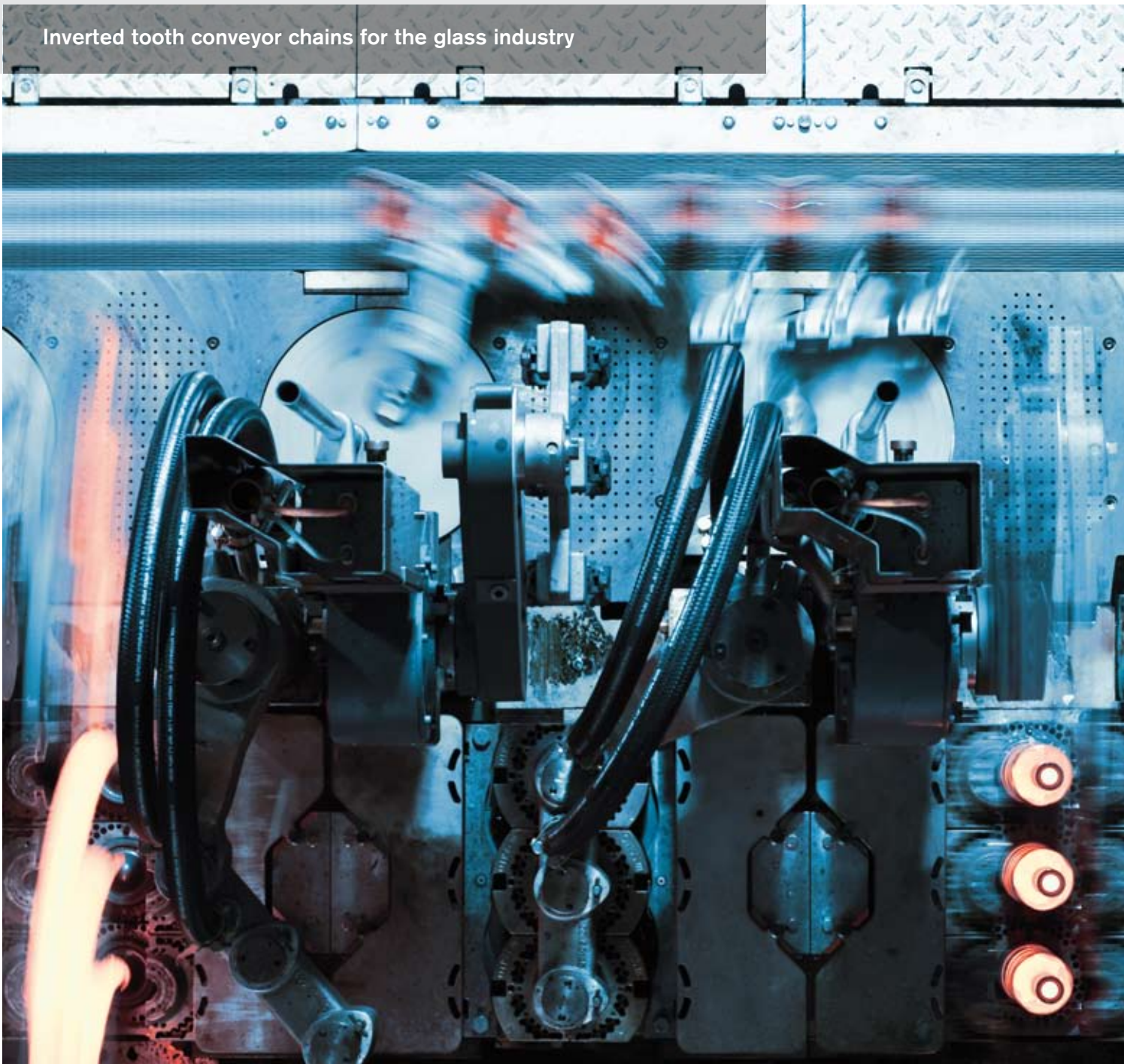
Rexroth
Bosch Group

Crystal Clear: Safe Transport for Flawless Production

Inverted tooth conveyor chains for the glass industry



Rely on our experience

Whether round or square, large or small, extremely bulgy or slim – our inverted tooth conveyor chains are perfect for all glass forms. They transport all types of hollow glassware – reliably, safely, carefully, and economically.

100 years of research, development, and manufacturing are behind Rexroth's drives for inverted tooth chains. It all began in 1908 at Westinghouse in Hanover, Germany, but our inverted tooth chains have also become famous under company names such as Wabco, Mannesmann, and Rexroth Mecman.

Rexroth's inverted tooth chains
We offer the largest delivery program in the world for inverted tooth chains used for driving and conveying.
In addition to the product specialists at our production facilities and our trusted sales partners, we also have access to a worldwide, dense network of contacts as a part of Bosch Rexroth AG. We continuously support and train our partners so that you can be sure to receive expert advice in your own country.

- Customer satisfaction
- Availability
- Competence
- Innovation
- Reliability

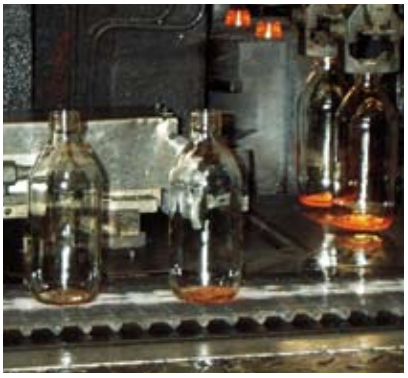
… we are certain that there are many more reasons than just those listed above to choose Rexroth, the market leader for tooth chains.

Cross-technology competence
No other brand in the world can offer its customers all types of drive and control technologies. This is one of the main reasons why Rexroth is considered the benchmark when it comes to drive, control, and motion technologies.

Industry competence that pays off

Over 50 years of experience in your industry

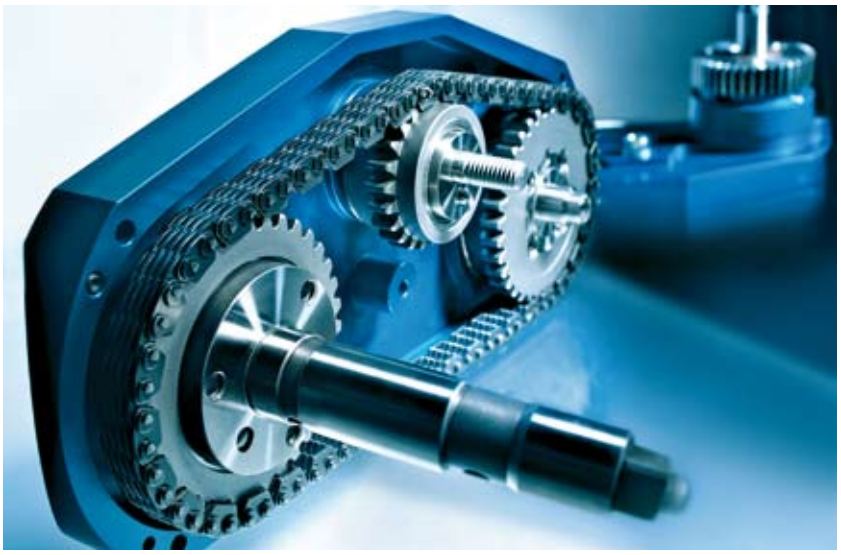
Rexroth follows a sophisticated industry concept that offers its customers solutions that are precisely oriented towards the needs of the respective industry. As the technological leader, we set the trends and come up with groundbreaking industry solutions. We assist you from the very first day in introducing inverted tooth conveyor chains for glass containers in your production. For over 50 years, we have been improving our products and systems in close cooperation with the glass industry, in order to comply with rising demands for higher production speeds, a larger PTM net yield, and longer service lives. Rexroth's inverted tooth chains not only fulfil today's requirements, but are also a future-oriented technology with unique advantages and high productivity levels.

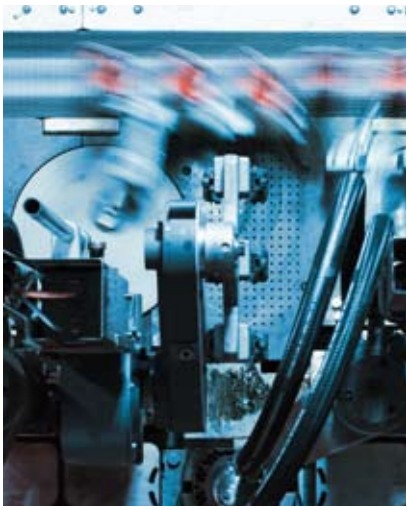


Efficient take-out gears

Using a Rexroth inverted tooth chain in a take-out gear makes it possible for hollow glass manufacturers to reduce costs by increasing productivity. Inverted tooth chains are extremely long-lasting and have a much longer service life than commonly used toothed belts. Thanks to this long service life, there are fewer downtimes for maintenance and repair work on the IS-machine.
At the same time, this drive is characterized by a reduction in width, enabled by Rexroth's HPC high-power inverted tooth chain, in order to account for high dynamics and the required low component weights. As a result, the inverted tooth chain conversion set is, in any case, narrower than the toothed belt and can thus be easily implemented by replacing the sprockets.
Wear must be ruled out as much as possible when operating a gripper arm, in order to ensure exact positioning even after many years have gone by. An inverted tooth chain with 2-pin rolling pivot joint with a hardened axle and rolling pivots creates almost only rolling friction and the HPC version is designed for circumferential speeds of over 50 m/s. Wear is greatly reduced thanks to a reduction in friction. The inverted tooth chain retains its uniform running characteristics and reproducibility of the swivel movement is ensured over the long run. In contrast to belts, inverted tooth chains are not susceptible to the lubricants used in glassworks.

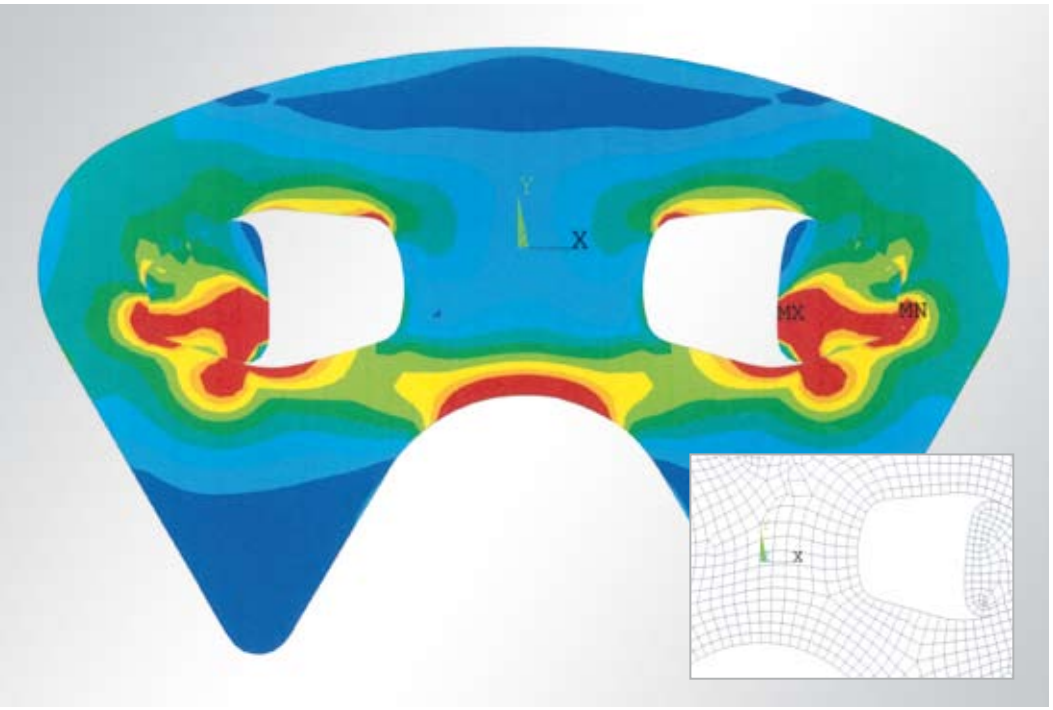
They are also suitable for use with higher temperatures and do not age at all.





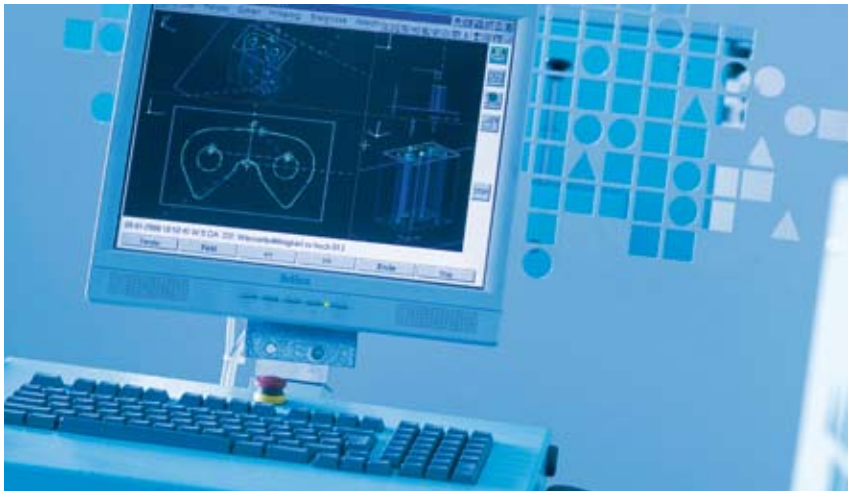
Rexroth advantages at a glance:
- Increase in productivity
- Reduction in downtimes
- Improvement to dynamics
- Increase in temperature resistance

Uncompromising quality



Innovation and quality assurance
We apply the same standards to our development and production processes as we do to our inverted tooth chains: 100 % accuracy. We have managed to create, develop, and construct these systems. Using special R&D programs and the most modern systems available, we have developed improved joint systems and new plate forms.

All the necessary systems and, to a certain extent, special machines developed according to our own design, plus trained and experienced personnel are used to manufacture and test our inverted tooth chains and sprockets.



Our goal for development is to constantly optimise forms to improve product performance, which also includes making our quiet drive chains even more silent.

The resulting prototypes are thoroughly tested and examined inside and out over long periods of time.

Quality management according to EN ISO 9001 and the Eco-Audit Certificate are not an option to us, but a foregone conclusion.

Our customers' requirements and requests are the driving force behind all of our product improvements. Development and production work closely together to continuously improve our chains.

Laser-welded by Rexroth

Rexroth has the largest range of conveyor chains for the container glass industry in the world. As the market leader with 100 years of experience in researching, developing, and manufacturing inverted tooth chain systems, Rexroth offers an exemplary product that is technically mature in every aspect. Rexroth's customers can be certain they always receive the best quality and consultancy is always up-to-date with the latest technological advances. Our inverted tooth chains with laser-welded toothed plates are just one example of our innovation. The first laser-welded machine conveyor was commissioned in Europe at the end of 2001. To date, this new inverted tooth chain design from Rexroth has continued to demonstrate its reliability and contribution to optimizing hot-end production with its perfection in detail.

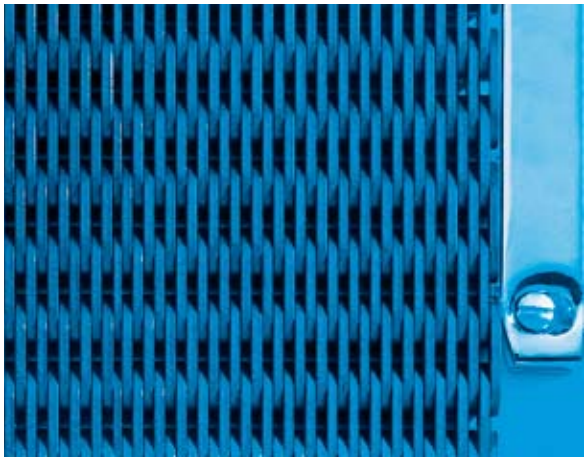
Reliable transfer from the machine conveyor to the cross conveyor is facilitated by minimum side gaps and sliding the products into the cooling furnace.

Truly unique!

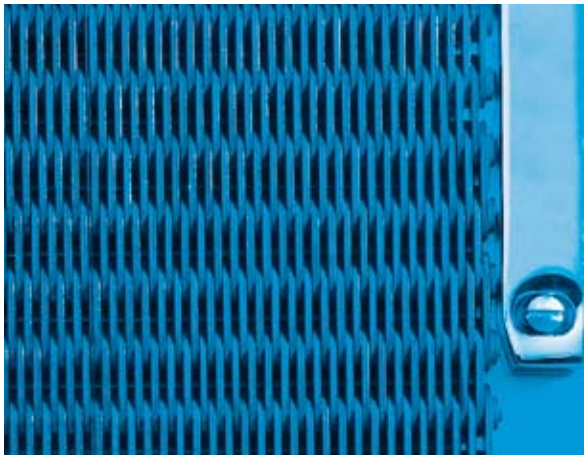
Rexroth's new inverted tooth conveyor chains now come with the axle pivots welded to the outer plate by laser.

The rivet heads no longer protrude and the chains have a smooth contact surface on both sides. The inverted tooth conveyor chains can be routed directly alongside the dead plates in the IS-machine or the side rails. There are no gaps on both sides of the chain conveyor. Where nothing projects, there is nothing to damage, and the life span is automatically increased! Use of laser-welded inverted tooth chains reduces lateral wear and substantially improves the guiding characteristics in high-speed machines.

- This technology prevents lateral movement of the joint pivots.
- A notably larger side surface without any sharp-edged rivet heads prevents lateral wear on the inverted tooth chain and guide rails.
- The outer link plates are formed as toothed plates or guide plates.
- These innovative inverted tooth conveyor chains are fully interchangeable with previous designs and the sprockets do not require any modifications or machining.
- Both chain sides are identical and thus suitable for any direction of motion.



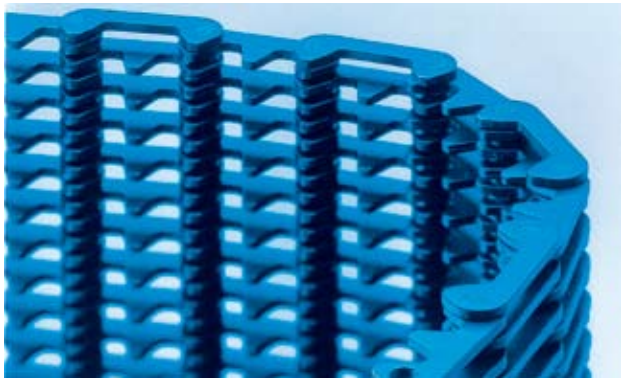
Laser-welded

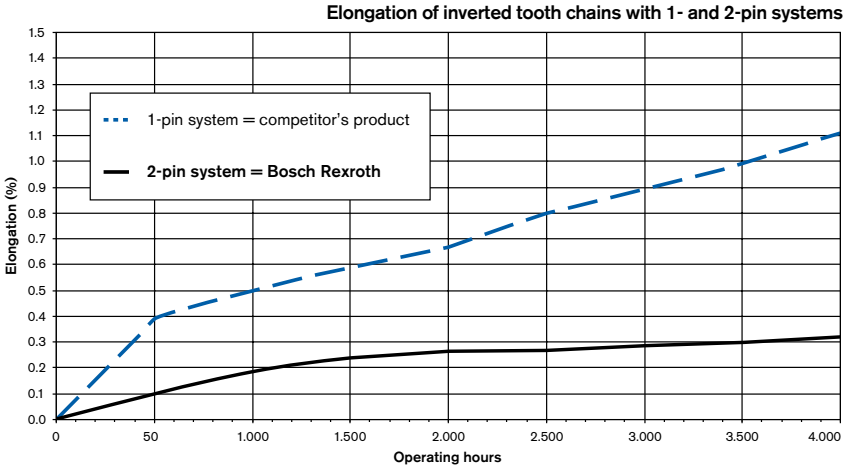


Riveted

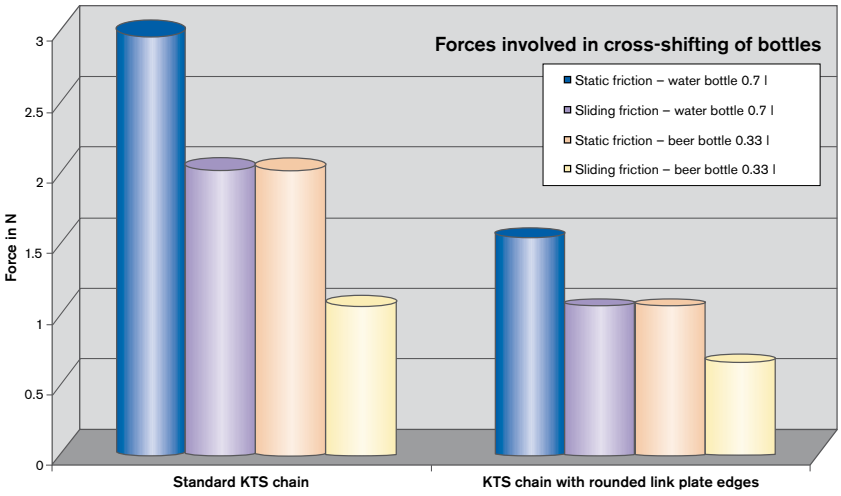
Constant improvement

Rexroth's inverted tooth conveyor chains are constantly being improved.
In addition to the improvement to the plate form for the 1/2" pitch, which tripled the contact surface, we now also offer an extended pitch version with a new plate form (see photo). In comparison to multi-guides, the problem of vertical wear caused by abrasion on the teeth is reduced across the **entire** inverted tooth chain. Despite this effect, the advantage of lower chain elongation due to minimising the number of joints is not impaired in any way.





Advantages of the joint system from Rexroth
Due to sliding friction and increased wear of the joint, elongation in 1-pin chains can be up to three times higher than in 2-pin systems. Bosch Rexroth's 2-pin rolling pivot joint with a hardened axle and rolling pivots only creates rolling friction, which greatly reduces wear on the system.



Advantages of edge rounding
- Less bottom damage
- Reduces the risk of „stumbling" for narrow-base bottles
- Reduces the glassware's sliding resistance
- Improves sliding capability

We are constantly optimising our inverted tooth chains, based on your requirements and experience in the field.

Distinctive features

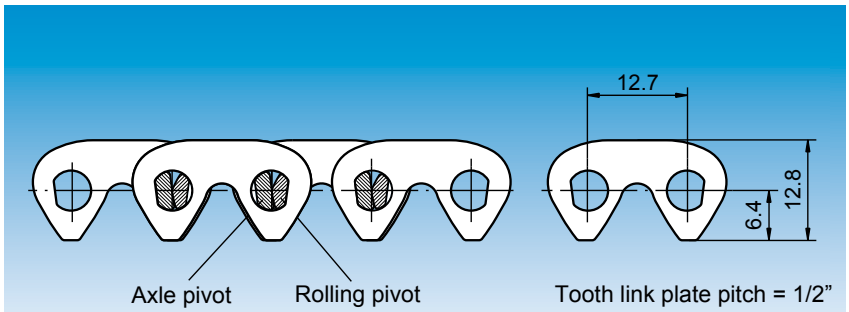
Both of these types of inverted tooth chains, along with the 2-pin rolling pivot joint, are essential components of the inverted tooth conveyor chain with the lowest elongation. Furthermore, an increase in the sliding surface was attained by optimising the plate form.

The following standard designs are available:

- Link plate configurations with spacer construction
- „Tight" link construction

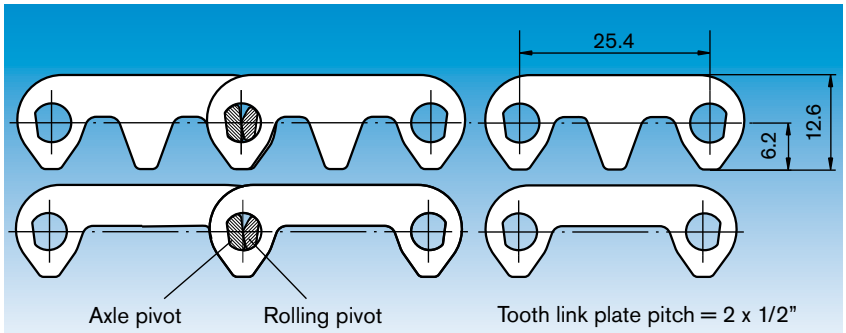
Additional designs for special applications:

- Inverted tooth chains with ground top surface to improve stability of small bottles (can be ground on both sides on request)
- Stainless steel plates (1.4301) for clean bottoms on pharmaceutical glassware
- Ceramic layers for improved thermal insulation during crystal glass production



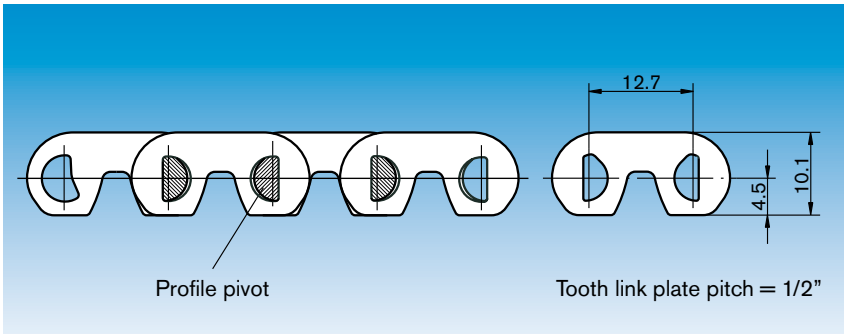
Regular pitch 1/2"

- Suitable also for small glass articles
- Often used on cross conveyors
- For a small deflection diameter
- Compact, strong, and long-lasting



TRILEG or extended pitch 2 x 1/2"

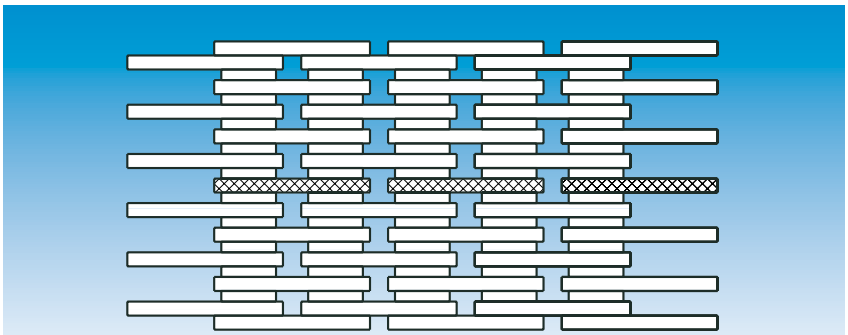
- Less elongation
- Less heat loss/bottom damage
- Lower drive power and easier installation due to weight reduction
- Better cooling air feed possible due to larger link plate interspaces



Low profile 1/2"

- Extremely large bearing area on the tooth side
- Sturdy design with a profile pivot
- Reduced plate height
- Special design available without a rigid back

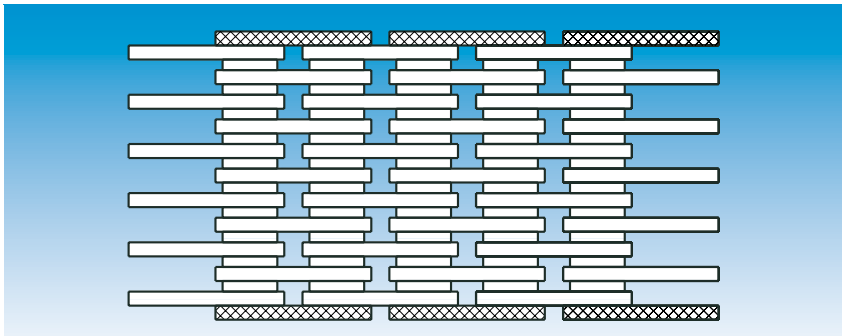
Types of guides



Centre guide

The inverted tooth chain has a row of guide plates in the centre, which run into a guiding groove in the sprocket and centre the chain.

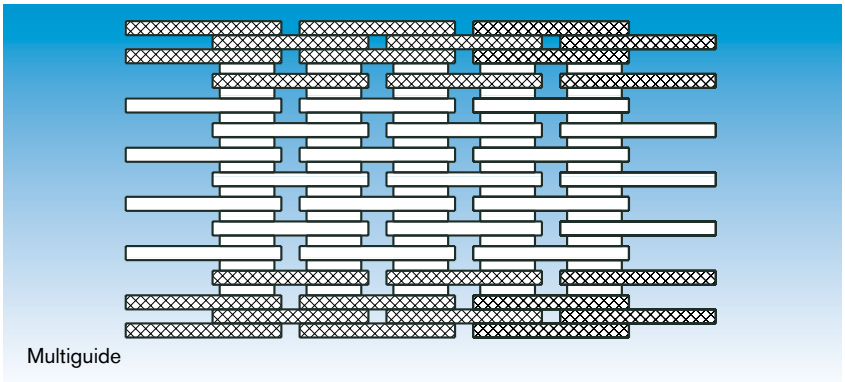
- Universally applicable – not dependent on the sprocket width!



Side guide

A row of guide plates are mounted on the outside of the chain. This row encases the sprocket teeth and centres the chain.

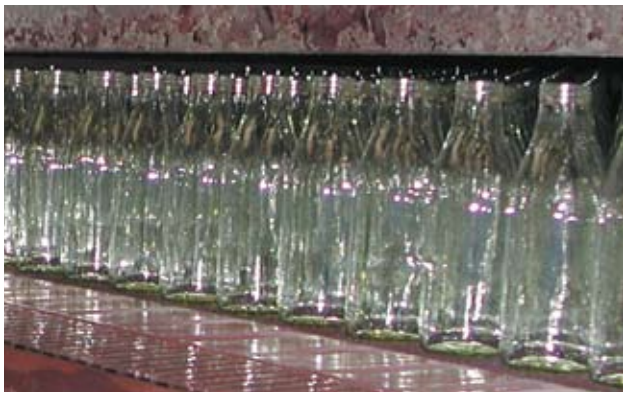
- Completely homogenous link plate construction possible in the centre of the chain
- Adjustment to the sprocket width required



Multiguide

Several rows of guide plates are mounted on the outside of the chain. These rows encase the sprocket teeth and centre the chain.

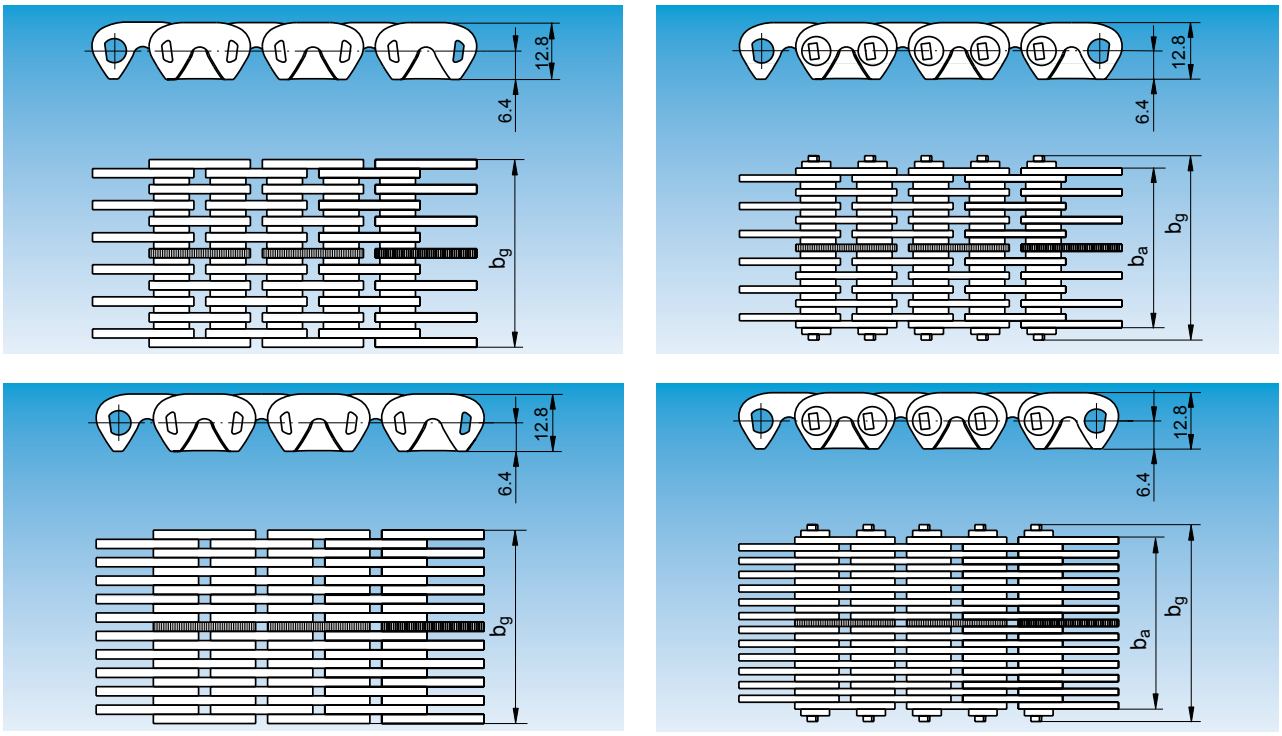
- Reduction in vertical wear
- Completely homogenous link plate construction possible in the centre of the chain
- Adjustment to the sprocket width required
- Increase in chain weight



Inverted tooth conveyor chains are generally centred on the sprocket with toothless plates, so-called guide plates. All of the guide types serve a useful purpose, however, the guide plates are, under certain circumstances, not always needed in inverted tooth conveyor chains. For more details, just ask us!

All types of guides are available from us. Please include the sprocket width when ordering any of our side guided chains.

Inverted tooth conveyor chains 1/2”

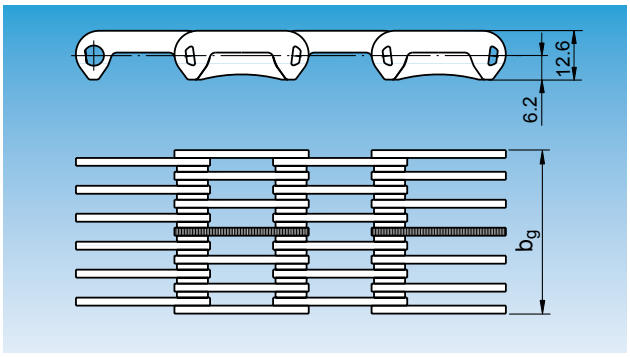


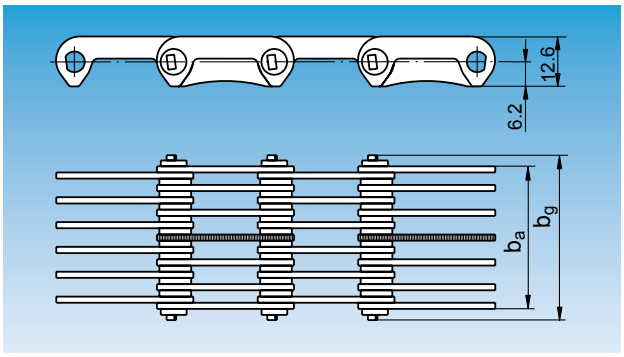
Inverted tooth conveyor chains with regular pitch 1/2”

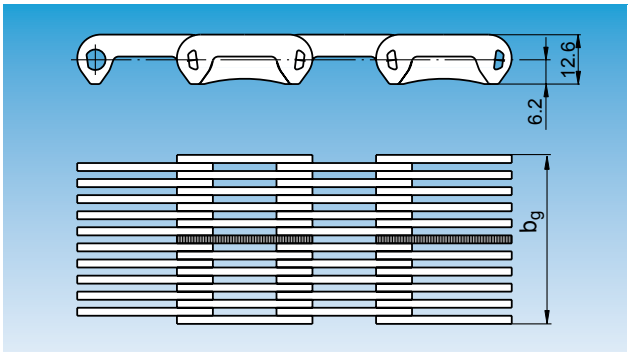
Laser-welded—2 mm link plates			Riveted—1.5 mm link plates				General	
Designation	Max. width b_g	Weight [kg/m]	Designation	Max. working width b_a	Max. overall width b_g	Weight [kg/m]	Nominal width	Sprocket width b
RS-100-CL	98.1	4.7	KTS 3100	90.8	96.4	4.0	100	100
RS-115-CL	115.7	5.8	KTS 3115	115.8	121.4	5.1	115	120
RS-125-CL	122.9	6.2	KTS 3125	121.0	124.5	5.3	125	130
RS-140-CL	137.3	6.9	KTS 3140	132.4	139.0	5.9	140	145
RS-150-CL	151.7	7.6	KTS 3150	147.0	153.0	6.4	150	155
RS-175-CL	173.3	8.7	KTS 3175	175.3	180.9	7.5	175	180
RS-200-CL	202.1	10.0	KTS 3200	196.0	201.6	8.6	200	205
RT-100-CL	97.9	6.4	KTSS 3100	90.8	96.4	5.2	100	100
RT-115-CL	114.3	7.5	KTSS 3115	114.0	120.0	6.7	115	120
RT-125-CL	126.6	8.3	KTSS 3125	122.0	127.6	7.1	125	130
RT-140-CL	138.9	9.1	KTSS 3140	134.6	140.0	7.8	140	145
RT-150-CL	151.2	10.0	KTSS 3150	147.0	152.7	8.5	150	155
RT-175-CL	175.8	11.6	KTSS 3175	172.2	177.8	9.9	175	180
RT-200-CL	200.4	13.2	KTSS 3200	198.8	204.4	11.5	200	205

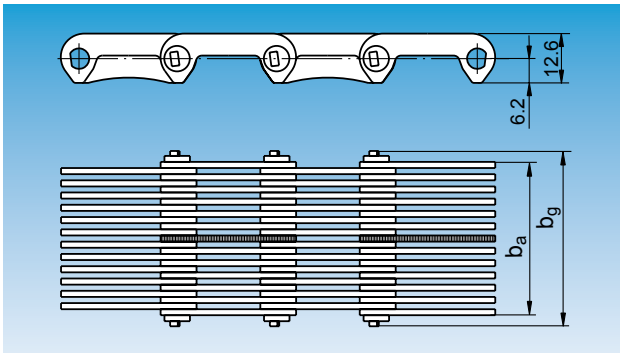
Dimensions in mm

Inverted tooth conveyor chains 2 x 1/2”









Inverted tooth conveyor chains with extended pitch 2 x 1/2”

Laser-welded—2 mm link plates			Riveted—1.5 mm link plates				General	
Designation	Max. width b_g	Weight [kg/m]	Designation	Max. working width b_a	Max. overall width b_g	Weight [kg/m]	Nominal width	Sprocket width b
ES-100-CL	98.1	2.7	KLS 3100	91.0	96.0	2.5	100	100
ES-115-CL	115.7	3.3	KLS 3115	112.7	118.3	3.0	115	120
ES-125-CL	122.9	3.6	KLS 3125	122.0	126.6	3.3	125	130
ES-140-CL	137.3	4.0	KLS 3140	135.0	140.0	3.6	140	145
ES-150-CL	151.0	4.3	KLS 3150	147.0	152.0	3.9	150	155
ES-175-CL	173.3	5.0	KLS 3175	170.0	175.0	4.6	175	180
ES-200-CL	202.1	5.8	KLS 3200	196.0	201.6	5.3	200	205
ET-100-CL	97.9	3.8	KLSS 3100	89.3	94.3	3.5	100	100
ET-115-CL	114.3	4.5	KLSS 3115	115.8	121.4	4.4	115	120
ET-125-CL	126.6	4.8	KLSS 3125	120.5	126.0	4.7	125	130
ET-140-CL	138.9	5.5	KLSS 3140	132.0	138.5	5.2	140	145
ET-150-CL	151.2	5.9	KLSS 3150	147.0	152.7	5.7	150	155
ET-175-CL	175.8	6.9	KLSS 3175	172.2	177.8	6.6	175	180
ET-200-CL	200.4	7.9	KLSS 3200	197.5	203.1	7.7	200	205

TRILEG-Version with similar dimensions.

Dimensions in mm; see next page for ordering information and explanations on the listed inverted tooth chains.

Ordering information

The standard inverted tooth chains listed in the table are just a selection from our delivery program.

The laser-welded inverted tooth chains feature a special design, with edge-rounding and using 2 mm thick plates. This allows a larger air feed gap for tight chains, plus an increased bearing area in spite of rounding. 1.5 mm thick spacers are, however, still used for link and spacer chains, and the gap is not much wider then.
Only even numbers of pitches can be used.

Inverted tooth conveying chains are delivered open with the rivet lock included. Two additional rivet locks are included in the service pack for laser-welded inverted tooth conveyor chains. Cotter pin locks should be avoided, since the cotter pin head protrudes on one side.

The manufacturing tolerance for the width of the inverted tooth chain is - 1 % for standard designs.

Order codes for 2 mm link plate thickness

3. Nom. width

5. Closure type
R = riveted
L = laser-welded
D = directly riveted

2. Construction
T = tight
S = spacer disks
B = bushings
C = cleaning disks

4. Guide type
C = internal guide
S = external guide
M = multiple external guide
W = without guide

1. Link plate form
R = regular pitch 1/2”
E = extended pitch 2 x 1/2”
T = TRILEG Version 2 x 1/2”
L = low model 1/2”

Order codes for 1.5 mm link plate thickness

2. Nom. width

4. Guide type
Optional: A = external guide

1. Version
KTSS = regular pitch 1/2” tight
KTS = regular pitch 1/2” with spacer disks
KLSS = extended pitch 2 x 1/2” tight
KLS = extended pitch 2 x 1/2” with spacer disks
KT = low model 1/2” tight

If not explicitly stated, all inverted tooth chains—with the exception of the low model which is riveted directly—are manufactured with rivet washers.

The right sprockets for each task

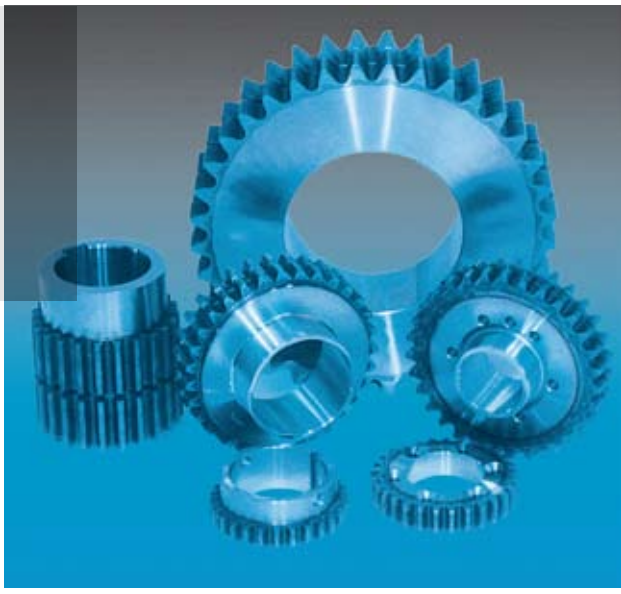
The diversity of sprockets is just a mirror-image of the multitude of application-specific conveyor tooth chains. Optimal adaptation of all relevant dimensions and profiles to one another results in an accurate toothing, the first step to trouble-free continuous operation.

Sprockets are manufactured to customer specifications, if technically possible, and the tooth design is adjusted to fit the type of guide used with the selected chain. Please indicate the type or previous tooth width when ordering replacement sprockets for use with side guide chains.
Of course, special versions are also available with guide grooves for various chain widths and can be prepared for the use in conjunction with center and side guided chains.

Material:

- C45 steel with hardened teeth. Standard material with proven resistance to wear.
- GGG-60 nodular graphite iron with hardened teeth, especially suitable for a large number of teeth, e.g. 84 teeth for maximum operation life (GG-25 is an alternative).
- Tool steel (vacuum hardened) for substantially higher operation life on cross conveyors with extremely high temperatures. Usual loss in hardness, as with normal steel sprockets, is avoided.

Additional materials available on request.



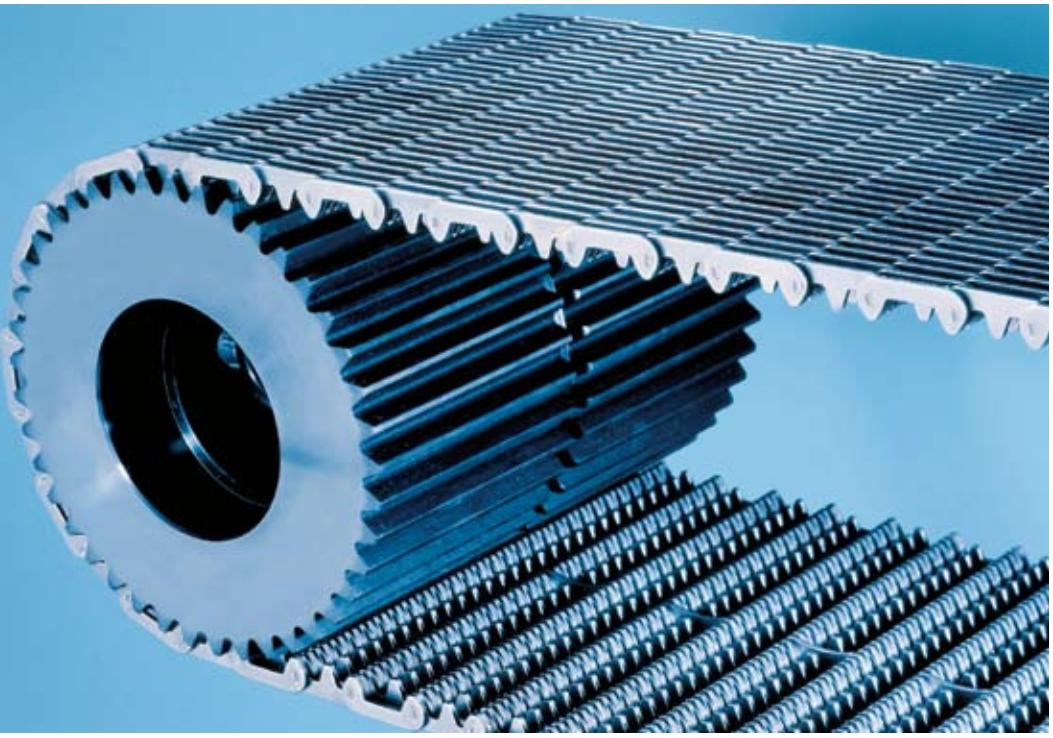
Slide rail height
Raising the rail surface by 2% of the sprocket diameter reduces contact pressure on the teeth and promotes quiet running.

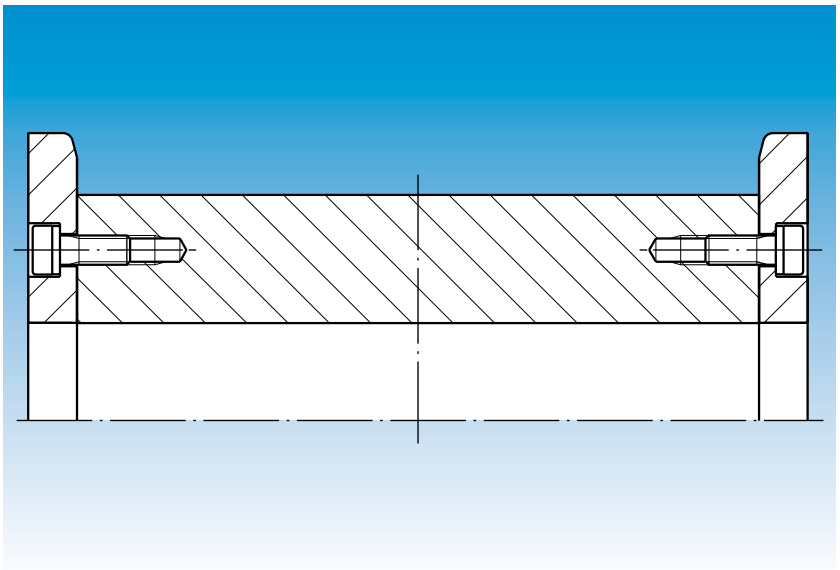
Recommended slide rail height:

$$h_{slide} \approx (d_0 \cdot 1.02)/2 - o$$

Dimension o in mm	
Regular pitch	o = 6.4
Extended pitch	o = 6.2
Low profile	o = 4.5

Sprockets in the glass industry



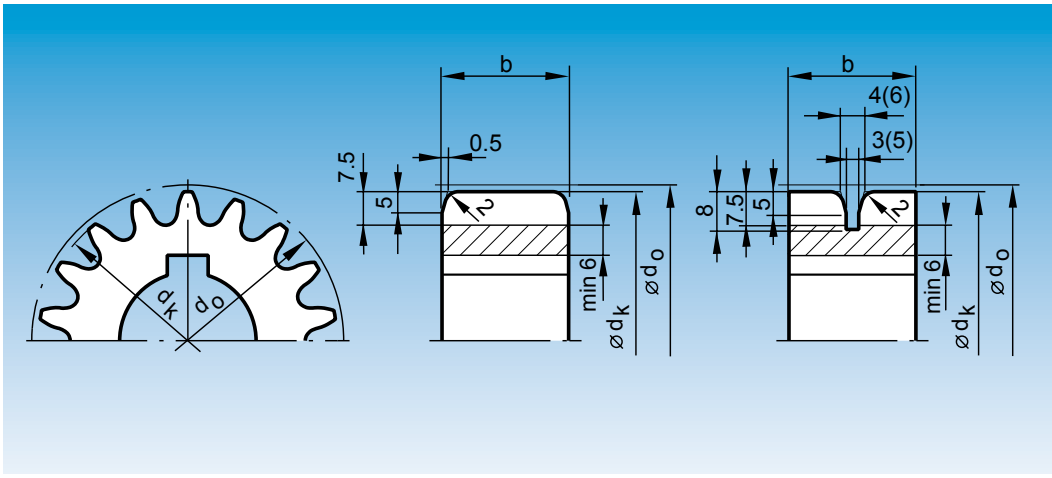


The inverted tooth conveyor chains used in the glass industry usually run on sprockets with a 1/2" pitch.
Whereas regular pitch and extended pitch have an identical tooth profile, low profile has a different kind of tooth profile.
TRILEG versions can also be used on sprockets with 1/2" toothing.

In order to maintain a consistent belt height at transfers points, we offer customer-specific solutions for toothless deflection rollers. The outer diameter of the deflection rollers, with the chain, corresponds to the diameter of the sprockets which have been previously used. The chain is guided by hardened flanges, which have been mounted on both sides. You must, however, take the overall width of the chain into account when doing this. Deflection rollers with flanges have a substantially higher operation life, when used with laser-welded inverted tooth conveyor chains, due to reduced wear on the parts. Use of TRILEG inverted tooth chains on deflection rollers is not recommended.

Sprocket dimensions

Chain width determines sprocket width. Narrower sprocket widths are possible in special cases. Extremely wide chains may make use of a series of narrower sprockets positioned side by side at a distance. The correct outer diameter for a sprocket with a new chain is determined by the diameter of the pitch circle:



Pitch circle diameter:

$$d_0 = \frac{12.7}{\sin(180°/z)}$$

Outer diameter:

Dmax= d_0 + X	
With correction factor	X =
Regular pitch	X = 12.8
Extended pitch	X = 12.8
Low profile	X = 11.2

Sprockets with the correct tooth design are essential for reliable operation and a long operation life for the inverted tooth chain. The warranty for an inverted tooth chain is not applicable if it is used with sprockets that are not manufactured by Bosch Rexroth.

Minimum number of teeth:

- Regular pitch and low profile 17 teeth
- Extended pitch 26 teeth, preferably at least 35 teeth

A larger number of teeth lowers the polygonal effect and generally reduces elongation. Regular pitch can, theoretically, operate with only 13 teeth.

Sprocket diameter dk for 1/2" pitch

Z	d_k	Z	d_k	Z	d_k
17	67.9	42	169.4	67	270.6
18	72.0	43	173.5	68	274.6
19	76.1	44	177.5	69	278.7
20	80.1	45	181.6	70	282.7
21	84.2	46	185.6	71	286.8
22	88.3	47	189.7	72	290.8
23	92.3	48	193.7	73	294.9
24	96.4	49	197.8	74	289.9
25	100.5	50	201.8	75	303.0
26	104.5	51	205.9	76	307.0
27	108.6	52	209.9	77	311.0
28	112.7	53	214.0	78	315.1
29	116.7	54	218.0	79	319.1
30	120.8	55	222.1	80	323.2
31	124.8	56	226.1	81	327.2
32	128.9	57	230.1	82	331.3
33	133.0	58	234.2	83	335.3
34	137.0	59	238.2	84	339.4
35	141.1	60	242.3	85	343.4
36	145.1	61	246.3	86	347.5
37	149.2	62	250.4	87	351.5
38	153.2	63	254.4	88	355.5
39	157.3	64	258.5	89	359.6
40	161.3	65	262.5	90	363.6
41	165.4	66	266.6		

Z = number of teeth
dk = tip diameter
Dimensions in mm

Easy assembly and correct shortening of inverted tooth chains

Use only even link numbers. Otherwise, lateral offsets may develop at the junction between both ends. Normal riveted inverted tooth chains are closed with rivets and may be opened at any point by grinding off a rivet head. A new rivet closure is needed to reseal the opening. The following operation applies to inverted tooth chains with direct riveting or laser-welding:

Closing

- Join both ends and connect them with the accompanying rivet closure.
- For laser-welded inverted tooth chains, grind off any protruding rivet head to the outer link. (cf. Fig. 5 and 6)

Shortening

- Proceed as in Fig. 1 – 6

Recommendation: Inverted tooth chains longer than 10 m usually have several junctions. These are preferably used to open the chain if you have to shorten it, which makes this process easier.

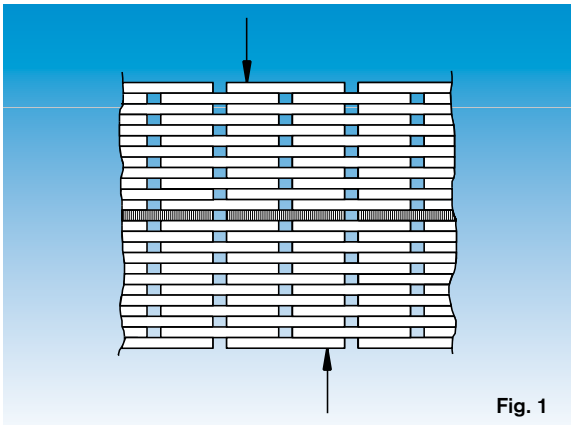


Fig. 1:

- Force open the weld by hitting the pin's front side (if possible, offset on both sides to allow each axle pivot to remain connected to a welding linkplate).

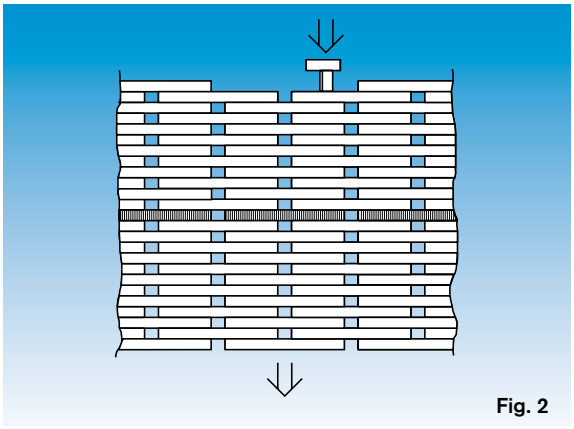


Fig. 2:

- Remove the first axle pivot with the connected welding linkplate and replace it with the rivet closure axle pivot.
- The rolling pivot need not be changed.
- Remove the second axle pivot likewise with the welding linkplate.
- Rivet.

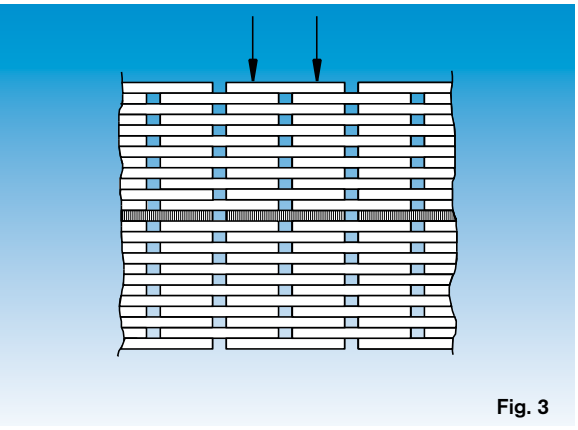


Fig. 3:

- Measure off the necessary length and disconnect both welds on one side (blasting the linkplate on its front).

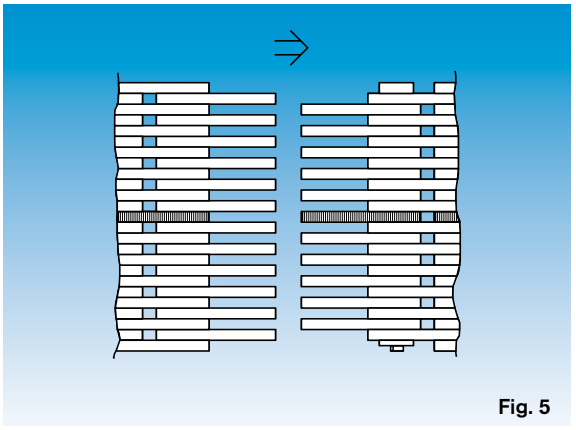


Fig. 5:

- Push the now inversely arranged ends of the inverted tooth chain into one another until the holes are in line.

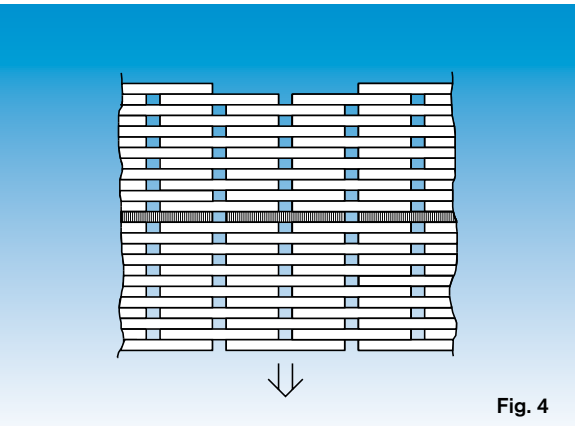


Fig. 4:

- Remove welding linkplate with both rolling pivot joints.
- Remove individual parts and single links as well as a chain section.

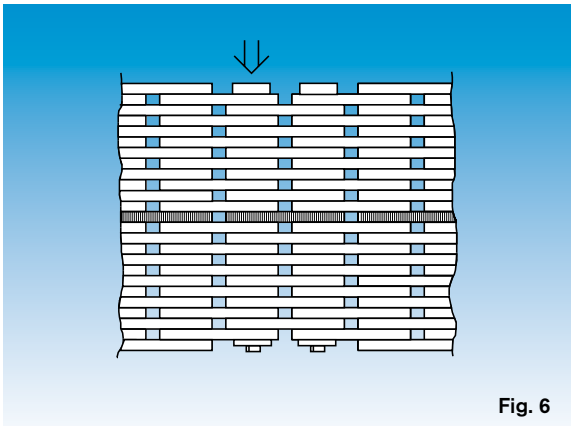
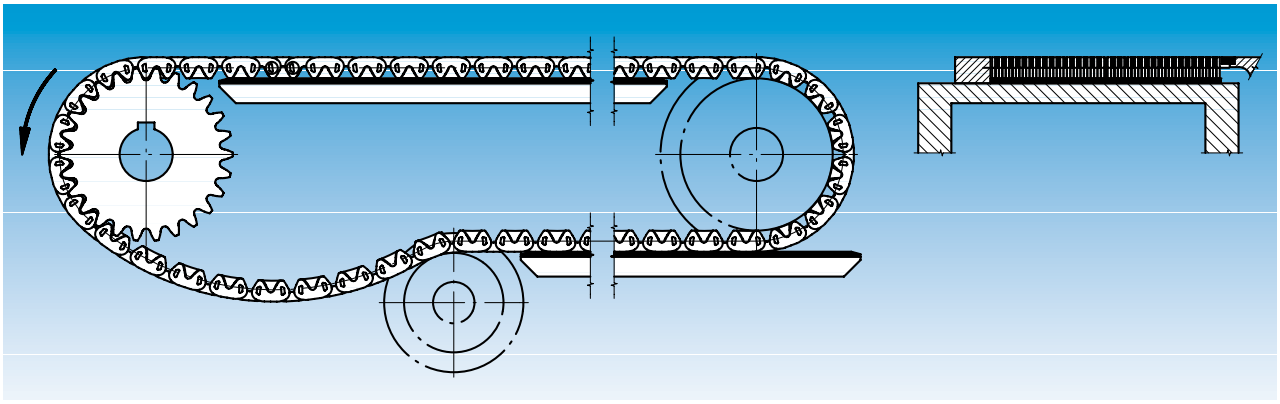


Fig. 6:

- Insert rivet closure (first the axle pivot with the washer, then the rolling pivot).
- Rivet and abrade both rivet heads until they are flush with the outer surface of the adjoining linkplates.

Installation and maintenance



Due to the positive sprocket powered drive system, inverted tooth conveyor chains do not require pre-tensioning.
The drive should be oriented so that the chain is pulled along the conveyor to ensure that a bulge and wave-free surface is obtained. To permit tensioning, the sprockets should be adjustable horizontally. Chain elongation caused by wear or heat must be compensated for automatically to avoid a chain pile-up. This self-tensioning effect is reached by means of a 1-metre sag behind the driving sprocket.

Should the sag increase, the distance between the shafts can be adjusted or the chain can be shortened. Transfer from the machine conveyor to the cross conveyor requires a consistent chain height. This is accomplished by using toothless deflection rollers on the cross conveyor. The guide bed ensures lateral guiding of the chain belt between both sprockets. Unilateral heating, e.g. at the cross conveyor in front of the cooling furnace, can cause a lateral deflection resulting in high friction on the side guides.

Steps to be taken against lateral wear:

- Divide the guide bed into segments and position them at angles which allow for the curvature of the chain
- Inverted tooth conveying chains without rivet heads-use laser-welded inverted tooth chains with smooth surfaces

The operation life of inverted tooth conveyor chains at the hot end depends on the chain length, temperature, speed, and the contamination level.

Approximate operation life:

- Approx. 5 years for machine conveyors
- Approx. 2 years for cross conveyors
- A multiple of the above for chains at the cool end

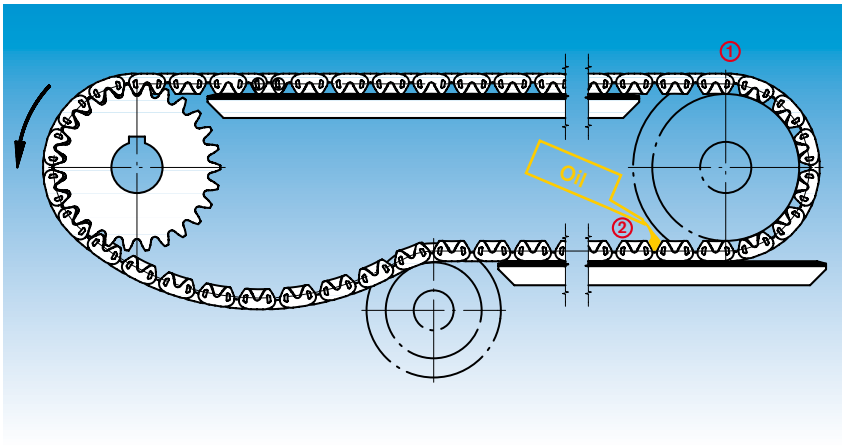
Lubrication

Lubrication of the chain should be avoided at the hot end. Do not apply moulding grease to the chain as this would fill the interspaces between the link plates and harden, thus making the chains less flexible. Only lubricants which are thermally stable or which evaporate without residue should be used. Apply such lubricants following the recommendations in the picture below. It is important to lubricate prior to any interruption in operation and the resulting cooling down of the chains. The surface should be moistened with a liquid lubricant to prevent rusting and stiffening.

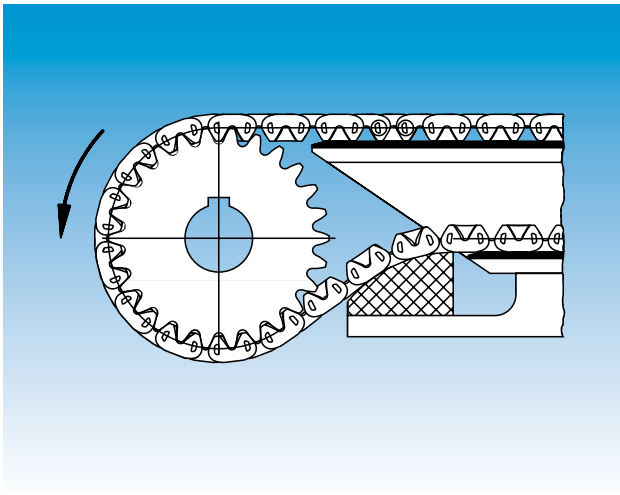
Inverted tooth chains are always delivered protected against corrosion.

Reverse bending of inverted tooth chains

As inverted tooth chain drives do not possess much bilateral flexibility, they should not be bent over the backs. Depending on the pitch and type, the loose strand can be returned with appropriate radii (see chart). Belts with S-shaped wraps, e.g. with a center drive, are available with bilaterally flexible inverted tooth chains. Reverse operation is possible with a pre-tensioned inverted tooth chain; however, this requires a special layout.



Oil should be displayed to the chain evenly across the full width to avoid uneven elongation due to partial lack of lubricant.
① Clean here if necessary.
② Lubricate here if possible.



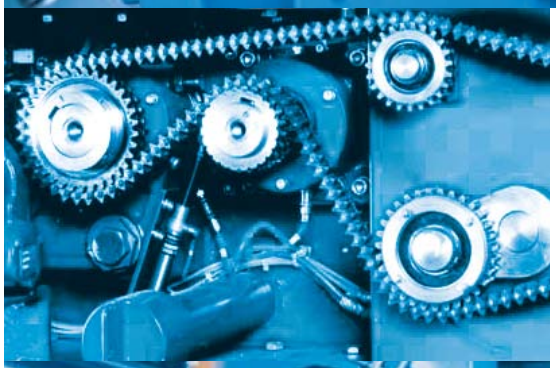
Overview of the allowable bending radii for the return unit:

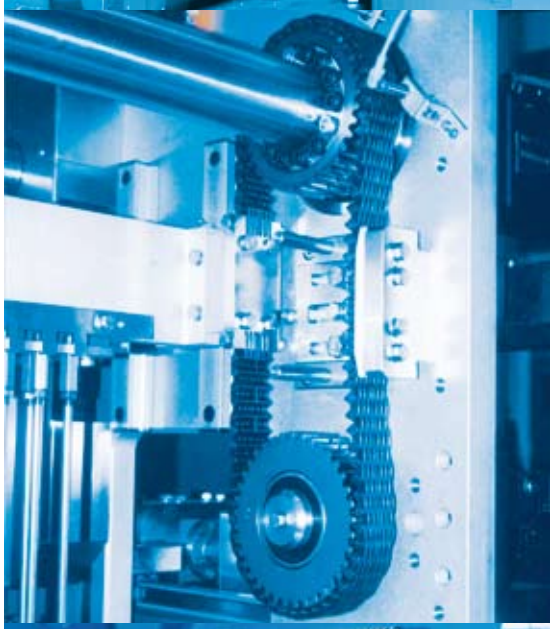
Inverted tooth chain type	bending radius
KTSS / KTS / KTB	> 35 mm
RT / RS / RB	> 65 mm
KLSS / KLS / KLB	> 75 mm
TT / TS / TB	> 95 mm

Loose strand: Unloaded chain without tensile load (loose side of chain)

Advantages you can dig your teeth into: Customer service, engineering, design, and extensive know-how.

Using the latest technical methods and field-specific knowledge needed for the customers' tasks, we calculate and develop the most suitable configuration. Inverted tooth chains and sprockets are perfectly adapted to each other.





Inverted tooth chains for drives

All inverted tooth chains for conveying and special applications originated in drive chains. These were designed for the transmission of great traction, torque, and power, even at high rotations and speeds up to 50 m/s as well as slower-running machines at full capacity. In all of these cases, service life and functional reliability are indispensable.

These factors are met through the following pre-requisites:

- Sliding friction-free rolling pivot joints made from case hardened steel and exhibiting a high degree of efficiency, resistance to wear, and durability
- Inverted tooth chain link plates with FE-optimized outlines made from high-resistance heat-treated steel
- Sprockets featuring hardened involute-toothing for smooth, impact-free meshing

When compared to other wrap drives, roller chain drives, and belt drives, the advantages shine through:

- Optimum use of space due to high power density
- **The proverbial quiet running; in a word: silent chain**
- Extremely long service life
- Very low lubrication requirements
- High temperature resistance

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