

Mechanical Fasteners Or Endless Splicing: Part 2

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Read Part I [here](#) [1].



There are two major processes to choose from when splicing your conveyor belt: mechanical fasteners and endless splicing. Reviewing the available alternatives against the realities of your conveyor system will help you determine which type will serve your needs best.

Endlessing Options

There are two basic methods of endlessing light-duty belts. Belts with thermoplastic binders such as PVC, RMV (rubber modified vinyl), and urethanes lend themselves to endless fabrication because these materials flow together under heat and cool into a homogeneous mass. Fabricators typically install a “finger splice” into these belts, in which a dovetailing zigzag die-cut across both belt ends optimizes the edge-bonding area in between them. If belt thickness permits, a “finger-over-finger” technique also separates the belt ends into upper and lower layers, with their finger-cuts staggered so bonding occurs between layers, as well as, between fingers.

Belts made of thermoset materials — including rubber, neoprene, Buna-N, and some urethanes that don’t flow under heat — are usually made endless with a “step splice.” In this process, both belt ends are cut into steps at complementary angles, typically diagonal to the belt length, which overlay each other when the belt ends are drawn together. The step interface is bonded with an adhesive, either cold-set or heat activated.

Mechanical fastener options

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Mechanical splicing for light-duty belts presents three basic choices of metallic fasteners (wire hook, staple-style, and stamped lacing) and two non-metallic choices. Each type of light-duty belt splice has characteristics suitable for certain applications, but large areas of overlap exist between the various offerings. This variety allows users to select the style that best fits their needs.

Wire hook fasteners offer users an economical, low-profile, yet long-lasting splice. They are available in a wide variety of sizes, metals, and configurations for belt thicknesses up to .39" (10 mm) and pulley diameters as small as 15/16" (24 mm). Wire hook segments are supplied in strips with hooks held in proper spacing and alignment by either carded or welded assembly. Carded assembly holds individual wire hooks together with a stiff paper channel for easy handling and is disposed of once used. In welded assembly, hooks are welded in position along a common crosswire. Both types provide the advantage of a low profile fastener that is machine-installed, which assures a consistent, even splice.

Installation machinery offers a variety of alternatives, from powered shop units to small portable tooling that allows anyone with basic mechanical skills to repair splices within minutes directly on the conveyor. Wire hook fasteners would be ideal for applications that call for a low-profile, machine-applied splice. The low-cost nature of this splice, combined with quick installation that minimizes downtime, also makes this an economical choice.

Staple Applied-Plate fasteners present a strong and abrasion-resistant fastener choice. This design gains extra holding strength through a combination of compression between upper and lower fastener plates, which sandwich the belt ends, and the dual staples penetrating through both plates and cross-clinching on the bottom side. Installation requires only a hammer and a portable tool, making it very easy to install these splices on-site. Staple Applied-Plate fasteners are suited for applications with belt thicknesses from 1/16" to 1/4" (1.5–6.4 mm) and pulley diameters as small as 2" (50 mm). Those looking for a strong, abrasion-resistant splice would be pleased with this easy-to-install fastening system.

Stamped Lacing is often the best choice for low-volume users who want a low-profile, hinged mechanical splice, with no investment in installation tooling. This design provides a continuous strip of hinge loops formed with pointed teeth that are simply hammer-driven through the belt end. Lacing is not as strong as wire hook or staple fasteners and should only be used in less demanding applications. Lacing accommodates belt thicknesses up to 1/2" (13 mm) and a minimum pulley diameter of 1" (25 mm). Stamped Lacing is ideal for less demanding applications where there are only a few belts to maintain with simple hammer installation.

Non-metallic fasteners combine the convenience and economy of hinged mechanical splices with non-metallic properties. Most notably, non-metallic fasteners are non-marking, non-abrasive, compatible with metal detectors, and made of FDA-approved materials. This combination of properties makes them a viable alternative to endless splicing in applications involving x-ray or scanning, food handling, and finished products that are sensitive to being marked. There are

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two basic types of non-metallic fasteners: plastic rivet and plastic spiral fasteners.

Plastic Rivet fasteners produce a non-metallic splice that can be installed on-site with a portable installation tool. Installation requires punching holes into the belt, fitting the fasteners onto the belt through the holes, then using the application tool to spin-set the molded-in "rivets." Plastic rivet fasteners can be repaired on the conveyor, as long as the belt was not damaged where the plastic fastener plate damage occurred. This fastener suits low-tension applications that forbid metal fasteners, on belt thicknesses up to 1/8" (3.2 mm), operating at less than 65 P.I.W. (11 kN/m) and over minimum pulley diameters of 1-1/2" (38 mm).

Plastic Spiral fasteners provide a non-metallic alternative with an extremely low-profile and the ability to operate over pulley diameters as small as 1/2" (13 mm). The spirals are assembled into a webbing material, which is fabricated into the belt ends through various endless splicing processes, so it is not typically installed by in-house maintenance crews. This design accommodates belt thicknesses up to 1/4" (6 mm) with mechanical fastener ratings up to 50 PIW (8.7 kN/m) and is able to withstand heat up to 392°F (200°C).

Which option to choose

Light-duty belt conveyor systems have a number of options available for joining belts. It is important to look at your conveyor system, the condition of the belt, and your operational needs when selecting which splicing option to use. Remember, just because the conveyor started out with either a mechanical fastener or an endless splice doesn't mean that it needs to continue to be spliced in that manner. If you need assistance with selecting the proper splice for your application, expert guidance is always available from your conveyor belt supplier or the manufacturer of the splice. Select the splice that best fits your conveyor and operational requirements.

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