Extra Wide Hybrid Kalsi Seal

Seal description and features

The Extra Wide Hybrid Seal™ (EWH) was developed so that sealed bearing mud motor assemblies can benefit from the advantages of a much wider dynamic sealing lip. The advantages include increased structural strength and pressure capacity, and additional sacrificial material to counteract wear mechanisms such as extrusion damage and abrasive wear.

With a well lubricated dynamic sealing interface that is 1.6X wider than the Wide Footprint Kalsi Seal (507 series), the Extra Wide Hybrid Seal significantly improves the performance and life of sealed bearing mud motors.

Another key feature of the Extra Wide Hybrid Seal is that it fits in the same seal groove as the 507 seal that it replaces and has a comparable hydrodynamic pumping related seal leak rate.

These key features make the Extra Wide Hybrid Seal the ideal pressure retaining seal for mud motors!

Laboratory testing and field trials

The Extra Wide Hybrid Seal demonstrated significantly better performance compared to the 507 series seal in the more than 1,200 hours of laboratory testing.

One test which dramatically showcased the performance advantage of the Extra Wide Hybrid seal (see Figure 1) was performed at 345.6 sfpm with an ISO 320 viscosity grade lubricant maintained at 302°F. The test seals were installed in a carrier with a 0.02" radial extrusion gap and subjected to 1,500 psi differential pressure. One of the 507 series seals failed due to gross extrusion damage in about an hour. The Extra Wide Hybrid Seals reached the planned 24-hour duration and were in good condition as shown in Figure 1.

Figure 1
Wide Footprint and Extra Wide Hybrid Seals after testing
The 507 series seal (left image) failed in about an hour while the Extra Wide Hybrid seal (right image) completed the 24 hour test and was in good condition.

Successful field trials with the Extra Wide Hybrid Seal were completed in 2021[1] and by 2022 there were more than a dozen seal sizes available.

Because of excellent field performance and the ease of implementation, the Extra Wide Hybrid Seal has been adopted as the pressure retaining seal in many sealed bearing mud motors.

How to obtain EWH seals

Our Extra Wide Hybrid catalog page features the most up-to-date list of available sizes. However, new sizes can be made to meet your specific requirements.

If you don't see the EWH seal size you need or have questions about implementing the EWH seal into your equipment, contact our experienced engineering team.

Enhance mud motor performance and life with the Kalsi Extra Wide Hybrid Seal

[1] The initial Extra Wide Hybrid seals that were field tested had to be installed in wider grooves because they were axially wider than 507 seals. Drop-in Extra Wide Hybrid seals were introduced in 2023 and have the same key features.

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