Monitoring and control

Endoscope – TKES 10 series

Whether the task involves installing a gearbox on-site or detecting damage early on, TKES 10 endoscopes are highly effective instruments for **inspecting machines internally, without any disassembly, even in areas hard to reach**. A wide backlit display allows for **real-time viewing of images and videos.** TKES 10 endoscopes are fitted with powerful, continuously adjustable LED lighting for carrying out inspections in dark places.

- Easy to use
- No training required
- High-resolution miniature camera
- Provided with 1 metre lead, 3 versions available:
  - flexible (F)
  - semi-rigid (S)
  - articulated (A)

TKES 10A endoscope

Technology and condition monitoring

The more critical the equipment such as gearboxes – key items at the heart of innumerable industrial processes – the greater the potential for production losses.
For reliable and dependable plant performance, SKF provides condition monitoring tools and technology to carry out "health checks" on equipment in operation. To do so, SKF experts conduct vibration diagnostic checks, power and lubricant analyses, and apply thermography and endoscopy techniques; all intended to keep equipment in good working order.

- Plan maintenance downtime
- Identify equipment that needs attention
- Avoid unnecessary downtime and systematic maintenance costs
- Reduce energy and lubricant consumption

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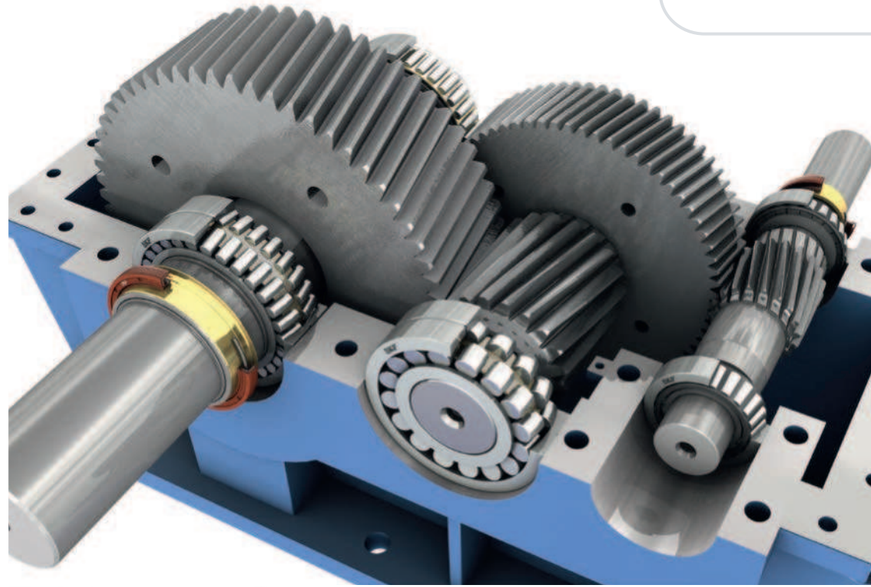
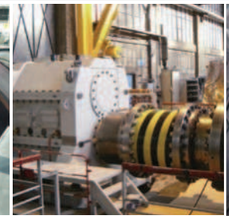
Industrial gearboxes

Efficient, compact and reliable designs





For optimum gearbox design, it is crucial during the development process, to assess all constituent components – crankcase, shafts, gears and bearings – and their interactions. With the technologies readily identified – helical gears, wheel and augers, planetary gear systems, and so on – reliability, footprint and speed are all criteria to consider for differentiation and to meet the growing demands of users.

Reliability in assembly and disassembly

Induction heating for bearings

Compared with existing heating techniques – blowtorch, oil bath, ovens, hotplates – induction heaters offer a **quick, clean and energy-efficient solution**. As well as heating up bearings efficiently, they can **heat gearwheels prior to shrink-fitting onto shafts.** Induction heaters are **easy to use and provide control over component temperature**.

- Magnetic temperature probe
- Adjustable power levels
- Auto-demagnetisation
- Folding support arm
- Overheating protection

Oil injection mounting and dismounting

With the oil injection method, bearings and possibly other power transmitting components can be mounted and dismounted **in a fast, secure and controllable way**. The contact surfaces between the bearing and shaft are separated **using a thin film of oil injected under high pressure** that prevents any friction between them. When used during disassembly, the bearing is released almost instantly.

- Suitable for assembly and disassembly
- Cylindrical or tapered bore bearings or other components
- Significantly reduces extraction force

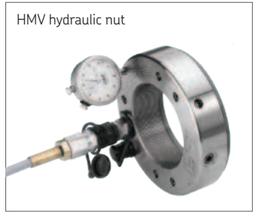
Hydraulic nut– HMV series

Using an SKF HMV series hydraulic nut makes it possible to apply **uniformly high forces to simplify the mounting of tapered bore bearings.**

- Shaft diameter: from 50 to 1 000 mm
- Quick coupling
- “Control of axial drive-up”

HIT 30 bearing induction heater

HMV hydraulic nut



Compact and powerful

SKF bearings are manufactured according to SKF Explorer performance class specifications. Now a benchmark in the industry, this class combines pure, homogeneous steel with a unique heat treatment process with precise tolerance requirements. The end result is longer service life, even in harsh operating conditions.

- Optimised internal geometry
- New generation steel
- Patented heat treatment
- Smaller footprint
- Up to twice the service life of standard bearings
- Highly resistant to wear and contaminants
- Longer service intervals

Spherical roller bearing

Versatile and efficient, the spherical roller bearing has numerous benefits. It can withstand **very high radial and axial loads, is self-aligning, and** can also be used as a **locating or non-locating or floating bearing** and be incorporated in any gearbox design. It offers excellent performance at high speed, thanks to its internal design and friction reducing characteristics.

Tapered roller bearing

Particularly recommended for **rigid mountings** such as drive pinions, tapered roller bearings can withstand high combined loads. Special variants of SKF tapered roller bearings help to maintain the accuracy of the initial settings, especially end play or preload, enhancing the performance of the gear mesh. With precise rolling element geometry, and optimized raceway and flange surfaces, tapered roller bearings can withstand very high preload forces.

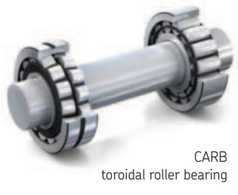
Cylindrical roller bearing

Generally recommended for non-locating bearing positions, the cylindrical roller bearing has an internal geometry suited to operate at **high and very high speeds**. Its special component geometry (logarithmic profile) means it can withstand heavy radial loading, even in the event of slight misalignment (< 4 minutes). Depending on the version, compared with current market offers, SKF cylindrical roller bearings are **capable of withstanding significant axial loads.**

CARB toroidal roller bearing

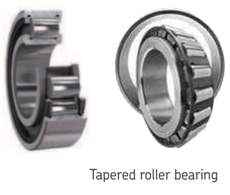
Self-aligning, the CARB bearing is **used as a non-locating bearing**. It can accommodate axial shaft thermal expansion for longer service life. Its plus-points are a small footprint and slim cross-section that fulfil demands for ever increasing requirements for compact and efficient gearbox designs.

Spherical roller bearing



CARB toroidal roller bearing

Cylindrical roller bearing



Tapered roller bearing

Preserving and maintaining performance

HMS5 and HMSA10 radial seals

Spring-mounted, the HMS5 and HMSA10 dynamic seal lip efficiently deals with runout. Still considered a highly effective seal even in the event of extreme seal lip wear. Playing a key role in retaining oil inside the gearbox, these seal profiles can withstand high acceleration and braking cycles, while maintaining seal efficiency.

- Extensive range of sizes
- Temperature: –40 to +100 °C
- Highly resistant to wear and ageing
- Excellent compatibility with synthetic oils
- Exceptional lubricant retention capability

V-Ring seals

Used on shafts, V-Ring seals are composed of a body and an axial seal lip. They provide axial sealing against a mounting surface protecting components from contaminants while accommodating shaft axial movement or misalignment.

- Fluorinated rubber or nitrile rubber seals
- Reduction of friction and high-speed overheating

SKF SPEEDI-SLEEVE

Historically used for repairing seal bearing surfaces on shafts **without disassembling or changing seal size**, this **wear sleeve can also be built into a new machine** to provide better conditions for sealing in terms of surface condition and hardness.

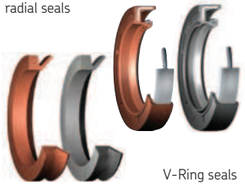
- Fast, economical and reliable
- Highly resistant to abrasion
- Shaft diameter: 12 to 203,2 mm and 211,15 to 1 143 mm
- Hardness standard 39 HRC
- Gold Range 80–85 HRC

SKF Flowline circulating oil lubrication unit

The **SKF Flowline circulating oil lubrication unit** provides **lubrication and removes abrasive particulates, while also cooling down rolling element bearings and other power transmitting components.** With its **innovative compact tank, the life of the circulating oil is extended, contributing to a drastic** reduction in the consumption of lubricant. The control system accurately measures and controls the rate at which oil is delivered by means of **separately programmable and adjustable controllers**.

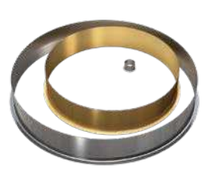
- Innovative compact tank
- Longer oil life
- Up to 50% reduction in oil consumption
- Separates and removes water and air bubbles from oil

HMS5 and HMSA10 radial seals



V-Ring seals

SKF SPEEDI-SLEEVE



SKF Flowline recirculating lubrication unit