

How to make the right connection

FLEXURE ATTACHMENTS THAT MAKE CENTS

For many years Helical Products Company has been recognized as the pioneer in the design and manufacture of helical beam type couplings, universal joints (UJ's) and precision machined springs. The unique capabilities of the HELI-CAL Flexure have solved countless design projects for engineers in many diverse industries.

But curiously, engineers or designers often fail to recognize how important the integration of the flexure/attachment is in improving component performance. Typically, the portion of a coupling that fastens, clamps, meshes or otherwise contacts adjacent components is referred to as an "attachment." It is these various attachments and their potential impact on system design we will discuss here.

First, let's consider some of the special characteristics inherent to a HELI-CAL Flexure. Flexured couplings and UJ's are backlash free and provide constant velocity rotation regardless of misalignment. Any means of attachment used in conjunction with this type of product should maintain these properties, and at best complement them. The most common form of coupling attachment, set screws, can introduce backlash into a system unintentionally.



The right attachment will reduce assembly/production costs.

Having said this, it should be noted that Helical does sell many flexures with set screw attachments. [The key to assuring this attachment method does not compromise effectiveness of the entire system is knowing the configuration of the adjacent components, D-shafts for example, and the anticipated duty cycle the component will encounter.]

Clamp style attachments are frequently used as a zero backlash, positive means of transmitting rotational motion between components. When compared to set screws on a performance basis, clamps squeeze around the shaft circumference rather than creating a dimple in the shaft. Clamp attachments better lend themselves to applications where the components are assembled and disassembled occasionally. Clamps require more linear space for the coupling, are inherently less dynamically balanced and slightly more expensive to manufacture. At times neither of these attachment methods may be optimal for your application. This raises the question, "What other alternatives do I have?"

The variety of attachments available is limited only by the imagination of the design engineer, and the laws of physics. The configuration of coupling attachments can be as simple as the plain bore or as complex as a pinion gear. The purpose in seeking a customized attachment is to minimize the cost, optimize performance, simplify design, reduce system size, or reduce weight.

By using the HELI-CAL Flexure along with an attachment, the engineers are allowed to dream in their system design. Most designers view a special or modified standard with a cost being too great. In actuality, customized attachments more than pay for themselves. The proper attachment will minimize assembly-production time and reduce the total number of parts to purchase, to maintain in inventory, and to assemble. All of this produces an overall production savings.

Pictured are some examples of customized attachments and the benefits they have provided:



A custom blind attachment designed to transmit torque in a single direction.



Integrating a lever arm into a clamp attachment flexure allowed linear motion to be converted to rotary motion.



Detachable caps permit flexure installation where components cannot be spread apart to slide the flexure onto component shafts.



A threaded shaft attachment offers several advantages. Fine axial length adjustment and blind assembly are just two potential uses.



FANTASTIC "FLEXURE FACTS"

The versatility of the HELI-CAL Flexure is the "secret ingredient" in each design engineering application. You'll see how the flexibility of the HELI-CAL Flexure means unprecedented design opportunities for you.



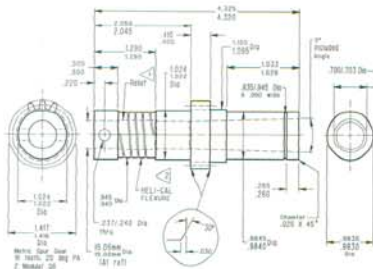
SOLVED APPLICATION STORY 9

CHALLENGE: A customer had problems with a wire feeding unit in a stapling machine. The stapler is used to fasten magazine pages together. The unit was made up of a flexible spring coupling welded onto a shaft with a gear attached. The entire machine is made in Italy.

The customer didn't know the tolerances for any dimensions, torque or the torsional stiffness rating. A unit that is currently being used by the customer was supplied to Helical. From that, a "guesstimate" was made and Helical was able to provide a best effort paid sample.

SOLUTION: This is an illustration of being able to retrofit a part. When the end user proves it is functional, then the machine manufacturer can be contacted with the idea of Helical furnishing the complete part to them. Note, there are two bearing surfaces, a gear and a HELI-CAL Flexure with a tapered bore on the A2 end. Helical's Application Engineer was able to put it all into a single piece of 17-4pH stainless steel.

ANSWER: HELI-CAL Flexure Flexible Shaft Coupling # 6883.



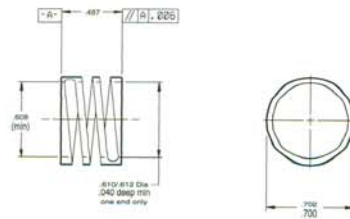
SOLVED APPLICATION STORY 28

CHALLENGE: A manufacturer of linear and rotary actuators came to Helical in 1975 looking for a spring element to project the puck of a disc brake. Their actuators are driven by electric motors which, when turned off, need to stop immediately. Minimal over-run was desired. To control over-run, an electric disc brake was adopted which is not common in the industry. Somewhat like truck air brakes, the actuator brake is always on and is released by an armature drawing the puck away from the disc. The spring had to be made of electron beam weldable material (the spring would be welded in place), have specific rate and force, be lightweight and distribute forces uniformly across the spring ends.

SOLUTION: Helical's machined, square ended springs were a perfect fit. We decided upon a thin walled, 1 1/2 coil, single start spring from 17-4pH corrosion resistant steel (CRES).

This solution worked so well that through the years 37 additional single and double start springs have been added. The ability to change size and performance, yet retain the basic configuration, has made this application one that continues to grow.

ANSWER: HELI-CAL Flexure Precision "Machined" Spring #236 and 37 others.



HELICAL'S PHILOSOPHY

Helical Products Company, Inc. has a unique product in the HELI-CAL Flexure concept. Equally unique and important is the high level of service we at Helical provide to our customers. Together this is our competitive advantage.

When speaking of service we talk of all areas needed to supply the HELI-CAL Flexure to the customer. Putting it in perspective we like to relate it to the spokes of a wheel. Each of the spokes represents a unit of our organization - drafting, engineering, finance, administration, shipping, sales, production, manufacturing and marketing. Each, in turn, bears the weight of responsibility - and opportunity - to provide and maintain this high level of service to the CUSTOMER - the hub of the wheel.

Passing this commitment on to the next "spoke" requires good, clear communication and cooperation between departments, with the full realization that our focus is always on the customer and their needs. Each department, and, of course, each individual is important at Helical. Helical has never considered itself an "I" company but a "WE" company. With this philosophy we are able to supply an excellent product at a fair price as well as to provide outstanding service.

Our commitment has been to build an organization through hard work, fairness, cooperation, and mutual trust for each other's roles; to act with courtesy, dependability, reliability, and honesty toward the customer.

Helical does what it says - with pride in its product, its service, and its people.

PLEASE NOTE:

Take advantage of Helical's engineering expertise. Using application and design criteria to accommodate various torques, misalignments and/or spring rates in conjunction with an infinite number of attachments, you are able to consolidate several components into a single HELI-CAL Flexure. The net result is a reduction in total number of parts and lower system costs. Consultation with Helical factory engineers is at "no charge." Use this service.

"More Than A
Means To
Connect
Two Shafts"

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