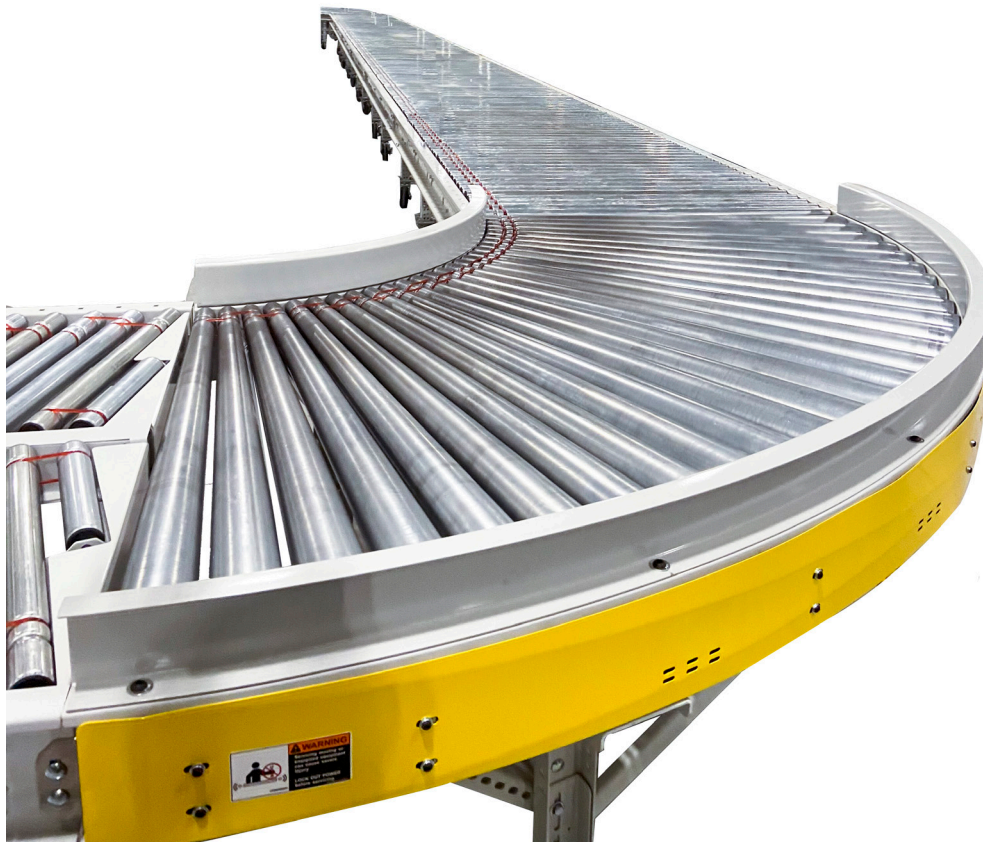


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GENERAL OVERVIEW

The Mod-LinX rigid re-configurable conveyor product line is an innovative conveyor system that is modular and can be easily re-configured to meet current operational demands and requirements. The system is adaptable and provides options to rapidly assemble, disassemble and re-assemble in a new configuration to meet the needs of the specific application. The Mod-LinX system can also incorporate other flex conveyors and Mod-LinX and can be easily customized with accessories for the ultimate load and unload dock door solution. This conveyor line offers the proven, energy efficient 24VDC drive technology that ConveyX is known for.

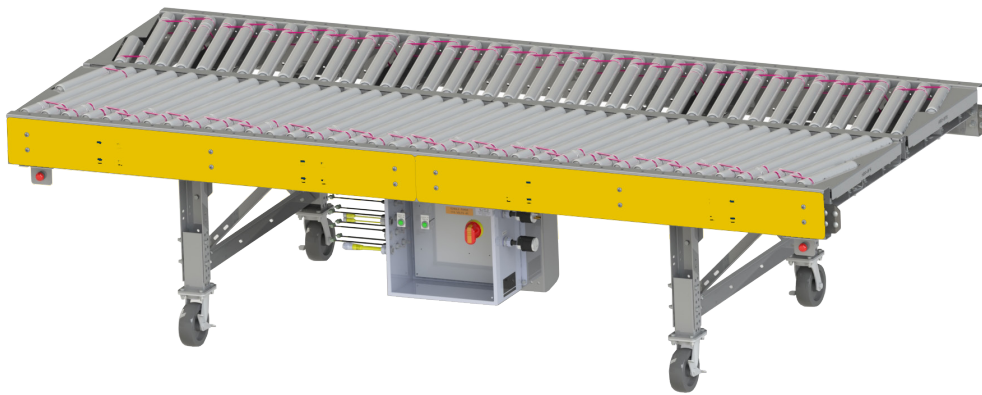


STANDARD COMPONENTS

MOD-LINX MDR STRAIGHT CONVEYOR



MOD-LINX MDR HERRINGBONE



MOD-LINX MDR SKEW



STANDARD COMPONENTS

MOD-LINX CURVE



MOD-LINX GRAVITY STRAIGHT



PRODUCT SPECIFICATIONS

| GENERAL | |
|-------------------------|--|
| Conveyor Bed Width (BF) | 30", 36", 48" |
| Conveyor Length | Standards: 10' straights; 90° curves |
| Conveyor Height | 32" top of roller; bolt adjustable |
| Speed | 40-150 feet per minute (FPM) |
| Capacity | 50 pounds per linear foot (PLF) |
| Noise Level | 70dB at conveyor bed c/l (32" TOR), 60dB at ear level (approximately 5'- 6" height from ground level) |
| MDR Torque | 11 pounds/inch |

| POWER | |
|---------|--|
| AMPS | 4 AMPS per roller |
| Watts | 35W |
| Supply | 30 AMP with a maximum of (7) sections per power supply for typical configurations* |
| Maximum | Maximum of (50) sections per master power supply |

*In the case of a herringbone, skew, urethane coated roller, or dual lane curve conveyor, each section counts as (2) of the (7) sections per power supply.

| MATERIALS | |
|------------------------|---|
| Casters | 6" swivel casters |
| Frame | 12 gauge formed and powder coated steel |
| Leg Supports | Bolt together, H style |
| Belts | Belts 3/16" diameter Cyclothane-B |
| Rollers | 1.9" motorized drive rollers 30" center to center; 1.9" bed rollers 3" center to center |
| Ball Transfer Bearings | 1" dia. nylon ball, zinc plated steel housing, 1/4-20 stud size |

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, Mod-LinX is motor-powered and this motor can be stopped by turning off the motor's electrical power. 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) offers a 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: <https://cemanet.org/posters-videos>.

SAFETY INSTRUCTIONS

WARNING

- 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.
- Mod-LinX 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/tagout procedures.
- Never operate conveyor with an electrical enclosure open or any guards removed.

PRE-INSTALLATION INSPECTION



Follow all proper safety precautions and plant installation procedures.

If you find any damage to the conveyor upon inspection or any loose wires, contact the factory BEFORE applying power to the conveyor.

1. Prior to unpacking and de-stacking the Mod-Linx conveyors, perform a visual inspection for any wiring or mechanical components that may be improperly connected or attached to the shipping pallet or banding.
2. Unpack the Mod-LinX and inspect for any possible damage that may have occurred during shipping. Pay particular attention to the wiring to ensure that no wires are pulled loose or damaged. If you find any physical or electrical damage to the conveyor upon inspection, contact the factory BEFORE applying power to the conveyor.
3. Inspect all electrical cables, communication cables and connectors to ensure they did not loosen during transportation. If a connection or wire is loose, inspect for damage. If no damage is found, reconnect and contact the factory as needed.
4. Inspect the rollers to ensure the rollers were not damaged during shipping. If the rollers are bent, the conveyor will not move products or operate properly resulting in poor performance. The conveyor rollers will need to be replaced. Contact the factory for parts and further instruction.
5. Inspect the casters and legs to ensure no damage has occurred during shipping. If any damage has occurred, then the conveyor will need to be repaired. Contact the factory for parts and further instruction.
6. Inspect each leg assembly for physical damage, loose and/or missing parts. Verify that the height is correct and that the adjustment fasteners are in place and secure. If the conveyor bed is not at the correct height, adjust the leg to the proper height and secure the fasteners.
7. Inspect all frame work to ensure that no damage occurred during shipping. If frames are damaged or bent, the conveyor will need repairs. Contact the factory for parts and further instructions.
8. Inspect the conveyor to ensure all yellow driver card covers are secured in the proper location and have the proper identification tag visible.

INSTALLATION INSPECTION

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 direction.



To avoid accidental start-up of conveyors, please be aware of capacitive touch when using the START/STOP buttons. Gloves are not sufficient grounding to prevent capacitive touch buttons from responding.

- Roller speed is set to the proper specification (the direction and roller speed can be set within the power supply panel).



Follow all lockout and tagout procedures.

2. While under power, visually inspect that 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 property 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.
5. **ADDITIONAL GATE INSPECTION;** The Mod-LinX gates should be inspected for proper lift and operation by manually lifting and lowering the gates. Check for proper START/STOP function and that the "Gate Closed" proximity sensor is in place, secure and functioning properly.

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.

INSTALLATION

MECHANICAL INSTALLATION

1. Prior to equipment arrival, perform a site inspection with the necessary personnel which would include but not limited to; confirmation of site layout and that all dimensions are correct, all power supplies have been properly installed and that all site electrical processes are complete, debris and hazards are removed from installation areas, necessary dock doors are open and operational for unloading, that a staging area is available if needed and confirm that delivery areas are clear.

NOTE

Before starting any installation verify that the pre-installation inspection process has been completed.

2. Upon completion of the Pre-Installation Inspection, unload the equipment, unstack, and depalletize. If necessary, restack the pallets in a staging area in order to load to return truck.
3. Attach all START/STOP button cabling. The cables will be zip-tied to the underside of the spreader for shipping purposes and will have enough slack to be able to attach to the appropriate START/STOP button.



WARNING

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4. If conveyors were shipped in a stacked position on pallets then there will be additional rollers zip tied to the conveyor bed. If so, the zip tied rollers need to be installed prior to moving the conveyor into place.
5. Find the Master paneled conveyors and move them into place according to the tag on the conveyor and the site layout. It is best to start building the conveyance system at the Master paneled conveyors at the infeed end.
6. Attaching conveyors
 - Locate the (2) splice plates on the conveyor that are zip-tied to the spreader.
 - Cut them loose and align the conveyor sections together end to end and at a matched height.

- Use (4) fastener configurations (carriage bolt, flat washer, lock washer, hex nut) per splice plate for securement. (1) splice plate is used per side.
 - Attach (3) or (4) appropriate sections of conveyor to the master conveyor and once they are in the exact position, lock all the casters and use this as an anchor point to continue the building system.
7. Continue to attach conveyor sections together according to the site layout and conveyor tags.
 8. Check to see if there are any accessories included that require attachment or adjustment such as Transition Plates prior to locking the conveyor system in place, otherwise these items may be difficult to reach.
 9. If applicable, move Gate sections of conveyor into place according to the site layout and attach. Pay particular attention to the Gate tags as the "A" Gate will be attached to the upstream section and the "B" Gate will attach to the downstream section. Also pay attention to the Gate numbers as they are a matched set from the factory (1A with 1B and 2A with 2B). The final position of the Gates will have a 1/2" gap between the frames when in the down or closed position.

NOTE

Cable routing process must be followed to ensure that cabling is not damaged by rollers or would cause any interference with the conveyor operation.

10. Install any remaining accessories such as Side Guides, Backstops, Power Masts, Retainer Brackets, Infeed Connection Brackets, End Stops, etc.
11. Once all the equipment is in place and the dimensions of the site layout have been met, lock all casters into place and make sure that the casters are parallel with the conveyor frame.

ELECTRICAL AND CONTROLS INSTALLATION

1. All cabling should be routed beneath the spreaders and rollers. Once the cable is running in the proper upstream or downstream direction and it is connected to its device, secure the cabling to the spreaders with multiple hook and loop fasteners to ensure that the cabling does not contact the rollers in any way.
2. All yellow interface discharge cables will run in the downstream direction to the next power supply panel. The interface discharge cable will connect to the Infeed Interface bulkhead on the side of the power supply panel.

INSTALLATION (CONTINUED)

3. The black Power In cables will be routed in the upstream direction and connected to the appropriate female twist lock receptacle. That receptacle could be a power drop or the upstream Power Out cable. If it's the upstream Power Out receptacle, it will also need to be properly routed to make the twist lock connection.
4. Begin at the Master paneled conveyors and cut the zip-ties holding the black power cables and the yellow interface cables. Start with the Power In cable and route it to the upstream power supply. Then route the Power Out and the yellow interface cables in the downstream direction and make the proper connections. Continue this process until you come to the next Master panel or the system is complete.
5. At no time will a yellow interface cable be connected into a downstream Master panel. If a downstream Master panel is next in line on the layout, coil the interface cable and secure it to a spreader on the underside of the conveyor, away from the rollers. The Master panel should be secured by installing a receptacle cap in the Infeed Interface receptacle and covering the cap with a tamper evident sticker. In most cases this has been completed by the factory. However, if the receptacle cap and sticker have not been installed, there is a kit with parts and instructions available. Consult factory.
6. No more than (7) units can be powered by a single (1) 30AMP power drop. In the case of a herringbone, skew, urethane coated roller, or dual lane curve conveyor, each unit counts as (2) of the (7) units allowed on a single (1) 30AMP power drop. When routing the power cabling, the Power Out cable on the last conveyor will not be needed and can be coiled up and secured to the underside of the conveyor, away from rollers.
7. Once all of the power interface cabling has been routed and secured, the BYPASS switch on the last powered conveyor in the line needs to be set to the ON position to complete the power circuit.
8. All power supplies and the Master power supply panel need to be in the ON position.
9. Once all power supplies are ON, all START/STOP buttons should illuminate RED and when pressed, they should illuminate GREEN. Once all START/STOP buttons on the conveyor line are GREEN, the conveyor will begin to run. Continue this process for all conveyors starting at the Master panel until the entire system is running.
10. All direction settings can be changed within the power supply panel by setting the Directional switch. Modify direction if needed.
11. All BYPASS settings can be changed within the power supply panel by setting the BYPASS switch. Modify Parent/Child relation if needed.
12. All roller speed settings can be changed within the power supply panel by adjusting the Speed pot. Modify speed if needed.
13. Perform the INSTALLATION INSPECTION on the entire system. If issues arise, refer to the TROUBLESHOOTING section of the manual. If needed, contact the factory for further assistance.
14. Perform the FINAL INSPECTION section of the manual.



WARNING

To avoid accidental start-up of conveyors, please be aware of capacitive touch when using the START/STOP buttons. Gloves are not sufficient grounding to prevent capacitive touch buttons from responding.

OPERATING INSTRUCTIONS

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.



WARNING

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1. Designate a central START/STOP button or buttons to be used for initial start-up or shift change shut down according to the site layout to assist all operational personnel.
 - Complete the PRE-INSTALLATION INSPECTION.
 - Make sure that all conveyor lines are clear and free from debris and hazards. This applies to the roller bed and underneath the conveyors.
 - Make sure that all persons are clear and away from the conveyor lines prior to start-up.
 - Verify that all necessary START/STOP buttons are illuminated GREEN. If they are RED, then apply slight hand pressure to the gate and they should change to GREEN.

NOTE

Depending on the site layout and the equipment provided, the start-up procedure may happen in more than (1) location.

2. Once the PRE-INSTALLATION INSPECTION is complete, press the designated START/STOP button and it should illuminate GREEN. The conveyor will start.
3. If a conveyor section needs to be shut down, any of the START/STOP buttons can be pressed and it will illuminate RED and stop the conveyor. To restart the conveyor, make sure the line and/or hazards are clear then slightly press the same RED START/STOP button and the button will illuminate GREEN. The rollers will then begin to move.

CAUTION

Do NOT use E-Stops to stop the conveyor in normal operation. E-Stops should only be used as emergency stops. Using the E-Stop as a "regular" shut down can cause the system to operate incorrectly upon restart.

4. If issues arise, refer to the TROUBLESHOOTING section. If needed, contact the factory for further assistance.

PACKAGE JAM CLEARANCE

1. Mod-LinX conveyor drives are designed to shut down if temperature exceeds a specified limit. When a package becomes jammed on a conveyor, the zone drive will shut itself down to avoid damaging the drive roller or driver card due to overheating.
2. To restart the system if a jam occurs, clear the product jam, and the conveyor drive will restart itself after the temperature has returned to normal operating temperature. If the system has not cycled within 2 minutes of clearing the jam then turn the START/STOP button to OFF and then back to the ON position. The system should begin to operate normally.
3. If the system has not returned to normal operating conditions, please refer to **TROUBLESHOOTING** section to check for other system alarms.

NOTE

Do not exceed the rated capacity of the conveyor 50 lbs (22 kg) per linear foot. Overloading the conveyor could cause damage to the conveyor or components and could void the equipment warranty.

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 set to Amazon-specified parameters and normally configured before equipment delivery. Stop the conveyor per the documentation provided by the party responsible for controls integration.

GENERAL PREVENTATIVE MAINTENANCE

Periodic maintenance intervals shown may vary with load, speed, hours of daily operation, ambient temperature, humidity, etc. Intervals can be established by fairly frequent maintenance at first; then lengthen the intervals as justified by observation of need based on history. The following is based on 5 days per week, 8 hours per day under normal conditions.

WARNING

- Prohibit riding on conveyor by anyone.
- Think before making any 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.
- Lockout/Tagout procedures must be followed for every energy source of the conveyor.

Follow general maintenance safety procedures and review safety material prior to performing maintenance on any equipment.

Regular inspections are recommended by the manufacturer to ensure proper operation of mechanical, electrical and safety systems.

DAILY MAINTENANCE

Walk all lines of the Mod-Linx system:

- 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. (Do not tug on cables, as this can cause disconnects and unwanted electrical issues.)
- 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

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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.
- Check that all warning labels are still legible and properly placed.
- Check all cables and connectors *outside of the panels* for unrestrained/pinched wiring, loose wire connectors, nip points, and other hazards. Begin at the driver cards and move to the child panels, extension cable connectors, and finally the master panel. Do not check the connections inside of the panel boxes unless an electrical issue remains unresolved using the previous maintenance methods.
- Check all power drops and the plugs to ensure proper connection and securement.
- Check that the MDR bracket screws are tight and in place. If not, secure the bracket screws ensuring maximum torque is not exceeded (See **PARTS REPLACEMENT PROCEDURES**)
- Verify all guard covers are in place and secure.
- Remove excess cardboard dust and/or debris from polyurethane rollers and round belt.
- Visually inspect rollers for excessive run-out, damage or rubbing.
- Verify quick disconnects are tight and secure.

Continued on next page.

GENERAL PREVENTATIVE MAINTENANCE

MONTHLY MAINTENANCE

- Check for consistent belt tension between rollers.
- Check splice plates for proper connection, placement or missing/loose fasteners.
- Inspect that all roller axles are properly seated through the frame hex hole and that MDR axles are properly installed in the mounting brackets.

QUARTERLY MAINTENANCE

- Check MDR to ensure that motor is operating within proper heat and noise range
- Verify that driver cards and the connectors are in place and secure.
- Verify that power cycles on and off properly on power supply panels.
- Check all indicator lights, connections, and cabling on power supply panels.

REALIGNING FINGERS

It may be necessary at some point to realign fingers of the system. Reference the following instructions for the appropriate situation.

MOVED OUT OF POSITION (NO VISIBLE DAMAGE)

1. Gather an appropriate number of people to move the conveyor safely. It is recommended that 1-2 people move each 10'-0" long section.
2. Unlock casters.
3. Reposition conveyor, ensuring straightness and positioning is per system layout requirements.
4. Lock casters.

LINE IS TWISTED OR DAMAGED

1. Remove yellow side covers.
2. Loosen conveyor connection plates. Remove connection plates if necessary.
3. Gather an appropriate number of people to move the conveyor safely. It is recommended that 1-2 people move each 10'-0" long section.
4. Unlock casters.
5. Reposition conveyor, ensuring straightness and positioning is per system layout requirements.
6. Replace and/or tighten conveyor connection plates.
7. Lock casters.
8. Replace yellow side covers, taking care not to pinch or otherwise interfere with cables and wire management.

CAUTION

It is important there is no variance in the angle of finger running out from trunk line. Variance in this angle can add stress to the rollers and cause them to pinch.

NOTE

It is recommended to place stickers on the floor along the casters to show each one's location. This can be helpful when placing conveyors back in proper position.

PARTS REPLACEMENT PROCEDURES

WARNING

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

WARNING

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

MOTORIZED ROLLER REPLACEMENT

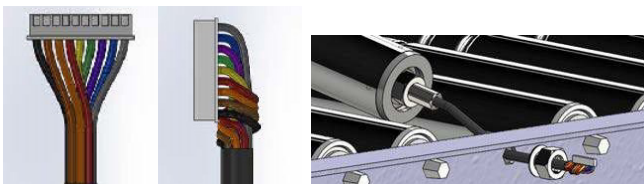
It will be necessary to replace an MDR due to faulty construction, damage accrued during operation, or it simply has reached the end of its life.

Removing Roller:

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.

Installing New Roller:

5. Slip rubber rings over each end of the new MDR, if applicable.
6. Prepare motor connector on new MDR power cable by tilting 90° and twisting until the wires are taut. This will enable the connector to be inserted into the holes on the frame and fixing blocks without damaging the wires.



CAUTION

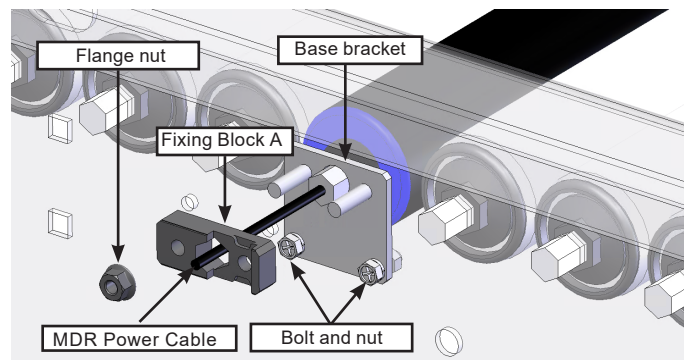
Be careful not to damage the cable. Tighten the nut slowly with specified torque manually.

7. Insert end of roller axle with cable, into the frame in through MDR clamping bracket.

WARNING

Follow the proper lockout/tagout procedures for your specific zone area, building requirements and tech level.

8. Slide a putty knife between the opposite end of roller axle and the other frame. Line up axle with hole and remove putty knife.
9. Mount base bracket onto the frame and use a torque wrench to tighten bolt and nut with 2.3 - 3.5 Nm.
10. Put Fixing Block A over the shaft and use a torque wrench to tighten flange nut with 8 - 10 Nm.



CAUTION

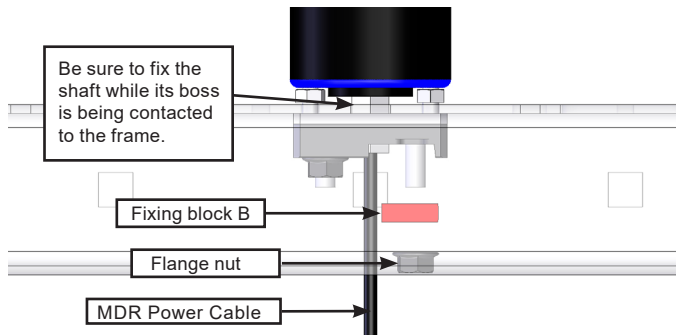
Do not use tools which can apply strong impact (e.g., impact wrench). It may cause damage of Fixing Block A. Manually tighten the nut slowly to specified torque. Be sure to attach Fixing Block B in parallel with frame. Failure to do so may cause damage to Fixing Block A. The shaft will run idle if the tightening is not proper, which may cause a break of the cable or other failures.

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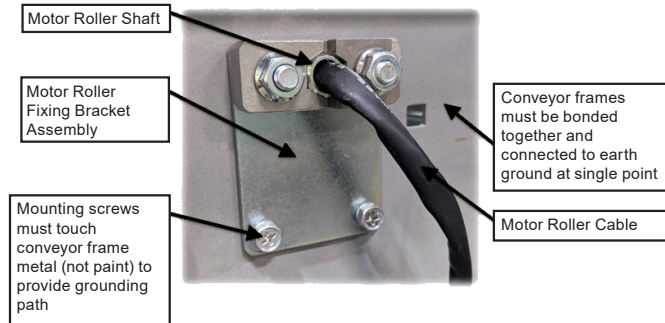
PARTS REPLACEMENT PROCEDURES

MOTORIZED ROLLER REPLACEMENT (CONTINUED)

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 flange nut with 8 - 10 Nm to fix fixing block B.
13. Reconnect MDR power cable to the drive card.



CAUTION

Improper grounding of MDR may result in premature MDR and/or drive card failure. Proper grounding techniques must be observed.

NOTE

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

PARTS REPLACEMENT PROCEDURES

MOTORIZED ROLLER REPLACEMENT - BELOW MOUNT

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.

1. Turn the main power switch counterclockwise (left) 1/4 turn into the off position and secure a lock & tag on the power switch slide out. This is done correctly when the red/green start and stop buttons and power panel indicator lights will fade out.
2. Disconnect the nearest upstream twist lock power supply and properly secure a lock & 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.



Figure 2



Figure 3

Mechanical Process:

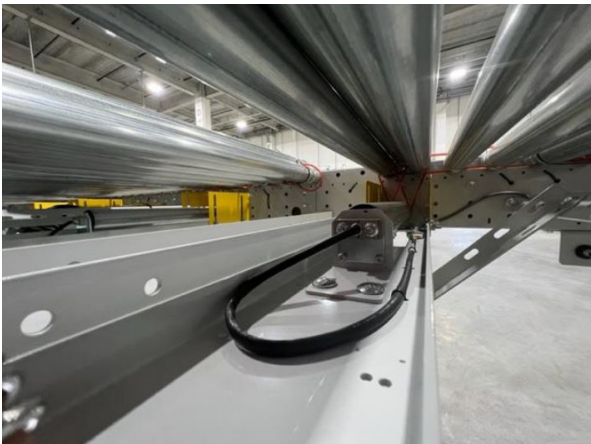


Figure 1

1. Unplug the electrical connection nearest the MDR roller, which is located to the right of the MDR in Figure 1.
2. Remove hook and loop fasteners and free wire for MDR roller removal.
3. (2) 3/8-16 Grade 5 Zinc plated bolts and whiz nuts secure one of the short MDR brackets to the 48" BF MDR spreader and allow for slide adjustment and quick re-installation later.
4. Mark the current position of the carriage bolts in the slotted portion of the short MDR bracket for later reference during new MDR installation.

5. Remove at least one of the yellow Drive Belt Guards attached to the MDR Spreader. Access to the belts will be needed to slide the drive belts off the MDR.
6. Completely remove the short MDR bracket on the wired side of the MDR (2) 3/8-16 Carriage Bolts, Hex Nuts & 3/8 lock washers along with the entire MDR. (Figures 1 & 2)
7. Once the MDR and small mounting bracket, on the power supply side of the MDR, are dismantled then completely remove the hex shaft clamping collar nuts and lock wedges (2) 7/16 Hex nuts. (Figure 1)
8. Prepare MDR wire connector to be removed through the hole in the Hex shaft clamping collar (7/16" Hex) by gently folding wires over while slightly bending them back resembling the shape of the wire itself. **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. (Figure 1)

PARTS REPLACEMENT PROCEDURES

NEW MDR ROLLER INSTALLATION

Gently feed (**DO NOT** push or pull) new MDR wire connector through the hole in the Hex shaft clamp mounting collar and secure clamping screws verifying shaft is captured by the clamp.

1. Connect and zip tie the new wires around the MDR BF spreader near what will be rotating once replaced. *Multiple zip-ties are recommended* (Figure 1)
2. Feed the MDR roller back into the drive belts in the reverse order it came out making sure the hex shaft is completely captured into the mounting bracket beyond the drive belts.
3. Once the hex shaft on the belt side of the MDR is secured in the shaft mounting bracket, make sure the belts are in the proper locations and everything is aligned.
4. Remount the small MDR bracket back onto the MDR BF spreader and this will take a little pressure to push the MDR roller down while securing the fasteners simultaneously.
5. Make sure to mark the current position of the short MDR bracket for later reference during new MDR installation.
Make sure both ends of the MDR hex shaft are properly secured and recheck the marked position for alignment.

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.

1. Shut down conveyor and lockout/tagout power.
2. 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' axles through the frame opening and lift the rollers up and out of the frame.
3. Remove the old urethane round belt(s) from the rollers.
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.

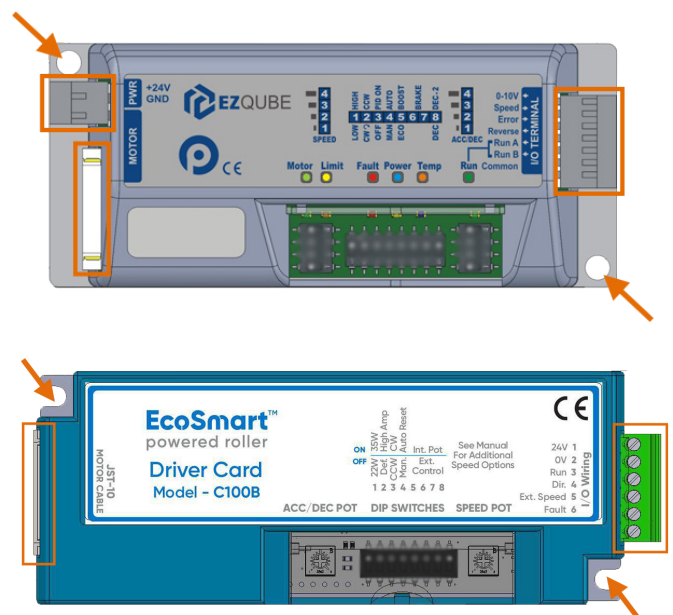
DRIVE CARD REPLACEMENT

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

1. Shut down conveyor and lockout/tagout power.
2. Remove yellow cover guard to access drive cards.
3. Unplug the two or three connecting terminal blocks, depending on the card used. Do not unplug individual wires from the blocks or card. See drive card images below.
4. Unbolt card from conveyor frame. See drive card images below for mounting hole locations.
5. Replace the faulty drive card with a new drive card.
6. Bolt new card in place on conveyor frame. See drive card image below for mounting hole locations.
7. Reconnect the connecting terminal blocks.
8. Verify DIP switch settings according to the **DRIVER CARD - SETTINGS** page for the appropriate card.

NOTE

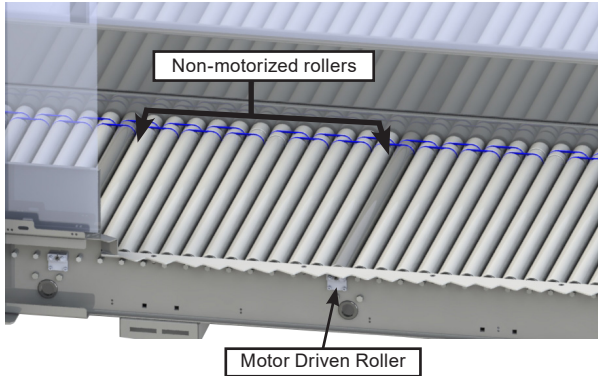
Drive cards and MDRs cannot be brand-mixed. If there is a need to change the brand of a drive card, the MDR brand, extension cables, and MDR bracket must be changed as well, and vice versa.



PARTS REPLACEMENT PROCEDURES

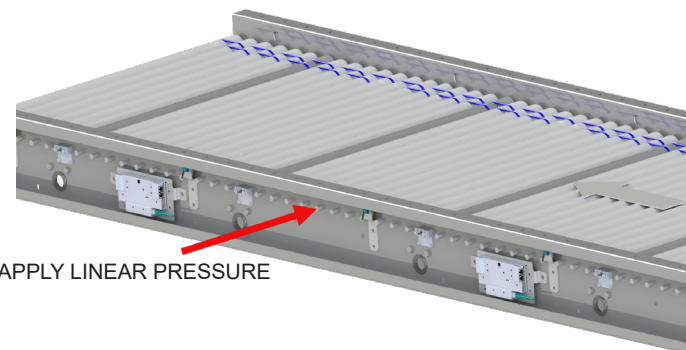
ROLLER REPLACEMENT (NON-MOTORIZED)

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

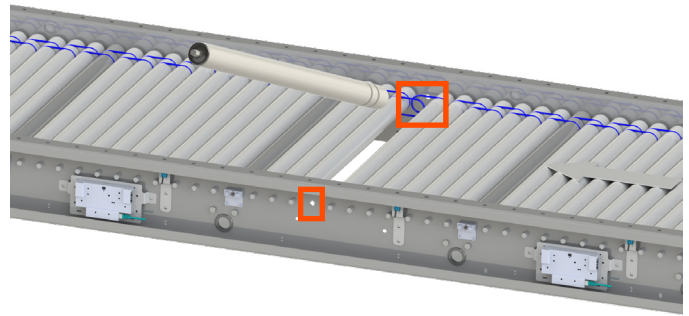


1. Shut down conveyor and lockout/tagout power.
2. Identify which end of roller is spring retained (typically grooved end). Using a small diameter punch or similar tool, apply linear pressure to the shaft on the opposite end until the shaft clears the inside of the frame.

NOTE
 Be careful to NOT apply side load pressure to the roller shaft.



3. Apply upward force on the roller body, freeing roller from urethane round belts, until the roller shaft lifts out of the frame completely. It is recommended to place a putty knife or similar flat surface tool between the shaft and the inside of the frame to protect the finish on the inside of the conveyor frame. Remove roller from conveyor.



4. If replacing urethane round belts, place one or two around roller, depending on roller's position in banding pattern. Otherwise, insert roller into adjacent rollers' o-bands while placing new roller's shaft into the hole in the conveyor frame.
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.

For a brief demonstration of installing a roller on a conveyor with a below mount motorized roller, please follow the link in this QR code:



For a brief demonstration of installing a roller on a conveyor with an in bed mounted motorized roller, please follow the link in this QR code:

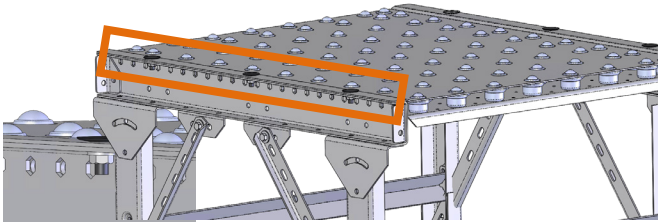


PARTS REPLACEMENT PROCEDURES

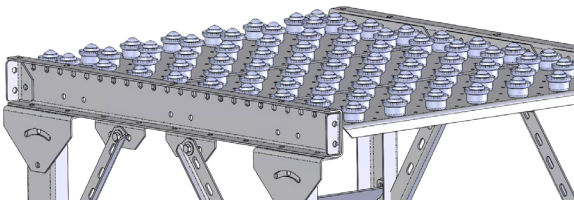
BALL TRANSFER REPLACEMENT

If it becomes necessary to replace one or more bearings in the ball transfer table, follow these steps.

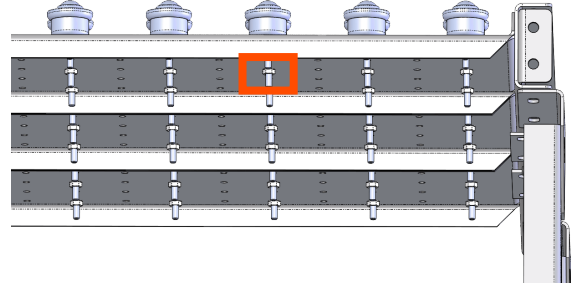
1. Lock the casters to prevent the ball transfer table from moving while performing maintenance.
2. Locate and remove the whiz nuts and elevator bolts that hold the dust cover on the side frames.



3. Remove the dust cover from the bed of bearings.



4. Loosen and remove the keps nut from the bearing studs set to be replaced. The bearing can then be lifted out of the ball transfer pan.



5. Install new bearing in same hole and tighten Keps nut on the bearing stud on the underside of the pan.
6. Once new bearings are installed, replace dust cover onto table, ensuring holes settle onto bearings and sideframe holes line up for fastening.
7. Reinstall elevator bolts and whiz nuts to secure dust cover onto ball transfer table.
8. Once dust cover is securely in place, casters can be unlocked and ball transfer table can be returned to service.

PARTS REPLACEMENT PROCEDURES

SPEED CONTROLLER REPLACEMENT

There are different speed controllers that may be used on the Mod-LinX system depending on date of manufacture and system requirements. Reference the images and instructions below for the appropriate speed controller.

NOTE

If an existing speed controller needs to be changed or replaced, the connector on the cable may also need to be changed to accommodate for a different style port.

NOVAzone® Variable Speed Controller

1. Shut down/power down conveyor and panel and lockout/tagout power.
2. Depending on which version is present, disconnect the three or four wires by gently pulling the removable wiring connector off the face of the controller.
3. Using a flathead screwdriver, gently pry the release tab at the bottom of the controller and lift the controller off.
4. Install new controller.
5. Reconnect the wiring connector to the controller and securely tighten the fasteners using a torque of 0.5 - 0.6 Nm.



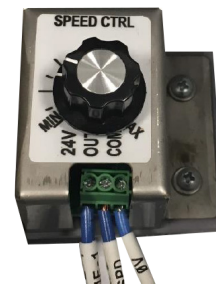
Schneider Electric™ Variable Speed Controller

1. Shut down/power down conveyor and panel and lockout/tagout power.
2. Using a flathead screwdriver, gently pry the release tab at the bottom of the controller and lift the controller off.
3. Turn the controller over and disconnect wiring.
4. Reconnect wiring to new controller.
5. Install new controller.



NTC Variable Speed Controller

1. Shut down/power down conveyor and panel and lockout/tagout power.
2. Disconnect the three wires from the face of the controller.
3. Using channel locks, grab controller and twist/pull until controller breaks off. Controller will typically break off in multiple pieces.
4. Install new controller.
5. Reconnect the three wires to the controller.





PARTS REPLACEMENT PROCEDURES


TORQUE SPECS FOR COMPONENTS IN PANELS


NOTE


Locate the schematic for part number reference.

| Weidmüller Circuit Breakers WEIBRI8UC (CB1) / WEIBRC20UC (CB2) | |  |
|---|-----------------------|---|
| Tightening Torque | 3.5 Nm - 4.5 Nm | |
| | 30 in-lbs - 40 in-lbs | |
| Tool Blade Size | PH1 | |
| Voltage Reading | (CB1) 120V (CB2) 24V | |

| Noark Circuit Breakers NOAB1E1C5 | |  |
|---|-----------------------|---|
| Tightening Torque | 3.5 Nm - 5.05 Nm | |
| | 30 in-lbs - 45 in-lbs | |
| Tool Blade Size | PH1 | |
| Voltage Reading | 24V | |


| WEI2476820000 Relay Module | |  |
|-----------------------------------|---------------------|--|
| Tightening Torque | 0.5 Nm - 0.8 Nm | |
| | 5 in-lbs - 7 in-lbs | |
| Tool Blade Size | PH1 | |
| Voltage Reading | 24V | |


| WEI1122770000 Coupling Relay | |  |
|-------------------------------------|-----------------|---|
| Tightening Torque | 0.3 Nm - 0.4 Nm | |
| | 5 in-lbs | |
| Tool Blade Size | PH0 | |
| Voltage Reading | 24V | |


| WEI1010100000 Terminal Block | |  |
|-------------------------------------|---------------------|---|
| Tightening Torque | 0.5 Nm - 1.0 Nm | |
| | 5 in-lbs - 7 in-lbs | |
| Tool Blade Size | 0.6 x 3.5 mm | |
| Voltage Reading | 24V | |


PARTS REPLACEMENT PROCEDURES


TORQUE SPECS FOR COMPONENTS IN PANELS

| | | |
|-------------------------------------|---------------------|---|
| WEI1061200000 Terminal Block | |  |
| Tightening Torque | 0.5 Nm - 1.0 Nm | |
| | 5 in-lbs - 7 in-lbs | |
| Tool Blade Size | 0.6 x 3.5 mm | |
| Voltage Reading | 24V | |

| | | |
|-------------------------------------|------------------------|---|
| WEI1905060000 Terminal Block | |  |
| Tightening Torque | 0.5 Nm - 0.8 Nm | |
| | 5 in-lbs - 7 in-lbs | |
| Tool Blade Size | 0.6 x 3.5 mm flat head | |
| Voltage Reading | 24V | |

| | | |
|-----------------------------------|------------------------|--|
| WEI1469510000 Power Supply | |  |
| Tightening Torque | 1 Nm | |
| | 9 in-lbs | |
| Tool Blade Size | 0.6 x 3.5 mm flat head | |
| Voltage Reading | 120V | |

| | | | |
|-----------------------------------|----------------|---|--------------|
| WEI1469520000 Power Supply | |  | |
| Tightening Torque | [L, N, G] | | 1.0 Nm |
| | [13, 14, +, -] | | 2.0 Nm |
| | [L, N, G] | | 9 in-lbs |
| | [13, 14, +, -] | | 18 in-lbs |
| Tool Blade Size | [L, N, G] | | 0.6 x 3.5 mm |
| | [13, 14, +, -] | | 1.0 x 5.5 mm |
| Voltage Reading | 120V | | |

| | | |
|---|----------------------|---|
| Mersen MERM403 Disconnect Switches | |  |
| Tightening Torque | 0.79 Nm | |
| | 7 in-lbs - 10 in-lbs | |
| Tool Blade Size | PH2 | |
| Voltage Reading | 120V | |

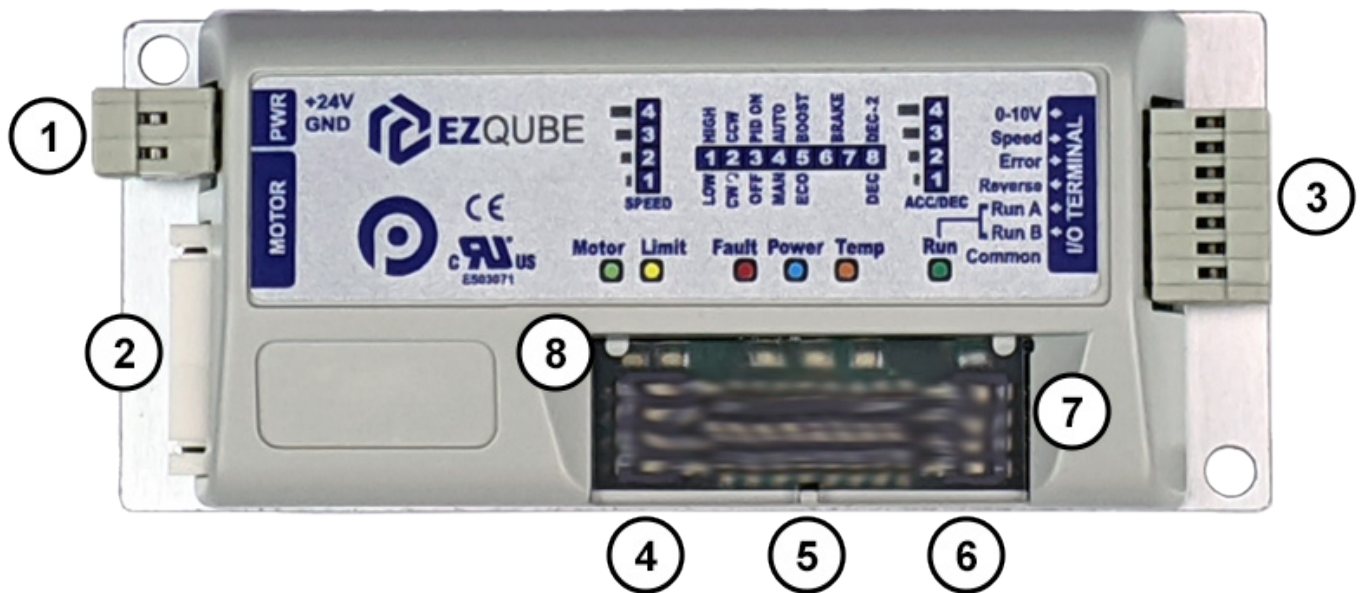
DRIVER CARDS

| | |
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| Driver Card - EZ-Qube Description | 27 |
| Driver Card - EZ-Qube Dual Lane Conveyor Settings | 29 |
| Driver Card - EZ-Qube Troubleshooting | 31 |
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| Driver Card - Ecosmart™ Settings | 37 |
| Driver Card - Ecosmart™ Dual Lane Conveyor Settings | 38 |

DRIVER CARD - EZ-QUBE DESCRIPTION

DESCRIPTION

EZ-Qube is an economical single motor, drive controller module for Senegy Motors. EZ-Qube provides control for all Senegy Motors. Speed, acceleration, and deceleration are adjustable using combinations of DIP switches on the module. The table below can be used to identify EZ-Qube components.

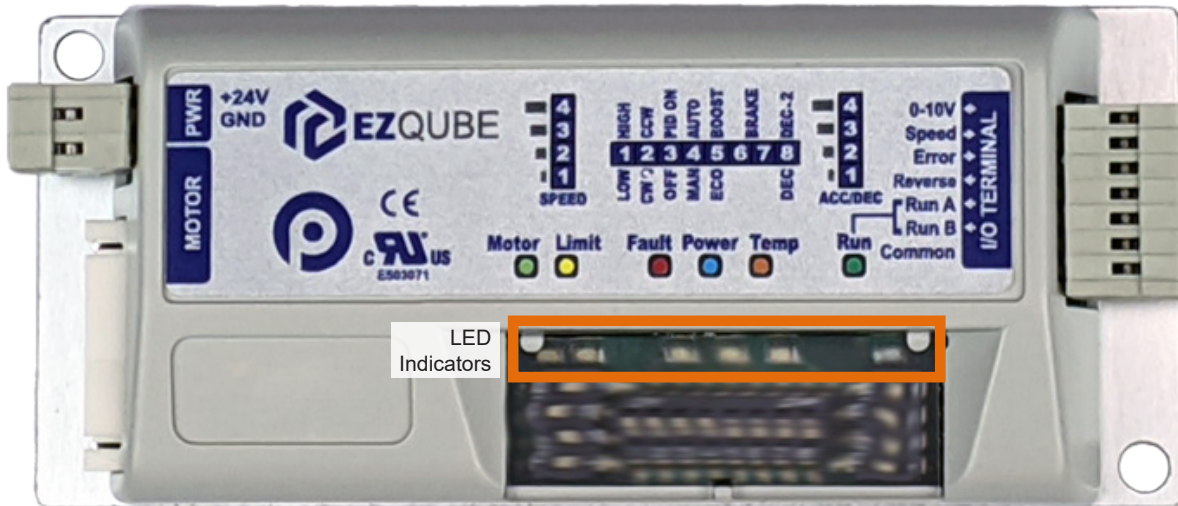


| Item | Component Description |
|------|---|
| 1 | Removable 24VDC Power Connector Terminal Block |
| 2 | Senegy Motor Port - 9-pin JST style header for MDR/PGD connection |
| 3 | Removable I/O Terminal Block |
| 4 | Motor Speed Selection 4 Position DIP Switch |
| 5 | Configuration 8 Position DIP Switch |
| 6 | Motor Accel/Decel 4 Position DIP Switch |
| 7 | DIP Switch and LED Hinged Clear Protective Cover |
| 8 | Module Status LEDs |

DRIVER CARD - EZ-QUBE DESCRIPTION (CONTINUED)

LED STATUS AND INFORMATION REFERENCE CHART

The EZ-Qube picture shows where to locate the LED indicator panel. The LED indicator chart below lists the primary function for each of the indicator lights on the panel.

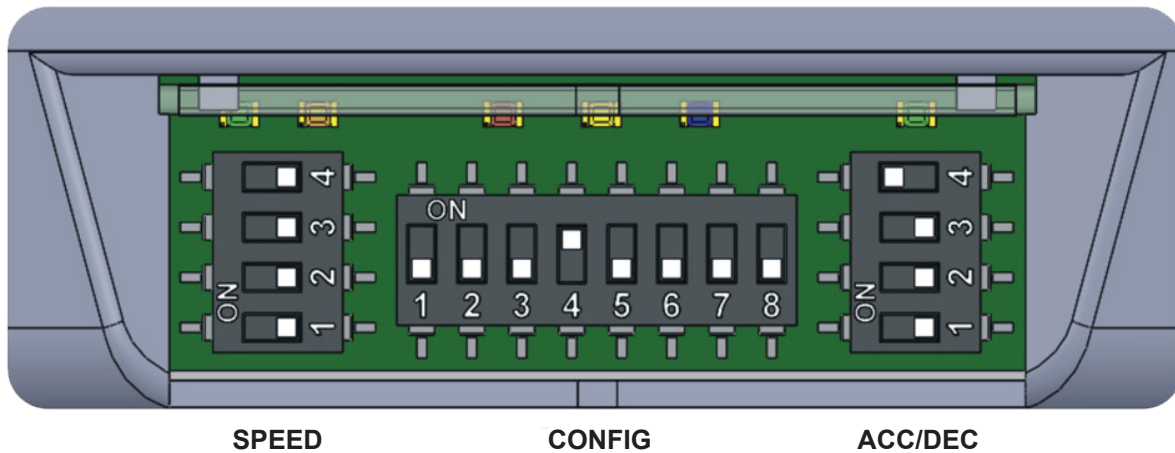


| LED Light | LED State | Description |
|-----------|--------------------------------|--|
| Power | ON at normal brightness | Input power is between 18V and 31V |
| | FLASH at 0.1s interval | Input power is below 18V |
| | ON at high brightness | Input voltage is greater than 31V |
| Run | ON | ON when either RUN A or RUN B or both are on |
| Motor | Flashing | RUN signal(s) are on and flash rate is proportional to motor speed |
| Limit | ON | Current is being limited to motor |
| | Flash & Blink | See Timing Diagrams |
| Temp | ON | Calculated motor temperature is above 105°C |
| | 0.2s Flash at 0.4 sec interval | Motor roller is disconnected |
| Fault | Flash at 1.0 s interval | Controller has stopped the motor due to error condition |
| | Other flash rates | See Timing Diagrams |

DRIVER CARD - EZ-QUBE DUAL LANE CONVEYOR SETTINGS

DESCRIPTION

Speed, acceleration, and deceleration are adjustable using combinations of DIP switches on the module. The graphic and description below describe the DIP switch settings for standard conveyor operation.



SWITCH POSITION

For standard conveyor operation please verify the driver card switches are set. There are (3) sets of switches on the EZ-Qube driver card.

The left set of switches is denoted as SPEED. SPEED switches 1-4 should all be in the OFF position.

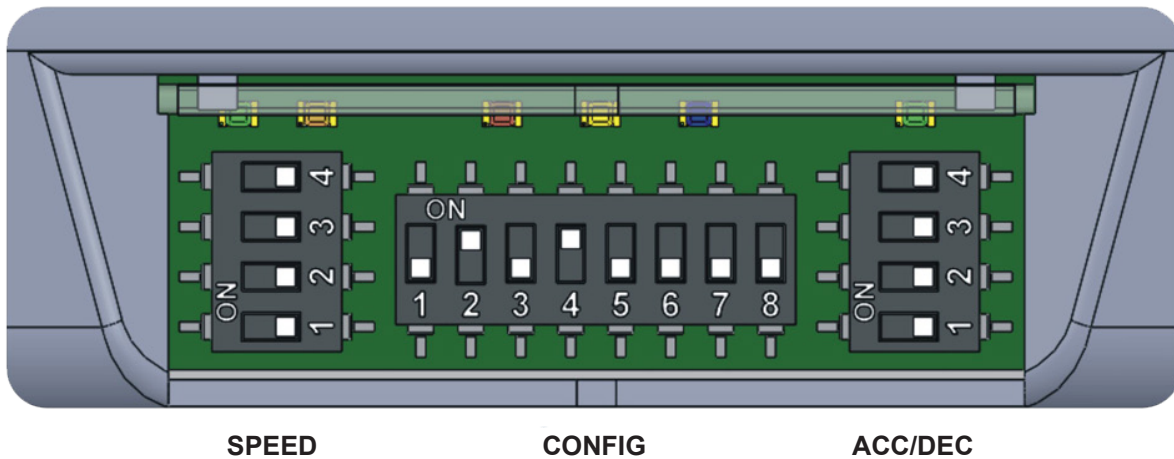
The center set of switches is denoted as CONFIG. CONFIG switches 1-8 should all be in the OFF position except switch #4 which should remain ON or in the up position.

The right set of switches is denoted as ACC/DEC. ACC/DEC switches 1-3 should all be in the OFF position, while #4 should be in the ON position.

DRIVER CARD - EZ-QUBE DUAL LANE CONVEYOR SETTINGS

DESCRIPTION

The EZ-Qube driver card can be configured for dual lane conveyors, such as Dual Lane Curves, Herringbones, Skews, and Merges. To support this configuration, the DIP switch settings on EZ-Qube driver card will need to be set accordingly. The graphic and description below describe the DIP switch settings for dual lane conveyor operation.



SWITCH POSITION

For Dual Lane conveyor operation, verify that the top driver card switches are set accordingly. There are (3) sets of switches on the EZ-Qube driver card.

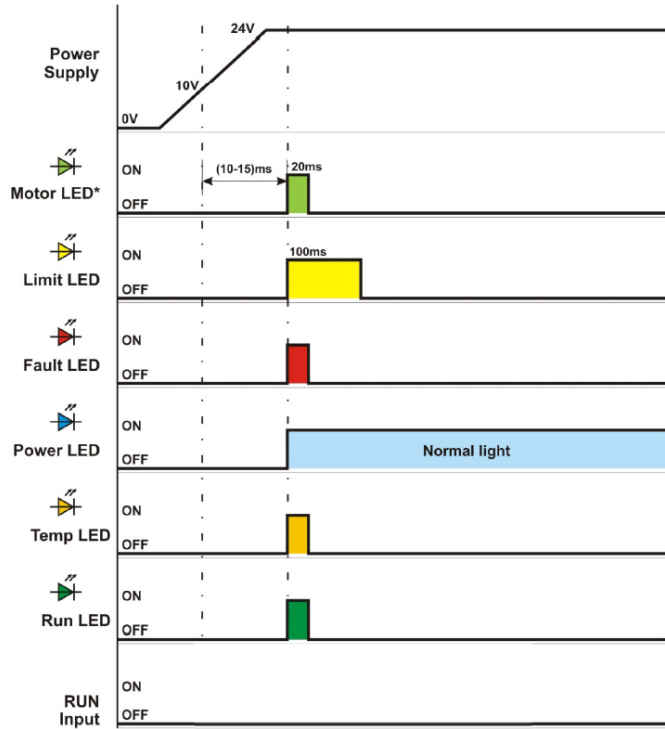
The left set of switches is denoted as SPEED. SPEED switches 1-4 should all be in the OFF position.

The center set of switches is denoted as CONFIG. CONFIG switches 1-8 should all be in the OFF position except switch #2 and #4 which should remain ON or in the up position.

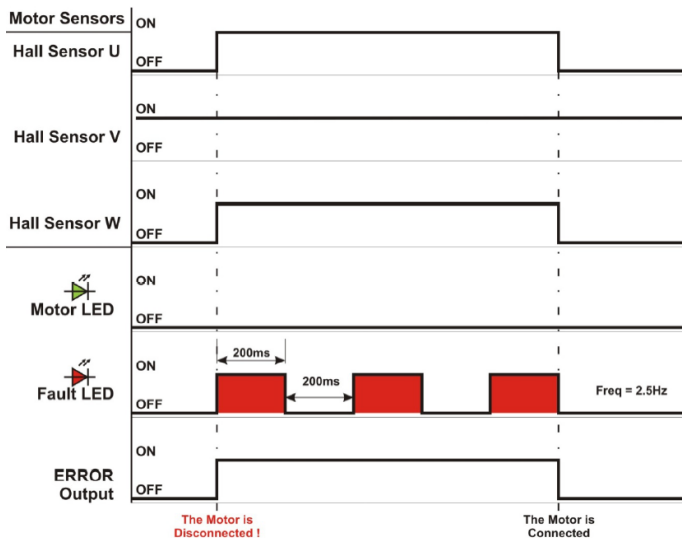
The right set of switches is denoted as ACC/DEC. ACC/DEC switches 1-4 should all be in the OFF position.

DRIVER CARD - EZ-QUBE TROUBLESHOOTING

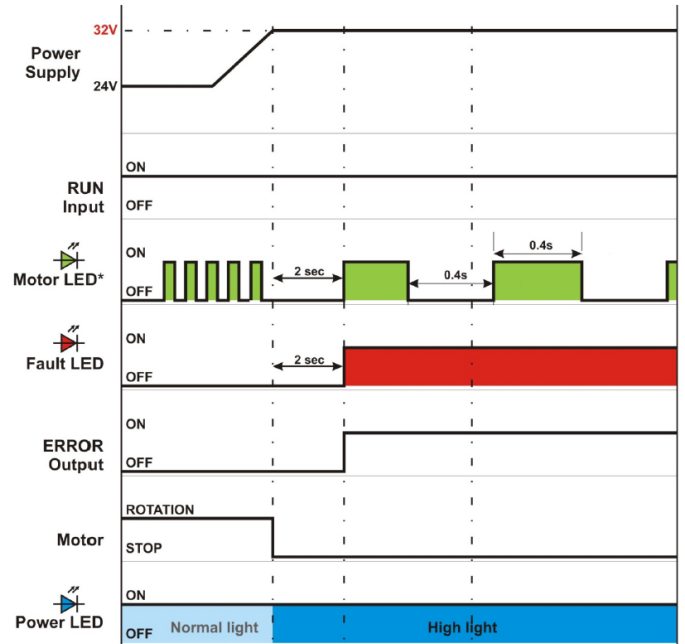
These LED's can also display brief indications of normal events. The following pages show timing diagrams that illustrate normal status and each error condition, along with the visual LED behavior used to indicate each condition.



Power supply ON with motor roller connected.

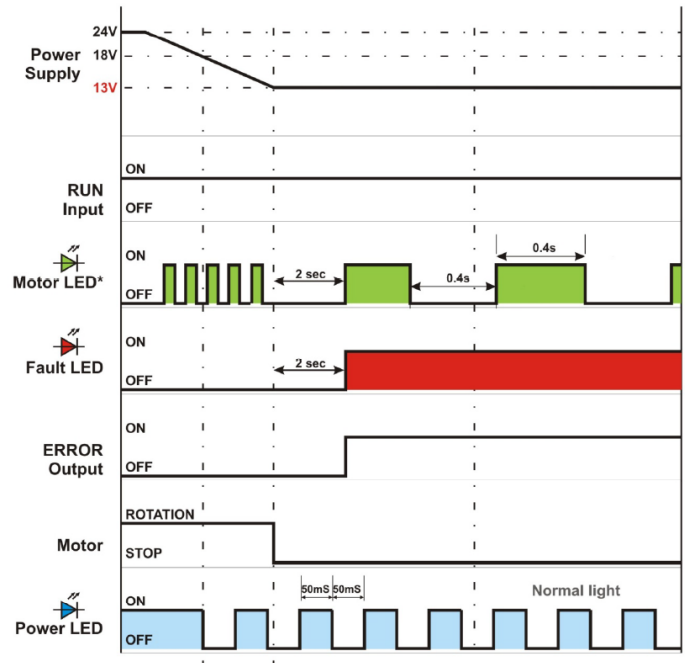


MDR not connected.



Power supply voltage exceeds 32V.

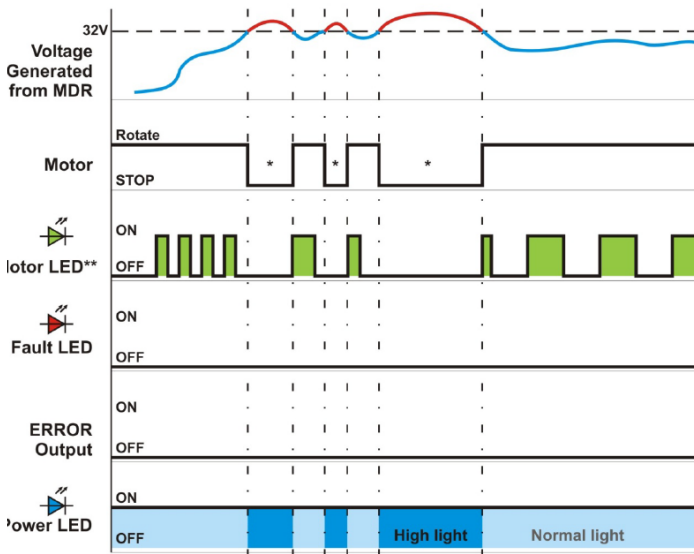
Frequency is proportional to the rotation speed of the motor.



Voltage drops below 18V and voltage drops below 13V.

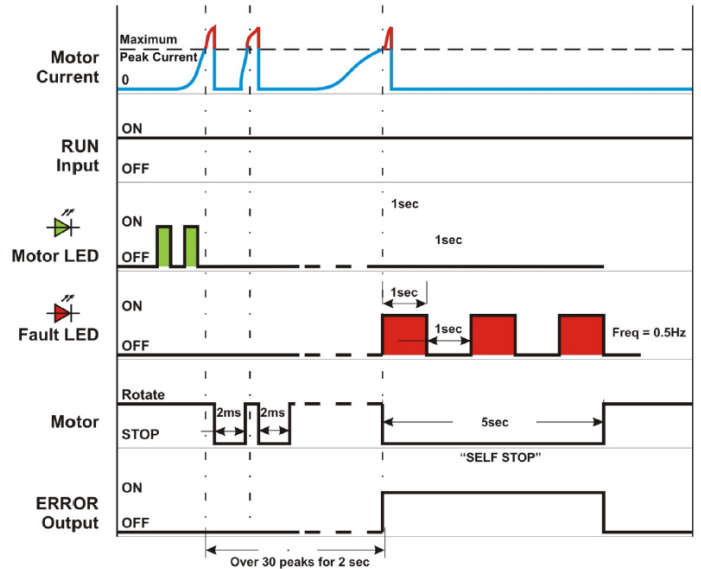
Frequency is proportional to the rotation speed of the motor.

DRIVER CARD - EZ-QUBE TROUBLESHOOTING

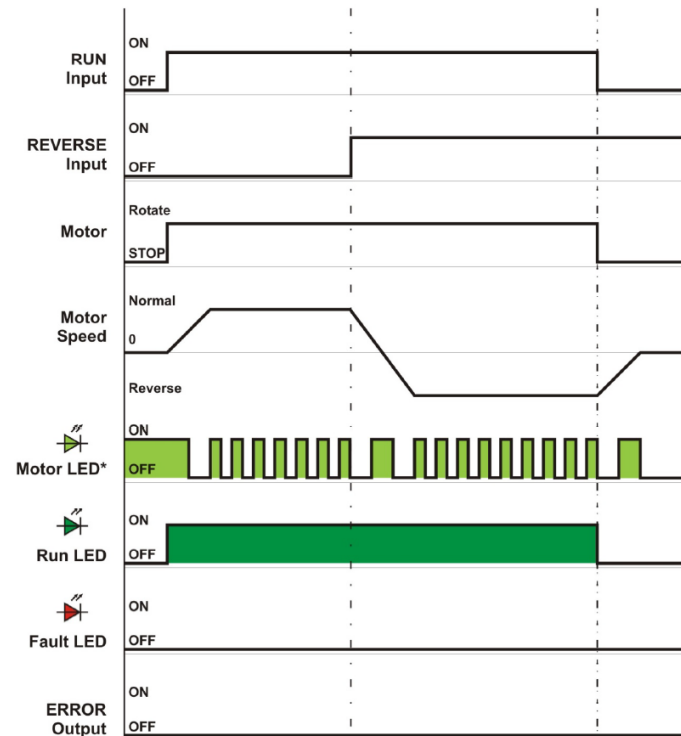


Voltage over 32V due to over speeding.

Frequency is proportional to the rotation speed of the motor. EZ-Qube absorbs extra energy generated by the motor.

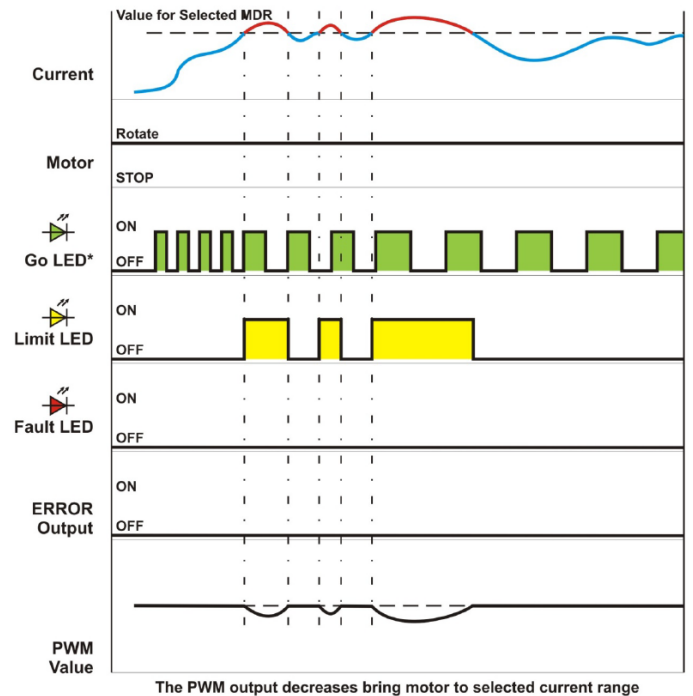


MDR current exceeding peak limit.



Normal operation with MDR rotating then reverse signal.

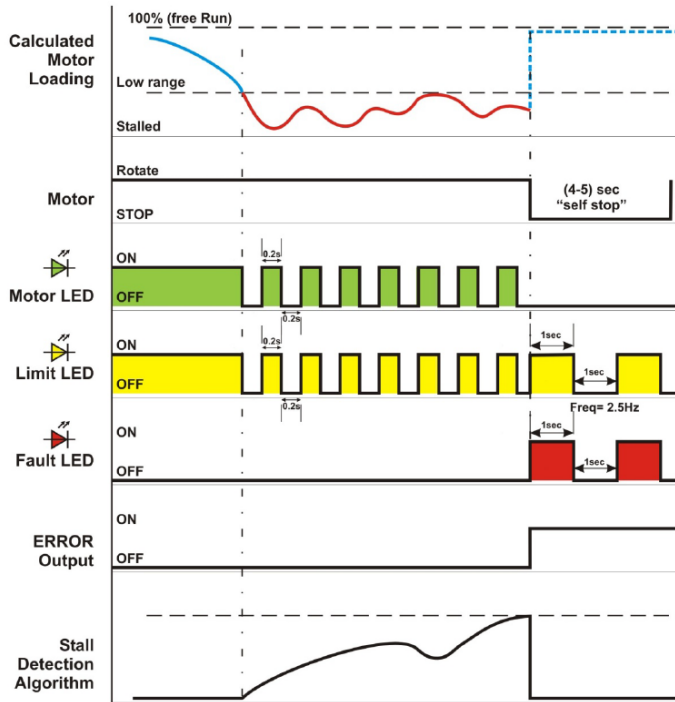
Frequency is proportional to the rotation speed of the motor.



Over current with PWM limiting.

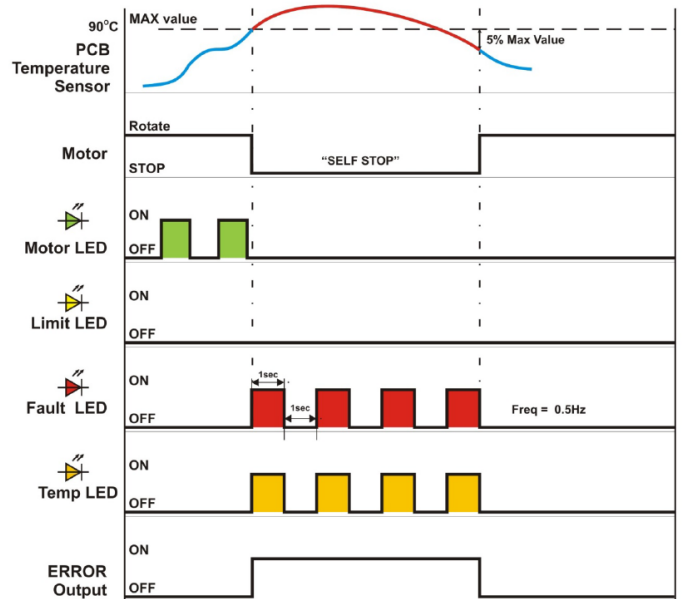
Frequency is proportional to the rotation speed of the motor.

DRIVER CARD - EZ-QUBE TROUBLESHOOTING

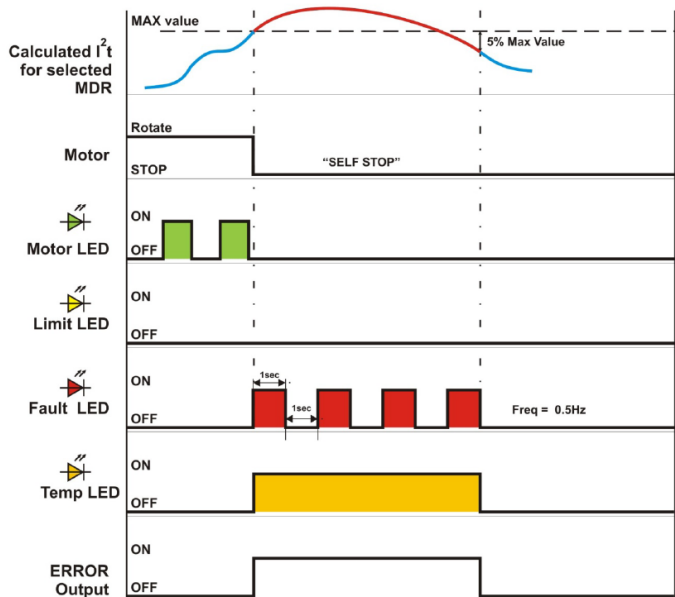


MDR stalled condition with self stop.

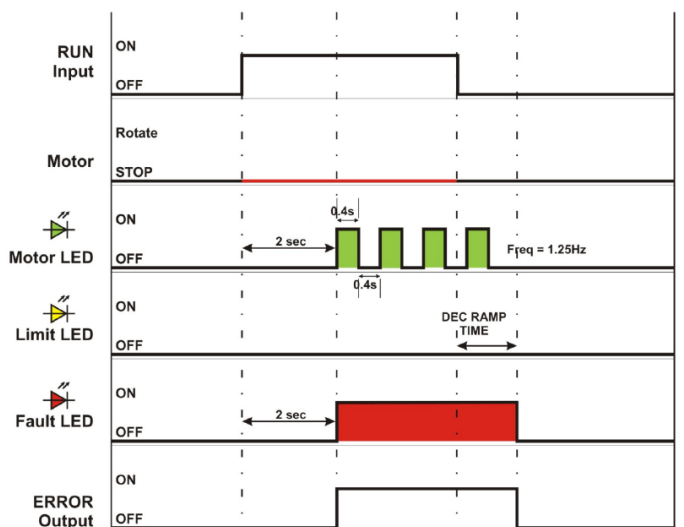
In this case if no PI loop control is used, the motor current may not exceed the upper current limit.



EZ-Qube overheated with self stop.

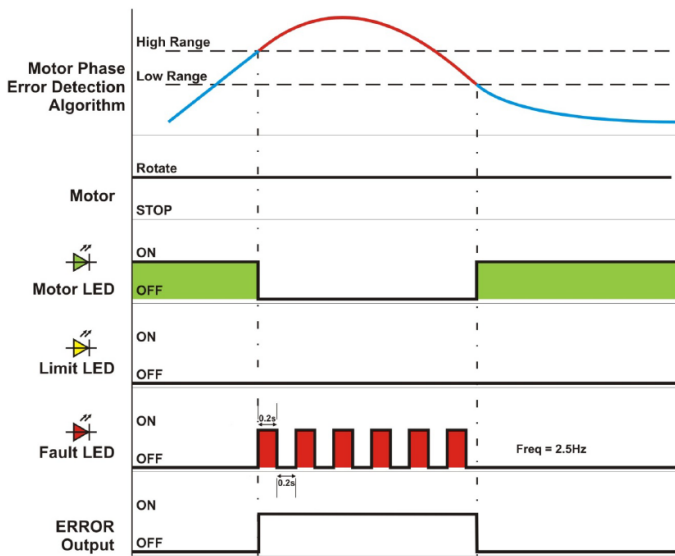


Motor roller overload with self stop.



Motor not rotating when RUN is ON.

DRIVER CARD - EZ-QUBE TROUBLESHOOTING



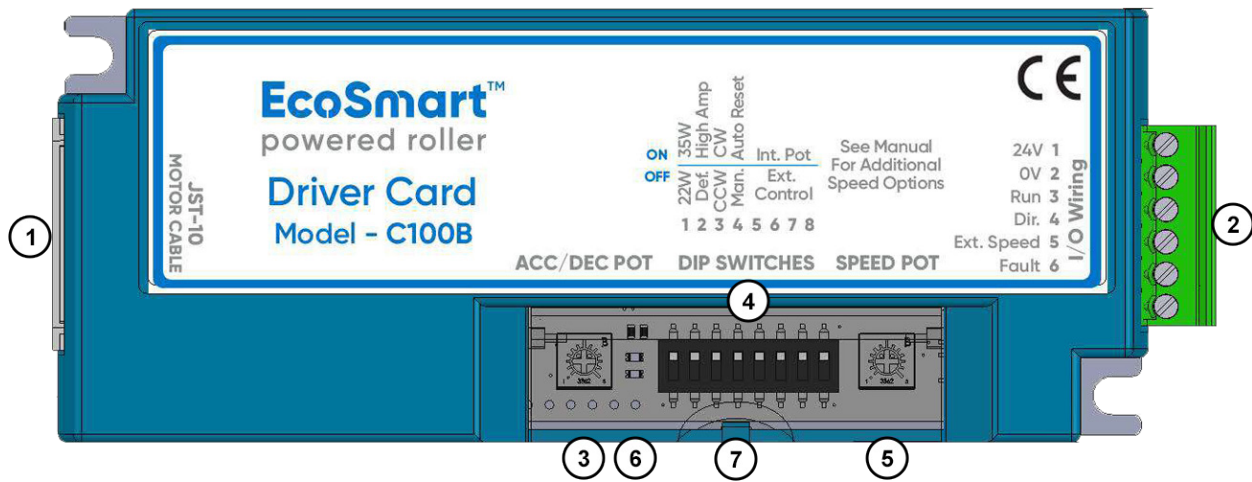
MDR phases error detected.

Fault phases may occur due to a failed sensor, short circuit between connecting cables, or short circuit between sensor and ground.

DRIVER CARD - ECOSMART™ DESCRIPTION

DESCRIPTION

The EcoSmart™ driver card allows for manual settings to control EcoSmart™ powered rollers. Speed, direction, motor wattage, reset, and high-performance mode functions are adjustable using combinations of DIP switches and potentiometers on the module. The table below can be used to identify EcoSmart™ components.



| Item | Component Description |
|------|---|
| 1 | Motor Port - 10-pin JST style header for MDR connection |
| 2 | I/O Terminal Block |
| 3 | Accel/Decel Potentiometer |
| 4 | Configuration 8 Position DIP Switch |
| 5 | Motor Speed Potentiometer |
| 6 | Module Status LEDs |
| 7 | Protective Cover |

DRIVER CARD - ECOSMART™ (CONTINUED)

LED STATUS AND FAULT INFORMATION

There are two LEDs (red and green) on the EcoSmart™ driver card. Whenever 24VDC power is applied and the driver is functioning normally, the STATUS LED will display solid green. If 24VDC is present and the STATUS LED is not on then the driver needs to be replaced.

Solid red or flashing red indicates a Fault.

Application Faults

| Flashing Red LED Status Indication |
|--|
| Motor stall - the EcoSmart™ is trying to run the motor, yet it hasn't moved for a full second. The motor will attempt to restart after 10 seconds. |
| Motor Thermistor Fault - The motor has reached its temperature limit (90C) and has stopped. The motor will attempt restart every 10 seconds after it cools below the over-temp limit. |
| Driver Thermistor Fault - The EcoSmart™ circuitry has reached its temperature limit (100C) and has cut off power to the roller motor. The EcoSmart™ will attempt to restart the motor every 10 seconds after it cools below the over-temp limit. |



FAULTS

Two types of faults are displayed on the EcoSmart™: Application and Critical Faults cause the motor to stop running, and may require intervention.

Application Faults result in Red Flashes as indicated by the Application Faults table.

If the motor thermistor or the driver card thermistor senses that the motor is overheating, the driver card will restrict power to the motor. If the **Reset Mode** (DIP Switch 4) is set to OFF then the power to the motor must be cycled to reset. If the **Reset Mode** is set to ON and the motor is in an over temp condition, then the driver will automatically attempt to reset the motor after the motor cools to below the acceptable temperature. If the **Reset Mode** is set to ON, in the event of a stall, the EcoSmart™ will attempt to restart the EcoSmart™ powered roller every 10 seconds.

Critical Faults are indicated by a solid red LED. Critical Faults typically cannot be cleared and usually require changing either the EcoSmart™ powered roller or the EcoSmart™ driver card. The solid red light indicates that a critical fault has occurred, however, it does not distinguish which fault has occurred. In the case of a Low Supply Voltage Fault, the fault can be cleared by correcting the low voltage condition and cycling the power.

NOTE

DIP Switch 4 must be set to ON for the auto-resets listed above to occur.

Critical Faults

| Solid Red LED Status Indication |
|--|
| Commutation Fault - The circuit that controls the motor commutation has failed, or the motor connection is not fully inserted. If the connection is fully inserted then either the EcoSmart™ powered roller or the EcoSmart™ driver card must be replaced. |
| Low Current - The EcoSmart™ driver card is reading a current that is below the normal No-Load value. This typically occurs when the internal mechanical link to the EcoSmart™ powered roller has been broken. The roller must be replaced. |
| Low Supply Voltage Fault - The fault activates if the supply voltage to the EcoSmart™ driver card falls below 18VDC. |

DRIVER CARD - ECOSMART™ SETTINGS

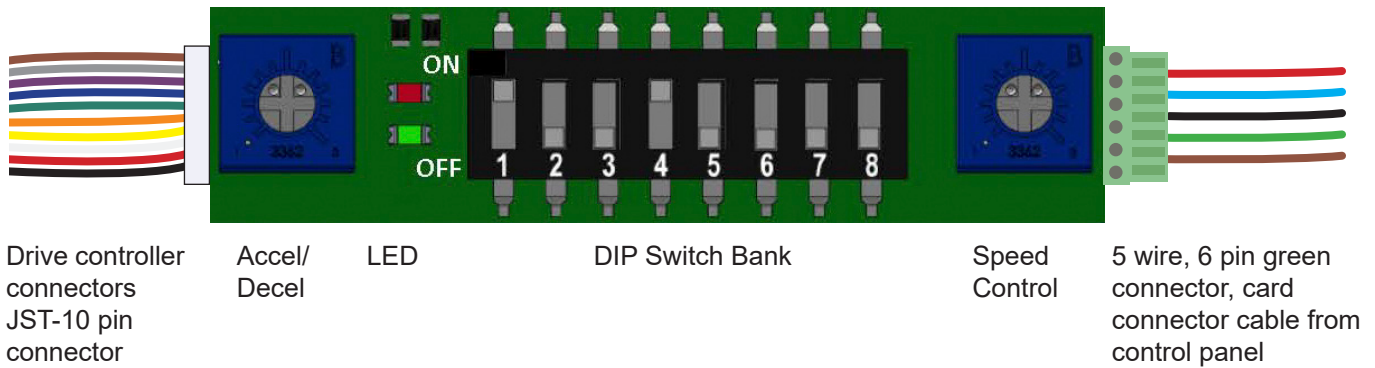
DESCRIPTION

Speed, acceleration, and deceleration are adjustable using combinations of DIP switches and potentiometers on the module. The graphic and description below describe the DIP switch settings for standard conveyor operation.

SWITCH POSITION

For standard conveyor operation please verify the driver card switches are set.

The DIP switches should all be in the OFF or down position except switches #1 and #4 which should remain ON or in the up position.



DRIVER CARD - ECOSMART™ DUAL LANE CONVEYOR SETTINGS

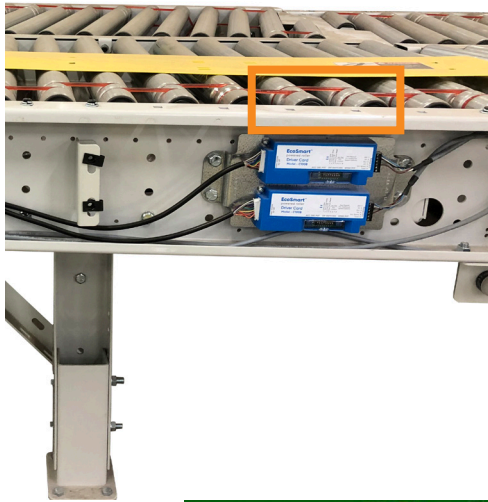
DESCRIPTION

The EcoSmart™ driver card can be configured for dual lane conveyors, such as Dual Lane Curves, Herringbones, Skews, and Merges. To support this configuration, the DIP switch settings on the top driver card will need to be set accordingly.

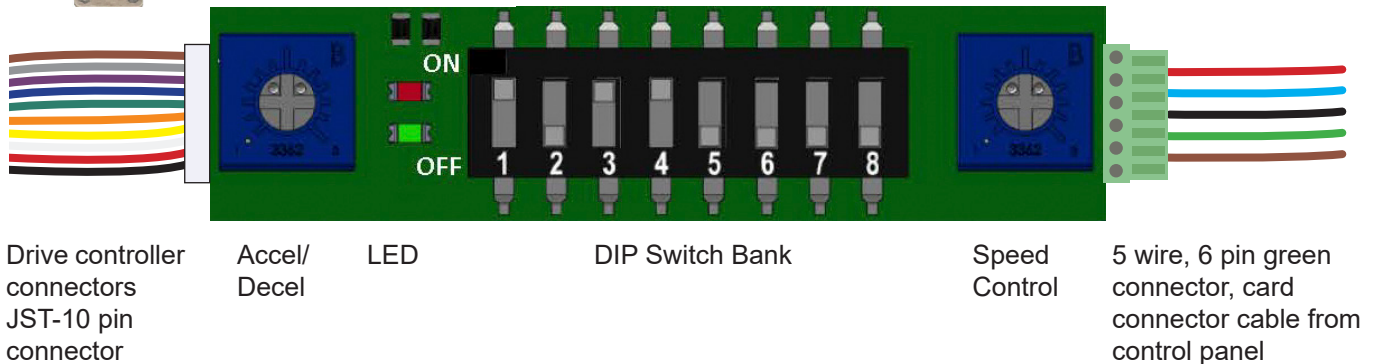
SWITCH POSITION

For Dual Lane conveyor operation please verify that the top driver card switches are set accordingly.

The DIP switches should all be in the OFF or down position except switches #1, #3, and #4 which should remain ON or in the up position.



NOTE
 Setting applies to the top driver card of the double card bracket on all dual lane conveyor.



TROUBLESHOOTING

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INTRODUCTION TO 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.

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

To minimize downtime due to maintenance and repairs, it is important to maintain Replacement and Spare Parts inventory. [\(See Replacement and Spare Parts List\)](#).

WARNING

- Prior to performing any maintenance or replacement procedures, the electrical service must be turned off and locked out.
- To avoid accidental start-up of conveyors, please be aware of capacitive touch when using the START/STOP buttons. Gloves are not sufficient grounding to prevent capacitive touch buttons from responding. Replace all safety devices and guarding prior to equipment start up.

CAUTION

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.

TROUBLESHOOTING - METHODOLOGY

ABNORMAL MHE BEHAVIOR AFTER POWER LOSS EVENTS

After a power loss event, sites may occasionally experience unusual system behavior. Symptoms may vary between power loss events. To ensure the system continues to function properly, a reset will be required, using the following methodology:

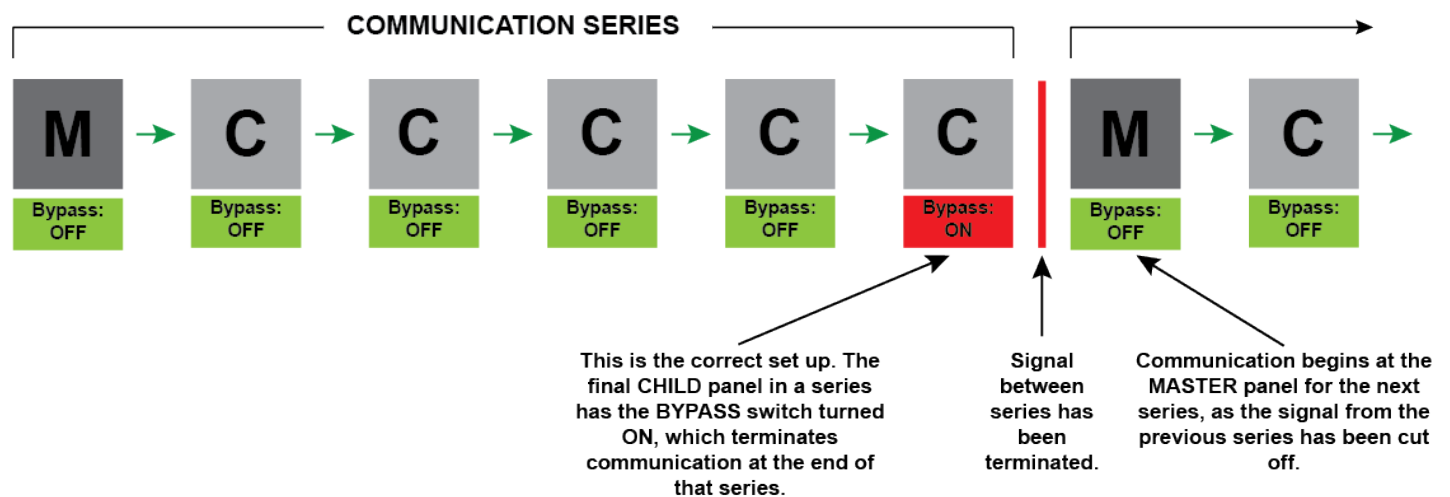
1. If running, stop the system.
2. Turn OFF power to the entire series/zone being worked on.
 - Starting at the MASTER, turn the disconnect switch to the OFF position.
 - Continue moving downstream, switching each panel OFF, until the last CHILD panel is OFF. Note that the start/stop button lights and indicator lights on panels should be OFF.
3. Turn ON power to the entire series/zone being worked on. Reverse the previous steps.
 - Starting at the furthest, downstream conveyor, turn the disconnect switch to the ON position.
 - Continue downstream, switching each panel ON, until MASTER panel is ON. Note that as sections are turned ON, check for GREEN indicator lights on the front of each panel.

BYPASS SWITCH FUNCTION AND SETTINGS

The Bypass switch is used to close a communication series. Each MASTER panel controls its own communications series. (See Example 1, below.)

Any series of conveyance that starts and stops together begins with a MASTER panel and ends at the last CHILD panel before the next, downstream MASTER panel. Any conveyor within a communication series that is downstream of an activated Bypass switch will not run, as each of these conveyors is no longer receiving signal (see Example 3). (See [Master and Child Panels](#) section for assistance in identifying and differentiating between each type of panel.)

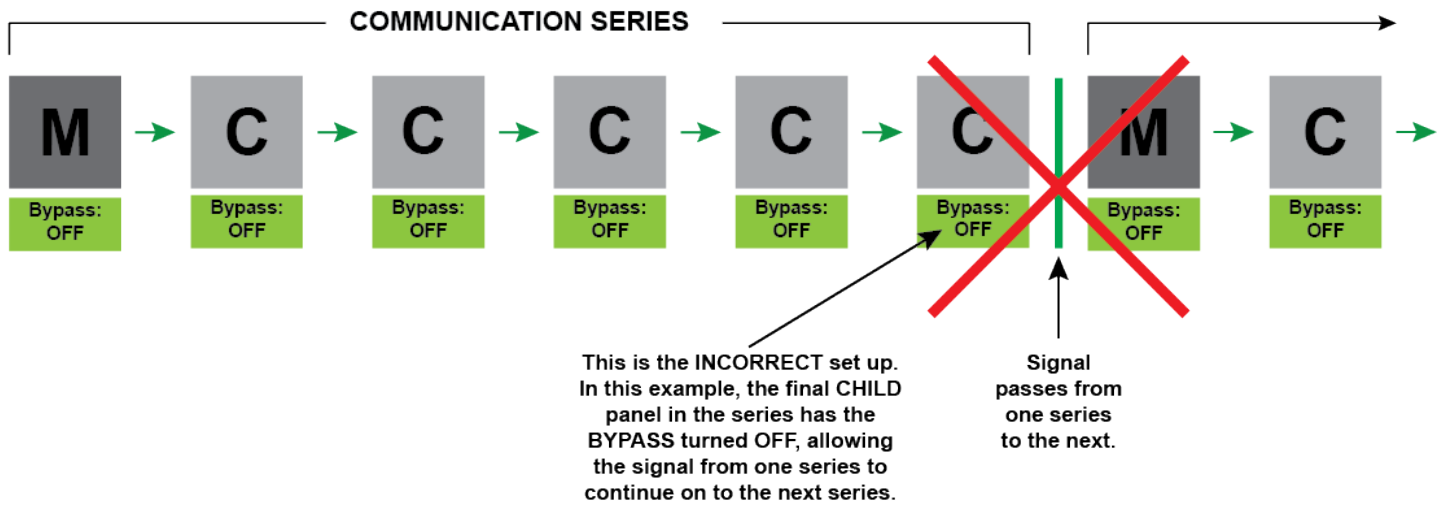
EXAMPLE 1: CORRECT OPERATION



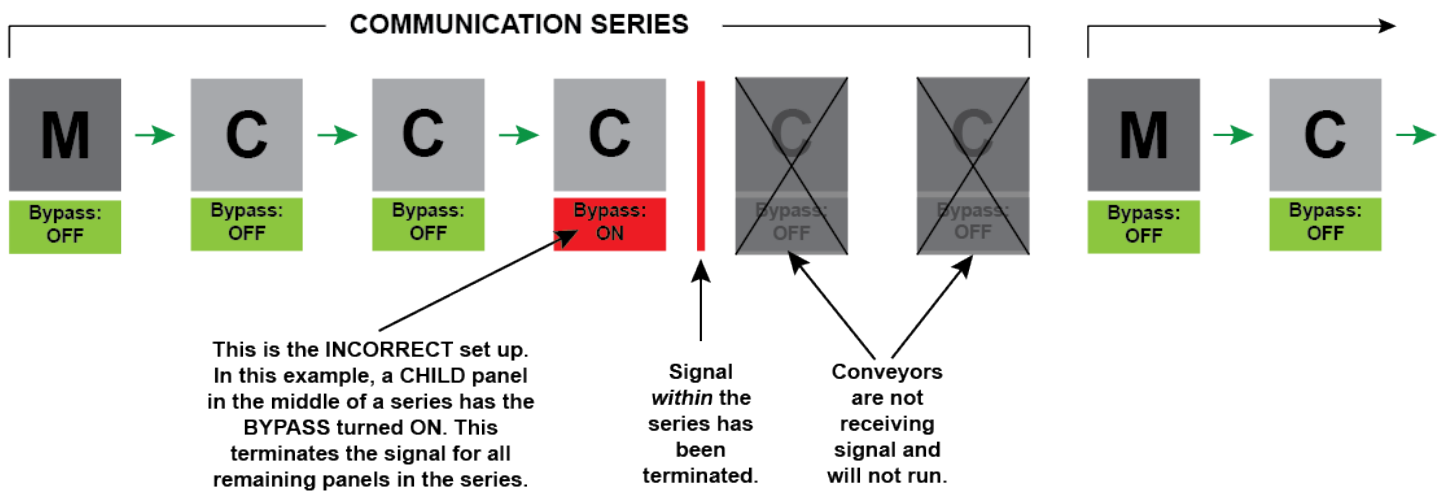
TROUBLESHOOTING - METHODOLOGY

BYPASS SWITCH FUNCTION AND SETTINGS (CONTINUED)

EXAMPLE 2: INCORRECT OPERATION



EXAMPLE 3: INCORRECT OPERATION



TROUBLESHOOTING - METHODOLOGY

USING BYPASS SWITCH FOR PROBLEM ISOLATION

The BYPASS switch is used as a closing of one communication series. When there is an issue in a large zone, the BYPASS switch can help pinpoint the problem.

Example: if a zone of 20 conveyor sections (1-20) will not start, flipping the BYPASS switch at section 10 should yield one of two results:

- Sections 1-10 begin to run, indicating the problem is not in sections 1-9.
- None of the sections 1-20 will run, indicating the problem is in sections 1-10.

If none of the sections run, the next step would be to "cut the zone in half" and flip the BYPASS switch at section 5. This would indicate if the problem is in sections 1-4 or sections 6-10. This pattern can be repeated until the "problem section" is identified.

USING RELAY LIGHTS AS INDICATORS

Each relay light in the panels is tied to a certain function of the control's architecture.

- CR-1 (Circuit Relay-1) is tied to Push Button 1.
- CR-2 (Circuit Relay-2) is tied to Push Button 2.
- CR-ON (Circuit Relay-ON) is tied to the power for Run Signals.
- CR-SW (Circuit Relay-SW), located within master panel, is tied to starting a whole zone when all push buttons are turned GREEN.

NOTE

CR-1 and CR-2 are isolated to the individual conveyor bed's START/STOP buttons. CR-ON is tied to controlling the run signal to its individual conveyor bed's MDRs. CR-SW is what differentiates Parent and Child Panels and controls the CR-ONs in the whole zone. When Push Button 1 is turned on, CR-1 will illuminate the same as Push Button 2 and CR-2. The zone will turn on when all push buttons along their Circuit Relay turn GREEN (in that zone). Thus, CR-1 and CR-2 complete turning on CR-SW, which illuminates all CR-ONs. Upon start-up, as all the push buttons are made GREEN, the relay lights in the panel will illuminate, as well.

USING BYPASS SWITCHES AND RELAY LIGHTS TOGETHER

Example situation:

Your operations team has informed you of a downed belt in a zone with 10 conveyor sections - finger runout A/B. You decide this is related to the communication series of the equipment, as all panels are illuminated to show power and all START/STOP buttons are GREEN.

Some of the most probable causes of this problem are:

1. BYPASS switch is flipped incorrectly.
2. Two master panels are connected together.
3. Tripped or faulted CR-BP (Circuit Relay).
4. Loose communication cable.
5. Loose communication related wire in panel.

Working down the list:

The BYPASS switch on the last child panel is turned on - this is the correct configuration. Next, determine if the issue is START/STOP related or communication related.

The relay lights in the master panel of the zone are all illuminated GREEN and the yellow communication line of the upstream child conveyor is not connected to the downstream master. This indicates the START/STOP circuit is working properly. From here, isolate the panel with the faulted component or loose wire.

Use the BYPASS switch to identify if the problem is in sections 1-4 or 6-10 by turning on the BYPASS switch at section 5. *For this example, the conveyor sections 1-5 begin to run with the BYPASS switch in section 5 turned on. This indicates the problem is downstream in sections 6-10. Turning on the BYPASS switch in section 7 results in no sections running, indicating the problem is in section 6 or 7. Turning on the BYPASS switch in section 6 results in no sections running, indicating, finally, the problem is in section 6.*

Working in section 6 now, verify the yellow QD connection on the outside of the panel is secure. *For this example, you see that the CR-BP is not illuminated. Checking the input voltage yields good results, but there is no output voltage beyond the CR-BP. This indicates the Circuit Breaker is faulty.*

Replace the faulty Circuit Breaker, validate the fix, and perform the normal start-up procedure. (Reference the Parts Replacement Procedures -Torque Specs for Components in Panels for torque specification.)

ADJUSTING SPEED

Open the power supply control panel and locate the SPEED CTRL knob, pictures of examples provided below. Adjust speed of conveyor by turning knob clockwise to speed up, and counterclockwise to reduce speed.

NOVAzone® Variable Speed Controller



Clockwise = increase speed



Counterclockwise = decrease speed

Schneider Electric™ Variable Speed Controller



Clockwise = increase speed



Counterclockwise = decrease speed

NTC Variable Speed Controller



Clockwise = increase speed



Counterclockwise = decrease speed

MASTER AND CHILD PANELS

TYPES OF PANELS

MASTER PANEL

The master panel is the start of the zone. This panel handles all the logic for the entire run utilizing the child panels.

CHILD PANEL

Child panels are located throughout the run and are controlled by each master panel. The child panels cannot operate stand-alone; they require the master panel logic to be pushed to each child panel for control.

The panel serial number will indicate if it is a master or child panel.

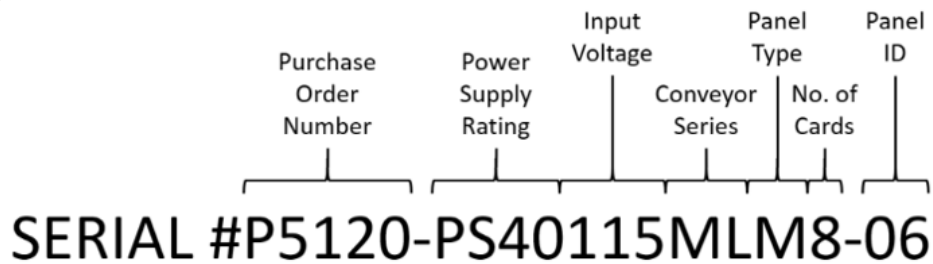
Master Panel: Serial #XXXXXMLM8

Child Panel: Serial #XXXXXMLC8

Descriptions of the panel contents for each type are provided on the following pages.



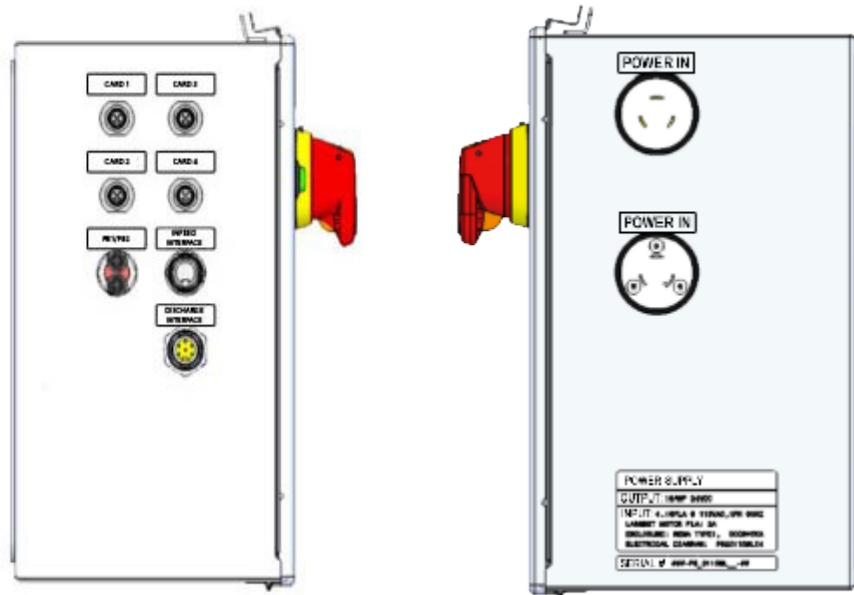
HOW TO READ A PANEL SERIAL NUMBER



- **Purchase Order Number:** Purchase order the panel is under. May be a four- or five-digit number.
- **Power Supply Rating:** Amp rating of power supply. May be 20A or 40A.
- **Input Voltage:** Input voltage to panel. All panels should be 115.
- **Conveyor Series:** All panels should be ML for Mod-LinX conveyor series.
- **Panel Type:** M = Master panel; C = Child panel; GM = Gate master; GC = Gate child.
- **No. of Cards:** How many drive cards the panel runs. May be 2, 3, 4, or 8.
- **Panel ID:** A two- or three-digit number that uniquely identifies each panel.

MASTER AND CHILD PANELS (CONTINUED)

At no time will a yellow interface cable be connected into a downstream Master panel. If a downstream Master panel is next in line on the layout, coil the interface cable and secure it to a spreader on the underside of the conveyor, away from the rollers. The Master panel should be secured by installing a receptacle cap in the Infeed Interface receptacle and covering the cap with a tamper evident sticker (See Figure 1, below.) In most cases this has been completed by the factory. However, if the receptacle cap and sticker have not been installed, there is a kit with parts and instructions available.



EXTERNAL PANEL SIDE VIEWS



Figure 1: Master panel with Infeed Interface covered with tamper resistant sticker.

TROUBLESHOOTING - PROBLEM RESOLUTION

| CONVEYOR IS NOT RUNNING. | |
|---|---|
| 1. Check for package jam. | Clear package jam and system will reset itself. If roller(s) overheated due to jam, the motor will attempt restart every 10 seconds after it cools below the over-temp limit. If the system has not cycled within 2 minutes of clearing the jam then turn the START/ STOP button to OFF and then back to the ON position. |
| 2. START/STOP button(s) turned RED. | <ul style="list-style-type: none"> • Press START/STOP button(s) to turn GREEN. • Check cables to buttons for secure connections. • Replace any faulty button(s). • Open control panel, turn disconnect ON using pliers while control panel door is open. Check CR1 & CR2 relays inside control panel, verify indication lights are green, use a multimeter to verify voltage (24V), replace if necessary. • Check BY-PASS switch inside control panel. Only the MASTER and last CHILD conveyor in series should be switched to ON. |
| 3. Control panel power is off (no GREEN light). | <ul style="list-style-type: none"> • Open control panel, turn disconnect ON using pliers while control panel door is open. • Verify light indicator is GREEN. • If not GREEN, use a multimeter to verify voltage across disconnect knob (120V). • Check for loose connections. |
| 4. Verify the power supply is receiving power. | <ul style="list-style-type: none"> • Open control panel, turn disconnect ON by turning with pliers, while control panel door is open. • While under power, check for loose power cable connections (black cables) from control panel to next conveyor in series. • Inside control panel, use a multimeter to verify power supply voltage (120V), check for loose connections, replace if necessary. |
| 5. Check to see if power supply breaker is tripped. | <ul style="list-style-type: none"> • Open control panel, turn disconnect ON by turning with pliers, while control panel door is open. • While under power, visually inspect both power supply breakers on either side of power supply inside control panel, correct switch if tripped. • Use a multimeter to check voltage on each, CB2 (AC 120V) and CB1 (DC 24V) . |
| 6. Verify that the communication cable is secured. | <ul style="list-style-type: none"> • Verify that the yellow QD communication cable connection on the outside of the control panel is secure at Infeed Interface. (MASTER control panels should not have anything connected at this interface.) • Check conveyors upstream and downstream. The MASTER panel should be secured with a receptacle cap in the Infeed Interface receptacle and covering the cap a tamper evident sticker. |

(Continues on next page.)

TROUBLESHOOTING - PROBLEM RESOLUTION

| CONVEYOR IS NOT RUNNING. (CONTINUED) | |
|--------------------------------------|---|
| 7. Failed panel component. | <ul style="list-style-type: none"> • Locate the schematic of the panel for reference. Open control panel, turn disconnect ON by turning with pliers while control panel door is open. • While under power, use a multimeter to check for voltages across components: AC is 120V DC is 24V Speed control (0-10V) • Check for loose or improperly landed wires inside panel. • Inspect wiring and cables for damage and proper securement. (Do not tug on cables, as this can cause disconnects and unwanted electrical issues.) • Using the appropriately sized screwdriver for each terminal, check all screw type terminals are tightened on the wires correctly. • Verify terminal clamps are contacting the copper of the wire ONLY and not tightened on the wire insulation. Reference PARTS REPLACEMENT PROCEDURES (Torque Specs for Components in Panels) for torque specifications. • Replace component(s) or power supply as necessary. Close and turn ON the control panel. |
| 8. MDR Failure. | <ul style="list-style-type: none"> • Check card for error code.(See Driver Card section for Error Codes and Troubleshooting) • (Check mounting bracket(s)) • Check motor cable. • Check extension cable. |
| 9. Check for relay failure. | With panel disconnect in the OFF position, use multimeter to check for continuity. A proper connection will read "0", while a result of higher than 10 ohms indicates poor continuity. |

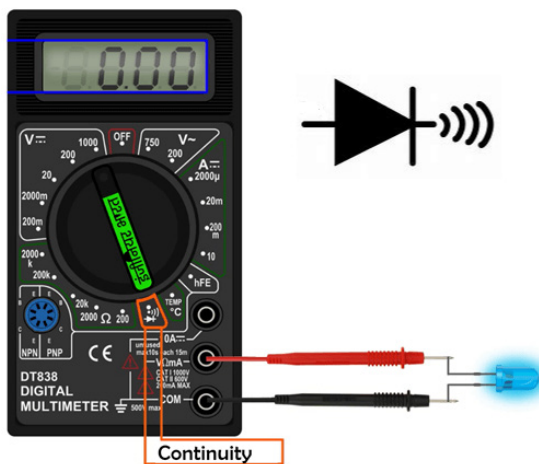


Figure 1: Continuity mode with optimal reading.

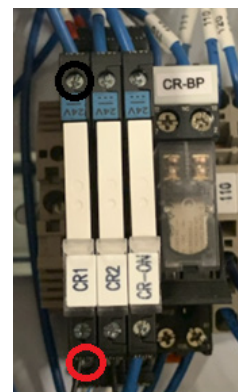


Figure 2: Probe placement for CR relays.

CR1 = Push Button 1

CR2 = Push Button 2

CR-ON = Run signals to MDRs

TROUBLESHOOTING - PROBLEM RESOLUTION

| CONVEYOR WILL NOT START EVEN THOUGH START/STOP BUTTONS ARE GREEN. | |
|---|--|
| <p>Notes:</p> <ul style="list-style-type: none"> The START/STOP button is just a part of an entire circuit. This series is set to a standard during installation. Between two Master Panels is a series of child panels, and the last child panel in the series will have the BYPASS switch turned ON (up), closing the communication series for everything upstream. The last child panel before the next Master Panel will have the yellow communication cord coiled up and stored on top of the panel. When there are two Master Panels "talking" with each other, conveyor series not starting will be a common symptom. Similarly, if the BYPASS switch has been altered, everything upstream will continue to run, while everything downstream, ending at the last child panel before the next Master, will not run. | |
| <p>1. Verify drive cards have power. (Indicator lights are on each card.)</p> | <p>Verify wiring and terminals are secure and properly terminated.</p> |
| | <p>Check wiring for damage.</p> |
| | <p>Check for card error indicators. Troubleshoot per Driver Card Troubleshooting section for appropriate drive card.</p> |
| <p>2. Check for loose communication cables.</p> | <ul style="list-style-type: none"> Verify that the yellow QD communication cable connection on the outside of the control panel is secure at Infeed Interface. <p style="padding-left: 40px;">Note: MASTER control panels should not have anything connected at this interface. The MASTER panel should be secured with a receptacle cap in the Infeed Interface receptacle and covering the cap a tamper evident sticker.</p> <ul style="list-style-type: none"> Check conveyors upstream and downstream. |

(Continued on next page.)

TROUBLESHOOTING - PROBLEM RESOLUTION

| CONVEYOR WILL NOT START EVEN THOUGH START/STOP BUTTONS ARE GREEN | | |
|--|---|--|
| (CONTINUED) | | |
| <p>3. Locate CR1 and CR2 relays inside the control panel. Turn each START/STOP button ON/OFF while looking at the CR1 and CR2 relays. (Note: when the START/STOP button is GREEN, the corresponding CR1 and CR2 relay GREEN indicator light should be ON.)</p> | <p>If relay indicators do not illuminate:</p> | <ul style="list-style-type: none"> • Check for damaged wire between the button and the panel. Verify QD connections are secure. • Check all wires entering the CR1 and CR2 relay for proper termination. • Check all terminal screws on CR1 or CR2 relay for proper torque. (Do not over-tighten as damage may occur.) • Check all 0V and 24VDC wires for proper termination at corresponding terminal blocks. |
| | <p>If relay indicators illuminate:</p> | <ul style="list-style-type: none"> • Check all terminal screws on CR1 and CR2 relay for proper torque. • Use multimeter to determine if relay is functioning properly for Normally Open and Normally Closed. If not functioning properly, replace relay. |
| | <p>Bypass relay is not ON in a run or zone. <i>Note: CR-BP relay only illuminates when conveyor is running.</i></p> | <ul style="list-style-type: none"> • Open control panel, turn disconnect ON with pliers while control panel door is open. • Verify BYPASS switch is in ON position in the last conveyor in a run or zone. • Verify all START/STOP buttons in the zone are ON (GREEN). • Check all wires entering the CR-BP relay for proper termination, and check all terminal screws for proper torque. • Check all 0V and 24VDC wires for proper termination at corresponding terminal blocks. • Use a multimeter to determine if relay is functioning properly for Normally Open and Normally Closed. If not functioning properly, replace the relay. If relay is functioning properly, check the system for proper operation. |

(Continued on next page.)

TROUBLESHOOTING - PROBLEM RESOLUTION

CONVEYOR WILL NOT START EVEN THOUGH START/STOP BUTTONS ARE GREEN

(CONTINUED)

4. Check for failed control panel components.

- Locate the schematic of the panel for reference. Open control panel, turn disconnect ON by turning with pliers while control panel door is open.
- While under power, use a multimeter to check for voltages across components:
AC is 120V
DC is 24V
Speed control (0-10V)
- Check for loose or improperly landed wires inside panel.
- Inspect wiring and cables for damage and proper securement. (Do not tug on cables, as this can cause disconnects and unwanted electrical issues.)
- Using the appropriately sized screwdriver for each terminal, check all screw type terminals are tightened on the wires correctly.
- Verify terminal clamps are contacting the copper of the wire ONLY and not tightened on the wire insulation. Reference PARTS REPLACEMENT PROCEDURES ([Torque Specs for Components in Panels](#)) for torque specifications.
- Replace component(s) as necessary. Close and turn ON the control panel.

TROUBLESHOOTING - PROBLEM RESOLUTION

| CONVEYOR SECTION CONTINUOUSLY RUN AND WILL ONLY STOP BY TURNING OFF THE DISCONNECT SWITCH. | |
|---|--|
| <p>Important Information:</p> <ul style="list-style-type: none"> • Although the MDRs are simultaneously controlled by a single potentiometer, they are individually controlled by signalized run wires. • The run wires are powered by the CR-ON relay. • The power sent to the MDRs by the top din rails RUN terminal blocks. | |
| 1. Ensure that the BYPASS settings have not been altered. | Check BY-PASS switch inside control panel, only the MASTER and last CHILD conveyor in series should be switched to ON. |
| 2. Verify that the START/STOP buttons are in working order. | <ul style="list-style-type: none"> • Check cables to buttons for secure connections. • Replace any faulty button(s). • Open control panel, turn disconnect ON by turning with pliers, while control panel door is open. While under power, check CR1 & CR2 relays inside control panel. Verify indication lights are green. Verify voltage (24V), replace if necessary. |
| 3. Check for drive card fault/failure. | Check drive cards for errors and verify wiring connections are secure. Driver Card section for Error Codes and Troubleshooting |
| 4. Check for failed control panel components. | <ul style="list-style-type: none"> • Locate the schematic of the panel for reference. Open control panel, turn disconnect ON by turning with pliers while control panel door is open. • While under power, use a multimeter to check for voltages across components: AC is 120V DC is 24V Speed control (0-10V) • Check for loose or improperly landed wires inside panel. • Inspect wiring and cables for damage and proper securement. (Do not tug on cables, as this can cause disconnects and unwanted electrical issues.) • Using the appropriately sized screwdriver for each terminal, check all screw type terminals are tightened on the wires correctly. • Verify terminal clamps are contacting the copper of the wire ONLY and not tightened on the wire insulation. Reference PARTS REPLACEMENT PROCEDURES (Torque Specs for Components in Panels) for torque specifications. • Replace component(s) as necessary. |
| 5. Check for loose communication cables. | <ul style="list-style-type: none"> • Verify that the yellow QD communication cable connection on the outside of the control panel is secure at Infeed Interface. Note: MASTER control panels should not have anything connected at this interface. The MASTER panel should be secured with a receptacle cap in the Infeed Interface receptacle and covering the cap a tamper evident sticker. • Check conveyors upstream and downstream. |

TROUBLESHOOTING - PROBLEM RESOLUTION

| CONVEYOR IS RUNNING SLOWLY. | |
|---|--|
| <p>Important Information:</p> <ul style="list-style-type: none"> • May be visually identified, observing package flow slowing down at the most upstream roller zone in the 10-ft section. A tachometer can be used to measure the FPM for verification. • The speed for conveyor sections varies based on the layout's specific speed requirements. • The MDRs in a conveyor bed are all simultaneously controlled by a speed controller in the control panel. | |
| 1. Speed Controller needs adjustment. | <ul style="list-style-type: none"> • Open control panel and turn disconnect ON with pliers while control panel door is open. • Adjust speed. • Use a tachometer to verify correct FPM. • Use a multimeter to verify voltage across speed controller (24V). • Check for loose or incorrect wiring. Replace if necessary. |
| 2. Verify the DIP switch settings on the drive card are correct. | Reference Drive Card settings. |
| 3. Check for belts that are rubbing, twisted, or misaligned. | Replace as needed. |

| SPEED OF CONVEYOR NOT ADJUSTING WITH SPEED CONTROLLER. | |
|--|--|
| 1. Verify speed controller has power. | <ul style="list-style-type: none"> • Some have a GREEN LED light indicating power. • If no light is illuminated, use a multimeter to verify 24VDC is present. |
| 2. Check driver cards for proper configuration of DIP switches. | See Driver Card Settings. |
| 3. Check all wires at the speed control for proper termination and torque. | When tightening the terminals, the connector should be removed from the speed control to prevent damage to the device. Reference PARTS REPLACEMENT PROCEDURES (Torque Specs for Components in Panels) for torque specifications. |
| 4. Check all wires going to and from the SPEED terminal blocks for proper termination. | |
| 5. Check speed wires at drive cards for proper termination and torque. | |
| 6. Check all 0V and 24VDC wires for proper termination at corresponding terminal blocks. | |

TROUBLESHOOTING - PROBLEM RESOLUTION

| ROLLER RUNNING IN REVERSE. | |
|--|---|
| <p>Important Information:</p> <ul style="list-style-type: none"> • A roller running in reverse may be visually identified. Operators may also hear round belts squealing. • The FORWARD/REVERSE switch controls the direction of 10-foot section as a whole, not an individual roller. | |
| 1. Verify FORWARD/REVERSE switch is working properly. | Open control panel, verify FORWARD/REVERSE switch is set properly inside control panel. |
| 2. Verify the DIP switch settings on the driver card are correct. | <ul style="list-style-type: none"> • Reference drive card settings to verify the DIP switch settings are correct. Driver Card section for Error Codes and Troubleshooting • Check cable connections are secure on either side of card. • Check drive card indicator lights for EcoSmart. • Check drive card indicator lights for EZQube and reference troubleshooting chart. Replace if necessary. |
| 3. MDR Failure. | <ul style="list-style-type: none"> • Check card for error code. Driver Card section for Error Codes and Troubleshooting • Check mounting bracket(s) • Check motor cable. • Check extension cable. |
| 4. Check for failed communication cable. | <ul style="list-style-type: none"> • Verify that the yellow QD communication cable connection on the outside of the control panel is secure at Infeed Interface. <p style="margin-left: 40px;">Note: MASTER control panels should not have anything connected at this interface. The MASTER panel should be secured with a receptacle cap in the Infeed Interface receptacle and covering the cap a tamper evident sticker.</p> <ul style="list-style-type: none"> • Check conveyors upstream and downstream. |
| 5. Check for failed extension cable. | Check each extension cable from control panel to drive card and drive card to roller. Unplug 1 at a time to check for change, replace if necessary. |

TROUBLESHOOTING - PROBLEM RESOLUTION

| DRIVE ROLLER RUNNING EXCESSIVELY HOT OR REPEATEDLY STALLING. | |
|--|---|
| 1. Check for repeated package jams. | Clear package jam and system will reset itself. If roller(s) overheated due to jam, the motor will attempt restart every 10 seconds after it cools below the over-temp limit. |
| 2. Verify loading is within specified capacity and check for package jams. | Check conveyor for excessive load; reduce if design specifications are exceeded. If the system has not cycled within 2 minutes of clearing the jam, then turn the START/STOP button to OFF and then back to the ON position. |
| 3. MDR Failure. | <ul style="list-style-type: none"> • Check card for error code. Driver Card section for Error Codes and Troubleshooting • Check mounting bracket(s) • Check motor cable. • Check extension cable. |
| 4. Check for drive card fault/failure. | <ul style="list-style-type: none"> • Check drive cards for errors and verify wiring connections are secure. |

| DRIVE BELT IS SLIPPING. | |
|---|---|
| 1. Verify that belts are in effective running condition, that the correct belt type is being used, and that the belt is tensioned properly. | Replace belt with original equipment manufacturer belt. |
| 2. Verify that the MDR is mounted properly and belt is properly aligned. | <ul style="list-style-type: none"> • Check for proper mounting of drive roller(s) and mounting bracket(s). (Misalignment can cause extra load on roller.) See Parts Replacement Procedures. • Verify that below-mount drive rollers and above idler roller(s) and belts are properly aligned. |

TROUBLESHOOTING - PROBLEM RESOLUTION (CONTINUED)

| MDR IS NOT TURNING. | |
|---|--|
| Important Information: Issue may be visually identified. Operators may also hear round belts squealing. | |
| <p>1. Check for package jam.</p> | <p>The MDR is experiencing an Amp-Draw Overload. The roller will enter a powerless mode where it will perform a power cycle every 10 seconds then attempt to restart for 0.75 seconds. The roller will repeat this cycle until the jam has been cleared.</p> <p>If the MDR repeatedly stalls due to package jams, the jamming issue should be investigated and resolved.</p> |
| <p>2. Check for thermal overload.</p> | <p>During a Thermal Overload, the roller will also go into a powerless mode, but the internal motor windings and gearing will have to reach 194° F (90° C) to enter this mode. The roller has an internal thermistor that keeps a constant reading of the temperature. The roller will perform an internal restart when the temperature cools to below 194° F (90° C). This will typically take 5-15 minutes, but may last longer.</p> <p>If the MDR cannot be immediately replaced, the bands on the MDR can be cut and the pigtail from the driver card can be unplugged. The roller will not free spin due to the internal gearing and motor windings. This should be used only as a very temporary solution.</p> <p>If the MDR repeatedly stalls due to Thermal Overloads, it is recommended that the MDR be replaced.</p> |

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

PARTS REFERENCE CHART AND DRAWINGS

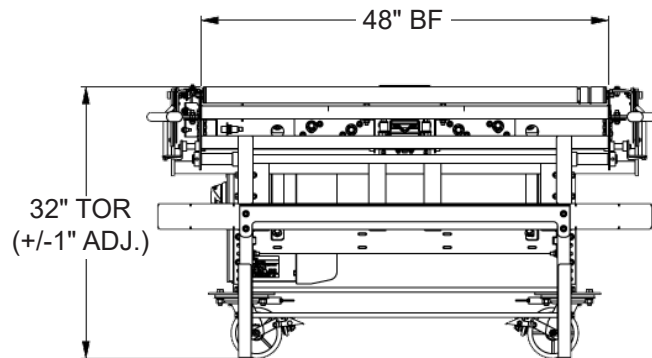
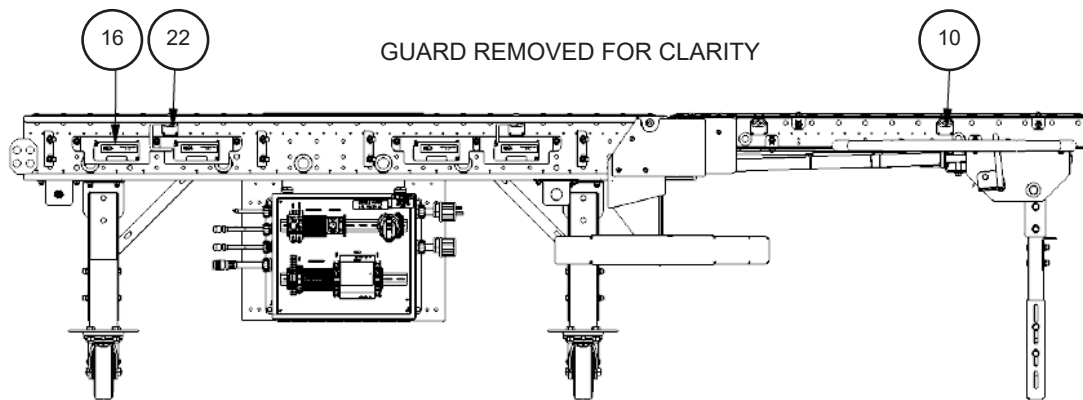
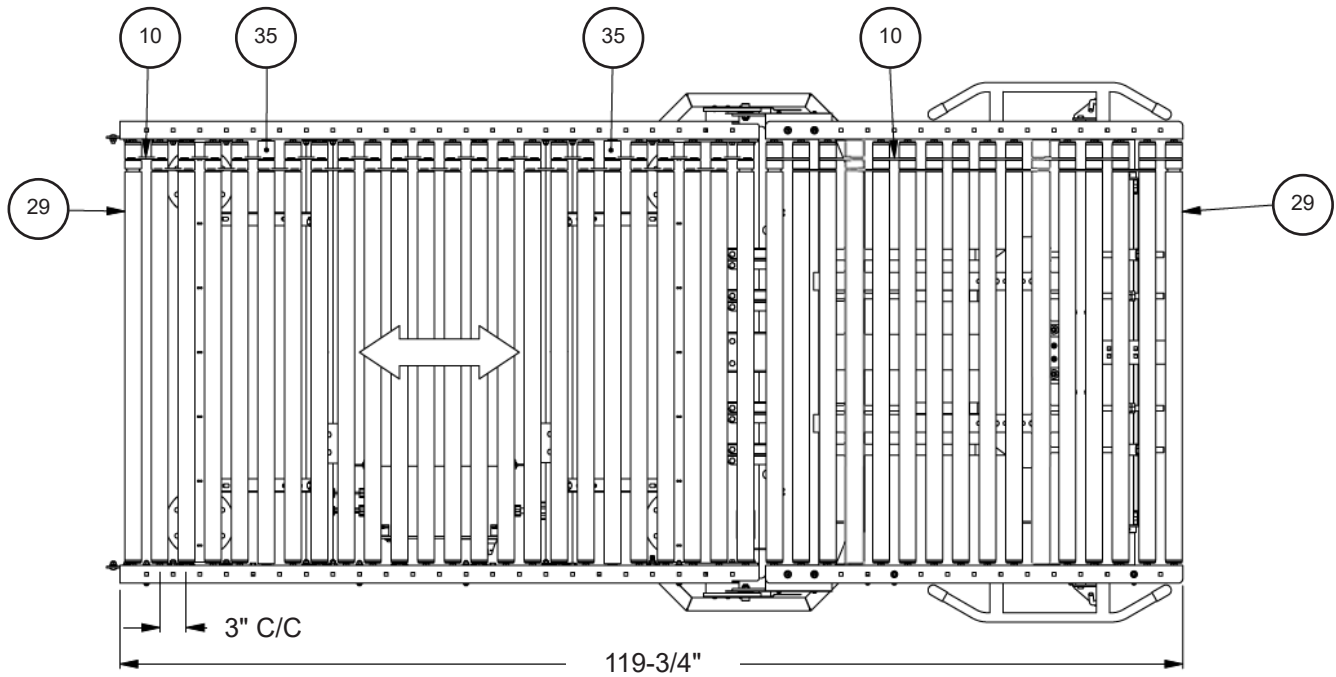
| Mod-LinX WEAR/REPLACEMENT PARTS | | |
|---------------------------------|------------------|---|
| 1 | BANK30ALBT2RGHQ | SWITCH (TOUCH BUTTON): BANNER #K30ALBT2RGHQ, 96552, 12-30VDC, 22MM MOUNTING HOLE, 30MM ILLUMINATED, RED NOT ACTIVATED, GREEN ACTIVATED, 2N.O. LATCHING, M12 |
| 2 | LEV2611 | PLUG: LEVITON #2611, 30 AMP, 125 VOLT, NEMA L5-30P, 2P, 3W, LOCKING PLUG, GROUNDING, BLACK-WHITE, MALE |
| 3 | LEV2613 | PLUG: LEVITON #2613, 30 AMP, 125 VOLT, NEMA L5-30R, 2P, 3W, LOCKING CONNECTOR, GROUNDING, BLACK-WHITE, FEMALE |
| 4 | LUMRKT46335M | CORDSET: LUMBERG #RKT 4-633/5M, M12 STRAIT FEMALE CONNECTOR, 4-PIN, 22AWG, PVC, 5M PIGTAIL |
| 5 | MENMIN6MMFP4M | CORDSET: MENCOM #MIN-6MMFP-4M, 7/8-16UN 6 PIN SINGLE CORDSET, MINIFAST HD MALE CONNECTOR, PVC, 6-C 16AWG, 4M PIGTAIL |
| 6 | MERHR45 | HANDLE: MERSEN # HR45, RED, YELLOW RING, 45 MM, IP65, NEMA 3R (HH BARNUM) |
| 7 | MXBE-11116 | ROUND BELT: .210" DIA. X 11-1/16" LONG, CYCLOTHANE-B 85A DUROMETER, HIGH-TENSION RED, WELDED LOOP |
| 8 | MXBE-758 | ROUND BELT: .210" DIA. X 7-5/8" LONG, CYCLOTHANE-B 85A DUROMETER, HIGH-TENSION RED, WELDED LOOP |
| 9 | MXBE-9 | ROUND BELT: .210" DIA. X 9" LONG, CYCLOTHANE-B 85A DUROMETER, HIGH-TENSION RED, WELDED LOOP |
| 10 | MXBE-938 | ROUND BELT: .210" DIA. X 9-3/8" LONG, CYCLOTHANE-B 85A DUROMETER, HIGH-TENSION RED, WELDED LOOP |
| 11 | CXC-100056B | CASTER (SWIVEL W/BRAKE): 6" X 2" BLACK POLYOLEFIN WHEEL, 4" X 4-1/2" PLATE MOUNT, 700# CAPACITY |
| 12 | MXCS-M11 | CORDSET (DRIVER CARD): 5-PIN, QD CONNECTION, BLACK, 11 FEET LONG, SINGLE CONNECTOR |
| 13 | MXCS-M9 | CORDSET (DRIVER CARD): 5-PIN, QD CONNECTION, BLACK, 9 FEET LONG, SINGLE CONNECTOR |
| 14 | MXCS-P11 | CORDSET (DRIVER CARD): 5-PIN, QD CONNECTION, BLACK, 11 FEET LONG, DOUBLE ENDED CONNECTOR |
| 15 | MXCS-P9 | CORDSET (DRIVER CARD): 5-PIN, QD CONNECTION, BLACK, 9 FEET LONG, DOUBLE ENDED CONNECTOR |
| 16 | MXDC-M | DRIVER CARD: ECOSMART #C100B |
| 17 | MXDC-P | DRIVER CARD: PULSE #EZ QUBE-P-J |
| 18 | MXEX-M1 | EXTENSION CABLE: ECOSMART #ES48-CA-EC-OM-JS-JS-1.2M, JST 10 PIN, 1.2 METER LONG |
| 19 | MXEX-M2 | EXTENSION CABLE: ECOSMART #ES48-CA-EC-OM-JS-JS-2M, JST 10 PIN, 2 METER LONG |
| 20 | MXEX-P1 | EXTENSION CABLE: PULSE #CACRSC-EXT-150, JST 9 PIN, 1.5 METER LONG |
| 21 | MXEX-P2 | EXTENSION CABLE: PULSE #CACRSC-EXT-200, JST 9 PIN, 2 METER LONG |
| 22 | MXRO-BR-M | MOUNTING BRACKET: ECOROLLER #MH-PUHM, 7/16" HEX, POINT UP |
| 23 | MXRO-BR-P | MOUNTING BRACKET: PULSE #PR-D-30H-PU-N-ST, 7/16" HEX, POINT UP |
| 24 | MXRO-G119-1175V1 | GROOVED ROLLER: 1.9" X 16 GA. GALVANIZED FLO-COAT TUBE, 11 3/4" BF, 7/16" SPRING RETAINED HEX AXLE, #116191-GP PRECISION, PLASTIC HOUSED, SHIELDED BEARINGS, (1) NARROW GROOVE, 1/4" DEEP, GROOVE LOCATION 1 7/8" BF/C |
| 25 | MXRO-G219-23V1 | GROOVED ROLLER: 1.9" X 16 GA. GALVANIZED FLO-COAT TUBE, 23" BF, 7/16" SPRING RETAINED HEX AXLE, #116191-GP PRECISION, PLASTIC HOUSED, SHIELDED BEARINGS, (2) NARROW GROOVE, 1/4" DEEP, GROOVE LOCATION 2 1/4" BF/C AND 1 1/4" C/C |
| 26 | MXRO-G219-235SV1 | GROOVED ROLLER: 1.9" X 16 GA. GALVANIZED FLO-COAT TUBE, 23 1/2" BF, 7/16" SPRING RETAINED HEX AXLE, #116191-GP PRECISION, PLASTIC HOUSED, SHIELDED BEARINGS, (2) NARROW GROOVES, 1/4" DEEP, GROOVE LOCATIONS 2 17/32" BF/C AND 1 1/4" C/C |

| | | |
|----|-------------------|--|
| 27 | MXRO-G219-235S2V1 | GROOVED ROLLER: 1.9" X 16 GA. GALVANIZED FLO-COAT TUBE , 23 1/2" BF, 7/16" SPRING RETAINED HEX AXLE, #116191-GP PRECISION, PLASTIC HOUSED, SHIELDED BEARINGS, (2) NARROW GROOVES, 1/4" DEEP, GROOVE LOCATIONS 3 9/32" BF/C AND 1 1/4" C/C |
| 28 | MXRO-G219-36V1 | GROOVED ROLLER: 1.9" X 16 GA. GALVANIZED FLO-COAT TUBE , 36" BF, 7/16" SPRING RETAINED HEX AXLE, #116191-GP PRECISION, PLASTIC HOUSED, SHIELDED BEARINGS, (2) NARROW GROOVES, 1/4" DEEP, GROOVE LOCATIONS 2 1/4" BF/C AND 1 1/4" C/C |
| 29 | MXRO-G219-48V1 | GROOVED ROLLER: 1.9" X 16 GA. GALVANIZED FLO-COAT TUBE , 48" BF, 7/16" SPRING RETAINED HEX AXLE, #116191-GP PRECISION, PLASTIC HOUSED, SHIELDED BEARINGS, (2) NARROW GROOVES, 1/4" DEEP, GROOVE LOCATIONS 2 1/4" BF/C AND 1 1/4" C/C |
| 30 | MXRO-G319-235AV1 | GROOVED ROLLER: 1.9" X 16 GA. GALVANIZED FLO-COAT TUBE , 23 1/2" BF, 7/16" SPRING RETAINED HEX AXLE, #116191-GP PRECISION, PLASTIC HOUSED, SHIELDED BEARINGS, (3) NARROW GROOVES, 1/4" DEEP, GROOVE LOCATIONS 3 9/32" BF/C, 1 1/4" C/C, AND 2 1/2" BF/C ON OTHER END OF ROLLER |
| 31 | MXRO-G319-235BV1 | GROOVED ROLLER: 1.9" X 16 GA. GALVANIZED FLO-COAT TUBE , 23 1/2" BF, 7/16" SPRING RETAINED HEX AXLE, #116191-GP PRECISION, PLASTIC HOUSED, SHIELDED BEARINGS, (3) NARROW GROOVES, 1/4" DEEP, GROOVE LOCATIONS 1 13/16" BF/C, 2 3/16" C/C, AND 1 1/4" C/C |
| 32 | MXRO-PM19-18 | MOTORIZED ROLLER (24VDC): ECOSMART #RCAD042H457HNS12A0X, 1.9" DIA X 18" BF, 35W MOTOR, 12:1 GEAR REDUCER, (2) 1/4" DEEP GROOVES, 7/16" NON-THREADED HEX AXLE, MOTOR END 300MM STANDARD LEAD, JST-10 PIN CONNECTOR |
| 33 | MXRO-PM19-23 | MOTORIZED ROLLER (24VDC): ECOSMART #RCAD042H584HNS12A0X, 1.9" DIA X 23" BF, 35W MOTOR, 12:1 GEAR REDUCER, (2) 1/4" DEEP GROOVES, 7/16" NON-THREADED HEX AXLE, MOTOR END 300MM STANDARD LEAD, JST-10 PIN CONNECTOR |
| 34 | MXRO-PM19-36 | MOTORIZED ROLLER (24VDC): ECOSMART #RCAD042K914HNS12A0X, 1.9" DIA X 36" BF, 35W MOTOR, 12:1 GEAR REDUCER, (2) 1/4" DEEP GROOVES, 7/16" NON-THREADED HEX AXLE, MOTOR END 300MM STANDARD LEAD, JST-10 PIN CONNECTOR |
| 35 | MXRO-PM19-48 | MOTORIZED ROLLER (24VDC): ECOSMART #RCAD042K1219HNS12A0X, 1.9" DIA X 48" BF, 35W MOTOR, 12:1 GEAR REDUCER, (2) 1/4" DEEP GROOVES, 7/16" NON-THREADED HEX AXLE, MOTOR END 300MM STANDARD LEAD, JST-10 PIN CONNECTOR |
| 36 | MXRO-PP19-18 | MOTORIZED ROLLER (24VDC): PULSEROLLER #PR-AD-48-446-35ZSGY, 1.9" DIA X 18" BF, 35W MOTOR, 12:1 GEAR REDUCER, (2) .196" DEEP GROOVES, 7/16" NON-THREADED HEX AXLE, MOTOR END 600MM STANDARD LEAD, JST-9 PIN CONNECTOR |
| 37 | MXRO-PP19-23 | MOTORIZED ROLLER (24VDC): PULSEROLLER #PR-AD-48-573-35ZSGY, 1.9" DIA X 23" BF, 35W MOTOR, 12:1 GEAR REDUCER, (2) .196" DEEP GROOVES, 7/16" NON-THREADED HEX AXLE, MOTOR END 600MM STANDARD LEAD, JST-9 PIN CONNECTOR |
| 38 | MXRO-PP19-36 | MOTORIZED ROLLER (24VDC): PULSEROLLER #PR-AD-48-903-35ZSGY, 1.9" DIA X 36" BF, 35W MOTOR, 12:1 GEAR REDUCER, (2) .196" DEEP GROOVES, 7/16" NON-THREADED HEX AXLE, MOTOR END 600MM STANDARD LEAD, JST-9 PIN CONNECTOR |
| 39 | MXRO-PP19-48 | MOTORIZED ROLLER (24VDC): PULSEROLLER #PR-AD-48-1208-35ZSGY, 1.9" DIA X 48" BF, 35W MOTOR, 12:1 GEAR REDUCER, (2) .196" DEEP GROOVES, 7/16" NON-THREADED HEX AXLE, MOTOR END 600MM STANDARD LEAD, JST-9 PIN CONNECTOR |
| 40 | MXRO-T-48 | ROLLER (TAPERED): 4" LE, 1.688" SE X 48" BF, GALVANIZED STEEL TUBE, 7/16" SPRING RETAINED HEX, ABEC BEARINGS, 2 GROOVES (2.25" BF/C AND 1.25" C/C) SST #TR48.0040LP276H3HB |
| 41 | MXRO-48V1 | GRAVITY ROLLER: 1.9" X 16 GA. GALVANIZED FLO-COAT TUBE, 48" BF, 7/16" SPRING RETAINED HEX AXLE, #116191-GP PRECISION, PLASTIC HOUSED, SHIELDED BEARINGS |
| 42 | WEI1469510000 | POWER SUPPLY (24VDC) : WEIDMULLER # 1469510000, PRO ECO SERIES, SINGLE PHASE, 115/230VAC, 20 AMP OUTPUT |

*SEE SALES REP FOR AVAILABLE PARTS PACKAGES.

GATE CONVEYOR

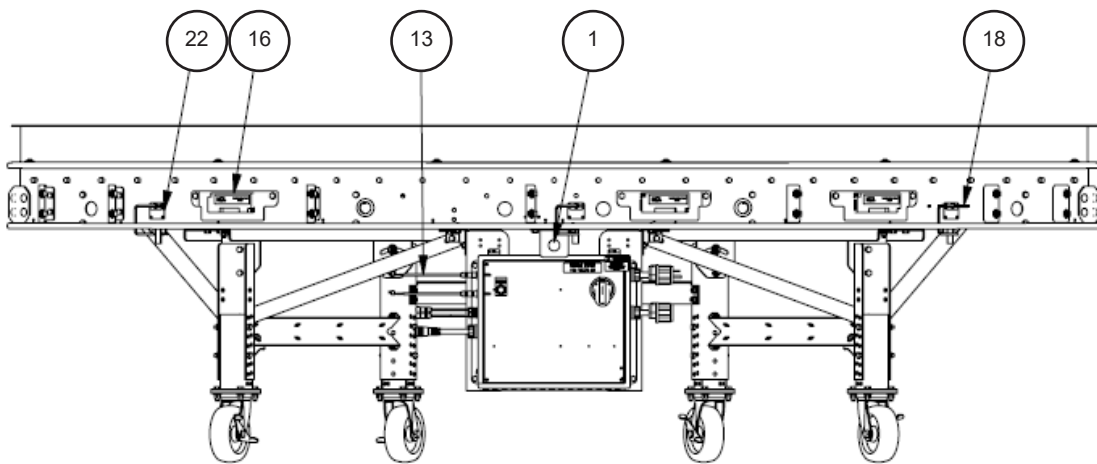
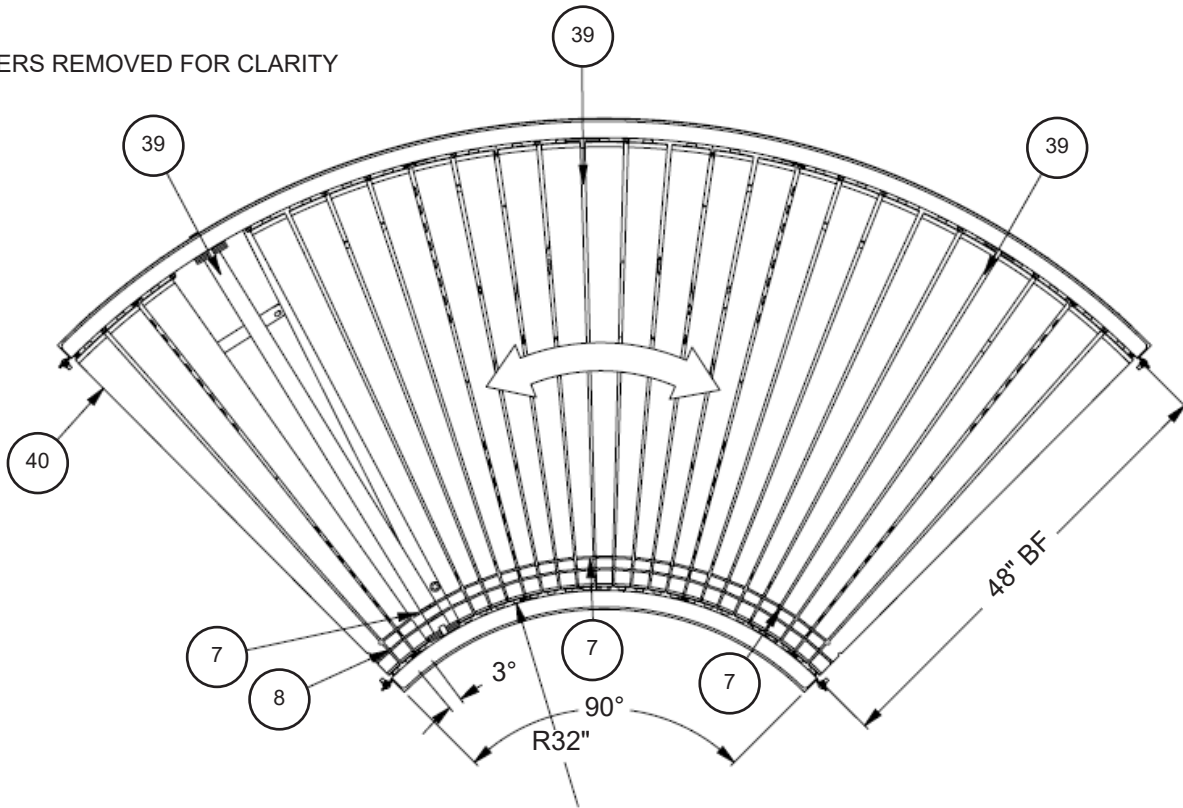
Please note: Gate conveyors are due to be retrofit and will no longer be able to lift/lower.



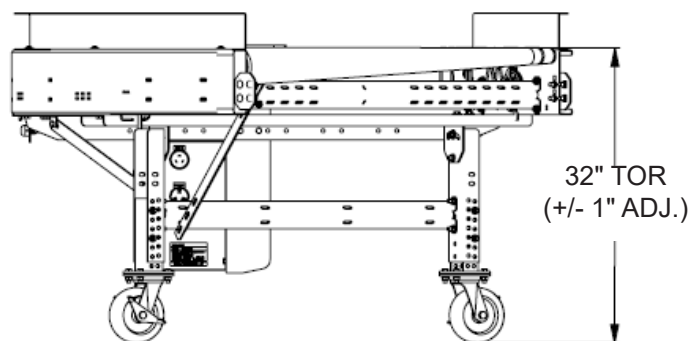
PIVOT END VIEW

CURVED CONVEYOR

(2) ROLLERS REMOVED FOR CLARITY

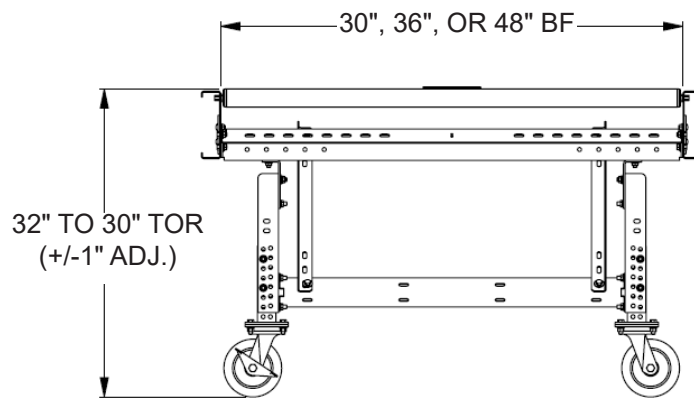
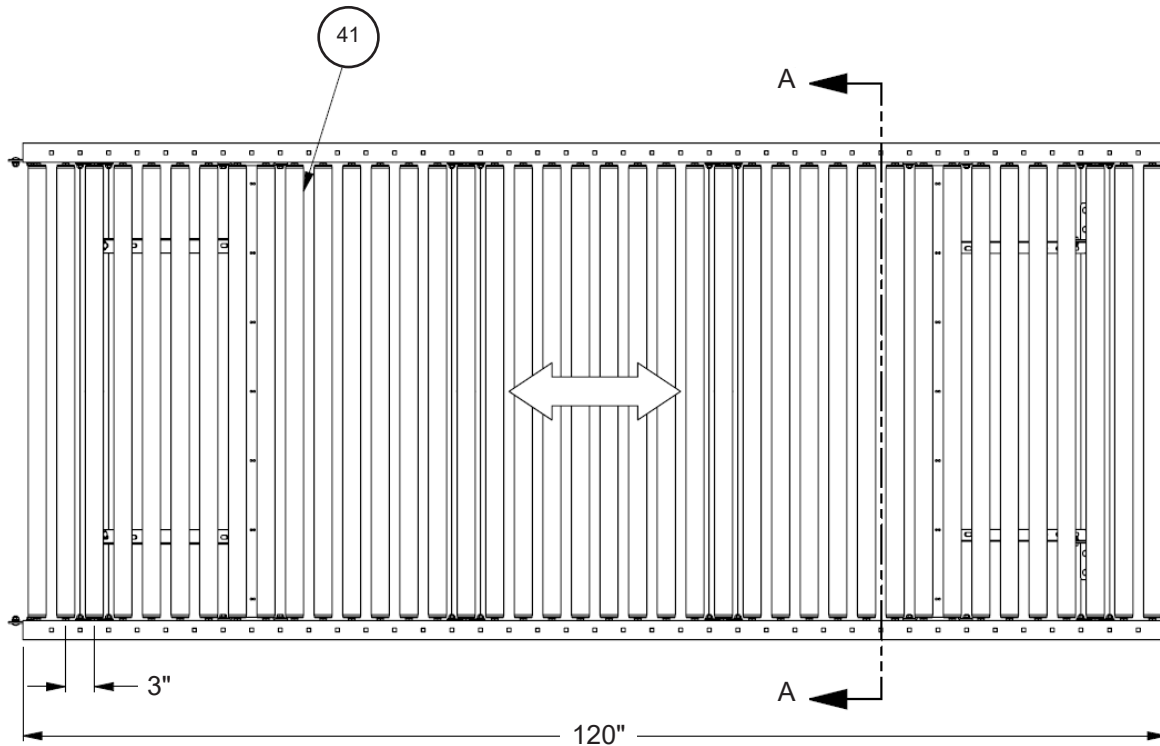


GUARD REMOVED FOR CLARITY



END VIEW

GRAVITY STRAIGHT CONVEYOR

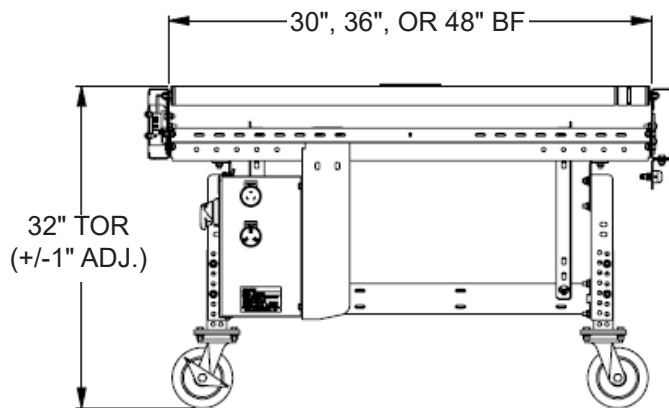
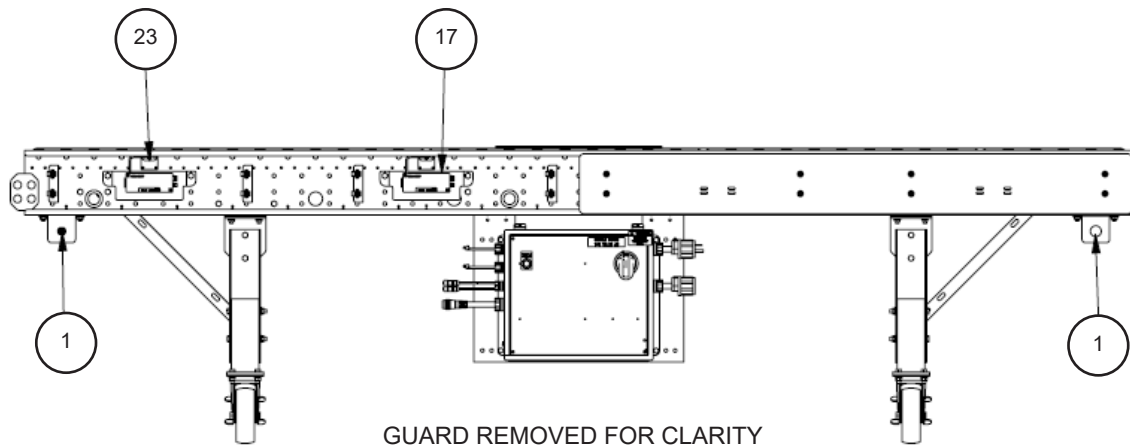
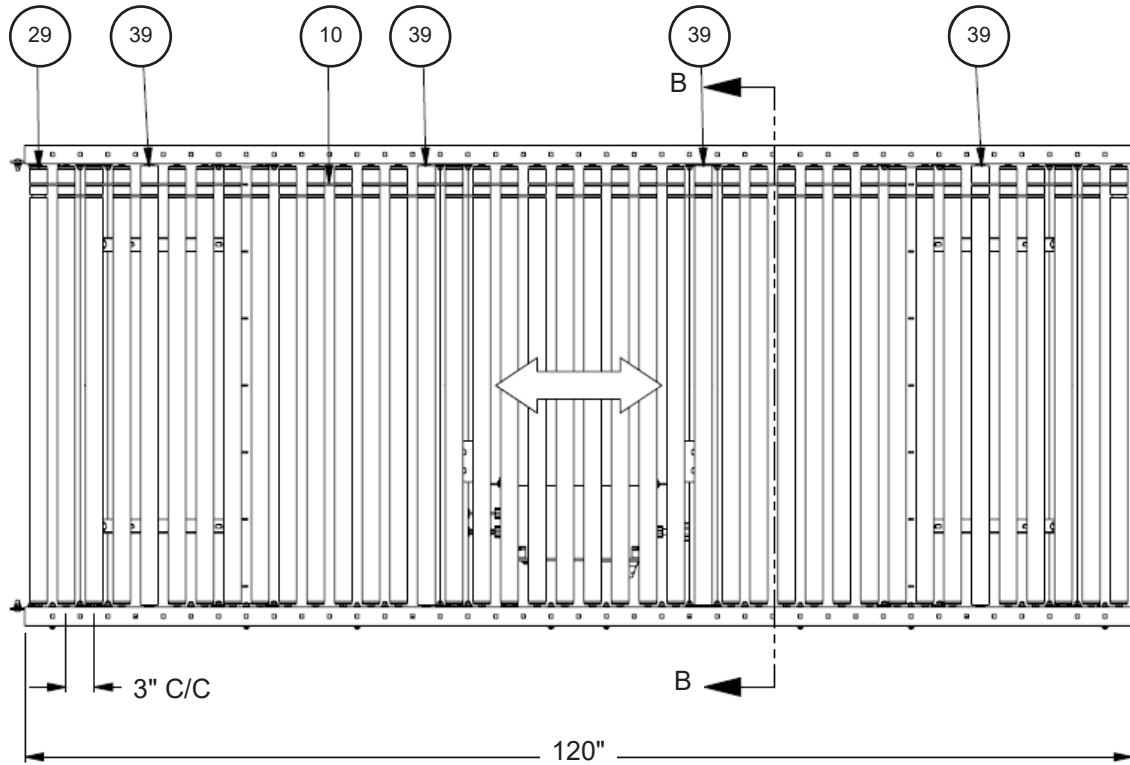


SECTION A-A

*Note:

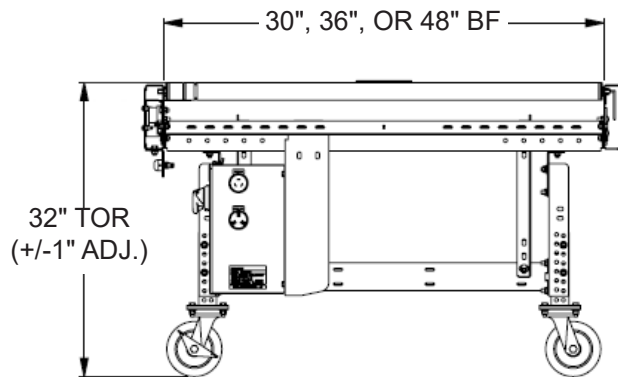
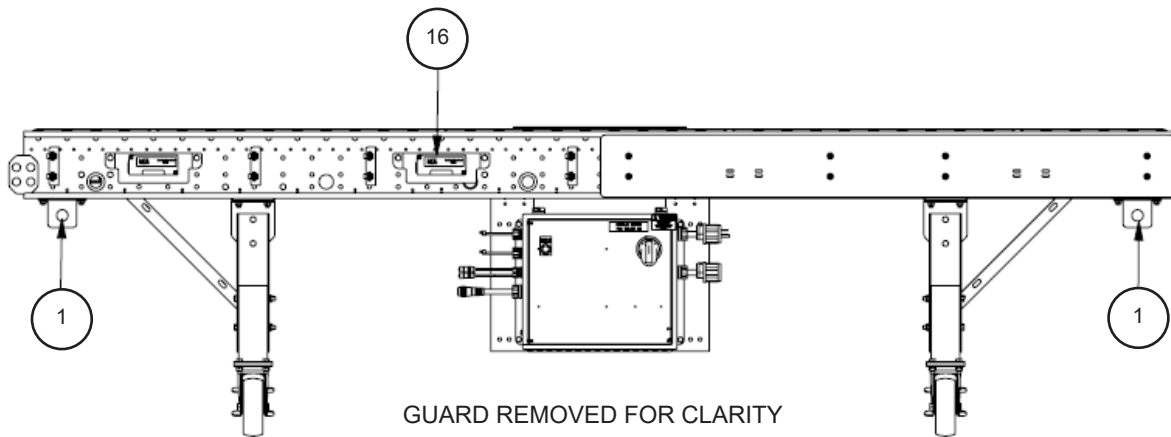
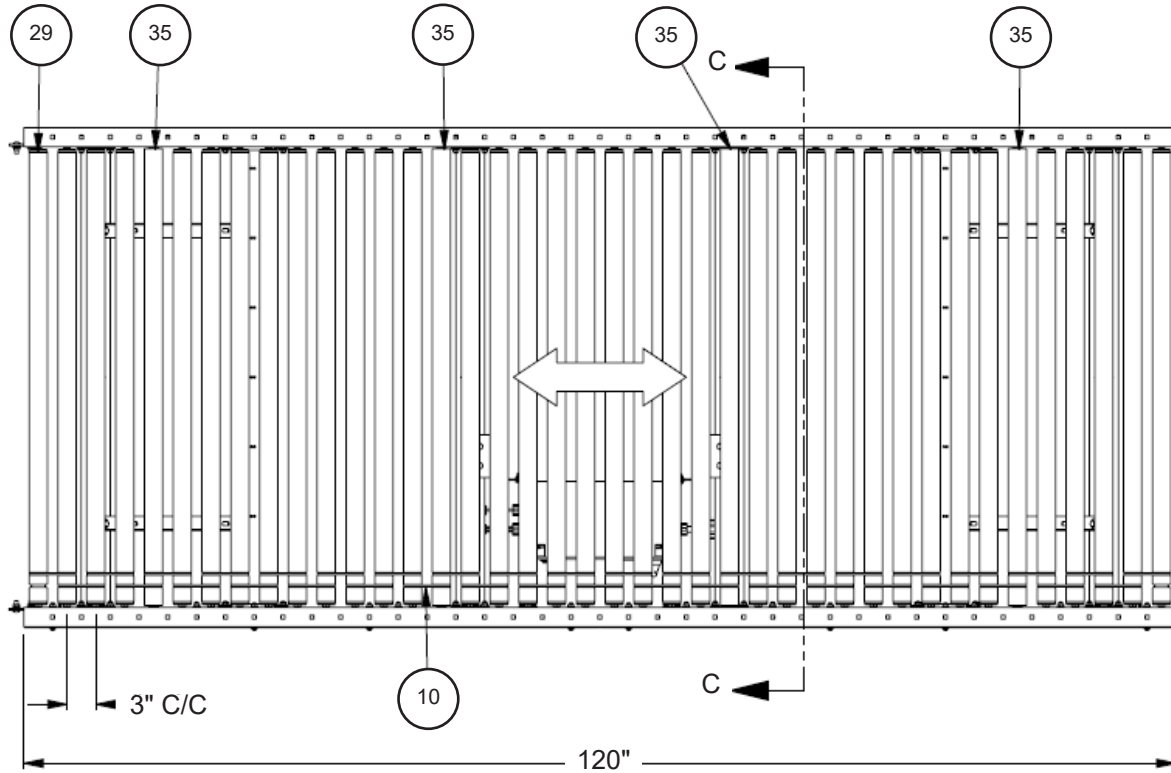
- Your system may have the optional 16' long gravity section with 28" TOR height instead of what is shown here.
- Gravity Straight Conveyor sections may have grooved or non-grooved rollers.

POWERED STRAIGHT CONVEYOR (STANDARD)



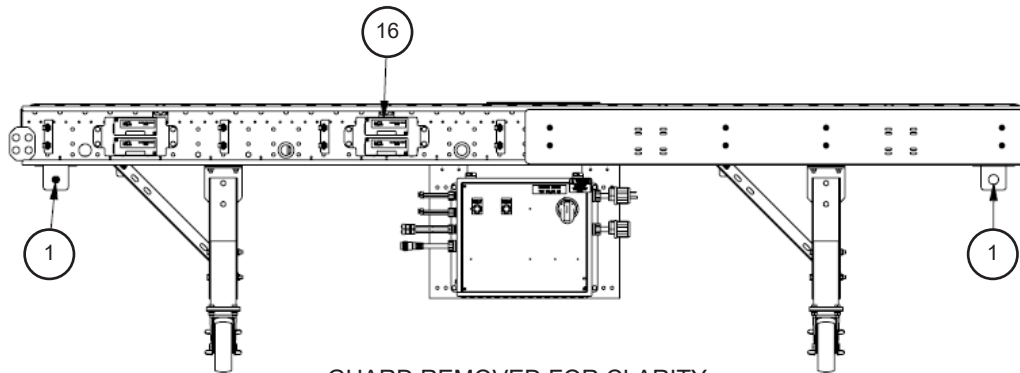
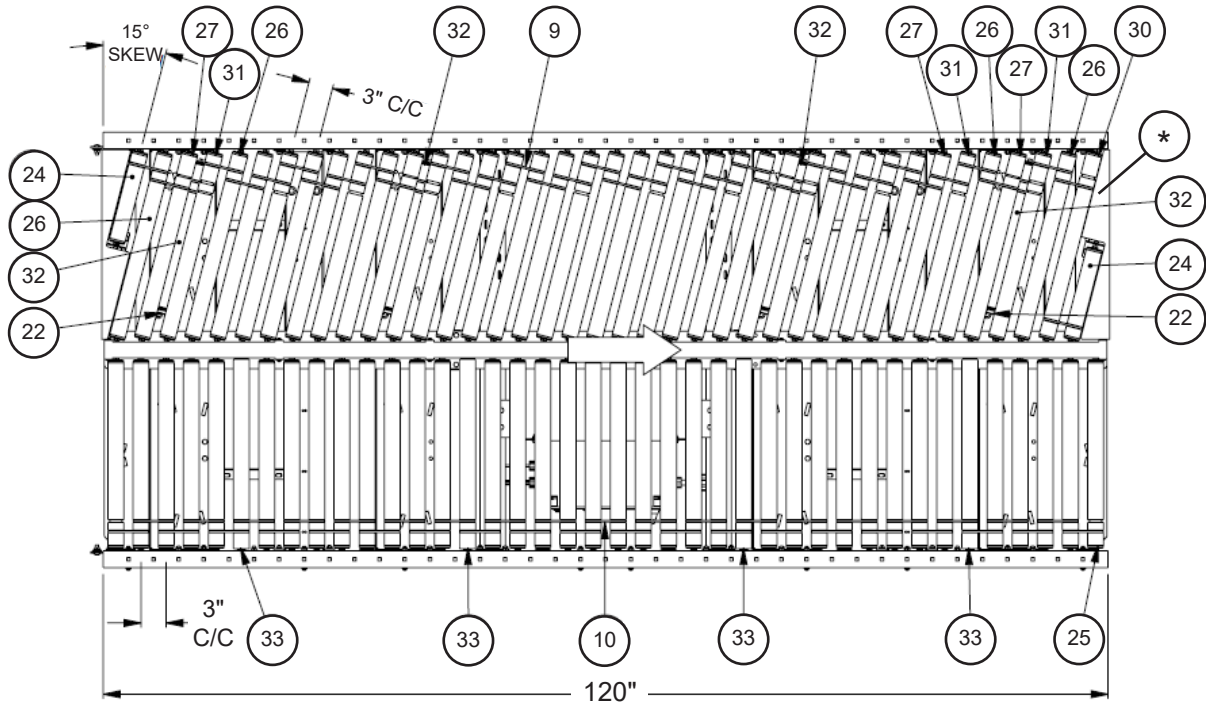
SECTION B-B

POWERED STRAIGHT CONVEYOR (OPPOSITE)

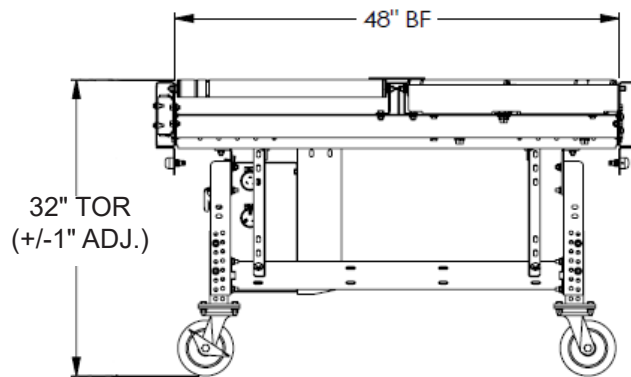


SECTION C-C

SKEW RIGHT CONVEYOR



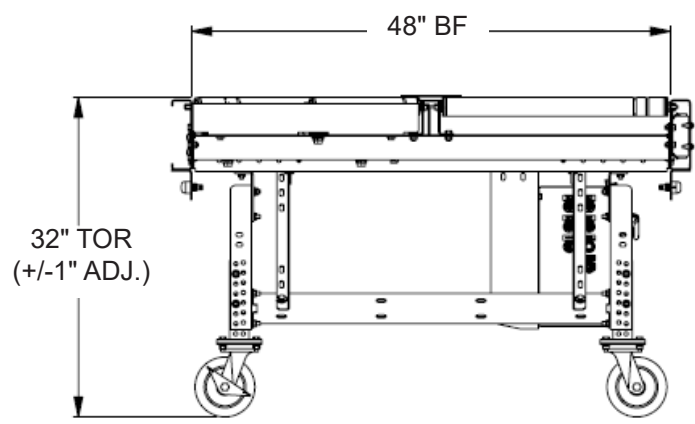
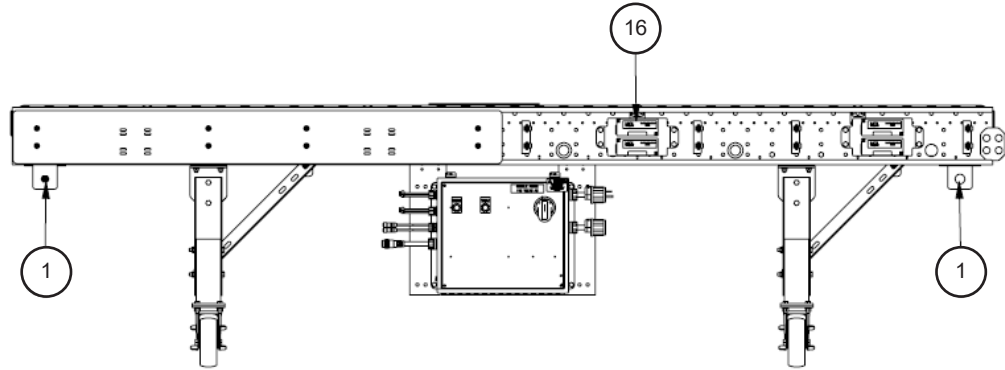
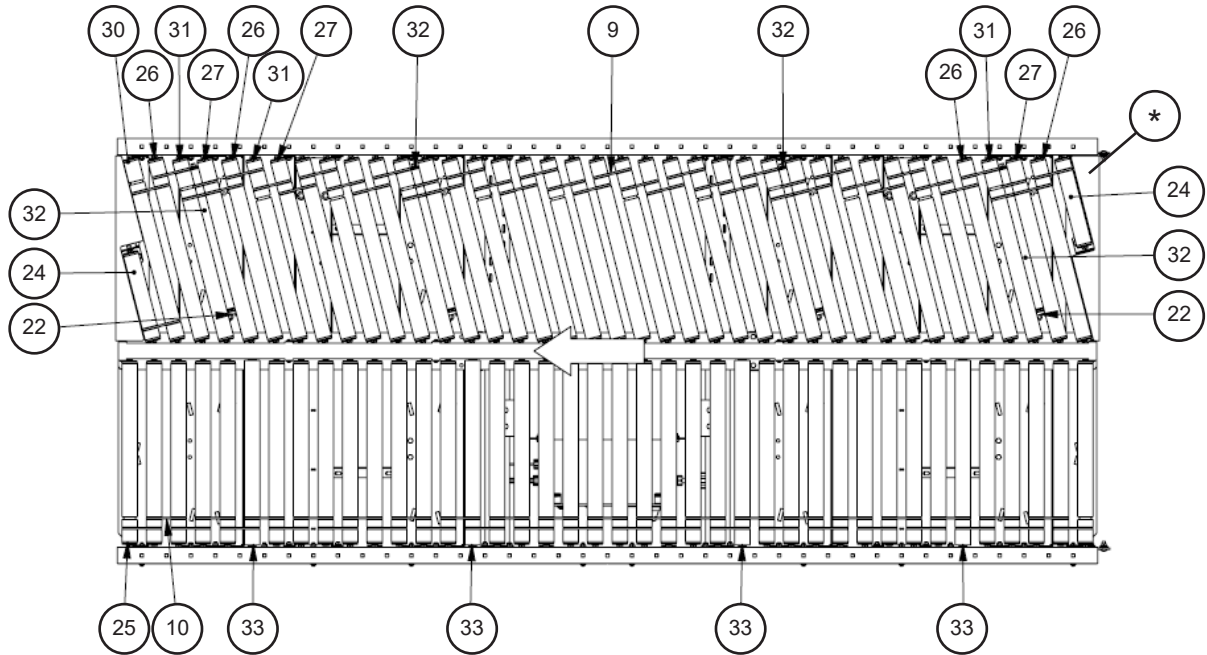
GUARD REMOVED FOR CLARITY



DISCHARGE END VIEW

* Contact customer support for help replacing gap fillers.

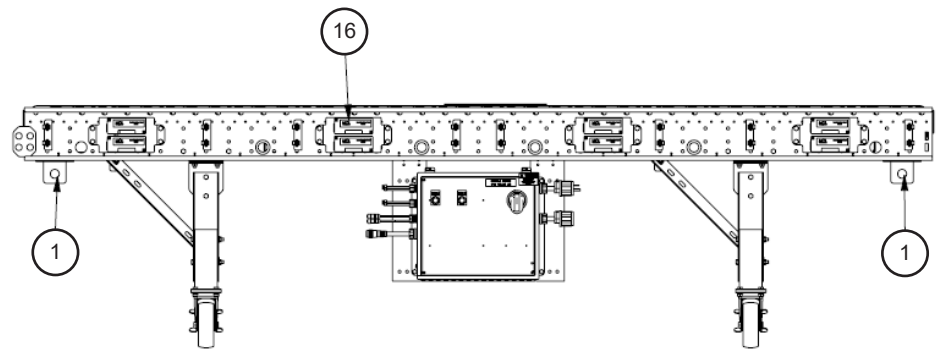
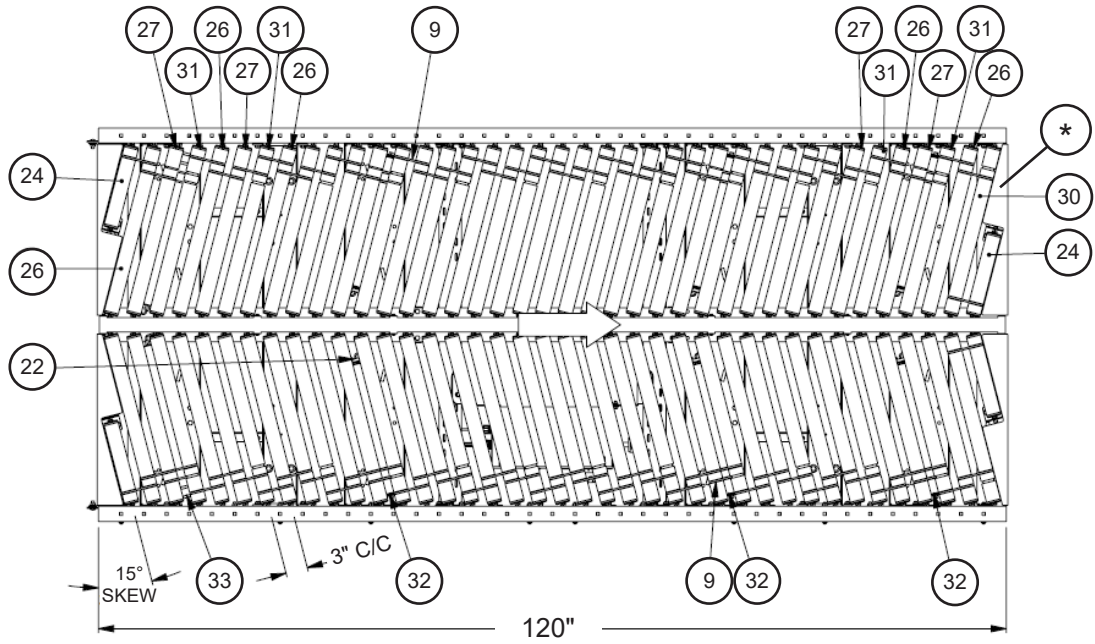
SKEW LEFT CONVEYOR



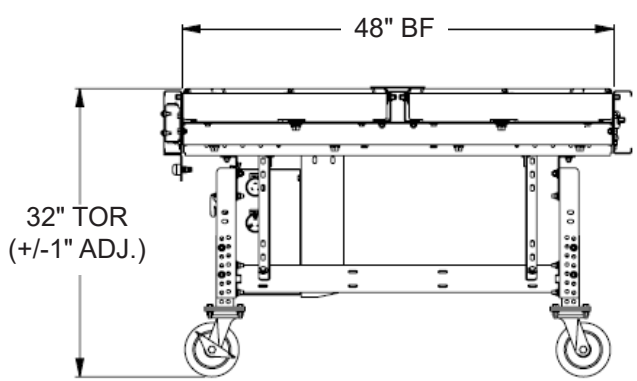
DISCHARGE END VIEW

* Contact customer support for help replacing gap fillers.

HERRINGBONE CONVEYOR



GUARD REMOVED FOR CLARITY



DISCHARGE END VIEW

* Contact customer support for help replacing gap fillers.



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.