

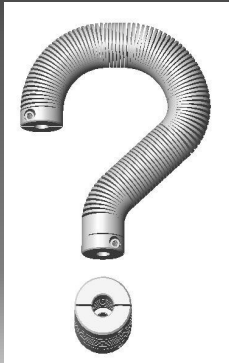
About the Extraordinary HELI-CAL Machined Spring®

~and the remarkable
HELI-CAL® Flexure
for your special applications



~for those who are as yet unfamiliar
with this versatile product

Consider the questions



- What is a machined spring?
- What are some of the advantages of machined springs?
- How are machined springs different?
- What are the advantages of multiple start springs?
- Explain “single start” and “double start” flexures.
- What are the basic elastic modes applicable to machined springs?
- Can machined springs be made so that the coils don’t touch?
- Can I get a listing of catalog machined springs?

Consider this Answer:

Answers to the questions
and consultations with
Helical engineers are available,
no charge. You are invited to
take advantage of our design
and application expertise.
To see why, read on.

Helical Products Co., Inc.

uses HELI-CAL Flexure technology
to produce high performance,
machined springs in a way that takes
much of the guesswork out of the
design and manufacturing processes.

It may seem to some that "machined
springs" is a preposterous idea, but
believe us, "machined springs" offer
performance that often appears to be
light years ahead of ordinary springs.

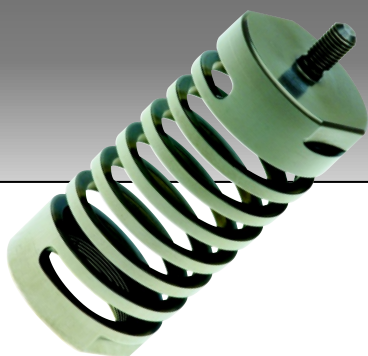
Interested?

Call Toll Free 877-353-9873

Or go to www.MachinedSprings.com

The HELI-CAL Flexure...

**It's what makes HELI-CAL
Machined Springs®
unique, versatile and
better able to integrate
attachments.**



The HELI-CAL Flexure is a flexible helix (curved beam) machined into a unique configuration that incorporates special performance characteristics.

Used as a spring, the multi-functional flexure provides predictable and desired performance in compression, extension, torsion, lateral bending, and lateral translation modes.

ONE,

or multiple functions, integrated within the HELI-CAL Flexure into a single unit, can have a marked, positive impact on your system performance, as well as increased production efficiencies and significant cost savings.



**Wire-wound spring.
Three separate pieces
welded together.**

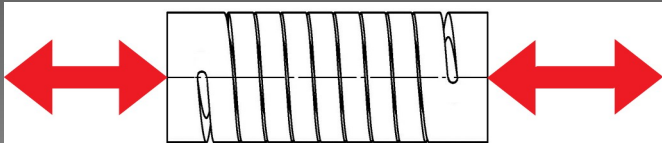


**Helical machined spring.
Single piece. Integrated
parts-functions.**

**The key is integrating several parts
into one piece.**

The HELI-CAL Flexure

as a compression/extension
spring with attachment



Tapered end



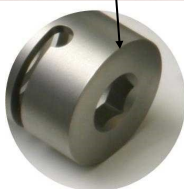
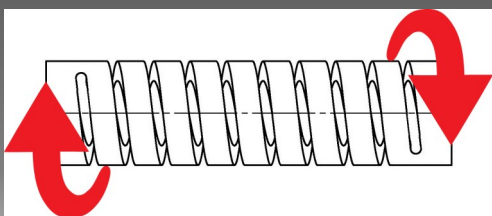
Flanges



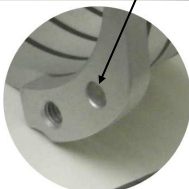
Threaded ends

The HELI-CAL Flexure

as a torsion spring
with attachment



Hex



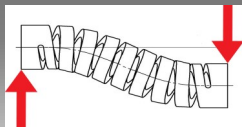
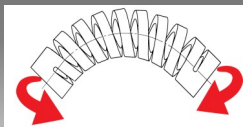
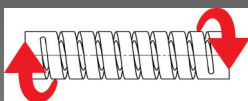
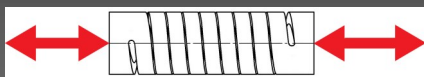
Tangs with pinholes



Slots

The HELI-CAL Flexure

as a spring including all
four displacement modes
with attachment

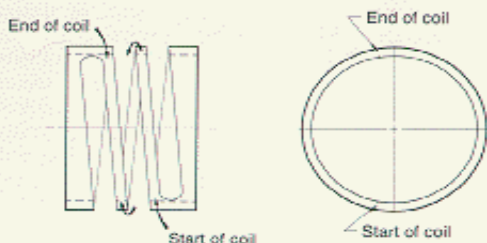


This spring of 7075-T6 aluminum with five starts provides compression, torsion, lateral bending and lateral translation rates, all within one individual spring.

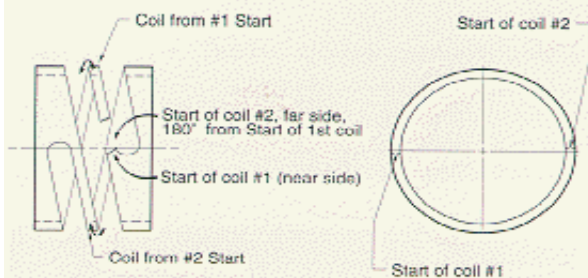
About starts:

A single start spring is a single continuous coil element which starts at one end and terminates at the other end. This configuration is common to most springs. A “double start” spring has two intertwined continuous coil elements. In effect, this puts two independent helixes in the same cylindrical plane. Multiple start flexures, such as triple start etc., are similar extensions of the concept.

Single Start Spring



Double Start Spring



A final word about attachments:

The beauty of Helical
“machined springs” is that
any manner of end configurations
is possible; threads, flanges,
slots, pinholes...



The operational limitations of loops and hooks are not present with machined springs. The tangs common to “traditional” torsional springs are not needed.

The incorporation of a cross slot, double tangs, spline or bolt circle, allows for a pure moment attachment so that there are no unresolved forces or moments.

Our pitch, as presented in *"Design World"*

ENTER THE INCREDIBLE WORLD OF *MACHINED* SPRINGS

Introducing:

The spring for the 21st century

Light years ahead of
traditional springs:

- ◆ End attachments
- ◆ More precise performance
- ◆ A broad range of spring rates and functionality
- ◆ Safety operation
- ◆ Repeatability—predictability
- ◆ Integration with entire assembly
- ◆ Cost reduction
- ◆ Accommodates spring modes: compression-extension, torsion, lateral bending, lateral translation
- ◆ Torsional springs produce pure moments. Multiple starts resolve (cancel) moments
- ◆ Easier assembly

Free engineering
consultation

The key is integrating several parts into one piece.



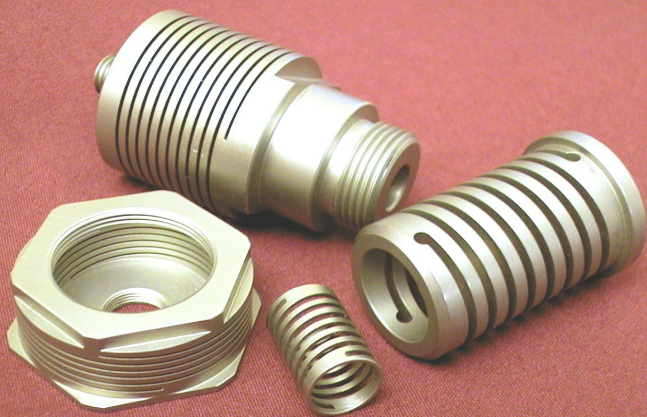
HELICAL
PRODUCTS COMPANY, INC.

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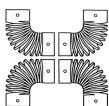
Examples not
shown to scale

Reasons for buying Helical:

- State-of-the-art single piece machined springs, utilizing the HELI-CAL Flexure
- Technical consultation (no charge)
- Quality products at fair prices
- Over 45 years of engineering and manufacturing excellence
- Unmatched dedication to customer satisfaction



NOTE—Please see our web site for additional HELI-CAL Machined Spring[®] information.



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