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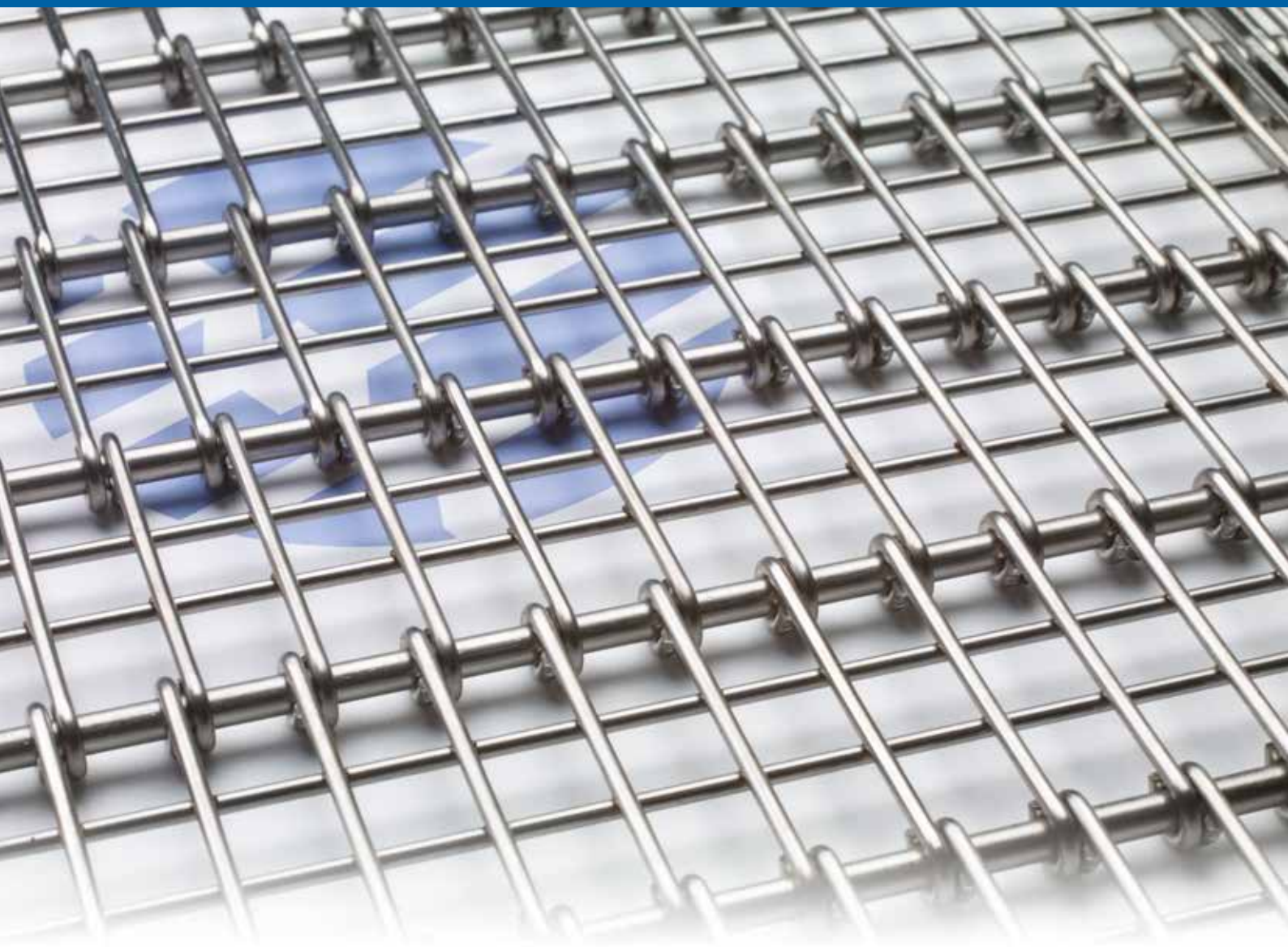
The Trusted Metal Conveyor Belt Manufacturer™



Eye-Flex® conveyor belts

Support Guide

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Eye-Flex® conveyor belt

Support Guide

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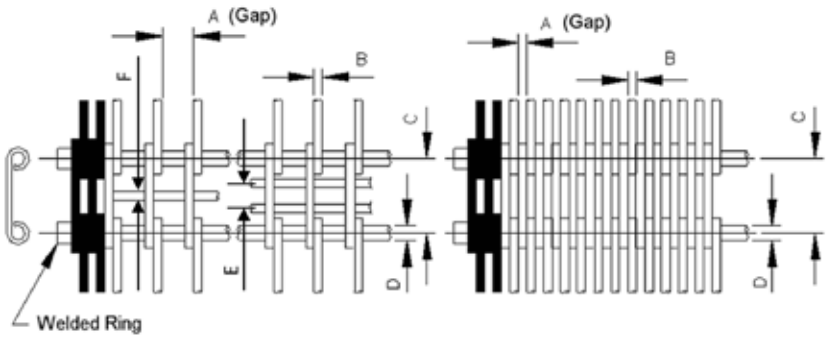
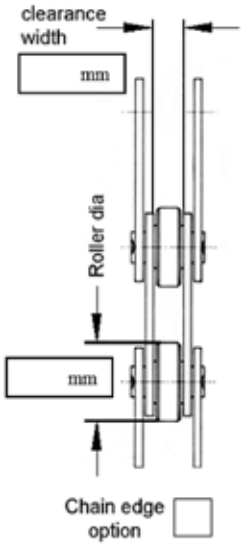
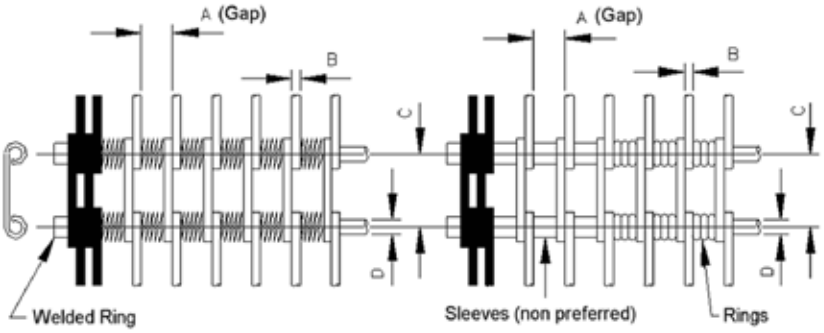
Eye-Flex Conveyor Belt Request for Quotation



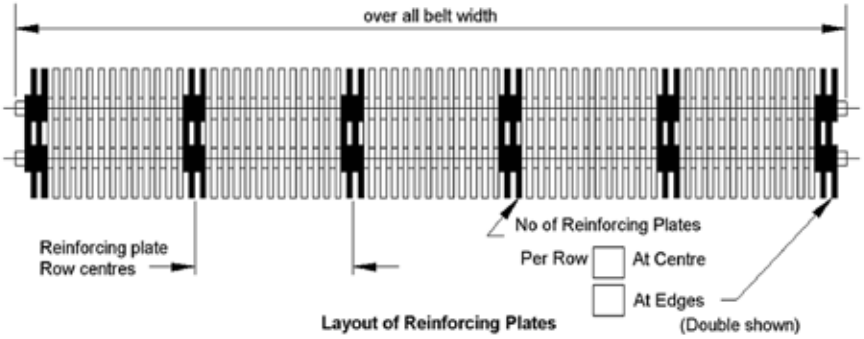
Wire Link with single or double underside welded wires. Triple also available.	Wire Link fully packed ☐
No of welded wires ☐	



Length (mtrs)	O/all width (mm)	Material	A Gap (mm)	B Dia (mm)	C Ctrs (mm)	D Dia (mm)	E Ctrs (mm)	F Dia (mm)



Wire Link with spacer Springs ☐	Wire Link with spacer Sleeves ☐ or spacer Rings ☐



Layout of Reinforcing Plates

Belt Installation Guidelines

1. PREPARATION - BEFORE INSTALLING A NEW BELT, ALWAYS CHECK THE CONVEYOR STRUCTURE;

- Shafts to be at 90° to direction of travel, and horizontal.
- Rollers to be free to rotate.
- Sprockets to be correctly positioned, and aligned.
- Belt supporting surfaces are smooth and level with adequate belt edge clearance.
- Check that there are no parts of the structure that can catch the belt.
- If a take up mechanism is fitted, ensure that it is functioning correctly.

Tools you will need:
• Safety glasses
• Flat end pliers
• Side cutting pliers
• Grinder or alternatively a hacksaw
• Heavy duty cable ties/wire/rope (optional)
• Pulling rope (for long new conveyor installations)
• Manual pulley or powered winch system (for long heavy weight belt systems only)
• Necessary tools for conveyor belt take up adjuster
• Welding set to complete the belt edge cross rod join(s)

2. INSTALLATION PROCEDURE:

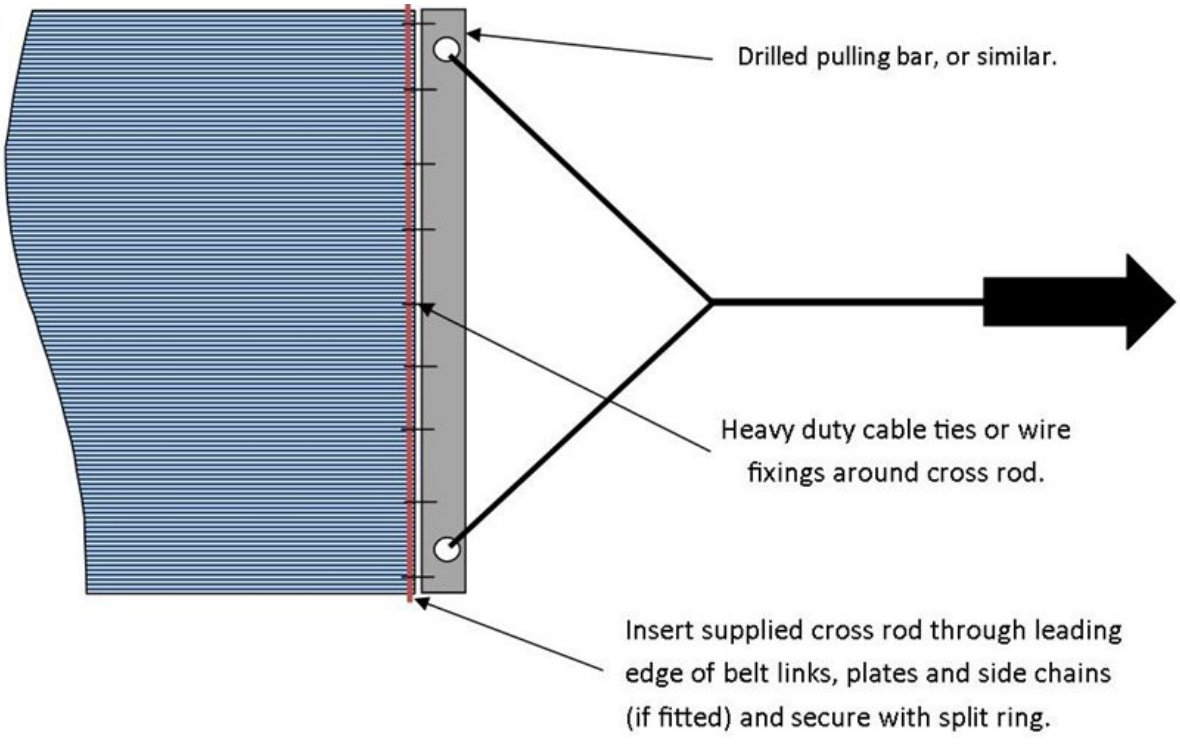
1. First ensure that the electrical supply to the conveyor is turned off and the power supply locked out.
2. Release any conveyor belt tension take up mechanism to allow maximum adjustment during use.
3. The top surface of the belt is flat with the cross rod/link ridges on the underside.
4. There is no direction of travel to this style of belt (unless overlapping side guards or cross flights are fitted).
5. The belting should be pulled through the conveyor circuit until the two ends meet. There are 2 approaches to this:

Existing Belt Installation: In this instance the existing belt would be cut on the non-drive carry way surface (normally idle infeed end) by grinding or cutting off a cross rod head and then withdrawing the rod.

Important Note: Before doing this, check the lead edge of the new belt to ensure you will maintain the in/out pattern of assembly when the ends of the belt (new and old) are connected.

Then temporarily attach the lead of the new belt roll to the lagging end of the existing belt using the supplied joining cross rod. With the cross rod fully inserted clip onto the plain rod end the supplied split ring. Tap the ring in position whilst supporting the opposite end rod head. If the belt is supplied in more than one length you will need to repeat this attachment procedure. Then by means of supporting the new belt (whether on a roll or layered on a pallet) you will be able to carefully drive the belt (operate at slow speed) into the conveyor using the existing belt – always maintain suitable belt tension to ensure there is no belt slip on the drive sprockets. Whilst the belt is being driven in the old belt should be collected at the underside infeed end and layered carefully onto a pallet or suchlike for disposal. Once the lead edge of the new belt has been pulled through the circuit to the infeed end, remove the first temporary fix cross rod and split ring, taking care to collect the split ring. Then layer the leading belt edge over the trailing edge of the new belt and mark the cross rod cutting point to maintain the in/out pattern of assembly. The excess belt should then be removed by grinding or cutting off the appropriate rod head and withdrawing the rod, whilst maintaining the correct in/out repeat pattern of the belt edge. Then continue on from step 6 on page 7.

New Conveyor Installation: If fitting the belt to a conveyor, where there is no existing belt (such as a new installation), the belt will have to be fed through the conveyor circuit by hand. For long heavy belt weight conveyors where it is not possible to pull the belt through by hand the process will be different. First insert through the belt leading edge links, plates and side chains (if fitted) a supplied cross rod. With the cross rod fully inserted temporarily clip onto the plain rod end the supplied split ring. Tap the ring in position whilst supporting the opposite end rod head. Then attach a steel drilled pulling bar of your own supply (see below) using cable ties, wire or similar. To this bar attach a pulling rope which is then fed through the conveyor carry way to the discharge. From here the belt can be pulled through the carry way part of the circuit. For long heavy belt systems it may be possible to pulley wrap the rope around the drive shaft to give assistance in pulling the belt – ensure that the drive is controlled and operated at slow speed. Check that the lead edge of the belt and cross bar does not catch on any part of the conveyor framework. Once the lead edge of the belt is at the discharge end the rope should then be fed back through the return way of the belt circuit to the infeed end (after first removing the rope from the drive shaft if a pulley wrap of rope was used). The belt can then be pulled through the return way (maybe with slow speed drive assistance) to the infeed end. For long heavy belt weight systems a manual pulley rope or powered winch cable attached to the cross bar/rope may be required. However if you are not able to control the speed of the belt drive shaft and the pulley/winch system together then we suggest that you disconnect the geared motor drive from the drive shaft allowing the drive shaft to freely rotate in its bearings. Take care to ensure the lead edge of the belt does not catch on any part of the conveyor framework during this operation. Once the lead edge of the new belt has exited the return way at infeed, remove the cross bar, rope and any pulley or winch cables used. Then remove the leading edge temporary fix belt cross rod and split ring, taking care to collect the split ring. Next layer the leading belt edge up around the infeed idle roller and over the trailing edge of the new belt (on the carry way) and mark the cross rod cutting point to maintain the in/out pattern of assembly. The excess belt should then be removed by grinding or cutting off the appropriate rod head and withdrawing the rod, whilst maintaining the correct in/out repeat pattern of the belt edge. Then continue on from step 6 on page 7.



6. Temporarily, the two ends can be tied together; this may make assembly easier.
7. The adjacent join position wire links/plates and side chains (if fitted) can then be layered together. Check that all links, plates & chains are maintaining the pattern of assembly before re-inserting the joining cross rod. Then connect the ends by inserting a supplied cross rod through the mating links/plates and chains to make the belt endless. Re-attach the split ring to the rod head as previously described. It may help to lay a board under the join positions to ensure that the wire links and plates lay flat when inserting the cross rod. Then finally check that the pattern of assembly is maintained across the join position(s) before proceeding.

Note! A correctly assembled belt will always have an even number of pitches, in its' length.

8. Finish the rod(s) by welding in place the split ring(s) to the rod head to complete the join. Note! Care should be taken not to weld the rings to the edge plates or side chains. Then check to ensure the belt still articulates freely after joining.
9. Re-connect the geared motor to the belt drive shaft if it had been disconnected during the belt fitting process.
10. The take-up, or tensioning, should be adjusted in accordance with the manufacturer's instructions. Generally, a correctly set-up conveyor will have small catenary loop in the belt return path and just enough tension to ensure that the belt engages with the sprockets and continues to drive.
11. After a few hours of process running check the tension and adjust if required.

NOTES:

Sometimes a belt can show signs of surging, hunting or jerking. What could be happening may be an effect sometimes referred to as "slip-stick" which can afflict some longer conveyors (with any type of belt). The belt can act something like a spring. The idle end of the belt can remain stationary until belt tension increases to the point that static friction is overcome; the belt can then surge ahead and the resulting drop in tension may then allow the belt to slow, or even stop. The cycle of surging can then become repetitive; if this problem persists then consult the designer or manufacturer of the conveyor.

Inspection and Installation Check List

YES	NO	BEFORE YOU BEGIN JOINING THE BELT
		Power to the conveyor is disconnected
		Wear safety glasses
		Correct tools on hand
		All tensioning mechanisms released
		Belt threaded onto conveyor right (smooth) side up
		Belt length is an even number of pitches (to allow reinforcing plate rows to align at the join)
		AFTER JOINING/INSTALLATION COMPLETED
		Check sprocket teeth alignment (Not needed if shaft is "keyed")
		Check position of the wear strips and adjust if not supporting reinforcing plates (Not applicable to herringbone or chevron support)
		Check belt tracking
		Retighten/adjust tension
		Test tracking by running belt without product; adjust belt
		Tools returned to proper storage locations
		CONVEYOR SAFETY CHECK
		Are operating instructions clearly listed or posted?
		Are safety guards adequate to prevent accident and injury?
		Are limit switches and alarms working?
		Personnel know location of emergency stop/control switches
		ROUTINE MAINTENANCE INSPECTION/EVALUATION
		Check belt surface for bent or broken Eye-Links
		Check splice clips (if used) for wear/damage
		Check all conveyor components for excessive wear (drive sprockets, idler rollers, wear strips, etc.); replace if needed
		Check position of wear strips and adjust if not supporting reinforcing plates (Not applicable to herringbone or chevron support)
		Check belt tracking
		Check levelness of conveyor frame
		Test tracking by running belt without product; adjust belt

Drive Components

Sprockets

With their positive engagement, sprockets eliminate the possibility of slippage on the drive shaft that can occur on a friction drive system. All sprockets are available in stainless steel or polyacetal plastic. The table below shows the available pitch diameters and number of teeth for each belt pitch.

Sprocket pitch diameter table

Number of Teeth	Belt Pitch mm										
	15.875	25.00	25.40	30.00	31.75	50.00	50.80	60.00	70.00	75.00	100.00
7	36.60	57.60	58.50	69.10	73.20	115.20	117.10	138.30	161.30	172.90	230.50
10	51.40	80.90	82.20	97.10	102.80	161.80	164.40	194.20	226.50	242.70	323.60
12	61.30	96.6	98.10	115.90	122.70	193.20	196.30	231.80	270.50	289.80	386.40
14	71.30	112.4	114.20	134.80	142.70	224.70	228.30	269.60	314.60	337.10	449.40
15	76.40	120.2	122.20	144.30	152.40	240.50	244.30	288.60	336.70	360.70	481.00
16	81.40	128.2	130.20	153.80	162.70	256.30	260.40	307.60	358.80	384.40	512.60
18	91.40	144.0	146.30	172.80	182.80	287.90	292.60	345.50	403.10	431.90	575.90
20	101.50	159.8	162.40	191.80	203.00	319.60	324.70	383.60	447.50	479.40	

Sprocket Material

- PA6G (Polyamide Cast Nylon 6) - FDA approved.
- POM (PolyOxyMethylene / Acetal) – FDA approved.
- 1.4305 Stainless Steel - standard
- 1.4404 Stainless Steel - for corrosive environments
- Mild Steel
- Other materials on special request.

Cage Rollers

This positive drive system is often used for chain edge belts. In addition to driving the chain edge, this drive system also engages the belt across the entire belt width. Cage rollers are an excellent choice for applications that require a sanitary and hygienic drive system.

Potential Causes of Downtime

By their very nature, all conveyor belts have a finite life, including metal belts. However, it is a fact that the majority of conveyor belts do not wear out or "use up" their life. Most belts, if they actually do fail during use in a production environment, fail because of factors not related to strength, belt life, or robustness of the belt. They usually fail for one or more of the reasons outlined below. These failures result in critical downtime, which equates to lost opportunity, lost production and lost profits. We have the most common issues that have been found to be the culprit in conveyor and/or belting breakdown situations.

Use of aggressive cleaning solution – Abrasive or corrosive cleaning solutions can degrade the belt material rapidly. Abrasive solutions can be used provided the belt is rinsed thoroughly afterward. Where corrosive or caustic cleaning solutions are necessary, consider the use of 316L stainless steel belting..

Wrong belt for the application - Products and processes change over the years. The conveyor and belt that were designed for a specific product and process several years ago may no longer be appropriate or heavy duty enough for the demands of the current application. The impact of product loading and belt speed on belt life needs to be re-evaluated on an on-going basis.

No spare belt – A spare belt should always be available close to the point of use in order to be prepared for the unexpected. It is a false economy not to carry spare belting or to make arrangements for rapid availability. The Wire Belt Company has a number of solutions to the costly cause of downtime.

Drive sprockets out of alignment - The drive sprocket teeth must be perfectly aligned so that they all pull together smoothly to avoid "stress overload" on isolated sections of the belt. (Using a "Keyed" drive shaft eliminates the need to manually align the sprocket teeth.)

Installation of wrong drive sprockets - Substituting other commercially available spur gears and sprockets will cause belt climbing and snapping. Only Eye-Flex sprockets purchased from Wire Belt Company are specifically designed to fit and pull the belt properly.

Too much tension on belt - Eye-Flex is a low-tension system. You only need to use enough tension to engage the drive sprockets correctly. (Too much tension literally pulls the belt apart).

Accidents to conveyor machinery and belt - Accidents can and should be minimised, through establishment of standardised maintenance checklists and proper training of maintenance personnel.

Trouble Shooting Guide

Problem	Possible Cause(s)	Solution(s)
Belt blackening	• Frozen/stuck roller	• Free roller; reduce or eliminate steel-to-steel contact
	• Too much tension	• Adjust tension take-up
	• Load too high	• Change to a heavier mesh belt
	• Improper/inadequate cleaning	• Install continuous spray cleaning device on conveyor
	• Too much steel to steel contact	• Replace metal parts, where possible, with suitable plastic alternatives
	• Galling of belt surface	• Allow belt to "run-in" for several days before first clean
Excessive wear strip wear	• Abrasive cleaner used	• Install spray wash on belt to reduce grit build up
	• Load too high	• Increase the number of wear strips
	• Not enough wear strips / incorrect positioning	• Install more wear strips / correct positioning of wear strips
	• Wrong type of wear strips	• Consult Technical Sales
Belt not tracking properly	• Sprocket teeth mis-aligned	• Check alignment and adjust
	• Conveyor frame not square	• Check alignment and adjust
	• Drive shaft not aligned	• Check alignment and adjust
	• Uneven product loading	• Correct loading method
Excessive belt wear or poor belt life	• Contact with other equipment	• Eliminate contact
	• Too much or uneven tension	• Adjust tension take-up so it is equal on both sides of frame
	• Wrong type of wear strip	• Consult Technical Sales
	• Abrasive cleaner used	• Install spray wash on belt to reduce grit build up
	• Load too high	• Change to a belt with higher load capacity
	• Speed too high	• Reduce running speed
	• Frame not level	• Correct affected area
	• Sprockets not properly installed or aligned	• Check for correct sprocket arrangement and alignment - adjust if needed
Belt not hinging properly	• Belt components too tight (Standard gap)	• Remove components (eyelinks) from belt
	• Work temperature too high for belt	• Use different material or belt suitable for higher temperatures
	• Product on belt contains abrasive elements (Sugar sand, etc.)	• Use different belt style, clean belt (brush or blow off residue)
	• Belt drive location incorrect	• Make sure belt is being pulled not pushed

Trouble Shooting Guide

Problem	Possible Cause(s)	Solution(s)
Flights and/or side guards damaged	• Contact with other components/ equipment	• Eliminate contact, consider changes to conveyor or design of flights/sideguards
	• Insufficient clearance at transfer	• Adjust to allow for sufficient clearance
	• Uncontrolled loading (heavy weight dumped on small area)	• Adjust loading to take place in a controlled way equalised over belt width
	• Product jamming/blocking while being loaded	• Adjust loading process
Excessive wear of welded edges, torn off weld heads	• Edges in contact with conveyor frame	• Adjust belt location and tracking, consider use of guard strips at edges
	• Belt too wide for conveyor	• Reduce belt width
Eyelinks moving to one side	• Belt not running straight:	• Ensure correct belt tracking
	• Frame warped / shafts not in right angle	• Correct frame / adjust shafts to right angle
	• Uneven tension	• Adjust tension take-up so it is equal on both sides of frame
	• Sprockets not properly installed or aligned	• Check for correct sprocket arrangement and alignment - adjust if needed.
Belt running against conveyor frame	• Belt not running straight:	• Ensure correct belt tracking
	• Frame warped / shafts not in right angle	• Correct frame / adjust shafts to right angle
	• Uneven tension	• Adjust tension take-up so it is equal on both sides of frame
	• Sprockets not properly installed or aligned	• Check for correct sprocket arrangement and alignment - adjust if needed.
Underwire disconnects from eyelinks / falling off	• Underwires are in contact with drive components / blanks	• Use drive components / blanks suitable for use with Eye-Flex with eyelink panels using underwires
Product build up at sprockets	• Drive sprockets not suitable for application	• Consider replacing with cage roller

Glossary of terms

Cage roller	Alternative drive system for Eye-Flex, which engages the belt across the entire belt width. The main benefit of this system can be found in freezers as snow build-up is drawn away from belt and drive components and therefore reducing the chance of belt failure due to build up on sprockets.
Chain centre distance	The distance between the centres of the chains on both edges, only applicable to belts with chain edges.
Chain sprocket	A drive sprocket for the use with chain driven belt (see also Hollow pin chain).
Cotter pin	A metal pin used to secure the edge of a belt (see also Welded button)
Cross rod	A metal rod pushed through eyelinks, reinforcing plates, chains, etc. across the belt width in order to connect them to become a conveyor belt. The centre distance of two neighbouring cross rods is the pitch of the belt.
Cross rod diameter	The diameter of the cross rods used for a belt like Eye-Flex (see also Wire diameter).
Drive shaft	The part that drive sprockets are mounted on. These, as a unit, are driving the belt.
Drive sprocket	A machined disc with teeth on the circumference, de-signed to engage with the belt. They are fitted to the Drive Shaft that together with the sprocket positively drives the belt.
Eyelink	A piece of wire with both ends bent to a circular shape to allow for a cross rod to be pushed through. These rounded sections are called eyes.
Eyelink diameter	See Wire diameter
Eyelink panel	A number of eyelinks welded at right angle onto a cross wire which keeps them at a set distance to provide the gap of the Eye-Flex belt. Depending on the belt pitch up to three underwires can be used to support the eyelinks. Gaps of more than 50mm can be maintained and this method provides the largest range of possible eyelink gaps.
Eyelink thickness	See Wire diameter
Flights	Flights on Eye-Flex belts are used for inclines or de-clines, as well as product separation. There is a huge variety of flight styles and assembly methods to suit different requirements. For instance, fastening plates may be built into the belt on which a piece of metal strip is mounted. Flights can be made with either an open or closed structure.

Glossary of terms

Gap	see Gap width
Gap distance	see Gap width
Gap fixing	The method used for keeping the gap in an Eye-Flex belt. Typical methods are Standard gap, Underwire, Ring spacers, Spring spacers and Tube spacers.
Gap width	Clearance between two neighbouring eyelinks.
Hollow pin chain	Eye-Flex as well as other belt styles may be fitted with chain edges when an alternative drive system is required. In this case the drive sprockets will not engage the belt but the chain (See also Chain sprockets).
Idler blank	A support disk, similar to a sprocket with no teeth.
Idler sprocket	Non-drive sprockets which support the tracking of a belt.
Overall belt width	Describes the total width of the belt measured over the outermost parts of the belt edges.
Pitch	The distance between the centres of two neighbouring cross rods.
Plate roller chain	An edge style for Eye-Flex similar to chain edges, but made of plates and rollers (see also Hollow pin chain).
Polygon sprocket	see Drive sprocket
Reinforcing plate	Reinforcing plates provide most of the pull strength of an Eye-Flex belt. They also provide a bearing surface to run on the belt supports.
Ring spacer	Circular shaped wire pieces for increasing and maintaining the gap in an Eye-Flex belt. Multiple rings can be used for one gap to increase the gap even further in steps defined by the diameter of the wire used for the rings.
Rows of reinforcing plates	Describes the pattern and amount of reinforcing plates within an Eye-Flex belt.
Side guards	Plates mounted into the belt across the belt length. Usually used at the edges to keep conveyed product from falling off the belt edges. Can also be mounted within the usable width of a belt across the belt length to provide separate lanes on one belt. There is a variety of possible shapes, sizes, and assembly patterns.
Spring spacer	Springs are used in Eye-Flex belts to allow flexibility in link spacing. Springs also expose a large proportion of the connecting rod for improved cleaning and sanitising.
Sprocket	See Drive sprocket
Standard gap	It describes an Eye-Flex belt with no spacers between eyelinks. In such case the gap equals the eyelink diameter.

Tube spacer	Tube like objects put on the cross rods of an Eye-Flex belt in order to increase the gap for better air circulation. The length of the tubes defines the gap of the belt.
Underwire	The cross wire used for eyelink panels.
Usable width	The width of the belt that actually can be used for conveying product. Compared to the overall belt width this dimension depends on the construction of the belt and excludes edge limitations like chains and/or side guards.
UWW	See Underwire and Eyelink panel.
Welded button	Also called weld head. A welded button that forms the belt edge and secures all other belt parts.
Width	See Overall belt width
Wire diameter	Thickness of a wire, usually measured with a calliper.

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Our policy is one of continuous improvement and we reserve the right to change specifications at any time and without notice, or modify these to suit manufacturing processes

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