

USING CUSTOM BELT MODIFICATIONS TO OPTIMIZE PERFORMANCE

Introduction



Modifications are a complex, but effective component of conveying applications. Modifications that are designed correctly can enhance performance in synchronous and non-synchronous product handling applications.

With nearly limitless design options, modifications can be made to both the conveying and drive sides of the belt. Megadyne expansive selection of materials and modifications enables us to create the ideal belt construction to meet manufacturers' unique product handling requirements.

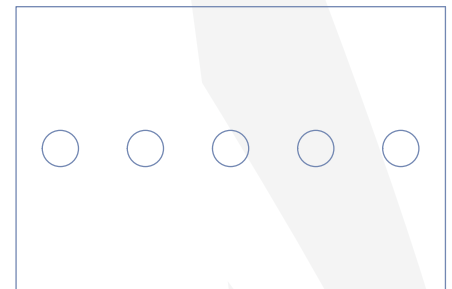
Types of Belt Modifications

Depending on the desired capability—whether it's enhanced speed, increased traction or higher resistance to wear—various modifications are available for optimizing belts to meet the demands of your specific application.

COMMON MODIFICATIONS INCLUDE:

Punching / Perforating

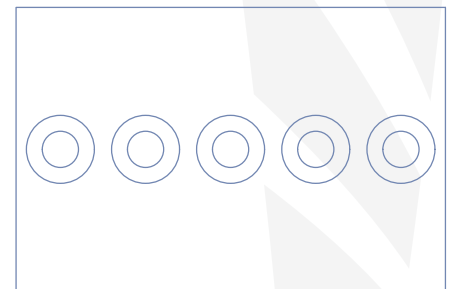
Using precise tooling for exact diameter and hole spacing, manufacturers can punch and perforate holes in a belt to allow air to pass through it. This creates suction, which better holds objects in place as they move along the conveying path. Although this method is most often employed to achieve a vacuum or suction effect, it can also be used to vent water.



Single Row of Holes

Countersinking, Slotting, and Routing

Countersinking is used to enhance the suction effect of solely using perforation. This modification, which creates a conical shape on the top side of the belt, expands an existing hole, allowing air to make better contact with the product. Both slotting and routing increase the area of suction, thereby creating better vacuum.



Holes and Countersink

Siping / Grooving

The primary purpose of siping—creating sipes or slits in the belt—is to provide stress relief. Siping helps prevent cracking in the belt, especially if it has a thick cover or if it is traveling over a smaller pulley. These slits are etched across the width of the belt, either laterally or diagonally. In addition to providing relief, siping also helps to prevent the cover from dusting or glazing over. Furthermore, wider diagonal grooving of the belt's cover can allow for venting or release of water in certain applications.



Grooves across Width

Using Custom Belt Modifications to Optimize Performance

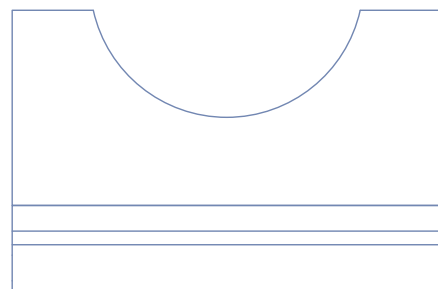
Milling / Grinding

Using precision multi-axe CNC machining equipment, milling and grinding—the most complex modifications of all—can be done on both sides of a belt to achieve various results. Tooth-side grinding involves removing an area of the belt's teeth for one of two reasons: to create a leak-free suction seal when riding over the vacuum chamber or to provide the belt with an integral tracking design.

Grinding the belt's cover side can also serve many purposes; it can give the belt a new texture or finish, alter the thickness of the cover or modify the cover profile—by creating lugs, for example. Precision grinding the cover side brings uniformity to the belt's different thicknesses and textures, depending on what types of objects it will be moving and the level of control required.



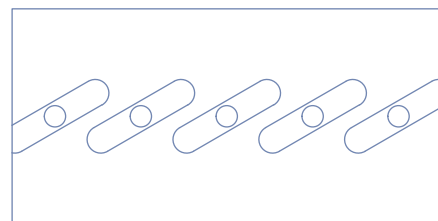
Lug Grind Across Width



Convex Grind

Multiple Modifications

When making multiple modifications on the same belt, the complexity of belt, the features required and stacked tolerances must be taken into consideration. Generally, the customization process begins with the base timing or flat belt, followed by the addition of a molded, fabricated or coated cover, which can then be further altered with CNC-machined features such as slots, holes and ground impressions.



Slots With Holes

CASE STUDY

Belt Modification in Action



To illustrate how modification can impact a project, we've outlined a relevant case study below.

A corrugated box manufacturer needed to find an aftermarket supplier for the replacement timing belt on a paperboard handling machine. Unable to justify the high cost and long lead time of an OEM replacement part, the company turned to Megadyne for an alternative solution.

After receiving the original geometry and surface characteristics of the belt, we developed a series of prototypes to reverse engineer a replacement part that not only matched the complex criteria, but was also cost effective. To keep costs down, we made sure our fabrication methodology was as efficient as possible, producing nine belts per machine.

The belt, a neoprene base with a 0.125-in.-thick gray, non-marking neoprene cover, featured precision-ground teeth with slots machined into the cover, as well as holes in the slots for vacuum suction. Utilizing our advanced modification equipment, our team was able to match the original part's tooth geometry and dimension as well as spacing of the slots and holes while maintaining tolerances of ± 0.01 in.

After just six weeks, the 1200-8M-85 HTD timing belt was complete and delivered to the customer. Our final aftermarket product, which is used in corrugated box equipment, performs just as well, if not better, than the OEM belt we modeled it after. Megadyne efficient production processes enabled us to provide our customer with a high-quality belt at a fraction of the price.



About The Megadyne Group

Founded in 1957 in Mathi, Italy, Megadyne is a leading global manufacturer and fabricator of power transmission, product handling, materials handling and linear positioning belts, hose and metal products.

With manufacturing operations in Europe, Middle East and Africa (EMEA), Asia Pacific (APAC) and the Americas, Megadyne is well poised to be your partner. From a broad selection of materials and processes, we service over 20 major industries offering high-quality product, outstanding service, technical support and state-of-the-art logistics to ensure we develop the right product for your application and have it at the right location when you need it.

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