IntelliQ® Accumulation Conveyor Installation and Maintenance Manual

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Intelligrated®

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Read these documents thoroughly before attempting to perform installation, maintenance or repairs to the applicable Intelligrated equipment components or devices. Exercise extreme caution when working around moving and rotating equipment. Wear the proper clothing and safety equipment. DO NOT attempt to perform any maintenance until the equipment is de-energized, locked out and tagged out in accordance with established company procedures and OSHA/ANSI standards.

The information presented in these documents is correct at the time of publication. Intelligrated has made every effort to ensure that the information presented is correct and free from error. However, some errors or misprints may occur. Please contact Intelligrated with any corrections.

Revision	Date	Initials	Description
Rev 1	07/08/12	RB	Updated information on Photo-eyes and Reflectors in the Specifications and Controls chapters. Corrected graphic in the Accessories chapter Skate Wheel Side Guides

Use of Manual

This manual contains important information. Please read this manual before attempting to operate or perform installation or maintenance on this Conveyor.

This manual is designed for operator personnel who have a substantial knowledge of mechanical operations and who have basic knowledge of typical mechanical operations. Failure to comply with the instructions and warnings contained in this manual, and the warnings posted on the Conveyor can result in serious injury to personnel and/or damage to the equipment.

Disclaimers

All terms mentioned in this manual that are known to be trademarks or service marks have been appropriately capitalized. Intelligrated can not attest to the accuracy of this information. Use of a term in this manual should not be regarded as affecting the validity of any trademark or service mark.

This manual contains a generalized description of the Conveyor and its operation available at the time this manual was approved for printing. Intelligrated reserves the right to make changes in design and specifications and to make additions to, or improvements in, the product without imposing any obligations upon it to install them on previously manufactured products.

Table of Contents

List of Figures

1 Safety Instructions

This chapter provides instructions for the safe and productive operation of the equipment.

⚠WARNING

You must read and understand these precautions completely before operating, setting up, installing, running, or performing maintenance on the equipment. Failure to follow this instruction may result in serious personal injury and/or equipment damage.

These safety precautions are to be used as a guide to supplement the following:

1. All other information pertaining to the equipment.
2. Local safety codes.
3. Plant and shop safety rules and codes.
4. Federal and state safety laws, regulations, and codes.

NOTE: Emphasis is placed on the latest edition of the Occupational Safety and Health Standards, which is available from the Department of Labor, Washington, D.C. These standards (found in Part 1910, Title 29 of the Code of Federal Regulations) contain the current, general industry occupational safety and health regulations set forth by federal legislation. Also, some of the information contained in this section has been reprinted from ASME, B20.1-2000 by permission of The American Society of Mechanical Engineers. All rights reserved.

For Your Safety

This manual contains important safety information concerning the use, maintenance, installation, and operation of this equipment. Read and become familiar with the contents of this manual before attempting to install, operate, or service this equipment. It is necessary that all operators and maintenance personnel study the applicable sections of this manual thoroughly before operating the equipment.

⚠WARNING

If you are unable to understand the contents of this manual, please bring it to the attention of your supervisor or foreman. Failure to comply with the instructions and warnings contained in this manual, and the warnings posted on the machine, can result in serious injury to personnel and damage to the equipment. Do not operate this equipment unless you have read and understood the contents of this manual.

Standard Safety Conventions

This section includes information essential to the safety of personnel and equipment. Throughout this manual, and on the equipment, you will find **DANGER**, **WARNING**, and **CAUTION** signs. Pay particular attention to these because they signal information that is important to your safety and to the correct operation of the equipment.

Warning signs and labels posted on or near the equipment shall not be removed, painted over, or altered at any time. **Reference: ANSI Z535.4**. All safety devices, warning lights, and alarms associated with the conveyor system must be regularly tested (at least monthly) for proper operation and serviced as needed. If the original safety item(s) become defective or damaged, refer to the conveyor parts list(s) of bill(s)-of-materials for replacement part numbers.

⚠ DANGER

DANGER indicates a hazardous situation that, if not avoided **will** result in immediate, serious personal injury or death.

⚠ WARNING

A WARNING indicates a hazardous stitutation that, if not avoided, **could** result in death or serious injury.

⚠ CAUTION

A CAUTION indicates a hazardous situtation that, if not avoided, **could** result in minor or moderate injury.

NOTICE

A NOTICE provides information that is considered important but is not hazard-related. This includes messages that discuss property damage.

NOTE: The term **NOTE** is used to call attention to useful information and is not a safety notice. Information appearing in a NOTE provides additional information that is helpful in understanding the item being explained.

Safety Precautions

The success of any safety program depends primarily on the attitudes and training of the installation, maintenance, and operating personnel. The very nature of their work makes it necessary that they develop a complete and firsthand knowledge of each piece of equipment that is within their care. This familiarity enables them to recognize the hazards resulting from improper usage.

Guards and Guarding

Where necessary for the protection of personnel from hazards, all exposed moving machinery parts that present a hazard to employees at work stations or operator's stations shall be mechanically or electrically guarded, or guarded by location or position.

Interfacing of Equipment

When two or more pieces of equipment are interfaced, special attention shall be given to the interfaced area to ensure the presence of adequate guarding and safety devices.

Guarding Exceptions

Wherever conditions prevail that would require guarding under these standards, but such guarding would render the conveyor unusable, prominent warning means such as signs or warning lights shall be provided in the area or on the equipment in lieu of guarding.

Guarded by Location or Position

Remoteness from frequent presence of public or employed personnel shall constitute guarding by location. Overhead conveyors, such as trolley equipment and hanger-suspended tray conveyors, for which guarding would render the equipment unusable or would be impractical, shall have prominent and legible warnings posted in the area or on the equipment, and, where feasible, lines shall be painted on the floor delineating the danger area.

When the equipment passes over a walkway, roadway, or work station, it is considered guarded by location if all moving parts are at least 8 ft. (2.4 m) above the floor or walking surface or are otherwise located so that the employee cannot inadvertently come in contact with hazardous moving parts. Although overhead conveyors may be guarded by location, spill guards, pan guards, or equivalent shall be provided if the product may fall off the conveyor for any reason and endanger personnel.

Headroom

When the equipment is installed above exit passageways, aisles, or corridors, there shall be a minimum clearance of 6 ft. 8 in. (2.03 m) measured vertically from the floor or walking surface to the lowest part of the equipment or guards. Where system function will be impaired by providing the minimum clearance of 6 ft. 8 in. (2.03 m) through an

emergency exit, alternate passageways shall be provided. It is permissible to allow passage under the equipment with less than 6 ft. 8 in. (2.03 m) clearance from the floor for other than emergency exits if a suitable warning indicates low headroom.

Controls

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

Control Stations

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

Equipment that would cause injury when started shall not be started until employees in the area are alerted by a signal, or by a designated person, that the equipment is about to start. When the equipment would cause injury and is automatically controlled or must be controlled from a remote location is started, an audible device shall be provided which can be clearly heard at all points along the conveyor where personnel may be present. The audible warning shall be actuated by the controller device starting the equipment and shall continue for a required period of time before the equipment starts. A flashing light or similar visual warning may be used in conjunction with, or in place of, the audible device if a visual warning is more effective. Where system function would be seriously hindered or adversely affected by the required time delay, or where the intent of the warning may be misinterpreted (e.g., a work area with many different pieces of equipment and allied devices), a clear, concise, and legible warning sign shall be provided. The warning shall indicate that the equipment and allied equipment may be started at any time, that danger exists, and that personnel must keep clear. These warning signs shall be provided along the equipment at areas not guarded by position or location.

Remotely and automatically controlled equipment, and equipment where operator stations are not manned or are beyond voice or visual contact from drive areas, loading areas, transfer points, and other potentially hazardous locations on the equipment path not guarded by location, position, or guards, shall be furnished with emergency stop buttons, pull cords, limit switches, or similar emergency stop devices. All such emergency stop devices shall be easily identifiable in the immediate vicinity of such locations unless guarded by location, position, or guards. Where the design, function, and operation of such equipment clearly is not hazardous to personnel, an emergency stop device is not required. The emergency stop device shall act directly on the control of the equipment concerned and shall not depend on the stopping of any other equipment. The emergency stop devices shall be installed so that they cannot be overridden from other locations.

Inactive and unused actuators, controllers, and wiring should be removed from control stations and panel boards, together with obsolete diagrams, indicators, control labels, and other material which may confuse the operator.

Safety Devices

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

Emergency Stops and Restarts

The controls shall be arranged so that, in case of emergency stop, manual reset or start at the location where the emergency stop was initiated shall be required of the conveyor(s) and associated equipment to resume operation.

Before restarting the equipment that has been stopped because of an emergency, an inspection of the conveyor shall be made and the cause of the stoppage determined. The starting device shall be locked or tagged out before any attempt is made to remove the cause of the stoppage, unless operation is necessary to determine the cause or to safely remove the stoppage. Refer to ANSI Z244.1-1982, American National Standard for Personnel Protection - Lockout/Tagout of Energy Sources - Minimum Safety Requirements, and OSHA Standard 29 CFR 1910.147, “The Control of Hazardous Energy (Lockout/Tagout)."

Operation Safety Precautions

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

Where safety is dependent upon stopping devices or starting devices or both, they shall be kept free of obstructions to permit ready access.

The area around loading and unloading points shall be kept clear of obstructions that could endanger personnel.

No person shall ride on a conveyor under any circumstances.

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

A conveyor shall be used to transport only material it is designed to handle safely.

Under no circumstances shall the safety characteristics of the conveyor be altered if such alterations would endanger personnel.

Routine inspections and preventive and corrective installation and maintenance programs shall be conducted to ensure that all guards and safety features and devices are retained and function properly.

Personnel should be alerted to the potential hazard of entanglement in conveyors caused by items such as long hair, loose clothing, and jewelry.

Conveyors shall not be newly installed, maintained, or serviced while in operation unless proper installation, maintenance, or service requires the conveyor to be in motion. In this case, personnel shall be made aware of the hazards and how the task may be safely accomplished.

Installation and Maintenance Safety

Installation and Maintenance shall be performed only by qualified and trained personnel.

It is important to establish an installation and maintenance program to ensure that all conveyor components are maintained in a condition which does not constitute a hazard to personnel.

When a conveyor is stopped during installation or for maintenance, starting devices or powered accessories shall be locked or tagged out in accordance with a formalized procedure designed to protect all persons or groups involved with the conveyor against an unexpected start. Personnel should be alerted to the hazard of stored energy, which may exist after the power source is locked out. Refer to ANSI Z244.1-1982, American National Standard for Personnel Protection - Lockout/Tagout of Energy Sources - Minimum Safety Requirements, and OSHA Standard 29 CFR 1910.147, “The Control of Hazardous Energy (Lockout/Tagout)."

Replace all safety devices and guards before starting equipment for normal operation.

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

Guards and safety devices shall be maintained in a serviceable and operational condition. Warning signs shall be maintained in a legible and operational condition. Examples of warning signs are shown later in this section.

It is the responsibility of the owner/user to add any additional protective components that may be needed whenever changes or variations are made to any of the equipment components or operational characteristics.

Lockout / Tagout Guidelines

Appropriate lockout and tagout policy and procedures shall comply with the **Code of Federal Regulations, 29 CFR 1910.147** and the minimum safety requirements outlined in the current publication of the **American National Standard Institute's Lockout/Tagout of Energy Sources (ANSI Z244.1)**.

Effective January 8, 1990, O.S.H.A. has designated the need for a 'positive, lockable' means to remove all energy sources from equipment prior to new installation(s) or any maintenance. The electrical power to your equipment can be locked out at the main disconnect switch, which is normally located on the electrical cabinet. When this is done, residual energy remains for some time in the capacitors associated with the electrical system. This residual energy is automatically depleted by features built into the equipment. After locking out the main disconnect switch, wait at least 60 seconds before beginning any installation or maintenance procedures. This allows the residual energy to diminish. (If an equipment-mounted plate indicates that you should wait longer than 60 seconds, wait the recommended period of time before beginning any installation or maintenance work.)

Whenever you need to install new equipment or perform maintenance on the equipment, or whenever you need to shut it down for any other reason, a lockout procedure must be followed. Your employer is required by O.S.H.A. to develop a written lockout/tagout procedure for this equipment. The following items should be considered in developing this procedure:

- Notify everyone who normally operates, sets up, installs, or performs maintenance on the equipment that it will be shut down.
- Turn off all electric motors.
- Turn off the main electrical disconnect switch.
- Lock the main disconnect switch in the OFF position, and place a tag on the switch to indicate that work is being performed on the equipment.
- If there is any auxiliary equipment associated with the equipment, make sure the main electrical disconnect switch is also turned off for each piece of auxiliary equipment. Then lock each disconnect switch in the OFF position, and tag each switch to indicate that work is being performed on the equipment.
- Lock the air supply valves to make sure no air can be supplied to the equipment.
- Verify that no sources of residual energy (capacitors, suspended equipment components, etc.) are present on the equipment or any piece of auxiliary equipment. If any such energy sources are located, make sure they are neutralized. If necessary, manually discharge air pressure and capacitor voltage from charged components. Also, block all suspended or spring loaded mechanical parts to prevent movement.

- Verify that electrical power has been disconnected from the equipment, and from any auxiliary equipment, by trying to energize the equipment and any auxiliaries with the appropriate control switches. If any piece of equipment is found to be operational, locate the electrical circuit(s) supplying the power, and disconnect all such power sources. Then lock and tag these power sources.
- Make sure the air system pressure is 0 PSI.
- Before you begin any work on the equipment or any auxiliary equipment, make sure that at least 60 seconds has elapsed since you turned off the main disconnect switch. (If an equipment-mounted plate indicates that you should wait longer than 60 seconds, wait the recommended period of time before beginning any new installation or performing any maintenance work.)
- Verify that any equipment which may have been added, and which is not covered by previous bulleted items, is considered for the lockout/tagout procedure.
- After you have completed your work on the equipment, make sure all guards, gates and other safety-related devices are in place and functioning properly.
- When the equipment is completely ready to resume operation, remove your lock and tag from the main electrical disconnect switch. If someone else has placed a lock and/or tag on the main disconnect, do not remove the additional lock or tag. If there is no other lock or tag on the main disconnect, turn on the main disconnect switch and the electric motors, then perform the daily safety checks.

Safety Signs

In an effort to reduce the possibility of injury to personnel working around conveying equipment, safety signs are placed at various points on the equipment to alert them of potential dangers. Please check the equipment and note all safety signs. Make certain your personnel are alerted to and obey these signs.

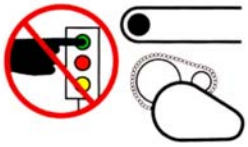
The following illustration shows pictograms designed by the Conveyor Equipment Manufacturers Association (CEMA) Safety Committee as a service to the industry. They also mirror, to the extent practical, the pictograms on the associated CEMA Safety Labels placed on the equipment. CEMA Safety Posters are also available to place in work areas and break areas to remind personnel of safe practices.

Package Conveyors

Intelligrated®

Do Not Climb, Sit, Stand, Walk, Ride, or Touch the Conveyor at Any Time

Do Not Perform Maintenance on Conveyor Until Electrical, Air, Hydraulic and Gravity Energy Sources Have Been Locked Out and Blocked



Operate Equipment Only With All Approved Covers and Guards in Place

Do Not Load a Stopped Conveyor or Overload a Running Conveyor

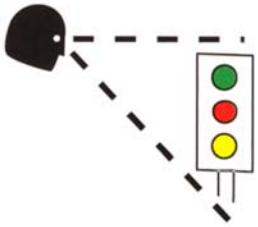
Ensure That All Personnel Are Clear of Equipment Before Starting

Allow Only Authorized Personnel To Operate or Maintain Material Handling Equipment

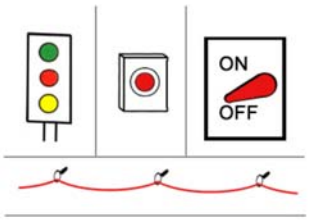
Do Not Modify or Misuse Conveyor Controls

Keep Clothing, Body Parts and Hair Away from Conveyors

Remove Trash, Paperwork and Other Debris Only When Power is Locked Out



Ensure That ALL Controls and Pull Cords are Visible and Accessible



Know the Location and Function of All Stop and Start Controls

Report All Unsafe Conditions

POST IN PROMINENT AREA

2 General Description

The IntelliQ® Accumulation Conveyor is a horizontal, zero-pressure, belt-driven live roller conveyor that provides:

- Quiet and efficient transportation of product in straight sections,
- Gentle, zero-pressure accumulation of product (cartons, cases, totes, etc.),
- Multiple operational modes to meet a variety of application requirements.

Conveyor Sections

An IntelliQ® Accumulation Conveyor typically contains the following sections: Infeed Idler, Center Drive, Intermediate Section, and Discharge Idler, see Figure 2 - 1.

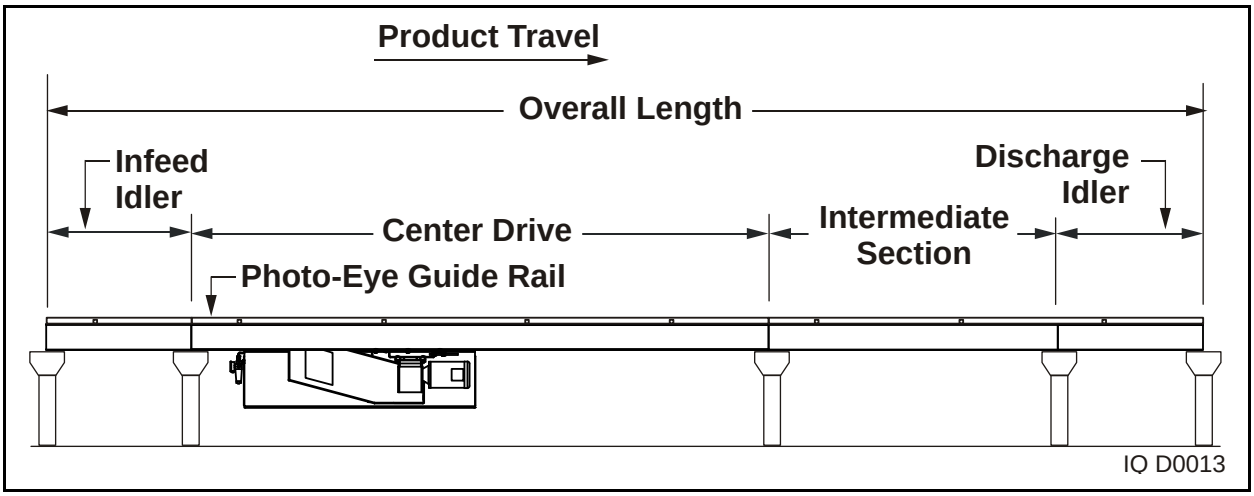


Figure 2 - 1 Typical Conveyor Sections

Conveyor Section Components

Each conveyor section contains:

- Carrier Rollers, see Figure 2 - 2,
- Photo eye sensors on side guides or between rollers,
- At least one 3-foot-long Pressure Shoe Assembly containing Pressure Rollers. When the Pressure Shoe is raised, the Pressure Rollers push the V-Backed Belt against the Carrier Rollers with enough force to drive the rollers,
- Pressure Shoe Supports, each containing an Air Diaphragm. The Air Diaphragms inflate to raise the Pressure Shoe Assembly.

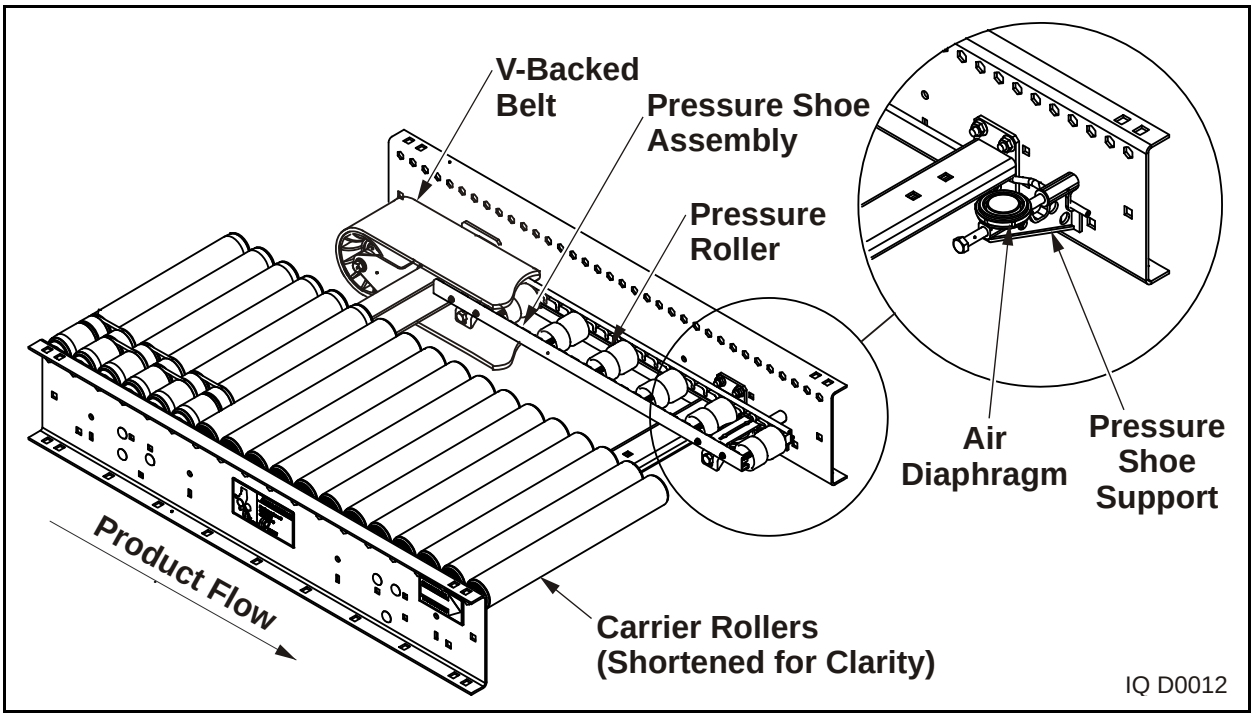


Figure 2 - 2 Conveyor Section Components

Infeed Idler

Product enters the conveyor on the Infeed Idler. It contains one Pressure Shoe Assembly and an End Idler. The continuous-loop V-Back Belt wraps around the End Idler.

Center Drive

The Center Drive is always the first or second section after the Infeed Idler. It is pre-assembled to an Intermediate Section, and contains the motor, the drive pulley, and the pneumatic belt tensioner.

Intermediate Section

Intermediate Sections are typically the most common conveyor section. Belt return supports on the undersides of the crossmembers support the belt and keep it in the correct position. An optional pop-up stop is available.

While not recommended, a field-assembled skew kit can be provided as an Intermediate section. The recommended method for aligning product to one side of the conveyor is the placement of a V-Belt conveyor with a hard skew immediately upstream from the IntelliQ® Accumulation Conveyor.

Discharge Idler

Product leaves the conveyor from the Discharge Idler. Like the Infeed Idler, it contains one Pressure Shoe Assembly and an End Idler. An optional brake assembly, end guard, and pop-up stop are available.

Product Flow Control

The conveyor is divided into three-foot-long zones for controlling product flow. Each zone is equipped with one retro-reflective photo eye or one diffused photo eye, which senses the presence of product on the conveyor. Typically, the photo eye in Zone #1 controls the state of the components (logic modules, carrier rollers, air diaphragms) in Zone #2; the photo eye in Zone #2 controls the state of the components in Zone #3; and so on, see Figure 2 - 3.

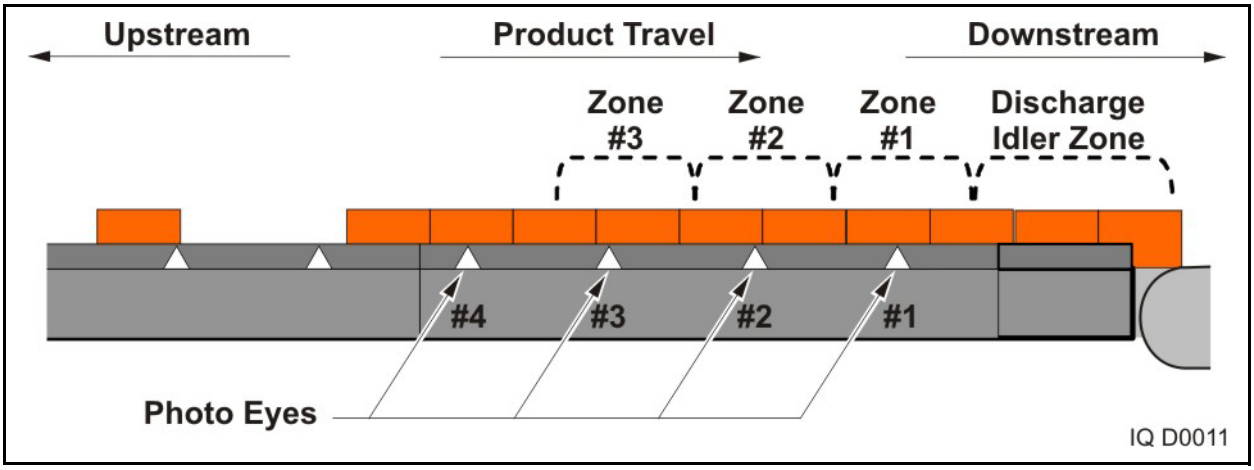


Figure 2 - 3 Photo Eye/Zone Diagram

When a photo eye senses that the zone has product and is not able to accept more, it sends a signal to a specially-designed logic module with an integrated pneumatic valve. The logic module then de-energizes the solenoid on the pneumatic valve, removing air from the air diaphragms in the adjacent upstream zone according to a pre-programmed pattern. As the air diaphragms deflate, the pressure shoe lowers, which removes upward pressure on the belt. The belt lowers until it is not in contact with the carrier rollers, see Figure 2 - 4.

When a zone is cleared of product and ready to accept more, the photo eye sensor sends a signal to the logic module that there is no product present. If the logic module is programmed to release product upon a “no product present” signal, it will energize the solenoid on the pneumatic valve. This supplies air to the air diaphragms in the adjacent upstream zone. As the air diaphragms inflate, they raise the pressure shoe and pressure rollers against the belt, and the belt against the rollers to drive them.

See “Product Acceptance Modes” on page 6 for the specific operation of each type of logic module.

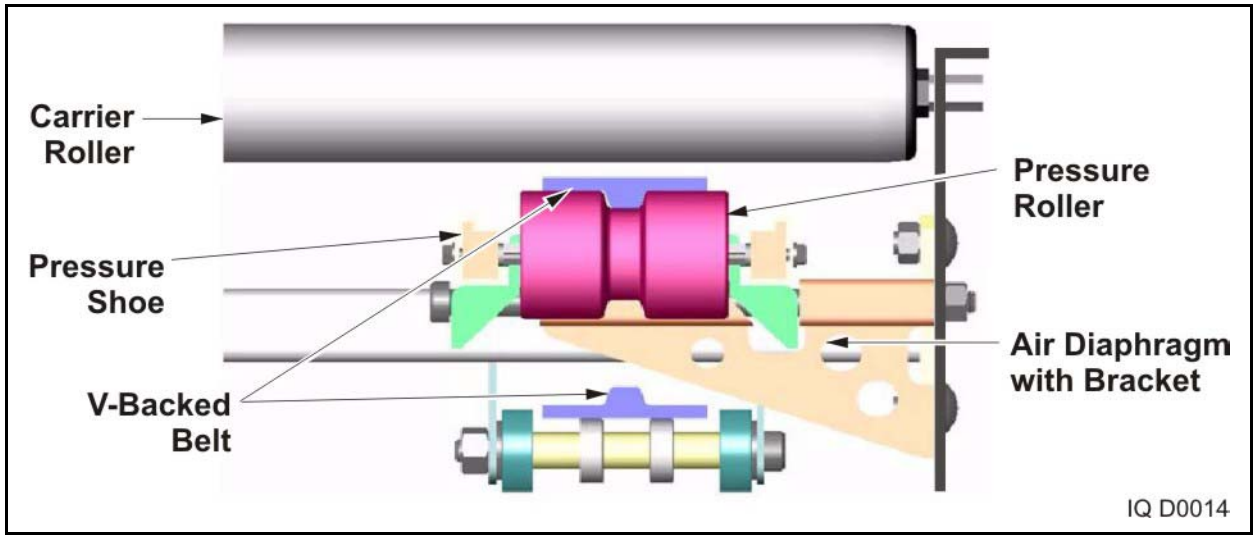


Figure 2 - 4 Carrier Roller Control Components

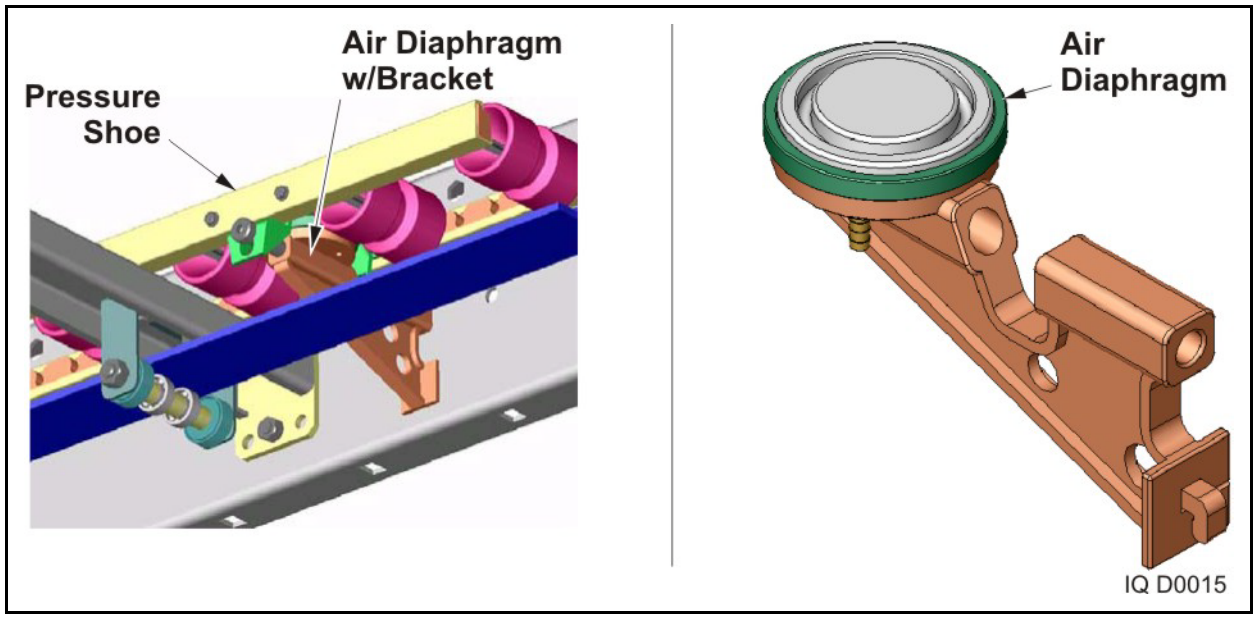


Figure 2 - 5 Air Diaphragm and Shoe Support (Underside View)

Product Acceptance Modes

The product acceptance modes control the movement of product into a zone. They follow rules for activating zones based on the blocked/unblocked status of specific downstream photo eyes. When a zone is activated, its carrier rollers rotate to move product downstream into the next control zone.

Singulation Acceptance (Accumulation)

Standard

As product moves down the conveyor, it continually blocks and unblocks the photo eyes. As long as two consecutive photo eyes are not blocked, all zones will remain energized and the product will continue moving down the conveyor. If two consecutive zones detect product, the next upstream zone is deactivated and begins to accumulate. In other words, if the photo eyes in Zone #4 and Zone #5 are blocked, Zone #6 is deactivated, see Figure 2 - 6. This is to prevent conveying product into a zone that is already full of product. When one of the photo eyes is cleared, the upstream zone is activated again. If a long block, or slug, of product is moving down the conveyor, the zones will continually activate and deactivate in this manner, introducing gaps into the slug of product. By controlling the zones in this manner, the gaps will be smaller than when using mechanical sensors and throughput will actually be higher.

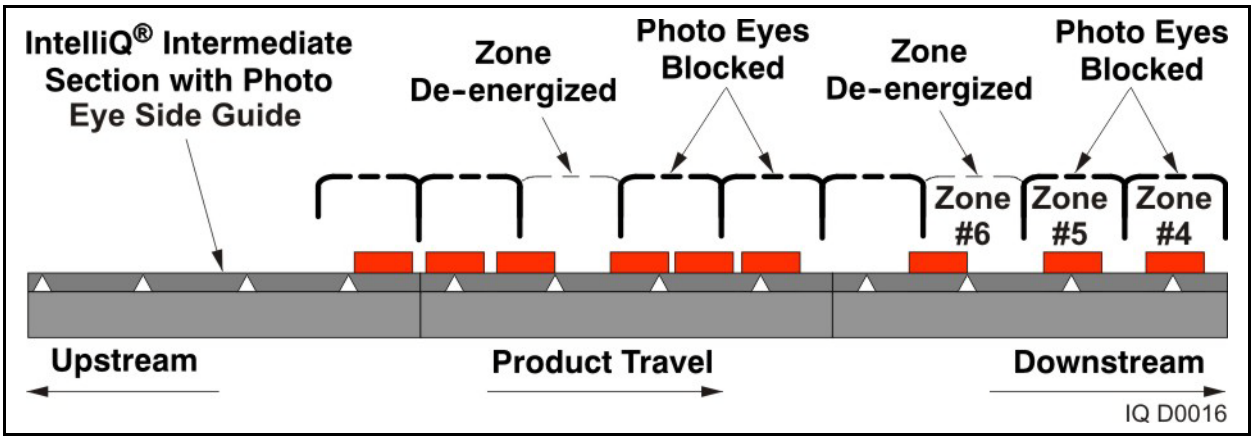


Figure 2 - 6 Photo Eye Sensor Operation

In typical applications of the IntelliQ® Accumulation Conveyor conveyor, a Belt Conveyor is installed at the discharge end of the conveyor to control the release of product. In some applications, some other type of stopping device, such as a package stop, may be used. The Discharge End Idler Zone of the IntelliQ® Accumulation Conveyor is equipped with a solenoid valve controlled in conjunction with the Belt Conveyor. When the Belt Conveyor is stopped, the electrical signal is removed from the solenoid valve, which deactivates the Discharge Idler Zone. The solenoid valve in the Discharge Idler also controls the next upstream zone (Zone #1 in Figure 2 - 7), so Zone #1 is deactivated as well.

As the product moves down the conveyor and coasts into the deactivated Discharge Idler Zone, and then accumulates into the deactivated Zone #1, it blocks Photo Eye Sensor #1. Since two upstream photo eyes (Discharge Idler Zone and Zone #1) are now blocked, Zone #2 becomes deactivated. As product moves into Zone #2, it blocks Photo Eye Sensor #2. With Photo-Eye Sensors #1 and #2 blocked, Zone #3 becomes deactivated. Product will continue accumulating in this manner as long as the belt conveyor is stopped. Also, since the zones are up to three feet long, it is possible to have more than one product accumulate in a zone.

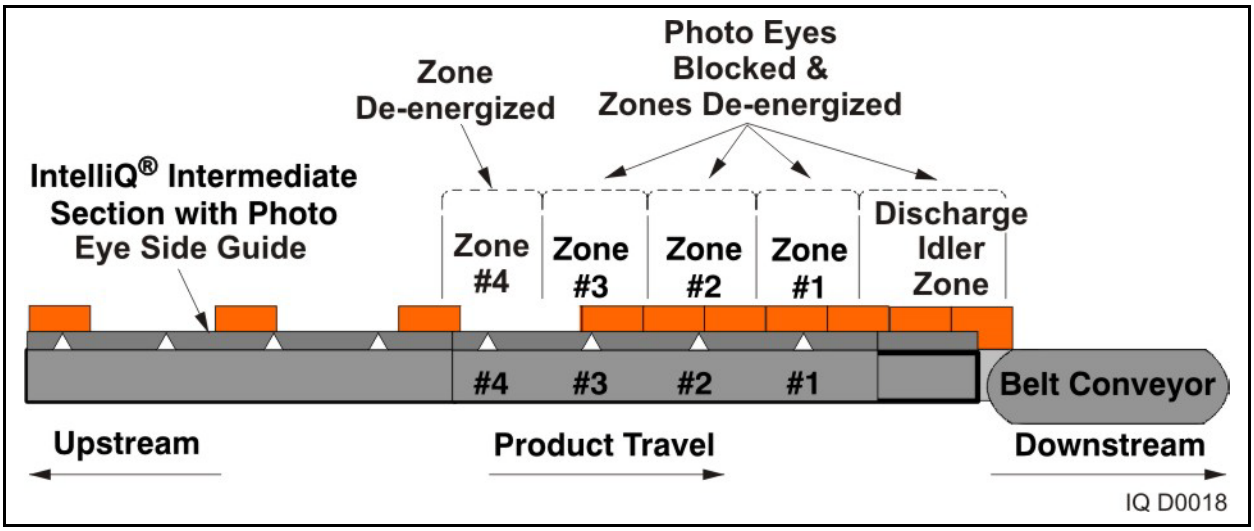


Figure 2 - 7 Singulation Acceptance (Accumulation) - Standard

Run-Up Acceptance (Accumulation)

When the conveyor is in Run-Up Acceptance mode, if two consecutive photo eyes are blocked, the zone containing the second (upstream) photo eye is deactivated. In Figure 2 - 8, Photo Eyes #4 and #5 are blocked, causing Zone #5 to deactivate; Photo Eyes #7 and #8 are blocked, causing Zone #8 to deactivate. This mode is used for lightweight cartons that do not coast well.

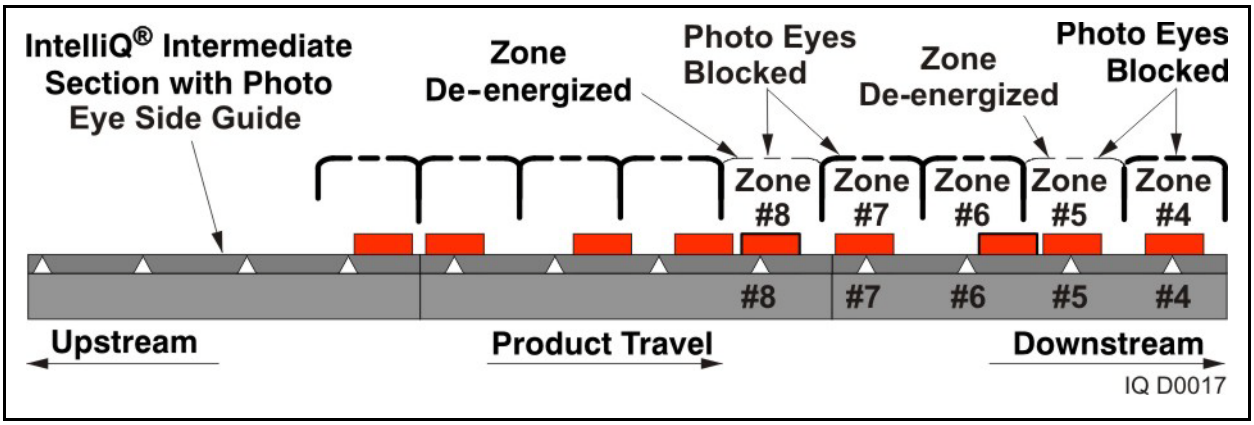


Figure 2 - 8 Singulation Acceptance (Accumulation) - Run-Up

True Singulation Acceptance (Accumulation)

As product moves down the conveyor, it continually blocks and unblocks the photo eyes. Each photo eye controls the previous (upstream) zone. When a photo eye sensor is blocked, it deactivates its upstream zone. When it is unblocked, the zone is activated again. This is to prevent conveying product into a zone that is already full of product. If a long block, or slug, of product is moving down the conveyor, the zones will continually activate and deactivate in this manner, introducing gaps into the slug of product.

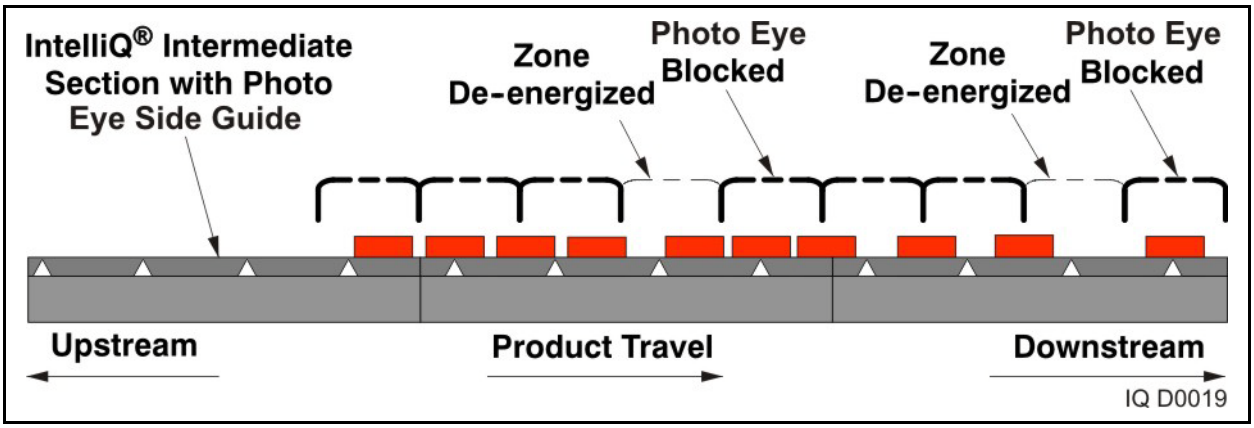


Figure 2 - 9 Photo Eye Sensor Operation

In typical applications of the IntelliQ® Accumulation Conveyor conveyor, a belt conveyor is installed at the discharge end of the IntelliQ® Accumulation Conveyor to control the release of product. (In some applications, some other type of stopping device, such as a package stop, may be used.) The discharge end idler zone of the IntelliQ® Accumulation Conveyor is equipped with a solenoid valve that is controlled in conjunction with the belt conveyor. When the belt conveyor is stopped, the electrical signal is removed from the solenoid valve which deactivates the discharge idler zone. The solenoid valve in the discharge idler is also used to control the next upstream zone (Zone #1 in the illustration).

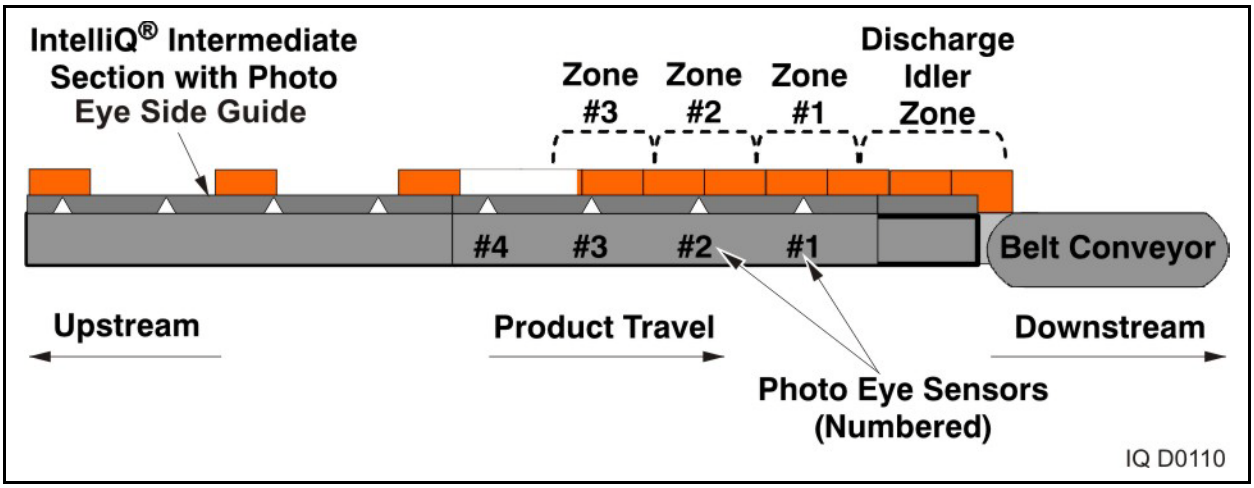


Figure 2 - 10 Singulation Acceptance (Accumulation)

As the product moves down the conveyor and coasts into Zone #1 (the discharge idler and Zone #1 are deactivated), it blocks Photo Eye Sensor #1. This deactivates Zone #2. As product moves into Zone #2, it blocks Photo Eye Sensor #2 causing Zone #3 to deactivate. Product will continue accumulating in this manner as long as the belt conveyor is stopped. Also, since the zones are three feet long, it is possible to have more than one product accumulate in a zone.

Slug Acceptance (Accumulation)

Slug Acceptance is used at the infeed end of an accumulation conveyor to make sure product is positively conveyed away from the upstream conveyor. A common usage is when the accumulation conveyor is downstream from the divert lane of a sorter. Since the sorter diverts the product at a high rate of speed, the accumulation conveyor must be able to accept the product at a high rate of speed to prevent jams and to keep the product moving. Slug Acceptance allows product to be conveyed onto the accumulation conveyor without the interruption that would occur when Singulation is used. The number of zones used for Slug Acceptance is directly dependent on the application.

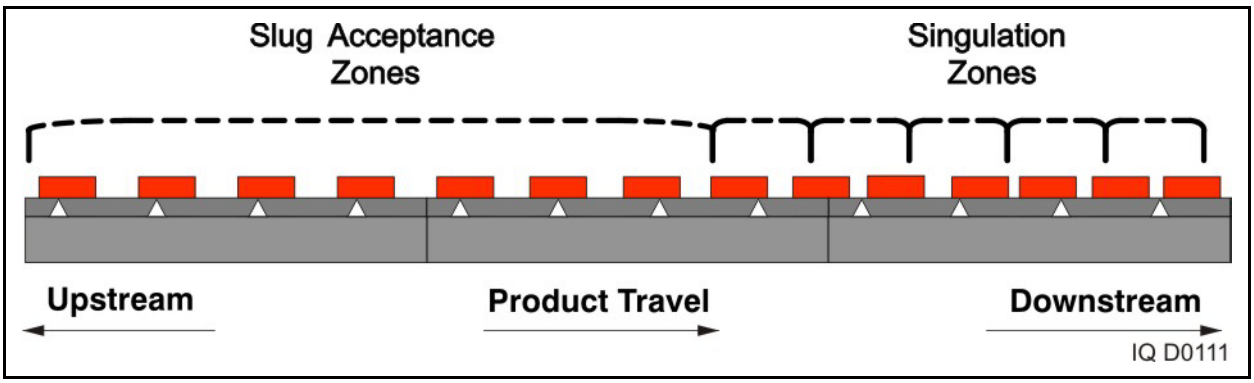


Figure 2 - 11 Slug Acceptance with Downstream Singulation Zones

Slug Acceptance basically turns the infeed end of the accumulation conveyor into a transportation conveyor. Product is allowed to travel uninterrupted down the conveyor until it reaches the furthest downstream Slug Acceptance Zone. The product will then begin to accumulate according to the type of logic modules installed in the remaining downstream zones.

If accumulated product backs up to the furthest downstream Slug Acceptance Zone, that zone will accumulate, effectively shortening the Slug Acceptance Zone. If product is allowed to continue accumulating, the zones that make up the Slug Acceptance Zone will continue to convert to accumulation zones until the entire conveyor is full. A control mechanism must be in place to prevent this from occurring.

Product Release Modes

The product release modes control the movement of product out of a zone. They follow rules for activating zones based on the blocked/unblocked status of specific downstream photo eyes. When a zone is activated, its carrier rollers rotate to move product downstream and out of the zone.

Singulation Release

In Singulation Release mode, product is not released until the downstream zone is cleared. When the belt conveyor is started, an electrical signal is also sent to the solenoid valve in the Discharge Idler. This activates both the Discharge Idler Zone and Zone #1. Product in those zones will now begin to move forward.

When Photo Eye Sensor #1 is clear, Zone #2 and Zone #3 will activate and product will move toward Zone #1. As each upstream photo eye sensor is cleared, its corresponding zone will activate and release product.

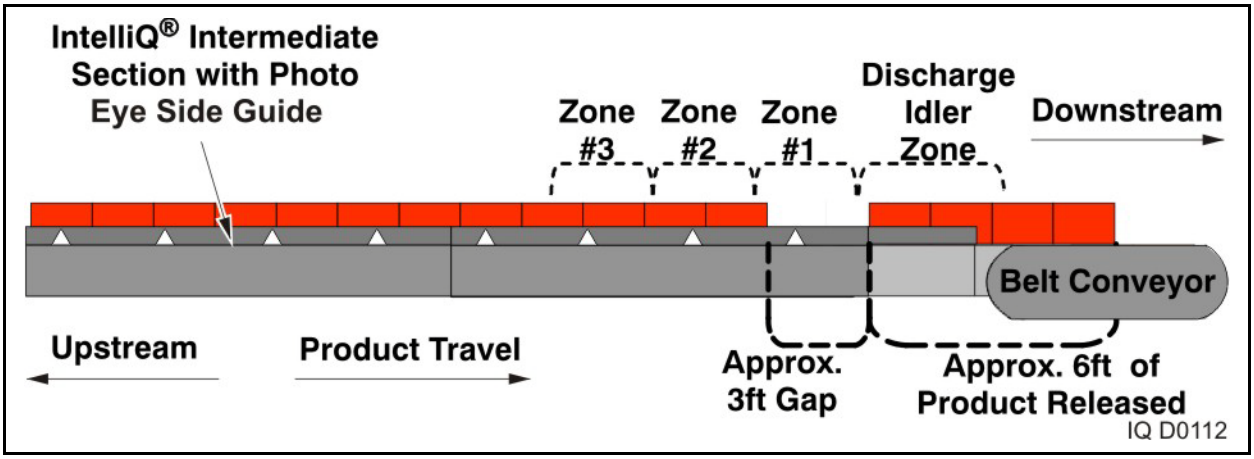


Figure 2 - 12 Initial Singulation Release

Since the zones are three feet long, releasing the Discharge Idler Zone and Zone #1 will release approximately six feet of product. The remaining product will be released in three-foot groups. Also, the groups of product will be separated by three-foot gaps. The length of the product groups and gap lengths may not be exact. They may fluctuate depending on the size or weight of the product and the speed of the conveyor.

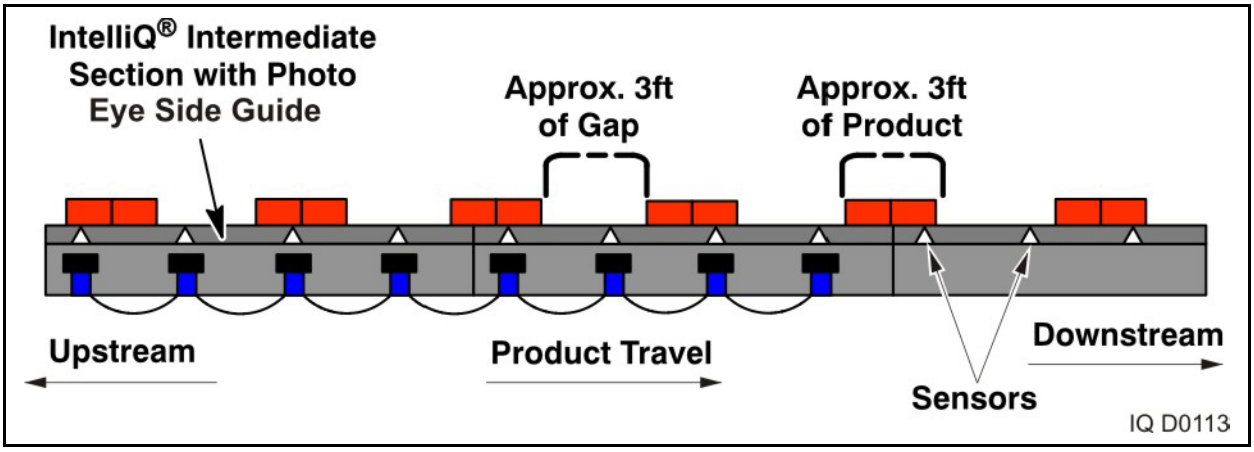


Figure 2 - 13 Singulation Release

True Singulation Release

In True Singulation Release mode, product is not released until the downstream zone is cleared. When the belt conveyor is started, an electrical signal is also sent to the solenoid valve in the Discharge Idler. This activates both the Discharge Idler Zone and Zone #1. Product in those zones will now begin to move forward.

When Sensor #1 is released, Zone #2 will activate and product will move toward Zone #1. As each upstream photo eye sensor is cleared, its corresponding zone will activate and release product. A zone will not release until its immediate downstream zone has cleared.

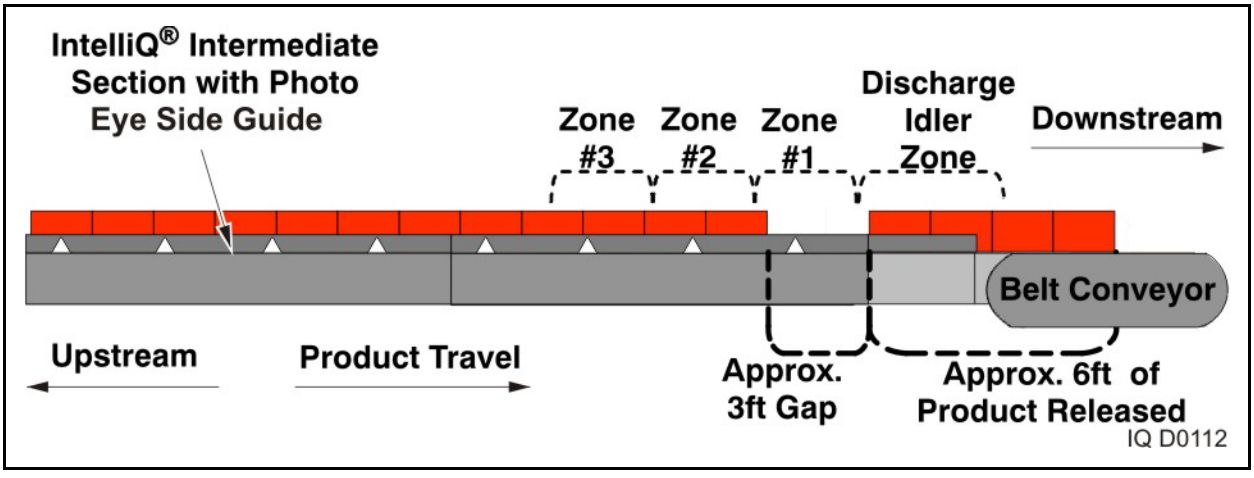


Figure 2 - 14 True Singulation Release

Slug Release

Slug Release requires a Zone Interface Module (ZIM) or other device to provide a signal to the logic modules. Slug Release allows all zones to be activated simultaneously, releasing all the product on the conveyor at one time. The number of zones activated is determined by the placement of the Slug Terminator Cable. The Slug Terminator Cable blocks the slug signal from being sent to the logic modules. If a twenty-one foot slug is desired, the Slug Terminator Cable is installed between the logic modules in Zone #6 and Zone #7. (6 zones x 3 ft. + 3 ft. Discharge Idler = 21 ft.) If no Slug Terminator Cable is installed, the product on the entire conveyor will be released as one slug.

When the belt conveyor is started, an electrical signal is sent to the solenoid valve in the Discharge Idler and the ZIM. This activates the Discharge Idler Zone and the ZIM sends a signal to all the logic modules between the ZIM and the Slug Terminator Cable to activate their zones simultaneously. Product in the discharge idler and the slug release zones will now begin to move forward as one slug of product. The zones following the Slug Terminator Cable will begin to release as soon as the photo eye sensor in the first downstream zone (the last slug release zone) is cleared. Their release mode is based on the logic module installed.

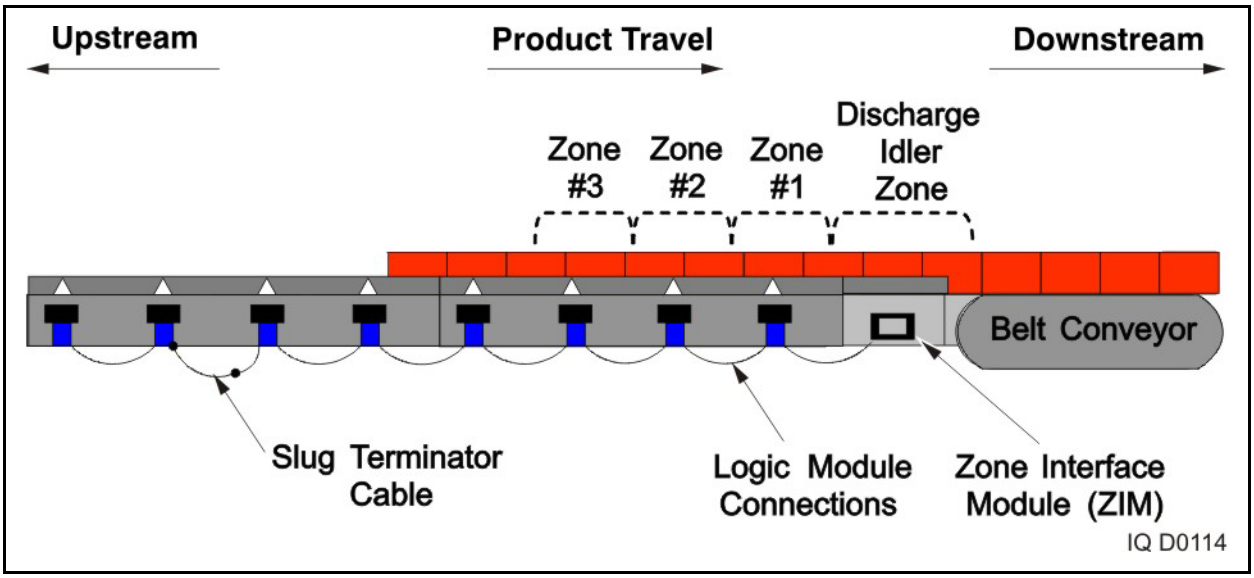


Figure 2 - 15 Slug Release

Product Summary

Applications:
- High-speed transportation,
- Zero-pressure accumulation,
- High rate of release.

Widths (Conveyor): Module width is define as the distance between the inside surface of the frame rails on the product side of the frame. These widths follow the general convention set for the Intelligrated Case Conveyor family:
16 inches
22 inches
28 inches
34 inches
40 inches

Maximum Conveyor Length Length varies and is determined by the belt pull. Maximum belt pull is 300 pounds.

Speeds 60, 90, 120, 150, 180, 210, 240, 270*, 300*, 350*, 400*
* Consult product engineer for applications above 240 fpm.

Drive Belt 2-inch drive V-backed drive belt, thermal-welded or mechanically-laced.

Capacity Live Load: 100 lbs./ft. Live Load (item weight: <.5 lbs. to 200 lbs.)

Carrier Rollers: AB - ABEC
HS - High Speed
PR - Premium
See the Rollers Specifications Table in Chapter 2 - Specifications for more information.

Infeed Idlers: Required at the charge end of conveyor

Length
3 feet

Roller Centers
2 inches w/fixed-type mounting

Pressure Spools
One 3-foot-long accumulation zone, solenoid-controlled

Designations
Right Hand
Left Hand

Center Drive Section for Standard and Low Profile:

Second or third section of the conveyor. Drive is pre-assembled to an Intermediate Section.

Length of Drive
58 inches

Lengths of Intermediate Section
9 feet
12 feet

Roller Centers of Intermediate Section
2 inches w/fixed-type mounting
3 inches w/fixed-type mounting

Pressure Spools
3-foot long operational zones

Maximum Effective Pull
300 pounds

Belt Tensioner
Pneumatic

Designations
Right Hand
Left Hand

Power Units:

Motors
3/4 to 5 HP
Underhung C-Face (Baldor)
230/460/575 VAC, 3-phase, 60 Hz.,
380 VAC, 3-phase, 50 Hz.
Standard and premium-efficiency motors
Chain drive

Reducer
C-Face, right-angle (Dodge)

Intermediate Section - "Accumulation" type standard.

Straight:

Lengths
6 feet (2 zones of pressure spools)
9 feet (3 zones of pressure spools)
12 feet (4 zones of pressure spools)

Roller Centers
2 inches w/fixed-type mounting
3 inches w/fixed-type mounting

Pressure Spools
3-foot long operational zones
Low-pressure air actuators

Zone Control
Trailing-zone control
Solenoid Control Module and photo eye sensor (on P.E. rail or under rollers*)
24VDC, 3.7A output. Zone control power supply accommodates up to 50 zones - 25 in either direction (upstream/downstream). One supply included per conveyor.
*Photo Eye Under Roller is not standard. Consult product engineer.

Common piping for all operational modes (SICK singulation, SICK true singulation, and SICK slug).

Designations
Right Hand
Left Hand

Sensor Type/Modes: **No Sensor:** Transportation Mode

P.E. (Photo Eye) Sensor mounted on P.E. Guide Rail

- SICK Singulation
- SICK TS (True Singulation)
- SICK Slug

P.E. (Photo Eye) Sensor mounted under Rollers*

- SICK Single Zone
- SICK TS (True Singulation)
- SICK Slug

*Photo Eye Under Roller is not standard. Consult product engineer.

Discharge Idlers: Required at the end of conveyor.

Length
3 feet

Roller Centers
2-inches w/fixed-type mounting

Pressure Spools
One 3-foot-long accumulation zone

Zone Control
Solenoid Control Module
Remote 120VAC or 24VDC
Common piping for all operational modes (SICK singulation, SICK true singulation, and SICK slug)

Designations
Right Hand
Left Hand

Options
Brake Assembly

Power Requirement:

For Power Unit
230/3/60 VAC, 460/3/60 VAC, 575/3/60 VAC, or 380/3/50 VAC

For Zone Control/Actuation Components
24V DC

For Component Solenoid Valves
120 VAC or 24 VDC

Control Components

Solenoid Valves
110 VAC
24 VDC

Finish: Powder-coated

Accessories / Options:

- Drip Pan
- Power Supply
- 9.75/6.5 Transition Bracket Field Kit
- Belt Cutter/Welder Kit
- Knee Brace
- End Guard
- Brake Assembly
- Pop Up Stop (120VAC and 24VDC
- Head-to-Tail Logic Kit
- Slug Release Zone Interface Module (ZIM)
- Splice Plate Kit
- Filter/Regulator
- Spacer Splice Channel
- Racking Tool - 16 to 22 inch BF
- Side Guides
  - Straight
  - Photo Eye/Reflector
  - Skate Wheel Side Guide
  - Transition - Photo Eye to Straight
  - Transition - End

3 Accessories

This chapter contains standard and optional accessories available for the IntelliQ® Accumulation Conveyor product line.

Standard Accessories

- Drip Pan
- Power Supply

Optional Accessories

- 9.75/6.5 Transition Bracket Field Kit
- Skew Zone Guide Kit
- Belt Cutter/Welder Kit
- Knee Brace
- End Guard
- Brake Assembly
- Pop Up Stop (120V AC & 24V DC)
- Head-to-Tail Logic Kit
- Slug Release Zone Interface Module (ZIM)
- Splice Plate Kit
- Filter/Regulator
- Spacer Splice Channel
- Racking Tool - 16 to 22 inch BF
- Side Guides
    - Straight Side Guide
    - Photo Eye/Relector
    - Skate Wheel Side Guides
    - Transition - Photo Eye to Straight
    - Transition - End

Drip Pan

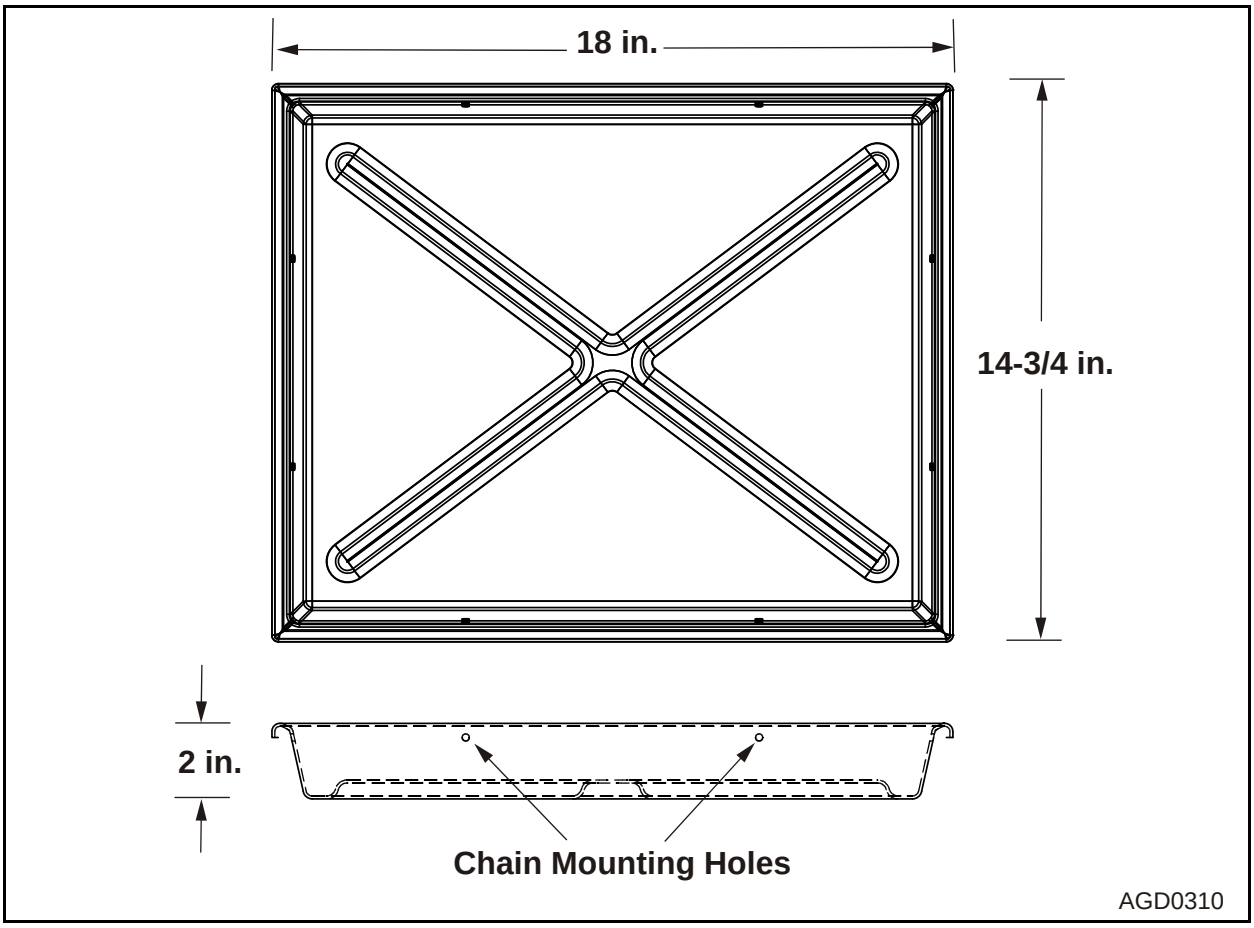


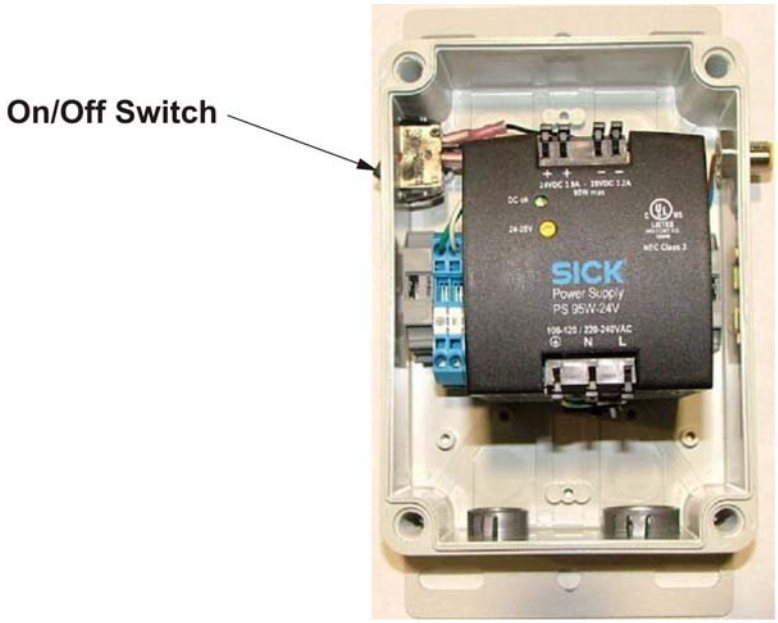
Figure 3 - 1 Drip Pan

Overview The drip pan catches oil dripping from the gearbox and/or oiler.

IInstallation It is most commonly installed on the drive section of each conveyor. The drip pan hangs from chains mounted on the frame of the drive, or on the reducer itself. Install drip pans as needed, typically one per drive.

Part Numbers 29001300

Power Supply



IQ I0411

Overview Each power supply can provide power for a maximum of 50 zones (25 zones in each direction) and must be located as close to the center of the zones as possible to balance the power supplied to the zones.

Installation If there are 25 zones or less, the power supply may be installed at the end of the conveyor closest to the 115V supply. If the total number of zones exceeds 50, an additional power supply and a power isolatin cable must be installed. For additional information regarding installation, see Chapter 3 Installation Procedures in this manual.

Part Numbers 23193700 Power Supply, Accumulation 120VAC Input 24VDC, 3.7 Amp Output with Box and 2M T-calbe, Sick #7029740.

9.75/6.5 Transition Brackets Field Kit

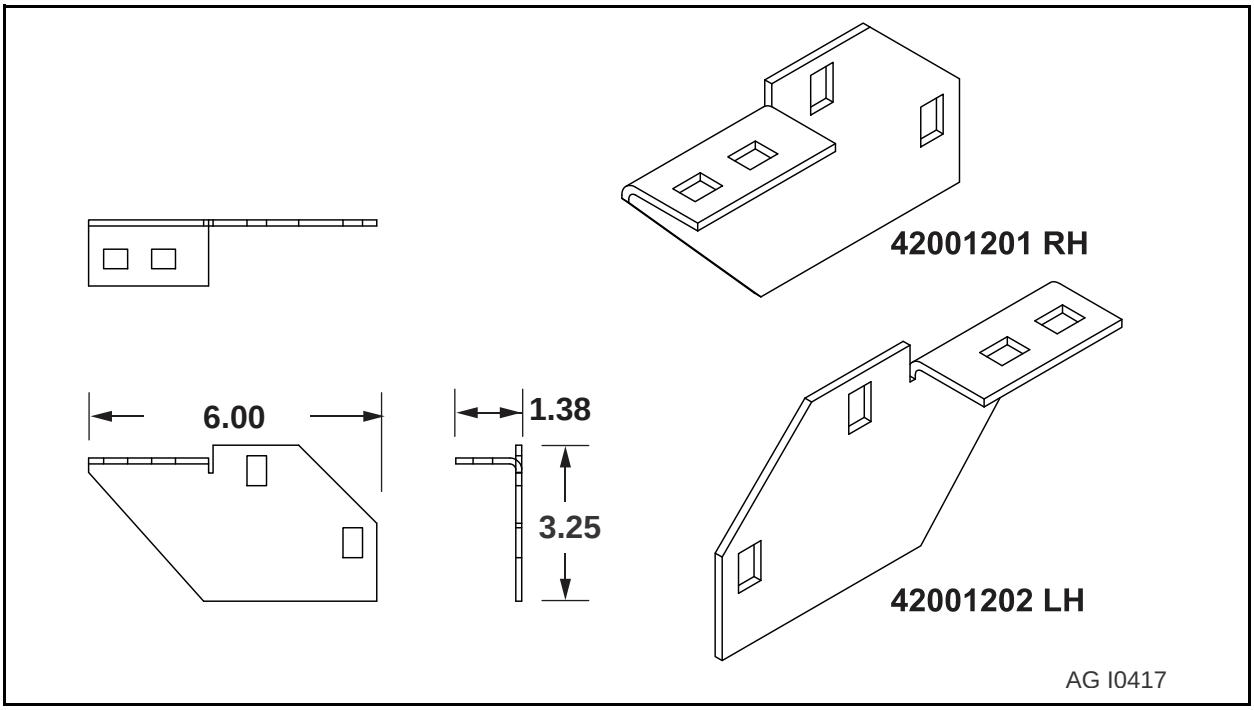


Figure 3 - 2 9.75/6.5 Transition Bracket Field Kit

Overview

The Brackets can be ordered to reinforce the coupling of a 6.5 inch or a 9.75 inch frame conveyor.

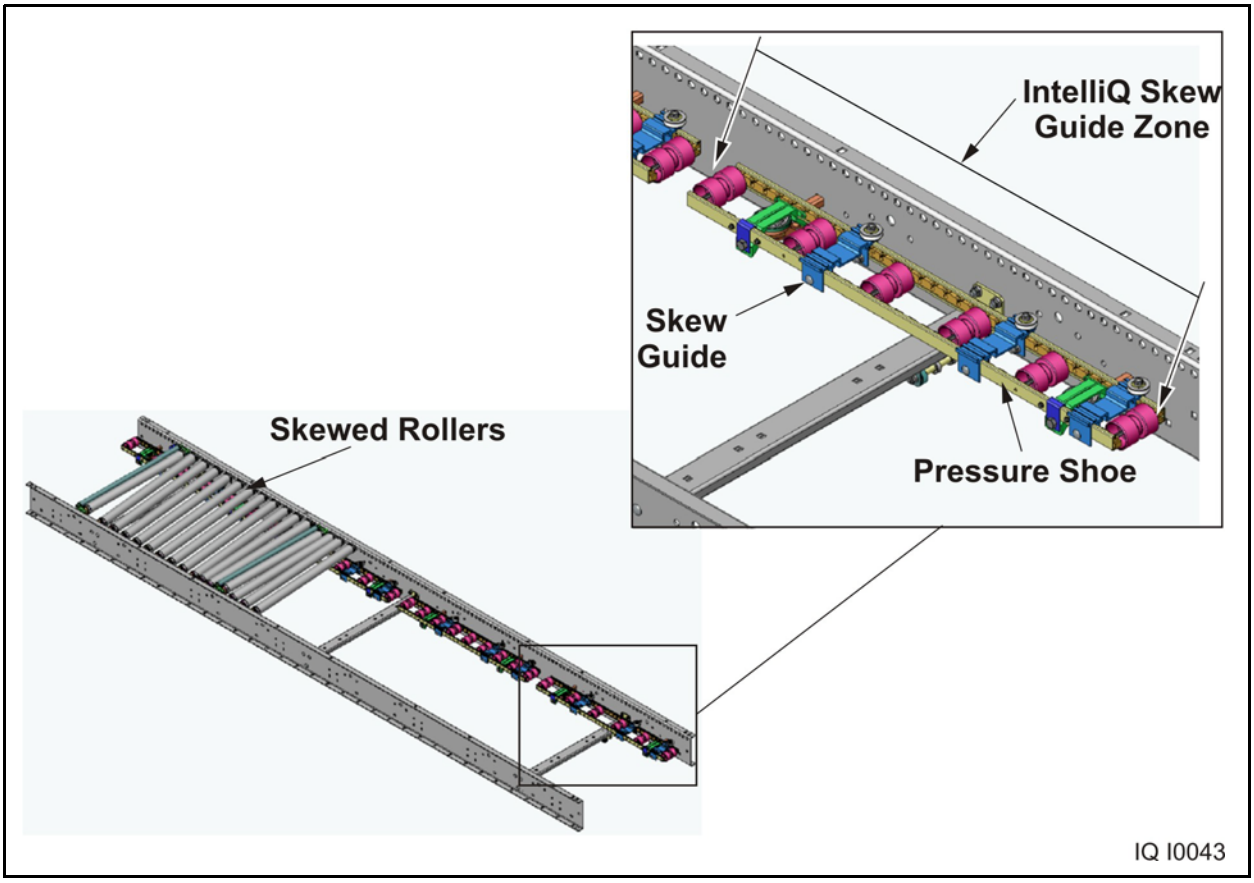
Note: Any changes in frame height, in a single conveyor line, the brackets will be included at the factory.

For example, this accessory can be ordered when transitioning from a 6.5 inch conveyor frame to a 9.75 inch conveyor frame.

Part Numbers

42001201 - Right Hand
42001202 - Left Hand

Skew Guide



Overview The intermediates with skewed roller configurations require skew guides to keep the drive belt properly tracked on the pressure rollers as it goes through the skewed sections.

Specifications The conveyor is designed for a 1-inch roller offset skew, a 2-inch roller offset skew, and a 3-inch maximum offset skew. There must be a minimum of three skew guides per zone per shoe.

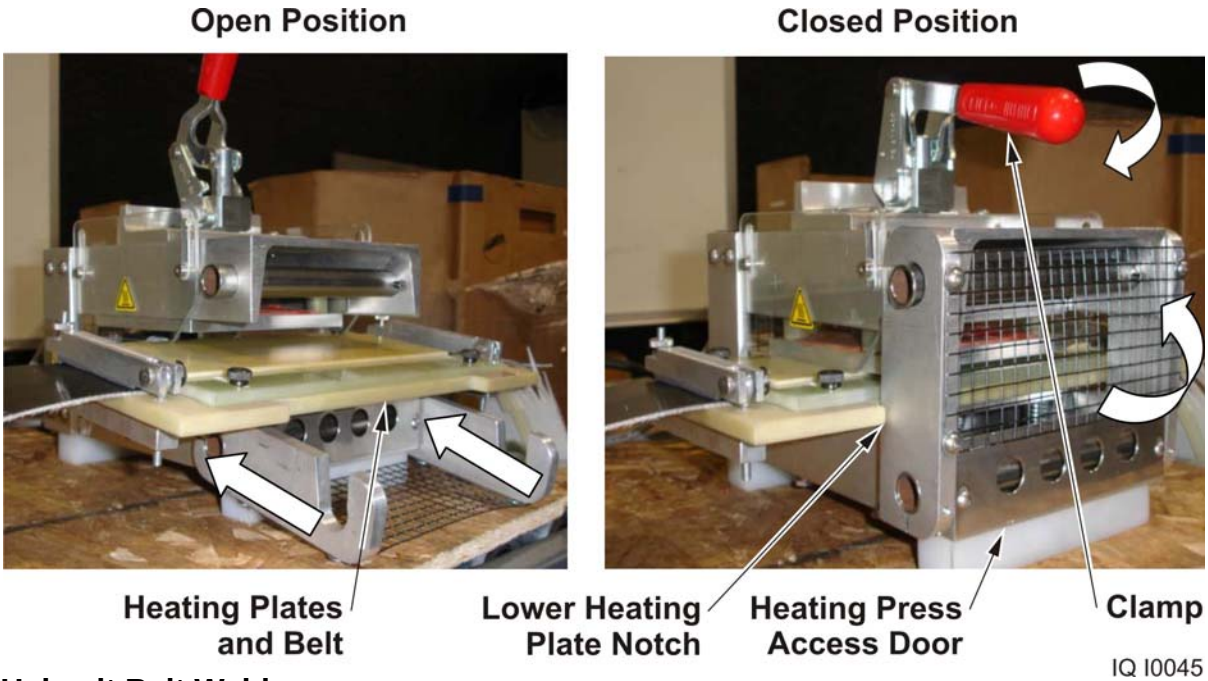
Note:Field-Assembled Skew Kits are available, but are not recommended. The recommended method for aligning product to one side of the conveyor is the placement of a V-Belt conveyor with a hard skew immediately upstream from the IntelliQ® Accumulation Conveyor.

Part Number 70095100

Belt Cutter and Belt Welder

Habasit Belt Cutter

IQ I0044



IQ I0045

Habasit Belt Welder

Overview

The recommended lacing method for drive belts is thermal welding. In the event of a breakdown, the drive belt may also be mechanically laced using #1-HT lacing until a shutdown period when the belt may be welded.

Specifications

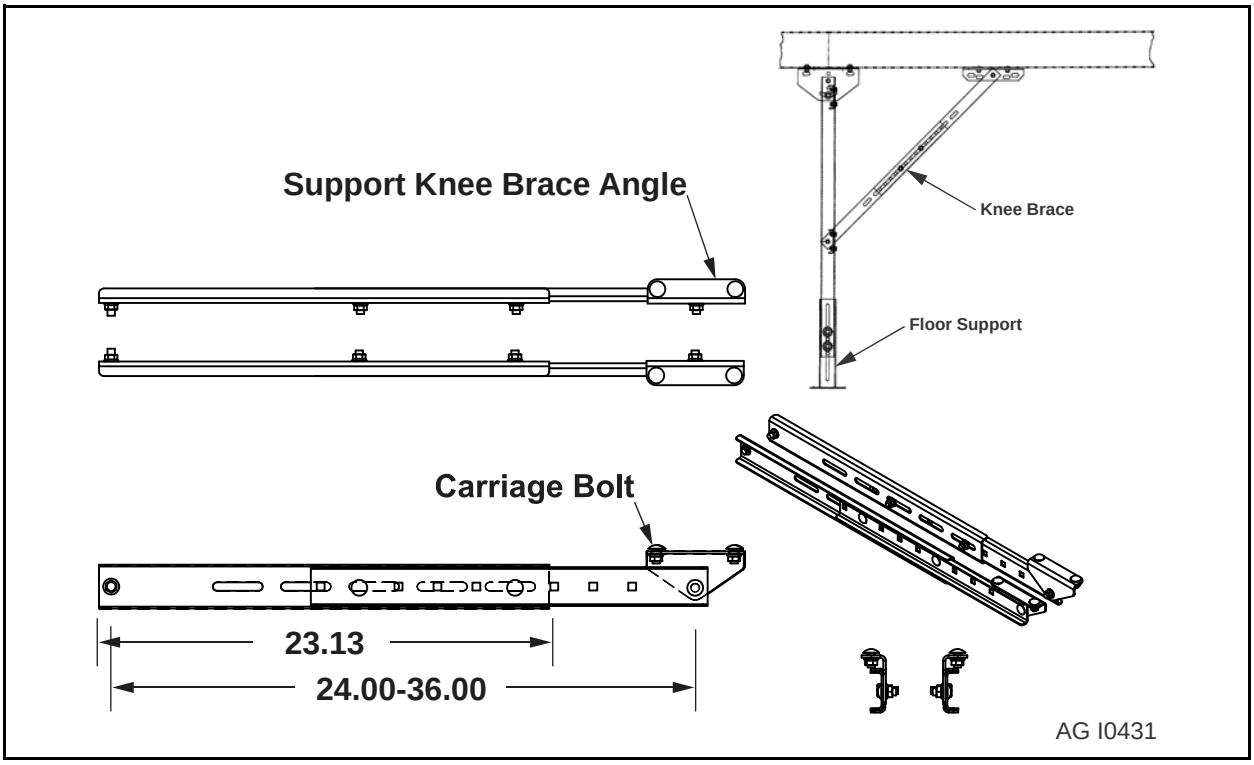
The belt is cut and welded using the Habasit Belt Cutter and Welder. The Habasit Belt Cutter is a manual, portable die cutting device that prepares the ends of the belt for welding.

The Habasit Belt Welder is a manual, portable welding unit that welds the prepared ends of the belt together.

Part Numbers

29303500 - kit features a 3-stage cutter
29377600 - kit features 11-stage cutter
For South America requiring 230VAC use the following part numbers 29406700 and 29406600.

Knee Brace



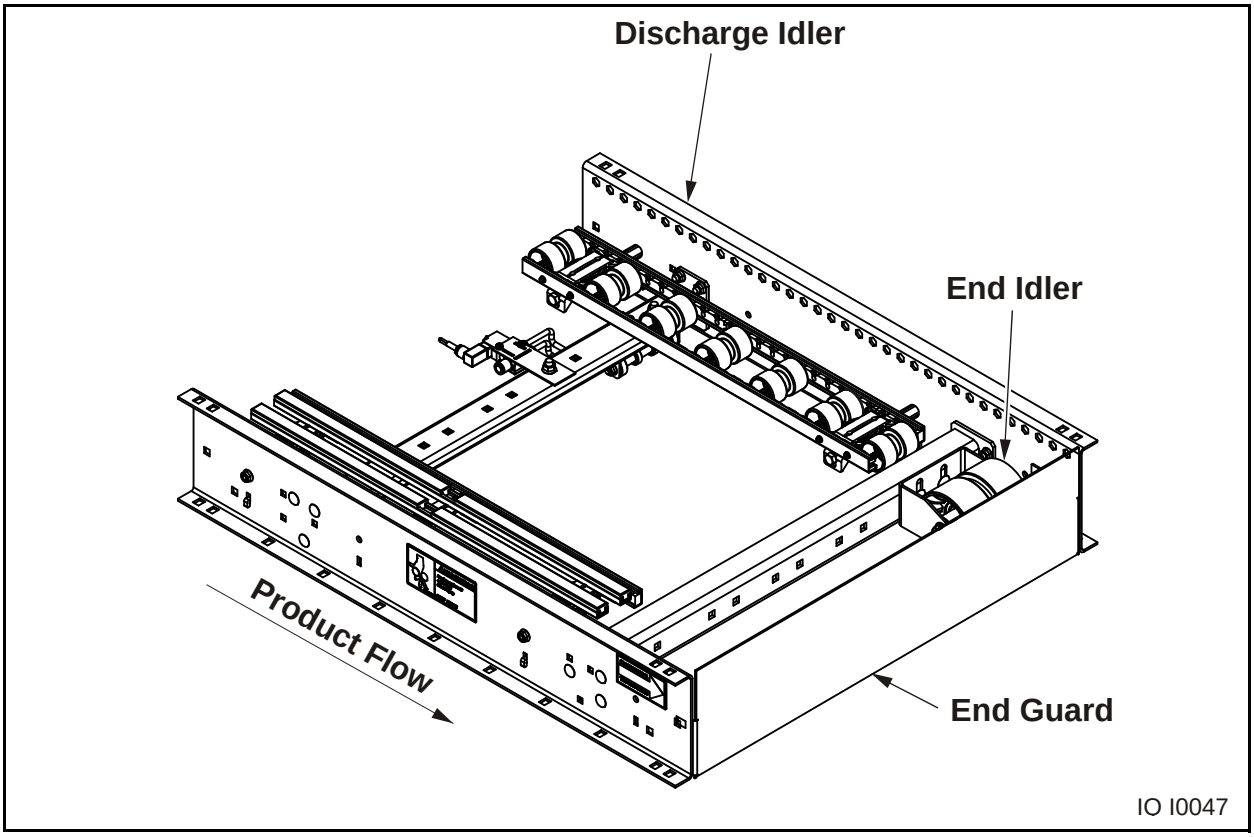
Overview The knee braces add longitudinal stability. The knee brace eliminates stress caused by flow direction, stops, and starts. Every support does not require bracing.

Operation Use knee braces: at the ends of straight runs, before case stops, near the drive, and approximately every 50 feet on a long straight run.

Installation Locate the knee braces on the downstream side of the supports, putting them in tension. However, starting the conveyor stresses the legs in the opposite direction. To resist these stresses, install braces near to, and upstream from the drive.
For best results, keep the strap-to-frame angle between 30° and 45°. On shorts supports, where a small angle results, shorten the brace strap - this is optional.

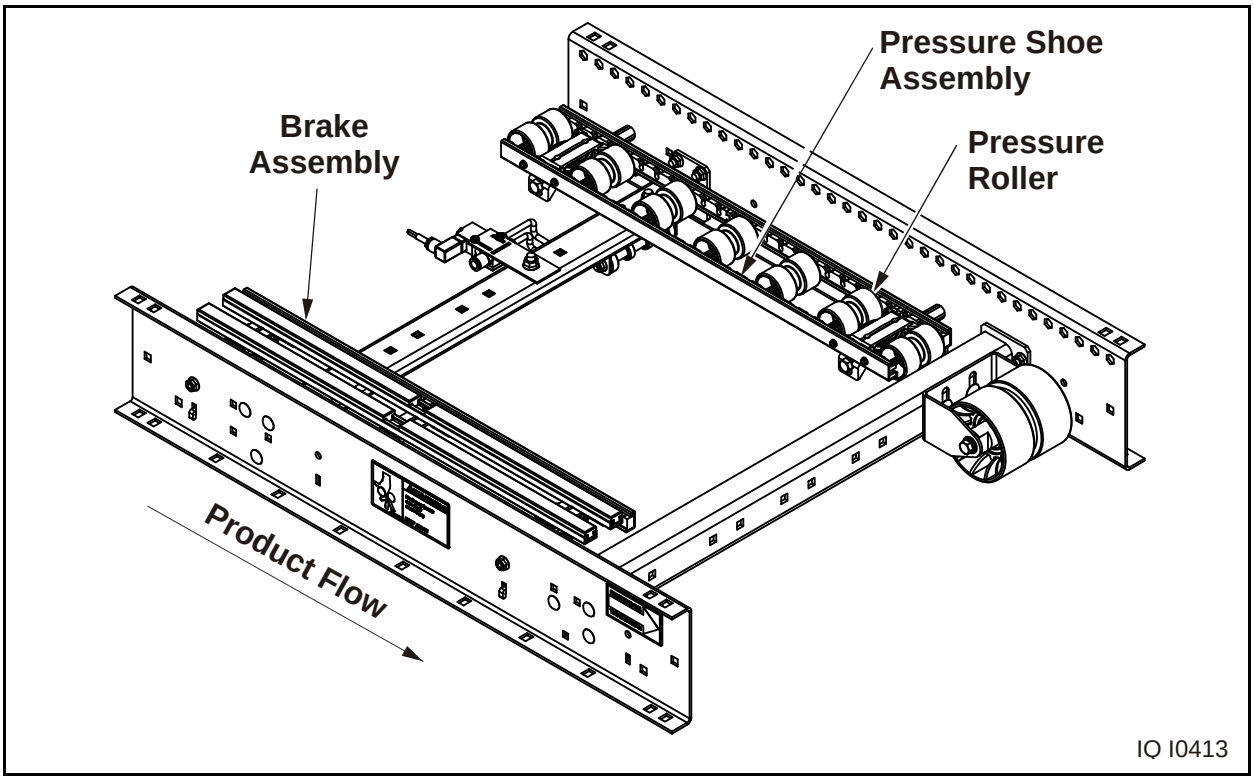
Part Number 10005900

End Guard



Overview	.The End Guard is used if the Discharge Idler is not attached to another conveyor. It protects the End Idler from being damaged.
Kit Includes	End Guard RH and LH assemblies and mounting clips.
Installation	Bolt the End Guard to the conveyor frame rails using the hardware supplied.
Part Number	40016200

Brake Assembly

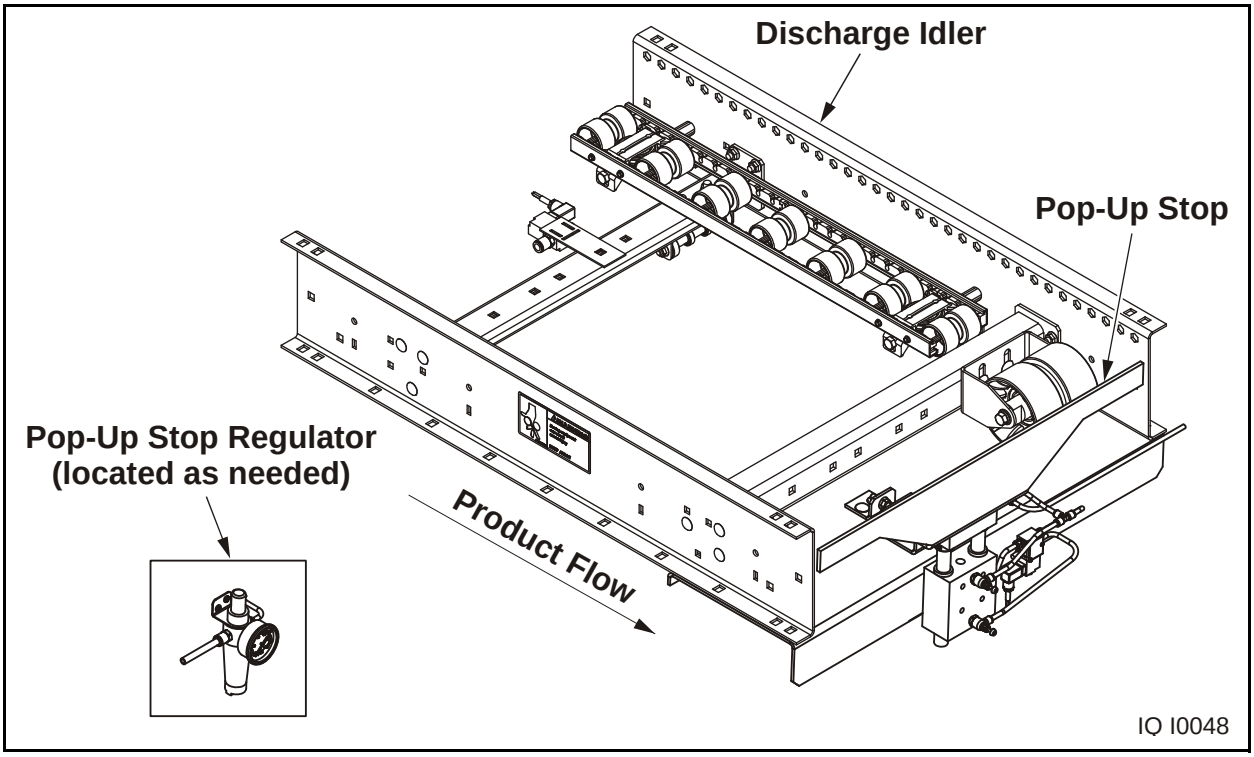


Overview IntelliQ® Accumulation Conveyor Discharge Idlers may be equipped with a Brake Assembly that provides a positive braking action to the rollers on the conveyor. This prevents products from coasting on the rollers.

Installation The assembly is identical to the pressure shoe assembly, with the exception of the brake pads and brake pad mounting channels. It is activated in the same manner as the normal pressure shoe assembly and is easily repaired, removed or replaced.

Part Number 40007600 - 610 Discharge Brake Kit

Pop-Up Stop



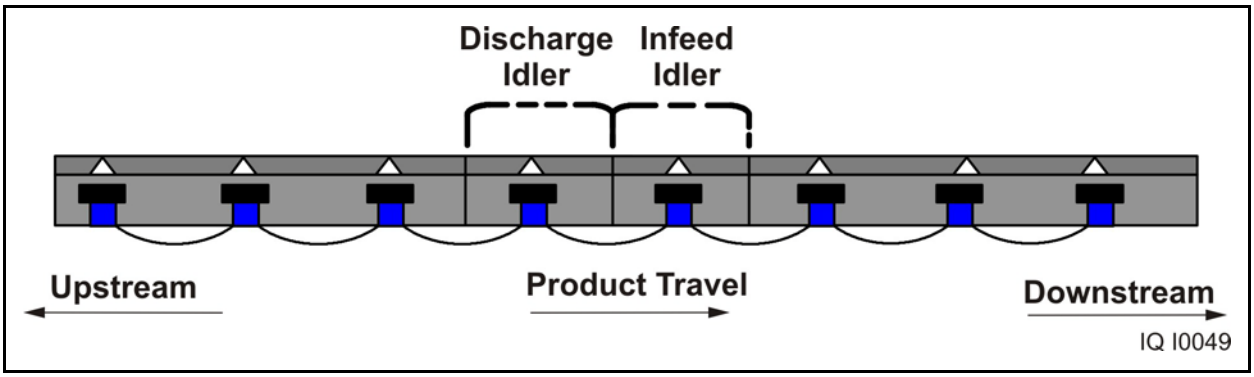
Overview When activated, the Pop-Up Stop rises between rollers to stop product from moving downstream, even if the rollers are turning. It is available in 120 VAC or 24 VDC control signal configuration.

Note: The Pop-Up stop will work only with straight (not skewed) rollers on 3-inch centers.

Installation INormally installed at the end of the Discharge Idler. If it is installed elsewhere on the conveyor, customized piping is needed.

Part Number 80002200

Head-To-Tail Logic Kit

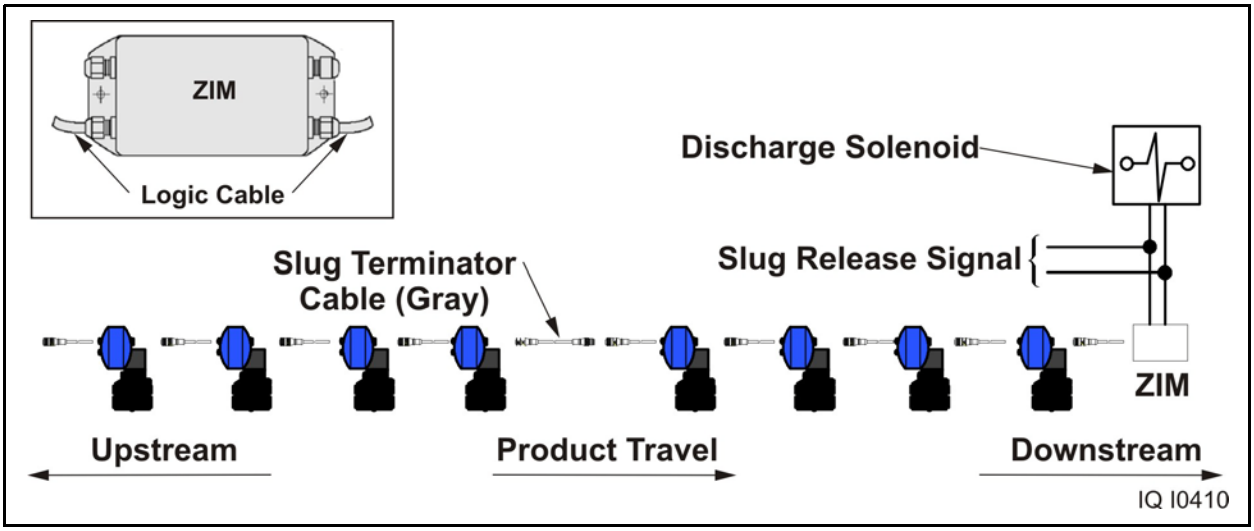


Overview The Head/Tail Logic Kit provides seamless logic across two conveyors that are installed head-to-tail. The kit consists of two logic modules and the associated mounting and pneumatic hardware.

Installation The infeed and discharge idlers are piped as if: 1.) they are an extension of the intermediate section, and 2.) there is no interruption in the conveyor.

Part Number 40016000

Slug Release Zone Interface Module (ZIM)

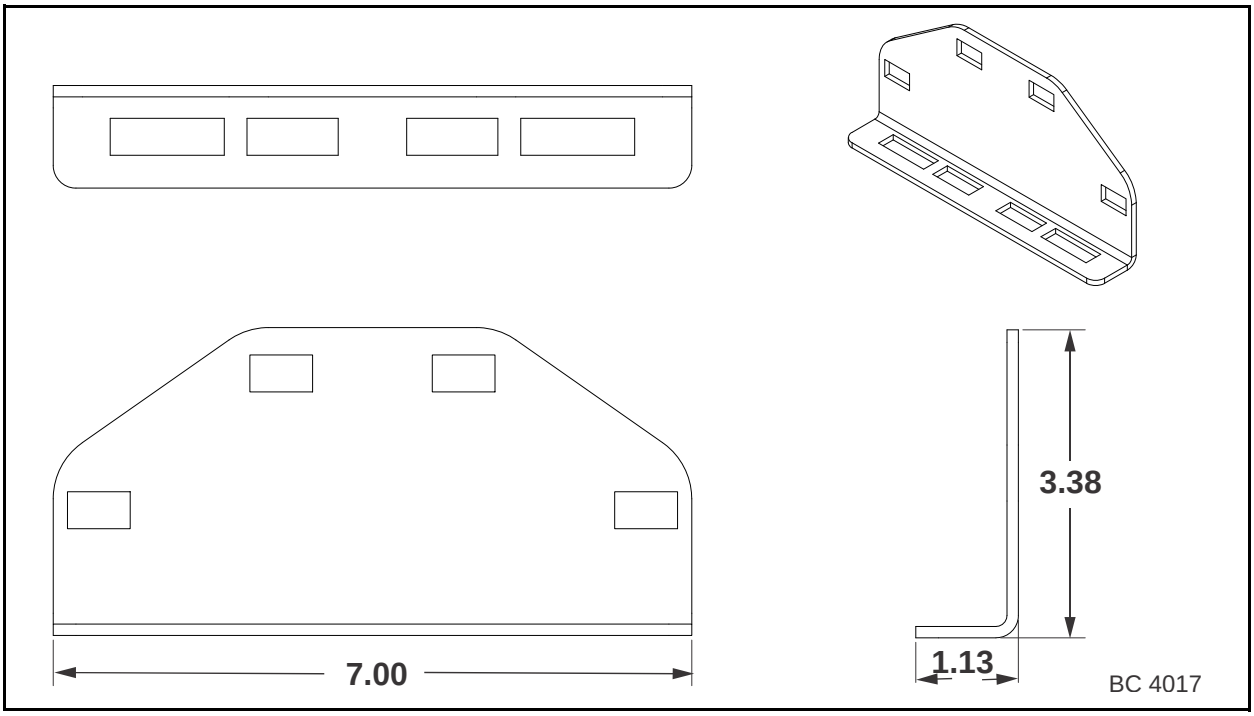


Overview The ZIM provides the signal which energizes multiple zones at the same time to accomplish Slug Release. It accepts in True Singulation mode, and releases in Slug Mode.

Installation If a limited number of zones is going to be used for Slug Release and not the entire conveyor, a Slug Terminator Cable is installed between the last logic module used for the Slug Release and the next upstream module. The remaining zones will release in Singulation or True Singulation. The ZIM is available for conveyor discharge only.

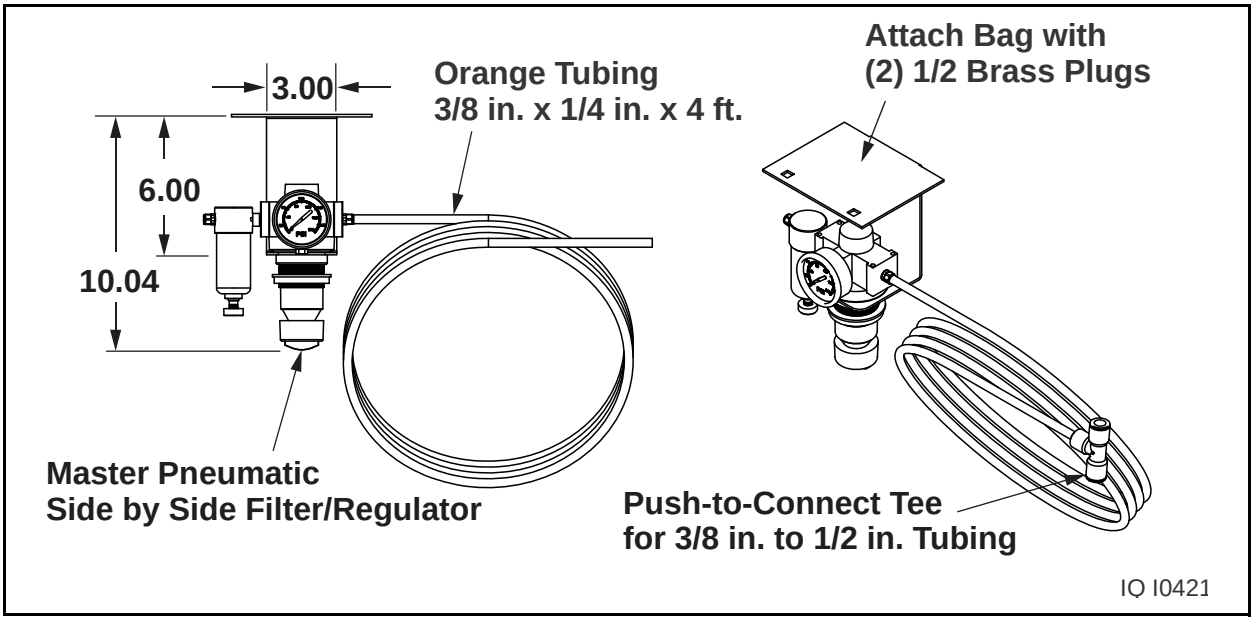
Part Number 40013100

Splice Plate Kit



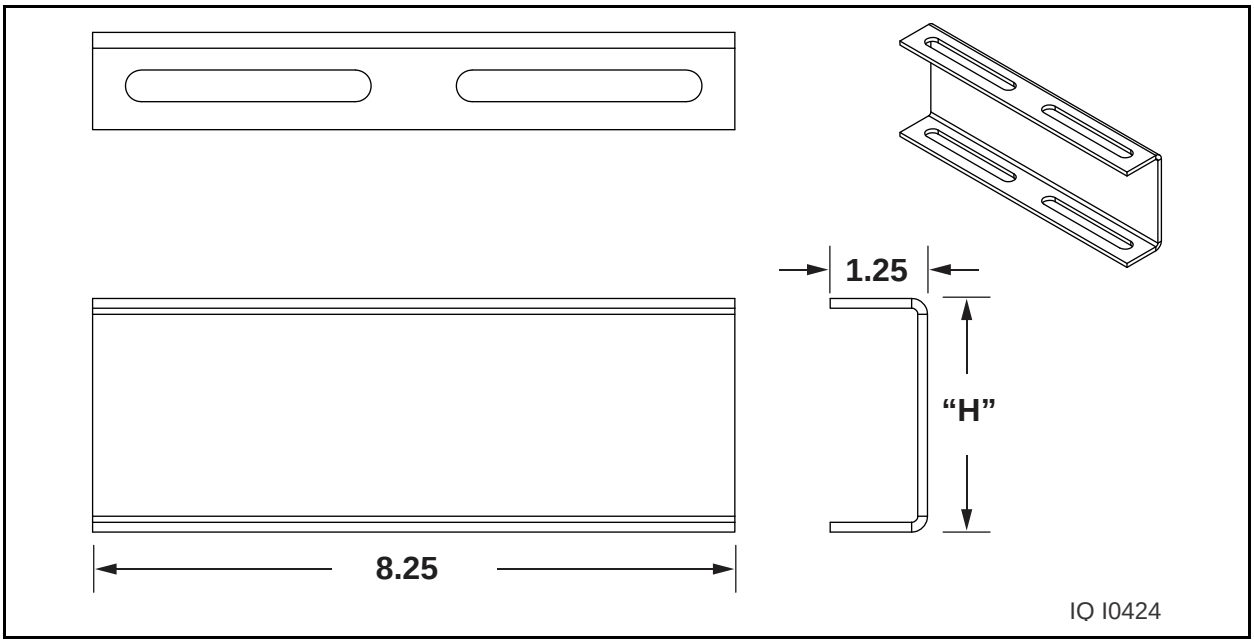
Overview	Standard plate for splicing sections together.
Installation	Use the splice plate to connect adjacent conveyor beds together.
Part Number	FK410241 (Kit) - 18000800 (plate only)

Filter/Regulator



Overview	A minimum of one is required for each 200 feet of conveyor.
Installation	Recommended initial setting of operation pressure for intermediates is 12 psi.
Part Number	70074200

Spacer Splice Channel



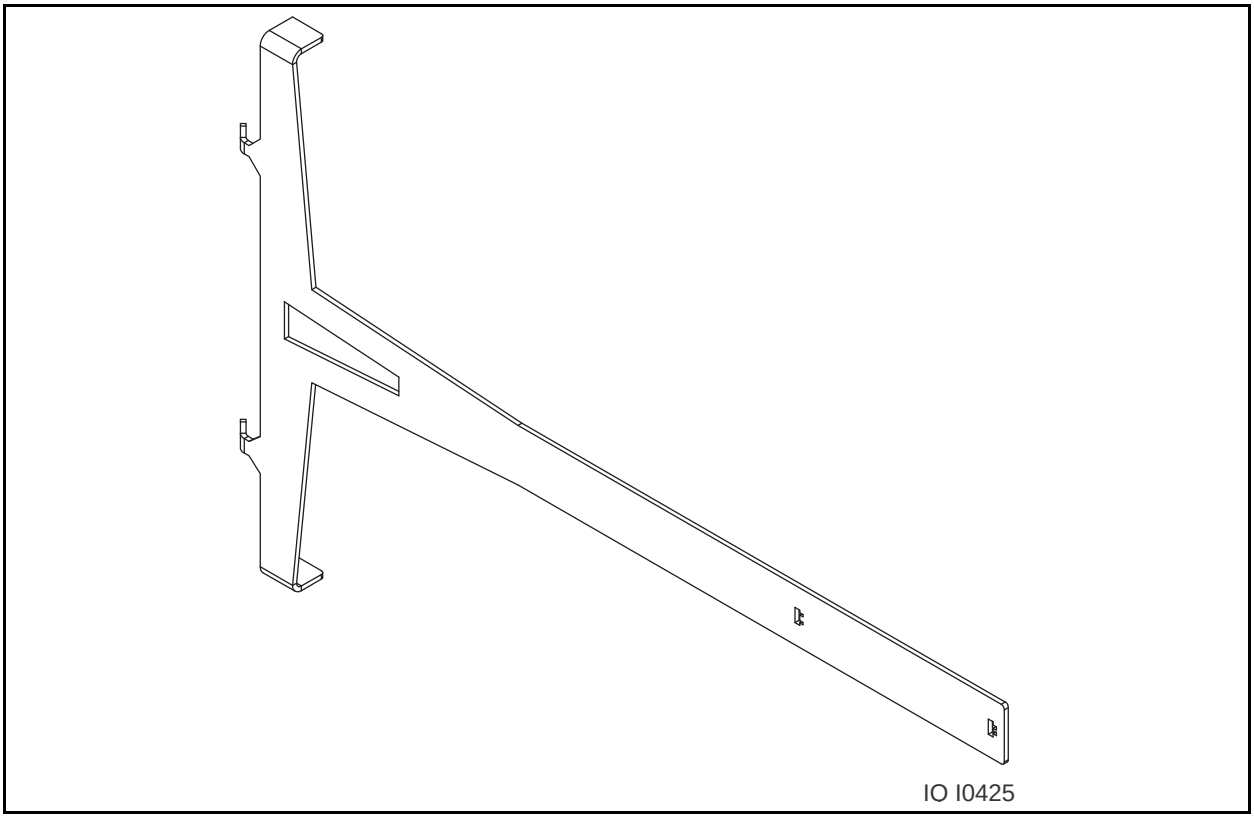
Overview Used to span gaps in floor supports and to create space for straddled supports.

Installation A 3 inch plate is required to straddle support for the drive.

Part Numbers

	Dim "H" (inches)
18001601	3.00
18001602	6.00
18001603	9.00
18001604	12.00
18001605	4.00
18001606	5.50
18001608	6.50

Racking Tool (Optional)



Overview The Racking Tool is an optional tool used for squaring the conveyor.

Part Numbers

BF (inches)	
22	70246700
28	70246702
34	70246703
40	70246704

Straight Side Guide

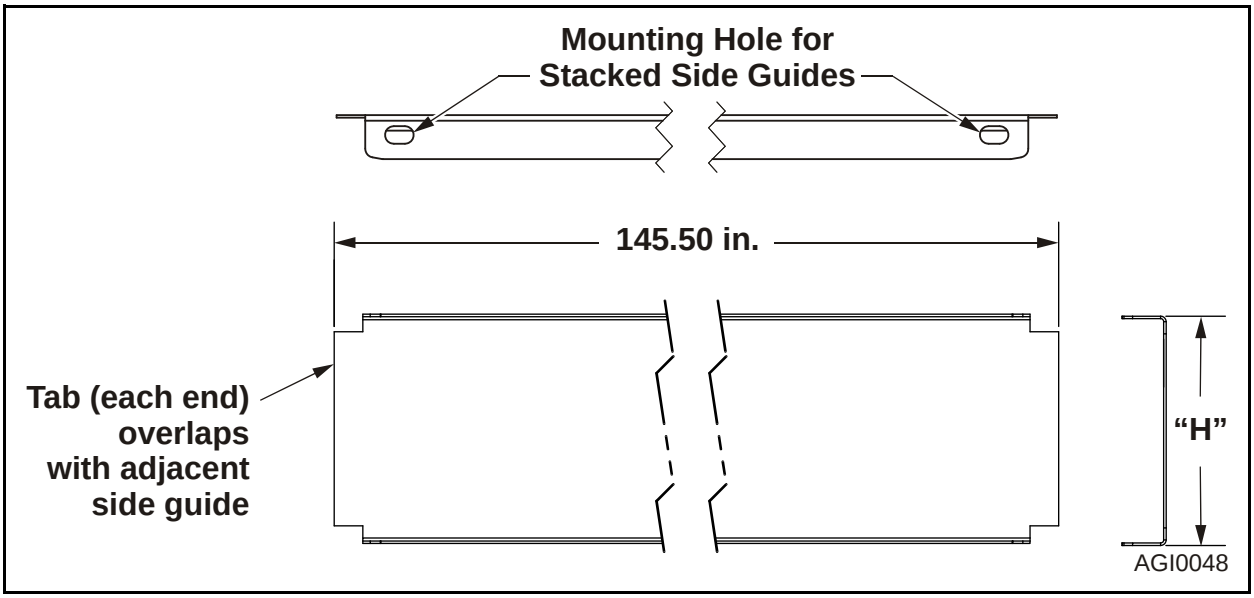


Figure 3 - 3 Straight Side Guide

Overview

Used for all straight sections that do not require special guides.

Specifications

Length: 12 feet, 1-1/2 inches
Height varies. See Part Numbers information below. If stacked on other side guides, total height limit of the stack (photo-eye and reflector side guides included) is 10 inches.

Mounting Options

- Direct-Mounted to the frame

Mounting Hardware Kits

Provided for each mounting option. See Chapter 3 - Installation Procedures for detailed mounting information.

Available Finishes

- Powder-coated

Part Numbers

Part No.	"H" Height (inches)
12000101	2.50
12000102	6.50
12000103	10.00 (used only in areas without PE/Reflector rails)
12000104	7.50
12000105	3.25
12000106	4.00

Photo-Eye and Reflector Side Guides

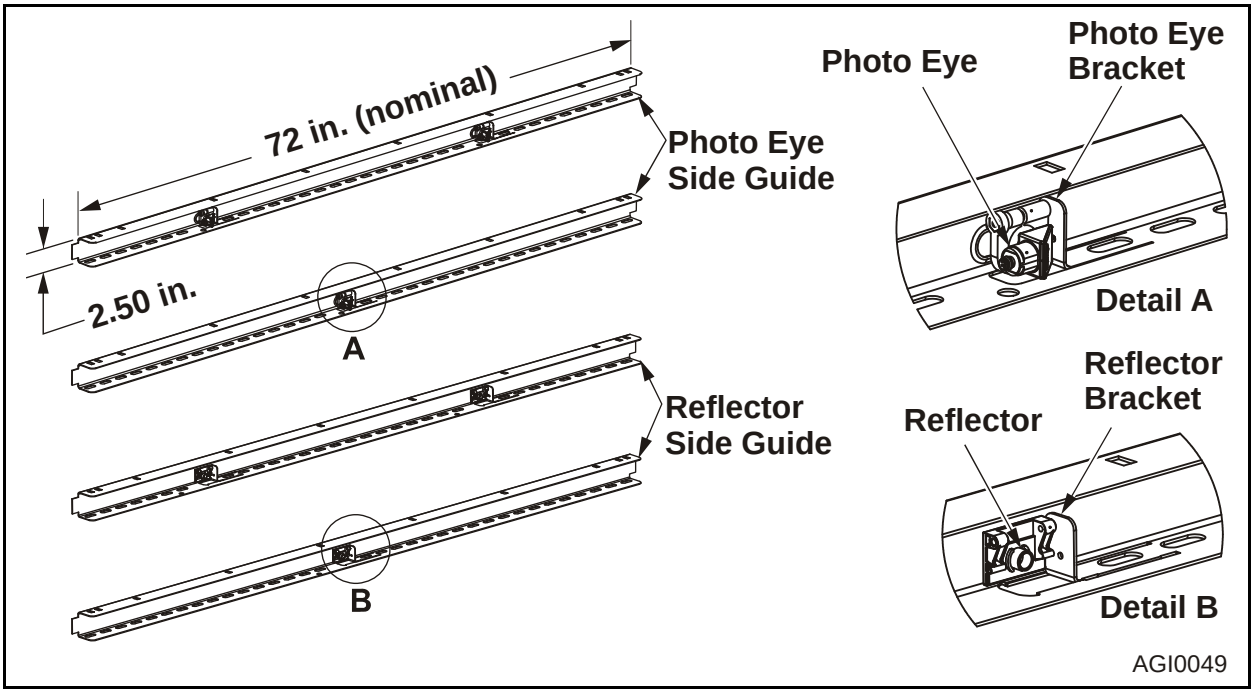


Figure 3 - 4 Photo-Eye and Reflector Side Guides

Overview Used for mounting photo-eyes and reflectors.

Specifications Length: 71.9 or 143.9 inches (6 or 12 feet nominal).
See Part Numbers information below.
Height: 2.50 inches.

Mounting Options
- Direct-Mounted to the frame

Mounting Hardware Kits Provided for each mounting option. See Chapter 3 - Installation Procedures for detailed mounting information.

Avail. Finishes
- Powder-coated

Part Numbers

Part No.	Side Guide Type	Length (feet)	# of PE's/ Reflectors	PE/Reflector Spacing (feet)
40012601	Photo-Eye	6	2	3
40012602	Photo-Eye	12	4	3
40012701	Reflector	6	2	3
40012702	Reflector	12	4	3

Skate Wheel Side Guides

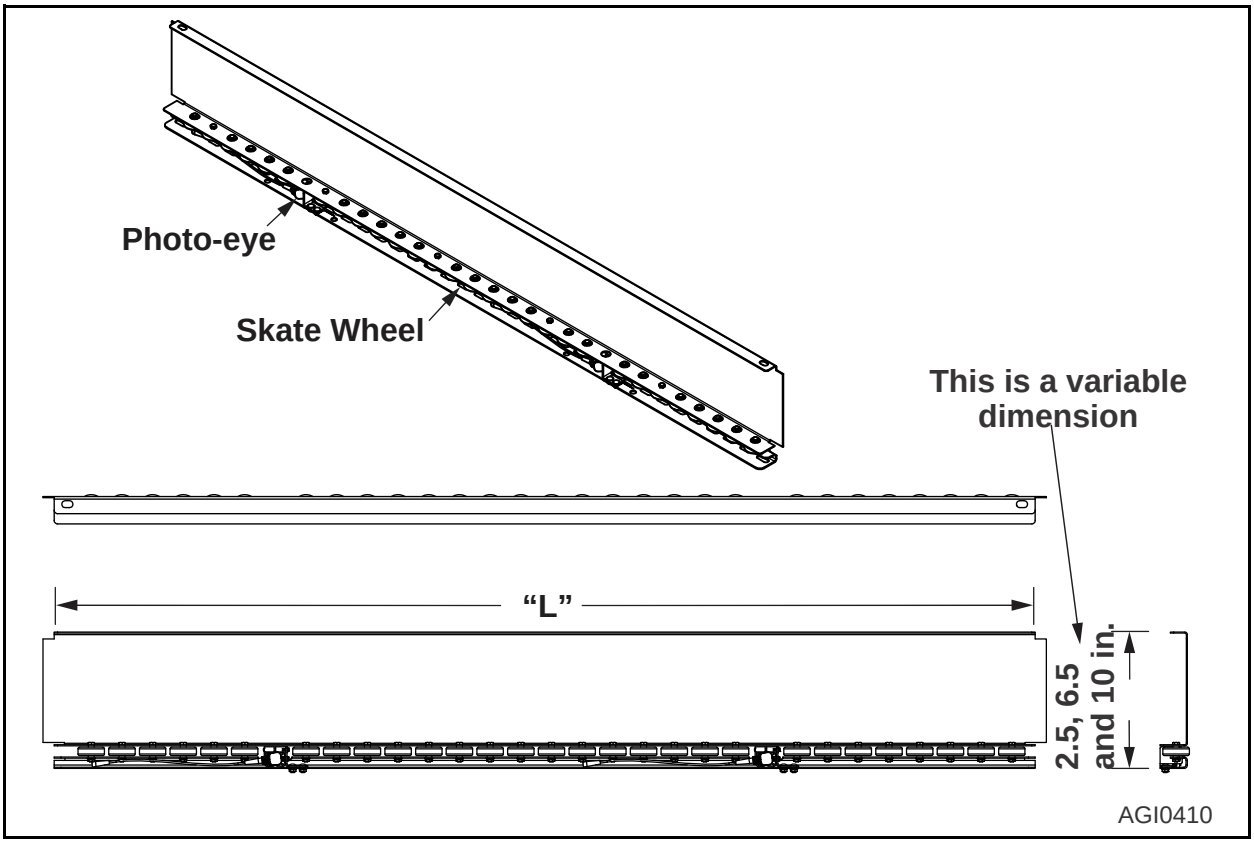


Figure 3 - 5 Skate Wheel Side Guide - 10 inch height shown

Overview	Used for all straight sections where product is skewed to one side.
Specifications	Length: 6 and 12 foot lengths Height varies. See Part Numbers information below. Distance from the top of roller to the center of the skate wheel is 1 inch, and 11/16 inch to the bottom edge of the wheel . Equipped with SICK photo-eyes and reflectors.
Mounting Options	Direct-Mounted to the frame - Transportation Accuglide only.
Mounting Hardware Kits	Provided for direct mounting. See Installation Procedures chapter for detailed mounting information.
Available Finishes	Plain (powder coated)

Part Numbers

Photo-Eye Part No.	Reflector Part No.	Length (feet)	Height (inches)	Zone Length (feet)
12017901	12018401	6	2.50	3
12017902	12018402	6	2.50	6
12018001	12018501	12	2.50	3
12018002	12018502	12	2.50	6
12018101	12018601	6	6.50	3
12018102	12018602	6	6.50	6
12018201	12018701	12	6.50	3
12018202	12018702	12	6.50	6
12018301	12018801	6	10.00	3
12018302	1208802	6	10.00	6
12019501	12018901	12	10.00	3
12019502	12018902	12	10.00	6

Side Guide Transition - PE to Standard

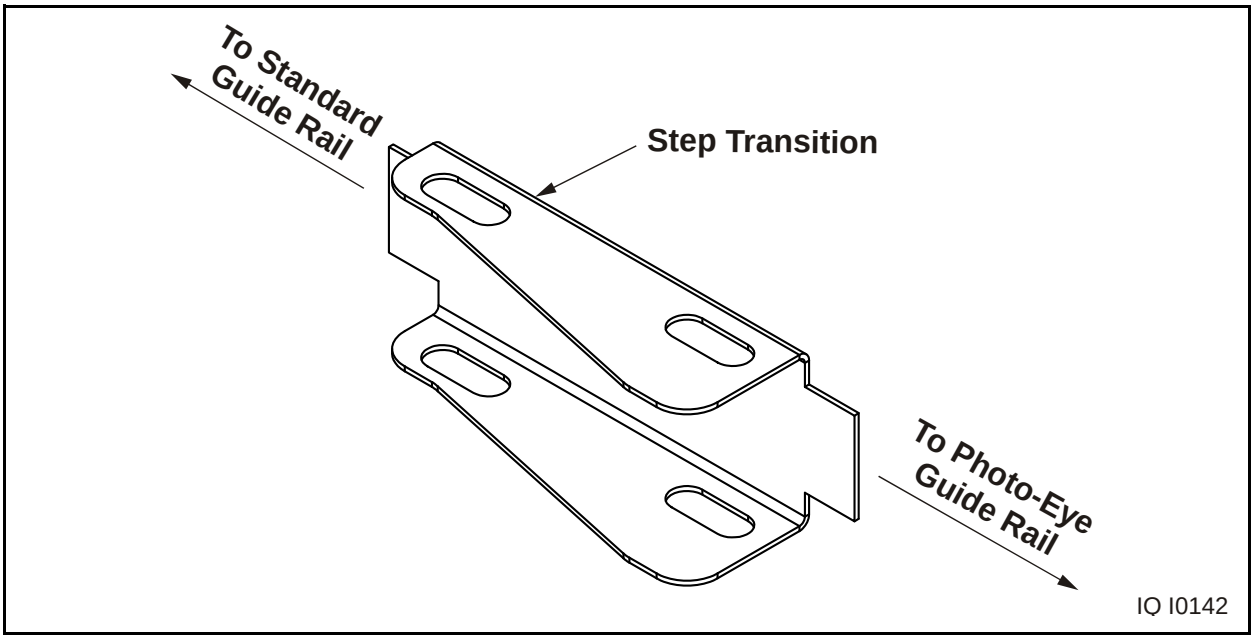


Figure 3 - 6 Side Guide Transition - PE to Standard

Overview	Used to transition from the 2.50-inch flange on photo-eye and reflector side guides to the 1-inch flange on a standard side guide.
Specifications	Height: 2.50 inches.
Mounting Options	• Direct-Mounted to the frame
Mounting Hardware Kits	Provided for each mounting option. See Chapter 3 - Installation Procedures for detailed mounting information.
Avail. Finishes	• Powder-coated
Part Number	40012800

Side Guide Transition - End

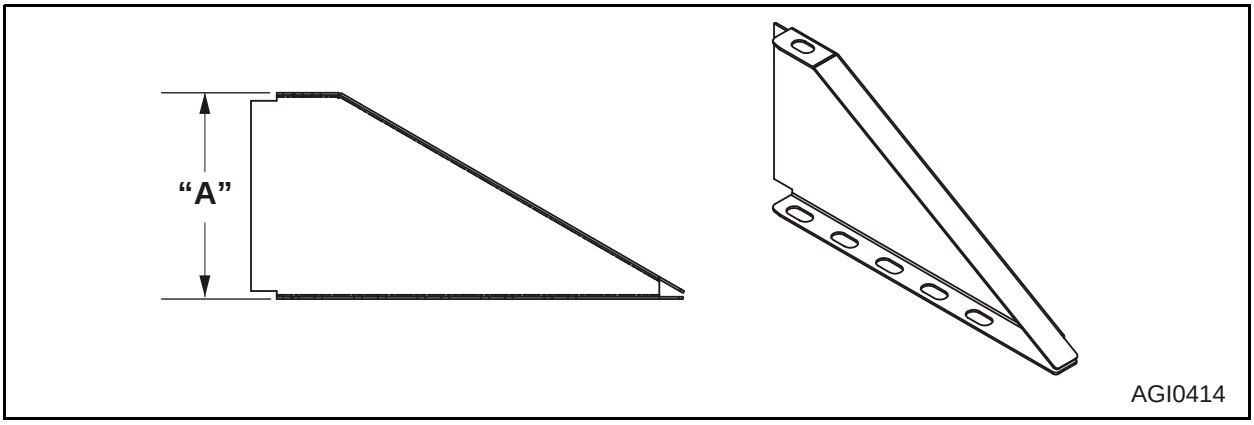


Figure 3 - 7 Side Guide Transition - End

Overview

The Side Guide Transition with one end at 0 inches is used to end a side guide at the end of a conveyor line, or to transition from a conveyor section with side guides to a section without side guides.

Specifications

Left-Hand and Right-Hand designations.
Length - varies
Height, Short Side of Transition - 0 inches
Height, Long Side of Transition - 2.50, 6.50, 7.50, and 10 inches
See Part Numbers information below.

Mounting Options

- Direct-Mounted to the frame

Mounting Hardware Kits

Provided for each mounting option. See Chapter 3 - Installation Procedures for detailed mounting information.

Available Finishes

- Powder-coated

Part Numbers

Part No.	"A" (inches)	Designation
12012001	2.50	RH
12012002	6.50	RH
12012003	10	RH
12012007	7.50	RH
12012101	2.50	LH
12012102	6.50	LH
12012103	10	LH
12012107	7.50	LH

4 Controls

This chapter contains descriptions and illustrations of control components used on the IntelliQ® Accumulation Conveyor.

For an explanation of how the components are used to control the flow of product on the conveyor, see the General Description chapter.

Photo Eyes and Reflectors

The IntelliQ® Accumulation Conveyor is equipped with retro-reflective or diffused photo eyes to sense the presence of product in the accumulation zones. Specially designed logic modules work in conjunction with the photo eye sensors to achieve the various accumulation and release modes.

Mounting brackets are manufactured into the side guide to serve as mounting points for the photo eyes and reflectors. The integral bracket is designed to be bolted to the conveyor frame independent of the side guide to isolate it from any flexing of the side guide due to product pressing against it. Slots have also been stamped through the side of the side guide for the light source to pass through. The edges of the slots are recessed to prohibit packages from catching on them.

Retro-Reflective Photo-Eyes

Application	Standard photo-electric sensor used to detect product within the zone.
Voltage	24 VDC
Output	PNP, dark-operated.
Mounting	Mounted to integral brackets in the side guide using a ball mount. Mounting protects the photo-eye from passing product, and allows for easy adjustment for alignment with reflector. Extended flanges on the side guide channel protect the photo-eye from passers-by.
Cord / Connector	Four (4) pin male PICO QD connector; connects to the Solenoid Control Module's 25 inch cable with female connector.
Cord Length	NA
Voltage Range	10-30 VDC
Sensing Range	12 feet
Temperature Range	-4° to +158°F
LED Indicators	Amber LED “ON” indicates photo-eye is aligned with the reflector and is unblocked. Green LED “ON” indicates sensor has power.
Reflector	Mounted with screws to integral brackets in the side guide. Locating stud correctly aligns reflector.

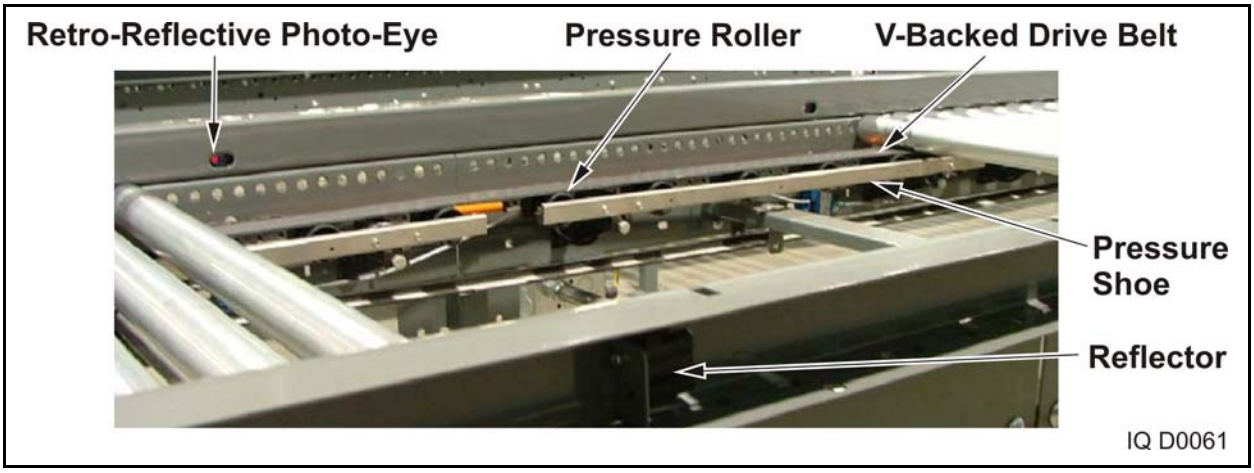


Figure 4 - 1 Retro-Reflective Photo-Eye and Reflector

Figure 4 - 2 Retro-reflective Photo-Eye (Ball Mount)

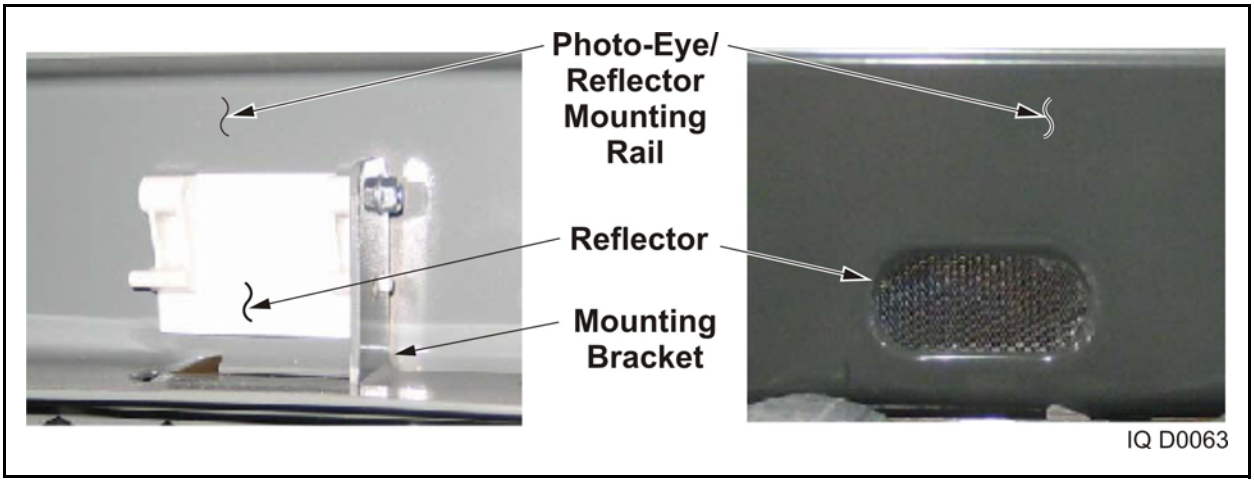


Figure 4 - 3 Reflector

Diffused Photo Eye with Integral Valve

Application	Used in applications where side guide cannot be installed.
Voltage	10-30 VDC
Output	PNP, light-operated.
Mounting	Mounted below the rollers so that the top of the sensor is at least 1/4 inch below the high point of the adjacent rollers.
Cord / Connector	Photo-eye mounted directly to zone control valve (no cable or connector).
Cord Length	NA
Voltage Range	10-30 VDC
Sensing Range	Variable, up to 900 mm. Adjust gain using black dial on top of sensor.
Temperature Range	-4° to +158°F
LED Indicators	White LED on top of sensor. Brightness increases when product is sensed.
Reflector	None

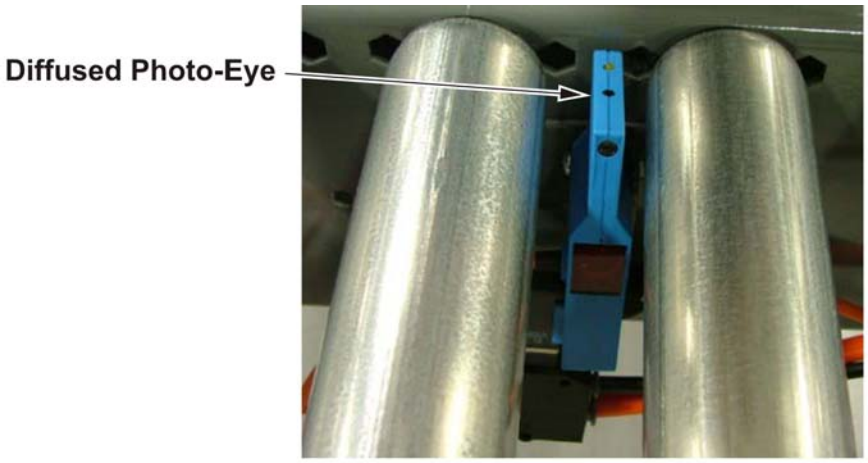


Figure 4 - 4 Diffused Photo Eye

5 Installation Procedures

The Installation manual contains instructions for receiving, inspecting, and installing the conveyor equipment, and preparing it for operation. It is essential that the equipment be properly installed, and subsequently maintained, in order to obtain maximum productivity.

⚠WARNING

The installer must be qualified and must comply with all applicable codes, ordinances, specifications, and/or other governing data related to the installation of the equipment. Read the installation section of this manual and resolve any questions you may have before attempting to move or install the equipment. Obey all safety precautions. Failure to follow these instructions may result in serious personal injury and/or equipment damage.

Receiving & Inspections

During the process of unloading the material, it is important to:

1. Make sure that the quantity of items received matches the count listed on the Bill of Lading. Once the Bill of Lading has been signed, the liability of any shortage is on the receiver.
2. Inspect each item for damage to the product, especially if there is any damage to the crate or container. Any obvious shortage or damage should be noted on the Bill of Lading before it is accepted.

Reporting Product Damage

Any damage to the product that cannot be detected upon the initial receiving inspection must be reported to the carrier within 24 hours of the receipt of the product in order to qualify for a damage claim against the delivering carrier. It is the responsibility of the recipient to file claims for shipping shortages or damage whenever the freight charges are borne by that recipient.

Please notify Intelligrated whenever there is a shipment shortage or any damage occurs to the equipment so that we can provide support services as well as track carrier performance. In the event that the shipment is refused, it is imperative that Intelligrated be contacted immediately for return authorization approval to avoid demurrage costs.

If you need further assistance, please visit our website at **www.intelligrated.com** or call our Customer Service Department at (513) 701-7300, Monday through Friday 8:00 A.M. to 5:00 P.M. EST.

Layout Requirements

Conveyor layout drawings are typically used to determine the conveyor location and elevation based on the building grid. Layout drawings should be referenced in the installation preparations to determine the conveyor layout area, and to make sure there are no physical obstructions to the conveyor. Special consideration should be given to drives (motor/reducer combinations) that extend from the conveyor.

In addition, measurements should be taken along the conveyor to ensure that the support adjustment falls within the conveyor elevation requirements.

Prior to setting the conveyor or other components in place, scribe all reference measurements from the layout drawings to the facility floor. Typically, datum lines are marked with red diamonds, conveyor center lines are marked with yellow diamonds, conveyor end of locations are marked with white diamonds, and 100 ft. lines are marked throughout the facility with red arrows to make marking layout lines easier.

Installation Procedures

Your conveyor has been shipped in major sub-assemblies to simplify and accelerate the installation process. Typically, the conveyor sub-assemblies consist of intermediate sections, end idlers, drive units, supports or hangers, and accessories.

All installations should be done by qualified installation specialists who understand conveyors and conveyor layout. Wiring and controls should always be the responsibility of experienced, licensed electricians. To ensure satisfactory performance, follow these instructions during the installation of every section of the conveyor. These instructions are also explained in detail on the following pages.

1. Mark a line on the floor to locate the centerline of the conveyor frame using a laser or chalk line.
2. Preset the frame supports (or ceiling hangers) to the proper elevation, and attach the first conveyor section to its supports.
3. Position the conveyor section according to the conveyor tag information provided. Each component is tagged with its respective identification and flow arrow.
4. Locate the center of the conveyor carrying surface and, using a plumb-bob or laser, align the conveyor to the center line on the floor within a tolerance of (+/-) 1/8 inch.
5. Level the conveyor section to within a tolerance of (+/-) 1/16 inch from the charge end to the discharge end and from side to side.
6. Insert a string through the two hex axle holes that are across from each other and pull tight. Use a framing square to check the squareness of the bed against the string. The bed should be purposely racked 1/16 inch measured at a point 24 inches from the side frame of the conveyor. This is to assure product alignment to the side of the conveyor. (Refer to “Conveyor Bed Squaring” on page 9.)
7. Anchor the conveyor section in place using the appropriate anchor bolts and according to layout requirements and codes.
8. Preset the frame supports to the proper elevation for the next conveyor section to be installed.
9. Position the next conveyor section according to the conveyor tag information and flow arrow, leaving a 1/16-inch gap between it and the previously installed section. (The gap provides clearance for adjusting and squaring the frame.)
10. Align the conveyor section to the previous conveyor section and to the center line on the floor as described in Step 4.
11. Level the conveyor section as described in Step 5. and check to make sure it is square as described in Step 6.
12. When the conveyor section is properly positioned, attach the appropriate frame coupler, and anchor the section in place.
13. Connect the pneumatic piping and logic module cables (if equipped) between the conveyor sections.
14. Repeat steps 8. through 13. for all additional sections.
15. If not already installed on the conveyor, mount the drive unit. The drive unit must be installed as close to the infeed end of the conveyor as possible.
16. Install the drive belt and lace and adjust for the proper tension. (Refer to “Drive Belt Lacing-Thermal Welding” on page 18 and “Drive Belt Tension Adjustment” on page 52.)

17. Install all the rollers and finger guards (if required).
18. Install all side guides.
19. On Photo Electric IntelliQ® Accumulation Conveyors, connect the photo eyes to the logic modules. Be sure to route the photo eye cable through an existing hole in the conveyor side frame and up to the photo eye.
20. Install the air piping and electrical service.

Leveling

To ensure proper performance during operation, all sections of the conveyor must be leveled to within (+/-)1/16 inch from the infeed end to the discharge end as well as from side to side. Use a builder's level, laser level, transit, or other precision leveling device.

Floor Supports

Conveyors are typically shipped with adjustable support feet for floor mounting, see Figure 5 - 1. These supports negate the need for grouting and/or shimming to provide a level conveying surface. If the support feet are not adjustable, shimming or grouting may be necessary to ensure a level conveying surface.

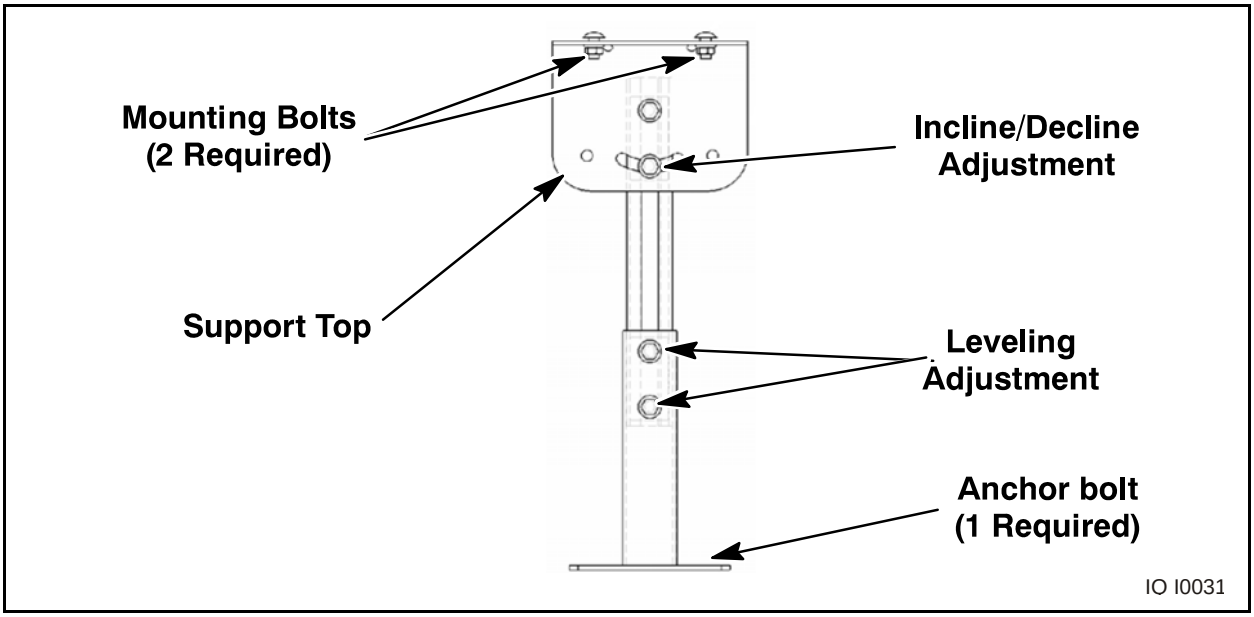


Figure 5 - 1 Floor Support

Only two mounting bolts are required when attaching a floor support to the conveyor frame, see Figure 5 - 2. Install the anchor bolts on the opposite sides of the feet.

NOTE: If the conveyor system is located in an area that requires seismic considerations, consult the local jurisdiction having authority for seismic applications.

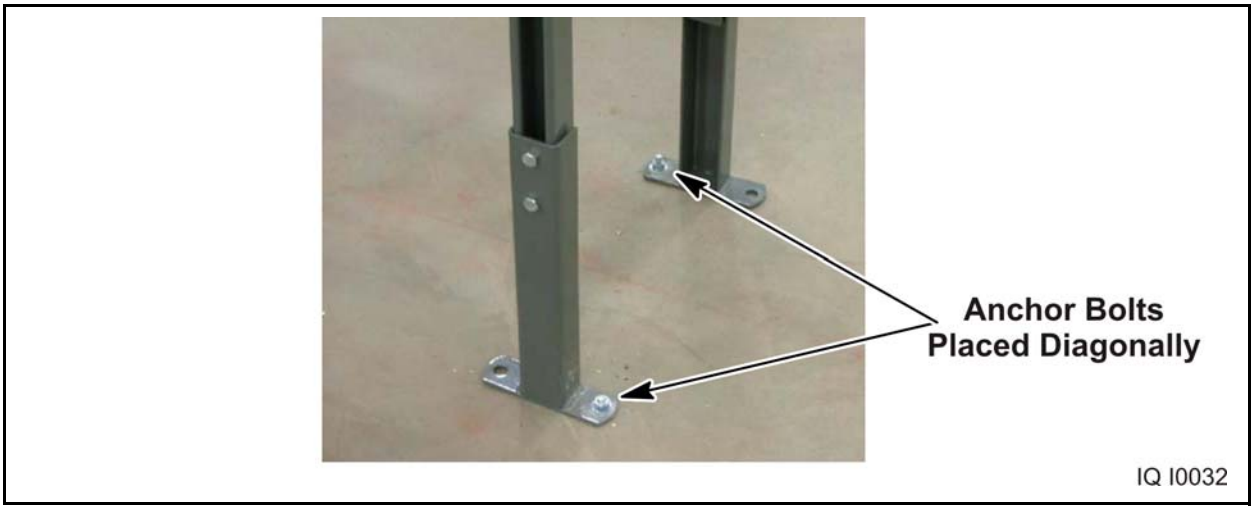


Figure 5 - 2 Anchor Bolt Placement

If a floor support is mounted at the junction between two conveyor frames, use a splice flat to join the conveyor frames together. Mount the splice flat to the inside of the conveyor frames. Use splice plates to join all suspended conveyor together.

Hanger Supports

WARNING

When installing ceiling hanger rods in an existing building, confirm that the structure loading and connection method is approved by the appropriate authority to support the conveyor components and intended loads for conveyed materials and human live load (where applicable). All methods of attachment must comply with federal, state, and local building codes. Failure to follow these instructions may result in serious personal injury and/or equipment damage.

The conveyors may also be hung from the ceiling or other overhead support structure using various hanger supports. Figure 5 - 3 through Figure 5 - 6 show the standard hangers and their proper configurations. If a hanger support is used close to the drive unit on the conveyor, an additional spacer channel must also be used to provide clearance for the belt path into and out of the drive, see Figure 5 - 4.

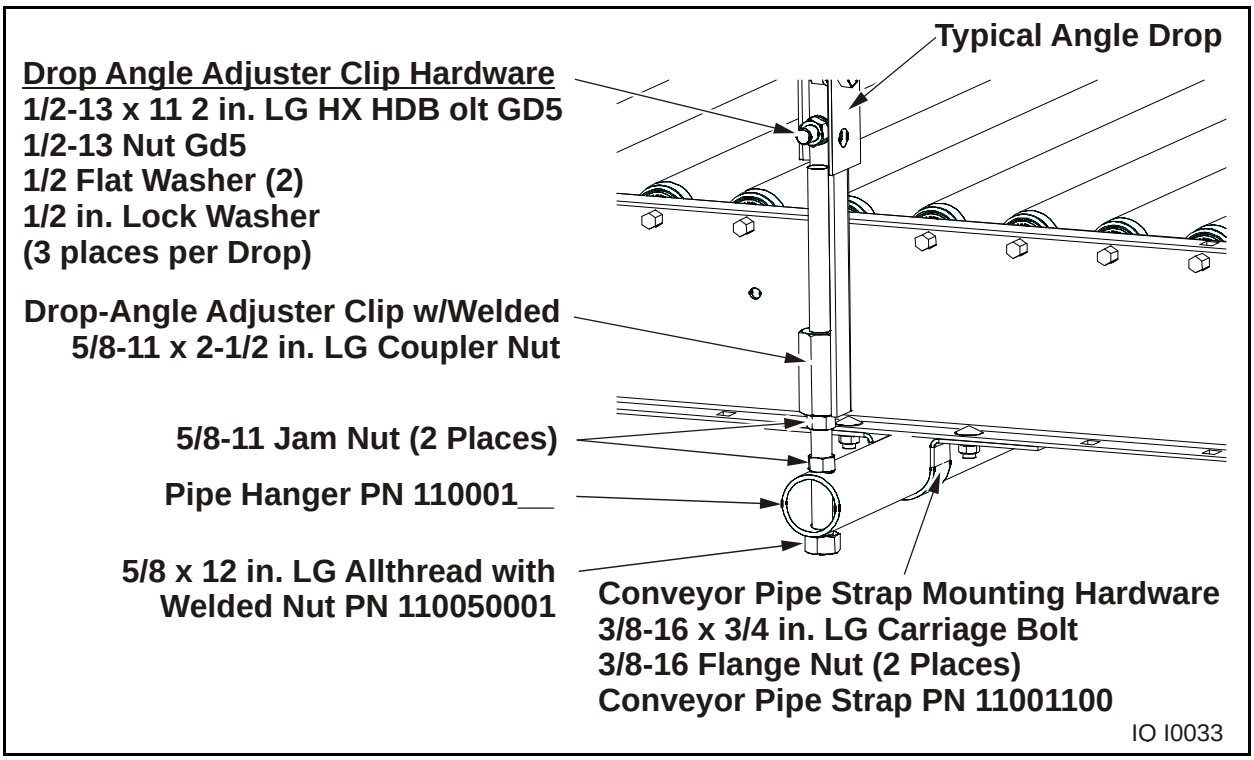


Figure 5 - 3 Standard Pipe Hanger Support Connection

NOTE: If the conveyor system is located in an area that requires seismic considerations, consult the local jurisdiction having authority for seismic applications.

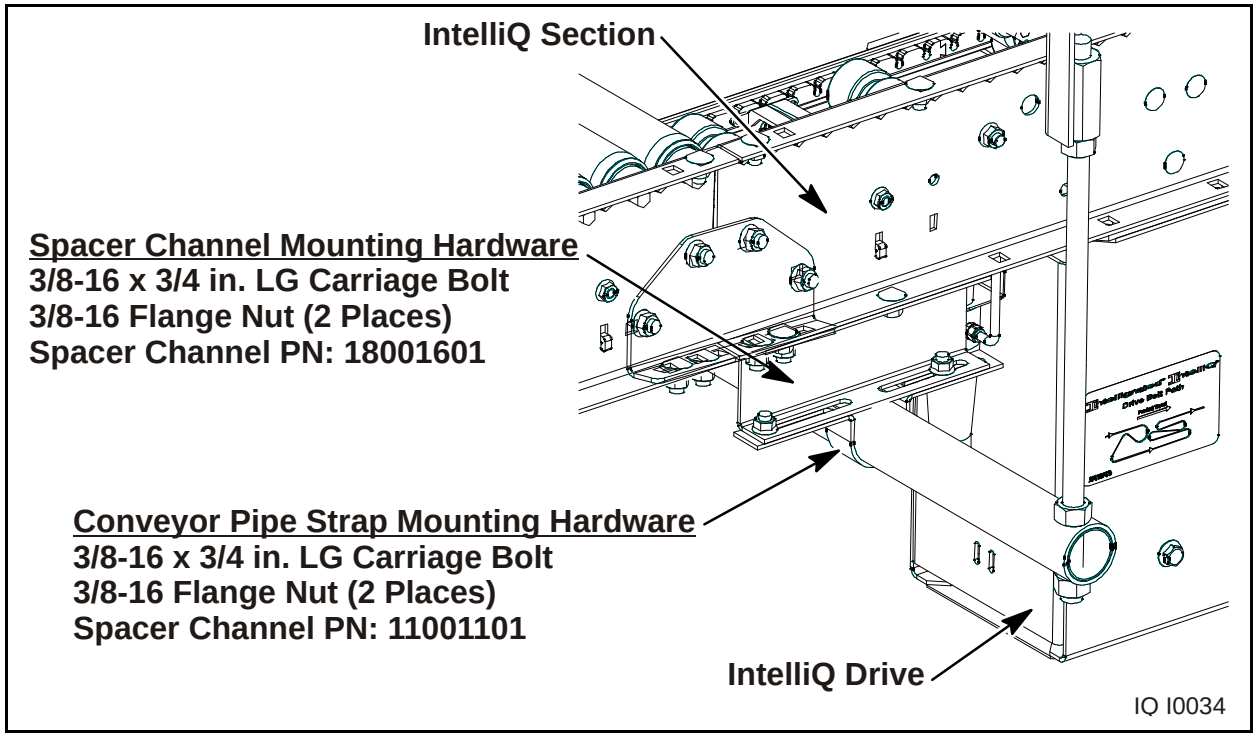


Figure 5 - 4 IntelliQ® Accumulation Conveyor Drive Hanger Connection

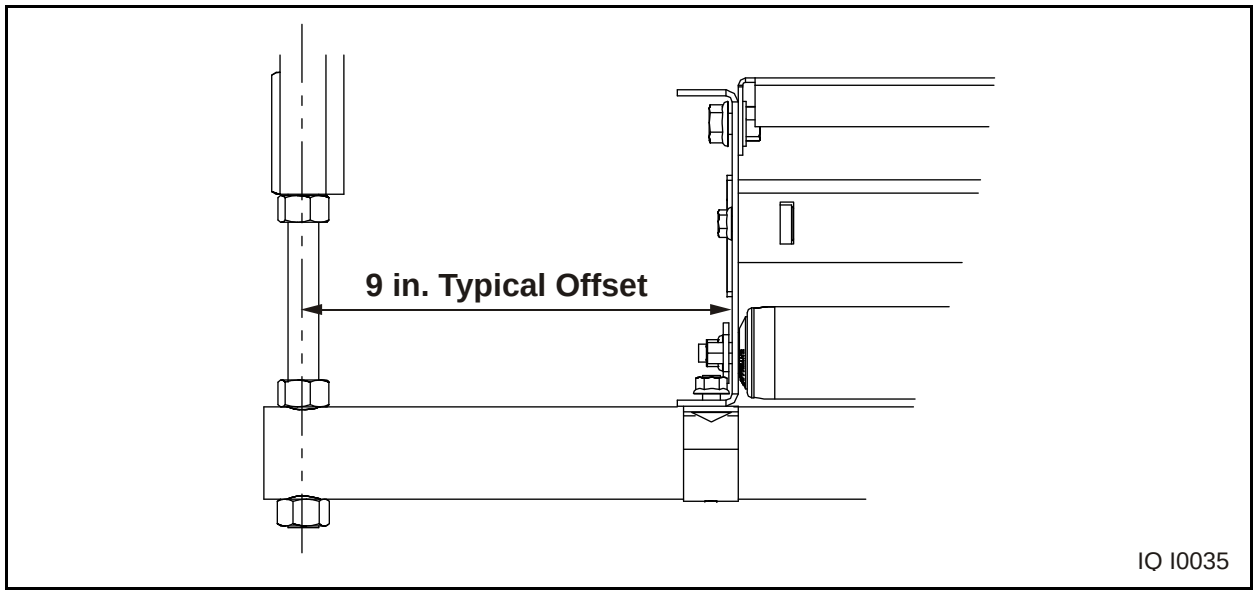
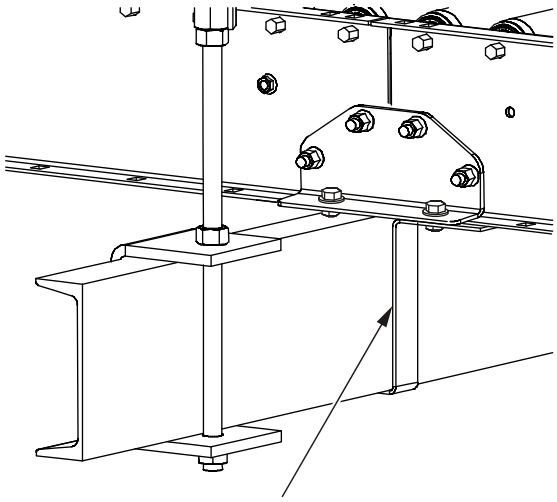
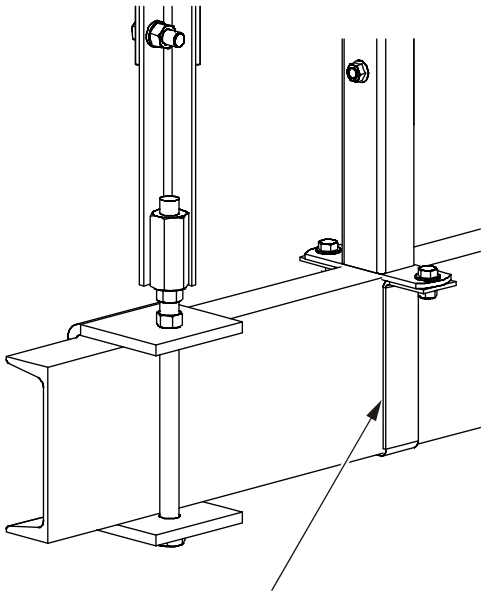


Figure 5 - 5 Standard Hanger Offset Spacing



Conveyor Channel Strap Hardware
3/8-16 x 3/4 in. LG Carriage Bolt
3/8-16 Flange Nut
(Nuts on Top Side -
Inner Web of Frame)
Conv. Chan. Strap PN: 110008__
for 4, 6, and 8 in. Channel



Floor Support Channel Strap Hardware
1/2-13 x 1 in. LG HX HD Bolt GD 5
1/2-13 Nut GD 5
1/2 Flat Washer
1/2 Lock Washer
(2 Places per Support)
Floor Support Chan. Strap PN: 110057__
for 4, 6, and 8 in. Channel

IQ I0036

Figure 5 - 6 Standard Channel Hanger Support and with Floor Support

Conveyor Bed Squaring

During shipment it is possible that some conveyor sections may be knocked out-of-square. If this condition is not corrected before the section is installed in the conveyor line, operating problems, such as poor tracking, can result. The procedure for squaring is the same for all types of conveyor sections and is relatively straightforward. Be sure to check each section before installation.

Insert a string through the two hex axle holes that are across from each other and pull tight, see Figure 5 - 7. Use a framing square to check the squareness of the bed against the string. The bed should be purposely racked 1/16th inch measured at a point 24 inches from the side frame of the conveyor. This slightly skews the rollers to assure product alignment to the side of the conveyor. If the bed needs to be racked, use the following procedure. Be sure to rack all sections of the conveyor in the same direction (See detailed squaring procedure below).

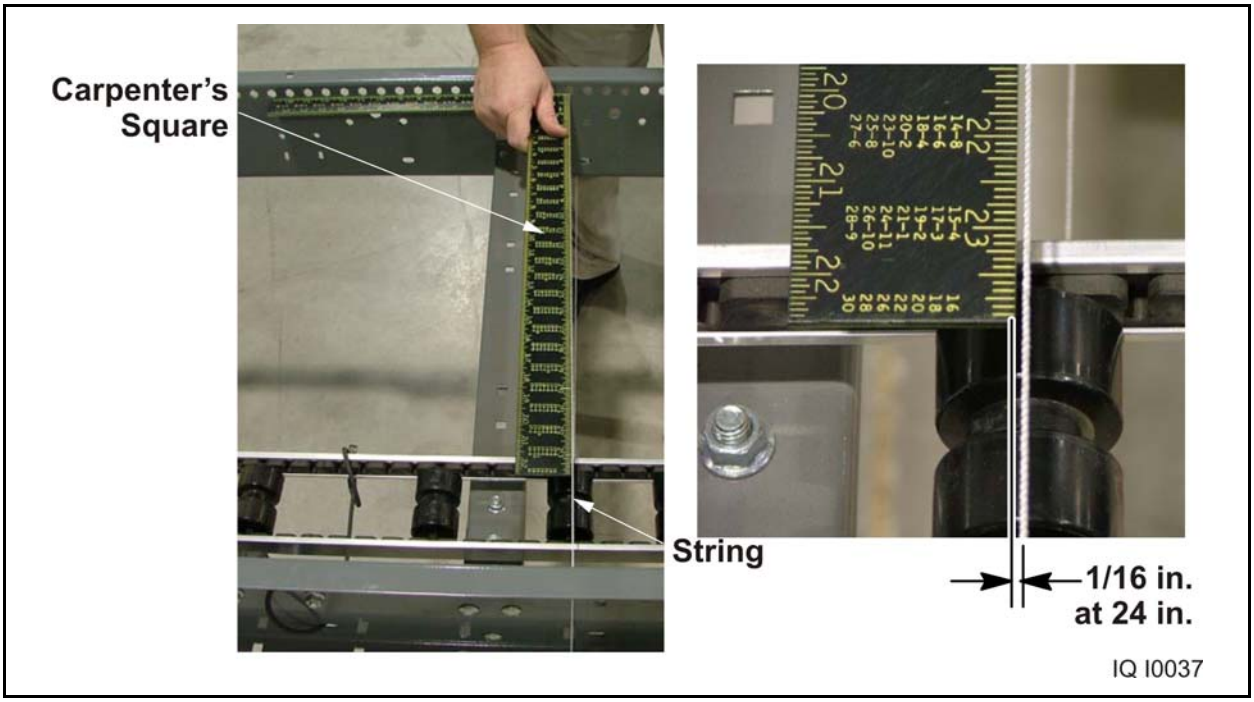


Figure 5 - 7 Squaring

1. Attach a suitable pulling device across the corners with the longest dimension.
2. Loosen the frame spreader mounting bolts.
3. Pull the corners together until the bed is racked to within 1/16th inch.
4. Tighten the frame spreader mounting bolts.

Optional Racking Gauge Procedure

The following describes the use of the racking gauge.

1. Start near the center of the bed section. Insert the tabs on the end of the racking gauge into the slots in the far frame rail flange as shown in Figure 5 - 8..

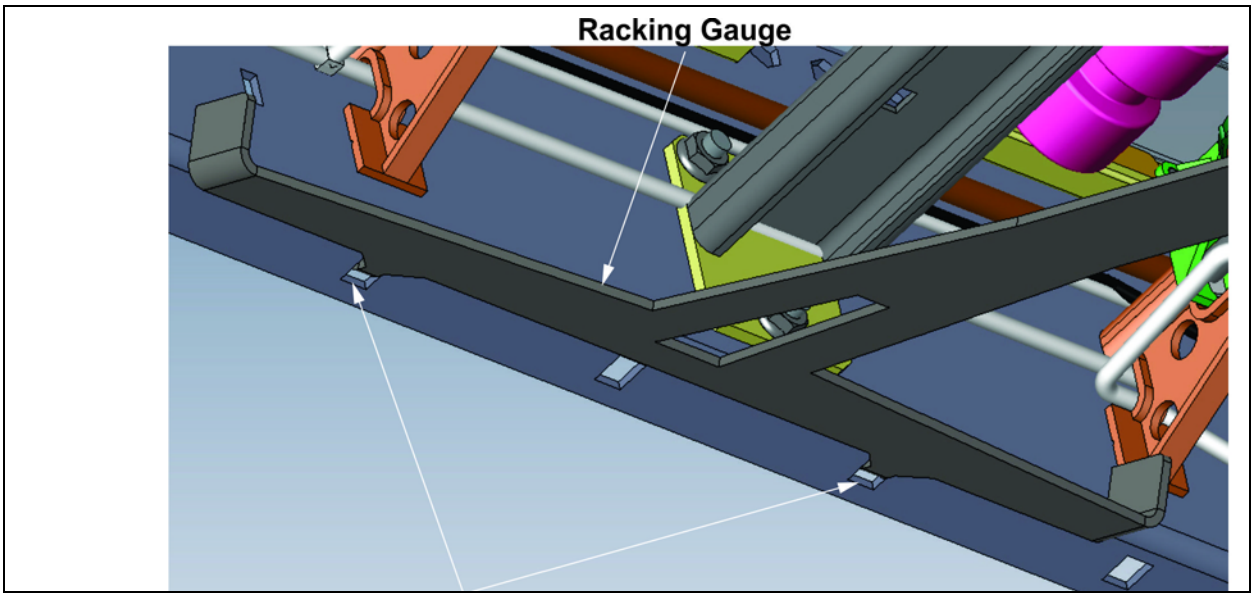


Figure 5 - 8 Inserting the Tabs

2. Bring the racking gauge up allowing it to touch both flanges of the conveyor. The flanges on either side of the gauge are located on the inside surface of the first rail as shown in Figure 5 - 9. There are several cutouts in the racking gauge. One of these should be visible through the hole in the conveyor flange.

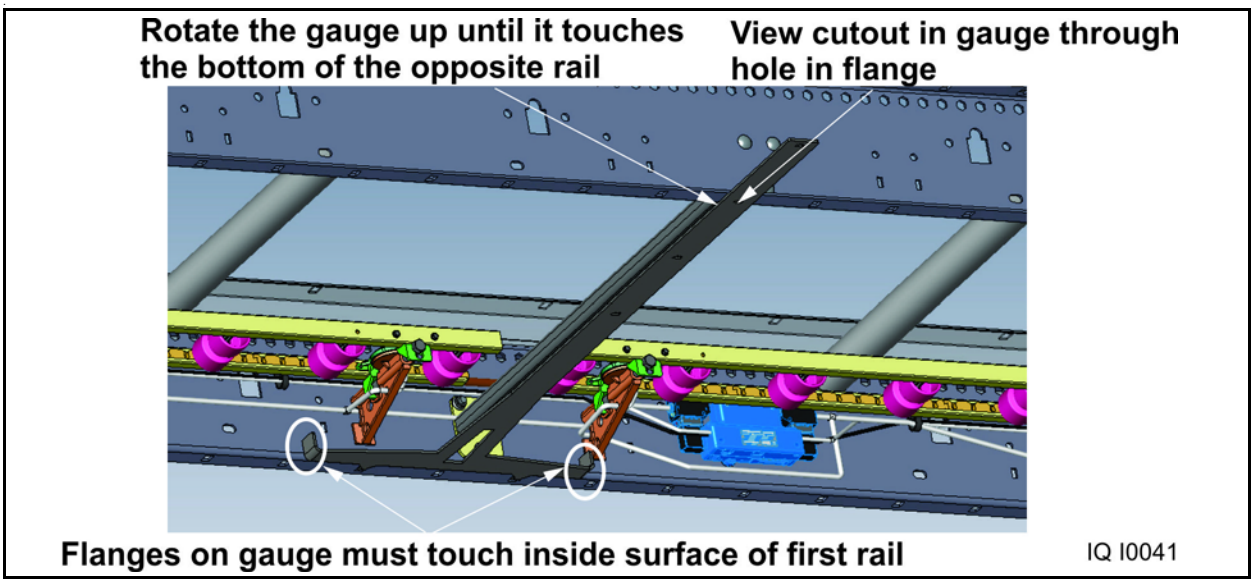


Figure 5 - 9 Rotate Racking Gauge into Position

3. Look down through the hole in the conveyor flange to read the gage. The cutout is symetrical with steps on either side and an optional step in the middle. If both outside steps are completely visible, the gage and flange are aligned and there is no racking, see Figure 5 - 10.

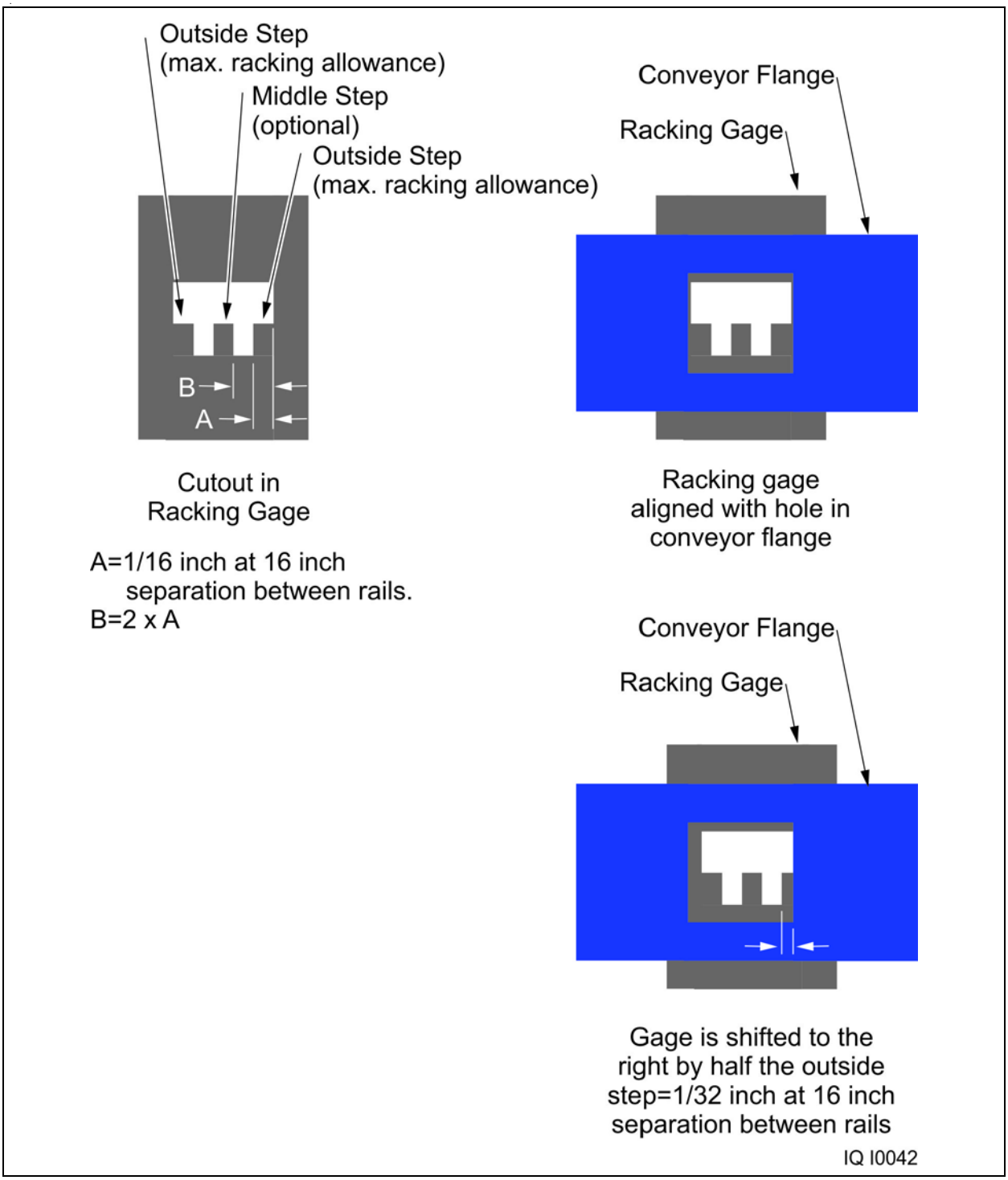


Figure 5 - 10 Reading the Racking Gauge

If one step is partically covered by the conveyor flange, the gauge and flange are not perfectly aligned and the conveyor is racked. The conveyor may be racked up to the width of the outside step (1/16 of an inch at 16 inch separation between rails), such that the product is pushed toward the side guard. In the lower section of the Figure 5 - 10, the gauge and therefore the first rail are shifted to the right about half the width of the outside step. If product alignment is to the closer side frame and product is moving from right to left, then this conveyor is within specification. Any more than the first step and the conveyor is over racked.

Notice that some of the holes in the gauge have two steps on either side and others have only one. For the larger bed frames, the 1/16 of an inch of rack at 16 inches away from the side frame is much larger than at the smaller bed frames, therefore there was only enough room for the 1/16 of an inch step. The same rules apply; nothing should be racked farther than the first step.

Frame Coupling

When the conveyor has been leveled and aligned to its final position, fasten the sections together using the appropriate frame couplers as shown in the following illustrations. Make sure that a 1/16-inch gap is maintained between the conveyor sections.

There are two types of frame couplings: splice flats and splice plates, see Figure 5 - 11. Splice flats are used to connect conveyor frames when the joint between the frames is supported by a floor support. Splice plates are used in all other instances.

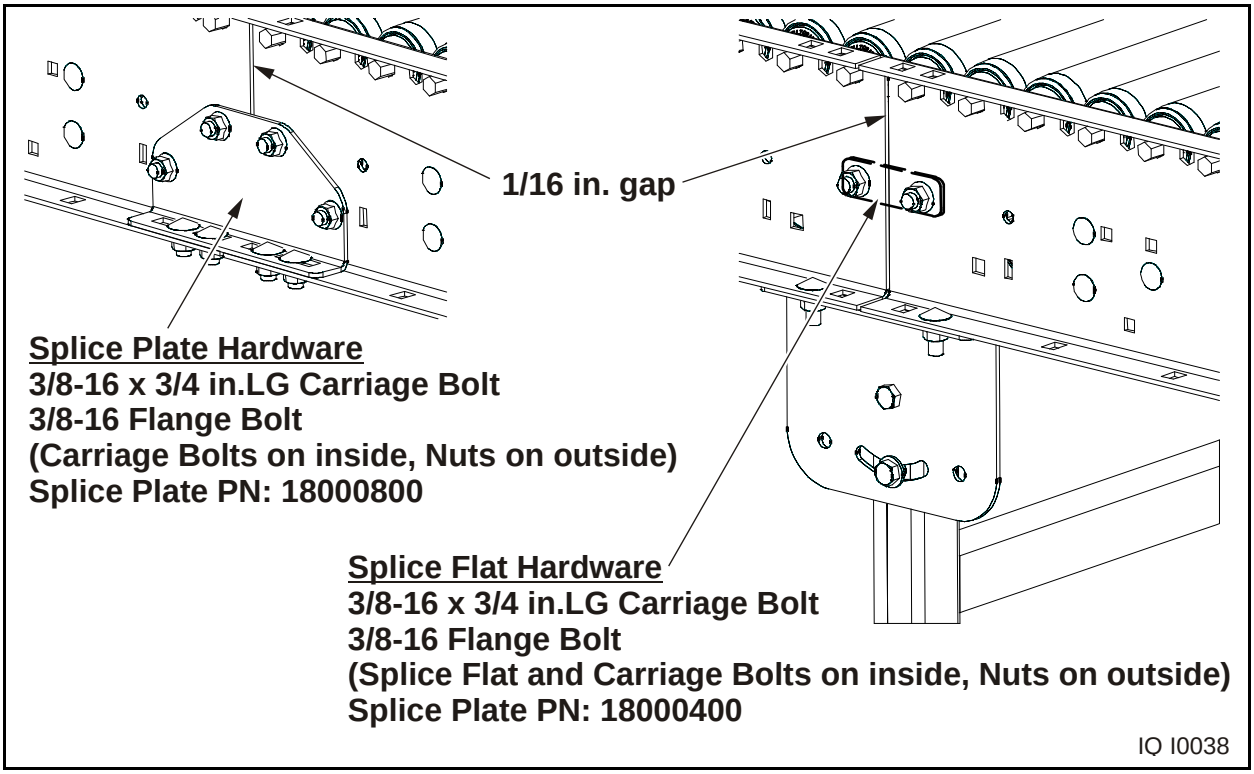


Figure 5 - 11 Frame Couplings

Pressure Roller Removal and Installation

WARNING

Before performing any maintenance or lubrication services, follow the Lockout/Tagout Procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or machine damage.

Use the following procedures to remove and replace damaged pressure rollers.

Removal

1. Turn off and lockout/tagout all power and air supply to the conveyor section.
2. Remove rollers as needed to gain access to the pressure shoe and rollers.
3. To remove the old roller, lift up on the axle, and lift it out of the axle retainer, see Figure 5 - 12. (Pulling or pushing on the roller body can damage the axle.)

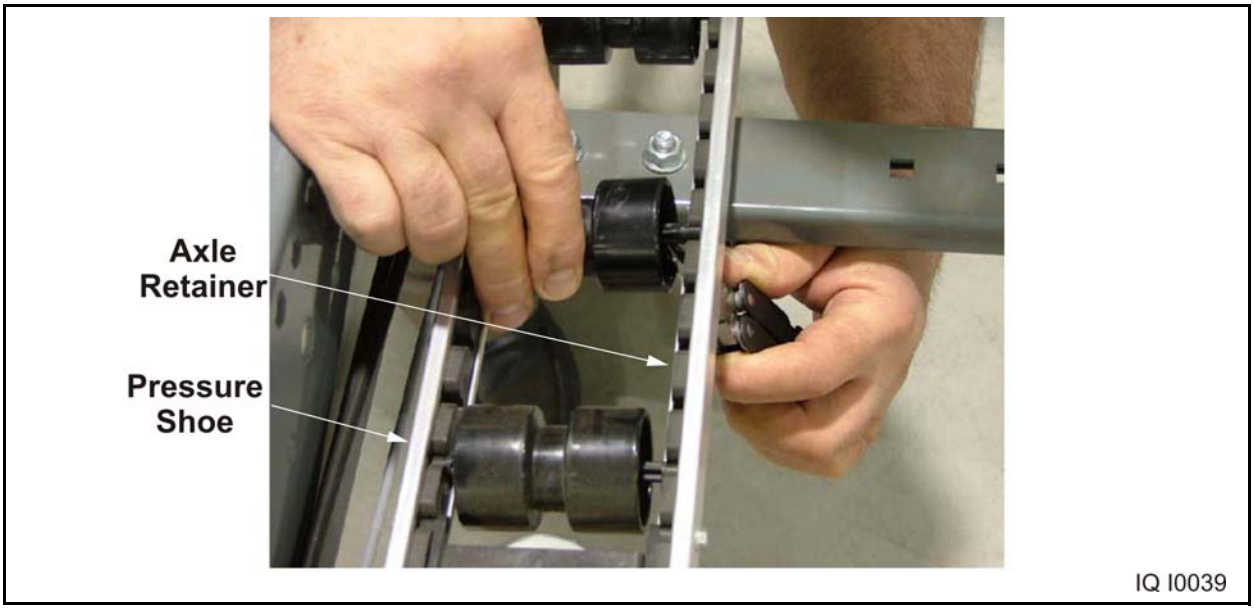


Figure 5 - 12 Pressure Roller Removal

Installation

⚠CAUTION

Follow all of the steps in this section. Pressing down on the roller can break the axle.

1. Tilt the pressure roller slightly and insert one end of the axle into the lower portion of the axle retainer, see Figure 5 - 13.
2. Lay the axle on the opposite end of the pressure spool, on the top of the adjacent slot in the axle retainer directly across from the where the axle is to be seated.
3. Press down on the axle with your thumb or a suitable tool to seat it in the axle retainer.
4. Replace the carrier rollers that were removed to gain access.
5. Remove locks and tags and restore power and air supply to the conveyor section.

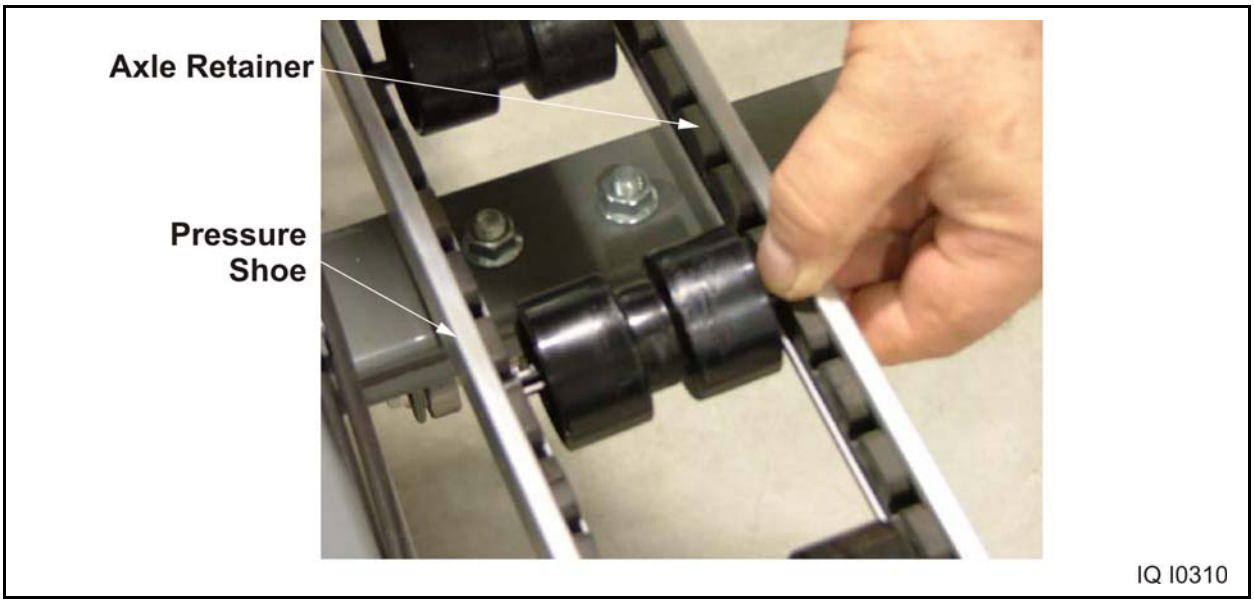


Figure 5 - 13 Pressure Roller Installation

Drive Belt Installation

Once all of the sections and the drive unit are installed and in place, install the belt on the entire assembly using the following procedure:

1. Make sure the air supply to the belt tensioner is turned off and the tensioner cylinder is fully retracted.
2. If not already supplied in a precut length, measure and cut a length of belt for the conveyor using the following formula:

   Belt Length = (Conveyor length X 2) + 12 Feet

   For example, the belt length for a 120-foot conveyor would be 252 feet.
3. Install the belt on top of the pressure shoes with the v-back centered in the groove of the pressure rollers. The conveyor is shipped with the rollers removed to make it easier to install the belt. Place a clamp on one end of the belt so it does not move while you are routing the other end of the belt through the conveyor.

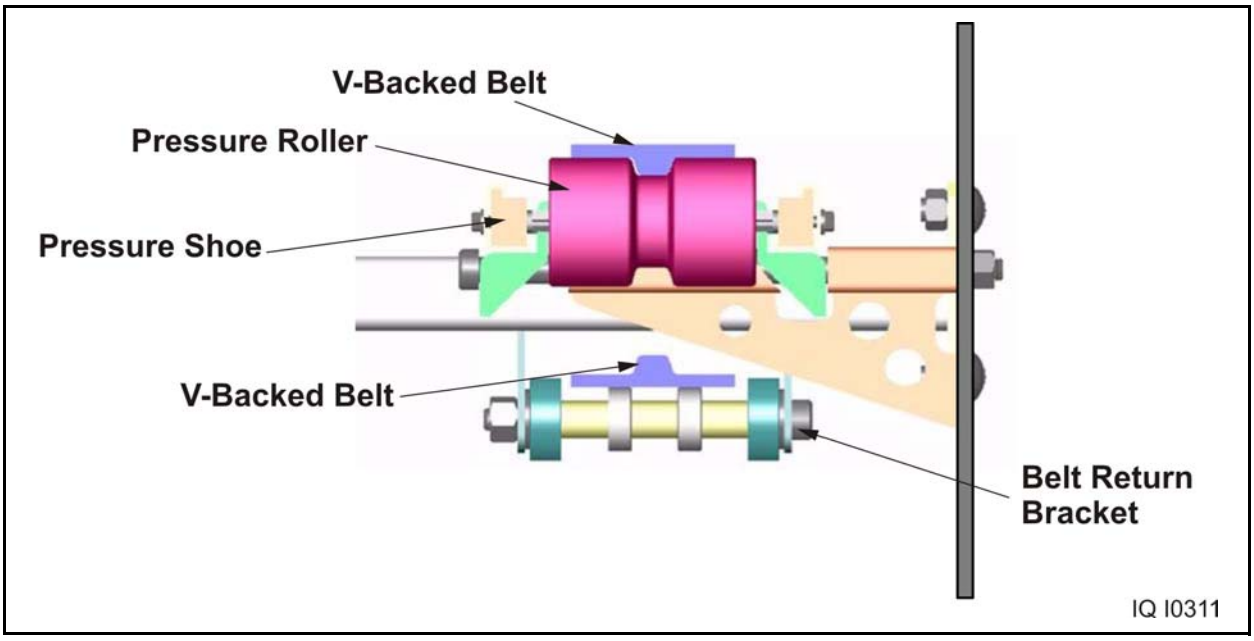


Figure 5 - 14 Belt Routing

4. Wrap the belt around the end idler pulley and thread it through the belt return brackets.
5. Route the belt through the drive, see Figure 5 - 15.

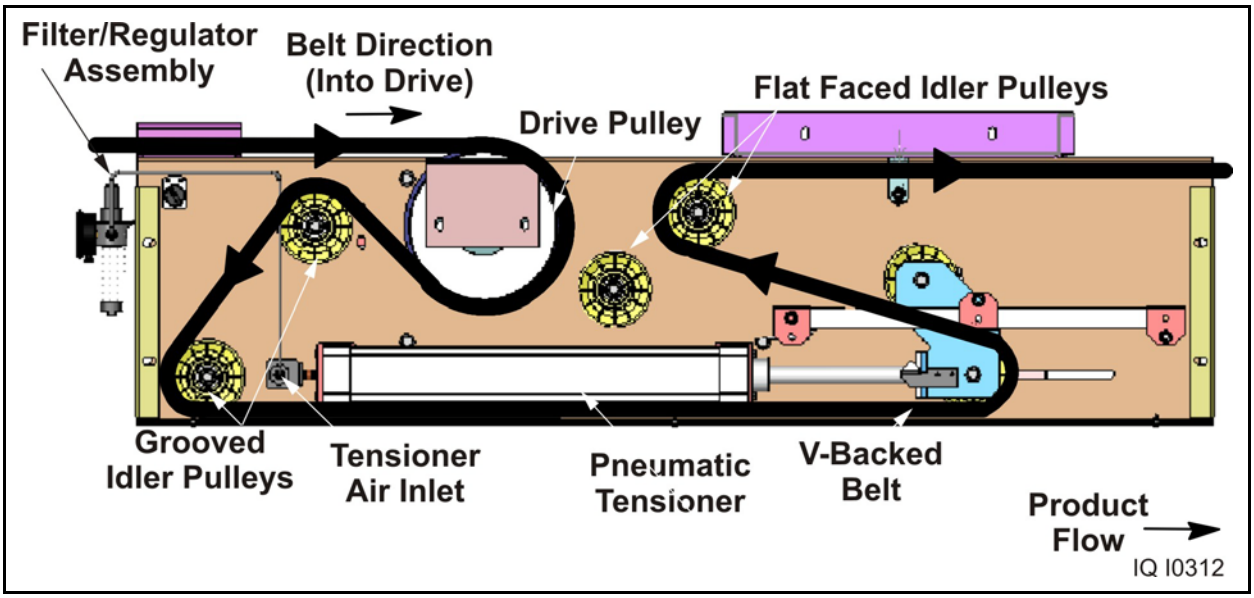


Figure 5 - 15 Belt Path Through The Drive Unit

6. Continue threading the belt through the remaining return brackets and around the other end idler.
7. Pull the belt ends together tightly to remove any slack in the belt.
8. Lace the belt according to the instructions in the following section.
9. Check the belt routing to make sure there are no mechanical interferences that may cause damage to the belt.

Drive Belt Lacing-Thermal Welding

The recommended lacing method for IntelliQ® Accumulation Conveyor drive belts is thermal welding. In the event of a breakdown, the drive belt may also be mechanically laced using #1-HT lacing until a shutdown period when the belt may be welded.

The belt is cut and welded using the Habasit Belt Cutter and Welder. The Habasit Belt Cutter is a manual, portable die cutting device that prepares the ends of the belt for welding. The Habasit Belt Welder is a manual, portable welding unit that welds the prepared ends of the belt together.

NOTE: When thermally welding a belt that was previously mechanically laced, install a 6-foot dutchman and thermally weld both ends. This is necessary to make sure there is enough belt length to prepare the belt ends and properly weld the belt.

Cutting the Belt for Thermal Welding

Perform the following procedures to prepare the drive belt:

1. Lockout and tag all power to the conveyor section, including air pressure.
2. Remove the rollers from the conveyor in the area where you will be working.
3. On top of the conveyor, place a sheet of plywood or steel that spans the side rails.

   This will be the work surface for the cutting and welding procedures. Make sure this work surface is flat and sturdy.
4. Measure the required belt length and add 8-1/2 inches to compensate for the material removed by the cutting process.
5. Use a razor knife to cut the belt, keeping the cut as perpendicular to the length of the belt as possible.

   This is for alignment purposes only, and is not critical to the welding process. The Habasit Belt Cutter will prepare the ends of the belt for welding, see Figure 5 - 16.

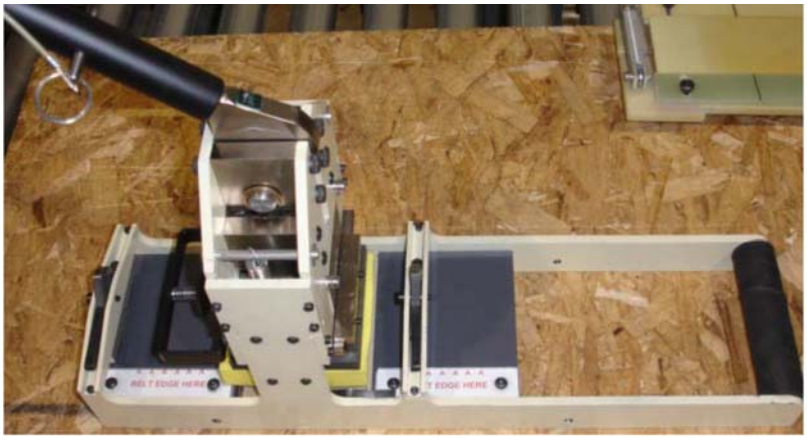


Figure 5 - 16 Habasit Belt Cutter

6. Place the Habasit Belt Cutter on the work surface.

   If needed, clamp the belt ends to the work surface to keep them from falling away.

7. If needed, attach the Cutting Lever Handle and secure it with the Lynch Pin, see Figure 5 - 17.

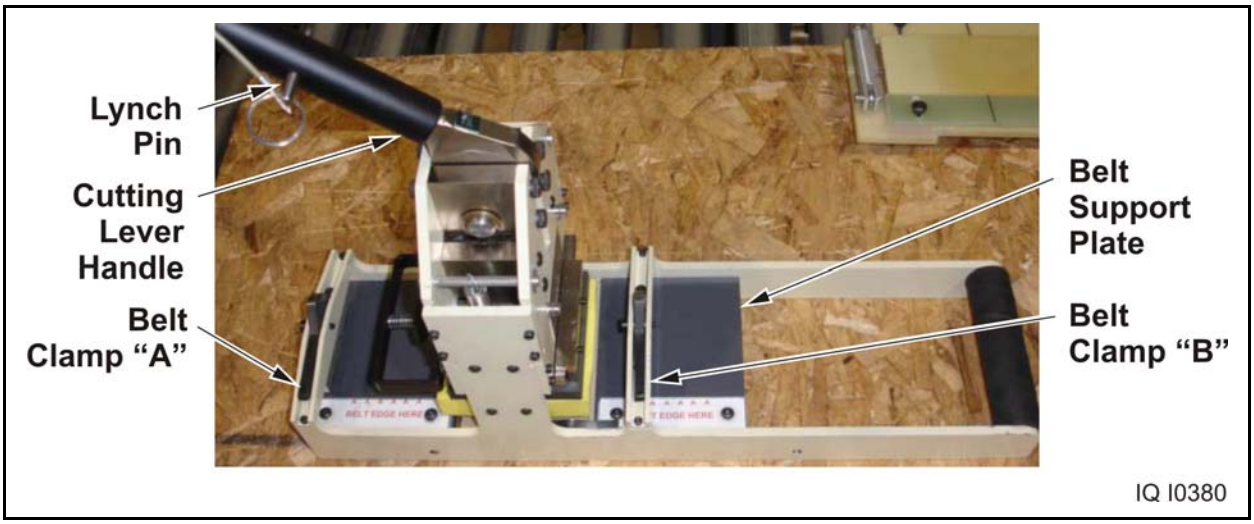


Figure 5 - 17 Preparing the Belt Cutter for First Cut

8. Pivot the Belt Clamp Levers to unlock Belt Clamp "A" and Belt Clamp "B", see Figure 5 - 18.
9. From Belt Clamp "A" side, slide the Belt under both Belt Clamps until its front edge is even with the edge of the Belt Support Plate, see Figure 5 - 17.
10. Lock both Belt Clamps, see Figure 5 - 18.

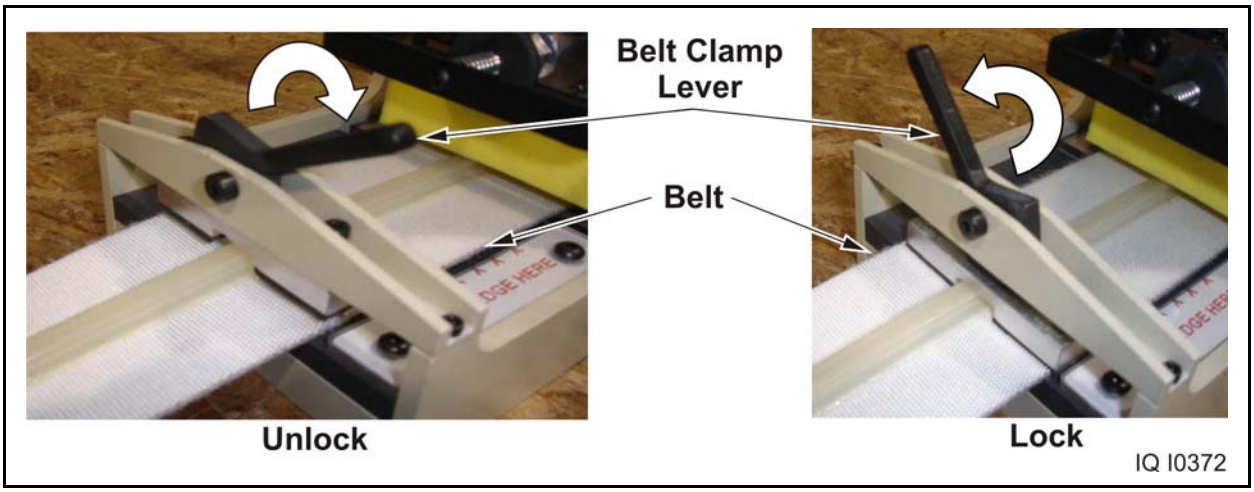


Figure 5 - 18 Inserting the Belt for the First Cut

NOTE: In this manual, the belt is shown first inserted from Belt Clamp “A’ side. The first belt end may be inserted in either side of the cutter, but the second belt end must be inserted from the side opposite the first belt end. This insures the adjoining cut edges align perfectly for the splice.

11. Squeeze the Locking Mechanism, and move the Blade Carrier to Position 1, see Figure 5 - 19.
12. Pull the Cutting Lever Handle toward Belt Clamp “B” to cut the belt, see Figure 5 - 17.
13. Move the Blade Carrier to Position 2 (not shown), see Figure 5 - 19.
14. Cut the Belt.
15. Move the Blade Carrier to Position 3.
16. Cut the Belt.

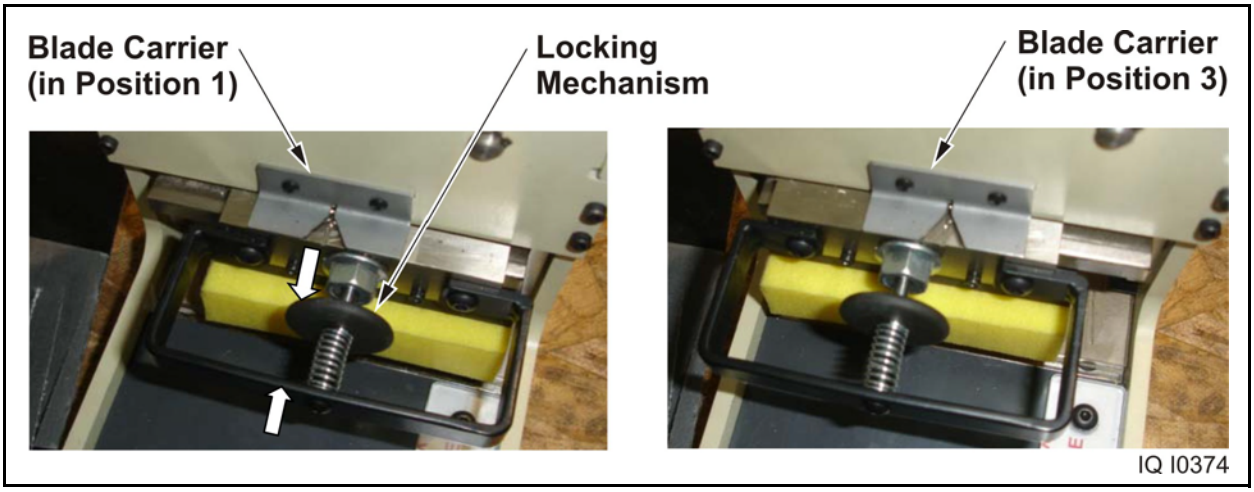


Figure 5 - 19 Positioning the Blade Carrier

17. Unlock both Belt Clamps and remove the Belt.
18. If needed, flex the belt to separate the cut parts.
19. From Belt Clamp “B” side, slide the other end of the Belt under both Belt Clamps until its front edge is even with the edge of the Belt Support Plate.
20. Repeat steps 10 through 18.

NOTE: In this manual, the start position for the Blade Carrier is Position 1.The start position can also be Position 3. In that case, as cuts are made, move the Blade Carrier to Position 2, then to Position 1.

Preparing the Belt for Thermal Welding

Perform the following procedures to prepare the cut ends of the drive belt:

1. Using the Upper Heating Plate as a guide, cut the Reinforcing Material, or “Foil”, see Figure 5 - 20.

   Cut on both sides of the plate to make sure the foil has straight edges and is the proper length. The correct length of foil is equal to the narrow width of Upper Heating Plate.

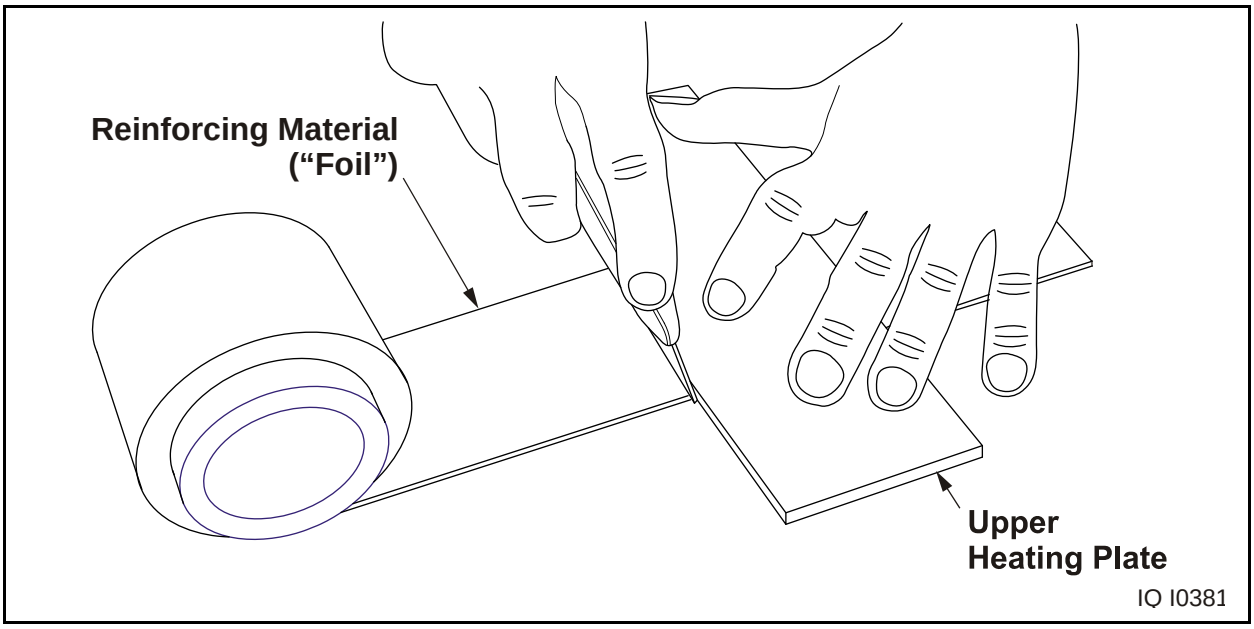


Figure 5 - 20 Cutting the Reinforcing Material (“Foil”)

2. Open both Belt Clamps on the Lower Heating Plate, see Figure 5 - 21.
3. Slide the two ends of the belts, with the back sides facing up, under the Belt Clamps until their cut ends interlock at the center of the Lower Heating Plate.

   Make sure the “fingers” at the belt ends are firmly seated against each other, and that the top surfaces are flush with each other. This is crucial for a good weld. The tighter the fit, the better the weld.
4. Close and secure both Belt Clamps.
5. Place the Reinforcing Material, or “Foil”, fabric side down/smooth side up. on the belt. Center the foil over the cut ends of the belt.

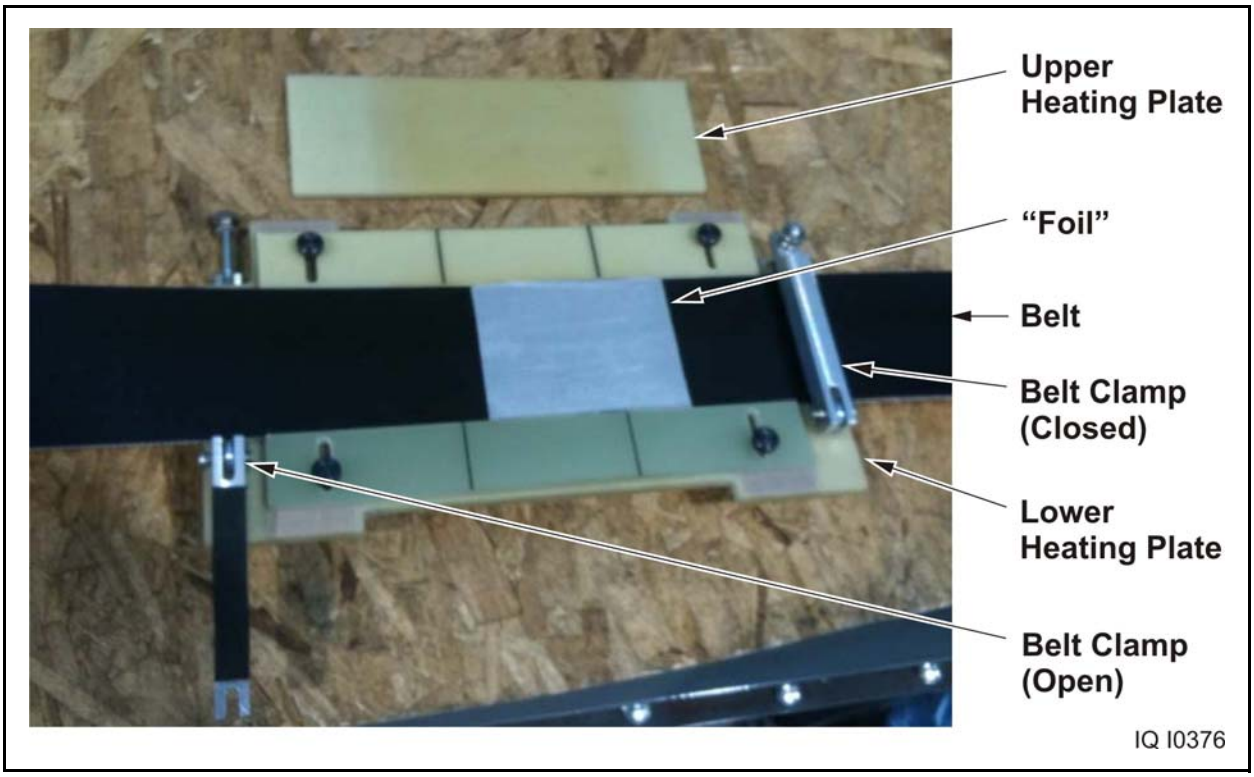


Figure 5 - 21 Preparing the Belt for Thermal Welding

Thermal Welding the Belt

WARNING

Make sure the welding unit is unplugged and cool to the touch before handling the unit. During the welding process, the platens are heated to 160°C (320°F), and may cause burns if touched. Failure to follow this instruction may result in serious personal injury.

Placing the Belt in the Heating Press

Perform the following procedures to place the belt in the Heating Press:

1. Place the Upper Heating Plate on the Belt, centering it over the Belt and between the Belt Clamps, see Figure 5 - 22.
2. Open the heating press and slide the Heating Plates and Belt into the Heating Press, see Figure 5 - 22.

   Make sure the Lower Heating Plate Notch lines up with the Heating Press Access Door.
3. Swing the Heating Press Access Door up and lower the Clamp to close the Heating Press.
4. Clamp both ends of the belt to the edge of the work surface to keep the belt from moving during thermal welding.

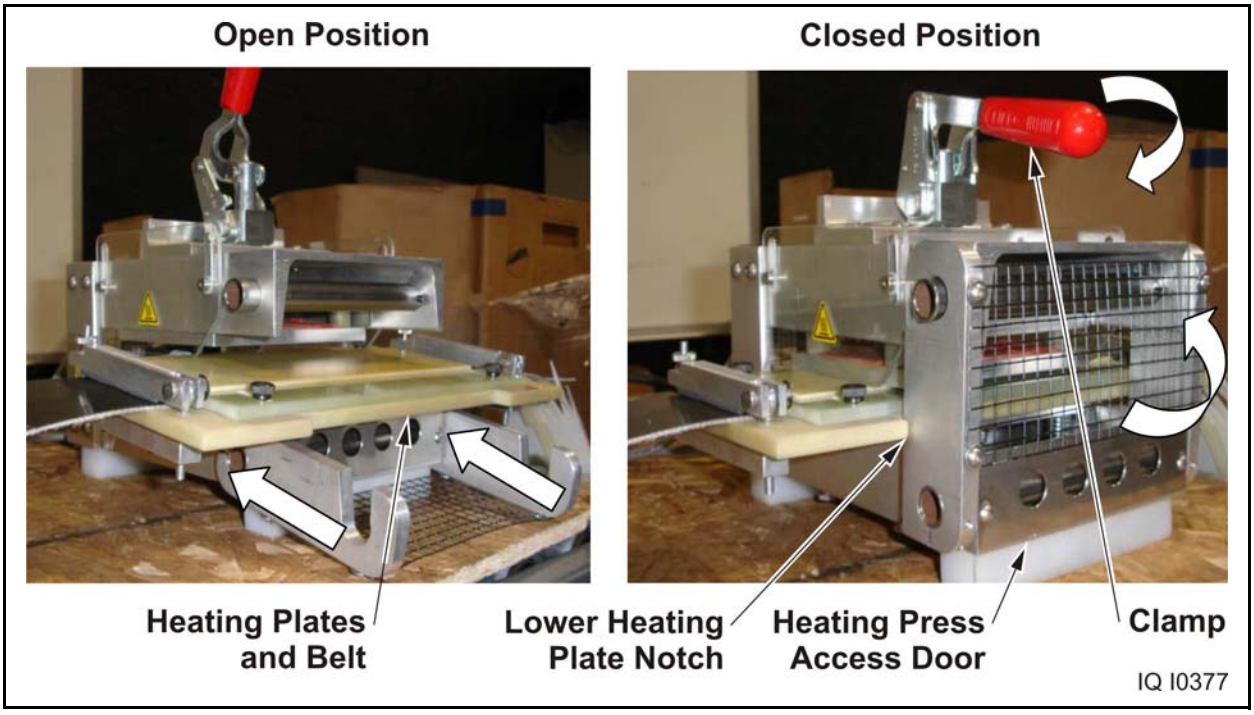


Figure 5 - 22 Placing the Belt in the Heating Press

Welding the Belt

⚠WARNING

Do not touch the Heating Press during the welding process. During the welding process, the platens are heated to 160°C (320°F), and may cause burns if touched. Failure to follow this instruction may result in serious personal injury.

Perform the following procedures to weld the belt:

1. Press the START Button, see Figure 5 - 23.
   The Heating Press will run through a pre-set cycle consisting of a heating phase, a timed pressing phase, and a cooling phase, then it will automatically shut off.
2. If needed, interrupt the cycle before it is complete by pressing the STOP button twice.
3. After the Heating Press has shut off, remove the Heating Plates and Belt.
4. Open the Belt Clamps.
5. Carefully pry the Upper Heating Plate from the Belt.
6. Peel the Belt away from the Lower Heating Plate.
7. Use the provided scraper to remove any excess melted fabric from the plates or the belt.

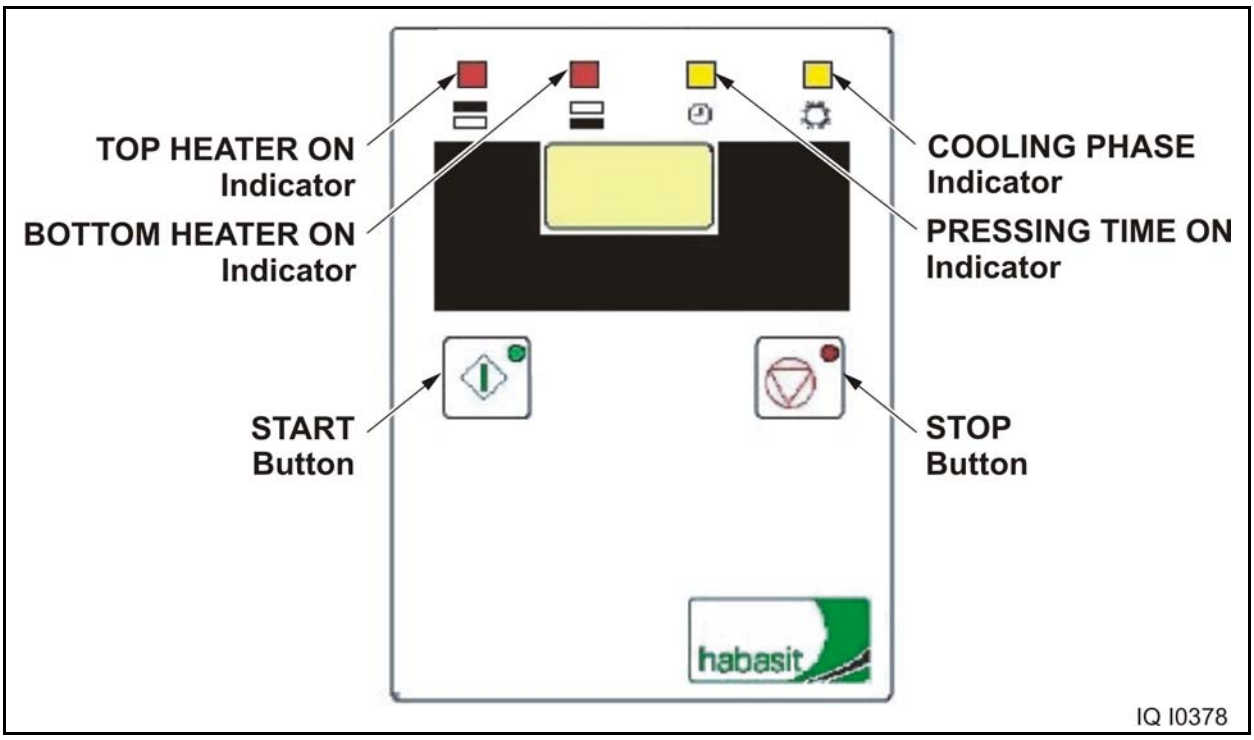


Figure 5 - 23 Heating Press Control Panel

Inspecting and Finishing the Belt

Inspect the belt as follows:

1. Make sure the weld is smooth by checking for bubbles or “fingers” not joined together tightly.
2. Turn the belt over so the white side is facing you and inspect the “fingers”, see Figure 5 - 24.

   Black spots at each finger tip indicate a good weld. Thick black lines between the fingers indicate too much gap between the fingers. If this occurs the belt may need to be rewelded.

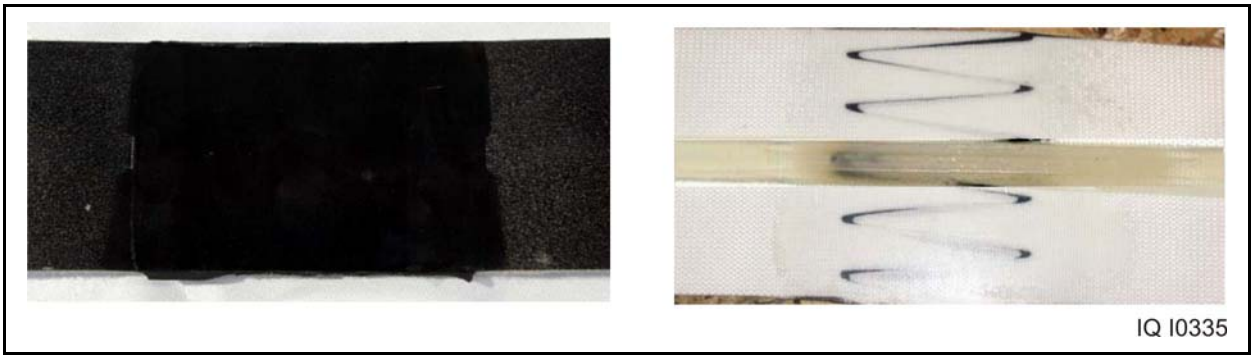


Figure 5 - 24 Top and Bottom Views of Welded Belt Splice

3. Remove a portion of the V-guide over the weld to increase the life of the weld.
    a. Place the belt on a solid work surface with the v-guide facing up, see Figure 5 - 25.
    b. Using a sharp knife remove approximately four inches of the v-guide over the weld. Cut the v-guide on one side of the weld, then cut from the other side working toward the first cut. Remove the v-guide as close as possible to the surface of the belt, without cutting the belt.

NOTE: Use caution when cutting the v-guide. This material can be difficult to cut and is best done with a very sharp blade.

    c. Cut the edges of the v-guide to a point to ensure smooth transitions as the belt passes through the roller guides and drive mechanism.
    d. Bevel the leading edge, or both leading and trailing edges if desired.
4. Re-inspect the weld to make sure there are no gaps, cracks, or bubbles that could lead to premature belt failure.
5. If installing a dutchman, repeat this procedure for the other splice.

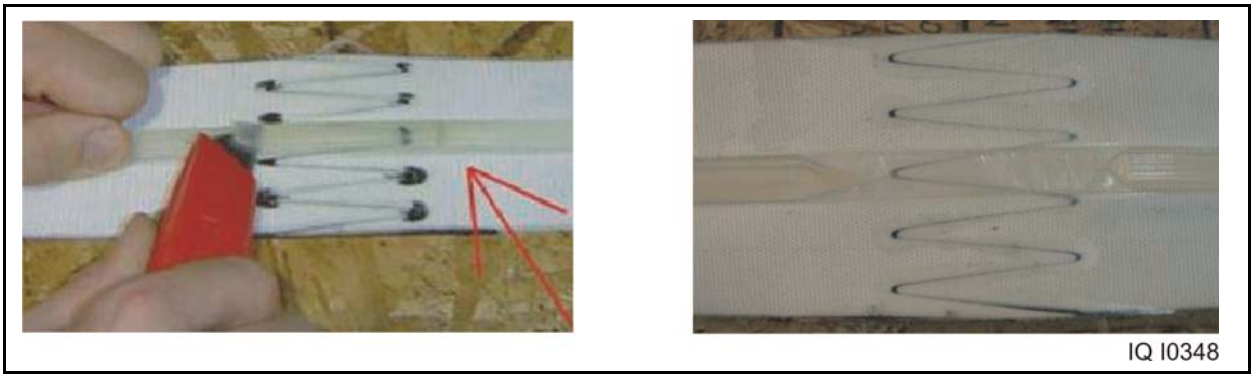


Figure 5 - 25 Trimming the V-Guide

Drive Belt Lacing - Mechanical Roller Lacing

In the event of a breakdown, the drive belt may also be mechanically laced using #1-HT lacing until a shutdown period when the belt may be welded. The following instructions explain the proper method to mechanically lace a belt using a roller lacer:

1. Pull the belt ends together tightly to remove any slack in the belt.
2. Use a razor knife and a straight edge to cut the ends of the belt squarely with each other and at a 90 degree angle, see Figure 5 - 26.

Figure 5 - 26 Cutting the Belt Ends

For a more precise cut, use a belt cutter, see Figure 5 - 27. This method is preferred because it ensures that the end of the belt is at 90 degrees and also that the v-backing is cut cleanly.

Figure 5 - 27 Using a Belt Cutter

3. Remove approximately 5 in. of the v-backing from each end of the belt, see Figure 5 - 28. This is necessary for the belt to fit into the lacing equipment.
4. Taper the v-backing on the bottom and sides. This is necessary for the belt to run more smoothly as it travels through pulley grooves.

Figure 5 - 28 Taper the V-Backing

5. Cut the lacing and lacing pin to the width of the belt, see Figure 5 - 29.

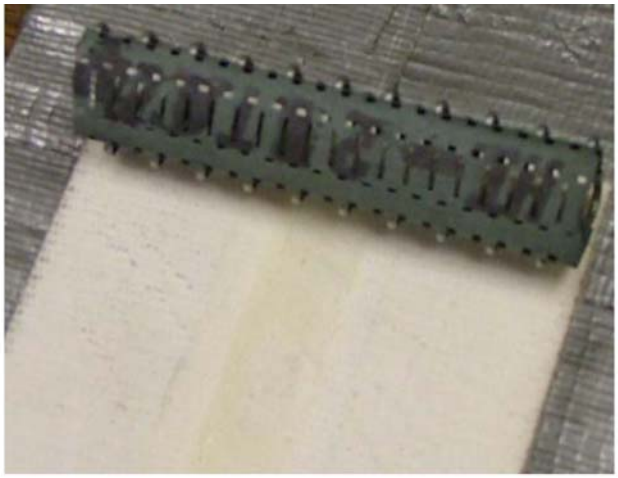


Figure 5 - 29 Sized Lacing

6. Loosen the face strip knob 1/2 turn, see Figure 5 - 30.

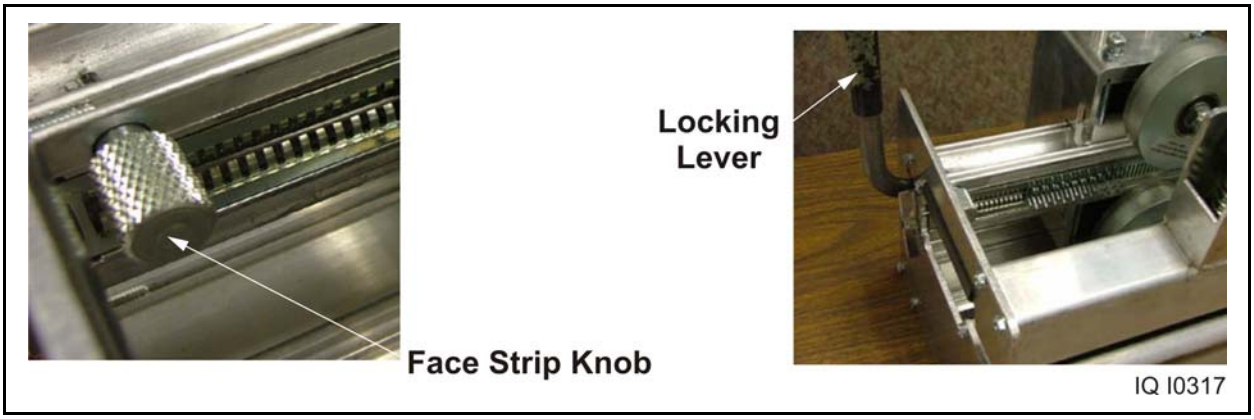


Figure 5 - 30 Knob and Lever

7. Move the locking lever into the unlocked (up) position and slide the face strip that corresponds to the lace type into the end of the lacer. In order to identify the correct face strip, the lace type number is stamped into the face strip. Be sure the face strip is positioned flush with the ends of the lacer frame. Tighten face strip knob.

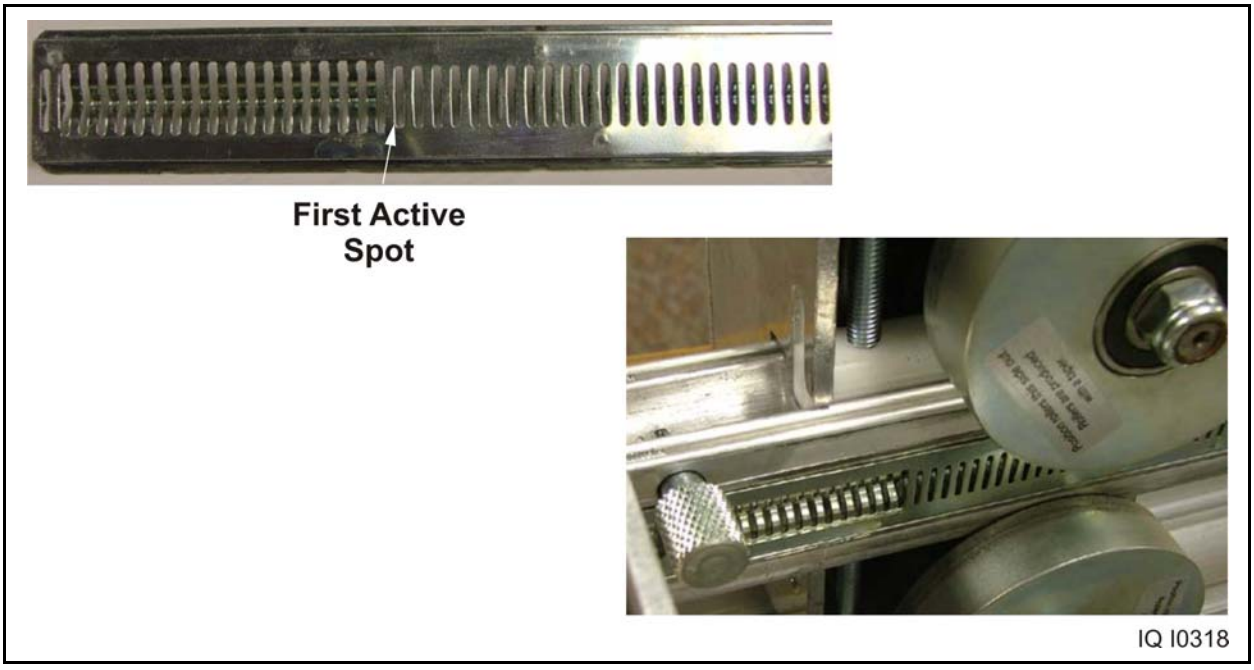


Figure 5 - 31 Face Strip

8. Position lacer head to the end of the tool, and turn roller adjustment knob clockwise to open rollers, see Figure 5 - 32.

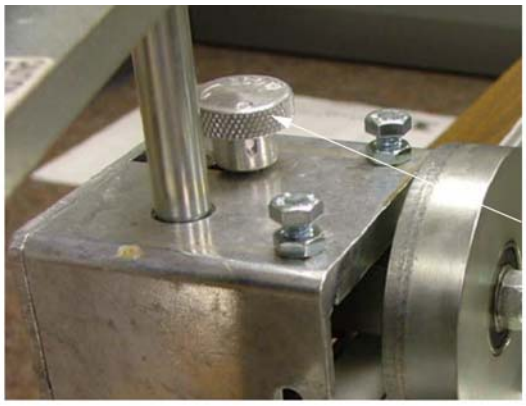


Figure 5 - 32 Roller Adjustment Knob

9. Insert hooks into the first active slot of the face strip, see Figure 5 - 33. Slide in lacer guide pin on the side and through the loops of the lacing hooks to secure the hooks to the machine. Push the locking levers into the locked (down) position. Remove carding paper.

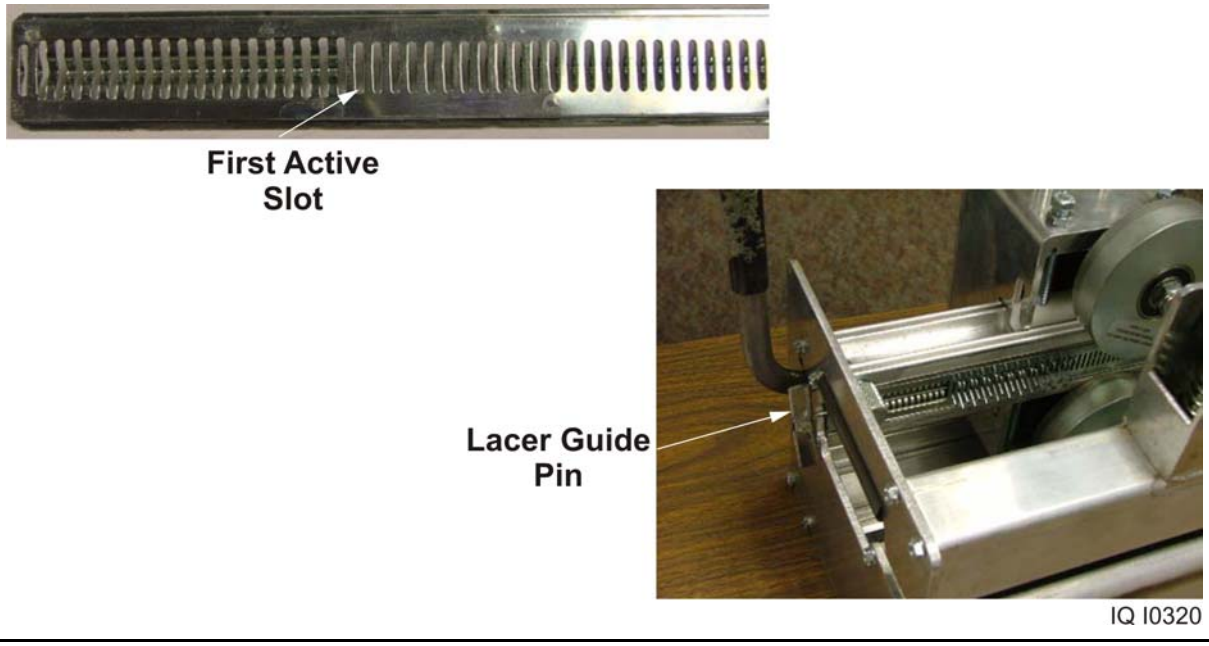


Figure 5 - 33 Insert Hooks

10. Insert belt through the belt clamp and flush against the entire width of the face strip. Lock belt clamp, see Figure 5 - 34.

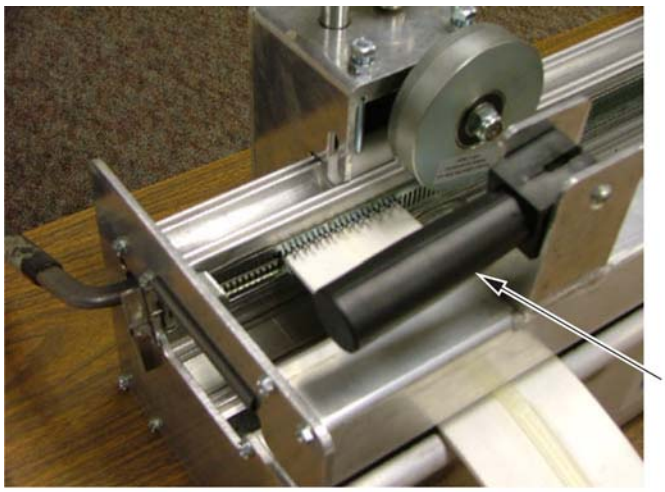


Figure 5 - 34 Insert Belt

11. Position rollers over the hooks, turn adjusting knob counter-clockwise until rollers touch hooks, see Figure 5 - 35. Return the lacer head to the end of the lacer and turn the adjusting knob 1-1/2 additional turns counter-clockwise.

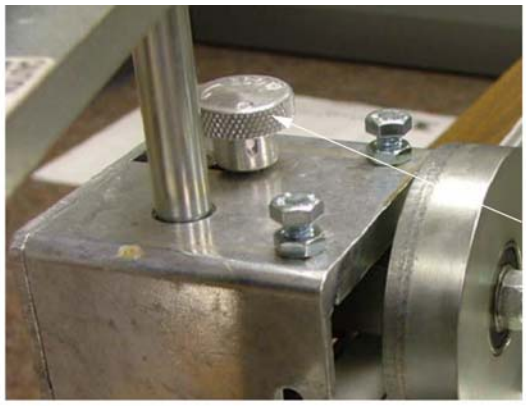


Figure 5 - 35 Position Rollers

12. Using the drive handle, move the lacer head across the belt width at a smooth speed, see Figure 5 - 36. Turn adjusting knob counter-clockwise 1/2 turn and return head across the belt. Repeat until hooks are embedded 1/3 to 1/2 into the belt. When laced properly, the end of the belt will look like Figure 5 - 37.

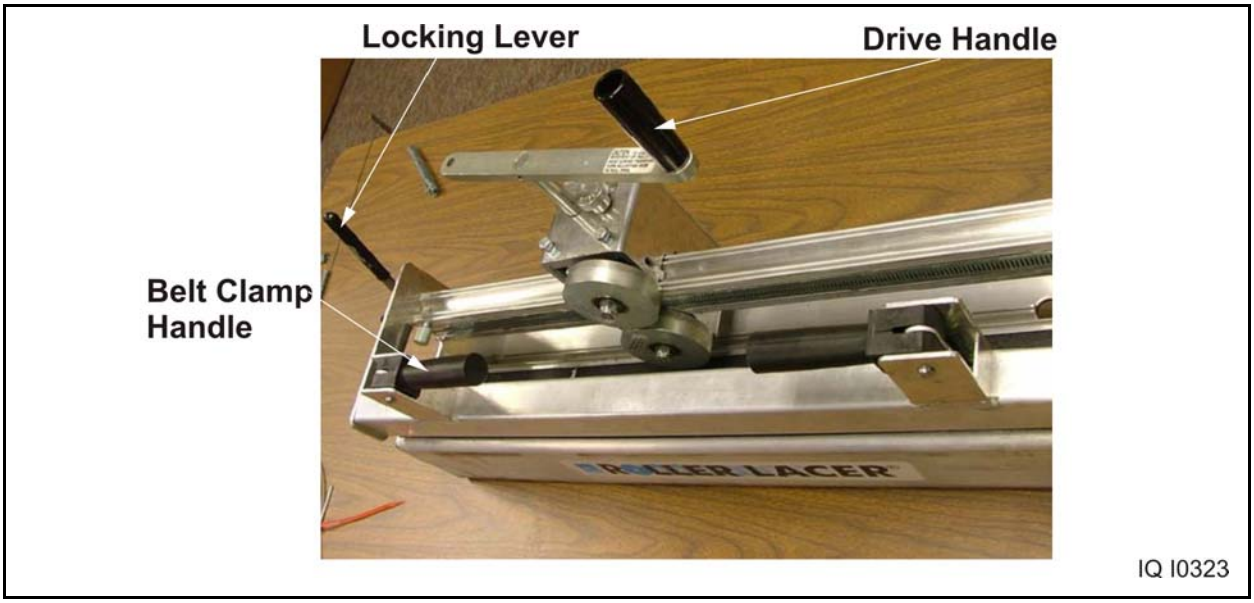


Figure 5 - 36 Roller Lacer Outer View

Figure 5 - 37 Embedded Laces

Check the following to make sure the lacing hooks are properly installed:

a. The hook legs are parallel, see Figure 5 - 38 and Figure 5 - 39.
b. The hook points slightly penetrate the opposite side of the belt.
c. Approximately 1/3 to 1/2 of the wire diameter is embedded into the belt.
d. Hook knuckles are not higher than the legs when installed.
e. Approximately 1/4 inch (6.4 mm) on each belt edge is left unlaced.
f. One more hook is installed on the leading end than the trailing end of the belt.
g. The trailing end of the splice is chamfered/notched.
h. The edges of the belt line up.
i. The hooks are secure in the belt.

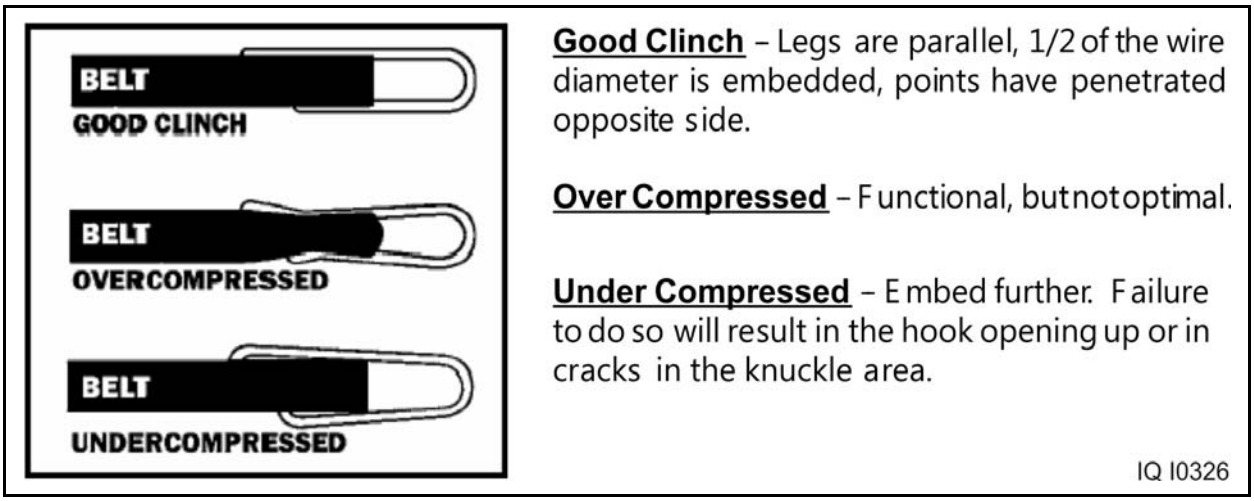


Figure 5 - 38 Properly Installed Lacing Hooks

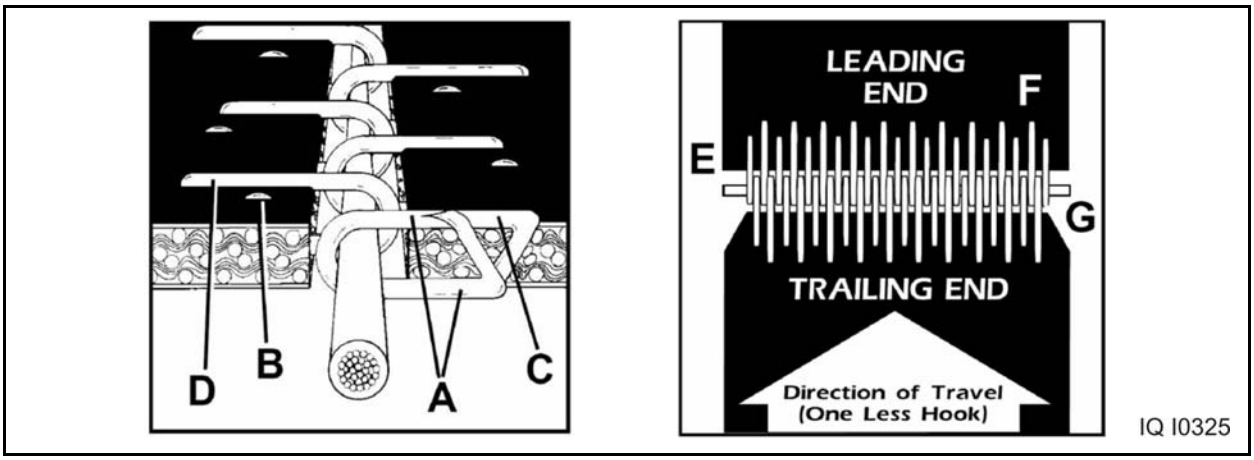


Figure 5 - 39 Lacing Comparison

13. Lift up locking lever. Remove lacer pin. Release belt clamp. Remove belt from lacer.

14. Repeat steps 6 through 13 on page 30 through page 35. for the other end of the belt. Insert belt lacing into to the second active slot in the face strip in order to lace the opposite end of the belt, see Figure 5 - 40. This will allow the laces to interconnect properly.

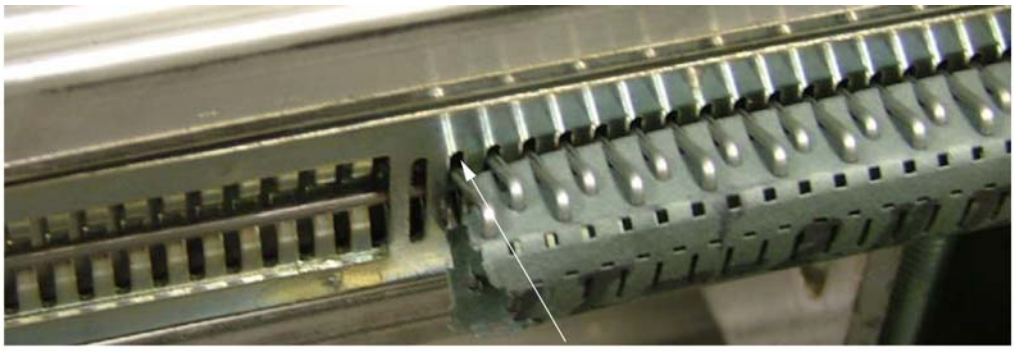


Figure 5 - 40 Lacing Opposite End

15. Pull the ends of the belt together and insert the pre-cut lacing pin into the interconnected lacing hooks.

16. Bend the ends of the lacing pins in the direction away from belt travel to keep it from migrating out of the lacing hooks.

17. Chamfer the edges of the belt on the trailing end of the spliced joint, see Figure 5 - 41.

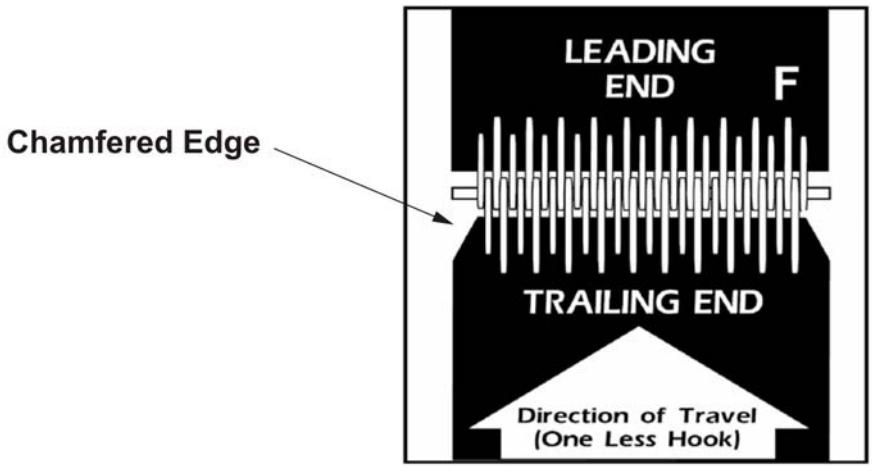


Figure 5 - 41 Chamfered Edges of Belt

Drive Belt Lacing - Mechanical Lacing

In the event of a breakdown, the drive belt may also be mechanically laced using #1-HT lacing until a shutdown period when the belt may be welded. The following instructions explain the proper method to mechanically lace a belt using a bench lacer:

1. Pull the belt ends together tightly to remove any slack in the belt.
2. Use a razor knife and a straight edge to cut the ends of the belt squarely with each other and at a 90 degree angle, see Figure 5 - 42.

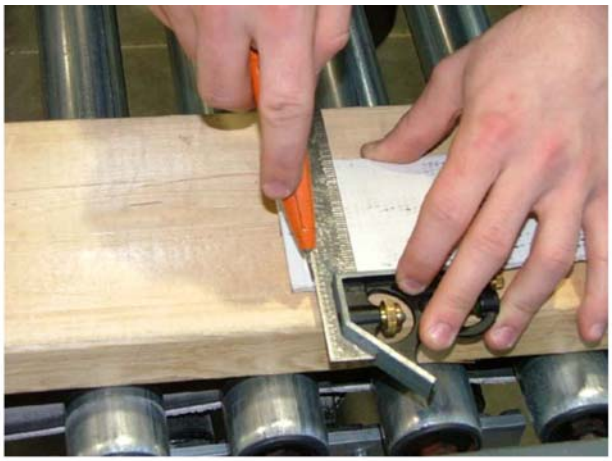


Figure 5 - 42 Cutting the Belt Ends

For a more precise cut, use a belt cutter, see Figure 5 - 43. This method is preferred because it ensures that the end of the belt is at 90 degrees and also that the v-backing is cut cleanly.

Figure 5 - 43 Using a Belt Cutter

3. Remove approximately 1 inch of the v-backing from each end of the belt, see Figure 5 - 44. This is necessary for the belt to fit into the lacing equipment.
4. Taper the v-backing on the bottom and sides. This is necessary for the belt to run more smoothly as it travels through pulley grooves.

Figure 5 - 44 Taper the V-Backing

5. Cut the lacing and lacing pin to the width of the belt.
6. Insert the #1-HT lacing into the lacing machine jaws, see Figure 5 - 45.
7. Insert the lacing pin in the side and through the loops on the bottom of the lacing hooks to secure the hooks to the machine.

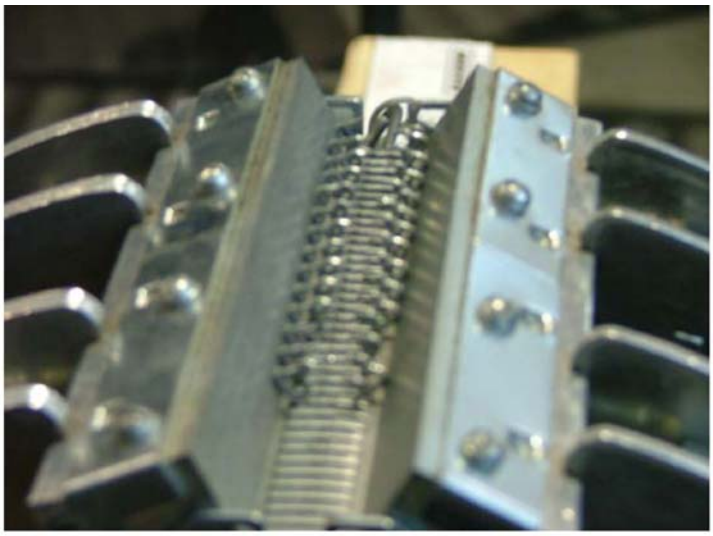


Figure 5 - 45 Insert the Lacing

8. Insert one end of the belt into the lacing machine, see Figure 5 - 46.

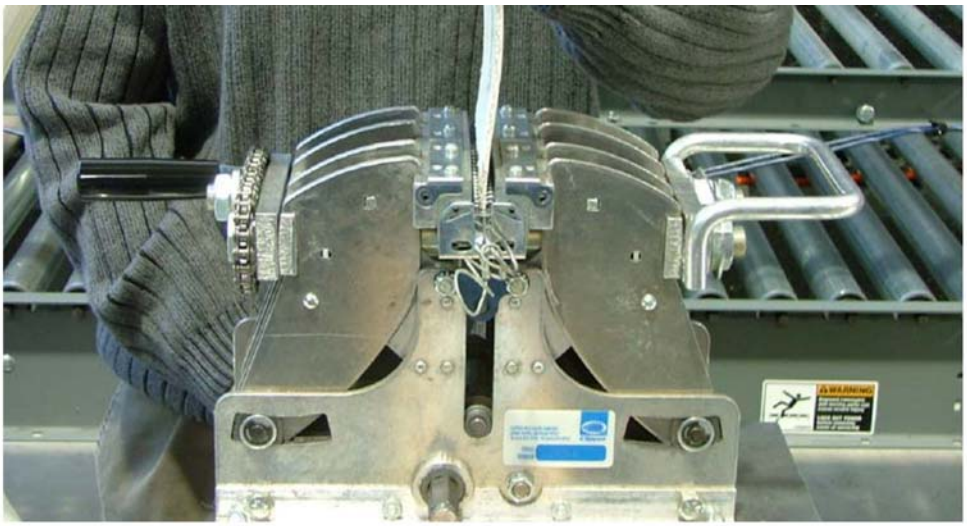


Figure 5 - 46 Lacing

9. To begin lacing the belt, turn the crank shown in the picture on the top/left of the belt lacing machine, so that the machine's jaws begin to tighten. It is best to tighten the jaws of the machine in very small increments to both ensure a secure lacing, but also make the process much less difficult. After tightening the first crank, use the dual handled crank located on the center of the machine's side to close, and then re-open the jaws. Repeat these steps, tightening the jaws bit by bit until the lacing hooks are completely inserted into the belt. You will know that the lacing is completely inserted into the belt when you can see the tips of the hooks just beginning to poke through.
10. When laced properly, the end of the belt will look like Figure 5 - 47.

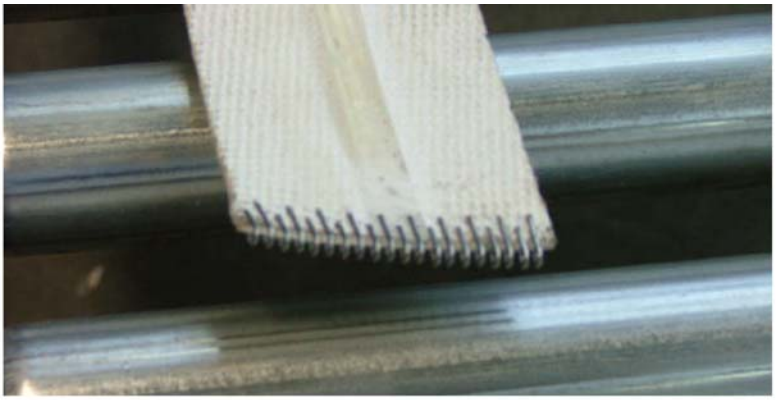


Figure 5 - 47 Proper Lacing Penetration

Check the following to ensure the lacing hooks are properly installed.

a. The hook legs are parallel, see Figure 5 - 48 and Figure 5 - 49.
b. The hook points slightly penetrate the opposite side of the belt.
c. Approximately 1/3 to 1/2 of the wire diameter is embedded into the belt.
d. Hook knuckles are not higher than the legs when installed.
e. Approximately 1/4 inch (6.4 mm) on each belt edge is left unlaced.
f. One more hook is installed on the leading end than the trailing end of the belt.
g. The trailing end of the splice is chamfered/notched.
h. The edges of the belt line up.
i. The hooks are secure in the belt.

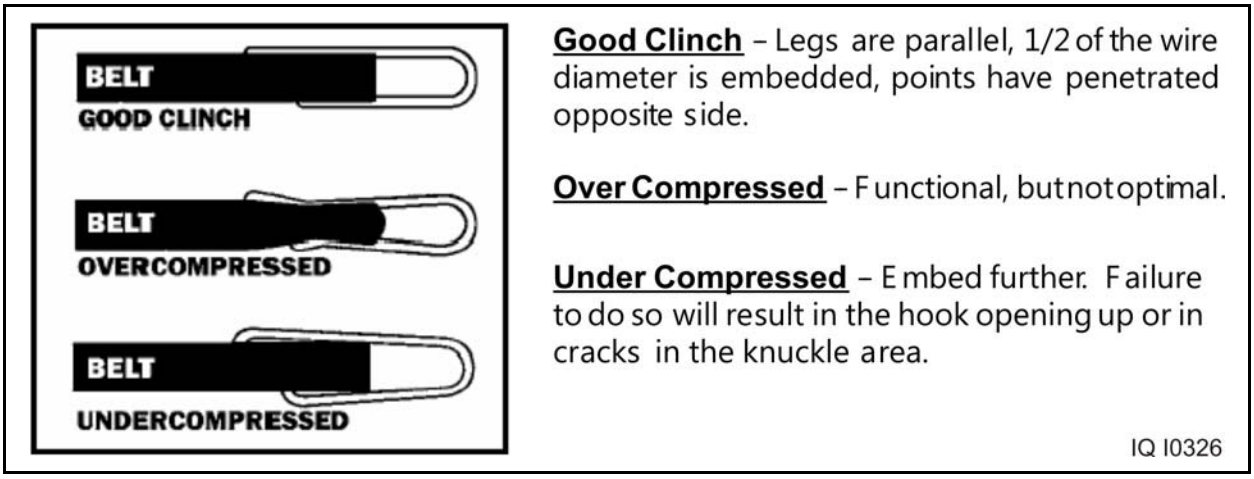


Figure 5 - 48 Properly Installed Lacing Hooks

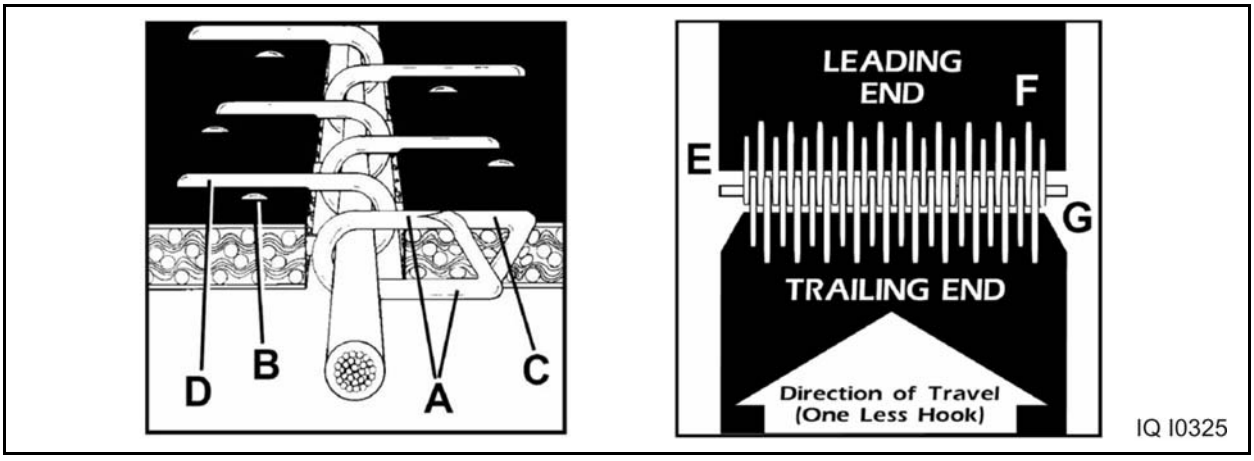


Figure 5 - 49 Lacing Comparison

11. Repeat steps 6 through 10 on page 37 through page 38 for the other end of the belt. Insert belt lacing into the second active slot in the lacing machine in order to lace the opposite end of the belt. This will allow the laces to interconnect properly.
12. Pull the ends of the belt together and insert the pre-cut lacing pin into the interconnected lacing hooks.
13. Bend the ends of the lacing pins in the direction away from belt travel to keep it from migrating out of the lacing hooks.
14. Chamfer the edges of the belt on the trailing end of the spliced joint (Figure 5 - 50). Both belt ends may be chamfered, but it is not necessary.

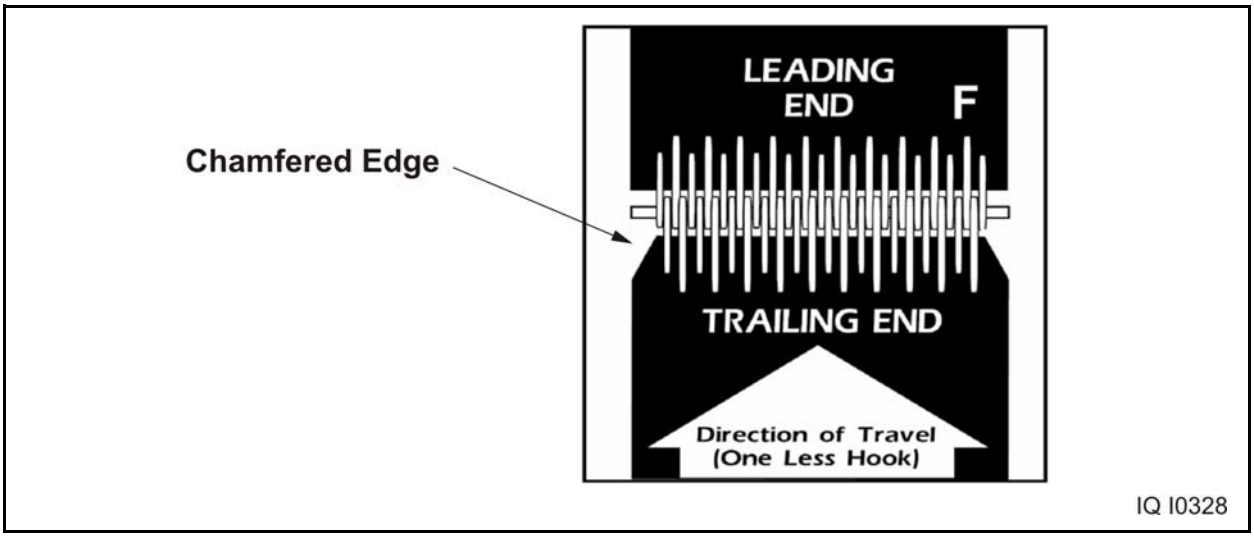


Figure 5 - 50 Chamfered Edges of Belt

Electrical Connections

⚠WARNING

Only qualified electricians are allowed to connect or perform maintenance on the electrical system. Conveyor conduit must be properly grounded per all applicable wiring code requirements. Failure to follow these instructions may result in serious personal injury and/or equipment damage.

All electrical connections and wiring should be done by licensed, certified electricians who are familiar with local wiring and inspection codes. All motors and controls should be wired according to the wiring diagrams provided.

Conveyor Motor Wiring

Each conveyor motor must have a lockable disconnect switch located within sight of the motor.

Logic Module Connections

On IntelliQ® Accumulation Conveyors equipped with photo eye sensors, the logic modules must be connected between each of the conveyor bed sections, see Figure 5 - 51. The cable and pneumatic line are attached to the side of the conveyor frame to prevent damage during shipping. Route the cable from the downstream logic module to the upstream logic module on the next conveyor section.

Figure 5 - 51 Logic Module Connections

Power Supply Installation

A 24VDC power supply is required to supply power to the photo eyes and logic modules. Each power supply can provide power for a maximum of 50 zones (25 zones in each direction) and must be located as close to the center of the zones as possible to balance the power supplied to the zones.

NOTE: If there are 25 zones or less, the power supply may be installed at the end of the conveyor closest to the 115VAC supply.

If the total number of zones exceeds 50, an additional power supply and a power isolation cable must be installed.

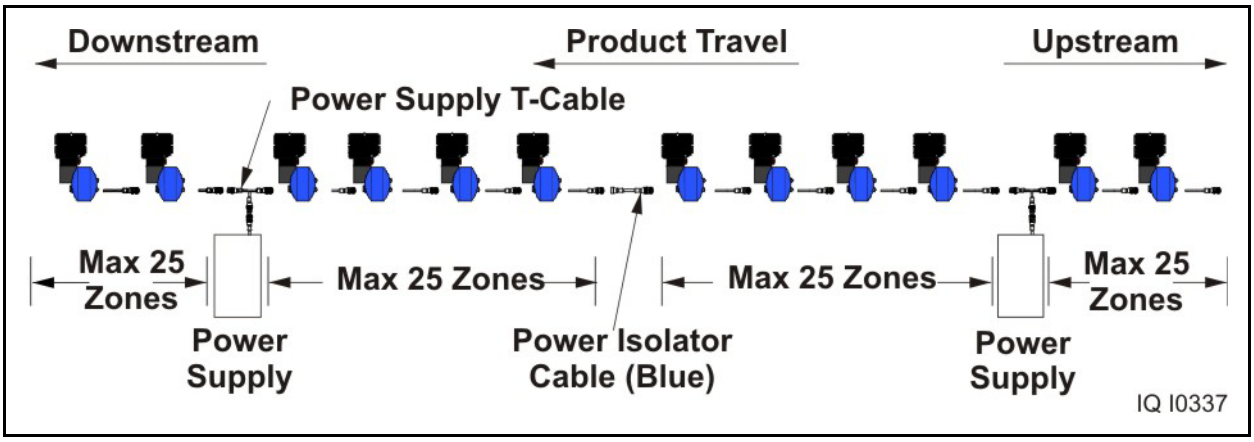


Figure 5 - 52 Power Supply Details

Use the following procedure to install the power supplies, see Figure 5 - 53.

1. Mark a location as close to the center of the accumulation zones as possible for mounting the power supply. The power supply must be mounted vertically with the vent holes on the top and bottom. The power supply may be mounted to the conveyor frame, conveyor support, or stationary building framework.
2. Drill holes, if necessary, and mount the power supply.
3. Connect the single connector end of the gray power supply T-cable to the connector on the power supply and connect the Tee between the closest logic module and the cable from the downstream logic module. This cable connects the 24VDC to the logic modules.
4. If more then one power supply is used on this conveyor, be sure to install the Power Isolator Cable between the logic modules powered by the different power supplies.
5. Make sure the power supply on/off switch is turned off.

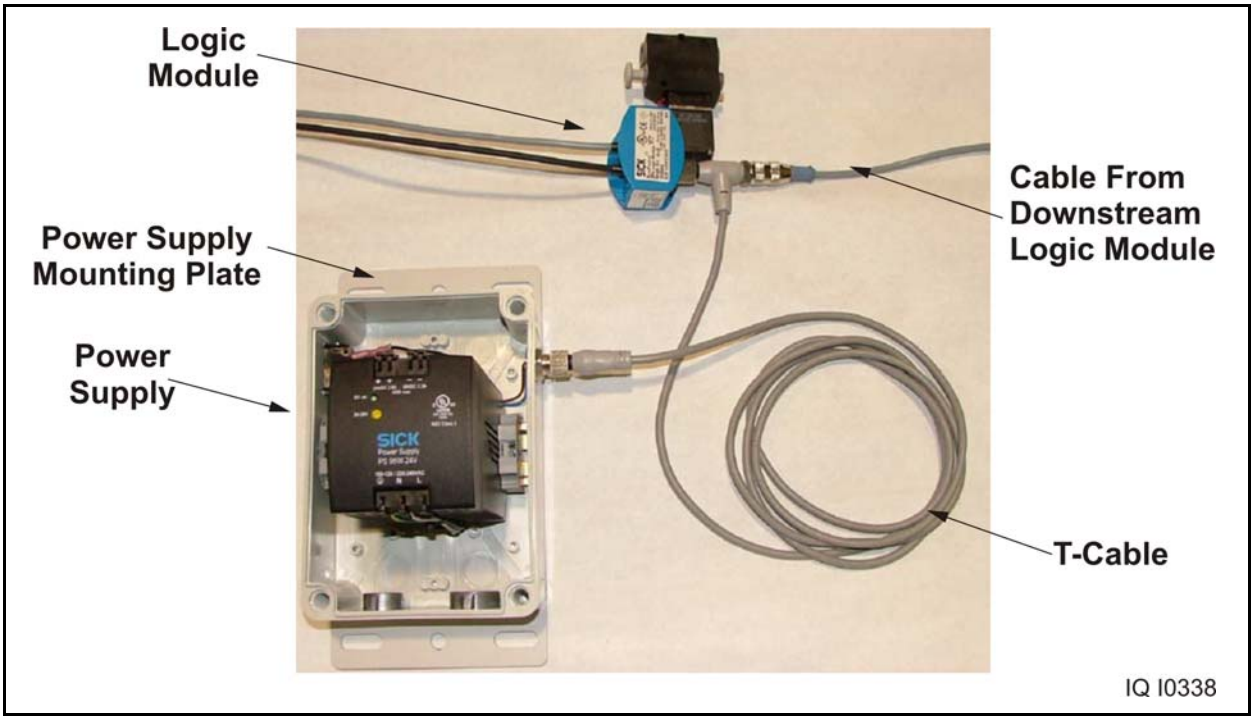


Figure 5 - 53 Power Supply Connections

6. Remove the cover from the power supply enclosure.
7. Install wiring conduit to the bottom of the power supply enclosure. There are two precut access holes in the bottom of the enclosure, see Figure 5 - 54.

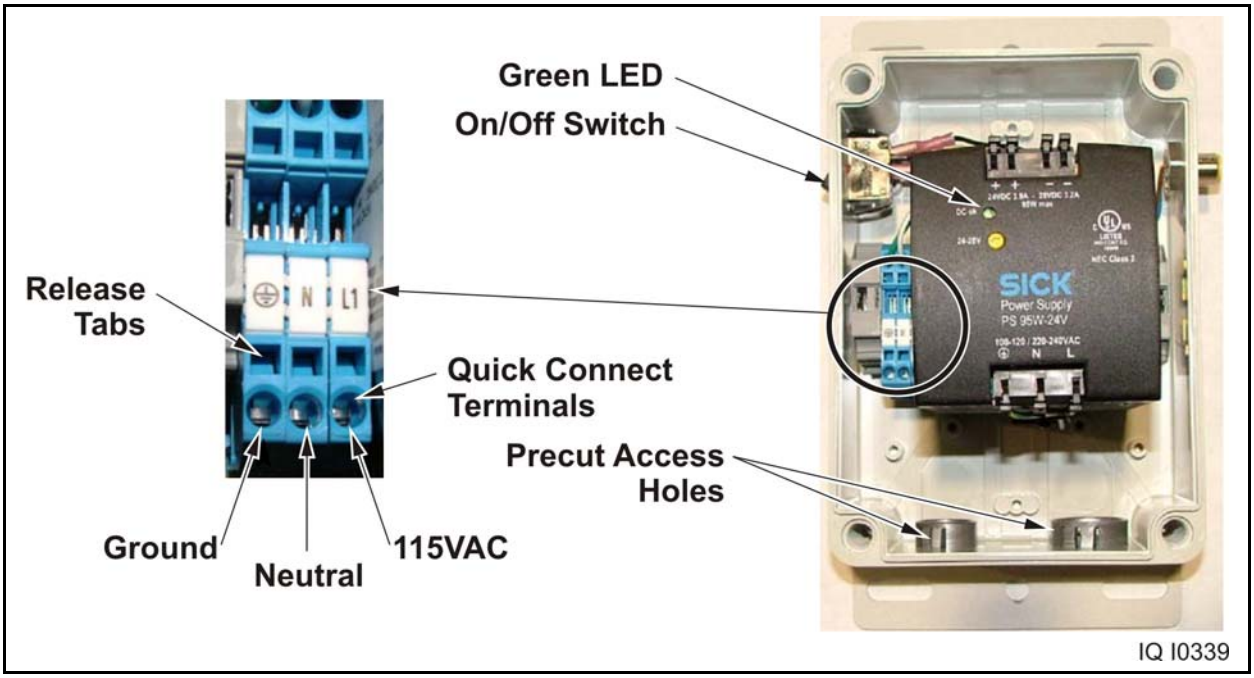


Figure 5 - 54 115 VAC Connections

8. Route the 115VAC supply line through the conduit and connect the black, white, and green wires to their designated terminals as show in the following illustration.

   The terminals are quick connect. Use a small screwdriver to press the release tab to open the terminal, insert the wire into the terminal, and remove the screwdriver to capture the wire.

9. Install the cover on the power supply enclosure.

10. Turn on the main 115VAC supply and turn on the power supply switch. The Green LED illuminates when the 24VDC supply is activated.

11. With no product present on the conveyor, align the photo eyes to the reflectors.

12. Using the wire ties provided, make sure all wiring and tubing is neatly routed and secured so it does not interfere with any moving components on the conveyor.

Zone Interface Module (ZIM) Installation

A Zone Interface Module (ZIM) must be installed for Slug Release Mode to operate on Photo Electric conveyors using Singulation or True Singulation modules, see Figure 5 - 55. The ZIM provides the signal to energize multiple zones at the same time to accomplish Slug Release. If a limited number of zones is going to be used for Slug Release and not the entire conveyor, a Slug Terminator Cable must be installed between the last logic module used for the Slug Release and the next upstream module. The remaining zones will release in Singulation or True Singulation.

The ZIM is typically connected to the first logic module at the discharge end of the conveyor but may be connected anywhere in between the logic modules being used for slug release. The ZIM may be activated by an output from the system controller or by the same signal that is connected to the solenoid valve in the discharge section of the conveyor. The connection on the ZIM is voltage independent.

Since the ZIM is typically installed at the discharge end of the conveyor and wired to the same signal as the discharge solenoid, the following installation procedure has been written from that perspective. You may need to make adjustments based on the configuration of your conveyor.

1. Turn off and lock out the disconnect that supplies power to the conveyor and specifically (if used), the discharge solenoid valve.

2. Install the ZIM on the drive side of the conveyor side frame at the discharge end of conveyor.

3. Connect the logic cable to the first logic module on the conveyor. Coil the unused cable and secure it to the conveyor frame with a wire tie.

4. Connect a length of two conductor wire to the wiring terminals feeding the signal to the discharge solenoid. (If another device or control output is to be used to supply the slug signal, connect that device to the ZIM module.)

5. Remove the cover on the ZIM and insert the two conductor wire into the ZIM enclosure through one of the available cable clamps.
6. Connect the Slug Release signal wires as shown in the following illustration.

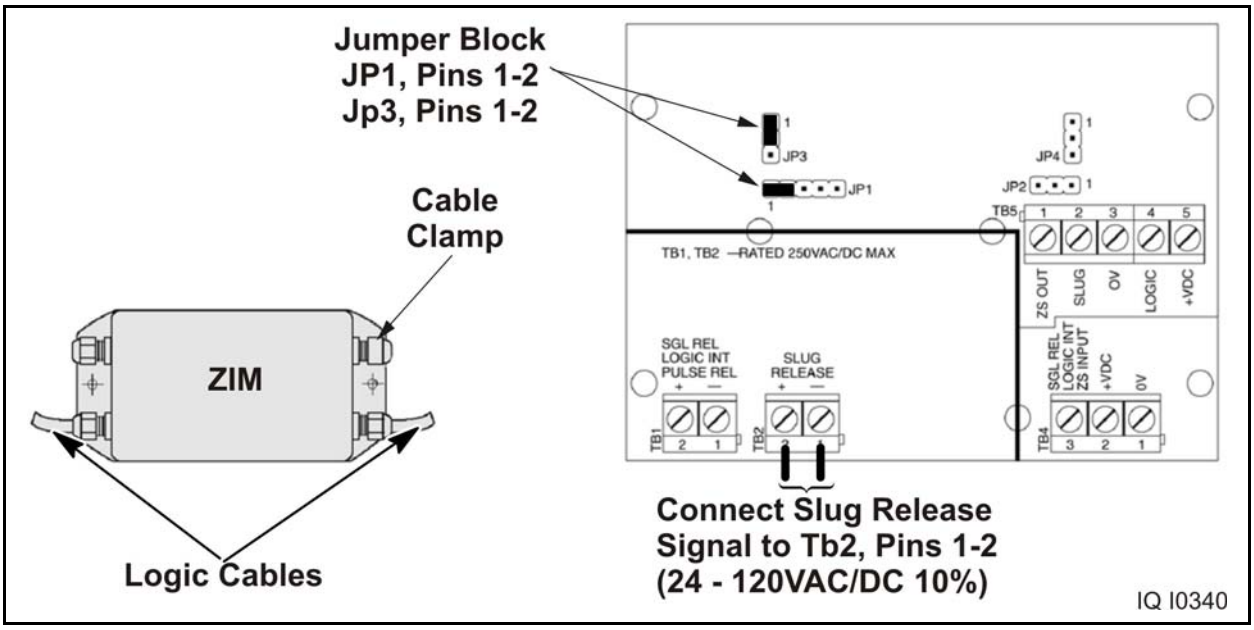


Figure 5 - 55 Release Signal Connection

7. Tighten the cable clamp and install the cover on the ZIM enclosure.
8. Install a Slug Terminator Cable between the appropriate logic modules to limit the size of the slug to be released.

   Figure 5 - 56 shows the ZIM connections and the Slug Terminator Cable placement for a fifteen foot slug (Discharge Zone + four three-foot zones = fifteen feet).
9. Unlock and turn on the power to the conveyor and discharge solenoid valve.

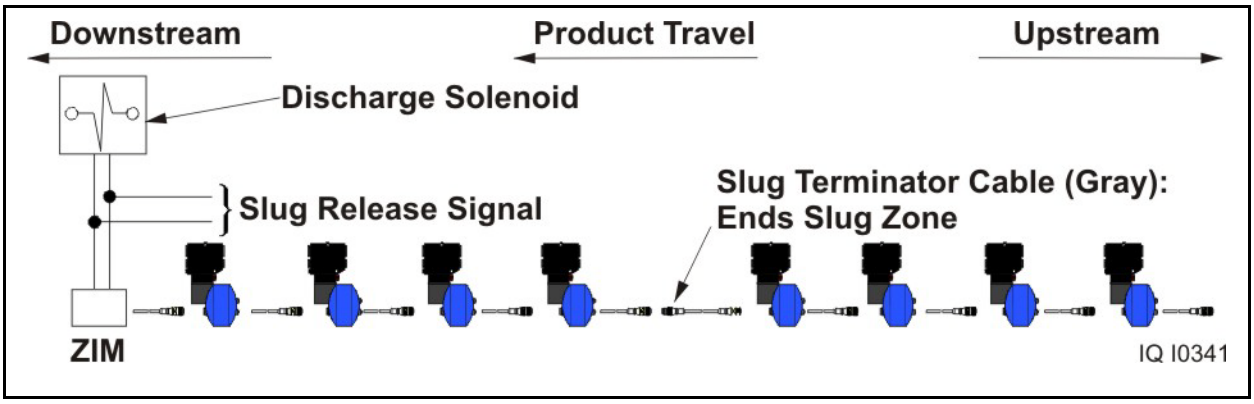


Figure 5 - 56 Typical ZIM Connections

Air Connections

The IntelliQ® Accumulation Conveyor requires that two separate air supplies be connected to the conveyor. One supply is used to operate the individual pressure shoes and the other is used for the pneumatic belt tensioner. The following guidelines describe the requirements for each.

All air lines and devices on the conveyor are factory secured to their respective components, but some air lines may require minor trimming to prevent any interference with moving parts.

Air is supplied to the pneumatic valves on the conveyor sections through 3/8-inch O.D. x 1/4-inch I.D. orange tubing. Air is supplied to the pressure shoe diaphragms through 1/4-inch O.D. x 1/8-inch I.D. black tubing. A 1/4-inch O.D. x 1/8-inch I.D. clear tubing is also used on conveyor sections with mechanical sensors for slug piping.

Infeed Idler Air Connections

The pneumatic piping of the infeed idler is connected to the first zone of the intermediate conveyor section, see Figure 5 - 57. The main air supply to the pneumatic solenoid valve and the pressure shoe diaphragm connections are shown in the following illustration.

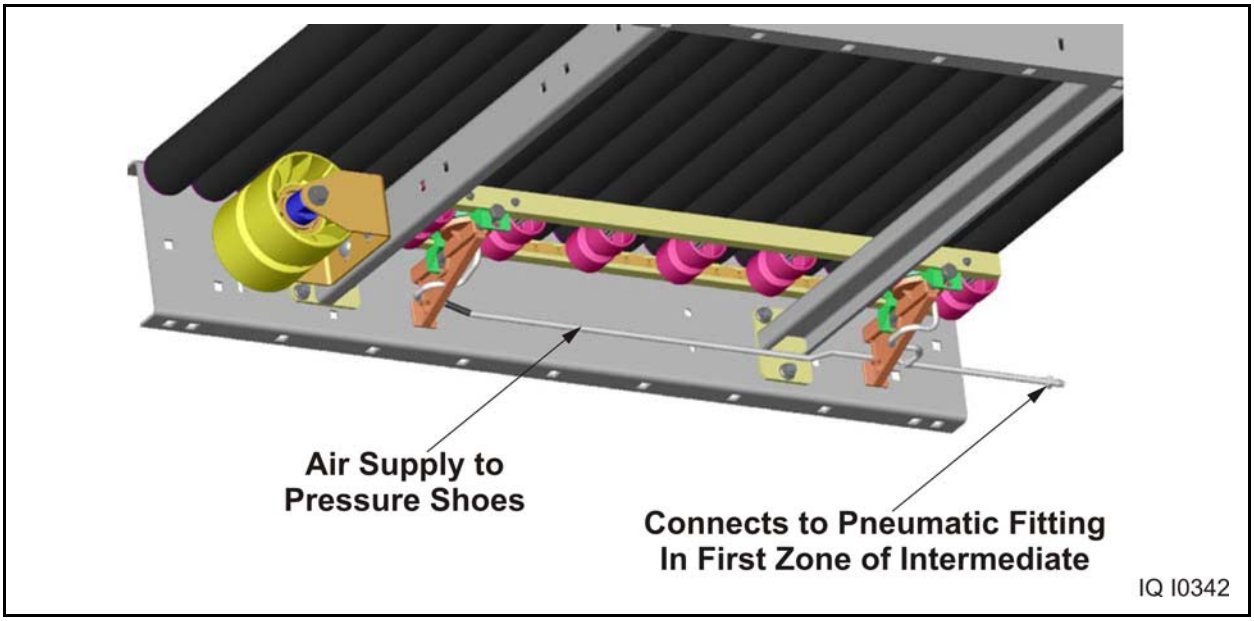


Figure 5 - 57 Infeed Idler

Discharge Idler Air Connections

The discharge idler of an IntelliQ® Accumulation Conveyor is equipped with a pneumatic solenoid valve so the release of product can be controlled by the system controller. The main air supply to the pneumatic solenoid valve and the pressure shoe diaphragm connections are shown in Figure 5 - 58.

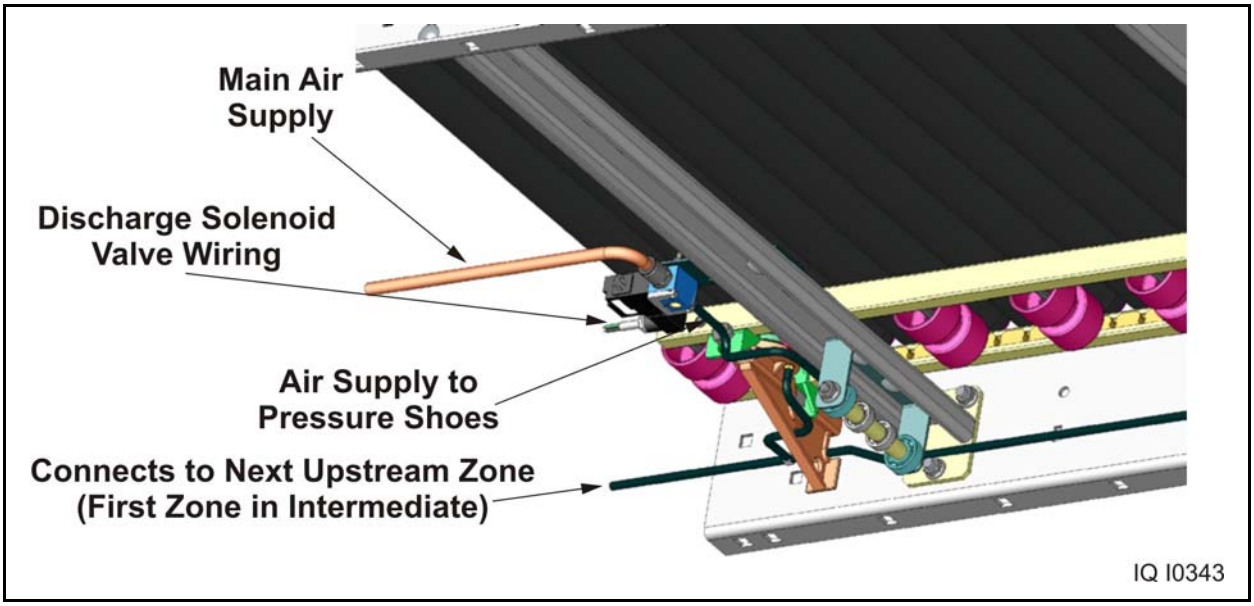


Figure 5 - 58 Discharge Idler (Accumulation)

If the conveyor is configured for transportation only, there is no pneumatic solenoid valve and the main air supply is connected directly to the pressure shoe diaphragms.

Conveyor Bed Air Connections

The pneumatic piping for each intermediate conveyor bed section is configured for a particular type of accumulation and/or release mode. On most conveyors, there are two pneumatic connections to make between the bed sections: the main air supply line (orange) and the pressure shoe diaphragm supply line (black), see Figure 5 - 59.

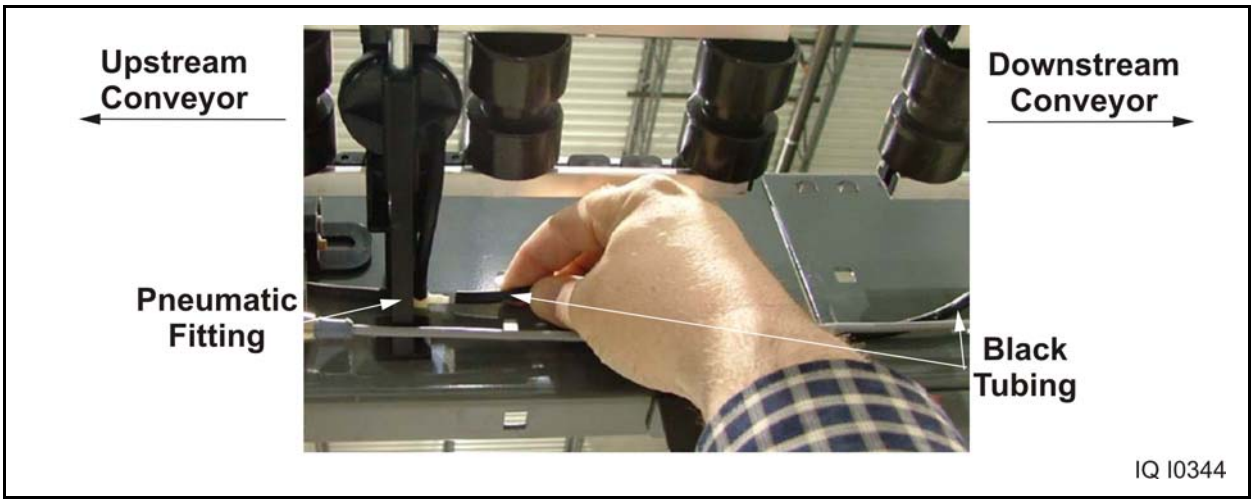


Figure 5 - 59 Pneumatic Connections - Most Conveyors

For the mechanical sensor conveyors with Slug piping, there are three connections: the main air supply line (orange) and two pressure shoe diaphragm supply lines (black), see Figure 5 - 46.

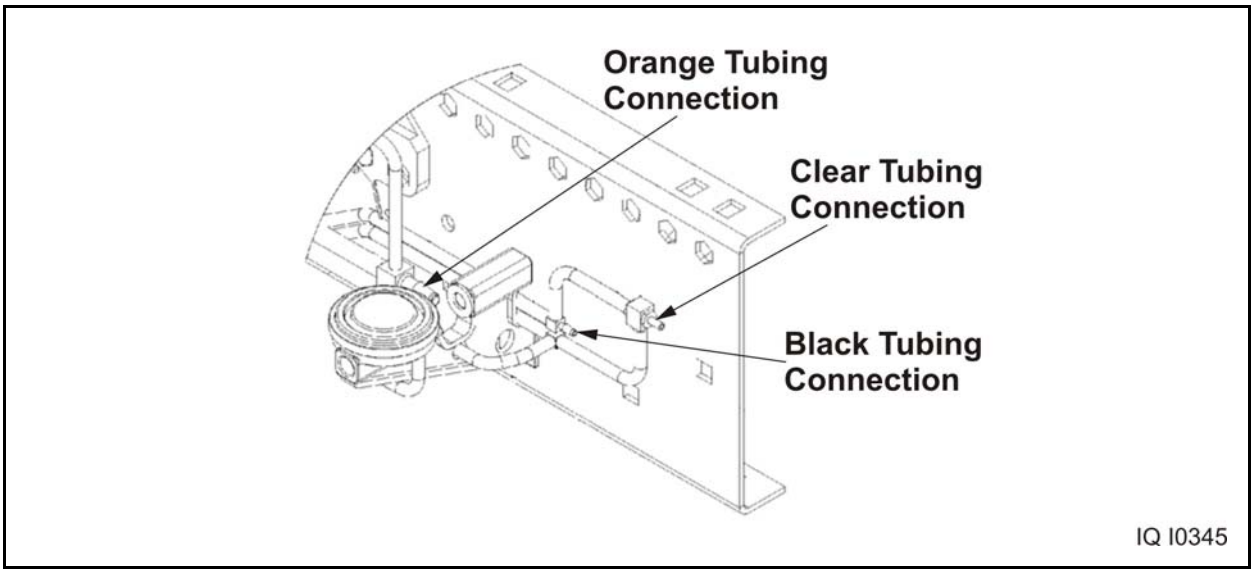


Figure 5 - 60 Mechanical Sensor with Slug Piping

For intermediate conveyor bed sections configured for transportation, there is only the one connection for constantly supplying air to the pressure shoe diaphragms.

Head-To-Tail Connections

A special Head/Tail Logic Kit has been designed for the Photo Electric IntelliQ® Accumulation Conveyor to provide seamless logic across two conveyors that are installed head-to-tail. The kit consists of two logic modules and the associated mounting and pneumatic hardware. The infeed and discharge idlers are piped as if they are an extension of the intermediate section and there was no interruption in the conveyor.

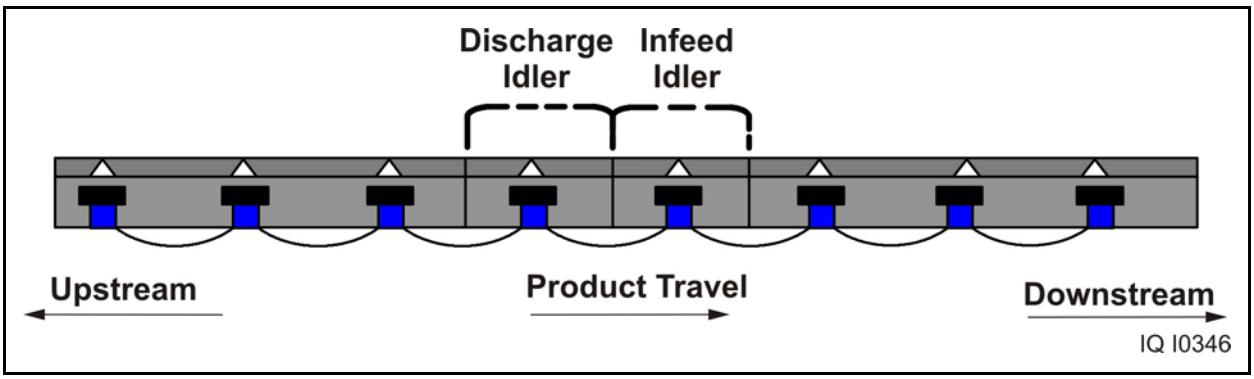


Figure 5 - 61 Head-To-Tail Operation

Use the following instructions to install the Head/Tail Logic Kit:

1. If present, remove the solenoid valve in the discharge idler.
2. Install one logic module in the Discharge Idler and one logic module in the Infeed Idler, see Figure 5 - 61.
3. Connect the black tubing from the pressure shoe diaphragms in the next upstream zone (intermediate section) to the logic module in the Discharge Idler.
4. Connect the black tubing from the pressure shoe diaphragms in the Discharge Idler to the logic module in the Infeed Idler.
5. The black tubing from the pressure shoe diaphragms in the Infeed Idler should already be connected to the logic module in the next downstream zone.
6. Connect the orange tubing for the main air supply to the two newly installed modules.

Pressure Shoe Air Supply Connections

Air must be supplied to the pressure shoes to maintain belt pressure on the carrier rollers for them to convey the product correctly. Air supply drops must be installed according to the following instructions:

NOTE: Air regulators for the pressure shoe air supplies are not mounted but are supplied with the conveyor and must be mounted during installation. Be sure the mounting location does not cause any interference with moving conveyor components.

1. Air supply drops for the Pressure Shoes must be installed at intervals of 120 feet maximum to supply adequate pressure and flow to the conveyor. All air supply drops should be installed in the middle of the conveyor to ensure adequate pressure to both ends of the conveyor.
2. A filter/regulator (supplied) must be installed for each air supply drop. Be sure to install the filter/regulator so the drive belt cannot come in contact with it when the drive belt tension is released.

NOTE: The maximum length of conveyor per regulator is 120 feet (60 feet each side of regulator). If the conveyor is less than 120 feet, install regulator at the mid-point. If the conveyor is greater than 120 feet, install units evenly spaced, not to exceed 120 feet between units. Cut and plug the orange tubing midway between units to create separate supply lines.

3. The source air must be clean and dry (no oilers).
4. The regulated pressure to the pressure shoe support diaphragm should be set to 10 PSIG. Do not exceed 15 PSIG.
5. After assembly of the air lines and components, a sight and sound inspection should be made in order to find and repair any air leaks.

Belt Tensioner Air Connection

Belt tension is controlled by a pneumatic tensioner located in the drive unit. Air must be supplied to maintain adequate tension on the belt to prevent slipping. A separate air supply drop must be installed for each IntelliQ® Accumulation Conveyor according to the following instructions:

1. Make sure the source (shop) air supplying the tensioner is between 60 and 120 PSIG.
2. Adjust the filter/regulator supplied with and mounted to the drive unit to 0 PSIG., see Figure 5 - 62.
3. Connect the air supply to the filter/regulator by inserting a 3/8-inch O.D. tube into the push-to-connect fitting on the side of the filter/regulator.

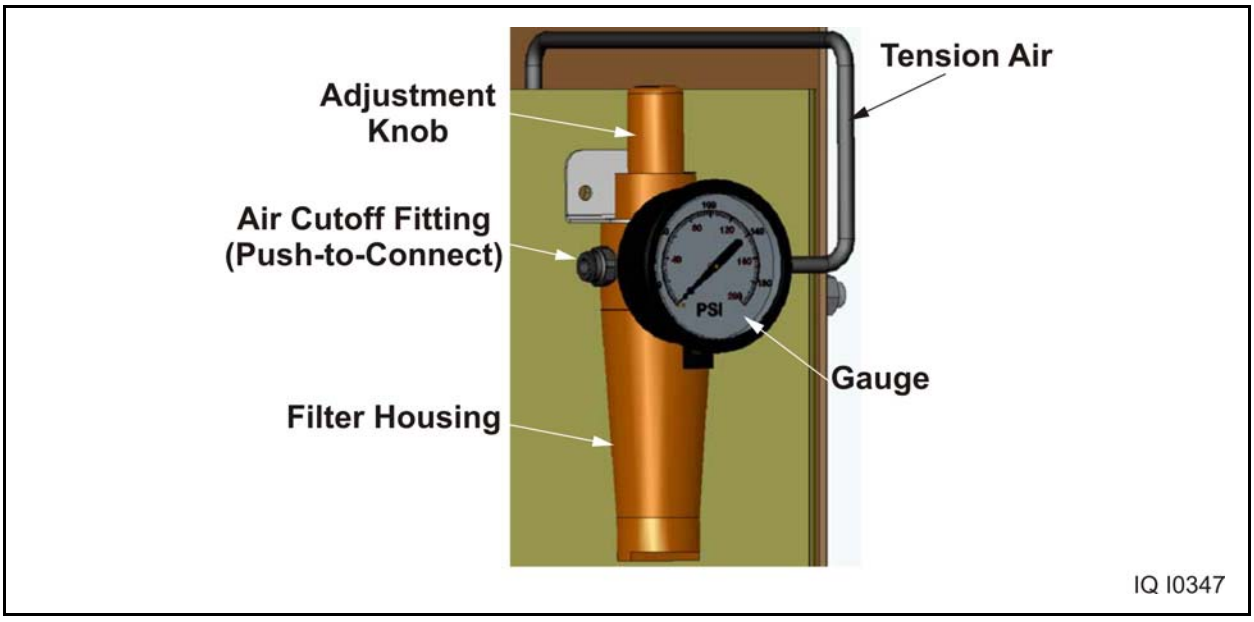


Figure 5 - 62 Belt Tension Filter/Regulator Assembly

4. Adjust the air pressure to the tensioner. See “Drive Belt Tension Adjustment” on page 52.

Drive Belt Tension Adjustment

WARNING

Replace the drive guards after inspection or maintenance of the drive mechanism. Failure to follow this instruction may result in serious personal injury and/or equipment damage.

Drive belt tension on the IntelliQ® Accumulation Conveyor is controlled by a pneumatic tensioner. Too much tension on the belt may cause damage to the belt, lacing, pulleys, and bearings, and possibly cause overloading of the motor.

To adjust belt tension follow these steps:

1. Make sure that the belt is routed properly through the drive and around all pulleys, see Figure 5 - 63.

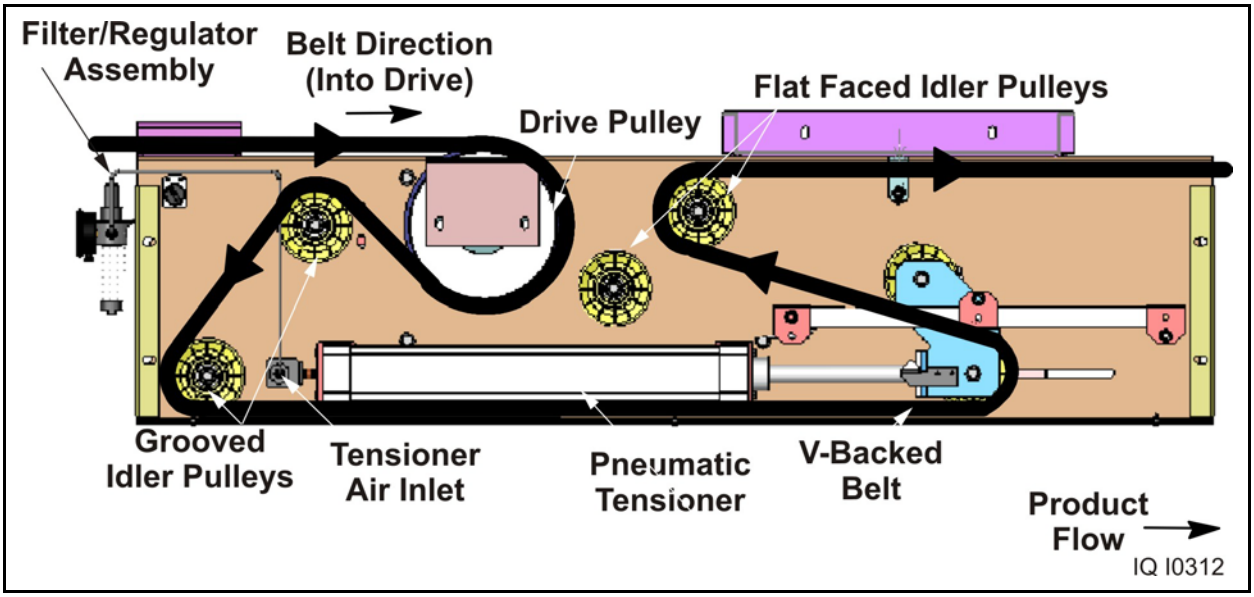


Figure 5 - 63 Belt Path Through The Drive Unit

2. The pneumatic tensioner should be in the fully retracted position during initial installation. If not fully retracted, press the rod back into the tensioner with the air pressure line disconnected. Reconnect to air source with the filter/regulator adjustment set to 0 PSIG prior to tensioning, see Figure 5 - 64.
3. Gradually increase the tensioner air pressure until there is no slack in the belt.
4. Start the conveyor.

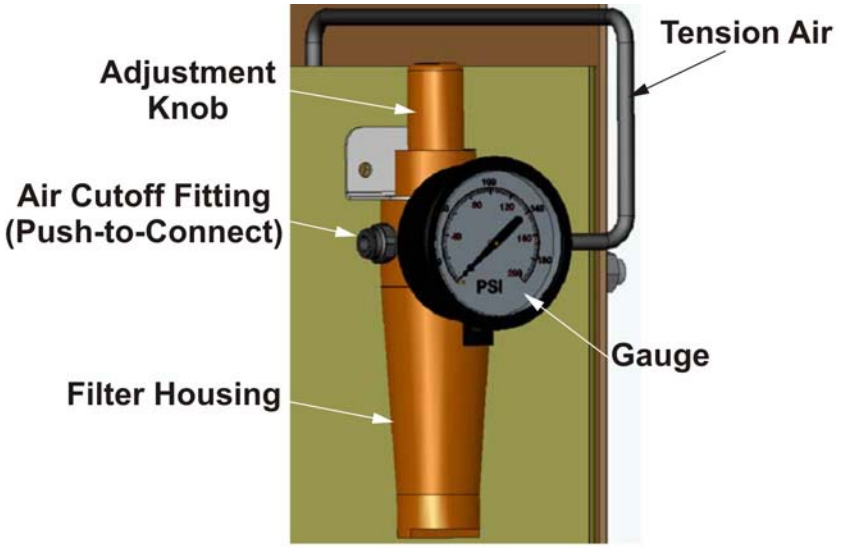


Figure 5 - 64 Belt Tensioner Filter/Regulator Assembly

5. With the belt in motion, gradually increase the air supply pressure until the belt does not slip on the drive pulley. The pressure required will vary based on the overall length of the conveyor, product being conveyed, weight of the product, etc., and will normally fall between 25 and 45 PSI.

6. Check to be sure the belt stretch indicator on the drive assembly is in the green area. When the belt stretch indicator is in the red area, the belt must be shortened by three feet and re-laced or thermally welded, see Figure 5 - 65.

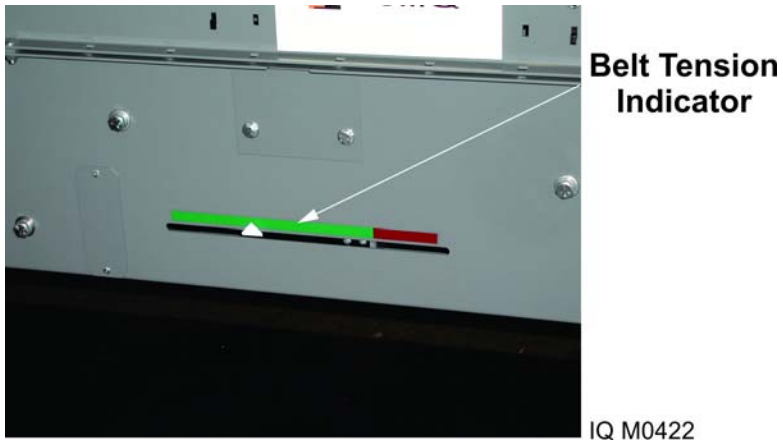


Figure 5 - 65 Belt Tension Indicator

Drive Belt Tracking

The V-backed belt may not track properly if any of the end idlers, belt splice, or drive pulley are not square.

The belt needs to be tracked if any of the following are true:

- The belt is not centered on the drive pulley within 1/2 inch
- There is an audible “pop” when the splice traverses through the drive. (The “pop” is caused when the guide rides out of the pulley groove and snaps back into it.)
- The belt is in contact with the outside bearings or the bracket of the belt return guides.

Use the following procedure when adjusting the belt tracking:

1. Make sure the conveyor sections are properly racked 1/16 inch, level, and plumb.
2. Verify that the end idlers, belt splice, and drive pulley are square with the conveyor side frame, see Figure 5 - 66.
3. Turn the conveyor on and verify that the conveyor is running in the intended direction.
4. Make sure there is adequate tension on the belt and that the air supply to the shoe supports is set to 10 PSIG. This is a starting point and may need to be adjusted once product is introduced on the conveyor.

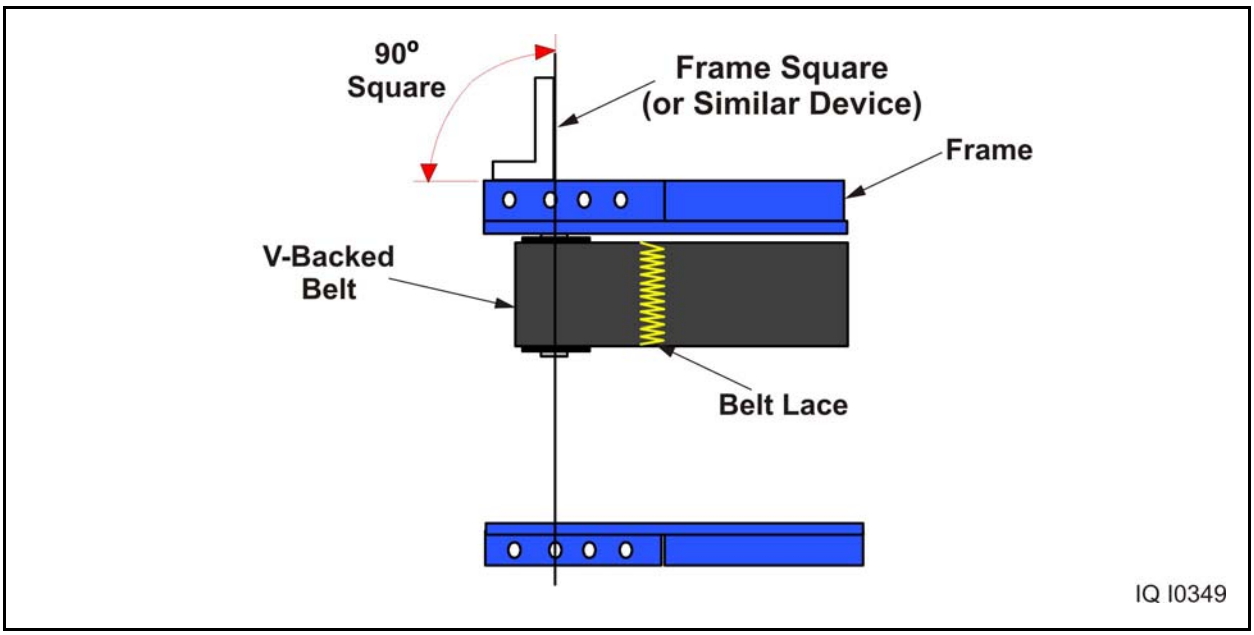


Figure 5 - 66 Checking End Idler Square

5. Remove a few rollers above the drive so the top of the drive pulley is visible, see Figure 5 - 67.

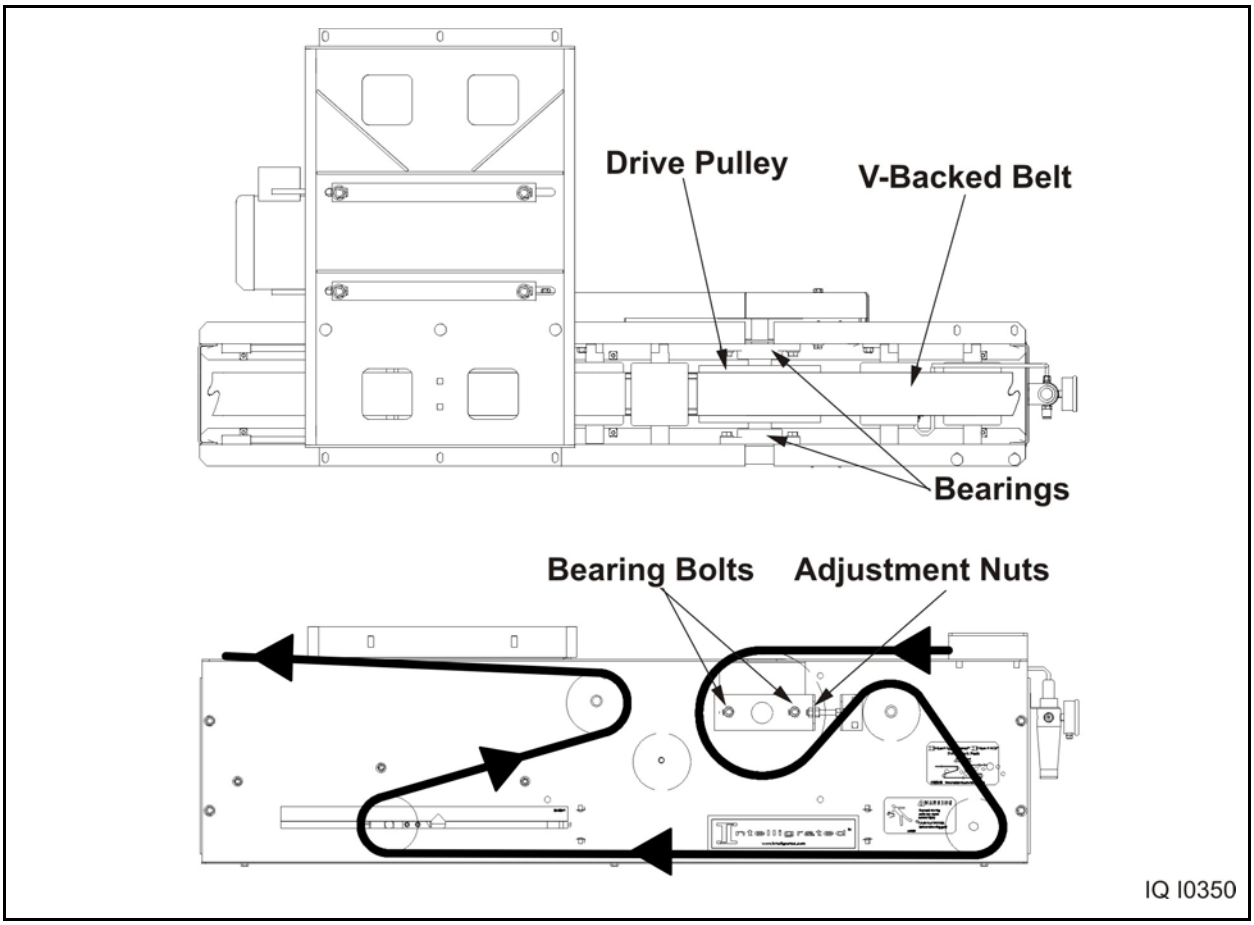


Figure 5 - 67 Belt Tracking

6. If the belt is not centered on the drive pulley or it is making a “popping” noise as it traverses through the drive, adjust the belt using the following procedure:

    a. Turn off the conveyor and lock it out.

    b. Stand on the drive side of the conveyor (opposite the motor and reducer) and loosen the bearing bolts.

    c. Figure 5 - 68 shows the adjustment nuts and bolts. If the belt needs to move away from you, move the pulley towards the discharge end of the conveyor by loosening the adjustment nut on the discharge side and turn the other adjustment nut clockwise.

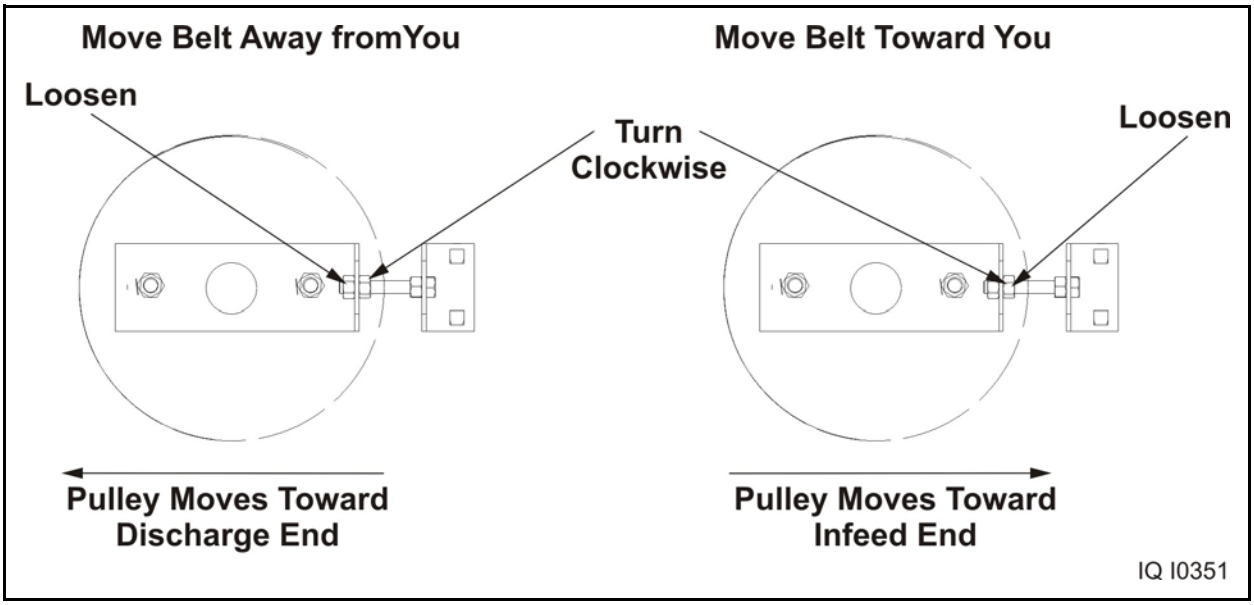


Figure 5 - 68 Belt Tracking Adjustment

If the belt needs to move away from you, move the pulley towards the infeed end of the conveyor by loosening the adjustment nut on the infeed side and turn the other adjustment nut clockwise. Approximately 1/4 inch of adjustment equals approximately 1/2 inch of belt movement.

    d. Tighten the adjusting nuts and the bearing bolts and check the tension on the drive chain or belt. Adjust if necessary.

    e. Unlock the disconnect and turn the conveyor on. Be ready to turn the conveyor off quickly if the adjustment was too much.

f. Check the belt position. Allow the belt splice to traverse the drive at least two times. Repeat steps a. - e on page 56. until the splice does not “pop” and the belt stays in place.

   If this adjustment does not move the belt to the desired position, it may be necessary to use the adjusting nuts on the opposite side of the drive unit. You will have to remove the drive guard and release the drive chain (or belt) tension prior to making the adjustment. Be sure to reset the tension before starting the conveyor.

7. Install the rollers that were removed in step 5 on page 55.
8. If the belt is not running down the center of the return brackets and is in contact with either the outside bearings or the bracket itself, adjust the belt tracking using the following procedure:
   a. Turn off the conveyor and lock it out.
   b. Depending on which direction the belt needs to move, adjust one side of the return bracket towards the infeed or discharge end of the conveyor, see Figure 5 - 69. Always start adjusting at the infeed end of the conveyor.
   c. Repeat step b for the return brackets on the entire length of the conveyor.

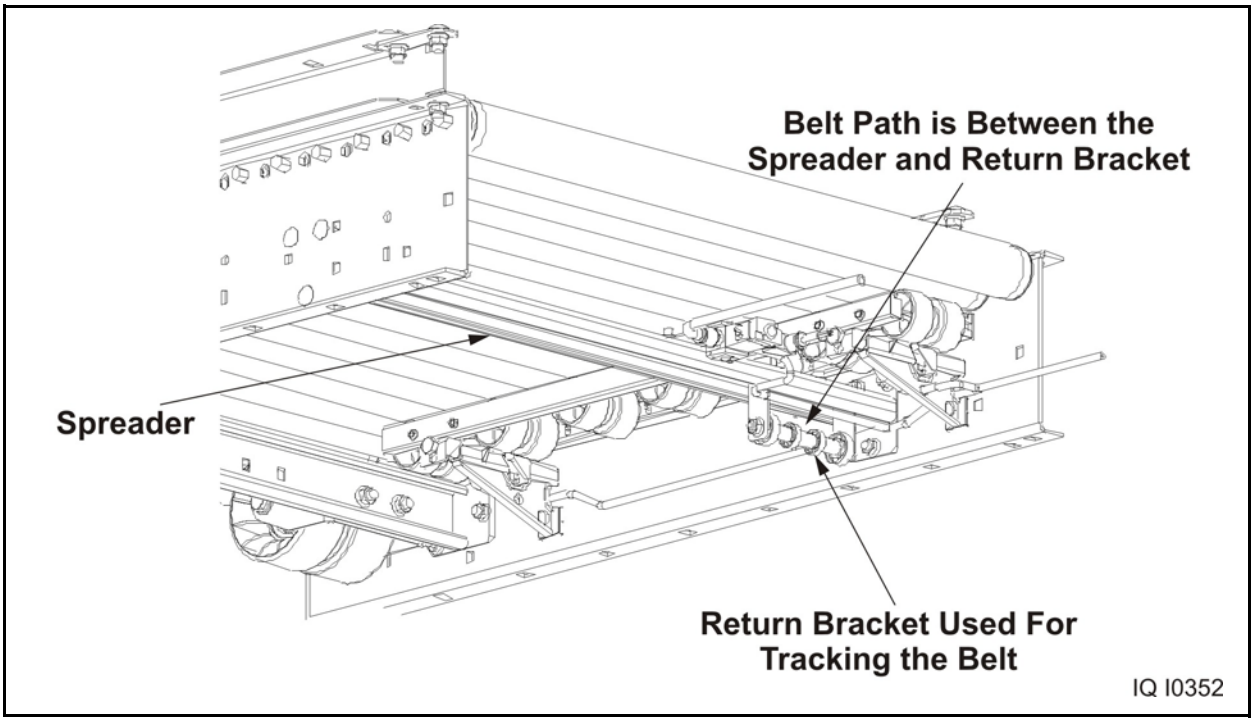


Figure 5 - 69 Belt Tracking through the Return Brackets

End Idler Pulley Adjustment

Observe the operation of the carrier rollers in the end idler. If they continue to drive after the end idler zone is deactivated, or do not drive sufficiently when the zone is activated, the height of the end idler pulley must be adjusted. Use the following procedure to adjust the height of the end idler pulley:

1. Turn off and lock out the conveyor motor.
2. Loosen the bolts that mount the pulley bracket to the spreader, see Figure 5 - 70.
3. If the rollers continue to drive after the end idler zone is deactivated, the pulley must be lowered. If the rollers do not drive, or if they do not drive sufficiently when the zone is activated, the pulley must be raised. Adjust the pulley in small increments.
4. Tighten the pulley bracket mounting bolts.
5. Unlock and turn on the conveyor and observe the operation of the carrier rollers.
6. Repeat steps 1 through 5 as necessary.

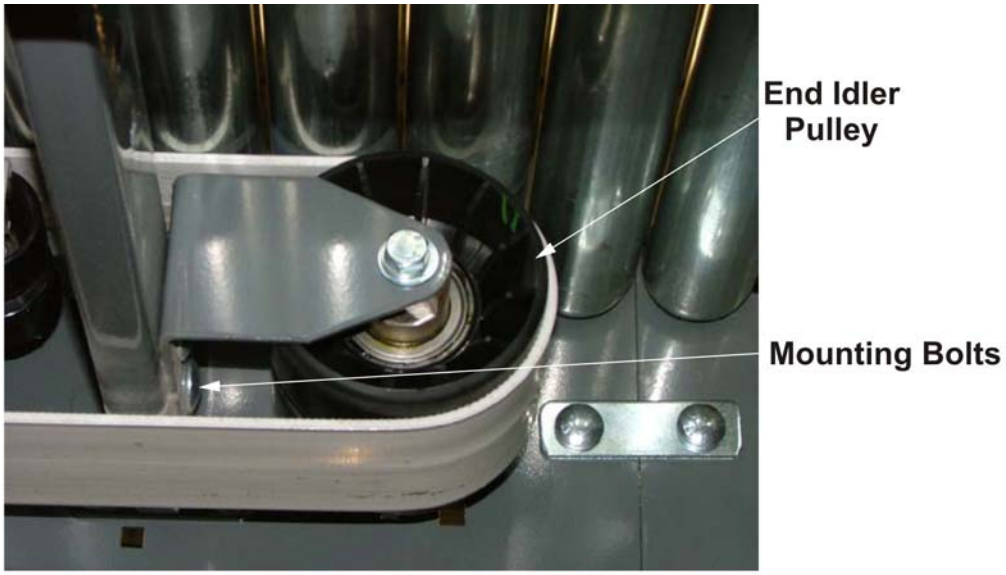


Figure 5 - 70 End Idler Pulley Adjustment

Side Guide Installation

⚠WARNING

Turn off any power circuit(s) and/or lockout / tagout operating control(s) before installing the side guides. Failure to follow this instruction may result in equipment starting unexpectedly and causing serious personal injury and/or equipment damage.

Side Guide Types

The following types of side guides are available, see Figure 5 - 71:

- Photo-Eye and Reflector Side Guide
- Straight Side Guide
- Side Guide Transition - PE to Standard
- Side Guide Transition - End
- Skate Wheel Side Guide

NOTE: See Chapter 4 - Accessories for information about sizes, finishes, and part numbers for each side guide type. Refer to the Order Acknowledgement and the Field Kit Summary for specific information about hardware used in mounting each side guide type and in each mounting style.

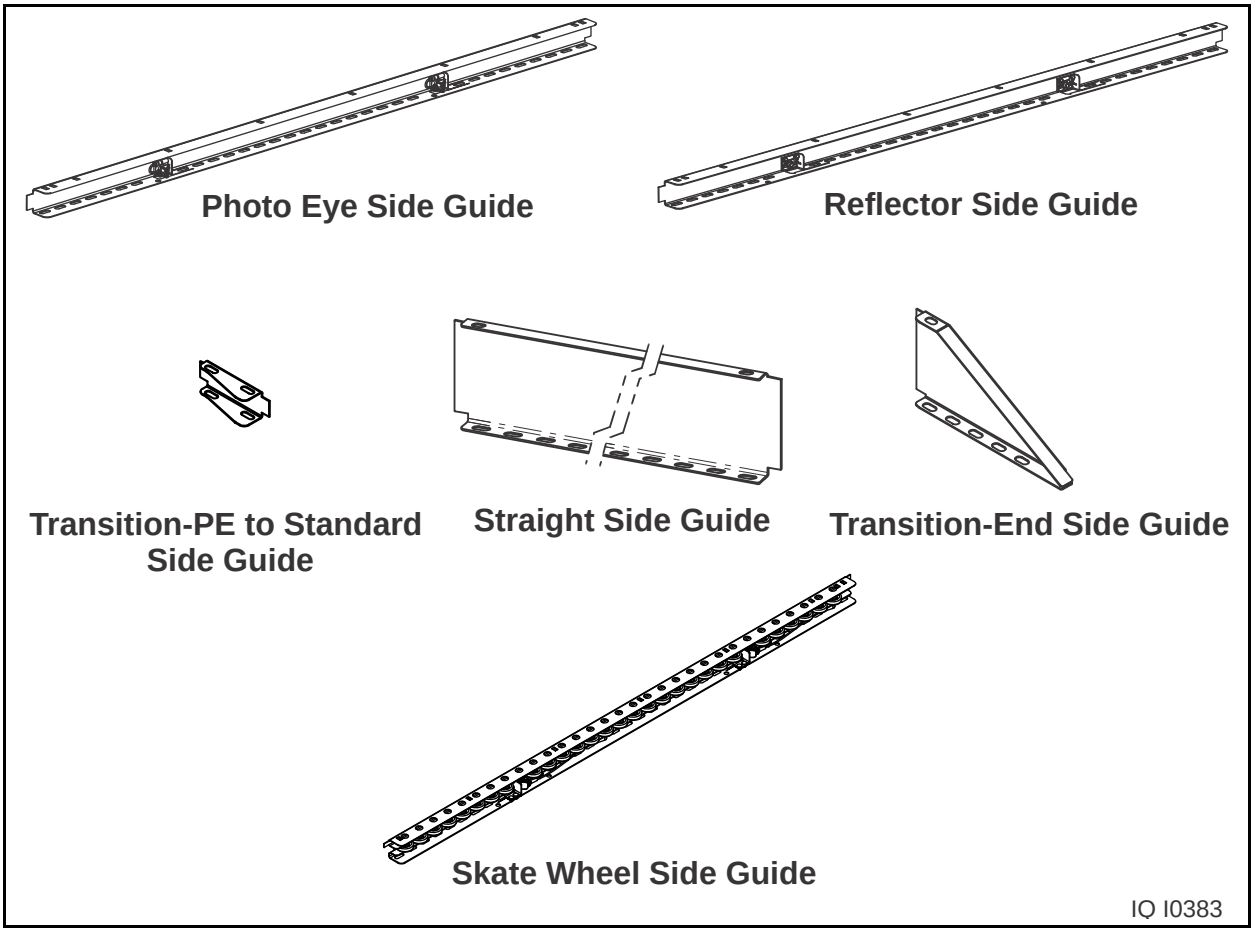


Figure 5 - 71 Side Guide Types

Side Guide Mounting

All side guides are fixed and direct-mounted to the frame. Once installed, they are not meant to be adjusted.

Direct-Mounting Photo-Eye Side Guides

The Photo-Eye Side Guide is used in areas where photo-eyes are required. It is mounted directly to the frame. To install the Photo-Eye Side Guide:

1. Refer to the installation drawings or contact Intelligrated for photo-eye locations.
2. Place the Photo-Eye Side Guide on the conveyor frame. Position and orient the side guide as shown in Figure 5 - 72 and Figure 5 - 73.
3. If the side guide butts against a previously installed side guide, follow the procedure in “Overlapping the Side Guides” on page 68.
4. Bolt the side guide to the frame at each end, and at every three feet in the middle. Use the hardware specified, see Figure 5 - 72.
5. Repeat steps 2-4 as needed.

NOTE: The Direct-Mounting Hardware Kit contains enough hardware to mount one 12-foot long straight side guide.

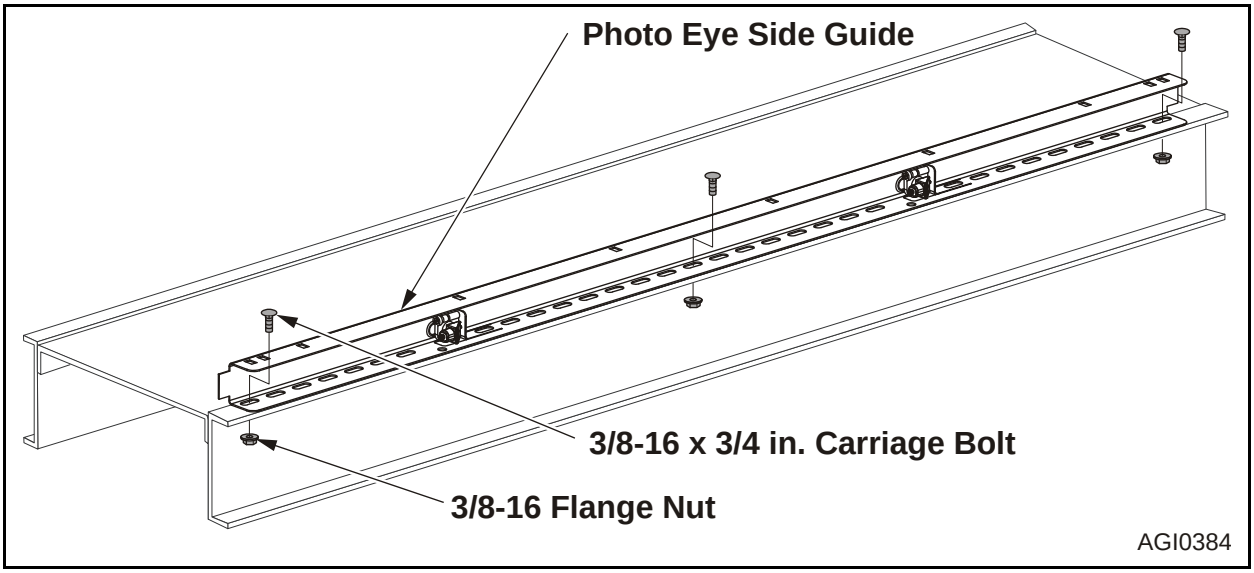


Figure 5 - 72 Direct-Mounting the Photo-Eye Side Guides

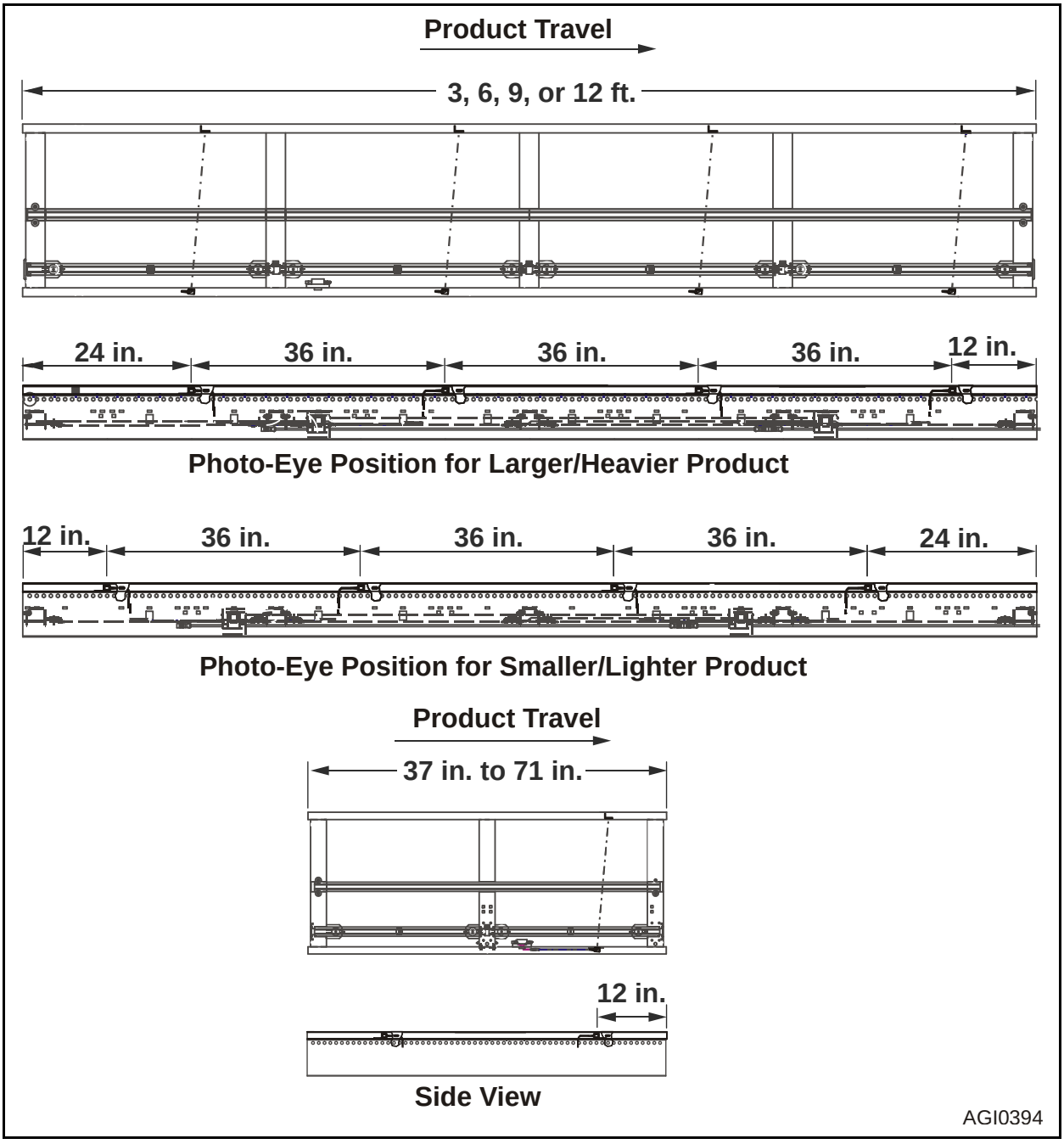


Figure 5 - 73 Photo-Eye Positions in Side Guides

Direct-Mounting Reflector Side Guides

In installations with Photo-Eye Side Guides, a Reflector Side Guide is mounted across from each Photo-Eye Side Guide at a certain distance downstream.

The installation drawings list the photo-eye-to-reflector distance. Each reflector in the side guide is placed at a specific distance downstream from a corresponding photo-eye.

- For boxes, the default distance (“D”, see Figure 5 - 74) between the photo-eye and the reflector (along the direction of travel) is two inches.
- For tapered totes, the default distance (“D”, see Figure 5 - 74) between the photo-eye and the reflector (along the direction of travel) is six inches. The allowed distance between the photo-eye and the reflector is 2-18 inches.

To direct-install the Reflector Side Guides:

1. Make sure all Photo-Eye Side Guides are installed.
2. Refer to the installation drawings, or contact Intelligrated for reflector locations.
3. Starting at the furthest upstream location, place a Reflector Side Guide on the conveyor frame.
4. Orient the side guide correctly, see Figure 5 - 75.
5. Slide the side guide until each reflector is the correct distance downstream from a corresponding photo-eye.
6. If the side guide butts against a previously installed side guide, follow the procedure in “Overlapping the Side Guides” on page 68.
7. Bolt the side guide to the frame at each end and at every three feet in the middle. Use the hardware shown in Figure 5 - 75.
8. Repeat steps 3 through 7 as needed.

NOTE: The Direct-Mounting Kit contains enough hardware to mount one 12-foot long straight side guide.

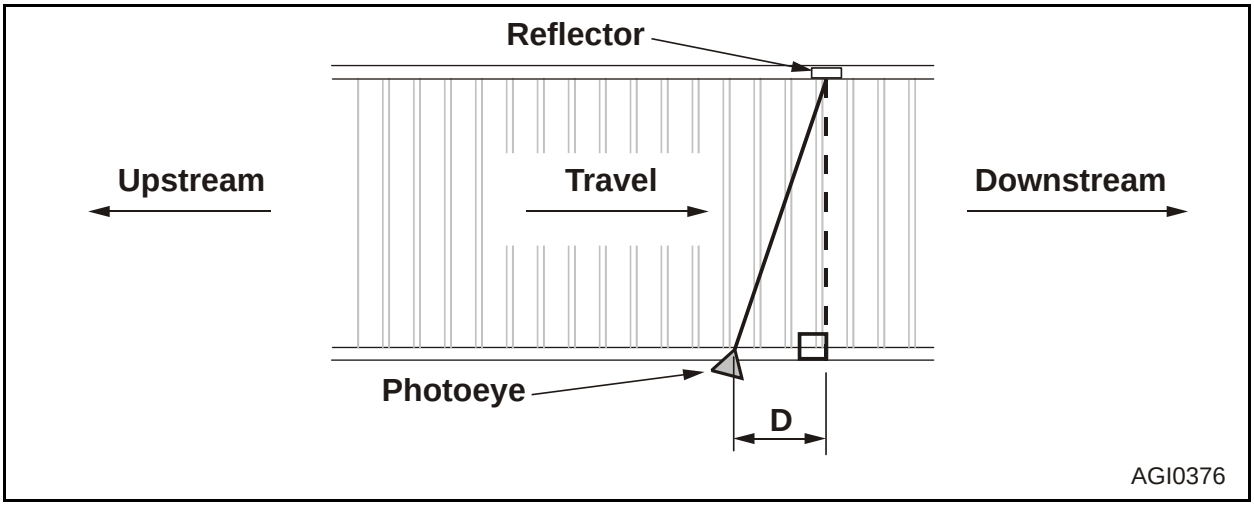


Figure 5 - 74 Photo-Eye to Reflector Distance

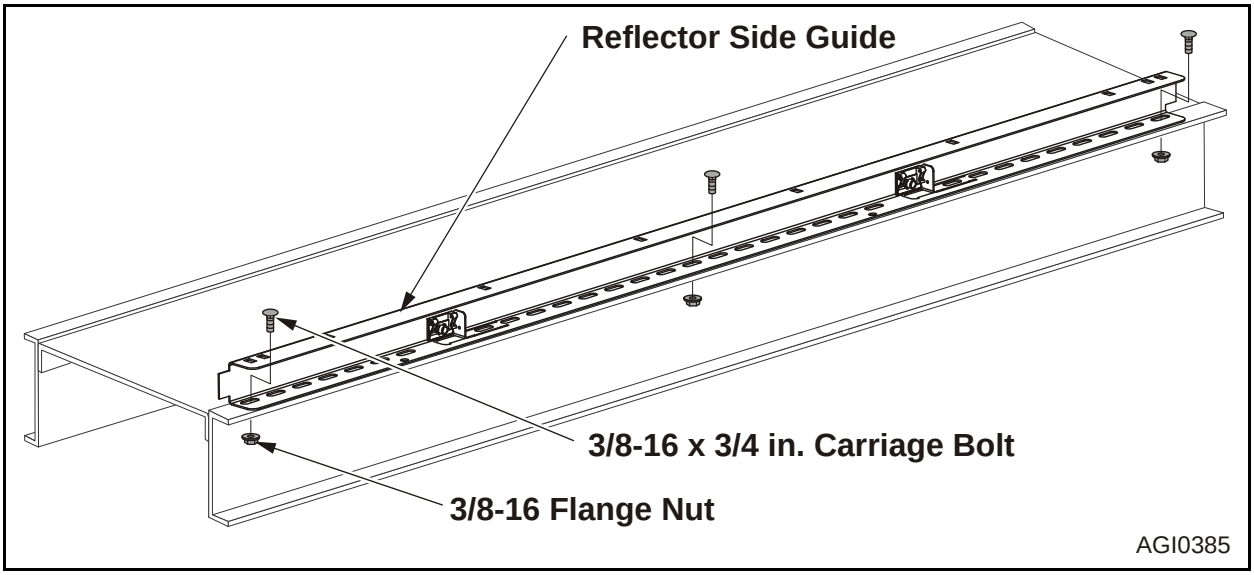


Figure 5 - 75 Direct-Mounting the Reflector Side Guides

Direct-Mounting Straight Side Guides

To install Straight Side Guides:

1. Refer to the installation drawings for Straight Side Guide locations.
2. Place the Straight Side Guide on the conveyor frame. Orient the guide correctly, see Figure 5 - 76.
3. If the side guide butts against a previously installed side guide, follow the procedure in “Overlapping the Side Guides” on page 68.
4. Bolt the side guide to the frame at each end and at every three feet in the middle. Use the hardware specified.
5. If the side guide height is more than 4 inches, connect side guides as needed, following the procedure in “Connecting the Side Guides” on page 69.

NOTE: The Direct-Mounting Kit contains enough hardware to mount one 12-foot long straight side Guide.

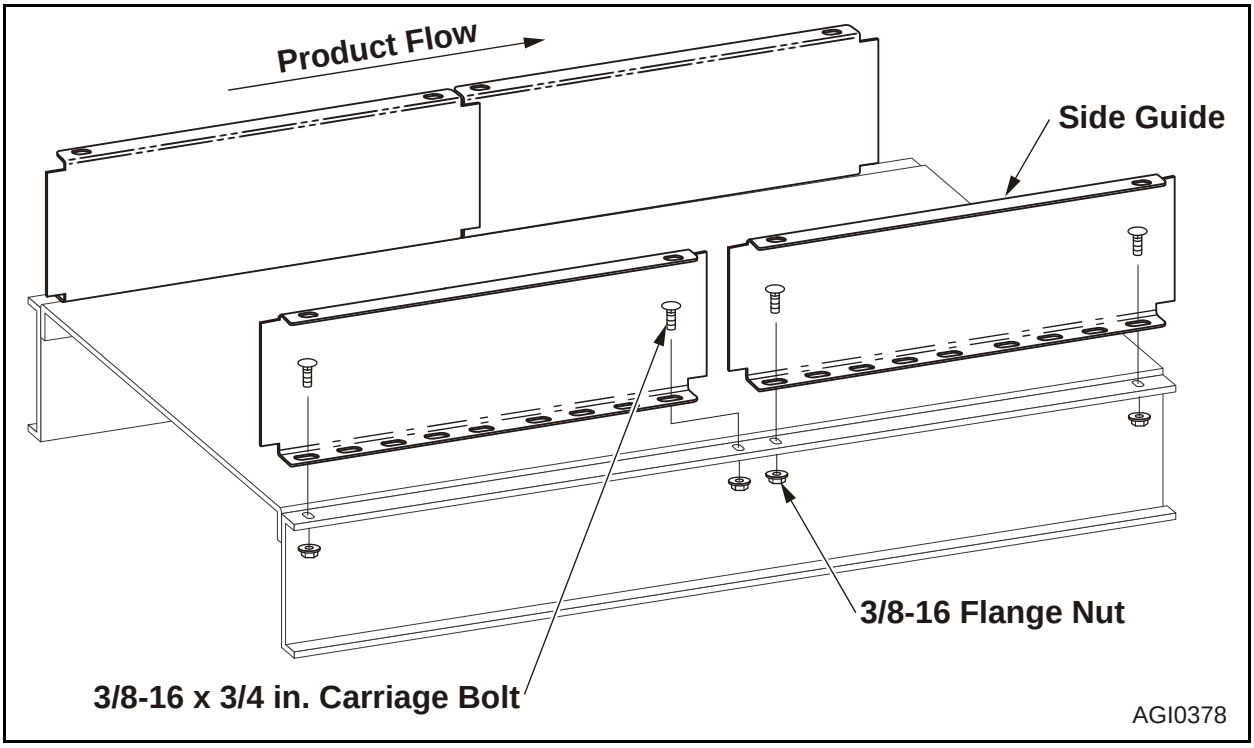


Figure 5 - 76 Direct-Mounting Straight Side Guides

Direct-Mounting Side Guide Transitions at the Ends

The Side Guide Transition-Ends are placed at each end of the conveyor on each side. They protect personnel from contacting exposed side guide edges.

To install a Side Guide Transition - End at each corner of the conveyor:

1. Place a Side Guide Transition - End at the end of the conveyor.
   Make sure the Side Guide Transition - End is oriented correctly, see Figure 5 - 77.
2. Follow the procedure in “Overlapping the Side Guides” on page 68 to correctly overlap the side guide tabs.
3. Install the hardware.
4. If the taller end of the side guide is more than 4 inches in height, connect the Side Guide Transition to adjacent side guides, following the procedure in “Connecting the Side Guides” on page 69.

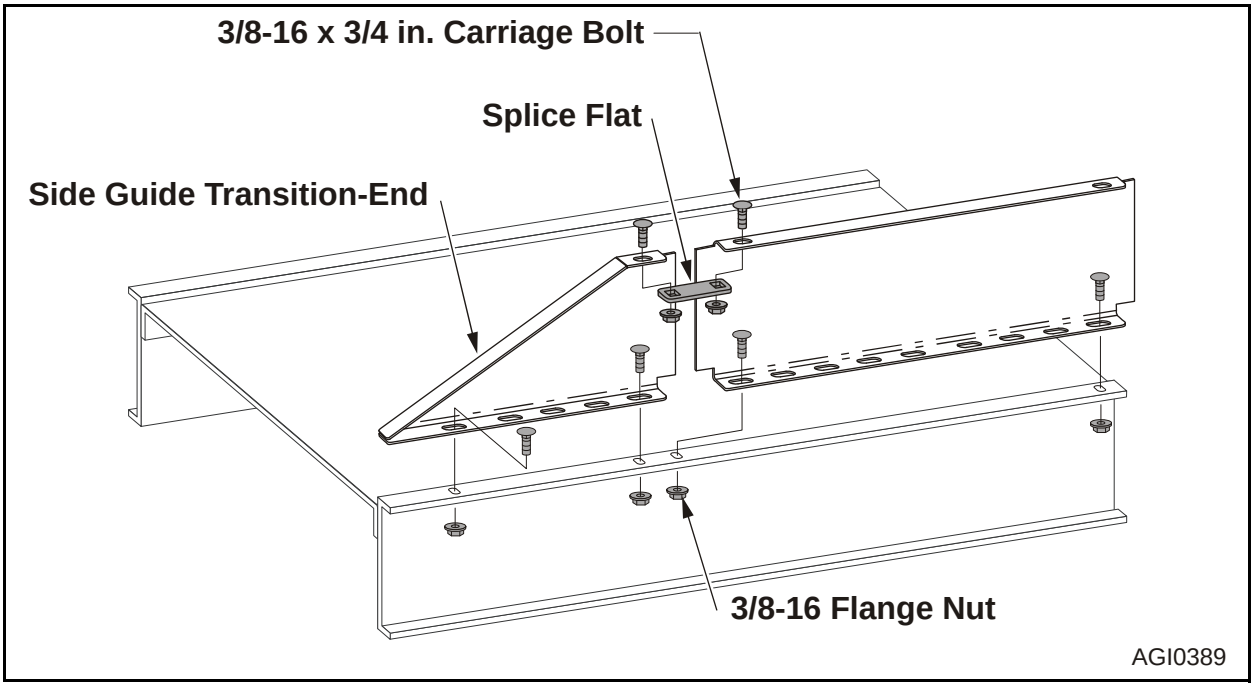


Figure 5 - 77 Direct-Mounting Side Guide Transition - Ends

Direct-Mounting Skate Wheel Side Guides

The Skate Wheel Side Guide consists of two channgels within s single row of wheels in the middle, see Figure 5 - 78. The rows of wheels provide a low-friction surface for guiding product.

To install Skate Wheel Side Guides directly onto the conveyor frame:

1. Refer to the installation drawings for Skate Wheel Side Guide locations.
2. Place the Skate Wheel Side Guide on the conveyor frame. Orient the side guide correctly.
3. If the side guide butts against a previously installed side guide, follow the procedure in “Overlapping the Side Guides” on page 68.
4. Install the bolts and nuts to the conveyor frame.
5. If the side guide height is more than 4 inches, use Splice Flats to connect the Skate Wheel Side Guide to adjacent side guides.

NOTE: Do not stack Skate Wheel Side Guides.

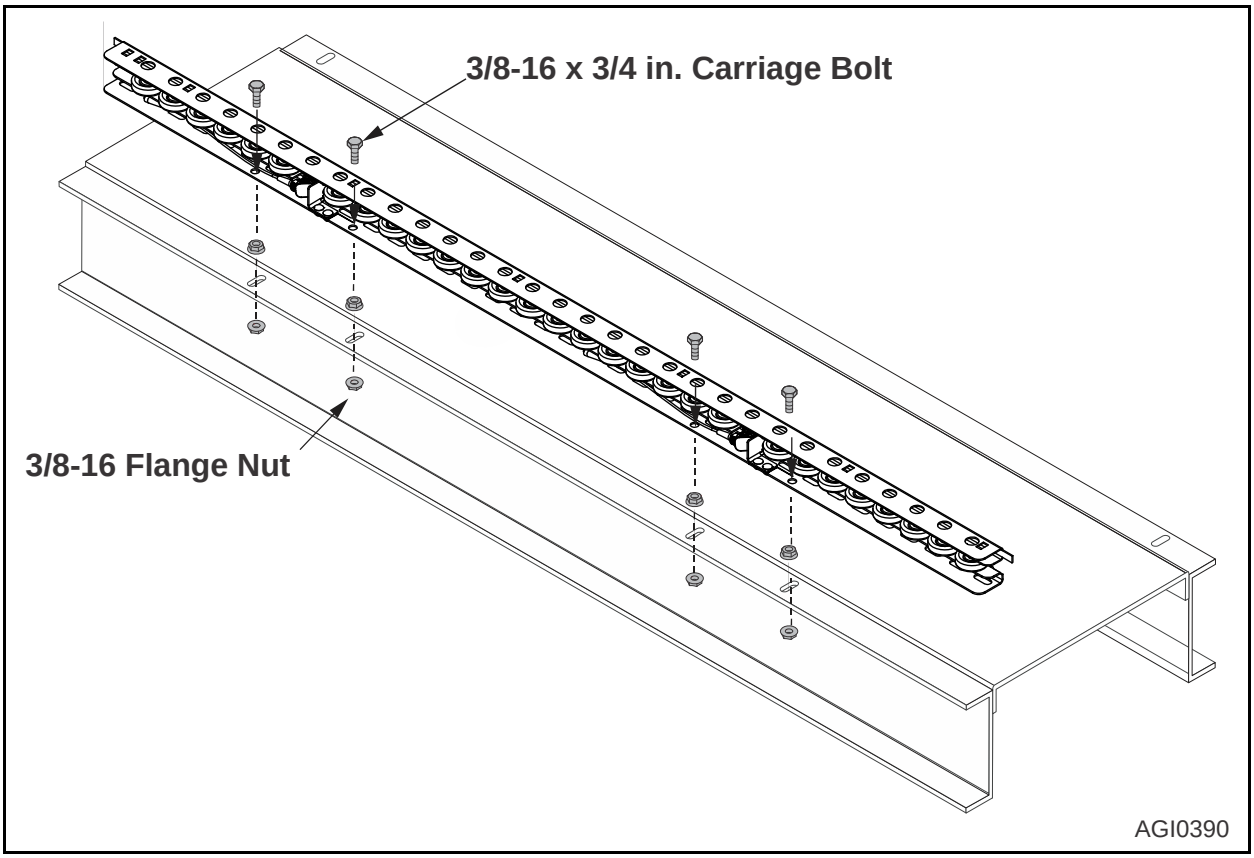


Figure 5 - 78 Direct-Mounting Skate Wheel Side Guides

Overlapping the Side Guides

Each point where two side guides meet is configured to allow product to move past without being snagged or blocked. The side guide tabs are overlapped to provide the smooth surface needed for unobstructed product travel.

After installing the first side guide on a conveyor line, overlap all subsequent upstream and downstream side guides as they are installed.

When the side guide tabs are overlapped correctly, the upstream tab is the closest tab to the inside (or belt/roller side) of the conveyor, see Figure 5 - 79.

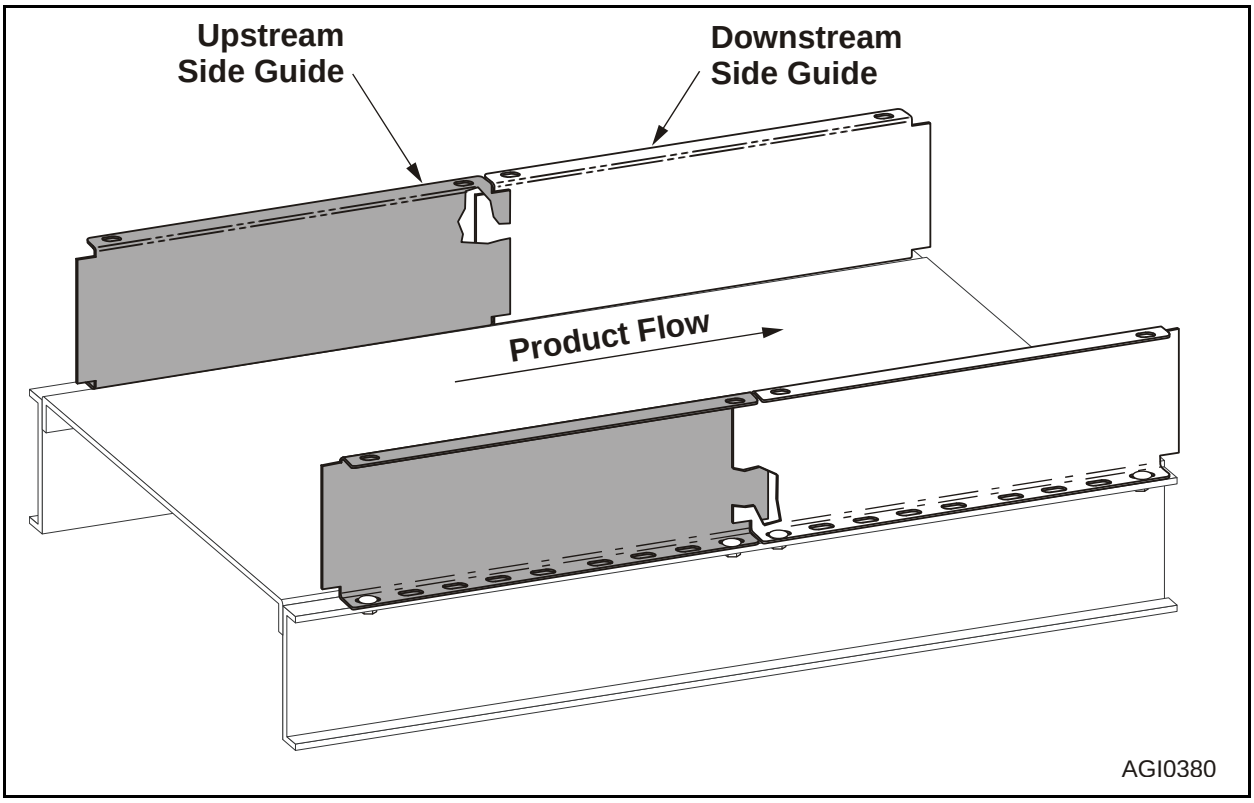


Figure 5 - 79 Correct Side Guide Tab Overlapping

Connecting the Side Guides

Connect all adjacent side guides as follows:

- If no side guides are stacked above, bolt a splice flat to the underside of each top flange, see Figure 5 - 80.
- If there are side guides stacked above, bolt a splice plate to the top side of each upper side guide's flange, and to the underside of each lower side guide's flange, see Figure 5 - 81.

NOTE: These instructions do not apply to Straight Side Guides shorter than 4 inches high; shorter side guides are rigid enough to stay in place without being connected.

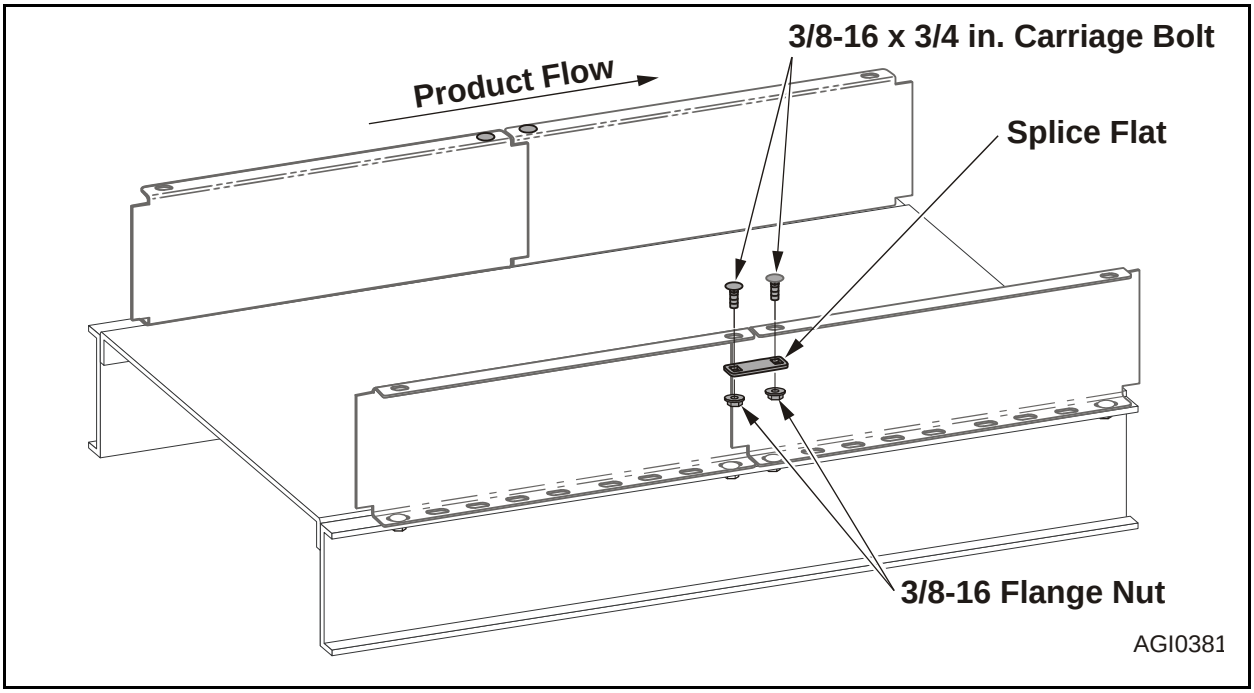


Figure 5 - 80 Connecting Direct-Mounted Standard Side Guides

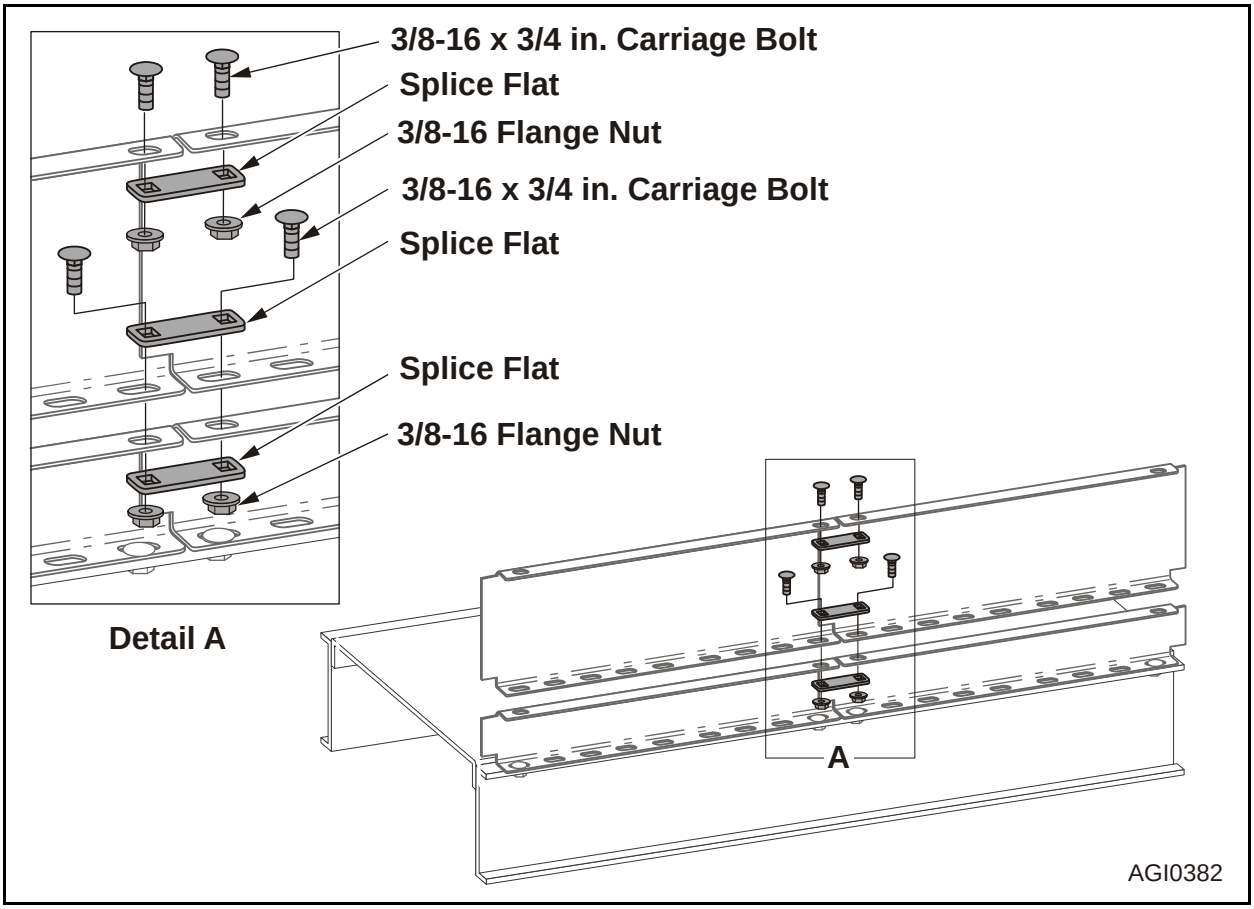


Figure 5 - 81 Connecting Stacked Standard Side Guides

Photo Eye Alignment

Once power has been supplied to the 24VDC power supply, the photo eyes may be aligned with their reflectors. The photo eyes are mounted using ball mount brackets. These brackets allow for easy alignment of the photo eyes.

Use the following procedure to align each photo eye:

1. Clean the photo eye lens and the reflector with a soft cloth dampened with water or isopropyl alcohol. Do not use any other type of solvent.
2. Make sure that the photo eye can “lock on” to the reflector. The easiest method of doing this is to hold a reflector close to the photo eye and make sure the indicator light stays on without flashing.

   If this doesn't work, use a different reflector, flip the reflector, or, if the reflector works on other photo eyes, replace the photo eye.

Figure 5 - 82 Photo Eye Mounting

3. Make sure that the mounting screw is snug and holds the ball mount firmly in place, see Figure 5 - 82.
4. Loosen the ball mount clamping bolt using a 9/64-inch hex key.
5. Pre-orient the ball mount bracket so the photo eye tends to aim high (the same position it would tend to “jiggle” into if it were loose).

6. While holding the bracket in this position, begin aiming the photo eye until the alignment indicator comes on solid, see Figure 5 - 83.

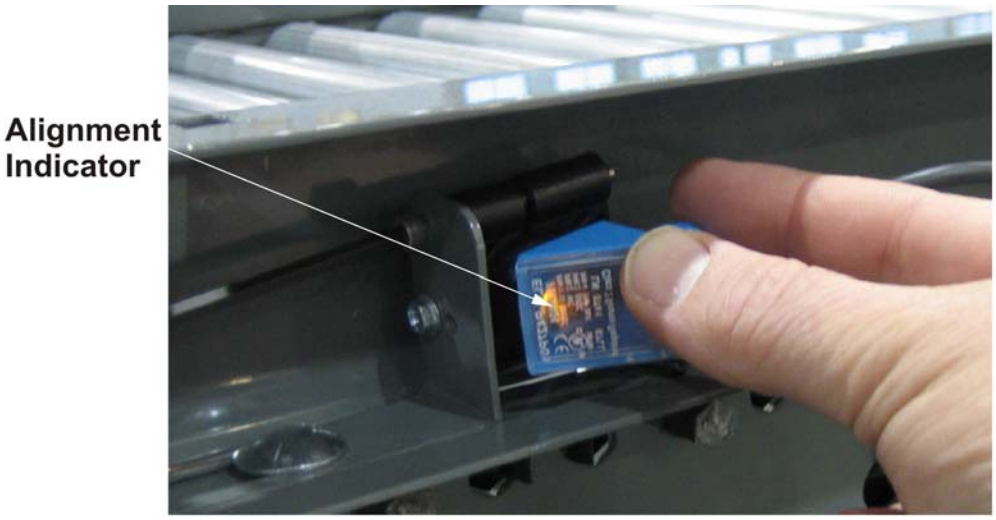


Figure 5 - 83 Photo Eye Alignment

7. Tighten the ball mount clamping bolt until the ball mount is snug. It is not necessary to tighten the ball mount clamp bolt until the ball mount is squeezed as tight as it can get. This will actually cause the photo eye to go out of alignment.
8. Repeat this procedure for the remaining photo eyes.

Skew Guide

NOTE: Field-Assembled Skew Kits are available, but are not recommended. The recommended method for aligning product to one side of the conveyor is the placement of a V-Belt conveyor with a hard skew immediately upstream from the IntelliQ® Accumulation Conveyor.

IntelliQ® Accumulation Conveyor intermediates with skewed roller configurations require skew guides to keep the drive belt properly tracked on the pressure rollers as it goes through the skewed sections, see Figure 5 - 84.

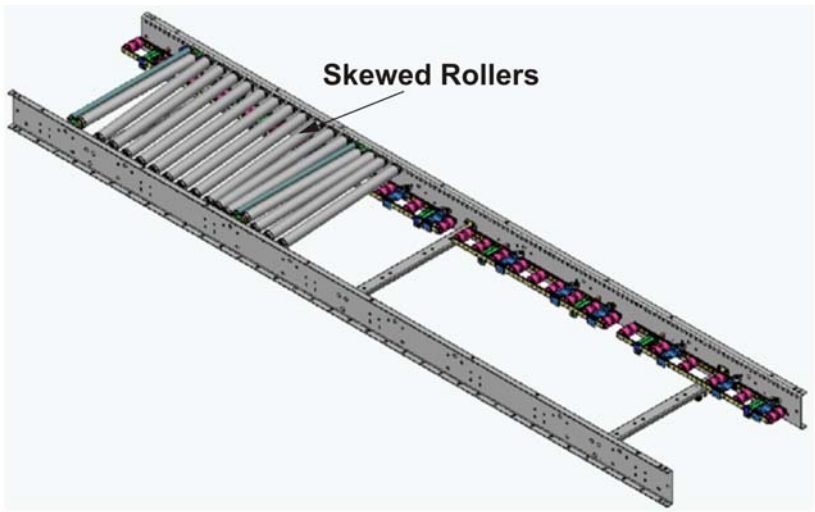


Figure 5 - 84 Skew Assembly

The IntelliQ® Accumulation Conveyor is designed for a 1-inch roller offset skew, a 2-inch roller offset skew, and a 3-inch maximum offset skew. There must be a minimum of three skew guides per zone per shoe, see Figure 5 - 85.

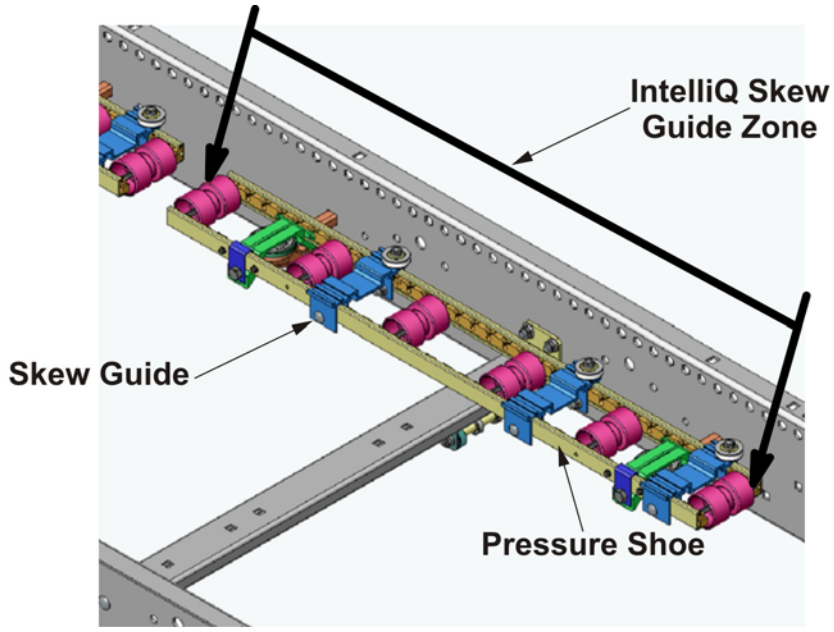


Figure 5 - 85 Skew Guide Zone

The skew guide roller must be placed on the side of the drive belt that is opposite the skew direction, see Figure 5 - 86. The skew guide slides on over the shoe rail and is bolted underneath it. The skew guide and the guide roller need to be adjusted so that they are directly between the carrier rollers.

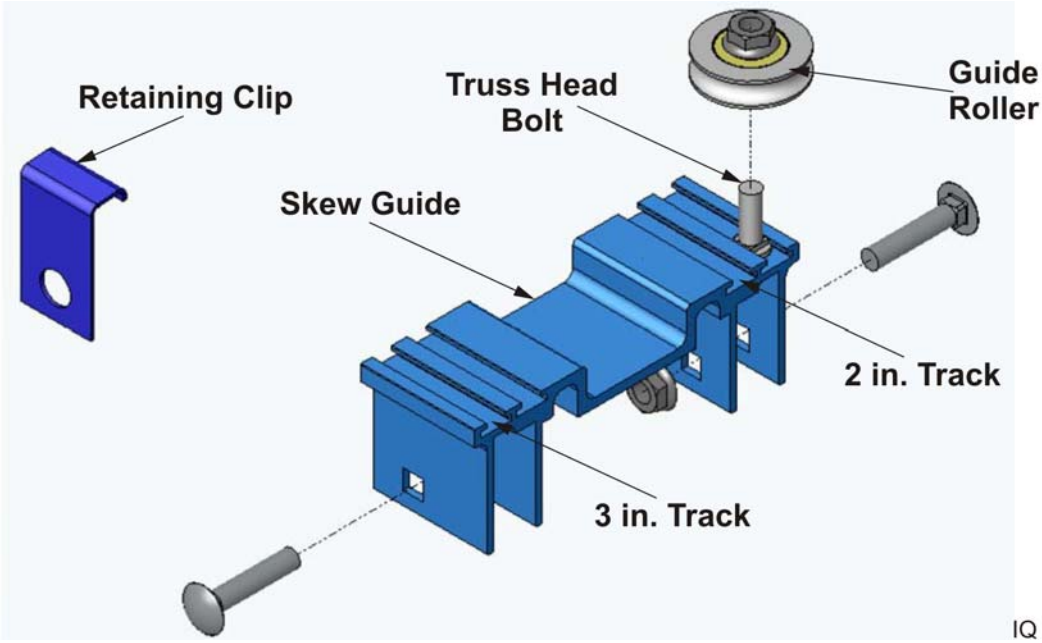


Figure 5 - 86 Skew Guide Assembly

Retaining clips are used to restrict the movement of the pressure shoe, see Figure 5 - 87. This movement is created by the opposing force of the skewed rollers against the drive belt. The retaining clips are mounted on the shoe rail opposite the guide roller. To install the retaining clip, the stud shoe support must be removed. Once the stud shoe support is removed, insert the retaining clip attaching it to the shoe rail, and re-install the stud shoe support.

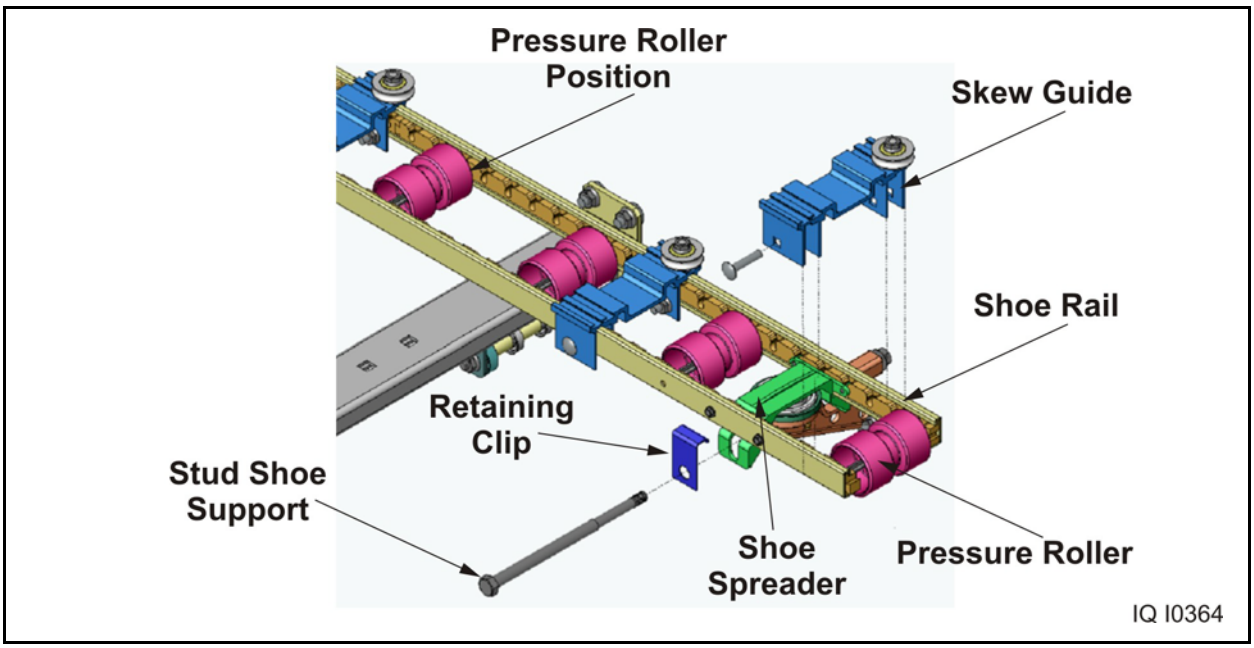


Figure 5 - 87 Skew Guide Installation

If the section to be skewed previously had 3-inch roller centers, then the first pressure roller in each skewed zone must be moved to the outermost pressure roller position, see Figure 5 - 88. This must be done to accommodate the skew guide assembly. If the section to be skewed previously had 2-inch roller centers, no modifications to the pressure rollers are required.

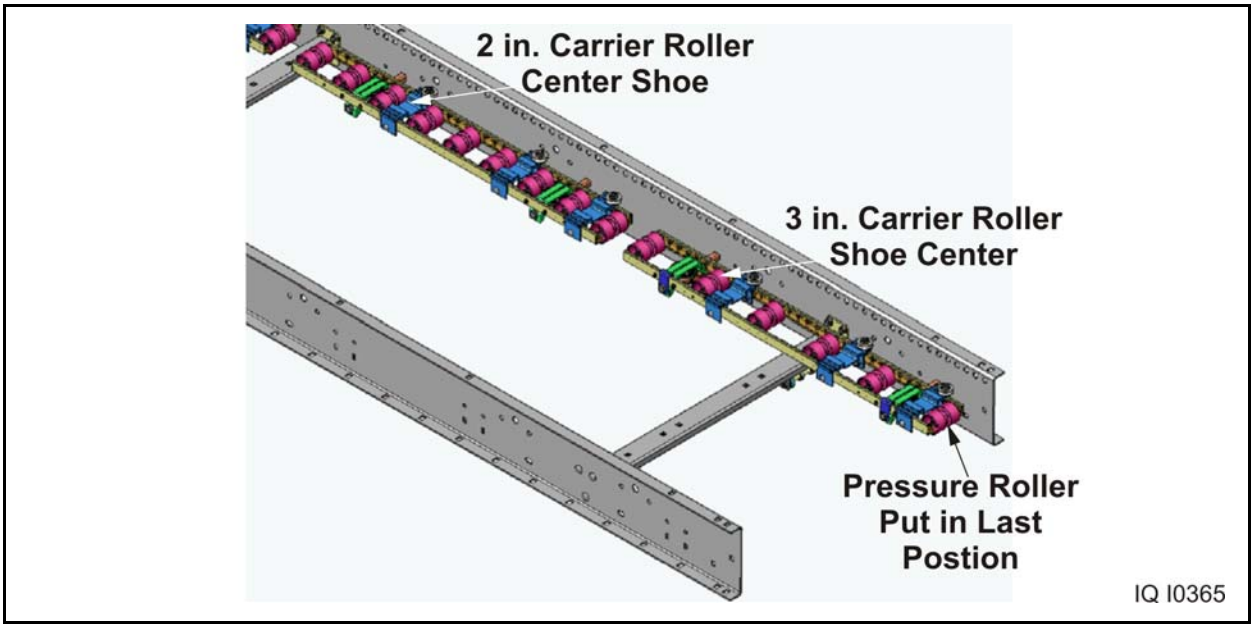


Figure 5 - 88 Shoe Configurations

Installation

1. Place the skew guide in place on top of the shoe.
2. Install the two carriage bolts and flange nuts that secure the skew guide to the shoe, see Figure 5 - 89.

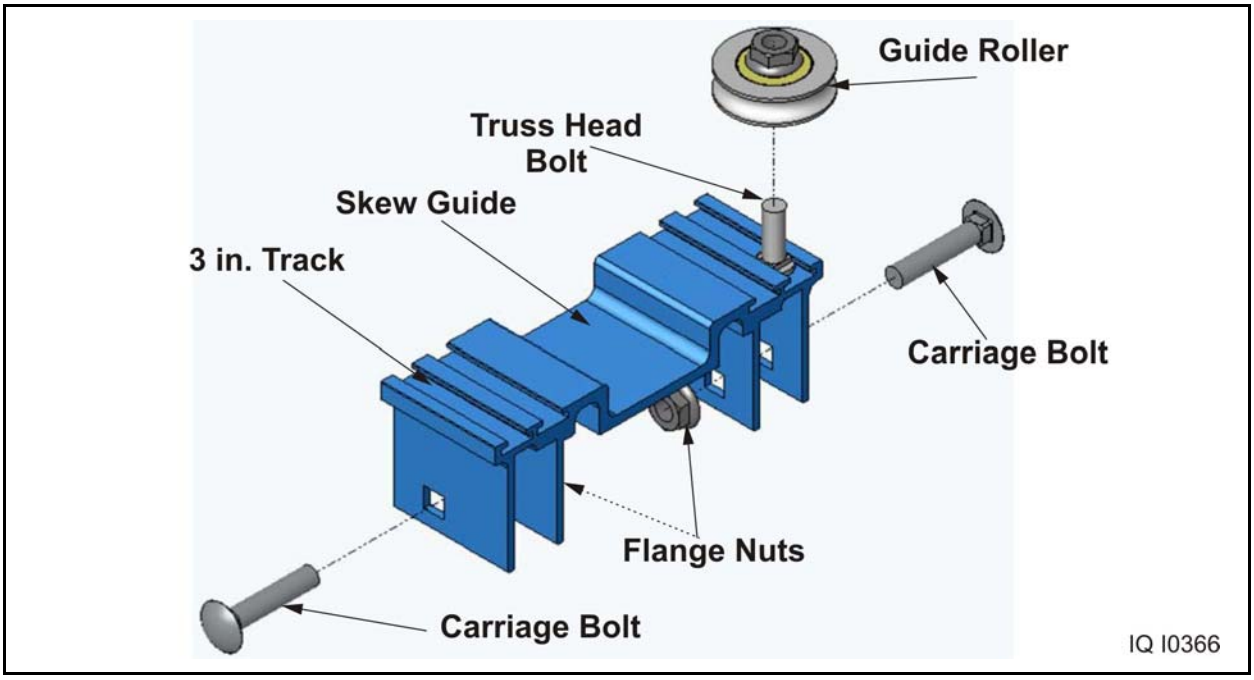


Figure 5 - 89 Skew Guide Assembly

3. Install the retaining clip on the Stud Shoe Support, slide the stud through the shoe support and its washer and install the flange nut, see Figure 5 - 90.

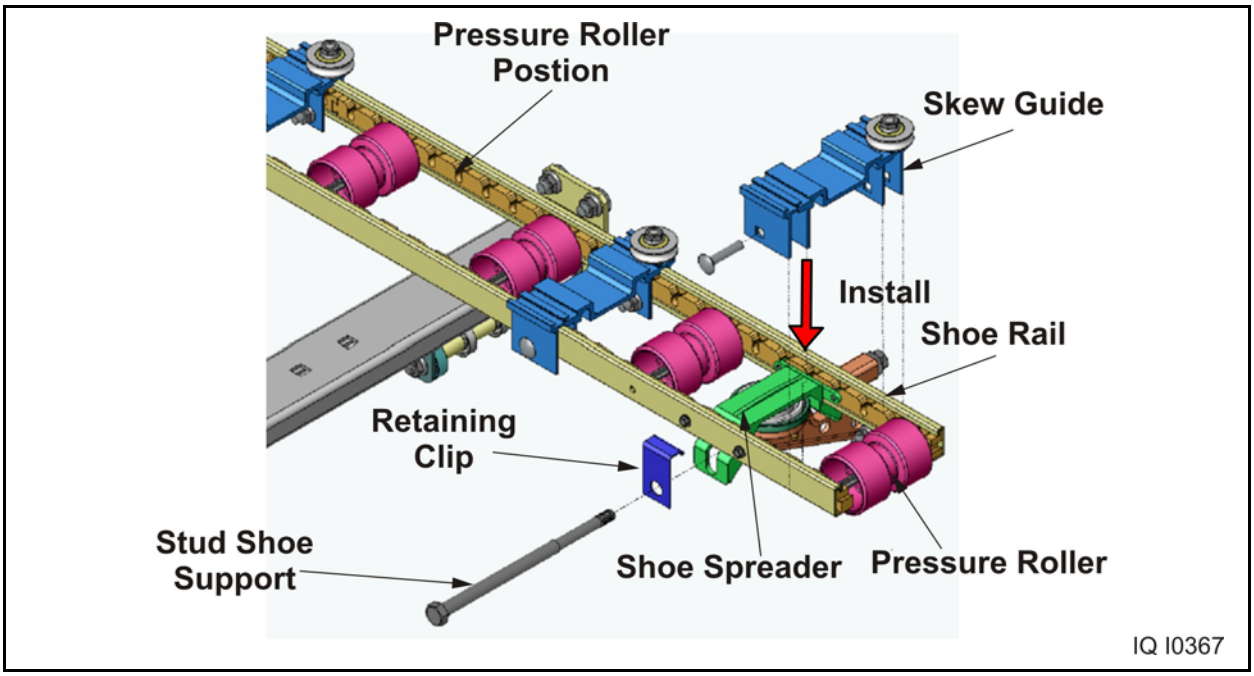


Figure 5 - 90 Skew Guide Clip Placement

4. Reestablish air pressure to put pressure on the belt.
5. Install the rollers over the shoe where the installation was required.
6. Remove locks and tags and restore power and air supply to the conveyor section.

Post Break-In Period

WARNING

Replace the chain guards after inspection or maintenance of the chain drive. Failure to follow this instruction may result in serious personal injury and/or equipment damage.

After approximately 40 hours of initial break-in, an inspection should be completed on all fasteners and set screws to confirm they are tightened properly. If loose fasteners or set screws are detected, they should be tightened at this time.

For correct chain tension, the deflection on the slack side should measure 5% of the sprocket center distance. For correct timing belt tension, the deflection on the slack side should measure 1/64th of an inch per inch of belt span. Excessive slack in the chain or timing belt should be corrected promptly if found to be outside of the required limits.

6 Service and Repair

⚠WARNING

Before performing any maintenance or lubrication services, follow the Lockout/Tagout Procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or equipment damage.

This chapter contains instructions for performing maintenance and removing or replacing various components on the IntelliQ® Accumulation Conveyor.

Be sure to follow all safety precautions and Lockout/Tagout Procedures when servicing and repairing the conveyor.

The design incorporated into the IntelliQ® Accumulation Conveyor is intended to increase the service life of the drive belt and contribute to the overall efficiency of the conveyor.

Drive Belt Installation

WARNING

Before performing any maintenance or lubrication services, follow the Lockout/Tagout Procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or equipment damage.

Once all of the IntelliQ® Accumulation Conveyor sections and the drive unit are installed and in place, install the belt on the entire assembly using the following procedure:

1. Make sure the air supply to the belt tensioner is turned off and the tensioner cylinder is fully retracted.
2. If not already supplied in a precut length, measure and cut a length of belt for the conveyor using the following formula:

   Belt Length = (Conveyor length x 2) + 12 Feet

   For example, the belt length for a 120-foot conveyor would be 252 feet.
3. Install the belt on top of the pressure shoes with the v-back centered in the groove of the pressure rollers, see Figure 6 - 1. The conveyor is shipped with the rollers removed to make it easier to install the belt. Place a clamp on one end of the belt so it does not move while you are routing the other end of the belt through the conveyor.

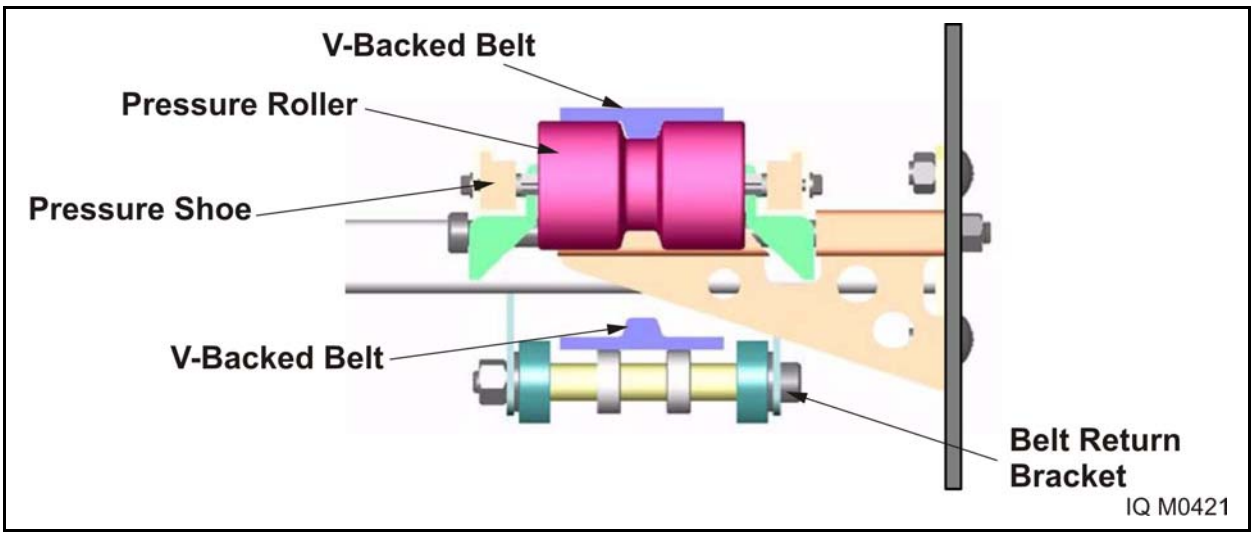


Figure 6 - 1 Belt Routing

4. Wrap the belt around the end idler pulley and thread it through the belt return brackets.
5. Route the belt through the drive, see Figure 6 - 2.

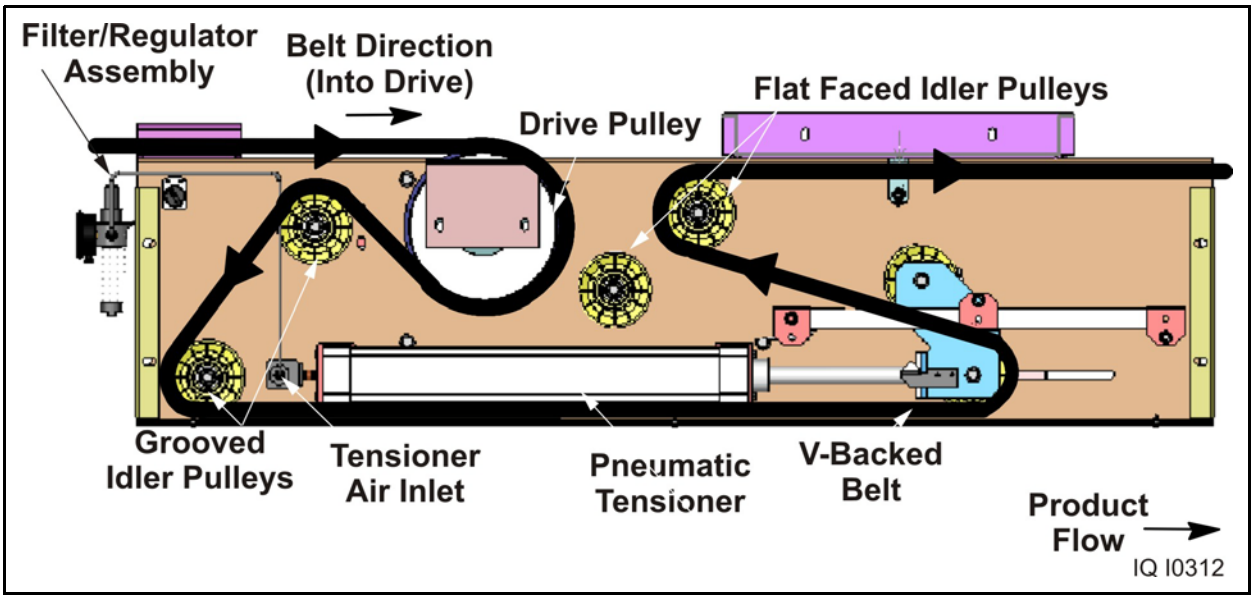


Figure 6 - 2 Belt Path Through The Drive Unit

6. Continue threading the belt through the remaining return brackets and around the other end idler.
7. Pull the belt ends together tightly to remove any slack in the belt.
8. Lace the belt according to the instructions in the following section.
9. Check the belt routing to make sure there are no mechanical interferences that may cause damage to the belt.

Drive Belt Lacing-Thermal Welding

The recommended lacing method for IntelliQ® Accumulation Conveyor drive belts is thermal welding. In the event of a breakdown, the IntelliQ® Accumulation Conveyor drive belt may also be mechanically laced using #1-HT lacing until a shutdown period when the belt may be welded.

The belt is cut and welded using the Habasit Belt Cutter and Welder. The Habasit Belt Cutter is a manual, portable die cutting device that prepares the ends of the belt for welding. The Habasit Belt Welder is a manual, portable welding unit that welds the prepared ends of the belt together.

NOTE: When thermally welding a belt that was previously mechanically laced, install a 6-foot dutchman and thermally weld both ends. This is necessary to make sure there is enough belt length to prepare the belt ends and properly weld the belt.

Cutting the Belt for Thermal Welding

Perform the following procedures to prepare the drive belt:

1. Lockout and tag all power to the conveyor section, including air pressure.
2. Remove the rollers from the IntelliQ® Accumulation Conveyor in the area where you will be working.
3. On top of the conveyor, place a sheet of plywood or steel that spans the side rails.

   This will be the work surface for the cutting and welding procedures. Make sure this work surface is flat and sturdy.
4. Measure the required belt length and add 8-1/2 inches to compensate for the material removed by the cutting process.
5. Use a razor knife to cut the belt, keeping the cut as perpendicular to the length of the belt as possible.

   This is for alignment purposes only, and is not critical to the welding process. The Habasit Belt Cutter will prepare the ends of the belt for welding, see Figure 6 - 3.

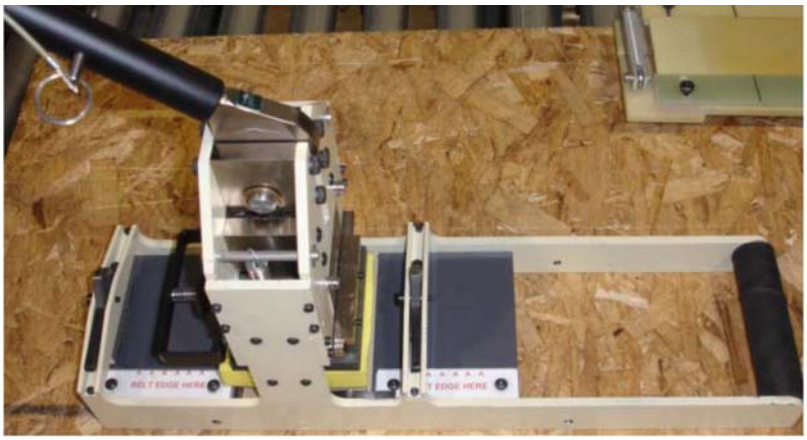


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Figure 6 - 3 Habasit Belt Cutter

6. Place the Habasit Belt Cutter on the work surface.

   If needed, clamp the belt ends to the work surface to keep them from falling away.

7. If needed, attach the Cutting Lever Handle and secure it with the Lynch Pin, see Figure 6 - 4.

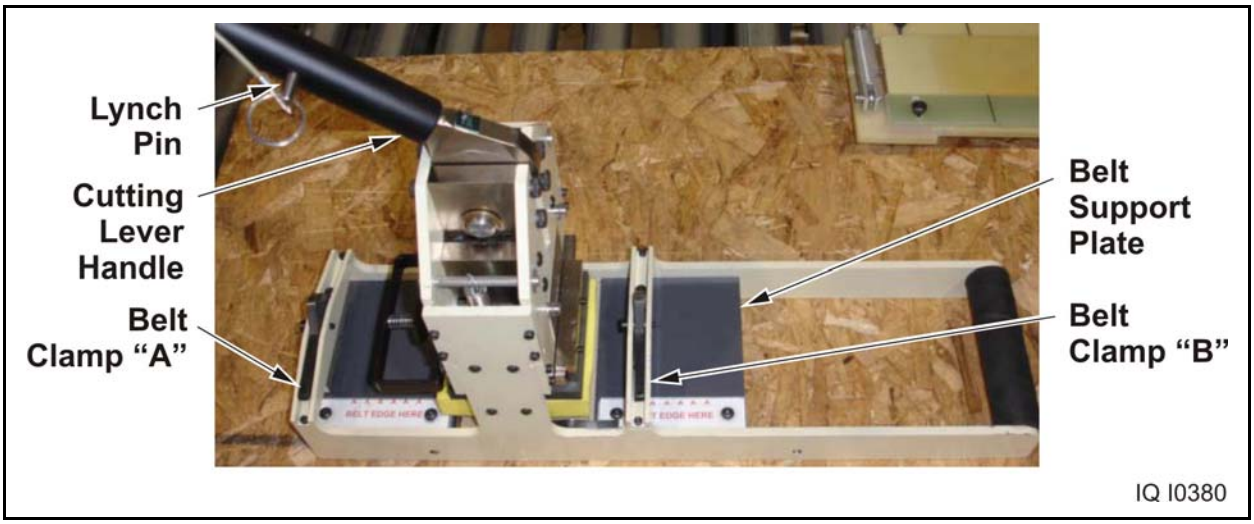

Figure 6 - 4 Preparing the Belt Cutter for First Cut

8. Pivot the Belt Clamp Levers to unlock Belt Clamp "A" and Belt Clamp "B", see Figure 6 - 5.
9. From Belt Clamp "A" side, slide the Belt under both Belt Clamps until its front edge is even with the edge of the Belt Support Plate, see Figure 6 - 4.
10. Lock both Belt Clamps, see Figure 6 - 5.

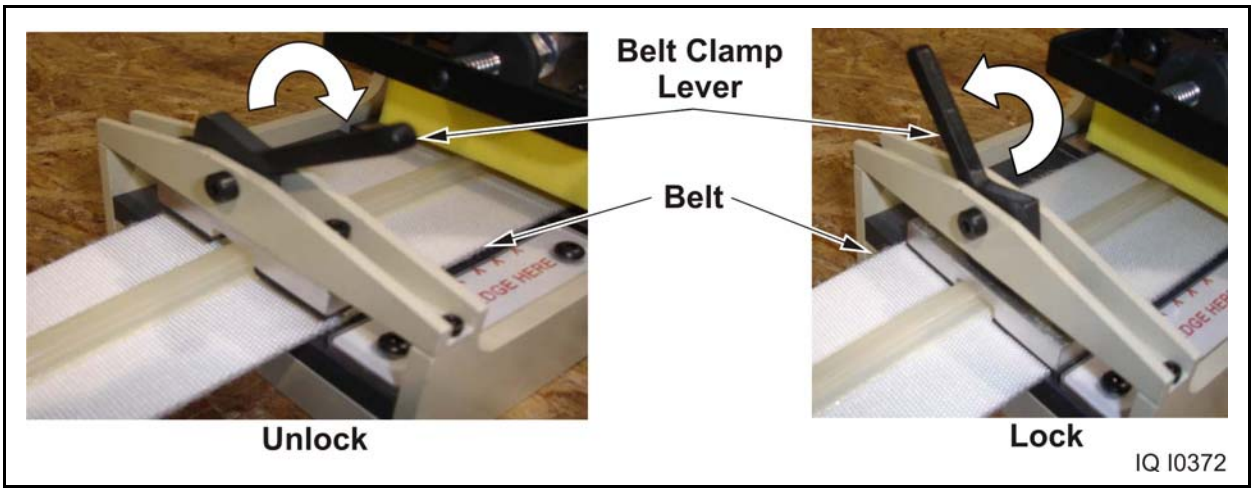

Figure 6 - 5 Inserting the Belt for the First Cut

NOTE: In this manual, the belt is shown first inserted from Belt Clamp “A“ side. The first belt end may be inserted in either side of the cutter, but the second belt end must be inserted from the side opposite the first belt end. This insures the adjoining cut edges align perfectly for the splice.

11. Squeeze the Locking Mechanism, and move the Blade Carrier to Position 1, see Figure 6 - 6.
12. Pull the Cutting Lever Handle toward Belt Clamp “B” to cut the belt, see Figure 6 - 4.
13. Move the Blade Carrier to Position 2 (not shown), see Figure 6 - 6.
14. Cut the Belt.
15. Move the Blade Carrier to Position 3.
16. Cut the Belt.

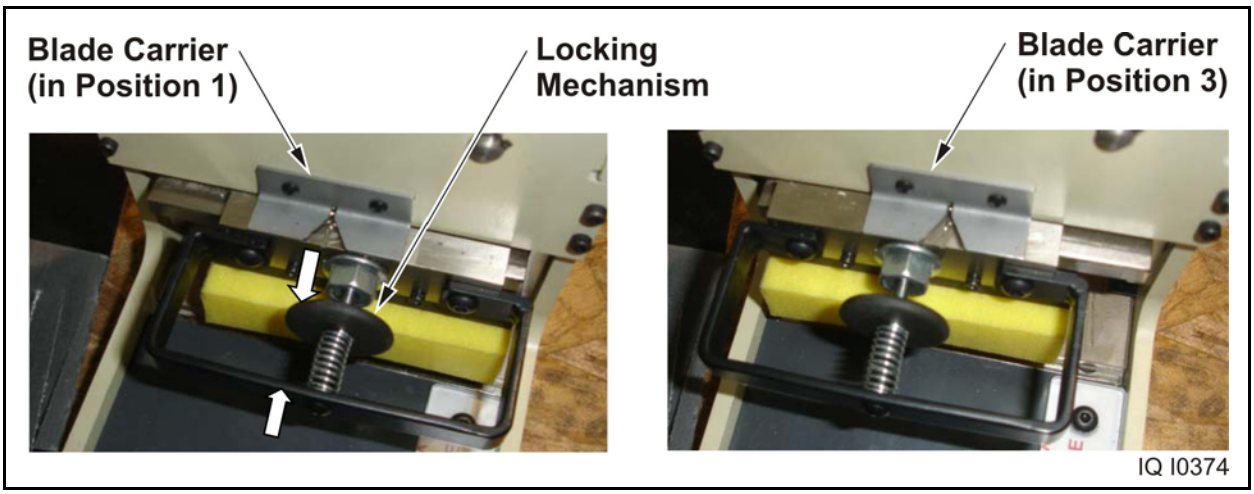

Figure 6 - 6 Positioning the Blade Carrier

17. Unlock both Belt Clamps and remove the Belt.
18. If needed, flex the belt to separate the cut parts.
19. From Belt Clamp “B” side, slide the other end of the Belt under both Belt Clamps until its front edge is even with the edge of the Belt Support Plate.
20. Repeat steps 10 through 18.

NOTE: In this manual, the start position for the Blade Carrier is Position 1.The start position can also be Position 3. In that case, as cuts are made, move the Blade Carrier to Position 2, then to Position 1.

Preparing the Belt for Thermal Welding

Perform the following procedures to prepare the cut ends of the drive belt:

1. Using the Upper Heating Plate as a guide, cut the Reinforcing Material, or “Foil”, see Figure 6 - 7.

   Cut on both sides of the plate to make sure the foil has straight edges and is the proper length. The correct length of foil is equal to the narrow width of Upper Heating Plate.

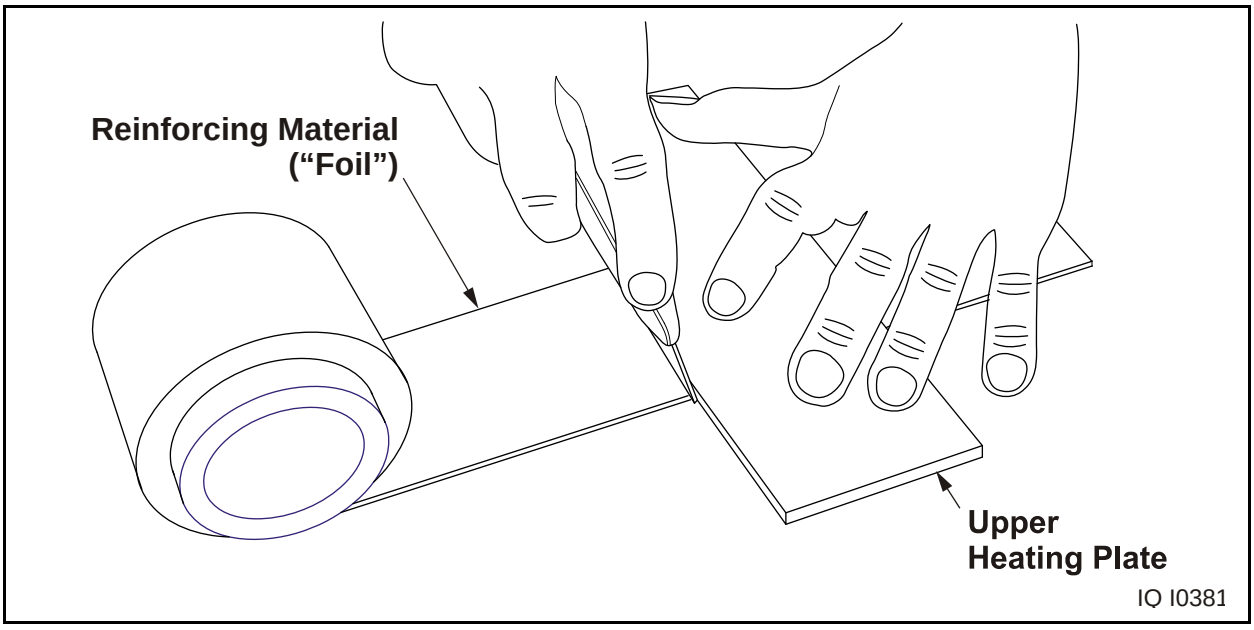

Figure 6 - 7 Cutting the Reinforcing Material (“Foil”)

2. Open both Belt Clamps on the Lower Heating Plate, see Figure 6 - 8.
3. Slide the two ends of the belts, with the back sides facing up, under the Belt Clamps until their cut ends interlock at the center of the Lower Heating Plate.

   Make sure the “fingers” at the belt ends are firmly seated against each other, and that the top surfaces are flush with each other. This is crucial for a good weld. The tighter the fit, the better the weld.
4. Close and secure both Belt Clamps.
5. Place the Reinforcing Material, or “Foil”, fabric side down/smooth side up on the belt. Center the foil over the cut ends of the belt.

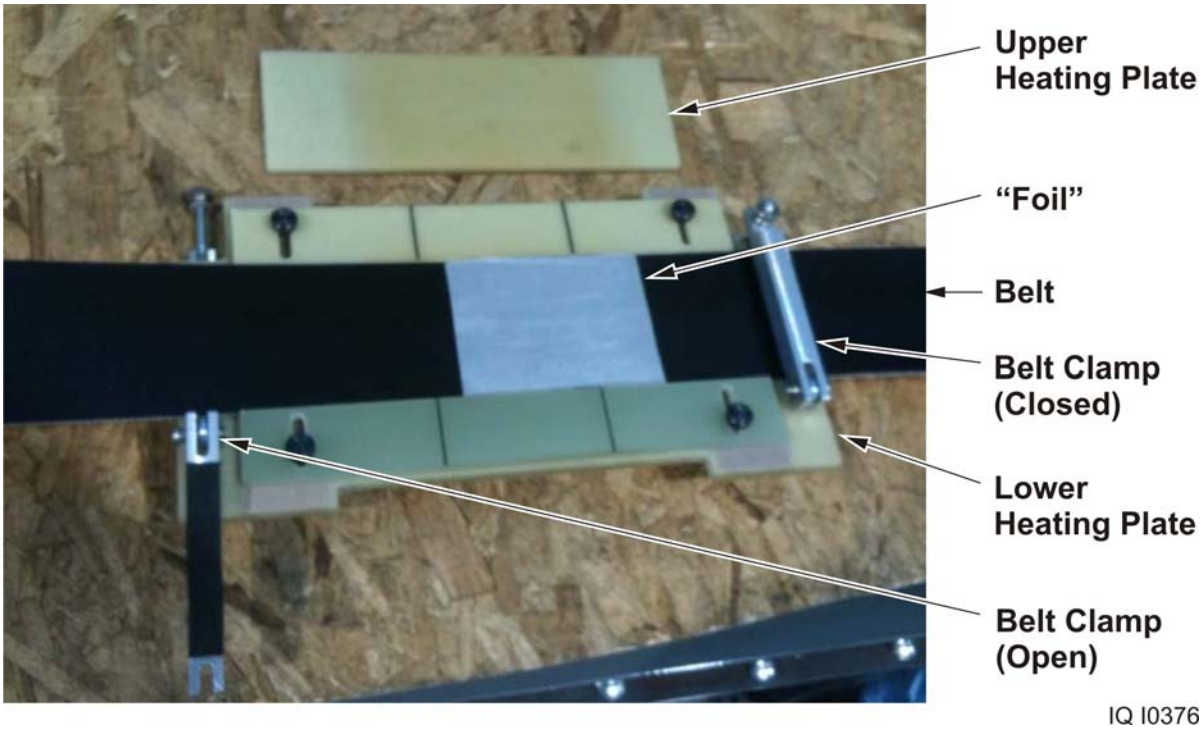

Figure 6 - 8 Preparing the Belt for Thermal Welding

Thermal Welding the Belt

WARNING

Make sure the welding unit is unplugged and cool to the touch before handling the unit. During the welding process, the platens are heated to 160°C (320°F), and may cause burns if touched. Failure to follow this instruction may result in serious personal injury.

Placing the Belt in the Heating Press

Perform the following procedures to place the Belt in the Heating Press:

1. Place the Upper Heating Plate on the Belt, centering it over the Belt and between the Belt Clamps, see Figure 6 - 8.
2. Open the Heating Press and slide the Heating Plates and Belt into the Heating Press, see Figure 6 - 9.

   Make sure the Lower Heating Plate Notch lines up with the Heating Press Access Door.
3. Swing the Heating Press Access Door up and lower the Clamp to close the Heating Press.
4. Clamp both ends of the belt to the edge of the work surface to keep the belt from moving during thermal welding.

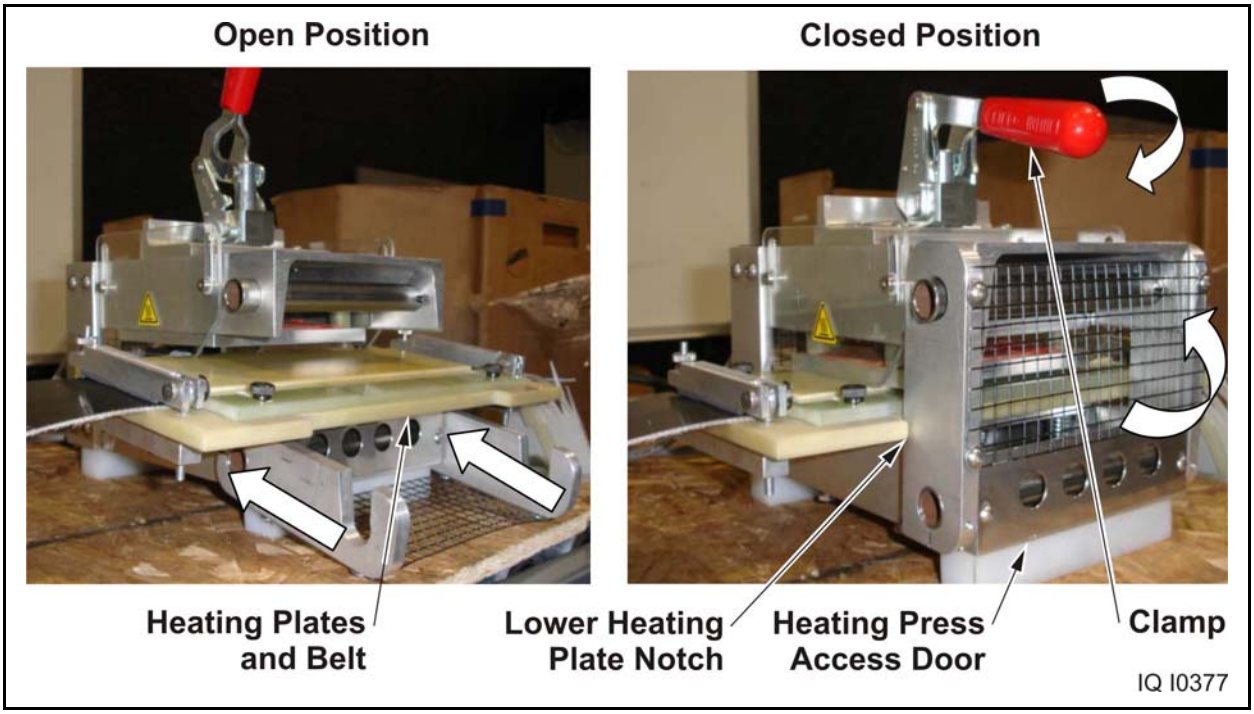

Figure 6 - 9 Placing the Belt in the Heating Press

Welding the Belt

⚠WARNING

Do not touch the Heating Press during the welding process. During the welding process, the platens are heated to 160°C (320°F), and may cause burns if touched. Failure to follow this instruction may result in serious personal injury.

Perform the following procedures to weld the belt:

1. Press the START Button, see Figure 6 - 10.
   The Heating Press will run through a pre-set cycle consisting of a heating phase, a timed pressing phase, and a cooling phase, then it will automatically shut off.
2. If needed, interrupt the cycle before it is complete by pressing the STOP button twice.
3. After the Heating Press has shut off, remove the Heating Plates and Belt.
4. Open the Belt Clamps.
5. Carefully pry the Upper Heating Plate from the Belt.
6. Peel the Belt away from the Lower Heating Plate.
7. Use the provided scraper to remove any excess melted fabric from the plates or the belt.

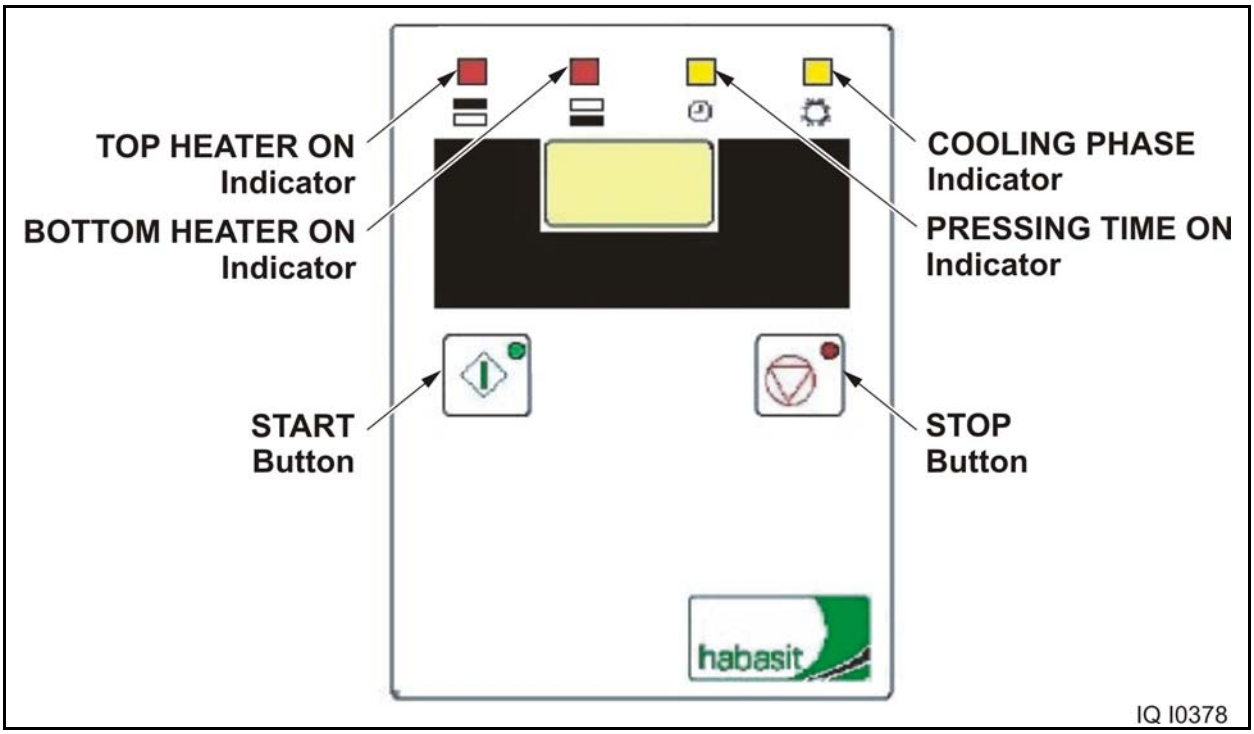

Figure 6 - 10 Heating Press Control Panel

Inspecting and Finishing the Belt

Inspect the belt as follows:

1. Make sure the weld is smooth by checking for bubbles or “fingers” not joined together tightly.
2. Turn the belt over so the white side is facing you and inspect the “fingers”, see Figure 6 - 11.

   Black spots at each finger tip indicate a good weld. Thick black lines between the fingers indicate too much gap between the fingers. If this occurs the belt may need to be rewelded.

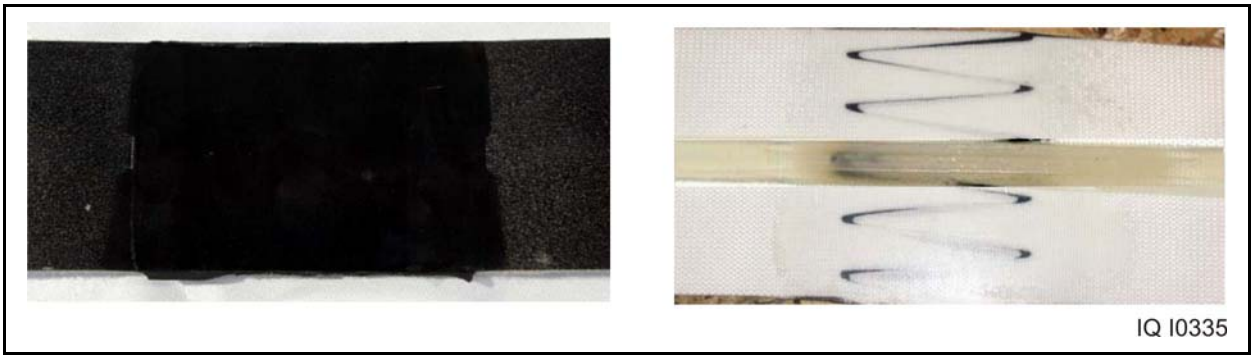

Figure 6 - 11 Top and Bottom Views of Welded Belt Splice

3. Remove a portion of the v-guide over the weld to increase the life of the weld.
    a. Place the belt on a solid work surface with the v-guide facing up, see Figure 6 - 12.
    b. Using a sharp knife remove approximately four inches of the v-guide over the weld. Cut the v-guide on one side of the weld, then cut from the other side working toward the first cut. Remove the v-guide as close as possible to the surface of the belt, without cutting the belt.

NOTE: Use caution when cutting the v-guide. This material can be difficult to cut and is best done with a very sharp blade.

    c. Cut the edges of the v-guide to a point to ensure smooth transitions as the belt passes through the roller guides and drive mechanism.
    d. Bevel the leading edge, or both leading and trailing edges if desired.
4. Re-inspect the weld to make sure there are no gaps, cracks, or bubbles that could lead to premature belt failure.
5. If installing a dutchman, repeat this procedure for the other splice.

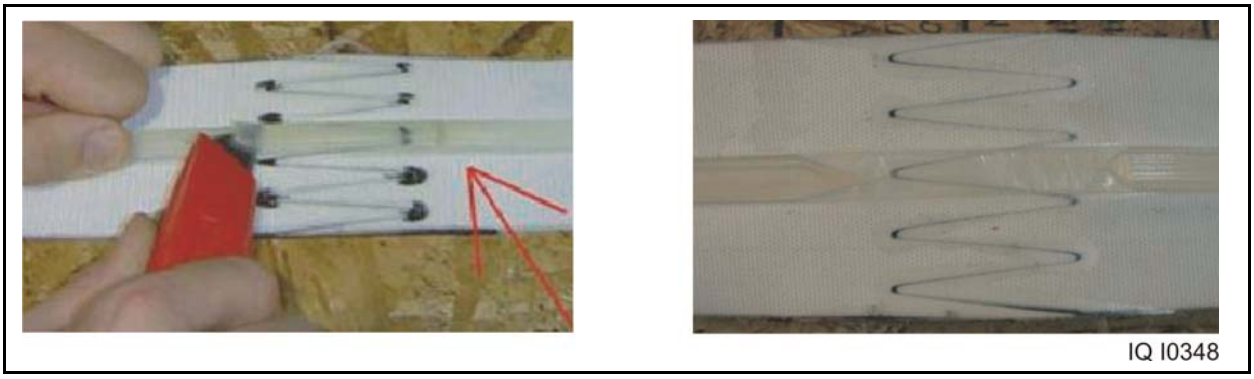

Figure 6 - 12 Trimming the V-Guide

Drive Belt Lacing - Mechanical Roller Lacer

In the event of a breakdown, the IntelliQ® Accumulation Conveyor drive belt may also be mechanically laced using #1-HT lacing until a shutdown period when the belt may be welded. The following instructions explain the proper method to mechanically lace an IntelliQ® Accumulation Conveyor belt using a roller lacer:

1. Pull the belt ends together tightly to remove any slack in the belt.
2. Use a razor knife and a straight edge to cut the ends of the belt squarely with each other and at a 90 degree angle, see Figure 6 - 13.

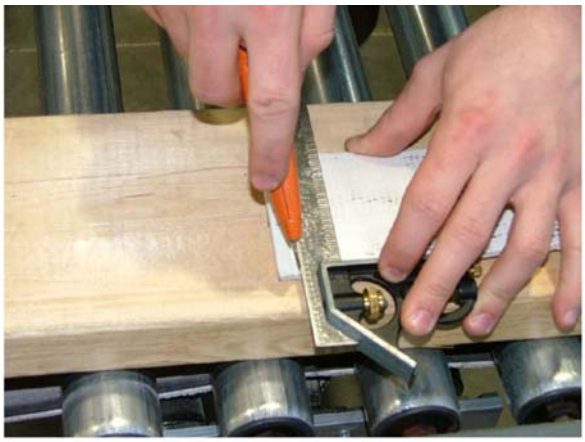

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Figure 6 - 13 Cutting the Belt Ends

For a more precise cut, use a belt cutter, see Figure 6 - 14. This method is preferred because it ensures that the end of the belt is at 90 degrees and also that the v-backing is cut cleanly.

IQ I0314

Figure 6 - 14 Using a Belt Cutter

3. Remove approximately 5 inches of the v-backing from each end of the belt, see Figure 6 - 15. This is necessary for the belt to fit into the lacing equipment.
4. Taper the v-backing on the bottom and sides. This is necessary for the belt to run more smoothly as it travels through pulley grooves.

Figure 6 - 15 Taper the V-Backing

5. Cut the lacing and lacing pin to the width of the belt, see Figure 6 - 16.

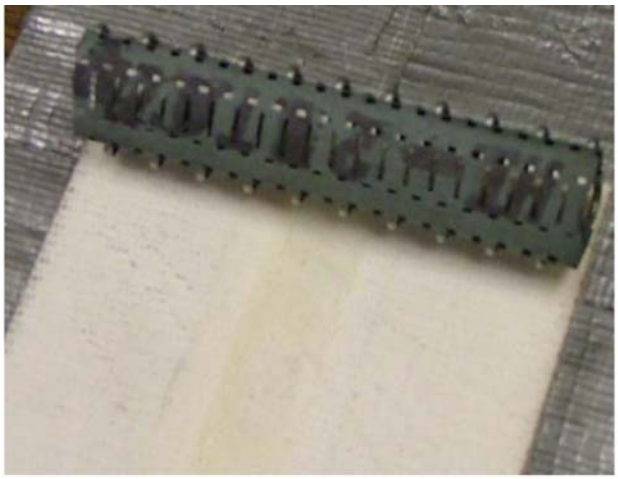


Figure 6 - 16 Sized Lacing

6. Loosen the Face Strip Knob 1/2 turn, see Figure 6 - 17.

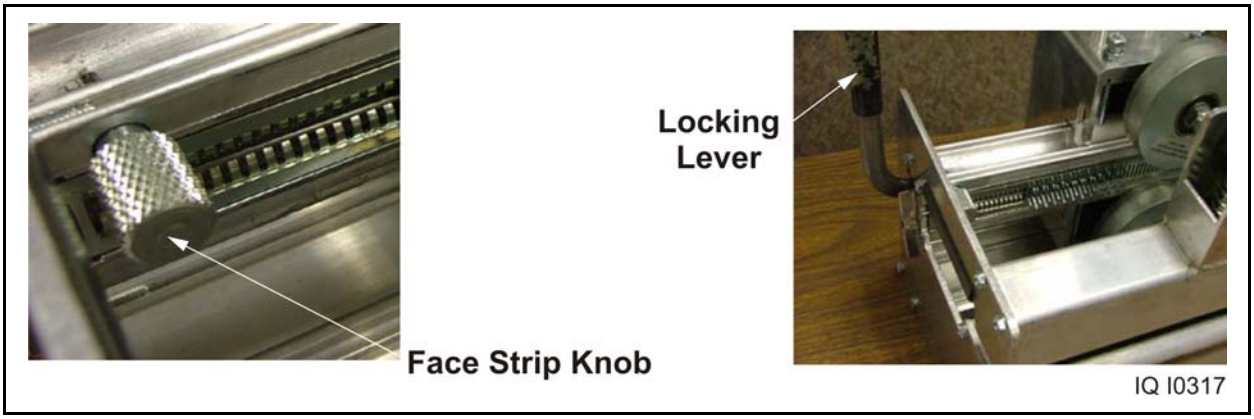


Figure 6 - 17 Knob and Lever

7. Move the Locking Lever into the unlocked (up) position and slide the face strip that corresponds to the lace type into the end of the lacer. In order to identify the correct face strip, the lace type number is stamped into the face strip. Be sure the face strip is positioned flush with the ends of the lacer frame. Tighten face strip knob.

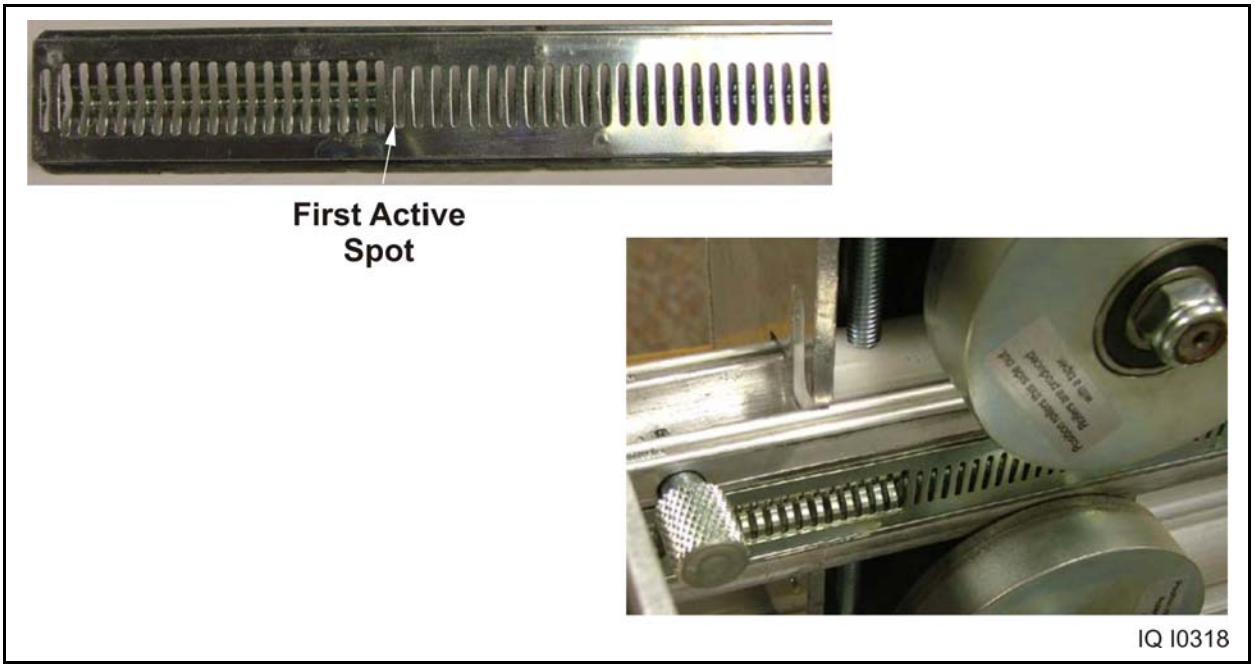


Figure 6 - 18 Face Strip

8. Position the lacer head to the end of the tool, and turn the Roller Adjustment Knob clockwise to open the rollers, see Figure 6 - 19.

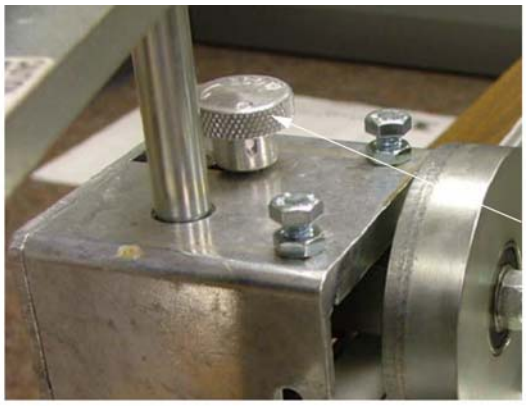


Figure 6 - 19 Roller Adjustment Knob

9. Insert hooks into the First Active Slot of the face strip, see Figure 6 - 20. Slide in the Lacer Guide Pin on the side and through the loops of the lacing hooks to secure the hooks to the machine. Push the locking levers into the locked (down) position. Remove the carding paper.

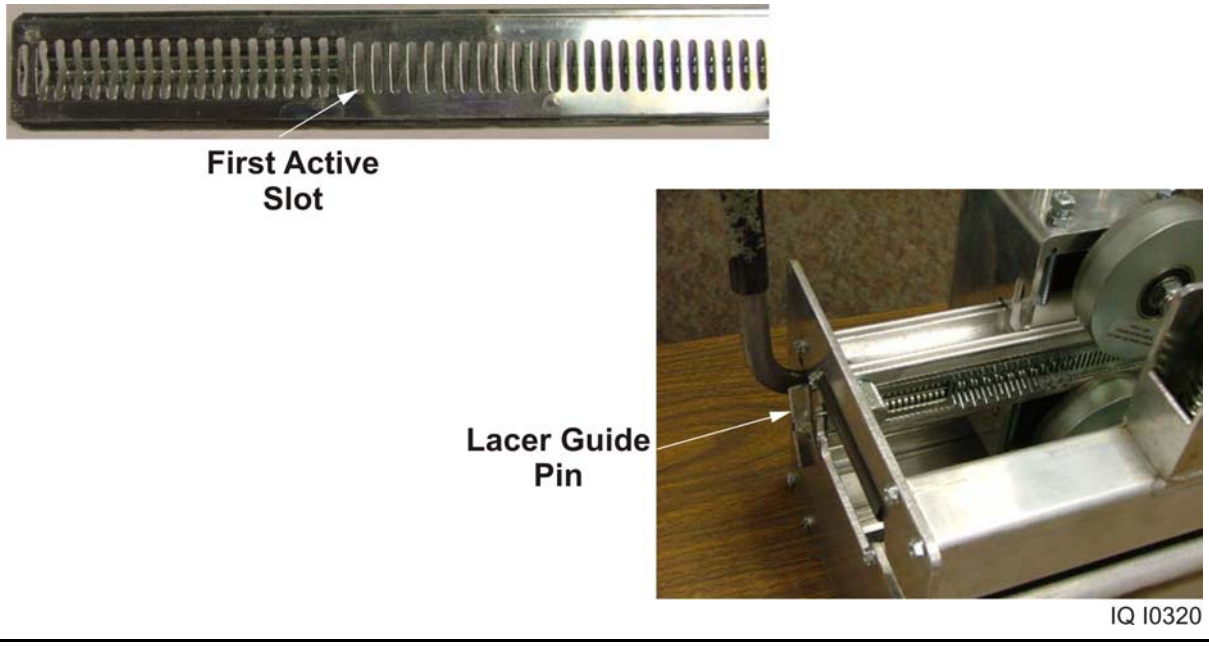


Figure 6 - 20 Insert Hooks

10. Insert the belt through the belt clamp and flush against the entire width of the face strip. Lock the belt clamp, see Figure 6 - 21.

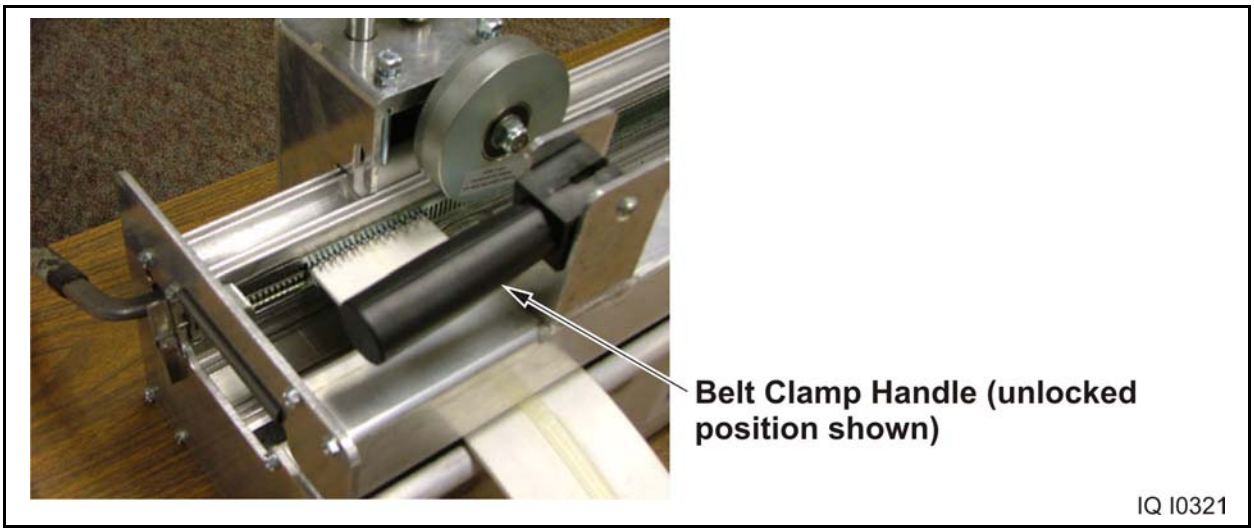


Figure 6 - 21 Insert Belt

11. Position rollers over the hooks, turn the Roller Adjusting Knob counter-clockwise until rollers touch hooks, see Figure 6 - 22. Return the lacer head to the end of the lacer and turn the adjusting knob 1 and 1/2 additional turns counter-clockwise.

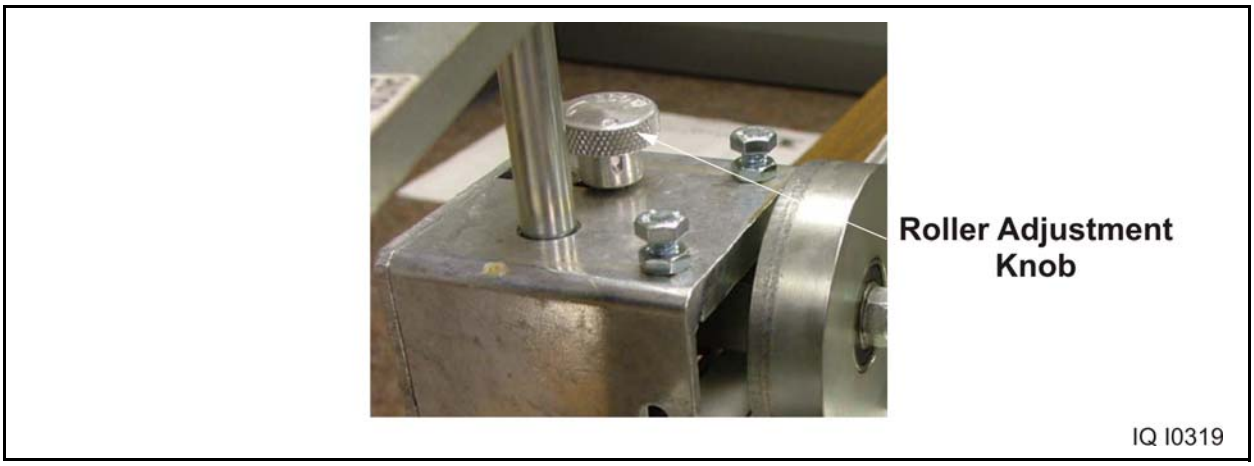


Figure 6 - 22 Position Rollers

12. Using the Drive Handle, move the lacer head across the belt width at a smooth speed, see Figure 6 - 23. Turn the adjusting knob counter-clockwise 1/2 turn and return head across the belt. Repeat until hooks are embedded 1/3 to 1/2 into the belt. When laced properly, the end of the belt will look like Figure 6 - 24.

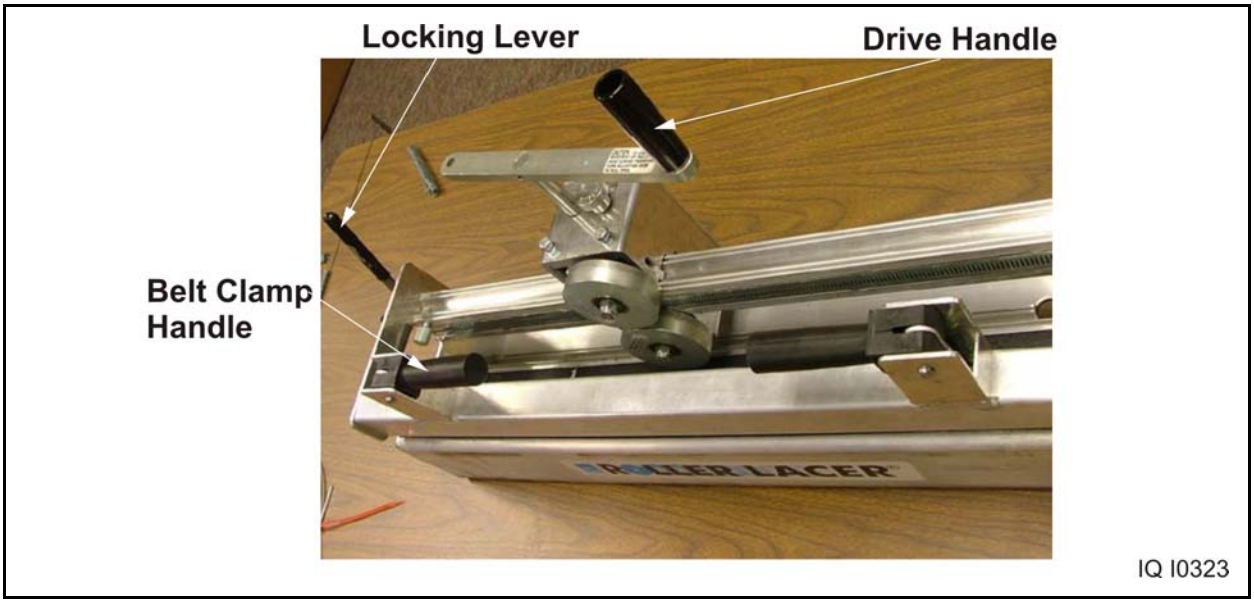


Figure 6 - 23 Roller Lacer Outer View

Figure 6 - 24 Embedded Laces

Check the following to make sure the lacing hooks are properly installed:

a. The hook legs are parallel, see Figure 6 - 25 and Figure 6 - 26.
b. The hook points slightly penetrate the opposite side of the belt.
c. Approximately 1/3 to 1/2 of the wire diameter is embedded into the belt.
d. Hook knuckles are not higher than the legs when installed.
e. Approximately 1/4 inch (6.4 mm) on each belt edge is left unlaced.
f. One more hook is installed on the leading end than the trailing end of the belt.
g. The trailing end of the splice is chamfered/notched.
h. The edges of the belt line up.
i. The hooks are secure in the belt.

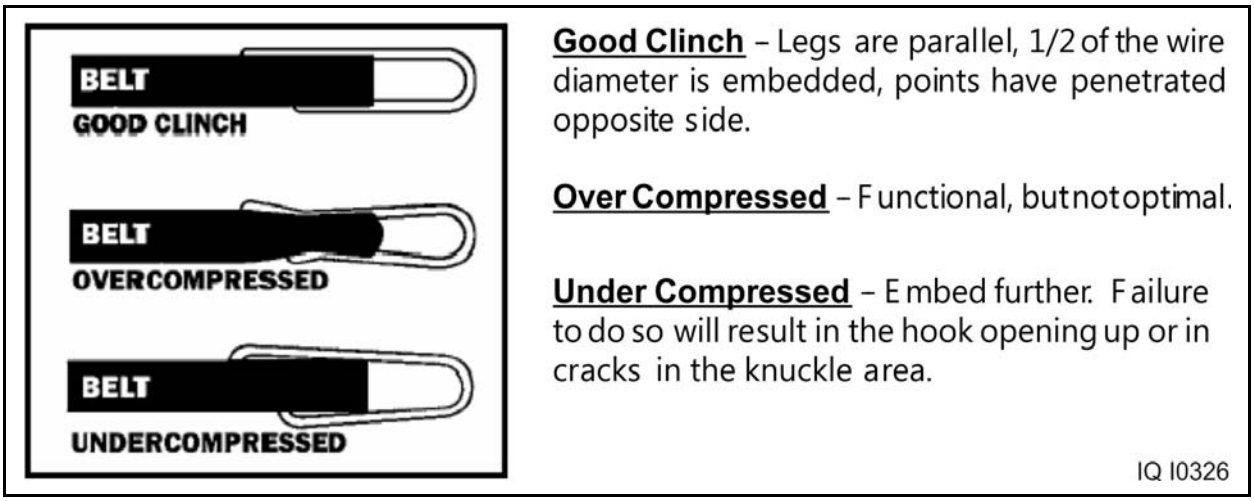


Figure 6 - 25 Properly Installed Lacing Hooks

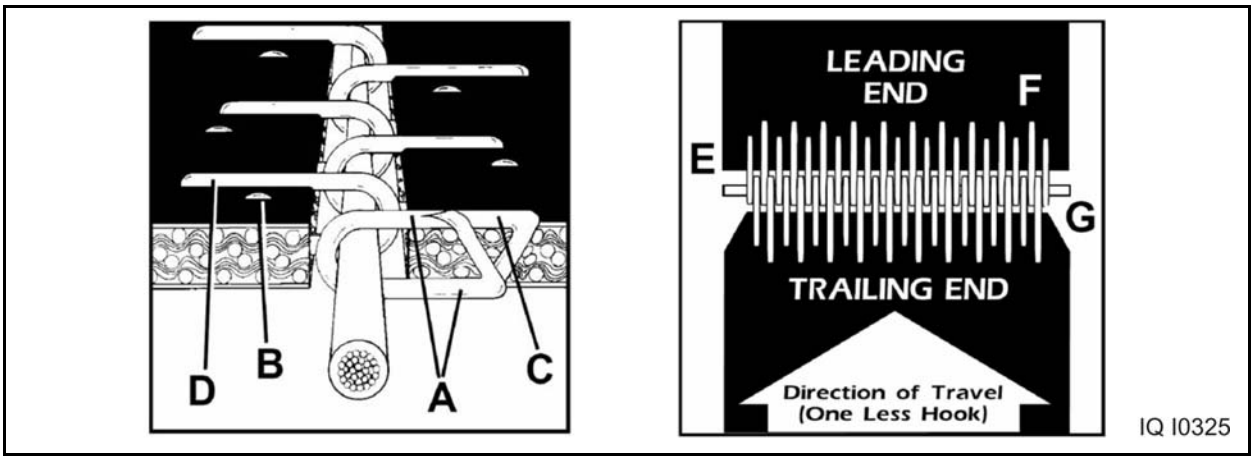


Figure 6 - 26 Lacing Comparison

13. Lift up locking lever. Remove lacer pin. Release belt clamp. Remove belt from lacer.

14. Repeat steps 6 through 13 on page 16 through page 21. for the other end of the belt. Insert belt lacing into to the Second Active Slot in the face strip in order to lace the opposite end of the belt, see Figure 6 - 27. This will allow the laces to interconnect properly.

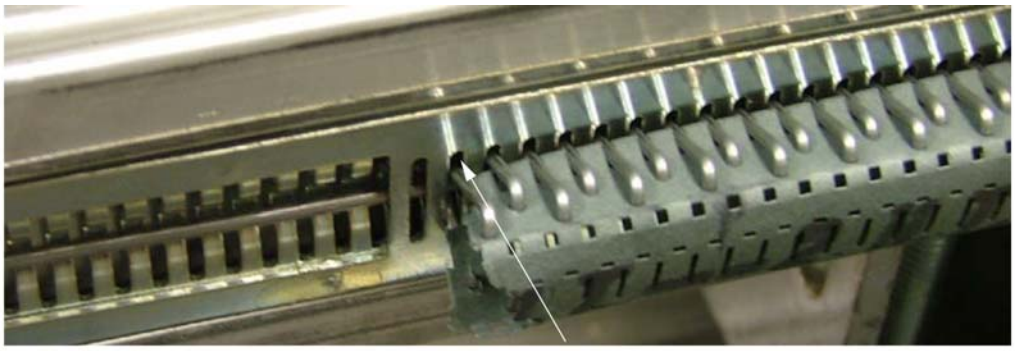


Figure 6 - 27 Lacing Opposite End

15. Pull the ends of the belt together and insert the pre-cut lacing pin into the interconnected lacing hooks.

16. Bend the ends of the lacing pins in the direction away from belt travel to keep it from migrating out of the lacing hooks.

17. Chamfer the edges of the belt on the trailing end of the spliced joint, see Figure 6 - 28.

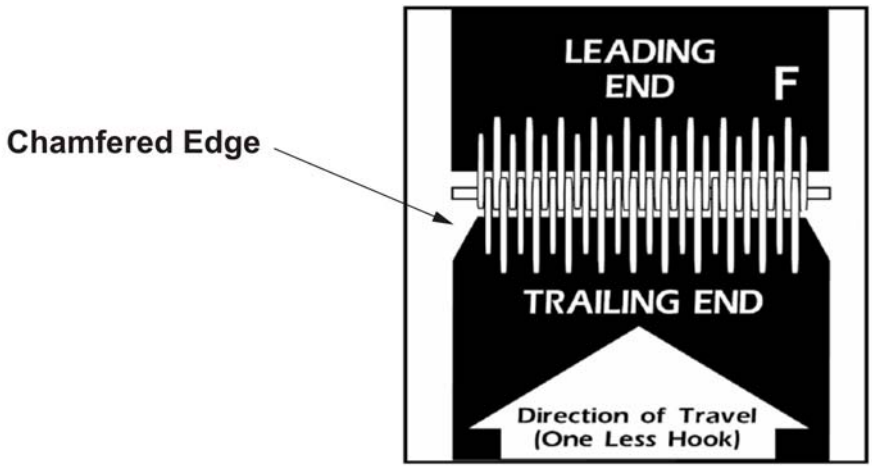


Figure 6 - 28 Chamfered Edges of Belt

Drive Belt Lacing - Mechanical Bench Lacer

In the event of a breakdown, the IntelliQ® Accumulation Conveyor drive belt may also be mechanically laced using #1-HT lacing until a shutdown period when the belt may be welded. The following instructions explain the proper method to mechanically lace an IntelliQ® Accumulation Conveyor belt using a bench lacer:

1. Pull the belt ends together tightly to remove any slack in the belt.
2. Use a razor knife and a straight edge to cut the ends of the belt squarely with each other and at a 90 degree angle, see Figure 6 - 29.

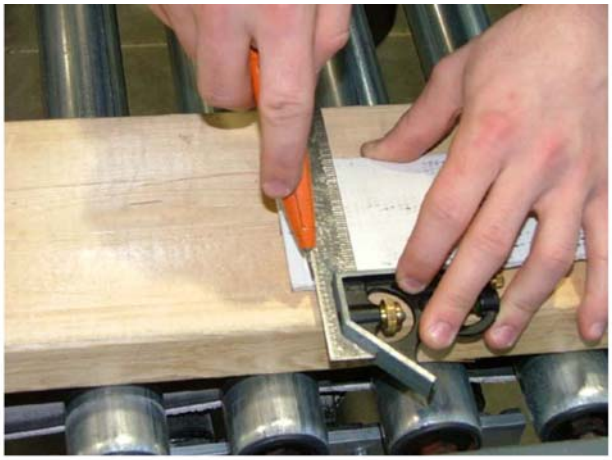


Figure 6 - 29 Cutting the Belt Ends

For a more precise cut, use a belt cutter, see Figure 6 - 30. This method is preferred because it ensures that the end of the belt is at 90 degrees and also that the v-backing is cut cleanly.

Figure 6 - 30 Using a Belt Cutter

3. Remove approximately 1 inch of the v-backing from each end of the belt, see Figure 6 - 31. This is necessary for the belt to fit into the lacing equipment.
4. Taper the v-backing on the bottom and sides. This is necessary for the belt to run more smoothly as it travels through pulley grooves.

Figure 6 - 31 Taper the V-Backing

5. Cut the lacing and lacing pin to the width of the belt.
6. Insert the #1-HT lacing into the lacing machine jaws, see Figure 6 - 32.
7. Insert the lacing pin in the side and through the loops on the bottom of the lacing hooks to secure the hooks to the machine.

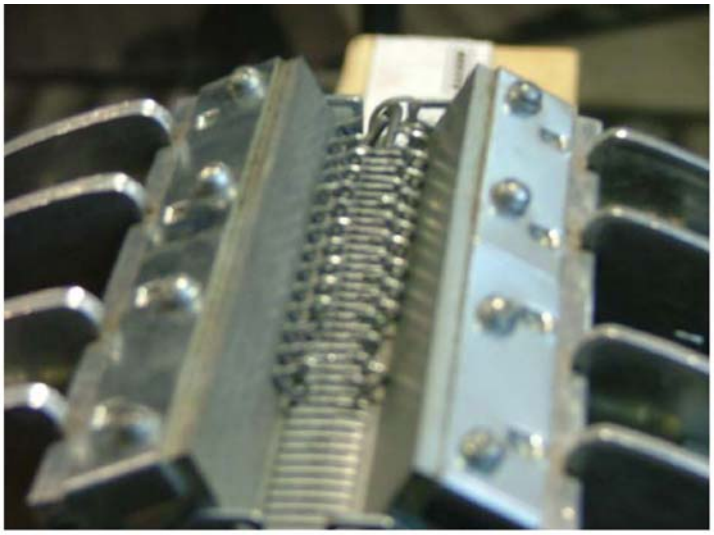


Figure 6 - 32 Insert the Lacing

8. Insert one end of the belt into the lacing machine, see Figure 6 - 33.

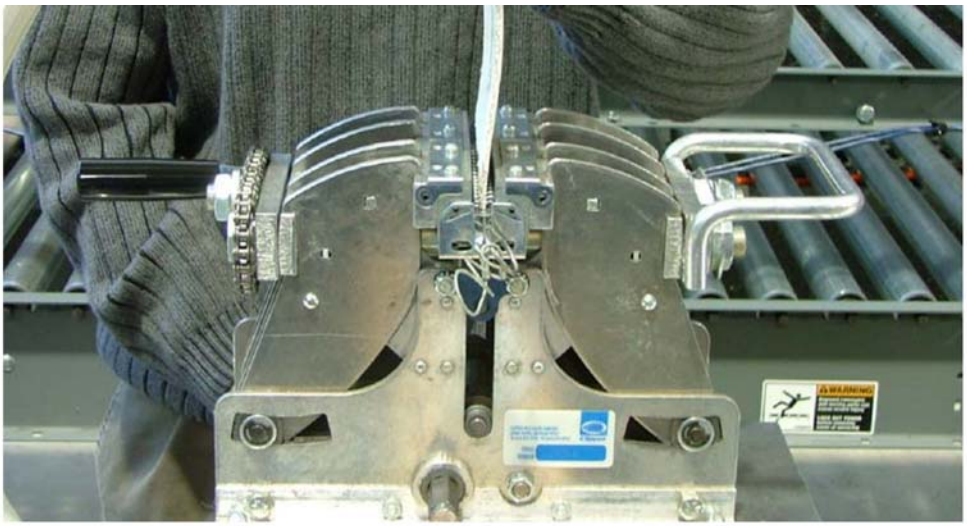


Figure 6 - 33 Lacing

9. To begin lacing the belt, turn the crank shown in the picture on the top/left of the belt lacing machine, so that the machine's jaws begin to tighten. It is best to tighten the jaws of the machine in very small increments to both ensure a secure lacing, but also make the process much less difficult. After tightening the first crank, use the dual handled crank located on the center of the machine's side to close, and then re-open the jaws. Repeat these steps, tightening the jaws bit by bit until the lacing hooks are completely inserted into the belt. You will know that the lacing is completely inserted into the belt when you can see the tips of the hooks just beginning to poke through.
10. When laced properly, the end of the belt will look like Figure 6 - 34.

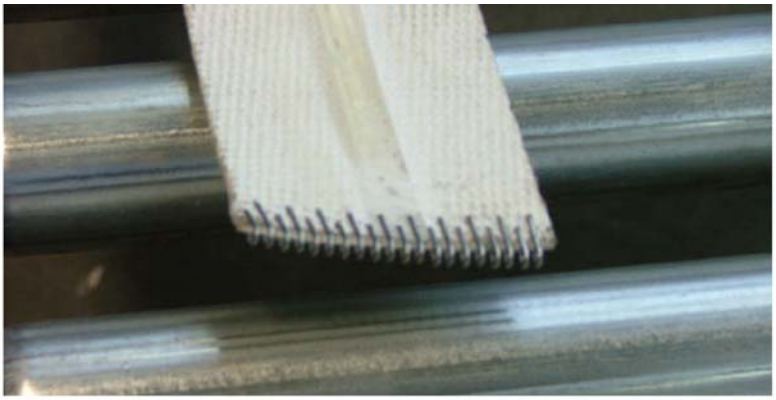


Figure 6 - 34 Proper Lacing Penetration

Check the following to ensure the lacing hooks are properly installed.

a. The hook legs are parallel, see Figure 6 - 35 and Figure 6 - 36.
b. The hook points slightly penetrate the opposite side of the belt.
c. Approximately 1/3 to 1/2 of the wire diameter is embedded into the belt.
d. Hook knuckles are not higher than the legs when installed.
e. Approximately 1/4 inch (6.4 mm) on each belt edge is left unlaced.
f. One more hook is installed on the leading end than the trailing end of the belt.
g. The trailing end of the splice is chamfered/notched.
h. The edges of the belt line up.
i. The hooks are secure in the belt.

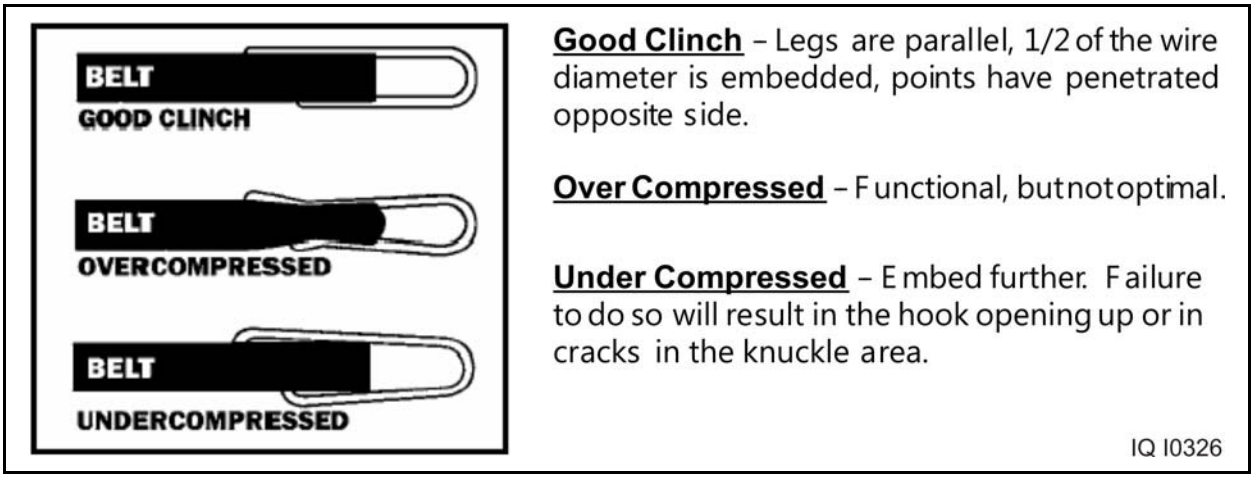


Figure 6 - 35 Properly Installed Lacing Hooks

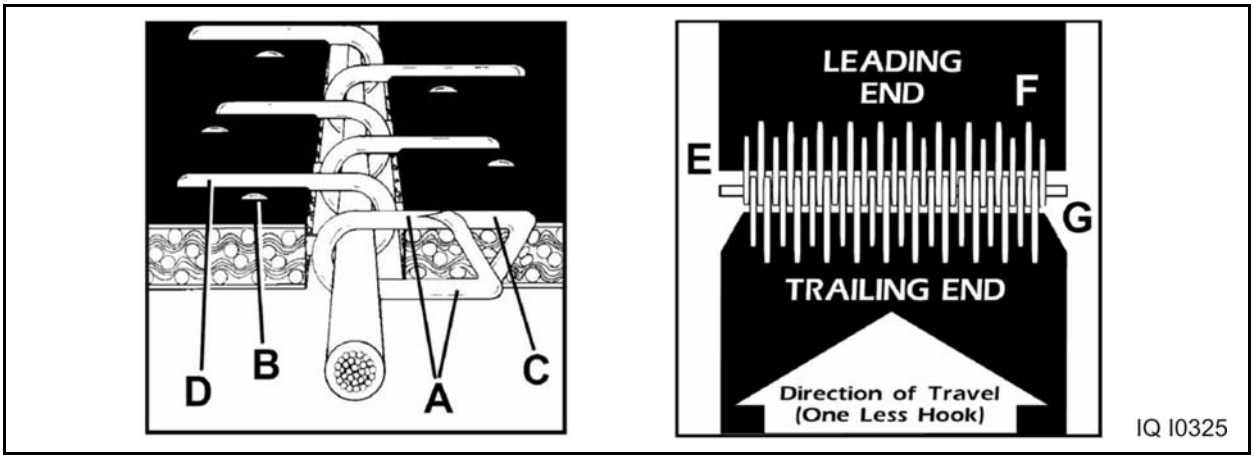


Figure 6 - 36 Lacing Comparison

11. Repeat steps 6 through 10 on page 23 through page 24 for the other end of the belt. Insert belt lacing into the second active slot in the lacing machine in order to lace the opposite end of the belt. This will allow the laces to interconnect properly.
12. Pull the ends of the belt together and insert the pre-cut lacing pin into the interconnected lacing hooks.
13. Bend the ends of the lacing pins in the direction away from belt travel to keep it from migrating out of the lacing hooks.
14. Chamfer the edges of the belt on the trailing end of the spliced joint, see Figure 6 - 37. Both belt ends may be chamfered, but it is not necessary.

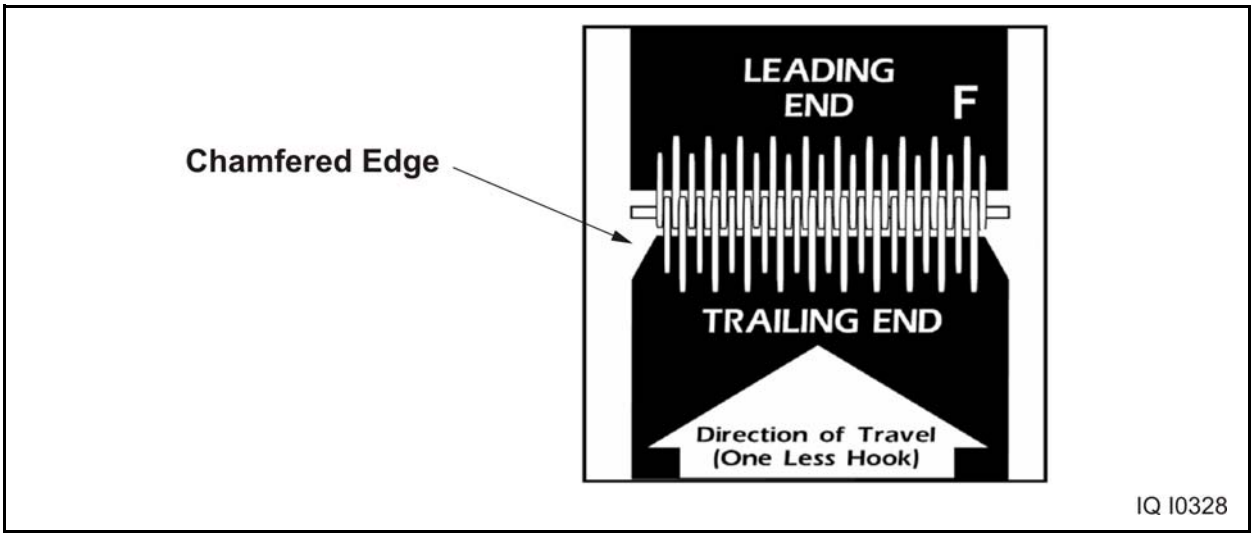


Figure 6 - 37 Chamfered Edges of Belt

Drive Belt Tension Adjustment

⚠WARNING

Replace the drive guards after inspection or maintenance of the drive mechanism. Failure to follow this instruction may result in serious personal injury and/or equipment damage.

Drive belt tension on the IntelliQ® Accumulation Conveyor is controlled by a pneumatic tensioner. Too much tension on the belt may cause damage to the belt, lacing, pulleys, and bearings, and possibly cause overloading of the motor.

To adjust belt tension follow these steps:

1. Make sure that the belt is routed properly through the drive and around all pulleys, see Figure 6 - 38.

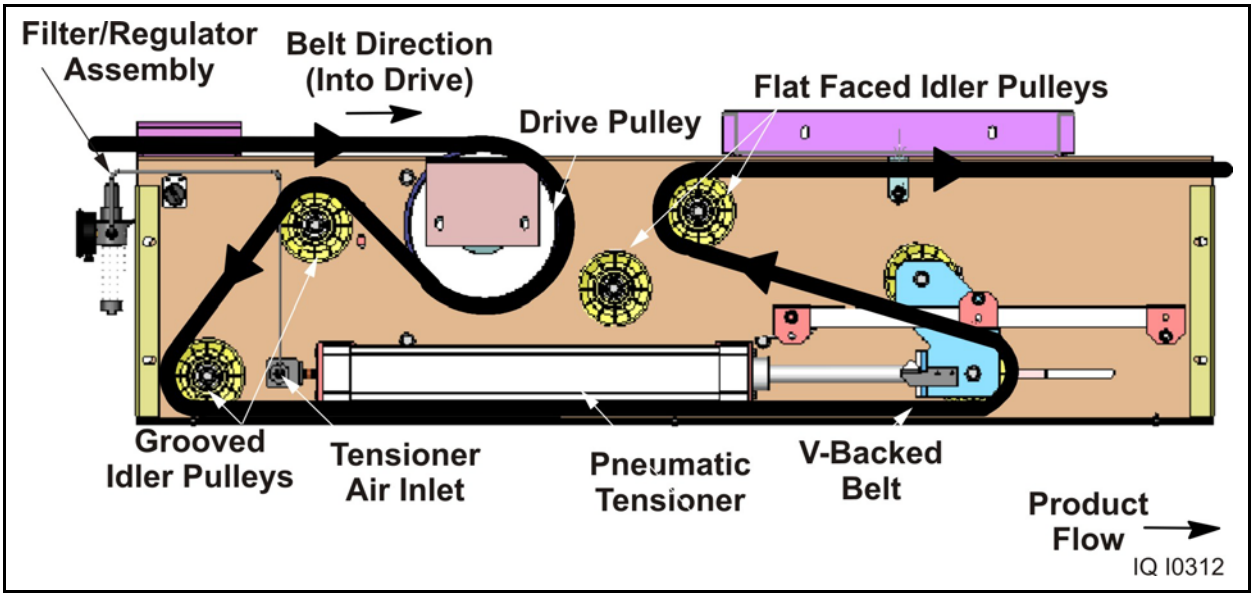


Figure 6 - 38 Belt Path Through The Drive Unit

2. The Pneumatic Tensioner should be in the fully retracted position during initial installation. If not fully retracted, press the rod back into the tensioner with the air pressure line disconnected. Reconnect to air source with the filter/regulator adjustment set to 0 PSIG prior to tensioning, see Figure 6 - 39.
3. Gradually increase the tensioner air pressure until there is no slack in the belt.
4. Start the conveyor.

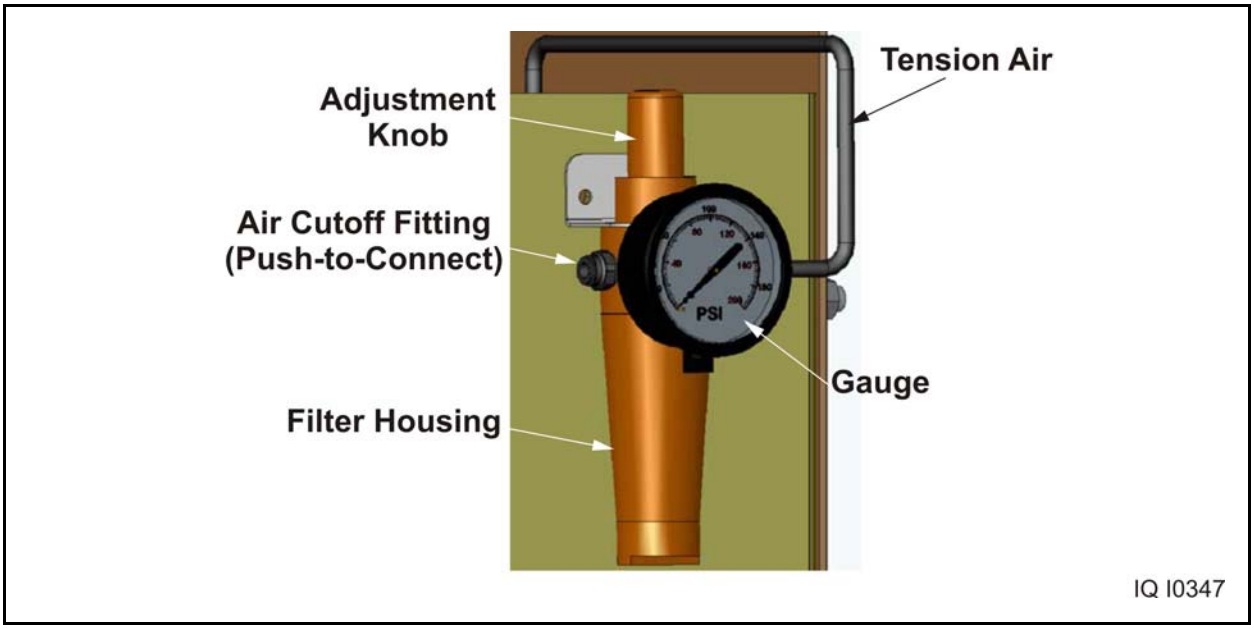


Figure 6 - 39 Belt Tensioner Filter/Regulator Assembly

5. With the belt in motion, gradually increase the air supply pressure until the belt does not slip on the drive pulley. The pressure required will vary based on the overall length of the conveyor, product being conveyed, weight of the product, etc., and will normally fall between 25 and 45 PSI.

6. Check to be sure the belt stretch indicator on the drive assembly is in the green area. When the belt stretch indicator is in the red area, the belt must be shortened by three feet and re-laced or thermally welded, see Figure 6 - 40.

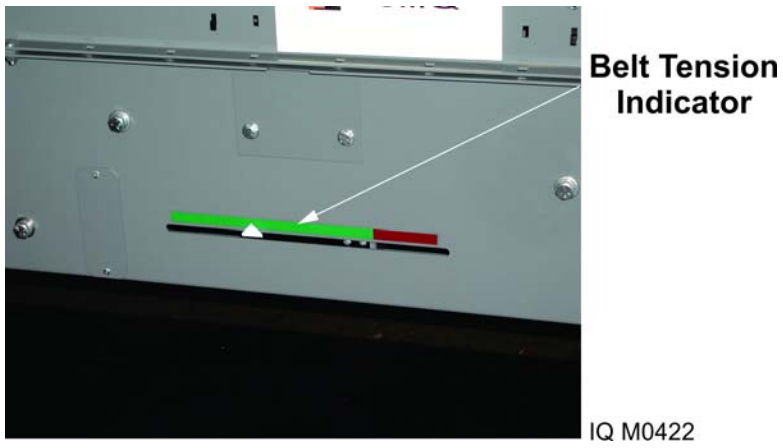


Figure 6 - 40 Belt Tension Indicator

Drive Belt Tracking

The V-backed belt may not track properly if any of the end idlers, belt splice, or drive pulley are not square.

The belt needs to be tracked if any of the following are true:

- The belt is not centered on the drive pulley within 1/2 inch
- There is an audible “pop” when the splice traverses through the drive. (The “pop” is caused when the guide rides out of the pulley groove and snaps back into it.)
- The belt is in contact with the outside bearings or the bracket of the belt return guides.

Use the following procedure when adjusting the belt tracking:

1. Make sure the conveyor sections are properly racked 1/16 inch, level, and plumb.
2. Verify that the end idlers, belt splice, and drive pulley are square with the conveyor side frame, see Figure 6 - 41.
3. Turn the conveyor on and verify that the conveyor is running in the intended direction.
4. Make sure there is adequate tension on the belt and that the air supply to the shoe supports is set to 10 PSIG. This is a starting point and may need to be adjusted once product is introduced on the conveyor.

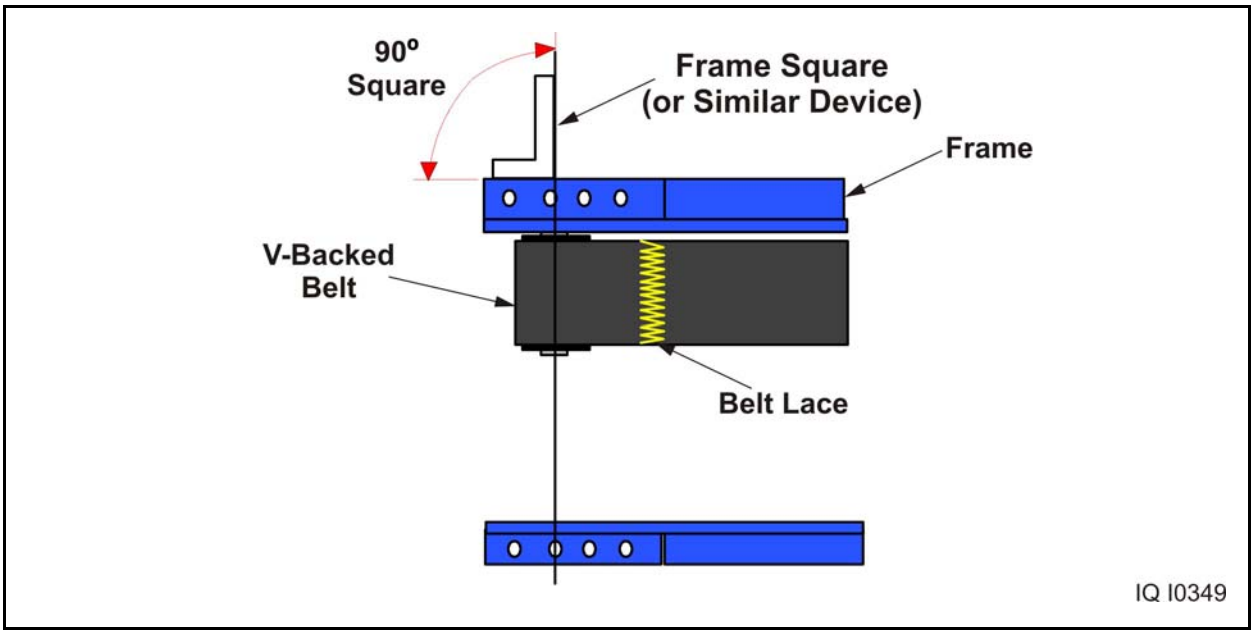


Figure 6 - 41 Checking End Idler Square

5. Remove a few rollers above the drive so the top of the drive pulley is visible, see Figure 6 - 42.

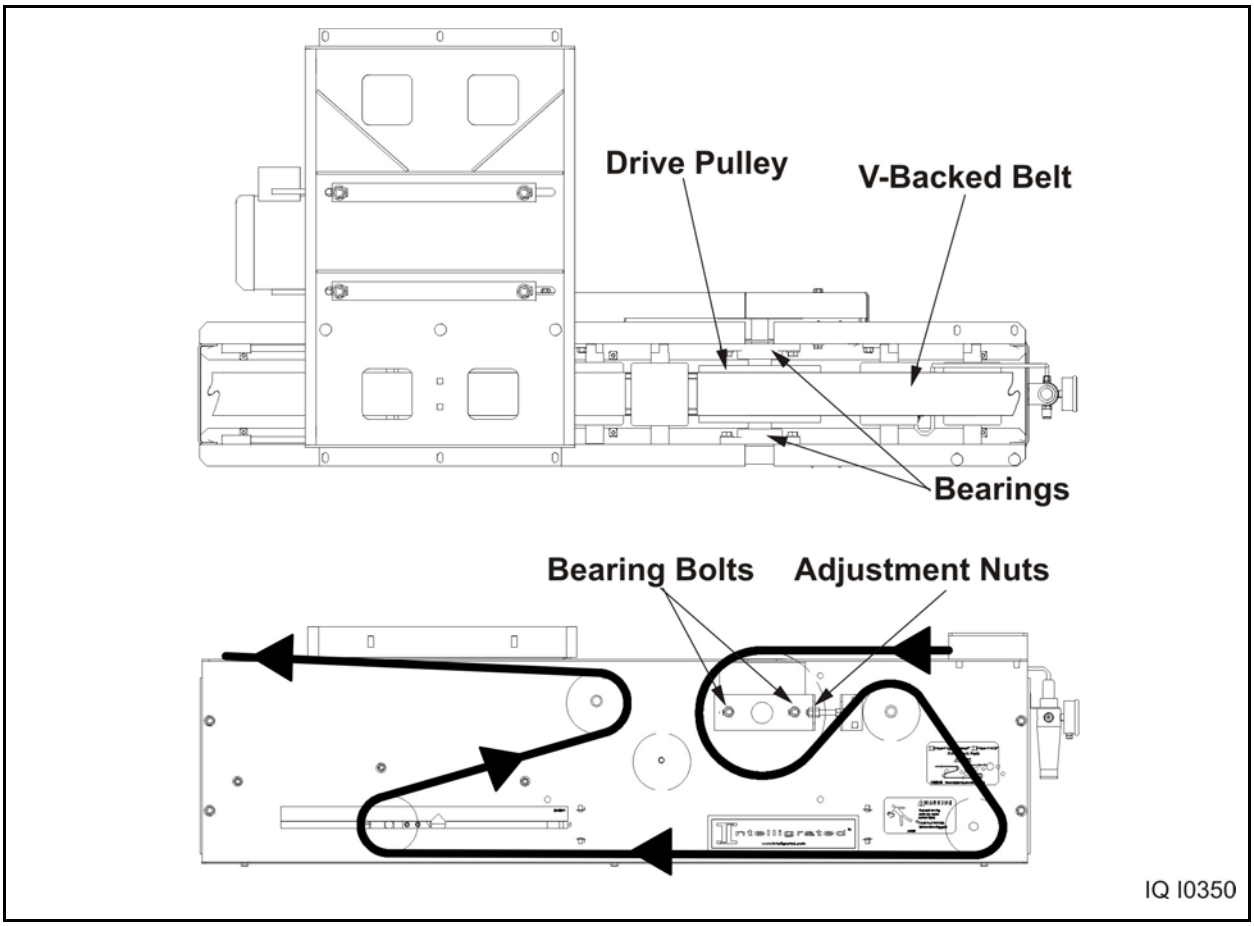


Figure 6 - 42 Belt Tracking

6. If the belt is not centered on the drive pulley or it is making a “popping” noise as it traverses through the drive, adjust the belt using the following procedure:

    a. Turn off the conveyor and lock it out.

    b. Stand on the drive side of the conveyor (opposite the motor and reducer) and loosen the bearing bolts.

    c. Figure 6 - 43 shows the adjustment nuts and bolts. If the belt needs to move away from you, move the pulley towards the discharge end of the conveyor by loosening the adjustment nut on the discharge side and turn the other adjustment nut clockwise.

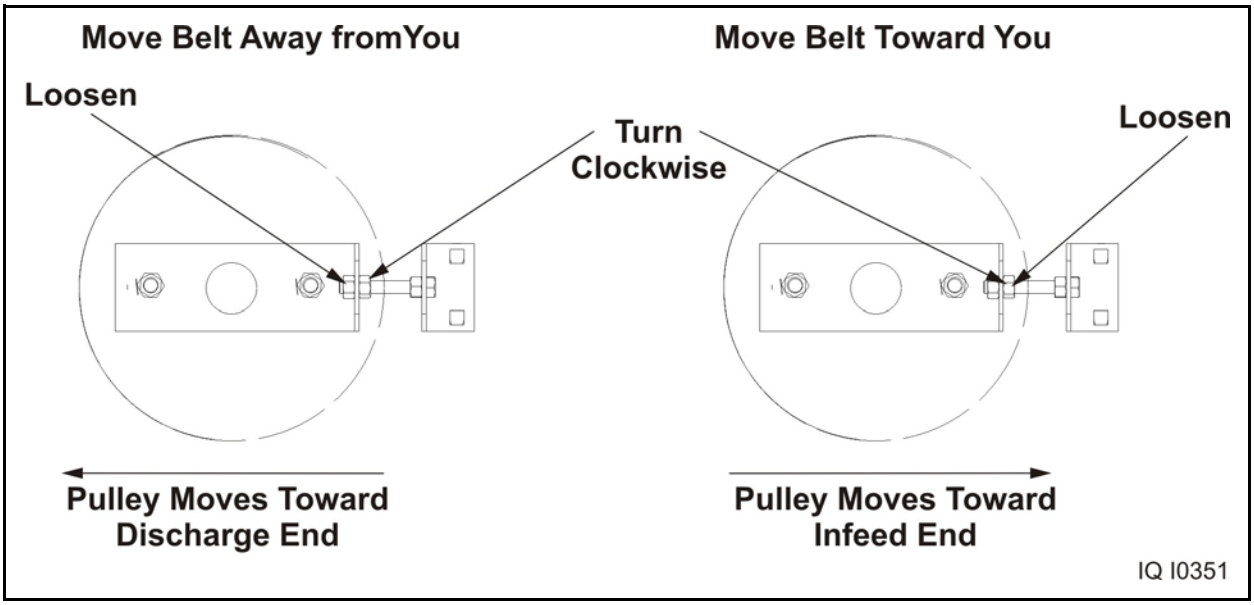


Figure 6 - 43 Belt Tracking Adjustment

If the belt needs to move away from you, move the pulley towards the infeed end of the conveyor by loosening the adjustment nut on the infeed side and turn the other adjustment nut clockwise. Approximately 1/4 inch of adjustment equals approximately 1/2 inch of belt movement.

    d. Tighten the adjusting nuts and the bearing bolts and check the tension on the drive chain or belt. Adjust if necessary.

    e. Unlock the disconnect and turn the conveyor on. Be ready to turn the conveyor off quickly if the adjustment was too much.

f. Check the belt position. Allow the belt splice to traverse the drive at least two times. Repeat steps a. - e on page 31. until the splice does not “pop” and the belt stays in place.

   If this adjustment does not move the belt to the desired position, it may be necessary to use the adjusting nuts on the opposite side of the drive unit. You will have to remove the drive guard and release the drive chain (or belt) tension prior to making the adjustment. Be sure to reset the tension before starting the conveyor.

7. Install the rollers that were removed in step 5 on page 30.
8. If the belt is not running down the center of the return brackets and is in contact with either the outside bearings or the bracket itself, adjust the belt tracking using the following procedure:

   a. Turn off the conveyor and lock it out.

   b. Depending on which direction the belt needs to move, adjust one side of the return bracket towards the infeed or discharge end of the conveyor, see Figure 6 - 44. Always start adjusting at the infeed end of the conveyor.

   c. Repeat step b for the return brackets on the entire length of the conveyor.

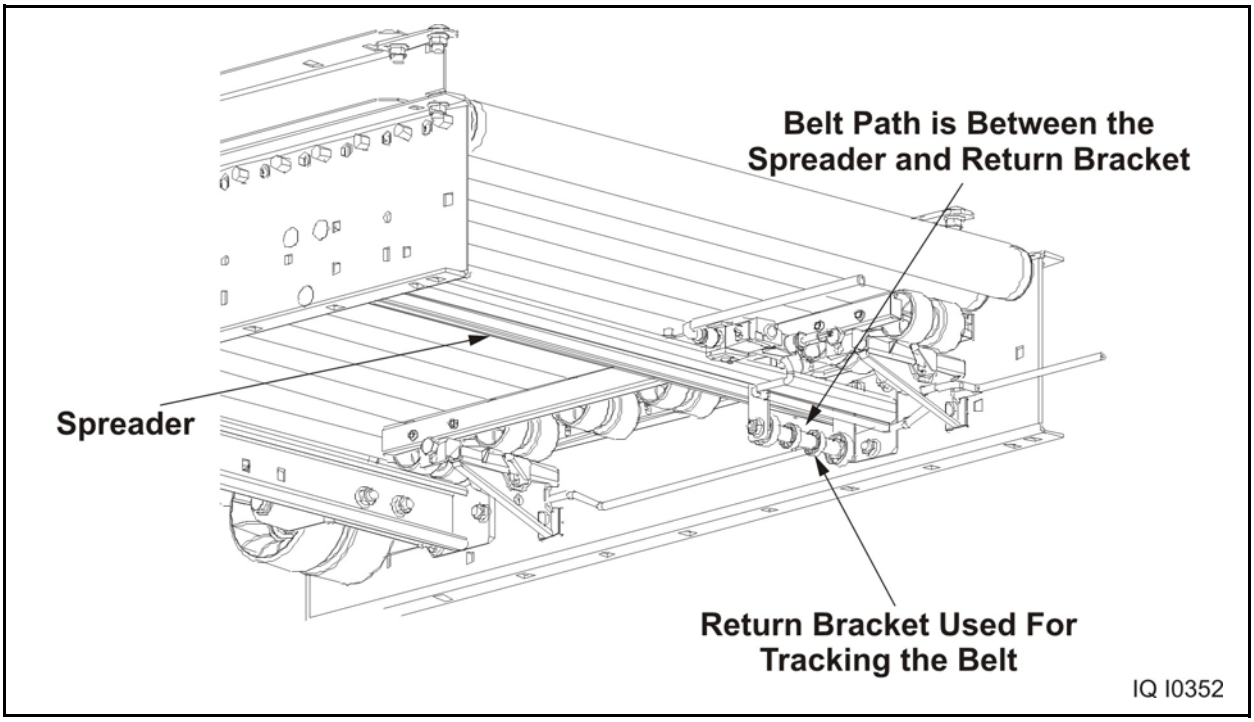


Figure 6 - 44 Belt Tracking through the Return Brackets

End Idler Pulley Adjustment

Observe the operation of the carrier rollers in the end idler. If they continue to drive after the end idler zone is deactivated, or do not drive sufficiently when the zone is activated, the height of the end idler pulley must be adjusted. Use the following procedure to adjust the height of the end idler pulley:

1. Turn off and lock out the conveyor motor.
2. Loosen the bolts that mount the Idler Pulley Bracket to the spreader, see Figure 6 - 45.
3. If the rollers continue to drive after the end idler zone is deactivated, the End Idler Pulley must be lowered. If the rollers do not drive, or if they do not drive sufficiently when the zone is activated, the End Idler Pulley must be raised. Adjust the End Idler Pulley in small increments.
4. Tighten the pulley bracket Mounting Bolts.
5. Unlock and turn on the conveyor and observe the operation of the carrier rollers.
6. Repeat steps 1 through 5 as necessary.

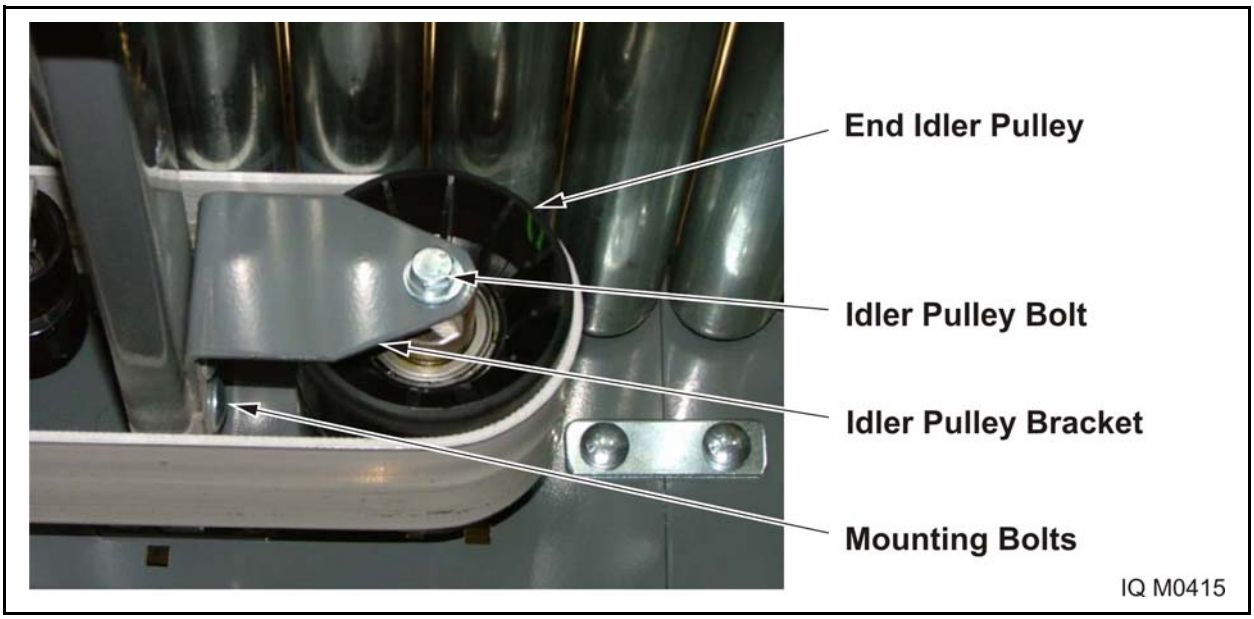


Figure 6 - 45 End Idler Pulley Adjustment

Shoe Support Bracket Removal and Installation

WARNING

Before performing any maintenance or lubrication services, follow the Lockout/Tagout Procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or machine damage.

The purpose of the Shoe Support Bracket is twofold:

- It supports the Shoe assembly,
- It enables air pressure to be converted into mechanical pressure. This causes the diaphragm to press the air puck up against the Shoe assembly, forcing the drive belt up and against the rollers.

Removal

1. Turn off and lockout/tagout all power and air supply to the conveyor section.
2. Remove the rollers over the shoe where the maintenance is required.
3. Remove the Stud Shoe Support and its washer and nut, see Figure 6 - 46.
4. Remove the Retaining Clips (skew applications only).

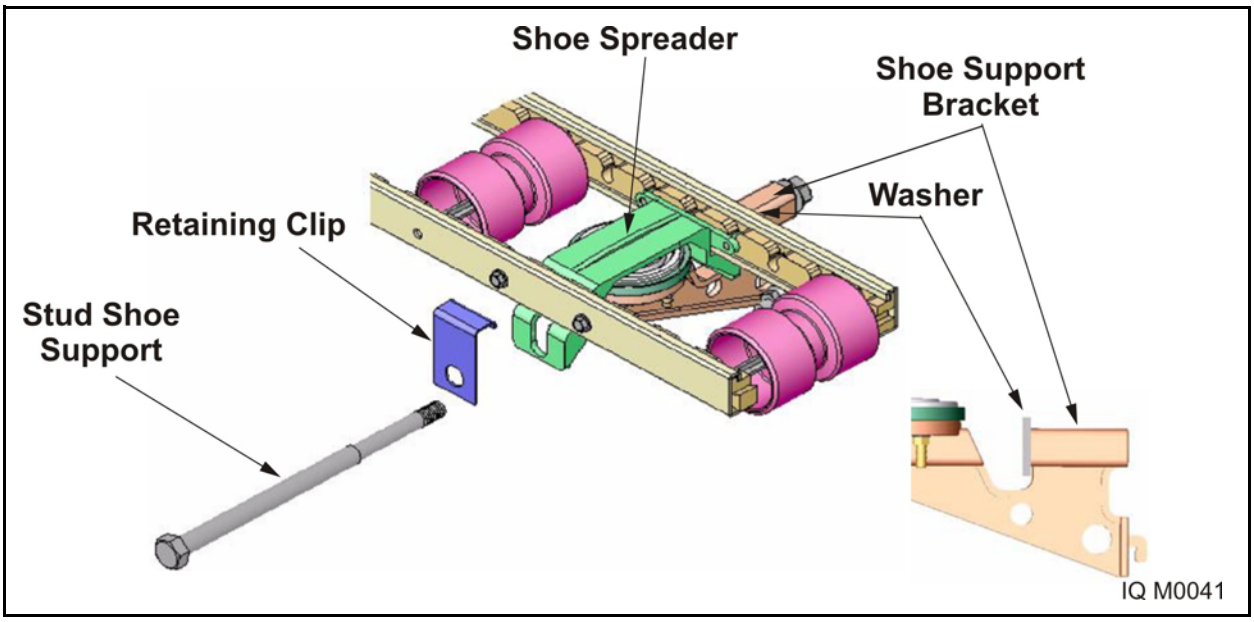


Figure 6 - 46 Shoe Removal

5. Lift the shoe with Shoe Spreader up and off of the Shoe Support Bracket.
6. Remove the air line , slide the Shoe Support bracket up in the rail, until the lug on the shoe support clears the rail, and pull it to the inside of the rail to remove, see Figure 6 - 47.

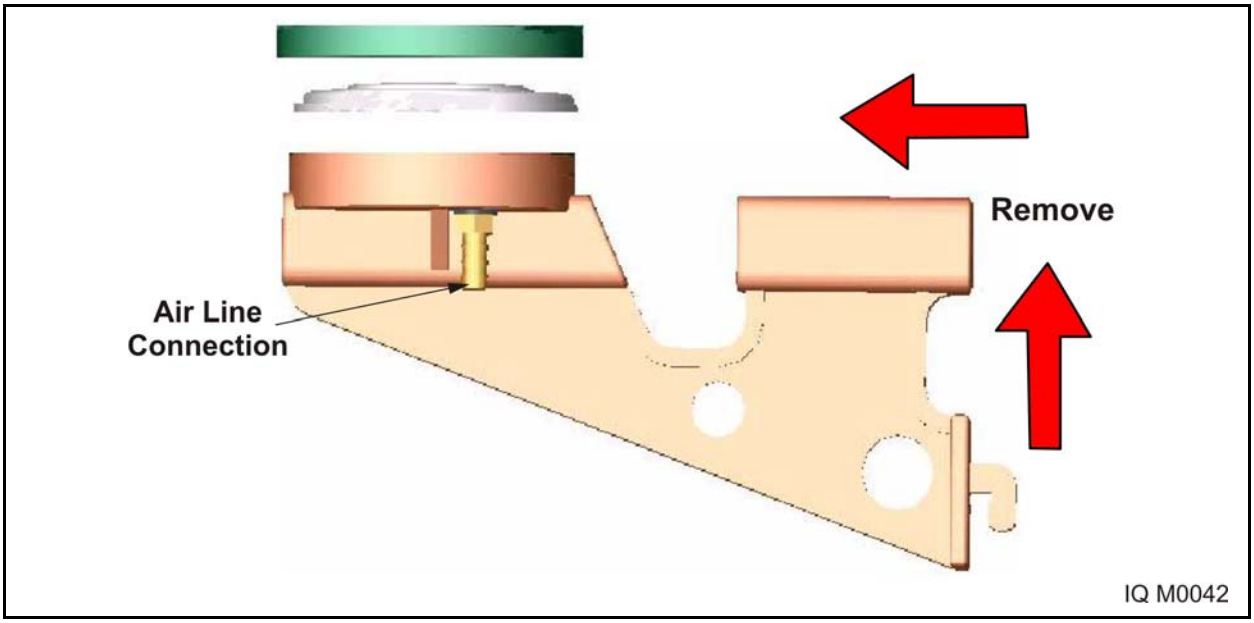


Figure 6 - 47 Shoe Support Removal

Installation

1. Replace the air line on the Shoe Support bracket, fit the lug on the shoe support into the rail, and slide it down in the rail, see Figure 6 - 48.

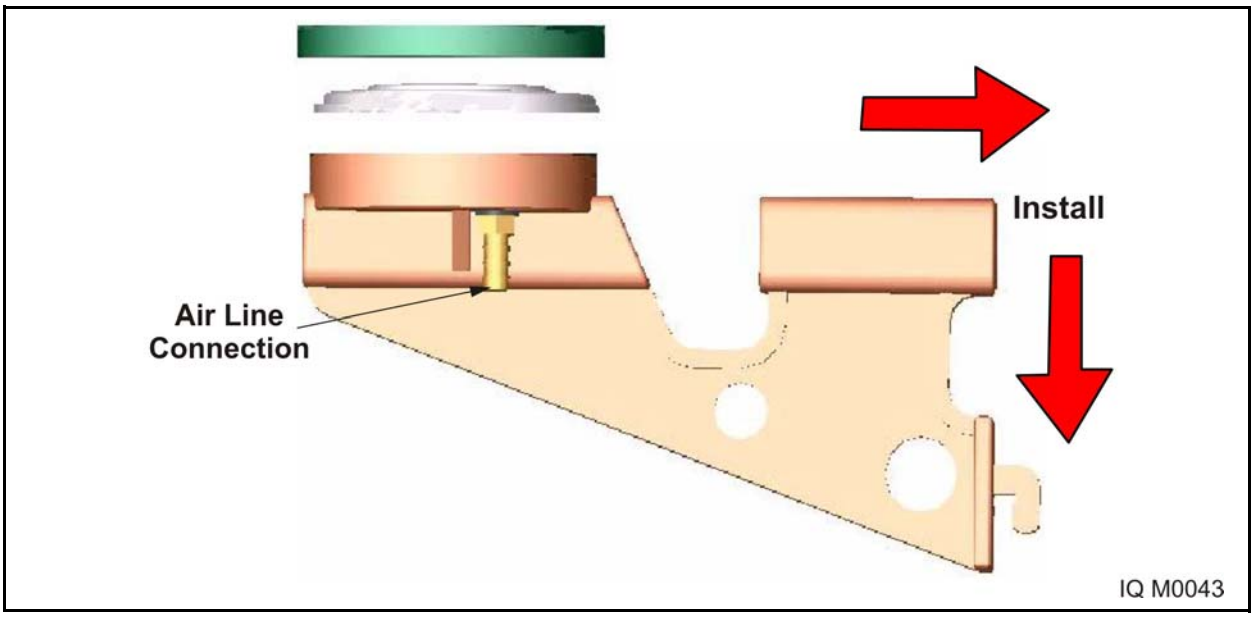


Figure 6 - 48 Shoe Support Installation

2. Place the shoe with the Shoe Spreader down onto the Shoe Support Bracket, see Figure 6 - 49.
3. Replace the Retaining Clips (skew applications only).
4. Align the spreader with the shoe support, insert the Stud Shoe Support, washer, and nut.

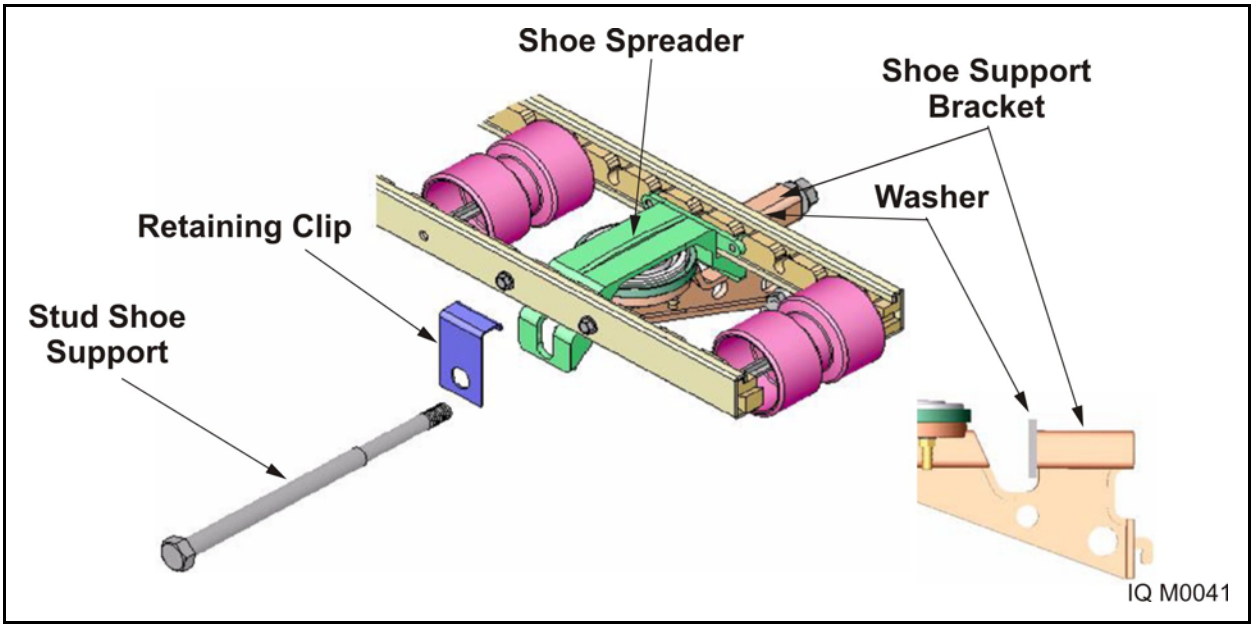


Figure 6 - 49 Shoe Removal

NOTE: The Stud Shoe Support Washer must be present to prevent the support bracket from splitting during installation and maintenance.

5. Replace the rollers over the shoe where the maintenance was performed.
6. Unlock and turn on power and the air supply to the conveyor section.

Air Puck Removal and Installation

WARNING

Before performing any maintenance or lubrication services, follow the Lockout/Tagout Procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or machine damage.

It may be necessary to replace the puck on the Shoe Support bracket. The following are the steps used to remove and install the air puck and air puck retaining ring.

Removal

1. Turn off and lockout/tagout all power and air supply to the conveyor section.
2. Remove the rollers over the shoe where the maintenance is required.
3. Remove the Stud Shoe Support and its washer and nut.
4. The Stud Shoe Support Washer must be present to prevent the support bracket from splitting during installation and maintenance.
5. Remove the retaining clips (skew applications only).
6. Lift the shoe with shoe spreader up and off of the shoe support bracket.
7. Remove the air line, slide the shoe support bracket up in the rail, and pull it to the inside of the rail to remove.
8. Pull up on the Retaining Ring and remove it, see Figure 6 - 50.
9. Pull up on the Air Puck and remove it from the Shoe Support bracket.

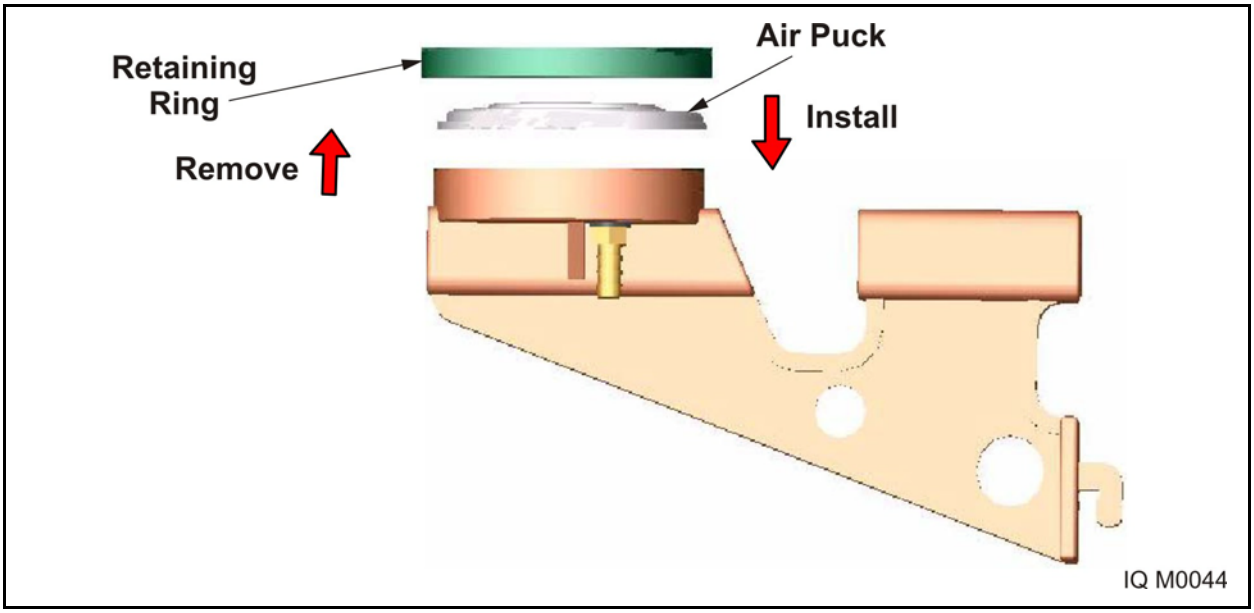


Figure 6 - 50 Air Puck Removal and Replacement

Installation

1. Place a new Air Puck on the Shoe Support Bracket and press it down into place, see Figure 6 - 50.
2. Slide a new Retaining Ring down onto the Air Puck and Shoe Support bracket.
3. Connect the air supply to the shoe support bracket and slide the shoe support bracket down into the rail.
4. Place the shoe spreader on the shoe support bracket.
5. Replace any retaining clips (skew applications only).
6. Slide the stud shoe support through the shoe support bracket, place the washer on the stud and slide it through the side rail.

   The stud shoe support washer must be present to prevent the support bracket from splitting during installation and maintenance.
7. Place the shoe support bracket nut on the stud and tighten.
8. Replace any removed rollers.
9. Remove locks and tags and restore power and air supply to the conveyor section.
10. Set the pressure on the air pucks (diaphragms) to 10 PSI.
11. Listen for any air leaks from the new puck and correct if necessary.

Shoe Spreader Removal and Installation

WARNING

Before performing any maintenance or lubrication services, follow the Lockout/Tagout Procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or machine damage.

Removal

1. Turn off and lockout/tagout all power and air supply to the conveyor section.
2. Remove the rollers over the shoe where the maintenance is required.
3. Remove the shoe support bracket stud, washer and nut from the shoe support bracket.
4. You do not have to remove the shoe support Bracket from the side rail.
5. Lift the shoe up and off of the shoe support bracket.
6. Remove the Shoe Spreader Fasteners (4 ea.) from the accumulator shoe rails and remove the spreader, see Figure 6 - 51.
7. Perform required repair/replacement/maintenance.

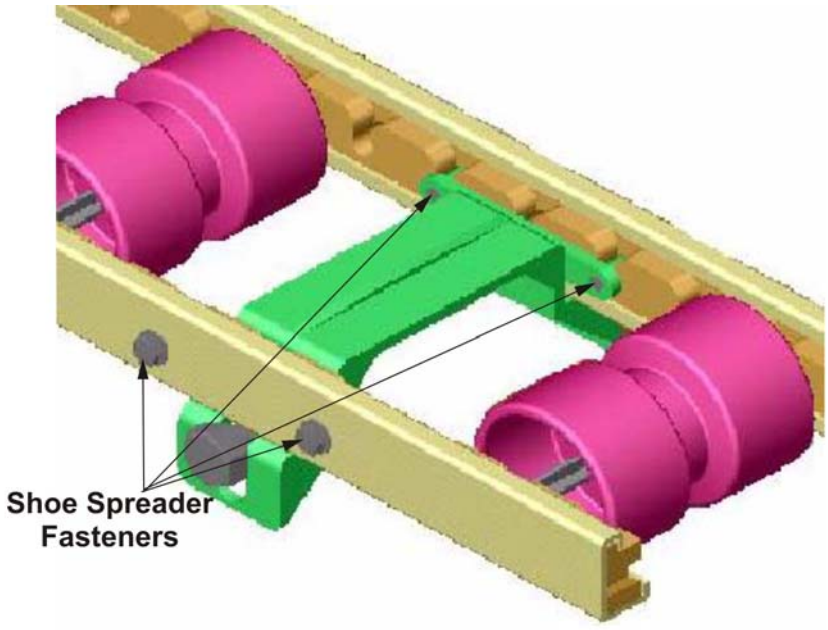


Figure 6 - 51 Shoe Spreader Removal

Installation

1. Replace the shoe spreader and the Shoe Spreader Fasteners (4 ea.) in the Accumulator Shoe Rails, see Figure 6 - 51.
2. Place the shoe on the shoe support bracket.
3. Replace the shoe support bracket stud, washer and nut in the shoe support bracket and tighten.
4. Replace the rollers over the shoe where the maintenance was performed.
5. Remove locks and tags and restore power and air supply to the conveyor section.

Pressure Roller Removal and Installation

⚠WARNING

Before performing any maintenance or lubrication services, follow the Lockout/Tagout Procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or machine damage.

Use the following procedures to remove and replace damaged pressure rollers.

Removal

1. Turn off and lockout/tagout all power and air supply to the conveyor section.
2. Remove rollers as needed to gain access to the pressure shoe and rollers.
3. To remove the old roller, lift up on the axle and lift it out of the Axle Retainer, see Figure 6 - 52. (Pulling or pushing on the roller body can damage the axle.)

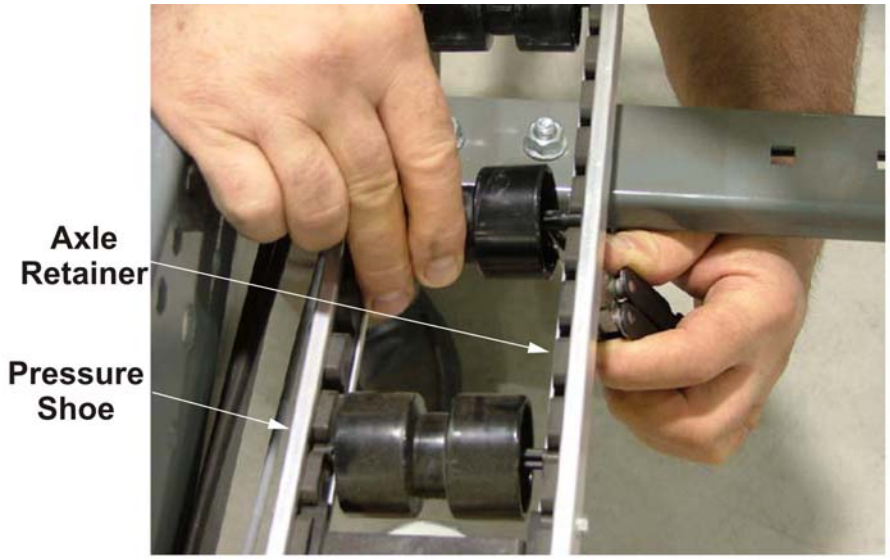


Figure 6 - 52 Pressure Roller Removal

Installation

⚠CAUTION

Follow all of the steps in this section. Pressing down on the roller can break the axle.

1. Tilt the pressure roller slightly and insert one end of the axle into the lower portion of the Axle Retainer, see Figure 6 - 53.
2. Lay the axle on the opposite end of the pressure spool, on the top of the adjacent slot in the Axle Retainer directly across from the where the axle is to be seated.
3. Press down on the axle with your thumb or a suitable tool to seat it in the axle retainer.
4. Replace the carrier rollers that were removed to gain access.
5. Remove locks and tags and restore power and air supply to the conveyor section

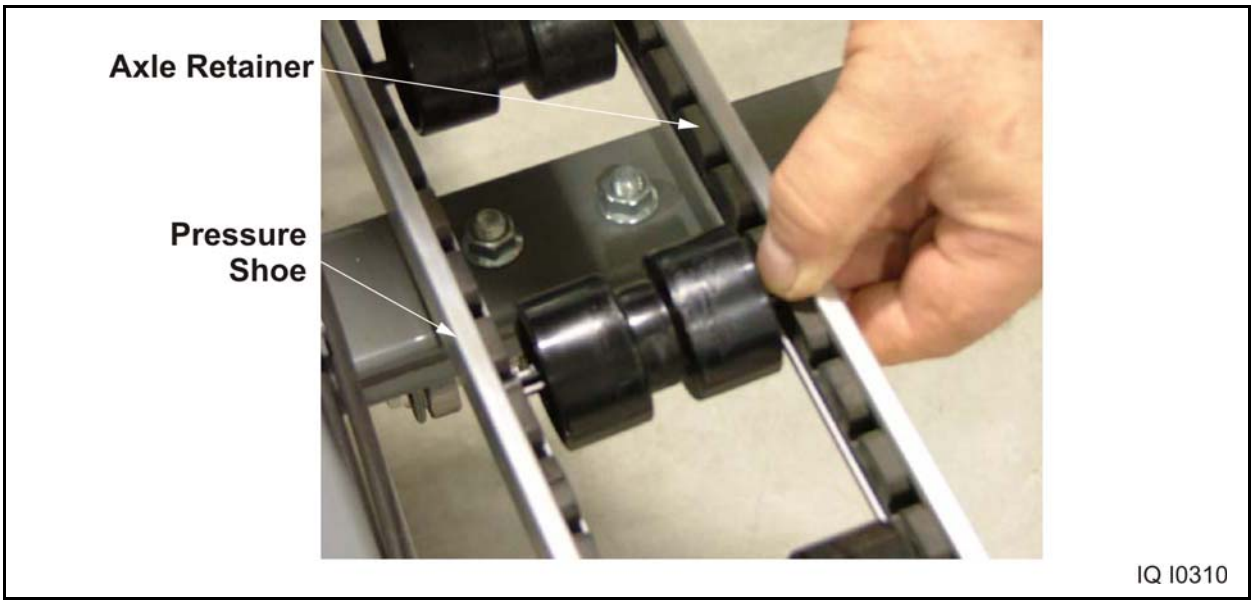


Figure 6 - 53 Pressure Roller Installation

Drive Unit Idler Pulley Removal and Installation

WARNING

Before performing any maintenance or lubrication services, follow the Lockout/Tagout Procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or machine damage.

If there is a need to change out any of the idler pulleys on the drive, it is not necessary to detach the drive from the conveyor bed frame. There are six pulleys installed on the drive. These include two flat faced pulleys, two grooved idler pulleys, and two grooved pulleys on the dual idler take-up assembly.

Removal

1. Turn off and lockout/tagout all power and air supply to the conveyor section.
2. Remove carrier rollers and pressure rollers as needed to gain access to the idler pulleys.
3. Remove the individual Idler Pulleys by unbolting them from both sides of the drive and pulling them out through the top, see Figure 6 - 54.

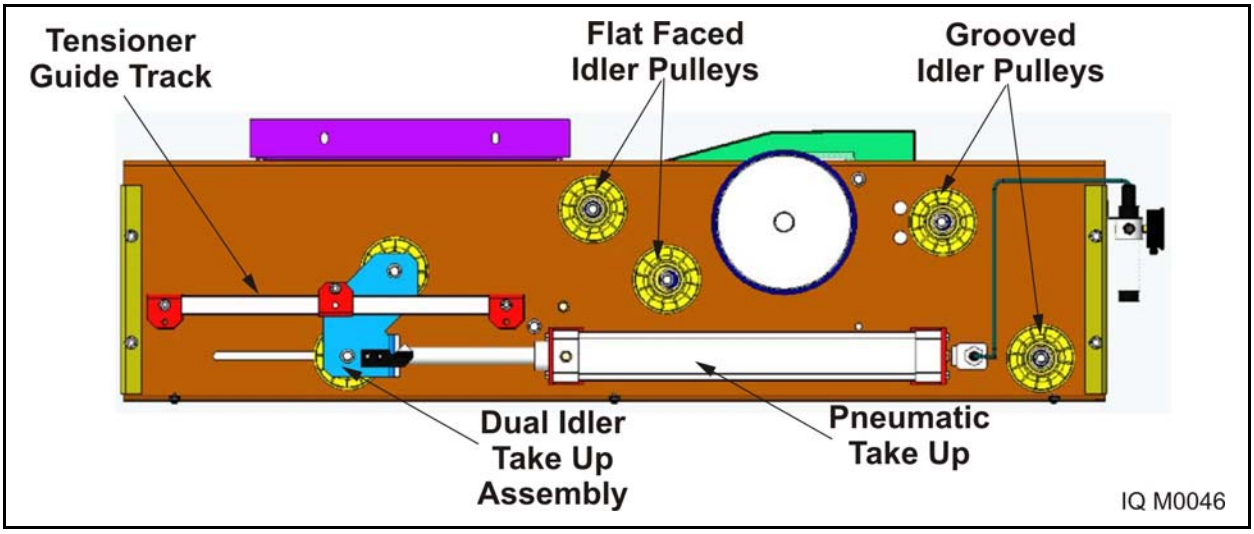


Figure 6 - 54 Drive Section (drive cover removed for clarity)

Installation

1. Install the individual Idler Pulleys into the top of the drive and bolt them in place from both sides of the drive, see Figure 6 - 55.
2. Replace any removed carrier rollers and pressure rollers.
3. Remove locks and tags and restore power and air supply to the conveyor section.

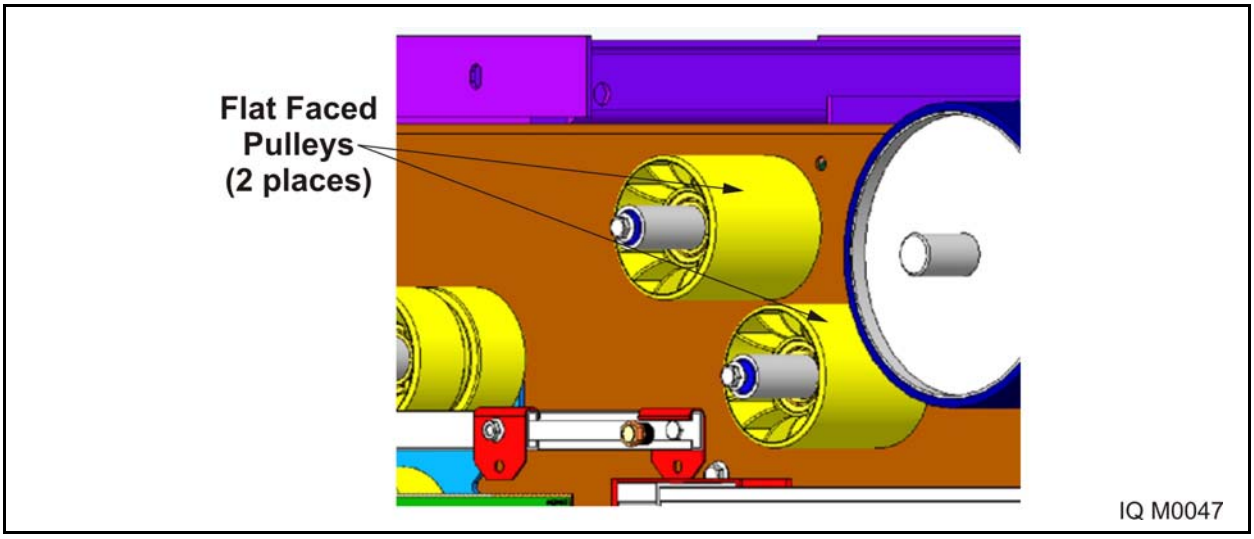


Figure 6 - 55 Flat Faced Pulleys on Drive (drive cover removed for clarity)

Take Up Assembly Idler Pulley Removal and Installation

WARNING

Before performing any maintenance or lubrication services, follow the Lockout/Tagout Procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or machine damage.

Removal

1. Turn off and lockout/tagout all power and air supply to the conveyor section.
2. Remove carrier rollers and pressure rollers as needed to gain access to the take up assembly idler pulleys, see Figure 6 - 56.

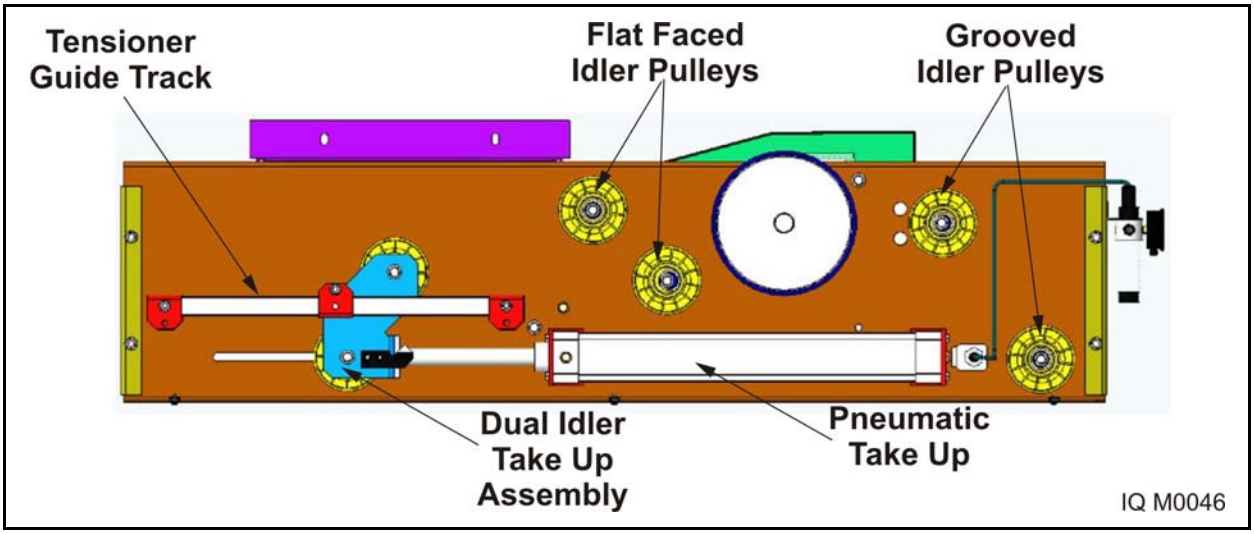


Figure 6 - 56 Drive Section (drive cover removed for clarity)

3. Unbolt the two Take Up Nuts from the Take Up Bracket that mounts the dual idler take up to the pneumatic take up assembly, see Figure 6 - 57.

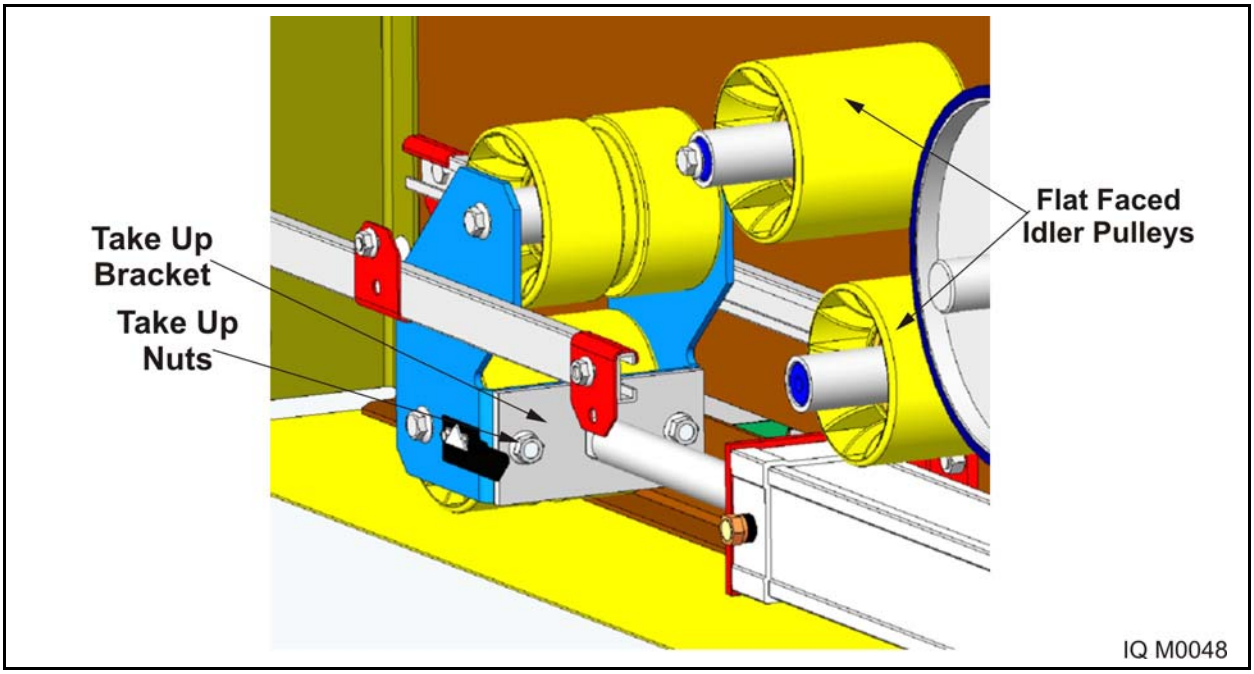


Figure 6 - 57 Take Up Bracket w/Bolts

4. Remove the Guide Track Bolts that inhibit the Tensioner Guide Tracks from sliding; there are normally one or two bolts per side, see Figure 6 - 58.

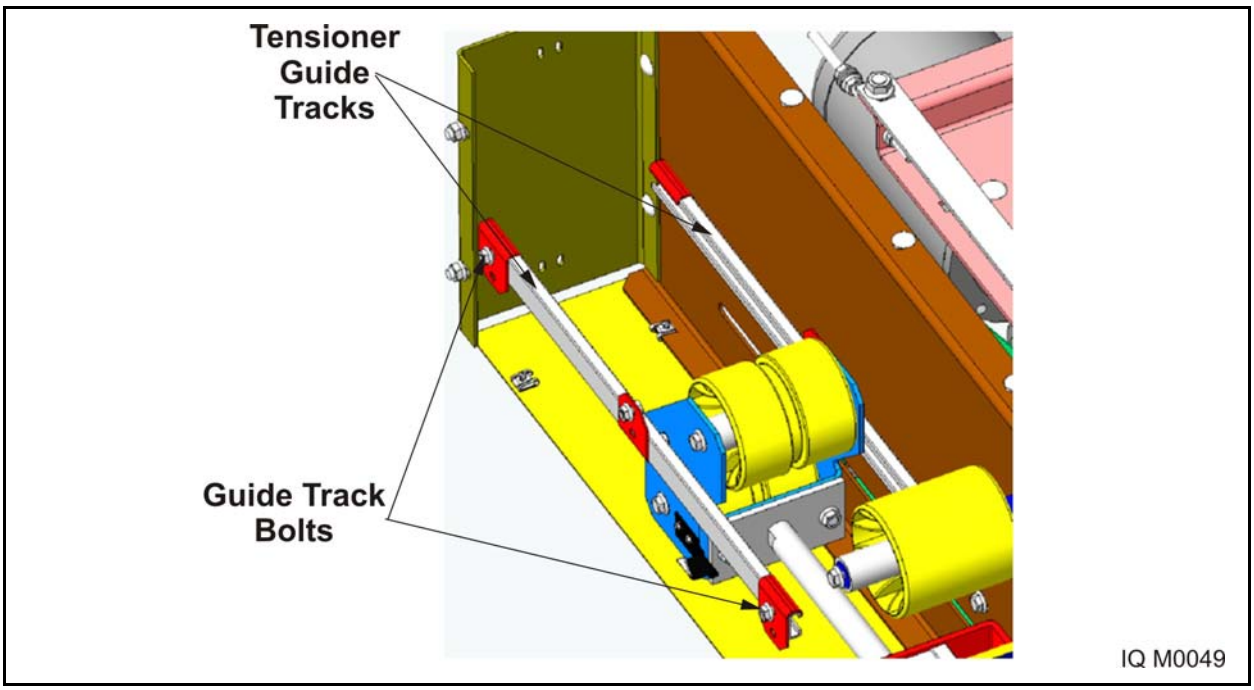


Figure 6 - 58 Tensioner Guide Tracks

5. Slide the guide tracks enough to free the dual idler take up assembly, see Figure 6 - 59.

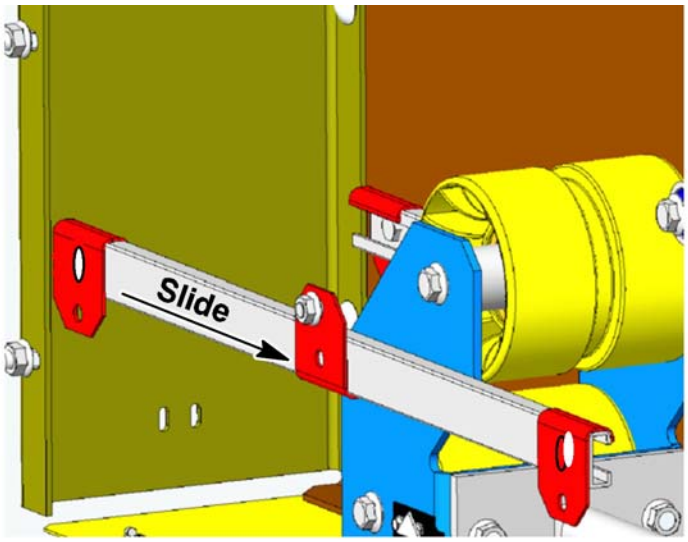


Figure 6 - 59 Tensioner Guide Tracks (freeing the dual idler take up assembly)

6. Lift the dual idler take up assembly out of the top of the drive, see Figure 6 - 60.
7. Unbolt the idler pulleys from the dual idler take up assembly and remove.

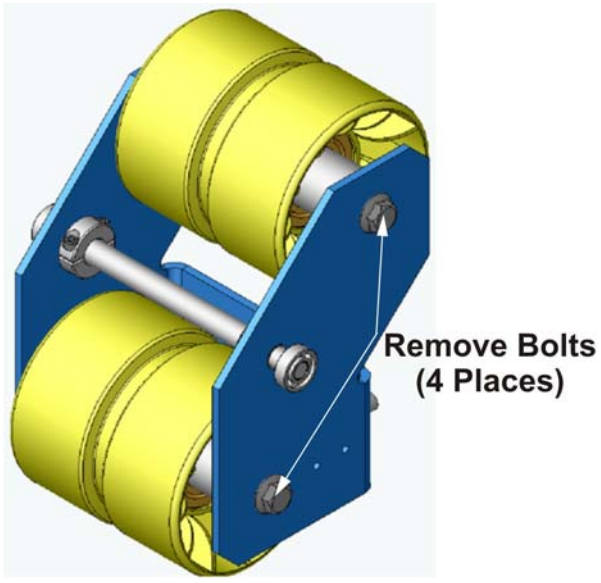


Figure 6 - 60 Removing the Dual Idler Take Up Assembly

Installation

1. Bolt the idler pulleys into the dual idler take up assembly, see Figure 6 - 61.

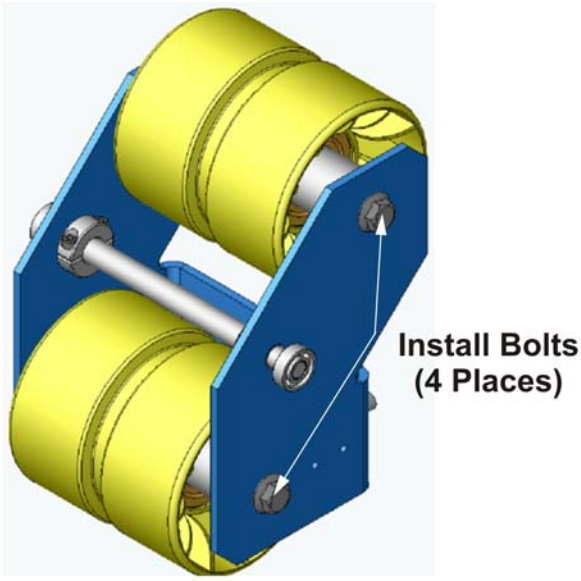


Figure 6 - 61 Installing the Dual Idler Take Up Assembly

2. Lower the dual idler take up assembly into the top of the drive assembly.
3. Install (slide) the dual idler take up assembly onto the guide tracks, see Figure 6 - 62.

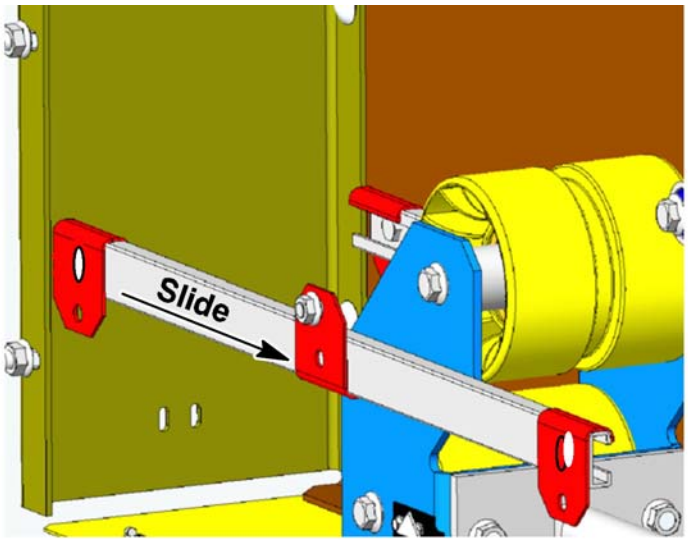


Figure 6 - 62 Tensioner Guide Tracks (installing the dual idler take up assembly)

4. Install the Guide Track Bolts that inhibit the movement of the Tensioner Guide Tracks; there are normally one or two bolts per side, see Figure 6 - 63.

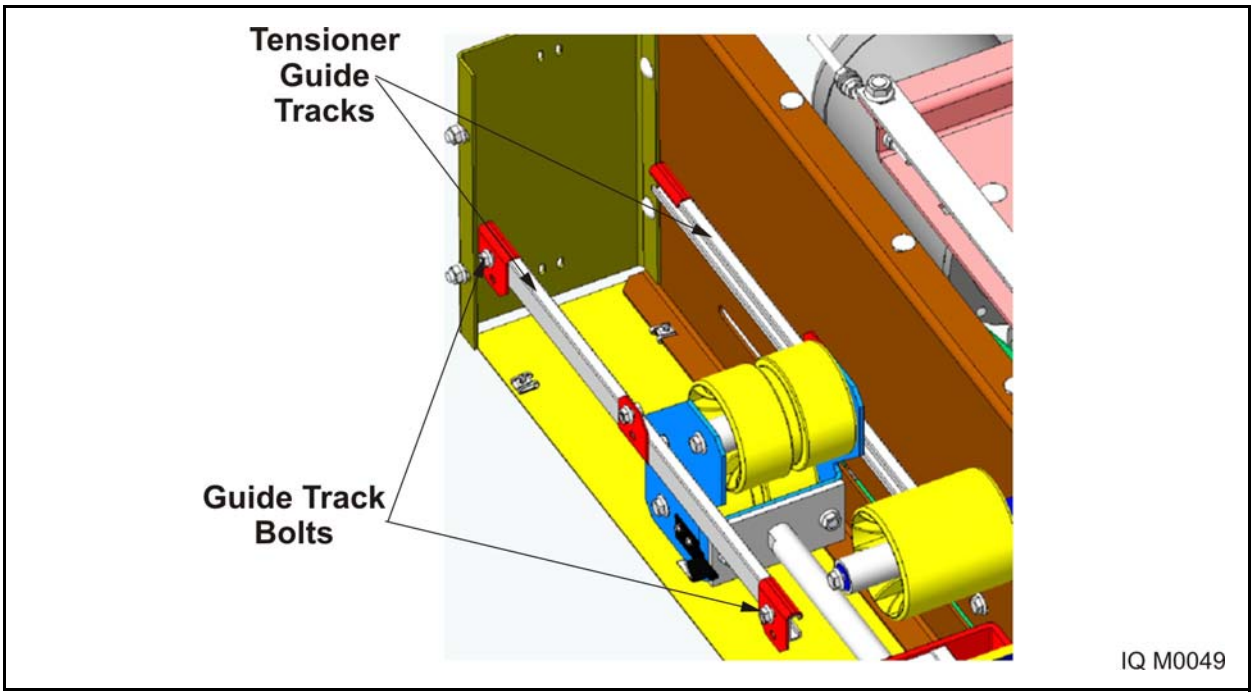


Figure 6 - 63 Tensioner Guide Tracks (installing the guide track bolts)

5. Install the two take up nuts from the take up bracket that mount the dual idler take up to the pneumatic take up assembly and tighten.
6. Route the belt as required.
7. Reestablish air pressure to the conveyor section to actuate the pneumatic tensioner and place tension on the belt.
8. Install carrier rollers and pressure rollers that were removed.
9. Remove locks and tags and restore power and air supply to the conveyor section.

End Idler Pulley and Bracket Removal and Installation

⚠WARNING

Before performing any maintenance or lubrication services, follow the Lockout/Tagout Procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or machine damage.

Removal

1. Turn off and lockout/tagout all power and air supply to the conveyor section.
2. Remove carrier rollers as needed to gain access to the End Idler Pulley, see Figure 6 - 64.
3. Make sure the air pressure to the pneumatic tensioner has been released to relieve tension on the belt.
4. Slide the belt off of the Idler Pulley.
5. Remove the two mounting bolts and nuts holding the Idler pulley bracket to the spreader and remove it
6. Remove the Idler pulley from the Idler pulley bracket by removing the Idler Pulley bolt.

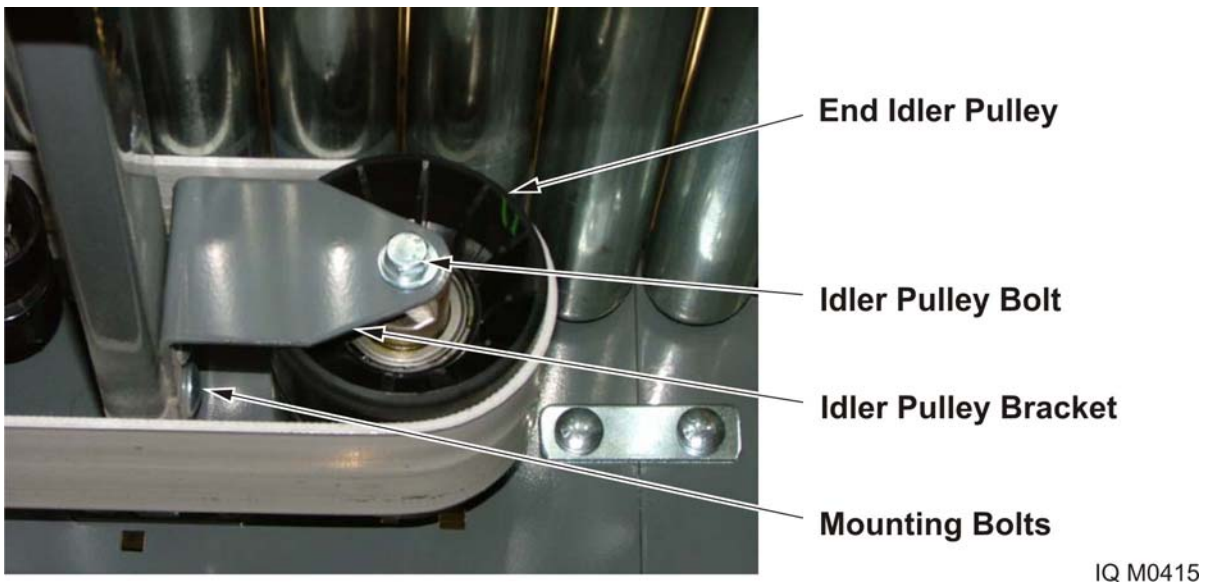


Figure 6 - 64 End Idler Pulley Adjustment

Installation

1. Install the End Idler Pulley into the Idler Pulley Bracket by installing the Idler Pulley Bolt, see Figure 6 - 64.
2. Install the two bolts and nuts that mount the Idler Pulley Bracket to the spreader.
3. Slide the belt onto the End Idler Pulley.
4. Unlock and turn on the air supply to the pneumatic tensioner to place tension on the belt.
5. Replace any carrier rollers as necessary.
6. Remove locks and tags and restore power to the conveyor section.

⚠ WARNING

Before performing any maintenance or lubrication services, follow the Lock-out/Tagout Procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or machine damage.

Belt Return Supports Removal and Installation

⚠WARNING

Before performing any maintenance or lubrication services, follow the Lockout/Tagout Procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or machine damage.

Removal

1. Turn off and lockout/tagout all power and air supply to the conveyor section.
2. Remove carrier rollers as needed to gain access to the Belt Return Supports.
3. Remove the Socket Head Bolt and Flange Nut from the belt return, see Figure 6 - 65.

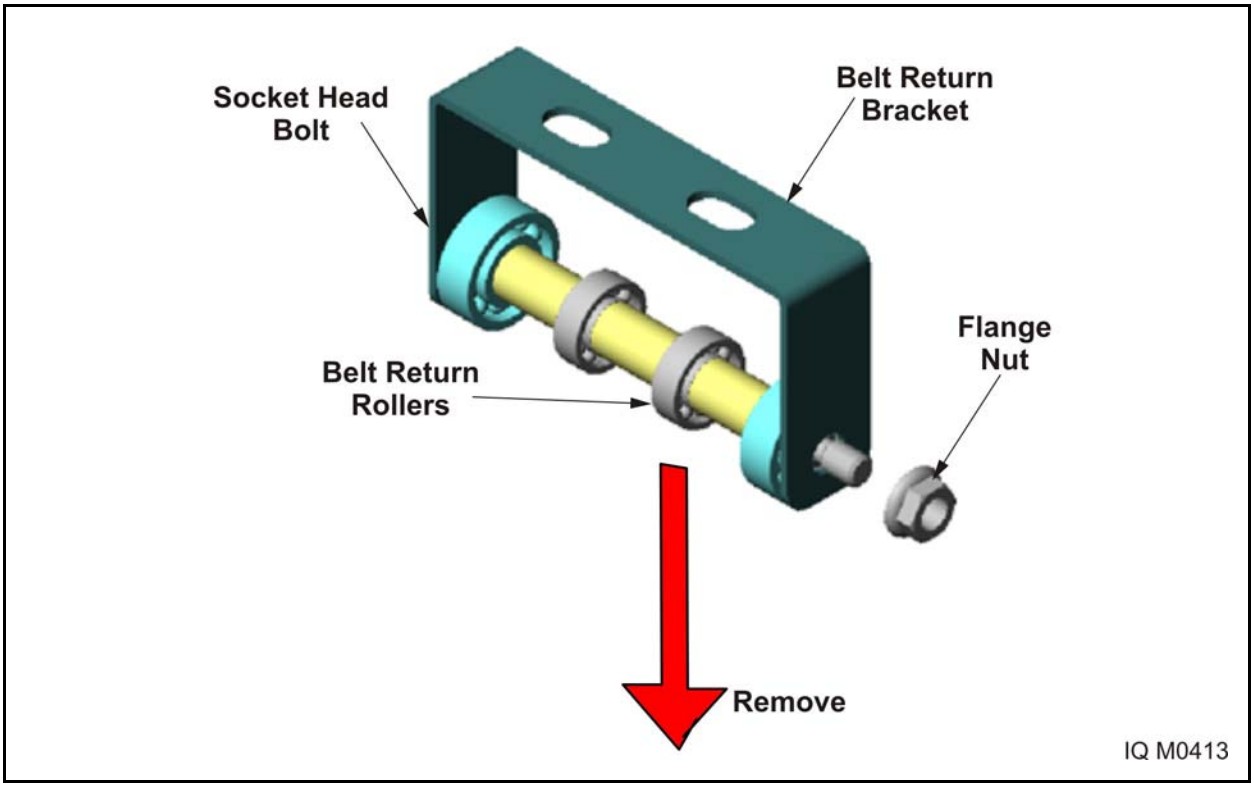


Figure 6 - 65 Belt Guide Removal

7. Remove the Belt Return Rollers from the belt return guide.
8. Remove the belt return bracket mounting bolts from the spreader to remove the bracket.

Installation

1. Mount the Belt Return Bracket to the spreader, see Figure 6 - 66.
2. Insert the Socket Head Bolt through one side of the Belt Return Bracket and thread it through the Belt Return Rollers, making sure the belt is positioned above the Belt Return Rollers.
3. Finish inserting the Socket Head Bolt through the other side of the Belt Return Bracket and install the Flange Nut.
4. Tighten the Flange Nut on the Socket Head Bolt.
5. Replace any carrier rollers that were removed.
6. Remove locks and tags and restore power and air supply to the conveyor section.

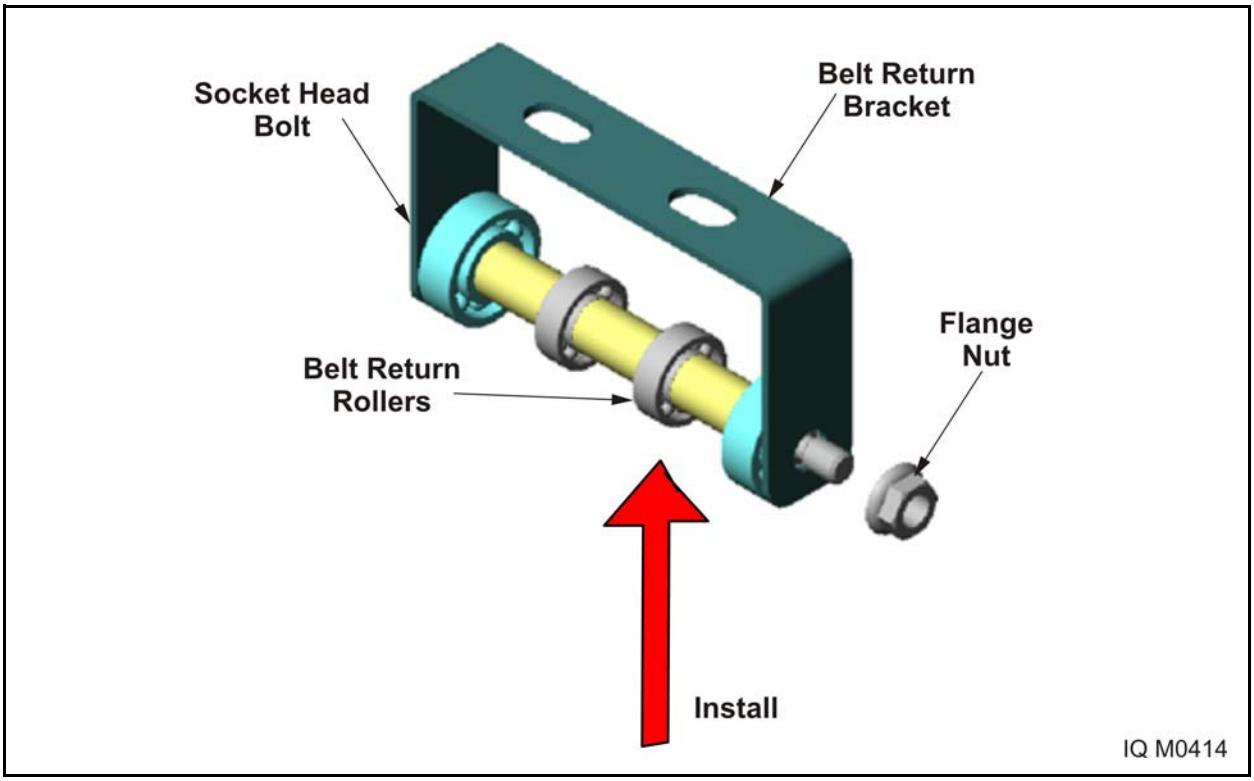


Figure 6 - 66 Belt Guide Installation

Photo Eye Removal and Installation

WARNING

Before performing any maintenance or lubrication services, follow the Lockout/Tagout Procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or machine damage.

Removal

1. Turn off and lockout/tagout all power and air supply to the conveyor section, including the photo eye power source.
2. Disconnect the photo eye cable.
3. Loosen the Ball Mount Clamping Screw, see Figure 6 - 67.
4. Pull the Photo Eye out of the ball mount.
5. Remove the Ball from the Photo Eye.

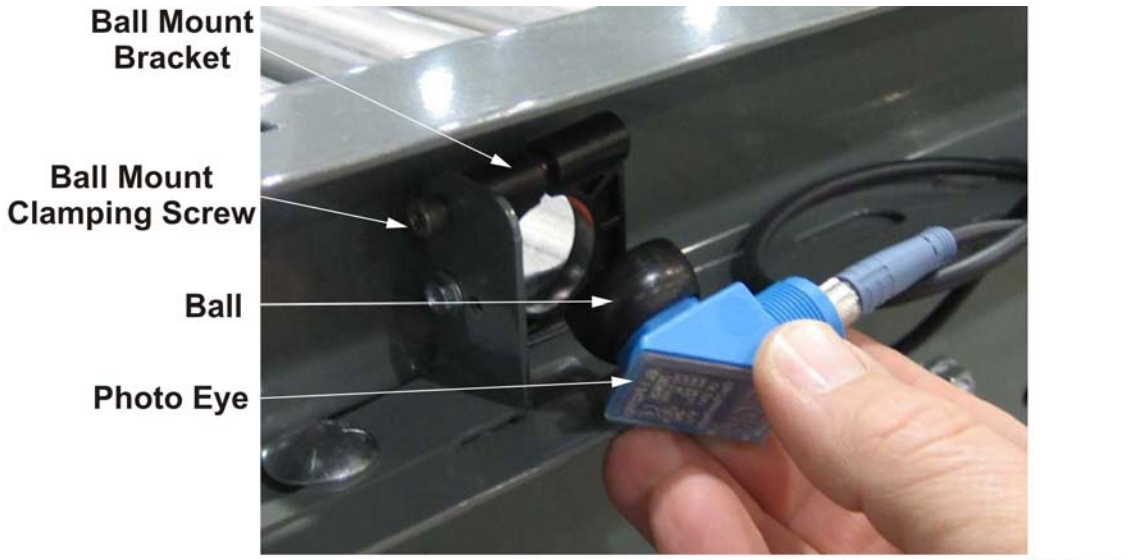


Figure 6 - 67 Photo Eye Removal

Installation

1. Install the Ball onto the Photo Eye, see Figure 6 - 67.
2. Insert the Photo Eye into the Ball Mount Bracket.
3. Tighten the Ball Mount Clamping Screw.
4. Connect the photo eye cable.
5. Remove locks and tags and restore power and air supply to the conveyor section.

Photo Eye Ball Mount Removal and Installation

Removal

1. Turn off and lockout/tagout all power and air supply to the conveyor section.
2. Remove the Ball Mount Clamping Screw from the Ball Mount and remove the Mounting Screw, see Figure 6 - 68.
3. Remove the Ball Mount and Photo Eye from the side guide.
4. Pull the Photo Eye out of the Ball Mount.

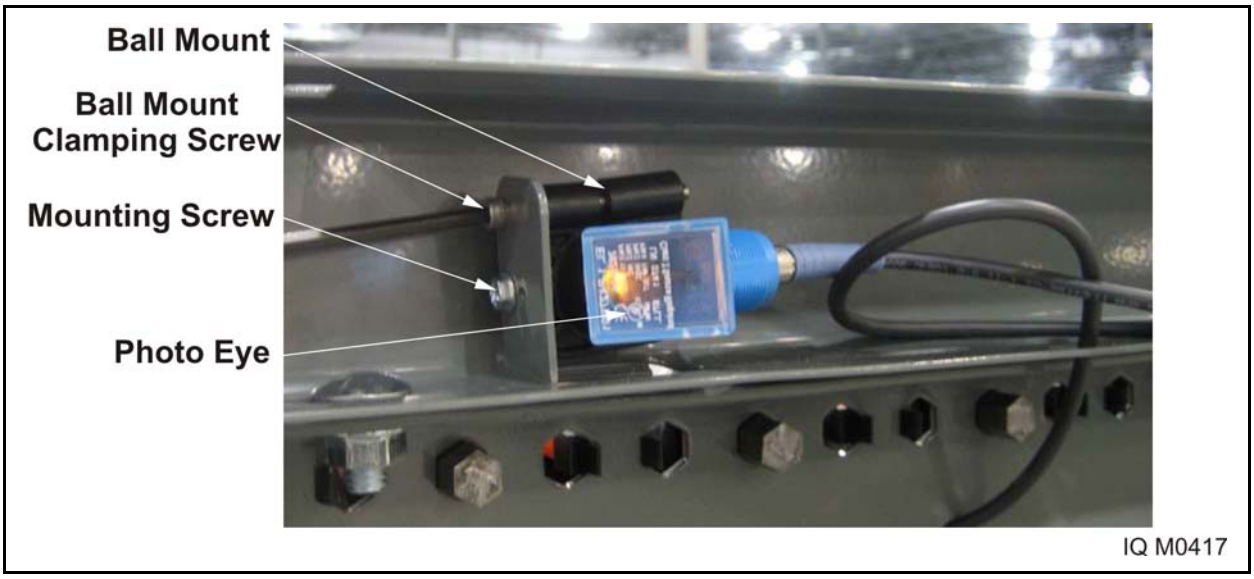


Figure 6 - 68 Photo Eye Ball Mount

Installation

1. Align the Ball Mount with the mounting holes on the bracket in the side guide and insert the Ball Mount Clamping Screw and the Mounting Screw, see Figure 6 - 68.
2. Tighten the Mounting Screw but leave the Ball Mount Clamping Screw loose.
3. Insert the Photo Eye into the Ball Mount and tighten the Ball Mount Clamping Screw.
4. Remove locks and tags and restore power and air supply to the conveyor section.
5. Align the Photo Eye to the reflector.

Reflector Removal and Installation

Removal

1. Remove the Mounting Screw and remove the Reflector from the side guide bracket, see Figure 6 - 69.
2. Check the reflector for cleanliness or damage and replace if necessary.

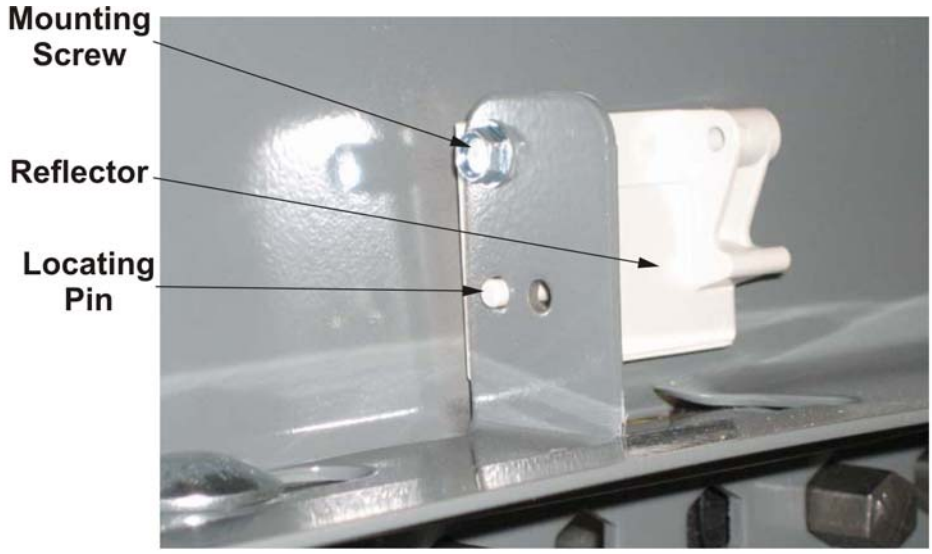


Figure 6 - 69 Reflector Replacement

Installation

1. Place the Locating Pin in the lower hole of the bracket and secure the Reflector to the bracket with the Mounting Screw, see Figure 6 - 69.
2. Realign the line photo eye with the Reflector if required.

Photo Eye Alignment

Once power has been supplied to the 24VDC power supply, the photo eyes may be aligned with their reflectors. The photo eyes are mounted using ball mount brackets. These brackets allow for easy alignment of the photo eyes.

Use the following procedure to align each photo eye:

1. If needed, clean the photo eye lens and the reflector with a soft cloth dampened with water or isopropyl alcohol. Do not use any other type of solvent.
2. Make sure that the photo eye can “lock on” to the reflector. The easiest method of doing this is to hold a reflector close to the photo eye and make sure the indicator light stays on without flashing.

   If this doesn't work, use a different reflector, flip the reflector, or, if the reflector works on other photo eyes, replace the photo eye.
3. Make sure that the Mounting Screw is snug and holds the Ball Mount firmly in place, see Figure 6 - 70.
4. Loosen the Ball Mount Clamping Screw using a 9/64-inch hex key.
5. Pre-orient the ball mount bracket so the Photo Eye tends to aim high (the same position it would tend to “jiggle” into if it were loose).

Figure 6 - 70 Photo Eye Mounting

6. While holding the bracket in this position, begin aiming the photo eye until the Alignment Indicator comes on solid, see Figure 6 - 71.

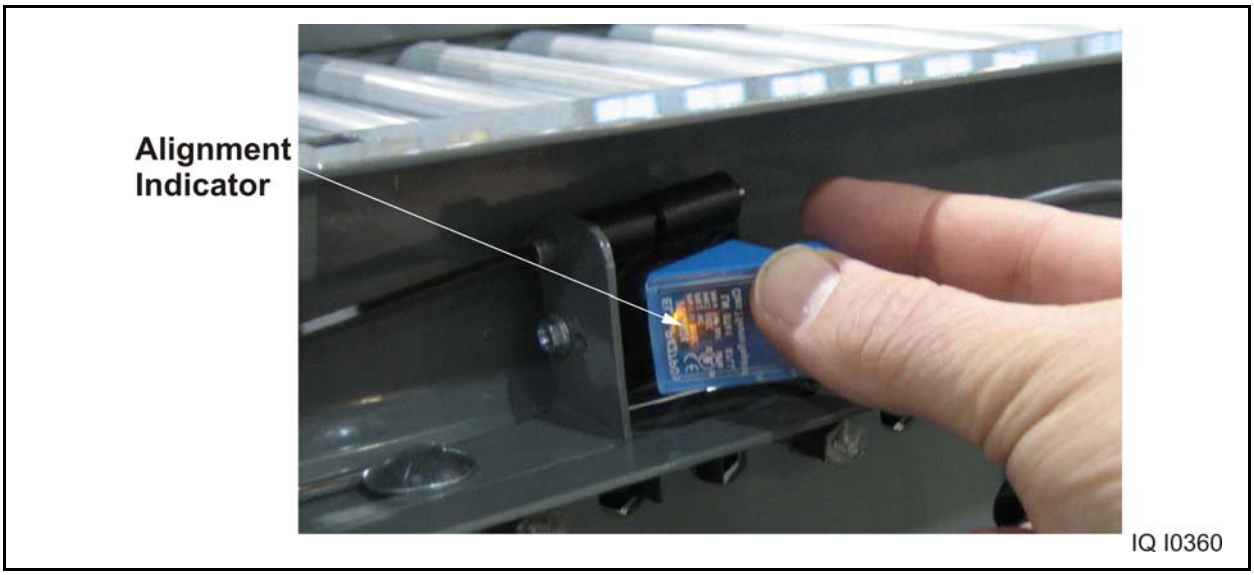


Figure 6 - 71 Photo Eye Alignment

7. Tighten the ball mount clamping bolt until the ball mount is snug. It is not necessary to tighten the ball mount clamp bolt until the ball mount is squeezed as tight as it can get. This will actually cause the photo eye to go out of alignment.
8. Repeat this procedure for the remaining photo eyes.

Replacing Carrier Rollers

WARNING

Before performing any maintenance or lubrication services, follow the Lockout/Tagout Procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or machine damage.

1. Turn off and lockout/tagout all power to the conveyor.
2. Disconnect the air supply to release the pressure shoes and subsequent pressure on the carrier rollers.
3. Use a tool to push in the spring loaded axle on the roller to free one end of the axle from the frame of the conveyor.
4. Carefully disengage the opposite end of the roller from the frame and remove. Make sure the axle is not pinched on the frame causing damage during removal.
5. Insert the axle of the replacement roller through the hole on the conveyor frame.
6. Use a tool to compress the spring loaded axle on the roller and lower the roller into its proper position.
7. Release the spring loaded axle and make sure it fully engages in the hole in the frame.
8. Reconnect the air supply.

Skew Guide Removal and Installation

WARNING

Before performing any maintenance or lubrication services, follow the Lockout/Tagout Procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or machine damage.

IntelliQ® Accumulation Conveyor intermediates with skewed roller configurations require skew guides to keep the IntelliQ® Accumulation Conveyor drive belt properly tracked on the pressure rollers, see Figure 6 - 72.

The direction of the skew determines the position of the roller and the clip on the skew guide. For the purpose of this manual the roller is located on the right side of the skew guide, close to the rail, and the clip is on the opposite side of the Stud shoe support. If the skew was to be reversed the clip would be close to the rail, positioned between the washer and the support bracket and the roller would be closer to the inside of the conveyor.

NOTE: Skewing rollers is not recommended. The recommended method for aligning product to one side of the conveyor is the placement of a V-Belt conveyor with a hard skew immediately upstream from the IntelliQ® Accumulation Conveyor.

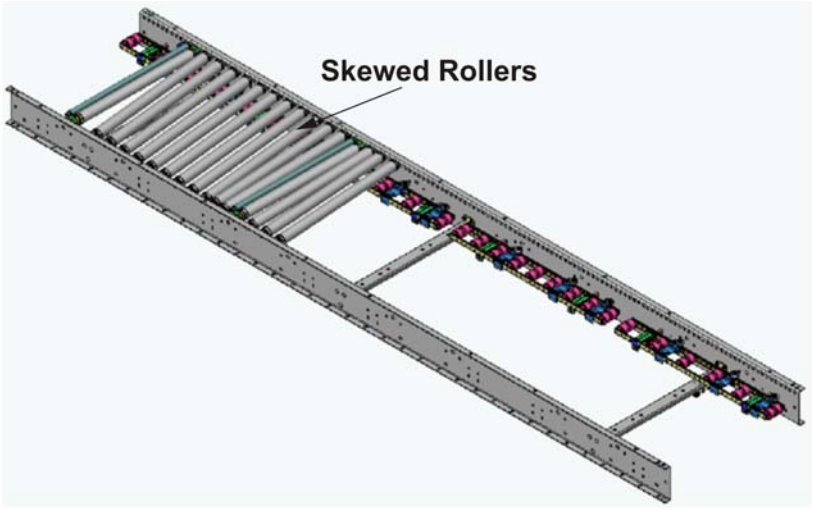


Figure 6 - 72 IntelliQ® Accumulation Conveyor Skew Assembly

The IntelliQ® Accumulation Conveyor is designed for a 1-inch roller offset skew, a 2-inch roller offset skew, and a 3-inch maximum offset skew. There must be a minimum of three Skew Guides per IntelliQ® Accumulation Conveyor Skew Guide Zone per Pressure Shoe, see Figure 6 - 73.

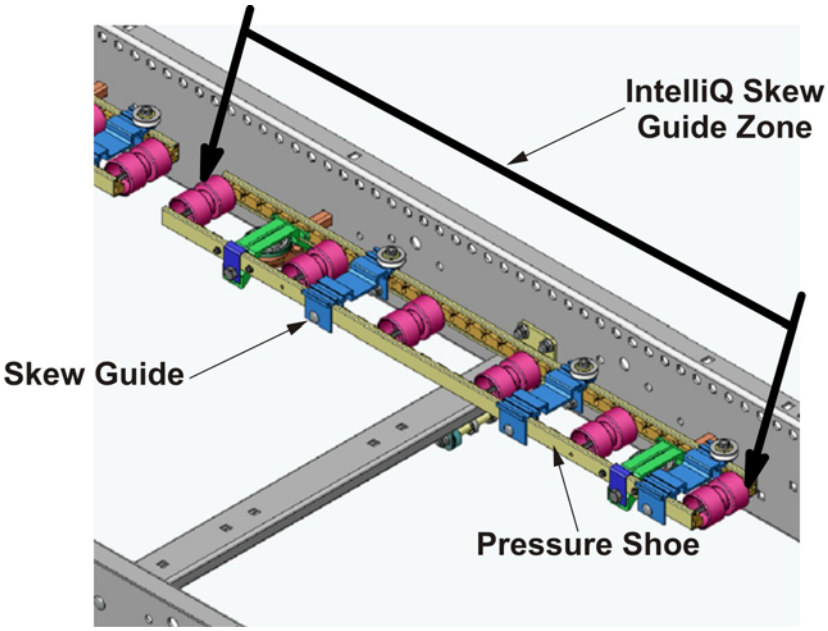


Figure 6 - 73 Skew Guide Zone

The skew Guide Roller must be placed on the side of the drive belt that is opposite the skew direction, see Figure 6 - 74. The Skew Guide slides on over the shoe rail and is bolted underneath it. The Skew Guide and the Guide Roller need to be adjusted so that they are directly between the carrier rollers.

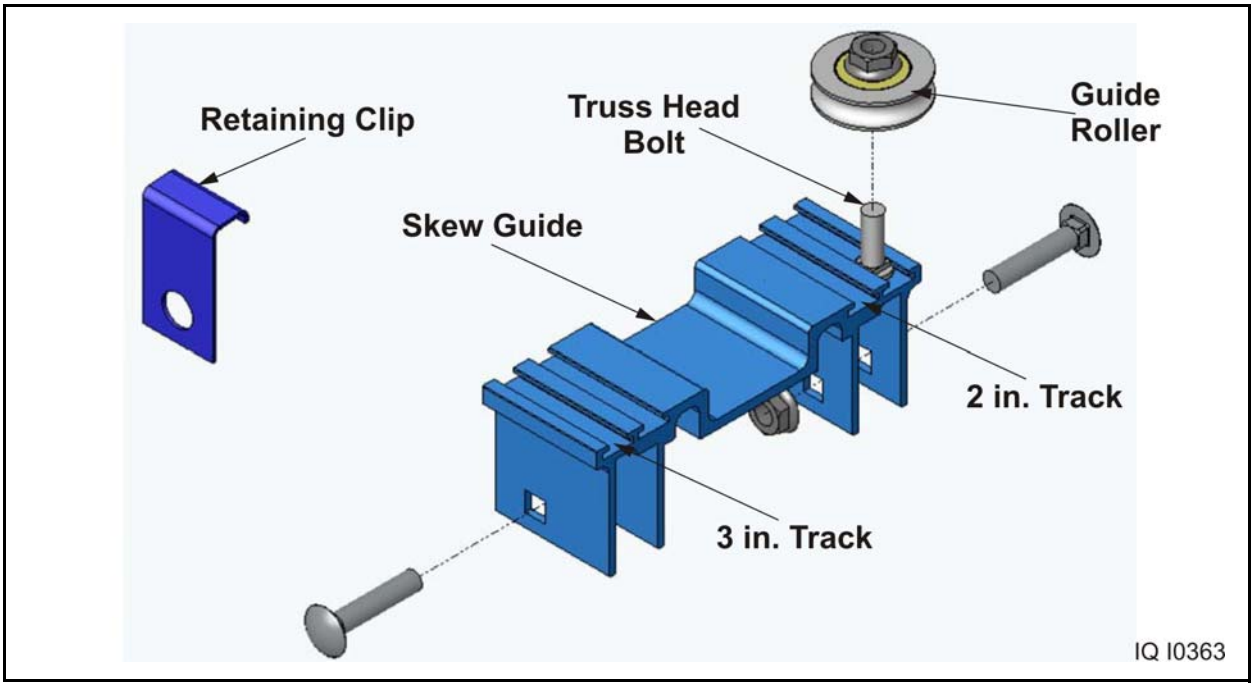


Figure 6 - 74 Skew Guide Assembly

Retaining Clips are used to restrict the movement of the pressure shoe, see Figure 6 - 75. This movement is created by the opposing force of the skewed rollers against the drive belt. The Retaining Clips are mounted on the Shoe Rail opposite the guide roller. To install the Retaining Clip, the Stud Shoe Support must be removed. Once the Stud Shoe Support is removed, insert the Retaining Clip, attaching it to the Shoe Rail, and re-install the Stud Shoe Support.

Removal

1. Turn off and lockout/tagout all power and air supply to the conveyor section.
2. Remove the rollers over the shoe where the maintenance is required.
3. Release all air pressure to the pneumatic tensioner to release tension on the belt.
4. Remove the Stud Shoe Support and its washer and nut, see Figure 6 - 75.
5. Remove the Retaining Clip.
6. Remove the two carriage bolts and flange nuts that secure the Skew Guide to the shoe.
7. Remove the Skew Guide by lifting it up and off the shoe.

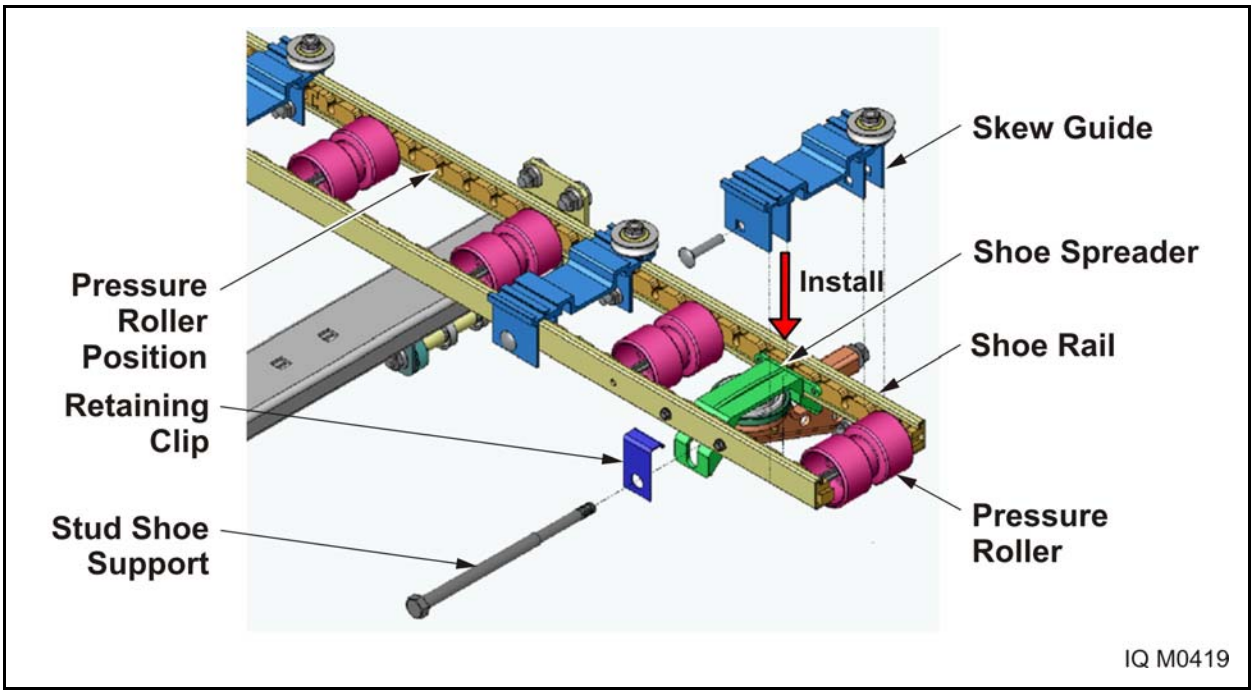


Figure 6 - 75 Skew Guide Removal

Installation

1. Place the Skew Guide in place on top of the shoe, see Figure 6 - 76.
2. Install the two Carriage Bolts and Flange Nuts that secure the Skew Guide to the shoe.

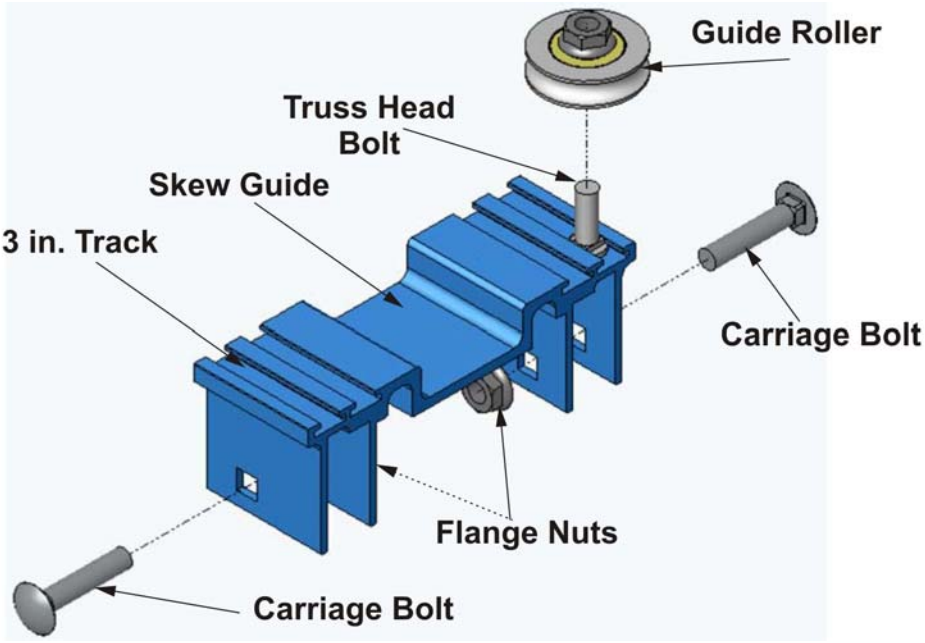


Figure 6 - 76 Skew Guide Assembly

3. Install the Retaining Clip on the Stud Shoe Support, slide the stud through the shoe support and its washer and install the flange nut, see Figure 6 - 77.

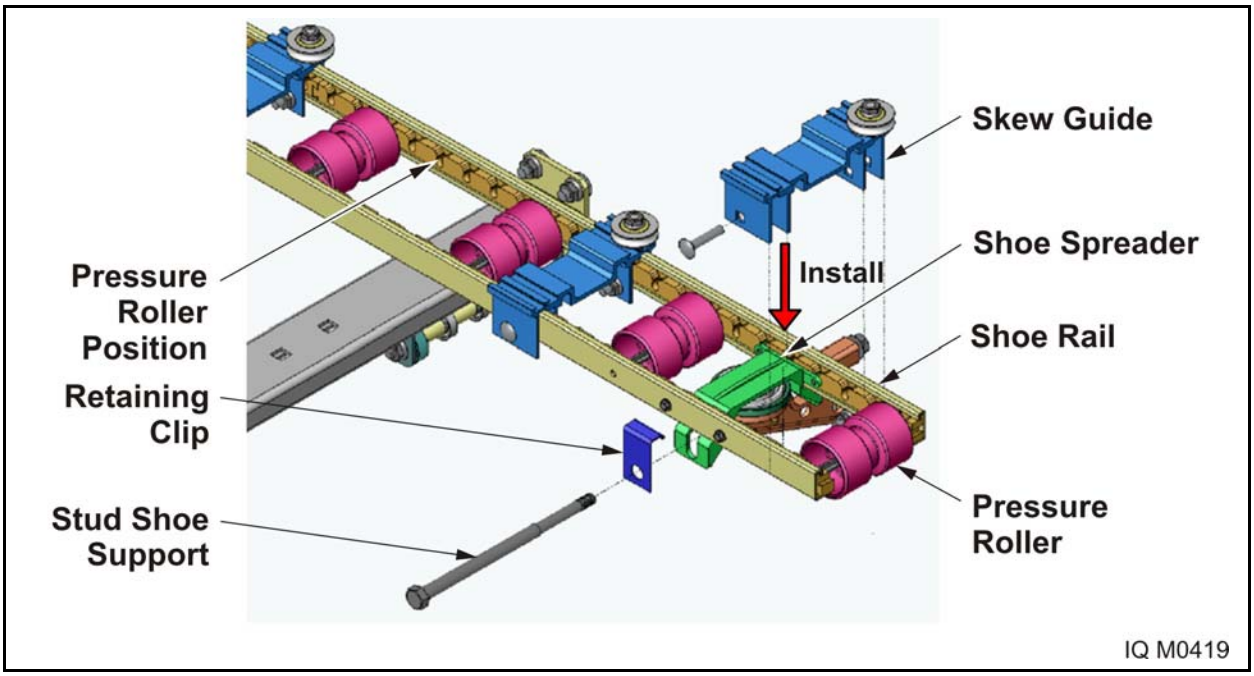


Figure 6 - 77 Skew Guide Clip Placement

4. Reestablish air pressure to put pressure on the belt.
5. Install the rollers over the shoe where the installation was required.
6. Remove locks and tags and restore power and air supply to the conveyor section.

Guide Roller Removal and Installation

⚠WARNING

Before performing any maintenance or lubrication services, follow the Lockout/Tagout Procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or machine damage.

Removal

1. Turn off and lockout/tagout all power and air supply to the conveyor section.
2. Remove the rollers over the shoe where the maintenance is required.
3. Release all air pressure to the pneumatic tensioner to release tension on the belt.

4. Remove enough rollers to allow access to the Skew Guide and the shoe.
5. Remove the Flange Nut from the Guide Roller Truss Head bolt, see Figure 6 - 78.
6. The Truss Head Bolt is a partially threaded bolt on which the Guide Roller is installed. The track, machined in the Skew Guide will hold the bolt tightly to allow for the removal of the Guide Roller. The head of the bolt is square and slides into a track machined into the Skew Guide. To hold the Roller Guide in place a Flange Nut tightens against the bearing in the Guide Roller to hold the guide in place.
7. Remove the Guide Roller.

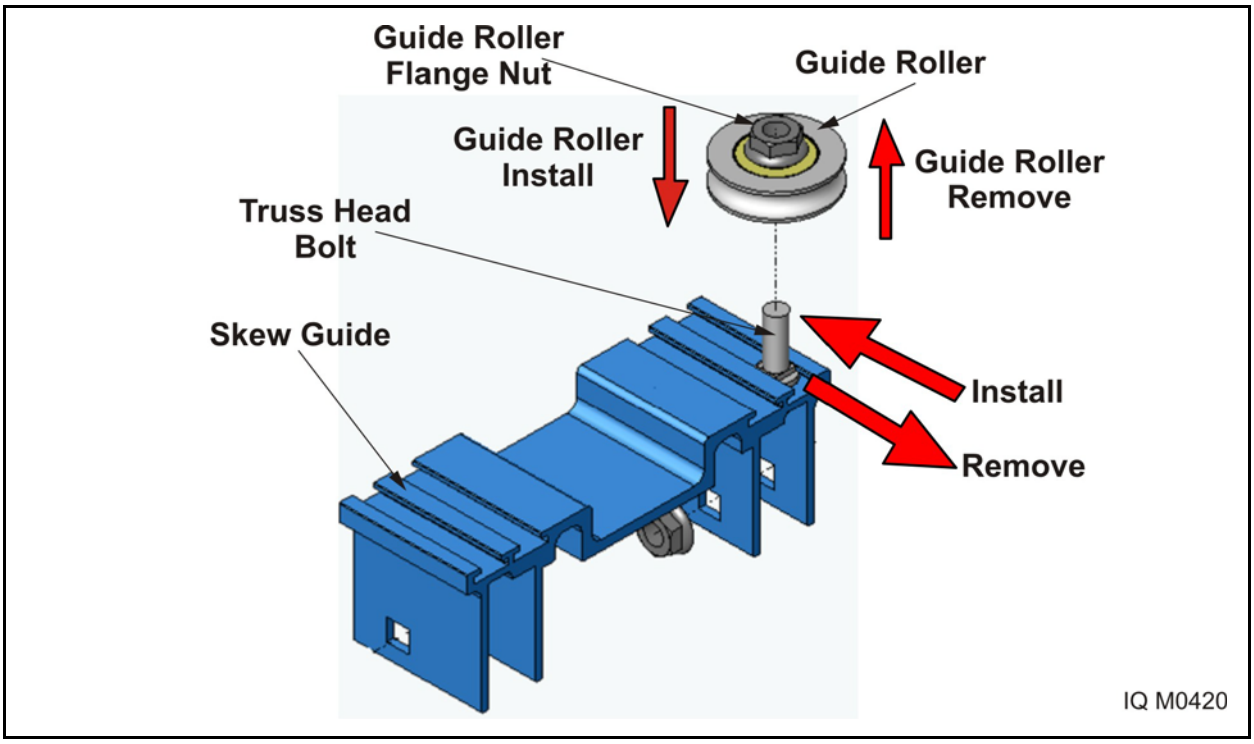


Figure 6 - 78 Roller Guide Removal

Installation

1. Slide the Truss Head Bolt into the appropriate slot in the Skew Guide, see Figure 6 - 78.
2. Slide the Guide Roller onto the truss nut and install the Guide Roller Flange Nut.
3. Reposition the belt and reestablish air pressure to the conveyor section to apply tension to the belt.
4. Replace the rollers that were removed to gain access to the Guide Roller.
5. Unlock and turn on power and the air supply to the conveyor section.

7 Preventive Maintenance

⚠WARNING

Before performing any maintenance or lubrication services, follow the lockout/tagout procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or equipment damage.

The satisfactory performance and reliability of this equipment is dependent upon a proficient preventive maintenance (PM) program with scheduled equipment inspections under normal operating conditions. Accurate records of maintenance and repairs will help to identify problem areas and repetitive problem patterns. It is imperative that adequate records be kept in connection with the preventive maintenance program. These records should contain the date of inspection, inspection results, equipment services, repair history, part replacement history, and any other information that will help to make the maintenance process more efficient and accurate. It is recommended that each conveyor have its own record. Properly kept, the conveyor record sheet will form a mechanical history of the equipment covered.

Preventive maintenance consists of regular service (lubrication, adjustments, cleaning, etc.). Part of preventive maintenance is becoming aware of potential problems by simply using your senses. Use your eyes to see potential component failure. Use your ears to listen for abnormal or louder than normal noises. Use your nose to smell a motor running abnormally warm in time to prevent its burnout. These sights, noises, and smells can be indicators of lack of lubrication, misalignment, or other potential trouble. Ignore them and you will be replacing a shaft, motor, or whatever does go out when a component is lacking proper preventive maintenance.

Only qualified maintenance specialists should maintain the mechanical, electrical and pneumatic portion of the conveyor.

Maintenance Precautions

⚠WARNING

You must read and understand these precautions completely before operating, setting up, installing, running, or performing maintenance on the equipment. Failure to follow this instruction may result in serious personal injury and/or equipment damage.

1. When testing operating performance, do not start the equipment until all operations and maintenance personnel are notified and clear of the unit being tested.
2. Be certain that required safety guards are never removed without authorization.
3. Never run the equipment under production conditions without safety guards in place.
4. Do not make any equipment repairs while the conveyor is running.
5. Keep hands, hair and clothing clear of any moving parts.
6. Never attempt to clear load jams while equipment is running.
7. Always use appropriate tools when making repairs or adjustments.
8. Observe all warning labels and follow plant safety rules.

Cleaning and Inspection

Generally, there are many reasons for cleaning:

1. To allow heat to dissipate (motors and gearboxes).
2. To prevent wear on moving parts.
3. To prevent binding.
4. For proper operation.
5. Operating personnel will most likely treat clean equipment with more care.

Any prescribed cleaning schedule should be modified as experience is gained. A thorough inspection should be performed while cleaning problem areas.

The total value of inspection procedures is determined largely by the consistency and regularity of the schedule. A definite interval of inspection must be established and obeyed. This is usually easier to accomplish if a “round robin” system of inspection is used. It is recommended that a general inspection that will ensure a thorough examination of each component and assembly contained in the system be done at least

once for each thirty day period of operation. Results of these general inspections should be documented in the conveyor record of the unit inspected.

The probability of mechanical/electrical problems increase during periods of heavy usage, so an additional inspection immediately before and after these periods is recommended.

Preventive Maintenance Check List

Daily Check List	Date:	Checked by:	Changes/ Repairs made:
Check with Conveyor Running			
Listen for abnormal noises that could indicate worn bearings in rollers, motors, reducers, etc.			
Listen for abnormal noises that could indicate mis-aligned or improperly adjusted O-belts.			
Check with Conveyor Shut Down			
Look for strings or other foreign material wrapped around bearings, shafts, or rollers. Remove all foreign material immediately.			
Look for shavings or belt dust under conveyor that would indicate misaligned or damaged components.			
Look for oil leakage that would indicate faulty bearings or seals in rollers, motors, reducers, etc.			
Check pneumatic regulators for proper setting and lis-ten for air leaks.			

Weekly Check List	Date:	Checked by:	Changes/ Repairs made:
Check with Conveyor Running			
Visually inspect belts and rollers for wear, improper alignment, or buildup of foreign materials and repair/clean as required.			
Visually inspect all motors.			
Check pneumatic water traps and drain as required.			
Inspect O-belts for wear or damage. Replace worn or damaged O-belts.			

Weekly Check List	Date:	Checked by:	Changes/ Repairs made:

Monthly Check List	Date:	Checked by:	Changes/ Repairs made:
Check with Conveyor Running			
Inspect mechanical belt lacing pins for wear or damage. Replace when the lacing has worn grooves through the pin coating (approximately 25% of the pin diameter) or if the pin is broken.			

6 Month Check List	Date:	Checked by:	Changes/ Repairs made:
Check with Conveyor Shut Down			
Clean and lubricate all drive chains according to the following temperature ranges (°F): 20 - 40: SAE 30W 40 - 100: SAE 40W 100 - 140: SAE 50W			
Check all set screws and tighten as necessary. These may work loose during normal operation.			
Check all bolted connections and tighten as needed. Bolted connectors may work loose during normal operation.			

Mechanical Components

⚠WARNING

Before performing any maintenance or lubrication services, follow the lockout/tagout procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or equipment damage.

Chains and Sprockets

Check the sprocket alignment periodically and correct any misalignment immediately. Wear on the inside of side bars, or on one side of a sprocket, is a definite indication of misalignment. Give reducers and gear motors (on indexing drives, or drives equipped with brakes) special attention to prevent drive sprocket mountings from becoming loose and shifting.

Normally, the drive section is shipped with the drive chain and guard installed. It is recommended that the chain guard be removed and the drive components checked for alignment and chain tension. Also check that all fasteners, keys and locking collars are in place and properly tightened.

It is a good practice to periodically clean and lubricate the chains. For correct chain tension, the deflection on the slack side should measure 5% of the sprocket center distance. Chains under too much tension are just as damaging to the conveyor as chains with too much slack.

⚠WARNING

Be sure to replace the drive guarding after inspection or maintenance. Failure to follow this instruction may result in serious personal injury and/or equipment damage.

Timing Belts and Pulleys

WARNING

Before performing any maintenance or lubrication services, follow the lockout/tagout procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or equipment damage.

Check timing belt pulley alignment periodically and correct any misalignment immediately. Wear on one or both sides of the belt are a definite indication of misalignment. Give reducers and gear motors (on indexing drives, or drives equipped with brakes) special attention to prevent drive pulley mountings from becoming loose and shifting.

Normally, the drive section is shipped with the drive belt and guard installed. It is recommended that the belt guard be removed and the drive components checked for alignment and belt tension. Also check that all fasteners, keys and locking collars are in place and properly tightened.

It is a good practice to periodically clean the belts and check belt tension. Belts that are too tight can be very harmful to the conveyor. For correct belt tension, the deflection on the slack side should measure 1/64 per inch of belt span (our standard length between pulley centers is about 20”, therefore the belt deflection with 4 lbs. of force is about 1/4 inch).

WARNING

Be sure to replace the drive guarding after inspection or maintenance. Failure to follow this instruction may result in serious personal injury and/or equipment damage.

Belt Maintenance

⚠WARNING

Before performing any maintenance or lubrication services, follow the lockout/tagout procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or equipment damage.

Most conveyor belting will perform satisfactorily if three basic rules are observed:

1. Keep belt properly tracked.
2. Prevent anything from dragging on belt.
3. Keep the belt and conveyor free of foreign material build-up.

All belting goes through a break-in period during which more frequent tracking adjustments are expected. To prevent damage to the belt from rubbing or roll-over, tracking adjustments must be made when the belt begins to wander from its normal track. Do not wait until it begins to rub before correcting. (See the Service and Repair section for Tracking instructions.)

Anything that drags on the belt will destroy it. Prevent this type of damage. If a belt is damaged by having the edge drag, clip all loose strings and frayed edges to keep them from becoming caught or tangled in rotating parts of the conveyor.

If any part of the conveyor is damaged, make sure that edges or corners do not contact the belt. Make repairs to damaged equipment as soon as possible.

Belt Tension Requirements

Power to the V-backed drive belt is transmitted from the friction surface of the drive pulley to the friction surface of the belt. The tighter the belt grips the pulley, the tighter the tension will be. The tighter the belt tension, the greater the power transmitted. Conversely, if belt tension is low, slippage may result.

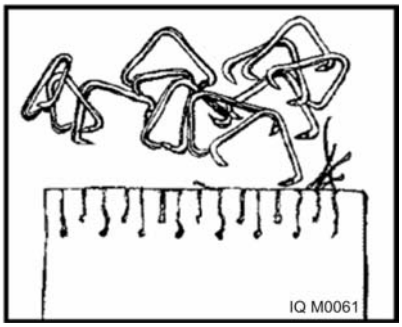
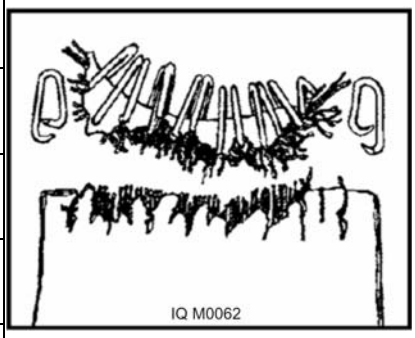
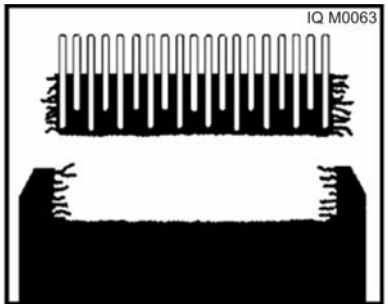
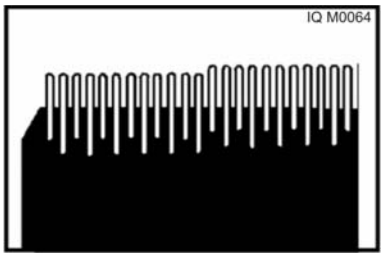
The drive is equipped with a pneumatic tensioner, so no adjustment is necessary.

Adjustment Intervals

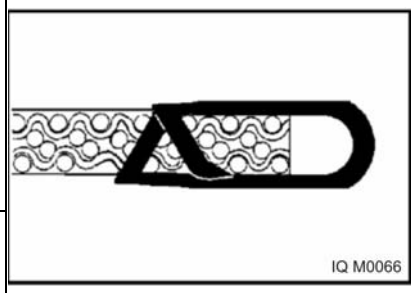
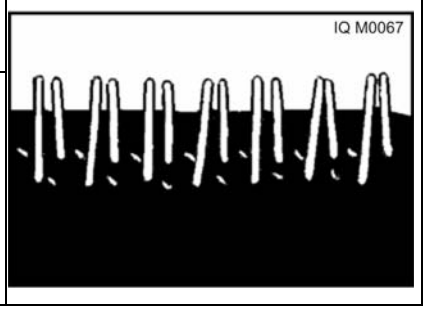
There are no specific intervals between belt adjustments, but good preventive maintenance routines will generally uncover and correct belt problems before they cause belt damage.

Lacing Troubleshooting

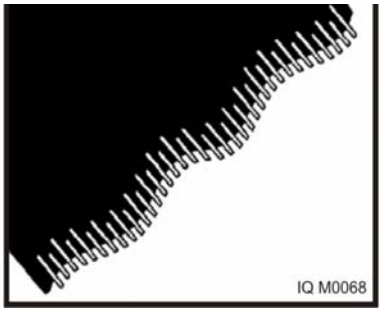
Although the lacing is very reliable, there are times when a splice may not be performing to the user's expectations. Use the following guide from the Clipper® Wire Hook Training Manual to troubleshoot lacing issues.

Symptom	Probable Cause	Illustration
Hooks Open Up and Release From Belt End.	Wrong size hook may have been selected.	
	Tension may be too high for the strength of the hook.	
	Hooks may be under-compressed.	
	Belt may not be cut square.	
	Belt may be mis-tracking.	
Hooks Pull Through (comb through) Belt End Without Opening Up.	Hooks may not be reaching back far enough into the belt.	
	Wrong belt may have been selected.	
	Belt end may not be cut square.	
	Wrong size hook may have been selected.	
	Hook may be too large for the minimum pulley.	
Belt Fractures Directly Behind Fasteners	Hook may be too large for the minimum pulley.	
	Incorrect belt may have been selected.	
	Wrong size hook may have been selected.	
Step in the Lacing.	Incorrect installation procedures may have been used.	
	Belt end may not be cut square.	

Symptom	Probable Cause	Illustration
Hooks Rust or Corrode	Wrong hook material may have been selected.	
Connecting Pin Fractures Prematurely	Connecting pin may be too rigid for the application.	
	Belt may be mis-tracking.	
	Wrong connecting pin may have been selected.	
Premature Connecting Pin Wear.	Wrong connecting pin may have been used.	
	Consider a connecting pin with more resistance to abrasion, such as Duralink or DuraStainless.	
Connecting Pin Difficult To Insert Into Splice.	Wrong connecting pin may have been selected.	
	Pin may not be rigid enough. Consider using a solid core pin or a pin with a leader assembly.	
	“Belt Wave” may be occuring.	
	Hooks may be improperly installed.	
Connecting Pin Migrates Out of Splice.	Belt end may not be cut square.	
	Wrong pin material may have been selected.	
	Smooth exterior of the pin might be allowing the pin to migrate out of the splice. Consider using notched steel or stainless pins.	
	Pin may not be secure in the splice. Consider “J End” pins.	

Symptom	Probable Cause	Illustration
Hook Legs Fracture Prematurely.	Hook size may exceed the recommended minimum pulley diameter.	
	Hooks may have been over-compressed.	
	Hooks may have been under-compressed.	
A Flat Spot Is Worn On The Hook Knuckle.	Metal chosen for hook is not abrasion resistant enough for the application. Select a material that is more abrasion resistance (i.e. high tensile).	
	Hooks may be under-compressed.	
	Hooks may be over-compressed and have caused the knuckles to back out of the belt.	
Premature Loop Wear	Wrong connecting pin may have been selected.	
	Connecting pin may need replacement.	
	Metal chosen may not be abrasion resistant enough for the application. Select a material that is more abrasion resistant (i.e. high tensile).	
	Hooks may be over-compressed, causing a “light bulb” loop shape.	
Hook Loops Lean Together In Pairs.	Hooks may be under-compressed.	
	May be using carded hooks.	

Symptom	Probable Cause	Illustration
Hooks Twist.	Hooks may be over-compressed.	
	Hook points may be too long for the belt thickness.	
Splice Triggers Magnetic Detector.	Hook selected may be magnetic. Consider switching to a material without magnetic properties: Bronze, Hastelloy, or Inconel. 316 Stainless Steel is only slightly magnetic and can often be used.	
Splice Triggers Metal Detector.	All hooks will trigger metal detectors. Consider switching to a non-metallic fastener.	
Hook Points Twist (lay over) Instead of Properly Penetrating Belt.	Belt may be too hard for the hook points to properly penetrate. Heat hook points or belt prior to installation.	
	Hook points may be too long for the belt thickness.	
End Hooks Pull Out Of Splice.	Lacing may be too close to the edges. Leave 1/4” - 1/2” unlaced on both sides of the belt.	
	Hooks may be under-compressed.	
	Tension load may be too high for the strength of the hook.	
	Consider a larger size hook, a hook made from a larger diameter wire, and/or a hook made from high tensile wire.	
	Pin may be too short, allowing the splice to snag on obstructions.	

Symptom	Probable Cause	Illustration
Belt Wave.	Hooks may be over-compressed.	
	Belt displacement may have occurred during the installation of the splice.	

Lubrication

WARNING

Before performing any maintenance or lubrication services, follow the lockout/tagout procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or equipment damage.

Check the following maintenance items immediately after start-up, during initial run-in, at 100 hours, and thereafter at 500 hour intervals under average conditions. Under adverse conditions, more frequent maintenance checks should be performed.

Reducers

Standard speed reducers are sealed and maintenance free. They incorporate a pressure compensating chamber, which eliminates the lengthy preparation normally required to put a reducer into service and prevents atmospheric contamination. These reducers are properly filled at the factory with sufficient lubrication for all mounting positions. The lubricant is Mobil SHC-634, a synthesized hydrocarbon formulated for extremely long life. Refer to the manufacturer's instructions for more information.

Chains and Sprockets

WARNING

Be sure to replace the drive guarding after inspection or maintenance. Failure to follow this instruction may result in serious personal injury and/or equipment damage.

To keep drive chains in good operating condition, the following procedures are recommended:

1. Use a Commercial Grade non-corrosive solvent to flush away foreign materials such as metal particles, dirt, or rust before lubricating.
2. Chains should be lubricated with non-detergent oil according to the following temperature ranges (°F):

   20 - 40: SAE 30W

   40 -100: SAE 40W

   100-140: SAE 50W

   Lubricate every 500 hours of runtime or as often as required to keep the chain bearing points properly lubricated. Lubricants formulated for chain lubrication will retard oil throwing.
3. Lubricate all sprocket contact surfaces.

All lubricant should be applied on the INSIDE of the chain so that centrifugal force will help work the oil into the pin joints instead of throwing it off. A thin lubricant will penetrate into the chain joints. Lubrication with an oil cup, spout can, or brush is adequate.

In an atmosphere that contains abrasive particles, it is better not to have conventional lubricants on the surface of the chain that collect or retain abrasive particles. Use dry lubricants such as molybdenum disulfide or deflocculated colloidal graphite in a volatile carrier.

Motors and Carrier Rollers

All motors and carrier rollers are equipped with sealed bearings. No additional lubrication is required for motors and carrier rollers.

8 Troubleshooting

⚠WARNING

Before performing any maintenance or lubrication services, follow the lockout/tagout procedure in the Safety section to ensure that the equipment is safe to work on. Failure to follow this instruction may result in serious personal injury and/or equipment damage.

When troubleshooting equipment problems, it is essential to completely understand how the system functions during normal operation. Thoroughly review the operational description, the circuit drawings, and the electrical diagrams sent with your equipment. Once the system operation is understood, it is usually best to start at the problem, and then work back to the source.

Troubleshooting Guidelines

Procedures are discussed at length in the following pages; however, there are certain guidelines that should be followed for all troubleshooting problems:

1. Locate the problem.
2. Listen and observe.
3. Identify problem as electrical, mechanical, or pneumatic.
4. Determine symptoms through observations.
5. Think and act with caution and clear thinking.
6. List short and long term solutions.
7. Select a solution or possible solutions.
8. Implement and document one solution at a time.

Symptom	Probable Cause	Corrective Action
Motor will not start or it is slow to start.	No line voltage.	Check emergency stops and reset. Check fuses and wiring for open circuit. Replace fuses or repair wiring as necessary. Check thermal overload protection device and reset as necessary. Check limit switches, starter and relays for defective contacts or mechanical fault. Replace as necessary. Check for supply voltage at source and correct fault as necessary. Check control circuit voltage and correct fault as necessary.
	Low line voltage.	Check for proper supply voltage and proper motor wiring. Correct as necessary.
	Conveyor overloaded or jammed.	Remove load from conveyor and reset. Check for foreign material in chain or sprockets and remove. Check chain tension and correct as necessary.
	Defective motor.	Verify proper wiring, voltage and overload. Correct as necessary. Replace motor with spare.

Symptom	Probable Cause	Corrective Action
Motor repeatedly stalls.	Defective wiring or electrical components.	Check electrical circuits and panels for loose or defective wiring. Correct as necessary. Check for loose or defective relays, switches, etc. Correct as necessary.
Motor runs excessively hot.	Overload.	Check for sluggish or seized bearings, or obstructions. Check all rollers for free rotation.
	Lack of lubrication in reducer.	Replace reducer with spare and clean motor as necessary.
	Ventilating holes in motor obstructed or excessive dust in motor.	Clean ventilating holes or replace motor as necessary.
	Defective bearing in motor or reducer.	Replace motor or reducer with spare.
Motor emits excessive noise, hum, or vibration.	Lack of lubrication in reducer.	Replace reducer with spare.
	Worn or damaged motor or reducer.	Replace motor or reducer with spare.
	Defective bearing.	Replace motor or reducer with spare.
	Loose mounting.	Check motor and reducer for loose mounting hardware.
Oil leakage from reducer.	Worn or damaged bearing or seals or cracked housing.	Replace reducer with spare.
	Loose drain plug.	Tighten the drain plug.

Symptom	Probable Cause	Corrective Action
Belt slipping on drive pulley.	Insufficient belt tension.	Adjust take-up, while running under normally loaded condition (see the “Drive Belt Tension Adjustment" section).
	Seized pulley(s).	Check pulley bearings and replace as necessary.
	Pulleys or rollers causing belt drag.	Check pulleys and rollers for seized or sluggish performance and replace as necessary.
	Conveyor is overloaded.	Check conveyor capacity and correct as necessary.
Excessive belt stretch.	Excessive belt tension.	Relieve belt tension by adjusting take-up (see the “Drive Belt Tension Adjustment” section).
	Insufficient belt tension.	Adjust pneumatic take-up according to the "Drive Belt Tension Adjustment" section.
	Seized pulley(s).	Check pulley bearings and replace as necessary.
	Pulleys or rollers causing belt drag.	Check pulleys and rollers for seized or sluggish performance and replace as necessary.
	Conveyor is overloaded.	Check conveyor capacity and correct as necessary. Excessive Load.
Severe wear on underside of belt.	Seized or misaligned pulleys or rollers.	Check alignment, bearing condition and replace as necessary.
Excessive edge wear.	Belt tracking problem.	See belt tracking procedure.
	Belt splice is not square.	Remove belt lacing, trim belt square and re-lace.

Symptom	Probable Cause	Corrective Action
Belt runs off at head or tail pulley.	Belt tracking problem.	See belt tracking procedure.
	Conveyor loading or load distribution problem.	If side loading, move loading location several feet from end of conveyor. If load concentrated on one side, redistribute upstream to correct problem.
	Pulleys or rollers causing belt drag.	Check pulleys and rollers for seized or sluggish performance and replace as necessary.
V-back guide detaches from belt.	Excessive belt tension.	Replace belt.
	Insufficient belt tension.	Replace belt.
	Worn belt.	Replace belt.
	Belt not tracking correctly.	Replace belt and adjust tracking according to procedure.
Section of belt runs to one side continually.	Belt splice is not square.	Remove belt lacing, trim belt square and re-lace.
	Excessive belt camber.	Replace belt.
	Conveyor section not square.	See squaring procedure in installation section.
Belt moves erratically.	Intermittent roller or bearing drag.	Check and replace any rollers and/or bearings that are not free rotating.
	Excessive belt tension.	Relieve belt tension by adjusting take-up.
	Conveyor is overloaded.	Check conveyor capacity and correct as necessary.

Symptom	Probable Cause	Corrective Action
Belt lacing pulls out or wears out prematurely.	Wrong lacing size.	Replace lacing with correct size.
	Lacing not installed properly.	Check lacing to ensure lacing points are through belt.
	Excessive belt tension.	Relieve belt tension by adjusting take-up (see the "Drive Belt Tension Adjustment" section).
	Foreign obstruction.	Locate and clear obstruction.
	Conveyor is overloaded.	Check conveyor capacity and correct as necessary.
Belt has pulsing movement.	Too much slack in drive chain.	Adjust drive chain tension per “Drive Chain and Sprocket” section.
	Excessive belt tension.	Relieve belt tension by adjusting take-up.
	Conveyor is overloaded.	Check conveyor capacity and correct as necessary.
Excessive chain wear.	Chain is too tight or too loose.	Reposition the reducer or adjust the chain tensioner (if provided) for proper tension per instructions in the “Preventive Maintenance” section.
	Sprockets are misaligned.	Re-align with straight edge across the face of both sprockets.
	One sprocket is loose.	Locate, align and tighten loose sprocket.
	Insufficient lubrication.	Lubricate as instructed (Maintenance and Lubrication).

Symptom	Probable Cause	Corrective Action
Excessive noise.	Refer to “Possible Causes for Excessive Wear” listed above.	See “Corrective Action for Excessive Wear” listed above.
	Dirty chain.	Remove and clean chain in solvent; clean sprockets, replace chain and lubricate as instructed.
	Chain is rubbing guard.	Check for obstructions and adjust as necessary.
Chain is pulsing.	Insufficient tension.	Adjust as instructed.
	Conveyor/Drive overload.	Inspect conveyor for obstructions and correct as necessary.
Broken chain.	Frozen pulley or sprocket shaft.	Inspect source of problem and correct as necessary.
Conveyor/Work station does not accumulate.	Defective pneumatic assembly.	Check pneumatic piping diagram and search for error in connection/installation.
	Defective sensor or solenoid valve.	Replace sensor or solenoid valve.
	Product not depressing sensor roller.	Adjust sensor roller spring.
	Conveyor controller.	Control Signal.
Product not discharging, or conveyor has dead zone.	Defective pneumatic assembly.	Go through pneumatic piping diagram to search for error in connection/installation.
	Air leak.	Locate and repair air leak by checking control signal location.
	Defective sensor or solenoid valve.	Replace sensor or solenoid valve.
	Defective sensor assembly.	Repair or replace sensor roller assembly (broken or missing spring or broken bracket).
	Defective photo-eye.	Replace photo-eye.
	Conveyor controller.	Control signal.

Symptom	Probable Cause	Corrective Action
Multiple dead zones on the conveyor.	No air supply.	Check air supply and correct if necessary.
	No line voltage to the 24 VDC power supply.	Correct line voltage supply to 24 VDC power supply.
	Defective 24 VDC power supply.	Replace DC power supply.
	Conveyor controller.	Control signal.
Conveyor not slug releasing.	Defective pneumatic assembly.	Go through pneumatic piping diagram to search for error in connection/installation.
	Defective solenoid valve.	Replace solenoid valve.
	Air leak or low pressure.	Locate the repair air leak or correct pressure.
	Defective shuttle valve.	Replace shuttle valve.
	Defective ZIM module.	Replace ZIM module.
Conveyor always discharges as slug.	Defective pneumatic assembly.	Go through pneumatic piping diagram to search for error in connection/installation. Make sure the piping accurately resembles the pneumatic diagram.
	Defective ZIM module.	Replace ZIM module.

Troubleshooting Help

If you need further assistance, please visit our website at www.intelligrated.com or call our Technical Support Department at 1-877-315-3400.

9 Replacement Parts

This chapter contains the contact information and procedures for ordering replacement parts. Read the information below to ensure receipt of the correct parts, on time, and shipped to the correct location.

Contact Information

Parts Orders

Voice (Toll-Free): (877) 315-3400, select “1” at the prompt

Voice (Local): (513) 701-7346

Fax: (513) 701-7349

E-mail: parts@intelligrated.com

On-Time Parts Catalog: www.OnTimeParts.com

The Parts Department’s normal working hours are Monday through Friday, 8:00 AM to 5:00 PM, Eastern Time, except holidays. For Emergency parts support outside of normal business hours, call the Toll-Free number and select “2” at the prompt.

Warranty Part Order Procedures

The Warranty Replacement Parts program is designed to replace parts used from the customer's spare parts inventory and not for supplying emergency replacement parts. To maximize system up-time, have a well stocked inventory of spare parts.

The warranty period for the conveyor equipment is detailed in the sales contract. The standard conveyor equipment warranty period is (one) year.

Parts may be ordered by phone, fax, e-mail, or by using our On-Line Parts Catalog. The On-Linie Parts Catalog displays a complete description and illustration of the part and also shows the current price and availability.

During the warranty period, all parts that have failed due to defects in material and/or workmanship will be replaced at no cost.

Damage caused by misuse, accidents, mis-adjustment, improper installation, improper maintenance, modification by anyone except Intelligrated personnel, lack of preventive maintenance, power failure or surge, air conditioning or humidity control, transportation, or causes other than a defect in the materials or workmanship are also not covered.

Use the following procedure when requesting a warranty replacement part(s):

1. Make a copy of the Warranty Parts Request Form located at the end of this section and complete the information requested on the form. Provide as much information about the equipment and part as possible, including the description, manufacturer, any information stamped on the part, and all the informatin from the label on the conveyor. Part numbers may also be easily found in the appropriate maintenance manuals.

Figure 9 - 1 Example of Conveyor Label

Contact the Parts Department via e-mail, fax, phone, or through the On-Time Parts Catalog to request a copy of the form. The Parts Order Processor will fax or e-mail a Warranty Part Request Form.

2. Sign the form and fax it to the Parts Department at 513-701-7349.
3. Upon receipt of the completed Warranty Part Request Form, the Parts Order Processor will enter the warranty order into the ordering system and issue a Returned Material Authorization (RMA) number.
4. The Parts Order Processor will record the Returned Material Authorization (RMA) on the completed Warranty Part Request Form and indicate on the form if the part(s) must be returned to Intelligrated.
5. The Parts Order Processor will return the Warranty Part Request Form to the customer by fax or e-mail.
6. If indicated on the form, return the defective part to Intelligrated at the following address. Be sure to package it to prevent damage during shipment. Also, include a copy of the Warranty Part Request Form inside the package and clearly mark the Returned Material Authorization (RMA) number on the outside of the package.

   Intelligrated Returns
   4436 Muhlhauser Road Suite 300
   Attn: Returns
   Hamilton, OH 45011
   RMA#_____

   Parts received without an RMA number will be returned to the customer.

   If Intelligrated does not receive the defective part(s) within 30 days, the customer will be billed for the part(s).
7. The order will be processed and the replacement part(s) will be shipped to the customer as soon as possible.

   Warranty orders are always shipped via ground service. Other shipping arrangements may be made, but the customer will be billed for all shipping charges.

Non-Warranty Part Order Procedures

Use the following procedure when ordering a non-warranty replacement part(s).

1. Contact the Parts Department via e-mail, fax, or phone, or by using our On-Time Parts Catalog to request the replacement part. Provide as much information about the equipment and part as possible, including the description, manufacturer, any information stamped on the part, and all the information from the label on the conveyor (see label illustration on the previous pages). Part numbers may also be easily found in the appropriate maintenance manuals.
2. Parts may be purchased using company issued purchase orders or by credit card (Visa, MasterCard, American Express and Discover).

NOTE: There is a $100 minimum order for non-warranty orders.

Order Processing and Shipping

Orders for stock items are normally shipped the next business day.

Non-stock orders are subject to the lead time of the part. Orders are shipped via ground service (Freight Prepaid and added to invoice) unless otherwise requested. Emergency service to ship via package carrier or scheduled airlines is also available for an additional charge.

Warranty orders are always shipped via ground service. Other shipping arrangements may be made, but the customer will be billed for all additional shipping charges.

New Parts Warranty

All parts purchased from Intelligrated carry a one-year warranty. All parts supplied at no cost as a warranty replacement for a component assume the warranty of the part being replaced.

Intelligrated will repair or replace, at our option (F.O.B. shipping point), parts which prove to be defective in material or workmanship within the warranty period. Intelligrated reserves the right to deny any warranty claims if during inspection it is determined that failure or damage was caused by accident, abuse or neglect by the user.

Parts damaged in shipment must be handled by submission of a claim to the shipper. Please save all boxes and packing materials and contact the Parts Department.

Recommended Spare Parts

Intelligrated can prepare and recommend a spare parts list for a customer's specific material handling system. The spare parts list will take into account the expected failure rate of each component and the criticality of each part for each segment of a specific material handling system.

On-Time Parts Catalog

The Intelligrated On-Line Parts Catalog (OPC) is the only comprehensive material handling on-line parts catalog. Our unique "One Stop Shop" makes it easier to find, order and receive all replacement and spare parts for Material Handling Systems, sub-components and assemblies.

Accessing the On-Time Parts Catalog

The On-Time Parts Catalog (OPC) can be accessed via the Web by two methods:

1. Go to www.OnTimeParts.com.
2. Go to www.intelligrated.com. Click the On-Time Parts link at the top of the page, or move the mouse cursor to the "Support Services" link, move the mouse to "Parts" and then click the "On-Line Parts Catalog" link on the submenu.

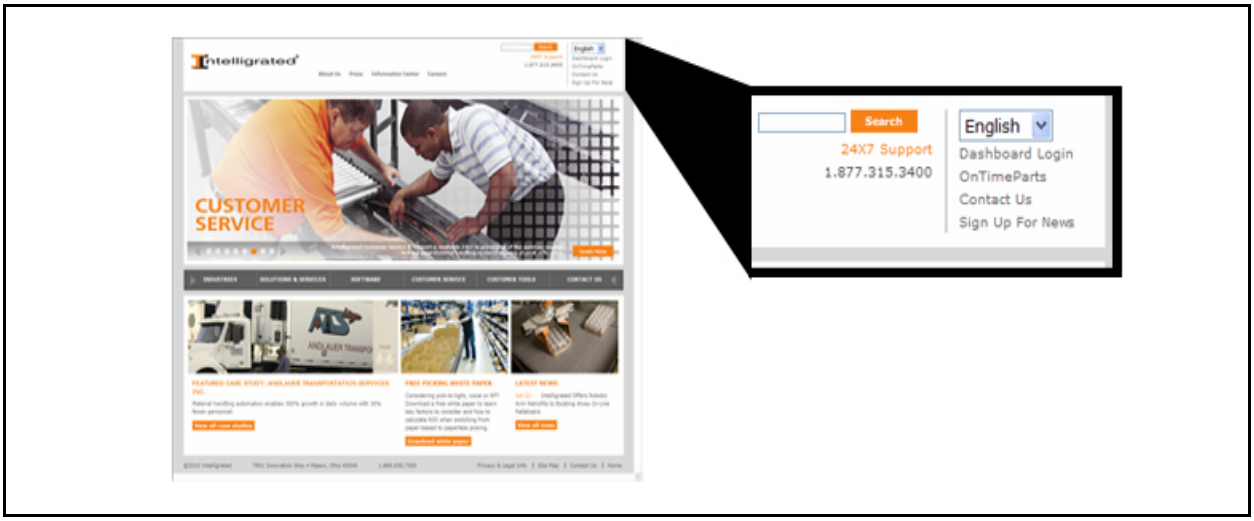


Figure 9 - 2 On-Time Parts Link

With the Intelligrated On-Line Parts catalog, it is easy to place orders on-line. In addition, phone support is available any time toll free at 1-877-315-3400. Intelligrated is also available by email; just click on the parts@intelligrated.com link on the OPC home page.

Online parts orders are risk free. Intelligrated provides a full money back guarantee if the customer is not totally satisfied with the service of the On-Line Parts Catalog.

Intelligrated has included contact information, policies, and how-to information. Just click on the “Help Desk” link at any time.

Click “Help Desk” link and then the “How To” link for details on how to place an order.

Using the On-Line Parts Catalog

To use the On-Time Parts Catalog:

1. Click the Login link. Enter your e-mail address and password and press the “Login” button. To skip the login step the next time, check the "Remember Me" box.

   If needed, click the “Create Account” link and fill in the account information.

2. Enter search information or use the links at the top of the page to select parts by category, Intelligrated product line, or by OEM parts or conveyor cross-reference categories.

3. Choose a part by clicking on the part number or photo. Cross reference and other information will be displayed.

4. Click the “Add to Cart” button and enter the quantity needed. If your company requires a requisition prior to ordering, click the “Add to Requisition” button. Your purchase requisition may be accessed under the “Order Info” link on the left side of the page.

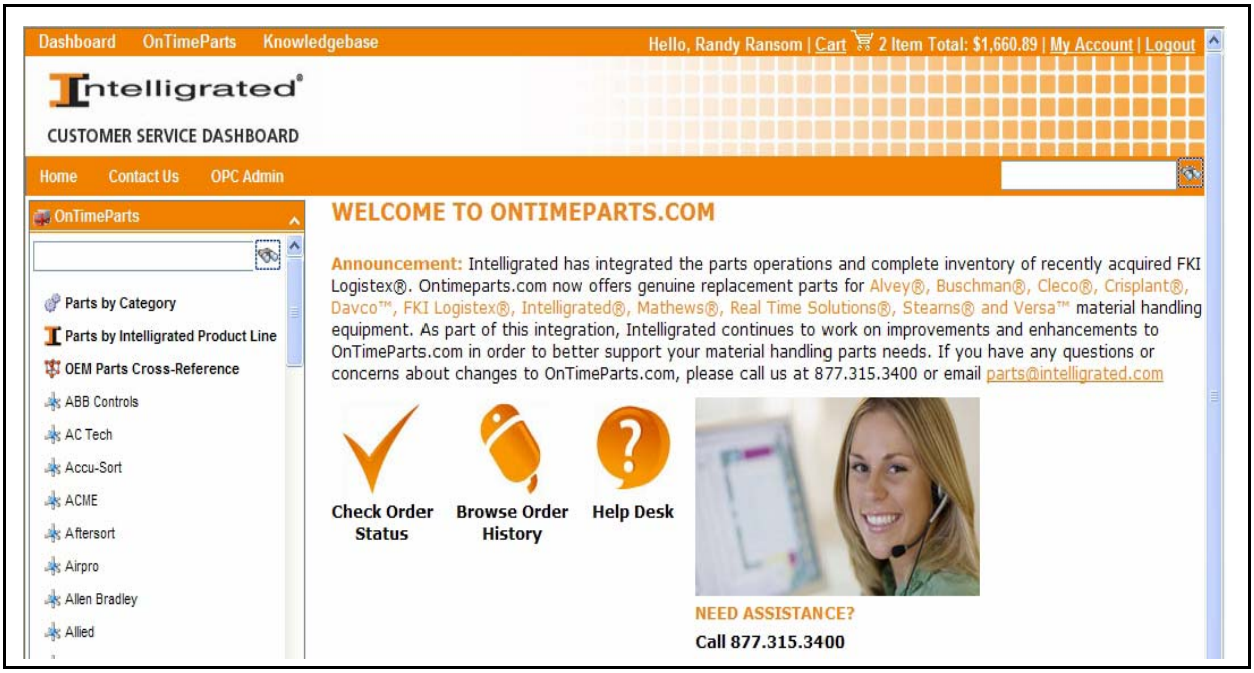
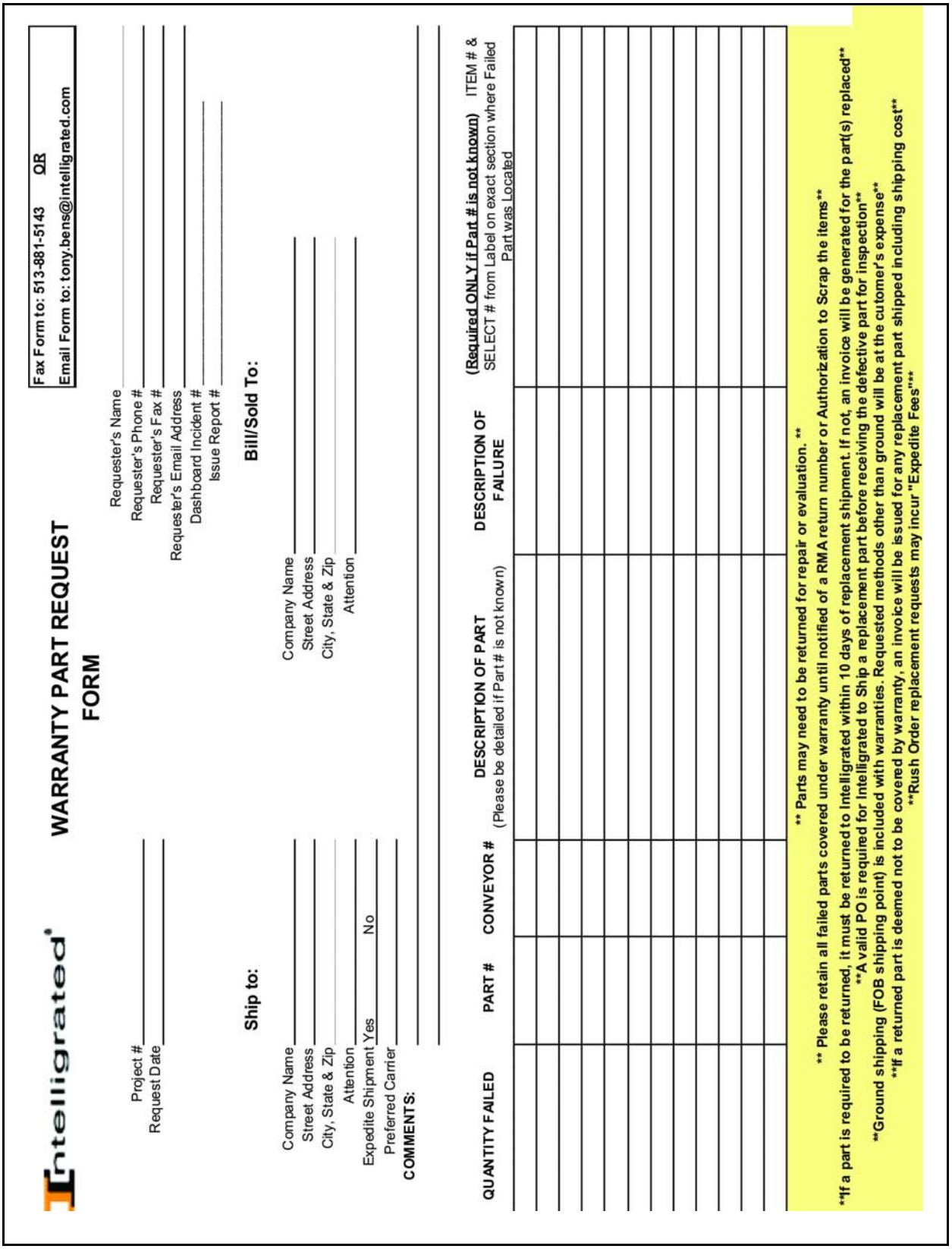


Figure 9 - 3 OPC Main Menu

5. To checkout, click the “Shopping Cart” link on the left side of the page.
6. Verify the order information and click the “Checkout” button to submit your order.
7. Once the order is submitted, click the “Log Off” link to end the session.



Intelligrated

WARRANTY PART REQUEST FORM

Fax Form to: 513-881-5143 OR
Email Form to: tony.bens@intelligrated.com

Project #
Request Date

Requester's Name
Requester's Phone #
Requester's Fax #
Requester's Email Address
Dashboard Incident #
Issue Report #

Ship to:

Company Name
Street Address
City, State & Zip
Attention
Expedite Shipment Yes No
Preferred Carrier

Bill/Sold To:

Company Name
Street Address
City, State & Zip
Attention

COMMENTS:

QUANTITY FAILED	PART #	CONVEYOR #	DESCRIPTION OF PART (Please be detailed if Part # is not known)	DESCRIPTION OF FAILURE	(Required ONLY if Part # is not known) ITEM # & SELECT # from Label on exact section where Failed Part was Located

** Parts may need to be returned for repair or evaluation. **
** Please retain all failed parts covered under warranty until notified of a RMA return number or Authorization to Scrap the items**
If a part is required to be returned, it must be returned to Intelligrated within 10 days of replacement shipment. If not, an invoice will be generated for the part(s) replaced
A valid PO is required for Intelligrated to Ship a replacement part before receiving the defective part for inspection
Ground shipping (FOB shipping point) is included with warranties. Requested methods other than ground will be at the customer's expense
If a returned part is deemed not to be covered by warranty, an invoice will be issued for any replacement part shipped including shipping cost
Rush Order replacement requests may incur **Expedite Fees**

Figure 9 - 4 Warranty Claim Request Form

Parts Lists and Illustrations

The following pages contain standard assembly and component parts illustrations and parts lists for your equipment. Colors used in these illustrations are for clarification only and may not match the paint colors of your conveyor components. These illustrations and parts listings were up-to-date at the time of the printing of this manual.

The row(s) highlighted in **GREY** are Recommended Spare Parts and may already be in your parts inventory.

Links have been provided in the electronic version of this manual, where possible, to make it easier to locate and order parts. Part numbers highlighted in **BLUE** and underlined are linked directly to the On-Time Parts Catalog. When the part number and description are highlighted in **BLUE**, it means there is an assembly drawing on another page of the manual that shows the break down of that assembly.

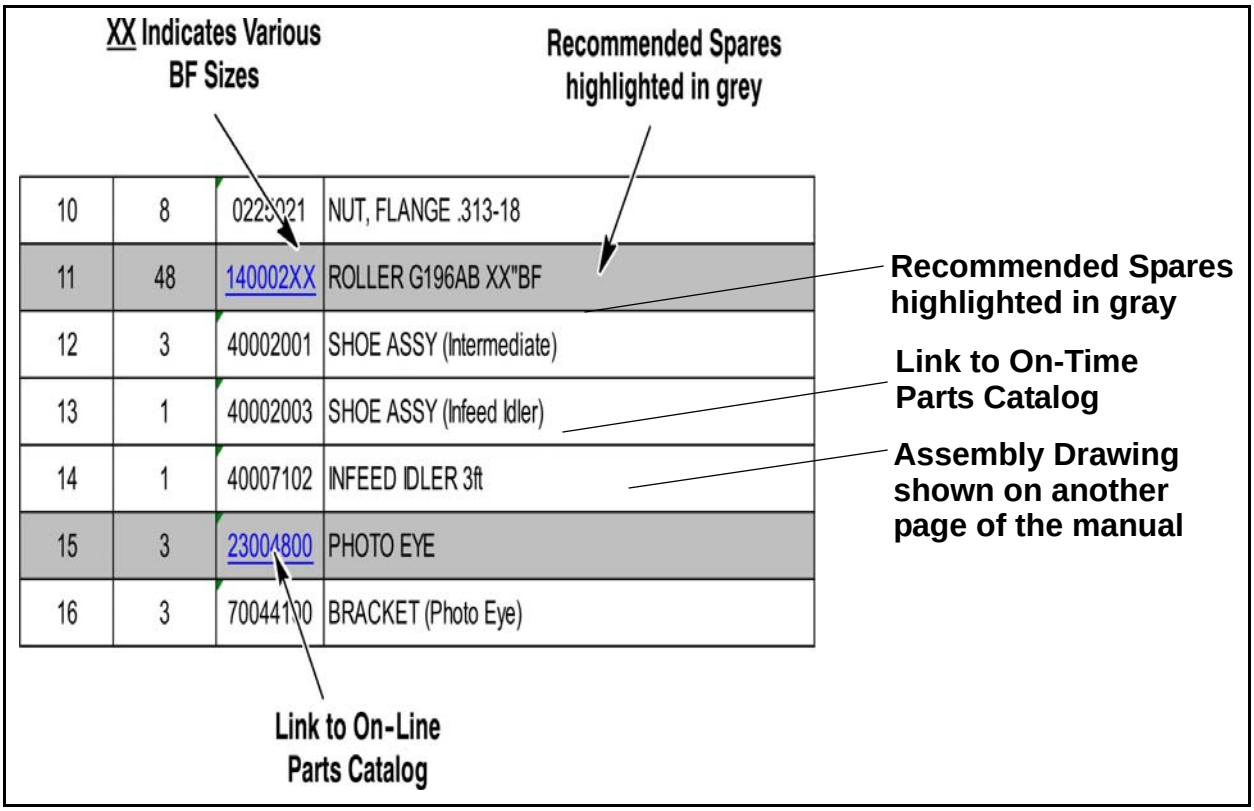


Figure 9 - 5 Example of Links in the Electronic Manual

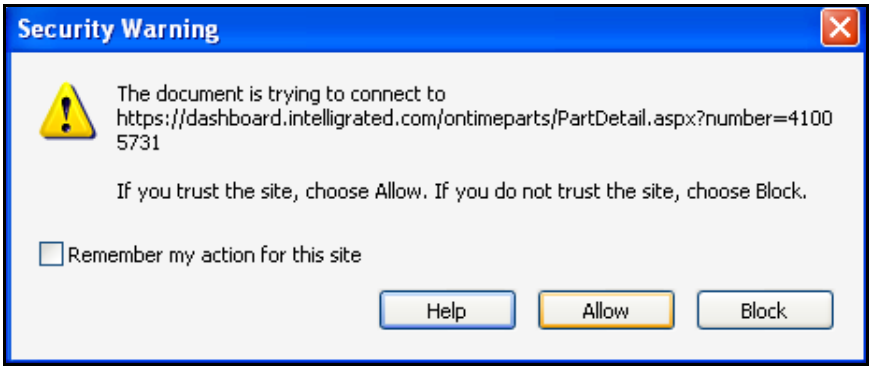
Using the Parts Lists

The assemblies and components listed in these parts lists may not be described completely if they contain special modifications and/or enhancements. Use the part number shown in this parts list to make sure the correct replacement parts are ordered. In addition, include nameplate information from motors, reducers, gearboxes, clutch/brakes, etc., whenever possible.

1. Find the exploded illustration of the applicable components.
2. Find the item number in the parts lists that matches the number in the illustration. Items on the parts list that are highlighted in GREY are Recommended Spare Parts and may already be in your spare parts inventory.
3. Note the complete description and part number. See the Recommended Spare Parts List to verify the part number for your specific project. Be sure to supply all this information when placing the order.

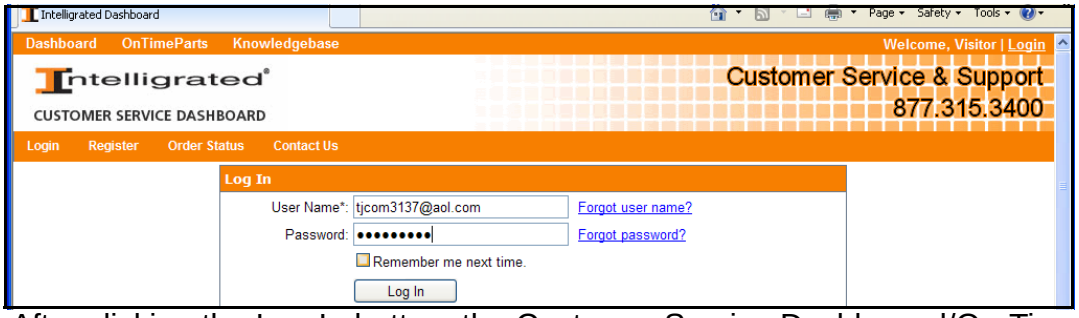
NOTE: Do not provide the item number (the number in the circle) assigned to the part in the illustration. These numbers are used for reference.

4. To Order Spare Parts - click on the part number shaded in grey, see Figure 9 - 5. The Security Warning Window may be displayed. Click the Allow button and the Intelligrated Customer Service Dashboard window is displayed. Enter User Name and Password, and click the Log In button.

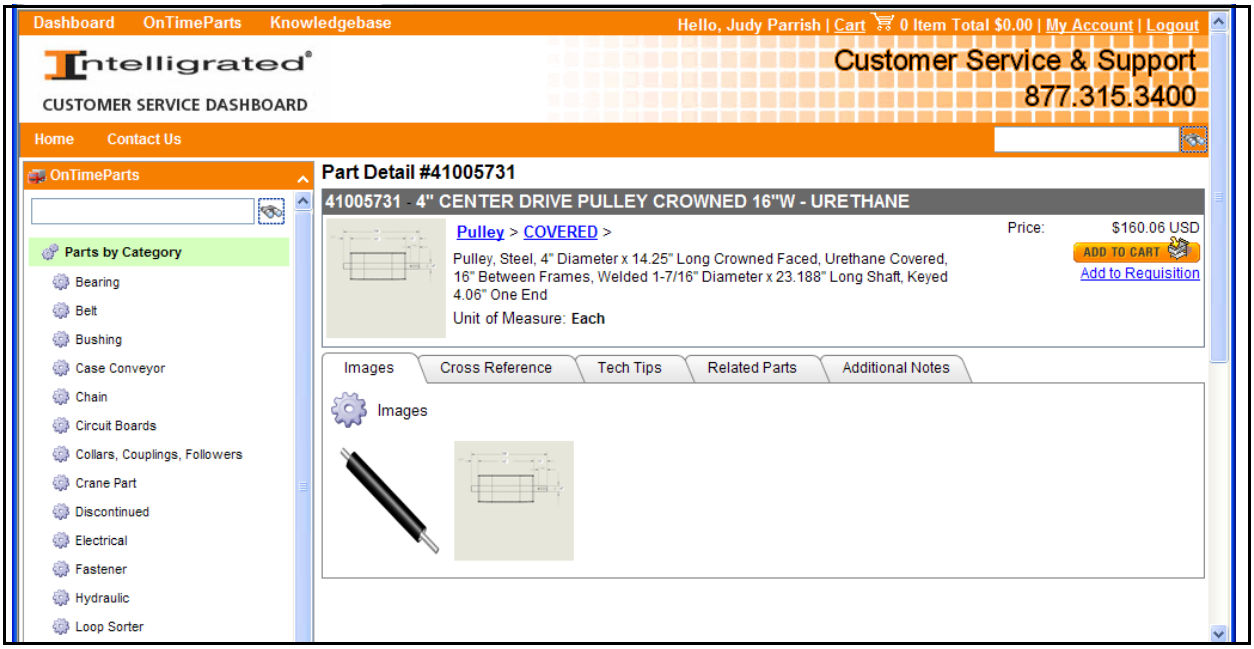


5. Enter User Name and Password, and click the Log In button.

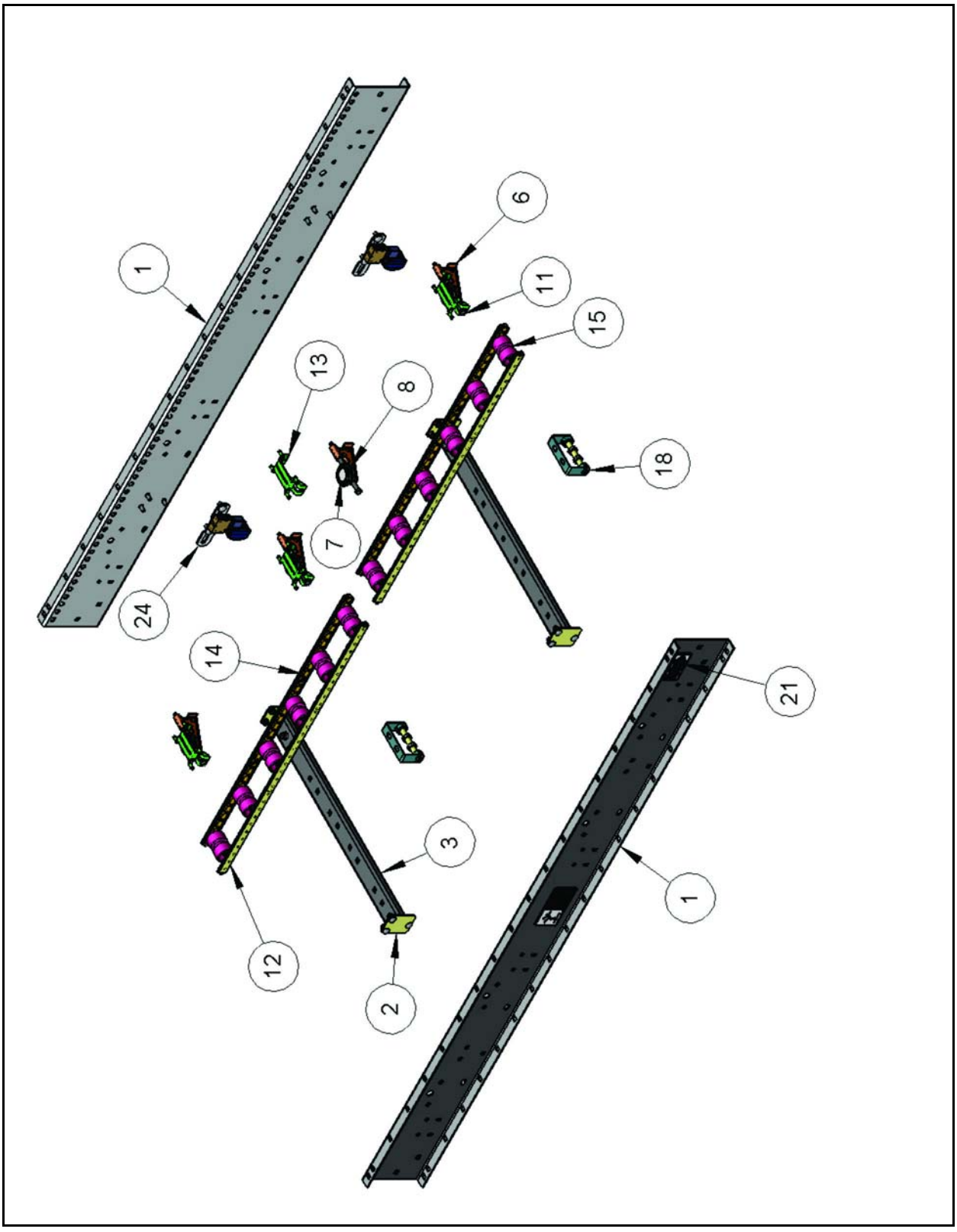
NOTE: If you are already logged in, the link will take you to the part that was selected.



After clicking the Log In button, the Customer Service Dashborard/On-Time Parts Catalog is displayed and information about the part that was initially requested. The detailed information, price and availability are displayed in this window. This window allows for on-line ordering.



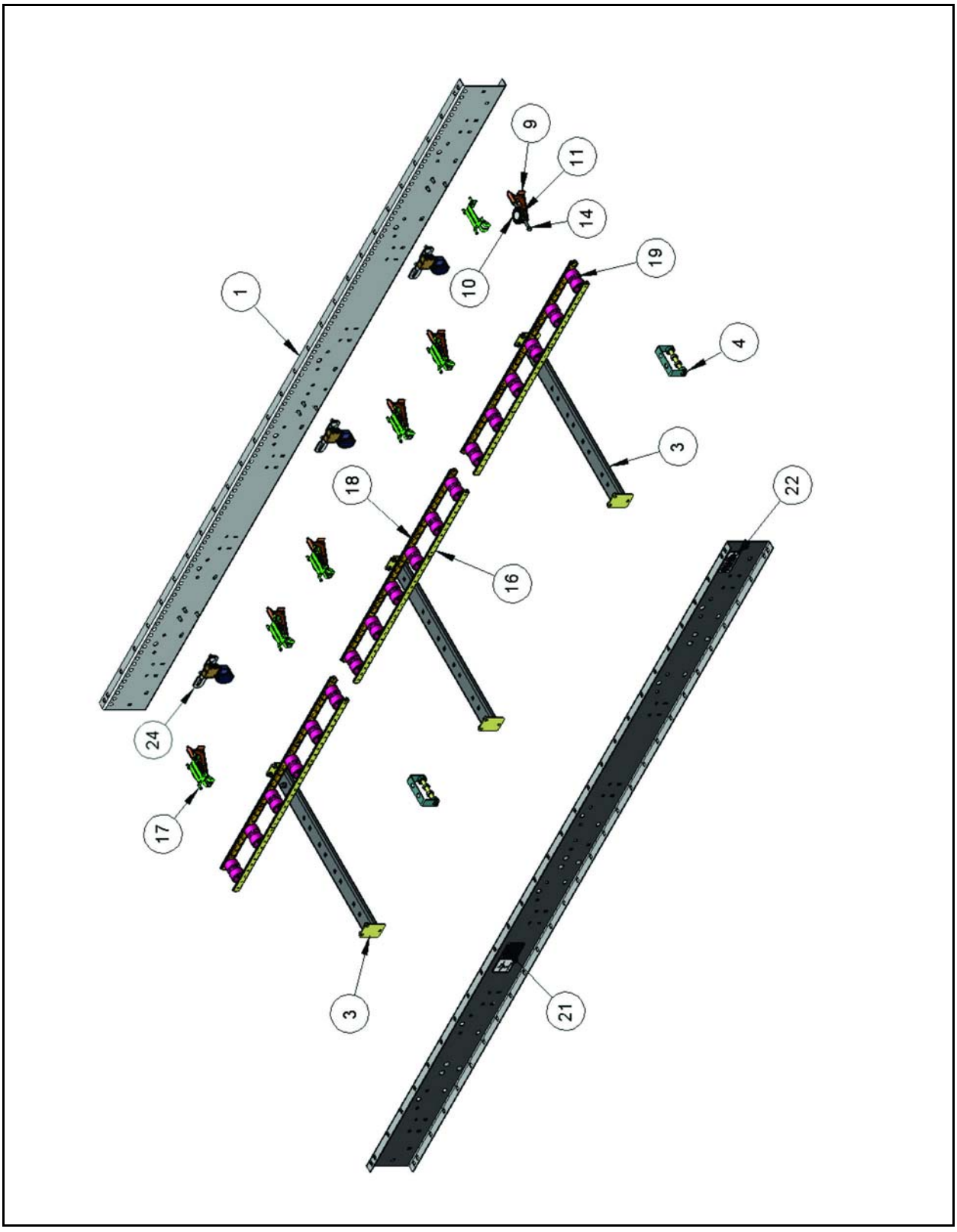
400081 - 610 Intermediate Assy 6 ft lg



610 INTERMEDIATE ASSY 6' LG 400081

SEQ	QTY	PART NO	DESCRIPTION	SEQ	QTY	PART NO	DESCRIPTION
1	2	40000204	610 CHAN RAIL IS 6'	**16**	16	20002700	SCREW UNSLOT HEX WASH TEK #8 X .625"
2	4	40000500	610 SPREADER END PLATE	**17**	4	220076	WASHER FLAT .313 SAE TYPE A
3	2	40000328	610 SPREADER CROSS-TIE 28"LG	**18**	2	40001904	610 BELT RETURN SUPPORT ASY 3"
4	12	221102	BOLT CAR .313-18 X .750	**19**	4	220003	BOLT CAR .375-16 X .750
5	16	225021	NUT FLANGE .313-18	**20**	6	221055	NUT FLANGE .375-16
6	4	40000600	610 BRACKET SHOE SUPPORT	**21**	2	29003000	LABEL PRODUCT TRAVEL
7	4	40000700	610 DIAPHRAGM HYTREL 3078	**22**	2	29002600	LABEL CEMA # 930004
8	4	40000800	610 DIAPHRAGM RETAINING RING	**24**	2	40013402	610 RH ZONE SING CONT MOD W/BRKT ZLM1-C1121S03 #7028978 *
9	4	29000400	FITTING BRASS 10-32THD 1/8" HOSE			40013403	610 RH ZONE SLUG CONT MOD W/ BRKT ZLM1-C2121S04 #7028979 *
10	4	29001700	GASKET CLIPPARD FIBER PN:11761-3			40013405	610 RH ZONE TS CONT MOD W/BRKT #7029513 *
11	4	40001500	610 STUD SHOE SUPPORT			40013400	610 LH ZONE SICK CONT MODULE W/BRKT ZLM 1-C1121S01 # 7028829
12	4	40000901	610 SHOE RAIL 33" LG			40013401	610 LH ZONE SLUG CONT MOD W/ BRKT #7028856
13	4	40001100	610 SHOE SPREADER			40013404	610 LH ZONE TS CONT MOD W/BRKT #7029512
14	12	40002601	610 SHOE AXLE RETAINER 11"	* = RH RECOMMENDED SPARE			
15	12	40001200	610 PRESSURE ROLLER ASY	**27**	4	220003	BOLT CAR .375-16 X .750 SHORT SQ NECK

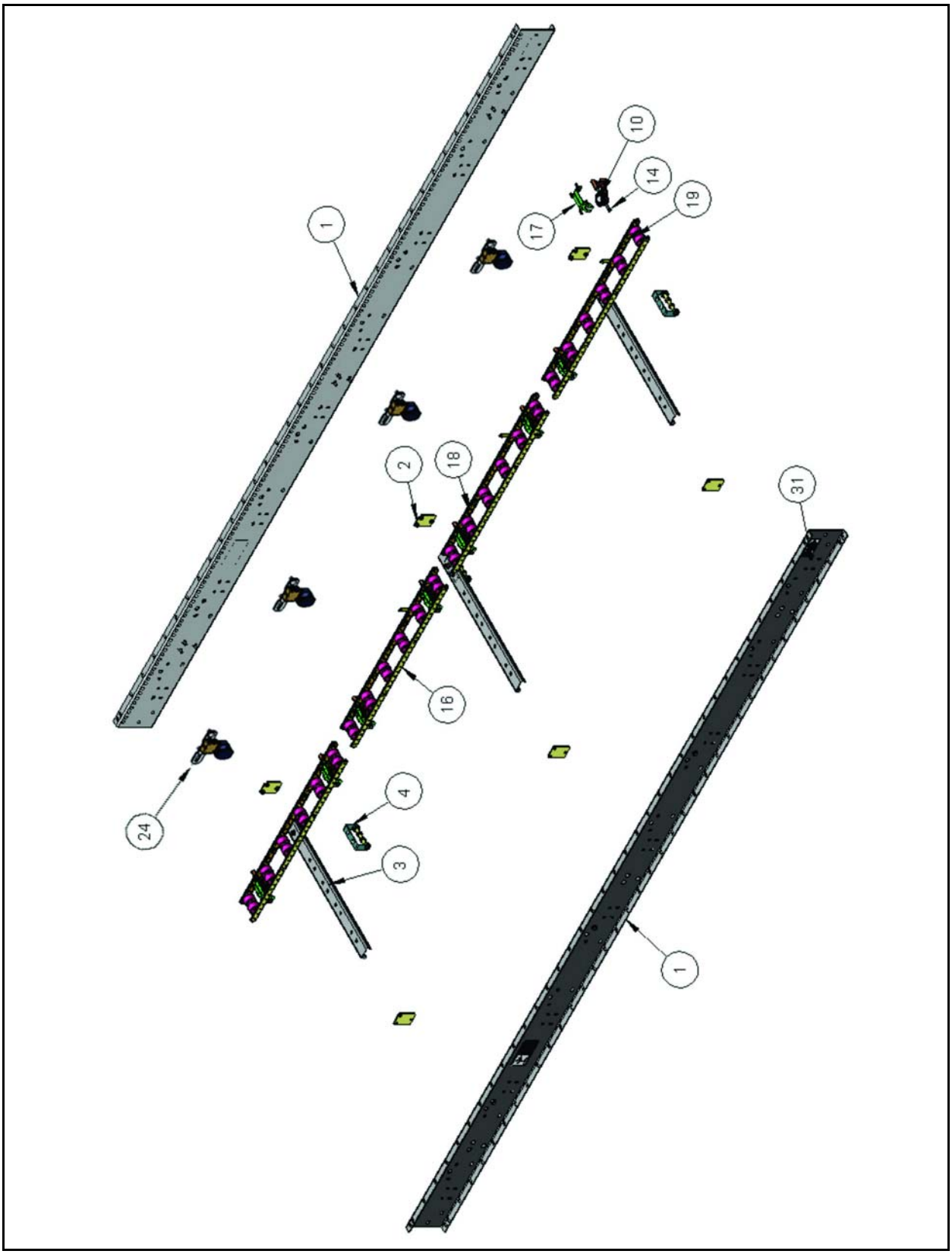
400082 - 610 Intermeidate Assy 9 ft lg



610 INTERMEDIATE ASSY 9' LG 400082

SEQ	QTY	PART NO	DESCRIPTION	SEQ	QTY	PART NO	DESCRIPTION
1	2	40000205	610 CHAN RAIL IS 9'	**15**	6	220076	WASHER FLAT .313 SAE TYPE A
2	6	40000500	610 SPREADER END PLATE	**16**	6	40000901	610 SHOE RAIL 33" LG
3	3	40000328	610 SPREADER CROSS-TIE 28"LG	**17**	6	40001100	610 SHOE SPREADER
4	2	40001904	610 BELT RETURN SUPPORT ASY 3"	**18**	18	40002601	610 SHOE AXLE RETAINER 11"
5	18	221102	BOLT CAR .313-18 X .750	**19**	18	40001200	610 PRESSURE ROLLER ASY
6	24	225021	NUT FLANGE .313-18	**20**	24	20002700	SCREW UNSLOT HEX WASH TEK #8 X .625"
7	4	220003	BOLT CAR .375-16 X .750	**21**	2	29002600	LABEL CEMA # 930004
8	4	221055	NUT FLANGE .375-16	**22**	2	29003000	LABEL PRODUCT TRAVEL
9	6	40000600	610 BRACKET SHOE SUPPORT	**24**	3	40013402	610 RH ZONE SING CONT MOD W/BRKT ZLM1-C1121S03 #7028978 *
10	6	40000700	610 DIAPHRAGM HYTREL 3078			40013403	610 RH ZONE SLUG CONT MOD W/ BRKT ZLM1-C2121S04 #7028979 *
11	6	40000800	610 DIAPHRAGM RETAINING RING			40013405	610 RH ZONE TS CONT MOD W/BRKT #7029513 *
12	6	29000400	FITTING BRASS 10-32THD 1/8" HOSE			40013400	610 LH ZONE SICK CONT MODULE W/BRKT ZLM 1-C1121S01 # 7028829
13	6	29001700	GASKET CLIPPARD FIBER PN:11761-3			40013401	610 LH ZONE SLUG CONT MOD W/ BRKT #7028856
14	6	40001500	610 STUD SHOE SUPPORT			40013404	610 LH ZONE TS CONT MOD W/BRKT #7029512
				* = RH RECOMMENDED SPARE			

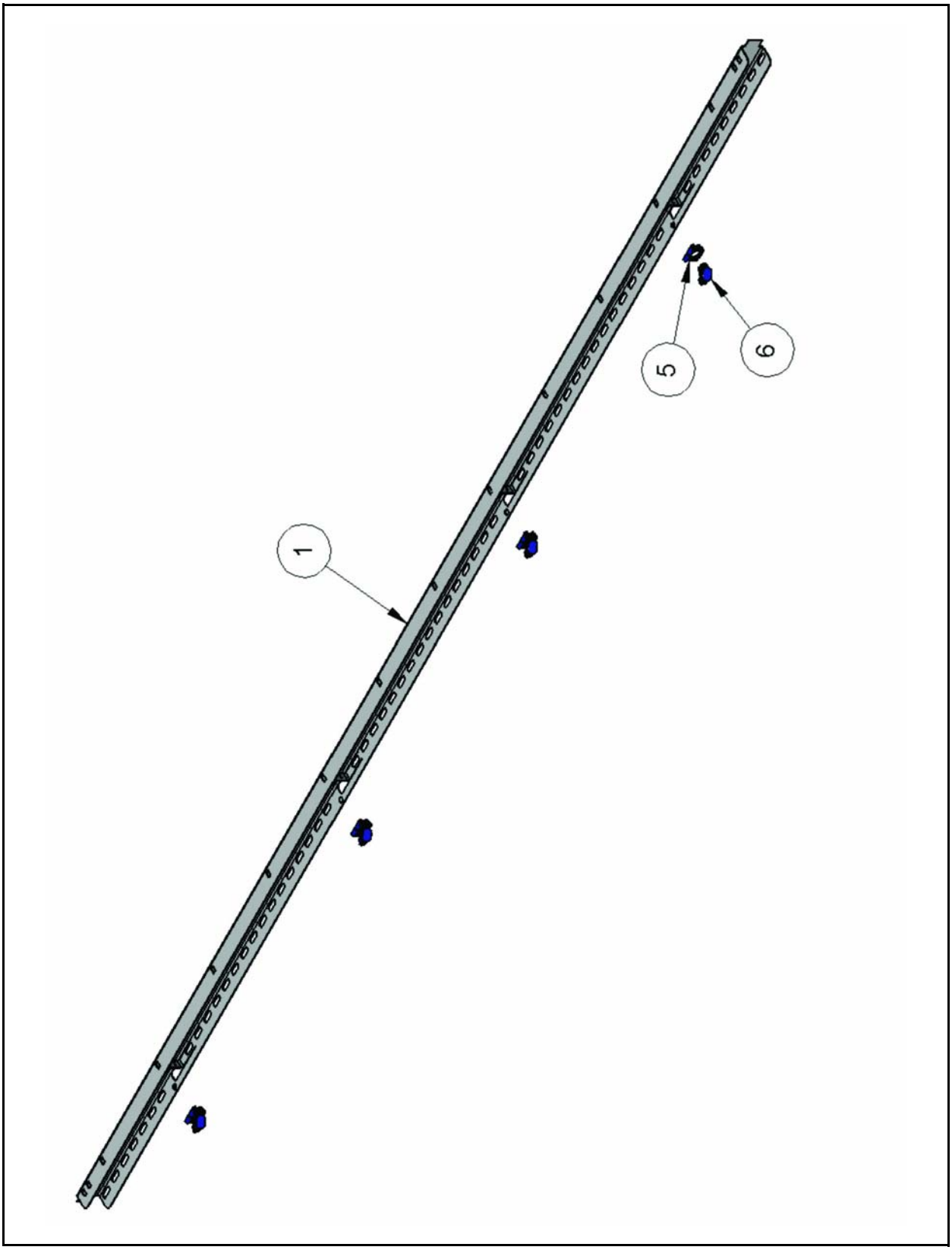
400083 - 610 Intermediate Assy 12 ft lg



610 INTERMEDIATE ASSY 12' LG 400083

SEQ	QTY	PART NO	DESCRIPTION	SEQ	QTY	PART NO	DESCRIPTION
1	2	40000206	610 CHAN RAIL IS 12'	**16**	8	40000901	610 SHOE RAIL 33" LG
2	6	40000500	610 SPREADER END PLATE	**17**	8	40001100	610 SHOE SPREADER
3	3	40000328	610 SPREADER CROSS-TIE 28"LG	**18**	24	40002601	610 SHOE AXLE RETAINER 11"
4	2	40001904	610 BELT RETURN SUPPORT ASY 3"	**19**	24	40001200	610 PRESSURE ROLLER ASY
5	18	221102	BOLT CAR .313-18 X .750	**20**	32	20002700	SCREW UNSLOT HEX WASH TEK #8 X .625"
6	26	225021	NUT FLANGE .313-18	**24**	3	40013402	610 RH ZONE SING CONT MOD W/BRKT ZLM1-C1121S03 #7028978 *
7	4	220003	BOLT CAR .375-16 X .750			40013403	610 RH ZONE SLUG CONT MOD W/ BRKT ZLM1-C2121S04 #7028979 *
8	15	221055	NUT FLANGE .375-16			40013405	610 RH ZONE TS CONT MOD W/BRKT #7029513 *
9	8	40000600	610 BRACKET SHOE SUPPORT			40013400	610 LH ZONE SICK CONT MODULE W/BRKT ZLM 1-C1121S01 # 7028829
10	8	40000700	610 DIAPHRAGM HYTREL 3078			40013401	610 LH ZONE SLUG CONT MOD W/ BRKT #7028856
11	8	40000800	610 DIAPHRAGM RETAINING RING			40013404	610 LH ZONE TS CONT MOD W/BRKT #7029512
12	8	29000400	FITTING BRASS 10-32THD 1/8" HOSE	* = RH RECOMMENDED SPARE			
13	8	29001700	GASKET CLIPPARD FIBER PN:11761-3	**25**	11	220018	BOLT HEX .375-16 X .750
14	8	40001500	610 STUD SHOE SUPPORT	**30**	2	29002600	LABEL CEMA # 930004
15	8	220076	WASHER FLAT .313 SAE TYPE A	**31**	2	29003000	LABEL PRODUCT TRAVEL

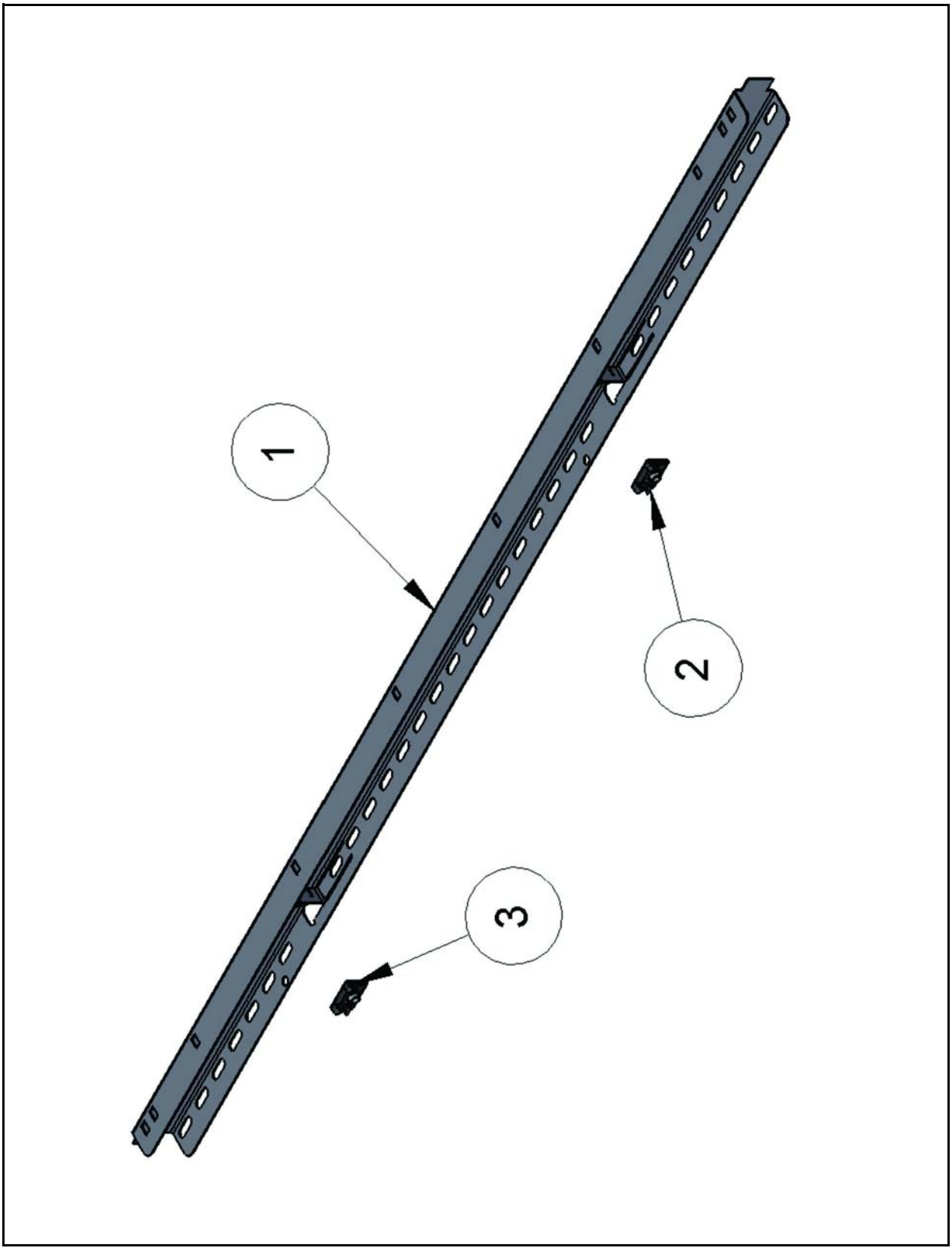
400126 - 610 Guide Rail PE Sick 6’ LG/ _’ZN



610 GUIDE RAIL PE SICK 6'LG/_'ZN ASSY 400126

SEQ	QTY	PART NO	DESCRIPTION
1	1	40012502	610 GUIDE RAIL PE/REF SICK 12'LG/3'ZN
2	4	20045800	SMS #8 X .375 UNSLOT FLANGED HEX HEAD (S&S#8N37TUWZ)
3	4	20023100	SHCS #8-32 x 1.750
4	4	20040300	WASHER FLAT #8
5	4	23117000	BRKT PE BALL/CLAMP SICK #7029350
6	4	23116700	PHOTOEYE W/ MTG BALL SICK #1047826 EL4-P2638

400127 - 610 Guide Rail Ref Sick 6’ LG/ _’ZN

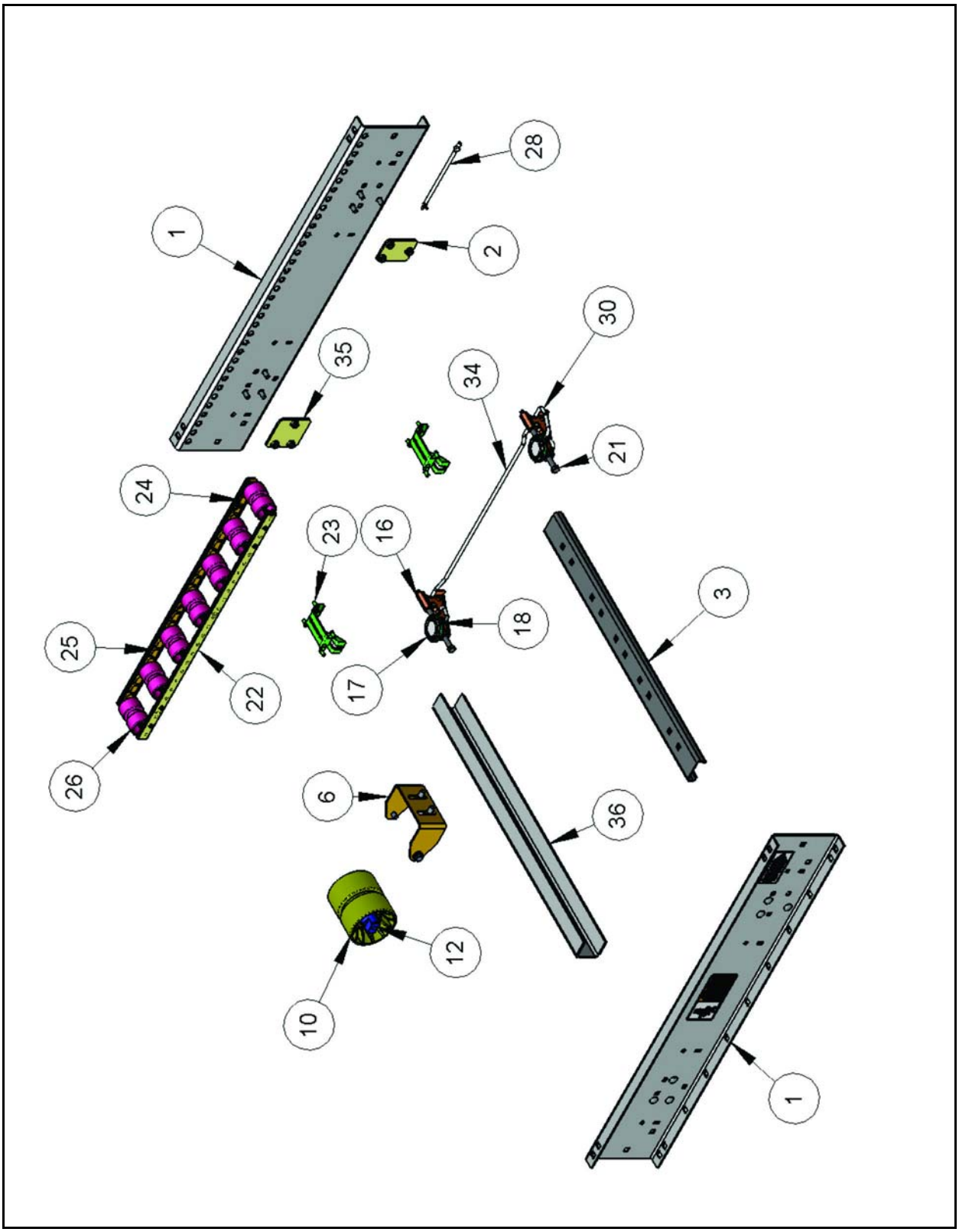


610 GUIDE RAIL REF SICK 6'LG/_'ZN ASSY 400127

SEQ	QTY	PART NO	DESCRIPTION
1	1	400278__	610 GUIDE RAIL PE/REFL SICK __'LG/_'ZN LOW
2	2	49091900	REFLECTOR MICROCUBE SICK

SEQ	QTY	PART NO	DESCRIPTION
3	2	20045800	SMS #8 X .375 UNSLOT FLANGED HEX HEAD (S&S#8N37TUWZ)

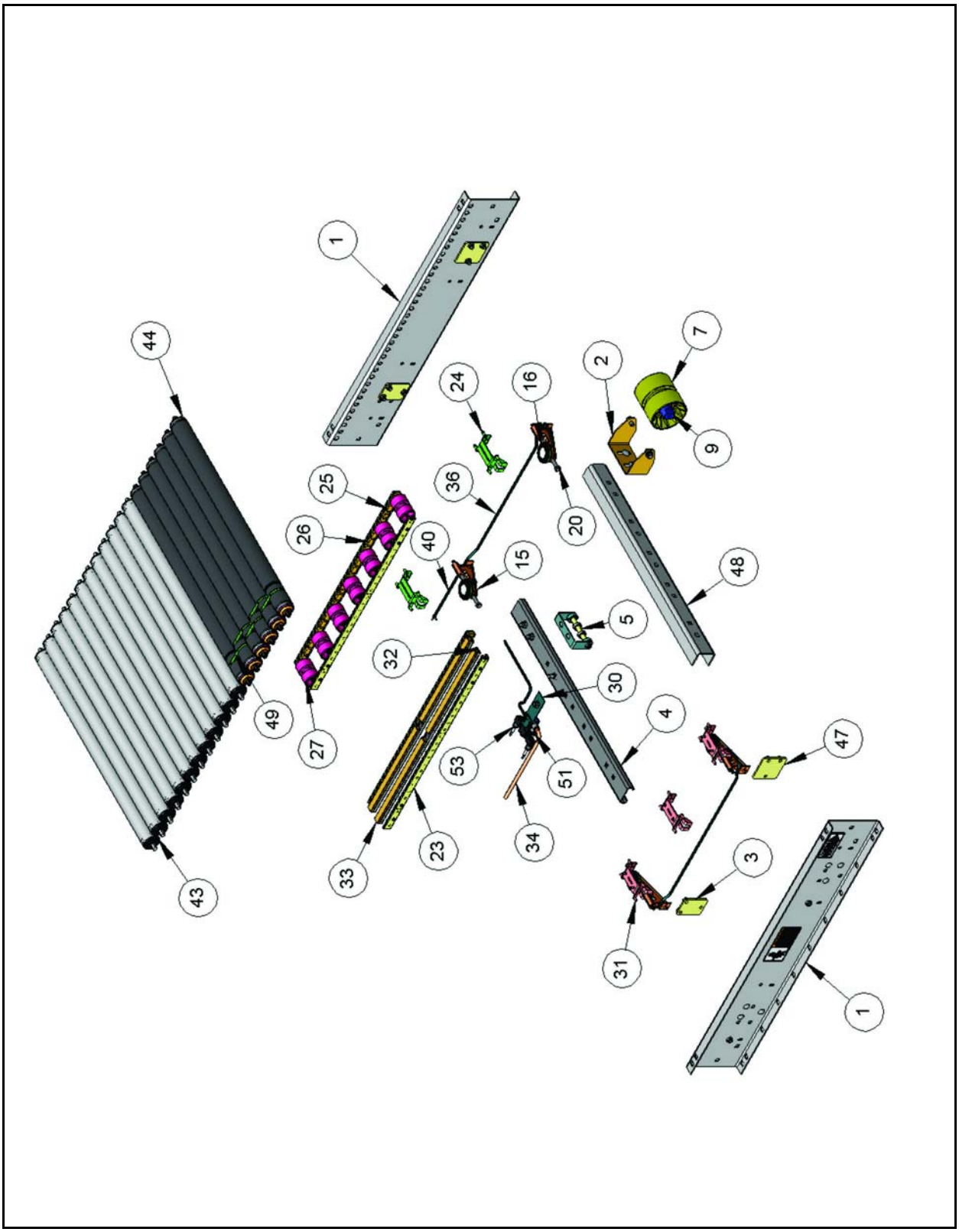
400071 - 610 Infeed Idler ATO Model



610 INFEED IDLER ATO MODEL 400071

SEQ	QTY	PART NO	DESCRIPTION	SEQ	QTY	PART NO	DESCRIPTION
1	2	40002901	610 CHAN RAIL IDLER 6.5"X3'	**17**	2	40000700	610 DIAPHRAGM HYTREL 3078
2	2	40000500	610 SPREADER END PLATE	**18**	2	40000800	610 DIAPHRAGM RETAINING RING
3	1	40000328	610 SPREADER CROSS-TIE 28"LG	**19**	2	29000400	FITTING BRASS 10-32THD 1/8" HOSE
4	12	221102	BOLT CAR .313-18 X .750	**20**	2	29001700	GASKET CLIPPARD FIBER PN:11761-3
5	15	225021	NUT FLANGE .313-18	**21**	2	40001500	610 STUD SHOE SUPPORT
6	1	40003001	610 BRACKET IDLER PULLEY	**22**	2	40000902	610 SHOE RAIL 25" LG
7	2	220003	BOLT CAR .375-16 X .750	**23**	2	40001100	610 SHOE SPREADER
8	2	221055	NUT FLANGE .375-16	**24**	2	40002602	610 SHOE AXLE RETAINER 3"
9	2	22554400	BRG .984-2.047-.591 (SST#6205-ZZ)	**25**	4	40002601	610 SHOE AXLE RETAINER 11"
10	1	40013900	610 PULLEY IDLER 4.0" OD W/GROOVE	**26**	7	40001200	610 PRESSURE ROLLER ASY
11	1	40005004	610 SPACER IDLER ROLLER 1.165"LG	**27**	8	20002700	SCREW UNSLOT HEX WASH TEK #8 X .625"
12	1	40003103	610 SHAFT IDLER ROLLER 4.500"LG	**29**	1	24001600	ARK-PLAS REDUCING CONNECTOR #APRC212CR25WN
13	2	220077	WASHER FLAT .375 SAE TYPE A	**31**	1	24000900	TEE 1/8"ID X 1/8"ID X 1/8"ID TUBE
14	2	220071	WASHER LOCK .375	**32**	2	29002700	LABEL CEMA # 931005
15	2	220018	BOLT HEX .375-16 X .750	**33**	2	29003000	LABEL PRODUCT TRAVEL
16	2	40000600	610 BRACKET SHOE SUPPORT	**35**	2	40027500	610 SPREADER END PLATE

400066 - 610 Discharge Idler ATO Model



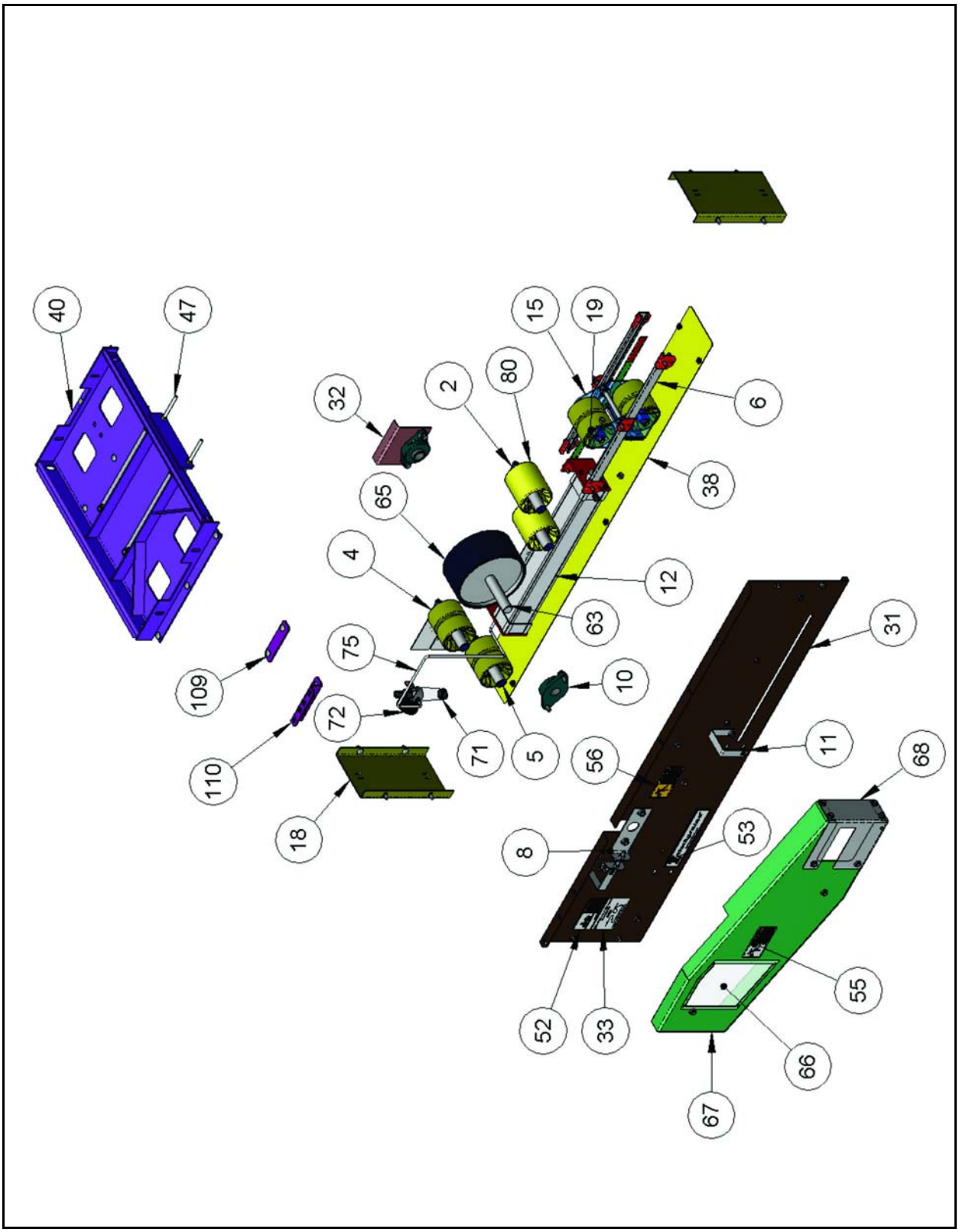
610 DISCHARGE IDLER ATO MODEL 400066

SEQ	QTY	PART NO	DESCRIPTION	SEQ	QTY	PART NO	DESCRIPTION
1	2	40002901	610 CHAN RAIL IDLER 6.5"X3'	**25**	4	40002602	610 SHOE AXLE RETAINER 3"
2	1	40003001	610 BRACKET IDLER PULLEY	**26**	8	40002601	610 SHOE AXLE RETAINER 11"
3	2	40000500	610 SPREADER END PLATE	**27**	7	40001200	610 PRESSURE ROLLER ASY
4	1	40000328	610 SPREADER CROSS-TIE 28"LG	**28**	22	20002700	SCREW UNSLOT HEX WASH TEK #8 X .625"
5	1	40001904	610 BELT RETURN SUPPORT ASY 3"	**29**	4	24000900	TEE 1/8"ID X 1/8"ID X 1/8"ID TUBE
6	2	22554400	BRG .984-2.047-.591 (SST#6205-ZZ)	**30**	1	40006701	610 BRACKET 3 & 4 WAY VALVE MOUNT
7	1	40013900	610 PULLEY IDLER 4.0" OD W/GROOVE	**31**	3	70056700	P610 BRAKE SPREADER
8	1	40005004	610 SPACER IDLER ROLLER 1.165"LG	**32**	2	70046900	P610 CHAN BRAKE PAD MOUNTING
9	1	40003103	610 SHAFT IDLER ROLLER 4.500"LG	**33**	4	70045000	P610 BRAKE PAD
10	2	220077	WASHER FLAT .375 SAE TYPE A	**34**	1	24001300	TUBING 3/8"OD X 1/4"ID ORANGE
11	2	220071	WASHER LOCK .375	**37**	2	20003600	SCREW PN HD PHL #6-32 X 1.25
12	2	220018	BOLT HEX .375-16 X .750	**38**	2	20003700	NUT FLANGE #6-32
13	5	221055	NUT FLANGE .375-16	**41**	1	24000401	VALVE 4-WAY 120V w/FITTINGS
14	5	220003	BOLT CAR .375-16 X .750	**43**	12	140061160	ROL G196 16.00BF
15	4	40000600	610 BRACKET SHOE SUPPORT			140061220	ROL G196 22.00BF
16	4	40000700	610 DIAPHRAGM HYTREL 3078			140061280	ROL G196 28.00BF
17	4	40000800	610 DIAPHRAGM RETAINING RING			140061340	ROL G196 34.00BF
18	4	29000400	FITTING BRASS 10-32THD 1/8" HOSE			140061400	ROL G196 40.00BF
19	4	29001700	GASKET CLIPPARD FIBER PN:11761-3	**44**	6	140002160	ROL G196__ DGR 16.00BF
20	4	40001500	610 STUD SHOE SUPPORT			140002220	ROL G196__ DGR 22.00BF
21	16	225021	NUT FLANGE .313-18			140002280	ROL G196__ DGR 28.00BF
22	12	221102	BOLT CAR .313-18 X .750			140002340	ROL G196__ DGR 34.00BF
23	4	40000902	610 SHOE RAIL 25" LG			140002400	ROL G196__ DGR 40.00BF
24	2	40001100	610 SHOE SPREADER				

610 DISCHARGE IDLER ATO MODEL 400066

SEQ	QTY	PART NO	DESCRIPTION
45	2	29002700	LABEL CEMA # 931005
46	2	29003000	LABEL PRODUCT TRAVEL
47	2	40027500	610 SPREADER END PLATE
4	1	40000328	610 SPREADER CROSS-TIE 28"LG
49	5	305280	O-BELT 0.188 DIA x 7.750 LG 83A
51	1	3175 60 11	Legris 3/8"Tube to Male 1/8NPT Connector

400204 - 610 Center Drive Assy



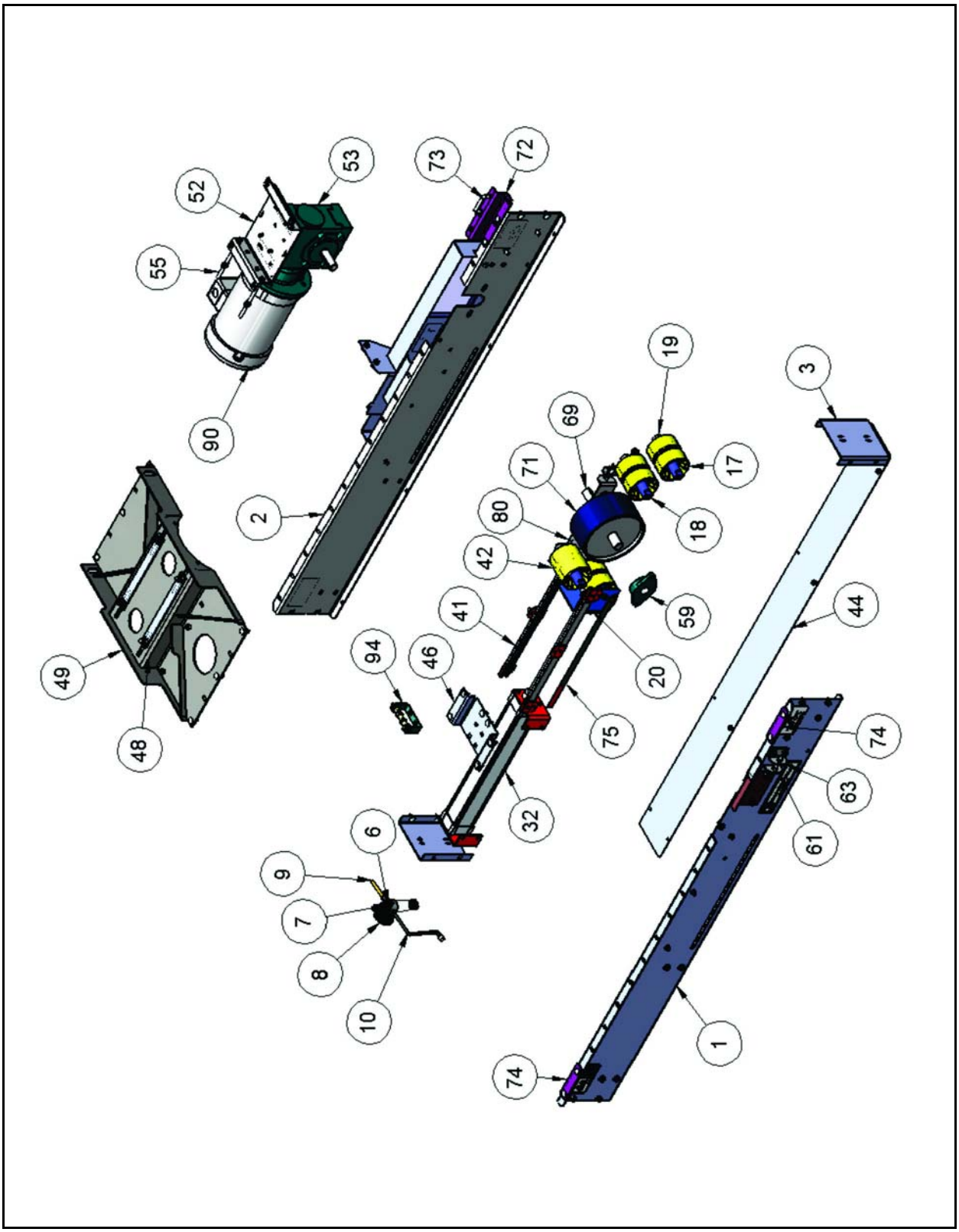
610 CENTER DRIVE ASSEMBLY 400204

SEQ	QTY	PART NO	DESCRIPTION	SEQ	QTY	PART NO	DESCRIPTION
1	1	40002201	610 CENTER DRIVE RAIL A	**26**	20	20006700	BOLT HEX FLG .375-16 X .750
2	4	40003102	610 SHAFT IDLER ROLLER 7.000"LG	**27**	31	220003	BOLT CAR .375-16 X .750
3	12	22554400	BRG .984-2.047-.591 (SST#6205-ZZ)	**28**	1	40008601	610 END PLATE AIR TAKE-UP
4	4	40013900	610 PULLEY IDLER 4.0" OD W/GROOVE	**29**	5	220028	BOLT HEX .438-14 X 1.250
5	4	40005005	610 SPACER IDLER ROLLER 2.400"LG	**30**	1	220073	WASHER LOCK .438
6	2	40005300	610 TENSIONER GUIDE TRACK	**31**	1	40002300	610 CENTER DRIVE RAIL B
7	6	40005501	610 BRACKET TENSIONER GUIDE SUPT	**32**	1	40002401	610 FILL PLATE CENTER DRIVE
8	1	40004701	610 DRIVE PULLEY ADJUSTING ANGLE	**33**	2	29000705	610 LABEL BELT PATH INSTRUCTION
9	1	40004801	610 DRIVE PULLEY ADJUSTING GUSSET	**34**	4	225191	WASHER FLAT .438 SAE TYPE A
10	2	22000800	BRG F2B-SC-103-NL (DODGE 124614)	**35**	8	225055	NUT FLANGE .438-14
11	2	70084300	P610 BRKT DR GUARD MTG	**36**	8	20006000	NUT CAGE .375-16 W/.057-.092 GRIP RANGE
12	1	40006400A	610 CYLINDER PHD 2 1/2" BR X 18" ST	**37**	1	220025	BOLT HEX .375-16 X 2.500
15	1	40003301	610 BRACKET DUAL IDLER TAKE-UP	**38**	1	40004600	610 BOTTOM GUARD CENTER DRIVE
16	8	20031600	BOLT HEX FLG .250-20 X .500	**39**	51	221055	NUT FLANGE .375-16
18	2	40002501	610 END PANEL CENTER DRIVE	**40**	1	40003507	610 REDUCER MTG PLATE 28"BF
19	2	40003101	610 SHAFT IDLER ROLLER 5.000"LG	**41**	1	70084207	P610 RED ADJ MTG BASE - 921
20	1	40005400	610 SHAFT GUIDE BRG DUAL IDLER TU	**42**	2	40003703	610 RED MTG ADJ PLATE
21	2	40005006	610 SPACER IDLER ROLLER 1.400"LG	**43**	2	40015403	610 RED MTG RIB PLATE GEN2
22	2	22000600	BRG ABEC .375-.875-.281 (SST#1604ZZ)	**44**	2	40015401	610 RED MTG RIB PLATE GEN2
23	2	A22001700A	COLLAR 2 PC CLAMP-ON .500" ID (RULAND # SP-8-F)	**45**	1	40005102	610 TENSION POSITION INDICATOR LH
24	2	A22001700B	COLLAR 2 PC CLAMP-ON .500" ID (RULAND # SP-8-F)	**46**	2	20003400	SCREW UNSLOT HEX WASH TEK #10 X .500"

610 CENTER DRIVE ASSEMBLY 400204

SEQ	QTY	PART NO	DESCRIPTION	SEQ	QTY	PART NO	DESCRIPTION
47	2	20007200	ROD THD .375-16 X 7.00	**69**	4	220002	BOLT CAR .438-14 X 1.500
48	2	41011500	200 RED BACK PLT	**70**	1	A33-82	BRKT AIR FLTR/REG A3382
49	4	221022	BOLT CAR .500-13 X 1.000	**71**	1	24000000	610 PNEUMATIC TENSIONER CONTROL KIT VCC800
50	4	221286	NUT FLANGE .500-13	**73**	1	3175 60 11	Legris 3/8"Tube to Male 1/8NPT Connector
51	6	20006800	BOLT HEX FLG .375-16 X .500	**74**	1	3175 56 11	Legris 1/4"Tube to Male 1/8"NPT Connector
52	2	29002800	LABEL CEMA # 930009	**75**	1	24001400	TUBING 1/4"OD X 1/8" ID BLACK
53	2	29002900	LABEL INTELLIGRATED	**76**	2	20022000	BOLT CARR SHORT SQ NEXK 10-32 X .500
54	1	29000500	610 LABEL TENSIONER POSITION	**77**	2	225022	NUT NYLOCK #10-32
55	1	29002500	LABEL CEMA # 930001	**78**	3	220061	NUT HEX .375-16
56	1	29039700	LABEL CEMA # 930001	**80**	2	40014000	MOLD - PULLEY IDLER 4"OD W/GROOVE
57	6	220014	BOLT HEX .313-18 X .750	**96**	32	20002700	SCREW UNSLOT HEX WASH TEK #8 X .625"
58	32	225021	NUT FLANGE .313-18	**97**	2	29002600	LABEL CEMA # 930004
59	6	20021300	NUT CAGE .250-20 W/.093-.126 GRIP RANGE	**98**	2	29003000	LABEL PRODUCT TRAVEL
60	6	220907	BOLT HEX .250-20 X .500	**100**	4	40013300	610 BRKT PLASTIC SICK SINGLE ZONE
61	2	40003601	610 RED MTG END PLATE	**106**	8	220003	BOLT CAR .375-16 X .750 SHORT SQ NECK
65	1	40005800	610 PULLEY CENTER DRIVE	**108**	1	40006500	610 U-BOLT 3/8"-16 X 2.69 X 1.75
66	1	70085000	P610 GUARD LEXAN WINDOW	**109**	1	70107000	610 LOWER DRIVE SUPPORT BRACKET
67	1	70084001	P610 GUARD DR BALDOR RED LH	**110**	1	70106900	610 UPPER DRIVE SUPPORT BRACKET
68	1	70084113	P610 GUARD END DR 921\200 LH				

40035800 - 610 Center Drive Low Profile Assy



CENTER DRIVE LOW PROFILE DRIVE 40035800

SEQ	QTY	PART NO	DESCRIPTION	SEQ	QTY	PART NO	DESCRIPTION
1	1	40029701	610 LPCD RAIL LH	**27**	1	40005102	610 TENSION POSITION INDICATOR LH
2	1	40029702	610 LPCD RAIL RH	**28**	2	20003400	SCREW UNSLOT HEX WASH TEK #10 X .500"
3	2	40029800	610 LPCD END PLT	**29**	13	220004	BOLT CAR .375-16 X 1.000
4	22	220003	BOLT CAR .375-16 X .750	**30**	1	40008601	610 END PLATE AIR TAKE-UP
5	54	221055	NUT FLANGE .375-16	**31**	3	220028	BOLT HEX .438-14 X 1.250
6	1	8500083	BRKT AIR FTLR/REG A3382	**32**	1	40006400	610 CYLINDER PHD 2 1/2" BR X 18"ST
7	1	24000000	610 PNEUMATIC TENSIONER CONTROL KIT VCC800	**35**	4	225331	NUT HEX JAM .375-16
9	1	24001300	TUBING 3/8"OD X 1/4" ID ORANGE	**36**	8	20031600	BOLT HEX FLG .250-20 X .500
11	1	3175 60 11	LEGRIS 3/8"TUBE TO MALE 1/8NPT CONNECTOR	**38**	6	40005501	610 BRACKET TENSIONER GUIDE SUPT
12	1	3175 56 11	LEGRIS 1/4"TUBE TO MALE 1/8"NPT CONNECTOR	**39**	6	220014	BOLT HEX .313-18 X .750
13	1	24031900	FITTING 90 DEGREE 1/4" PUSH CONNECT X 1/4NPT THREAD LEGRIS 3129 56 18	**40**	6	225021	NUT FLANGE .313-18
14	2	20022000	BOLT CARR SHORT SQ NEXK 10-32 X .500	**41**	2	40005300	610 TENSIONER GUIDE TRACK
15	2	225022	NUT NYLOCK #10-32	**42**	1	40014000	610 PULLEY IDLER 4"OD FLAT
16	8	7892109	BRG .984-2.047-.591 (SST#6205-ZZ)	**43**	10	20021300	NUT CAGE .250-20 W/.093-.126 GRIP RANGE
17	3	40013900	610 PULLEY IDLER 4.0" OD W/GROOVE	**44**	1	40031200	610 LPCD BTTM CVR
18	4	40003102	610 SHAFT IDLER ROLLER 7.000"LG	**45**	10	220907	BOLT HEX .250-20 X .500
19	4	40005005	610 SPACER IDLER ROLLER 2.400"LG	**46**	1	40029900	610 LPCD RETURN IDLER BRKT
20	1	40030100	610 LPCD T-U IDLER BRKT	**47**	2	20039300	WASHER FLAT 1/2 SAE ZP
21	14	20006700	BOLT HEX FLG .375-16 X .750	**48**	1	400304__	610 LPCD REDUCER MNT PLT __"BF
22	1	40005400	610 SHAFT GUIDE BRG DUAL IDLER TU	**49**	2	400305__	610 LPCD REDUCER MNT SIDE PLT __"BF
23	2	22001700	COLLAR 2 PC CLAMP-ON 0.500" ID				
26	2	22000600	BRG ABEC .375-.875-.281 (SST#1604ZZ)				

CENTER DRIVE LOW PROFILE DRIVE 40035800

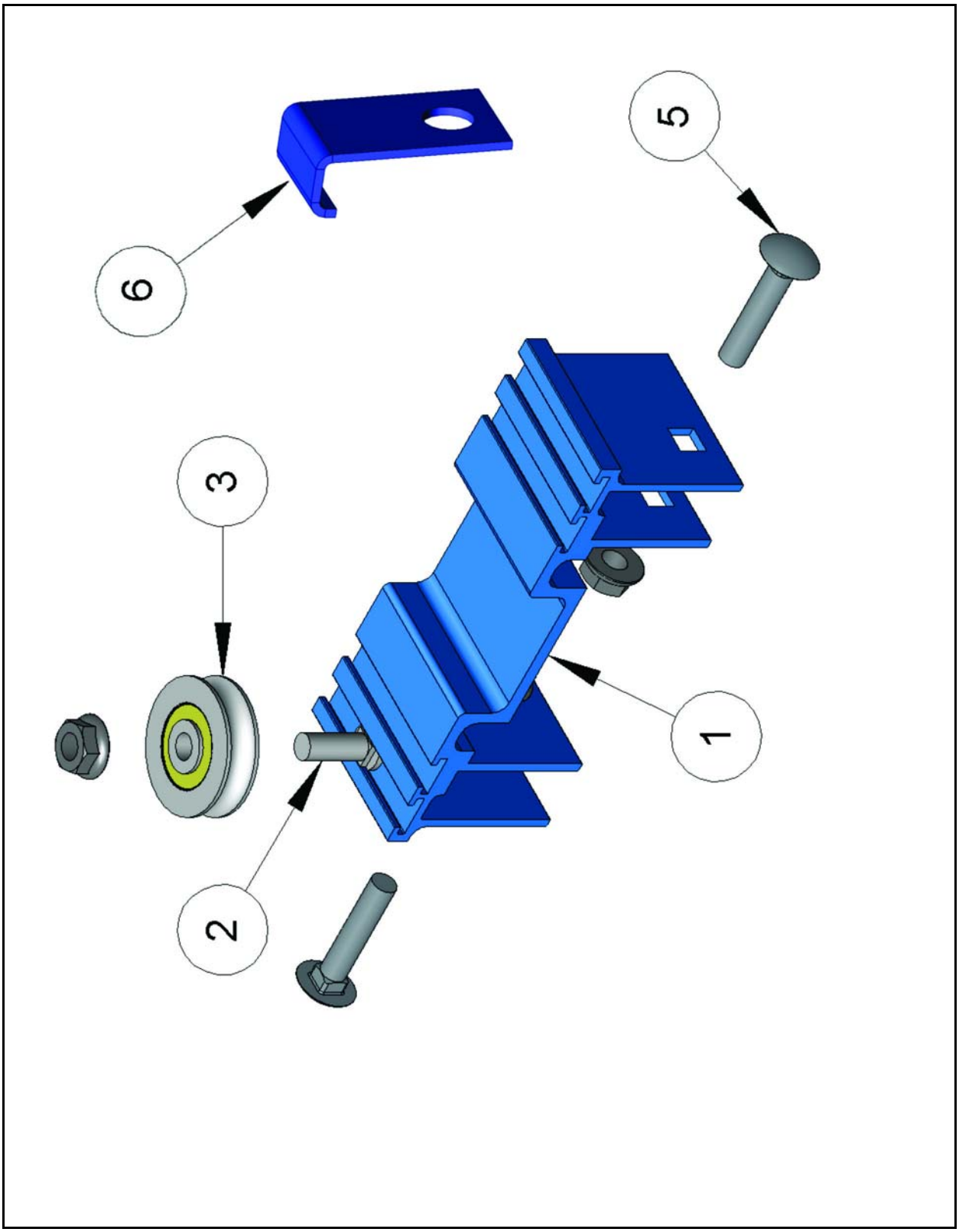
SEQ	QTY	PART NO	DESCRIPTION	SEQ	QTY	PART NO	DESCRIPTION
50	2	40030600	610 LPCD REDUCER MNT GUSSET - BELT SIDE	**73**	1	40006500	610 U-BOLT 3/8"-16 X 2.69 X 1.75
51	2	400307__	610 LPCD REDUCER MNT GUSSET __"BF	**74**	2	70107000	610 LOWER DRIVE SUPPORT BRACKET
52	1	400313__	610 LPCD REDUCER ADJ BASE - _H DRV	**75**	1	29000500	610 LABEL TENSIONER POSITION
53	1	SEE ORDER	REDUCER	**76**	2	29002800	LABEL CEMA # 930009
54	2	21253100	RED SPACER KIT DODGE 2326SPACER	**77**	1	29000705	610 LABEL BELT PATH INSTRUCTION
55	2	20007200	ROD THD .375-16 X 7.00	**78**	1	29000706	610 LABEL BELT PATH INSTRUCTION
56	4	225392	BOLT CAR .500-13 X 1.250	**79**	2	29002900	LABEL INTELLIGRATED
57	2	40031100	610 LPCD REDUCER MNT SLIDE PLT	**80**	2	29002500	LABEL CEMA # 930001
58	4	221286	NUT FLANGE .500-13	**81**	1	70084300	P610 BRKT DR GUARD MTG
59	2	22000800	BRG F2B-SC-103-NL (DODGE 124614)	**82**	2	20006500	BOLT HEX .375-16 X 4.000
60	4	225191	WASHER FLAT .438 SAE TYPE A	**83**	1	400308__	610 LPCD DRV CVR - _H DRV
61	2	40004701	610 DRIVE PULLEY ADJUSTING ANGLE	**84**	1	20006000	NUT CAGE .375-16 W/.057-.092 GRIP RANGE
62	4	225055	NUT FLANGE .438-14	**85**	1	40030900	610 LPCD DRV CVR WINDOW
63	2	40004801	610 DRIVE PULLEY ADJUSTING GUSSET	**86**	4	225577	BHSCS .250-20 X .500
64	2	220025	BOLT HEX .375-16 X 2.500	**87**	4	221281	NUT FLANGE .250-20
65	8	220061	NUT HEX .375-16	**88**	1	400310__	610 LPCD DRIVE CVR FILLER PLT - _H DRV
66	2	220928	BOLT HEX .438-14 X 1.500	**89**	1	40031400	610 LPCD DRV CVR END PLT
67	1	40030200	610 LPCD BRG CVR PLT	**90**	1	SEE ORDER	MOTOR
68	1	40005800	610 PULLEY CENTER DRIVE	**91**	1	105344	BELT GEAR DGE 630H150 / GATES 630H150
72	1	40030000	610 LPCD SUPPORT Z BRKT			105358	BELT GEAR DGE 850H150 / GATES 850H150

CENTER DRIVE LOW PROFILE DRIVE 40035800

SEQ	QTY	PART NO	DESCRIPTION
92	1	123142	RC 40 ROLLER CHAIN JEFFREY RENOLD PREMIUM
		123144	RC 50 ROLLER CHAIN JEFFREY RENOLD PREMIUM
		123146	RC 60 ROLLER CHAIN JEFFREY RENOLD PREMIUM
		123148	RC 80 ROLLER CHAIN JEFFREY RENOLD PREMIUM
		22442600	RC 100 ROLLER CHAIN (SOLD IN 10' INCREMENTS) JEFFREY RENOLD PREMIUM
		22442700	RC 120 ROLLER CHAIN JEFFREY RENOLD PREMIUM
		22627000	BT GATES POLYCHAIN CARBON 8MGT-1280-21
		22629600	BT GATES POLYCHAIN CARBON 8MGT-1280-36

SEQ	QTY	PART NO	DESCRIPTION
94	1	40001904	610 BELT RETURN SUPPORT ASY.3" BELT

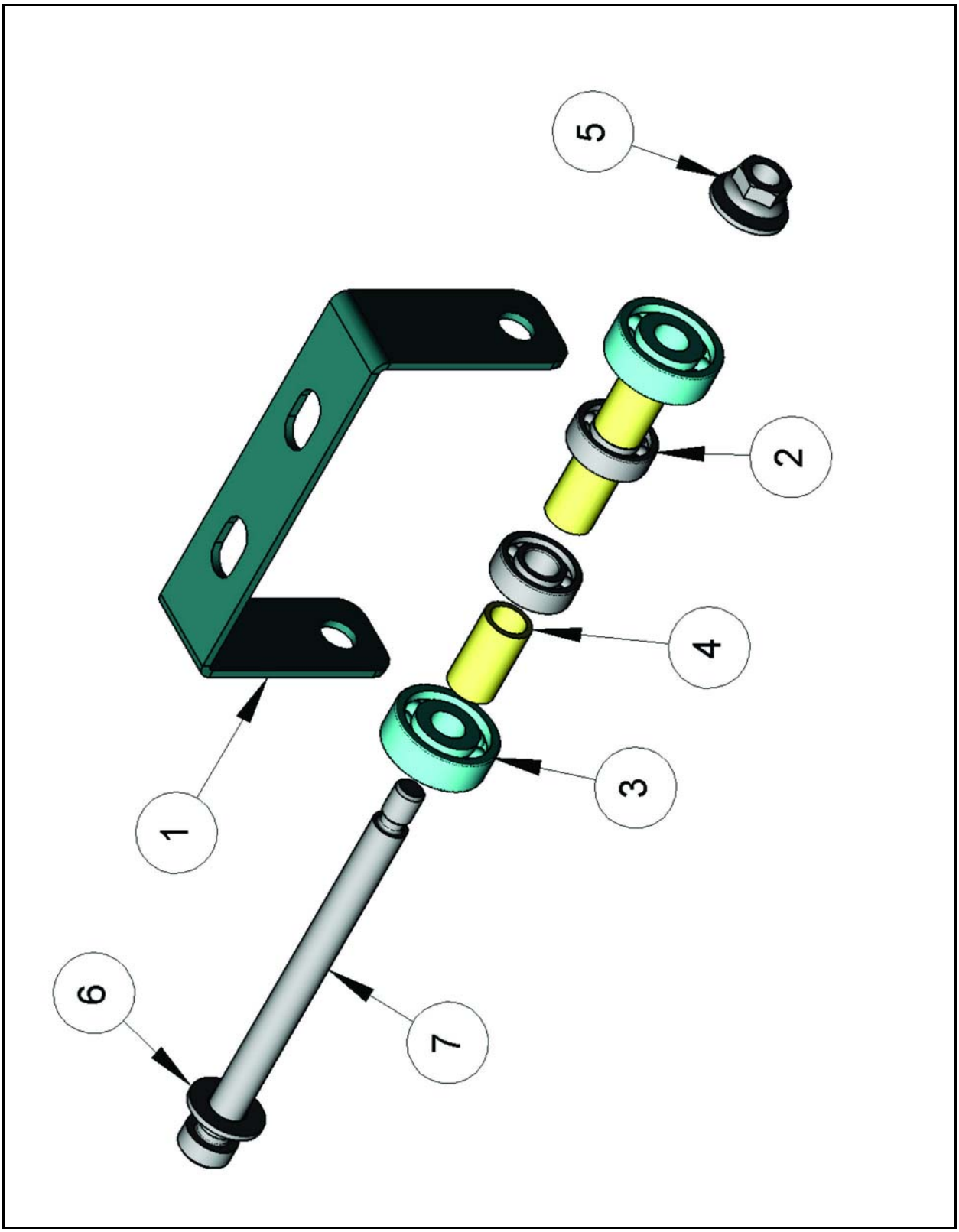
700753 - 610 Skew guide Assy 3 Inch Belt



610 SKEW GUIDE ASSY 3" BELT 700753

SEQ	QTY	PART NO	DESCRIPTION
1	1	40007000	610 SKEW GUIDE ROLLER BRKT
2	1	70075600	P610 BOLT TRUSS HEAD .250-16 X .625
3	1	70062800	P610 SKEW GUIDE ROLLER (SST PN-8459)
4	3	221281	NUT FLANGE .250-20
5	2	20004600	BOLT CAR .250-20 X 1.250
6	1	700601	P610 SKEW RETAINING CLIP

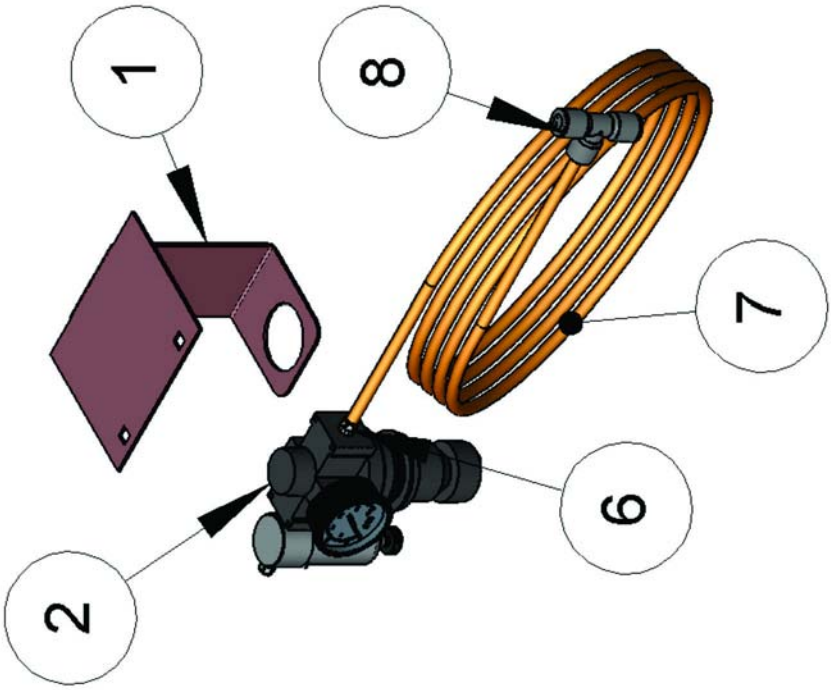
400019 - 610 Belt Return Support Assy



610 BELT RETURN SUPPORT ASSY 400019

SEQ	QTY	PART NO	DESCRIPTION
1	1	40001804	610 BRACKET BELT RETURN 3"
2	2	22000600	BRG ABEC .375-.875-.281 (SST#1604ZZ)
3	2	22000700	BRG ABEC .375-1.125-.375 (SST#1614ZZ)
4	3	40001602	610 SPACER BELT RETURN .904"LG
5	1	225021	NUT FLANGE .313-18
6	2	220077	WASHER FLAT .375 SAE TYPE A
7	1	20003100	BOLT SHD SH .375 X 4.50

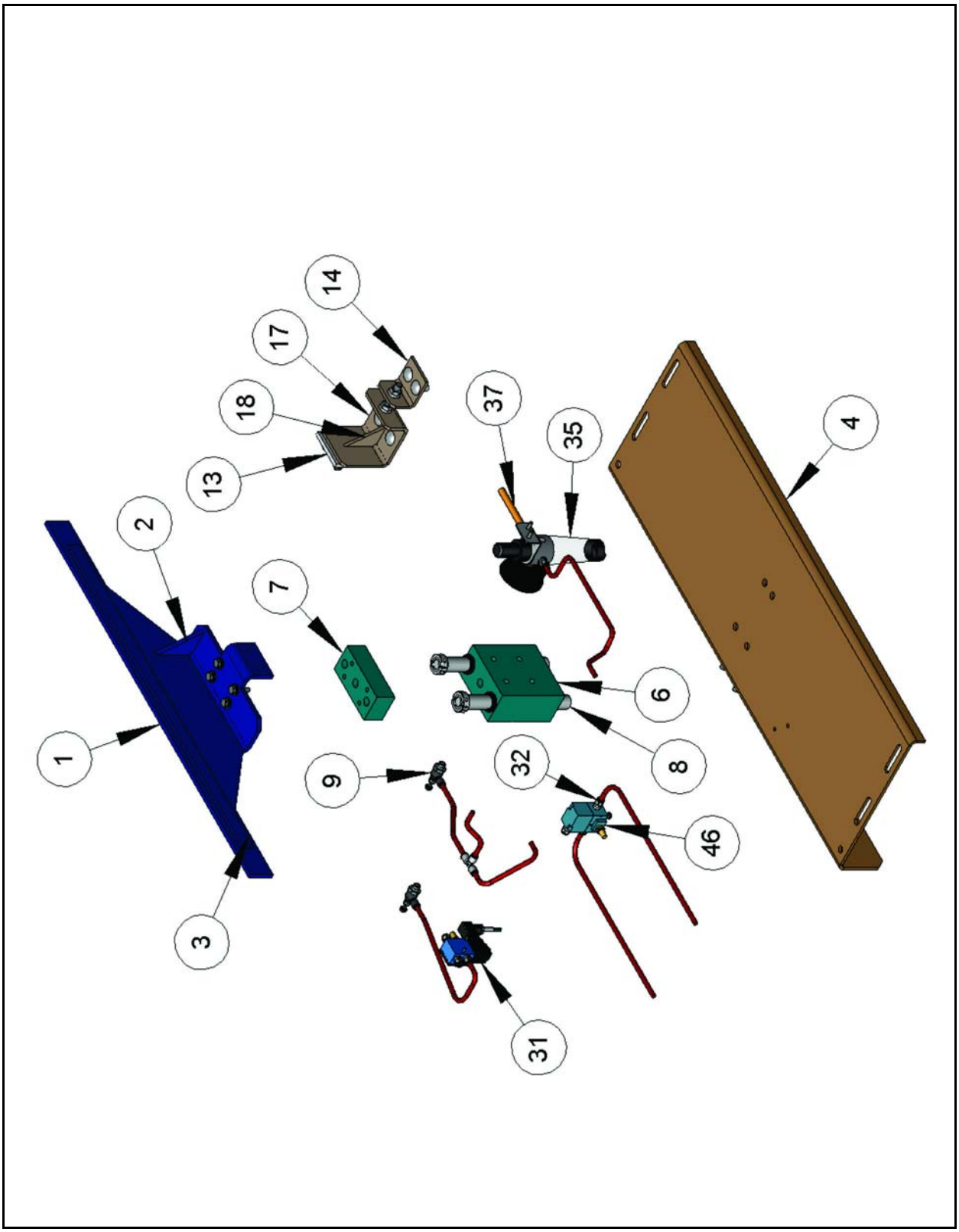
700742 - P610 Filter/Regulator Mtg Kit (VCC-823)



P610 FILTER/REGULATOR MTG KIT (VCC-823) 700742

SEQ	QTY	PART NO	DESCRIPTION
1	1	A7007420 0A	VOELKER CONTROLS SPECIAL BRACKET
2	1	A7007540 0A	P610 FILTER/REGULATOR MTG KIT (vcc-823)
6	2	3175 56 11	Legris 1/4"Tube to Male 1/8"NPT Connector
7	1	24001300	TUBING 3/8"OD X 1/4:ID ORANGE
8	1	l3104_62_60	CONNECTORS - LEGRIS

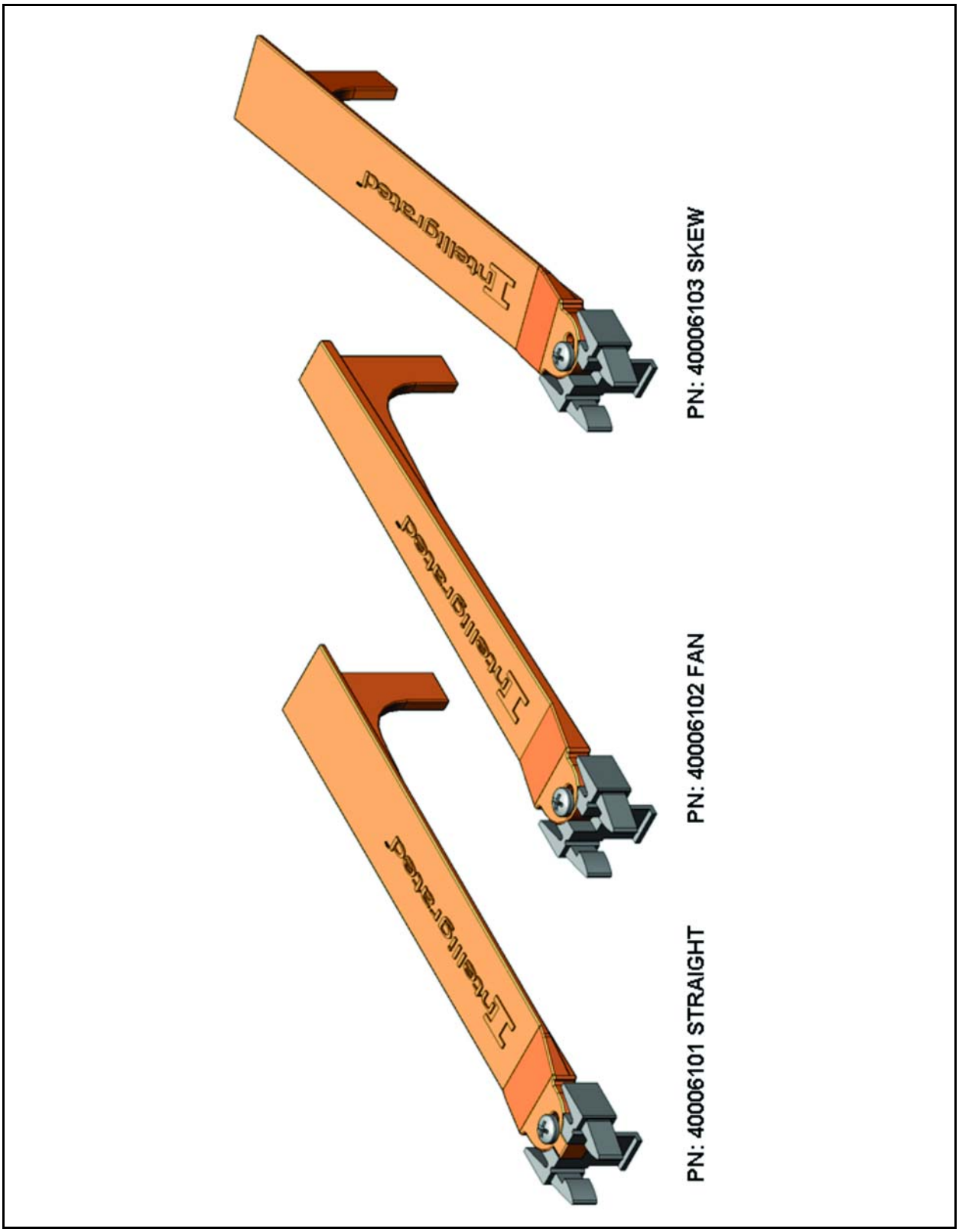
800022 - Pop-Up Stop Assy ATO Model



POP -UP STOP ASSY ATO MODEL 800022

SEQ	QTY	PART NO	DESCRIPTION	SEQ	QTY	PART NO	DESCRIPTION
1	1	80001303	PU STOP BLADE 28BF	**23**	4	220076	WASHER FLAT .313 SAE TYPE A
2	1	80001400	PU STOP BLADE GUSSET	**24**	4	220070	WASHER LOCK .313
3	1	80001503	PU STOP BLADE BACKER 28BF	**25**	4	220015	BOLT HEX .313-18 X 1.000
4	1	80000903	PU STOP FRAME 28BF	**26**	2	225114	FST FHSCS .25-20 X .875 ZC
5	2	80001000	PU STOP FRAME GUSSET	**27**	4	20025600	SCREW PN HD PHL #4-40 X 1.25
6	1	A80001200A	PU STOP CYLINDER PHD#: SAH132X2-Q6-J3 Voelker (VCC-864)	**28**	4	20025700	HEX NUT #4-40
9	2	A24007100E	PU STOP 120V CONTROLS KIT VCC865 Voelker	**29**	4	20025800	SCREW PN HD PHL #10-32 X .500
13	1	80002100	PU STOP BACKSTOP GUIDE UHMW	**30**	2	225022	NUT NYLOCK #10-32
14	1	80002000	PU STOP BACKSTOP ADJ BRKT	**31**	1	A240004MAC	VALVE 4WAY 120V W/FITTINGS MUFFLER & CABLE VCC-822
15	1	225220	BOLT HEX .375-16 X 2.000	**32**	7	3175 56 11	Legris 1/4"Tube to Male 1/8"NPT Connector
16	7	221055	NUT FLANGE .375-16	**33**	1	9-5140-001	Cable Connector for Mac Valve# 9-5140-001 (New Number 5J444-000-USOL) GRND DOWN CORD
17	1	80001700	PU STOP BACKSTOP	**34**	1	A33-82	BRKT AIR FLTR/REG A3382
18	1	80001800	PU STOP BACKSTOP GUSSET	**35**	1	24000000C	610 PNEUMATIC TENSIONER CONTROL KIT VCC800
19	4	220075	WASHER FLAT .250 SAE TYPE A	**37**	1	24001300	TUBING 3/8"OD X 1/4" ID ORANGE
20	4	225404	WASHER LOCK .250	**38**	1	3175 60 11	Legris 3/8"Tube to Male 1/8NPT Connector
21	4	220009	BOLT HEX .250-20 X 1.000	**46**	2	24003700	MUFFLER 3/8" NPT (VOELKER #BM-38)
22	4	220003	BOLT CAR .375-16 X .750 SHORT SQ NECK	**48**	2	225072	NUT FLANGE .250-20

40006101-3 - 610 Finger Guard Assemblies

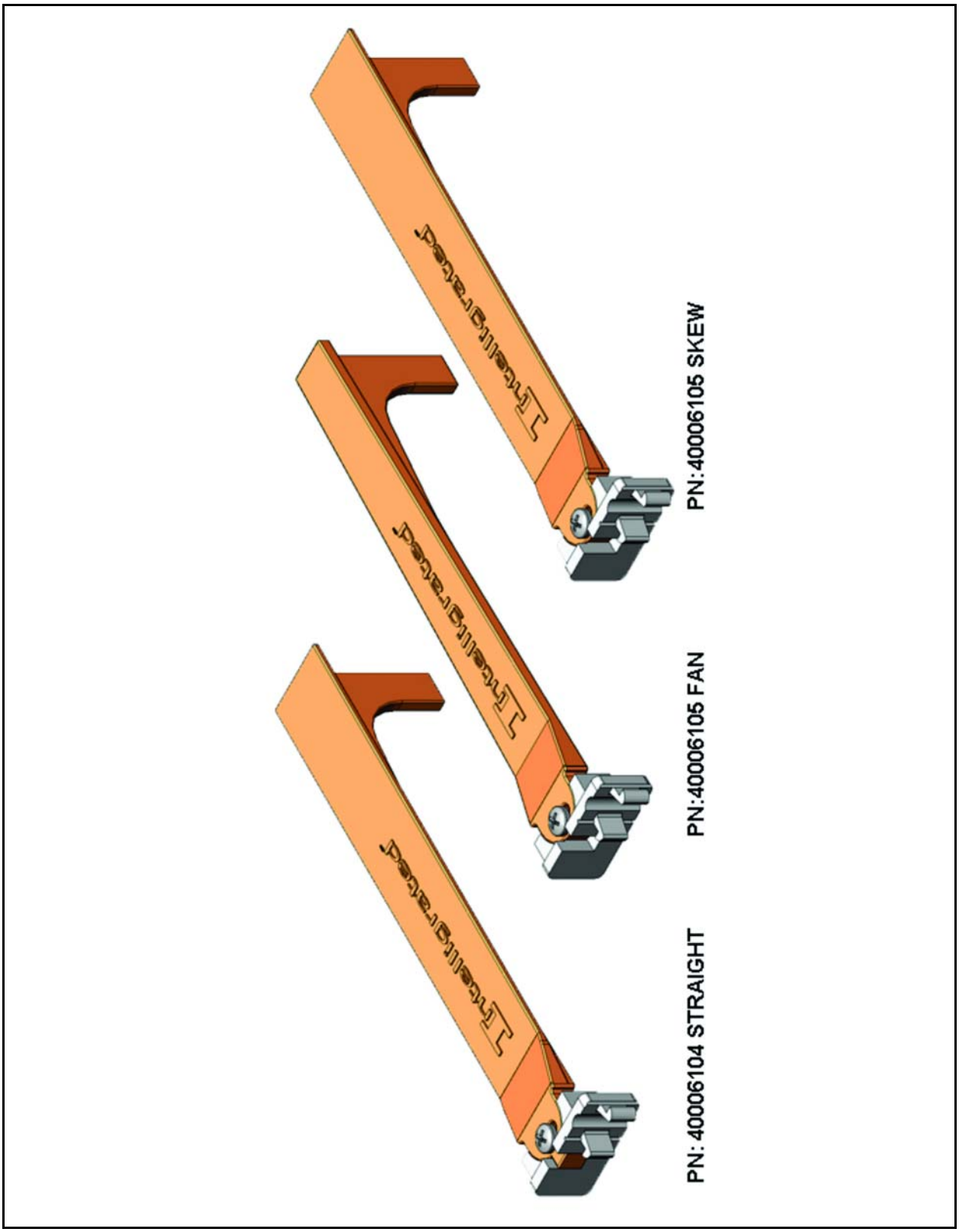


610 FINGER GUARD ASSEMBLIES 40006101-3

SEQ	QTY	PART NO	DESCRIPTION
1	1	40006101	610 FINGER GUARD ASSY STRAIGHT
2	1	40006102	610 FINGER GUARD ASSY FAN

SEQ	QTY	PART NO	DESCRIPTION
3	1	40006103	610 FINGER GUARD ASSY SKEW

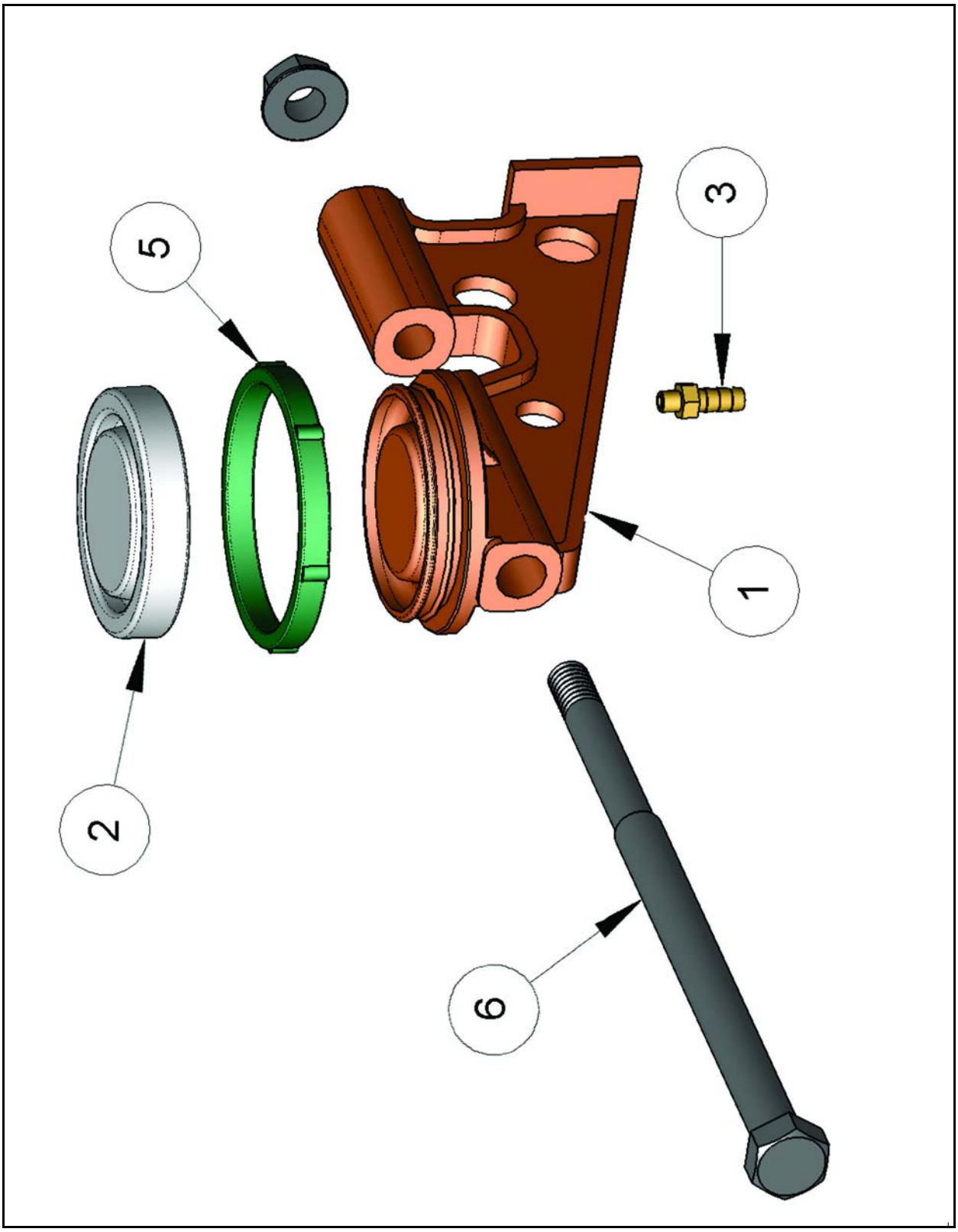
40006104-6 - 610 Finger Guard Junction Assemblies



610 FINGER GUARD JUNCTION ASSEMBLIES 40006104-6

SEQ	QTY	PART NO	DESCRIPTION
1	1	40006104	610 FINGER GUARD ASSY STRAIGHT JCT
2	1	40006105	610 FINGER GUARD ASSY FAN JCT
3	1	40006106	610 FINGER GUARD ASSY SKEW JCT

400006 - 610 Bracket Shoe Support



610 BRACKET SHOE SUPPORT 400006

SEQ	QTY	PART NO	DESCRIPTION
1	4	40000600	610 BRACKET SHOE SUPPORT
2	4	40000700	610 DIAPHRAGM HYTREL 3078
3	4	29000400	FITTING BRASS 10-32THD 1/8" HOSE
4	4	29001700	GASKET CLIPPARD FIBER PN:11761-3
5	4	40000800	610 DIAPHRAGM RETAINING RING
6	4	40001500	610 STUD SHOE SUPPORT

Accessori

ACCESSORIES

PART NO	DESCRIPTION
29092300	LACING #1 HIGH TENSILE 12" LONG CLIPPER 02242
22591500	PIN CONNECTING 0.065 DIA DURASTAINLESS #25 CLIPPER #02826
40013100	610 SLUG TERMINATOR SICK # 7027187
23194000	POWER SUPPLY 2 AMP WITH BOX SICK #7029741
23193700	POWER SUPPLY, ACCUMULATION 120VAC INPUT 24 VDC. SICK #70297
23195900	RELEASE ZIM MODULE SICK # 7029609
40013500	POWER ISOLATOR INTERCONNECTING CABLE SICK MODEL
40013800	T-CABLE TYPE 1 M12 DC 4 PIN JD4-TM12300A SICK #6011682
40015100	T-CABLE TYPE 2 M12 DC 4-PIN JD4 TM12300B SICK #6011683
40015500	CABLE COMM BREAK SICK # 7029124
40015800	GENDER CHANGER MALE/MALE
40015900	GENDER CHANGER FEMALE/FEMALE
40015200	CABLE 10" M12 4-PIN SICK #7028981
23194100	CABLE M12 #22-4C 2 METER MALE TO FEMALE EXTENSION MODLE KD4-SINM122SM12 SICK # 7023135
40015300	CABLE 3M M12 4-PIN SICK #7028657

PART NO	DESCRIPTION
29304000	610 SPLICE FOIL 75mm X 85mm (PRE-CUT SQUARE)
29303500	610 IQ BELT WELD KIT HABASIT PF-80OUS AND AF-76 AND GRV012-70/80C
40012601	610 Guide Rail PE Sick 6'LG/3'ZN Assy
40012602	610 Guide Rail PE Sick 12'LG/3'ZN Assy
40012606	610 Guide Rail PE Sick 6'LG/6'ZN Assy
40012607	610 Guide Rail PE Sick 12'LG/6'ZN Assy
12019601	Guide Rail PE 6ft. LG 3ft. ZN 2.5in. H Assy
12019602	Guide Rail PE 6ft. LG 6ft. ZN 2.5in. H Assy
12019701	Guide Rail PE 12ft. LG 3ft. ZN 2.5in. H Assy
12019702	Guide Rail PE 12ft. LG 6ft. ZN 2.5in. H Assy
12019801	Guide Rail PE 12ft. LG 3ft. ZN 10.0in. H Assy
12019802	Guide Rail PE 12ft. LG 6ft. ZN 10.0in. H Assy
12019901	Guide Rail PE 12ft. LG 3ft. ZN 10.0in. H Assy
12019902	Guide Rail PE 12ft. LG 6ft. ZN 10.0in. H Assy

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