

Filled Kalsi Seals

Product Description

The environment-end of the Filled Kalsi Seal¹ incorporates a deep groove that is filled with a mechanically interlocked soft silicone energizer (Figure 1). This energizer significantly reduces interfacial contact pressure between the seal and the shaft. As with other Kalsi Seals, the dynamic lip incorporates a wavy lubricant-side edge that hydrodynamically lubricates the dynamic sealing interface. This combination of features provides reduced breakout and running torque and less self-generated heat, compared to Standard Kalsi Seals.

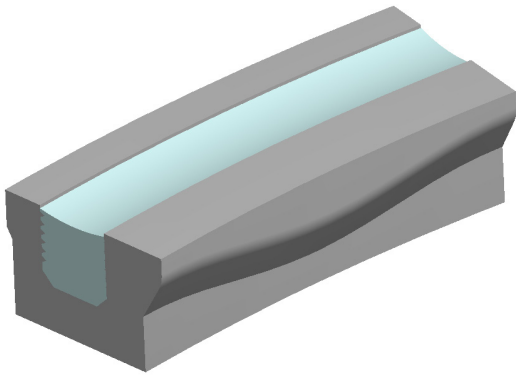


Figure 1
Filled Kalsi Seal Configuration

The Filled Kalsi Seal features a soft energizer and hydrodynamic interfacial lubrication that significantly reduce torque and seal-generated heat. The seals are used to retain lubricant in high speed applications such as submerged dredge pumps and oilfield cement pumps.

Compared to Dual Durometer Kalsi Seals, the C-shaped shell construction permits the use of much softer energizing materials, because the seal torque is not carried by the energizer. Because the energizer is cast in place, the radial cross-sectional tolerance is minimized, compared to seals with insert-type energizers.

Because filled Kalsi Seals offer increased resistance to compression set and lubricant pressure-induced distortion, they are typically recommended over the older generation Grooved Kalsi Seals.

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Typical Applications

Filled Kalsi Seals are used to retain lubricant in applications with high-speed rotation, such as submersible dredge pumps and oilfield cement pumps. In low differential pressure service, the seals are being used at surface speeds of up to 1,250 ft/minute.

Application Guidelines

General seal implementation guidelines are provided in the **Kalsi Seals Handbook**, available at http://www.kalsi.com/Rotary_Seal_Literature.htm. Filled Seals are not ordinarily recommended for severe abrasive environments. Contact Kalsi Engineering for available test data and application-specific recommendations.

Available Sizes

Filled Kalsi Seals are currently produced and used commercially in diameters that range from 1.500" (38.1 mm) to 9.438" (239.7 mm), and in radial cross-sections that range from 0.335" (8.51 mm) to 0.450" (11.42 mm). For a list of available sizes, see http://www.kalsi.com/filled_rotary_seals.htm.

Additional sizes can be furnished, subject to a one-time tooling charge to help to defray associated engineering, machining and set-up expenses. Contact Kalsi Engineering for additional information.

Optional Hydrodynamic Geometry

Most filled seals use a conventional hydrodynamic wave form, as shown in Figure 1, to minimize hydrodynamic pumping-related leakage. When the filled seal cross-section is combined with the enhanced lubrication wave form, leakage and torque are similar to a solid cross-section High Film Seals, but in a bi-directional configuration. This special purpose arrangement achieves even lower torque than the conventional hydrodynamic wave, combined with a much higher hydrodynamic pumping rate. Contact Kalsi Engineering for additional information.