J-Crimp™ and 2-Crimp™ Radial Compression Stations

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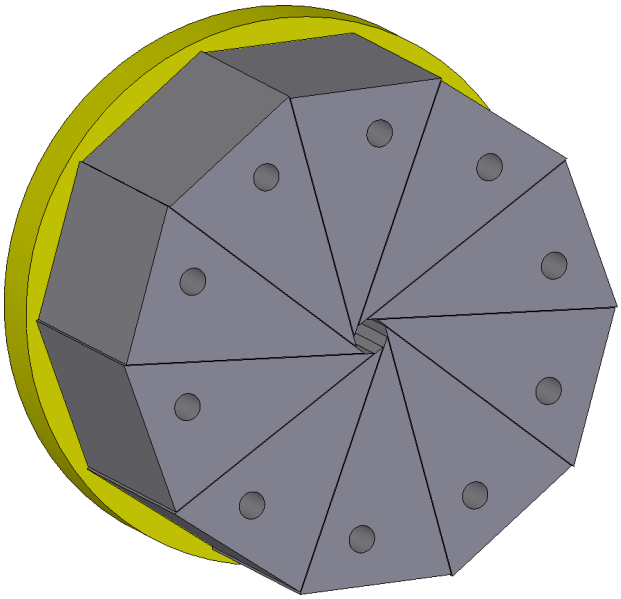
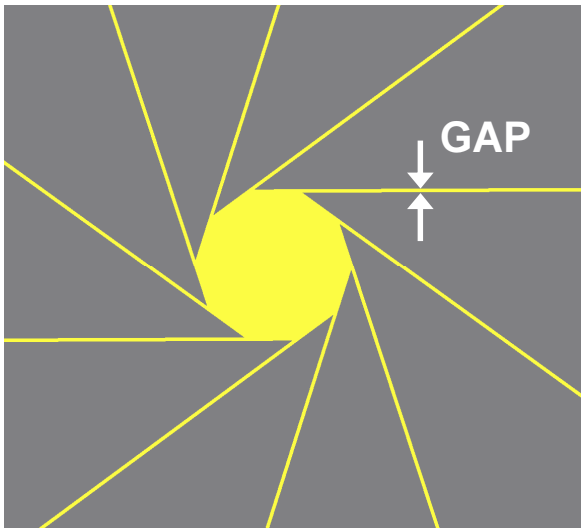
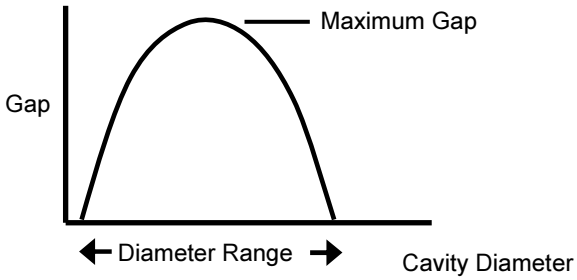
Blockwise Engineering's J-Crimp™ and 2-Crimp™ brand radial compression stations (patented) solve a significant problem that burdens traditional radial compression mechanisms. J-Crimp™ and 2-Crimp™ stations are available as part of Blockwise's stent-crimping machines, and are also sold as separate components for use in customer's equipment.

Traditional radial compression mechanisms of the "hinged-wedge" variety, commonly used for stent crimping and other manufacturing and testing applications, are constrained by a strict design tradeoff between diameter range and maximum wedge-to-wedge gap. Further, for a given design, the gap is a function of the opening diameter as follows: At the closed and opened extremes of the motion range, the dies are wedged against each other (zero gap), and the gap varies with diameter, reaching a maximum value near the middle of the diameter range. The range of diameter is actually limited by the points at which the gap becomes zero. To avoid excess gapping, the mechanism must be designed specifically for the diameter range of the application.







Blockwise's J-Crimp™ and 2-Crimp™ compression station eliminates that tradeoff, and provides a very small die-to-die gap at any opening diameter. By using J-shaped dies hinged opposite from the working surfaces, and curving the working surfaces in a specific shape, the die-to-die gap is made very small at all opening diameters.

There is no need to design the mechanism specifically for the diameter range of the application because there is no disadvantage in oversizing the mechanism. The mechanism is available only with stainless steel dies. Because of the complex shape, it is not practical to make the dies from plastics.

Both J-Crimp and 2-Crimp mechanisms have a working diameter range of **0 to 16 mm**. J-Crimp stations have a working length of 62 mm or 124 mm, and **maximum radial force** rating up to 1350 N (depending on configuration). 2-Crimp Stations have a working length of 180 mm and a very high maximum radial force rating six times that of the J-Crimp, or 8000 N.

J-Crimp and 2-Crimp stations are available in temperature-controlled configurations, and exhibit superior uniformity of temperature over the working length.

The J-Crimp mechanism is designed-for-manufacturing, using very special processes, to achieve the best possible accuracy and durability with reasonable manufacturing cost. There are more than 100 J-Crimp mechanisms in service today, and none has worn out or needed to be rebuilt from normal service. In comparison with competing mechanisms:

Competitor's Mechanisms	**Blockwise J-Crimp and 2-Crimp**
Plain metal-on-metal bushings wear out, requiring periodic rebuild.	All-ball-bearing motion has essentially infinite life. No rebuilds, no adjustment.
High, variable friction results in poor process control, often requiring different process settings on supposedly identical machines.	Very low friction results in exquisitely precise process control in both force-controlled and diameter-controlled modes.
Die-to-die sliding and wear.	No die-to-die contact or wear.
Poor accuracy (opening not round when viewed under a microscope)	Best roundness accuracy available.
Matched, non-interchangeable parts, needs periodic rebuild, not customer-serviceable	Never needs service. (J-Crimp can be reassembled by customer technicians.)
Poor temperature uniformity over the working length	Excellent temperature uniformity over the working length