



TR springs to the challenge to develop innovative new solution for automotive customer

TR Fastenings



As the EV market grows worldwide, automotive designers and engineers, together with manufacturers, are completely rethinking the design of EVs, in order to provide consumers with the most advanced, high-tech specifications they now expect, without compromising on passenger comfort and user experience in any way.

TR was approached by a global leading EV manufacturer to design and develop a brand new and complex component for their latest model. They needed to work with an experienced partner who could take on the challenge to produce a unique spring and spool solution for their vehicle's central console.

The requirement

The customer required a highly engineered fastener solution that would provide the advanced functionality they were looking for in their latest electric vehicle. Their requirement was for a bespoke spring and spool product for the sliding central console, with three different versions designed specifically for installation in the tray, cup holder and lid.

The challenge was to achieve a very precise speed and timeframe of the open and closure mechanism, only achievable through advanced fastener technology. The requirement was for a high level of collaboration and technical expertise to develop such a meticulously designed and engineered product.

The Solution

As nothing like this was currently available, TR stepped in and brought its expert teams together from global locations to develop this highly specialised component.

Utilising years of experience in developing complex parts, and working closely with customers and their drawings, TR knew exactly what needed to be done to meet the specific challenges. Teams from TR USA and TR Sweden worked closely with several global manufacturers to design and assemble the final spring and spool product.

New Electric Vehicle components, from initial design and prototyping to full production require extensive design and engineering expertise, and TR was able to provide full-service provision, which was particularly important for launching this new product.

The product

To create a smooth and continuous motion of the central console mechanism, TR had to match the spring performance with a suitable damper to ensure that the console travelled smoothly and at a continuous speed, both in a stationary vehicle or when driving over a bumpy road.

Understanding the application design requirements, TR developed a spring and spool assembly which translates linear motion into rotation. The assembly was tailored to the application to fulfil its function smoothly and without noise.





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To achieve this, the spool was specifically designed to align with the geometry of the spring. Controlling and lubricity, as well as manufacturing the spool of a specific polymer, low static and dynamic sliding friction against mating surfaces was achieved.

TR was also able to support the customer with cost efficiencies of this product. By reducing the size of the spool, not only would this reduce material costs, it would also speed up installation time. TR used a combination of technical insights and production techniques to produce a superior product that met the brief of this challenging application.

View the [Constant Force Spring](#) video.

Project Conclusion

TR rose to the challenge by providing top-class engineering insights and support, delivering precisely what the customer needed to bring their electric vehicle design to life. By integrating innovative solutions and collaborating closely with global teams, TR developed a custom spring and spool system tailored to the customer's unique requirements. This solution met the complex demands of the central console mechanism while maintaining smooth functionality, reliability, and cost efficiency.

As the EV market continues to expand, TR remains committed to pushing the boundaries of fastener technology, supporting automotive manufacturers in designing and producing advanced components without sacrificing passenger comfort or user

experience. Through this project, TR demonstrated its dedication to innovation, meticulous engineering, and understanding the needs of both customers and the evolving electric vehicle industry.

TR is leading the way in design engineering and manufacturing with more than 55,000 products across its portfolio. It supplies components to more than 5,000 companies globally across a wide range of industries from its facilities in 18 countries encompassing seven manufacturing sites.

Patrik Ringdahl, Project Engineer at TR commented;

"Finding the right solution is my passion, and working alongside our customer on this project was an incredible opportunity to bring that to life. Leveraging our experience and global supplier network, we designed a solution that not only met their precise needs but also provided enhanced functionality and durability. This approach means our customer benefits from a reliable, high-performance component, supporting their commitment to quality and innovation. Growing with our customers to create functional, forward-thinking solutions is what drives our teams at TR, every day."

