Rexnord® TableTop® and MatTop® Chains

2010-SERIES INTEGRATED SIDERAIL

FLATTOP

REXNORD
PRECISION. POWER. PERFORMANCE.

Rexnord Industries, LLC

For more than one hundred years, Rexnord has provided superior power transmission, bearing, aerospace and specialty components to industry across the globe. We pride ourselves in commitment and dedication to the customer – from development to manufacturing, from installation to service.

This commitment and dedication a the centerpieces as Rexnord Industries begins our next century of growth. We are taking on new challenges and opportunities with a fresh look on the future.

Precision. Power. Performance.SM

FlatTop Global's Vision

To be the best in the world at continuously improving customers' productivity through superior material handling solutions.

Rexnord Industries, LLC Mission

To be a leading marketer and world class manufacturer of precision motion technology products & systems and provide superior growth and command sustainable competitive advantage.

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SAFETY CONSIDERATIONS

PRODUCT SAFETY: Products designed and manufactured by Rexnord are capable of being used in a safe manner; but Rexnord cannot warrant their safety under all circumstances. PURCHASER MUST INSTALL AND USE THE PRODUCTS IN SAFE AND LAWFUL MANNER IN COMPLIANCE WITH APPLICABLE HEALTH AND SAFETY REGULATIONS AND LAWS AND GENERAL STANDARDS OF REASONABLE CARE; AND IF PURCHASER AILS TO DO SO, PURCHASER SHALL INDEMNIFY REXNORD FROM ANY LOSS, COST OR EXPENSE RESULTING DIRECTLY OR INDIRECTLY FROM SUCH FAILURE.

SAFETY DEVICES: Products are provided with only safety devices identifi ed herein. IT IS THE RESPONSIBILITY OF PURCHASER TO FURNISH APPROPRIATE GUARDS FOR MACHINERY PARTS in compliance with MSHA or OSHA Standards, as well as any other safety devices desired by Purchaser and/or required by law; and IF PURCHASER FAILS TO DO SO, PURCHASER SHALL INDEMNIFY REXNORD FROM ANY LOSS, COST OR EXPENSE RESULTING DIRECTLY OR INDIRECTLY FROM SUCH FAILURE.

General Safety Precautions:

- To avoid personal injury, all machinery must be turned off and locked out, prior to chain installation, inspection, maintenance and removal.
- Always use safety glasses to protect eyes. Wear protective clothing, gloves and safety shoes
- Support the chain to prevent uncontrolled movement of the chain and parts
- Maintain tools in proper condition and assure their proper use. Use of chain assembly tools is recommended when applicable.
- Do not attempt to connect or disconnect chain unless chain construction is clearly known and understood
- Do not reuse any sections of damaged chain because they may have been overloaded and weakened

If any fl ame cutting, welding, etc. is to occur in the conveyor vicinity, take adequate precautions to insure that no burning of any chain or other components occurs. If adequate protection cannot be provided, remove the chain and other plastic components from the conveyor and store in a safe location. Thermoplastic and similar materials can burn and give off toxic fumes.

DO NOT INSTALL, OPERATE OR PERFORM MAINTENANCE ON THESE PRODUCTS UNTIL YOU READ AND UNDERSTAND THE INSTRUCTIONS CONTAINED IN THIS MANUAL.

INTRODUCTION

1.1 INTRODUCTION

Inclined conveyors are one of the areas subject to product loss and difficult cleaning. Inclined conveyors are a necessary means of bringing product to a higher level for processing or packaging. The most used type of MatTop chain on this kind of conveyor is the 2-inch pitch food grade execution, such as the Rexnord 2010 series.

Rexnord is introducing a new type of side rail, the Integrated SideRail. This is a side rail that retains product, travels with the chain and is an integral part of the chain design. However, this system is very different from current two piece assembled or one piece molded side guard executions.

This manual describes the easy steps for converting your current system to the new efficiency improving Rexnord 2010 Integrated SideRail system, helping you to improve the throughput of your processing line.

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CURRENT SYSTEMS

1.2 WHY CHANGE?

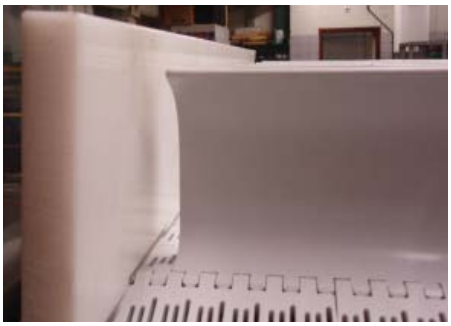
In processing lines currently several system are being used in combination with 2-inch pitch food grade Modular belting/MatTop chains:

1. Flighted chains with static side guides.
2. Flighted chains with conventional sideguards (Loose elements to the chain).
3. Flighted chains in combination with Integrated (or Molded-In) sideguards.

Although the functionality of all these systems should be the same; bringing product to a higher or lower level on an inclined or declined conveyor, in the field they have their own specific issues causing down time and product loss.

Static guides

Conveyors with static guides trap the product between the moving plastic modular belt/chain and stationary PE or stainless steel side walls that are mounted to the conveyor. This results in several disadvantages:



- More expensive conveyor construction because of the additional material needed to create the static guides and mounting supports.
- Installation and adjustment of the guides is time consuming and can be fairly complicated.
    - The guides need to be mounted, but also carefully adjusted in relation to the position of the pusher attachment. If the guides are too far away from the pusher attachment excessive amounts of product can escape downwards between the guide and the pusher.
    - If the guides are too high in relation to the belt surface product can escape out the side of the conveyor. However, if the static guides are to close to the chain or to the pusher, they can jam the chain or wear out the chain surface.

CURRENT SYSTEMS

- Cleaning of the inclined conveyor is often not easy due to their height. The chain rotates and passes the lowest point in the conveyor and therefore can be cleaned. However, the static guides at the top of the conveyor cannot be reached easily. This is an issue as there are parts of the conveyor that actively touch the product. If the guides can be opened up or removed for enhanced cleaning, they have to be re-positioned prior to start-up, which again is time consuming and needs to be done accurately.

The advantage of static guards is that they can be custom made to a desired height to create the required capacity of the conveyor. In practice this means they can be used to accompany up to a 6-inch high pusher attachment that are typically used on plastic modular belt/chain, optimizing conveyor capacities.

Conventional two piece sideguards

Two piece sideguards are the conventional system; they exist as loose parts that are connected with the chain using the chain connection pin. Although this system eliminates the installation and cost issues of static guides there are still some disadvantages:

- Due to their connection with the chain, a pin-hinge construction, sideguards are not very stable and the top of the sideguards can move to the left and to the right rather easily. This makes the conveyor design for chains with conventional sideguards more complicated. Every construction element that could cause the side guards to jam during operation should be addressed and therefore requires more chain clearance throughout the system.

- As a standard the conventional sideguards are often not positioned directly against the pusher. This is done to avoid jamming between the sideguards and the pusher when forward-flexing around a sprocket and back flexing when entering the conveyor return. If an opening between the pusher and sideguard is allowed, product is not properly retained.

- Conventional sideguards have a clear orientation in relation to the direction of chain travel. This is because they are located in an angled overlapped position. If they are set to retain the product in an optimum manner, they are more sensitive to jamming in the conveyor frame. If they are set not to jam (opposite overlap), product can get caught between them.

CURRENT SYSTEMS

- The conventional sideguards are only available up to 4-inch high and therefore can not be combined with 6-inch tall pushers, limiting the capacity of the inclined conveyor.

- Since conventional sideguards are located in an angled overlapping position they cannot be properly reached for cleaning and large surface areas remain unexposed. Residual coatings such as spices or flavourings can be very difficult to clean when caught in the sideguard area.

Molded one piece sideguards

Currently also molded one piece sideguards are being offered. These systems address the issue of the instability of conventional sideguards and the accurate positioning need of static sideguides as well. However, in their current design there are two major disadvantages:

- The maximum height of the current molded one piece side guards design is limited to 4-inches. This restricts the optimum conveyor capacity when utilized in combination with 6-inch straight or curved pushers.

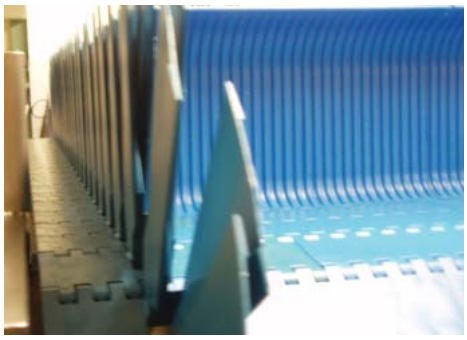
- The design of the current molded one piece sideguard is rectangular without an overlap between the blade elements from pitch to pitch. This allows the sideguards to open up in two important positions and cause (significant) product loss:

    - When the chain reaches the crest of the incline and begins to forward-flex to the horizontal section or downwards.

    - When product is unloaded from the conveyor at the position of the drive sprockets.

REXNORD INTEGRATED SIDERAIL

Integrated SideRail (ISR)



Based on feedback from the market Rexnord have designed the new Integrated SideRail to address the deficiencies of most conventional systems. The system consists of 2 integrated staggered blades per end module that interact together when the chain operates; this system provides the following advantages and features:

- The blades overlap in such a way that allows the Integrated SideRail to always stay fully closed through out the chain cycle. This includes when flexing over a sprocket and through all angled transitions. The orientation of the Integrated SideRail blades is such that the product is always guided to the inside of the chain when travelling up the incline. These features result in minimizing product loss and increasing throughput.

- Due to rigid design of the Integrated SideRail, the system is very stable and the conveyor construction elements can be positioned close to the SideRail. This enables a compaect conveyor design around the SideRail. The SideRail stability also minimizes any gap between the pusher and the SideRail system, as they can be positioned virtually against each other. This reduces product loss, damage and eliminates adjustment issues associated with other side guard systems.

- The Integrated SideRail can be used with a back-flex radius as small as 12-inch [305mm], meeting the industry standard for existing and new conveyors.

- The side indent is a fixed 2-inch [50,8mm] from the edge of the chain to the outboard side of the blade. This allows for an optimum chain support throughout the conveyor return. Also this side indent maximizes upgrade possibilities in existing conveyors [see paragraph 1.4].

- The Integrated SideRail remains overlapped through out the incline and when forward-flexing around the sprocket. The minimum sprocket diameter for this is 6.5-inch [165mm, 10 teeth]. This optimizes the unloading of the conveyor without any product loss.

- Integrated SideRail maximizes the conveyor capacity due to the availability of a 4-inch [101,6mm] **(ISR4)** and 6-inch [152,6mm] **(ISR6)** high execution. This makes it possible to combine the system with any straight or curved pusher attachments of the 2-inch pitch 2010-series MatTop® chain.

- The Intergrated SideRail system is designed for easy cleaning. At the tail shaft the blades open up in a way that all areas and surfaces can be reached and cleaned easily. The base of the system is ported to allow the removal of possible fine product residue such as seasoning or flavouring.

1.3 NEW SYSTEMS

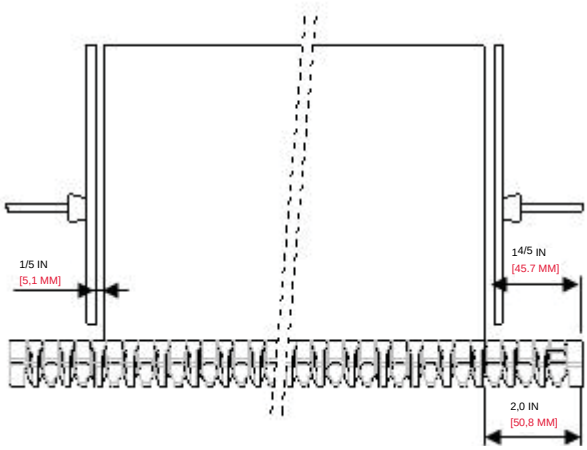
Obviously the Rexnord 2010 ISR system can be used on new equipment as well. In this case you will experience the easy and simple conveyor design needed for the 2010 ISR. Details about new conveyor design can be found in our engineering manual, section inclined conveyors. If you need this information please contact our Application Engineering department at AE.Europe@Rexnord.com (for Europe, Africa, Asia and South America) or AE@Rexnord.com (for Mexico, United States and Canada) depending on your location.

1.4 EXISTING SYSTEMS

In the case of existing systems the conversion to the Rexnord 2010 Integrated SideRail is possible with minimal modifications. The most common retrofit situations are described below.

Static Guides

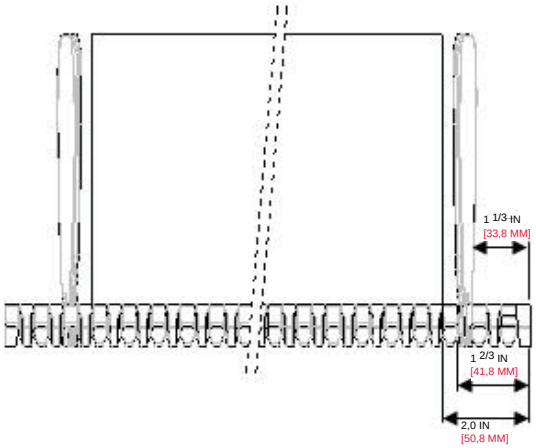
Conveyors with static guides typically use a 2-inch side indent (distance from the side of the chain to the side of the pusher attachment). The static guides need to be removed and the ISR chain can be installed. In the return way the Integrated SideRail can be implemented because it falls within the outer most dimensions of the current pusher attachments. If desired the static guides could be left on the conveyor, however this would greatly reduce the overall cleanability. If the side indent is smaller than 2-inch the 2010 Integrated SideRail can still be used. Only if the current side indent is larger than 2-inches more conveyor modifications are required.



REXNORD INTEGRATED SIDERAIL

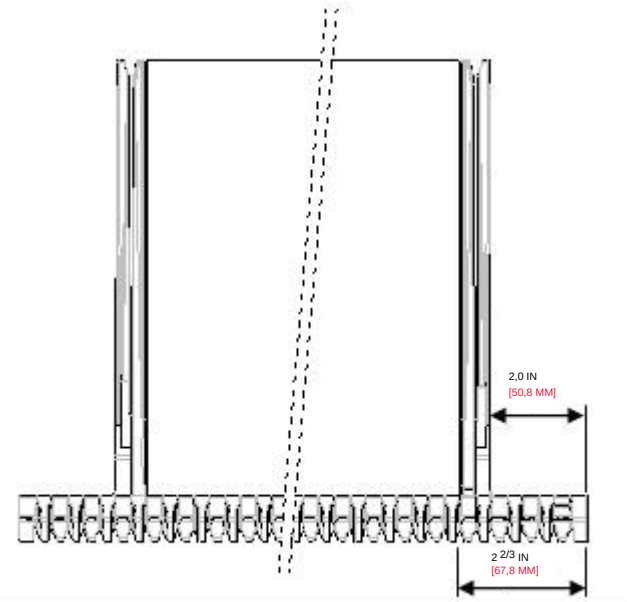
Conventional sideguards

In case of conventional sideguards, the current chain can simply be exchanged for a 2010 ISR chain. Due to the slightly larger side indent of the 2010 ISR (2-inch instead of 1 1/3 or 1 2/3 –inch), the ISR chain will always be within the current chains parameters, both in the conveyor carry way and return way.



Molded one piece sideguards

The side indent of molded one piece sideguards is the same as the afore mentioned conventional sideguard side indent. Therefore the change to 2010 ISR is just as easy.



2010 Integrated SideRail (ISR)

The Integrated SideRail normally fits the current conveyor design. In addition to the minor changes described above, the following points should be noticed:

- The guides (static or roller) that hold down the current chain can be used for the ISR chain as well. When changing from conventional sideguards (as described before), these guides can be set 1/3-inch further towards the chain.
- Some attention needs to be paid to the chain tension. The chain should not be tight but it is recommended to limited the amount of chain sag in the return way.
- If the current chain is not a Rexnord 2010-series chain, the drive sprockets need to be changed. If sprockets are being used on the idler shaft, these need to be replaced as well. Discs (or other systems not interacting with the chain hinges), normally can be re-used.

REXNORD ISR CHECKLIST

- At the loading position of the conveyor, the positioning of the infeed chute needs to be reviewed. Due to the slightly different position of 2010 ISR it must be made sure that product is loaded inside the Integrated SideRail system and not on top.

As well as the previously mentioned recommendations, as with any renewal or conversion of conveyor Modular belt/chain the carry way and return way should be inspected on their general condition.

1.5 CHECKLIST

To determine if your conveyor can be changed to Rexnord Integrated SideRail the following checklist should be completed:

Item	Description	Yes/No
1	Define the current chain specification, is this a 2-inch pitch chain?	
2	Is the horizontal – incline backflex radius 12 inch [305mm] or larger (see fig 1)?	
3	Is the conveyor top radius 3½ inch [90mm] or larger (see fig 2)?	
4	Are the drive sprockets 10 teeth or more?	
5	Are the idler sprockets or disks larger than 6 ½ inch [165mm] diameter?	
6	Is the current side indent 2 inch [50,8mm] or smaller?	
7	Is the smallest chain backflex radius in the return part 12 inch [305mm] or larger?	

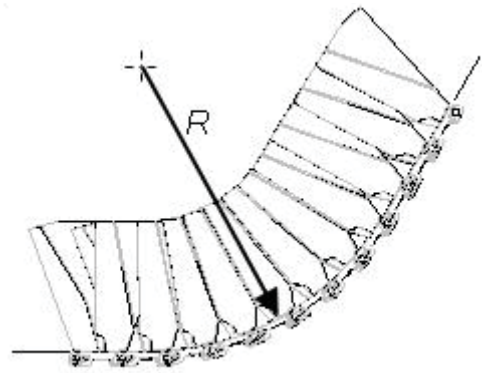


Figure 1. Back-Flex min. 12 inch [305mm]

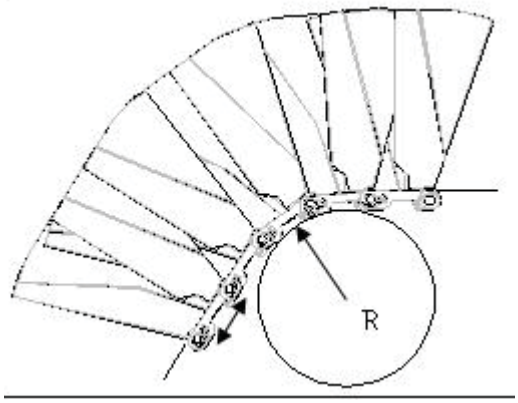


Figure 2. Conveyor Top Radius min. 3½ inch [90mm]

If all answers are YES, the conversion is truly simple. If one of the answers is NO, some slight conveyor modifications are required before Rexnord 2010 ISR can be installed. If you have questions or if one of more items above are answered with “NO” please contact our application engineers (see contact details in paragraph 1.3).

NOTES

World Class Customer Service

For more than 100 years, the dedicated people of Rexnord have delivered excellence in quality and service to our customers around the globe. Rexnord is a trusted name when it comes to providing skillfully engineered products that improve productivity and efficiency for industrial applications worldwide. We are committed to exceeding customer expectations in every area of our business: product design, application engineering, operations, and customer service.

Because of our customer focus, we are able to thoroughly understand the needs of your business and have the resources available to work closely with you to reduce maintenance costs, eliminate redundant inventories and prevent equipment down time.

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