

HYDRODYNAMIC SEALS

HYDRODYNAMIC "LIFT-OFF" SEALS FOR CRITICAL AEROSPACE APPLICATIONS

More than 40 years of innovation have made Qualiseal Technology a globally trusted leader in engineered components, seals, assemblies and subsystems for demanding environments. As a critical applications solutions provider, Qualiseal Technology recently developed a specialized design, manufacturing and testing process for hydrodynamic "lift-off" seals. With an Advanced Spiral Groove design, our HD seals are engineered for superior performance at high altitudes and a variety of temperatures and pressures. In rigorous testing, Qualiseal HD seals performed nearly three times better than competing HD seals. Aircraft operators that install Qualiseal HD seals can benefit from an industry-leading maintenance cycle of over 20,000 hours.



OFFERINGS

- Hydrodynamic (lift-off) face seals – bellows and spring-energized

APPLICATIONS

- High speed applications such as gearbox, starter and engine main shaft seals

KEY FEATURES & BENEFITS

- Operates in wide range of temperatures between cryogenic and 1000°F (538.8°C) for bellows-energized seals and -65°F and 400°F (-53.9°C and 204.4°C) for spring-energized seals
- Withstands pressures up to 50 psid
- Excellent high-altitude performance with low leakage rates
- Service life of more than 20,000 hours
- Sizes: 1 in - 6 in diameters
- FAA certified

SEAL MATERIALS

- Various carbon grades
- Stainless steel or 440C
- Inconel or other metal bellows material

HYDRODYNAMIC FEATURES

- Advanced Spiral Groove design
- Inward pumping or outward pumping designs
- Unidirectional
- Low heat generation
- Low friction
- Long life and reduced wear

TESTING, DESIGN & RELIABLE ENGINEERING

- Dedicated Engineering and Program Management teams allowing for quick analysis and hardware turn around
- Superior technology validated through CFD analysis, as well as extensive rig and engine tests
- Accurate performance predications at altitude and sea level
- 30+ years in carbon face seal manufacturing coupled with 40+ years of dynamic seal and bellows design
- Proprietary hydrodynamic rotor design ensures reliability and increased life over competing seals
- Design analysis predicting lift-off speed, seal temperature, oil temperature

ROTOR FEATURES

- Tool steels and bearing steels
- Superior hydrodynamic groove geometry ensuring lift-off at lower RPM and sustained lift-off at altitude

KEY MANUFACTURING CAPABILITIES

- Proprietary hydrodynamic groove manufacturing process provides tighter control and consistency when compared to traditional media or laser etching processes
- Proprietary bellows welding and manufacturing process for increased life and consistency for bellows type seal
- Proprietary O-Ring design and materials for low hysteresis and temperature capabilities

