

A Modsort module is a unit designed to divert products: the incoming product can be conveyed straight ahead or diverted left or right. The Modsort unit is generally not used as standalone but needs to be integrated in a line.

This manual provides technical information regarding the operation, maintenance and service of the Modsort module, including spare parts ordering information. Modsort module integration and performance parameters are also addressed to assist in overall system design.

1.1 Purpose of this Manual

This technical manual is intended for all personnel responsible for operating, maintaining, and servicing the Modsort module. Read this manual before operating or performing maintenance on this piece of equipment. Keep this manual legible and readily accessible to personnel maintaining or operating this equipment.

Regal Rexnord assumes no liability for damages and/or operating failures resulting from the user failing to read, understand, and follow operating instructions.

Personnel who do not work directly with, but may work near or around the equipment, should at minimum read the Safety section. The safety section has important information about potential equipment hazards.

1.2 Regal Rexnord

References in this manual to "Regal Rexnord" refers to Regal Beloit America, Inc., Regal Rexnord Corporation and/or any of their affiliated companies.

1.3 Trademarks

The following is a list of terms that may be used in this manual - and as of this date - are trade names or trademarks of Regal Rexnord Corporation or one of its' affiliated companies.

- Regal Rexnord
- System Plast®
- Modsort®
- Nolu®

1.4 Contact Information

For questions regarding specific operational, integration, dimensional, or other technical issues, please contact:

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1.5 Ordering Spare Parts and Accessories

Refer to Section 8.0 Spare Parts Lists and Drawings of this manual for spare ordering and part numbers.

Refer to Section 7.0 Optional Parts of this manual for optional/ accessories ordering and part numbers.

⚠ DANGER indicates a hazard which, if not avoided, will result in serious injury or death.

⚠ WARNING indicates a hazard which, if not avoided, could result in serious injury or death.

⚠ CAUTION indicates a hazard which, if not avoided, could result in minor or moderate personal injury.

NOTICE indicates a hazardous situation that, if not avoided, could result in equipment or product damage.

GENERAL SAFETY INSTRUCTIONS

⚠ WARNING

- Read and follow all instructions carefully.
- Disconnect and lock out power before installation and maintenance. Working on or near energized equipment can result in severe injury.
- Do not operate equipment without guards in place. Exposed equipment can result in severe injury or death.
- Read and understand the information in this section and in this manual completely before installing, operating or maintaining this equipment. Failure to follow this instruction could result in severe injury or death.

⚠ CAUTION

- Do not open or remove protective guarding if energy is supplied to any part of the Modsort module. Follow the lockout/tagout procedure according to safety procedures at the facility where the Modsort module is installed. Failure to follow this instruction could result in severe injury or death.
- Perform periodic inspections. Equipment may fail prematurely and could become unsafe if not properly inspected and maintained. Failure to follow this instruction could result in mild or moderate personal injury.

The scope of this section is to provide general safety information regarding the Modsort module. The safety information specific to the operation and maintenance of this piece of equipment is provided as needed in each operation/maintenance procedure.

2.1 Machine Lifting and Installation

The Modsort module must be lifted from the 4 edges/corners of its frame, using lifting straps or chains with hooks. See below picture (Figure 2.1) as lifting example.

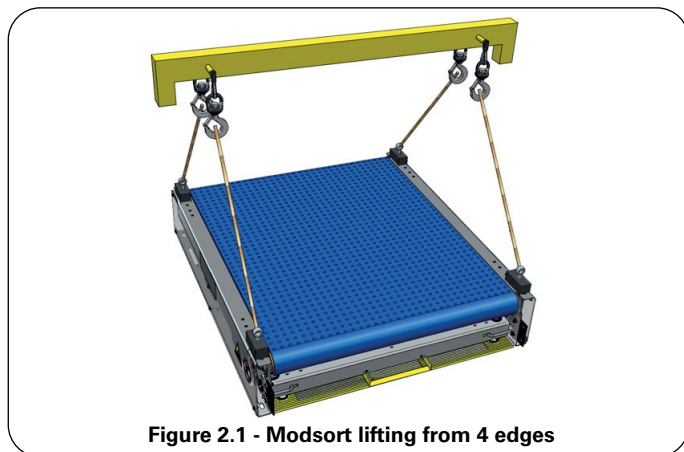


Figure 2.1 - Modsort lifting from 4 edges

The equipment must be lifted properly according to its dimensions and weight as provided on the below table. The weight of the Modsort module varies according to its size.

Modsort module size	External Length [mm]	External Width [mm]	Weight [kg]
Size 1	762	500	66
Size 2	762	653	79
Size 3	914	500	77
Size 4	914	653	91
Size 5	914	805	103
Size 6	1066	653	103
Size 7	1066	805	116
Size 8	1066	958	129

Table 2.1: Modsort Module Dimensions and weight

The Modsort module can be installed/positioned on the floor or on top of supports. Regal Rexnord offers supporting legs that can be adapted to several configurations; however, Regal Rexnord doesn't offer supports to attach adjacent conveyors.

The Modsort module can be ordered with supporting legs from Regal Rexnord, or other floor supports can be used. The material handling integrator must select the proper floor support system based on the requirements for the job.

Contact Regal Rexnord Application Engineering for details and recommendations. Refer to section 7.0 Optional Parts for the list of available supporting legs.

NOTICE: Regal Rexnord assumes no responsibility for supporting leg ratings or for seismic ratings. In addition, Regal Rexnord assumes no liability for 3rd party floor support systems. Regal Rexnord recommends all floor support system selected for the installation be subject to a formal review to make certain all facility, state and local codes have been adhered to.

The one and only pass-line reference to level the Modsort module in respect to the adjacent conveyors is the top surface of the roller top belt.

2.2 Safety Notifications

This manual, and the Modsort module it describes, contain safety icons and labels which provide information needed for safety and for the correct operation of the equipment.

2.2.1 Safety Icons

The following safety icons can be found in the manual and on the equipment:

DANGER! indicates a hazardous situation that, if not avoided, **will** result in severe injury or death.

WARNING! indicates a hazardous situation that, if not avoided, could result in severe injury or death.

CAUTION! indicates a hazardous situation that, if not avoided, could result in minor or moderate personal injury.

NOTICE: indicates a hazardous situation that, if not avoided, could result in equipment or product damage.

2.2.2 Safety Labels

The safety labels shown below are affixed to the frames of the Modsort® module to warn operators of potential hazard/risks. Make sure that all operator read and obey the instructions on the safety labels.



2.3 Lockout/Tagout Procedures

The Modsort module is typically part of a conveyor system. Depending on the installation, Modsort module may or may not have a standalone ON/OFF switch.

Follow all local and facility procedures for lockout/tagout when working on the Modsort module.

Check that power supply has been disconnected from the Modsort module prior any maintenance and assistance operation.

2.4 Legal Requirements

The instructions in this section do not supersede legal or regulatory requirements that apply to installation, maintenance or use of the equipment.

Pursuant to the European community directive 2006/42/EC on machinery, and amending directive 95/16/EC (recast), the Modsort module must be considered a "partly completed machine" since it is intended to be a part of a very complex system to which it must be properly integrated and interfaced by the purchaser. This applies only when the Modsort module is installed in a country of the European Community.

WARNING! The equipment can only be operated when the machine/plant in which is mounted is declared compliant to the european community directive 2006/42/EC.

2.5 Operational Safety

Allow only trained employees to operate the Modsort module.

Train employees for operations under normal and emergency conditions.

All the operators working on or around the Modsort module must practice the following rules of safety:

WARNING! Failure to follow these instructions in section 2.5 can result in serious personal injury or death.

- Know the location and function of all start/stop devices and keep those devices free from obstruction and make them easy to access;
- Do not bypass, disable, or remove any electrical safety devices or physical protection;
- Do not walk, ride or climb on the Modsort module;
- Do not operate the Modsort module with chain guards or other protective guards removed;
- Keep bodyparts, hair, clothing, jewelry and other loose items away from hazards and equipment;
- Complete lockout/tagout procedures before performing maintenance;
- Clear all personnel from the Modsort module before starting the conveyor;
- Remove and clean any oil or product spills immediately;

- Do not attempt to clear product jams while the Modsort module is running;
- Do not load the Modsort module beyond specified design limits;
- Never touch moving parts;
- Do not modify the Modsort module without checking with the manufacturer;
- Do not operate or perform maintenance to the Modsort module when taking any type of drug/sedative, when under the influence of alcohol, or when over-fatigued;
- Report any unsafe condition to immediate supervisor or maintenance personnel.

2.6 Maintenance Safety

Follow the lockout/tagout procedure according to the safety procedures at the facility where the Modsort module is installed.

Failure to follow this instruction could result in severe injury or death.

WARNING! Do not remove or open protective guarding if energy is supplied to any part of the Modsort module.

- Read and understand the manual before operating or maintaining or servicing the Modsort module;
- Allow only qualified and trained employees to perform maintenance procedures, including adjustments of the Modsort module;
- Always wear personal protective equipment (PPE) when performing maintenance or assistance on the equipment.
- Do not attempt to repair the Modsort module while it is running;
- Check that power has been disconnected from the system before performing any maintenance or service procedures;
- Replace all safety devices and guards before starting equipment for normal operation;
- Maintain all guards and safety devices in position and in safe repair;
- Maintain all safety labels in a legible condition and obey all the warnings. See safety labels at the beginning of this section;
- Establish a maintenance program to ensure that all conveyor components are maintained in a condition which doesn't constitute a hazard to personnel;
- Conduct routine inspections and preventive/corrective maintenance programs to insure all safety features and devices are present and are functioning properly.

At the end of the maintenance or service procedures, make sure that all test instruments and equipment have been removed from or inside the equipment.

The scope of this section is to provide Modsort module specifics and basic overview of the components. It lists the uses of the Modsort module and explains how it works.

3.1 Equipment Description

The Modsort module is an all 24-Volt motorized driven roller (MDR) based right angle transfer and/or diverter station. It integrates easily with other MDR-based conveyors and can also be used to integrate to more traditional conveyor types, providing all interlocks and controls links are properly established. The Modsort module is designed to handle more problematic packages such as polybags, small packages, envelope and the more traditional boxes up to 22.7 kg (50 pounds). The Modsort module can be installed as a true right-angle transfer or can be utilized as an on-the-fly diverter station.

Proper mechanical and controls integration is critical to the success of any Modsort module system. Carefully review the guidelines presented in this manual prior to designing a Modsort module-based system. If you lack the expertise to lay out and integrate a functional system, engage a 3rd party familiar with integrating MDR-based conveyor modules.

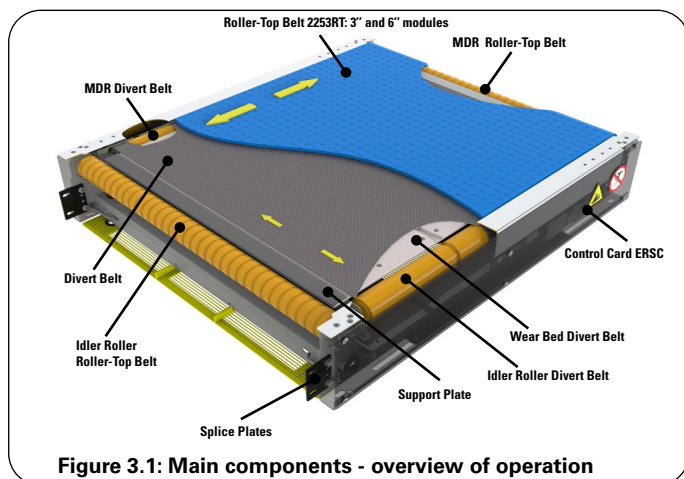


Figure 3.1: Main components - overview of operation

3.2 Equipment Features

- Uses unique System Plast® Roller-Top Belt technology;
- Fully self-contained;
- Easily integrated into existing traditional or motorized roller conveyor systems,
- Operates at low noise (70 dB) and low voltage (24 V DC); no conduit is required;
- Ideal for polybags and smaller, lightweight packages and envelopes;
- Achieves energy savings as high as 50%-60% compared to traditional divert mechanisms;
- Programmable to provide angular to full right angle divert;
- Diverts without the use of pop-up rollers or other means of vertical or pneumatic activation;
- Provides high resolution package control without the gaps usually associated with pop-up style divert mechanisms;

- Bi-directional divert is possible; reversible MDR operation;
- Allows for zero-contact, zero-pressure accumulation;
- Incorporates run-on-demand technology;
- Does not require compressed air for operation;
- Easily maintained; few moving parts and minimal spare parts required.

3.3 Modsort Module Available Sizes

Size	External Length [mm]	External Width [mm]	Width between frame [mm]	Active area	Effective Zone Length [mm]
Size 1 (30x16)	762	500	406	530	620
Size 2 (30x22)	762	653	559	530	620
Size 3 (36x16)	914	500	406	682	772
Size 4 (36x22)	914	653	559	682	772
Size 5 (36x28)	914	805	711	682	772
Size 6 (42x22)	1066	653	559	834	924
Size 7 (42x28)	1066	805	711	834	924
Size 8 (42x34)	1066	958	864	834	924

Table 3.1: Modsort module dimensional characteristics

		Width between frame (W)			
		406 mm	559 mm	711 mm	864 mm
Frame length (L)	762 mm	Size 1	Size 2		
	914 mm	Size 3	Size 4	Size 5	
	1066 mm		Size 6	Size 7	Size 8

Table 3.2: Modsort module available sizes

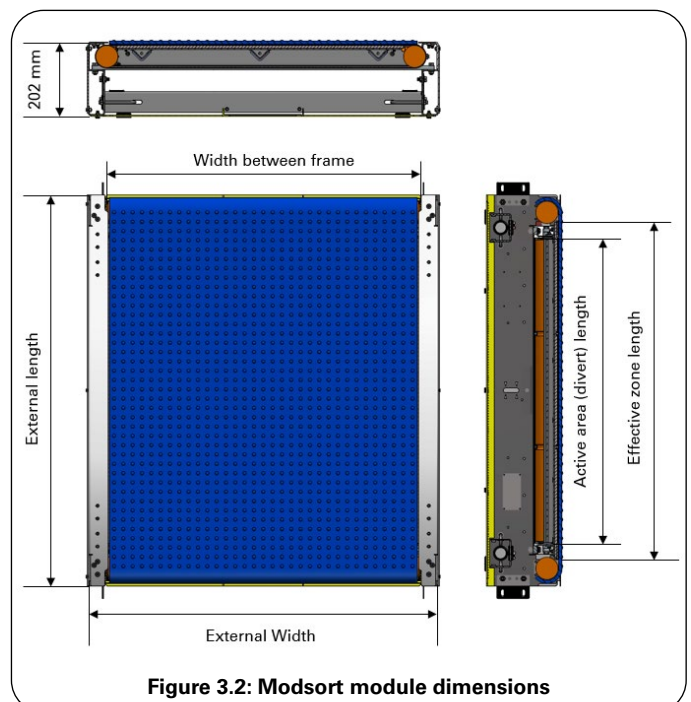


Figure 3.2: Modsort module dimensions

3.4 General Features

The following mechanical specifications are standard for all Modsort® modules sizes.

Item	Specifications
Main Frame	3 mm sheet metal
Spreader Bar	U-channel with J-bolt assembly
Paint/Finish	Main Frame: Powder Coated Divert Belt Assembly and Axle Lock Fixation: Galvanized Brackets: Galvanized
Roller-Top Belt	System Plast® 2253RT modular Roller Top belt; links containing omni-directional spheres
Divert Belt	PVC/fabric belt with bonded tracking rib(s)
Divert Frame	3mm sheet metal, plated and galvanized
Divert Belt Polymer Wear Bed Surface	Static dissipative UHMW with track rib pathways
Roller-Top Belt MDR	PulseRoller®* Senergy®* 3 stage MDR with patented lag coating
Divert Belt MDR	PulseRoller®* Senergy®* 2 stage MDR with patented lag coating
Maximum Product Speed on RT Belt	Boost/boost8 mode: 70m/min Eco mode: 94 m/min
Maximum Divert Belt (Product) Speed	Boost/boost8 mode: 54 m/min Eco mode: 70 m/min
Capacity Live-Load	Maximum 22.7 kg per package (not more than one package on Modsort module at any given time)
Power Supply Required	24 V DC/400 W output
Operating Environments	4° C to 50° C, 5% to 90% Relative Humidity, Non-Condensing
Control Card	ERSC PLC compatible

Table 3.3: Standard mechanical specifications

The names used in this section to refer to various components, characteristics, and features of the Modsort module are used throughout this manual. Where such names are used, they have the meaning provided in the descriptions below, under each name respectively.

3.4.1 Main Frame

The Modsort module frame is made from precision laser-cut mild steel formed in a press brake, resulting in a cost-effective and strong frame system. The frame is powder-coated in grey RAL 9006. Other frame colors available upon request.

3.4.2 Spreader Bar

The Modsort module spreader bar is a U-channel design. It holds the main side frames together with a J-bolt construction or screw. Holes fitted with grommets are located for wire routing. The grommets minimize the risk of wire chafing.

3.4.3 Paint/Finish

The paint finish on the Modsort module is a powder coating. All main frame surfaces of the Modsort module are powder-coated. Exceptions to this are the diverter belt assembly and the Axle Lock fixation brackets. These items are plated steel.

3.4.4 Roller-Top Belt

The main belt of the Modsort module is the proprietary System Plast Roller-Top Belt. It offers 1-inch omni-directional Spheres on a 1-inch X-Y array.

3.4.5 Divert Belt

The divert belt is a PVC/Cloth-based belt with a vulcanized tracking rib(s) system attached. It allows for reliable tracking of the Modsort module's unusual aspect ratio on the divert belt. The belt is sometimes wider than it is long. The belt allows for effective diverting of packages, but it does not consume large amounts of power from the divert belt's MDR.

3.4.6 Divert Belt Frame

The divert belt frame on the Modsort module is constructed from a formed piece of 3 mm sheet metal. It is plated to eliminate the need for painting because it contains small threaded tapped holes. Gussets are added for additional stiffness.

3.4.7 Divert Belt Polymer Wear Bed Surface

The Modsort module's divert belt runs over a static dissipative polymer wear bed. The surface has been machined to allow the divert belt's tracking rib to pass across without interference. Fasteners attach the polymer wear bed to the divert belt frame.

3.4.8 Roller-Top Belt Drive

The Roller-Top belt drive is based upon standard MDR (motorized drive roller) technology. The MDR on the Modsort module is a Senergy* 3-stage roller with a Regal Rexnord proprietary-design lag coating which offers an excellent drive system with low noise and exceptionally long life.

3.4.9 Divert Belt Drive

The Divert Belt Drive is based on standard MDR (motorized drive roller) technology. The MDR used on the Modsort module is the Senergy* 2-stage roller with a lagged coating which offers an excellent drive system with low noise, high friction, and exceptionally long life.

3.4.10 Maximum Roller-Top Belt Speed

The Roller-Top Belt MDR can run in one of three modes; ECO, Boost or Boost 8. These modes refer to the amount of current the roller can run. Since the Modsort module can be run in various modes of operation, it is important to understand these modes and what they mean. In Eco mode, the roller can run a sustained amperage of 2.5 amps, with around 3.0 amps of starting current.

In Boost mode, 5 amps of starting current is available for 2 seconds, with sustained running of 3.5 amps sustained running current. In Boost8 mode, 8 amps of current is available for 2 seconds with 3.5 amps available for sustained running. In Boost and Boost8 mode, the motor's speed is limited as detailed in these specifications. These modes are available but must be selected carefully before moving forward. Boost mode is better for moving large and heavy packages, but there are rate limitations associated with using that mode. Speed limits (unloaded roller): 70 m/min in Boost/Boost8 mode, 94 m/min in Eco mode.

3.5 Standard Control Card: ConveyLinx®* Ai2

3.5.1 ERSC Control card; network based, PLC program capable, Profinet®*, EtherNet/IP™* and Modbus®* interface

One ERSC control card is provided. The ERSC Control Card supplies AC to DC commutation to the MDR, while providing connection between the photo eyes, I/O devices and MDRs. The ERSC Control Card can be configured as a stand-alone controller with an embedded program, or can be PLC interfaced via Profinet*, EtherNet/IP* and Modbus* connection. Cards can be linked together via simple Cat5 Ethernet/IP* cables due to a repeater switch within each card at the board level. The ERSC Control Card offers a feature-rich solution for handling a wide array of applications via ConveyLinx* technology. A controls engineer or trained technician is required to program the ERSC Control Card using ConveyLogix®* programming.

*The following are believed to be the trademarks and/or trade names of their respective owners and are not owned or controlled by Regal Rexnord Corporation. PulseRoller, ConveyLinx, ConveyLogix, Senergy: Insight Automation, Inc.; Profinet: Profibus Nutzerorganisation e.V; EtherNet/IP: ODVA, Inc.; Modbus: Schneider Automation.



Figure 3.3: ERSC control card ConveyLinX®* Ai2

3.5.2 Controls cards locations and linking with extension cable

Control cards are factory mounted to the frame of the Modsort® modules. According to the below product description, control cards can be mounted by default either to the left or to the right side of the modules. However, several alternate mounting positions are provided within the frames. Control cards can easily be repositioned to optimize system design. At times it will be necessary to attach a motor extension cable(s) if the control card is relocated. Regal Rexnord offers a 1m long extension cable. See section: 7.0 Optional parts and section, 8.0 Spare parts list and drawings of this manual, for part number and ordering information. A maximum of three extension cables may be linked (3m). Example product description:

- #MS-ST1-LH-AI2-L30W20-16 - control card on left side
- #MS-ST1-RH-AI2-L30W20-16 - control card on right side

3.6 Power Supply

The Modsort module is provided with a Power supply on request. Regal Rexnord offers a suitable AC-to-DC regulated power supply. Refer to Section 7.0 Optional Parts of this manual for specifications and ordering information.

3.7 Divert Modes

The Modsort module can divert product in a continuous motion up to a 90-degree angle or stop and divert at 90 degrees. The Modsort module can be configured to provide a wide array of product travel, divert and sortation solutions.

Please see Section 4.0 Engineering and Applications Data, of this manual for configuration and controls considerations. Additional assistance is available by contacting Modsort Application Engineering.

3.7.1 Operation and Control of Photocells

Regal Rexnord supplies the ERSC Control Card with the Modsort. Its features are detailed in Section 5.0 Controls Configurations of this manual.

The speed and direction of the Roller-Top Belt and the Divert Belt are controlled by the control card in response to signals from the photo eyes or PLC.

Single-sided and double-sided diverts are possible through varied photo-eye configurations.

Single-Sided Divert

- One photo eye at the entry to the Modsort module
- One photo eye at the exit of the Modsort module
- One photo eye at the divert side of the Modsort module (divert confirm)

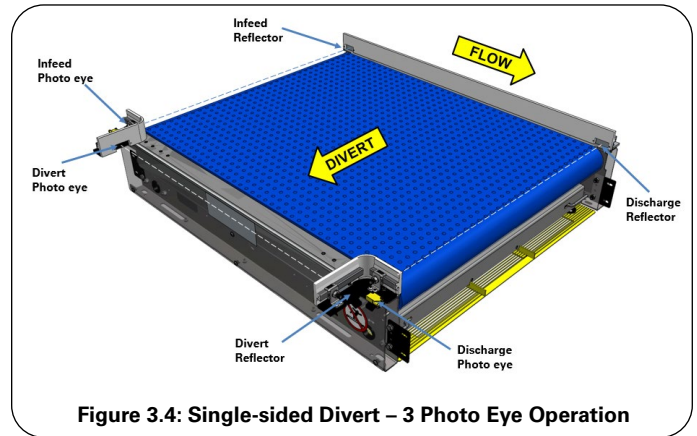


Figure 3.4: Single-sided Divert – 3 Photo Eye Operation

Double-Sided Divert

- One photo eye at the infeed to the Modsort module
- One photo eye at the exit of the Modsort module
- One photo eye at the RH divert side of the Modsort module (divert confirm)
- One photo eye at the LH divert side of the Modsort module (divert confirm)

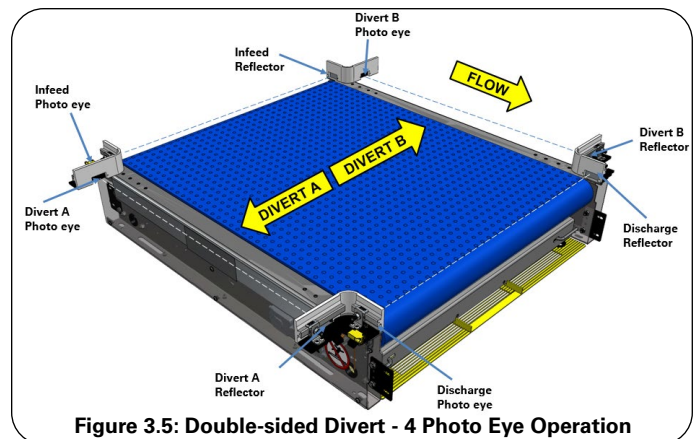


Figure 3.5: Double-sided Divert - 4 Photo Eye Operation

* ConveyLinX is believed to be the trademark and/or trade names of Insight Automation, Inc. and is not owned or controlled by Regal Rexnord Corporation.

This section contains data used by the applications engineer to determine how to apply the Modsort module, and how to choose the Modsort module size that best fits the packages being handled. This section is intended to present general integration considerations.

4.1 Overview

The Modsort module can be used in a wide range of applications and in differing modes. Many factors must be considered when integrating the Modsort module into a materials handling system; product weight, size, product contact surface, frictional contributions, etc. For specific application questions, please contact Modsort Application Engineering.

4.2 Supports

The Modsort module can be floor supported or supported by hanger hardware. Regal Rexnord offers supporting legs to accommodate most situations, however; Regal Rexnord does not offer hanger hardware for conveyor support. Alternate vendors' floor supports are feasible for integration with the Modsort module. Contact Regal Rexnord Application Engineering for details and recommendations. See Section 7.0 Optional Parts of this manual for a listing of available supporting legs.

Note: Regal Rexnord assumes no responsibility for supporting legs ratings or for seismic ratings. In addition, Regal Rexnord assumes no liability for 3rd party floor supports systems. Regal Rexnord recommends all floor supports be subject to a formal review to make certain all facility, state and local codes have been adhered to.

4.3 Divert Options

Two MDRs power the two belts within the Modsort module; one provides transport, while the other provides divert motion. Through the speed of these drives, and duration at speed, the desired package motion occurs on the Modsort module.

The spheres within the Roller-Top Belt are used to provide omni directional product flow. It is possible to program the Modsort module to transport product in the following manners:

- Straight thru transportation
- 90 degree/Right-angle divert
- Angular/Blended vector divert

Refer to Figure 4.1.

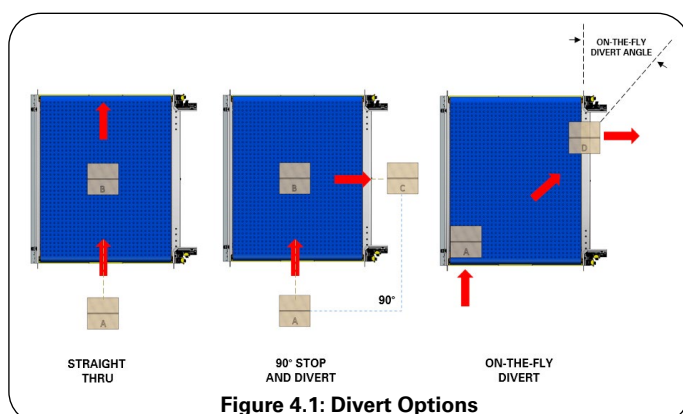


Figure 4.1: Divert Options

4.3.1 Straight Thru Transportation (No Divert)

Straight-thru transportation is achieved by programming the Modsort module to power the Roller-Top Belt MDR, without powering the Divert Belt MDR. In this mode, product speed is doubled because of the rotation of the spheres within the belt. i.e., Product will travel around twice the belt speed. In this mode, constant speed will be maintained as the product passes through the Modsort module. Excessive product weight (in excess of 22.7 kg) can slow the MDR driving the Roller-Top Belt.

Speed is varied through PLC interface. Product spacing may be affected by transitioning onto the Modsort module from another conveyor components traveling at speeds which vary from the speed of the Modsort module.

Many factors affect how products behave when feeding or discharging from the Modsort module, or to/from adjoining conveyor components. The Modsort module has been designed to minimize chordal action where the Roller-Top Belt travels over the MDR; however, minor product slippage may be experienced, causing some products to behave unexpectedly. This will provide a buffer for any slippage which can happen at the transition.

4.3.2 Diverting at 90 Degrees

Diverting at 90 degrees is achieved by programming the Roller-Top Belt to stop, then powering the Divert Belt. The Divert Belt MDR can be programmed to travel at varied speeds to accommodate the requirements of the system.

Stopping the Roller-Top Belt before activating the Divert Belt assures full 90-degree direction change. The product will divert at 90 degrees to the flow direction.

4.3.3 Angular/ Blended Vector Diverting (Diverting on the fly)

The highest throughput rates are attained with angular diverting (diverting on the fly), however; the MDRs must be carefully programmed with testing performed to obtain optimal performance. This mode of operation is the best method for diverting smaller products, as they can be pre-justified and then diverted.

The divert angle is best approximated using the ratio of speeds of both MDRs, thus producing a resultant vector angle. The resultant vector angle is an approximation of the angle which will be achieved.

There are many factors that influence product dynamics when product is diverted in this manner, including but not limited to; package slip, package weight, and take-away conveyor or chute geometry, etc.

4.4 Integration Considerations

Attention must be given to several criteria when planning to integrate the Modsort module into any system. Those areas are highlighted below, with key concerns detailed within each area.

It is important to note that the summary of many factors contributes to the optimal performance of the Modsort module.

4.4.1 General

- It is possible to program the Modsort® module to divert angularly, or with a prescribed vector. This mode of operation provides the most optimum throughput rates. (see below).
- Divert angle and speed are dependent upon product weight, length, and the MDR power mode selected.
- A nominal amount of slippage occurs when the direction of product travel is changed to divert.

4.4.2 Product Dimensional Considerations

- Determining the Modsort module size to integrate into a system is dependent upon maximum product length and the proposed angle to divert.
- When diverting at 90 degrees, at the upper speed limits of the MDR, the divert opening must be a minimum of 210 mm larger than the longest product to be diverted. Refer to Figure 4.2. The length of Modsort module chosen should be maximized if possible, to permit the largest takeaway package width.
- The Modsort module can be slowed to accommodate longer product, then sped up for smaller product. An opening 210 mm larger than the product will not be required if the longer product is slowed.
- Smaller product can be diverted at higher rates than longer product.
- The amount of product slippage on the belt must be considered and applied to the longest product to be handled (see figure 4.2).

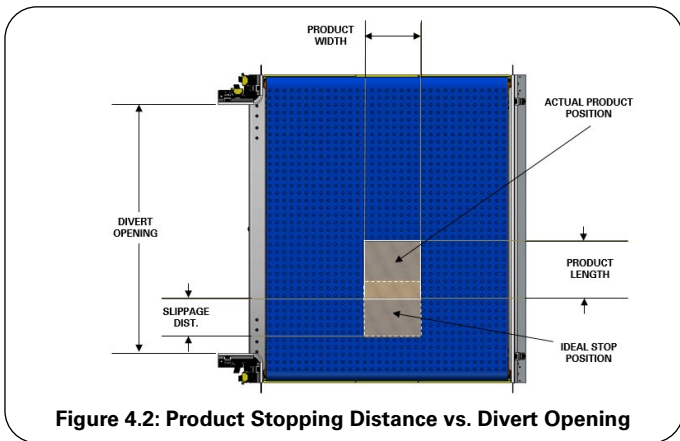


Figure 4.2: Product Stopping Distance vs. Divert Opening

4.4.3 Product Weight Considerations

- Product weight directly affects the performance limitations of the Modsort module.
- Maximum product weight is 22.7 kg.
- Minimum product weight is than 50 g.

The MDRs can be set to operate at three different modes; Eco, Boost and Boost8, depending on product weight and divert angle (see table 4.1).

Note: Speed modes cannot be changed dynamically during operation.

Contact Regal Rexnord Application Engineering to discuss handling product weighing in excess of 22.7 kg.

Note: Eco mode provides the highest throughput rate, but is not recommended for product weights in excess of 12 kg, as less power is being supplied by the MDRs. Products in excess of 12 kg must be tested for performance in this mode. Contact Regal Rexnord to discuss handling of product above 12 kg when in Eco Mode.

The MDRs can be configured to operate at other customized speeds. Contact Regal Rexnord Application Engineering to discuss optional speeds and gear reduction.

Mode	Package Weight Range, kg.	Maximum (Product) Speed, m/min	Maximum Divert Belt Speed, m/min	Starting Current Amps	Time Limit at Starting Current, Sec.	Running Current, Amps
Eco Mode	0-12	~ 94	~ 70	3.0	2.0	2.5
Boost/Boost8 Mode	0-22.7	70	54	5.0	2.0	3.5
				8.0		

Table 4.1: Modsort module Belt Speeds and Current Limits

Size	Length [mm]	Width Between frame [mm]	Effective Zone Length [mm]	Active area (divert belt area)
1	762	406	620	530
2	762	559	620	530
3	914	406	772	682
4	914	559	772	682
5	914	711	772	682
6	1066	559	924	834
7	1066	711	924	834
8	1066	864	924	834

Table 4.2: Modsort module dimensional characteristics

4.5 Throughput data

The following tables and graphs provide throughput test data for various sizes, weights and types of product in all three MDR modes. **Note:** test have been performed on a Modsort module 6 with dimensions 559 mm W x 1066 mm L.

Divert Mode	Motor Mode	Rate, Cycles Per Minute	Package Weight, kg		
			0,5	1	2,5
Blended vector, (on the fly)	Eco	Rate, Cycles Per Minute	42	41	40
	Boost		41	40	39
	Boost8		40	39	38
90-Degree	Eco		37	36	35
	Boost		37	36	34
	Boost8		37	36	34

Table 4.3: Polybag Throughput Rate Data (200 x 300 mm Polybag)

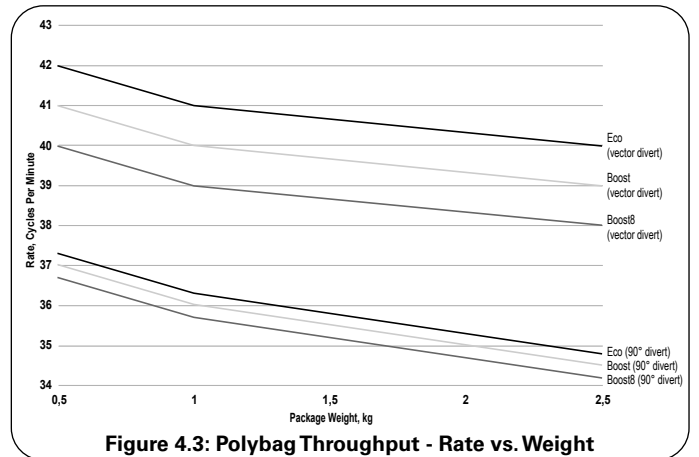
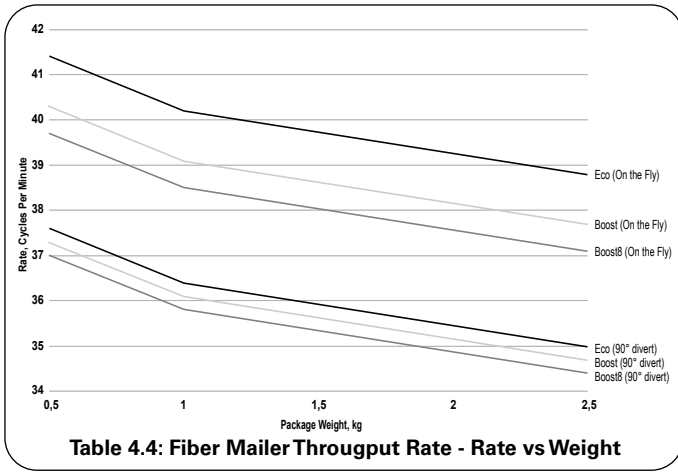


Figure 4.3: Polybag Throughput - Rate vs. Weight

Divert Mode	Motor Mode	Rate, Cycles Per Minute	Package Weight, kg		
			0,5	1	2,5
Blended vector, (on the fly)	Eco	Rate, Cycles Per Minute	41	40	39
	Boost		40	39	38
	Boost8		40	39	37
90-Degree	Eco		38	36	35
	Boost		37	36	35
	Boost8		37	36	34

Table 4.4: Fiber Mailer Throughput Rate Data (200 X 280 mm Mailer)



Attribute	ERSC Control Card
Number of Motors Controlled	2
Speed Adjustment	Software
Accel/Decel Adjustment	Software
Current Adjustment	Software
Brake Type Adjustment	Software
Pulse Counting	Available
Network Capability	Available
Ability to be Programmed	Available
Ability to Interface with a PLC	Available
Ability to Change Parameters "On the Fly"	Available
Required Software	ConveyLogix®*/Easyroll

Table 4-6: Control Card Attributes

4.7 Determining Power Layout

The Modsort module runs completely on 24VDC power. While Regal Rexnord offers a power supply for the Modsort module, it is possible to use other power sources to power the modules. DC power transmission has certain limitations on how far it can be run without experiencing significant voltage drops.

The Modsort module Power Supply is 400 watts of power output and has single lead for the DC output side which supports just under 8.5 amps of current draw. The Modsort module's motors can draw up to 8 amps if they are in Boost8 mode for short bursts.

In ECO mode, the current draw is much less than in Boost8 mode.

- In ECO mode, the current draw is 3.0 amps startup and 2.5 amps running.
- In Boost8 mode, the current draw is 8 amps startup and 3.5 amps running.

Two Modsort modules can be powered by one 400-watt power supply.

Note: the standard power supply has power connections just for one Modosrt module.

When package weights increase, the Boost8 mode is more appropriate. In this case, run one Modsort module per 400-watt power supply.

Thoroughly review how you intend to run the Modsort module before determining the number and placement of the power supplies. Choose the modes of operation, create plans for the motor running currents and add up your amp draw as a function of time prior to making a final decision on how many power supplies to integrate into the system layout.

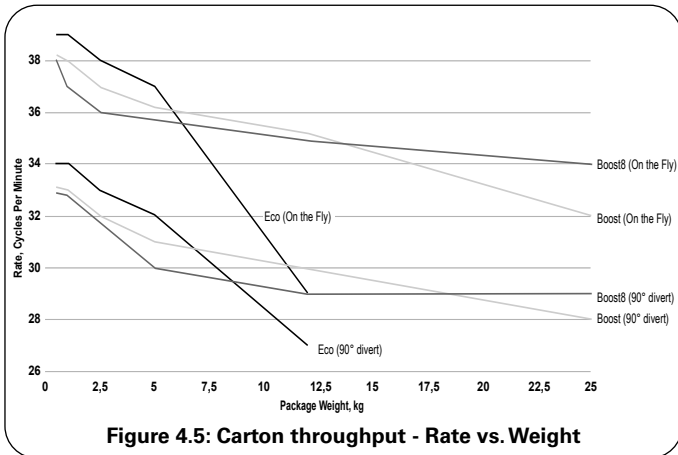
The wire harnesses in the Modsort module are equipped with a male 3-pin connection on one side and a female 3-pin connection on the other side. The power supply has the same connections. The power supply should sit between the Modsort modules which are being powered and feed DC power in either direction. This minimizes voltage drops on the line.

The Modsort module's trunk lines are 12 AWG or closer metric value to that according to norma IEC 60228. They will carry the necessary current a reasonable distance. If you are unfamiliar with voltage drop issues on DC conductors, study this topic before using an alternate power supply which may not have enough current-carrying capacity for this application. Line size for AC power distribution is much different than for that of DC power distribution. Any base 24VDC power trunk integrated with the Modsort module should be at least 12 AWG wire. 10 AWG wire is recommended for distances over 6 m. Copper is recommended over other conductor materials.

* ConveyLogix is believed to be the trademark and/or trade names of Insight Automation, Inc. and is not owned or controlled by Regal Rexnord Corporation.

Divert Mode	Motor Mode	Rate, Cycles Per Minute	Package Weight, kg					
			0,5	1	2,5	5	12	22,7
Blended vector, (on the fly)	Eco		39	39	38	37	29	N/A
	Boost		38	38	37	36	35	32
	Boost8		38	37	36	36	35	34
90-Degree	Eco		34	34	33	32	27	N/A
	Boost		33	33	32	31	30	28
	Boost8		33	33	32	30	29	29

Table 4.5: Carton Throughput Rate Data (280x330x355mm Carton)



4.6 MDR Control Card Considerations

The ERSC Control Card is provided with the Modsort® module. Details regarding the control card are provided in Table 4.6.

The ERSC Control Card can be remotely programmed and controlled via PLC; it is not necessary to be at the Modsort module. Changing motor speeds, accel/decel ramps, and checking motor pulse counts can be accomplished via PLC. This card requires a skilled control engineer or technician for integration and troubleshooting. Photo eyes can be directly connected to the control card without I/O interface.

Physical replacement of either card is easily accomplished. The ERSC Control Card will require a control engineer to program the control logic into the new card. The ERSC Control Card stores the IP address and motor. Further information on control card are available at section 5.0 Controls.

NOTICE: In case of service interruptions, an emergency arresting system shall be implemented. Such system shall remove voltage to the machine.

Once the problem is solved, it is possible to restore voltage with either an automatic system or by human intervention.

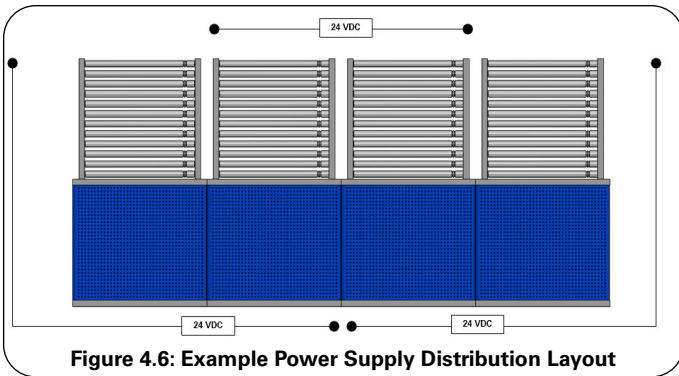


Figure 4.6: Example Power Supply Distribution Layout

4.8 Modsort® Module Layout Examples

The Modsort module is designed to be promptly integrated into various materials handling systems with countless configuration options which may be applied.

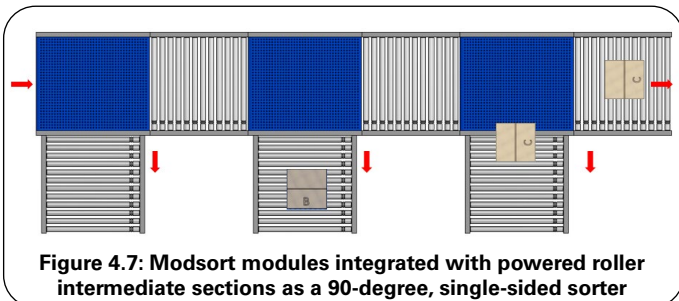


Figure 4.7: Modsort modules integrated with powered roller intermediate sections as a 90-degree, single-sided sorter

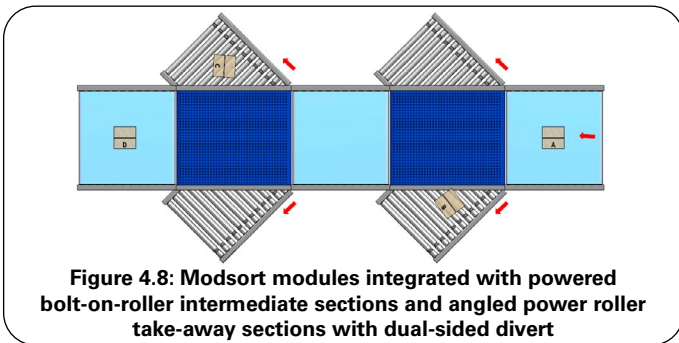


Figure 4.8: Modsort modules integrated with powered bolt-on-roller intermediate sections and angled power roller take-away sections with dual-sided divert

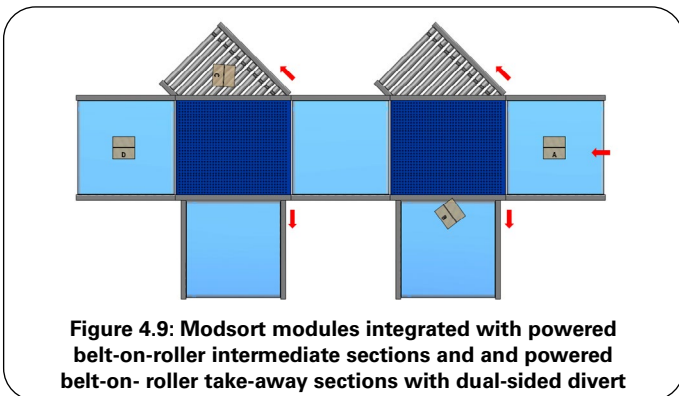


Figure 4.9: Modsort modules integrated with powered belt-on-roller intermediate sections and and powered belt-on- roller take-away sections with dual-sided divert

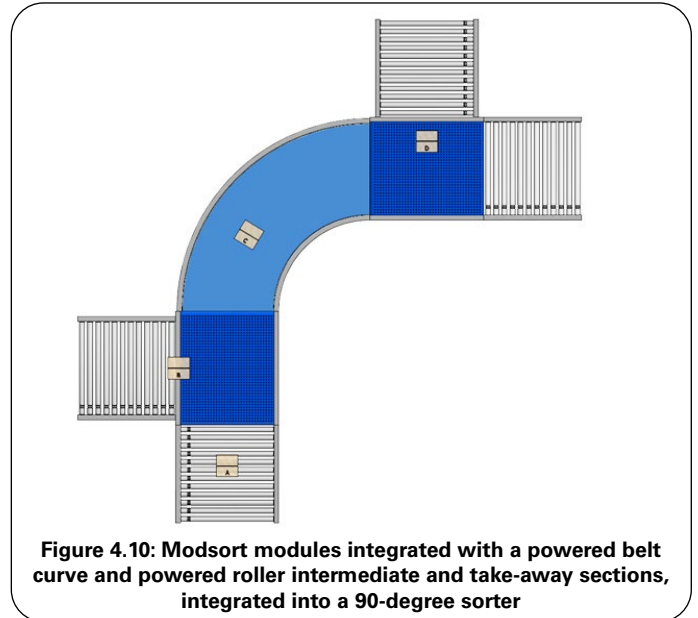


Figure 4.10: Modsort modules integrated with a powered belt curve and powered roller intermediate and take-away sections, integrated into a 90-degree sorter

4.9 CAD Blocks

2D and 3D CAD blocks are available for use in conveyor system layout drawings. Please contact Regal Rexnord Application Engineering to obtain the proper CAD block(s) for your application.

- 2D CAD blocks are available in .dwg format.
- 3D CAD blocks are available in .stp format.

It is strongly recommended that any application of the Modsort module be thoroughly planned and laid out with these CAD blocks in order to make certain any issues are addressed in the design phase of the project. Consult Regal Rexnord Application Engineering to discuss the specific application during the conceptual phase of the layout design. A sample generic CAD block is shown below.

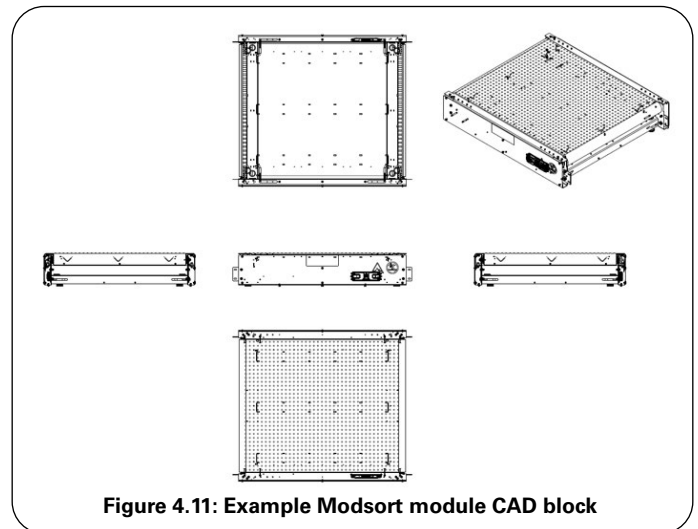


Figure 4.11: Example Modsort module CAD block

5.1 PLC Connection

The PLC will connect to the Modsort module unit as an EtherNet/IP™* IT or Profinet®* (EIP) client with an implicit I/O type connection.

Note: Refer to appendix 9.1 to 9.3 for details on connecting ERSC Control Cards to Siemens™* PLC.

The ERSC/PLC connection will utilize 16 registers of Input data from ERSC to PLC and 16 registers of Output data from PLC to ERSC. Each Register's data type will be 16-bit Word (INT). The following charts indicate the assignments of each data register:

Parameters	PLC Register	Description
Command Word	O.Data[0]	Bitwise Values bit 00 = Enable Modsort module in Auto Mode bit 01 = Wake-Up Main Belt bit 02 = Divert Next Item to Left Side bit 03 = Divert Next Item to Right Side bit 04 = Downstream Is Clear bit 05 = Clear Virtual Item On Board bit 06 = Reserved bit 07 = Reserved Bit 08 = Manual Jog Main Belt Bit 09 = Manual Jog Sort Belt Left Bit 10 = Manual Jog Sort Belt Right Bit 11 thru Bit 15 = Reserved
Main Belt Speed	O.Data[1]	MDR Speed in % PWM (ex. 800 = 80%) Default Value = 800 Maximum Value = 1000 Minimum Value = 250 Any value out of this range forces default value to be used
Main Belt Acceleration	O.Data[2]	Value in Motor Pulses Default Value = 100 Maximum Value = 1000 Minimum Value = 50 Any value out of this range forces default value to be used
Main Belt Deceleration	O.Data[3]	Value in Motor Pulses Default Value = 100 Maximum Value = 1000 Minimum Value = 50 Any value out of this range forces default value to be used
Main Belt Motor Mode	O.Data[3]	Value in Motor Pulses Default Value = 100 Maximum Value = 1000 Minimum Value = 50 Any value out of this range forces default value to be used
Main Belt Motor Mode	O.Data[4]	Numerical Value: 0 = Use default set in EasyRoll®* 1 = ECO Mode 2 = BOOST Mode 3 = BOOST8 Mode
Sort Belt Speed	O.Data[5]	MDR Speed in % PWM (ex. 800 = 80%) Default Value = 800 Maximum Value = 1000 Minimum Value = 250 Any value out of this range forces default value to be used

Parameters	PLC Register	Description
Sort Belt Acceleration	O.Data[6]	Value in Motor Pulses Default Value = 100 Maximum Value = 1000 Minimum Value = 50 Any value out of this range forces default value to be used
Sort Belt Deceleration	O.Data[7]	Value in Motor Pulses Default Value = 50 Maximum Value = 1000 Minimum Value = 50 Any value out of this range forces default value to be used
Sort Belt Motor Mode	O.Data[8]	Numerical Value: 0 = Use default set in EasyRoll®* 1 = ECO Mode 2 = BOOST Mode 3 = BOOST8 Mode
Infeed Trail Edge Trigger Pointer	O.Data[9]	Value in motor pulses equating to the distance from infeed sensor to location of trailing edge of item at the point where the divert cycle should be initiated. The same value is used for both left and right side divert commands. Default Value = 0 Maximum Value = 5000 Minimum Value = 0 Any value out of this range forces default value to be used
Sensor Polarity Mask	O.Data[10]	Bitwise value used to determine the sensor signal polarity. Bit set to 1 indicates the sensor signal is OFF when blocked. Bit reset to 0 indicates sensor signal is ON when blocked. Bitwise Value bit 00 = Reserved for Left Sensor Port - Pin 3 bit 01 = Reserved for Left Control Port - Pin 3 bit 02 = Reserved for Right Sensor Port - Pin 3 bit 03 = Reserved for Right Control Port - Pin 3 bit 04 = PE-3 (Left Side) bit 05 = PE-1 (Infeed) bit 06 = PE-4 (Right Side) bit 07 = PE-2 (Discharge) bit 08 thru bit 14 = Reserved bit 15 = Enable Sensor Polarity Mask The default value is bits 4,5,6, and 7 are set (0xF0 or 240 decimal) which is for light operate, normally open type retro-reflective sensor in all 4 places. To use values other than default, you must set bit 15 to cause Modsort module to recognize new mask. If bit 15 is reset, then Modsort module will ignore any values in this register. Please note this data is identical to the Sensor Port Input Signal Condition Mask register as defined in Insight Publication ERSC-1500 PLC Developer's Guide version 4.7. Please see this publication for definitions of these particular status bits.

* The following are believed to be the trademarks and/or trade names of their respective owners and are not owned or controlled by Regal Rexnord Corporation. EtherNet/IP: ODVA, Inc.; Profinet: Profibus Nutzerorganisation e.V.; Siemens: Siemens AG; EasyRoll: Decyfered LCC.

Parameters	PLC Register	Description
Reserved	O.Data[11]	Reserved for future use
Reserved	O.Data[12]	Reserved for future use
Reserved	O.Data[13]	Reserved for future use
Reserved	O.Data[14]	Reserved for future use
Reserved	O.Data[15]	Reserved for future use
Modsort module Status Word	I.Data[0]	Bitwise Values bit 00 = Modsort® Module Ready bit 01 = Main Belt Running bit 02 = Sort Belt Running Left bit 03 = Sort Belt Running Right bit 04 = Virtual Item On Board bit 05 = Reserved bit 06 = Reserved bit 07 = Reserved bit 08 = Reserved bit 09 = Reserved bit 10 = Reserved bit 11 = Reserved bit 12 = Reserved bit 13 = Reserved bit 14 = Reserved bit 15 = Reserved
Sensor Status Word	I.Data[1]	Bitwise Value bit 00 = Reserved for Left Sensor Port - Pin 3 bit 01 = Reserved for Left Control Port - Pin 3 bit 02 = Reserved for Right Sensor Port - Pin 3 bit 03 = Reserved for Right Control Port - Pin 3 bit 04 = PE-3 (Left Side) bit 05 = PE-1 (Infeed) bit 06 = PE-4 (Right Side) bit 07 = PE-2 (Discharge) bit 08 thru bit 14 = Reserved bit 15 = 2 sec on / 2 sec off heartbeat
Main Belt Motor Status	I.Data[2]	Bitwise Values bit 00 = Motor Status bit 01 = Motor Status bit 02 = Port in Digital Mode bit 03 = Reserved bit 04 = Reserved bit 05 = Reserved bit 06 = Over-Voltage bit 07 = Low Voltage bit 08 = Overheated bit 09 = Over Current bit 10 = Short Circuit bit 11 = Motor Not Connected bit 12 = Overloaded bit 13 = Motor Stalled bit 14 = Hall Sensor Error bit 15 = Motor Not Used Please note this data is identical to the Right Motor Status register as defined in Insight Automation®* Publication ERSC-1500 PLC Developer's Guide version 4.7. Please see this publication for definitions of these particular status bits.

Parameters	PLC Register	Description
Sort Belt Motor Status	I.Data[3]	Bitwise Values bit 00 = Motor Status bit 01 = Motor Status bit 02 = Port in Digital Mode bit 03 = Reserved bit 04 = Reserved bit 05 = Board Overheat bit 06 = Over-Voltage bit 07 = Low Voltage bit 08 = Overheated bit 09 = Over Current bit 10 = Short Circuit bit 11 = Motor Not Connected bit 12 = Overloaded bit 13 = Motor Stalled bit 14 = Hall Sensor Error bit 15 = Motor Not Used Please note this data is identical to the Left Motor Status register as defined in Insight Automation®* Publication ERSC-1500 PLC Developer's Guide version 4.7. Please see this publication for definitions of these particular status bits.
Reserved	I.Data[4]	Reserved for future use
Reserved	I.Data[5]	Reserved for future use
Reserved	I.Data[6]	Reserved for future use
Reserved	I.Data[7]	Reserved for future use
Reserved	I.Data[8]	Reserved for future use
Reserved	I.Data[9]	Reserved for future use
Reserved	I.Data[10]	Reserved for future use
Reserved	I.Data[11]	Reserved for future use
Reserved	I.Data[12]	Reserved for future use
Reserved	I.Data[13]	Reserved for future use
Reserved	I.Data[14]	Reserved for future use
Reserved	I.Data[15]	Reserved for future use

Table 5.1: PLC Output to ERSC Control Card Input

5.2 Basic Operation

5.2.1 Initialization

In order for the Modsort module to operate, the PLC must first examine the Modsort module Ready bit (Modsort module status word – Bit 00) and if it is set, then the Modsort module internal program is running and ready. Then the PLC must set the enable Modsort module in auto mode bit (Command Word – Bit 00) in order for the Modsort module program to recognize any further commands. If the PLC ever resets this bit, the Modsort module program will immediately stop all automatic motor rotation and only respond to manual jog commands.

5.2.2 Conveying an Item

When the PLC needs to simply have the Modsort module pass an item straight through from infeed to discharge, the PLC must first set the Wake-Up main belt bit (command word – Bit 01). This will signal the Modsort module program to run the Roller-Top Belt and wait for an item to block PE-1. If nothing appears at PE-1 within 5 seconds, the Roller-Top Belt will stop. The Wake-Up main belt bit must be toggled off and then on again to re-initiate this wake-up cycle.

Once an item blocks PE-1, the item will be conveyed onto the Modsort module. Upon the trailing edge of the item clearing PE-1, the Modsort module program will continue to run the Roller-Top Belt for the designated amount of motor pulses defined in the infeed trail edge trigger pointer register.

* Insight Automation is believed to be the trademark and/or trade names of Insight Automation, Inc. and is not owned or controlled by Regal Rexnord Corporation.

Once this has completed, the Modsort® module program will then examine the downstream is clear bit (command word – Bit 4). If this bit is clear, then the Roller-Top Belt will stop. If this bit is set, then the Roller-Top Belt will continue to run and discharge the item from the Roller-Top Belt. The Modsort module program will examine PE-2 and once the item has blocked then cleared PE-2, the main belt will automatically stop after a 400 msec. delay. If no block and clear transition is seen at PE-2 by the Modsort module program, the Roller-Top Belt will continue to run for 5 seconds and then automatically stop.

5.2.3 Accumulating

If an item had to stop and accumulate because the Downstream Is Clear bit was not set; the Modsort module program will set the Virtual Item On Board bit (Modsort module Status Word – Bit 04) to indicate to the PLC that the Modsort module is not ready to accept a new item. While in this state, the Modsort module program will ignore the Wake-Up Main Belt bit and wait until the PLC sets the Downstream Is Clear bit to indicate that it is OK to convey the item. Once the Downstream Is Clear bit is set, the Modsort module program will run the main belt to complete the discharge cycle as previously described.

5.2.4 Sorting to the Left Side

If an item needs to sort to the Left Side; the PLC first sets the Wake-Up Main Belt bit as described above to enable the Modsort module to accept an item. Prior to the item blocking PE-1, the PLC must set the Divert Next Item to Left Side bit (Command Word – Bit 02). When the item blocks PE-1, the Modsort module program will enable its divert left cycle logic. Upon the trailing edge of the item clearing PE-1, the Modsort module program will continue to run the Roller-Top Belt for the designated amount of motor pulses as defined in the Infeed Trail Edge Trigger Pointer register. Once this is complete, the Roller-Top Belt will stop and the Divert Belt will run to convey the item to the left. The Modsort module program will examine PE-3 to detect a block/clear transition, and once this is detected, the Divert Belt will automatically stop after a 400 msec. delay. If no block/clear transition is detected within 5 seconds, the Divert Belt motor will automatically stop.

5.2.5 Sorting to the Right Side

If an item needs to sort to the Right Side; the PLC first sets the *Wake-Up Main Belt* bit as described above to enable the Modsort module to accept an item. Prior to the item blocking PE-1, the PLC must set the *Divert Next Item to Right Side* bit (Command Word – Bit 03). When the item blocks PE-1, the Modsort module program will enable its divert left cycle logic. Upon the trailing edge of the item clearing PE-1, the Modsort module program will continue to run the Roller-Top Belt for the designated amount of motor pulses as defined in the *Infeed Trail Edge Trigger Pointer* register. Once this is complete, the Roller-Top Belt will stop and the Divert Belt will run to convey the item to the Right. The Modsort module program will examine PE-4 to detect a block/clear transition, and once this is detected, the Divert Belt will automatically stop after a 400 msec. delay. If no block/clear transition is detected within 5 seconds, the Divert Belt motor will automatically stop.

5.2.6 Divert Confirming and Tracking

The PLC can determine divert confirmation by monitoring the Sensor Status Word bits for the corresponding sensor status.

Based upon commands sent and the expected blocking / clearing of sensors, the PLC can keep track of items diverted.

5.2.7 Modsort Module Program Error Detection and Recovery

Under normal operation, as long as the Modsort module program is handling an item in one of the three possible cycles (conveying straight, divert left, divert right), the *Virtual Item On Board* bit is set.

In each case of diverting (left or right) or conveying straight through, the Modsort module program is looking for the appropriate sensor to block then clear to complete the cycle and stop all motors. Also, in each of these cases, there is a 5-second timeout to automatically cancel the cycle and stop all motors.

At the end of this 5-second timeout (for any of the cases), the Modsort module program will keep the Virtual Item On Board bit set to indicate to the PLC that the Modsort module will not respond to the a new *Wake-Up Main Belt* bit transition because the previous cycle did not complete.

While in this state, the PLC can attempt to clear the Roller-Top Belt by setting the *Clear Virtual Item On Board* bit (Command Word – Bit 05). On an off to on transition of this bit, the Modsort module program will run the Roller-Top Belt for 5 seconds and then stop. If all sensors are clear, the Modsort module program will re-initialize any cycle in progress, reset the *Virtual Item On Board* bit, and will accept the next Wake-Up Roller-Top Belt bit transition.

5.2.8 PLC Programming Assumptions

For the *Wake-Up Main Belt* bit and the *Clear Virtual Item On Board* bit commands, the Modsort module program accepts these on a leading edge transition. The PLC must reset these bits to 0 before setting them to 1 in order to repeat the command.

The other bits in the Command Word can remain on or off and their state will be examined as required in the Modsort module program logic.

Note: If both *Divert Next Item to Left Side* and *Divert Next Item to Right Side* bits are set at the point when a divert needs to be initiated, the Modsort module program will treat the item as a convey straight item.

Manual Mode

If the PLC resets bit *Enable Modsort module in Auto Mode* to 0 (Command Word – Bit 0), then the Modsort module program will not respond to the *Wake-Up Main Belt* bit and will only respond to the following bits from the PLC:

- Bit 08 = Manual Jog Roller-Top Belt
- Bit 09 = Manual Jog Divert Belt Left
- Bit 10 = Manual Jog Divert Belt Right

Once the PLC sets the *Enable Modsort module in Auto Mode* to 1, the Modsort module program will again accept a *Wake-Up Main Belt* bit transition command from the PLC.

Note: If both *Manual Jog Sort Belt Left* and *Manual Jog Sort Belt Right* are set to 1, then Divert Belt will stop. Similarly if one is set and then the other becomes set, the Divert Belt will stop.

Note: If any of these manual jog bits are already set when the *Modsort module in Auto Mode* bit is reset to 0, no manual jog motion will happen. Any given manual jog bit must have an off to on transition after the *Modsort module in Auto Mode* is reset to 0 before any jog motion will occur.

⚠ WARNING

- Allow only qualified maintenance personnel to perform mechanical/ electrical maintenance on the Intermediate module. Failure to follow this instruction could result in mild or moderate personal injury.
- Read, understand and follow all instructions in this section and in this manual completely before installing, operating or maintaining the Intermediate module. Failure to follow the instructions could result in severe injury or death.
- Disconnect and lock out power before performing installation and maintenance. Working on or near energized equipment can result in severe injury.
- Do not operate equipment without guards in place. Exposed equipment can result in severe injury.

⚠ CAUTION

- Perform periodic inspections. Equipment may fail prematurely and could become unsafe if not properly inspected and maintained. Failure to follow this instruction could result in mild or moderate personal injury.

6.1 Installation and Setup Guidelines

Employ good, basic practices to make sure the installation goes smoothly. Use the proper tools and equipment to install the Modsort module correctly. See table 6.4 Modsort Required Maintenance Tools.

The Modsort module is designed to be placed on traditional conveyor floor stands. Make sure the Modsort module is level in both horizontal axes. When two Modsort modules are joined together, make sure each end of the joint between the Modsort module frames are centred over a floor stand.

CAUTION! Install the splice plates mentioned in the following paragraph. If the splice plates are not installed, the Modsort modules may move and become misaligned. Failure to follow this instruction could result in mild or moderate personal injury.

All Modsort modules ship with a hardware splice kit. Use the splice kit when installing Modsort modules in an array. Bolt the splice plates to the inside surfaces of the Modsort module frames.

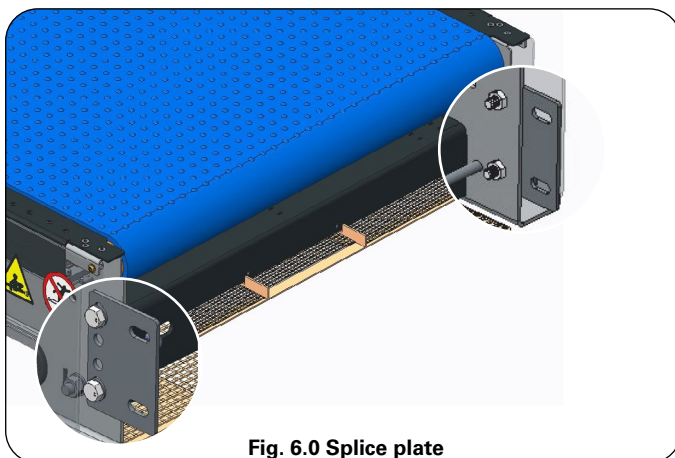


Fig. 6.0 Splice plate

The Side Guide and Photoeye kits contain all of the hardware needed for complete mechanical installation.

Note: Regal Rexnord assumes no liability on the seismic ratings for the bolted fastener kits, or for the customer's selection of ceiling/floor mounting structures.

6.1.1 Fixing the Power Supply Kit

The power supply unit is mounted on a base plate (1) which can be fixed to:

- The Modsort module's guard panel where it suits you best. Then the guard panel will be fixed underneath the Modsort module.
- Any other location as needed f.e. control panel/box or close to conveyor frame

See below at Figure 6.1 an explosion drawing of the power supply kit complete of base plate.

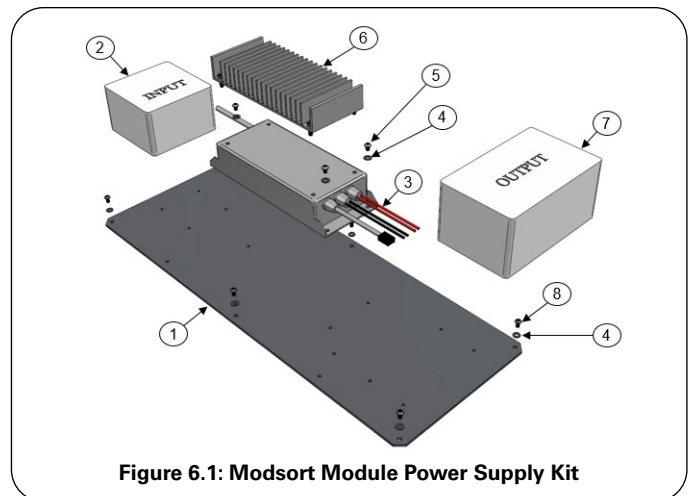


Figure 6.1: Modsort Module Power Supply Kit

Pos.	Item Description	Material
1	Modsort Power Supply Base Plate 580x220x3	SS
2	Junction Box - Input 105 x 105 x 67	
3	Modsort -DDP400-US24-SC	
4	Washer-ID4.3XOD-R-ZN	Zinc-Plated Stl
5	Screw-M4X0.7-L6-ZPAS-91306A659	Alloy Steel
6	Modsort-DDP400-US24-SC C. FIN + 4 Fixing Screws	
7	Junction Box - Output 170 X 105 X 82	
8	Screw-M4X0.7-L8-ZPAS-91306A660	Alloy Steel

Table 6.1: Modsort Power Supply Kit Material list

6.1.2 Connecting the Power Supply Unit

The power supply kit is supplied already wired and ready to be connected to the control card and the 230 VAC. Figure 6.2 (below) shows the Modsort® module Power Supply connections.

Note: The installer and user are responsible for connecting the Modsort module Power Supply to a 400W power source. Regal Rexnord assumes no responsibility for wiring interlocks.

AC input wire assignments are:

- Brown Wire: Live
- Blue Wire: Neutral
- Green/Yellow Wire: Protective Earth

For the wiring diagram refer to appendix 9.7 Wiring Diagram with feeder.

Here below a picture of the wired power supply with IN and OUT.

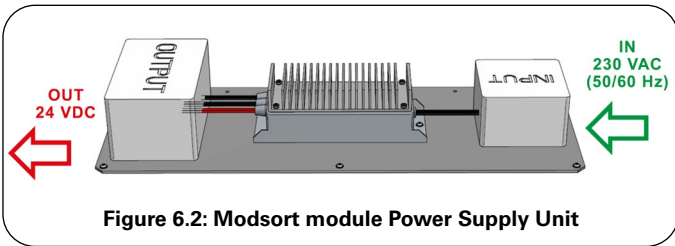


Figure 6.2: Modsort module Power Supply Unit

6.1.3 Orientation of the Motorized Drive Rollers (MDR's)

It is critical to orient the Modsort Module correctly to downstream conveyors. To orient the Modsort module correctly, position the Modsort module so that:

- The MDR of the Roller-Top Belt is at the discharge end of the Modsort module.
- The MDR of the Divert Belt is at the discharge end of the Divert Belt. (Look for the wire in the shaft of the Divert Belt MDR to identify the discharge end.) The MDR should be next to the conveyor that will be accepting items from the Modsort module.

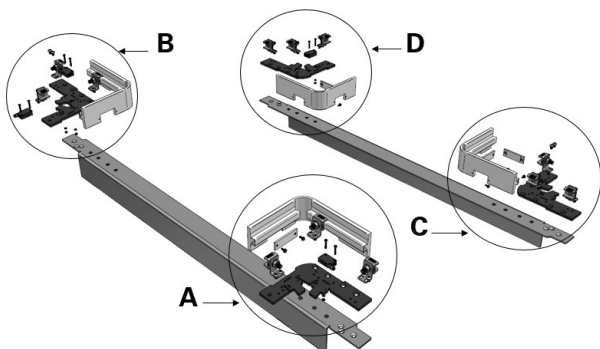
Note: Direction of flow arrows on the Modsort module will help with orienting the Modsort module correctly.

6.1.4 Side Guide and/or Photo Eye Installation

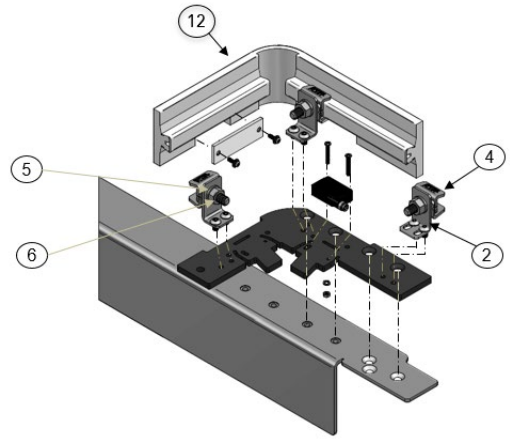
Side Guide with Photo eye kits or Photo eye kits are supplied complete of the assembling hardware. See table 6.2.

Follow the below step to fix the Side Guide and/or the Photo eye to the Modsort Module frame:

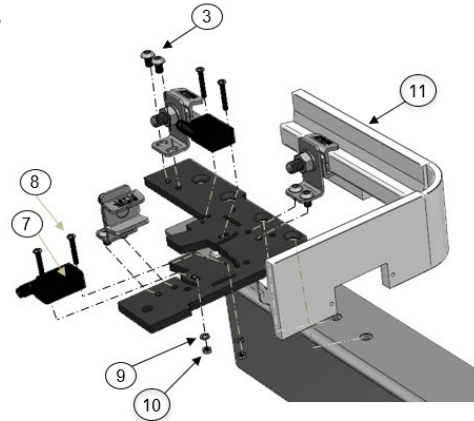
- Mount the Reflector (13) to the Side Guide rails (11, 12) at his pre-defined position;
- Mount Photo-eye kit (7) to the winglet (1) at his pre-defined position;
- Mount Bracket (2) and then the Clamp (4) to the winglet (1) at his pre-defined position;
- Mount Side Guide Rails (11, 12) to the Clamp (4)
- Fix the winglet complete of photo-eye and side guide to the Modsort module frame at his pre-defined position;
- Repeat the same procedure for the rest of the side guide and/or photo eye kits.



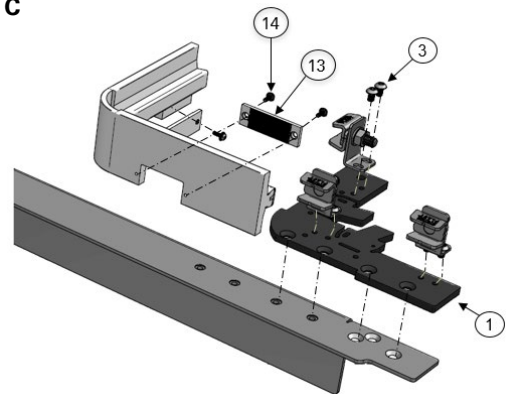
Detail A



Detail B



Detail C



Detail D

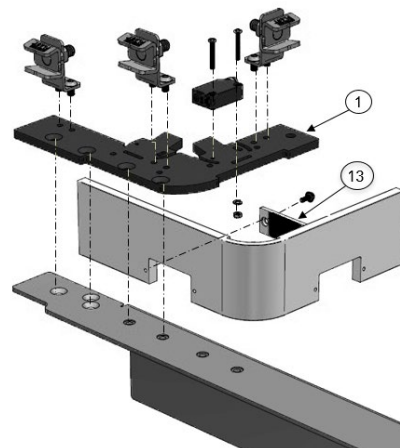


Figure 6.3: Modsort Double Divert's Side Guide with Photo Eye Kits

**SYSTEM
PLAST®**

Pos.	Item Description	Material
1	WINGLET	AL-6061
2	BRACKET-L-MOUNTING-SIDE GUIDE	AISI 304
3	SCREW-BHSC-M5X0.8-L8-SS-92095A207	-
4	VG-018M-02	AISI 304
5	WSH-M8D16-H1.6-DIN125-PM-A01	ZINC-PLATED STEEL
6	NUT-M8X6.5-H13-SS	STAINLESS STEEL
7	PHOTOELECTRIC SENSOR MINIATURE REFLEX SN 5M PNP CONNECTOR M8	-
8	SCREW-PHS-M3-L20-H2-JIS B1111-SS-94102A107	-
9	WSH-SP-M3D6.2-H0.7-DIN127B-PM-91202A222	-
10	NUT-HEX-M3-H2.4-DIN 934-SS-91828A211	-
11	SIDE GUIDE RAIL LH	UHMWPE / AISI 304
12	SIDE GUIDE RAIL RH	UHMWPE / AISI 304
13	RETROREFLECTIVE TARGET REFLECTOR	-
14	SCREW-PHS-SLW-M3-L10-H2.4-ASME B18.13-SS-91241A804	-

Table 6.2: Modsort® Double Divert's Side Guide with Photo Eye Kits Material list

The above assembly procedure has been done considering a Side Guide Kits for Double Divert Modsort module. Follow the same criteria to mount Side Guide kits for Single Divert, and Photo eye kit for single and double divert.

6.1.5 Photo Eye Alignment - X-Y, and Z Axis

The Modsort module Photo eyes are retroreflective style: each sensing location requires a Photo eye and a reflector. The Photo eye and the reflector must be correctly aligned before the Modsort module will work properly. When the Photo eye is correctly aligned with the reflector, the beam of the Photo eye strikes the centre of the reflector.

Checking Photo eye Alignment

There are two ways to determine if the Photo eye is aligned properly:

- Procedure 1: Crouch down behind the Photo eye and look at the Reflector. If the Photo eye is aligned correctly, a red dot will appear in the centre of the reflector.
- Procedure 2: Check the alignment of the Photo eye by looking at the LED light pipes on the back of the Photo eye.
 - The green LED indicates the Photo eye has power.
 - A "solid" amber LED indicates the Photo eye is receiving sufficient light back and is "on target" — the beam of the Photo eye is striking the centre of the reflector.
 - A blinking amber LED indicates the Photo eye is on target, but with marginal light reflecting back from the reflector. This indicates the beam of the Photo eye is striking the reflector, but not in the centre. The Photo eye must be adjusted.
 - An unlit amber LED usually indicates the Photo eye is not on target (not striking the reflector). However, it can also indicate that the Photo eye is blocked.

Note: procedure 2 apply to photocell included in our scope of supply. Photocell from other vendor might have a different colour coding of the LED light.

6.1.6 Final Installation Inspections

Perform the following inspections after installing the Modsort module.

Item:	Date	Checked by	Changes/ Repairs Made
CHECK WITH MODSORT MODULE RUNNING			
Make sure the Roller-Top Belt is holding its position and is not rubbing on any guide rails			
Make sure the Photo eyes and reflectors are aligned correctly			
Make sure the packages are being diverted at the required speed and angle. Adjust the Divert Belt tension to correct any speed/angle problems			
CHECK WITH MODSORT MODULE LOCKED/TAGGED OUT			
Make sure all axle-lock hardware is present.			
Make sure all joints are tight.			
Make sure all electrical connections are correctly plugged in			

Table 6.3: Installation Checklist

6.2 Maintenance and Assistance

WARNING! review general maintenance safety instruction at beginning of Section 6.0.

The Modsort module has been extensively tested and proven to run reliably for millions of cycles without interruption in service. Replacement or servicing of parts should be extremely infrequent, unless the module is physically damaged. In the event a component must be replaced or serviced; the Modsort module has been designed to incorporate a minimal number of parts and fasteners. Service or repair procedures can be performed quickly with minimal downtime. Additionally, few tools are required for any service procedure.

For assistance and replacement parts ordering information, see Section 8.0 Spare Parts Lists and Drawing. Addition information is available by contacting Regal Rexnord Application Engineering @ +39 035 8351 or SystemPlastTechSupport@Regalrexnord.com.

REQUIRED MAINTENANCE TOOLS	
Tool	Application
Allen wrench	top frame, belly pan, side covers
small standard screwdriver	pin removal, orange clip removal/replace
Socket wrench w/ratchet	divert assembly removal
Combination wrench	belt tension adjustment, MDR axle bolts
Thin specialized wrench (available through Regal Rexnord parts)	secures axle while loosening MDR axle bolts
Combination wrench	J-bolt removal
Combination wrench	axle locking mechanism - clamp
Combination wrench	axle locking mechanism - mount plate

Table 6.4: Modsort Required Maintenance Tools

6.3 Inspection and Replacement of the axle locking mechanism

The MDRs of the Modsort® module are assembled into the frame with an axle locking mechanism to positively secure the axle within the frame. Periodic inspection of the Axle Locks is recommended to assure tightness and alignment. Should the axle lock become loose or damaged, the axle of the MDR will eventually rotate within the axle lock. Permanent damage will result to the MDR and/or the Modsort module frame. The axle lock is a three-piece assembly consisting of a base plate, a locking block, and a locking clamp. (Figure 6.4).

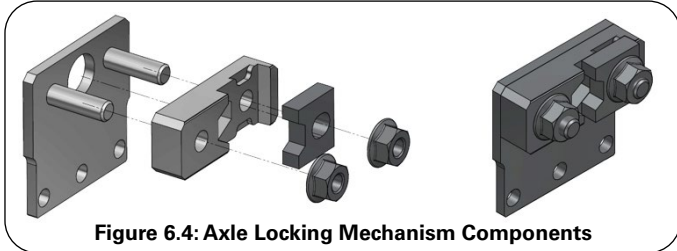


Figure 6.4: Axle Locking Mechanism Components

The axle locking mechanism of the Roller-Top belt is easily accessed without removal of additional components. In order to access the axle locking mechanism of the Divert Belt, the Roller-Top Belt must first be removed per 6.4.1.

Note: The wire harness protruding from the centre of the axle should be inspected for damage.

6.3.1 Axle Locking Assembly Removal

Steps:

- Trace the wiring harness protruding from the axle of the MDR to the control card and disconnect it.
- Remove all cable ties.
- Remove the two nuts securing the axle lock clamp and locking block, and the two nuts securing the axle lock base plate.
- Use a flat-head screwdriver to gently pry off the Axle Lock clamp (Figure 6.5).

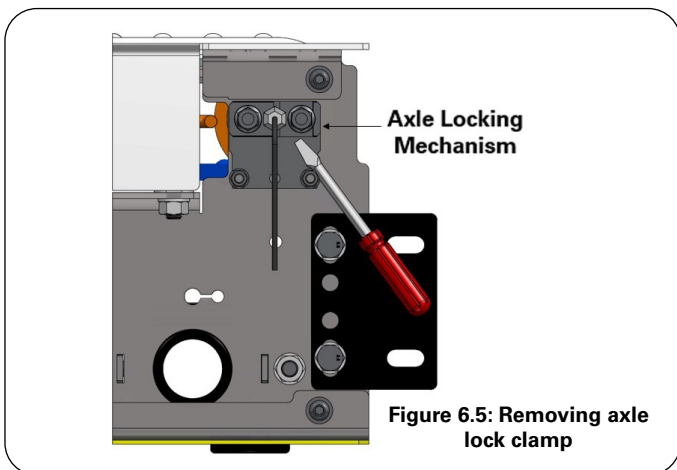


Figure 6.5: Removing axle lock clamp

- Thread the MDR wiring harness out of the axle lock mechanism base plate. It is necessary to carefully fold the wires perpendicular to the cable connector and guide it through the hexagonal hole in the axle locking block. (see Figure 6.6).

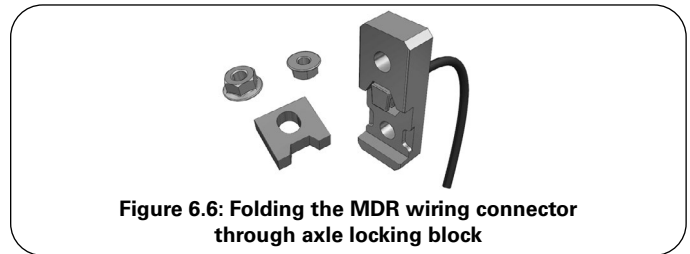


Figure 6.6: Folding the MDR wiring connector through axle locking block

- Thread the MDR wiring harness through the hexagonal hole in the axle locking baseplate in the same manner.
- Remove locking block and base plate.

6.3.2 Reinstalling axle locking mechanism

To install the axle locking mechanism, perform Steps a-g, above at 6.3.1, in reverse. Then perform the following two steps:

Note: Assure the locking clamp has been installed in the correct position. It must seat into the locking block squarely. Assure the wiring harness is not crimped or pinched.

Steps:

- After tightening the nuts on the base plate, tighten the nuts on the locking clamp, and then the locking clamp.
- Torque the locking block and locking clamp nuts to 9 Nm.

6.4 Removal, Replacement, Repair of Roller-Top Belt

6.4.1 To Remove the Roller-Top Belt:

Steps:

- Unlatch the orange clips on each end of the belt links you intend to separate. Insert a flat blade screwdriver into the slot in the clip and rotate 90 degrees. Remove and retain the orange clips for reinsertion. It may be necessary to slightly raise the edge of the Roller-Top Belt to access the orange clips. (Figure 6.7).

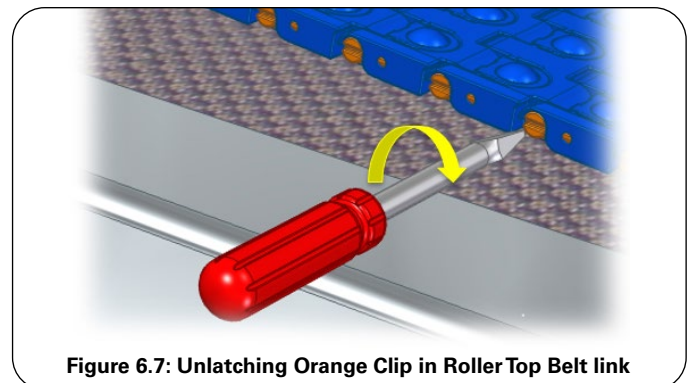


Figure 6.7: Unlatching Orange Clip in Roller Top Belt link

- With the help of an assistant, apply pressure to each side of the links you will be separating to relieve pressure on the pin. (Figure 6.8).

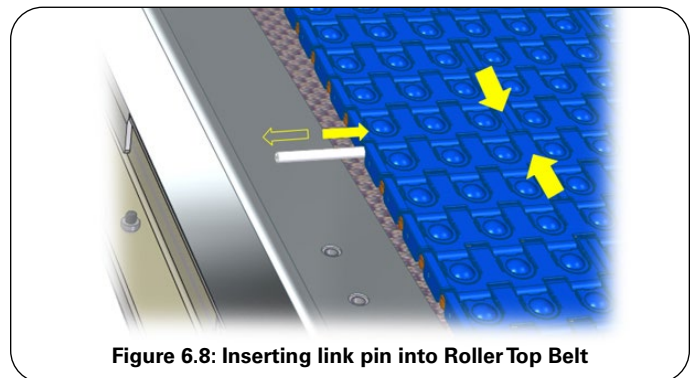


Figure 6.8: Inserting link pin into Roller Top Belt

- c. Using a small screw driver, push the pin a short distance from one direction, then from the other to determine if removal will be easier in one direction or the other. Manually remove the pin from the link connection in the easiest direction. (Figures 6.8 and 6.9).

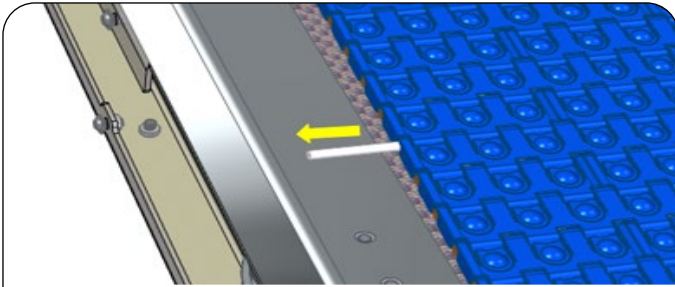


Figure 6.9: Removing/inserting pin from Roller Top Belt link

- d. Immediately re-insert the Pin into the link side of the Roller-Top Belt which will prevent the clamshells and spheres from separating when the belt is removed from the Modsort® module.

6.4.2 To Replace the Roller-Top Belt:

Steps:

- a. With an assistant; Lay the belt in position on top of the Modsort module, holding one end in place, while allowing the other end to hang off the end of the Modsort module. Assure the proper side of the belt is facing upward.
- b. Feed the loose end of the belt around the roller at the end of the Modsort module (MDR or idler roller). It does not matter which direction the belt is fed into the Modsort module. As well, the Roller-Top belt can be operated in either direction.
- c. Feed the belt up and around the roller on the opposite end (MDR or Idler roller), then up onto the conveyor bed to mate with the other end of the belt.
- d. Unlatch and remove the orange clips from the pin which was previously removed, and remove the pin.
- e. With the help of an assistant, again compress the ends of the belt together to aid in re-inserting the pin into the belt, as shown in (Figure 6.8).
- f. Insert the pin into the links of the belt, reinsert the orange clips. Using a small flat head screwdriver, rotate and lock the clips into position.

6.4.3 Roller-Top Belt, Modular Belt Link Replacement

The links of the Roller-Top Belt are comprised of modular segments which contain the clamshells and spheres. There are two sizes of modules in the assembled belt; three-inch/3 sphere, and six-inch/6 sphere.

The link segments may be disassembled into the spheres and clamshells which hold the spheres (see Figure 6.10). The modules are snap-fit together and can be assembled/disassembled without tools. These individual Roller-Top Belt components are not available individually.

Should a link segment, or any part of the link need replaced, a one square foot section of belt can be purchased through Regal Rexnord and disassembled to obtain a replacement link. Replacement link can be taken from the spare part roller-top belts. See Section 8; Replacement Parts, of this manual for part numbers and ordering information.

To replace a belt link, clamshell or sphere:

- a. Follow Steps a-d in 6.4.1, above, to separate the Roller-Top belt at the link where there is a defective module.
- b. Remove the module and replace with the new module.
- c. Reinstall Roller-Top belt per 6.4.2, steps d-f.

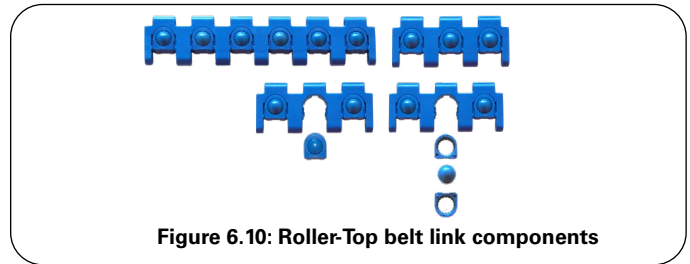


Figure 6.10: Roller-Top belt link components

6.5 MDR replacement; Roller-Top belt

Steps:

- a. Remove Roller-Top Belt per steps a-d of 6.4.1, above.
- b. Trace the Motor cable from the Roller-Top MDR to the control card and disconnect the motor cable.
- c. Remove axle locking mechanism per Steps a-g of 6.3.1, above.
- d. Using a screwdriver, press the opposite end of the spring-loaded axle shaft into the roller to free it from the Modsort module frame.
- e. Remove the MDR.
- f. To replace the MDR, perform the above steps in reverse.

6.6 Idler Roller Replacement; Roller-Top Belt

- a. Remove Roller-Top Belt per steps a-d of 6.4.1, above.
- b. Using a screwdriver, press the spring-loaded axle shaft into the roller to free it from the Modsort module frame. Either end of the axle shaft may be depressed to remove the roller.
- c. Remove the idler roller.
- d. To replace the idler roller, reverse steps a-c, above.

6.7 Divert Belt Removal and Replacement

6.7.1 Divert Belt Adjustment

Note: This is the most critical of the maintenance procedures. Proper tensioning of the belt is critical to belt life and the performance of the Modsort module.

Steps:

- a. Remove Roller-Top Belt per steps a-d of 6.4.1, above.
- b. Remove the upper frame rails by removing four allen head screws on each rail (see figure 6.11) to gain access to the Divert Belt mechanism.

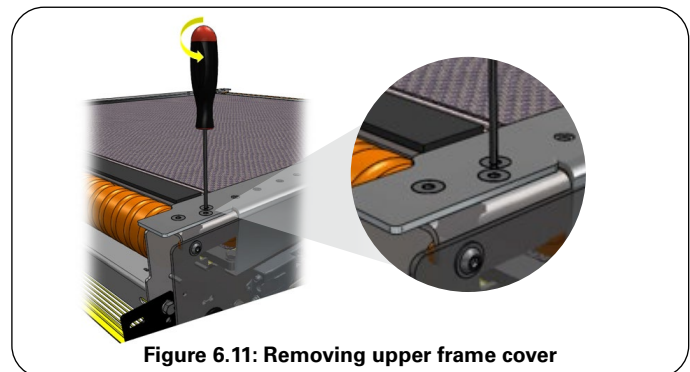


Figure 6.11: Removing upper frame cover

- c. An adjustment mechanism is provided on each end of the idler roller of the Divert Belt (see Figure 6.12). Both mechanisms are adjusted to provide proper belt tension.

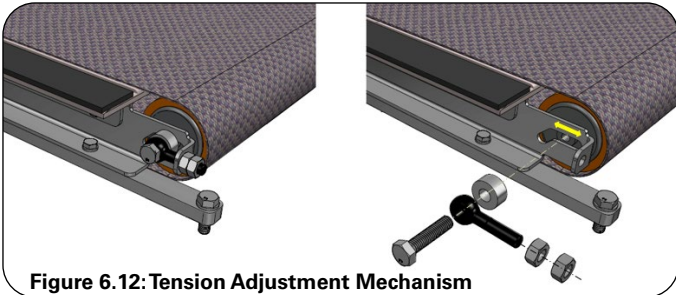


Figure 6.12: Tension Adjustment Mechanism

- d. A specialized thin wrench is used to secure the axle shaft of the idler roller while loosening the bolt locking the axle in place within the Divert mechanism frame (Figure 6.13). This wrench is available through Regal Rexnord.

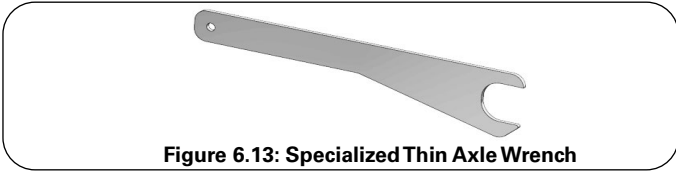


Figure 6.13: Specialized Thin Axle Wrench

- e. Using the specialized axle wrench (or equivalent) in combination with a wrench, loosen the bolts securing each end of the axle to the frame. (see figure 6.14).

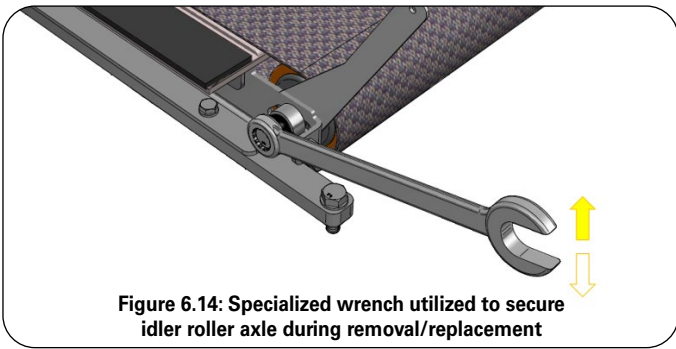


Figure 6.14: Specialized wrench utilized to secure idler roller axle during removal/replacement

- f. Using a wrench, tighten or loosen the jam nuts on each end of the idler roller to adjust belt tension. Equal adjustment must be applied to each end of the idler roller.
- g. Proper tension is set by feel. Place your hand between the Divert Belt and the conveyor bed. Manually move the belt with your other hand, while feeling the resistance as the belt passes over your fingers (Figure 6.15). Proper tension is achieved when there is a slight resistance as the belt passes over your fingers. **Note:** Do not over tension the belt as it will cause wrinkling and damage to the belt.

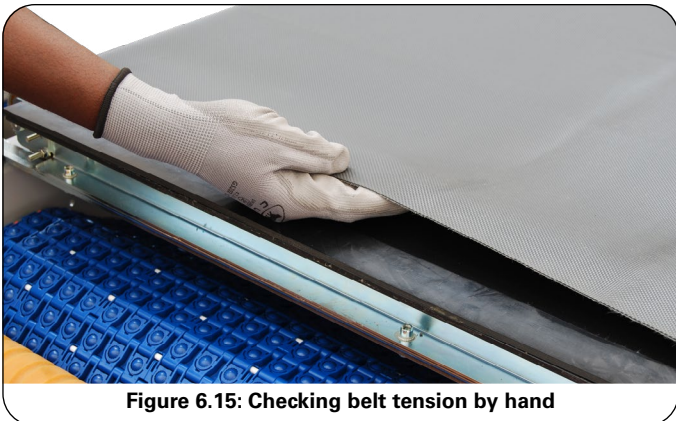


Figure 6.15: Checking belt tension by hand

- h. Reverse steps a-e, above, to secure the idler roller and reassemble the Modsort® module.

6.7.2 Divert Belt Removal

Steps:

- a. Remove Roller-Top Belt and Axle Locking mechanism per 6.3.1 and 6.4.1 above.
- b. Disconnect the MDR wiring harness from the control card and remove all wire ties.
- c. Using a wrench, remove the bolts and washers securing, washers securing the four corners of the Divert Assembly frame to the frame of the Modsort module (Figure 6.16).

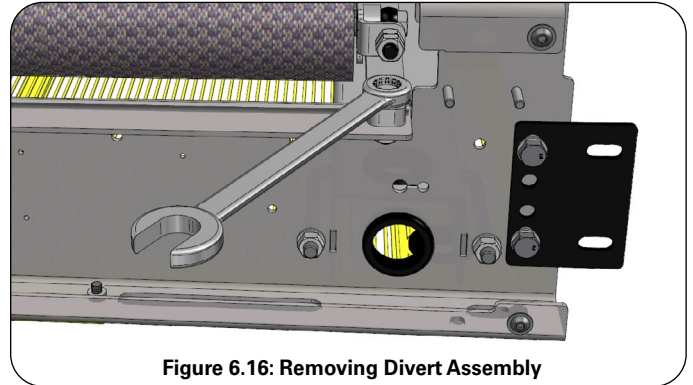


Figure 6.16: Removing Divert Assembly

- d. Lift the side of the Divert Assembly frame to access the MDR wiring harness. Feed the harness through the opening in the frame of the Modsort module so the Divert Assembly can be removed.
- e. Remove the entire Divert Assembly from the Modsort module. See Figure 6.17.

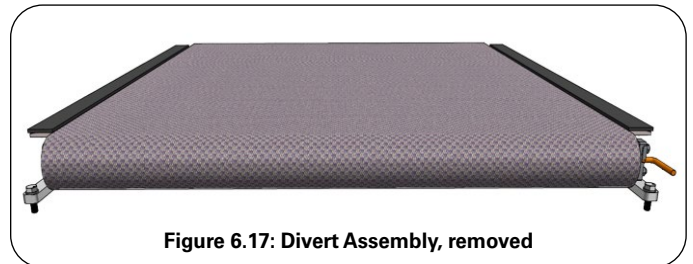


Figure 6.17: Divert Assembly, removed

- f. Remove both Idler Roller tensioning mechanisms per 6.7.1, steps d and e, above.
- g. Turn the Divert Assembly over and remove the Idler Roller. See Figure 6.18.

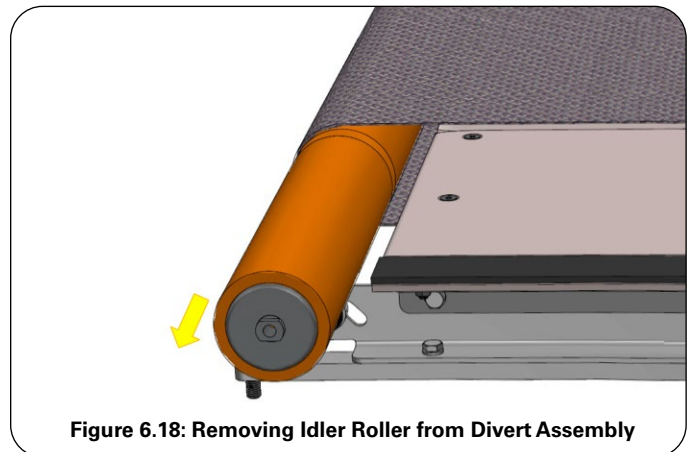


Figure 6.18: Removing Idler Roller from Divert Assembly

- h. Remove the divert frame mounting bar on the side of the Divert. Assembly, opposite the side where the MDR wiring harness is located, by removing the three bolts securing the Attachment Bar (Figure 6.19).

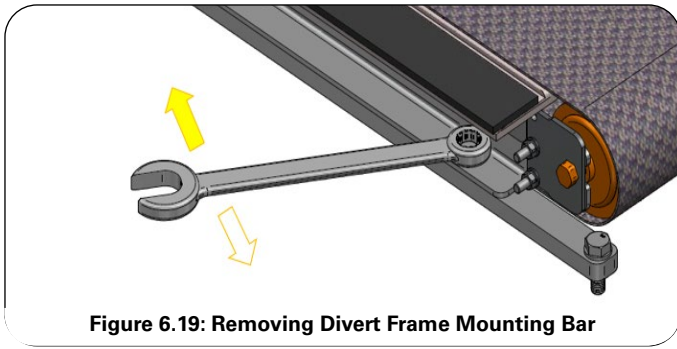


Figure 6.19: Removing Divert Frame Mounting Bar

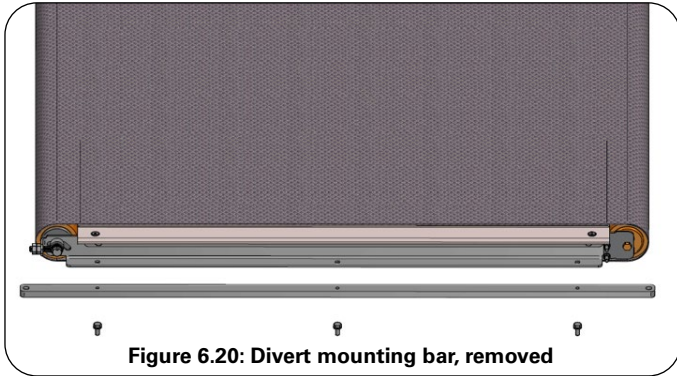


Figure 6.20: Divert mounting bar, removed

- i. Set the Divert Assembly on the floor, oriented so the MDR roller is vertical to the floor with the wiring harness closest to the floor (Figure 6.21). Be careful not to damage the wiring harness of the MDR during this procedure.

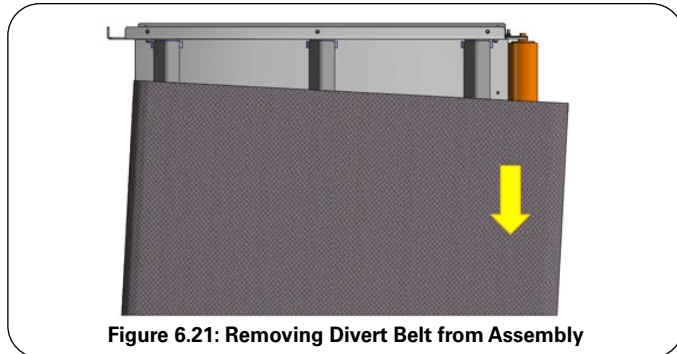


Figure 6.21: Removing Divert Belt from Assembly

6.7.3 Divert Belt Replacement

- Steps:
- a. Reverse steps a-i in 6.7.2, above to reinstall the Divert Belt.
 - b. Adjust the tension of the Divert Belt per 6.7.1, above.
 - c. Replace the Roller-Top Belt per 6.4.2, above.

6.8 Divert Belt MDR Replacement

- Steps:
- a. Remove the Roller-Top Belt per 6.4.1, above, steps a-e.
 - b. Remove the Divert Belt per 6.7.2, above, steps a-i.
 - c. Using a screwdriver, press the spring-loaded axle shaft into the roller to free it from the Divert Assembly frame. Either end of the axle shaft may be depressed to remove the MDR.
 - d. Thread the wiring harness of the MDR through the frame on the correct side.

- e. Insert one end of the axle of the new MDR into the frame. Depress the other end of the axle and insert it into the other side of the frame.
- f. Reverse the steps in step b- above, and then reverse the steps a- above to bring the Modsort® module back into service.

6.9 Divert Belt Idler Roller Replacement

Note: Follow the steps outlined in 6.7.2, steps a-g. Divert Belt removal.

6.10 Control Card Replacement

- Steps:
- a. Remove all connectors from the control card, and all wire ties.
 - b. Remove the Control Card from the Modsort module frame by pushing down on top of the control card and pulling it away from the frame to disengage the two mounting tabs from the frame.
 - c. Install the replacement control card by first inserting the bottom tab into the frame, and then push down on the control card while inserting the two top tabs into the slots in the frame, making sure the tabs snap into the slots in the frame.
 - d. Re-attach all connectors in the same locations as removed from.

6.11 Recommended Maintenance Schedule

The following checklist provides recommended maintenance procedures with suggested intervals to perform the procedures:

	Monthly	6 mos
Verify transport speed and divert motion are properly adjusted.	X	X
Check and tighten any bolted connections.		X
Inspect both belts for foreign objects embedded or stuck to the surface, clean and necessary.	X	X
Assure proper belt tracking of both belts.	X	X
Inspect spheres within the Roller Top Belt as wear, damage or debris. Assure sphere are rotating properly. Clean as necessary.		X
Check Divert Belt tension. Adjust as needed.		X
Inspect lag coating on MDRs for wear.		X
Inspect Divert Belt wear strips; replace as necessary.		X
Ensure Axle Locking Mechanisms are in place and secure.	X	X
Ensure tightening Torque of MDR's mounting block is 10 Nm.	X	X
Inspect all wiring harnesses for damage and/or wear. Ensure wires are secured by wire ties.	X	X

6.12 Modsort Module Disassembling VR Video

Below web link the video to dismount the Modsort module.
<https://www.youtube.com/watch?v=DjwRUMU8rqE>

6.13 Modsort® Module Cleaning Instruction

The following chapter is intended to provide an overview of how and when the Modsort module should be cleaned.

Generally, the Modsort module is designed to work under dry and rather clean conditions. However, a regular cleaning can improve and elongate the service life.

As a rule of thumb, we say that cleaning every six months is enough.

When cleaning, remove the Roller-Top belt from the Modsort module as per point 6.4.1 and then follow the below procedure based on your cases. While cleaning the Roller-Top belt, a spare belt can be installed to reduce the downtime.

6.13.1 General notes

All components of the Modsort module are splash-proof and may come into contact with water. Especially the motor rollers and the control card are certified as splash-proof according to IP54 and should not be cleaned with water pressure. All other components may be cleaned with moderate water pressure.

When cleaning a distinction must be made between:

- Long-term pollution due to ambient dirt/dust
- Contamination due to unpredictable circumstances such as crashes/leaking products etc.

When conveying liquid products and there is potential for product loss, we recommend having a spare Roller-Top belt on hand. More details in chapter 6.13.3.

6.13.2 Contamination by ambient dirt

Over a longer period of time, ambient dust as well as abrasion from cardboard and/or plastic packaging can lead to contamination of the belts and balls. Furthermore, stickers may come off the product and stick to side guides, light barriers or the balls of the belt.

To extend the life of the wear parts, it can be helpful to clean them of dust and other foreign matter.

Ideally, this should be done without water, since dust, in particular from cardboard, clumps together when water is added which makes it even harder to remove.

Here, cleaning by vacuum is the best solution.

6.13.3 Contamination due to product loss

Depending on the product being conveyed, leakage or damage of products may occur.

This should only occur in rare cases and not on a regular basis. For those cases, it is necessary to distinguish the type of product that gets on the belts.

6.13.3.1 Dry products

In the case of dry products, which cannot lead to sticking of the balls or other components, cleaning as described in 6.13.1 is recommended.

6.13.3.2 Water-soluble liquids

In the case of contamination by water-based products (liquids containing sugar, beverages, etc.) which can cause the balls or other moving parts to stick, it is advisable to rinse them off before they dry out. This should first be done while the belt is running, to ensure that the back of the belt and all corners are also accessed.

In case of severe contamination, the ball belt can be removed and cleaned and dried separately.

Since the coefficient of friction of the Roller-Top belt will change if it's wet, a spare ball belt should be installed.

In this way, it is possible to reduce downtime, since the removed belt can be cleaned and dried separately.

6.13.3.3 Oil-based liquids

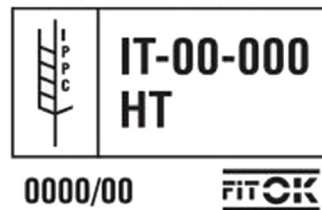
Liquids that are not water-soluble and therefore cannot be rinsed off with water should be removed with a suitable cleaning agent. It must be ensured that the cleaning agent is suitable for cleaning plastics and seals.

The cleaning agent manufacturer's instructions on concentration and exposure time must be strictly followed. The cleaning agent should be rinsed off while the belts are running in order to reach the back of the belts and all corners that are difficult to reach. As explained in section 6.13.3.2, it is recommended to clean and dry the Roller-Top belt separately and to replace it with a spare belt.

6.14 Modsort Module Disposal

6.14.1 Disposal of Modsort Module Packaging Material

The packaging material is fully recyclable and FITOK certified in accordance with the ISPM-15 regulation.



6.14.2 Disposal of Modsort Modules Parts

The electrical and electronic parts listed below are marked with the symbol



and classified as Waste of electric and electronic equipment (WEEE) in accordance with the European Directive 2012/19 / EU on WEEE.

- Control Card
- Divert Belt and Roller Top Belt's Motorized Drive Rollers (MDRs)
- Photo eyes
- Power Supply Unit

These WEEE must be disposed correctly at a suitable collection point according to the procedures in use in the country of disposal.

The other non-electric nor electronics waste of the Modsort modules (plastic and metals parts) are not considered special waste and must be disposed of in strict compliance with the local regulations regarding non-special waste.

This section contains information regarding standard and optional configurations available for the Modsort module. These optional equipment parts are added to the Modsort module base.

7.1 Side Guide with Photo Eye Kits

The Side Guides with Photo eyes kits are accessories to the Modsort module base assembly. They are available in kits that all include:

- Side Guides kit with Nolu-SD™ Guides and Winglets
- Photo eyes and Reflectors
- All Mounting Hardware to hold both the Side Guides kit, the Photo eyes and reflectors

The kits are available in single-sided or double-sided configuration and can be reconfigured as needed to meet the requirements of the application. Each size of Modsort module has its specific Side Guides kits and Photo eyes.

For details, refer to table 7.1 and figure 7.1 for single-sided divert Side Guides with Photo eyes kits and table 7.2 and figure 7.2 for double-sided divert Side Guides with Photo eyes kits.

Note: Single-sided kits contain three (03) Photo eyes and reflectors and two (02) winglets. Double-sided kits contain four (04) Photo eyes and reflectors and four (04) winglets.

Note: Modsort module can suit also alternate brand of Photo eyes. Any Photo eyes or reflectors may be moved to the opposite side of the Modsort module for a maximum flexibility.

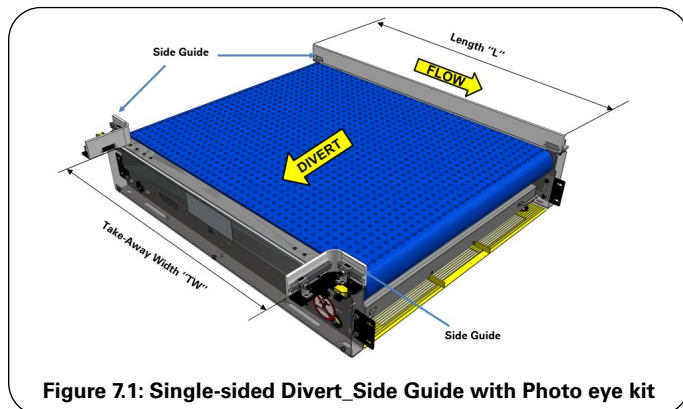


Figure 7.1: Single-sided Divert Side Guide with Photo eye kit

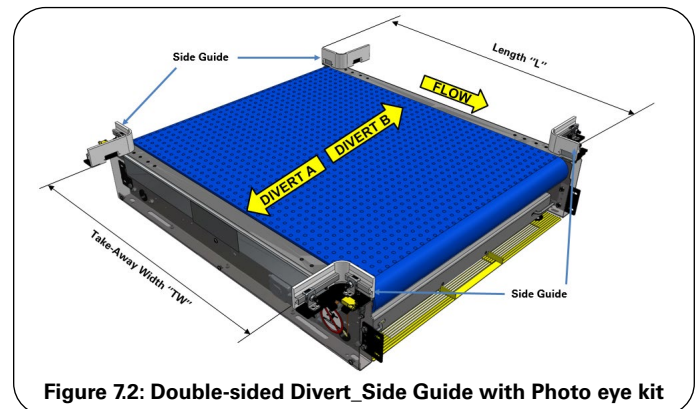


Figure 7.2: Double-sided Divert Side Guide with Photo eye kit

Single-Sided Side Guide with Photo eyes Kits				
Part No.	Description	Length "L" (mm)	Take-Away Width "TW" (mm)	Modsort Size
F1405578V03	MODSORT-MSGK-30-16TAW-S	762	406	1, 2
F1405578V04	MODSORT-MSGK-30-22TAW-S	762	559	1, 2
F1405578V09	MODSORT-MSGK-36-16TAW-S	914	406	3, 4, 5
F1405578V10	MODSORT-MSGK-36-22TAW-S	914	559	3, 4, 5
F1405578V11	MODSORT-MSGK-36-28TAW-S	914	711	3, 4, 5
F1405578V17	MODSORT-MSGK-42-22TAW-S	1066	559	6, 7, 8
F1405578V18	MODSORT-MSGK-42-28TAW-S	1066	711	6, 7, 8
F1405578V19	MODSORT-MSGK-42-34TAW-S	1066	864	6, 7, 8

Table 7.1: Single-sided Divert - Side Guide with Photo eye kit part numbers

Double-sided Divert Side Guide with Photo eye Kits				
Part No.	Description	Length "L" (mm)	Take-Away Width "TW" (mm)	Modsort Size
F1405578V25	MODSORT-MSGK-30-16TAW-D	762	406	1, 2
F1405578V26	MODSORT-MSGK-30-22TAW-D	762	559	1, 2
F1405578V31	MODSORT-MSGK-36-16TAW-D	914	406	3, 4, 5
F1405578V32	MODSORT-MSGK-36-22TAW-D	914	559	3, 4, 5
F1405578V33	MODSORT-MSGK-36-28TAW-D	914	711	3, 4, 5
F1405578V39	MODSORT-MSGK-42-22TAW-D	1066	559	6, 7, 8
F1405578V40	MODSORT-MSGK-42-28TAW-D	1066	711	6, 7, 8
F1405578V41	MODSORT-MSGK-42-34TAW-D	1066	864	6, 7, 8

Table 7.2: Double-sided Divert Side Guide with Photo eye kit part numbers

7.2 Photo Eye Kits

The Photo eye kits are accessories to the Modsort® module base assembly. They are available in kits that all include:

- Photo eyes and Reflectors
- Winglets
- All Mounting Hardware to hold the Photo eyes and reflectors

The kits are available in single-sided or double-sided configuration and can be reconfigured as needed to meet the requirements of the application. Each size of Modsort module has its specific Photo eyes kits.

For details, refer to table 7.3 and figure 7.3 for single-sided divert Photo eye kit and table 7.4 and figure 7.4 for double-sided divert Photo eye kit.

Note: Single-sided kits contain three (03) Photo eyes and reflectors and two (02) winglets. Double-sided kits contain four (04) Photo eyes and reflectors and four (04) winglets.

Note: The Photo eyes kits do not include side guides.

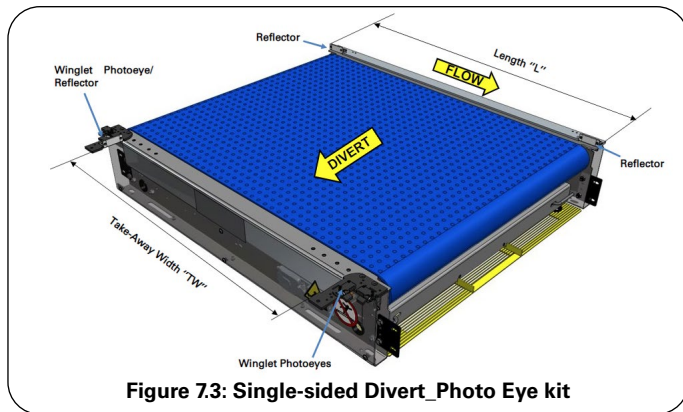


Figure 7.3: Single-sided Divert_Photo Eye kit

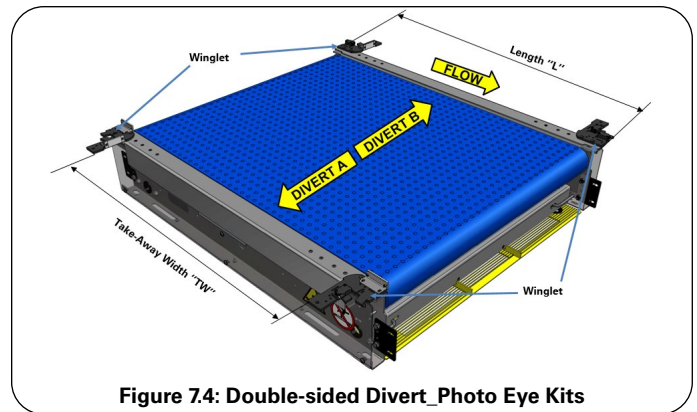


Figure 7.4: Double-sided Divert_Photo Eye Kits

Single-Sided _ Photo Eye Kits				
Part No.	Description	Length "L" (mm)	Take-Away Width "TW" (mm)	Modsort Size
F1405578V47	MODSORT-MPES-30-16TAW-S	762	406	1, 2
F1405578V48	MODSORT-MPES-30-22TAW-S	762	559	1, 2
F1405578V52	MODSORT-MPES-36-16TAW-S	914	406	3, 4, 5
F1405578V53	MODSORT-MPES-36-22TAW-S	914	559	3, 4, 5
F1405578V54	MODSORT-MPES-36-28TAW-S	914	711	3, 4, 5
F1405578V61	MODSORT-MPES-42-22TAW-S	1066	559	6, 7, 8
F1405578V62	MODSORT-MPES-42-28TAW-S	1066	711	6, 7, 8
F1405578V63	MODSORT-MPES-42-34TAW-S	1066	864	6, 7, 8

Table 7.3: Single-sided Divert _ Photo Eye kit part numbers

Double-sided Divert_Photo Eye Kits				
Part No.	Description	Length "L" (mm)	Take-Away Width "TW" (mm)	Modsort Size
F1405578V69	MODSORT-MPES-30-16TAW-D	762	406	1, 2
F1405578V70	MODSORT-MPES-30-22TAW-D	762	559	1, 2
F1405578V74	MODSORT-MPES-36-16TAW-D	914	406	3, 4, 5
F1405578V75	MODSORT-MPES-36-22TAW-D	914	559	3, 4, 5
F1405578V76	MODSORT-MPES-36-28TAW-D	914	711	3, 4, 5
F1405578V83	MODSORT-MPES-42-22TAW-D	1066	559	6, 7, 8
F1405578V84	MODSORT-MPES-42-28TAW-D	1066	711	6, 7, 8
F1405578V85	MODSORT-MPES-42-34TAW-D	1066	864	6, 7, 8

Table 7.4: Double-sided Divert_Photo Eye Kits part numbers

7.3 Stand-alone Photo Eye Kits

The Stand-Alone Photo eye Kit is used when the application calls for Modsort® module Photo eye to be installed on the user's equipment, immediately upstream to or downstream from the Modsort module.

The stand-alone Photo eye kit includes:

- Photo eyes
- Reflectors with mounting bracket
- Mounting hardware

Refer to Table 7.5 and Figure 7.5 for Stand-Alone Photo eye Kit details.

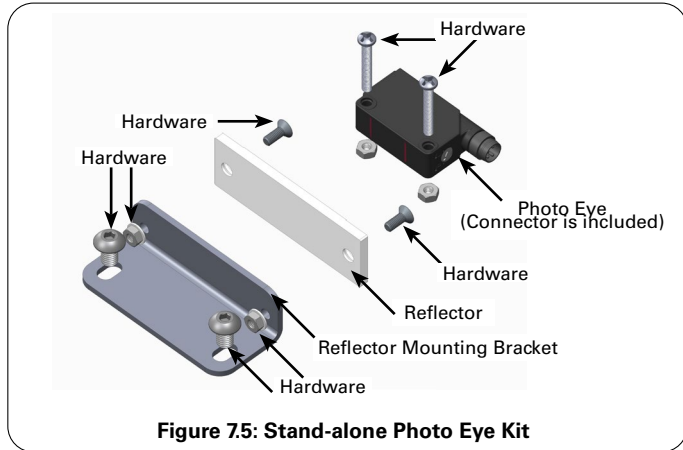


Figure 7.5: Stand-alone Photo Eye Kit

Stand-alone Photo Eye Kits	
Part Number	Part Description
AA8314724	MODSORT-MPEK

Table 7.5: Stand-alone Photo Eye Kit part number.

7.4 Power Supply Kit

This ultra-compact and high efficiency 24V 400W Power Supply can sufficiently power 1 standard Modsort modules. The unit is housed in an IP67 sealed enclosure and is CE, UL8750 and CSA C22.2 No 250 compliant for dry/damp applications. Power supply kit, as supplied, includes all wiring associated with connecting to the control card on the Modsort module and closed connection for the optional remote on/off switch feature. Cable ties are included to assist with wiring routing.

CAUTION! Installer and User responsible for proper and safe wiring practices when installing this kit and must provide proper connections to the power source. Regal Rexnord assumes no responsibility for an improperly installed power supply or for any resulting damage to Modsort Module equipment or other hardware in an application.

The power supply kit includes:

- 400W AC/DC 24V Output Power Supply
- Heatsink
- Input Junction box 105x105x67 mm
- Output Junction box 170x105x82 mm
- Base Plate 580x220x3 mm;
- Mounting bracket and hardware

Kit does not include:

- Wire Plug

AC input wire assignments are:

- Brown Wire: Live
- Blue Wire: Neutral
- Green/Yellow Wire: Protective Earth

Refer to Table 7.6b and Figure 7.6 for Power Supply Kit details.

Power supply kit	
Part Number	Part Description
AA1414723	MODSORT-MPS-400W

Table 7.6a: Power Supply Kit.

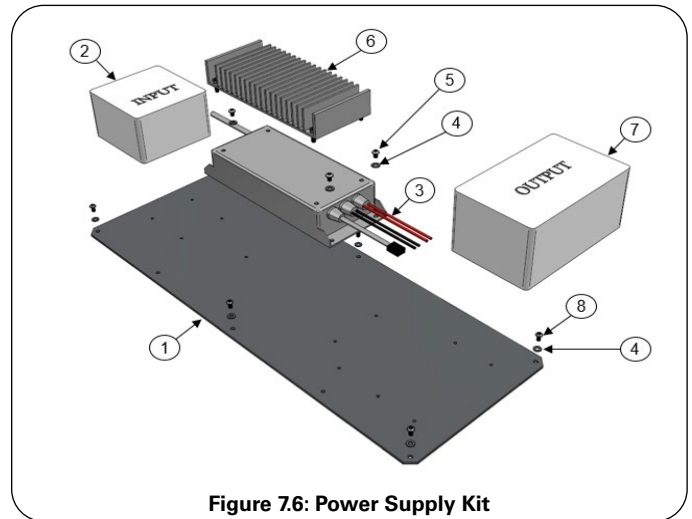


Figure 7.6: Power Supply Kit

Pos.	Item Description	Quantity	Material
1	Modsort Power Supply Base Plate 580x220x3	1	SS
2	Junction Box - Input 105 x 105 x 67	1	
3	Modsort-DDP400-US24-SC	1	
4	Washer-ID4.3XOD-R-ZN	9	Zinc-Plated Stl
5	Screw-M4X0.7-L6-ZPAS-91306A659	3	Alloy Steel
6	Modsort-DDP400-US24-SC C. FIN + 4 Fixing Screws	1	
7	Junction Box - Output 170 X 105 X 82	1	
8	Screw-M4X0.7-L8-ZPAS-91306A660	6	Alloy Steel

Table 7.6b: Power supply kit material list

7.5 Motor Extension Cable

The Modsort module is been designed to be easily reconfigured in the field. When design specifications require that components be moved, the Motor Extension Cable is used.

Any of the components may be moved to the opposite side of the conveyor. For example, if the controls are better suited on the opposite side of the Modsort module from where they are located at shipment, the controls and main Wiring Harness can be moved to the opposite side of the unit.

In some cases, moving these components results in the need to have a longer motor cable. The Modsort module motor extension cable is used in these cases.

Refer to Table 7.7 and Figure 7.7 for Motor Extension Cable details.

Motor Extension Cable	
Part Number	Part Description
AA8308628	MOTOR EXTENSION CABLE, 1 M

Table 7.7: Modsort Module Motor Extension Cable

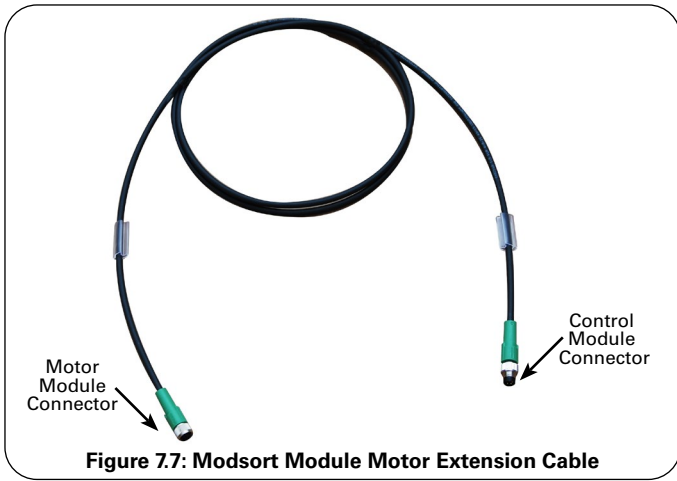


Figure 7.7: Modsort Module Motor Extension Cable

Adjustable Support Legs

Adjustable supporting leg of different height are available for each Modsort® modules. Refer to table 7.8 for supporting leg parts and table 7.9 for the suitable supporting leg size of your Modsort module.

NOTICE: Regal Rexnord assumes no responsibility for supporting leg ratings or for seismic ratings. In addition, Regal Rexnord assumes no liability for 3rd party floor stand systems. Regal Rexnord recommends all floor supports system selected for the installation be subject to a formal review to make certain all facility, state and local codes have been adhered to.

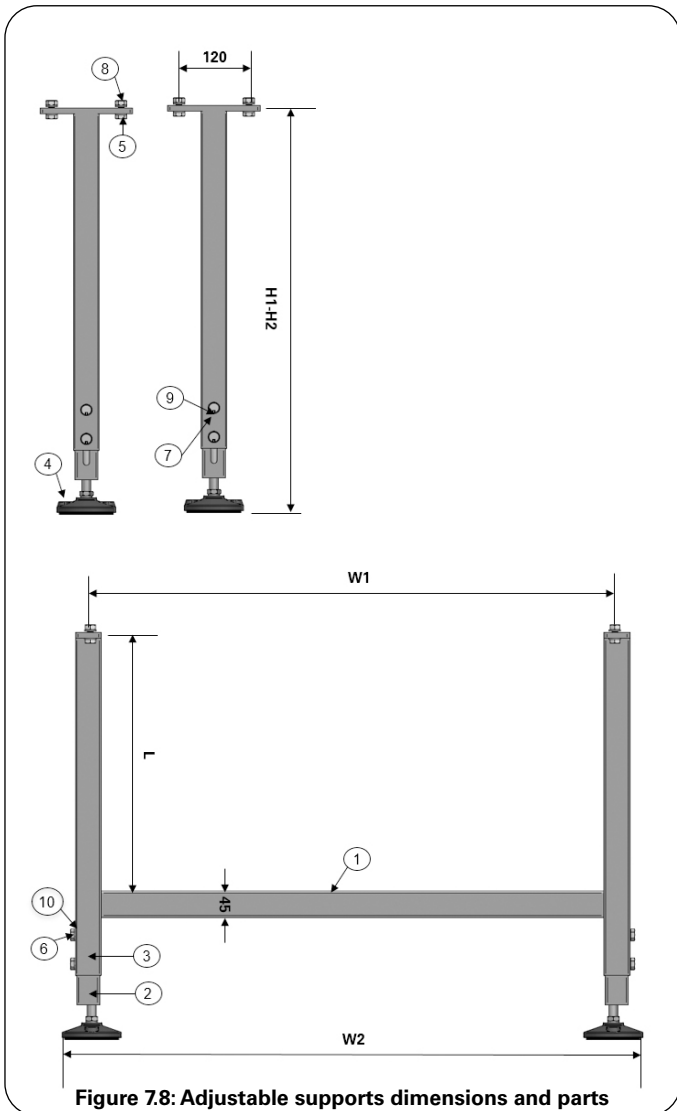


Figure 7.8: Adjustable supports dimensions and parts

ITEM NO.	ITEM DESCRIPTION	QTY.
1	UPPER FRAME	2
2	Support extension	4
3	Fix Plate	4
4	Articulated foot	4
5	ISO 4017 - d M10 x l 25 - 8.8	8
6	ISO 4017 - d M10 x l 20 - 8.8	8
7	Nut M16 galv.	4
8	Nut M10 galv.	8
9	Washer 17/30x3 galv.	4
10	Washer 11/21x2 galv.	24

Table 7.8: Adjustable Support parts

Adjustable Support Part Numbers						
PART NUMBER	ITEM DESCRIPTION	For Modsort Standard size	W1	W2	L	H1-H2
AA1315191	MODSORTFLSK-500-670-16BFW	1, 3	444	542	80	295-465
AA1315192	MODSORTFLSK-670-865-16BFW	1, 3	444	542	253	468-663
AA1315193	MODSORTFLSK-865-1350-16BFW	1, 3	444	542	445	660-1145
AA1315194	MODSORTFLSK-500-670-22BFW	2, 4, 6	597	695	80	295-465
AA1315195	MODSORTFLSK-670-865-22BFW	2, 4, 6	597	695	253	468-663
AA1315196	MODSORTFLSK-865-1350-22BFW	2, 4, 6	597	695	445	660-1145
AA1315197	MODSORTFLSK-500-670-28BFW	5, 7	749	847	80	295-465
AA1315198	MODSORTFLSK-670-865-28BFW	5, 7	749	847	253	468-663
AA1315199	MODSORTFLSK-865-1350-28BFW	5, 7	749	847	445	660-1145
AA1315200	MODSORTFLSK-500-670-34BFW	8	902	1000	80	295-465
AA1315201	MODSORTFLSK-670-865-34BFW	8	902	1000	253	468-663
AA1315202	MODSORTFLSK-865-1350-34BFW	8	902	1000	445	660-1145

Table 7.9 Adjustable Support Part Numbers and dimensions. Dimensions are in mm.

8.1 General Information

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

8.1.1 Contact Information Parts Orders

Email: SystemPlastTechSupport@regalrexnord.com

Note: When ordering by fax or e-mail, write "Modsort module Parts Order" on the fax or in the subject line and body of the e-mail.

The normal working hours of the Parts Department are Monday through Friday, 8:00 AM to 6:00 PM, Central European Time, except for holidays.

8.1.2 Spare Parts List/On-Hand Stock

The Modsort module does not require a large quantity of spare parts, but some parts will wear out and need to be replaced during the life of the equipment.

Most wear items and replacement parts are stocked at Regal Rexnord for quick delivery, however it is crucial to:

- Order spare parts before the job is signed over to the customer or the end user.
- Prepare a spare parts list in advance of actually needing spare parts.

8.1.3 Part Order Requirements

Regal Rexnord will not accept spare parts orders from customers who are not set up in Regal Rexnord's parts ordering system. If the Modsort module was purchased through a distributor, order the spare parts from that distributor.

8.2 Spare Parts List and Drawing of standard Modsort® Modules

Here below the list and the drawing of recommended spare parts. A set of spare parts is one quantity of each item from 1 to 7.

Item n°.	Item Description	Part Number							
		Size 1	Size 2	Size 3	Size 4	Size 5	Size 6	Size 7	Size 8
1	2253 RT Belt	AA2506008	AA2506010	AA2506009	AA2506011	AA2506013	AA2506012	AA2506014	AA2506015
2	Rubber Divert belt	AA8315234	AA8315233	AA8315232	AA8315231	AA8315141	AA8315071	AA8315039	AA8314930
3	Motorized roller for 2253RT	AA8320283	AA8320282	AA8320283	AA8320282	AA8320281	AA8320282	AA8320281	AA8320280
4	Idler roller for 2253RT	AA8306106	AA8306107	AA8306106	AA8306107	AA8306108	AA8306107	AA8306108	AA8306109
5	Motorized roller for rubber Divert belt	AA8318254	AA8318254	AA8318253	AA8318253	AA8318253	AA8318252	AA8318252	AA8318252
6	Idler roller for rubber Divert belt	AA8306113	AA8306113	AA8306114	AA8306114	AA8306114	AA8306115	AA8306115	AA8306115
7	Controller	AA8314404	AA8314404	AA8314404	AA8314404	AA8314404	AA8314404	AA8314404	AA8314404

Table 8.1: Standard Modsort Module Recommended Spare Parts list

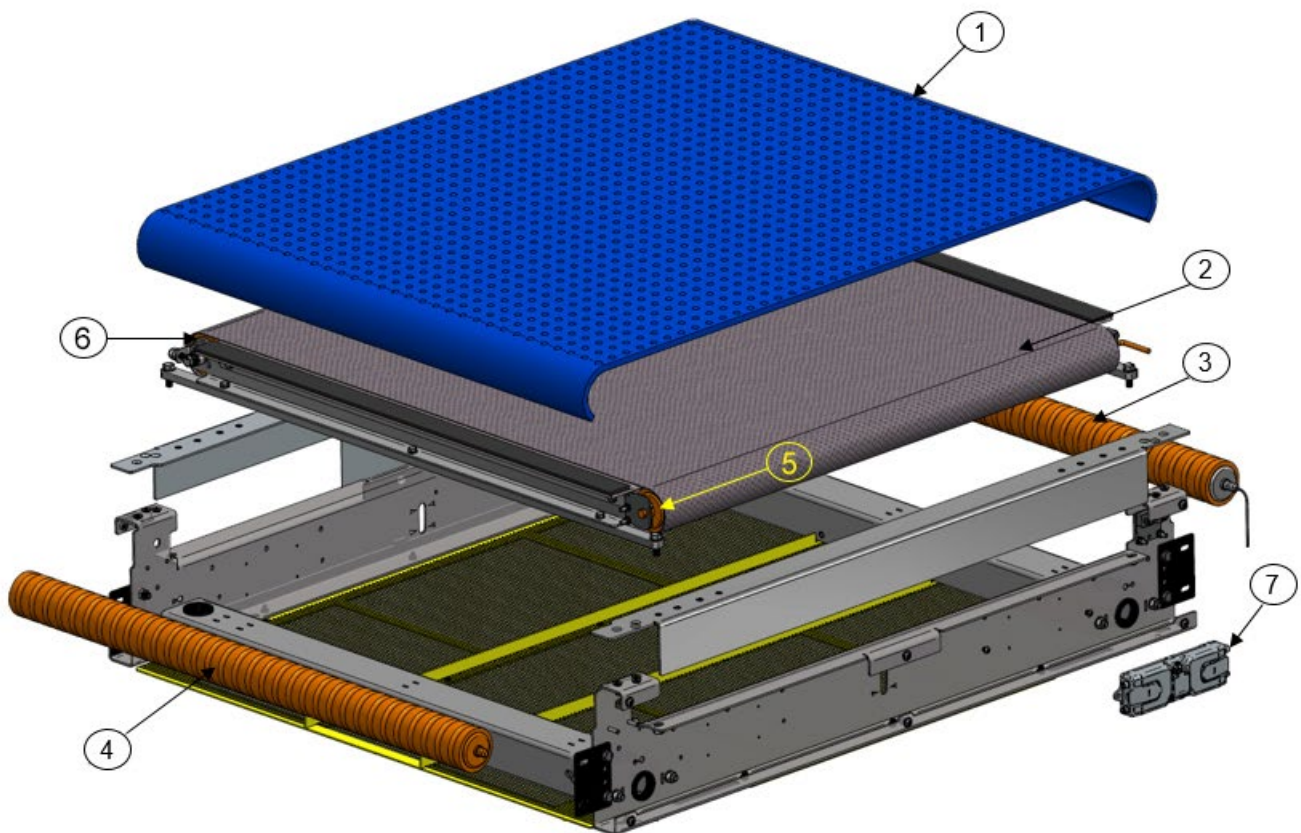


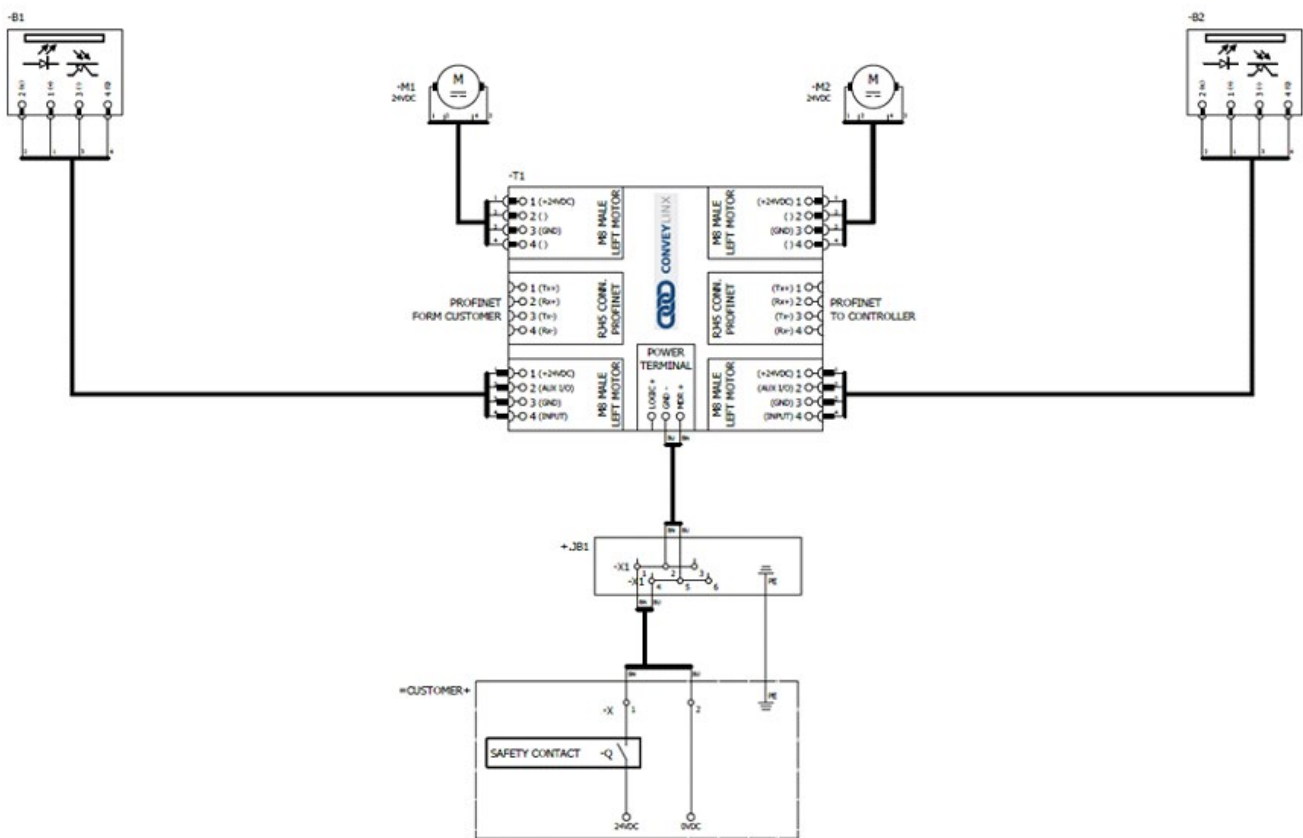
Figure 8.1: Standard Modsort Module Recommended Spare Parts Components.

Note: other Modsort module parts can be ordered as spare parts upon customer request.

- 9.1 Specifications ConveyLinx®* A2-i** (1)
- 9.2 Developers Guide ConveyLinx®* A2-i (1)
- 9.3 User Guide ConveyLinx®* A2-i (1)
- 9.4 Wiring Diagram
- 9.5 CE declaration of conformity

9.4 Wiring Diagram

1- 2 cells without feeder (System Plast Power Supply Unit): without 24VDC power supply and with n°2 photocells



(1) courtesy of Pulseroller.®* updated documents for sections 9.1 to 9.3 can be downloaded from the Pulseroller website <https://www.pulseroller.com>

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2- 2 cells with feeder: with 24VDC power supply and with n°2 photocellules

