Kalsi Seals

Field-Proven Answers To Your Rotary Abrasive Sealing Problems...

Kalsi

Kalsi Seals are a family of patented[1], one-piece elastomeric rotary seals. They provide hydrodynamic lubrication to accommodate high differential pressure and minimize seal and shaft wear. Kalsi Seals are used for lubricant retention and contaminant exclusion. Originally developed for the harsh and unforgiving oilfield downhole drilling environment, they provide an effective solution to the severe service conditions found in many different industries.

Kalsi Seals are available in many sizes & materials.

Typical Applications

Typical applications include both high and low differential pressure installations, such as:

- downhole drilling mud motors,
- rotary steerable drilling systems,
- high pressure/speed drilling and coring swivels,
- rotary blowout preventers,
- artificial lift top drives,
- rotary valve actuators,
- slant hole drilling swivels, and other abrasive service equipment.

Features and Benefits

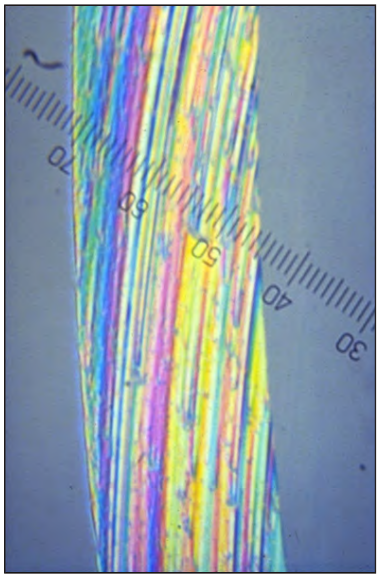
- Hydrodynamic lubrication reduces seal and shaft wear, running torque and seal-generated heat, and permits higher pressure and speed combinations.
- Lip design excludes environmental abrasives.
- Suitable for transient conditions that cause mechanical face seals to fail or leak excessively, such as frequent starts/stops, pressure fluctuations, shock and vibration, and temperature changes.
- Compact, one-piece design is installed in a simple O-ring type groove.

[1]Covered by U.S. and foreign patents.

Seals

Seal Selection

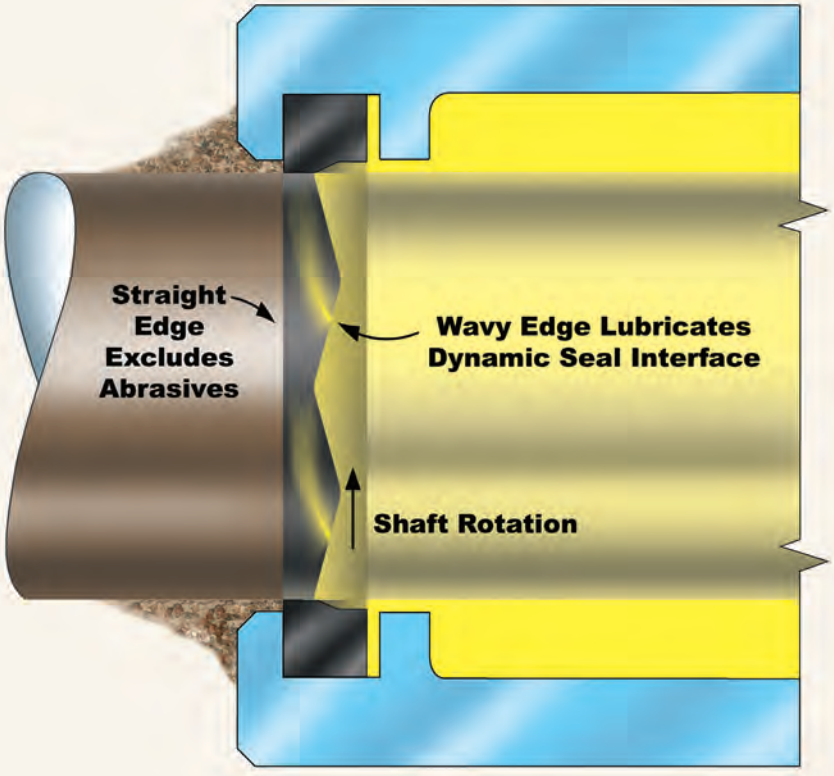
Kalsi Seals are available directly from Kalsi Engineering in an assortment of styles, cross-sectional sizes, and materials to address various operating parameters. For information, visit our website (www.kalsi.com) and download a copy of the Kalsi Seals Handbook. Seals are stocked in diameters ranging from 0.394" (10 mm) to 17.500" (444.5 mm). Custom diameters and cross-sectional sizes can also be engineered to meet unique application needs.



Continuing R&D

Kalsi Engineering's research and development mission is continual product improvement directed at the needs of new and existing markets. Products are developed and refined using state-of-the art analysis techniques and rigorous testing. The performance of existing products is also continually being evaluated in our well-equipped laboratory.

During initial development, lubricant film thicknesses were predicted by specially developed elastohydrodynamic lubrication software. Film thickness predictions and seal performance have been verified by optical interferometry studies, and by years of testing and commercial use.



How Kalsi Seals Work

Kalsi Seals are installed in a housing groove and compressed against a shaft, and they seal statically in the same manner as a conventional O-ring. The dynamic sealing lip incorporates a wavy edge on the lubricant side and a straight edge on the environment side. As rotation occurs, the waves cause the rotational velocity to hydrodynamically wedge a thin lubricant film into the dynamic sealing interface. This hydroplaning effect lubricates the seal and shaft surfaces, preventing the typical dry rubbing wear and high friction associated with conventional rubber and plastic seals, thus providing long life. When rotation stops, the hydrodynamic action stops, and the static seal is reestablished.

Application Support

Detailed technical information is provided in the Kalsi Seals Handbook. Experienced Kalsi Engineering personnel are also available to provide general technical support.

Company/Product Background

Kalsi Engineering, Inc. was established in 1978 to provide mechanical engineering consulting services, and is recognized worldwide for technical excellence. The founder of the company, Dr. M.S. Kalsi, was the manager of research & development for an oilfield equipment manufacturer prior to starting Kalsi Engineering. He first became interested in elastohydrodynamic lubrication while pursuing his graduate degrees, and his fundamental research led to the basic Kalsi Seal design. Since then, the company's application experience and continued commitment to seal research have resulted in many innovations that continue to enhance seal performance and expand our product line.

Consulting Engineering Services

Computer-controlled test fixtures are available to evaluate seal performance with customer-specified lubricants, process fluids, temperatures and other application-specific conditions. Comprehensive engineering services are also available.

Fixtures are available to test customer-specified conditions. Here a test is being set up for a custom 42" seal. A number of smaller fixtures are available for routine testing.

Kalsi Seals are thoroughly inspected to assure conformance to our demanding design specifications.

Kalsi Engineering is located in the Houston, Texas metropolitan area.

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