

# Nested wave springs offer increased force capabilities

TFC has introduced a standard range of nested wave springs from Smalley, available from stock in carbon and 17-7 stainless steel and in sizes from 16-100mm. And if one of the standard sizes does fit your application, Smalley can design you a custom product

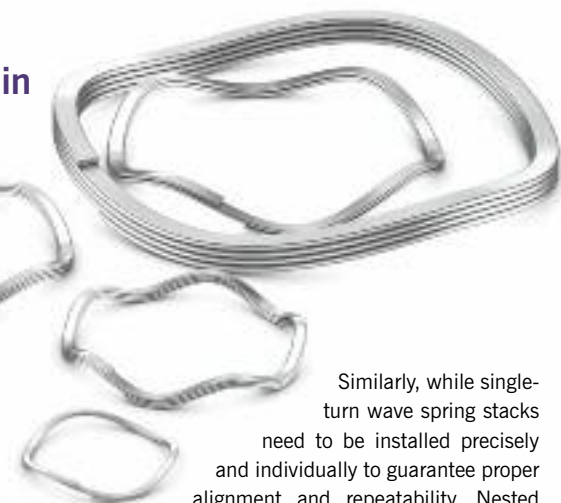
The Spirawave nested wave springs from TFC offer designers a number of benefits, not least of which is two to three times the force of conventional wave springs. Nested wave spring forces increase proportionally with the number of turns in the coil. Compressing a wave spring creates bending, or tensile stresses, which can limit the amount of force the spring can produce without failing or permanently deforming.

It is recommended that the calculated operating stress be less than the minimum tensile strength of the material in static applications and less than 80% of the minimum tensile strength in dynamic applications. Stacking single-turn springs can achieve a higher load, but one nested spring provides the desired load without the complication of stacking multiple parts.

Nested wave springs also eliminate uneven loading. When an assembly demands a stack of single-turn wave springs, they have to be aligned perfectly to prevent

binding or uneven loading when compressed. Because nested spirawave springs are made from one continuous filament of flat wire, coiled in parallel, the layers stay aligned, allowing for consistent loading.

Further, nested spirawave springs are ideal for automated processes. Their study, multi-turn design allows for pick and place methods without the risk of deformation that can occur when a robotic arm picks up a single-turn wave spring. This design has no free ends, making it tangle-resistant, reducing assembly time.



Similarly, while single-turn wave spring stacks need to be installed precisely and individually to guarantee proper alignment and repeatability. Nested springs can be easily placed into assemblies, which leads to both time and cost savings.

Now that nested Spirawave springs are a standard series from Smalley, thousands of carbon and stainless steel parts in metric sizes from 16-100mm and imperial sizes from 0.500-4in are available for next day shipment. Non-stock quantities can be available in as little as three weeks.

[www.tfc.eu.com](http://www.tfc.eu.com)

# Cylinders offer auto cushioning for optimal deceleration under any operational condition

Camozzi Automation's Series 23 pneumatic cylinders embrace the innovative concept of 'auto-cushioning' – reducing installation and commissioning time, to provide a cost-effective alternative to manually adjustable cylinders.

The versatile, general-purpose cylinder is compliant to ISO 6432, with its patented system automatically adjusting cushioning in order to provide optimal deceleration under every condition. The cylinder enjoys smooth, jolt-free movement over the entire cushioning phase, reducing vibrations and noise, while also guaranteeing higher reliability and constant performance over time.

The auto-cushioning system is based on the use of shaped sleeves that have a number of holes that are accurately positioned and precisely dimensioned. This enables the system to adapt to different combinations of speed and applied mass. As manual adjustments are not required, commissioning times reduce accordingly, and the cylinder effectively



becomes tamperproof. Series 23 is suitable for use in many industrial applications, especially where working conditions vary over time because of changes in dimensions or wear of the host machine or mechanism,

including packaging, food processing, plastics and textiles.

Available from July in diameters Ø16, 20 and 25mm and stroke lengths up to 1000mm, Series 23 offers magnetic piston as standard and has an operating pressure from 1-10 bar, within a temperature range from 0 to 80°C.

The Camozzi Automation division of the Camozzi Group offers a product range including components, systems and technologies for the industrial automation sector, the control of fluids – both liquids and gases – and applications dedicated to transportation and life science.

Camozzi Automation's offering includes ever more products and solutions for the Industrial Internet of Things (IIoT). The company works to realise the digitalisation of production processes and on the creation of real cyber-physical systems through which it becomes possible to integrate mechanical, electronic and digital elements, constantly improving process performance.

[www.camozzi.co.uk](http://www.camozzi.co.uk)