Axially Constrained Kalsi Seals

Product Description

The Axially Constrained style of Kalsi Seal®, [1] provides improved abrasion resistance in zero differential pressure applications by specifically combating skew-induced wear in abrasive fluid media. The skew-induced abrasive wear mechanism (Figure 1) is a leading cause of reduced seal life in applications having little or no differential pressure. The improved performance is the result of the axial seal constraint shown in Figure 2.

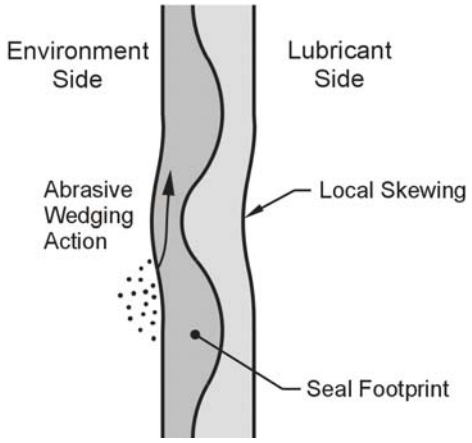

Figure 1
Skew-Induced Wear Mechanism
Standard seals can skew in low differential pressure conditions due to compression and thermal expansion. Rotation causes abrasive fluid to impinge at the skewed location, which can drive abrasives under the seal and cause accelerated wear.

Seal Features and benefits

Axial Preload Prevents Skewing

The seal body is designed to contact both sides of the seal groove. This contact effectively locks the seal in place, preventing it from axially translating or locally skewing. For ease of assembly, the seal width is initially narrower than the gland. Shaft insertion causes the seal to expand axially into stabilizing contact with the gland walls.

The Axially Constrained Seal™ eliminates the complexity of providing the positive differential pressure or spring preloading that is required with Standard seals in zero differential pressure applications.

[1] Covered by issued and pending U.S. and foreign patents. "Axially Constrained Seal", "Axially Constrained Kalsi Seal", "Wide Footprint Seal" and "Kalsi Seals" are trademarks of Kalsi Engineering, Inc. The rotary seals in this brochure are offered under the same general terms and conditions as the "Offer of Sale" that is included in the current revision of the **Kalsi Seals Handbook**.

Void Accommodates Thermal Expansion

The seal geometry provides a significant void space within the gland that allows the seal to thermally expand without becoming over-confined or losing its hydrodynamic lubricating capability.

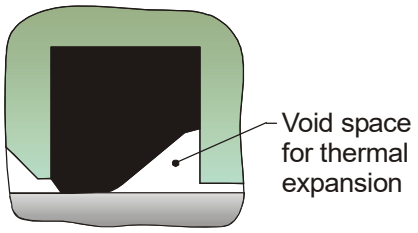

Figure 2
Axially Constrained Kalsi Seal™
Axially Constrained Seals™ contact both gland walls simultaneously to prevent skew-induced wear. A lubricant-side void accommodates thermal expansion. Two different cross-sectional sizes are available, to fit 0.250" and 0.309" radial gland depths.

Performance Testing

Testing under zero differential pressure conditions has shown that the Axially Constrained Seal provides a dramatic improvement in abrasion resistance and seal life.

Seal Implementation

Axially Constrained Seals are available in various diameters, for 0.250" and 0.309" radial gland depths. Due to thermal expansion considerations, the groove width is wider than normally used for Standard Kalsi Seals™. For a list of available sizes, see http://www.kalsi.com/acs-rotary-seals.htm.

Axially Constrained Seals are recommended for applications such as balancing pistons, where the lubricant pressure may fluctuate slightly above or below the environmental pressure during operation.

Axially Constrained Seals are not ordinarily recommended for high differential pressure service due to the elevated contact pressure associated with axial constraint. Standard or Wide Footprint Kalsi Seals™ are typically recommended for applications involving high differential pressure.

Contact Kalsi Engineering

Please contact a member of our staff for additional information on this and other styles of Kalsi Seals. Rotary seal implementation guidelines are provided in the **Kalsi Seals Handbook™**, available online at http://www.kalsi.com/Rotary_Seal_Literature.htm.

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Brochure PN 462-61 Rev. 3