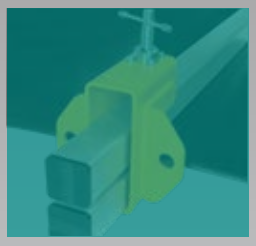
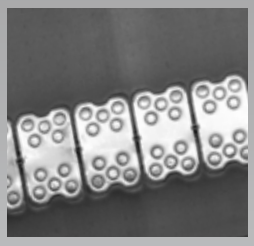
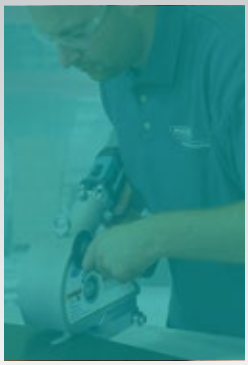
Keeping your belt up and running







HEAVY-DUTY MECHANICAL BELT FASTENING SYSTEMS

A comprehensive line of mechanical belt fastening systems and belt conveyor maintenance tools that increase uptime and output.

FLEXCO

Partners in Productivity

Around the world, the most respected name in belt conveyor solutions is Flexco. The reason is simple. Flexco belt splicing products have earned the reputation for unsurpassed quality and performance in the most demanding material handling applications on earth. Our fasteners set the industry's highest standards for design, ease of use, and reliability. The knowledgeable advice and proven solutions we provide our customers help keep conveyor efficiency high and conveyor operation costs low.

YOUR PARTNER IN **PRODUCTIVITY**

OVER **100 YEARS** OF SUCCESS HAS BEEN BUILT BY **FOCUSING** ON OUR **CUSTOMERS**

We have learned to understand our customers' industries and challenges and to respond to their changing needs.

We are constantly driving technology and design and strive to become the leader in belt conveyor solutions that maximize uptime, productivity, and safety.

We value industry relationships and believe that together, with a team of industry experts, our customers will receive greater value.

Together with our *Customers,* we are
"Partners in Productivity"

QUICK FACTS ABOUT FLEXCO

- **Flexco is a U.S.-based company and has been in the belt industry since 1907.**
- **We have subsidiary locations in Australia, Chile, China, Germany, India, Mexico, Singapore, South Africa, and the United Kingdom to service and support customers in more than 150 countries around the world.**
- **We have more than 1800 distributor partners throughout the world—we partner with the best distributors in every market we serve around the world to ensure our customers have ready access to our products, services, and expert resources.**
- **As a company, we focus on training and development and maintaining a safe work environment, and we are committed to those same things for our customers.**
- **Flexco holds 185 patents with an ongoing focus on new ideas and world-class innovation.**

WHY CHOOSE FLEXCO?

SAFETY. **At Flexco, the safety of our workers and our customers is our top priority.**

- Many of our products have built-in safety features to help prevent on-the-job injuries.

SERVICE. **We believe that our commitment to the customer really sets us apart from our competition.**

- When our customers call, we answer, dropping everything to help them solve their problems so they can keep their belt conveyor lines running.
- We have a global network of distributors, service providers, field technicians, and sales engineers who understand our products inside and out—all with a commitment to providing the optimal belt splicing solutions for your application.
- Flexco has an extremely high on-time product delivery rate—averaging 97.5%—helping you keep your downtime to a minimum.
- We manufacture and heat treat our own bolts so we can control the quality and strength of our products.

QUALITY. **Flexco has a robust quality program that prides itself on being responsive to customer feedback.**

- Our customer feedback system allows us to identify challenges and take action, analyzing the issue to provide a solution as quickly as possible.
- The Flexco quality team consistently benchmarks our processes and procedures against other companies for continuous improvement.
- We hold many certifications because we feel it is important to our business, not because it is required.

RESEARCH AND DEVELOPMENT. **Our global network of technical expertise gives us insight into the needs and challenges of our end-users. We take that information and design product solutions.**

- Flexco sales and engineering teams work closely with our customers in the field to develop a deep understanding of their pain points and bring them to the attention of our research and design team.
- Our technical resources collaborate on a regular basis to understand where products are working and what opportunities exist.

TESTING. **Flexco has invested in state-of-the-art equipment in order to provide the most comprehensive testing of our products.**

- We have a holistic testing process, ensuring that our fasteners are compatible with conveyor components like pulley lagging, belt cleaners, and conveyor rollers.
- Flexco fastening systems endure both rigorous internal testing as well as field testing in real-world conditions.
- We test and evaluate customers' belts to ensure proper fastener selection for their application.

THE MECHANICAL FASTENER ADVANTAGE

No matter what you're moving, minimizing downtime and maximizing output are always top priorities—and they can be significantly affected by the way you splice your belts. Most belt conveyor operations rely on one or both common methods of splicing:

- ***Mechanical Belt Fastening*** *- The process of joining belt ends by metal hinges or plates*
- ***Vulcanization*** *- The process of joining belt ends through heat or chemicals*

Mechanical Belt Fasteners Combine Strength and Durability with Affordability and Easy Installation

Unique Advantages of Mechanical Fasteners.

You can easily check the condition of a mechanical splice because it's easy to see. If you make periodic inspections, you can immediately notice any wear or weakening. When a section of mechanical splice becomes worn, you can make repairs quickly—the tools needed are simple and comparatively inexpensive.

Where Mechanical Fasteners are Preferred.

While mechanical fasteners are widely used on most conveyor belting, there are many applications where these fasteners are preferred. Included in this list are:

- *High-stretch belts when take-up capacity is exhausted and resplicing is necessary*
- *Belts operating over small pulleys*
- *Short center-to-center belts with rapid cycling over pulleys*
- *Any belt conveyor where changes are anticipated*

Savings Are Significant.

The benefits of mechanical fastening over vulcanization translates into minimal downtime and maximum savings in production.

- *Typically, you can make a mechanical splice in minutes, not hours or days*
- *To make a mechanical splice, it's a matter of inches, not feet*
- *You don't need a high-priced specialist to make your splices—use your on-site crew*
- *No need to clean contamination from the belt before it's spliced*

Mechanical Fasteners Solve Special Problems.

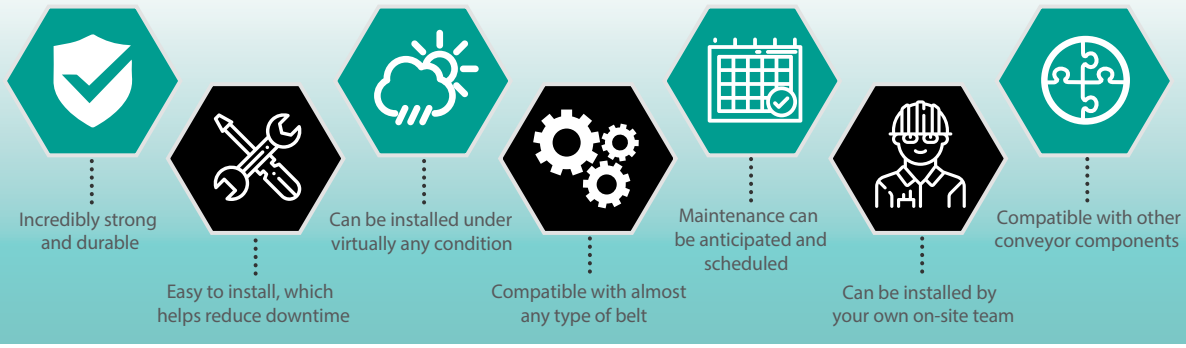
Certain types of belting present difficulties for vulcanizing. Among these are solid woven PVC, lightweight rough top, single- and two-ply straight warp belting, and rubber belts with exotic compounds. Many of these splicing difficulties are easily solved with mechanical fasteners. While vulcanizing has its place, in some cases mechanical belt fastening is the only solution.

Field Replacement is Quick and Easy.

Mechanical fasteners have a distinct advantage over vulcanization where belt replacement must be done in the field. For example, field installation is done easily with:

- *Work spaces too confined for a vulcanizing press*
- *Installation of a short, pre-spliced belt without conveyor disassembly*
- *Poor environmental conditions and humidity*

Benefits of Mechanical Belt Fasteners



Vulcanization—whether hot or cold—is a time-consuming process that requires special skills, expensive equipment, extreme accuracy in the cutting and stripping of belt ends, and a thorough knowledge of solvents, bonding materials, and compatible cover and fill materials. Every splicing method has its limitations, so it's essential to get the facts before you decide how to splice.

VULCANIZATION - SOME COMMON MISCONCEPTIONS

All Belts Can Be Vulcanized.

- Old and/or worn fabric belts are not well-suited to vulcanizing because the layers are weaker and will become brittle when heat is applied.
- Older rubber belts are also poor candidates for vulcanizing, as the bondable properties of rubber deteriorate over time.
- Vulcanizing requires additional belt length, so operations with little take-up simply may not have enough belt to work with.

It's Easy to Make a Good Vulcanized Splice.

- Vulcanizing is a complex process with a substantial chance of error. It takes specialized tools, a skilled professional who knows the proper temperatures and pressures to use, and the appropriate amounts of adhesives when applying the chemical bonding materials.
- The adhesives used in the chemical bonding process must be stored at the appropriate temperature levels in order to create a strong bond.

Vulcanizing Doesn't Mean a Lot of Downtime.

- Vulcanization requires you to shut down your belt for a substantial amount of time—much longer than mechanical splicing would.
- At minimum, a properly vulcanized spice requires several hours for the chemical to cure.
- You are also at the mercy of your vulcanizer's schedule.

You Can Vulcanize Anytime, Anywhere.

- Only clean, dry, relatively warm conditions are suitable for vulcanizing.
- Chemical residue, excessive moisture, and cold can interfere with the curing of the adhesives and cause air pockets. These weaken the strength of the splice.
- Vulcanizing can be extremey difficult in areas that aren't easily accessible.

Vulcanizing Doesn't Compromise Belt Strength.

- Vulcanizing actually robs your belt of an entire ply of strength, even more if it's not done properly.
- The early signs of adhesion breakdown are nearly invisible to the naked eye.
- Often, operators aren't even aware that a splice is experiencing problems until it fails—a catastrophic event that requires the immediate shutdown of the line.

Flexco Fasteners and Cleaners: Better, Together

Many of our fasteners have special features that allow them to interface seamlessly with our belt cleaning systems.

*The **Scalloped Edge®** feature on our rivet fasteners provides a lower fastener profile*

*The **lower profile nuts** on our bolt style fasteners seat easily into fastener cups for a smoother splice*

***Beveled fastener edges** allow for ultimate fastener/cleaner interface*

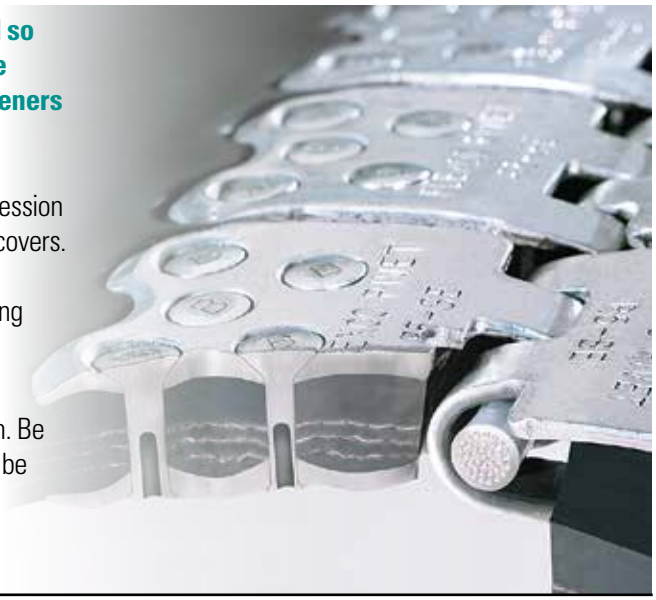
***Rubber-covered top plate options** offer increased impact protection and cleaner compatibility*

*Plus, our cleaners offer **multiple points of relief** so they maintain maximum contact with the belt—and still pass easily over mechanical splices*

UNDERSTANDING MECHANICAL FASTENERS

HOW DO MECHANICAL FASTENERS WORK?

The way belts are manufactured has evolved over the years—and so have mechanical belt fasteners. Because belting today tends to be thinner and made of synthetic materials, Flexco has designed fasteners with lower profiles that grip almost any belt carcass.



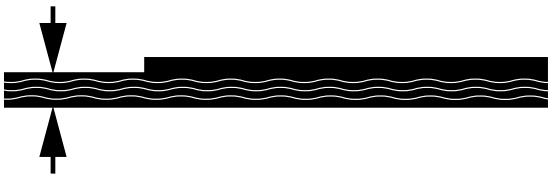
Our fasteners achieve their holding power through a combination of compression and penetration. They feature plates that apply firm, even pressure to top covers. Some systems, like our rivet-style fasteners, are able to penetrate the belt without damaging carcass fibers. They literally push the fibers aside, passing between them to embed the fastener in the belt.

Testing has shown that, with the right fastener, mechanical splices can withstand tensions of up to 2000 P.I.W and belt strengths up to 3500 kN/m. Be sure to check the mechanical fastener rating of your belt before splicing to be sure you've chosen a fastener that is compatible with the belt's rating.

How to Specify the Correct Flexco® Fastener for Your Application

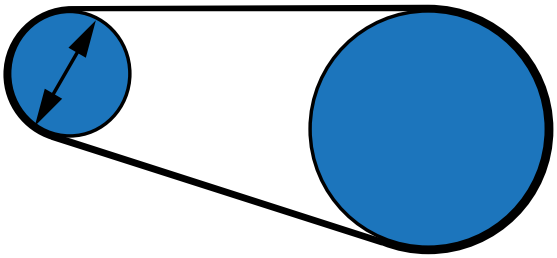
Determine belt tension or belt strength rating.

Most conveyor belting has a mechanical fastener rating. Care should be taken not to operate the belting or fasteners beyond their recommended ratings.



Measure belt thickness.

Flexco recommends countersinking fasteners whenever belt top covers are 4.8 mm thick or more. Always measure belt thickness after a portion of the belt cover has been removed.



Measure the diameter of the smallest pulley in your drive.

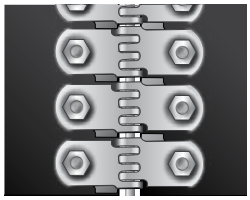
Consider only pulleys over which the belt makes at least a 90° wrap. For tail or take-up of the self-cleaning "wing"-type pulley, 25% larger diameter dimension is generally required.

Choose the fastener size that is appropriate for your application.

Consult Page 8 to make your initial selection of the Flexco® system that meets your specifications.

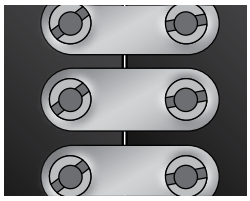
HINGED PLATE OR SOLID PLATE FASTENERS?

Hinged Plate



- *Easy joint separation: Hinged fasteners can be separated in order to remove, extend, or clean belts, simply by removing the hinge pin.*
- *Hinged fasteners can be spliced in the shop. This means only the hinge pin has to be inserted on-site.*
- *If belts of slightly different thicknesses must be joined, this can be accomplished using hinged fasteners.*
- *Used with smaller pulley diameters.*
- *Not recommended for highly abrasive applications or with belts conveying fine materials.*

Solid Plate



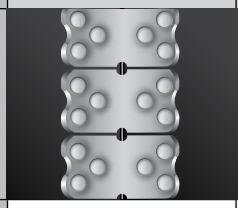
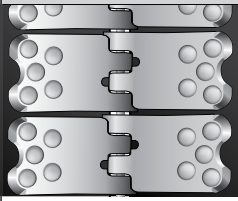
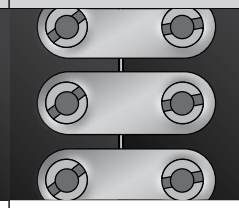
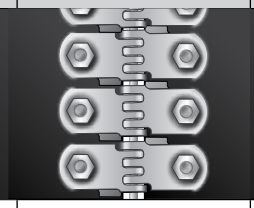
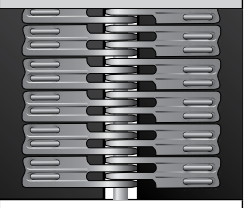
- *Ideal for larger pulley diameters requiring higher tension belt splicing.*
- *With no "working" movable parts, will generally deliver long, trouble-free service life.*
- *Good for applications where sifting can be a problem—helps eliminate sifting of fine materials between plates.*
- *Solid plate fasteners can be used successfully on elevator belts.*
- *Generally used where a permanent splice is needed.*
- *Easier repair with worn or damaged plates.*

When either style is appropriate, solid plate styles are preferred for longer life and to prevent sifting.
Hinged fasteners are preferred on portable conveyors and on conveyors with smaller pulley diameters.

ATTACHMENT METHODS

	Bolts	***Rivets***	***Staples***
	The strength is derived from the compression of the plates, mounted above and below the belt with high tensile strength bolts. The compression of the plates distributes the splice tension across the full width of each fastener plate.	Provides maximum resistance to pull-out and allows the self-setting rivets to work between the carcass fibers without severing them, leaving the entire belt carcass intact.	Preset stables are machine driven flush with the fastener for a smooth profile splice. Narrow plates provide the staples with multiple points of attachment for a superior splice in the toughest mining applications.
Best belt compatibility	Rubber Plied Belting	Rubber Plied and Straight Warp Belting	Harder Belting such as Solid Woven PVC and PVG types
Installed with minimal tools	●		
Large selection of lengths		●	
Higher tension applications		●	●
Suitable for rips and tears	●		
Compatible with belt cleaners	●	●	●

SYSTEM SELECTION GUIDE

	Flexco® BR™ Rivet Solid Plate	*Flexco® SR™ Rivet Hinged*	*Flexco® Bolt Solid Plate*	*Flexco® Bolt Hinged*	*Flexco® XP™ Staple*
Market Applications	Heavy-duty conveyor and elevator belts commonly used for handling sand, gravel, crushed stone, grain, coal, cement and salt	Underground mining, construction equipment with smaller pulleys, asphalt	Higher-tension main haulage belts used in coal, hard-rock mining, foundries, grain elevators, aggregate plants, and steel mills	Construction and road equipment, coal, salt, and potash, stacking and stockpiling belts, and other applications involving smaller pulleys	Tough mining environments requiring a staple-attached fastener
Fastener Configuration					
Recommended Maximum Belt Strength (kN/m)	Up to 1400	Up to 3500	Up to 1050	Up to 520	Up to 3500
Belt Thickness Range	5 mm to 24 mm	3 mm to 25.5 mm	5 mm to 24 mm and over	6 mm to 16 mm	9 mm to 20 mm
Recommended Minimum Pulley Diameter	350 to 900 mm	125 to 1050 mm	300 to 1220 mm	150 to 225 mm	350 to 500 mm
Installation Options	• Hammer Driven • Pneumatic Powered • Electric Powered • Air Powered	• Hammer Driven • Pneumatic Powered • Electric Powered • Air Powered	• Manual Tools • Impact Wrench Driven Tools	• Manual Tools • Impact Wrench Driven Tools	• Manual Tool • Hydraulic Tool
Quick Installation, Minimal Downtime	****	*****	**	**	***
Impact Resistance	****	****	*****	****	****
Abrasion Resistance	*****	***	*****	***	**
Fastener/Cleaner Compatibility	*****	****	***	***	****
Overall Splice Strength	*****	*****	**	*	*****
For Smaller Pulley Diameters	***	*****	**	*****	*****
Inexpensive Splice	***	***	*****	*****	***
Inexpensive Installation Tooling	**	***	*****	*****	*

Flexco fasteners have a 4:1 safety factor built into recommended operating tensions. Allowable operating tension depends on belt strength as well as fastener type: A given mechanical fastener rating in kilonewtons per meter (kN/m) is meaningful only with belt of comparable rated strength. Check your belt supplier for belt rating information. Whenever there is any change in belt, pulleys, belt tension, or conveyor conditions, Flexco fastener selections should always be evaluated.

FASTENER METALS AND AVAILABILITY

To maximize fastener service life, fastener material must be matched to the application. Flexco manufactures fasteners from a broad range of materials. Our selection makes it easy to specify a fastener that will deliver maximum performance in a variety of conditions—from wet and abrasive applications to highly corrosive environments.

Steel: *Standard fastener metal that is not recommended for environments where corrosion can occur from acids and chemicals.*

Galvanized Steel: *For basic applications, galvanized steel is recommended. It is magnetic, offers good abrasion and rust resistance, but is not recommended for corrosive environments.*

Stainless Steel: *Stainless steel provides extra resistance to abrasion, magnetic attraction, and corrosion from acids and other chemicals.*

MegAlloy®: *Features superior resistance to wear and abrasion. Provides several times the service life of steel. Not recommended where impact of corrosion is a problem.*

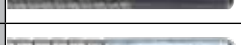
RustAlloy®: *Low chrome stainless steel. Resists corrosion from mine water and other types of chemical attack.*

Everdur®: *A corrosion-resistant copper and silicon alloy. Fully non-magnetic and spark-free, low in resistance to abrasion.*

Rubber-Covered Steel Top Plates: *Our bolt solid plate fasteners are available with rubber-covered top plates, either as individual plates or as a 6-plate Flexco® VP™ strip, for excellent resistance to abrasion. Bottom plates are manufactured from steel or MegAlloy®.*

Fastener Material	Magnetic	Abrasion Resistant	Chemical Resistant	Rust Resistant	Sparking	Flexco® BR™ Rivet Plate	Flexco® SR™ Rivet Hinged	Flexco® Bolt Solid	Flexco® Bolt Hinged	Flexco® XP™ Staple
Steel	Yes	Good	Poor	Poor	Yes			●		
Galvanized Steel	Yes	Good	Poor	Fair	Yes	●	●		●	●
Stainless Steel 400 Series	Yes	Good	Fair to Good	Good	Yes	●				
Stainless Steel 300 Series	Slightly	Good	Good to Excellent	Excellent	Yes	●	●	●	●	●
MegAlloy®	Yes	Excellent	Poor	Poor	Yes	●	●	●	●	
RustAlloy®	Yes	Good	Good	Good	Yes		●			
Everdur®	No	Poor	Poor	Poor	No	●		●	●	
Rubber-Covered Steel Top Plates	Yes	Good to Excellent	Poor	Poor	Yes			●		

HINGE PIN MATERIALS AND AVAILABILITY

Description	Pin Image	Abbreviation	Flexco® SR™ Rivet Hinged	Flexco® Bolt Hinged	Flexco® XP™ Staple	Characteristics
Nylon Covered Steel Cable		NC	●	●	Yes	Nylon covering reduces corrosion and simplifies hinge pin insertion.
Nylon Covered Stainless Steel Cable		NCS	●	●	Yes	For greater corrosion resistance.
Nylon Covered Armored Cable		NAC	●	●	Yes	Combines a durable armored steel wrap with a nylon covering for smooth operation and long service life.
Bare Steel Cable		SC	●	●	Yes	Recommended for abrasive or gritty material conveyance.
Bare 300 Series Stainless Steel Cable		SSC	●	●	Yes	For conditions where corrosion attacks steel pins.
Bare Armored Steel Cable		AC	●	●	Yes	For extendable conveyors to accommodate easy pin extraction.
Bare Armored Stainless Steel Cable		ACS	●	●	No	The same advantages as bare armored cable, plus corrosion resistance.
Nylon Covered Bronze Cable		NB	●	●	Yes	Fully non-magnetic hinge pin.

FLEXCO® RIVET SOLID PLATE FASTENING SYSTEM

The Flexco® BR™ Rivet Solid Plate Fastening System is recommended for high-tension applications, and has a staggered, multiple-point attachment for a long-lasting hold. Ideal for use with straight-warped belts because rivets separate the fibers instead of displacing the carcass.

- *Low-profile, Scalloped Edge® design is conveyor component compatible*
- *Wide, heavy-gauge plates promote long wear life, with a sift-free splice*
- *Rivet-attached for maximum resistance to pull-out*
- *Compatible with troughed belts*
- *Available in Steel, Stainless, MegAlloy®, and Everdur®*

FASTENERS

BR6

BR10

BR14

Flexco® Rivet Solid Plate Fastener Selection Chart

Fastener Size	Belt Strength Up To:	Belt Thickness Range	Minimum Pulley Diameter		
			Operating Tension 75-100% of Belt Rating	Operating Tension 50-75% of Belt Rating	Operating Tension Under 50% of Belt Rating
	kN/m	mm	mm	mm	mm
BR6	700*	5 - 17	350	300	250
BR10	1140	6 - 17	450	360	350
BR14	1400	10 - 24	900	460	860

* Contact Flexco Engineering for applications greater than 700 kN/m

RIVETS

Fasteners are secured to the belt by patented SR™ Self-Setting Rivets.

Rapid Loader™ Collated Rivet Strips

Unique Rapid Loader™ collated rivet strips make it easy to load an entire multiple guide block at one time and eliminate time-consuming handling of individual rivets.

- *Supplied in color-coded strips for easy identification of rivet sizes*
- *Available in steel or stainless steel*
- *Packed in convenient buckets*
- *Also available with washers for use with steel guide blocks*

INSTALLATION TOOLS

Flexco Rivet Plate Fasteners are installed with a portable installation tool and a hammer or power tool.

Hammer Installation Options

Fastener Size	Installation Tool	What it Includes
BR6	Aluminum MBRT6 Applicator Tool	Tool base, two multiple guide blocks, one multiple drive rod, one bridge removal tool, one hammer, and lubricant
BR10	MBRTA Applicator Tool	Tool base, multiple guide blocks, two multiple drive rods, one bridge removal tool, one nut driver, two hammers, lubricant, and tool box
	Aluminum MBRT10 Applicator Tool	Tool base, two multiple guide blocks, one multiple drive rod, one bridge removal tool, one hammer, and lubricant
BR14	MBRTA Applicator Tool	Tool base, multiple guide blocks, two multiple drive rods, one bridge removal tool, one nut driver, two hammers, lubricant, and tool box

Aluminum MBRT6 Applicator Tool

Power Installation Options

Save Time, Reduce Worker Fatigue with

Power Installation

Use the Flexco® **Pneumatic Single Rivet Driver** for faster, more consistent rivet driving of rivet hinged fasteners.

- *A powerful single trigger pull sets the rivet for quick, easy installation*
- *Air powered for reduced operator fatigue*
- *More compression of fastener plates results in a smooth splice compatible with conveyor components*
- *Use with Rapid Loader collated rivets with washers for rapid loading of guide blocks*

Electric Powered Rivet Driver

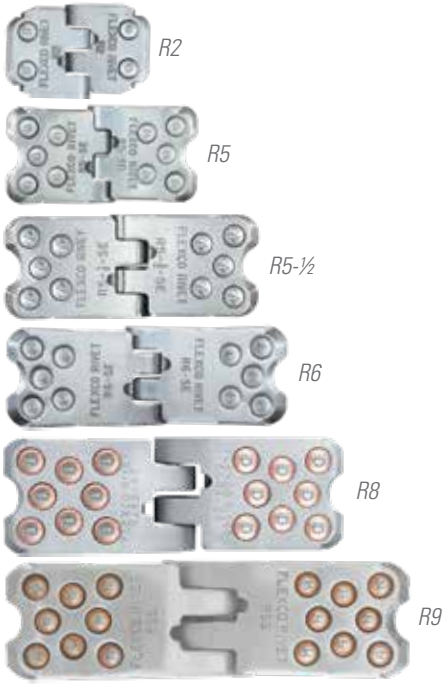
Air Powered Rivet Driver

FLEXCO® RIVET HINGED FASTENING SYSTEM

The Flexco® SR™ Rivet Hinged Fastening System has earned a reputation for quality and performance in the most demanding material applications. Flexco SR fasteners are a good choice for both new and worn belts, delivering long life and easy installation.

- *Low-profile, Scalloped Edge® design is conveyor component compatible*
- *Hinged splice—easily separated to remove or add belt sections*
- *Rivet-attached for maximum resistance to pull-out*
- *Perfect for worn belting unfit for vulcanizing*
- *Portable tooling with choice of hand or power installation*
- *Available in Steel, Stainless, MegAlloy®, and RustAlloy®*

FASTENERS



Flexco® Rivet Hinged Fastener Selection Chart

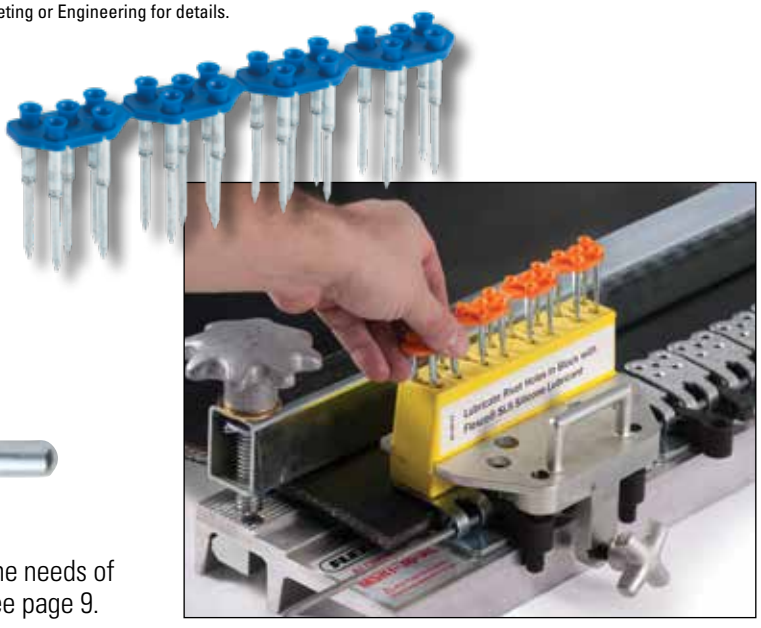
Fastener Size	Belt Strength Up To:	Belt Thickness Range	Recommended Min. Pulley Diameter	
			Operating Tension Under 100% of Belt Rating	Operating Tension Under 75% of Belt Rating
	kN/m	mm	mm	mm
R2	600	3-10	127	127
R5	790	6-11	175	175
R5-1/2	1140	8-15	250	250
R6*	1400	10.5-17	400	400
R6LP	1400	8-18	400	400
R8	2630	10.5-17	400	400
R9	3500	16-25.5	1050	1050

* R6 can be used in certain applications up to 2100 kN/m with R6 RustAlloy® and stainless steel rivets.
Contact Flexco Marketing or Engineering for details.

RIVETS

Fasteners are secured to the belt by SR™ Self-Setting Rivets.

Unique Flexco Rapid Loader™ collated rivet strips make it easy to load an entire multiple guide block at one time and eliminate time-consuming handling of individual rivets.



- *Supplied in color-coded strips for easy identification of rivet sizes*
- *Available in steel or stainless steel*
- *Packed in convenient buckets*
- *Also available with washers for use with steel guide blocks*

HINGE PINS

A wide selection of hinge pins make it easy to match pins to the needs of the applications. For descriptions of the complete selection, see page 9.

INSTALLATION TOOLS

Flexco Rivet Hinged Fasteners are installed with a portable installation tool and a hammer or power tool.

Hammer Installation Options

Fastener Size	Installation Tool	What it Includes
R2	R2T Applicator Tool	Tool base*
R2 R5 R5-1/2 R6	SRTA Applicator Tool	Tool base and driver tool
	MSRT Applicator Tool	Tool base, two guide blocks, two multiple drive rods, two 4 lb. hammers, lubricant, and one canvas carry bag
	Aluminum MSRT Applicator Tool	
R8	MSRT8 Applicator Tool	Tool base, two guide blocks, two multiple drive rods, two 4 lb. hammers, lubricant, and one canvas carry bag
	Aluminum MSRT8 Applicator Tool	
R9	MSRT9 Applicator Tool	Tool base, two guide blocks, two multiple drive rods, two 4 lb. hammers, lubricant, and one canvas carry bag

* Purchase single rivet driver tool separately

Aluminum MSRT Applicator Tool

Power Installation Options

Save Time, Reduce Worker Fatigue with

Power Installation

Use the Flexco® **Pneumatic Single Rivet Driver** for faster, more consistent rivet driving of rivet hinged fasteners.

- *A powerful single trigger pull sets the rivet for quick, easy installation*
- *Air powered for reduced operator fatigue*
- *More compression of fastener plates results in a smooth splice compatible with conveyor components*
- *Use with Rapid Loader collated rivets with washers for rapid loading of guide blocks*

Electric Powered Rivet Driver

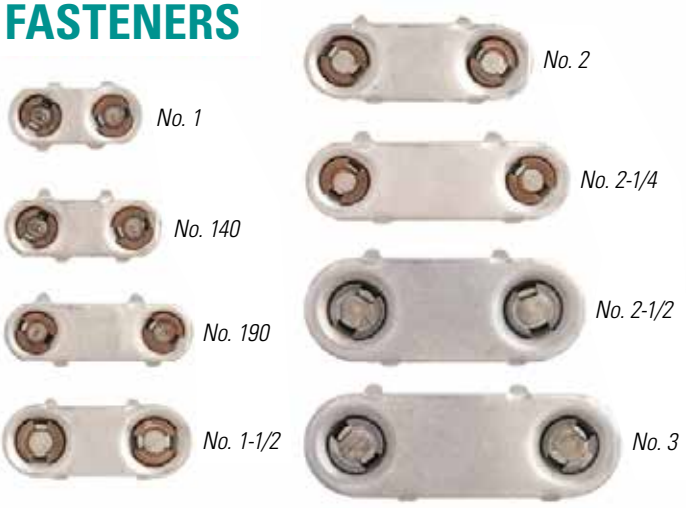
Air Powered Rivet Driver

FLEXCO® BOLT SOLID PLATE FASTENING SYSTEM

The Flexco® Bolt Solid Plate Fastening System produces a strong, sift-free splice that is ideal for sand, gravel, crushed stone, and cement. The high strength of Flexco Bolt Solid fasteners is the result of superior design and plate compression on both the top and bottom sides of the belt. High tensile strength bolts compress top and bottom plates to distribute splice tension evenly across the entire width of each fastener plate.

- *Beveled edges deliver our industry-leading fasteners/cleaner interface*
- *Specially formed teeth penetrate belt carcass without damaging fibers*
- *Patented piloted bolts have tapered tips for reducing installation time*
- *Bottom plates are pre-assembled with bolts for faster installation*
- *Choice of hand or power installation*
- *Material selection includes Steel, Stainless, MegAlloy®, Everdur®, Promal, and rubber-covered top plates*

FASTENERS



Flexco® Bolt Solid Plate Fastener Selection Chart			
Fastener Size	Belt Strength Up To:	Belt Thickness Range	Minimum Pulley Diameter
	kN/m	mm	mm
1	300	5 - 11	300
140, 140VP	400	5 - 11	360
190, 190VP	650	8 - 14	460
1-1/2	500	11 - 17	460
2, 2VP	750	14 - 21	760
2*	1230	8 - 32	510
2-1/4	1050	14 - 30	920
2-1/2	750	19 - 25	1070
3	1000	24 & over	1220

* When used with No. 3 Lead Wedlok® pattern, belts over 22 mm require extra long No. 2-1/4 bolts

BOLTS

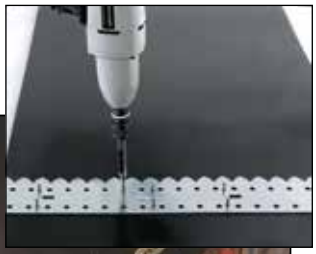
A key benefit of bolt solid plate fasteners is quick, easy installation. Only Flexco offers bolts with a patented pilot design that provides immediate alignment, greatly improving turnaround times. The bottom plates come pre-assembled with bolts for faster installation.

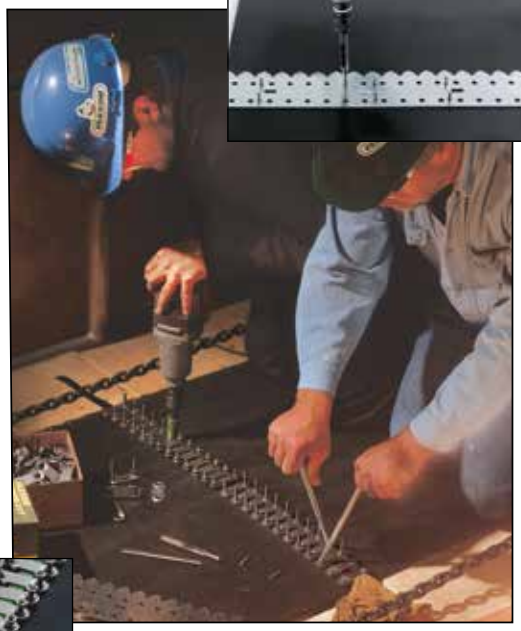
INSTALLATION TOOLS

Field-proven templets, punches, and boring tools make it easy to quickly and accurately prepare belts for fastener installation. Fasteners are easily installed on-site using only a templet and portable hand tools or power tools.

Templets

Templets simplify installation by providing a guide for accurate bolt-hole placement and are required for 90˚ and 45˚ Bolt Solid Plate fastener installation.





Hand or Power Installation

In addition to the templet, a punch or boring bit (for belts with top covers under 5mm thick), a bolt horn, and two bolt breakers are needed for installation. Impact wrench driven power tools (require a quick-change chuck) are recommended and can reduce installation time by at least 50%.

Hand Installation Tools

Bolt Breakers

Power Installation Tools

Flexco-Lok® Tape

Rigid nylon tape helps eliminate ripples on plied or solid-woven belting so belts run smoothly over pulleys and under cleaners. Flexco-Lok® Tape also helps seal splices against seepage of fines and moisture.

Cracking Chisel

With a hammer and cracking chisel, individual worn plates can be easily replaced—without having to replace the entire splice.

Flexco® Bolt Hinged Fasteners

For belts operating over smaller pulleys—such as in construction equipment and road machinery—Flexco® Bolt Hinged Fasteners are strong, dependable, and easy to install.

- *All the benefits of the standard bolt plate fastener with a hinged joint*
- *For applications requiring frequent belt length alterations, the joint can be separated simply by removing the hinge pin*
- *Uses the same easy-to-use hand or power installation tools as Flexco Bolt Solid Plate*
- *Select from Steel, Stainless, MegAlloy®, or Everdur®*

No. 375X

No. 550

Flexco® Bolt Hinged Fastener Selection Chart

Fastener Size	Belt Strength Up To:	Belt Thickness Range	Minimum Pulley Diameter
	kN/m	mm	mm
375X	330	6 - 11	150
550	520	6 - 16	115

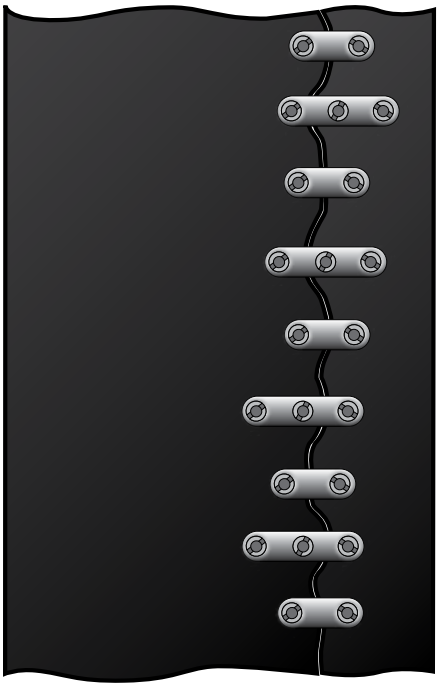
FLEXCO® BOLT SOLID FASTENING SYSTEM

SPECIALTY FASTENERS

Flexco® VP™ Fasteners

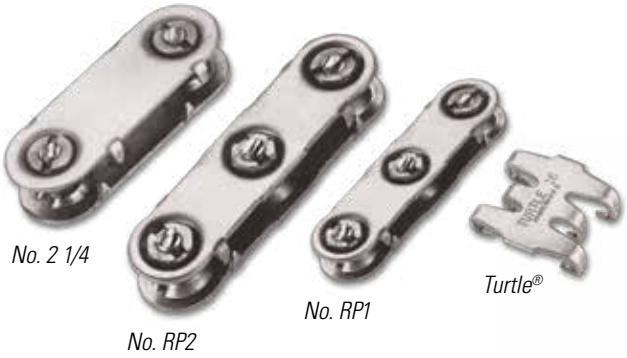
Bolt solid plate fasteners are available as strips of rubber-covered top plates, providing increased impact protection and reduced plate exposure to wear—resulting in longer splice life. The rubber covering offers a sift-free, sealed splice to protect against seepage of fines and moisture, plus reduced noise on return idlers and other conveyor components.

When countersunk, they provide for a continuous, smooth surface for improved belt cleaner interface, helping to extend the life of your fasteners and belt cleaner blades.



Rip Repair Fasteners

Use standard Flexco® Bolt Solid Plate fasteners to repair conveyor belt holes and edge tears. For jagged length-wise conveyor belt tears, standard Bolt Solid Plate fasteners can be combined with three-bolt Rip Repair fasteners. Three-bolt Rip Repair fasteners can also be used to bridge soft spots in the belt before they become rips. Turtle® fasteners are recommended for temporary rip repairs.



No. 2 1/4

No. RP2

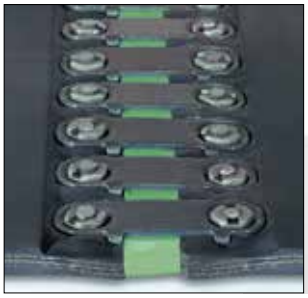
No. RP1

Turtle®

Maximizing Splice Life

Skiving the belt and recessing fastener plates is always recommended where belt top covers are 4.8 mm thick or more.

- *Deeper penetration of fastener teeth into loadbearing carcass*
- *Reduced plate exposure to wear*
- *Increased compatibility with cleaner blades*
- *Reduces noise on idlers and other conveyor components*
- *Reduced thickness of the belt also allows for use of smaller fastener for smaller pulleys*

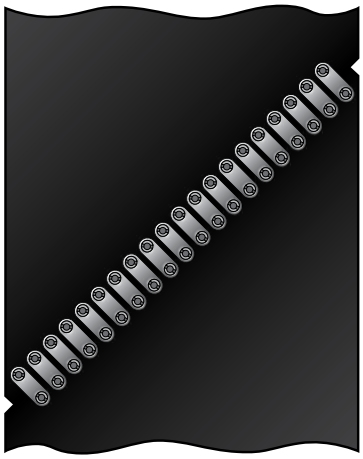


SPLICE PATTERNS

Flexco® Bolt Solid Plate fasteners can be installed in either 90° or 45° splice patterns. The 45° splice pattern allows you to use standard solid plate fasteners where your smallest pulley diameter is less than the recommended size.

90° Splice for Standard Troughing and Non-Troughing Bulk Conveyors

- *Preferred splice pattern for recommended pulley diameters*
- *Requires the fewest fasteners*
- *Is the easiest and quickest pattern to install*



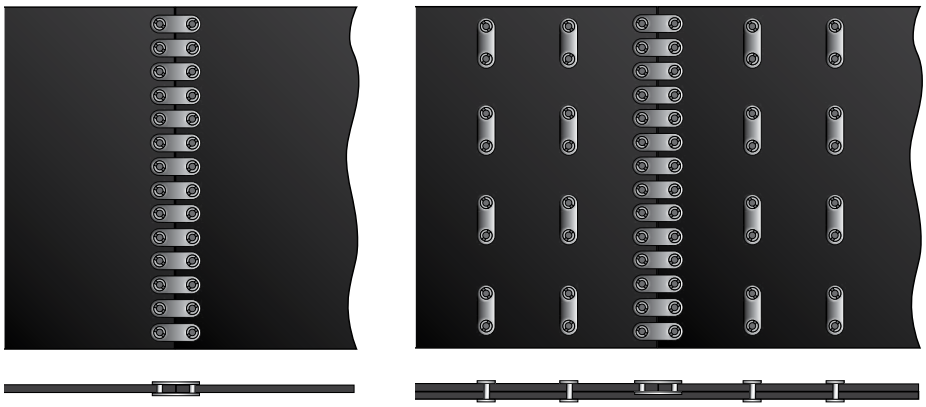
45° Splice for Use with Smaller Pulleys

- *Can be installed where conveyor pulley diameters are as much as 25% smaller than the recommended size for a 90° splice*
- *Distributes tension over a greater belt area*
- *Splice passes more smoothly over pulleys and under cleaner blades*

90° Splice for Bucket Elevator Belts*

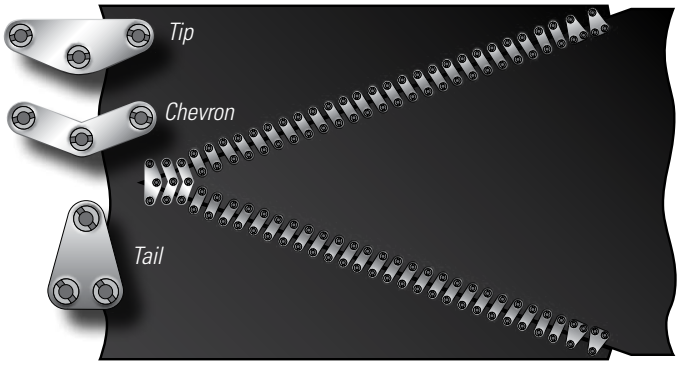
- *A standard 90° splice is recommended for most elevator belts, providing a smooth underside on the belt*
- *Tensile strength equal to that of a lap joint*
- *Easily made in confined space*
- *For extremely heavy jobs, 35% greater strength than a lap joint can be made by adding a splice pad*

**Flexco fasteners are not recommended for joining "manlift" elevator belts*



Wedlok® Higher Tension Splice

- *Excellent alternative to vulcanizing—can be installed in a fraction of the time required to vulcanize a belt*
- *For use on belts rated for mechanical splices to 123 kN/m or for belts rated for vulcanized splices in the same tension range*
- *Consists of standard size No. 2 Flexco fasteners and a Wedlok® Kit with special tip, chevron, and tail fasteners*
- *Complete details and specifications can be found on Flexco.com*



FLEXCO® XP™ STAPLE FASTENING SYSTEM

The Flexco® XP™ Staple Fastening System combines an enhanced applicator tool with the longest wearing staple fastener and hinge pin on the market to produce a superior belt splice for tough mining environments. XP™ provides extreme performance when it's most important.

- *For use with solid woven PVG/PVC belting*
- *Produces smooth, low profile splice for compatibility with belt cleaners and other conveyor components*
- *Staples are preset in fastener and large loop area accepts bigger pin for easier insertion and extended splice life*
- *Cold rolled steel provides uniform mechanical properties and increased tensile strength of up to 50%*
- *Applicator tool sets one fastener at a time with no misdrives, and tool jams are infrequent*
- *A single handle controls both the advance and fastener installation steps*
- *Integrated guide plate makes loading heavy belts easier*
- *Steel and stainless steel fastener plates available*

FASTENERS

Flexco® XP™ Staple Fastener Selection Chart

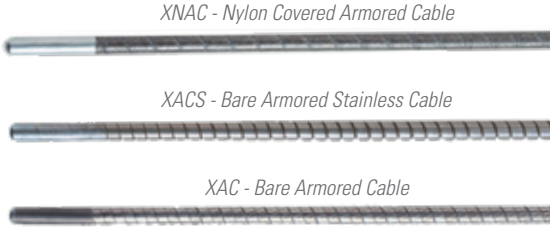
Fastener Size	Belt Strength Up To:	Belt Thickness Range	Recommended Min. Pulley Diameter	Max. Hinge Pin Diameter
	kN/m	mm	mm	mm
XP5	2000	9 - 12	350	8.1
XP5-L	2000	11 - 14	350	8.1
XP7	3500	13 - 15	500	10.3
XP8	3500	15 - 18	500	11.0
XP8-L	3500	17 - 20	500	11.0

STAPLES

Flexco® XP™ has the staples preset in the fastener plates for ease of handling and insertion. Staples come in both standard length and long length to handle a wide range of belt thicknesses.

HINGE PINS

A special selection of larger diameter XP™ hinge pins makes it easy to meet the needs of the application. When you combine the XP pin with the larger, durable loop area, you can expect up to 33% longer spice life. Use the selection chart on page 9 to identify which hinge pin is the right choice for your XP application.



INSTALLATION TOOLS

The Flexco® XP™ applicator tools are easy to set up, operate, and transport. Unlike similar designs, the XP sets one fastener at a time so misdrives and tool jams are infrequent. And, should an occasional misdrive occur, the design allows the operator to skip over it and continue with the splice.

Flexco XP can be installed with either a manual or hydraulic applicator tool. Both tools offer unique features to make splicing faster and easier.

- *A built-in belt thickness gauge to confirm proper fastener size and setting selection*
- *An integrated guide plate to make loading heavy belts easier*
- *Tool frame and applicators built for durability and ease of use*
- *Both manual and hydraulic applicators mount quickly to the frame and are easily positioned for splicing*
- *Easily transportable*

Manual Applicator Tool

- *Oversized handle design allows users to choose multiple hand positions based on work site conditions*
- *Quick adjust handle allows users to optimize handle length for reduced effort and increased mobility*
- *Mounts quickly to the frame*

Hydraulic Applicator Tool

- *One smooth motion of the lever compresses the fastener plate, then drives and folds the staples for the same consistent staple set and finished splice profile each and every time*
- *Sealed housing is easy to maintain*

BELT MAINTENANCE TOOLS

Lift

Flex-Lifter™ Conveyor Belt Lifter

- *Easily and safely lifts a tensioned belt up to the stated ratings*
- *Wide, dual-rail base to maintain unit stability*
- *Optimized lift height to provide sufficient room to make repairs easily*

Recommended for:

- *Top-side (troughed or flat) belts and return-side belts up to 1800 kg*

Clamp

TUG™ HD® Belt Clamps

- *Available in 6- and 8-metric ton versions, TUG™ HD® Belt Clamps provide ultimate grip strength by clamping over the belt*
- *Modular components allow for increased versatility and portability*
- *Can be used on multiple conveyor belting types including flat, sidewall, chevron, and other specialty profiles up to 55 mm thick*

Recommended for:

- *6- and 8-ton load capacity ratings and belt widths up to 2400 mm*

Far-Pul™ HD® Belt Clamps

- *Provides even clamping tension across entire belt width for safer belt maintenance*
- *Securely grips belts up to 25 mm thick*
- *Adjusts easily for a variety of belt widths*

Recommended for:

- *Load capacity up to 2.7 metric tons and belt widths up to 1800 mm*

Why Squaring Your Belt is Important for your Belt Conveyor and Belt Splice

Squaring your belt ends is an important step in the belt maintenance process and a job that requires only a few minutes of your time, but offers real paybacks in extending the life of your belt conveyor system and splice.

Effective belt repairs start with straight, square cuts. An accurate, squared cut will enhance belt and splice performance and ensure the belt tension is distributed evenly across the belt. But if your belt isn't square, you could see serious problems down the belt conveyor line including: belt mistracking, material spillage, belt and structure damage, splice damage or failure, and additional maintenance work.

Cut

Powered Belt Cutters

- *Cuts all types of belting from the softest of natural rubbers to the hardest constructed solid woven PVC and fabric plied belts*
- *Corded and cordless models are designed for cutting all belt widths as well as for extended, longitudinal cuts*
- *High-speed steel blade provides for a smooth, accurate cut and is protected by a spring-loaded blade guard for enhanced worker safety*

Recommended for:

- *Available in two sizes, the EBC1 allows for cuts up to 25 mm thick while the EBC2 provides for a thicker cut up to 50 mm*

900 Series™ Belt Cutter

- *Accurate, fast, safe cutting for all belting including thick and/or hard carcass belts*
- *Blade is guided at the top to ensure perpendicular cuts*
- *Single-sided clamp reduces operator cutting effort*

Recommended for:

- *Safely and accurately cuts belts up to 38 mm thick*

Skive

FSK™ Belt Skiver

- *A safe, easy way to remove belt top covers for installation of recessed splices*
- *Accurate and adjustable cutting depth provides skives from 1.5 to 9.5 mm deep in a single pass*
- *Blade safely enclosed during skiving operation*

Recommended for:

- *Belts with rubber top covers of 4.5 mm thick or more*

Safer than the alternatives, Flexco Belt Cutters protect operators from the cutting edge of the blade during operation and make squaring your belt ends fast, easy, and accurate.

While the utility knife is an attractive option for squaring the belt because it is readily available and inexpensive, it can be a safety and accuracy nightmare. Working with an exposed blade always presents a safety hazard and, when this is paired with the several passes it take to complete the cut, it increases the risk of injury. Multiple passes with the knife also diminish the chances of a straight and accurate cut, effectively eliminating all the work you did to square the belt for cutting.

Avoiding Unexpected Downtime

Inspecting and performing maintenance on all of your conveyor system components, including your mechanical splices, should be part of an overall maintenance plan. The amount of effort you put into proactive maintenance will decrease the amount of unexpected downtime, help keep your workers safe, and help your operation run more efficiently.

Knowing what an effective, proactive maintenance plan looks like can be challenging – but Flexco can help you solve issues before they become serious problems with a Belt Conveyor System Assessment. Flexco field specialists will walk your conveyor pinpointing splicing, spillage, carryback, and mistracking challenges to identify issues and opportunities. We can assess your whole conveyor system, or focus on your most challenging areas.

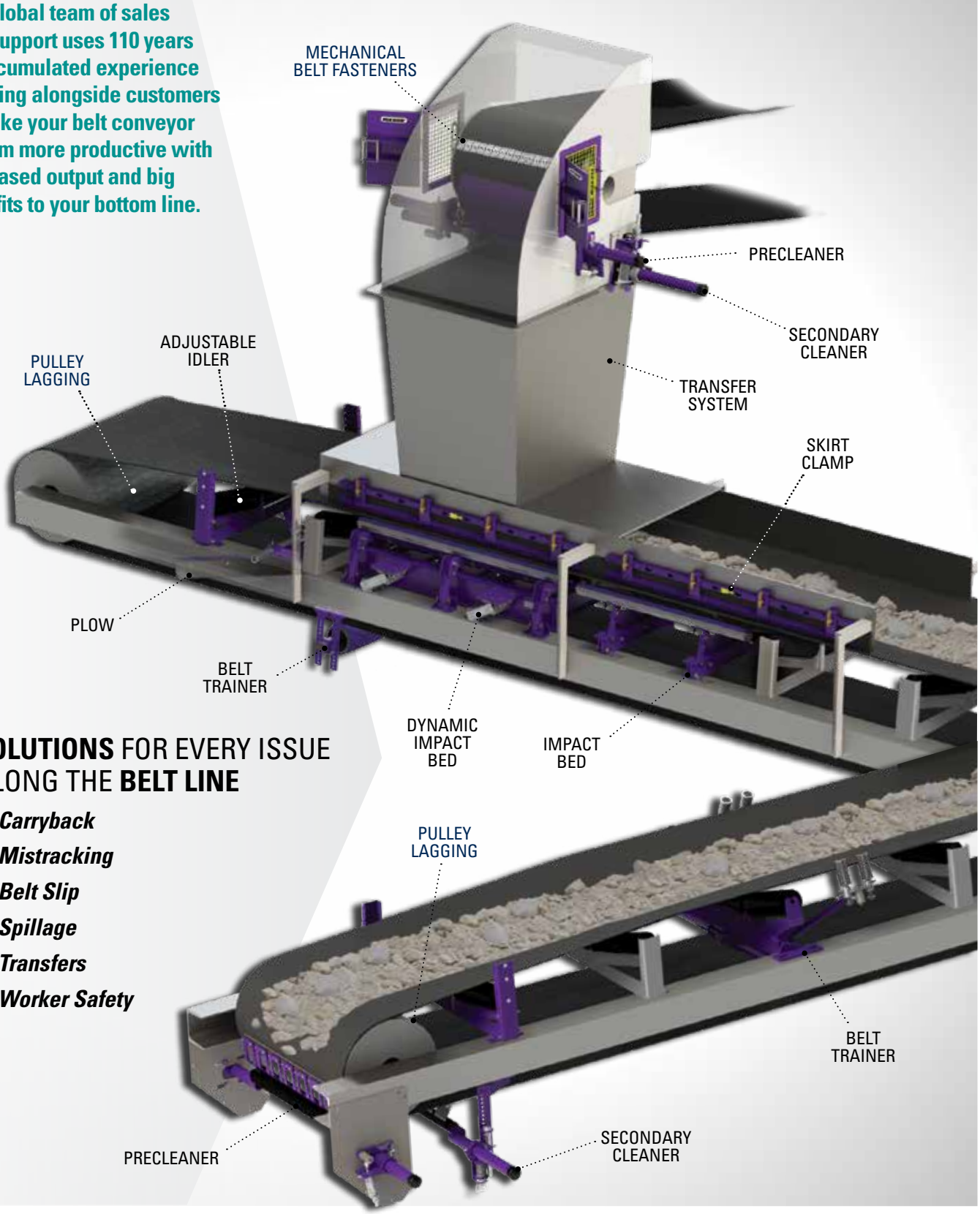
Sharing Expertise
Online, In Class, and On-Site

There is no substitution for having an expert third party share tips, tricks, and best practices. Every day, our Flexco field specialists around the world are on sites walking beltlines, helping maintenance crews troubleshoot, specify and install products, and maintain their belt conveyors for optimum performance and maximized output.

Flexco takes that real-world experience and brings it to your team, offering training programs around the world that are flexible to meet your needs and requirements. Our programs range from online course materials that can be accessed anytime it is convenient, to on-site training sessions that teach your crew best practices for selecting and installing mechanical splices, to custom training programs at one of our state-of-the-art Flexco training centers located around the globe. Our specialized training programs utilize a variety of innovative tools and methods to share technical training, application insights, and problem-solving techniques – all led by experienced Flexco personnel.

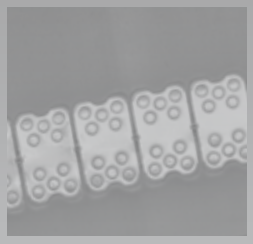
Flexco Expertise
doesn't stop at Splicing your Belt

Our global team of sales and support uses 110 years of accumulated experience working alongside customers to make your belt conveyor system more productive with increased output and big benefits to your bottom line.



SOLUTIONS FOR EVERY ISSUE ALONG THE **BELT LINE**

- ***Carryback***
- ***Mistracking***
- ***Belt Slip***
- ***Spillage***
- ***Transfers***
- ***Worker Safety***



Visit our website or contact your local distributor to learn more.

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