



# SideGrip™ Chain

# Maintenance Manual

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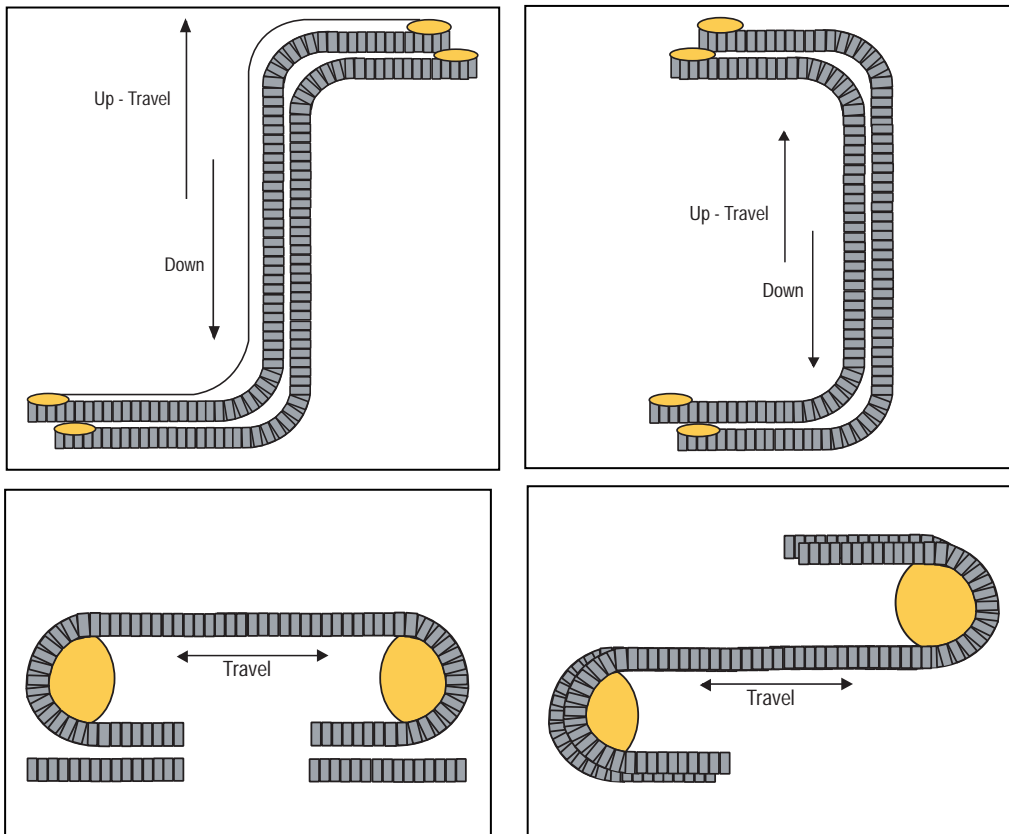
## Introduction

The information contained in this manual will allow you to install, operate and maintain your Rex® SideGrip™ chain in a manner which will insure smooth operation and maximum life.

SideGrip™ chains are used in applications that grip products to:

- Elevate
- Lower
- Rinse
- Sterilize
- Invert

Many different SideGrip™ conveyor configurations are possible. A few typical conveyors are shown below.



Please contact the Application Engineering Department if you need assistance at 262.376.4800.

## Safety Information

**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 FAILS 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 identified 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
- Do not attempt to connect or disconnect chain unless chain construction is clearly known and understood
- Do not use any sections of damaged chains because they may have been overloaded and yielded



If any flame cutting or welding 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 can not 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.

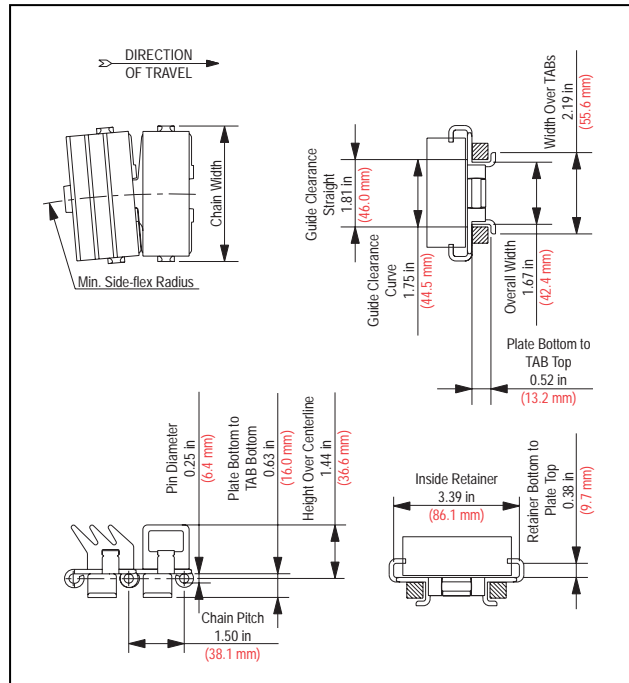
**DO NOT INSTALL, OPERATE OR PERFORM MAINTENANCE ON THIS PRODUCT UNTIL YOU READ AND UNDERSTAND THE INSTRUCTIONS CONTAINED IN THIS MANUAL.**

## Components

SideGrip™ Chain Styles - One Piece Chain Styles: 881G, 882G and 1757G

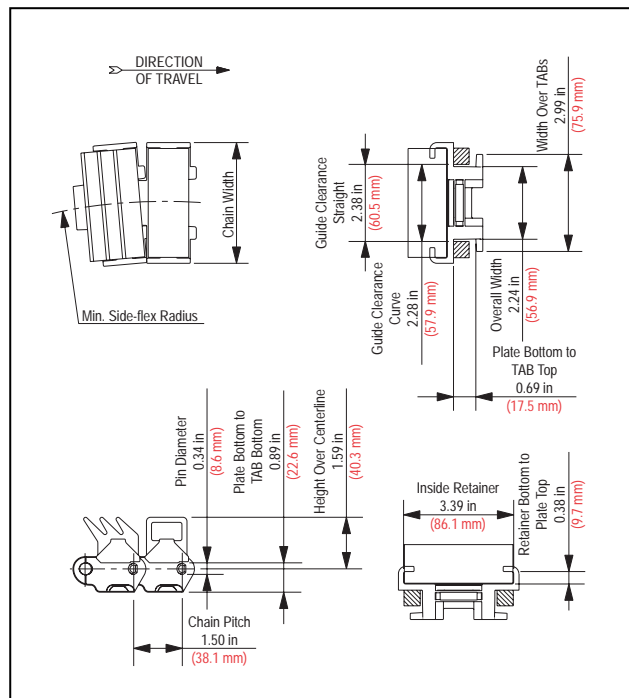
### 881G

- Chain pitch: 1.50 in (38.1 mm)
- Link material: Stainless steel
- Minimum side-flex radius: 18.00 in (457.2 mm)
- Chain width = 3.63 in (92.1 mm)



### 882G

- Chain pitch: 1.50 in (38.1 mm)
- Link material: Thermoplastic
- Minimum side-flex radius: 24.00 in (609.6 mm)
- Chain width = 3.75 in (95.3 mm)

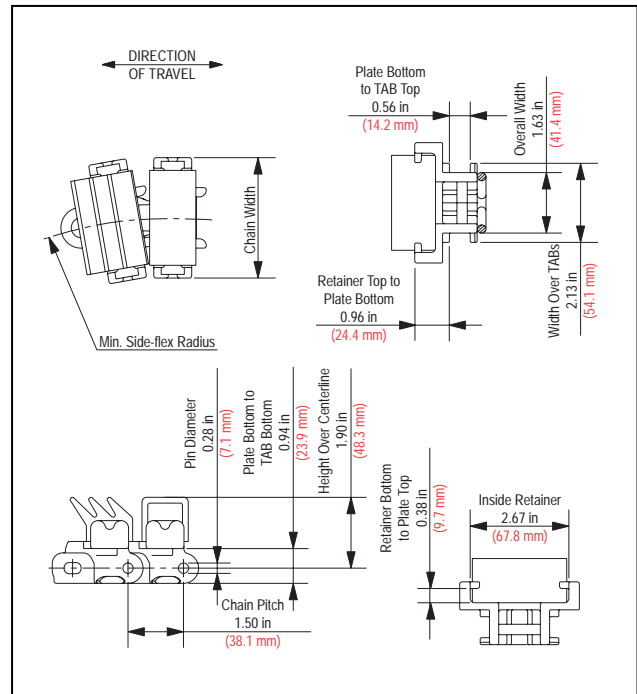


## Components

SideGrip™ Chain Styles - One Piece Chain Styles: 881G, 882G and 1757G

### 1757G

- Chain pitch: 1.50 in (38.1 mm)
- Link material: Thermoplastic
- Minimum side-flex radius: 8.00 in (203.2 mm)
- Chain width = 3.25 in (82.6 mm)

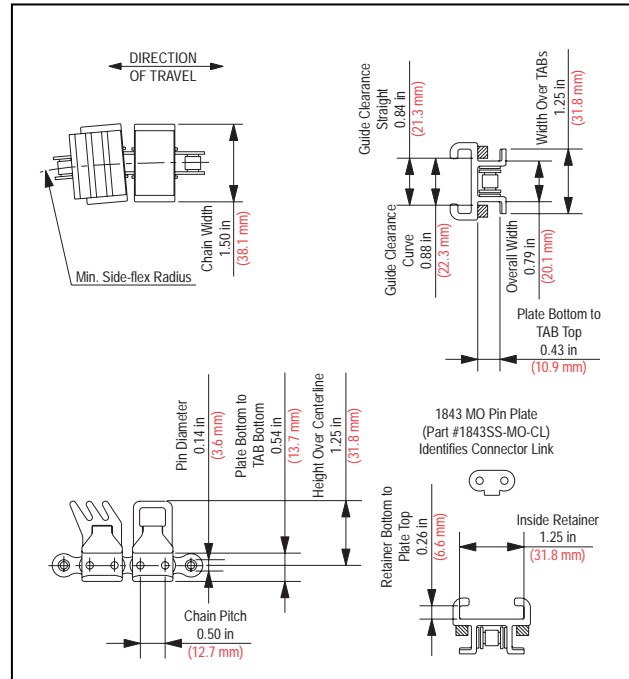


## Components

SideGrip™ Chain Styles - Two Piece Chain Styles: 1843G, 1873G and 1874G

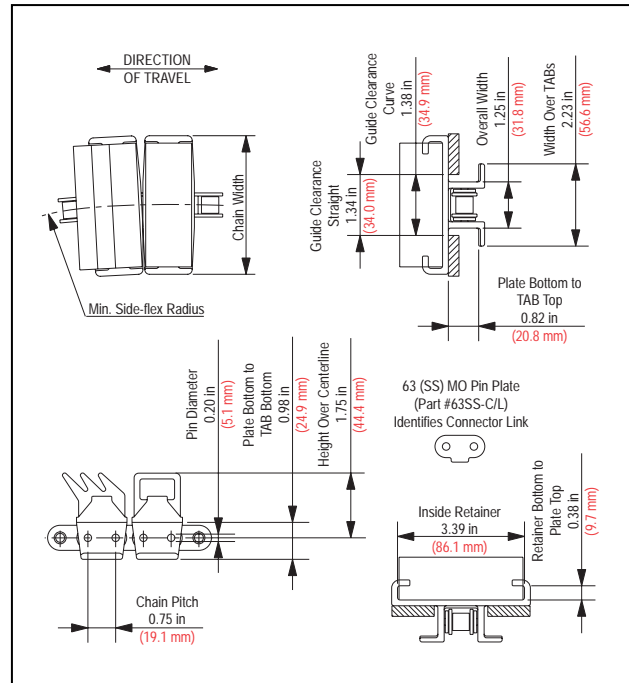
### 1843G

- Chain pitch: 0.50 in (12.7 mm)
- Top plate length: 0.75 in (19.1 mm)
- Top plate material: Thermoplastic
- Base chain material:  
Stainless steel, carbon steel
- Connecting link: stainless steel base chain uses stainless steel connecting link and carbon steel base chain uses carbon steel connecting link
- Minimum side-flex radius:  
10.00 in (254.0 mm)



### 1873G

- Chain pitch: 0.75 in (19.1 mm)
- Top plate length: 1.0 in (25.4 mm)
- Top plate material: Thermoplastic
- Base chain material:  
Stainless steel, carbon steel
- Connecting link: stainless steel base chain uses stainless steel connecting link and carbon steel base chain uses carbon steel connecting link
- Minimum side-flex radius:  
15.00 in (381.0 mm)
- Chain width = 3.75 in (95.3 mm)
- Lubricated stainless base chain is also available with PS™ top plates for optimum performance. Consult engineering for details



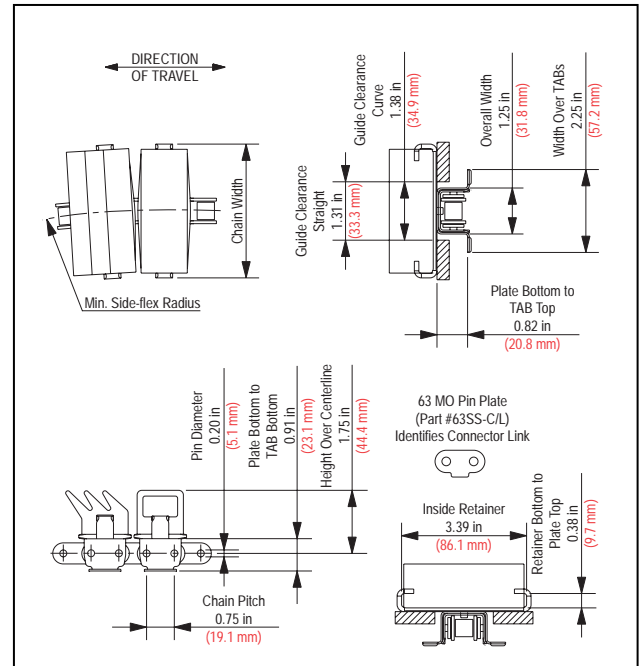


## Components

SideGrip™ Chain Styles - Two Piece Chain Styles: 1843G, 1873G and 1874G

### 1874G

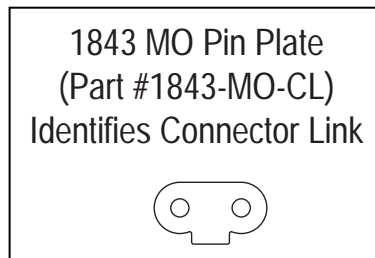
- Chain pitch: 0.75 in (19.1 mm)
- Top plate length: 1.0 in (25.4 mm)
- Top plate material:  
Stainless steel, carbon steel
- Base chain material:  
Stainless steel, carbon steel
- Connecting link: stainless steel base chain uses stainless steel connecting link and carbon steel base chain uses carbon steel connecting link
- Minimum side-flex radius:  
15.00 in (381.0 mm)
- Chain width = 3.63 in (92.1 mm)



The following bullets apply to all roller base chains.

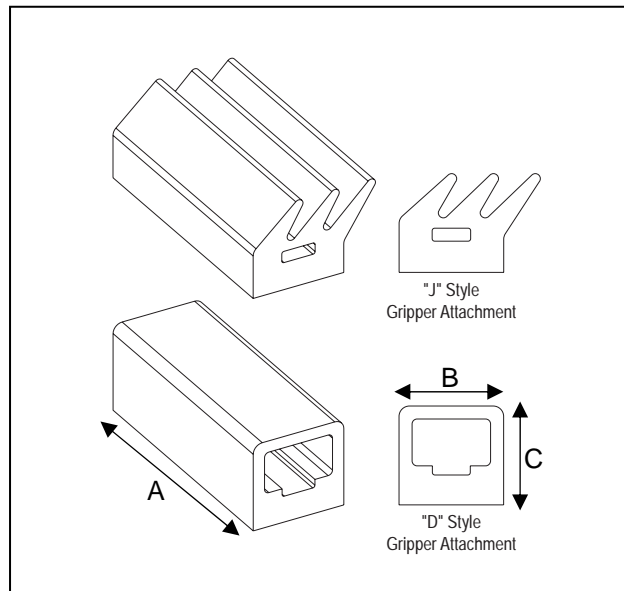
### Connecting Link

- All base chains are supplied in 10 ft sections and each section contains a connecting link
- One white top plate is supplied in each box to be used in conjunction with the connecting link for ease in identification
- Details of the MO connecting link are shown below. Ensure that the connecting link “flats” are in the down position as shown



## Components

Gripper Styles: "J" and "D" Gripper Attachment



### 881/882/1873/1874

Part Number	Style	Material	Color	Hardness (Shore A)	"A" Dimension in (mm)	"B" Dimension in (mm)	"C" Dimension in (mm)
114-582-1	D	Neoprene	Black	40	3.35 (85.1)	1.25 (31.8)	1.19 (30.2)
114-582-7	D	EPDM	Black	50	3.35 (85.1)	1.25 (31.8)	1.19 (30.2)
114-647-1	J	Neoprene	Black	40	3.35 (85.1)	1.25 (31.8)	1.19 (30.2)
114-647-5	J	EPDM	White	50	3.35 (85.1)	1.25 (31.8)	1.19 (30.2)

### 1843

Part Number	Style	Material	Color	Hardness (Shore A)	"A" Dimension in (mm)	"B" Dimension in (mm)	"C" Dimension in (mm)
114-881-1	D	Neoprene	Black	40	1.23 (31.3)	0.75 (19.1)	0.88 (22.4)
114-882-1	J	Neoprene	Black	40	1.23 (31.3)	0.75 (19.1)	0.88 (22.4)
114-882-2	J	Neoprene	White	40	1.23 (31.3)	0.75 (19.1)	0.88 (22.4)

### 1757

Part Number	Style	Material	Color	Hardness (Shore A)	"A" Dimension in (mm)	"B" Dimension in (mm)	"C" Dimension in (mm)
114-2644-1	D	Neoprene	Black	40	2.25 (64.8)	1.25 (31.8)	1.19 (30.2)
114-2644-7	D	EPDM	Black	50	2.25 (64.8)	1.25 (31.8)	1.19 (30.2)
114-2700-1	J	Neoprene	Black	40	2.25 (64.8)	1.25 (31.8)	1.19 (30.2)
114-2700-5	J	EPDM	White	50	2.25 (64.8)	1.25 (31.8)	1.19 (30.2)

- Chains can be ordered with or without grippers
- Standard materials are highlighted. All other materials are available on a made to order bases subject to minimum order requirements

## Components

### **Chain Materials**

For more detailed information, see the Material Appendix on page 35.

Rexnord has developed a variety of chain materials for various and unique applications. Special materials vary per chain series; see product catalog to determine standard versus special materials.

#### LF (Low Friction)

- Patented blend of acetal that provides good wear resistance and long service life due to the low coefficient of friction

#### HS (Heat Stabilized)

- Nylon resin designed for environments that contain hot water spray (rinser, sterilizer and pasteurizer applications)

#### HP™ (High Performance)

- Patented blend of acetal specifically formulated for dry running conveyors due to excellent friction characteristics

#### PS™ (Platinum Series™)

- Patented blend of acetal specially formulated for high speed conveying applications

#### S (Carbon Steel)

- A strong, abrasion resistant, fine grained, hardened carbon steel with a smooth finish
- Used in applications requiring high strength, high impact resistance and a hardened chain surface such as part handling

#### SS (Stainless Steel)

- Corrosion and abrasion resistant stainless steel

## Components

### **Gripper Materials**

For more detailed information, see the Material Appendix on page 35.

#### **Neoprene**

- Available colors: white or black
- Available styles: “D” or “J”
- Hardness (Shore A): 40 to 60
- Temperature range: +10° to + 250° F (-12° to +121° C) dry
- FDA approval: No

#### **EPDM**

- Available colors: white or black
- Available styles: “D” or “J”
- Hardness (Shore A): 50 to 80
- Temperature range: -20° to + 350° F (-29° to +177° C) dry
- FDA approval: Yes
- Improved chemical compatibility (see corrosion resistance guide on page 34)

## Installation / Preliminary Checks (prior to chain installation)

All instructions apply to both opposing conveyors.

### 1. Identify chain and sprockets

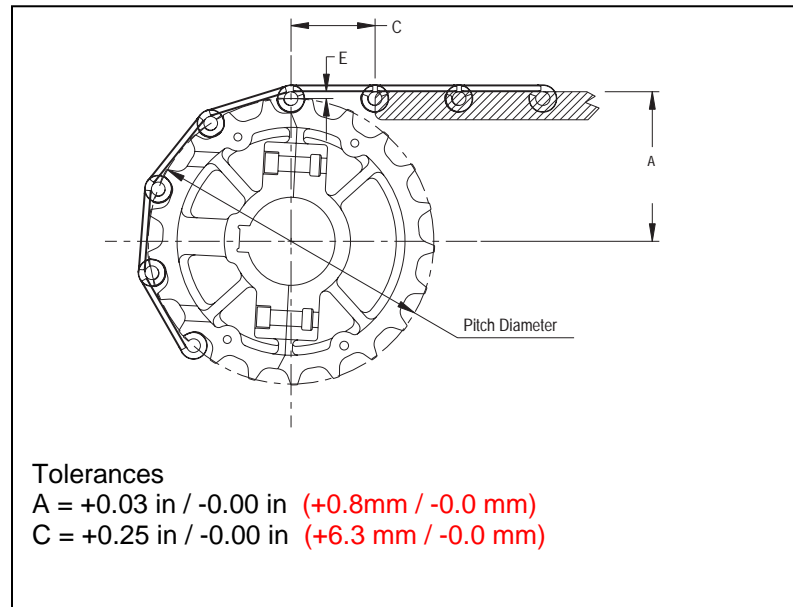
Chain identification can be found on the underside of the link/top plate or on pages 4-7 of this manual. Sprocket identification can be found on the face of the sprocket. Detailed information on each chain and sprockets can also be found in the Product Catalog.

### 2. Check sprocket and wearstrip location

Ensure that sprockets, carry and return wearstrips are properly positioned. Refer to Drawing and Table below for dimensions.

$$A = (\text{Pitch Diameter} / 2) + E$$

$C = \text{One Chain Pitch}$  (See table below)



Chain Series	Sprocket Series	"C" Dimension in (mm)	"E" Dimension in (mm)
881G	881 Series	1.50 <b>(38.1)</b>	0.13 <b>(3.2)</b>
882G	882 Series		0.19 <b>(4.8)</b>
1757G	1757 Series		0.34 <b>(8.7)</b>
1843G	ANSI No. #40	1.00 <b>(25.4)</b>	0.27 <b>(6.8)</b>
1873G	ANSI No. #60	1.50 <b>(38.1)</b>	0.41 <b>(10.3)</b>
1874G	ANSI No. #60		0.44 <b>(11.1)</b>



To increase sprocket life hardened teeth are recommended.

## Installation / Preliminary Checks (prior to chain installation)

### 3. Align drive and idler sprockets

For each strand of chain, make sure that the drive and idler sprockets are aligned axially with the center of the chain. Lock the sprockets in place using the keyway and setscrews.

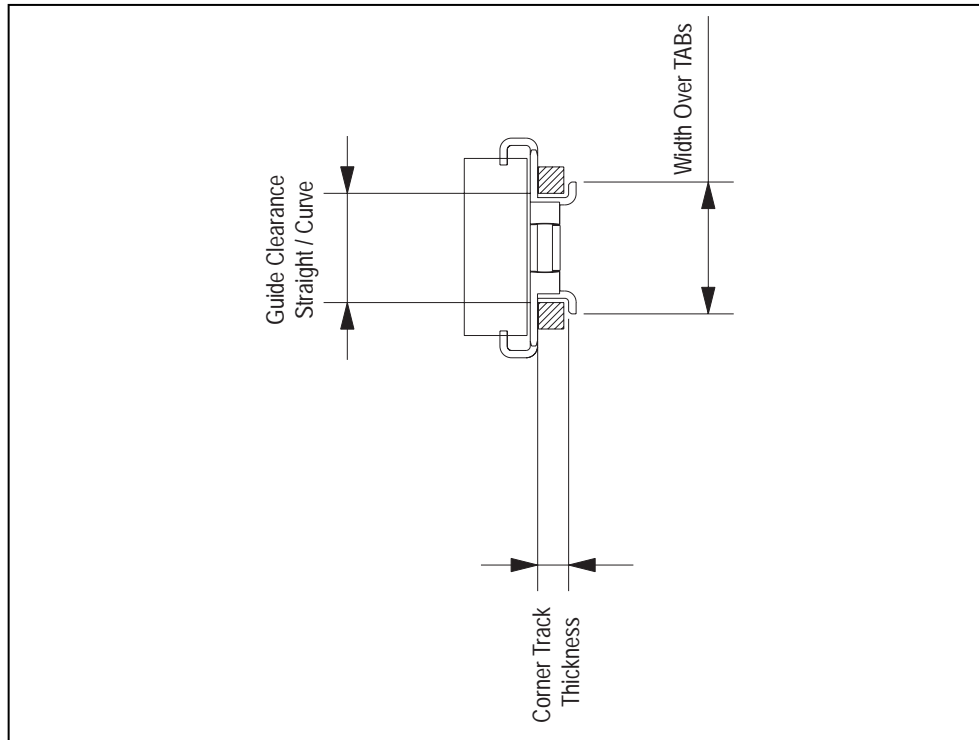


Rotating idler shafts and sprockets are always recommended with Rex® SideGrip™ chains.

### 4. Inspect wearstrips guide clearance and corner tracks

Check the carry and return tracks at several locations to ensure proper guide clearance. Check corner wearstrips and discs for proper thickness. Make sure there is adequate clearance for chain TABs (see table below for critical dimensions). Ensure straight and curved sections are lined up properly for smooth transitions. Adjust all items as required.

Chain Style	Guide Clearance (Straight) in (mm)	Guide Clearance (Curve) in (mm)	Corner Track Thickness in (mm)	Width Over TABs in (mm)
881G	1.81 (46.0)	1.75 (44.5)	0.4 (9)	2.19 (55.6)
882G	2.38 (60.5)	2.28 (57.9)	0.6 (16)	2.99 (75.9)
1757G	1.77 (44.9)	1.67 (42.4)	N/A	2.13 (54.1)
1843G	0.84 (21.3)	0.88 (22.3)	0.4 (9)	1.25 (31.8)
1873G	1.34 (34.0)	1.38 (34.9)	0.7 (19)	2.23 (56.6)
1874G	1.31 (33.3)	1.38 (34.9)	0.7 (19)	2.25 (57.2)



### Installation / Preliminary Checks (prior to chain installation)

**5. Insert section of chain**

Run a short section of chain (about 2 ft or **0.5 m** long) by hand through each conveyor track (carry and return) and over each sprocket. Make sure there are no tight clearance spots or obstructions such as sharp edges, uneven wearstrips, protruding bolts or screws, misaligned sprockets. Adjust all items as required.



Make sure turn discs are properly aligned and free turning.

**6. Inspect conveyor**

Clean the entire conveyor and remove any abrasives such as welding splatter, construction debris, dirt, metal chips that are present on the conveyor frame or embedded in the wearstrips. If wearstrips are damaged or embedded with debris, replace them as necessary.

**7. Retracting take-up devices**

Retract take-up devices so that the distance between the head and idler sprockets is at the minimum as recommended by your conveyor manufacturer.



To avoid personal injury, all machinery must be turned off and locked out, prior to chain installation, inspection, maintenance and removal.

Care should be used when handling the chain to avoid crushed or pinched fingers. Keep the chain under control at all times.

The chain can easily be twisted, causing permanent deformation. Make all chain connections on the conveyor frame.

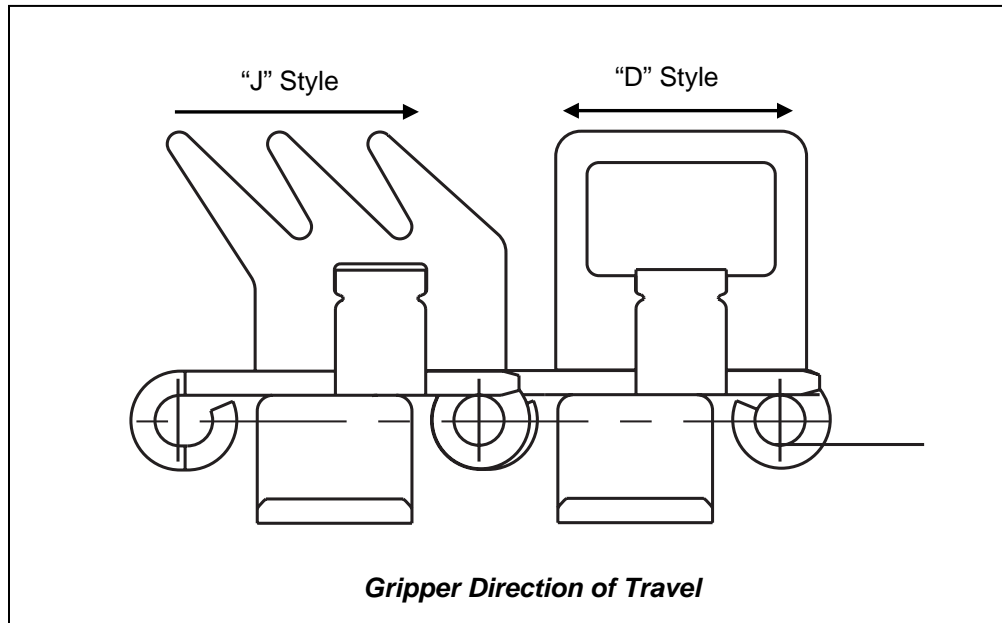
### Installation – Grippers

1. Grippers are installed on the chain prior to shipment. If grippers need to be removed or installed, squeeze the gripper edges until the gripper is clear of the chain TABs. A large flat head screw driver can be used to pry grippers off of the top plates.



Harder grippers are difficult to assemble onto the chain. Therefore, it is recommended that these chains are purchased as assemblies.

2. The recommended direction of gripper travel is shown below. Make sure that all “J” style grippers face the same way.



Make sure that both chain strands on the corresponding conveyors are installed to run in the same direction.



### Installation – Chain



1. Make sure take-ups are retracted to their fully collapsed positions and that drive sprocket teeth on opposing conveyors are “timed” (i.e. lined up).
2. Prior to installation, apply a light coating of mineral oil or grease to the inside corner wearstrips. If reinstalling used chain, it is recommended to oil any roller base chains.
3. Thread the chain onto each conveyor in 10 ft (3.048 m) sections, as shipped from the factory. Make sure all sections face in the correct direction of travel. For the preferred direction of travel, see arrows on the chain links. Be careful to avoid twisting and damaging the chain. Make all connections on the frame at either the drive or idler sprocket location.



The following SideGrip™ base chains are bi-directional: 881G, 1843G, 1873G and 1874G. Refer to page 14 for proper gripper direction of travel. Make sure all “J” style grippers face the same way.



At the drive sprockets, position both chains so the grippers are lined up across from each other.



CAUTION

For consistent product retention, grippers on the entire conveyor should be the same size, style, hardness and manufacturer.

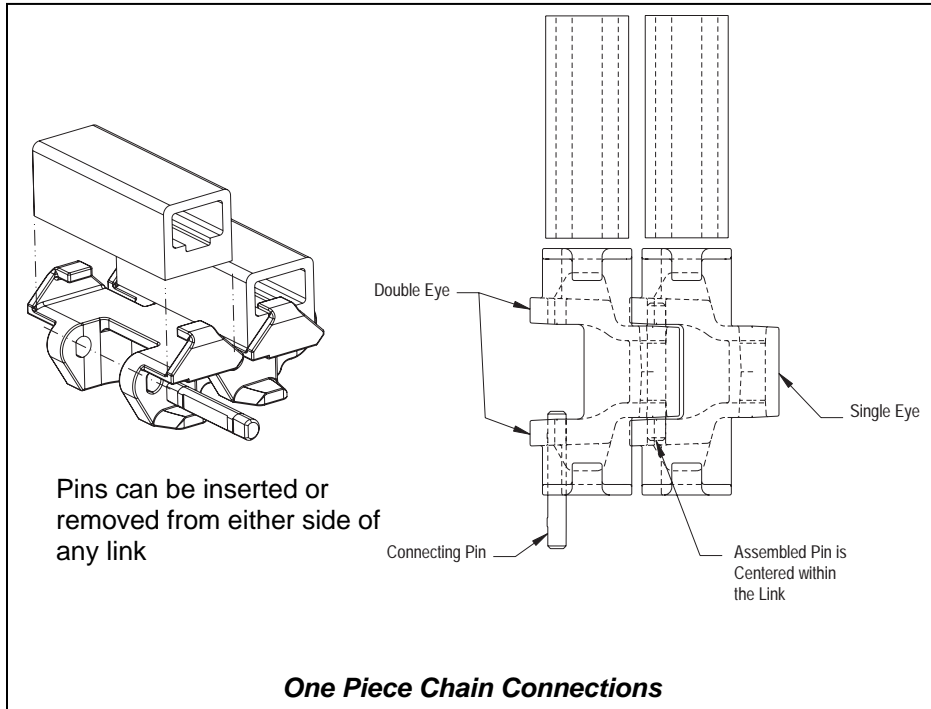
## Installation – Chain

### 4. a. Connect the chain / One Piece Chains – 881G & 882G

Tools required: screw driver, drift pin and hammer.



To connect each 10 ft (3.048 m) section, start by positioning the connecting pin into either one of the double eyes in the appropriate end link. Position the single eye of the other end link between the double eyes. Then drive pin through the single eye and into the adjacent double eye, using a drift punch and hammer, until connecting pin is centered in the link.

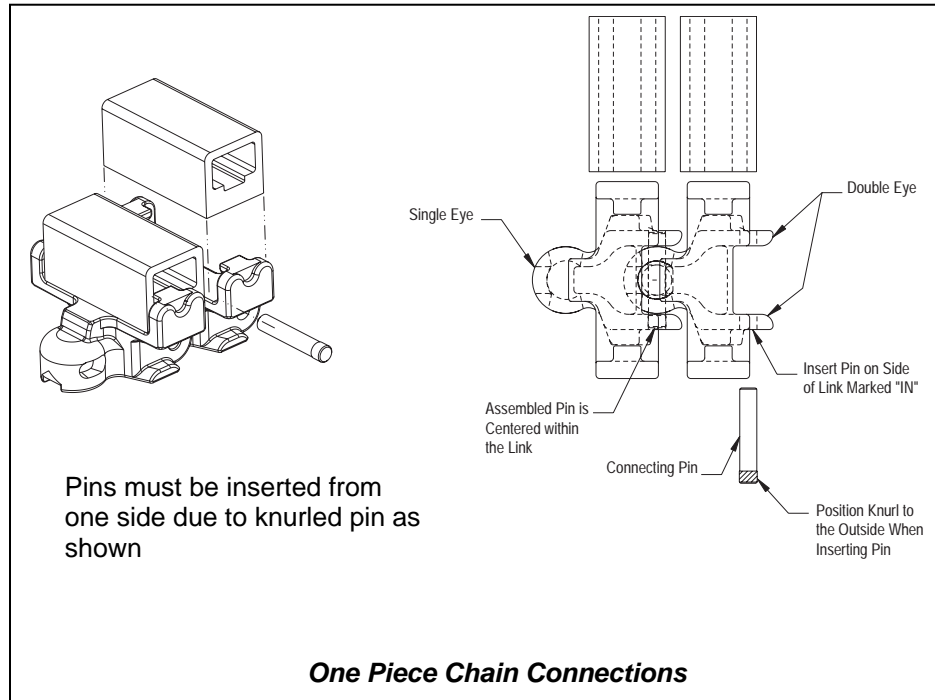


The installed chain loop should be hand tight. Chain should never be over tensioned.

When installing the last section, separate the chain to required length using a drift punch and hammer to drive appropriate connecting pin out of chain. Make final connection to complete the chain loop.

**Installation – Chain**

**4. b. Connect the chain / One Piece Chains – 1757G**



The installed chain loop should be hand tight. Chain should never be over tensioned.

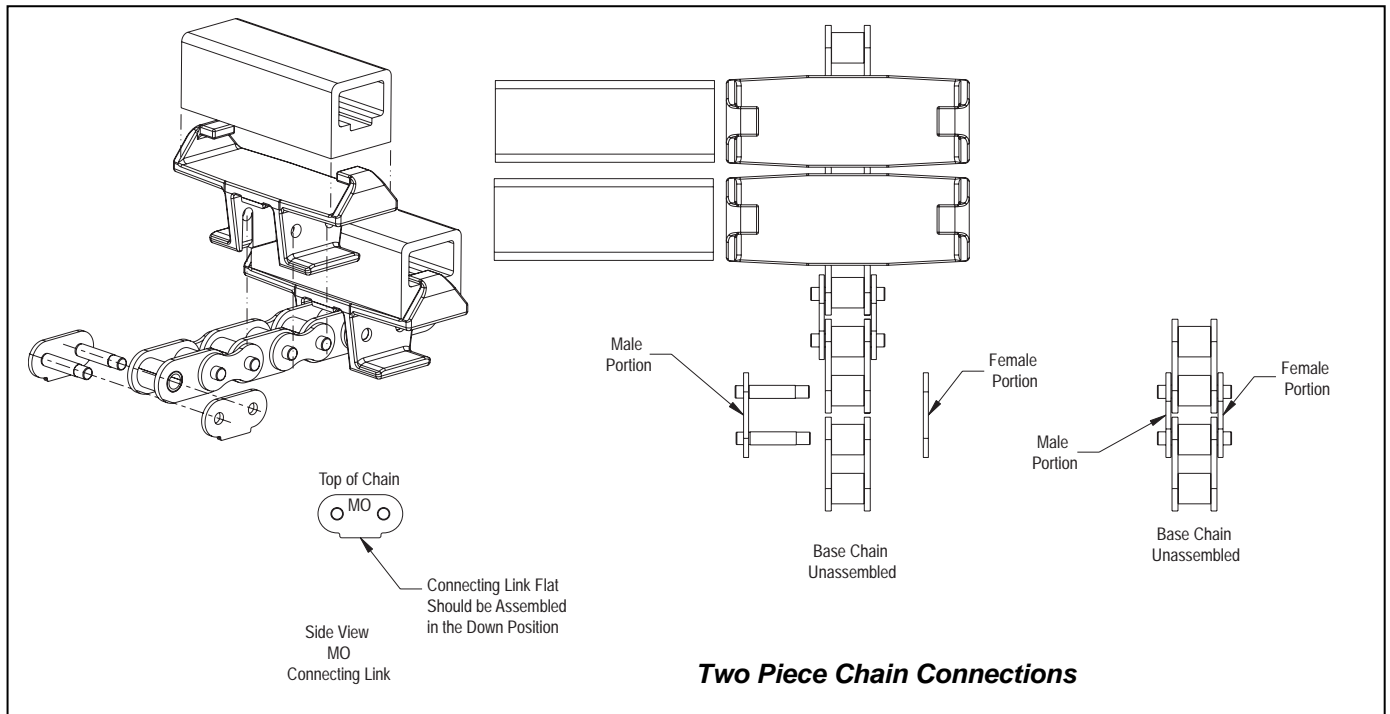
When installing the last section, separate the chain to required length using a drift punch and hammer to drive appropriate connecting pin out of chain. Make final connection to complete the chain loop.

## Installation – Chain

### 4. c. For Two Piece Chains – 1843G / 1873G / 1874G

Tools required: screw driver and chain breaker.

Connect each 10 ft (3.048 m) section using the included connecting link. Position the male portion of the connecting link through the corresponding end roller links of the two sections which are being connected. Position the female portion of the connecting link over the male portion. Ensure that the connecting link “flats” are in the down position (away from the top plate). Snap the white gripper top plate in place over the extended pin ends to secure the connecting link.



The installed chain loop should be hand tight. Chain should never be over tensioned.

To install the last section of chain, separate the chain to required length using a chain breaker to push the appropriate connecting pins out of the roller base chain. See page 19 for chain breaker styles. Make final connection to complete the chain loop.



White top plates are provided to aid in the location of the connecting links in assembled chain loops. The connecting link also contains a “flat” portion on the MO pin plate to aid in identification of the connecting link.

### Installation / Disassembly – Chain Breakers for Two Piece Chains

For roller base chains, two styles of roller chain breakers are available as shown below. They simplify the disassembly of the roller base chain when it must be taken apart at a location other than a connecting link.

**Step 1:** Use a large flat head screwdriver to pry off the appropriate top plate.

**Step 2:** Place the corresponding roller chain pin link in the “jaw” of the chain breaker and turn the pin(s) in order to push the chain pin(s) out of the sidebar on one side of the pin link.

**Step 3:** Once the one sidebar is loose, remove the link.



After disassembly, dispose of the damaged pin link. Use only a new connecting link when re-connecting the chain.

#### **Rex® Vise Roller Chain Breaker**

- For use with 1873G and 1874G chains only
- Can also be used for the disassembly of No. 60 ANSI roller chains
- Part #SK12776



#### **Rex® Roller Chain Breaker**

- For use with 1843G, 1873G and 1874G chains
- Can also be used for the disassembly of No. 25 through 60 ANSI roller chains
- Part #CB1

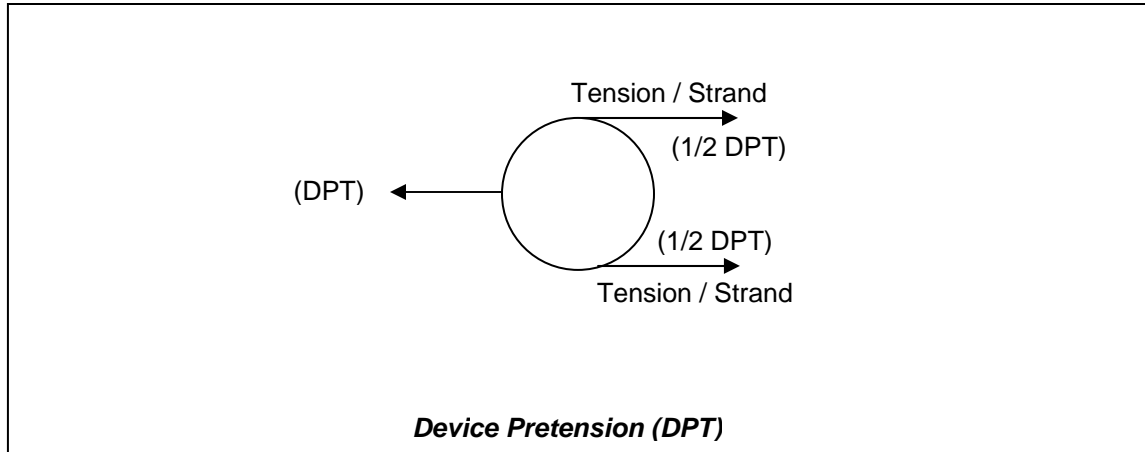


### Installation – Chain Pretension



It is always recommended to follow the OEM or equipment manufacturer's recommendations. Rexnord does not manufacture conveyors or equipment and therefore, the information provided should be used as a general guideline.

Chain pretension is dependent on the system parameters and operating conditions. Excess take-up tension will decrease chain life and could cause an overload condition.



- The three types of take-ups commonly used for SideGrip™ conveyors are pneumatic, spring and manual screw
  - Pneumatic take-ups are preferred since they can provide constant force throughout the travel of the take-up
  - Spring take-ups can respond to fluctuating load conditions, however the force is dependent on the spring length therefore the force may not be constant
  - Screw take-ups are manual and therefore they cannot respond to load fluctuations and must be constantly monitored and adjusted

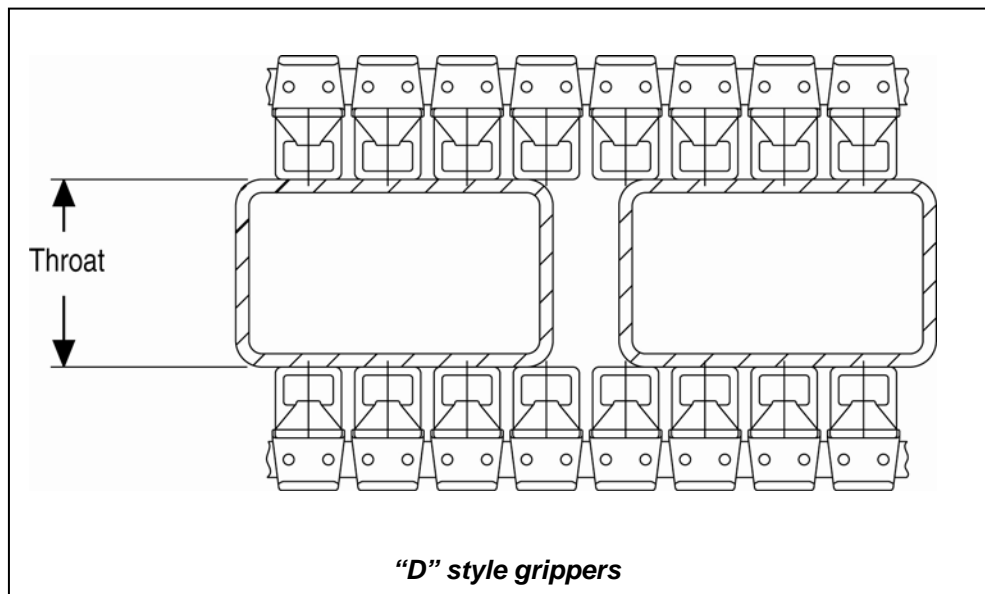


Too little take-up tension can lead to jam-ups and failures. Excess take-up tension will decrease chain life.

### Installation - Throat Dimension

The throat dimension is critical for providing enough force to grip the product, but not too much force. Too much force increases the chain tension and could over load the chain.

- The distance from the top surface of the gripper on one side to the top of the gripper on the alternate side is often referred to as the “throat” or “throat dimension” as shown below
- Excessive gripper force, which relates to a small throat dimension will increase head shaft tension and consequently increase the wear rate
- Decreasing the throat dimension by as little as 1/8 in (3.2 mm) can drastically increase head shaft tension and put the chain in an overload situation



Incorrect throat dimension is a typical problem on conveyors that run multiple products. Often the throat dimension is adjusted for one product and when another product is conveyed the throat dimension is not readjusted or it is adjusted incorrectly. This causes an excessive pressure on the top plate and causes rapid wear and increased tension.

### Installation - Throat Dimension

- “D” grippers are recommended for square products and “J” grippers are recommended for round products
  - The benefit of the “J” style gripper over the “D” style gripper is that it provides a more consistent gripping force when a round bottle is randomly fed in between the grippers
  - It is highly recommended to machine a gauge block to match the throat distance of the system
- ✓
- As a general rule of thumb, the correct dimension of the gauge block should be equal to the container diameter (or width) minus 1/8 in (3.2 mm)
  - A gauge block should be machined for each different bottle that is handled within the conveyor system
  - To insure parallelism between the two strands use gauge blocks to check spacing throughout the entire conveyor
  - The gripper should just touch the gauge block and not grip it – this setting should provide adequate force to retain the specific container
  - Every time a new bottle size is used in the system the distance should be set with the corresponding gauge block
  - If a “D” style gripper is used, a slightly larger throat size may be required, thus increasing the risk of adding excessive force to the top plates and base chain



***Typical Gauge Blocks (Not Supplied by Rexnord)***



### **Start Up**

1. Start the conveyors and run **without** product for 30 minutes to 1 hour.

Listen for unusual noises such as clicking or banging and also look for signs of unusual operation. Refer to the Trouble Shooting Guide on page 37 for possible corrections if unusual noises occur or the system is not running smoothly.

Adjust take-ups, as required, to remove chain slack.

2. Repeat step 1 **with** product.

### Maintenance – Initial Adjustments

As the chains operate, they will elongate due to component wear. This elongation will be absorbed by the take-up devices, up to the limits of their travel capacity.



Never allow the chain to run loose on the conveyors.

After a break-in period of 50 to 100 hours of normal operation, the take up travel should be checked and excess links should be removed as follows:

1. Retract the take-ups to their minimum collapsed position.
2. At either the drive or idler sprocket locations, remove excess chain and re-connect the chain loop.



For two piece chains, two base links must be removed for every one top plate.



To keep grippers “in time” on opposing conveyors, make sure that drive sprocket teeth are “timed” (i.e. lined up), make sure grippers are lined up across from each other at the drive sprockets, and remove equal pitches of chain, if possible, from each conveyor strand.

The re-connected chain should be hand tight.

3. Re-adjust take-ups to achieve proper chain pretension as discussed on page 20.



Periodic take-up and chain adjustments are required to assure proper chain performance. After the initial break-in period, adjust take-ups and chain according to the instructions and schedules shown on pages 29.

4. Check the throat dimension to insure that it is consistent throughout the entire conveyor and properly set as discussed on pages 21-22.

## Maintenance – Lubrication

### Lubrication

Lubrication is recommended whenever the application permits. It not only reduces friction, thereby reducing chain tension; but also, greatly improves the wear life of the chain and wearstrips. Lubrication offers a constant cleaning effect of both the chain and wearstrip and can also reduce static.

For more information on lubrication types, compatibility or methods, contact a lubricant manufacturer.

### General Recommendations

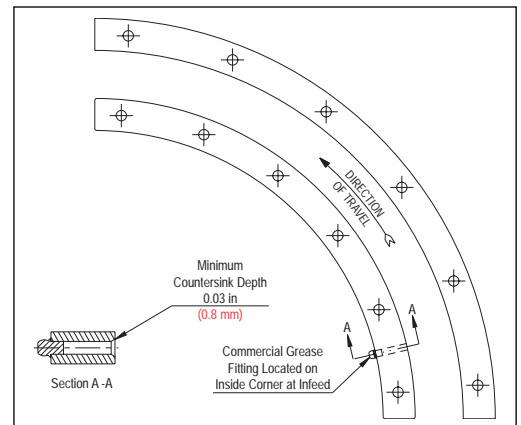
- Lubrication should be applied to both the chain and wearstrip
- The lubricant must be applied at the entrance of the inside corner track
- Metal side-flexing chains should **ALWAYS** be lubricated in the corners, unless corner discs are utilized
- Depending upon the application, lubrication requirements may vary. Lubricant quality and lubrication frequency can have a great affect on the longevity of the chain. For most common applications, any ISO 68 grade lubricant is satisfactory. For applications with special considerations such as high temperature, chemical compatibility, or FDA requirements, please contact your lubrication supplier

### General Types of Lubricants

- Water - Only utilize with corrosion resistant materials. Can be used as a general lubricant; however, it is not as effective as other types due to friction and cleanability properties
- Water soluble lubricants and soaps - Only utilize with corrosion resistant materials. These are excellent lubricants which also help clean the chain
- Oil base lubricants - These are vegetable, mineral oils or grease which offer high lubricity. Can be used with plastic or metal materials. Recommended to be used on all metal chains whenever practical. Food grade oils are available

### Selective Lubrication

In some applications, the presence of a lubricant cannot be tolerated. For these applications, it is recommended to utilize chains made of PS™ or HP™ acetal material with Nylatron® corners, which offers the lowest coefficient of friction.



## Maintenance – Lubrication – Other Considerations

### **Metal Unit Link Chains**

#### **Carbon Steel**

- Light lubricant and rust preventative is applied at the factory to prevent corrosion during shipping and storage
- Chains should be lubricated upon installation and re-lubricated when necessary
- Carbon steel chains should not be run dry
- Metal side-flexing chains should **ALWAYS** be lubricated in the corners, unless corner discs are utilized

#### **Stainless Steel**

- Stainless steel chains are supplied dry from the factory
- Lubrication will greatly increase their wear life and help reduce noise
- Metal side-flexing chains should **ALWAYS** be lubricated in the corners, unless corner discs are utilized

### **Rex® SideGrip™ Chains with Roller Base Chains**

- Top plates can be either plastic or metal with the following types of base chains:

#### **Carbon Steel Base Chains**

- Base chains are supplied with lubricant and rust preventative
- Base chains do not need to be lubricated when installed; however, they are not lubed for life
- Base chains must be re-lubricated when necessary
- The thrust surface of side-flexing metal top plate chains should **ALWAYS** be lubricated in the corners which will help reduce noise as well as lubricate the chain

#### **Stainless Steel Base Chains**

- Stainless steel base chains are supplied either dry or with lubrication from the factory. If a lubricated based chain is required specify 63SSL
- Lubrication will greatly increase chain wear life and help reduce noise
- The thrust surface of side-flexing metal top plate chains should **ALWAYS** be lubricated in the corners which will help reduce noise as well as lubricate the chain

### Maintenance – Cleaning

In many applications a build-up may occur such as grease, dirt, debris or even spilled product like syrup, beer or soda. This may cause problems as listed below. Therefore, a thorough and regular cleaning procedure is very important to the successful operation of any conveyor line.

- Damage to the conveyed product
- Increased horsepower requirements
- Chain pulsation
- Excessive chain wear on the flights and in the joint or hinge areas
- Rapid wear on the wearstrips
- Accelerated sprocket tooth wear



If conveyors are going to sit idle for a long time before start-up, they should be covered with plastic or drop cloth to minimize dirt and debris that can settle into chain and tracks.

### **Recommended Cleaning Frequency**

1. Lubricated lines – lubrication generally provides a continual cleaning action, therefore, a weekly cleaning is recommended.
2. Dry running lines – without the constant cleaning action of a lubricant, dirt and debris may build-up; therefore it is recommended that these lines be cleaned daily to obtain maximum sanitation and performance.

### **General Guidelines for Cleaning Solutions**

1. Recommended pH of 4-10.
2. With plastic chains, avoid phosphoric acid (found in most stainless steel cleaners). Avoid chlorine (bleach), ammonia and iodine.
3. Most hydrocarbons (mineral spirits, etc.) will not attack acetal chains.
4. Refer to page 34 to determine the compatibility of cleaners used on chains.



All cleaners and lubricants must be compatible with chain, wearstrip and sprocket materials. See the corrosion resistant guide on page 34. If chemicals are not listed, contact application engineering for assistance or consult with the cleaner/lubricant manufacturer for recommendations regarding compatibility with the different materials.

## Maintenance – Cleaning

### Methods of Cleaning

1. Periodic high pressure water rinse or steam cleaning should prove satisfactory. Spray the chain in place on the conveyor, both the carry and in the return sections. This is usually done with the conveyors running, but the chain can be stationary. For easy access to the underside of the carry and return chains, some manufacturers provide “clean out” holes in the side frames.



It is recommended that steam should NOT be held on chains for prolonged periods. Chains may deform or become permanently damaged.



Keep water, steam and chemicals away from electrical disconnects, motors, photo eyes, or any other moisture sensitive equipment.

2. Warm water and soap are commonly used to clean the conveyor.



In some cases, such as PET bottle lines, cleaners or combination cleaner/lubricants are applied continuously or intermittently. Several types of automatic application systems are available.



The main objective is to clean the chain carrying surface and underside as well as the wearstrips and tracks.

3. Chemical cleaners may be used if they are compatible with the chain material, refer to page 34 for guidelines.

Strong caustic agents should not be used with plastic chains.



**ALWAYS** thoroughly rinse all cleaning agents completely off of the chain and conveyor frame. Make sure that the underside of the chain is also rinsed thoroughly.

4. In extreme situations, it may be necessary to periodically clean the chains with a soft bristle brush. In these situations, clean the chain in place on the conveyor, both on the carry and in the return sections.
5. Inspect conveyors often. Remove broken or jammed containers or pieces of containers as soon as they are detected. Use cleaning solutions to clean away excessive spillage.

## **Maintenance – Continual Adjustments**

### **Adjustments – Chain and Take-Up**

- Review page 24 for initial adjustments.



Never allow the chain to run loose on the conveyors.

Periodic take-up and chain adjustments are required to assure proper chain performance.

### **Recommended Schedule**

1. With pneumatic take-ups, inspect the chains and adjust take-ups every 1,000 hours.
2. With spring take-ups, inspect the chains and adjust take-ups every 500 hours.
3. With screw take-ups, inspect the chains and adjust take-ups every 60 hours.

### **Procedure**

1. Take-ups should be adjusted so that chains are tight when running. However, avoid excess take-up tension as this will decrease chain life and could cause an overload condition (see page 20).
2. If take-up units have reached maximum travel position, follow the procedure outlined in Steps 1 through 3 under Chain Installation on page 15 to remove links. Be sure to remove the same amount of links from both strands of chain.
3. If the chains are elongated beyond the maximum allowable length (see Table and Figure on page 31), they must be replaced with new chain.



Approximately 3% of the total chain length can be removed via several repositions of procedure 2 before the chain must be replaced. For example a chain loop with an original length of 100 ft (30.48 m), a total of 3 ft (1.012 m) of chain may be removed before the entire chain must be replaced.



It is best to replace both chain strands at the same time.



If the system seems to be losing its “gripping” force, check to make sure the grippers have not lost their elasticity. If so replace grippers. Do not attempt to compensate for worn out grippers by adjusting opposing conveyors inward, as the increased force can damage product and/or gripper chain.

### **Maintenance – Inspection**

In the course of conveyor operation, periodic inspection of the chain, sprocket and conveyor system is required to detect faults and make repairs before serious damage may occur. It is important to set up a regular inspection and maintenance schedule. The conveyors should be inspected while the system is running as well as when it is shut off.

If any of the following problems are detected during inspection, refer to the Trouble Shooting Guide on page 37 to determine the cause of the problem and correction action.

1. Inspect grippers for signs of wear, breakage or loss of elasticity. Look for missing grippers. Replace worn or missing grippers as required.
2. While the conveyor is running, listen for and locate the sources of any unusual noises.
3. Look for unusual or excessive wear patterns on the chain or wearstrips.
4. Look for unusual or excessive debris, such as wear debris, product debris or broken container debris, especially glass.
5. Look for excessive gaps between flights due to jam up condition.
6. Periodically measure the chains for normal wear. Chains may wear due to hinge/joint wear, flight wear from wearstrips or thrust surface wear from corners. Refer to Replacement Guide on page 31.
7. Periodically measure the throat dimension to insure that there is not excessive load on the chains.
8. Look for pulsation or jerky chain operation.
9. Examine sprockets for signs of excessive wear or debris build-up in tooth pockets.
10. Make sure take-ups can slide freely. Lubricate as required.
11. Insure that corner turn discs, if used, are properly aligned and turning freely. Lubricate bearings as required.
12. Inspect lubrication system, if applicable, for proper operation.

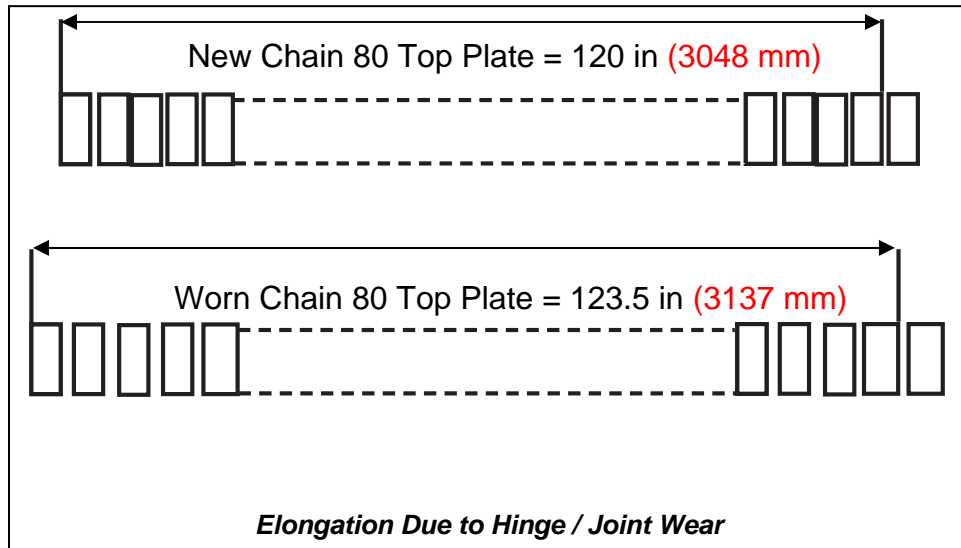


## Replacement Guide

For optimum chain and sprocket performance, it is recommended that both the chain and sprockets be replaced at the same time. The wearstrips should also be replaced if worn, damaged or embedded with debris.

The chain should be replaced when any of the following occurs:

- The chain starts jumping the sprocket teeth
- The chain has “stretched” or “elongated” to the dimensions shown in the table below



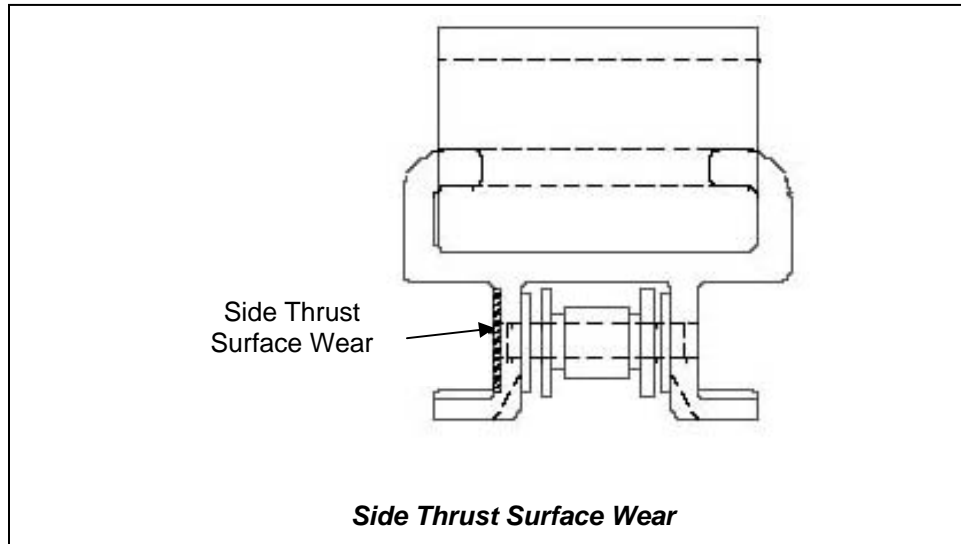
Style	Chain Series	Chain Pitch	Top Plate Pitch	Maximum Allowable Elongation
One Piece	881, 882, & 1757	1-1/2 in (38.1 mm)	Same	123-1/2 in (3137 mm) in 80 Flights
Two Piece	1843	1/2 in (12.7 mm)	1 in (25.4 mm)*	123-1/2 in (3137 mm) in 120 Top Plate Flights
Two Piece	1873 & 1874	3/4 in (19.5 mm)	1-1/2 in (38.1 mm)**	123-1/2 in (3137 mm) in 80 Top Plate Flights

\*Two piece base chain (1/2 in) top plate is measured the same as 1 in pitch chain.

\*\*Two piece base chain (3/4 in) top plate is measured the same as 1-1/2 in pitch chain.

### Replacement Guide

- The top plates have worn to 1/2 their original thickness
- The chain side thrust surface wears away and exposes the pins or other metal parts which may cut into corner tracks or other conveyor components
- The chain side thrust surface has worn 1/16 in (1.6 mm) or more from the original thickness



- ✓ It is best to replace both chains at the same time.
- ✓ When replacing chains insure that the correct material and style are specified. Refer to specifications of the OEM to determine the correct material and style.
- ✓ Before disconnecting worn chain, retract the take-ups to loosen the chain. Since all SideGrip™ chains are TAB style they must be disconnected at the drive or idler sprocket areas. See pages 15-19 for disassembly procedures.
- ✓ When installing replacement chain, follow the entire procedure outlined in the installation section on pages 15 to 19.

#### **Wearstrips should be replaced when:**

1. The surface has worn away and/or exposed any screws, rivets or other types of fasteners.
2. The surface has become rough.
3. The surface is embedded with abrasive particles.

**Replacement Guide**

**Sprockets should be replaced when:**

1. Tooth profile becomes hooked due to wear.
2. Chain jumps on sprocket.



Hardened sprocket teeth are recommended.

## Corrosion Resistance Guide

Common or Chemical Name	Carbon Steel	Austenitic	Acetal	Nylon & Nylatron®	Polyester	Chemically Resistant Fluorinated Polymer	Polypropylene	Polyethylene	Neoprene	EPDM
	S	SS	AS, BSA, BSM, DUV, GSA, HPT™, LF, PST™, SMB, WHP, WLF, WSA, WSM, WX	BWR, HS, MR	P, FR, TC	CR	BHA, BHT, ESD, HT, HTB, HUV, RHT, THD, UHS™, WHA, WHT	BLA, BLT, GLD, LUV, RLD, UHMWPE, WLA, WLT		
Acetic Acid (over 5%-up to 50%)	U	M	U	M	S	S	S	S	M	S
Acetone	U	S	S	S	S	U	S	S	M	S
Alcohol	S	S	S	S	S	S	S	S	S	S
Ammonia	M	S	U	S	S	S	S	S	S	S
Beer	S	S	S	S	S	S	S	S	S	S
Beverages-Soft Drinks	S	S	S	S	S	S	S	S	S	S
Benzene	S	S	S	S	S	S	M	M	M	U
Brine (pickle)	U	M	M	M	S	S	S	S	S	S
Carbon Tetrachloride	M	M	S	S	S	U	M	M	U	U
Chlorine	U	U	U	U	S	S	S	S	U	M
Citric Acid	U	S	M	M	S	S	S	S	S	S
Cyclohexane	-	--	S	--	--	S	U	U	S	S
Ethyl Chloride	-	S	S	S	S	S	M	M	M	M
Formaldehyde	S	S	S	S	S	M	S	S	S	S
Formic Acid	U	U	U	U	S	S	S	S	M	M
Fruit Juices	U	S	S	S	S	S	S	S	S	S
Gasoline	S	S	S	S	S	S	M	M	S	U
Hexane	-	S	S	--	S	S	S	U	S	U
Hydrochloric Acid (up to 2%)	U	U	U	U	S	S	S	S	M	S
Hydrochloric Acid (up to 37%)	U	U	U	U	S	S	M	S	U	M
Hydrogen Peroxide	U	S	U	U	S	S	S	S	M	S
Iodine	U	U	U	U	U	M	M	M	U	U
Isopropanol (isopropyl alcohol)	S	S	S	S	S	S	S	S	S	S
Lactic Acid	U	S	S	M	S	M	S	S	S	S
Methylene Chloride	-	S	S	--	U	M	S	U	U	U
Milk	S	S	S	S	S	S	S	S	S	S
Muriatic Acid	U	U	U	U	S	S	M	S	U	M
Nitric Acid (low concentrations)	U	S	U	U	S	S	S	S	M	S
Oil (vegetable or mineral)	S	S	S	S	S	M	S	S	S	U
Paraffin	S	S	S	S	S	S	S	S	S	U
Phosphoric Acid (up to 10%)	U	S	U	U	S	S	S	S	S	S
Soap and Water	M	S	S	S	S	S	S	S	S	S
Sodium Chloride	U	M	S	S	S	S	S	S	S	S
Sodium Hydroxide (up to 25%)	U	S	S	U	U	M	S	S	S	S
Sodium Hypochlorite (Bleach)	U	U	U	U	S	S	S	S	U	S
Stearic Acid	U	S	M	S	S	S	S	S	S	M
Sulphuric Acid (up to 40%)	U	U	U	U	S	S	S	S	M	S
Toluene (Toluol)	S	S	M	S	S	M	S	U	U	U
Turpentine	-	S	S	S	S	S	S	U	S	U
Vegetable Juices	M	S	S	S	S	S	S	S	U	S
Vinegar	U	S	S	S	S	M	S	S	S	S
Water (fresh)	U	S	S	S	S	S	S	S	S	S
Whiskey	S	S	S	S	S	S	S	S	S	S
Wine	S	S	S	S	S	S	S	S	S	S
Xylene	S	S	S	S	S	S	U	M	U	U



### General Rules of Thumb:

With thermoplastic products, do not use cleaning or lubricating agents with a pH below 4 or above 10.

This table is based on data available by various material suppliers.

## Trouble Shooting Guide

### Symptom

### Cause

### Correction

1. Products fall out of gripper conveyor or rinser

**A.** Not enough grip force  
**B.** Grippers are worn out, broken, or loss of elasticity  
**C.** Mixed grippers (i.e. different material, hardness.)  
**D.** Conveyor strands are not parallel

**A.** Adjust throat dimension – see page 21  
**B.** Replace grippers as required  
**C.** Make sure the entire conveyor consists of the same grippers  
**D.** Adjust throat dimension along entire length of conveyor – see pages 21-22

2. Conveyed products are being damaged

**A.** Excessive gripper force  
**B.** Grippers are worn out, broken, missing

**A.** Adjust throat dimension – see page 21  
**B.** Replace grippers as required

3. Rapid or unusual wear pattern on chain flights or top plates

**A.** Sprocket misalignment  
**B.** Obstruction cutting or scraping the chain  
**C.** Improper wearstrip selection for the application  
**D.** Abrasive materials are embedded in the surface of the wearstrips or corner tracks  
**E.** Corner disc is not turning freely  
**F.** Plastic top plates have exceeded PV limits

**A.** Correct the shaft mounting position and sprocket alignment – see page 11  
**B.** Locate the origin of the cutting and remove the obstruction. Replace any wearstrips that have foreign particles embedded in them  
**C.** See page EM-TT-5 in Engineering Manual for wearstrip material selection  
**D.** Remove abrasive build-up or replace wearstrips with a harder material (if necessary)  
**E.** Grease turn disc bearings or replace as required  
**F.** Selective lubrication, different wearstrip material, different top plate material, etc. may be required. Contact Engineering to run chain tension calculations



***Evidence of obstruction – step in thrust surface***



***Evidence of obstruction***



***Evidence of obstruction – bent TABs***

**Trouble Shooting Guide**

**Symptom**

**Cause**

**Correction**

4. Uneven wear on chain flights or top plates



***Evidence of uneven wear on top plate***

**A.** Chain is riding uneven in the track  
**B.** Excessive gripper force

**A.** Check to insure that the wearstrips are even and level. Modify the wear strips, as required, by grinding or shimming  
**B.** Adjust throat dimension – see page 21

5. Metal or plastic debris is accumulating in isolated points on the conveyor

**A.** Sharp edge or obstruction on wearstrip of the frame may be scratching the chain links  
**B.** Abrasive materials are embedded in the surface of the wearstrips or corner tracks  
**C.** High speed and/or poor lubrication  
**D.** Rough surface finish on the wearstrip or corner track  
**E.** Tight spots or chain binding within the path of chain travel  
**F.** Break-in wear

**A.** Locate the origin of the cutting and remove the obstruction  
**B.** Remove abrasive build-up or replace wearstrips with a harder material, if necessary  
**C.** Reduce speed or reduce friction with improved lubrication. If neither of these options is practical, select a chain/wear strip combination with lower friction values  
**D.** Grind, polish or replace wearstrips as required to ensure a smooth finish  
**E.** Make sure that there are no tight spots. Check to assure that proper guide clearances are provided – see page 12  
**F.** Periodic cleaning during the break-in phase is recommended to minimize the accumulation of dust debris

**Trouble Shooting Guide**

**Symptom**

**Cause**

**Correction**

6. Rapid gripper wear



- A. Abrasive environment
- B. Excessive gripper force



- A. Replace grippers with a harder material. See page 9
- B. Adjust throat dimension. See page 21

7. Rapid sprocket wear



- A. Abrasive environment
- B. Incorrect shaft location
- C. Excessive take-up tension
- D. Incorrect sprocket selection



- A. Clean conveyors frequently to reduce the amount of abrasives present. Contact Engineering to review sprocket material options
- B. Correct the shaft mounting position and sprocket alignment – see page 11
- C. Check for proper take-up pretension and adjust as required – see page 20
- D. Use hardened sprocket teeth where required

8. Chain jumping on sprocket teeth

- A. Excessive chain elongation
- B. Improper shaft positioning or sprocket misalignment
- C. Foreign material lodged in the sprocket tooth pockets or worn sprockets
- D. Incorrect chain tension
- E. Sprockets have developed a hooked tooth profile

- A. Replace the chain and sprockets as required – see page 31
- B. Correct the shaft mounting position and sprocket alignment – see page 11
- C. Clean or replace the sprockets as required
- D. Check for proper take-up pretension and adjust as required – see page 20
- E. Replace the chain and sprockets as required – see page 31. Use hardened sprocket teeth where required

**Trouble Shooting Guide**

<b><u>Symptom</u></b>	<b><u>Cause</u></b>	<b><u>Correction</u></b>
<b>9.</b> Broken top plates or TABs	<b>A.</b> Obstructions in conveyor frame or product jam <b>B.</b> Tight corner radius <b>C.</b> Chemical attack	<b>A.</b> Locate and remove obstruction. Replace broken links as required <b>B.</b> Make sure corner tracks (or discs) comply with the minimum side-flex radius – see pages 4 – 7 <b>C.</b> Refer to corrosion resistance guide – see page 34
<b>10.</b> Chain is squealing or chattering	<b>A.</b> Chain is trying to pass through a tight section of the conveyor <b>B.</b> Improper corner radius <b>C.</b> Rough surface finish on the inside corner track <b>D.</b> Improper corner track material selection <b>E.</b> Improper corner track selection <b>F.</b> Vibration within conveyor frame	<b>A.</b> Make sure that there are no tight spots. Check to assure that proper guide clearances are provided – see page 12. Pull a short piece of chain through the tight section before reinstallation. Check that there is a smooth transition between straight and curved sections. Also insure that there is clearance for the TABs through out the entire conveyor. <b>B.</b> Make sure corner tracks (or discs) comply with the minimum side-flex radius – see pages 4 – 7 <b>C.</b> Check to insure that there is a smooth finish on the wearstrips where they contact the chain (i.e. no rough saw cuts or machining marks). Replace corner tracks as necessary <b>D.</b> Check to insure that there are no foreign particles embedded in the corner tracks. Nylatron® or metal may provide a harder surface <b>E.</b> Selective lubrication or corner discs may be required <b>F.</b> Make sure structure is solid and secure



**Trouble Shooting Guide**

**Symptom**

**Cause**

**Correction**

**11.** Plastic chains appear cracked or are discolored (white residue is found on the chain)



**A.** Chemical attack due to product spillage  
**B.** Use of strong chemical cleaners or lubricants



**A.** Refer to corrosion resistance guide – see page 34  
**B.** Refer to corrosion resistance guide – see page 34. Review methods of cleaning – see page 28



**12.** Metal chains appear pitted or corroded

**A.** Chemical attack due to product spillage  
**B.** Use of strong chemical cleaners or lubricants

**A.** Refer to corrosion resistance guide – see page 34  
**B.** Refer to corrosion resistance guide – see page 34. Review methods of cleaning – see page 28

**13.** Products tip or are unstable at chain transfers

**A.** Incorrect speeds  
**B.** Incorrect chain elevation at discharge conveyor  
**C.** Improper guide rail location

**A.** It is recommended to keep infeed and discharge conveyor speeds the same as the gripper conveyor. Adjust controls as needed  
**B.** Ensure that proper heights are set to prevent product from dropping onto discharge conveyors  
**C.** Adjust guide rails so that products are centered on discharge conveyor

Trouble Shooting Guide

**Symptom**

**Cause**

**Correction**

**14.** Base chain is failing or showing signs of rapid elongation

**A.** Base chain components are deforming due to excessive load or jam up condition

**A.** High chain tension causes pins or bushings to deform. Contact Engineering to run chain tension calculations. Replace chain as necessary



*Evidence of overload – deformed bushing*



*Evidence of overload – deformed pin deformed bushing*

**15.** Chain is melting on the thrust surface and/or the underside of the top plate

**A.** Chain is experiencing a PV failure – plastic material melts due to excessive load and/or high speed

**A.** Selective lubrication, different wearstrip material, different top plate material, etc. may be required. Contact Engineering to run chain tension calculations



**16.** Chain does not articulate freely

**A.** Pins are bent

**A.** High chain tension causes pins to deform. Contact Engineering to run chain tension calculations. Replace chain as necessary

## Appendix – Material Index

Material Prefix	Description	Page	Primary Components
AS	Anti-Static	MA - 1	Electrically conductive acetal (POM)
BHA	Blue High Temperature Antimicrobial	MA - 23	Polypropylene (PP) Microban® antimicrobial product protection
BLA	Blue Low Temperature Antimicrobial	MA - 24	Polyethylene (HDPE) Microban® antimicrobial product protection
BLT	Blue Low Temperature	MA - 10	Polyethylene (HDPE)
BHT	Blue High Temperature	MA - 8	Polypropylene (PP)
BSA	Blue Special Acetal Antimicrobial	MA - 25	Cut resistant acetal (POM) Microban® antimicrobial product protection
BSM	Black Cut Resistant	MA - 12	Cut and abrasive wear resistant acetal (POM)
BWR	Black Wear Resistant	MA - 18	Wear resistant nylon (PA) composite
CR	Extreme Chemical Resistant	MA - 2	Fluorinated polymer
D	Plain Acetal	MA - 3	Acetal (POM)
DUV	Ultraviolet Resistant	MA - 15	Ultraviolet resistant acetal (POM)
EPDM	Ethylene Propylene Rubber	MA - 30	Ethylene Propylene Rubber
ESD	Electrostatic Dissipative	MA - 4	Electrically conductive polypropylene (PP)
FR	Flame Retardant	MA - 5	Flame retardant polyester (PBT)
GLD	Grey Detectable Low Temperature Antimicrobial	MA - 26	Polyethylene (HDPE) and nonferrous metal particulate Microban® antimicrobial product protection
GSA	Grey Special Acetal Antimicrobial	MA - 25	Cut resistant acetal (POM) Microban® antimicrobial product protection
HP	High Performance	MA - 6	High performance, internally lubricated acetal (POM)
HS	Heat Stabilized	MA - 7	Heat stabilized nylon (PA)
HTB	Black High Temperature	MA - 8	Polypropylene (PP)
HT	High Temperature	MA - 8	Polypropylene (PP)
HUV	High Temperature Ultraviolet Resistant	MA - 17	Ultraviolet resistant polypropylene (PP)
KHT	Khaki High Temperature	MA - 8	Polypropylene (PP)
LF	Low Friction	MA - 9	Low friction acetal (POM)
LUV	Low Temperature Ultraviolet Resistant	MA - 16	Ultraviolet resistant polyethylene (HDPE)
MR	Melt Resistant	MA - 11	Melt resistant nylon (PA)
Neoprene®	Neoprene®	MA - 31	Neoprene®
P	Chemical Resistant	MA - 13	Polyester (PBT)
PS	Platinum Series	MA - 28	High speed, Platinum Series internally lubricated acetal (POM)
RHT	Red High Temperature	MA - 8	Polypropylene (PP)
RLD	Red Detectable Low Temperature Antimicrobial	MA - 26	Polyethylene (HDPE) and nonferrous metal particulate Microban® antimicrobial product protection
S	Carbon Steel	MA - 19	Carbon steel
SS	Stainless Steel	MA - 20	Austenitic stainless steel
SMB	Blue Cut Resistant	MA - 12	Cut and abrasive wear resistant acetal (POM)
SSB	Stainless Steel Low Magnetic	MA - 21	Low ferromagnetic austenitic stainless steel
TC	Tough Composite	MA - 22	High strength, impact-modified composite
THD	Tan High Temperature Metal Detectable	MA - 27	Polypropylene (PP) and nonferrous metal particulate Microban® antimicrobial product protection
UHS	Ultra High Strength	MA - 14	High strength polypropylene (PP) composite
WD	White Plain Acetal	MA - 3	Acetal (POM)
WHA	White High Temperature Antimicrobial	MA - 23	Polypropylene (PP) Microban® antimicrobial product protection
WHP	White High Performance	MA - 6	High performance, internally lubricated acetal (POM)
WHT	White High Temperature	MA - 8	Polypropylene (PP)
WLA	White Low Temperature Antimicrobial	MA - 24	Polyethylene (HDPE) Microban® antimicrobial product protection
WLF	White Low Friction	MA - 9	Low friction acetal (POM)
WLT	White Low Temperature	MA - 10	Polyethylene (HDPE)
WSA	White Special Acetal Antimicrobial	MA - 25	Cut resistant acetal (POM) Microban® antimicrobial product protection
WSM	White Cut Resistant	MA - 12	Cut and abrasive wear resistant acetal (POM)
WLT	White Low Temperature	MA - 10	Polyethylene (HDPE)
WX	Green Abrasion Resistant Polyamide	MA - 29	Abrasion Resistant Polyamide (PA) Composite



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