



Kalsi Seals

What are Kalsi Seals?

Kalsi Seals® are a family of rotary seals that include features which cause the dynamic lip to hydroplane on a lubricant film during rotation. This hydroplaning action minimizes seal and shaft wear, and allows the seal to accommodate high differential pressure.

Kalsi Seals are primarily used for contaminant exclusion and lubricant retention in the severe service conditions found in various rock cutting applications, such as mining, coring, and oil well drilling. They are installed in a housing groove and compressed against the shaft, and seal statically in the same manner as other interference-type seals, such as O-rings. The hydroplaning action only occurs during rotation.

Performance data, and application guidelines are provided in the Kalsi Seals Handbook™, which is available online at www.kalsi.com.

Extreme Lubrication for Extreme Conditions

The Enhanced Lubrication Seal™ that is illustrated above is the product of a multi-year development effort to create an extremely low torque interference-type rotary seal. The illustrated seal has an extra wide lip width. This increased width minimizes extrusion damage in high differential pressure conditions, and provides significantly more sacrificial material, compared to earlier seal designs.

The unique lip geometry aggressively pumps lubricant between the seal lip and the shaft, producing a thick hydrodynamic lubricant film, even in high differential pressure conditions. The lubricating action is so effective that an Enhanced Lubrication Seal operates near the full hydrodynamic regime. Nearly all of the running torque is due to viscous shear of lubricant within the interface, with very little asperity contact between the seal and shaft. This reduces the under-lip temperature of the seal, extending the operating range and improving sealing life and reliability.

About Kalsi Engineering

Kalsi Engineering, Inc. has been serving industry since 1978 in the areas of rotary seal technology and consulting engineering services. Our rotary seals are the current state of the art for harsh sealing applications found in the oilfield, construction, utility, and mining industries.

The founder of the company pioneered techniques for the hydrodynamic lubrication of rotary seals during his graduate studies. The company's commitment to continuing research and development have resulted in a variety of advanced rotary seal products that have extended the performance envelope to accommodate the ever-harsher conditions encountered in the field.



Based on success in other types of heavy equipment, a customer approached Kalsi Engineering in 2006 to provide rotary seals for the air/water swivel in newly designed reverse circulation drilling machine. After several years of experience, the customer reported 1,800 hours of sealing life with Kalsi Seals, compared to less than 150 hours with conventional greased seal assemblies.

Reliable service in rock cutting applications

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