JOHN EVANS' SONS

Custom Spring Design Guide

JOHN EVANS' SONS Est.1850
SPRINGS MADE BETTER™
Part of Lesjöfors Group

Established in 1850, John Evans' Sons, Inc. manufactures custom and specialized springs for various industries and applications from medical to military to high-tech.

As one of the oldest spring makers in the United States, John Evans' Sons has become an industry-leading provider of high-quality precision spring products. With a commitment to excellence, we employ 70 workers at our manufacturing facilities in Lansdale, Pennsylvania, producing award-winning springs, mechanical spring assemblies, wire forms, and metal stampings.

John Evans' Sons offers custom capabilities to design springs that meet the performance and functionality demands of various medical, aerospace, electronic, trucking, and manufacturing applications. We take pride in prototyping highly technical spring solutions as well as manufacturing high-volume precision springs.

This comprehensive guide covers the importance of designing custom springs and the customization options offered by John Evans' Sons. We will highlight the crucial aspects of the custom spring design process, including how we work with customers from start to finish to develop a product that meets their needs.

Spring Types We Offer

John Evans' Sons is an international leader in spring design and manufacturing. We offer custom solutions based on the following spring types. These can be specially engineered to meet the dimensions and performance demands of various applications:

Constant Force Springs

Spiral Torsion Springs

Power Springs

Helical Springs

Stampings/Flat Springs

Torsion Leaf Springs

Custom Design Considerations

Various design factors can affect the time and money needed to manufacture a custom spring. Therefore, it is essential to work with an experienced manufacturer such as John Evans' Sons, who has the expertise and knowledge to handle all aspects of the design phase.

Our design engineering team will discuss all project requirements and available options with customers before creating prototypes, ensuring configurations and calculations are exact throughout the custom design process.

Important to Note

Most springs have a default configuration to make tooling more readily available during production. Our knowledgeable engineering team can recommend material sizes and standard end details as needed, providing custom solutions to benefit the customer and meet their expectations for product performance.

Design factors that affect the time and cost needed to manufacture a spring can include the following:

- Non-standard end details often require custom tooling. Our engineering team can help you navigate this process.
- Materials that are difficult to source because of composition or size.

Environmental Conditions and Material Selection

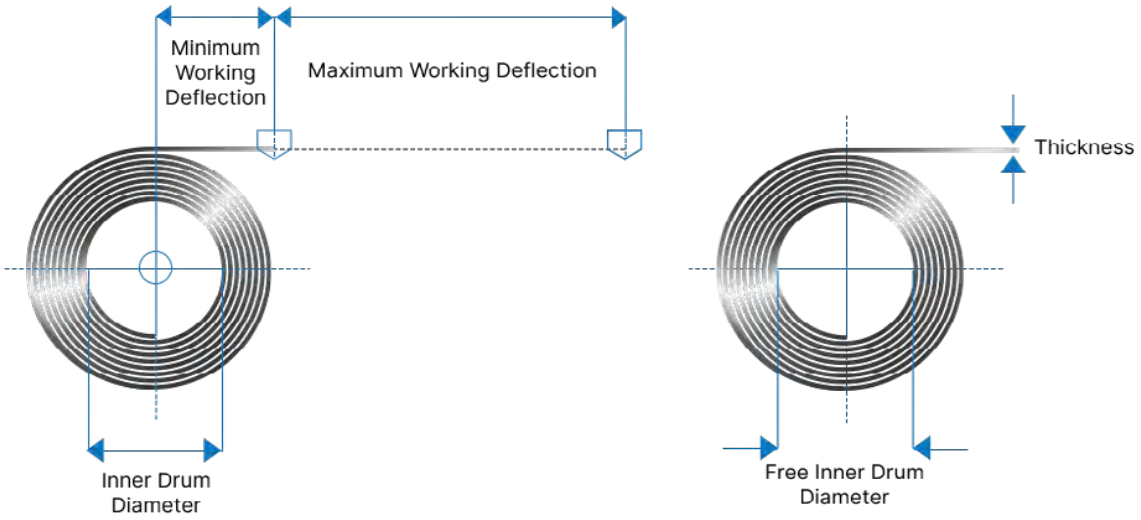
Customers must be prepared to address design considerations, especially concerning corrosion resistance and harsh environments. Extreme temperatures and corrosive atmospheres can negatively impact the performance of a spring. The John Evans' Sons team can assist in these unique situations, often addressing the issue with alternate material options.

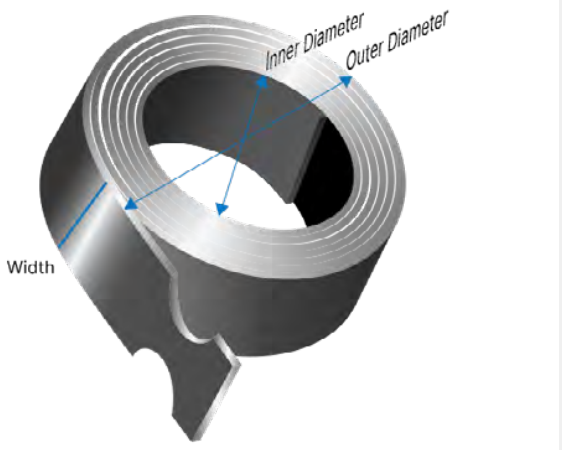
Material selection is a vital component of the design and overall cost of a project. Corrosive and high-temperature environments often require a specific material choice to maintain optimal performance. Many times our engineering team can design parts capable of withstanding harsh environments by using high-performance materials like Inconel or Elgiloy, or even supplementing springs with specialized coatings to meet performance requirements. Failing to pair an application with a material that can withstand its environment can dramatically shorten the life of the spring.

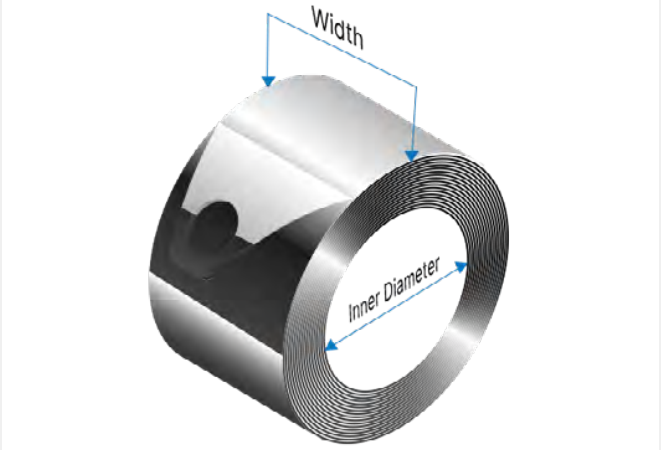
Diameter and Load

The following parameters can affect the spring's load:

- Length
- Thickness
- Material Width
- Coil Diameter



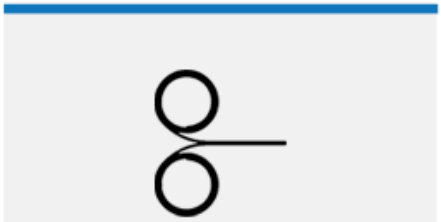




Achieving an increased load can occur using two or more constant force springs in various configurations, such as interwound or in tandem.

Mounting

Providing an overall available design envelope with mounting details can prove extremely helpful to the engineering design team. Some of the common mounting styles include



Back-to-Back

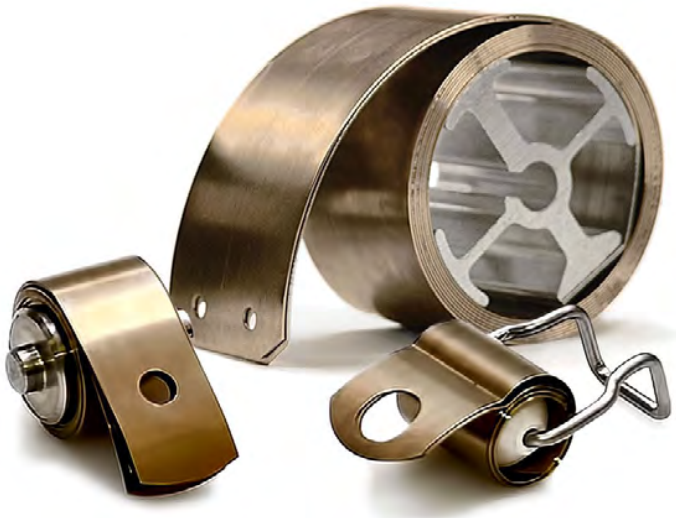
Tandem

Laminar

Cavity

Shaft Fitting

Bearing or Conduit



Defining Requirements

All load points and required deflection must be clearly defined to ensure accuracy during the design phase.

- Load Point
- Deflection

Realistic Lead Time and Project Completion Considerations

John Evans' Sons often receives questions regarding the lead time before more detailed quoting occurs. When customers want a project completed by a specific date, there are many considerations that can impact our projected completion. The most common lead time delays occur when materials are difficult to source or odd end details require custom tooling. The best way to get an accurate estimate for completion is by going through the quoting process.

Customization Capabilities We Offer

In addition to our ability to custom engineer a wide variety of size, torque, and performance requirements, John Evans' Sons offers custom end details and works with specialty materials to fabricate dies, fixtures, and tools in our state-of-the-art, on-site tool room facilities. Our in-house tooling and precision manufacturing can accommodate all fixturing and tooling as required. Our wide selection of stock springs and unending commitment to on-time delivery and quality make us an industry-leading provider of custom spring products.

Modifications available to achieve the desired rate, loads, and fatigue life include but are not limited to the following:

- Material and Coating
- Spring Diameter
- Pitch and Length
- Wire Diameter

Extension springs can include various end-loops and initial tension modifications. Compression springs can have square-and-ground or squared-only ends.

What Makes Us Different?

Some spring manufacturing companies may only provide stock springs, leaving customers to source products from multiple manufacturers. Sourcing components in this fashion can significantly increase the risk of potential production and dimensional difficulties.

At John Evans' Sons, we provide custom design, precision manufacturing, in-house tooling, and a wide and varied stock spring selection, giving customers access to the products they need all in one place. Our commitment to quality is one of our strongest selling points.

Our Custom Spring Design Process

The John Evans' Sons design customization process includes the following steps:

1. Customer submits a Request for Quote (RFQ).
2. The RFQ is addressed by the John Evans' Sons sales department, which assigns it to an applicable engineer.
3. Once the design is verified, it is sent to the tooling department, if needed.
4. The estimating department then sources raw materials and generates routers.
5. The final quote packet gets reviewed and forwarded to the sales department, which shares the information with the customer.

Our design engineering team works closely with customers, listening to their application requirements and helping explain any tradeoffs or optimizations that can benefit the end result. Our team also provides engineering assistance to ensure each product performs according to the customer's expectations.

Spring Into Action With a John Evans' Sons Consultation

John Evans' Sons manufactures custom springs for all purposes, and we work closely with our valued customers to meet their customization needs, ensuring the end product performs in the manner they expect.

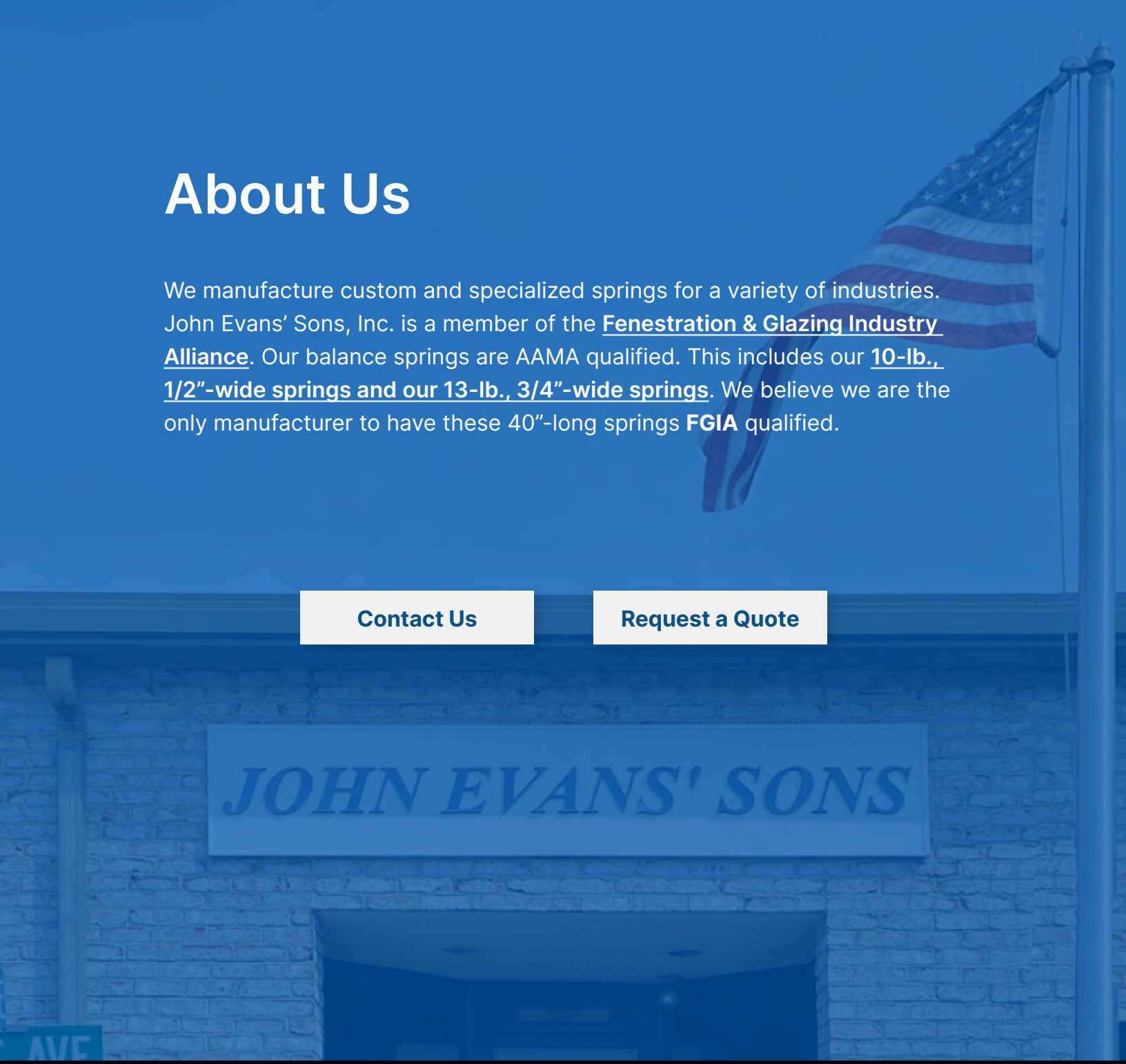
Our products meet the demands of a wide variety of applications and industries, and we provide impeccable service from start to finish, setting the standard for first-class precision spring products.

Contact us today to learn more about the high-quality spring products and customization options we offer at our in-house facilities. You can also **request a quote** to get information pertaining to your specific application.

About Us

We manufacture custom and specialized springs for a variety of industries. John Evans' Sons, Inc. is a member of the **Fenestration & Glazing Industry Alliance**. Our balance springs are AAMA qualified. This includes our **10-lb., 1/2"-wide springs and our 13-lb., 3/4"-wide springs**. We believe we are the only manufacturer to have these 40"-long springs **FGIA** qualified.

Contact Us **Request a Quote**



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