



Turcon[®] SG Seal

**LOW-FRICTION, RELIABLE SEALING
FOR CENTRAL TIRE INFLATION SYSTEMS (CTIS)**



Unmatched CTIS Sealing

Reliability and efficiency are essential for original equipment manufacturers (OEMs) and axle manufacturers operating in challenging off-highway environments. Able to withstand intense operational demands, Turcon® SG Seal maximizes vehicle uptime and performance.

MAXIMIZING CTIS EFFICIENCY AND RELIABILITY

For OEMs in agriculture, construction and forestry, performance in demanding environments is paramount. Equipment must operate with maximum efficiency and reliability to improve traction, reduce fuel consumption and minimize environmental impact like soil compaction.

Central Tire Inflation Systems (CTIS) are critical for achieving this level of performance by adjusting tire pressure to suit varying ground conditions. However, the effectiveness of any CTIS depends directly on the integrity of its sealing components, which must withstand high pressures and continuous rotary motion without failure.

ADDRESSING CHALLENGES WITH ADVANCED SEALING

Turcon® SG Seal is engineered specifically to optimize CTIS functionality. It provides a superior, low-friction sealing solution that ensures system airtightness during inflation and deflation cycles.

This pressure-activated seal is designed for an extended service life, delivering the reliability and durability required to maximize vehicle efficiency and uptime. By integrating this advanced sealing technology, OEMs can enhance the overall performance and longevity of their CTIS, ensuring dependable operation for over 10,000 hours.

**Low friction
and wear**

**Proven
performance
in lab and
field**

**Long lasting
and reliable**

Turcon® SG Seal

Turcon® SG Seal is a specially-engineered, patented solution that delivers unmatched CTIS performance. Its design integrates multiple functions to optimize system reliability and longevity in demanding applications.

- **Extended seal life:** The seal's unique design and Turcon® material composition result in the lowest levels of friction and wear. This directly translates to meeting and exceeding CTIS lifetime requirements of over 10,000 hours, increasing vehicle uptime and reducing maintenance needs for OEMs.
- **Pressure-activated sealing:** The seal remains in a low-friction, unpressurized state for 90 to 95 percent of its operating cycle to minimize wear. When pressure is applied, the PTFE lip activates to provide reliable and immediate sealing. This ensures optimal sealing performance only when required, maximizing system efficiency and durability.
- **Simplified, robust assembly:** The all-in-one modular design streamlines installation into a single, easy operation. This supports high-volume, automated mass production, reducing assembly time and costs while increasing manufacturing efficiency.
- **Modular 'toolbox' engineering:** Our design approach allows for the integration of multiple functions, such as scrapers or radial shaft seals, into a single, compact solution. This functional integration simplifies design space requirements, increases the axle's overall strength and allows for customization to meet the specific needs of different inflation systems.



APPLICATIONS

The Turcon® SG Seal optimizes CTIS operation in a wide range of wheel-driven vehicles. These systems provide:

- Improved traction and safety
- Up to 15% reduced fuel use and lower CO₂ emissions
- Reduced soil compaction



CONSTRUCTION AND MINING

- Trucks
- Dump trucks
- Wheel loaders
- Soil stabilizers



AGRICULTURE

- Tractors
- Sprayers
- Slurry spreaders
- Trailers
- Combines



FORESTRY

- Harvesters
- Forwarders

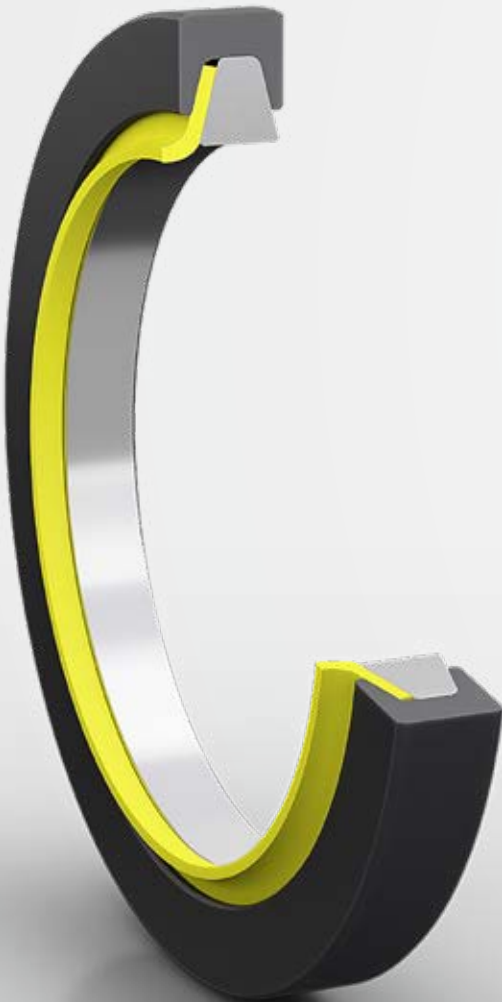
FIND OUT HOW WE CAN HELP YOU

Contact your local Customer Solution Center to learn how Turcon® SG Seal can improve your CTIS sealing:
trelleborg.com/seals/contact-form



Engineered for Longevity

Turcon® SG Seal represents a sophisticated advancement in sealing technology, specifically developed to master the rigorous challenges of CTIS. This solution integrates critical functionality into a robust design, ensuring superior reliability and extended service life in demanding off-highway applications.



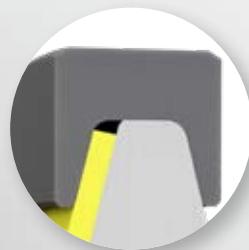
Pressure-activated PTFE Lip

Acts as the primary dynamic seal, minimizing friction while enhancing sealability under pressure. It also functions as a scraper to prevent contamination during unpressurized operation.



Integrated Guiding Element

Ensures seal stability and compensates for hardware tolerances, providing critical support to the Turcon® lip for consistent performance.

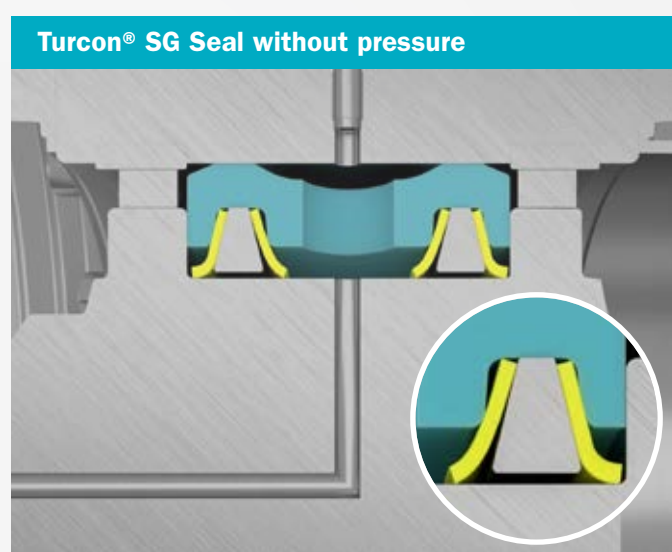


Built-in Static Elastomer Seal

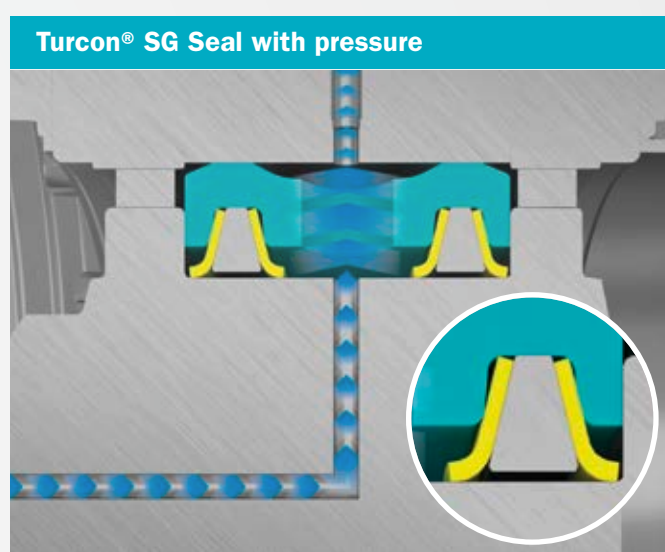
Creates a tight interference fit against the hub and pre-tensions the sealing lip, ensuring reliable sealing even at low pressures.

SEALING ONLY WHEN NEEDED

Pressure-activated sealing technology is essential to meeting CTIS lifetime requirements by giving the lowest levels of friction torque and wear.



Without pressure, friction is minimized to near-zero values, resulting in significantly reduced wear compared to alternative solutions. As approximately 90 to 95 percent of the seal's operating cycle occurs in this unpressurized state, this minimal friction is essential to meeting rigorous service life requirements of over 10,000 hours.



When pressurized, the seal activates quickly and effectively, pressing the sealing lip against the countersurface until pressure is relieved. This ensures a low-friction, reliable seal during inflation and deflation operations.

ROBUST, DURABLE AND LONG LASTING

Turcon® SG Seal is already proven to deliver exceptional performance in both pressurized and unpressurized conditions.

Extensively validated in laboratory tests that simulate actual field conditions, it has proven reliability across:

- **Friction torque testing** – displays efficient mechanical operation
- **Leak rate evaluation** – confirms exceptional sealing integrity under prolonged use
- **Wear and run-in behavior analysis** – demonstrates long-term resilience

Explore the interactive Turcon® SG Seal exhibit, along with other digitally rendered products and processes, in our Virtual Showroom.

trelleborg.com/seals/showroom

Toolbox Approach

Modular designs engineered to meet any CTIS requirements

Turcon® SG Seal is the first all-in-one modular sealing solution for rotary swivel joints in CTIS. Trelleborg Sealing Solutions engineering teams flexibly combine and adapt functions to meet the requirements of different configurations. This enables robust, efficient sealing with an extensive range of customization possibilities, ensuring optimal performance for every unique application.

INCREASED STRENGTH

Integrating the seal directly into the axle enhances the resilience and structural integrity of the entire assembly.

SIMPLIFIED, ROBUST ASSEMBLY

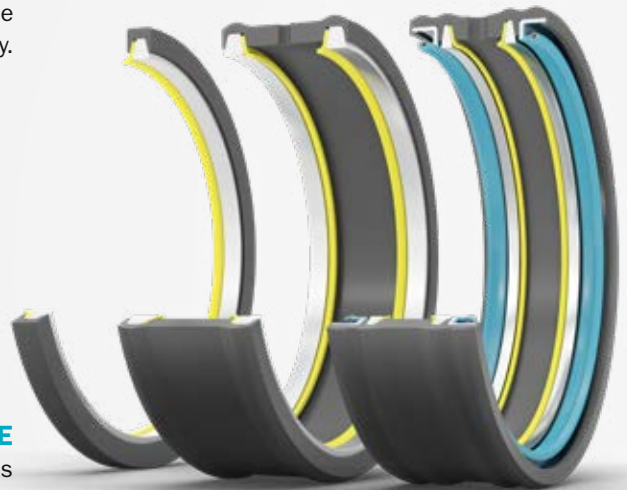
The design supports automated mass production, reducing assembly complexity and costs for high-volume applications.

SMALLER, OPTIMIZED DESIGN SPACE

Consolidating separate functions into a single unit minimizes installation space requirements.

INTEGRATE INTO ANY AXLE

The solution is fully customizable to the types and sizes required for nearly any axle or planetary gearbox configuration.



Single Solution

Channel Solution



Turcon® SG Seal



Turcon® SG Seal with Scraper (grease sealing)



Turcon® SG Seal with Radial Shaft Seal (oil sealing)

FUNCTIONAL INTEGRATION: A MODULAR SOLUTION

Combine distinct sealing functions within one product to reduce installation to a single, efficient operation. In both single and channel versions, products such as scrapers and radial shaft seals integrate seamlessly to reduce design space and simplify assembly for automation.

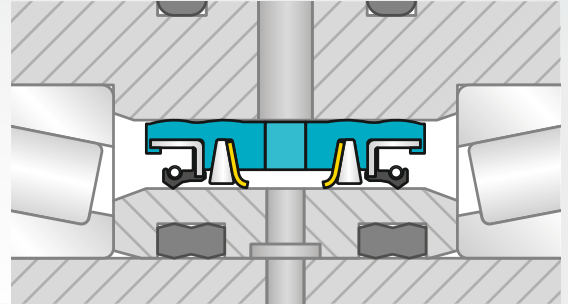
- Easy, single-piece installation
- Capable of high-volume automation
- Reduces design and installation space requirements

INTEGRATED AND EXTERNAL AXLE SOLUTIONS

Turcon® SG Seal offers the flexibility to be designed as an integrated component within the axle or as an external solution. Integrating within the axle maximizes the strength and resilience of the complete assembly while simplifying installation and supporting mass production.

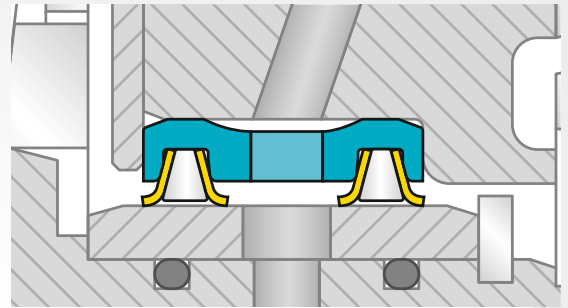
Turcon® SG Seal for Driven Axle

Driven axle bearings, such as those found in planetary gearboxes, often rely on oil lubrication. Turcon® SG Seal integrates in the optimal position between the two bearings, incorporating a radial shaft seal to effectively seal against both air and oil. This dual-functionality maximizes strength and performance.



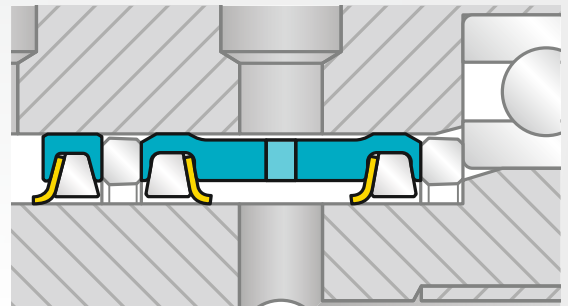
Turcon® SG Seal for Trailer Axle

Trailer axle bearings frequently use grease as a lubricant. To prevent contamination of the air seal, Turcon® SG Seal can include an integrated grease seal that ensures the CTIS functions correctly and reliably over time.

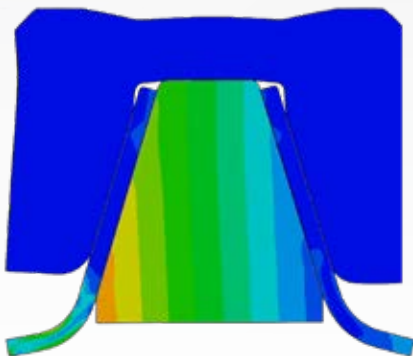


Turcon® SG Seal as an External Solution

External solutions are available in both single- and dual-channel variants and generally accommodate smaller diameters than integrated axle designs. Turcon® SG Seal delivers the same exceptional friction and sealing characteristics for external solutions as it does for integrated axle versions, ensuring high-quality performance for both the trailer and tractor.



PARTNER WITH TRELLEBORG SEALING SOLUTIONS



As a major supplier of seals to axle manufacturers for agricultural and other off-highway vehicles, Trelleborg Sealing Solutions has the technical know-how to effectively support you with engineering and manufacturing expertise:

- Application-specific, in-house FEA simulation and engineering support
- Custom analysis and extensive field and lab testing for customer-specific validation
- Dedicated tooling and solution customization
- Efficient project support and technical consultation
- Manufacturing facilities with certification for essential automotive and quality standards, including IATF 16949, ISO 9001 and ISO 14001

Trelleborg is a world leader in engineered polymer solutions that protect essential applications in demanding environments. Its innovative solutions accelerate performance for customers in a sustainable way.

Trelleborg Sealing Solutions combines deep materials and applications expertise with close customer collaboration to fulfil our mission as a leading provider of precision seals, bearings and custom polymer components. We focus on meeting the most demanding needs of aerospace, food and beverage, semiconductor and general industrial customers.

WWW.TRELLEBORG.COM/SEALS



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If you'd like to talk to Trelleborg Sealing Solutions, find your local contact at: www.trelleborg.com/seals/worldwide