

IMPORTANT!
DO NOT DESTROY

¡IMPORTANTE!
NO DESTRUIR



Installation and Maintenance Manual

with Safety Information
and Parts List

RECOMMENDED SPARE PARTS HIGHLIGHTED IN GRAY

Manual de Instalación y Mantenimiento

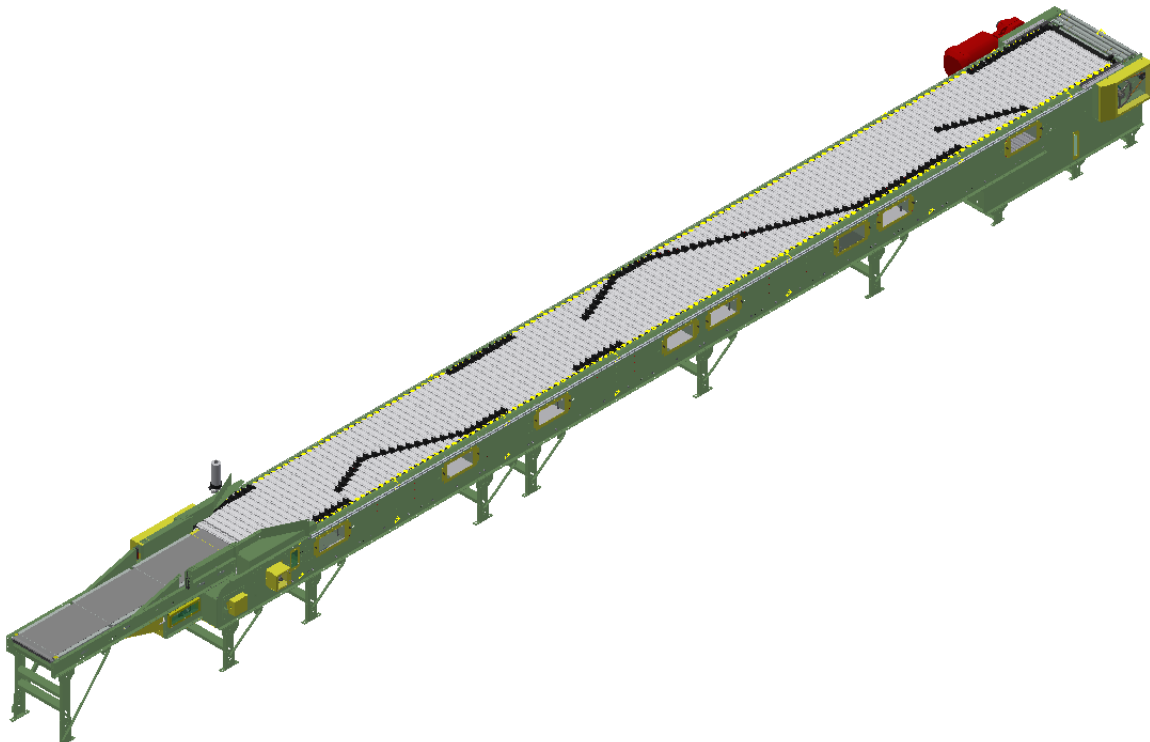
*con Información sobre Seguridad
y Lista de Refacciones*

LAS REFACCIONES RECOMENDADAS SE RESALTAN EN GRIS

ProSort 1100

Effective **FEBRUARY 2024**

Bulletin #754



HYTROL | Jonesboro, Arkansas
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INTRODUCTION

This manual provides guidelines and procedures for installing, operating, and maintaining your conveyor. A complete parts list is provided with recommended spare parts highlighted in gray. Important safety information is also provided throughout the manual. For safety to personnel and for proper operation of your conveyor, it is recommended that you read and follow the instructions provided in this manual.

• Receiving and Uncrating

1. Check the number of items received against the bill of lading.
2. Examine condition of equipment to determine if any damage occurred during shipment.
3. Move all crates to area of installation.
4. Remove crating and check for optional equipment that may be fastened to the conveyor. Make sure these parts (or any foreign pieces) are removed.

NOTE: If damage has occurred or freight is missing,
Contact your Hytrol Integration Partner.

• How to Order Replacement Parts

Included in this manual are parts drawings with complete replacement parts lists. Minor fasteners, such as nuts and bolts, are not included. When ordering replacement parts:

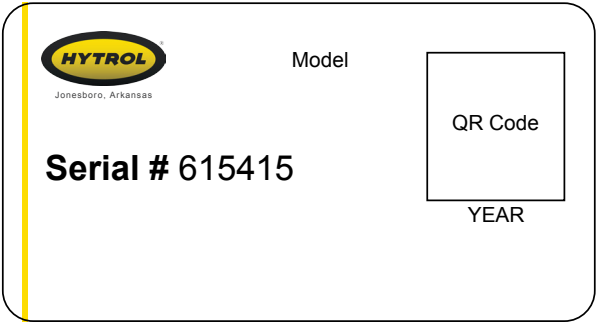
1. Contact Dealer from whom conveyor was purchased or nearest HYTROL Integration Partner.

2. Give Conveyor Model Number and Serial Number or HYTROL Factory Order Number.

3. Give Complete Description from Parts List.

4. Give type of drive. Example—8" End Drive, 8" Center Drive, etc.

5. If you are in a breakdown situation, call our Customer Care team at 1-844-4HYTROL.



HYTROL Serial Number
(Located near Drive on Powered Models).

SAFETY INFORMATION

• Installation

GUARDS AND GUARDING

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

Guarded by Location or Position. Where necessary for the protection of employees from hazards, all exposed moving machinery parts that present a hazard to employees at their work station shall be mechanically or electrically guarded, or guarded by location or position.

- Remoteness from frequent presence of public or employed personnel shall constitute guarding by location.
- When a conveyor passes over a walkway, roadway, or work station, it is considered guarded solely by location or position if all moving parts are at least 8 ft. (2.44 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 if personnel would be endangered.

HEADROOM

- When conveyors are installed above exit passageways, aisles, or corridors, there shall be provided a minimum clearance of 6 ft. 8 in. (2.032 m) measured vertically from the floor or walking surface to the lowest part of the conveyor or guards.
- Where system function will be impaired by providing the minimum clearance of 6 ft. 8 in. (2.032 m) through an emergency clearance, alternate passageways shall be provided.
- It is permissible to allow passage under conveyors with less than 6 ft. 8 in. (2.032 m) clearance from the floor for other than emergency exits if a suitable warning indicates low headroom.

• Operation

A) Only trained employees shall be permitted to operate conveyors. Training shall include instruction in operation under normal conditions and emergency situations.

B) Where employee safety is dependent upon stopping and/or starting devices, they shall be kept free of obstructions to permit ready access.

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

D) No person shall ride the load-carrying element of a conveyor under any circumstances unless that person is specifically authorized by the owner or employer to do so. Under those circumstances, such employee shall only ride a conveyor which incorporates within its supporting structure platforms or control stations specifically designed for carrying personnel. Under no circumstances shall any person ride on any element of a vertical conveyor.

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

F) A conveyor shall be used to transport only material it is capable of handling safely.

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

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

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

J) Conveyors shall not be maintained or serviced while in operation unless proper 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.

K) Conveyor owners should ensure proper safety labels are affixed to the conveyor, to warn of particular hazards involved in operation of their conveyors.

CAUTION! Because of the many moving parts on the conveyor, all personnel in the conveyor area need to be warned when the conveyor is about to be started.

• Maintenance

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

- All maintenance, including lubrication and adjustments, shall be performed only by qualified and trained personnel.
- It is important that a maintenance program be established to ensure that all conveyor components are maintained in a condition which does not constitute a hazard to personnel.
- When a conveyor is stopped for maintenance purposes, starting devices or powered accessories shall be locked or tagged out (LOTO) in accordance with a formalized procedure designed to protect all persons or groups involved with the conveyor against an unexpected start.
- Replace all safety devices and guards before starting equipment for normal operation.
- Whenever practical, DO NOT lubricate conveyors while they are in motion. Only trained personnel who are aware of the hazard of the conveyor in motion shall be allowed to lubricate.

Safety Guards

Maintain all guards and safety devices IN POSITION and IN SAFE REPAIR.

Safety Labels

In an effort to reduce the possibility of injury to personnel working around HYTROL conveying equipment, safety labels are placed at various points on the equipment to alert them of potential hazards. Please check equipment and note all safety labels. Make certain your personnel are alerted to and obey these warnings. See Safety Manual for examples of warning labels.

REMEMBER Do not remove, reuse or modify material handling equipment for any purpose other than it's original intended use.

INSTALLATION

• Location

1. Determine direction of product flow.
Figures 4A & 4B indicate the flow, with Figure 4A showing a single sided sorter and Figure 4B showing a dual sided sorter.
2. Refer to "match- mark" labels on ends of conveyor sections (Figure 4A & 4B).
Position sections in letter sequence near installation area.

• Conveyor Set-Up

1. Mark a chalk line on the floor to locate the conveyor center.
2. Attach supports and vibration pads to all conveyor sections (Figure 4C).
Adjust elevation to required height.
Hand tighten bolts only at this time.
3. During installation, check to make sure each bed section is square. Measure the diagonals from corner to corner of the frame. If they are not equal, the frame must be squared. Attach a come-along or another suitable pulling device across the longest corners and pull until the section is square.
4. Place the infeed (tail) section in position. Locate the (2) provided threaded rods (on the infeed or discharge end). Use these rods to pull each section together during installation (Figure 4C).

Note: Before adding sections, check if square nuts are missing from top chain guide assemblies (Figure 4D). If they are, slide in the quantities needed for chain covers to make the chain cover installation easier.

5. Install remaining sections, placing unsupported end on the extended pivot plate from the previous section (Figure 4C).
6. Fasten sections together with splice plates and pivot plates (Figure 4C).
Hand-tighten bolts only at this time.
7. Check if conveyor is level across width and length of unit.
Adjust supports as necessary.
8. After all sections have been squared and levelled, tighten all splice channels and support mounting bolts. Lag supports to the floor.
9. Check alignment of wearstrip at all section joints. Sand wearstrip as necessary to provide a smooth wear surface (Figure 4D).
10. Starting on the infeed end, force bearing profile under the wearstrip until the wearstrip snaps into groove on bearing profile (Figure 4D).
Use Self-Tapping Screws to attach the bearing profile.

Self-Tapping Screw instructions: At the beginning and end of each strip of the bearing profile, and at the start of every bed section along the sorter, drill a #32 pilot hole. Attempt to drill 1/4 inch off the BR side of the UHMW wearstrip, where the grooved portion of the bearing profile is latched underneath (Figure 4D).

Use a #6-20 x 3/4" flat-head self-tapping screw to prevent the bearing profile and wearstrip from attempting to move forwards and backwards inside the sorter while operating. Note: Torx bit uses a T10 driver.

11. Install 1/2" main air line into sections, routing through the large holes in the bed spacers (Figure 4C) that are closest to the side channel (Figure 4C). Connect 3/8" air lines at divert switches (Figure 5C).
12. Connect main air line to Filter/Regulator (Figure 5D).
Set regulator to working pressure of 60 P.S.I. Install low pressure switch at farthest point from regulator (Figure 5B) and plug on other end (Figure 5E).
13. Install electrical controls and wire motor. Verify correct motor rotation at this time. See Pages 6 through 9 for electrical control information.
14. Check each divert switch to see if it is operating properly.
This must be done before carrying chains are installed.
See instructions on pages 10 and 11.
15. Check proximity switch clearance at each internal safety switch (Figure 5G).
Adjust if necessary.
16. Install carrying chains per instructions on page 12.
17. Adjust the slide-back transition roller assembly at the discharge end to optimize transition of packages from the ProSort to the take away conveyor.
Set the proximity switch located in the transition roller assembly (Figure 5H).
18. Install chain oiler at infeed and connect to oil lines (Figure 5F).
Refer to the Lubrication section, page 6, for type of oil required.
After mounting, the oiler will need to be adjusted for proper chain oiling.
Adjustment may be made by using a combination of solenoid activation time and flow adjustment screws. (A good rule of thumb for solenoid adjustment is to turn the oiler on for one complete chain revolution for every 80 hours of operation, if chain is excessively wet, oil every 160 hours of operation.)
Typically, chain on the divert side will need slightly more oil.
The flow adjustment screws can be altered to control the volume.
CAUTION: Do not allow oil to drip on floor.
19. Locate spurs per instructions on Page 12.
20. Remove threaded rods before start-up.

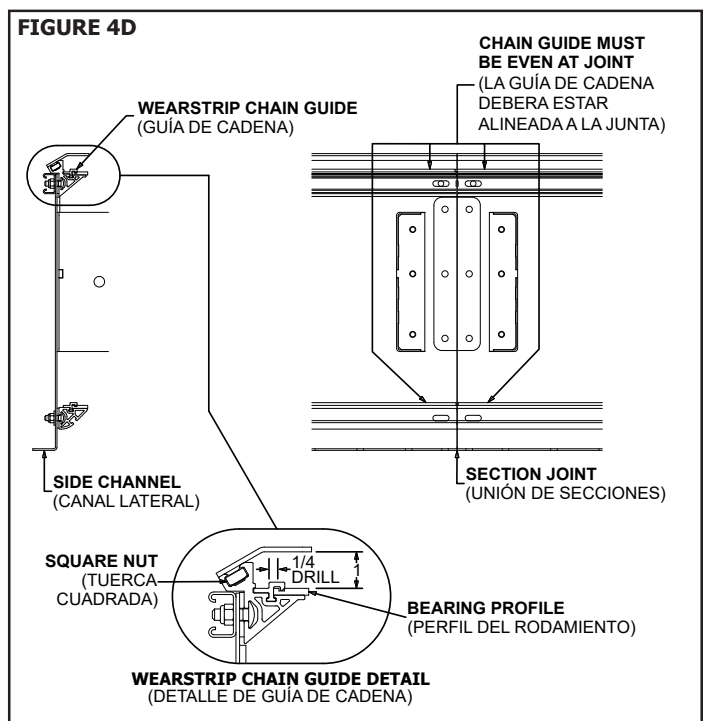
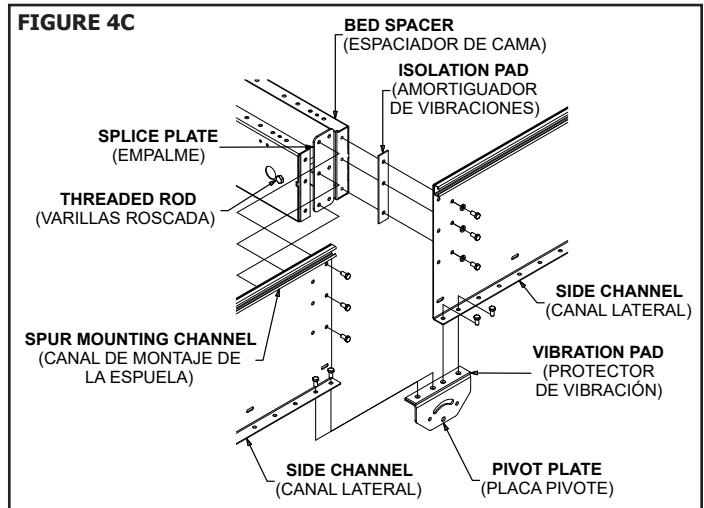
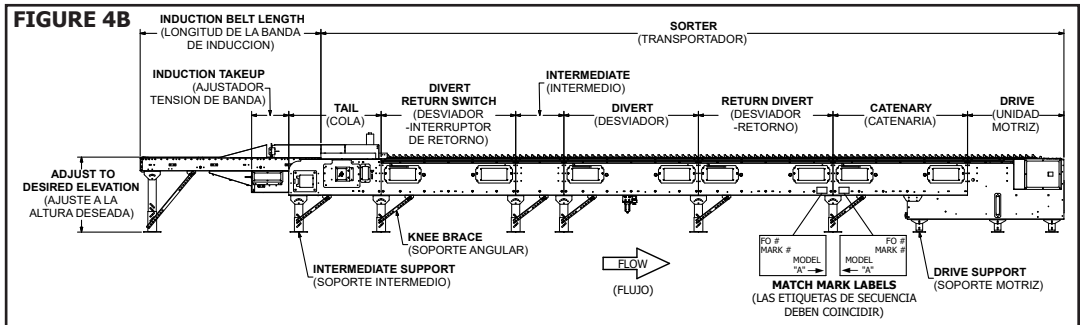
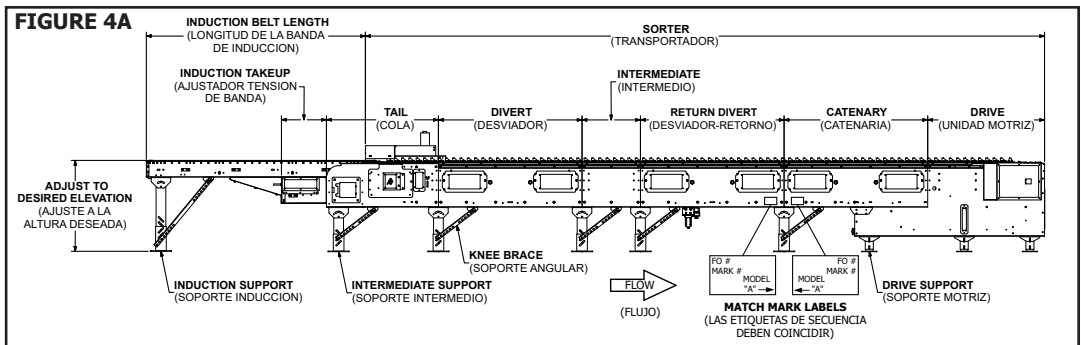


FIGURE 5A

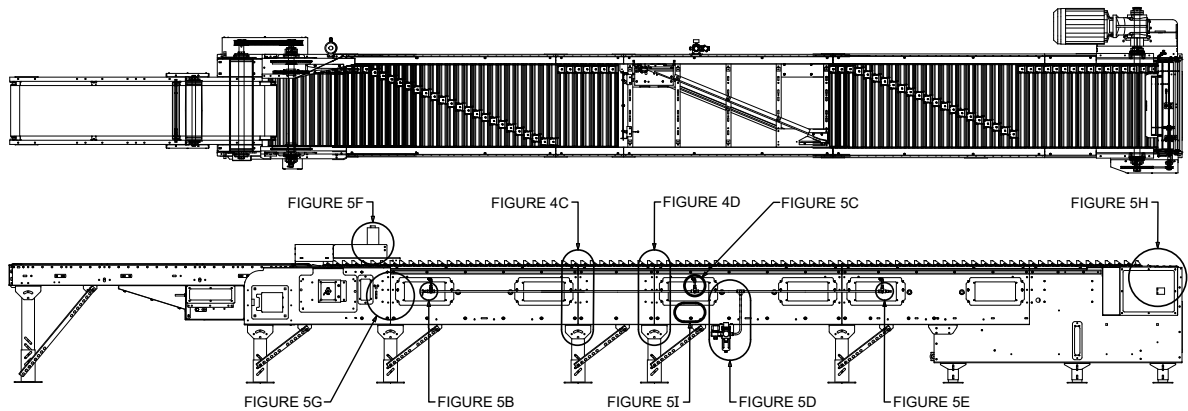


FIGURE 5B

**END SWITCH
(INTERRUPTOR EXTREMO)**

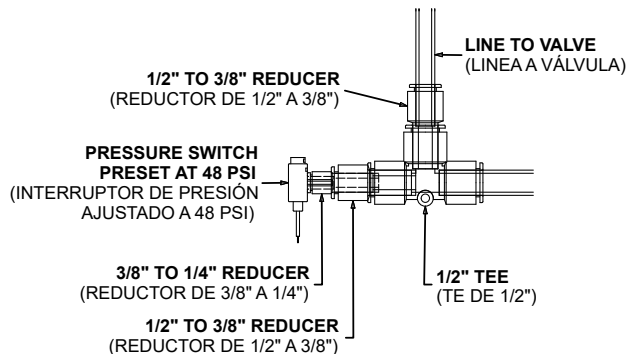


FIGURE 5F

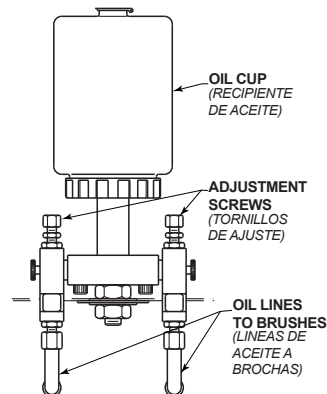


FIGURE 5C

**INTERMEDIATE SWITCHES
(INTERRUPTORES INTERMEDIOS)**

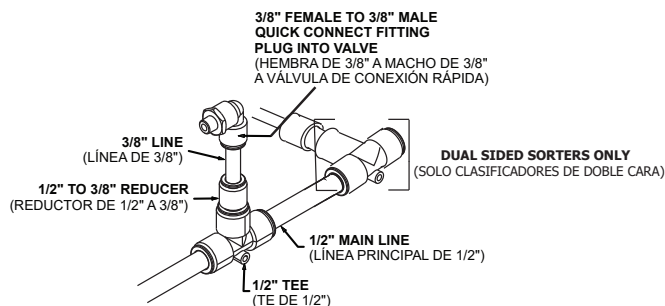


FIGURE 5G

**INTERNAL SAFETY SWITCH
(INTERRUPTOR DE SEGURIDAD INTERNO)**

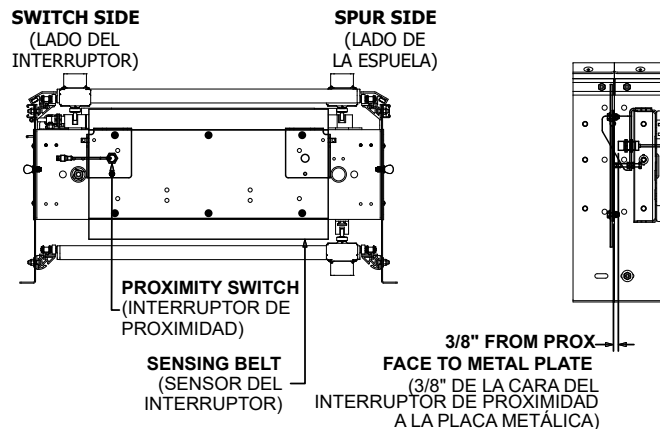


FIGURE 5D

**FILTER/REGULATOR SETUP
(CONFIGURACIÓN DEL FILTRO/REGULADOR)**

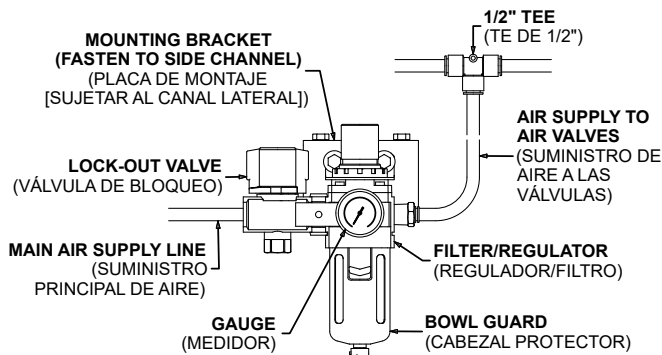


FIGURE 5H

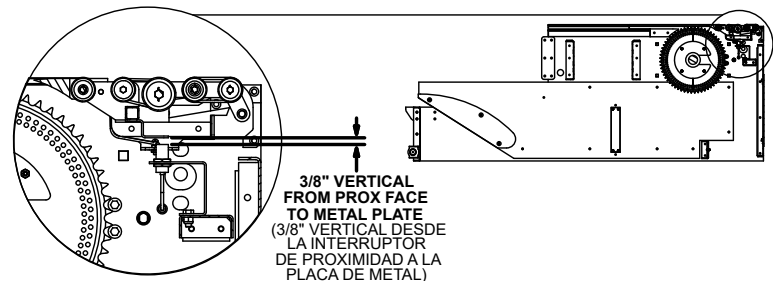


FIGURE 5E

**END PLUG
(CONEXIÓN FINAL)**

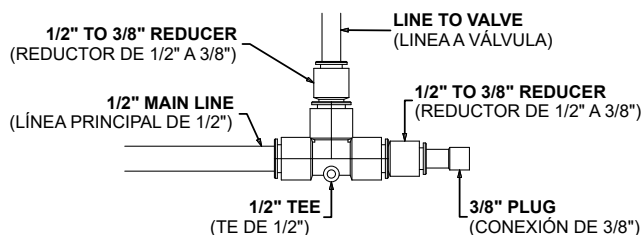
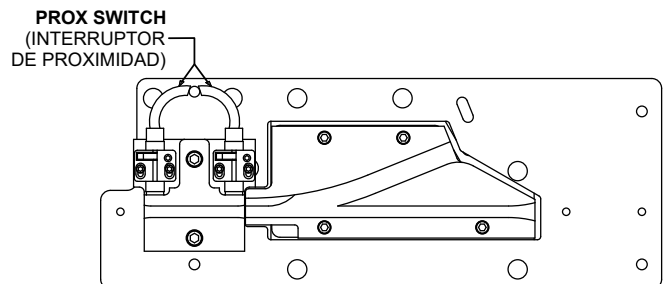


FIGURE 5I

**LOST BEARING DETECTION
(DETECCIÓN DE RODAMIENTOS PERDIDOS)**



• Electrical Equipment

WARNING! Electrical controls shall be installed and wired by a qualified electrician. Wiring information for motor and controls are furnished by equipment manufacturer.

CONTROLS

Electrical Code: All motor controls 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 Standards Institute, Inc.

CONTROL STATIONS

- A) Control stations should be so arranged and located that the operation of the equipment is visible from them, and shall be clearly marked or labeled to indicate the function controlled.
- B) A conveyor which 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 conveyor is about to start.

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

Clear, concise, and legible warning shall be provided where system function would be seriously hindered or adversely affected by the required time delay or where the intent of the warning may be misinterpreted (i.e., a work area with many different conveyors and allied devices).

The warning shall indicate that conveyors and allied equipment may be started at any time, that danger exists, and that personnel must keep clear. The warnings shall be provided along the conveyor at areas not guarded by position or location.

- C) Remotely and automatically controlled conveyors, and conveyors where operator stations are not manned or are beyond voice and visual contact from drive areas, loading areas, transfer points, and other potentially hazardous locations on the conveyor 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 conveyor 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 conveyor concerned and shall not depend on the stopping of any other equipment. The emergency stop devices shall be installed so that they cannot be overridden from other locations.

- D) 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 serve to confuse the operator.

SAFETY DEVICES

- A) All safety devices, including wiring of electrical safety devices, shall be arranged to operate in a "Fail-Safe" manner, that is, if power failure or failure of the device itself would occur, a hazardous condition must not result.
- B) Emergency Stops and Restarts. Conveyor controls shall be arranged such 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.
- C) Before restarting a conveyor which 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 out before any attempt is made to remove the cause of 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 Number 29 CFR 1910.147 "The Control of Hazardous Energy (Lockout/Tagout)."

OPERATION

• Conveyor Start-Up

Before conveyor is turned on, check for foreign objects that may have been left inside conveyor during installation. These objects could cause serious damage during start-up.

After conveyor has been turned on and is operating, check all moving parts to make sure they are working freely.

CAUTION! Because of the many moving parts on the conveyor, all personnel in the conveyor area need to be warned that the conveyor is about to be started.

MAINTENANCE

• Lubrication

BEARINGS

- A) NO GREASE FITTING - Prelubricated - No lubrication required.
- B) WITH GREASE FITTING - Relubricate approximately every 10 to 12 weeks with lithium base grease suitable for ball bearing service.

RECOMMENDED CHAIN LUBRICANT

A good grade of clean non-detergent petroleum or synthetic oil is recommended. See chart for proper viscosity.

Ambient Temperature Degrees F	SAE	ISO
20-40	20	46 or 68
40-100	30	100

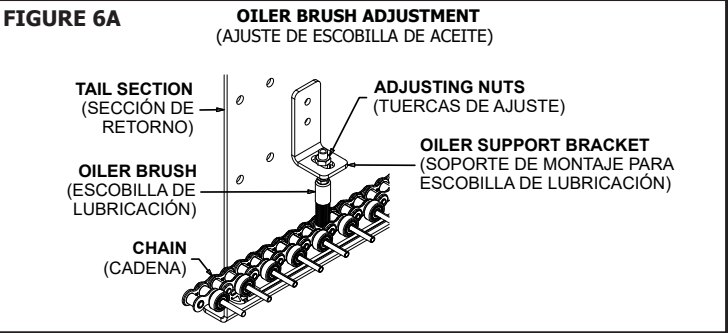
REDUCERS

See recommendations by manufacturer.

OILER BRUSH ADJUSTMENT

It is very important that the oiler brush comes in contact with the chain for proper lubrication and increased chain life. This can be done by using the adjusting nuts and support brackets (Figure 6A).

• Controlling the ProSort



A good software package is essential for proper operation of the ProSort sorter. With proper controls, the sorter will provide accurate, efficient and reliable sorting for many years. However, inadequate controls may result in poor sorter performance and mechanical failures of the sorter itself, including "crashes". Hytrol recommends using the Hytrol ProLogix software package.

Every sortation system is different, which means that the controls for the system are custom and unique to that system. These custom controls are provided either by Hytrol, the Hytrol Integration Partner or a third party.

Hytrol has built into the sorter some of the controls necessary to operate the divert switches, eliminating the need to control this function externally.

Other electrical control components are provided with the sorter, to allow external controls to monitor critical items and provide an interface between the electrical controls and mechanical sorter. Other control components must be provided by the custom controls package supplier to ensure proper sorter operation.

This section includes the following information for the custom controls provider:

1. A description of the divert switch control components supplied, their function, and how to interface with them.
2. A description of the other control components provided with the sorter and their intended function.
3. A description of control components that are not included with the sorter that must be provided by the controls supplier.
4. Some controls do's and don'ts to help with design and install of controls package. Please read this section thoroughly and share this information with the controls provider.

DIVERT SWITCH CONTROL

Proper divert switch control is critical for safe and reliable sorter operation. Failure to properly control the divert switch is one of the most common causes of switch damage, and can cause “crashes”.

The divert switch functions similar to a switch on a train track.

It sends divert shoes to travel either in a straight-through, “non-divert” track or diagonally across the sorter along a “divert track” to push product off the sorter.

When the switch is in its “home” position, divert shoes travel through the switch along its straight-through track. When the switch is in its “divert” position, the shoes are sent along the divert track.

The transition of the switch between its “home” and “divert” positions must be accurately timed to prevent sorter crashes. Just as a train track switch cannot be safely operated while a train is passing through the switch, the divert switch cannot be safely operated while a divert shoe is passing through the switch. If the movement of the switch mechanism is not timed to occur only when no shoe is present in the switch, the guide pin of the shoe may collide with the point of the divert block, resulting in damage to the switch and potentially costly downtime.

The ProSort has control components at each divert switch that accurately time the divert switch movement and operation, eliminating the need for the controls provider to do so. For pneumatic switch sorters, these components are the smart prox and the high-speed solenoid air valve.

For electric switch sorters, the smart prox supplies this control directly to the solenoid or servo.

PNEUMATIC SWITCH CONTROLS COMPONENTS

SMART PROX

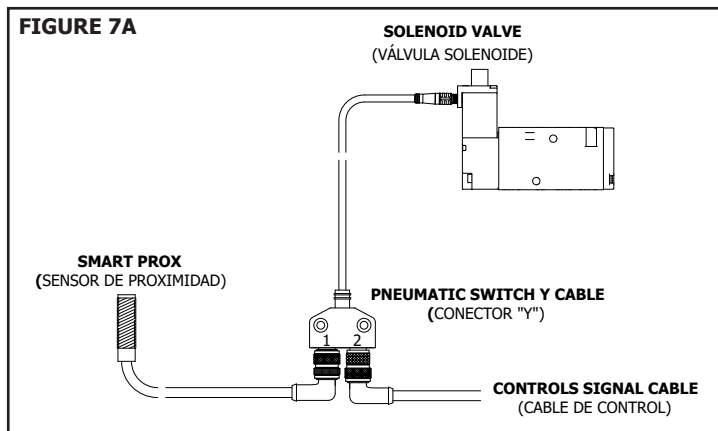
The “smart prox” is a special inductive proximity sensor developed exclusively for Hytrol, that has the “intelligence” needed to control the switch timing built-in. The prox plugs to the y-cable (Figure 7A).

PNEUMATIC SWITCH Y CABLE (Receives controls signal)

The y-cable connects the smart prox, solenoid air valve and system controls.

The male micro cord set from the smart prox connects to terminal #1 of the y-cable. The pico connector on the y-cable connects to the male plug on the solenoid air valve at the divert switch.

The micro cord set with female end plugs to terminal #2 of the y-cable.



Leads from the cordset connected to port #2 have the following functions (Figure 7A):

Pin #1 —+24VDC power input to the Smartprox.

Pin #2—Divert enable input lead for the Smartprox.

When a 24VDC (high) signal is given to this lead by system controls, the Smartprox waits until it detects another divert shoe then provides a 24VDC output through the y-cable to the high speed solenoid air valve.

The solenoid air valve then moves the switch to its “divert” position.

All shoes traveling through the switch follow the divert track while the enable signal is active (held high).

When the divert signal is removed (taken low), the Smartprox waits until it detects another divert shoe, then turns off the output to the solenoid air valve. The switch then returns to its “home” position, sending shoes along its “non-divert” track.

The enable signal (ENA Input) to this lead is the only signal that the system controls must provide in order to control divert switching.

Pin #3—Common voltage lead for the Smartprox.

Pin #4—Proximity output signal (PRX). This lead provides a 24VDC (high) signal each time the Smartprox detects a shoe's pin in front of it.

This is an optional output to be used at the discretion of the controls provider.

HIGH-SPEED SOLENOID AIR VALVE

The solenoid air valve is used to receive the smart prox output signal and provide air to the proper end of the divert switch cylinder to move and hold the switch in either the “home” or “divert” position.

The valve used is specially designed for the high speed operation necessary for proper divert switch timing.

The two solenoid inputs are non-polarized, allowing either lead to be used as input or ground for the valve. The solenoid requires 24VDC, 6W to operate.

The solenoid air valve is controlled directly by the smart prox.

Direct control of this valve by the controls package is not required or advised.

AIR PRESSURE SWITCH

The air pressure switch (Figure 5B) is used to detect low operating air pressure. Operation of the sorter at air pressures under 50 PSI can cause erratic switching and potential switch damage. If air pressure falls below this level, the sorter must be shut down until the cause of the pressure drop has been found and corrected. The pressure switch provides a contact-type output which closes at pressures of 48 PSI or higher and opens at lower air pressure.

The system controls provider should use this switch to monitor air pressure at the sorter and should shut down the sorter if an open (low) output is detected from the pressure switch.

Refer to the pressure switch manufacturer's installation manual, provided with the sorter, for wiring instructions.

ELECTRIC SOLENOID SWITCH CONTROLS COMPONENTS

SORTER PROX

The “sorter prox” is a special inductive proximity sensor developed exclusively for Hytrol, that has the “intelligence” needed to control the switch timing built-in. The prox plugs to the splitter cable (Figure 7B).

JUNCTION BOX (Receives controls signal and power)

While a 24VDC (high) enable (ENA) signal is sent to the junction box, the junction box passes the signal to the switch to begin diverting products.

The junction box routes power and send the control signal to an electric switch. Each junction box has a connector to receive power and a connector to pass the power to the following junction box. The junction box receives power and a divert signal, then passes a powered signal to the electric switch splitter cable.

Junction boxes are located near the switch assemblies -- typically below them.

A power supply is usually placed such that it has the same number of switches on either side of it. For a 480V, 40A power supply, there can be 7 divers powered by each power cable leaving the power supply (up to 14 switches total).

The first junction box on either side of the power supply receives its power, and passes it along to the junction boxes connected to it in series.

Note: there is a Left Hand (LH) and a Right Hand (RH) design for the junction box. The junction box hand used matches the divert-to direction.

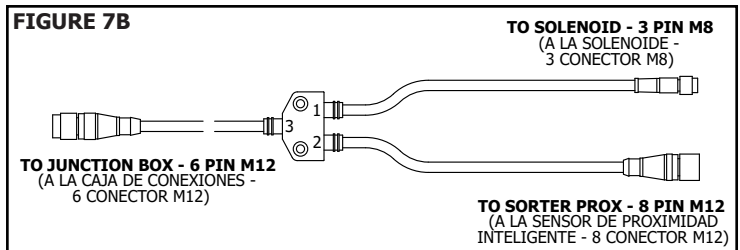
ELECTRIC SWITCH SPLITTER CABLE

The splitter cable connects the sorter prox, junction box, rotary solenoid and system controls.

The male micro cord set from the smart prox in the switch connects to terminal #2 of the splitter cable.

The pico connector on terminal #1 of the splitter cable connects to the male plug on the rotary solenoid in the divert switch.

The micro cord set on the junction box with a female end plugs to terminal #3 of the splitter cable.



ELECTRIC SWITCH VERIFICATION PROX

The electric switch has a verification prox to check if the switch is in the divert position. This prox can be used for the following functions:

- 1) Verify the divert position matches the divert signal.
- 2) Detect damage to the switch, by either not detecting the switch being in its divert position when the switch should be diverting or continuing to detect the divert position when the switch should have returned to its home position.

The prox is inductive and has a 4 pin M12 connector.

OTHER CONTROL COMPONENTS SUPPLIED WITH THE CONVEYOR

VARIABLE FREQUENCY DRIVE CONTROLLER

The variable frequency drive (VFD) is a motor controller with three functions:

1. Provide a smooth acceleration of the drive motor, allowing the sorter to slowly “ramp up” to full speed.

This protects sorter components from the stress of a full-speed start up.

2. Allow sorter speed to be adjusted to match system speed requirements.

It also allows the sorter to operate at a very slow speed during installation “debugging” and when certain mechanical components are checked after servicing.

3. Allow sorter to be operated at a slower speed during “off-peak” seasons, reducing energy consumption, noise, and wear.

Refer to the VFD manufacturer’s installation manual, provided with the sorter, for wiring and adjustment instructions.

SAFETY PROXIMITY SWITCHES

There are safety switch devices located at various locations in the sorter to indicate when a divert shoe is out of place, an obstruction has entered the sorter, or when an event has occurred that could damage the sorter or cause danger to personnel. These safety switches use normal inductive proximity switches as the electrical interface to the system controls.

There are two types of safety switches in the sorter:

1. Shoe position safety switches are internal switch mechanisms that trip if a divert shoe passes them while the shoe is outside of its track (see Figure 5G). They are also used to detect foreign objects that might fall between the slats and enter the interior of the sorter.

They detect problems on both the upper and return portions of the sorter.

There is one shoe position safety switch located at the infeed end and one at the discharge end of the sorter. There are additional switches included for every 30 feet of sorter length after the first 30 feet. For example, a 50 feet long sorter will have a total of 3 switches. An 80 feet long sorter will have 4 switches, and so on. The additional switches are spaced evenly along the sorter’s length.

2. The transition safety proximity switch is used to detect when the transition rollers on the discharge end of the sorter are in the “discharge” position (see Figure 5H). These rollers are designed to slide back if a stray divert shoe or a foreign object contacts them.

The normal output state of the safety proximity switch is “on” (high). If the switch detects a problem, the signal is changed to “off” (low). The system controls must be configured to go to an “emergency stop” condition and shut down the sorter and related equipment when a problem is detected. Restart must not be possible until the problem is corrected and the safety switch that detected the problem is again “on” (high). Refer to the proximity switch manufacturer’s installation manual, provided with the sorter, for wiring instructions.

CATENARY TAKE-UP PHOTO EYE (Figure 12C)

The catenary take-up photo-eye monitors the amount of chain sag occurring in the drive’s catenary area. The photo-eye is a retro-reflective, light-operated type, positioned in the catenary so that if the carrying chains allow the slats to sag below a certain level, the beam of the eye is blocked.

The system controls must be configured to stop the sorter when the photo-eye beam is blocked (photo-eye output is “off” or “low”) and provide an indication to the sorter operator that the chains must be taken up or shortened before operating the sorter further. Catenary eye may momentarily be blocked at start up giving an indication at the HMI to perform maintenance soon. If blocked continuously, don’t run the sorter. Refer to the photo-eye manufacturer’s installation manual, provided with the sorter, for wiring instructions.

ENCODER

An encoder is included with the sorter to provide a pulse signal for product tracking. The encoder provides a square-wave pulse signal of 30 pulses per revolution of the sorter infeed shaft, located in the tail assembly. This equates to one pulse for every 1.5 inches of sorter travel. The encoder requires 24VDC power, and provides a 24VDC pulse output.

Refer to the encoder manufacturer’s installation manual, provided with the sorter, for wiring instructions.

CHAIN OILER SOLENOID (Figures 5F and 6A)

The chain oiler is used to provide automatic lubrication of the carrying chains during sorter operation. When the oiler solenoid valve is energized, oil is gravity fed from the oiler reservoir, through metering valves, to brushes located inside the sorter above the return chains.

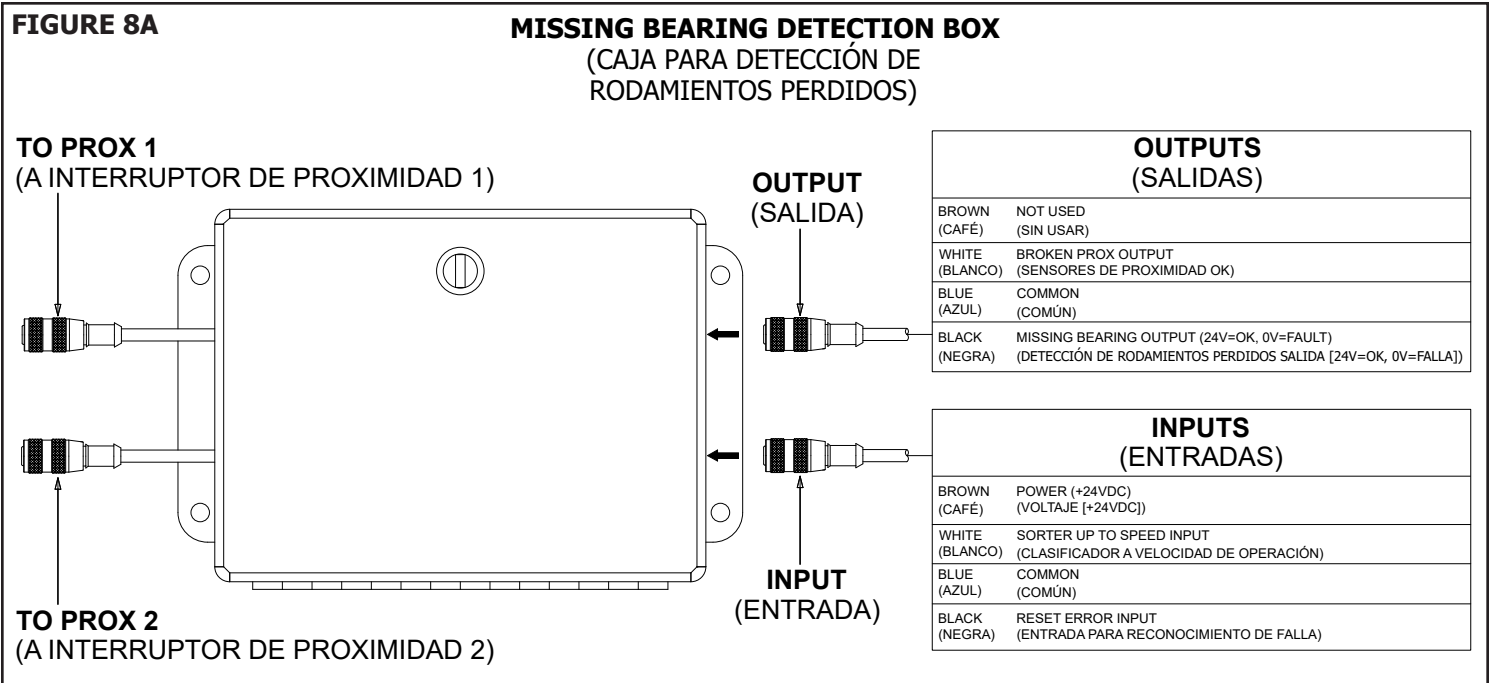
The system controls should be configured to activate the chain oiler solenoid for a duration equal to one complete revolution of the carrying chains about every 80 hours of operation. If chain is excessively wet, oil every 160 hours of operation instead. The actual amount of oil applied to the chains is controlled by metering screws (see “Conveyor Set-up” section of this manual).

The chain oiler solenoid requires 24VDC power to operate.

LOST BEARING DETECTION (Figures 5I and 8A)

A missing bearing detection block is used to detect shoes with a missing bearing. A divert shoe without a bearing can cause damage to the sorter. The missing bearing block uses two proximity switches located on the discharge end of the sorter in the return section, to detect the presence of shoe bearings. The missing bearing detector has a normally high (24 VDC) signal that will stay active while no missing bearings/pins are detected. If one prox detects a bearing while the other does not, the block signal goes low to indicate a missing bearing was detected. Hytrol recommends stopping the sorter if a bearing is missing. See Figure 8A for wiring setup of missing bearing detection block. The missing bearing block requires 24VDC power to operate. The prox switches are plugged into the left two ports in no particular order.

A reset signal of 24VDC is needed to clear the missing bearing error in the block.



Additionally, the missing bearing detection assembly includes a feature to detect if the proximity sensors are functioning properly.

While the missing bearing detection box receives a Sorter Up to Speed Input, the Broken Prox Output is normally high (24VDC) if the sensors are working properly. As long as the Sorter Up to Speed Input is active and the sorter is running, the missing bearing detection box will continuously test the proxes for proper function. If the Broken Prox Output goes low, then the proximity sensors and all connections to the sensors should be inspected and repaired or replaced.

To reset the Broken Prox Error, send a 24VDC Reset Error Input signal to the box.

CONTROL COMPONENTS NOT SUPPLIED WITH THE CONVEYOR

In addition to control components supplied with the ProSort sorter, there are several components that must be supplied by the system control provider. Hytrol recommends the following control components be used to protect the sorter from damage due to product jams or other problems.

ADJUSTABLE INSTANTANEOUS MOTOR OVERLOADS

Instantaneous overloads provide protection against sorter “hang-ups” by turning off the drive if a sudden increase in motor current is detected.

By adjusting the overload limit to slightly above the power required to operate the sorter, any extra load on the motor - such as would be caused by a product jam or switch malfunction - would cause the sorter to stop, possibly before significant damage is done to the equipment.

The instantaneous overloads should be installed in the sorter control panel and sized for the proper power requirements.

PHOTO-EYES

Photo-eyes are common components in systems controls. Hytrol recommends that photo-eyes be installed at the following locations to perform listed functions. These are, of course, in addition to other photo-eyes needed in the system.

JAM/DIVERT CONFIRMATION PHOTO-EYE—Photo-eyes mounted on each take-away spur of the sorter, as close to the sorter as possible.

- These eyes perform two functions:
1. Detect a product jam at the sorter “exit point”.
If a package blocks this photo-eye for a longer time than it takes for the package to travel past the photo-eye normally, this indicates the package is jammed. The sorter should be stopped and the jam cleared before restarting the sorter.
 2. Divert confirmation. If a divert signal is given to a divert, and no package is detected by the associated jam/divert confirmation photo-eye, an error has occurred. The sorter should be stopped and the error found and corrected before restarting the sorter.

FULL LINE PHOTO-EYE—Photo-eyes mounted on each divert lane from the sorter, near the infeed end of that lane. These eyes are used to signal the system controls that a particular divert lane is full. The controls should send any further packages assigned to that lane to the recirculation line until the full line photo-eye on that lane no longer indicates the full condition.

INDUCTION PHOTO-EYE—A photo-eye mounted at the infeed of the sorter.

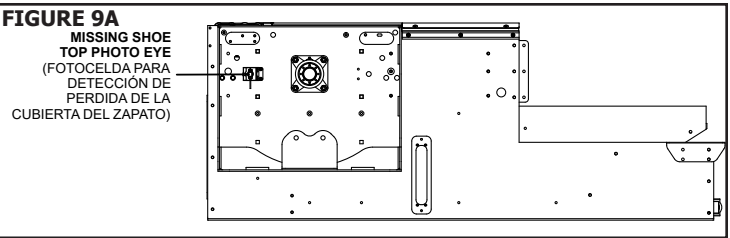
- This eye is used to perform the following functions:
1. Signal system controls that a particular package has entered the sorter. From this point forward, the package must be tracked using encoder pulses to determine when it reaches the proper divert location.
 2. Measure package length so the system controls may assign the proper number of divert shoes to the package for diverting.
- Note: Shoes are to be assigned for the entire length of the package plus one extra shoe is to be assigned to the trailing end of the package.
3. Check for proper gap between packages for safe sorting.
- It is important to check for proper gap here - even if it has been set prior to this point - to ensure proper package spacing. Attempting to sort packages with too little gap between them can cause jams. Note: The minimum gap necessary for sorting a package is a function of the width of the package.
- The following chart should be used for checking proper gap.

ProSort 1121 (22° Diverts) ProSort 1121 (22° Centros de Desvío)		ProSort 1131 (30° Diverts) ProSort 1131 (30° Centros de Desvío)	
Package Width	Minimum Gap	Package Width	Minimum Gap
0" < W ≤ 12"	6"	0" < W ≤ 9"	6"
12" < W ≤ 18"	9"	9" < W ≤ 12"	9"
18" < W ≤ 30"	12"	12" < W ≤ 18"	12"
		18" < W ≤ 24"	15"
		24" < W ≤ 30"	18"
ProSort 1122 (22° Diverts) ProSort 1122 (22° Centros de Desvío)		ProSort 1132 (30° Diverts) ProSort 1132 (30° Centros de Desvío)	
Package Width	Minimum Gap	Package Width	Minimum Gap
0" < W ≤ 12"	9"	0" < W ≤ 9"	9"
12" < W ≤ 18"	12"	9" < W ≤ 12"	12"
18" < W ≤ 30"	15"	12" < W ≤ 18"	15"
		18" < W ≤ 24"	18"
		24" < W ≤ 30"	21"

MISSING SHOE-TOP PHOTO-EYE—Laser photo eye mounted on the discharge end of the drive assembly, used to detect if shoe tops have broken off (Figure 9A).

The sorter can usually function properly with a missing shoe top, but a stop is recommended if multiple shoe tops are missing in a row to ensure proper diverting. If there are not a significant number of shoe tops broken off, sorter maintenance can wait until the sorter is shut down to replace the missing shoe tops.

Hytrol recommends displaying a warning if a missing shoe top is detected. If a missing shoe top is detected and the sorter continues running for 8-12 hours, the sorter should be stopped and maintenance staff should replace the missing shoe tops. If desired, an error reset can be included to allow the sorter to be restarted prior to replacing shoe tops (and delay stopping for another 8 hours).



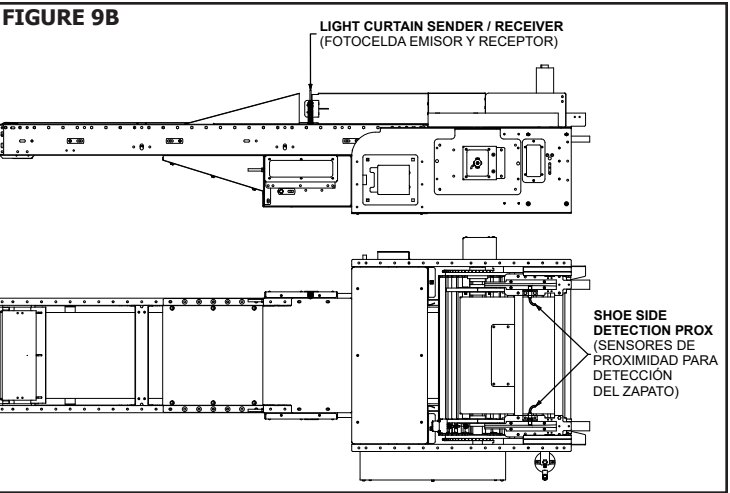
LIGHT CURTAIN (For dual sided sorter shoe return confirmation)
On dual sided sorters only, a light curtain photo eye is included for the induction belt, along with two proxes on the bottom of the tail assembly. These components work together to help controls verify that returning shoes are located on the side necessary to divert a package to the correct side of the sorter.

The light curtain photo eye helps compare the package position to the shoe side detected by proxes on the bottom of the tail assembly.

The light curtain setup is necessary to prevent shoe tops from breaking off excessively, or crashing the sorter in some cases.

If a shoe is located on the wrong side of the sorter, it can get pinched by the product as the product is pushed into the mis-located shoe.

In this event, the shoe top will normally break off and require replacement of the breakaway shear pin. To avoid this, it is recommended to verify shoe locations using the light curtain and return verification proxes prior to diverting a package.



SOME CONTROLS DO'S AND DON'TS

The following are recommendations to assist in design and installation of system controls that are interfacing with ProSort sorters.

- Do not place 24VDC control wires in the same wireway with AC power wires, especially if the AC power exceeds 240 volts. “Noise” produced in the control wires by the power wires may produce undesirable effects.
- Do not use optional “standard prox output” of the smart prox to substitute an encoder substitute. The three inch spacing between divert shoes does not provide enough tracking resolution to accurately sort packages.
- Do not use manual override operator of the solenoid air valve to operate a divert switch while the sorter is running. Doing so bypasses the switch timing controls and may cause switch damage or a sorter crash.
- Do treat tripping of any safety switch, motor overload, or low air pressure signal as an emergency stop. Inspect the safety switch and other parts of the sorter to be sure everything is in good working order before starting or restarting the sorter.

• Pneumatic Divert Switch Checklist

After all ProSort sections are installed and aligned, each divert switch should be checked for proper operations as follows:

1. Before air pressure is supplied to the divert switch solenoid air valve, manually pivot the switch back and forth between the non-divert and divert position while checking for a free and smooth pivoting movement. Determine and fix the cause of any switch binding. For proper switch alignment, see Figures 10A & 10B.

If switch adjustment is necessary, loosen the jam nut on the cylinder rod. Screw cylinder rod into or out of rod end to adjust the switch then retighten jam nut.

2. Turn air pressure on and verify each divert switch is in, or moves to, the home (non-divert) position (Figure 10A).
3. Check that the smart prox is set properly. The prox face should be set just out of the shoe pin guide path in the switch guide (Figure 10C).

FIGURE 10A

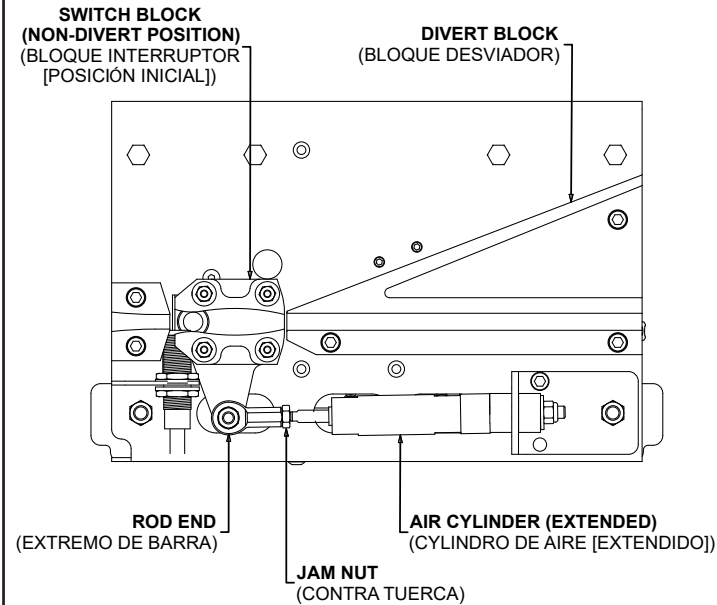
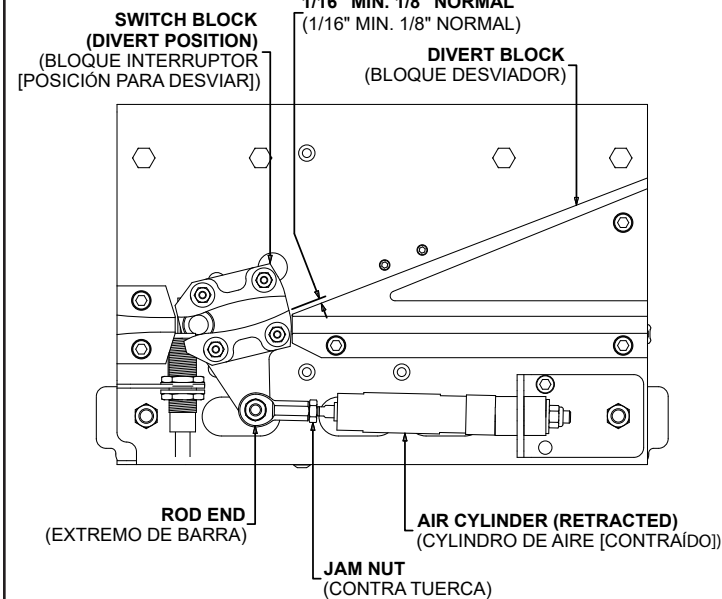


FIGURE 10B



• Pneumatic Divert Switch Replacement

The ProSort is designed for easy removal of divert switch assemblies for maintenance or replacement. Use the following steps to replace a switch assembly.

Side Removal

1. Remove the switch cover located on the side of the sorter.
2. Unplug the elbow from the fitting on the solenoid air valve by pushing in the orange flange of the fitting and then pulling on the airline.
3. Disconnect the prox switch cord set from y-cable connector (Figure 7A).
4. By reaching through the window hole in the side channel, remove the two bolts at the back side of the switch mounting channel (Figure 10D).
5. Push the switch towards the center of the sorter, until the switch mounting plate slides out of the switch mounting guide block.
6. Pivot the switch down so that the switch mounting plate can slide under the switch mounting guide block.
7. Remove the switch assembly through the opening in the sorter channel.
8. Check the new switch according to the "Pneumatic Divert Switch Checklist".
9. For easier installation, push shoes in switch area towards center of sorter.
10. Install the new divert switch assembly by reversing the procedure by which the old assembly was removed.

Top Removal

1. Remove the chain cover and slat/shoe assemblies in the switch area.
2. By reaching through the access holes in the switch mounting channel, remove two bolts at the back side of the switch mounting channel (Figure 10D).
3. Push the switch towards the center of the sorter, until the switch mounting plate slides out of the switch mounting guide block.
4. Unplug the elbow from the fitting on the solenoid air valve by pushing in the orange flange of the fitting and then pulling on the airline.
5. Disconnect the prox switch cord set from y-cable connector (Figure 7A).
6. Remove the switch assembly through the top of the sorter.
7. Check the new switch according to the "Pneumatic Divert Switch Checklist".
8. Install the new divert switch assembly by reversing the procedure by which the old assembly was removed.

FIGURE 10C

SWITCH BLOCK MUST CLEAR PROX SWITCH IN STRAIGHT THRU POSITION
(EL BLOQUE DESVIADOR DEBE LIBRAR EL SENSOR DE PROXIMIDAD CUANDO ESTE EN LA POSICIÓN HORIZONTAL)

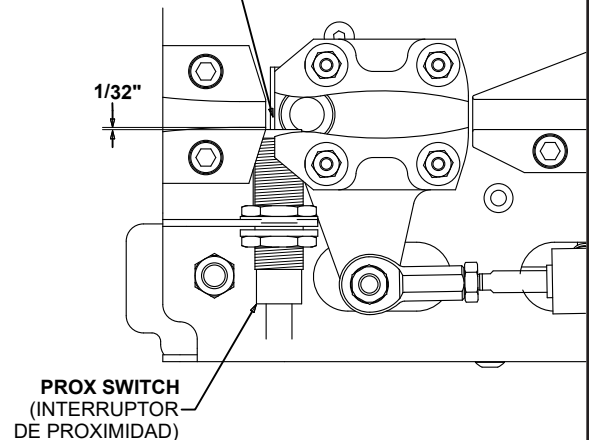
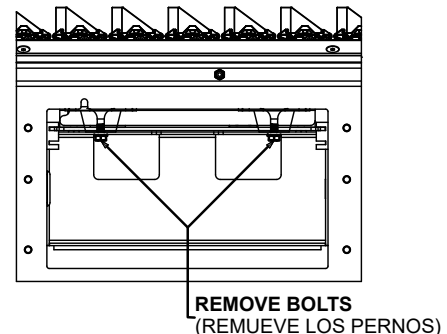


FIGURE 10D



• Electric Divert Switch Checklist

After all ProSort sections are installed and aligned, each divert switch should be checked for proper operations as follows:

1. Before running the sorter, apply power to the electric switch system and verify the diverts are fully in the home or diverted position (Figures 11A & 11B). Divert function was tested at the factory to ensure proper operation. If diverts are in the diverted position, they can be returned to the home position by removing the enable signal to the Smart Prox then flagging the Smart Prox to trigger a move operation.
2. Check that the Smart Prox is set properly. The face of the prox should be set just out of the shoe pin guide path in the switch guide (Figure 11C).

FIGURE 11A

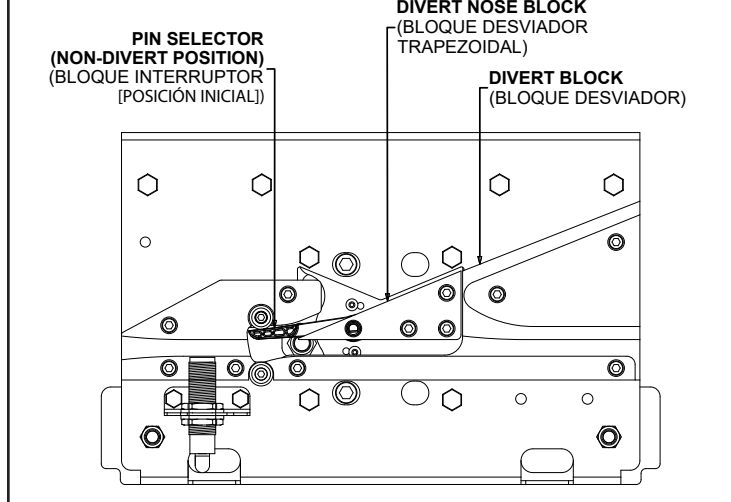


FIGURE 11B

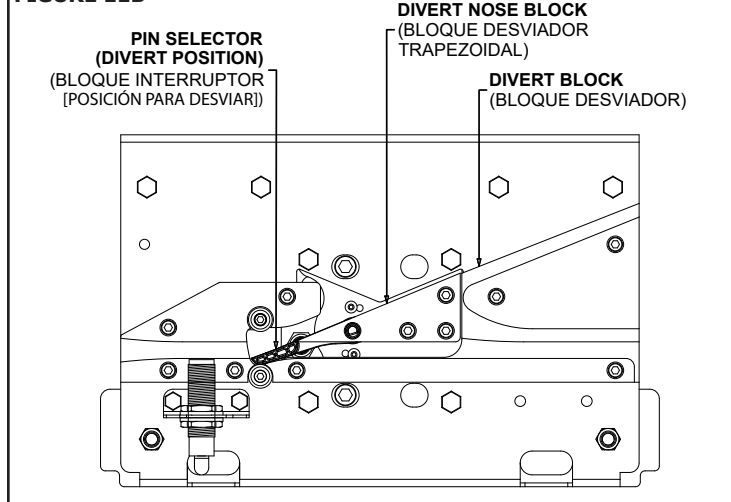
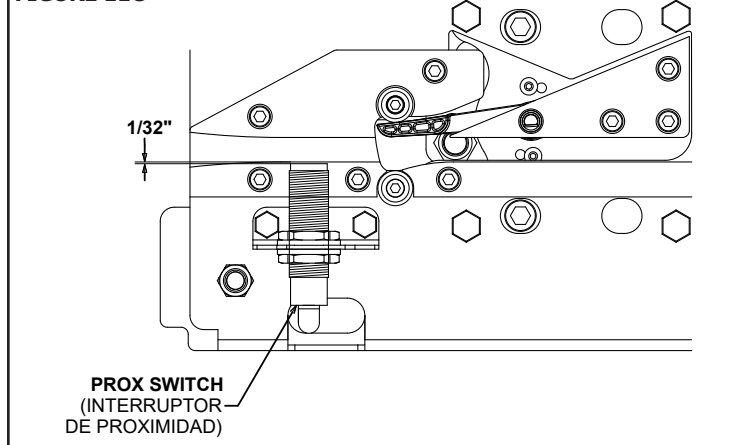


FIGURE 11C



• Electric Divert Switch Replacement

The ProSort is designed for easy removal of divert switch assemblies for maintenance or replacement. Use the following steps to replace a switch assembly.

Side Removal

1. Turn off all power supplies feeding the switch assemblies.
2. Remove the switch cover located on the side of the sorter.
3. Disconnect the signal cable and prox switch cord set from y-cable connector (Figure 7B).
4. By reaching through the uncovered hole in the side channel, remove the two bolts at the back side of the switch mounting channel (Figure 10D).
5. Push the switch towards the center of the sorter, until the switch mounting plate slides out of the switch mounting guide block.
6. Pivot the switch down so that the switch mounting plate can slide under the switch mounting guide block.
7. Remove the switch assembly through the opening in the sorter channel.
8. Check the new switch according to the "Electric Divert Switch Checklist".
9. For easier installation, push shoes in switch area towards center of sorter.
10. Install the new divert switch assembly by reversing the procedure by which the old assembly was removed.

Top Removal

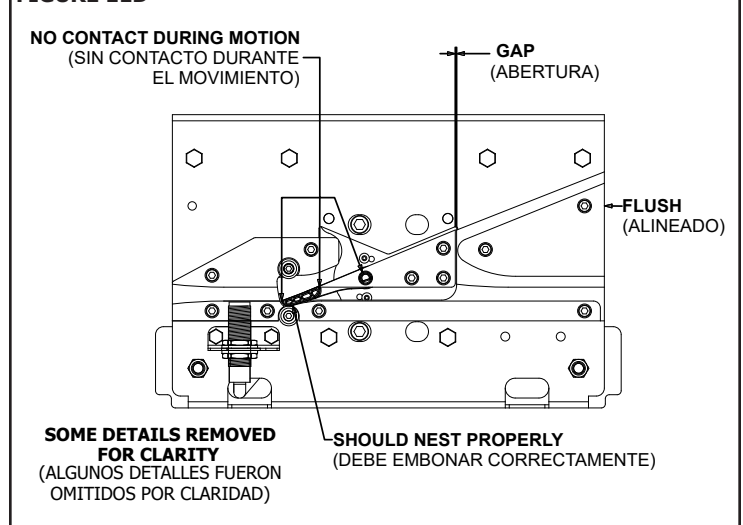
1. Turn off all power supplies feeding the switch assemblies.
2. Remove the chain cover and slat/shoe assemblies in the switch area.
3. By reaching through the access holes in the switch mounting channel, remove two bolts at the back side of the switch mounting channel (Figure 10D).
4. Push the switch towards the center of the sorter, until the switch mounting plate slides out of the switch mounting guide block.
5. Disconnect the signal cable and prox switch cord set from y-cable connector (Figure 7B).
6. Remove the switch assembly through the top of the sorter.
7. Check the new switch according to the "Electric Divert Switch Checklist".
8. Install the new divert switch assembly by reversing the procedure by which the old assembly was removed.

• Electric Divert Switch Inspection

If maintenance is performed on the electric divert switch, care should be taken to align any new components properly.

The pin selector should not contact the tip of the divert nose block during motion. Additionally, it should nest properly into the divert block and not bind during motion. See Figure 11D for useful inspection points when replacing parts for maintenance.

FIGURE 11D



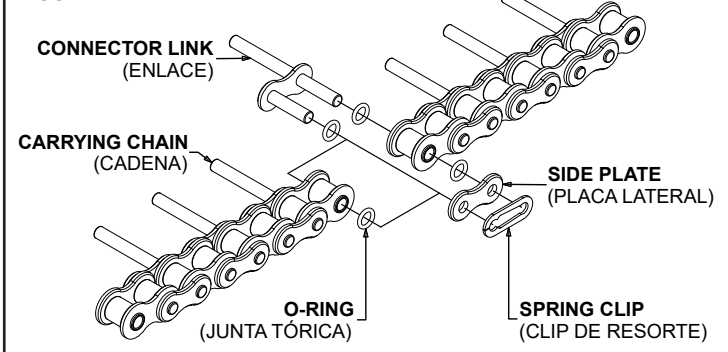
• Carrying Chain Installation

Carrying chains are shipped on marked spools, cut to proper length for each ProSort conveyor.

Steps for installing are as follows:

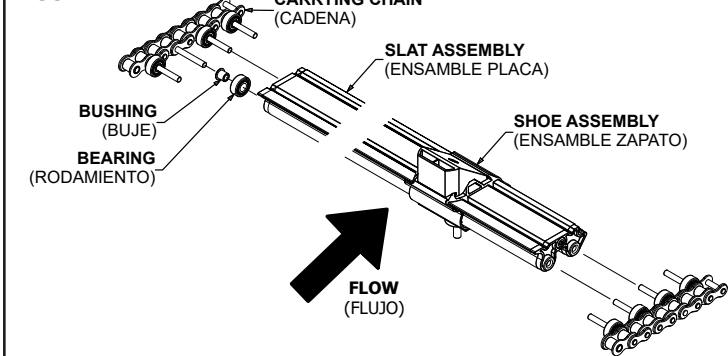
1. If motor is connected, disconnect electrical power to drive motor to prevent accidental start up.
2. Check alignment of chain guides by using two short pieces of chain with slat/shoe assemblies and bearings assembled to pins. This chain/slat/shoe assembly should slide freely through chain guides in direction of travel for entire length of conveyor.
3. Install carrying chains to both sides of conveyor with pins pointed inward. Make sure the pins of each chain are directly opposite each other. While installing chains, it will be helpful to install one slat/shoe assembly every four feet to hold chain in guides.
4. Fasten ends of both chains with connector links (Figure 12A). Use packets of grease provided to fill each cylinder of master link before setting link plate.

FIGURE 12A



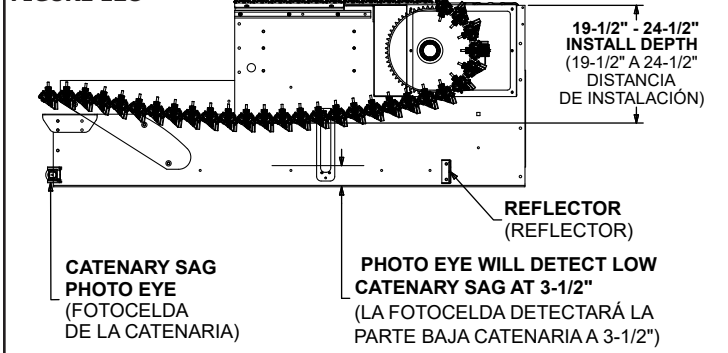
5. Install slat/shoe assemblies onto the extended chain pins on one side of the conveyor – being careful to keep the tapered face of the shoe pointing toward the discharge end (Figure 12B).

FIGURE 12B



6. Lift opposite side of chain out of chain guide (so chains may be spread apart) and insert extended chain pins into opposite end of slat/shoe assemblies. Lower chain into the guide as needed, until it is completely in.

FIGURE 12C



7. After all slat/shoe assemblies are installed, check for proper slack in catenary area of drive (Figure 12C). Ensure drive and tail shafts are square.
8. If needed, add or remove chain/slots/shoes in 3" increments.
9. Perform a "walk through" of the sorter, searching for any objects or tools left inside of the sorter during installation.

10. Use a jog function while sorter is in maintenance mode to move the entire carrying chain assembly through the conveyor to check if it operates freely, and as a final check that nothing was dropped into the sorter during installation.

11. Inspect divert shoes to make sure they have all been installed on the correct centers. If chains are shortened, it must be in increments of three inches.

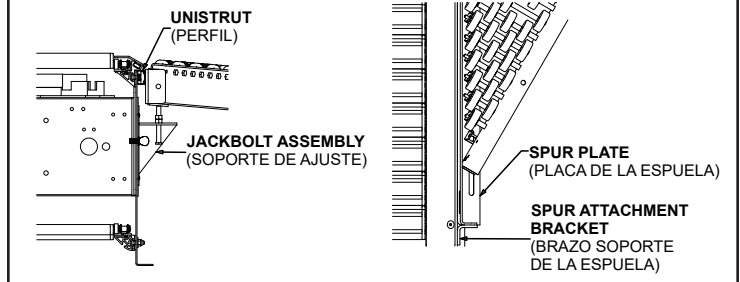
12. If motor is installed, reconnect electrical power to it.

• TorqLOC Drive Gearmotor Installation

1. Clean the drive shaft and reducer shaft opening with a solvent.
2. Inspect drive shaft for burrs and clean burrs if needed.
3. Insert clamping ring and conical bronze bushing onto drive shaft.
4. Apply anti-seize compound to conical steel bushing.
5. Insert reducer onto shaft.
6. Hand tighten torque arm hardware to drive assembly and gearmotor.
7. Slide conical steel bushing and clamping ring outward, into reducer box.
8. If using a KT77 or KT87 gearbox reducer, tighten clamping ring bolt to 220 in*lb (25 N*m).
- If using a KT57 gearbox reducer, tighten clamping ring bolt to 88 in*lb (10 N*m).
9. Loosen bolts on shrink disk, then press onto shaft on outside of reducer.
10. Push the conical steel counter-bushing into the shrink disk.
11. Hit the conical steel counter-bushing with a rubber mallet until fully seated.
12. Hand tighten bolts on shrink disk.
13. Working in a clockwise bolt pattern, turn shrink disk bolts evenly 60 degrees at a time (1 hex face on bolt) until tightened. KT77 and KT87 gearbox reducers use 265 in*lb (30 N*m). KT57 gearbox reducers use 105 in*lb (12 N*m).
14. Tighten torque-arm mounting bolts.
15. Attach shaft covers.

• Locating the Spurs

FIGURE 12D



The take-away spurs must be mounted properly on the ProSort divert sections to ensure proper diverting of product.

The following installation guidelines apply to both powered and gravity spurs:

1. Attach spurs to the sorter by bolting the spur attachment bracket to spur mounting nuts in the Unistrut channel located on the sorter side channel (Figure 12D). Support the spurs as required.

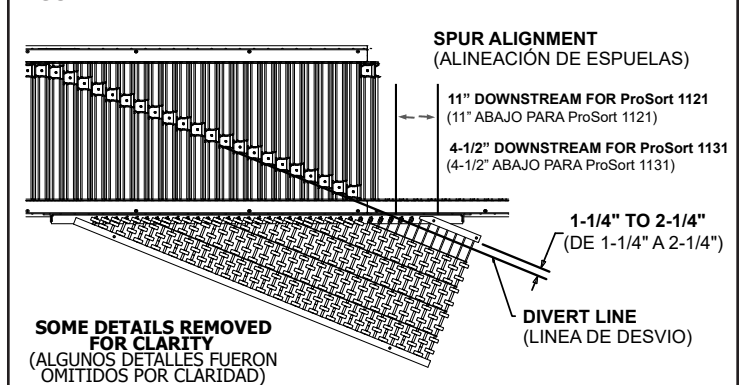
Hand tighten bolts only at this time.

2. Manually place 3 or more shoes along the divert angle.

Place a straight-edge against the shoes to find the "divert line" location.

Verify the distance between the "divert line" and spur "BR" is between 1-1/4 inches and 2-1/4 inches (Figure 12E).

FIGURE 12E



3. Use the jackbolt assembly to position spurs vertically so that spur rollers/skatewheels transition smoothly from the chain covers (Figure 12D). Tighten mounting bolts.

• Shoe Top Replacement

1. Use a small flat head screwdriver to pop out any remaining shear pin pieces remaining inside the shoe base.
(This can be accomplished by holding the screwdriver flat head parallel to the slat length, positioning it through the shoe base opening and giving it a quick push.)
 2. Slide new shoe top in place, making sure it is facing correctly for the flow direction of the sorter.
 3. Align the shoe top hole with the hole in the shoe base.
 4. Place a new shear pin in the shoe top.
 5. Use the same flathead screwdriver to pop the shear pin in.
- This can be accomplished by holding the screwdriver perpendicular to the slat, aligning it to the shear pin center and giving it a quick push.

• Install Guard Rails at Divert Locations

If guard rails are to be installed on the spurs and/or the spur side of the sorter, care should be taken to ensure that the guard rails do not interfere in any way with the boxes being diverted. Particularly, guards should not be installed in a way that produces a sharp edge or point in the divert area.

• ProSort 1100 Guardrail Photos

FIGURE 13A



FIGURE 13B



FIGURE 13C

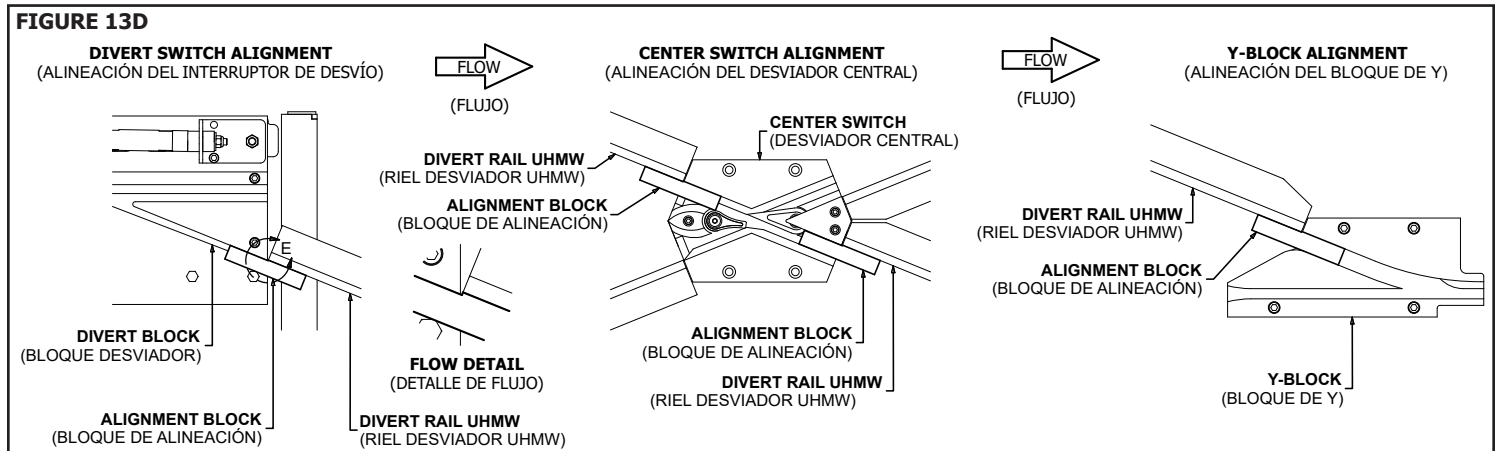


• Divert Rail Alignment

If divert rails are not aligned properly, they can cause excess noise and increased wear. If the misalignment is severe enough, it can also cause immediate damage. To align rails properly for quiet operation, we include a tool to position rails with an effective "waterfall" to help the shoe bearings transition between components better.

The alignment block tool should be used such that the "upstream" component protrudes further in the direction of flow, to prevent shoe bearings from colliding into the "downstream" part and creating excess noise.

The block should contact both components, with the "upstream" component being in the notched part of the block (Figure 13D).



• Troubleshooting

The following chart lists possible problems that may occur in the operation or initial setup of the ProSort.

TROUBLE	CAUSE	SOLUTION
Conveyor will not start or shuts off automatically during operation.	1) Jam eye blocked 2) Tripped internal safety switch. 3) Transition rollers pushed out of position. 4) Proximity switch for internal safety switch or pop-up rollers mis-adjusted or defective. 5) Low air pressure. a) Regulator set low. b) Air line restricted or broken. c) Air filter clogged. d) Compressor problem. e) Lockout closed. 6) Electrical circuits. 7) Variable speed drive mis-adjusted or defective. 8) drive motor defective.	1) Unblock jam eye. 2) Determine cause of tripping: foreign debris, mislocated divert shoes, etc., and correct problem. 3) Determine reason for rollers shifting, correct problem and set to home position. 4) Adjust or replace proximity switch (Figure 5G). 5) Determine reason for low air pressure and correct problem. See Cause 5a through 5e for common causes. 6) Check power and wiring. 7) Refer to variable speed drive manufacturer's manual for trouble shooting. 8) Replace motor.
Conveyor takes a long time to reach speed or conveyor jerks when starting.	1) Variable speed drive mis-adjusted or defective.	1) Refer to variable speed drive manufacturer's manual for trouble shooting.
Divert shoes "jump" during diverting.	1) Divert shoe is tight on the slats. 2) Slats are dirty. 3) Slats are bent. 4) Switch is mis-adjusted.	1) Replace slat/shoe assembly. 2) Clean surface. (Refer to Maintenance Checklist on the Back Cover) 3) Replace slat/shoe assembly. 4) Refer to Divert Switch Checklist on Pages 10 and 11.
Inoperative pneumatic divert switch.	1) No air pressure to cylinder. 2) Air solenoid valve defective. 3) Proximity switch mis-adjusted or defective.	1) Check air line and filter regulator. Replace if necessary. 2) Replace. 3) See page 10 for proper adjustment, or replace if necessary.
Inoperative electric divert switch	1) No power to electric switch. 2) Proximity switch mis-adjusted or defective.	1) Check power supply to electric switch. 2) See page 11 for proper adjustment, or replace if necessary
All pneumatic divert switches inoperative.	1) Lockout is closed. 2) No air pressure at divert switches 3) Loss of electricity to air solenoid valves. 4) Controls failure.	1) If it is safe to run the system, open lockout. 2) Inspect low pressure switch (Figures 5A and 5B) and fix any issues. 3) Correct problem. 4) Trouble shoot control system and wiring.
All electric divert switches inoperative.	1) Loss of electricity to power supplies 2) Power supply is damaged, disabling all connected switches 3) Controls failure.	1) Determine why power supplies are not receiving power and correct it. 2) Replace power supply 3) Trouble shoot control system and wiring.

• ProSort 1121/1131 Parts List

Ref. No.	Description
1	25 Snub Roller
2	Bearing - 3-Bolt, 1-3/16" Bore (Takeup Assembly)
3	Take-Up Plate Weld (Takeup Assembly)
4	6" Takeup Pulley
5	Induct Pulley Plate Weld
6	Bearing - Cast Iron, 4-Bolt, 1-11/16" Bore (Induct 8" Drive Pulley)
7	8" Diameter Pulley (Induct)
8	Timing Belt Sprocket (1-11/16" Bore - Tail Assembly)
9	Timing Belt (Induct)
10	Timing Belt Drive Guard Assembly (Tail Assembly)
11	Tail Bed Spacer Channel - LH/RH (Does Not Connect To Takeup)
12	Drive Sprocket (Drive And Tail Assembly)
13	Bearing - 4-Bolt Square, 2" Bore (Tail Shaft And Drive Shaft)
14	Tail Shaft (Tail Assembly)
15	Timing Belt Sprocket (1-1/2" Bore - Tail Assembly)
16	Lock Collar
17	Cushion Disk Assembly
18	Infed Pin Guide Block (Top Of Tail Assembly)
19	2-1/4" Diameter Pulley
20	Snub Roller Guard (In Induct Auto-Tracker)
21	Auto-Tracker
22	Tail Bed Spacer Channel - LH/RH (Connects To Takeup)
23	Induct Side Cover (Tail Assembly)
24	Slip Sprocket (Tail)
25	Tail Bearing Guard Assembly - Encoder Side
26	Encoder Kit
27	1/4" Diameter X 1-1/2" Long Shoulder Bolt (Encoder On Tail Assembly)
28	Infed Pulley (In Induct Auto-Tracker)
29	Nip Point Guard (In Induct Auto-Tracker)
30	Induct Bed Spacer
31	Slider Pan (Induct)
32	Induct Belt
33	Upper Guard Mounting Bearing Guide (Takeup)
34	Take-Up Bearing Cover Assembly
35	Butt Coupling Angle (Induct)
36	Belt Brush (Tail Assembly)
37	Brush Holder (Tail Assembly)
38	Brush Mounting Bar (Tail Assembly)
39	Nip Point Guard (Discharge End Of Induct)
40	Induct Shoe Cover Weldment (Tail)
41	Male M12 Recept 4-Pin With 1 Meter Leads, 1/2" NPT (Oiler On Tail Assembly)
42	Oiler Mounting Bracket (Tail Assembly)
43	Chain Lubricator Kit - 24 VDC, 2-Feeds
44	Lexan Cover Assembly (Tail)
45	Top Aluminum Chain Guide (Tail)
46	Induct Support
47	Support Vibration Dampening Belt
48	Induct Side Channel
49	Induct Transition Guard Assembly
50	Threaded Take-Up Rod
51	Take-Up Angle (Takeup Assembly)
52	11/16" Hex Idler Mounting Bracket
53	Bottom Guard (Takeup Assembly)
54	Side Channel (Takeup Assembly)
55	Guard Mounting Bearing Guide (Takeup Assembly)
56	Bearing Guide Spacer
57	Tail Bearing Guard Assembly - Encoder Side
58	Tail Assembly Side Channel - LH/RH
59	Bearing Spacer Plate (Tail Assembly)
60	Chain Transition Dampener
61	Shank Brush For Chain Lubricator (Bottom Of Tail Assembly)
62	Sorter Support
63	Knee Brace Angle (Supports)
64	Knee Brace Bracket (Supports)
65	Bottom Guard (Tail Assembly - Under Induct)
66	Fod Pan Support Bracket
67	Fod Pan (Foreign Object Debris Collection Pan)
68	Guard (In Auto-Tracker)
69	2-1/8" Diameter Roller (Induct)
70	Return Pin Confirmation Guide
71	Aluminum Chain Support (Bottom)
72	Chain Guide UHMW Wearstrip
73	Bearing Profile - Grooved Novitane Belt
74	Vibration Dampening Strip Behind Chain Rail
75	Plastic Tee - 1/2" To 1/2" (In Pneumatic Switches)
76	3/8" Outer Diameter Polyurethane Tubing (In Pneumatic Switches)
77	Prox Switch - DC, N.O. 16 mm Range (Safety Switches, Transition Rollers)
78	Safety Switch Assembly
79	Switch Mounting Channel Weld
80	Switch Assembly

Lista de Partes del ProSort 1121/1131

Ref. No.	Description
81	Switch Mounting Guide Block
82	Slotted Track Spacer
83	Uhmw C-Channel (Divert Rail)
84	Aluminum Divert Rail
85	Pin Guide Spacer
86	Slat Assembly
87	Shoe Assembly
88	Bed Spacer Weldment
89	Vibration Dampening Pads - Behind Bed Spacers
90	Divert Y-Block
91	#60 XLO O-Ring Chain Assembly
92	Metal Chain Cover
93	Unistrut (Spur Mounting Channel)
94	Aluminum Chain Support (Top)
95	Lexan Cover Assy (Divert Window)
96	Splice Plate (Section Ends)
97	Intermediate Side Channel
98	Filter Regulator Kit
99	Divert Side Channel
100	Sweep Block (Return)
101	Missing Bearing Detection Assembly - LH/RH, 22/30 Degree
102	Fixing Clamp - For Threaded Barrels, M18
103	Prox Switch - 18 mm, 24 VDC, Normally Open (In Missing Bearing Detection Assembly, Located in Return Assembly)
104	Pin Gathering Block
105	Shaft Guard Half
106	Gearmotor
107	Drive Bearing Mounting Channel Weld (Drive Assembly)
108	Torque Arm Mounting Angle
109	Missing Shoe Top Photo Eye - Laser Retro-Reflect, Long Range (Drive)
110	Missing Shoe Top Photo Eye Swivel Bracket (Drive)
111	End Cover (Drive)
112	Transition Roller Assembly
113	Discharge Transition Bar (Transition Rollers)
114	Sheave - 3.75" Outer Diameter, 1" Bore (Drives Transition Rollers)
115	Driving Assembly For Transition Roller Assembly
116	Bearing Mounting Channel - O-Ring Side (Drive)
117	Bearing - 2-Bolt, 1" Bore (In Transition Roller Driving Assembly)
118	Bearing Spacer Channel (In Transition Roller Driving Assembly)
119	Brush Holder (Drive)
120	Belt Brush (Drive)
121	Sheave - 11.35" Outer Diameter, 1-1/2" Bore (Drive Assembly)
122	Drive Shaft (Drive Assembly)
123	O-Ring Guard (Drive Assembly)
124	Transition Roller Drive O-Ring - 3/8" Thick
125	Sheave - 2.75" OD, 1" Bore (In Transition Roller Assembly Driving Assembly)
126	Top Aluminum Chain Support - LH/RH (Drive)
127	Brush Holder Extension Bracket (Drive)
128	End Cleanout Cover (Drive Assembly)
129	Catenary Section Support Bracket
130	Catenary Sag Photo Eye - Retro-Reflective (Drive)
131	Catenary Sag Photo Eye Mounting Bracket - Ball Swivel (Drive)
132	Photo Eye Channel Weldment (Drive)
133	Drive Support
134	Catenary Block
135	Catenary Wearstrip (Drive)
136	Drive Side Channel - LH/RH
137	Catenary Window Guard (Drive)
138	Bed Spacer (Catenary In Drive)
139	Reflector - 3.30" Diameter, .20" Mounting Hole (Catenary, In Drive Bed Spacer)
140	Chain Connector Link
141	Missing Bearing Detection Controls Box
142	External Retaining Ring Pliers (For Chain)
143	Chain Pick-Up Tool - Bent
144	Chain Pick-Up Tool - Flat
145	Pin Guide Alignment Tool
146	Divert Angle Alignment Block (For Divert Rail Transitions)
147	Chain Pull Assembly (For Easier Chain Installation)
148	Loctite - #401, .70 Ounce Bottle
149	Cordset - 3 Meters, Straight Female Pigtail (In Safety Switch, Transition Rollers, Lost Bearing Prox, Encoder)
150	Pin Guide
151	Channel Nut - 3/8-16 With Spring (For Mounting Spurs/Guard Rail Onto Unistrut)
152	Rubber Grommet - 1-1/4" Inner Diameter, 1-7/8" Outer Diameter
153	Rubber Grommet- 1/2" Inner Diameter, 1" Outer Diameter
154	Cordset (Switches, Catenary Sag Photo Eye)
155	#60 Chain Pulling Plate
156	Cordset - 5 Meter, Straight Female Pigtail (Air Line Pressure Switch)
157	Plug-In Reducer - 3/8" To 1/4" Push-In Type (Air Line Pressure Switch)
158	Plastic Plug - 3/8" OD Push-In Type (End Of Air Line On Pneumatic Sorters)
159	1/2" Polyurethane Tubing - Black (Primary Air Line on Pneumatic Sorters)
160	Air Line Pressure Switch - 24 VDC, Normally Open (Pneumatic Sorters Only)

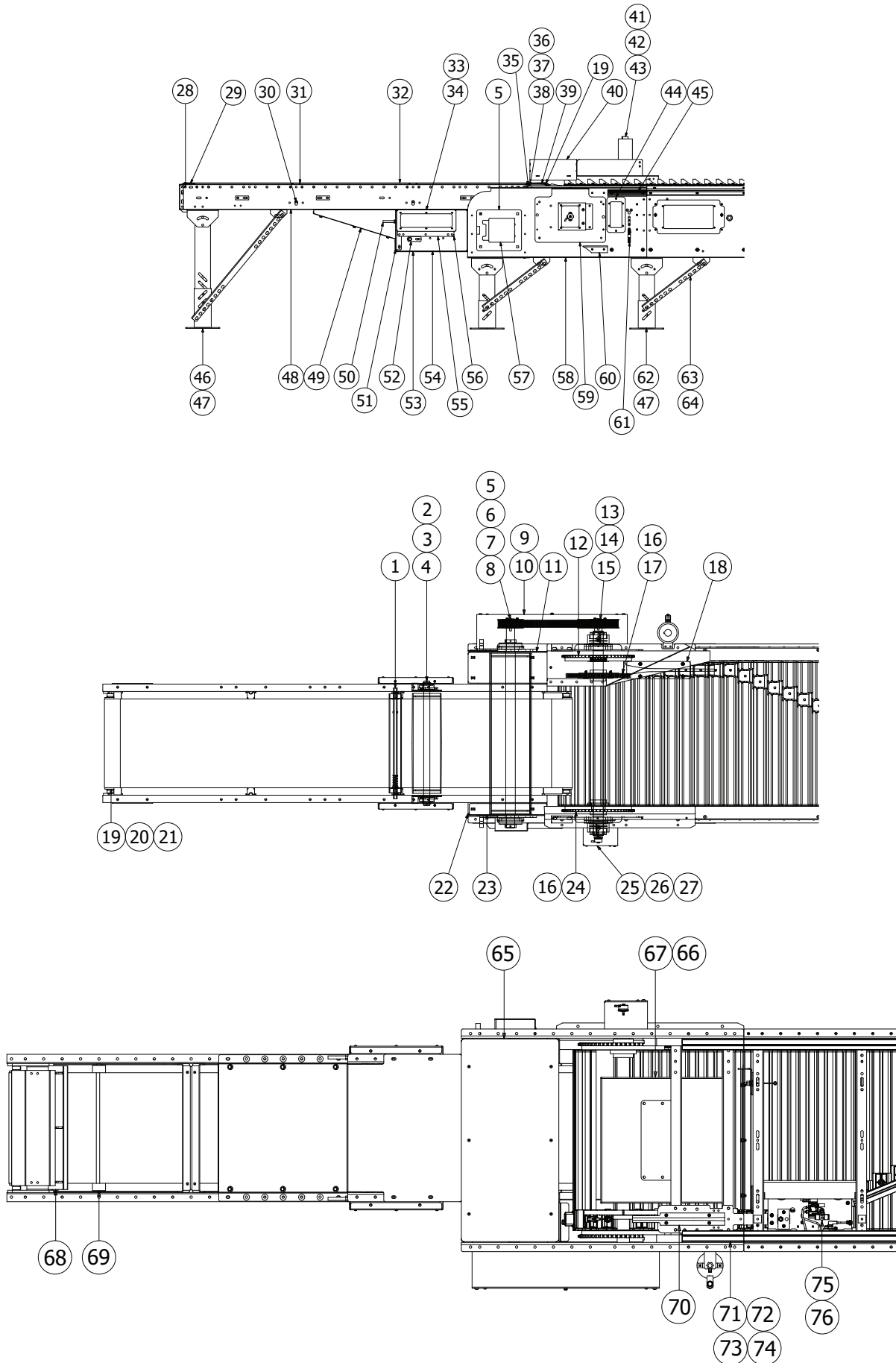
For part numbers use the Hytrol Toolbox App and use the Factory Order or Serial Number printed on the equipment, or call customer care at **1-844-4HYTROL**.

• ProSort 1121/1131 Parts Drawing

Induction Unit and Tail Section

(Unidad de Inducción y Sección de Descarga)

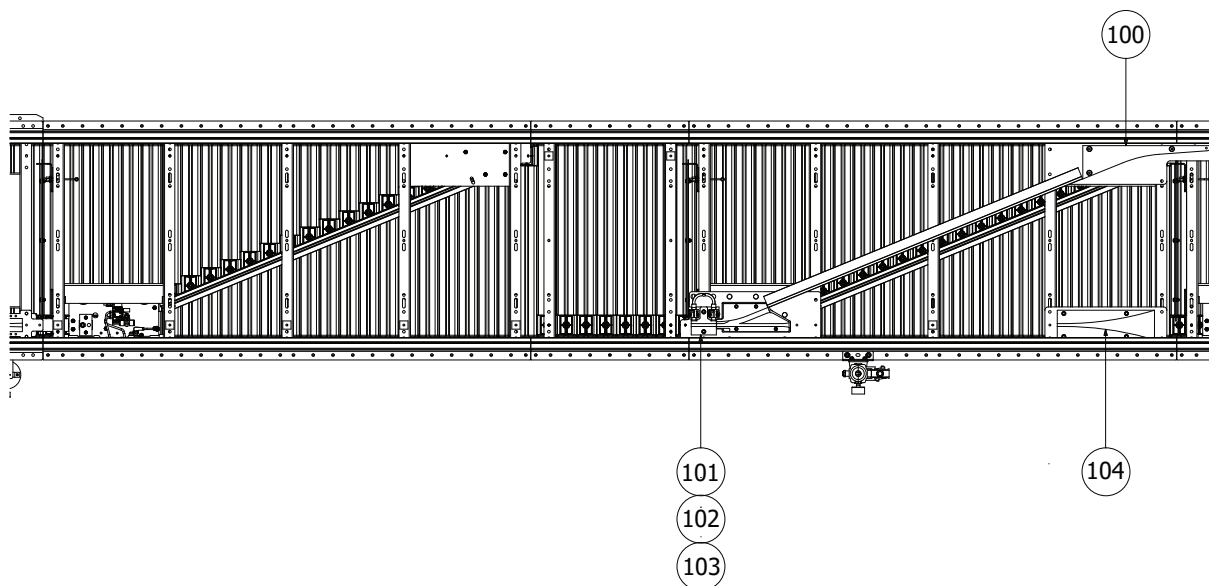
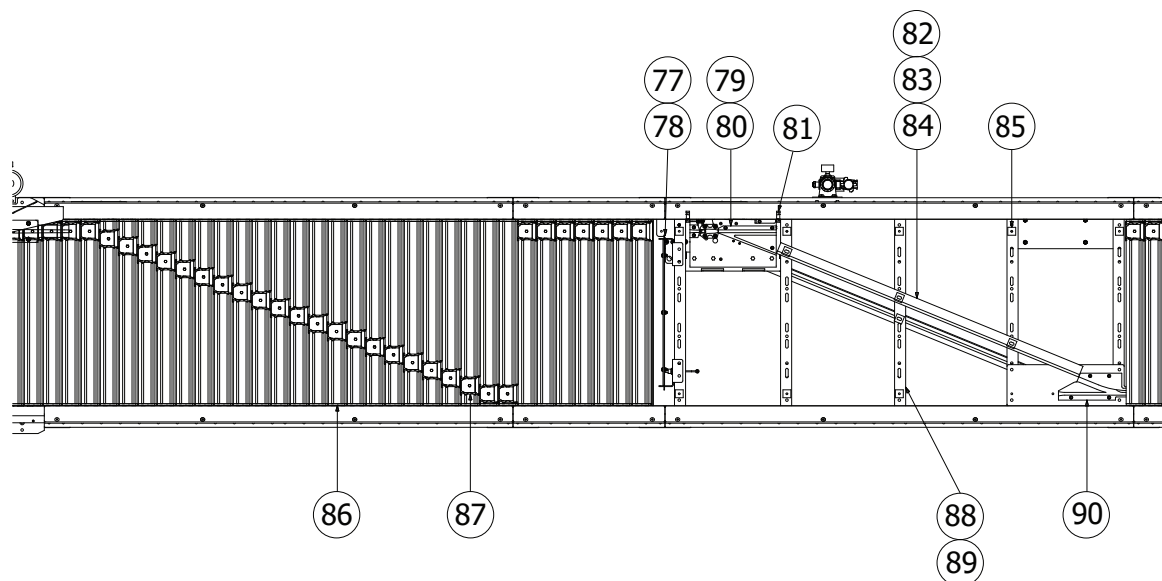
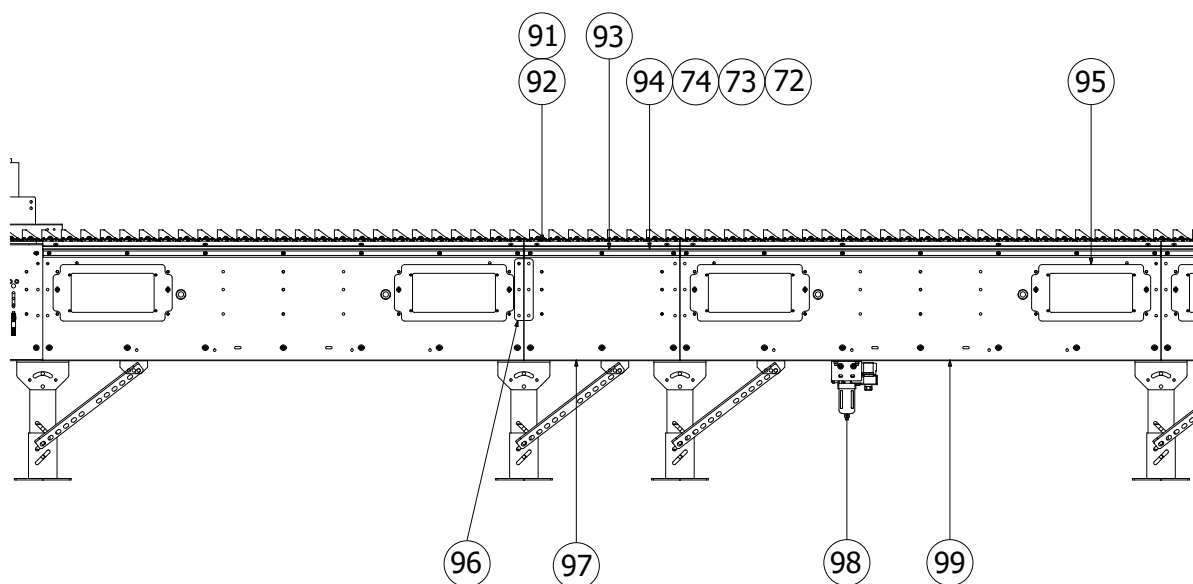
Dibujo de Partes del ProSort 1121/1131



• ProSort 1121/1131 Parts Drawing

Divert and Intermediate Sections
(Secciones de Desviador e Intermedia)

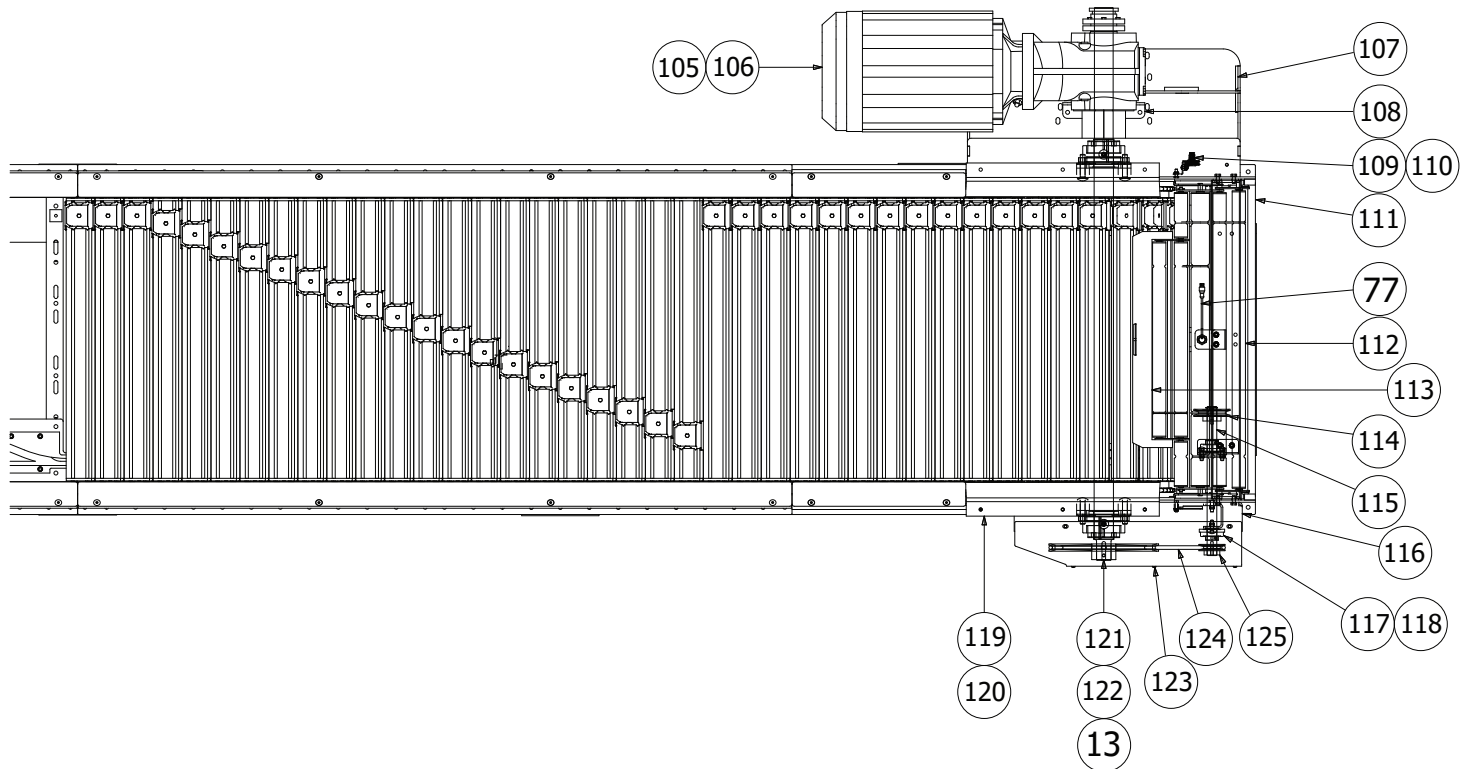
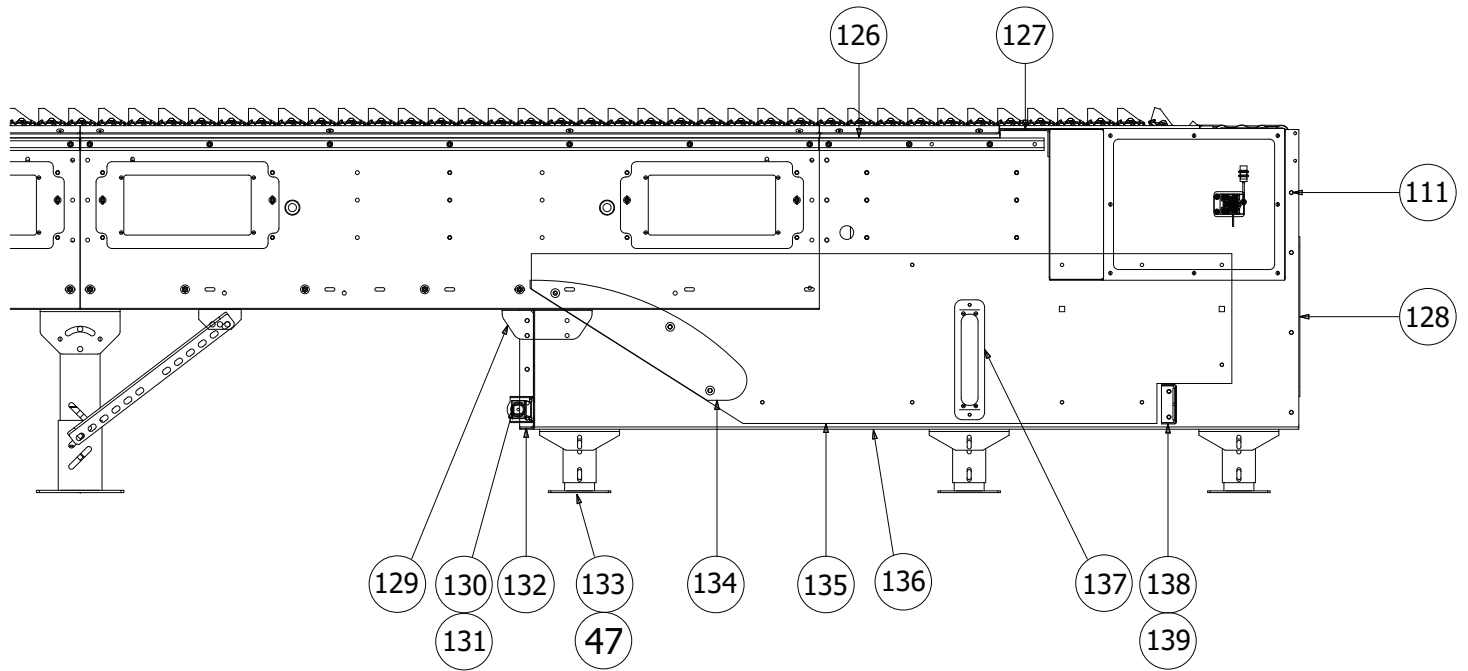
Dibujo de Partes del ProSort 1121/1131



• ProSort 1121/1131 Parts Drawing

Catenary Divert and Drive Section
(Catenaria de Desviación y Sección Motriz)

Dibujo de Partes del Modelo ProSort 1121/1131



• ProSort 1122/1132 Parts List

Ref. No.	Description
1	25 Snub Roller
2	Light Curtain Screen Emitter (Induct)
3	Bearing - 3-Bolt, 1-3/16" Bore (Takeup Assembly)
4	Take-Up Plate Weld (Takeup Assembly)
5	6" Takeup Pulley
6	Induct Side Cover (Tail Assembly)
7	Induct Pulley Plate Weld
8	Bearing - 4-Bolt, 1-11/16" Bore (Induct 8" Drive Pulley)
9	8" Diameter Pulley (Induct)
10	Timing Belt Sprocket - 1-11/16" Bore
11	Timing Belt (Induct)
12	Timing Belt Drive Guard Assembly (Tail Assembly)
13	Tail Bed Spacer Channel (Does Not Connect To Takeup)
14	Drive Sprocket (Drive And Tail Assembly)
15	Bearing - 4-Bolt Square, 2" Bore (Tail Shaft And Drive Shaft)
16	Tail Shaft (Tail Assembly)
17	Timing Belt Sprocket - 1-1/2" Bore
18	Lock Collar (Tail and Drive Assembly)
19	Cushion Disk Assembly
20	Infeed Pin Guide Block (Top Of Tail Assembly)
21	2-1/4" Diameter Pulley
22	Snub Roller Guard (In Induct Auto-Tracker)
23	Auto-Tracker (Induct)
24	Light Curtain Screen Receiver (Induct)
25	Tail Bed Spacer Channel (Connects To Takeup)
26	Slip Sprocket (Tail)
27	Tail Bearing Guard Assembly - Encoder Side
28	1/4" Diameter X 1-1/2" Long Shoulder Bolt (Encoder On Tail Assembly)
29	Encoder Kit
30	Cordset - 3 Meters, Straight Female Pigtail (Safety Switch, Transition Rollers, Lost Bearing Prox, Encoder)
31	Infeed Pulley (In Induct Auto-Tracker)
32	Nip Point Guard (In Induct Auto-Tracker)
33	Induct Bed Spacer
34	Slider Pan (Induct)
35	Induct Belt
36	Upper Guard Mounting Bearing Guide (Takeup)
37	Take-Up Bearing Cover Assembly
38	Light Curtain Mounting Guard Rail (Induct)
39	Butt Coupling Angle (Induct)
40	Nip Point Guard (Discharge End Of Induct)
41	Induct Shoe Cover Weldment - LH/RH (Tail)
42	Male M12 Recept 4-Pin With 1 Meter Leads, 1/2" NPT (Oiler On Tail Assembly)
43	Oiler Mounting Bracket (Tail Assembly)
44	Chain Lubricator Kit - 24 VDC, 2-Feeds
45	Lexan Cover Assembly (Tail)
46	Top Aluminum Chain Guide - LH/RH (Tail)
47	Induct Support
48	Support Vibration Dampening Belt
49	Induct Side Channel
50	Induct Transition Guard Assembly
51	Threaded Take-Up Rod (Induct Takeup Assembly)
52	Take-Up Angle (Takeup Assembly)
53	11/16" Hex Idler Mounting Bracket
54	Bottom Guard - Induct Drive
55	Side Channel - LH/RH (Takeup Assembly)
56	Guard Mounting Bearing Guide (Takeup)
57	Bearing Guide Spacer (Takeup Assembly)
58	Tail Bearing Guard Assembly - Encoder Side (Tail Assembly)
59	Tail Assembly Side Channel - LH/RH
60	Bearing Spacer Plate (Tail Assembly)
61	Chain Transition Dampener (Tail and Drive Assembly)
62	Shank Brush For Chain Lubricator (Bottom Of Tail Assembly)
63	Sorter Support
64	Knee Brace Angle (Supports)
65	Knee Brace Bracket (Supports)
66	Bottom Guard (Tail Assembly - Under Induct)
67	Fod Pan Support Bracket
68	Fod Pan (Foreign Object Debris Collection Pan)
69	Guard (In Auto-Tracker)
70	2-1/8" Diameter Roller (Induct)
71	Return Pin Confirmation Guide
72	Prox Switch - 18 mm, 24VDC, Normally Open (In Return Prox in Tail and Missing Bearing Detection Assembly In Return Section)
73	Aluminum Chain Support Rail (Bottom)
74	Chain Guide UHMW Wearstrip
75	Vibration Damping Strip Behind Chain Rail
76	Bearing Profile - Grooved Novitane Belt
77	Plastic Tee - 1/2" To 1/2" (In Pneumatic Switches)
78	3/8" Outer Diameter Polyurethane Tubing (In Pneumatic Switches)
79	Prox Switch - DC, N.O. 16 mm Range (Safety Switches, Transition Rollers)
80	Safety Switch Assembly

Lista de Partes del ProSort 1122/1132

Ref. No.	Description
81	Cordset (Switches And Catenary Sag Photo Eye)
82	Switch Mounting Channel Weld
83	Switch Assembly
84	Switch Mounting Guide Block
85	Slotted Track Spacer
86	UHMW C-Channel (Divert Rail)
87	Aluminum Divert Rail
88	Center Switch Assembly (22/30 Degree)
89	Pin Guide Spacer
90	Slat Assembly
91	Shoe Assembly
92	Bed Spacer Weldment
93	Vibration Dampening Pads - Behind Bed Spacers
94	Divert Y-Block (LH/RH and 22/30 Degree)
95	Lexan Cover Assy (Divert Window)
96	#60 XLO O-Ring Chain Assembly
97	Chain Connector Link
98	Metal Chain Cover
99	Unistrut (Spur Mounting Channel)
100	Aluminum Chain Support Rail (Top)
101	Divert Side Channel
102	Splice Plate (Section Ends)
103	Intermediate Side Channel
104	Filter Regulator Kit
105	Shaft Guard Half
106	Gearmotor
107	Drive Bearing Mounting Channel Weld (Drive Assembly)
108	Torque Arm Mounting Angle
109	Missing Shoe Top Photo Eye - Laser, Retro-Reflective, Long Range (Drive)
110	Lost Shoe Top Photo Eye Swivel Bracket (Drive)
111	End Cover (Drive)
112	Transition Roller Assembly
113	Discharge Transition Bar (Transition Rollers)
114	Sheave - 3.75" Outer Diameter, 1" Bore (Drives Transition Rollers)
115	Driving Assembly For Transition Roller Assembly
116	Bearing Mounting Channel - O-Ring Side (Drive)
117	Bearing - 2-Bolt, 1" Bore (In Transition Roller Driving Assembly)
118	Bearing Spacer Channel (In Transition Roller Driving Assembly)
119	Brush Holder (Drive)
120	Belt Brush (Drive)
121	Sheave - 11.35" Outer Diameter, 1-1/2" Bore (Drive Assembly)
122	Drive Shaft (Drive Assembly)
123	Drive Assembly O-Ring Guard
124	Transition Roller Drive O-Ring - 3/8" Thick
125	Sheave - 2.75" OD, 1" Bore (In Transition Roller Assembly Driving Assembly)
126	Top Aluminum Chain Support - LH/RH (Drive)
127	Brush Holder Extension Bracket (Drive)
128	End Cleanout Cover (Drive Assembly)
129	Catenary Section Support Bracket
130	Catenary Sag Photo Eye - Retro-Reflective (Drive)
131	Catenary Sag Photo Eye Mounting Bracket - Ball Swivel (Drive)
132	Photo Eye Channel Weldment (Drive)
133	Drive Support
134	Catenary Block (Drive)
135	Catenary Wearstrip (Drive)
136	Drive Side Channel - LH/RH
137	Catenary Window Guard (Drive)
138	Bed Spacer (Catenary In Drive)
139	Reflector - 3.30" Diameter (Catenary In Drive, On Lower Bed Spacer)
140	Sweep Block - 22/30 Degree (Return)
141	Missing Bearing Detection Assembly - LH/RH, 22/30 Degree (Return Section)
142	Fixing Clamp - For Threaded Barrels, M18 (In Missing Bearing Detection Assembly)
143	Pin Gathering Block
144	Missing Bearing Detection Controls Box
145	External Retaining Ring Pliers (For Chain)
146	Chain Pick-Up Tool - Bent
147	Chain Pick-Up Tool - Flat
148	Pin Guide Alignment Tool
149	Divert Angle Alignment Block (For Divert Rail Transitions)
150	Chain Pull Assembly (For Easier Chain Installation)
151	Loctite - #401, .70 Ounce Bottle
152	Pin Guide
153	Channel Nut - 3/8-16 With Spring (For Mounting Spurs/Guard Rail Onto Unistrut)
154	Rubber Grommet - 1-1/4" Inner Diameter, 1-7/8" Outer Diameter
155	Rubber Grommet- 1/2" Inner Diameter, 1" Outer Diameter
156	#60 Chain Pulling Plate
157	Cordset - 5 Meter, Straight Female Pigtail (Air Line Pressure Switch)
158	1/2" Polyurethane Tubing - Black (Primary Air Line)
159	Air Line Pressure Switch - 24 VDC, Normally Open (Pneumatic Sorters Only)

For part numbers use the Hytrol Toolbox App and use the Factory Order or Serial Number printed on the equipment, or call customer care at **1-844-4HYTROL**.

Dibujo de Partes del ProSort 1122/1132

(Unidad de Inducción y seccion de Descarga)

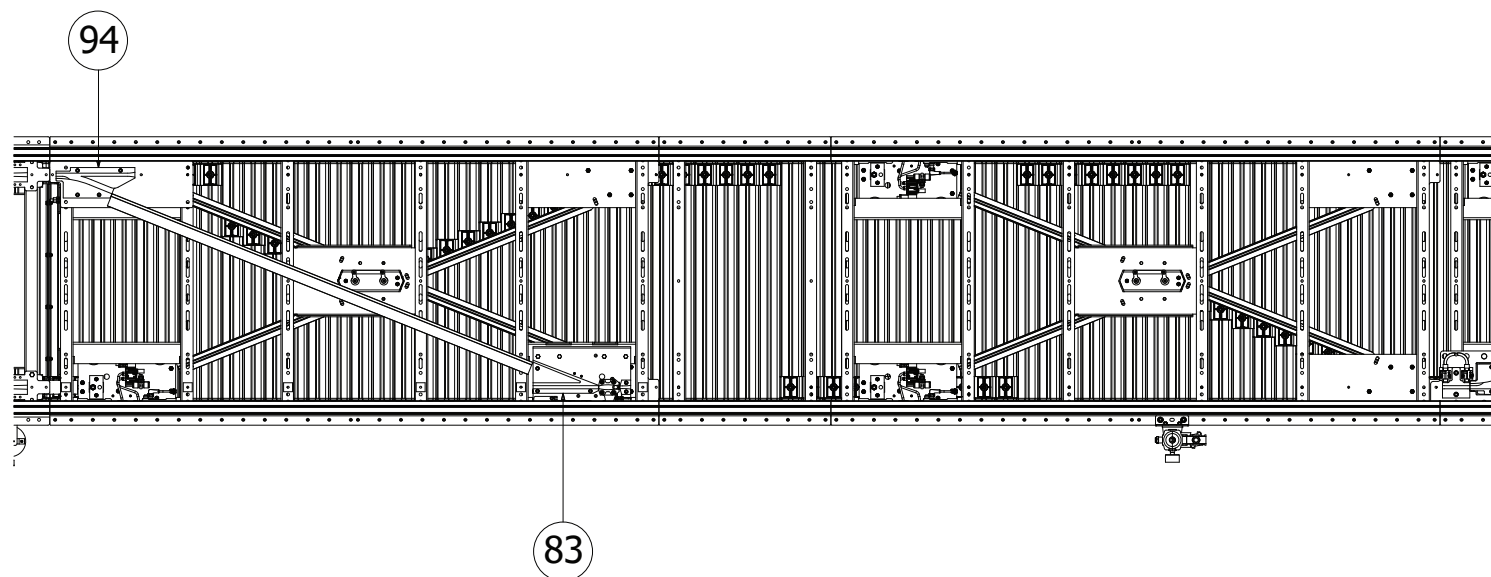
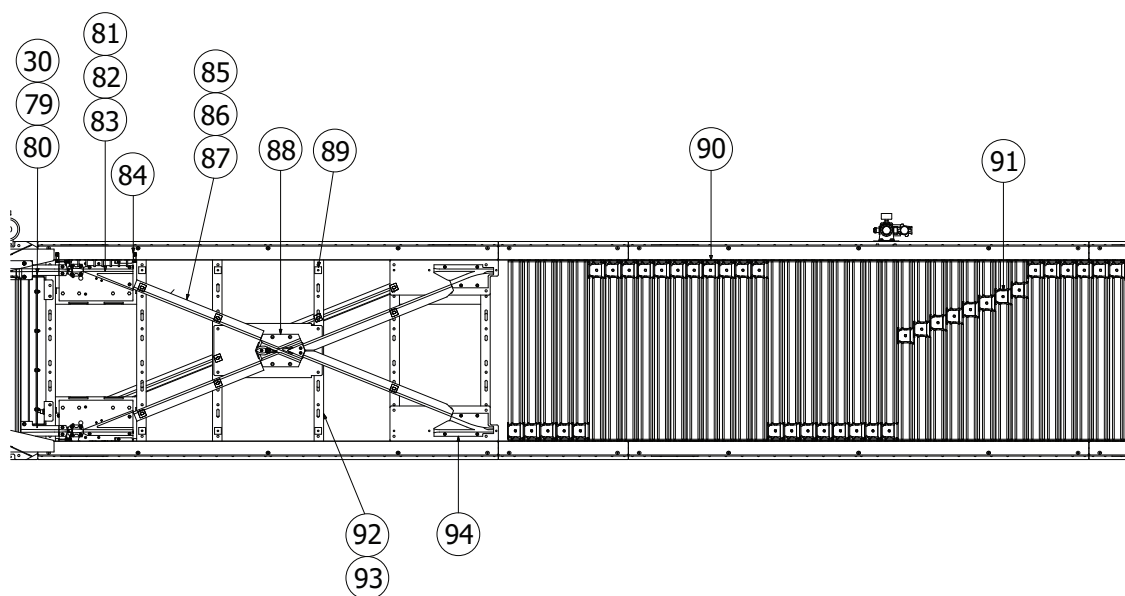
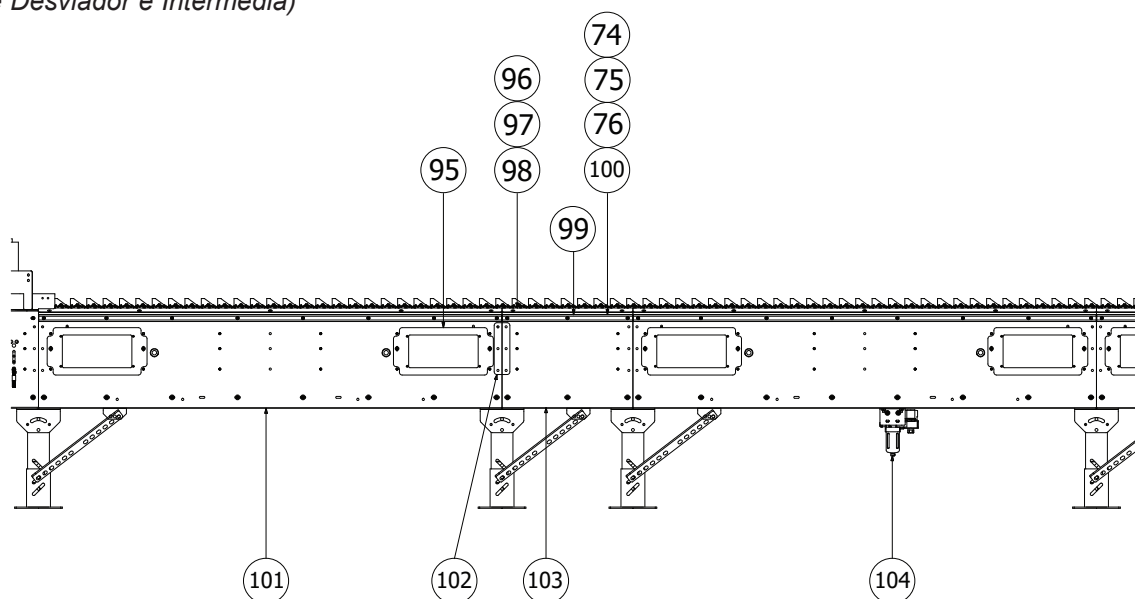


• ProSort 1122/1132 Parts Drawing

Divert and Intermediate Sections

(Secciones de Desviador e Intermedia)

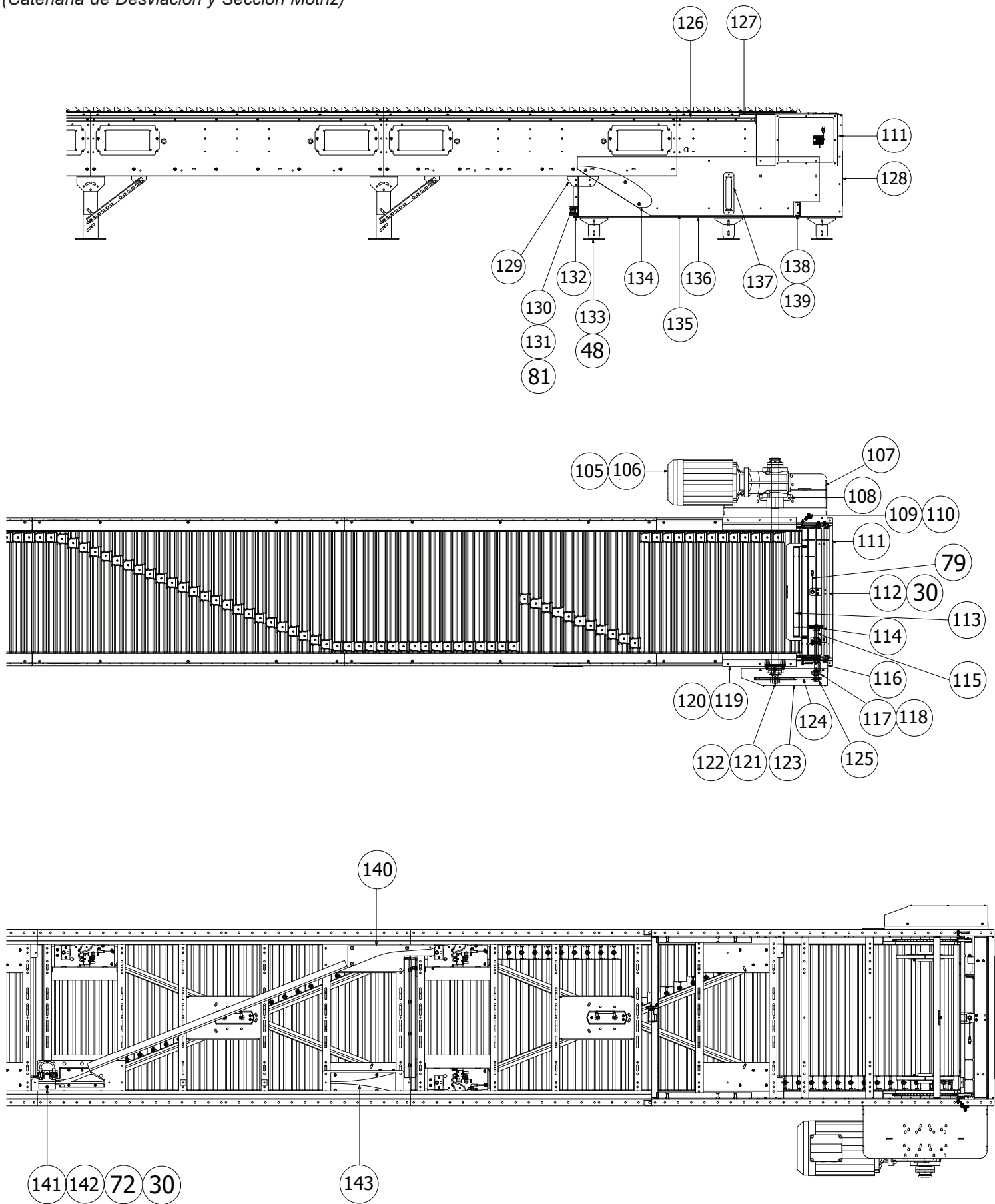
Dibujo de Partes del ProSort 1122/1132



• ProSort 1122/1132 Parts Drawing

Catenary Divert and Drive Section
(Catenaria de Desviación y Sección Motriz)

Dibujo de Partes del Modelo ProSort 1122/1132



• Preventive Maintenance Checklist (Lista de Mantenimiento Preventivo)

The following is a general maintenance checklist which covers the major components of your conveyor. This will be helpful in establishing a standard maintenance schedule.

Component (Componente)	Suggested Action (Sugerencia)	Schedule (Horario)		
		Weekly (Semanal)	Monthly (Mensual)	Quarterly (Trimestral)
Motor (Motor)	Check Noise (Revisar el Ruido)			
	Check Temperature (Revisar la Temperatura)			
	Check Mounting Bolts (Revisar los Tornillos de Montaje)			
Reducer (Reductor)	Check Noise (Revisar el Ruido)			
	Check Temperature (Revisar la Temperatura)			
	Check Oil Level (Revisar el Nivel de Aceite)			
Carrying Chains (Cadenas Transportadoras)	Check Tension (Revisar la Tension)			
	Lubricate (Lubricar)			
Carrying Chains Sprockets (Engranes de Cadenas Transportadoras)	Check Alignment with Chain Guards (Revisar la Alineación con los Resguardos de Cadena)			
Slat/Shoe Assemblies (Ensamble Tabilla/Zapato)	Check Physical Condition (Revisar Estado Físico)			
	Check Operation (Revisar Funcionamiento)			
Carrying Chain Guides (Guías de Cadena Transportadora)	Check for Wear (Revisar el Desgaste)			
Divert Switches (Interruptores Desviadores)	Check Physical Condition (Revisar Estado Físico)			
	Check Operation (Revisar Funcionamiento)			
Chain Oiler (Lubricador de Cadena)	Check Oil Level (Revisar el Nivel de Aceite)			
Air Regulator (Regulador de Aire)	Check Pressure (60 P.S.I. Normal) (Revisar Presión (Normal 60 P.S.I.))			
Air Filter (Filtro de Aire)	Check Physical Condition (Revisar Estado Físico)			
Structural (Estructura)	General Check: Check All Loose Bolts, etc. tightened (Revisar General: Tornillos sueltos, etc.)			
Divert Blocks (Bloques Desviadores)	Check Physical Condition (Revisar Estado Físico)			
Divert Angles (Ángulos Desviadores)	Check Physical Condition (Revisar Estado Físico)			

Carrying Chains - Check lubrication. Chains will appear moist when properly lubricated.

Slat/Shoe Assemblies - Check physical condition of slats and shoes. Replace any damaged slat/shoe assemblies. Check operation. Slats should be clean and straight. Shoes should slide freely on slats. Remedy cause of any binding. Slats may be cleaned by wiping with de-greaser type solvent such as a denatured alcohol.

Divert Switches - Check physical condition. Switches must be kept in good physical condition and clear of all foreign matter. Check operation. Check for any loose switches or improperly adjusted switches. Check physical condition of divert blocks. Pay particular attention to the point near the switch block. Replace parts as needed.

Divert Angles - Check for any bent areas. Check for loose or missing wear strip. Replace as needed.

Note: Check Set Screw for proper torque value after the first 24 hours of operation.

NOTA: REVISAR LOS TORNILLOS DE FIJACIÓN PARA OBTENER EL TORQUE ADECUADO DESPUÉS DE LAS PRIMERAS 24 HORAS DE OPERACIÓN.

Cadenas - Revisar lubricación. Las cadenas deben verse húmedas, propiamente lubricadas.

Ensamble Placa/Zapato - Revise su condición física. Revise la operación. Los zapatos se deben deslizar libremente sobre las placas. Corrija cualquier causa de ano. Revise la limpieza y rectitud de los tubos. Los tubos se pueden limpiar con solvente desengrasante tal como alcohol desnaturalizado.

Interruptores Desviadores - Revise su condición física. Los interruptores tienen que estar en buenas condiciones y libres de cualquier material ajeno. Revise su operación. Revise que los interruptores no estén flojos o mal ajustados. Revise la condición física de los bloques superiores e inferiores. Ponga especial atención al punto inferior del bloque cerca al interruptor.

Bloques Desviadores - Revise su condición física. Busque si hay bloques dañados y reemplácelos. Revise su operación. Los bloques deben deslizarse libremente sobre los tubos. Reemplace los dañados.

Ángulos Desviadores - Revise si hay áreas dobladas. Revise si la banda de protección está floja o extraviada.



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