INSIGHTS™
Belt Conveyor Maintenance
TECHNICAL SOLUTIONS FOR BELT CONVEYOR PRODUCTIVITY

Which Splice is Right?

Light-Duty Mechanical Fastening

Depending on the dimensions of your conveyor, material being conveyed, environment, and more, there are two types of splicing methods from which to choose – mechanical belt fastening and endless splicing. Mechanical belt fastening is a process that joins belt ends with metallic or non-metallic fasteners. Endless splicing is a process of joining belt ends through a combination of pressure, heat, and time or through chemical bonding.

Types of Light-Duty Mechanical Belt Splices

If you have decided that mechanical belt splicing is the choice for your operation, you will want to decide which installation style will work best with your system. Three main ways to install mechanical belt splices include: traditional, bias, and hybrid. Examining the advantages and disadvantages of each style will give you a better understanding of how each will work in your application.

Traditional (Straight) Splicing

The first, and most common, type of mechanical belt fastener splice is the traditional splice. It is fast, easy, and relatively inexpensive. These fasteners can be installed in minutes and require less belt preparation than other splice types, as well as limited tooling. Traditional splices are created by squaring the belt, cutting it on a 90-degree angle to the belt centerline, and installing the fasteners.

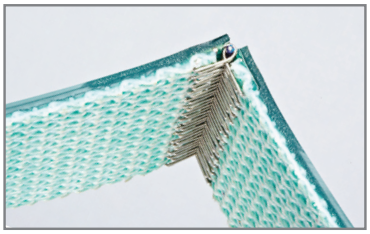
Traditional splices, when done correctly with the proper fasteners, are strong and durable. A wide variety of fasteners and connecting pins made from various materials allows the mechanical splice to be effective in most applications and environments. This splice also allows you to disengage the hinge pin and easily remove the belt from the conveyor for cleaning and maintenance.

Bias Splicing

Bias splices are used in applications where it is desirable to reduce the noise generated when a mechanically fastened splice contacts pulleys or other conveyor structures. The splice is installed on a slight angle, allowing the splice to gradually pass over the pulley, versus the entire length of the splice passing at the same time, reducing the ambient noise level.

It should be noted that installing the splice on a bias reduces the strength of the splice, so it should only be done if noise is a primary concern in the application. The reduction in splice strength is due to two factors. First, mechanical belt fasteners achieve their retention strength by tightly clinching the weft fibers (running laterally within the belt carcass). When the belt is cut on an angle, the weft fibers are cut, thus reducing the ability of the fasteners to clinch these fibers. Second, as the splice operates over pulleys the fasteners tend to pivot slightly to contact the pulley in the 90 degree orientation. Over time, this continual pivoting can weaken the fastener clinch. If the application requires reduced noise and a slightly weaker splice is acceptable, then a splice installed on a bias no greater than seven degrees is suitable.

Carded hooks and a flexible pin are required for bias splicing. Rigid pins and common bar fasteners are not flexible enough to operate over pulleys on a bias and will fail prematurely.



Hidden splice

Hybrid Splicing

A hybrid splice uses a low-profile mechanical fastener, such as wire hooks or lacing, and is fabricated in a manner that protects/covers the splice. The advantage of hybrid splicing is that it provides a hinged splice, which can be desirable for easier onsite installation of belts or for belts requiring frequent removal. There are three common ways to install a hybrid splice.

- *Covered Splice – Top Only* – The simple fabrication method of ply splitting and insertion of fasteners into the bottom plies makes this the easiest hybrid splicing method, only requiring the use of a ply separator and the fastener installation equipment. The top layer creates a flap to cover the fastener from the product being conveyed and return rollers.
- *Dual Covered Splice – Top and Bottom* – This fabrication method creates a splice that is protected on both the top and bottom by a plied flap. The top ply is separated to create the top flap, a bottom flap is created by separating the bottom ply, and the splice is installed in the remaining belt carcass, in essence being sandwiched between the ply flaps. This method requires a minimum of three-ply belting, a ply separator, and splice installation tools.
- *Hidden Splice* – This method creates the ideal hybrid splice. The top ply is separated, the splice is installed in the bottom ply/plies and the top ply is pressed on to the top of the splice using an endless splicing press. The top cover is scored to allow for the hinged splice to be separated. This type of splice requires a ply separator, endless splice press, and mechanical fastener installation tools.

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Belt Splicing Solutions From Flexco

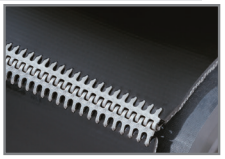
Flexco offers a variety of mechanical belt fasteners that can be used in whichever type of splice you choose.

Alligator® Staple System – With pre-inserted staples and a one-piece strip design, Alligator® Ready Set™ makes splicing quick and easy. The front edge of the fastener is beveled to allow it to interface smoothly with conveyor components, producing a strong impact- and abrasion-resistant splice.

Clipper® Wire Hook System –This low-profile fastener offers quick, economical installation and operates quietly and interfaces seamlessly with other conveyor components. The double-staggered grip pattern doesn't degrade the integrity of the belt carcass and is available in two hook styles: Unibar® Fasteners and Carded Fasteners.

Clipper® G Series™ Lacing System – Clipper® G Series™ Lacing features a staggered-leg design with four alternating leg lengths. These varying points of belt penetration provide additional strength and durability for the finished splice. The lacing is precision stamped from 316L stainless steel and then machine-applied for consistent compression, resulting in a uniform and flat splice.

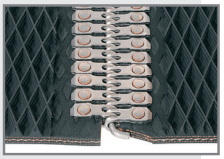
Alligator® Lacing System – For systems with pulleys as small as 1" (25 mm) in diameter, the Alligator® Lacing System offers an economical, low-profile splice that is hammer applied. The one-piece design provides uniform tension across the belt and is engineered to prevent pieces from working loose from the belt.



Alligator® Spiral Lace System – Alligator® Spiral Lace is ideal for belt operations with small head pulleys that require both non-metallic and low-profile fasteners. Made from FDA-compliant materials, they create a low-profile, non-marking splice with a removable hinge pin design for easy cleaning of belts.

Alligator® Plastic Rivet System – For light-duty applications where metal belt fasteners can't be used, Alligator® Plastic Rivet Fasteners are a long-lasting, easy-to-install alternative. The one-piece, easy-to-clean design features beveled leading edges and rivets molded into the top plate for conveyor component compatibility. These fasteners are applied with the Alligator® Spin Set™ installation tool where the rivets are spin set through heat and friction to provide a long-lasting splice.

Alligator® Rivet System – Specially designed for the abusive round hay baling application, Alligator® Rivet Fasteners are an affordable way to simplify belt maintenance and increase uptime. The robust and abrasion resistant fasteners can be installed quickly and easily in the field without removing the belt from the baler. The pilot nail rivet assembly penetrates without damaging carcass fibers and the installation tool produces the proper rivet curl.



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