FLOWSERVE

DHTW/UHTW Series

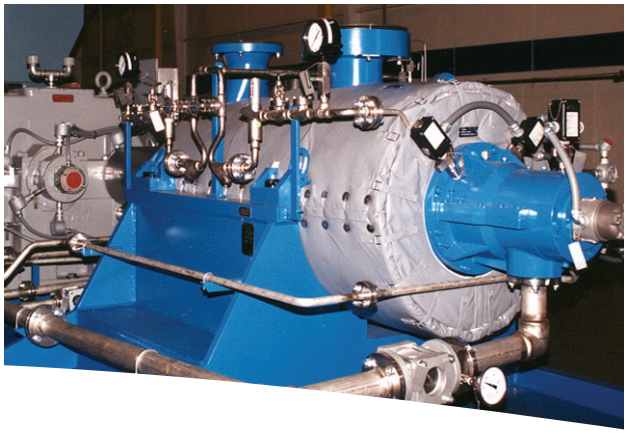
Custom engineered seals

for heavy duty applications



Experience In Motion

DHTW and UHTW mechanical seals are custom engineered to deliver exceptional reliability in high energy, critical pumping applications. DHTW and UHTW seals are balanced, flexible stator cartridge seals available in single or dual seal configurations.



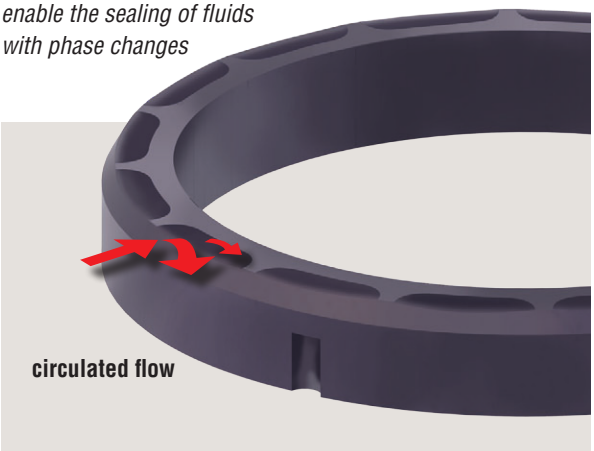
Versatile design tailored for the application

DHTW and UHTW seals reflect the pinnacle of mechanical seal engineering expertise, design detail, and years of successful experience. DHTW and UHTW seals are a solid platform, providing superior design flexibility to address a wide range of challenging applications including boiler feed, boiler circulation, oil field injection, and pipeline services. An extensive array of design features enables custom configured solutions to maximize equipment uptime and availability in critical services.

Exclusive features offer unique solutions

Reliable sealing under high duty conditions including pressure up to 207 bar (3000 psi) and rotating speed up to 76 m/s (250 fps) is a fundamental quality of DHTW and UHTW seal designs. While UHTW and DHTW seals share the same core seal components, DHTW seals have a high performance pumping feature integrated around the rotating seal face. In high temperature services, DHTW seals establish high flow rates for effective fluid circulation through a seal cooler. In dual seal applications, DHTW seals circulate enough fluid to satisfy cooling requirements.

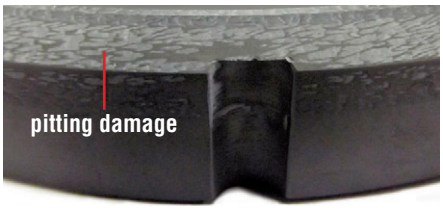
Available Precision Face Topography Waves enable the sealing of fluids with phase changes



After careful consideration of an application's full operating window, every aspect of the seal design from seal faces to drive mechanisms to adaptive hardware is optimized to sustain a stable fluid film at the seal faces for long term, reliable operation.

Sealing the full range of hot water pump conditions in power plants is well within the capabilities of DHTW seals. When ultra-pure, low conductivity feed water creates conditions for electrically-induced corrosion, DHTW seals employ an anti-electro-corrosion package to minimize seal generated electrical corrosion damage in critical seal areas. The package includes special seal face treatments and materials, face isolation rings, and a grounding throttle bushing.

Our exclusive anti-electro-corrosion package can eliminate the pitting damage shown in this untreated seal face



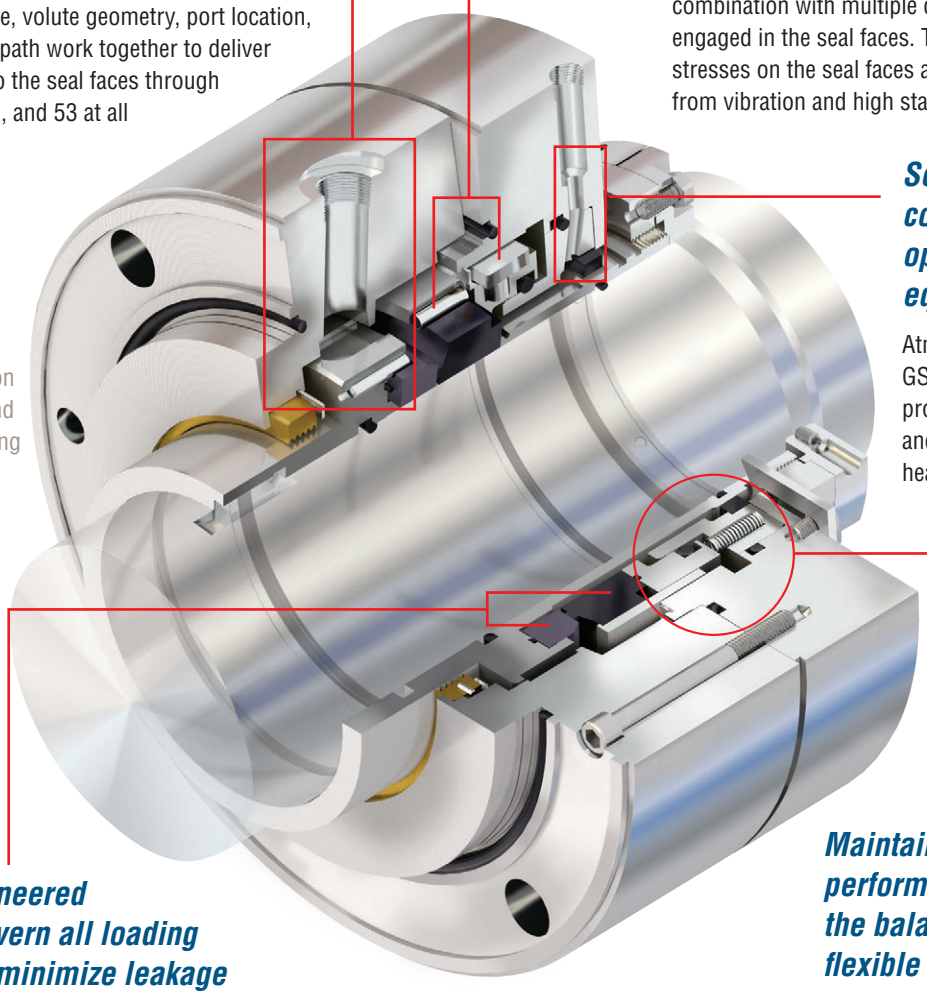
Sealing fluids such as CO_2, ethane, and ethylene in their supercritical phase requires a targeted solution to address a complex mix of gas-like and liquid-like properties. UHTW/GSLW dual seals for supercritical fluids utilize Flowserve's Precision Face Topography to provide hybrid gas and liquid performance without significant auxiliary systems. Hydrodynamic face features enhance load support and lower heat generation to minimize atmospheric emissions and icing. The bi-directional seal design includes a non-contacting GSLW containment seal capable of sealing full process pressure.

Handle high temperatures, slow roll, and hot standby with high performance circulating features

Engineered as a cooperating system within DHTW seals, the pumping feature, volute geometry, port location, port size, and flow path work together to deliver optimum cooling to the seal faces through piping plans 23, 52, and 53 at all operating speeds.

Withstand torque from high viscosity fluids and high speeds with robust drive engagement

DHTW and UHTW seals use a unique T-drive in combination with multiple drive pins deeply engaged in the seal faces. The design lowers stresses on the seal faces and resists damage from vibration and high startup torque.



Single DHTW seal shown with isolation bushing inboard and fixed throttle bushing outboard

Secondary containment options increase equipment uptime

Atmospheric bushings or a GSL containment seal provide leakage restriction and an access point for seal health monitoring.

Purpose-engineered seal faces govern all loading influences to minimize leakage and maximize seal life

Using advanced computer modeling techniques, the seal face geometry, surface profile and contact points are optimized for specific applications to provide unmatched performance. Dynamic modeling assures pressure, temperature and centrifugal effects balance for zero net deflection.

Enhanced Finite Element Analysis predicts temperature and pressure response



Maintain consistent performance by securing the balance ratio in a flexible stator design

Seal face balance ratio must be precisely controlled to achieve reliable operation in high speed services. DHTW and UHTW seals set the balance ratio behind the stationary face to best manage thermal effects and equipment dynamics.

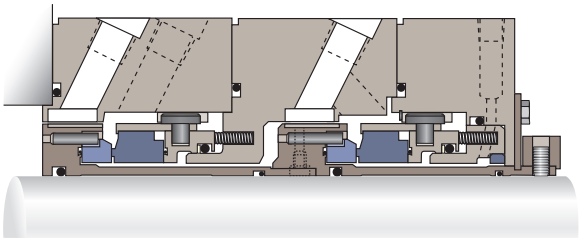
Materials of Construction

Metal Components	Stainless Steel
Rotating Face	Silicon Carbide, Tungsten Carbide
Stationary Face	Carbon, Silicon Carbide
Gaskets	Fluoroelastomer, Perfluoroelastomer, EPDM or Nitrile

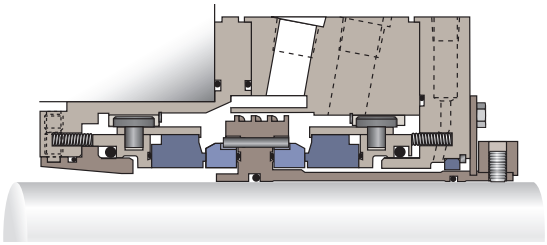
Operating Parameters

Pressures	up to 207 bar (3000 psi)
Temperatures	-40 to 371°C (700°F)
Speed	up to 76 m/s (250 fps)
Shaft Sizes	25.4 to 228.6 mm (1.000 to 9.000 inch)

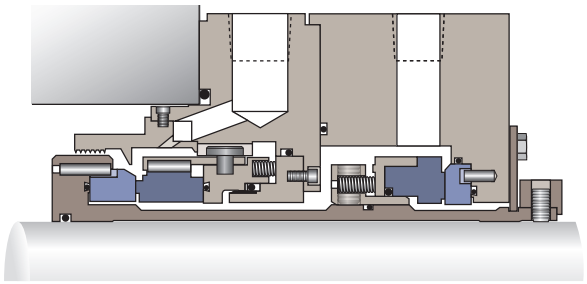
Dual DHTW/DHTW, face-to-back seal suitable for high pressure boiler circulation pumps



Dual DHTW/DHTW, face-to-face seal suitable for heavy duty applications requiring zero process emissions



Dual UHTW/GSLW, face-to-back seal suitable for higher pressure flashing fluids such as CO2, ethane, ethylene, and LPG



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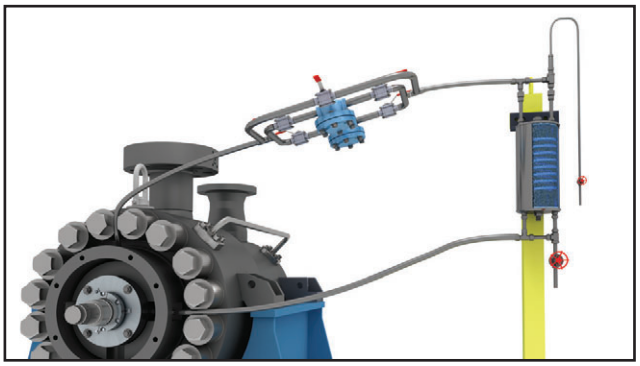
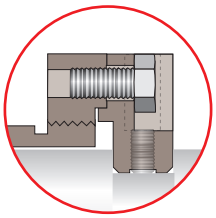
DHTW seal with Piping Plan 23

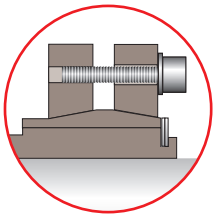


Shown with the Flowserve 682 Seal Cooler and redundant Magnetic Separators

Available high pressure drives



Split ring



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