

What are Tubular Spacers?

Tubular Spacers are generally used to separate / space two components from each other by a distance equal to the length of the Spacer. Typically, a Tubular Spacer is used in conjunction with a bolt that passes through the inner diameter (ID) of the Spacer to retain the assembly together. Tubular Spacers can also be used as stand-offs, bushings, tension sleeves, axles and pins. Common materials for Tubular Spacers include low carbon steel, galvanized steel, aluminum, and austenitic stainless steel. Other materials are sometimes used based on the specific application requirements.

Tubular Spacers can be manufactured by machining a rod to the proper ID (and OD if required), cutting metal Tubing with a specific diameter to the desired length, or roll forming coiled metal strip into a butted tube.

Machined Tubular Spacers by far are the most expensive type of Spacer and are not as readily used in industry as are Spacers manufactured by cut tubing or roll forming. For this reason, this White Paper will focus entirely on roll formed Tubular Spacers and cut tubing.

Advantages of Roll Formed Tubular Spacers

Roll formed Spacers are formed into closed seam tubes from cold rolled strip. Designed around standard bolt diameters with sufficient clearance around the bolt, roll formed Tubular Spacers offer significant advantages over cut tubing. These advantages include:

Cost Reduction

- **Material:** While also allowing for more design flexibility, coiled metal strip is more cost-efficient than metal tubing and creates less scrap in the forming process.
- **Efficiency:** Some proprietary roll forming processes are highly efficient and enable Spacers to be manufactured to any length within a specified length range without requiring a change to tooling or material. In addition, roll formed Spacers are formed with clean-cut, square ends that do not require any secondary steps for deburring.

On the contrary, after metal tubing is cut, the product must be tumbled or machined to remove the sharp edges as a result of the cutting process. This secondary process required to deburr cut tubing increases the cost to manufacture the parts.

- **Practicality:** Roll formed Spacers are designed with tolerances that meet the functional requirements of the application of separating two objects from each other by a desired distance. Typically, these tolerances are wider than machined or cut products which reduces costs, yet they still reliably meet the functional requirements of the spacing application. Unnecessarily close tolerances often require precision machining or the addition of secondary operations that substantially increase cost with no value added to the function of the Spacer.



Rolled Tubular Spacers



Examples of how metal tubing is cut



Coils of metal strip

Design Flexibility

- Since most Tubular Spacers are used to separate two objects by a desired distance and the assembly is normally fastened together by a bolt passing through the ID of the Spacer, manufacturers typically only control the ID and length of the Spacer. So as to not over-specify the product with no added value, the outer diameter (OD) of a Tubular Spacer is generally a reference dimension since the parts are not meant for installation into a hole or bore. When specific applications require a custom Tubular Spacer, manufacturers with extensive experience in roll forming can design and form coiled strip material into a wide array of parts to satisfy unique dimensional requests, including, notching, grooving, and customized part-marking. Oftentimes, standard materials can be used to manufacture the special items to minimize costs and avoid extensive lead times.
- Roll forming techniques have been refined over the years to enable the production of a wide selection of Tubular Spacers. The process affords more flexibility and responsiveness in the forming process to accommodate specific requirements,
- In some lighter duty applications, rather than using a bolt to secure the assembly, both ends of the roll formed Tubular Spacer can be flared to capture the mating materials.

Variety of Part Sizes

- The diameter range of cut tubing is often limited by the dimensions of the raw tubing material and the capability of the cut-tubing processing machines. This limits the range of product that the cut-tubing manufacturer can provide, and thus can make it difficult for companies to procure all sizes of Spacers they require from one source.

Burr-Free

- Burrs along the ID and OD are common in high volume cut tubing production. Removing the burr on cut-tubing products requires a secondary process and thus results in extra cost. Advanced roll forming processes do not create burrs during forming and therefore do not require an additional step to deburr afterwards.



Burr ends of cut metal tubing

Conclusion

While there are different types of Tubular Spacers available in the industry, roll formed Tubular Spacers offer several advantages that result in a high quality, reliable product at a much lower cost.

Complimentary Application Engineering Support

Need help choosing the most appropriate fastening solution for your application? SPIROL's Application Engineers will review your specific requirements, and help you select the most cost-effective Spacer to meet your technical and commercial needs. **Contact us today!**

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