

SKF

# SKF sealing solutions for off-highway machines

Protecting productivity and profitability at jobsites worldwide



The Power of Knowledge Engineering



More uptime for  
off-highway machines?





# SKF seals are also on the job

## A single source for bearings and seals

Backed by more than 100 years of rotating machinery expertise, SKF is synonymous with the highest quality bearings. But we also supply the world's major industries with seals for rotating, reciprocating, static and other applications.

As the only major bearing supplier with seal manufacturing capabilities, SKF can support off-highway machine OEMs and end-users alike with standard and customized seals. Applying both moulded and machined seal expertise, we offer everything from design and development to serial production and service parts.

Worldwide, SKF seals are at work in a range of off-highway industries and machines, including:

- **Construction**
- **Agriculture**
- **Forestry**
- **Tunnel boring**
- **Fork lift trucks**
- **Utility vehicles**

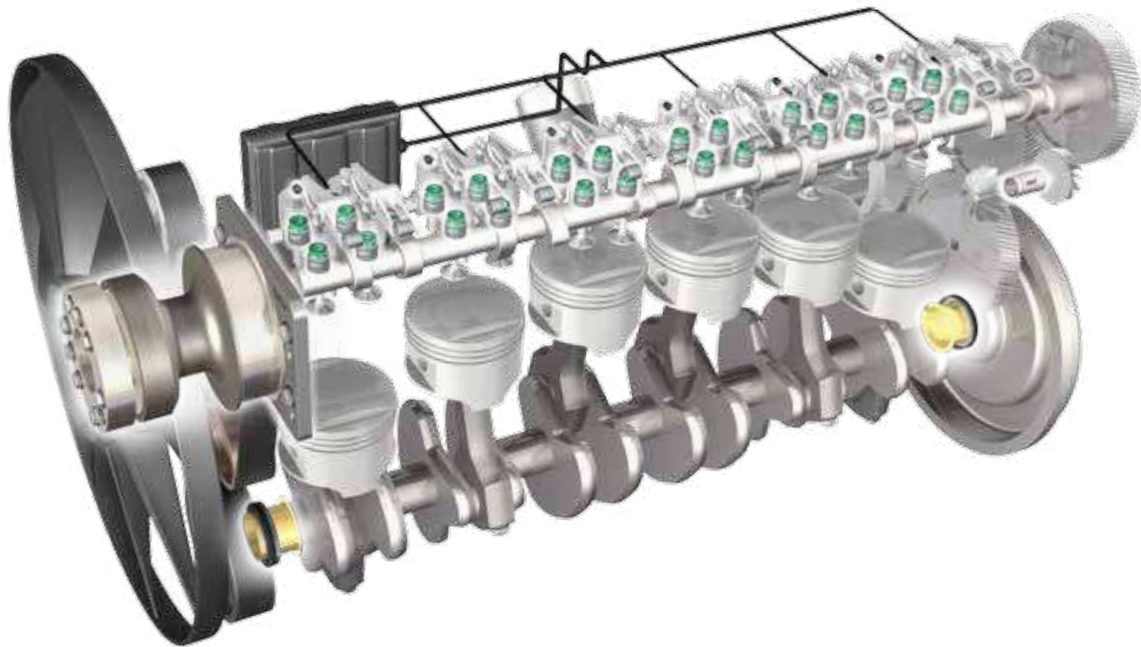
## Optimized for your application

For off-highway sealing applications, operating forces and temperatures, combined with mud, moisture and other harsh elements, can greatly impact seal lifecycle and performance. Seal material and design can therefore mean the difference between poor, adequate or exceptional performance. SKF can help you make all the right choices.

We offer standard and customized seals in a wide range of materials. SKF can also work with you to evaluate sealing performance on your test rigs, or on our own testing equipment, including 3-D modelling and simulation software. Whether you need to improve an existing seal or create a new one, SKF sealing solutions can help deliver:

- **Greater reliability**
- **Increased productivity**
- **Reduced maintenance**
- **Improved safety**
- **Longer service life**
- **Reduced TCO**
- **Lower warranty costs**

# Off-highway sealing solutions for a wide



## Engines



### Engine shaft seals

Featuring sophisticated elastomer materials, SKF Low Friction Engine Seal offers extended service life and more than 50% lower friction than spring-loaded seal designs.

### Standard and high-pressure valve stem seals



Offering consistent oil metering for optimum valve lubrication and minimum engine emissions, SKF valve stem seals are available for diesel and gasoline engines, in standard and high-pressure designs.

### SKF Rotostat integrated crankshaft seals

With dynamic and static seals bonded directly to a carrier or retainer, SKF Rotostat seals reduce leak paths by 50% while allowing the integration of an engine management sensor and trigger wheels.



### Spark plug and injector tube seals

Able to accommodate misalignment for sealing spark plugs, solenoids or injectors, these rubber-coated, corrosion-resistant static seals withstand higher temperatures than seals made from standard materials.



### Axial cassette seals

Featuring an axial sealing lip with a garter spring, SKF axial cassette seals provide a robust, long-life solution for heavy-duty engine crankshafts.

# range of applications



## Chassis and suspensions



### Gas spring seals

Featuring a bonded metal insert to support the sealing lips, SKF gas spring seals can help maintain pressures of up to 200 bar within the spring, while providing low friction and break-away force.



### Power steering seals

Low-noise, low-friction SKF power steering seals provide superior fluid and pressure resistance. For hydraulic systems, SKF offers seals for the rack, input shaft, pinion and pump; for electric systems, motor shaft seals are available.



### Shock absorber seals

A heavy gauge metal insert allows the shock absorber tube to be assembled over the seal in several ways, while a static gasket provides a leak-tight seal between tube wall and bushing.



### Strut seals

This application demands a high-performing sealing solution to maintain pressure while withstanding the short, rapid strokes and the high temperatures that often result. SKF sealing system solutions for struts are designed to do so over a long service life.

# Drivelines and undercarriages



## Axles and Power take-offs



### SKF Mudblock seals

With a multi-lip seal design that incorporates a wear sleeve and high-performance elastomeric materials, SKF Mudblock seals for oil or grease applications deliver robust protection against contaminants and extended seal service life.



### SKF Scotseals

A proven, long-life solution for hub bearing arrangements, SKF Scotseals feature a fully enclosed cassette design that combines a seal and wear sleeve in one unit.



### Metal face seals

Designed for severe service conditions at relatively low circumferential speeds, SKF metal face seals offer reliable protection against solid and liquid contaminants and leak-proof retention of lubricants.

## Transmissions



### Input and output shaft seals

Suitable for several transmission input and output shaft applications, SKF radial shaft seals are available in an extensive range of designs and materials.



### Bonded piston seals

Featuring pressure-activated sealing lips bonded directly to a stamped metal component, SKF bonded piston seals can replace conventional aluminium pistons and loose lip seals, enabling lower assembly costs and longer service life.



### Kingpin seals

Part of a combined offer that includes a self-lubricating spherical plain bearing, PTFE-coated kingpin seals from SKF eliminate the need for frequent lubrication of the steering axle kingpin and make it possible to include steering system sensors.



### Springless grease seals

Used primarily for grease-lubricated radial shafts in agricultural machinery operating at low speeds, SKF's offer includes a wide range of designs. All are generally installed with the sealing lip(s) facing outward for optimum contaminant exclusion.





## Tracks



### SKF Trackstar seals

Specifically designed for oil-lubricated track chain pins, SKF Trackstar seals can help dozer operators reduce machine wear, maintenance and operating costs.

## Wear sleeves

### SKF Speedi-Sleeve

Able to solve the problem of worn transmission or axle shaft ends in minutes, SKF Speedi-Sleeve is a thin-walled sleeve that is pushed into position on the worn area. This simple yet effective solution provides a new sealing surface – without costly shaft disassembly, grinding or the need to change seal sizes.



# Hydraulic cylinders



## Hydraulic sealing system solutions

From high pressures to aggressive fluids and contaminants, hydraulic cylinders in off-highway machinery face a range of harsh operating conditions. SKF offers both standard and customized hydraulic sealing system solutions to meet the most extreme application requirements.

## Filament wound bushing and wiper seals



Combining our filament wound bushing PWM series with an SKF wiper seal, this robust solution accommodates high loads and operates reliably in dirty, corrosive environments.

## Rotary manifold seals



SKF rotary manifold sealing solutions protect the flow of fluid between machine components for virtually any application, including those optimized for low friction to enable improved energy efficiency and service life.



# Machine attachments



## Agricultural attachments

### SKF Agri Hub



The SKF Agri Hub is a fully integrated hub bearing system, greased and sealed for life, using an SKF Muddblock design as the main seal. The seal is tested and validated to provide excellent grease retention and contaminant exclusion.

## Hydraulic rock hammers

### Sealing system solutions



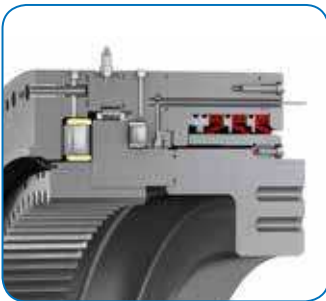
Hydraulic rock hammers require hydraulic reciprocating seals that can handle short strokes and extremely high velocities. SKF offers a range of them, including seals fabricated from high-temperature polyurethane and bonded to a low-friction PTFE anti-extrusion ring for longer service life and less maintenance.

# Tunnel boring machine heads



## Main bearing seal

Designed to keep earth out of the slewing bearing while keeping lubricants in, SKF main seals for tunnel boring



machines are part of a fully integrated solution. Custom engineered from G-ECOPUR – our hydrolysis-resistant, proprietary material – the seals can resist up to 10 bar of pressure and can help compensate for misalignments.

## Integrated sensors

### Magnetic trigger wheels for drivetrains



SKF magnetic trigger wheels supply sensors with data on speed and angular position. Integrated with sealing modules like SKF Rotostat, the trigger wheels enable a compact, dual sealing monitoring solution for camshafts, crankshafts, transmission shafts and other rotating or reciprocating shafts.



# SKF – a global development partner



## Application engineering

Expert SKF application engineers are available worldwide to assist with product development projects at every stage. Following a detailed analysis of operational requirements, our engineers use an extensive application database to find a suitable sealing solution. Alternatively, SKF can engineer customized seals for any off-highway machine application.



## Testing

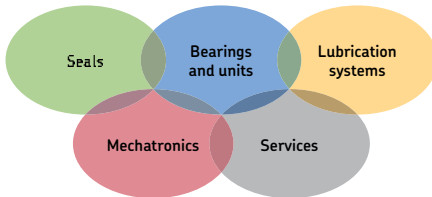
At locations in North America, Europe and Asia, SKF testing facilities are equipped to fully validate seal function and performance. Advanced testing performed with 3-D modelling and simulation software is available, including key life testing that uses test profiles and operating conditions from real applications. SKF also conducts physical performance trials on our own sealing modules, as well as customer components and assemblies.



## Manufacturing

The SKF seal manufacturing footprint extends across North America, Europe and Asia. Whether you require a large volume or a single seal, SKF can manufacture a range of standard or customized seals at sites worldwide.

In addition to our extensive moulded seal manufacturing capabilities, we offer on-demand machined seal production services. Our innovative SKF SEAL JET concept custom machines polymer seals quickly, allowing fast, flexible production of prototypes, low-volume series or replacement seals, with no tooling costs.



### The Power of Knowledge Engineering

Combining products, people, and application-specific knowledge, SKF delivers innovative solutions to equipment manufacturers and production facilities in every major industry worldwide. Having expertise in multiple competence areas supports SKF Life Cycle Management, a proven approach to improving equipment reliability, optimizing operational and energy efficiency and reducing total cost of ownership.

These competence areas include bearings and units, seals, lubrication systems, mechatronics, and a wide range of services, from 3-D computer modelling to cloud-based condition monitoring and asset management services.

SKF's global footprint provides SKF customers with uniform quality standards and worldwide product availability. Our local presence provides direct access to the experience, knowledge and ingenuity of SKF people.

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