

**QUALITY AND PRECISION**  
EXOTIC ALLOYS READILY AVAILABLE



Smalley Wave Spring

Coil Spring

### SAVE SPACE, SAVE WEIGHT

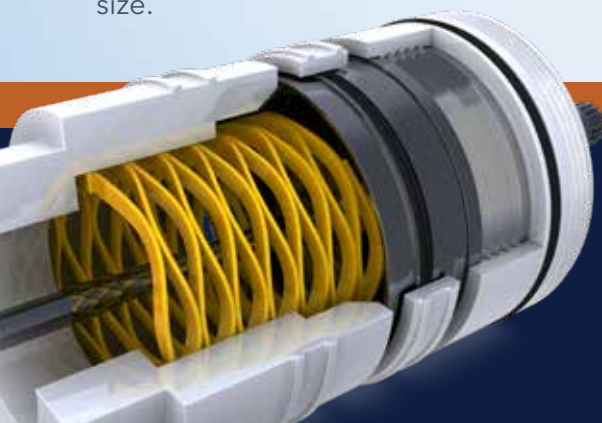
Crest-to-Crest® Wave Springs reduce spring heights by up to 50% compared to coil springs. A smaller, more compact spring allows for space and weight savings by reducing the spring cavity size.



Constant Section

### NO EARS TO INTERFERE®

Spirolox® Retaining Rings have no ears or lugs to interfere with mating components. Stocked in Stainless Steel, they are available for quick delivery and require no special tools for assembly or removal.



WAVE SPRINGS • RETAINING RINGS • CONSTANT SECTION RINGS

 **SMALLEY**  
THE ENGINEER'S CHOICE®

[smalley.com/oil-gas](http://smalley.com/oil-gas)

## CUSTOMS ARE STANDARD

Smalley engineers have designed thousands of parts for the oil and gas industry. Custom parts are available from .157 - 120" or 4 - 3000 mm diameters. From prototype to production, we are able to scale to your manufacturing schedule quickly and economically, with No-Tooling-Charges™.

## EXOTIC ALLOY AVAILABILITY

Our raw materials warehouse contains NACE compliant materials readily available for production, including:

- Stainless Steel
- Inconel
- Elgiloy®
- MP35N®

Heavy Duty  
Crest-to-Crest®  
Wave Spring



Interlaced  
Wave Spring



Nested  
Spirawave®  
Wave Spring



## COMMON APPLICATIONS

- Ball Valves
- Gate Valves
- Butterfly Valves
- Packing Preload
- Blowout Preventer
- Christmas Tree
- Ball and Taper Tools
- Coiled Tubing
- Electronic Chassis and Delivery Tools
- Well Abandonment Tools
- Scintillation Crystal Detectors
- Bearing Preload



A **Crest-to-Crest® Wave Spring** was used to reduce the spring cavity in this ball valve by 50%. The resulting spring reduced the valve size and weight. A cost savings was realized from the material savings.

Elgiloy is a Registered Trademark of Elgiloy Specialty Metals