

POWERED BY

TREW

INSTALLATION & MAINTENANCE MANUAL



SERIES 1500

24VDC MOTORIZED DRIVER ROLLER
HCAT30 POP-UP DIVERT SECTION

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OVERVIEW

Theory Of Operation



The HCAT30 pop up divert module provides the ability to divert packages off a conveyor system at moderate rates. The HCAT30 is designed to divert packages at a 30 degree angle relative to the main conveyor line, while not stopping the package during the divert process.

The HCAT30 consists of fixed direction rollers, divert wheels fitting between the fixed rollers, and a lifting mechanism that raises and lowers the divert wheel module.

All actuated motions of the HCAT30 are directed by an external control system.

COMPONENTS

Components

The HCAT30 is broken down into three sub-assemblies, top surface rollers, pop-up base and lift drive assembly. Assembly of all three sub-assemblies is shown in **Figure 1**. First two images **(2.1)** will show components of top surface and lift drive assembly. Third image **(2.2)** shows the connection point of all three sub-assemblies. Fourth image **(2.3)** shows the overview of the HCAT30 and fifth image **(2.4)** is the table of components:

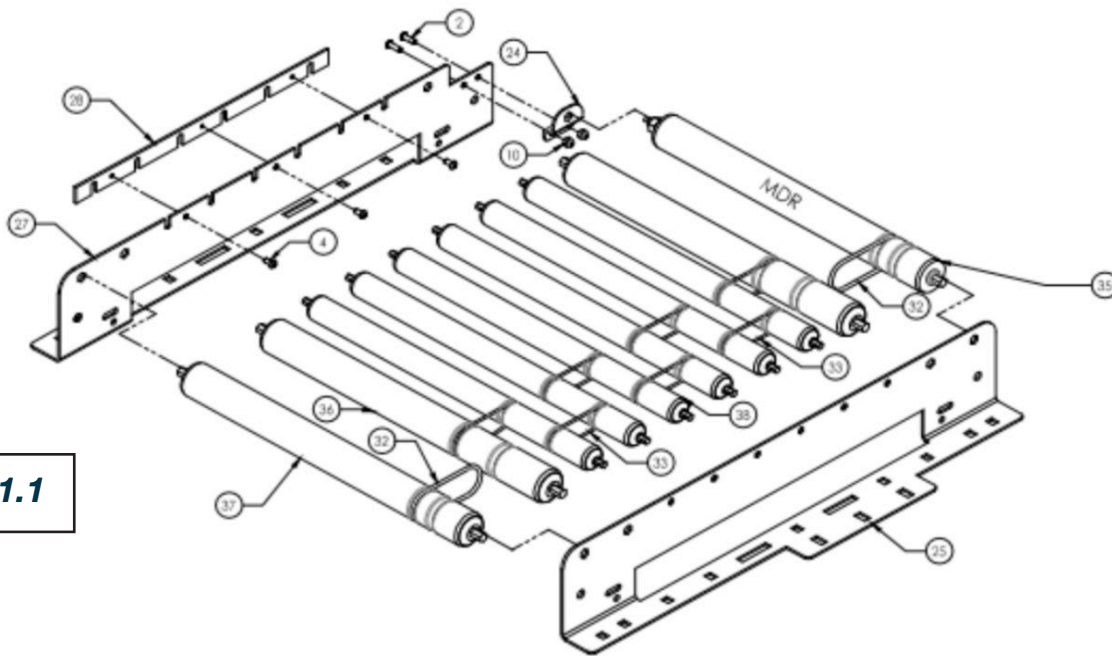


Figure 1.1

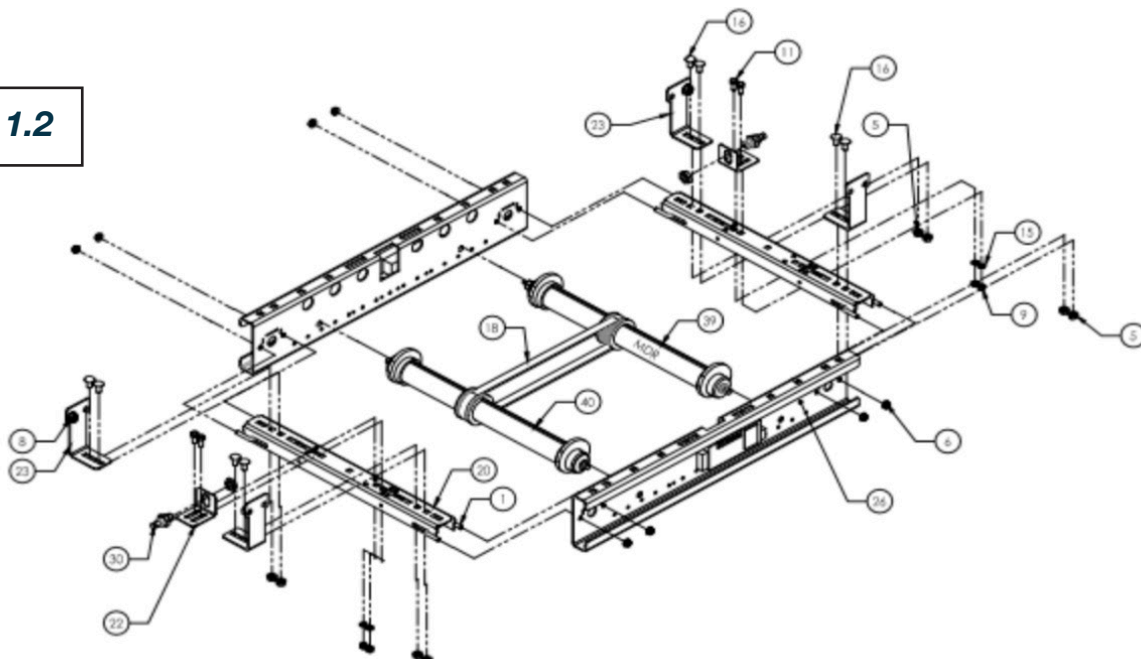


Figure 1.2

Figure 1.3

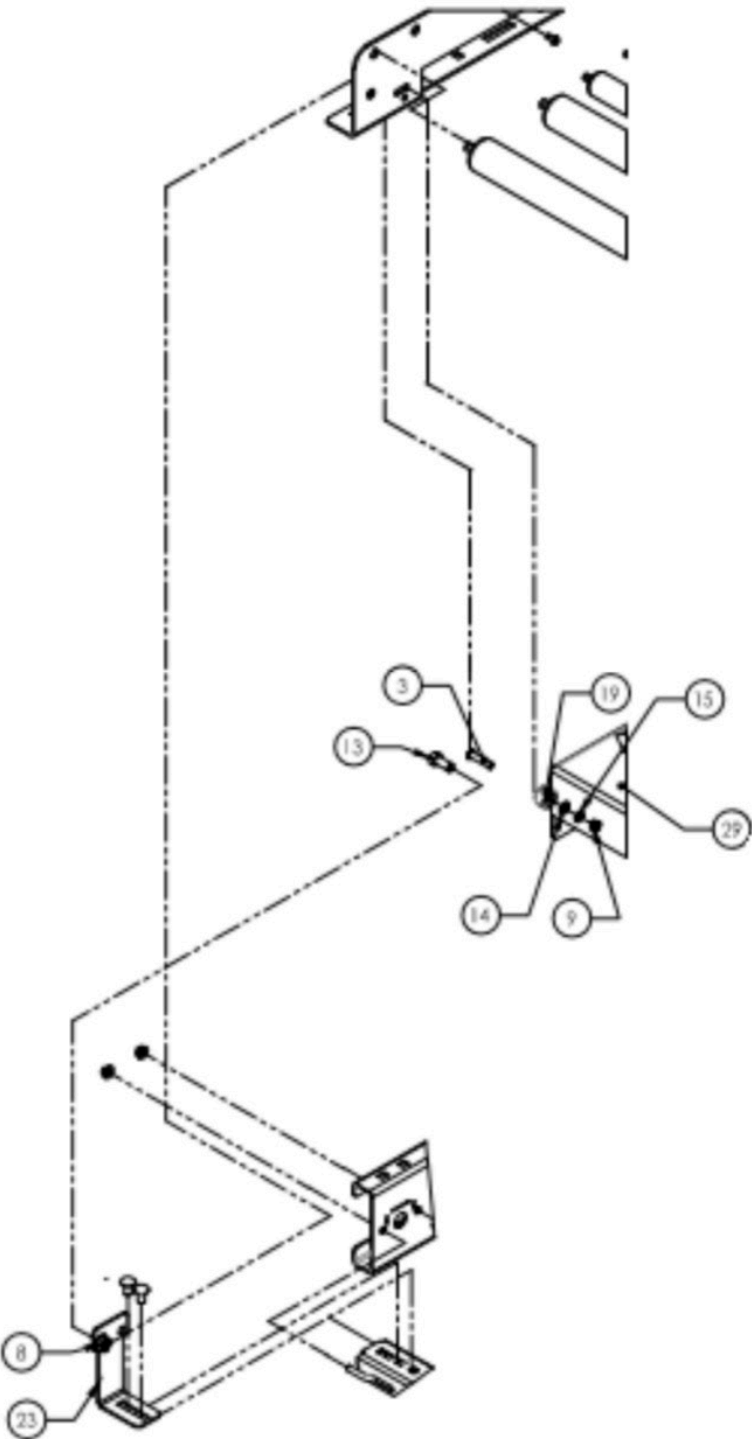
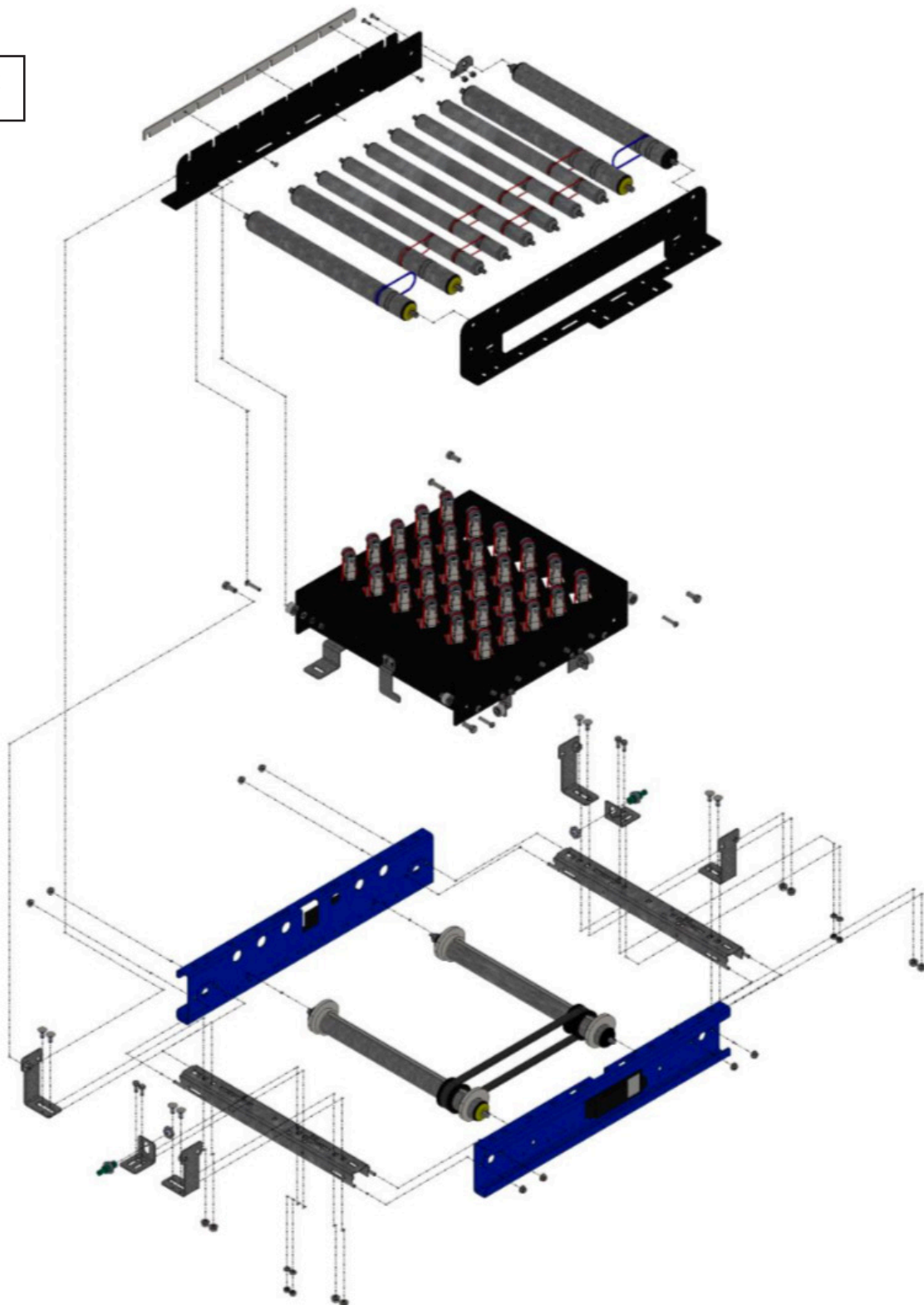


Figure 1.4



| ITEM | PART NUMBER | QTY. | DESCRIPTION |
|------|--------------|------|--|
| 1 | 10201-001546 | 4 | UBOLT, 5/16IN - 18 UNC X 2.50IN (STD.) |
| 2 | 10201-010005 | 2 | 1/4-20 UNC X 0.75 HEX SOCKET BUTTON HEAD CAP SCREW |
| 3 | 10201-010008 | 3 | 5/16-UNC X 1.50 HEX SOCKET BUTTON HEAD CAP SCREW |
| 4 | 10201-010100 | 3 | 1/4-20 UNC X 0.50 HEX SOCKET BUTTON HEAD CAP SCREW |
| 5 | 10201-010200 | 8 | 3/8 - 16 UNC FLANGE HEX NUT |
| 6 | 10201-010204 | 8 | 5/16 - 18 UNC HEX FLANGE NUT |
| 7 | 10201-010205 | 2 | 1/4 - 20 UNC HEX FLANGE NUT |
| 8 | 10201-010209 | 4 | 7/16 - 14 UNC HEX FLANGE NUT |
| 9 | 10201-010215 | 8 | 5/16-18 UNC HEX NUT |
| 10 | 10201-010219 | 2 | 1/4 - 20 UNC HEX NYLON LOCK NUT |
| 11 | 10201-010404 | 4 | 5/16-18 UNC X 0.75 HEX HEAD CAP SCREW |
| 12 | 10201-010406 | 2 | 1/4-20 UNC X 0.75 HEX HEAD CAP SCREW |
| 13 | 10201-010424 | 4 | 7/16-14 UNC X 1.00 HEX HEAD CAP SCREW |
| 14 | 10201-010601 | 4 | 5/16 WASHER-A |
| 15 | 10201-010654 | 8 | 5/16 LOCK WASHER |
| 16 | 10201-010800 | 8 | 3/8-16 UNC X 0.75 CARRIAGE SCREW |
| 17 | 10201-025954 | 1 | 3/8 - 16 UNC X 1.50 HEX SOCKET BUTTON HEAD CAP SCREW |
| 18 | 10213-029442 | 1 | TIMING BELT (1/2 PITCH, 3/4IN WIDTH, 390H075) |
| 19 | 10219-001554 | 4 | NEVERLUBE CAM YOKE ROLLER, 1" DIA |
| 20 | SEE TABLE 1 | 2 | CROSSMEMBER |
| 21 | 10300-035324 | 1 | PROX EYE BRACKET FOR UP POSITION (CAM TRANSFER) |
| 22 | 10300-035506 | 2 | PROX EYE MOUNTING BRACKET, POP UP DIVERT |
| 23 | 10300-035513 | 4 | INTERMEDIATE ATTACHMENT BRACKET, POP UP DIVERT |
| 24 | 10300-035718 | 1 | DIVERT MDR BRACKET |
| 25 | 10303-034458 | 1 | POP UP DIVERT INTERMEDIATE, 30IN ZONE, RH |
| 26 | 10303-034459 | 2 | POP UP DIVERT SUB RAIL, 30IN ZONE |
| 27 | 10303-035725 | 1 | POP UP DIVERT INTERMEDIATE, 30IN ZONE, MDR, FOR RH |
| 28 | 10303-038579 | 1 | POP-UP DIVERT ROLLER RETAINING PLATE, 30IN ZONE |
| 29 | SEE TABLE 2 | 1 | POP-UP CAM ACTUATED DIVERT, 30IN-36IN ZONE, 5 BANK ASSEMBLY, RH |
| 30 | 10707-034011 | 2 | INDUCTIVE SENSOR, NBN12-18GM35-E2-V1 |
| 31 | 10714-009546 | 2 | 9006 MOTOR ROLLER CARD; 24VDC DRIVE CARD WITH ZPA LOGIC (SINGLE ZONE CONTROLLER) PNP OR NPN |
| 32 | 11212-001541 | 2 | HT BLUE OBANDS, 3" C-C, 3/16" x 9.50", 85A HT BLUE |
| 33 | 11212-037356 | 5 | SUPER RED OBAND, 4mm X 9.00IN 90A |
| 34 | 11212-037356 | 2 | SUPER RED OBAND, 4mm X 9.00IN 90A |
| 35 | SEE TABLE 3 | 1 | EC100 ROLLER, 16:1 GEAR RATIO, 1.9" DIA, 2 GROOVES STD, 16GA |
| 36 | SEE TABLE 4 | 2 | CARRIER ROLLER, ABEC BEARINGS, 1.9IN DIA, 2 GROOVE (@ 3.39IN & 6IN FROM BF), 16GA GALV |
| 37 | SEE TABLE 5 | 1 | CARRIER ROLLER, ABEC BEARINGS, 1.9IN DIA, 2 GROOVE STD, 16 GA GALVANIZED |
| 38 | SEE TABLE 6 | 6 | BF CARRIER ROLLER, ABEC BEARING, 1.375IN DIA, 2 GROOVE (@ 2.7IN & 6.01IN FROM BF), 16GA GALV |
| 39 | SEE TABLE 7 | 1 | POP UP DIVERT EC110 CAM ROLLER, 1.9IN DIA., 2 CAMS, 1-TIMING BELT SPROCKET, WELDED KEYWAY |
| 40 | SEE TABLE 8 | 1 | POP UP DIVERT CAM ROLLER, 1.9IN DIA., 2-3IN DIA. CAMS, 1-TIMING BELT SPROCKET, WELDED KEYWAY |

HCAT30 Pop-Up Base

Figure 2 (2.5) shows the assembly of the pop-up base. The first image shows the components of the carriage and divert wheel. Second and third image shows the components that attach to the sides of the pop-up base plate. Fourth image is the orientation of the rollers. Fifth image is the assembly of the pop-up base. Sixth image is the table of components.

Figure 2.1

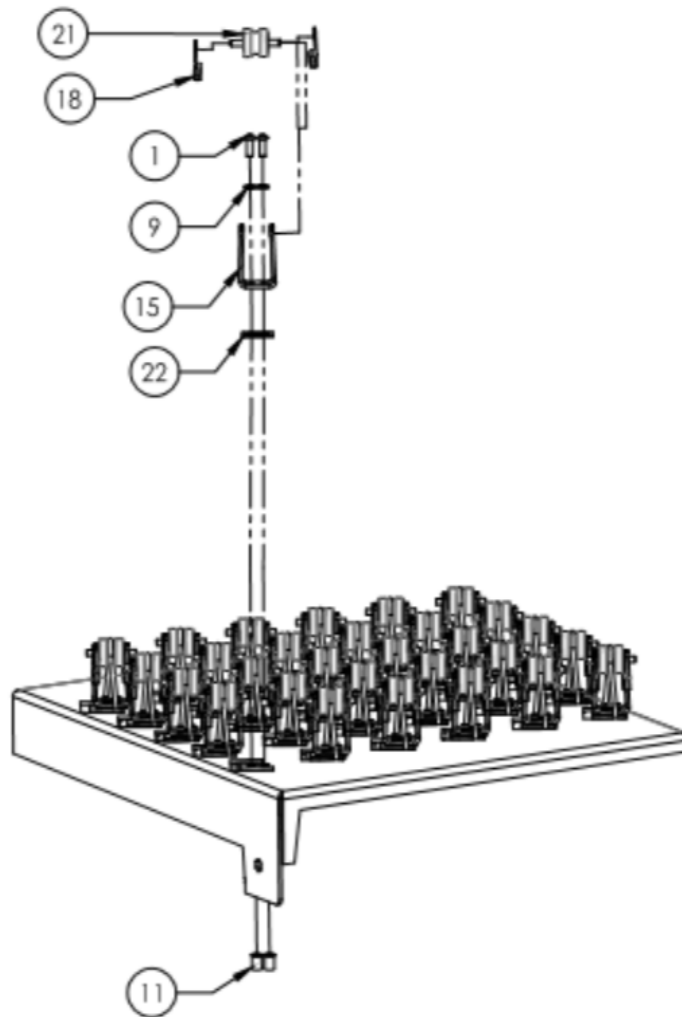


Figure 2.2

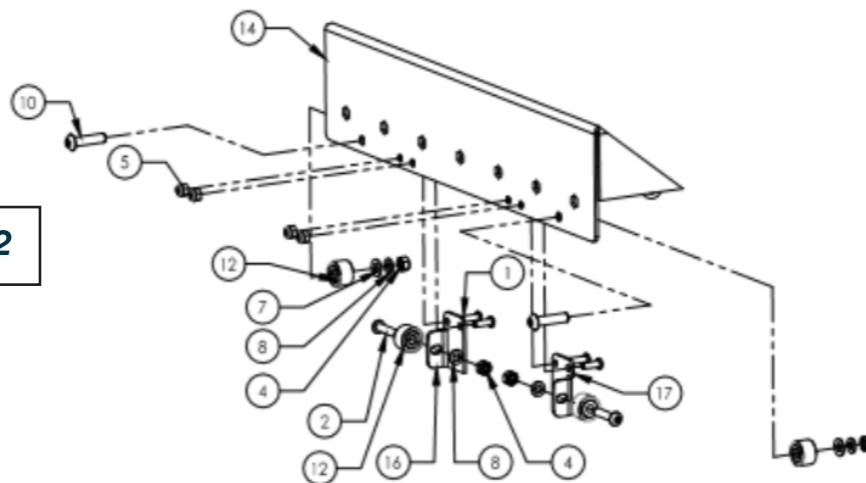


Figure 2.3

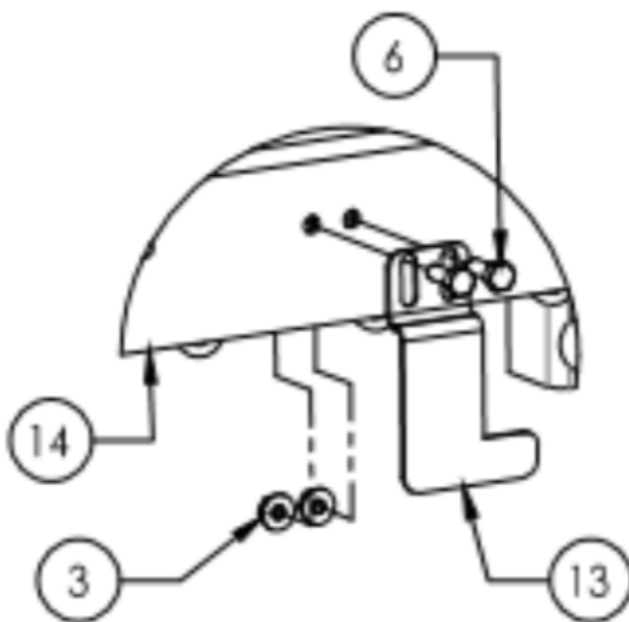


Figure 2.4

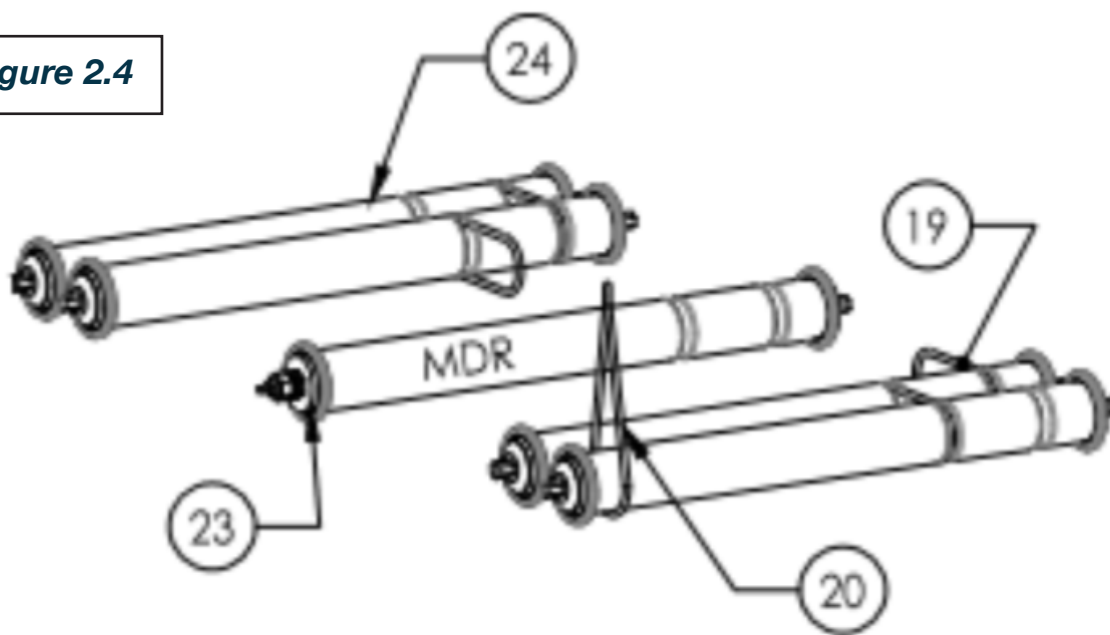


Figure 2.5

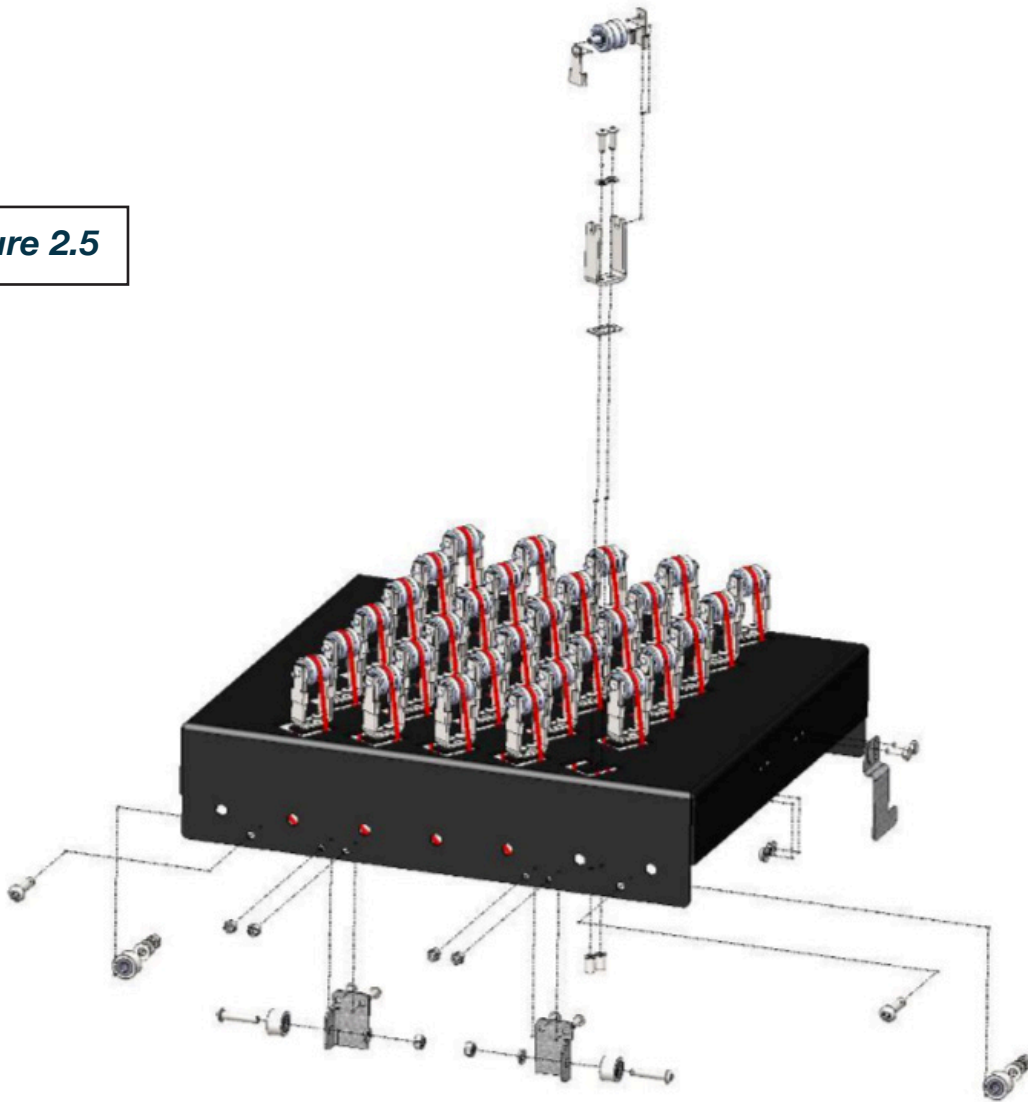


Figure 2.6



Types of MDR

There are three types of MDR used in the HCAT30. The three types are the lift drive assembly roller, the divert wheel drive assembly rollers and top surface drive roller. The divert wheel drive assembly rollers drive the pop-up divert wheels. The lift device assembly roller as oblong shape plates welded to each end to allow the mechanism to lift to the desired height. Figure 3 shows the three types of motorized drive rollers.



Top Surface Drive Roller



Lift Drive Assembly Roller



Divert Wheel Drive Assembly Roller

Replacement of MDR

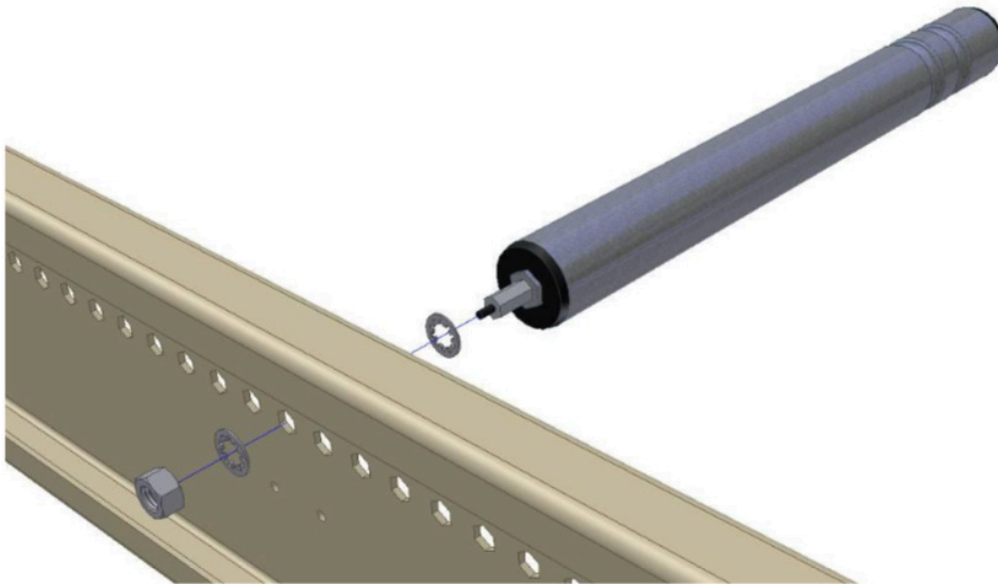
- 1 Turn off and Lockout / Tag-out all power to the conveyor section
- 2 Make sure that the Gear Ratio matches that of the roller that is being replaced. Standard Gear Ratios would include: 12:1, 16:1, 24:1, 36:1, 64:1, and 96:1. This is important if the conveyor system is comprised of more than one speed
- 3 The replacement roller should include:
 - a Motorized Drive Roller for BF and Gear Ratio
 - b Hardware kit
 - i. star washers – qty. 2
 - ii. motor nut
 - iii. motor instructions
- 4 Install a star washer on the threaded motor shaft. Fold the wires perpendicular to the connector and fan the wires down the backside of the connector. When folding the wires over the top of the connector use care not to put too much stress on the connector pins and try not to overlap and wires on top of other wires. This will allow the connector to easily pass through the washer. Just simply bending the wires at the connector and forcing the star washer over the wire can cause damage to the insulation on the wires leading to failure of the MDR.

See image below for instruction



Fan & Fold Method

- 5 Utilizing the fold and fan method described above insert the MDR connector into the hex hole and gently pull the cable extending from the motor through
- 6 Insert the threaded hex shaft into the hex hole. Push the spring loaded idler shaft inwards and line the roller up with the hole. Release the idler shaft and allow it to pop into the hole in the frame. See **image below** for an exploded view of the process



- 7 The replacement roller should include:
 - a Motorized Drive Roller for BF and Gear Ratio
 - b Hardware kit
 - i. star washers – qty. 2
 - ii. motor nut
 - iii. motor instructions
- 8 The motor nut threads on to the motorized drive roller shaft, and should be to the proper torque of: **See Page 2.13 for Proper Torque Information.**

Note: Torque is critical. Failure to properly torque the MDR will result in the shaft spinning in the frame, twisting of the wires and failure of the MDR. Exceeding this torque specification will also result in the conditions above.

- 9 Tools required to achieve proper torque can be seen in Figure 6






- 10 Plug the motor cable into the motor control card
- 11 Turn on power to the conveyor section

! WARNING

These checks must be performed with the power to the conveyor section turned "**ON**". Only qualified electricians should be allowed to perform these checks. Failure to follow this instruction may result in serious personal injury and/or equipment damage.

- 12 Check to see if roller operates by blocking the photo eye sensor of the zone that is being serviced or the photo eye sensor located upstream with respect to flow
- 13 If the MDR does not operate review the **Troubleshooting Section**

Proper Torque

| | | |
|---|--|---|
| Gear Ratios Vary. | | |
|  |  |  |
| EC110 and EC100: 30 ft-lbs +/- 5 ft-lbs (40.7 N-M +/- 6 N-M) | | EC310: 50 ft-lbs +/- 5 ft-lbs (67.8 N-m +/- 6 N-m) |

| |
|--|
|  |
| ITO: 22.5 ft-lbs +/- 5 ft-lbs (30.5 N-M +/- 6 N-M) |

Carrier Roller

The carrier roller is used to take the weight of the product and also distributes the torque generated by the motorized drive rollers via o-belts, chain, timing belts, strip belts, or full-width belts. Generally, no more than nine carrier rollers per motorized drive roller are used in each zone.

Replacement of Carrier Roller:

- 1 Turn off and Lockout / Tag-out all power to the conveyor section
- 2 Use an appropriate tool to push in the spring loaded axle on the roller and free that side of the axle from the frame of the conveyor
- 3 Carefully disengage the opposite end of the roller from the frame. Make sure the axle is not pinched on the frame causing damage during removal
- 4 Remove the disengaged roller entirely from the frame section
- 5 Insert the axle of the replacement roller through the conveyor frame
- 6 Use an appropriate tool to push in the spring loaded axle and lower the roller into position, aligning the axle with the hex hole in the conveyor frame
- 7 Unlock and turn on the power to the conveyor section

Replacement of Carrier Roller for Top Surface:

- 1 Turn off and Lockout / Tag-out all power to the conveyor section
- 2 Remove retaining plate
- 3 Remove the roller end that was in retaining plate
- 4 Pull roller out from other side of frame
- 5 Place spring loaded axle opposite of retaining plate end, aligning the axle with the hex hole in the conveyor frame
- 6 Place other end of roller in frame and replace retaining plate

Drive Belts (O-Bands)

MDR conveyor utilizes drive belts to connect individual rollers together to create a Zone. The drive belts can be O-bands or V belts, depending upon load and speed requirements of the conveyor. Over time the drive belts can exhibit wear. O-bands in particular can wear or stretch, eventually allowing excessive slippage in the roller groove. When this happens, the rollers in the zones may not rotate and inadequately convey packages.

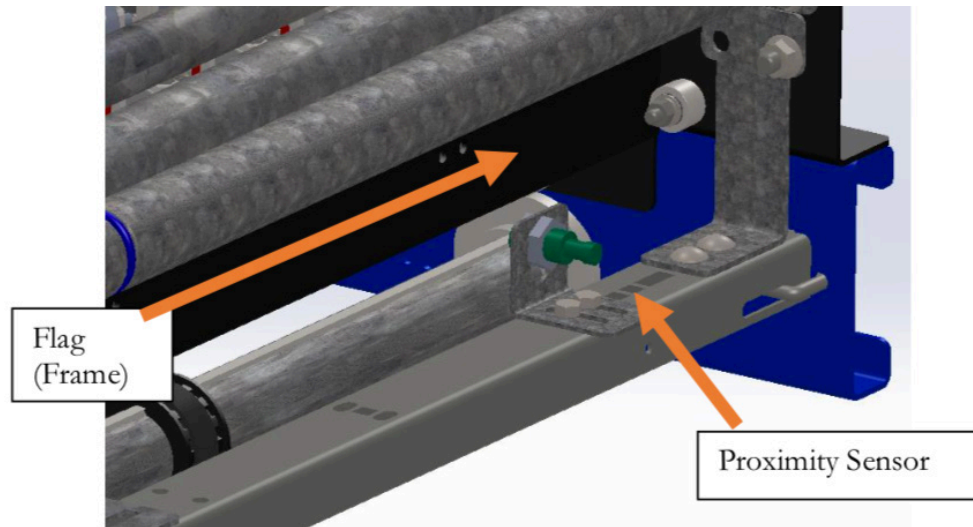
Proximity Sensors

There are two proximity sensors that provide control feedback, indicating the vertical position of the transfer mechanism, or cam. The sensors are adjusted at the factory, but field adjustment may be required from time to time.

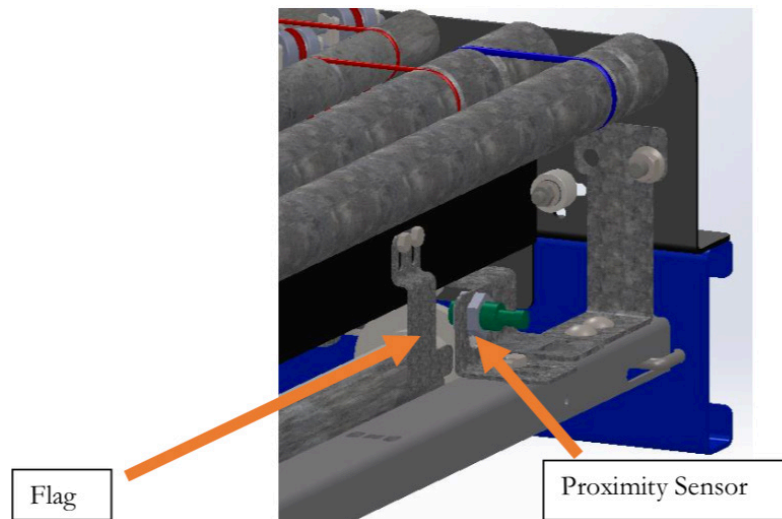
Proximity Sensor Adjustment

Correct positioning, or adjustment, of the proximity sensors will allow the sensors to detect the flag at the max position and the divert bank at the minimum position respectively. To check the sensor position the Cam lifting rollers should be rotated and the sensor detection lights should be monitored. When the cam is nearly in the up position, the up position proximity sensor light should blink on and remain on. When the cam is nearly in the down position the down position proximity sensor will blink on and remain on. Both sensors should be sensing with very little travel remaining on the roller frame in the up and down position. If adjustment is required, loosen the jam nuts retaining the sensor, and adjust the vertical position of the sensor to achieve the desired result then tighten the jam nut. See Figures 11 and 12 to see the relative positions of the flags and sensors.

Note: Adjustment of the sensor performance affects the controls operation of the divert module. Proper mechanical performance of the divert module is achieved when the control system raises the divert bank to the upper most position for the appropriate amount of time to divert packages then lowers the divert bank to the lowest position to allow other packages to flow straight over the rollers. Adjustment should be performed with someone knowledgeable of the control systems.



Shown in this image is the down position proximity sensor. The divert bank is in the raised position. The sensor will read the flag (frame) to indicate when the divert bank is in the down position.



Shown in this image is the up position proximity sensor and flag. The divert bank is in the raised position. The sensor will read the flag (frame) to indicate when the divert bank is in the up (raised) position.

PREVENTATIVE MAINTENANCE

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 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.). In addition, it consists of "keeping your eyes, ears, and nose open." 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.

⚠ 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.

Maintenance Precautions

WARNING

You must read and understand these precautions completely before operating, setting up, 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
- 9 Make sure all connectors are secure and all wires are free from interference, obstruction, and any moving parts

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 a these periods is recommended.

Daily Inspection

Walk the entire length of conveyor system and observe the following:

- 1** With the conveyor running, listen for abnormal noises that could indicate:
 - Worn bearings in rollers, motors, reducers, etc.
 - O-Belt making contact due to misalignment or improper adjustment
- 2** With the conveyor shut down, look for the following:
 - Strings or other foreign material wrapped around bearings, shafts, or rollers. Remove all foreign material immediately
 - Shavings or belt dust under conveyor that would indicate misaligned or damaged components
 - Oil leakage that would indicate faulty bearings or seals in rollers, motors, reducers, etc.
- 3** Check pneumatic regulators for proper setting and listen for air leaks

Weekly Inspection

- 1 Visually inspect belts and rollers for wear, improper alignment, or buildup of foreign materials and repair/clean as required
- 2 Visually inspect all motors
- 3 Check pneumatic water traps and drain as required

Inspection Every 6 Months

- 1 Clean and lubricate all drive chains with SAE-10 to SAE-40 oil
- 2 Check all set screws and tighten as necessary. These may work loose during normal operation
- 3 Check all bolted connections and tighten as needed. Bolted connectors may work loose during normal operation

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.

Replacing Rollers

- 1 Turn off and Lockout/Tagout all power to the conveyor
- 2 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
- 3 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
- 4 Insert the axle of the replacement roller through the hole on the conveyor frame
- 5 Use tool to compress the spring loaded axle on the roller and lower the roller into its proper position
- 6 Release the spring loaded axle and make sure it fully engages in the hole in the frame

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.

Lubrication

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.

Speed 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 manufacturers instructions for more information.

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.

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.

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

SUPPORT

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.

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

- Locate the problem
- Listen and observe
- Identify the problem as an electrical, mechanical, or pneumatic problem
- Determine symptoms through observations
- Think and act with caution and clear thinking
- List short and long term solutions
- Select a solution or possible solutions
- Implement and document one solution at a time

Troubleshooting a Dead Zone on the Conveyor

Perform the following visual checks prior to any troubleshooting:

- 1 Visually check and confirm that all wires are intact and all connectors are secure
- 2 Visually check and confirm that there are no obstructions to the rollers
- 3 Inspect the photo eye sensor and check for proper operation as described in the Preventative Maintenance section of this manual

WARNING

These checks must be performed with the power to the conveyor section turned **“ON”**. Only qualified electricians should be allowed to perform these checks. Failure to follow this instruction may result in serious personal injury and/or equipment damage.

Controller Check

The controller (typically Programmable Logic Controller (PLC)) typically controls multiple zones, merges, and sorting areas. If a relatively large area of the conveyor system is not functioning, especially in a PLC controlled area, there may be an issue with the controller.

Check the input voltage into the controller. If no voltage is detected, check the in-line fuse. If the in-line fuse is functional, check the power supply.

Power Supply Check

The power supply typically supplies voltage to multiple zones. If the power supply is defective, all zones supplied will be inoperative. If only one or two zones are inoperative, check the individual connection cables and connectors going to each card.

Check the input voltage into the power supply. Check the power supply fuse or the circuit breaker. Replace if defective.

Motor Control Card / Motorized Drive Roller Checks

This check determines if the motor control card and the motorized drive roller are functional and must be done with power to the conveyor turned on.

WARNING

These checks must be performed with the power to the conveyor section turned “ON”. Only qualified electricians should be allowed to perform these checks. Failure to follow this instruction may result in serious personal injury and/or equipment damage.

- 1 Determine which motor control card is being used at the zone location
- 2 Refer to corresponding vendor information to determine which input pins are designated ‘24VDC’ input, ‘0VDC’ input, and ‘Run’ input
- 3 Jumper across the ‘0VDC’ and ‘Run’ pins (NPN) using a suitable jumper wire. The motorized drive roller may rotate
- 4 Jumper across the ‘24VDC’ and ‘Run’ pins (PNP) using a suitable jumper wire. The motorized drive roller may rotate. If the motorized drive roller rotates in either “Step 3” or “Step 4”, check the photo eye sensor, the com-link cable/connection (if applicable) or the controller cable/connection (if applicable). If the motorized drive roller does not rotate, proceed to Step 5
- 5 This procedure requires use of an exact spare motor control card (be attentive of NPN and PNP signal differences in the card). It is not necessary to remove the drive card from the mounting fixture for this check.
 - a Turn off and lock out the power to the conveyor section.
 - b Remove connectors from existing motor control card one at a time and install in the exact corresponding connector on the spare motor control card.
 - c When all connectors have been installed on test motor control card, and connections have been checked and secured, place the spare motor control card in a safe position so it cannot be damaged by the rotating motorized drive roller.
 - d Unlock and turn on power to the zone, and cover the adjacent upstream sensor.

If the motorized drive roller rotates, the motor control card is defective. Replace the motor control card using the procedure **Motor Control Card** section of this manual. If the motorized drive roller still does not rotate, the motorized drive roller is defective. Replace the motorized drive roller using the procedure in the **Motorized Drive Roller (MDR)** section of this manual.

No Voltage to the Motor Control Card

This check determines if there is power being supplied to the motor control card and must be done with power to the conveyor turned on.

WARNING

These checks must be performed with the power to the conveyor section turned **“ON”**. Only qualified electricians should be allowed to perform these checks. Failure to follow this instruction may result in serious personal injury and/or equipment damage.

- 1 Determine which motor control card is being used at the zone location
- 2 Refer to corresponding vendor information to determine which input pins are supplying the '24VDC' input (pin '0V' and pin '24 V') and check the voltage across these pins using a multi-meter
- 3 If the voltage is not between 24-26VDC, check the downstream zone motor control card for voltage. If the same condition exists (voltage is not between 24-26VDC), check the Power Supply
- 4 If the voltage is between 24-26VDC, check the power cable wiring and connector

Appendix A gives a general troubleshooting guide for some of the common problems that might be seen with Motorized Drive Roller conveyor. Note: The troubleshooting guide does not cover issues involving zones controlled by a programmable logic controller.

Troubleshooting Help

If you need further assistance:
<http://www.hilmot.com>

Customer Service Department:
262.544.9960 or toll free at 800.799.4492
Monday through Friday 8:00 am to 5:00 pm CT

| Symptom | Probable Cause | Corrective Action |
|-------------------------------|--|--|
| Zone will not run (dead zone) | Mechanical Transmission | Insure proper mechanical connection (O-bands, drive chain loops, timing belts, etc.) between MDR & carrier rollers |
| | No voltage to motor control card | Check voltage across motor control card |
| | | Check power supply |
| | | Inspect interconnect wiring for loose wires |
| | Motor control card dip switch settings are incorrect | Verify dip switch settings according to electrical interconnect drawing |
| | Motorized drive roller is defective | Replace motorized drive roller |
| | Disconnected photo-eye sensor | reconnect photo-eye sensor |
| | Faulty communication cable | Replace communication cable |
| | | Replace motor control card |
| | DC common is not connected between power supplies | Verify DC common are connected |
| Zone runs in wrong direction | Motor control card dip switch settings are incorrect | Verify dip switch settings according to electrical interconnect drawing |
| | Faulty power supply | Replace power supply |
| Zone runs continuously | Photo-eye sensor misaligned on upstream zone | Align photo-eye sensor, clean photo-eye sensor lens |

| Symptom | Probable Cause | Corrective Action |
|--|--|--|
| Zone runs continuously (continued) | Disconnected photo-eye sensor | Reconnect photo-eye sensor |
| | Faulty communication cable | Replace motor control card |
| Motorized drive roller makes excessive noise | Faulty motorized drive roller | Replace motorized drive roller |
| Zone runs at a different speed than rest of conveyor | Gear ration of MDR is incorrect | Verify proper MDR, and replace if needed |
| | Speed potentiometer on motor control card is incorrect | Using a terminal screwdriver, adjust potentiometer on motor control card |
| | Motorized drive roller is defective | Replace motorized drive roller |
| Large batch of zones do not operate | Faulty power supply | Replace power supply |
| | Breaker blown at main panel | Reset breaker - if problem persists call for servicing |
| | Breaker blown at local power supply | Reset breaker - if problem persists call for servicing |
| | Disconnect switched at local power supply | Turn disconnect to ON position |
| | Interconnect wires - loose connection | Check wiring |
| Boxes run into each other | Photo-eye sensor not operating | Verify photo-eye sensor wiring |
| | | Verify proper photo-eye sensor alignment |
| | | Clean photo-eye sensor lens |

| Symptom | Probable Cause | Corrective Action |
|--|--|--|
| Boxes run into each other (continued) | Dead zone | See: zone will not run (dead zone) |
| | Speed set too high | See: zone runs at different speed than rest of conveyor |
| | Package larger than zone | Verify package size to original conveyor specifications |
| | Photo-eye sensor location is incorrect | Move photoeye sensor to proper location specified conveyor purchase |
| | Motor control card dip switch settings are incorrect | Verify dip switch settings according to electrical interconnect drawing |
| Green lights on card not lit | Motor control card is faulting | See: motor control card section of this maintenance manual for fault information |
| | No voltage to motor control card | Check voltage across motor control card |
| | | Check power supply |
| | | Inspect interconnect wiring for loose wires |
| Product bounces sporatically while in transportation | Conveyor sections do not have smooth transition at conveyor connection | Readjust conveyor height |
| | Debris on conveyor | Remove debris from conveyor |
| | Debris on conveyed product | Remove debris from conveyed product |
| Irregular movement of package while in transporation | Package large than zone | Verify package size to original conveyor specifications |
| | Different zone speeds | See: zone runs at different speed than rest of conveyor |

| Time Interval | Item Category | Inspection | Resolution |
|---------------|---------------------------------|--|--|
| Monthly | Timing Belts | <ul style="list-style-type: none"> • Visible fraying • Missing Teeth • Cracks (visible damage) • Proper Tension | <ul style="list-style-type: none"> • Replace belt • Adjust Tension |
| | O-bands | <ul style="list-style-type: none"> • Excessive O-band Stretch • Excessive O-band wear • Visible cracks in O-band • O-band slipping in roller groove • Broken or missing O-band | <ul style="list-style-type: none"> • Replace O-band |
| | Poly-v Belts | <ul style="list-style-type: none"> • Visible fraying • Cracks (visible damage) • Finger Guards Loose or missing | <ul style="list-style-type: none"> • Replace belt • Tighten or replace guard |
| | Specialty Carrier Rollers - CAM | <ul style="list-style-type: none"> • Grinding noise • Excessive grease on conveyor frame(some grease is normal) • Stalled Roller • Sprocket teeth and location • Cam profile excessive wear | <ul style="list-style-type: none"> • Replace roller |
| | Specialty Drive Rollers - CAM | <ul style="list-style-type: none"> • Grinding noise • Higher than usual amp draw • Loss of torque • Damaged MDR cable • Sprocket teeth and location • Cam profile excessive wear | <ul style="list-style-type: none"> • Replace drive roller |

| Time Interval | Item Category | Inspection | Resolution |
|---------------|---|--|---|
| Quarterly | Timing Belts | <ul style="list-style-type: none"> Visible fraying Missing Teeth Cracks (visible damage) Proper Tension | <ul style="list-style-type: none"> Replace belt Adjust Tension |
| | O-bands | <ul style="list-style-type: none"> Excessive O-band Stretch Excessive O-band wear Visible cracks in O-band O-band slipping in roller groove Broken or missing O-band | <ul style="list-style-type: none"> Replace O-band |
| | Poly-v Belts | <ul style="list-style-type: none"> Visible fraying Cracks (visible damage) Finger Guards Loose or missing | <ul style="list-style-type: none"> Replace belt Tighten or replace guard |
| | Specialty Carrier Rollers - CAM | <ul style="list-style-type: none"> Grinding noise Excessive grease on conveyor frame(some grease is normal) Stalled Roller Sprocket teeth and location Cam profile excessive wear | <ul style="list-style-type: none"> Replace roller |
| | Specialty Drive Rollers – CAM | <ul style="list-style-type: none"> Grinding noise Higher than usual amp draw Loss of torque Damaged MDR cable Sprocket teeth and location Cam profile excessive wear | <ul style="list-style-type: none"> Replace drive roller |
| | Carrier Roller | <ul style="list-style-type: none"> Grinding noise Excessive grease on conveyor frame(some grease is normal) Stalled Roller Excessive dirt, film or debris on roller surface | <ul style="list-style-type: none"> Replace roller |
| | Drive Roller | <ul style="list-style-type: none"> Grinding noise Higher than usual amp draw Loss of torque Damaged MDR cable Excessive dirt, film or debris on roller surface | <ul style="list-style-type: none"> Replace drive roller Clean roller |
| | Wheels/Idlers/Cam Roller(Items with Bearings) | <ul style="list-style-type: none"> Excessive grease loss Check for contact(Cam Roller) Divert Wheel Holding Clips loose or missing Grinding or abnormal noises | <ul style="list-style-type: none"> Replace appropriate component |
| | Photo Eyes and Sensors | <ul style="list-style-type: none"> Proper alignment and position of sensor Dirt, Dust or Debris on lens or reflector | <ul style="list-style-type: none"> Realign and tighten sensor Clean sensor or reflector |

Support

If you need further assistance:

Website:

www.poweredbyTrew.com

Email:

info@trewautomation.com

Phone:

1.800.571.8739

Monday - Friday, 8:00am - 5:00pm CT