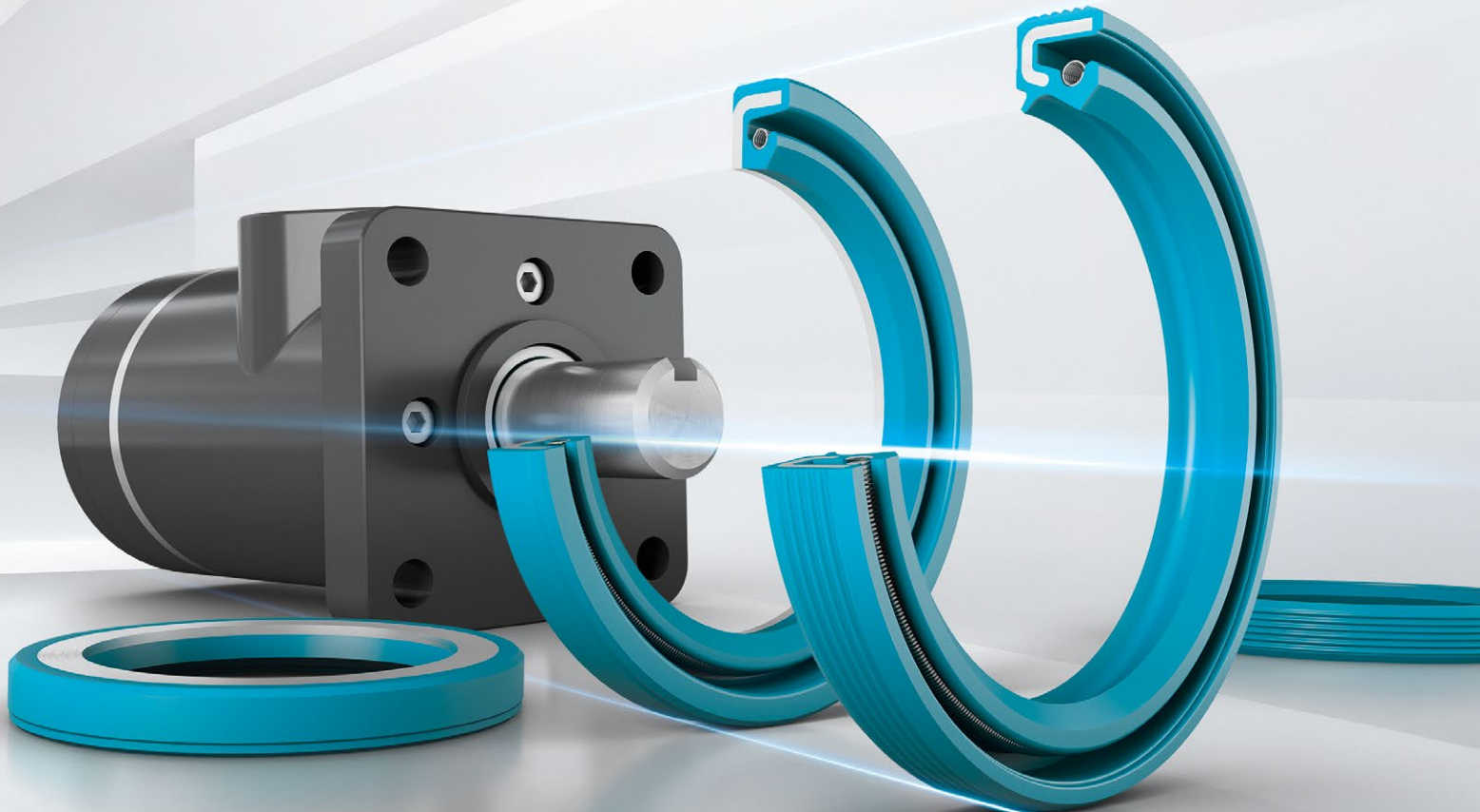


Stefa[®] High-Pressure Radial Shaft Seals

THE NEXT GENERATION OF
ROTARY SEALING



Stefa® High-Pressure Radial Shaft Seals

Engineered solutions to extend service life and improve performance in high-pressure rotary applications.

PERFORMANCE UNDER PRESSURE

Stefa® High-Pressure Radial Shaft Seals provide the ultimate in high-pressure sealing for sensitive components in rotating and oscillating environments. By managing speeds and pressures effectively, they reduce maintenance needs and prevent equipment downtime.

ENGINEERED FOR SUCCESS

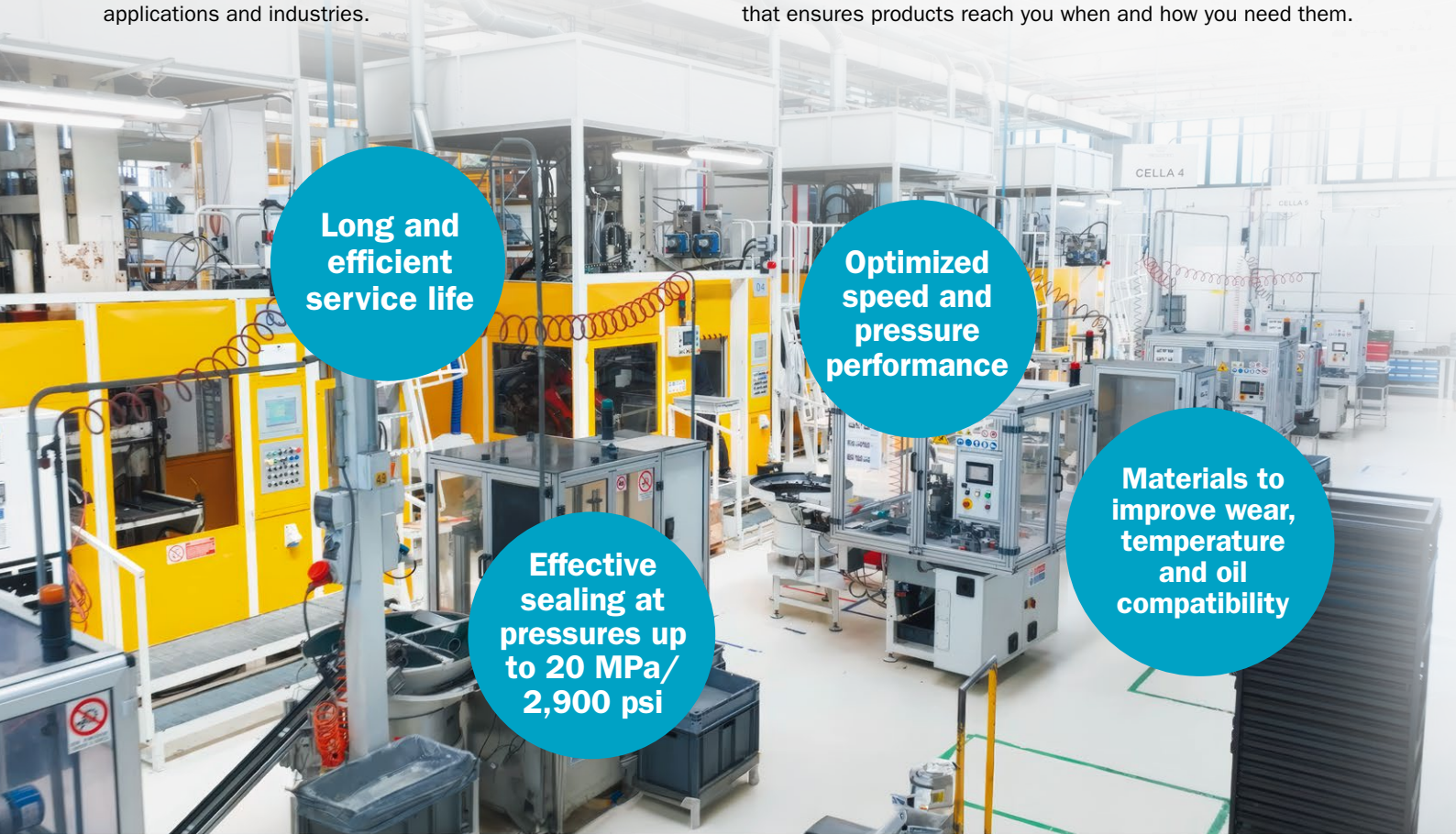
Through carefully selected materials and geometries, the Stefa® High-Pressure Radial Shaft Seals range delivers leading-edge performance more economically. Custom-engineered to meet specific pressure, temperature and oil compatibility requirements, they extend service life in a wide variety of applications and industries.

A COMPLETE SOLUTION PARTNER

As a development partner, Trelleborg Sealing Solutions supports you at every stage of your journey. From initial design to production, we provide engineering expertise at each process step. To ensure confidence in our products, testing and validation services verify performance meets expectations.

SUPPORT FROM DESIGN TO TESTING

With over 70 years of expertise and leading positions in numerous market segments, Trelleborg Sealing Solutions cultivates long-term, trusted partnerships to provide the optimal solution for nearly any application. Support extends through the entire product lifecycle with the unique ServicePLUS program that ensures products reach you when and how you need them.

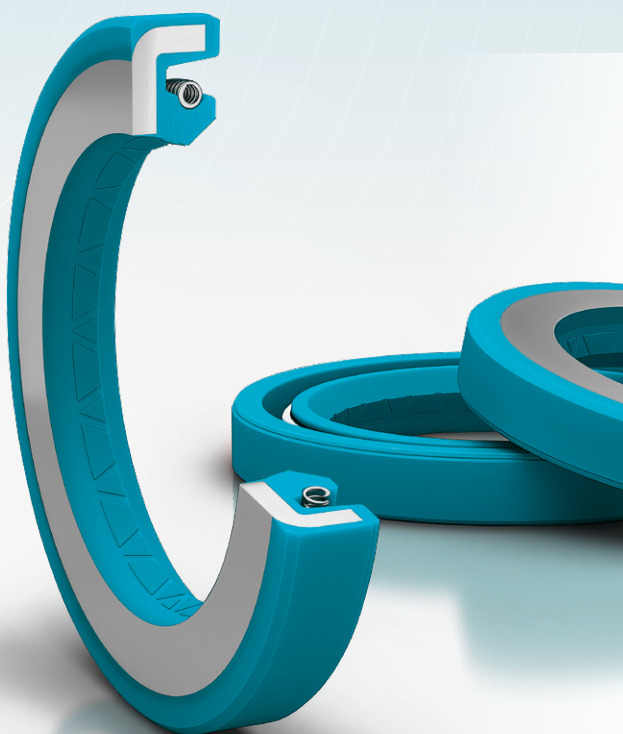


Long and efficient service life

Optimized speed and pressure performance

Effective sealing at pressures up to 20 MPa/ 2,900 psi

Materials to improve wear, temperature and oil compatibility



FEATURES AND BENEFITS OF STEFA® HIGH-PRESSURE RADIAL SHAFT SEALS

- **Customized and developed for the application** to extend product life and maximize performance.
- **Optimized for various speed and pressure combinations** to improve sealing performance.
- **Protect sensitive components over a long service life** by effectively retaining lubrication.
- **Lower total cost of ownership** through proprietary designs and material formulations.
- **Meet specific requirements for wear, temperature and oil compatibility** with a tailored portfolio of high-quality materials.
- **Compensate for shaft misalignment and eccentricity** with innovative engineered design.
- **Ensure product availability** through engineering and logistics support from a global partner with local presence.

APPLICATIONS

Stefa® High-Pressure Radial Shaft Seals are well suited to fluid power applications and for protecting motors, gearboxes and pumps in a wide range of industries, including:



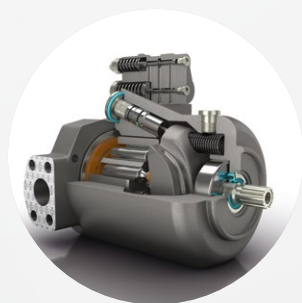
INDUSTRIAL

- Gearboxes
- Engines
- Mixers
- Presses and Winches



OFF-HIGHWAY VEHICLES

- Forestry and Agricultural Equipment
- Construction and Mining Equipment
- Material Handling Equipment



FLUID POWER

- Pumps and Motors for Hydrostatic Transmissions

DISCOVER OUR SOLUTIONS IN 3D

Learn more about the innovative engineering behind these seals and more in the Virtual Showroom:

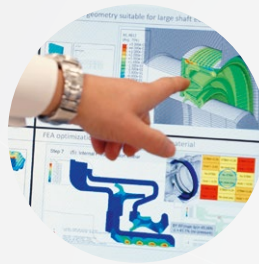
www.trelleborg.com/en/seals/showroom



Design Overview

Trelleborg Sealing Solutions collaborates with its customers to develop products that are:

- **Proven, effective seals** – tested and validated solutions that enhance application performance.
- **Cost-effective and robust** – reliability over a long product life, reducing total cost of ownership.
- **Customizable** – designed to meet specific requirements for pressure, speed, temperature, sideloading and chemical resistance.

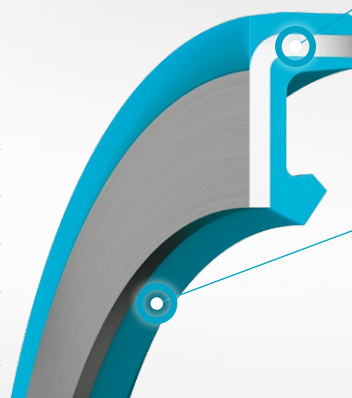


Full design and technical support, including testing and validation, is provided.

HP20

A proprietary lip geometry that self-balances under strong pressure.

Pressure	From 5 to 20 MPa/725 to 2,900 psi
Speed	Up to 2.5 m/s/8.2 ft/s
Temperature	-40 °C to +100 °C/-40 °F to +212 °F
Media	Mineral and synthetic lubricants (CLP, HLP, APGL, etc.)



METAL RETAINER

Prevents lip extrusion at high pressures and dissipates heat, extending service life.

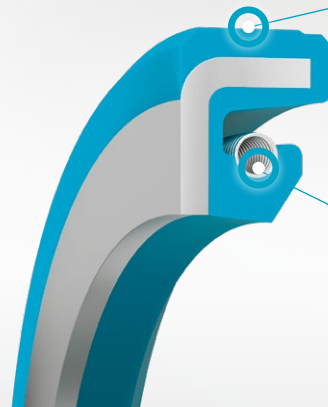
ENGINEERED GEOMETRY

Pressure-balanced design ensures stable shaft contact, enhancing sealing and reducing friction.

SPS-HP20

Effectively resists sideloads and shaft eccentricity over a long service life.

Pressure	Up to 15 MPa/2,175 psi
Speed	Up to 5 m/s/16.4 ft/s
Temperature	-40 °C to +100 °C/-40 °F to +212 °F
Media	Mineral and synthetic lubricants (CLP, HLP, APGL, etc.)



CUSTOMIZABLE DESIGN

Geometry and materials engineered for each application to maximize performance.

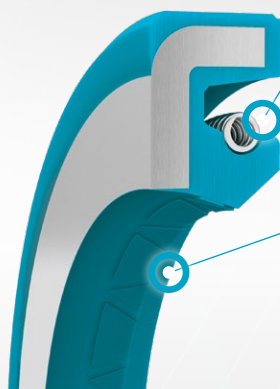
FLEXIBLE LIP GEOMETRY

Energized by a stainless steel spring to compensate for sideloads and shaft eccentricity.

HP20S

High quality, cost-efficient and long-lasting performance for high torque, low speed motors.

Pressure	Up to 15 MPa/2,175 psi
Speed	Up to 5 m/s/16.4 ft/s
Temperature	-40 °C to +100 °C/-40 °F to +212 °F
Media	Mineral and synthetic lubricants (CLP, HLP, APGL, etc.)



ENERGIZING SPRING

Extends seal lifespan and enhances both pressurized and unpressurized operation.

PADS AND CHANNELS

Improves lip lubrication at start-up and higher shaft speeds to reduce wear.

SPV

Enhanced service life at high speeds with pressure spikes and changes in direction.

Pressure	Up to 2.5 MPa/363 psi
Speed	Up to 17 m/s/55.7 ft/s
Temperature	-40 °C to +100 °C/-40 °F to +212 °F
Media	Mineral and synthetic lubricants (CLP, HLP, APGL, etc.)



INNOVATIVE DESIGN

Features are engineered and tested to deliver cutting-edge sealing performance and endurance.

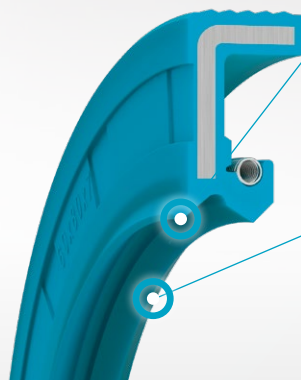
FLEXIBLE MATERIALS

Elastomer grades are customized to suit specific application needs, including premium HNBR and FKM materials.

TRP

A proprietary geometry that effectively combines performance and manufacturing reliability.

Pressure	Up to 0.7 MPa/102 psi
Speed	Up to 10 m/s/32.8 ft/s
Temperature	-40 °C to +100 °C/-40 °F to +212 °F
Media	Mineral and synthetic lubricants (CLP, HLP, APGL, etc.)



ADDITIONAL DUST LIP

Enhanced protection to extend lifespan in polluted environments.

IMPROVED LIP CONTACT

Reduces friction and optimizes sealing efficiency under pressure and speed.

The figures listed on this page are maximum values and cannot necessarily be used at the same time, e.g. the maximum operating speed depends on material type, pressure and temperature. Contact your local Customer Solution Center for more advice on specification or customization to meet application requirements.

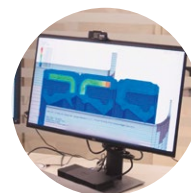
Engineering Support

A world of technical support and manufacturing expertise.

Working with a trusted, global supplier like Trelleborg Sealing Solutions offers several benefits:

- **World-Leading Engineering Teams** – leverage our expertise in standard and custom sealing applications.
- **Reduce Time-to-Market and Validation Costs** – in-house testing and validation confirm solution performance.
- **Expert Toolmaking and Process Engineering** – manufacturing competence ensures the highest quality parts.
- **Automated Manufacturing** – state-of-the-art equipment enables faster turnaround and lowers costs.
- **Quality by Design** – emphasis on quality, verified through detailed automated inspections.
- **Flexible Production Volumes** – efficiently delivered products for both small and large orders.
- **Added-Value Services** – our ServicePLUS program offers a wide range of services – including advanced delivery, assembly, and secondary operations – to streamline your business.

DESIGN SUPPORT



TOOLMAKING



PROTOTYPING



AUTOMATION



QUALITY



A full suite of engineering and design support to tackle complex engineering challenges.

CONTACT US

Find your nearest Customer Solution Center in the 'Contact Us' section at: www.trelleborg.com/seals/worldwide



TESTED FOR PERFORMANCE AND ENDURANCE

Trelleborg Sealing Solutions invests in an expanding suite of testing equipment to simulate product performance in real-world conditions, enhancing confidence and reliability. Alongside a fully equipped laboratory, customized testing rigs support development for specific applications.



HIGH PRESSURE TEST RIG

This device recreates the conditions of a high-torque hydraulic motor. It exerts up to 20 MPa/2,900 psi of pressure at 1,000 rpm. The system can increase or reduce oil flow while monitoring temperature, torque, and power absorbed by the tested seals.



PRESSURE PULSATIONS TEST RIG

Seal tests involve pressure pulsations of 25 mm/0.984 inch up to 2.5 MPa/362 psi, with bi-directional shaft rotation at speeds of up to 6,000 rpm. Real-time results at 30 Hz measure seal temperature, pressure, torque, and power absorption.

MATERIAL HIGHLIGHTS

A wide range of tailored materials for high-pressure seals are available, including Nitrile Butadiene Rubber (NBR), Hydrogenated Nitrile Butadiene Rubber (HNBR), and Fluoroelastomer (FKM).

Ongoing development of new and modified compounds aims to enhance product performance and environmental compliance.

Design	Material Grade	Hardness	Min. Temperature Operating Environment	Max. Temperature Oil	Chemical Compatibility
HP20 HP20S SPS-HP20	Standard HNBR	90 Shore A	-30 °C/-22 °F	+80 °C/+176 °F	Mineral oils
	Low-temperature HNBR	90 Shore A	-40 °C/-40 °F	+80 °C/+176 °F	Mineral oils
	Special FKM	90 Shore A	-20 °C/-4 °F	+100 °C/+212 °F	Mineral and synthetic oils
SPV	Special FKM	75 Shore A	-30 °C/-22 °F	+100 °C/+212 °F	Mineral oils
	Low-temperature HNBR	75 Shore A	-40 °C/-40 °F	+80 °C/+176 °F	Mineral oils
TRP	Standard FKM	75 Shore A	-20 °C/-4 °F	+100 °C/+212 °F	Mineral oils
	Low-temperature HNBR	75 Shore A	-40 °C/-40 °F	+80 °C/+176 °F	Mineral oils
	Standard NBR	75 Shore A	-40 °C/-40 °F	+60 °C/+140 °F	Mineral oils

These temperature ranges are for guidance only and may vary significantly depending on the media used. For specific recommendations, contact your local Customer Solution Center.

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 is a leading developer, manufacturer and supplier of precision seals, bearings and custom-molded polymer components. It focuses on meeting the most demanding needs of aerospace, automotive and general industrial customers with innovative solutions.

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