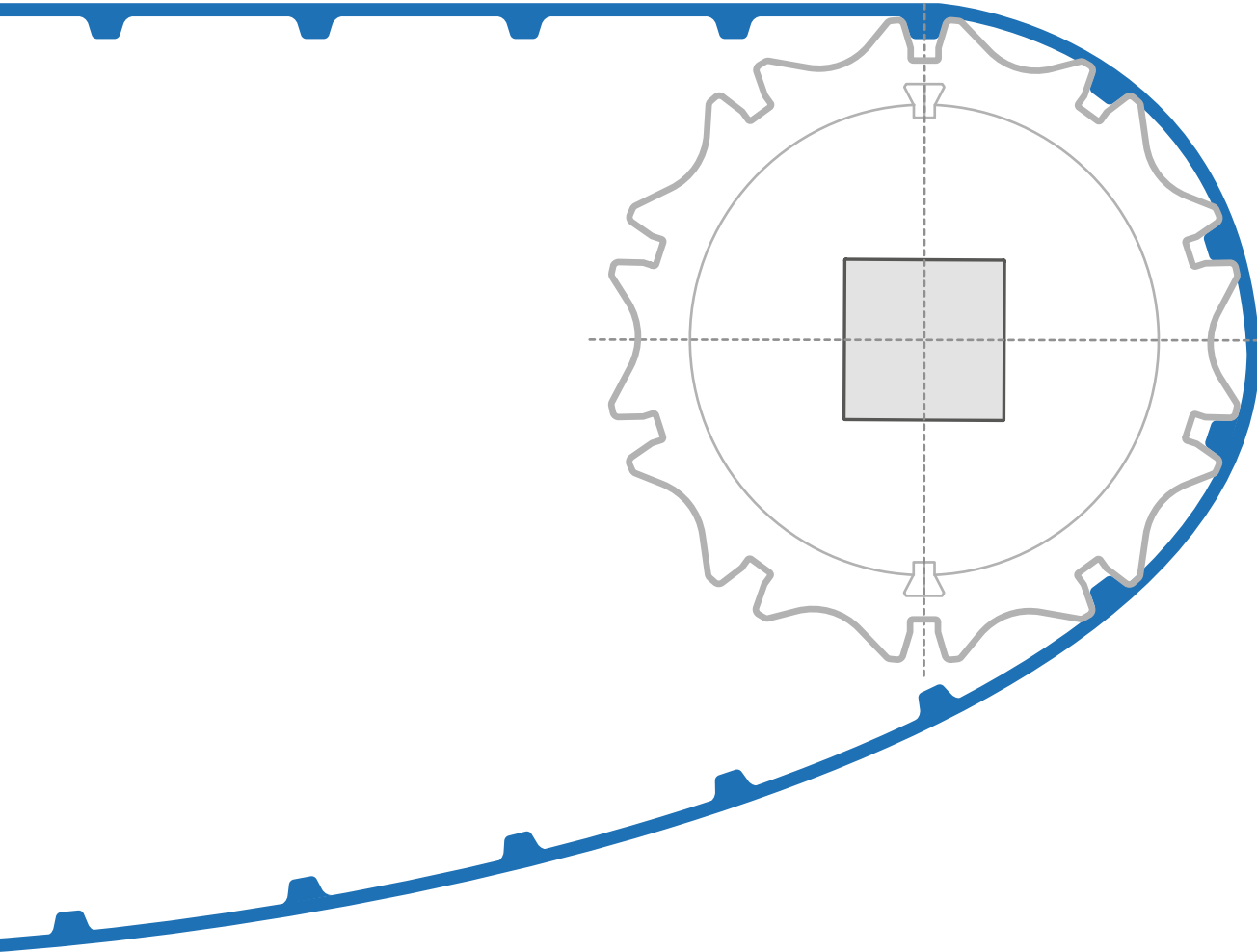


REOclean Hygienic Engineering Manual



REOclean

Robust. Effizient. Original.

CONTENTS

| | |
|--|-----------|
| INTRODUCTION | 5 |
| Key advantages of REOClean products | 5 |
| Available Product Types | 6 |
| <i>Version 1 (REO-F20, REO-F30 and REO-F40) Flat Types</i> | 6 |
| <i>Version 2 (REO-T50) Positive Drive Type</i> | 7 |
| <i>Version 3 (REO-M25) Positive Drive Type</i> | 8 |
| <i>Version 4 (REO-AT40) Positive Drive Type</i> | 9 |
| <i>Version 5 (REO-F13) Flat Type for Small Pulley</i> | 10 |
| <i>Version 6 (MD) for Version 1 – 4</i> | 10 |
| MATERIAL INTRODUCTION | 11 |
| Materials for belts | 11 |
| Material for sprockets..... | 11 |
| Material for wear strips and guides | 12 |
| REOCLEAN APPLICATIONS | 13 |
| DESIGN GUIDELINES..... | 14 |
| Positive Drive Types (REO-T50, REO-M25, REO-AT40) | 14 |
| Short Conveying Systems | 14 |
| Flat Conveyor Belt Types (REO-F20/REO-F30/REO-F40)..... | 15 |
| DRIVING MECHANISMS | 18 |
| Head Drive System | 18 |
| Tail Drive System | 18 |
| Twin Drive System | 19 |
| Center Drive Systems..... | 19 |
| Z Conveyors | 20 |
| INSTALLATION..... | 23 |
| Catenary Sag | 23 |
| Trough Conveyors..... | 24 |

| | |
|---|---------------|
| SPROCKETS | 25 |
| Sprocket Sizes | 25 |
| Sprocket Installation | 26 |
| Number of Sprockets..... | 27 |
| Position Placement of Sprocket..... | 28 |
| <i>Slider bed support</i> | 28 |
| <i>Wear strip support</i> | 28 |
| <i>Retrofit</i> | 28 |
| REOCLEAN BELT SUPPORT SYSTEMS | 29 |
| Carryway Wearstrips | 29 |
| Returnway Supports | 31 |
| <i>Wearstrips</i> | 31 |
| <i>Support rollers or stationary bars</i> | 31 |
| Wearstrip Design..... | 31 |
| Wearstrip Types and Placement..... | 31 |
| JOINING METHOD..... | 33 |
| Butt Joint..... | 33 |
| Finger Joint..... | 33 |
| Plastic and Steel Fasteners..... | 33 |
| ACCESSORIES | 34 |
| Cleats | 34 |
| Sidewalls | 36 |
| V-Guides..... | 36 |
| CLEANING INSTRUCTIONS | 37 |
| REOClean Cleaning Guideline..... | 37 |
| HANDLING INSTRUCTIONS | 39 |
| Product Storage..... | 39 |
| CHEMICAL RESISTANT TABLE..... | 40 |

INTRODUCTION

REOClean is an innovative product that was designed to improve hygiene and lower cleaning and sewage processing cost in industrial food production. **Two types of materials are used for all product types, one is the standard TPU polyester based compound, which is cut and abrasion resistant, while the other is the latest polyether based TPU compound, which is both anti-hydrolysis and anti-microbial.** Specially designed for food applications, this conveying product is meeting the highest demands in modern food processing. All REOClean products meet the US FDA, USDA and European Food Standards.

Key advantages of REOClean products

- 1. **Zero elongation** – Aramid cords as tension members guarantee “no stretch”
- 2. **Improved tracking** – belt stays in line under all loads and maintenance is reduced.
- 3. **Increased hygiene** – fully homogeneous TPU eases the cleaning process.
- 4. **Lower cost** – less maintenance, shorter cleaning times and less water consumption.

Figure 1 compares the bacterial counts before and after cleaning at a poultry processing facility. The polyether based REOClean DB line was used. The study shows that REOClean belts have reduced more than 80% germ counts.

Table 1 provides an overview about the amount of water (in tons) used to clean the three sample conveyors as from the test in Figure 1. 57% less water was consumed on machines equipped with REOClean belting.

Figure 1: 80% Reduction of the germ count

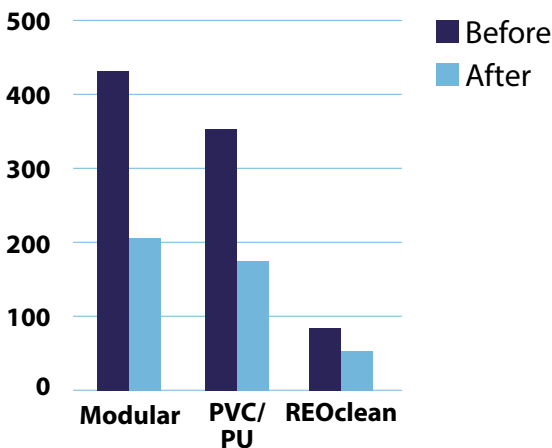


Table 1: Water Consumption Comparison

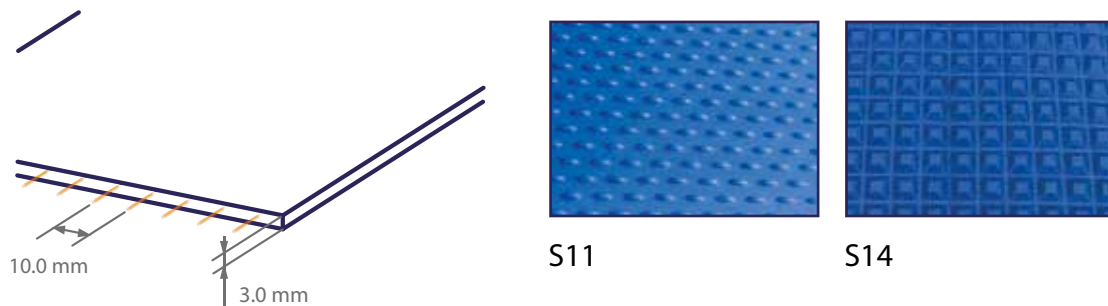
| DESCRIPTION | WATER CONSUMPTION |
|--------------|-------------------|
| PVC/PU | 1.8 tons |
| Modular Belt | 2.8 tons |
| REOClean | 1.2 tons |

Available Product Types

REOClean line is offered in five different product variations:

Version 1 (REO-F20, REO-F30 and REO-F40) Flat Types

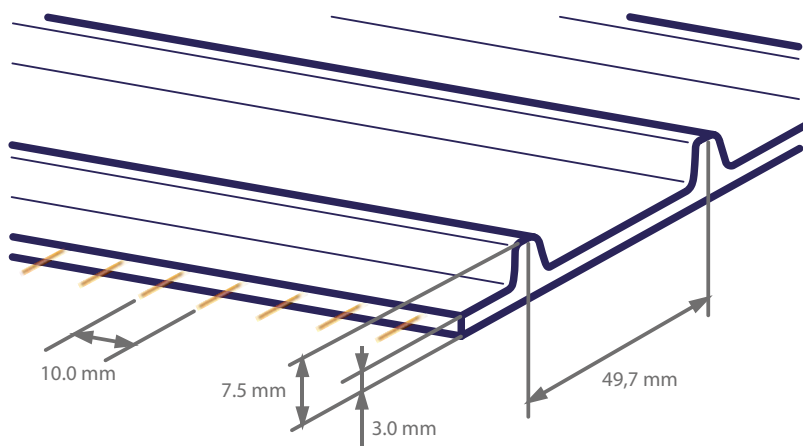
REO-F20, REO-F30 and REO-F40 are food grade flat belts reinforced with aramid tensile members. The belts do not fray, have minimal stretch, reduce the need for retensioning and thereby increase belt life. Flat types are ideal to replace any ply-belts installed in processing and handling lines. Different profiles (S11: rice and S14: pyramid) are provided to suit a wide range of applications, especially in wet and oily environments.



| Code | REO-F30 SB/W | REO-F20 SB/W | REO-F30 DB | REO-F30 S11 DB | REO-F40 S14 DB |
|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| Type | Flat | Flat | Flat | Flat | Flat |
| Material/Hardness | TPU/95 Shore A | TPU / 95 Shore A | TPU Polyether/ 95 Shore A | TPU Polyether/ 95 Shore A | TPU Polyether/ 90 Shore A |
| Characteristics | | | | | |
| Anti-hydrolysis | NO | NO | YES | YES | YES |
| Antimicrobial | NO | NO | YES | YES | YES |
| Total Thickness | 3 mm | 2 mm | 3 mm | 3.4 mm | 4.3 mm |
| Pitch | N/A | N/A | N/A | N/A | N/A |
| Colour | Sky Blue and White | Sky Blue and White | Dark Blue | Dark Blue | Dark Blue |
| Tension Member | Aramid | Aramid | Aramid | Aramid | Aramid |
| Spacing between cords (mm) | ≈ 10 mm | ≈ 10 mm | ≈ 10 mm | ≈ 10 mm | ≈ 10 mm |
| Tensile Strength at 1 % | 16 N/mm | 16 N/mm | 16 N/mm | 16 N/mm | 16 N/mm |
| Avail. Min. Pulley | 90 mm | 35 mm | 90 mm | 90 mm | 40 mm |
| Certificates | FDA, USDA, EU | | | | |
| Temperature Range | - 20°C to +90°C | - 20°C to +90°C | - 30°C to +100°C | - 30°C to +100°C | - 30°C to +100°C |
| Weight | 3.7 kg/m ² | 2.6 kg/m ² | 3.7 kg/m ² | 3.8 kg/m ² | 3.7 kg/m ² |
| Coefficient of Friction vs. Steel: | (wet) 0.5 ~ 0.7 (dry) 0.4 ~ 0.6 | (wet) 0.5 ~ 0.7 (dry) 0.4 ~ 0.6 | (wet) 0.5 ~ 0.7 (dry) 0.4 ~ 0.6 | (wet) 0.3 ~ 0.4 (dry) 0.5 ~ 0.7 | (wet) 0.5 ~ 0.7 (dry) 0.4 ~ 0.6 |
| Max. Width | 1.420 mm | | | | |
| Standard Length | 80 meters; others upon request | | | | |

Version 2 (REO-T50) Positive Drive Type

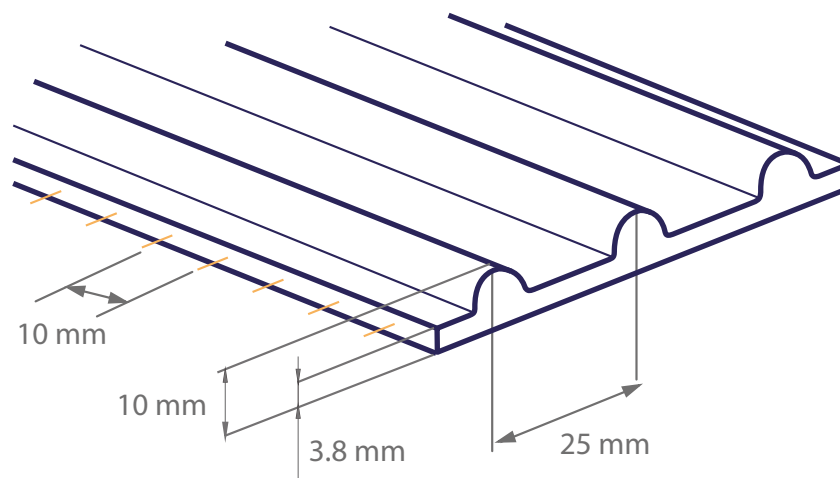
REO-T50 is a food grade belt reinforced with aramid tensile members with ≈ 50 mm pitch. The belt is easy to clean and an excellent replacement for plastic modular belts in the food processing industry. The tooth design extends across the full belt width and allows for multiple contact points to transfer force. The added lateral rigidity, the avoidance of any slippage and the aramid reinforced belt construction allow for applications with medium to high loads.



| Code | REO-T50 SB/W | REO-T50 DB |
|------------------------------------|---|------------------------------------|
| Type | Positive Drive | Positive Drive |
| Material/Hardness | TPU/95 Shore A | TPU Polyether/95 Shore A |
| Characteristics | | |
| Anti-hydrolysis | NO | YES |
| Antimicrobial | NO | YES |
| Base Belt Thickness | 3 mm | 3 mm |
| Pitch | 49.7 mm | 49.7 mm |
| Colour | Sky Blue and White | Dark Blue |
| Tension Member | Aramid | Aramid |
| Spacing between cords (mm) | ≈ 10 mm | ≈ 10 mm |
| Tensile Strength at 1 % | 16 N/mm | 16 N/mm |
| Avail. Min. Pulley | 92 mm | 92 mm |
| Certificates | FDA, USDA, EU | |
| Temperature Range | - 20°C to +90°C | - 30°C to +100°C |
| Weight | 4.3 kg/m ² | 4.3 kg/m ² |
| Coefficient of Friction vs. Steel: | (wet) 0.6 ~ 0.8 (dry) 0.4 ~ 0.6 | (wet) 0.6 ~ 0.8 (dry) 0.4 ~ 0.6 |
| Max. Width | 1.420 mm | |
| Standard Length | 80 meters standard; others upon request | |
| Sprocket size | 6, 8, 10, 12 teeth | |

Version 3 (REO-M25) Positive Drive Type

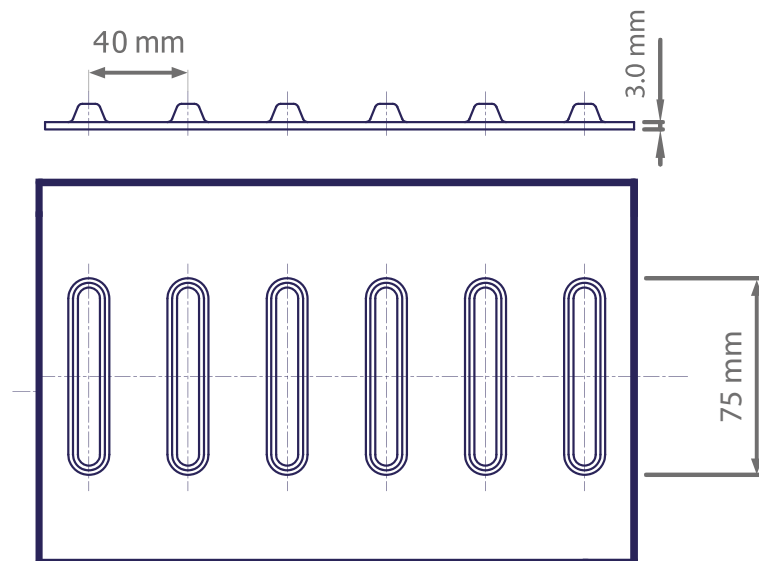
The REO-M25 type was developed to solve challenges where lateral rigidity and product loads play a major role. In pork and beef processing plants, modular belts are commonly seen due to the fact that they are able to withstand high impacts and loads. REO-M25 is the first and only homogeneous belt that is able to provide a hygienic solution that can handle extreme loads. This belt type has very high strength (26 N/mm) and excellent lateral stability.



| Code | REO-M25 DB |
|------------------------------------|------------------------------------|
| Type | Positive Drive |
| Material/Hardness | TPU Polyether/95 Shore A |
| Characteristics | |
| Anti-hydrolysis | YES |
| Antimicrobial | YES |
| Total Thickness | 10 mm |
| Pitch | 25 mm |
| Colour | Dark Blue |
| Tension Member | Aramid |
| Spacing between cords (mm) | ≈ 10 mm |
| Tensile Strength at 1 % | 26 N/mm |
| Avail. Min. Pulley | 184 mm |
| Certificates | FDA, USDA, EU |
| Temperature Range | - 30°C to +100°C |
| Weight | 7 kg/m ² |
| Coefficient of Friction vs. Steel: | (wet) 0.6 ~ 0.8 (dry) 0.5 ~ 0.7 |
| Max. Width | 1.420 mm |
| Standard Length | 60 meters; others upon request |

Version 4 (REO-AT40) Positive Drive Type

The REO-AT40 model is a self tracking aramid reinforced belt with smooth top surface. It is perfect for trough applications where the pitches are positioned in the center and the sides of the belts can be pushed up by rollers at different angles to keep the conveying products from falling off the conveyor.



| Code | REO-AT40 DB | REO-AT40 SB |
|------------------------------------|------------------------------------|------------------------------------|
| Type | Positive Drive | Positive Drive |
| Material/Hardness | TPU Polyether/95 Shore A | TPU Polyether/95 Shore A |
| Characteristics | | |
| Anti-hydrolysis | YES | NO |
| Antimicrobial | YES | NO |
| Base Belt Thickness | 3 mm | 3 mm |
| Pitch | 40 mm | 40 mm |
| Colour | Dark Blue | Sky Blue |
| Tension Member | Aramid | Aramid |
| Spacing between cords (mm) | ≈ 10 mm | ≈ 10 mm |
| Tensile Strength at 1 % | 16 N/mm | 16 N/mm |
| Avail. Min. Pulley | 100 mm | 100 mm |
| Certificates | FDA, USDA, EU | FDA, USDA, EU |
| Temperature Range | - 30°C to +100°C | - 20°C to +90°C |
| Weight | 7 kg/m ² | 7 kg/m ² |
| Coefficient of Friction vs. Steel: | (wet) 0.6 ~ 0.8 (dry) 0.4 ~ 0.6 | (wet) 0.6 ~ 0.8 (dry) 0.4 ~ 0.6 |
| Max. Width | 1.420 mm | 1.420 mm |
| Standard Length | 60 meters; others upon request | 60 meters; others upon request |



Version 5 (REO-F13) Flat Type for Small Pulley

REO-F13 is a special REOcLean flat type that is able to go through a very small pulley (9 mm) and is suitable for trough application. The overall thickness is 1.3 mm with one side white and the other side sky blue to offer increased flexibility for belt usage. Additionally, a special aramid construction is used to avoid fraying problems and limit the absorption of water and oil in wet and greasy environments.

Version 6 (MD) for Version 1 – 4

Metal detectable (MD) versions are available for all REOcLean types upon request in order to avoid possible undetected belt contamination to the final products. The MD versions allow metal detectors to screen the products and 'catch' the unwanted belt pieces that are mixed into the goods.

MATERIAL INTRODUCTION

Materials for belts

| Material | Property | Food approv. | Temperature Range | Colour |
|--|---|---------------|-------------------|-----------------|
| Thermoplastic Polyurethane-Polyester | Excellent resistance to cut and abrasion, unaffected by oils and chemicals (please see the chemical resistance table for more information) | FDA, USDA, EU | -20°C to +90°C | Sky Blue, White |
| Thermoplastic Polyurethane - Polyether | Excellent resistance to cut and abrasion, unaffected by oils and chemicals (please see the chemical resistance table for more information); good flexibility at low temperatures, reduce microbial growth and excellent resistance to hydrolysis | FDA, USDA, EU | -30°C to +100°C | Dark Blue |

Material for sprockets

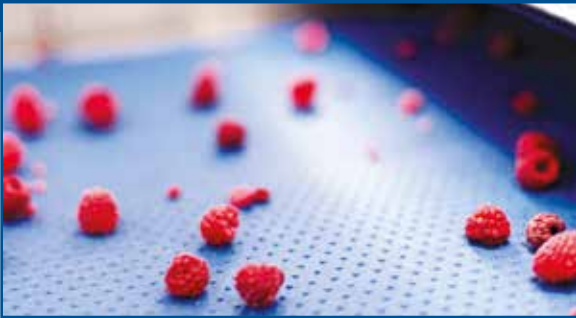
| Material | Property | Food approv. | Temperature range | Colour |
|-----------------------------------|---|--------------|-------------------|--------|
| POM (Polyoxymethylene- or Acetal) | Thermoplastic material that offers high stiffness, low friction and good chemical resistance to oil and alkalines | FDA, EU | -40°C to +90°C | White |

Material for wear strips and guides

| Material | Property | Temperature range | Coefficient of Friction vs. TPU |
|---|--|-------------------|------------------------------------|
| Ultra High Molecular Weight Polyethylene (UHMWPE) | Excellent abrasion resistance, impact strength and low coefficient of friction; perfect for high performance applications for reduced wear and longer lifetime | -50°C to +65°C | (wet) 0.4 – 1.0 (dry) 0.2 – 0.6 |
| High Density Polyethylene (HDPE) | Medium quality and low cost material for low speed and light load | -50°C to +65°C | (wet) 0.5 – 1.0 (dry) 0.3 – 0.6 |

REOCLEAN APPLICATIONS

REOClean belting can be used in a great variety of applications and are not limited to the food sector exclusively. Please contact us directly if you have an application and you are unsure if REOClean could work.



A. Meat

- Beef
- Pork
- Chicken
- Ground meat
- Cold cuts

B. Vegetables and fruits

- Vegetable and fruit washing and handling
- Frozen fruits
- Potato processing

C. Dairy

- Cheese processing and handling

D. Seafood

- General fish processing
- Fish filets
- Frozen fish washing and handling
- Shrimp processing

E. Confectionary

- Chocolate powder handling

F. Chemical

- Extreme low temperature handling

G. Others

- Metal scraps handling
- Industrial laundry
- Recycling/Filtration

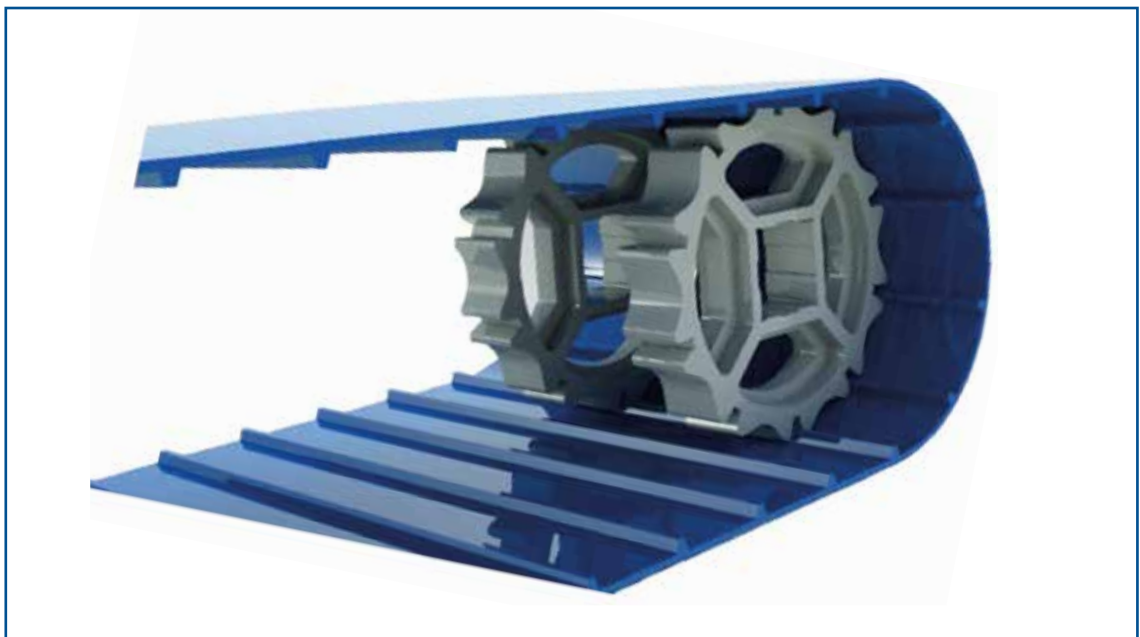
DESIGN GUIDELINES

Positive Drive Types (REO-T50, REO-M25, REO-AT40)

General conveyor design is made significantly easier with REOClean, compared to products used in similar settings. The embedded aramid cords help to avoid belt stretch, which in return improves tracking and durability of the belt. The TPU homogeneous belt range shall be installed with little to no tension to prolong product lifetime.

Short Conveying Systems

Short horizontal and incline conveyors benefit from the high tensile strength of our unique product design and do not need supporting rollers for lengths up to 2 meters. Belts can be installed under tension of 0.3% for conveying systems with up to 5 meters belt length with supporting rails. Each setup can be different as the belt width and type do affect these parameters.



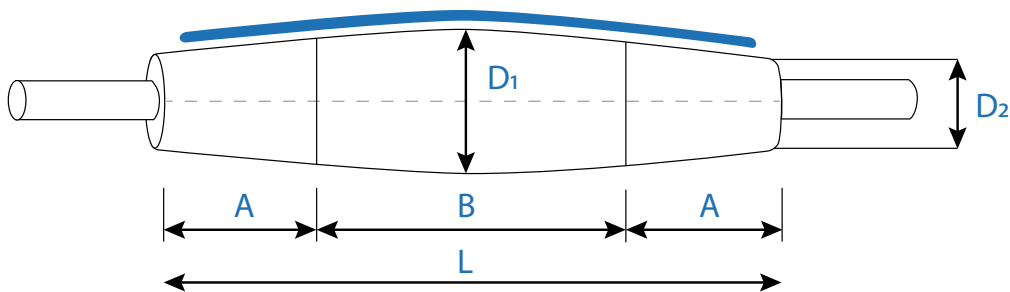
Flat Conveyor Belt Types (REO-F20/REO-F30/REO-F40)

Flat conveyors are usually powered by a head drive system using friction on a slider bed or roller design. The belt should be installed with less than 0.3% tension to ensure the belt runs smoothly.

Methods to Avoid Mistracking

1. Crowning of the pulleys

The purpose of a crowned pulley is to assist with belt tracking. In typical operating conditions, it is beneficial to use a convex pulley with larger diameter in the center of the roller than at the edges. Please see below drawing for design guideline.



The designed guideline of a crowned pulley: $D_1 - D_2 = 1\% \times D_1$

The drive and tail drums should both be crowned when the conveyor is longer than 4x the belt width. There is no need to crown a knife edge pulley.

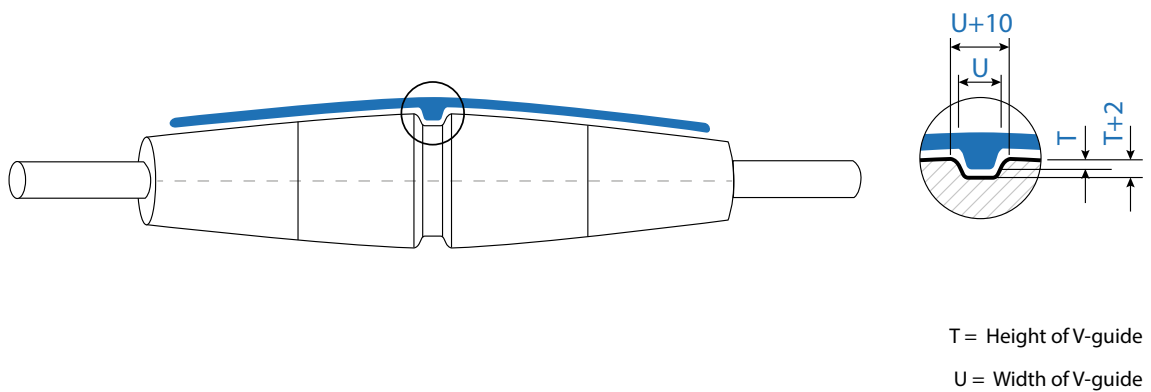
| L (mm) | A (mm) | B (mm) |
|----------------------|-----------------|-----------------|
| $L \leq 400$ | $\frac{1}{3} L$ | $\frac{1}{3} L$ |
| $400 < L \leq 800$ | $\frac{1}{4} L$ | $\frac{1}{2} L$ |
| $800 < L \leq 1200$ | $\frac{1}{5} L$ | $\frac{3}{5} L$ |
| $1200 < L \leq 1600$ | $\frac{1}{6} L$ | $\frac{2}{3} L$ |
| $L > 1600$ | $A = 300$ | |

TIPS: To avoid slippage of the belt on the pulley, it is possible to apply coatings, tapes or sandblast the drum surface to guarantee the friction needed to drive the belt.

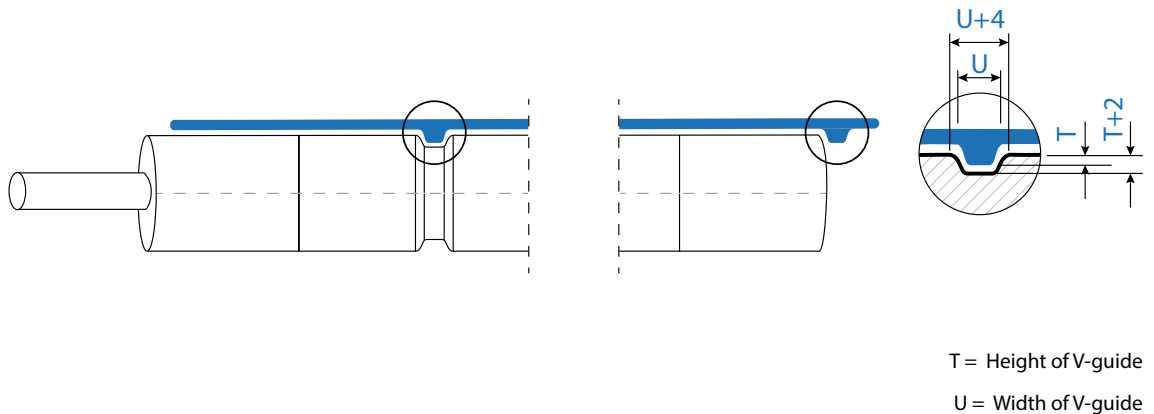
2. Applying V-guides

V-guides and guiding ropes (square and rectangular) can be applied in the center line or at the sides of the belt. The pulley diameter will increase depending on the types of the guides used. A general rule of thumb is the pulley diameter is 6 times the height of a V-guide and 10 times the height of the square and rectangular rope. Notched V-guides are not recommended as the cleanability worsens.

When a V-guide is applied on a crowned pulley, the width and depth of the groove should follow the below design:



When a V-guide is applied on a straight pulley, the width and depth of the groove should follow the following design:



3. Ratio of pulley to belt width

$$b_0 \leq 100 \text{ mm} \quad b = b_0 + 20 \text{ mm}$$

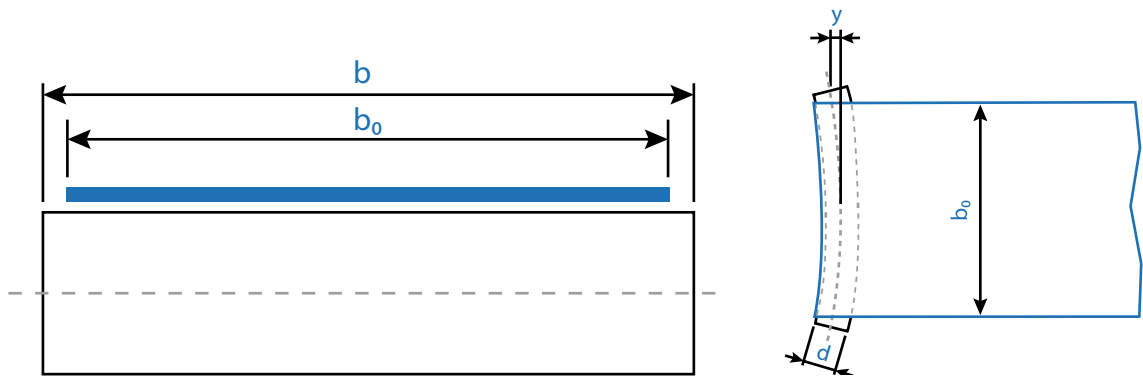
$$b_0 > 100 \text{ mm} \quad b = (1.08 \times b_0) + 12 \text{ mm}$$

b: the length of the pulley (mm)

y: the distance of deformation of the pulley (mm)

b_0 : the width of belt (mm)

d: the pulley diameter (mm)



Pulley Deformation

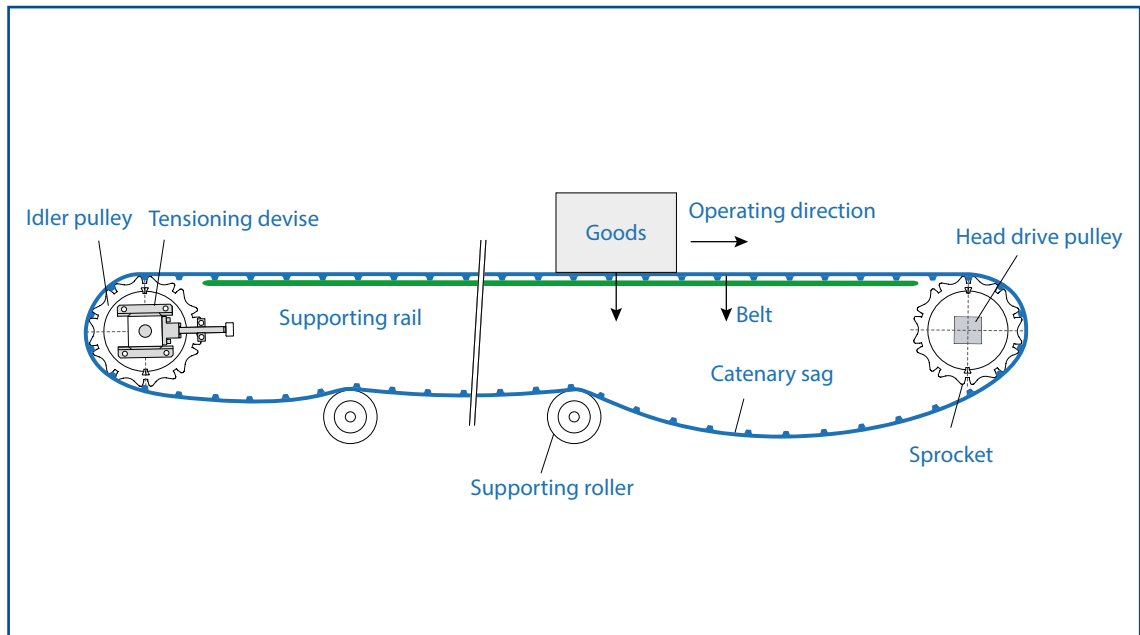
The pulley should be strong enough to have the least deformation after tensioning.

Straight pulley: $Y \leq 0.001 \times b_0$ mm / Crowned pulley: $Y \leq (0.001 \times d) + 0.07$ mm

DRIVING MECHANISMS

Head Drive System

The generally recommended drive setup, in which one motorized pulley exercises a pull movement to transport the goods toward the driving sprocket. Depending on the conveyor length and angle of incline, different support rails and rollers are recommended. Maintain at least 180 degree belt wrap on sprockets.

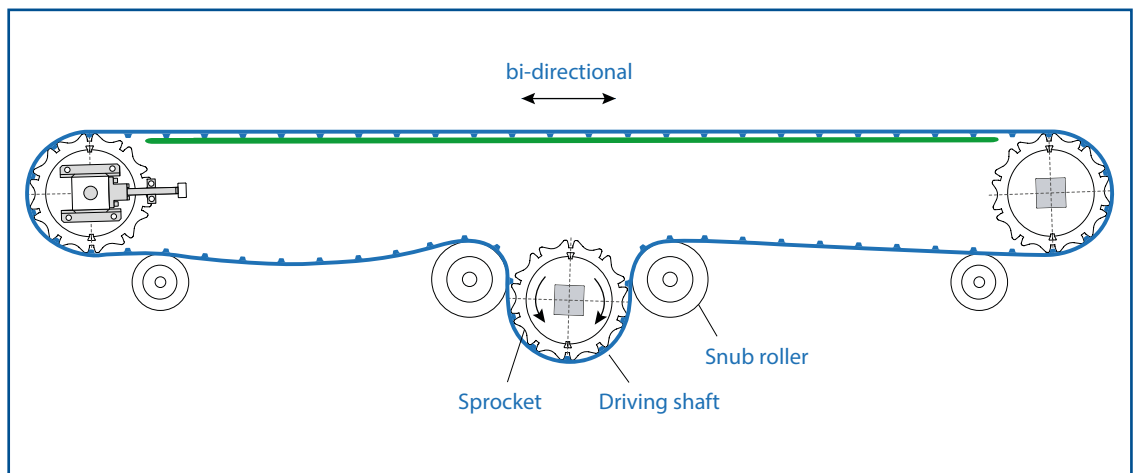


Tail Drive System

In a drive setup with a motorized pulley exercising a push movement to transport goods, a tail drive is in place. This setup requires the belt to be tensioned in order to ensure maximum grip at the drive sprocket. Generally, we do not recommend using a tail drive system with the REOClean products.

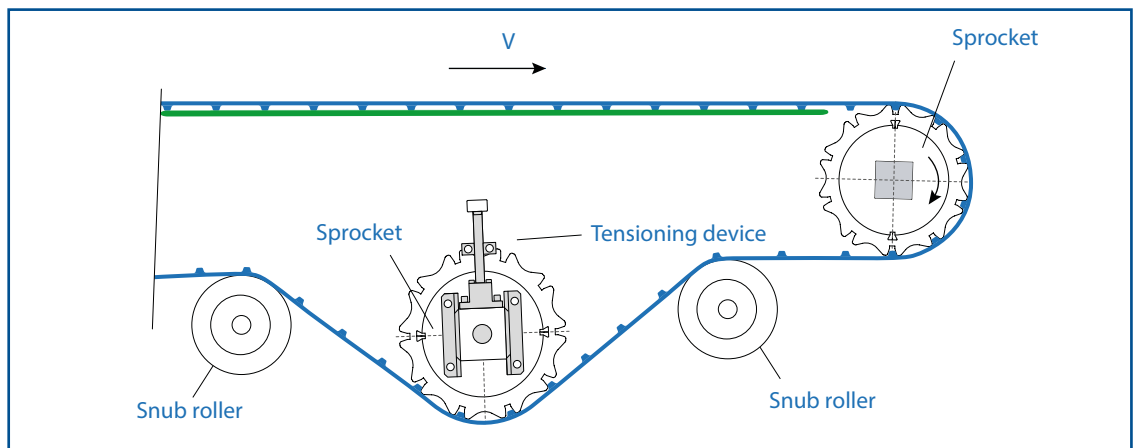
Twin Drive System

Twin drive conveyor systems feature motorized pulleys on both ends of the conveyor. When working with this setup, it is recommended to reconfigure it as a head drive system and release all driving forces from the back end sprocket. Therefore, only one side exercises force through a pull movement.



Center Drive Systems

For bi-directional conveyor setups, a center drive is the most suitable. Driving sprockets need to be of bigger diameter and it is recommended to use sprockets with at least 10 teeth. This design of constant pushing and pulling gives the most stress to the belt. To ensure a 180 degree belt wrap around the driving sprocket, snub rollers are used to backbend the belt at the center drive's position. For minimum allowed backbend diameters please refer to the data sheet of the relevant REOClean product type.



Z-Conveyors

Z-conveyors should only be equipped with positive driven belts to allow lateral stiffness and to avoid the belt being pulled out from under the hold downs in the carry way transition areas.

The distance from carryway transition (incline to horizontal) and from returnway transition (horizontal to decline) should be less than 2 meters long.

There are two ways to hold down the belt in a swan neck conveyor. It can be with rollers or containment blocks.

Hold down rollers

1. Recommended for dry application
2. Minimum radius (R) **without** sidewalls

- **REO-T50**

- Above 0 degrees: 200
- Below 0 degrees: 300

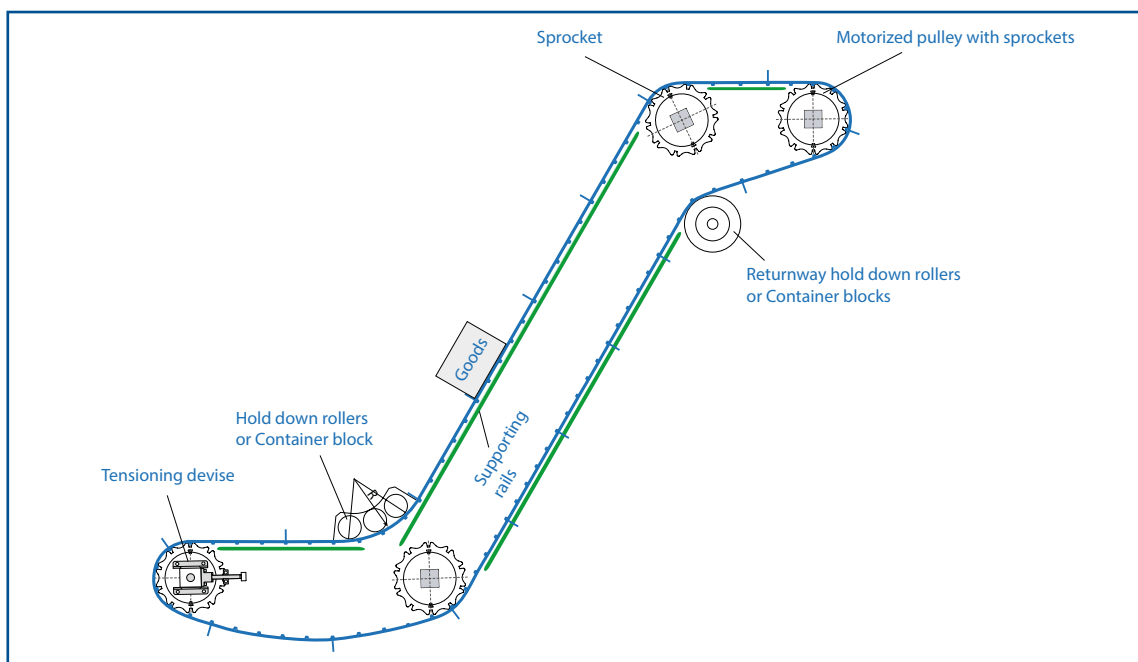
- **REO-M25**

- Above 0 degrees: 300
- Below 0 degrees: 400

3. Minimum diameter **with** sidewalls

The general rule of thumb is to have 1.5 x sidewall height as the minimum diameter or the minimum diameter recommended belt type without sidewalls listed above, whichever is greater.

4. Recommended diameter of the roller is 40 mm with spacing between roller and cleat or sidewall of 6 mm.



Containment blocks

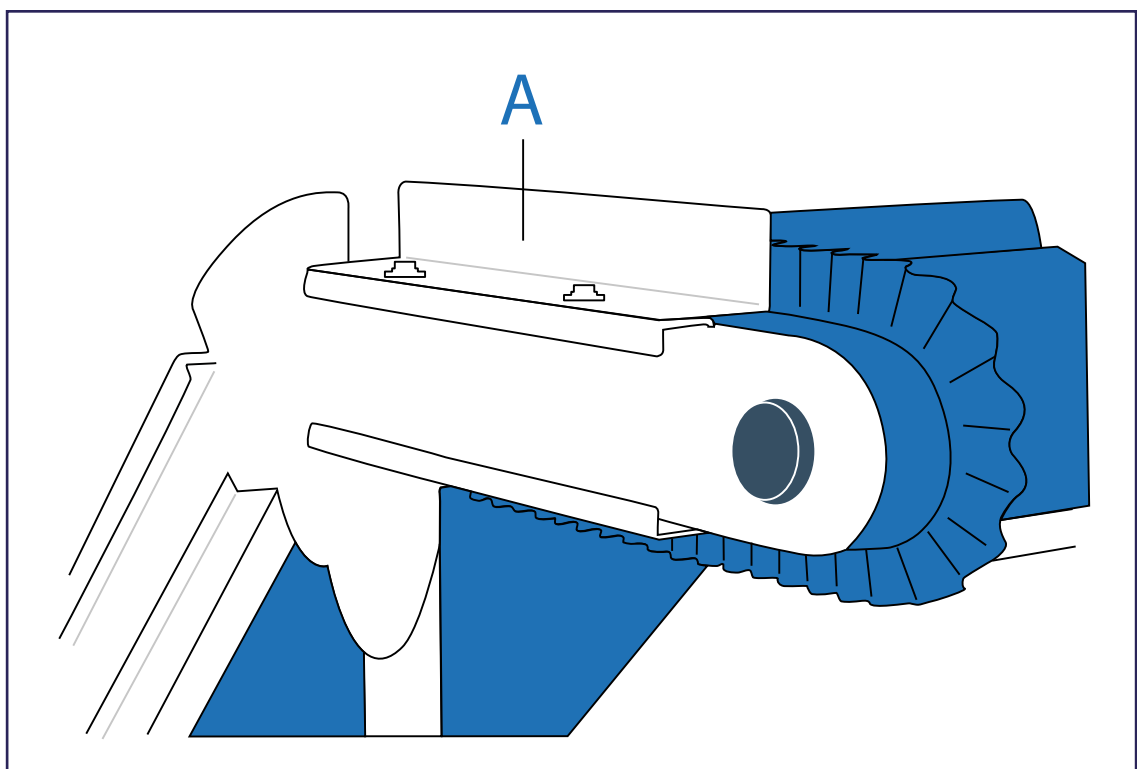
1. Recommended for wet application and when the load is light
2. Minimum radius is 200 mm and minimum width is 38 mm
3. Recommended spacing between block and cleat or sidewall is 6 mm

Drive Sprockets

- The minimum diameter of the sprocket of REO-T50 should be 10-pitch to ensure the drive is smooth
- The head drive configuration is always recommended at a swan neck conveyor

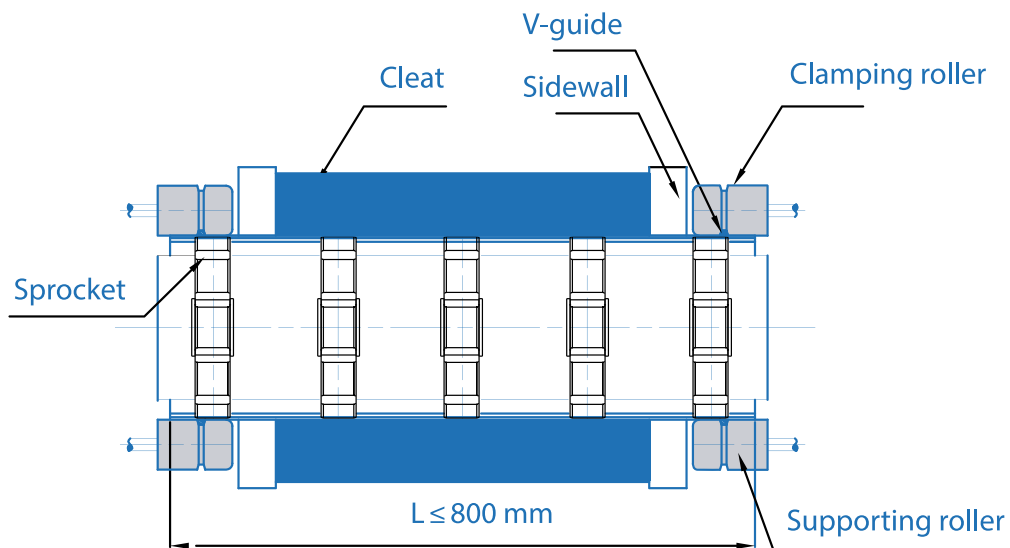
Conveyor sidewalls (fixed to conveyor frame) acting as hold downs

For a machine builder, it is possible to design hold downs that are fixed onto the conveyor frames as another way to keep the belt in place. Please see below illustration with the hold down labelled as A.



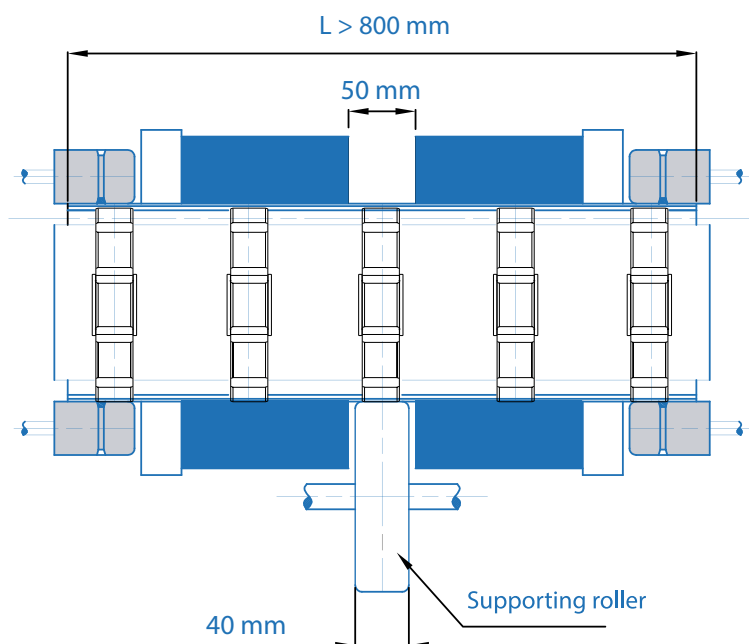
Methods to avoid mistracking

In a Z-conveyor set up, mistracking can be avoided with two V-guides welded on both sides of the belts on the working surface. Clamping rolls will be used with a groove of the V-guide to allow tracking.



Design for a belt less than 800 mm width

When the belt width is bigger than 800 mm, the cleat should be divided to two parts where a supporter roller can be used to hold down the belt at the carryway and returnway transition.



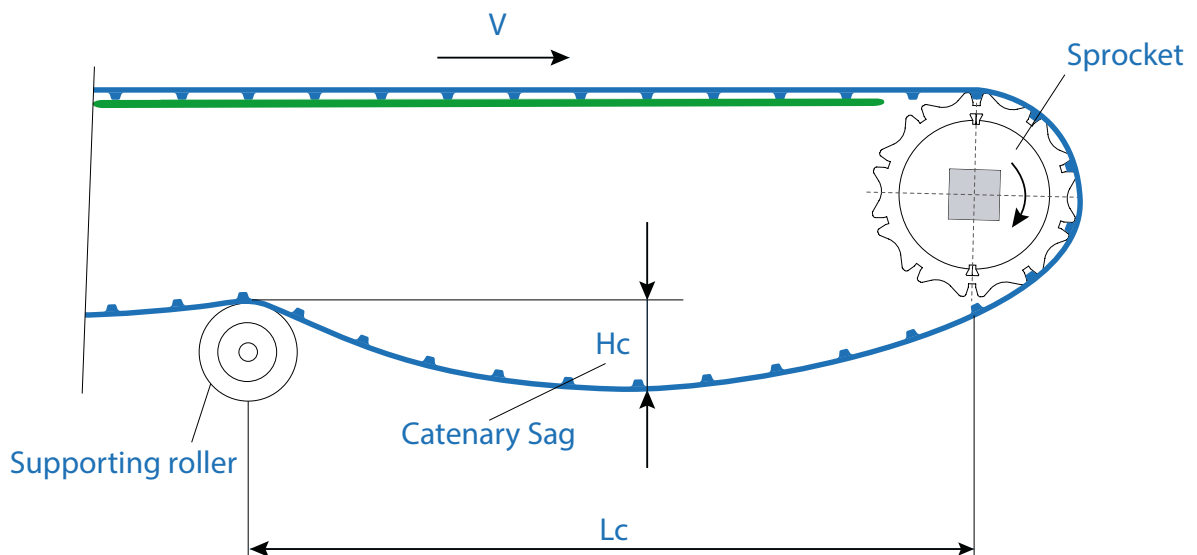
Width of clamping roller:
 ≥ 50 mm
 Diameter of clamping roller: 75 to 100

INSTALLATION

Catenary Sag

Catenary Sag is defined to be the unsupported length of the belt right after the driven sprockets. The weight and height of the sag need to be optimal to ensure firm engagement of the sprockets to the belt.

The first supporting roller is usually placed 900 to 1200 mm from the driving sprockets to create a Catenary Sag to ensure at least 180 degree belt wrap to the sprockets. Diameter (D) should be at least 50 – 75 mm.



- Distance between supporting rolls (A) = 1500 to 2000 mm (each distance should not be the same)
 - REO-T50, D = 40 – 50 mm
 - REO-M25, D ≥ 50 mm
 - REO-AT40, D = 40 – 50 mm

Trough Conveyors

With a trough conveyor, it is crucial to ensure the transition length from the center of the sprocket to the trough shaped support is not too small. The length depends largely on the angle of trough and the width of the belt.

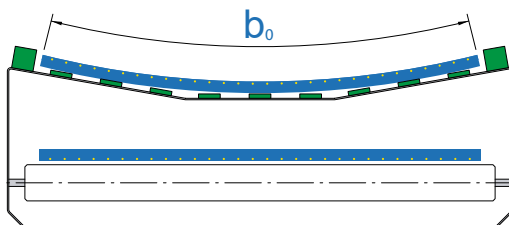
A general rule of thumb is to apply a factor based on the angle of trough to the belt width for the translation length. Maximum recommended trough angle is 40 degrees.

The length of a trough conveyor should not be less than 1.5 meter.

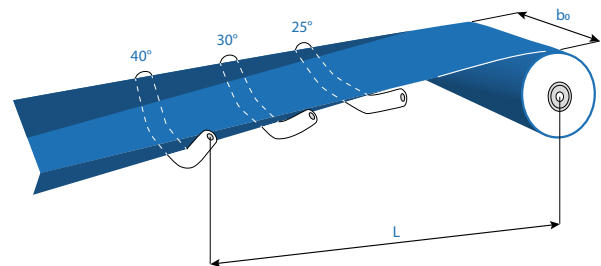
The minimum transition length for a trough conveyor is $L = c \times b_0$

- L: distance from the pulley to the beginning of trough conveying (transition length)
- c: factor applied based on troughing angle
- b_0 : belt width

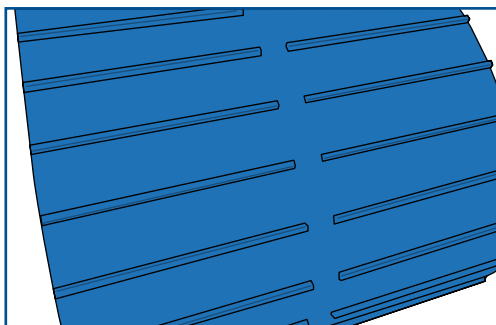
| Trough angle (degree) | 10 | 20 | 30 |
|-----------------------|----|-----|----|
| Factor (c) | 1 | 1.5 | 2 |



Belt width less than 300 mm is not recommended as the trough shape is not easily formed.



Belt width less than 500 mm does not trough more than 30 degrees easily.



It is possible to grind off the teeth in the middle or both sides of REO-T50 for trough application.

SPROCKETS

Sprocket Sizes

There are matching sprockets for our positive drive types, REO-T50, REO-M25 and REO-AT40 with different numbers of teeth from 6 to 23 at 40 x 40 mm and 60 x 60 mm square bore. The sprocket material can be POM (Polyoxymethylene) or UHMW-PE (Ultra high molecular weight polyethylene).

| Types | REO-AT40 | | | REO-T50 | | | | REO-M25 |
|------------------------------|---|-----|-----|---------|-----|-------|-------|---------|
| Tooth Count | 8 | 12 | 16 | 6 | 8 | 10 | 12 | 23 |
| Outside Diameter (mm) | 100 | 132 | 203 | 94.2 | 126 | 157.9 | 189.7 | 184.3 |
| Width (mm) | 200 | | | 28 – 38 | | | | |
| Bore Size | 40 x 40 square bore standard; others upon request | | | | | | | |

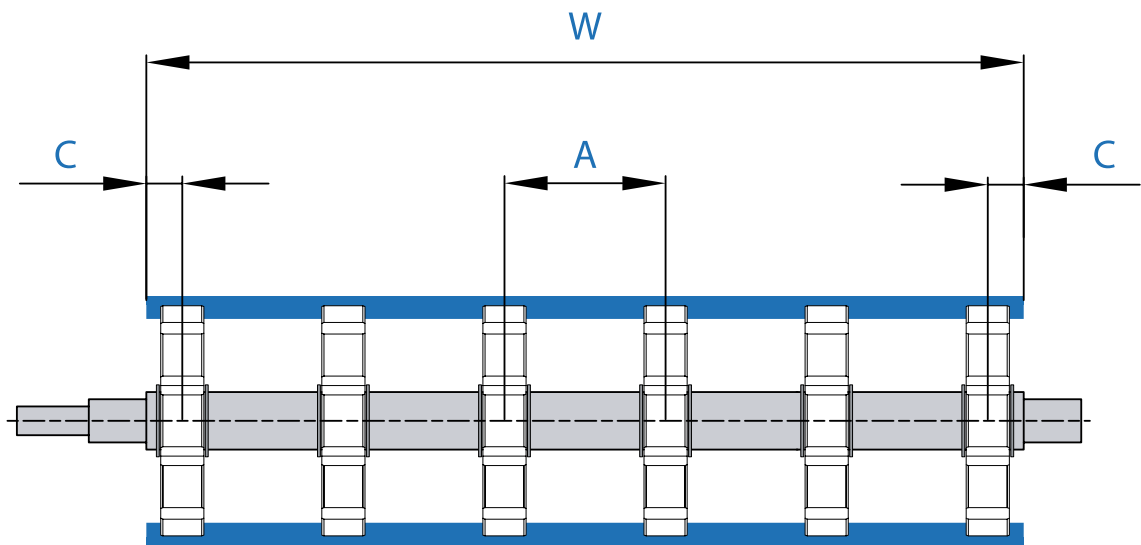
The working temperature of the application will affect the pulley size of the belt. The general rule of thumb is the lower the temperature, the bigger the sprockets to ensure smooth running.

Additionally, when the belt is joined by mechanical fasteners, the pulley size of the belt will change.

| Type | min. Pulley (mm) |
|---|------------------|
| RS125 SJ24/600 NCS (stainless steel) | 75 |
| APF 100 (plastic) | 38 |
| APT 150 (plastic) | 75 |

Sprocket Installation

The sprockets are fixed onto the shaft by applying two plastic retainer rings on both sides of the sprocket. One retainer ring is composed of two half-square parts with two screws. Please note that a small gap of 0.3 mm should be maintained between the sprocket and the retaining device and that all sprockets are locked into position on the shaft.



W = Width of Belt

C = distance of the sprocket to the edge of the belt

A = distance between the sprockets

C is usually at 20 to 30 mm while A is around 100 mm.

Number of Sprockets

The number of sprockets that needs to be applied to drive the belt smoothly depends largely on the width of the belt. It is important to place the sprockets on the driving and the tailing shafts. More sprockets should be installed for heavily loaded belts or for application with scraper. If you are in doubt, use the larger number of sprockets or contact us to help calculate the allowable belt tensile force.

The table below shows the number of sprockets needed REO-T50 and REO-M25 in the driving shaft including distances for typical belt width.

| Belt width (mm) | Number of sprockets | | | | Edge Distance (mm) |
|-----------------|---------------------|---------------|----------------------------------|---------------|--------------------|
| | Min. # of sprockets | Distance (mm) | Heavy load: min. # of sprockets* | Distance (mm) | |
| 100 | 2 | 50 | 2 | 50 | 25 |
| 150 | 2 | 100 | 3 | 50 | 25 |
| 200 | 3 | 60 | 3 | 60 | 40 |
| 250 | 3 | 85 | 4 | 57 | 40 |
| 300 | 3 | 110 | 5 | 55 | 40 |
| 350 | 4 | 90 | 5 | 68 | 40 |
| 400 | 4 | 107 | 6 | 64 | 40 |
| 450 | 5 | 93 | 7 | 62 | 40 |
| 500 | 5 | 105 | 8 | 60 | 40 |
| 550 | 6 | 94 | 9 | 59 | 40 |
| 600 | 6 | 104 | 9 | 65 | 40 |
| 650 | 7 | 95 | 10 | 64 | 40 |
| 700** | 7 | 103 | 11 | 64 | 40 |

* Heavy load means more than 50% of the allowable load on the belt.

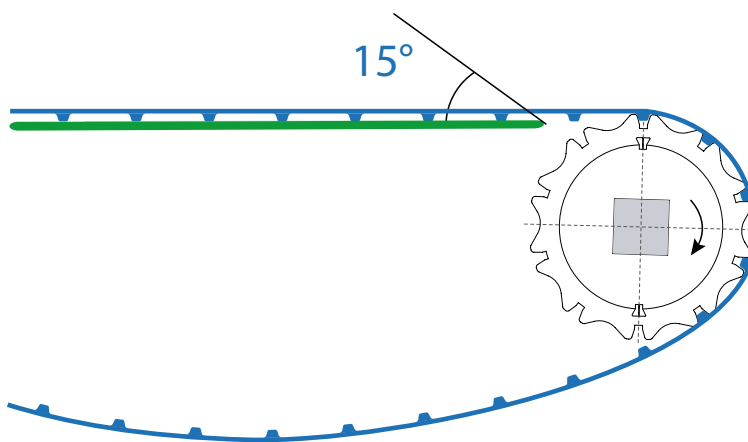
** For width more than 700mm, please consult our team directly for number of sprocket needed.

Position Placement of Sprocket

Correct placement of sprocket for belt support/shaft placement is important to reduce noise and increase lifetime of the sprocket and belt.

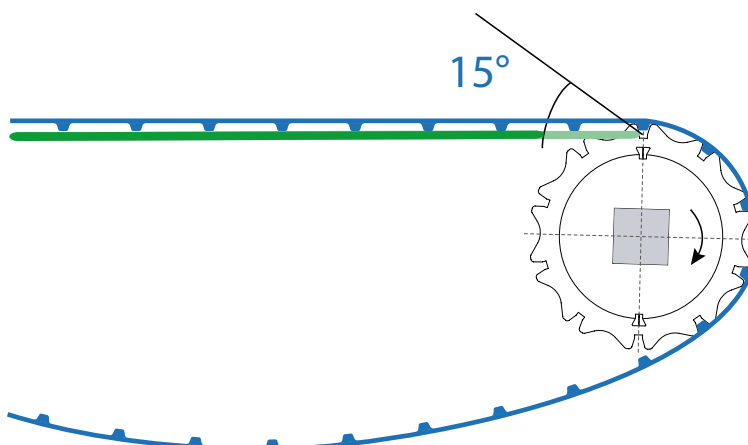
Slider bed support

Keep the sprocket as close as possible to the slider bed to ensure a smooth transition of the belt and that the guides do not touch the sprocket. The support edge should be beveled by 15 degrees as shown.



Wear strip support

The sprockets can be placed between the wear strips and to ensure a smooth transition, the support edge should be beveled by 15 degrees as shown.



Retrofit

To retrofit of a conveyor, it may be necessary to adjust the drive shaft or slider support height to keep the correct level of transport.

REOCLEAN BELT SUPPORT SYSTEMS

The conveyors equipped with REOClean belts require support for both the carry- & the returnway. Different factors influence the amount of support needed and thereby the setup of the supporting rails & rollers. Typical variables are the belt width & length as well as the belt load.

Carryway Wearstrips

The most commonly used setup of wearstrips in the market is a parallel arrangement that can be used in > 90 % of cases for the REOClean conveyor system.

- The number of wearstrips needed ranges from a distance of 70 – 150 mm between each strip depending on the size and weight of the products
- Distance from belt edge to outer rail is about 15 – 50 mm
- For positive drive types that are not self tracking (REO-T50 and REO-M25), external guides along the belt edges are required
 - Minimum heights of guides are 1.5 x belt thicknesses

The table below shows the placement of wearstrips and sprockets.

| Belt width (mm) | Number of Sprockets | Number of wearstrips (carryway) | Number of wearstrips (returnway) |
|-----------------|---------------------|---------------------------------|----------------------------------|
| 100 | 2 | 2 | 2 |
| 150 | 2 | 2 | 2 |
| 200 | 3 | 2 | 2 |
| 250 | 3 | 3 | 2 |
| 300 | 4 | 3 | 2 |
| 350 | 4 | 3 | 2 |
| 400 | 5 | 4 | 3 |
| 450 | 5 | 4 | 3 |
| 500 | 6 | 4 | 3 |
| 550 | 6 | 5 | 3 |
| 600 | 7 | 5 | 3 |
| 650 | 7 | 6 | 4 |
| 700 | 8 | 6 | 4 |
| 750 | 8 | 7 | 4 |
| 800 | 9 | 7 | 4 |
| 850 | 9 | 8 | 5 |
| 900 | 10 | 8 | 5 |
| 950 | 10 | 9 | 5 |
| 1000 | 11 | 9 | 5 |
| 1100 | 12 | 10 | 6 |
| 1200 | 13 | 11 | 6 |
| 1300 | 14 | 12 | 6 |
| 1400 | 15 | 13 | 7 |

Returnway Supports

Wearstrips

- The number of wearstrips needed ranges from a distance of 150 – 300 mm between each strip depending on the size and the weight of the products
- Distance from belt edge to outer rail is 50 – 75 mm

Support rollers or stationary bars

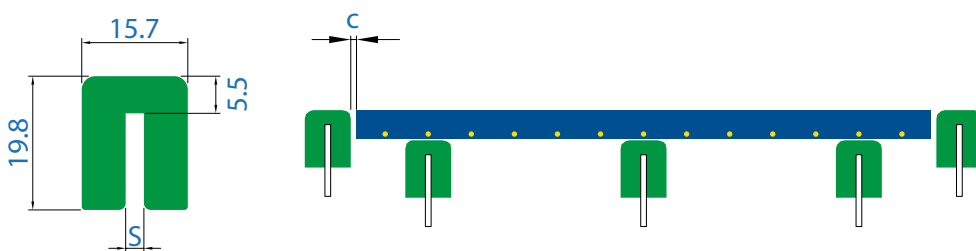
- Width should be same as the belt
- Spacing of roller shafts or stationary bars are 1 to 1.5 meters from each other
- Diameter should be 50 – 75 mm

Wearstrip Design

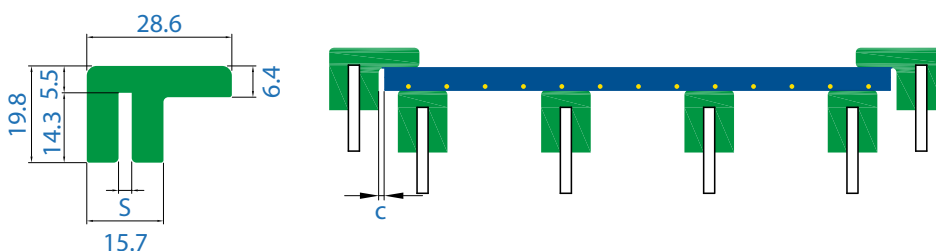
Materials used are hard plastics such as UHMWPE (Ultra high molecular weight polyethylene) and HDPE (Medium molecular weight polyethylene), that do need space for thermal expansion when installed. It is imperative that the edges of the wearstrips are deburred to avoid possible damages to the belt from the sharp edges. This is also important for guides framing the conveyor to help with tracking.

Wearstrip Types and Placement

Wearstrip Type 1



Wearstrip Type 2



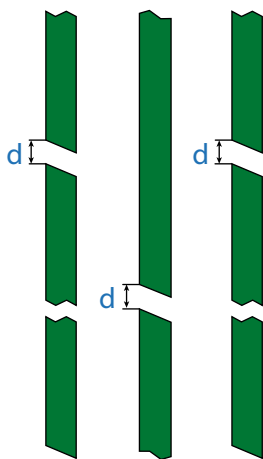
C = 3 mm; S = 2.2 ~ 5.2 mm

S can be tailor-made according to the client's request

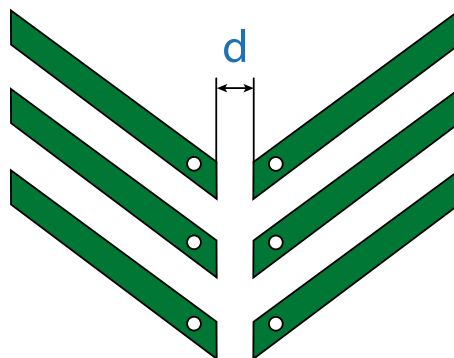
Wearstrip placements can be arranged in parallel or in V-shape. Please see below for illustration. It is important to leave certain distance between the wearstrips to allow thermo expansion. The distance can be calculated with the formular below.

- l: the length of the wearstrip at 23°C
- d: distance between two wearstrips (mm)
- α : thermo expansion coefficient (mm/m x °C)
- T: ambient temperature (°C)

| | Thermo expansion coefficient (mm/m x °C) | |
|--------|--|--------------|
| | -70°C ~ +30°C | 31°C ~ 100°C |
| UHMWPE | 0.14 | 0.20 |
| Steel | 0.01 | 0.01 |



Parallel alignment



V-shape alignment

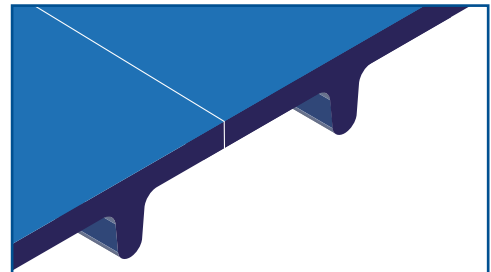
JOINING METHOD

REOClean products are joined with a designated machine that performs the perfect result to ensure the following:

- Strong and reliable welded site
- A smooth welded surface

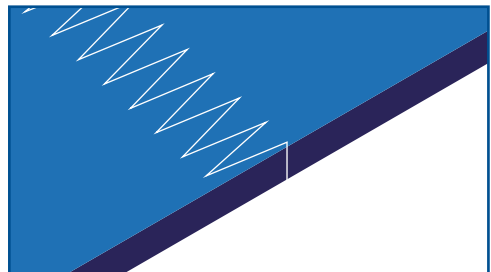
Butt Joint

Two ends of the REOClean belts are prepared using the right pitch-mold with a straight cut. Then they are welded together with adequate heat and pressure. The excess material at the joint site is removed using a skiver.



Finger Joint

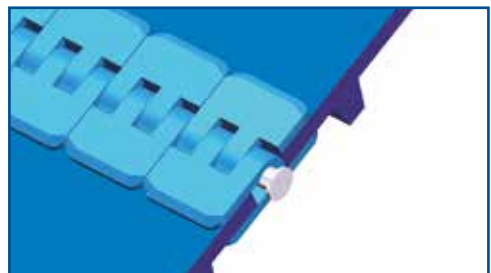
The flat type of REOClean line can be joined with 20 x 80 mm finger joint in any standard conveyor belt joining machine. Be cautious that there may be shrinkage on both edges after joining. Make sure REOClean materials are applied to both sides during this process.



Plastic and Steel Fasteners

Fasteners can be applied to our REOClean products to avoid any possible on-site heat welding headaches. A special machine is needed to apply the fasteners.

The use of fasteners will increase minimum pulley sizes. Please check Sprocket Sizes for details.



ACCESSORIES

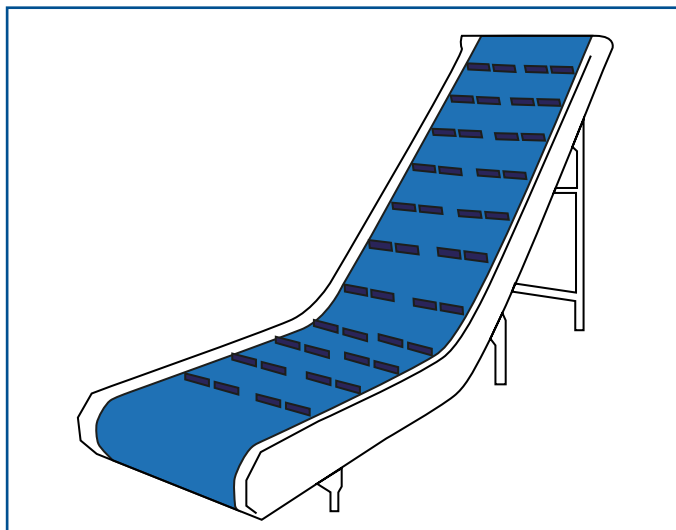
Cleats

Cleats, also called “profiles”, can be welded to any REOClean belts to move product up an incline or decline. The material of our cleats is the same as REOClean, which makes an easy welding possible. Use of a high frequency machine is recommended.

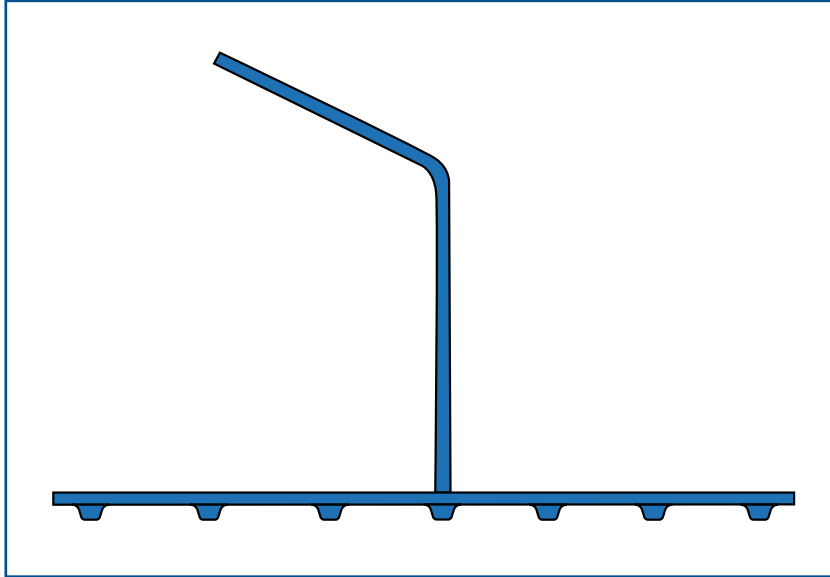
| Cleat Type | REO-C4 | REO-C6 |
|------------------------|-------------------------------|--------|
| Thickness (mm)* | 4 | 6 |
| Height | 140 | 140 |
| Colour | Dark blue, sky blue and white | |
| Hardness | 90 to 95 Shore A | |

* thicker cleats can be made upon request

- Cleat spacing should be multiples of belt pitch length and the cleat should be welded over tooth.
- Minimum belt length for welding an endless belt is 3600 mm and the maximum cleat welding width is 1000 mm.
- For a belt designed to have cleats wider than 800 mm in an incline conveyor, it is highly recommended to break it down to 2 parts where a small spacing between the cleats is allowed to ensure smooth incline.



Scoop cleat has the following load possible:



Scoop cleat Loading

| | | | |
|---------------------------------------|-----------|-----------|-----------|
| Overall height (mm) | 120 | 100 | 70 |
| Min. Base height (mm) | 50 | 40 | 30 |
| Weight load (kg/width of cleat in mm) | 0.0214296 | 0.0285728 | 0.0339302 |



Sidewalls

Sidewalls, also called “side skirts”, can be welded to any REOClean belts on both sides to prevent products from falling out of the conveyor.

- The maximum height of the sidewall available is 120 mm at a thickness of 1.7 mm with hardness of 90 Shore A.
- The minimum sprocket diameter is about 2 x sidewall height or minimum 2x diameter recommendation for Belt and Fastener.
- The minimum back bend diameter is about 1.5 x sidewall height or minimum 1.5x diameter recommendation for Belt, whichever is greater.
- Minimum belt length is 1800 mm with maximum belt width at 1600 mm.
- For other lengths and widths, please consult us directly as we may have other solutions.

V-Guides

V-guides are used to ensure tracking and can be welded on the top or bottom of the belt using a hot air gun. High frequency welding is possible as well.

| V-guides Types | Height (mm) | Width (mm) bottom | Width (mm): top | Colour | Hardness (Shore A) |
|----------------|-------------|-------------------|-----------------|--|--------------------|
| R10 | 6 | 10 | 6 |  | 85 Shore A |
| R13 | 8 | 13 | 8 |  | 85 Shore A |

* For different dimensions, please contact the REOClean team directly.

CLEANING INSTRUCTIONS

REOClean Cleaning Guideline

Common cleaning agents

Alkaline detergent, alkaline chlorine detergent and acid detergent

Common cleaning tools

Rag and high pressure water gun

Recommended cleaning agents and concentration

| Detergent | Concentration |
|------------------------------|---------------|
| Sodium hydroxide solution | < = 1 % |
| Sodium hypochlorite solution | < = 200 ppm |
| Sodium citrate solution | < 15 % |

Please note that the chemical resistance of REOClean material is from pH 2 to pH 12 under short contact. Please adjust the concentration accordingly.

Do not leave the cleaning agent on the belt without washing. This will affect the belt integrity tremendously.

Cleaning water temperature

It is recommended to clean the belt with water temperature from 50 to 60 degrees Celsius.

Recommended cleaning procedure

Step 1: *Pre-cleaning*

Use water from room temperature up to 60°C to clean the belt for 3 to 5 minutes.

Step 2: Use any of the recommended cleaning agents with the right concentration to wash the belt for 10 to 20 minutes. Make sure the water temperature is between 60°C to 80°C.

Step 3: Run the belt with industrial water for 5 – 10 minutes and temperature under 60°C.

Step 4: Wash the belt again with acid detergent for 10 to 20 minutes, water temperature from 60°C to 80°C.

Step 5: The final step is to wash the belt with industrial water for 5 to 10 minutes with water from room temperature up to 60°C.

HANDLING INSTRUCTIONS

Product Storage

- The flat types REO-F30 shall be stored either standing up or hung on a shelf while REO-F13 shall be stored hung.
- The positive types REO-T50, REO-M25 and REO-AT40 shall be stored standing up to avoid any damages to the belts due to the positive pitches.
- The belts should be protected from sunlight and kept in a cool and dry place (not below 0°C or above 25°C degrees).

CHEMICAL RESISTANT TABLE

The charts presented in the following table are based on the information given by the raw material manufacturers and suppliers. It does not relieve of a qualification test on the products for your application. The chemical resistance can be affected by different chemical concentration, environmental temperature, and contact period.

Thermoplastic polyurethane material TPU Condotion: 23°C

| CHEMICALS | Excellent | Good | Not recommended |
|--------------------------------|-----------|------|-----------------|
| Acetic Acid 3 % | ✓ | | |
| Alcohol | | | ✓ |
| Ammonium Chloride Solution 3 % | ✓ | | |
| Ammonium Solution 3 % | ✓ | | |
| Anti-freeze | ✓ | | |
| Animal Oils & Fats | ✓ | | |
| ASTM-Oils 1,2 and 3 | ✓ | | |
| Battery Acid | ✓ | | |
| Beer | ✓ | | |
| Benzyl Alcohol | | | ✓ |
| Bleach 0.5 % | ✓ | | |
| Boric Acid 3 % | ✓ | | |
| Brake Fluid | | | ✓ |
| Butter | ✓ | | |
| Butyric Acid 3 % | ✓ | | |
| Calcium Hydroxide Solution | ✓ | | |
| Cane Sugar | ✓ | | |

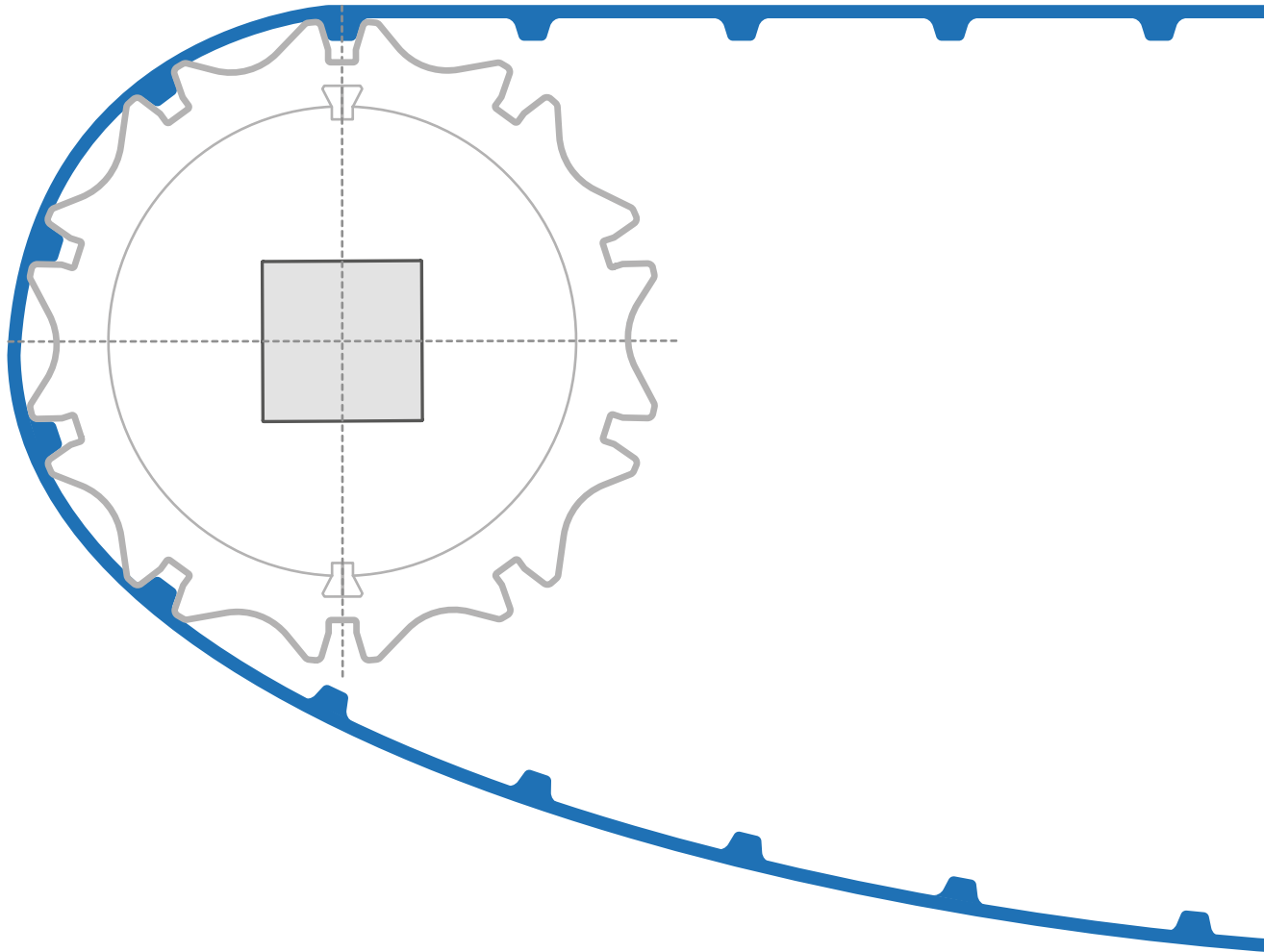
| CHEMICALS | Excellent | Good | Not recommended |
|-------------------------------|-----------|------|-----------------|
| Caster Oil | ✓ | | |
| Cheese | ✓ | | |
| Citric Acid 3 % | ✓ | | |
| Coconut Oil | ✓ | | |
| Corn Oil | ✓ | | |
| Ethanol | ✓ | | |
| Ethyl Acetate | | ✓ | |
| FAM Test Fluids A, B, and C | | | ✓ |
| Fish Oil | ✓ | | |
| Formic Acid 3 % | ✓ | | |
| Gasoline | | ✓ | |
| Glucose | ✓ | | |
| Diluted Hydrochloric Acid 3 % | ✓ | | |
| Hydrogen Peroxide 35 % | | ✓ | |
| Lactic Acid 3 % | ✓ | | |
| Lard | ✓ | | |
| Lauric Acid 3 % | ✓ | | |
| Linseed Oil | ✓ | | |
| Methanol | | ✓ | |
| Milk | ✓ | | |
| Mineral Spirits | ✓ | | |
| Mustard | ✓ | | |
| Diluted Nitric Acid | | | ✓ |
| Nut Oils | ✓ | | |
| Oils & Fats | ✓ | | |

| CHEMICALS | Excellent | Good | Not recommended |
|----------------------------------|-----------|------|-----------------|
| Oleic Acid 3 % | ✓ | | |
| Palm Kernel Oil | ✓ | | |
| Peanut Oils | ✓ | | |
| Phenol Solution 3 % | ✓ | | |
| Diluted Phosphoric Acid 3 % | ✓ | | |
| Propionic Acid 3 % | ✓ | | |
| Sea Water | ✓ | | |
| Silicone Oil | ✓ | | |
| Diluted Soda Lye | ✓ | | |
| Soda Solution 3 % | ✓ | | |
| Sodium Bisulphate 3 % | ✓ | | |
| Sodium Hypochlorite Solution 3 % | | ✓ | |
| Sodium Nitrate Solution 3 % | ✓ | | |
| Sodium Sulphite Solution 3 % | ✓ | | |
| Soy Bean Oil | ✓ | | |
| Stearic Acid 3 % | ✓ | | |
| Diluted Sulphuric 3 % | ✓ | | |
| Tap Water | ✓ | | |
| Tomatoes, Ketchup | ✓ | | |
| Trichloroethane | | | ✓ |
| Triethanolamine Solution 3 % | ✓ | | |
| Urea Solution 3 % | ✓ | | |
| Vegetable Oils | ✓ | | |
| Vinegar | ✓ | | |
| Water | ✓ | | |
| Whiskey & Wine | ✓ | | |

| SOLVENTS | Excellent | Good | Not recommended |
|------------------------------|-----------|------|-----------------|
| Acetic Ester | | | ✓ |
| Acetone | | | ✓ |
| Amyl Acetate | | | ✓ |
| Benzene | | | ✓ |
| Benzyl Alcohol | | | ✓ |
| Biodiesel Fuel | ✓ | | |
| Butane | ✓ | | |
| Butyl Acetate | | | ✓ |
| Chlorobenzene | | | ✓ |
| Chloroform | | | ✓ |
| Cyclohexane | ✓ | | |
| Dimethyl Acetamide | | | ✓ |
| Dimethyl Formamide (DMF) | | | ✓ |
| Dimethyl Sulphoxide (DMSO) | | | ✓ |
| Diesel Fuel | ✓ | | |
| Ethane | ✓ | | |
| Ethanol | | ✓ | |
| Ethyl Acetate (Acetic Ester) | | | ✓ |
| Ethylene Glycol | ✓ | | |
| Glycol | ✓ | | |
| Glycerine | ✓ | | |
| Hexane | ✓ | | |
| Iso-Octane | ✓ | | |
| Iso-Propanol | | ✓ | |
| Kerosine | ✓ | | |

| SOLVENTS | Excellent | Good | Not recommended |
|-------------------------------|-----------|------|-----------------|
| Methane | ✓ | | |
| Methylen Chloride | | | ✓ |
| Methyl Ethyl Ketone (MEK) | | | ✓ |
| Methyl Isobutyl Ketone (MIBK) | | | ✓ |
| N-Methyl Pyrrolidone (NMP) | | | ✓ |
| Octane | ✓ | | |
| Paraffin Oil | ✓ | | |
| Pentane | ✓ | | |
| Petroleum Ether | ✓ | | |
| Propane | ✓ | | |
| Pyridine | | | ✓ |
| Tetrachloroethylene | | ✓ | |
| Tetrahydrofurane | | | |
| Toluene | | | ✓ |
| Trichloroethane | | | ✓ |
| Xylene | | | ✓ |

REOClean is a premium product for industrial food processing companies. Particularly interesting in meat processing of all kinds, this innovative product is the result of a strong commitment to research and development.



Daisler Prozesstechnik GmbH
Reeperbahn 35, Haus 2
21481 Lauenburg
Tel: +49 (0)4153 5999 860
Fax: +49 (0) 4153 5999 869
www.daisler.com
www.REOClean.de
@-mail: REOClean@daisler.com

The information provided in this brochure contains a general description of the performance characteristics of the products concerned. The actual products may not always have these characteristics as described and, in particular, these may change as a result of further developments of the products. The provision of this information is not intended to have and will not have legal effect. An obligation to deliver products having particular characteristics shall only exist if expressed agreed in the terms of the contract.