FLOWSERVE®

Flow Solutions Division

GW/BAW

The standard conventional liquid mechanical seals typically used in Sundyne® equipment.

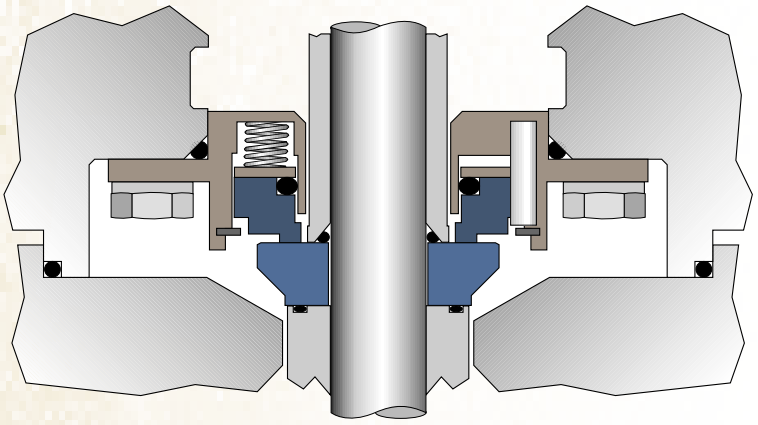
Flowserve FSD has an alliance agreement with the Sundyne Corporation (www.sundyne.com), which is a major manufacturer of both direct and integrally driven fluid pumping equipment and a leader in high head, low flow pump and compressor technology. Since the late 1960's Flowserve FSD has developed and supplied engineered mechanical seals to handle the high speed and pressure conditions common to these types of equipment. Excellent performance and consistent reliability through the years has earned Flowserve the base specification designation for new Sundyne® equipment using standard conventional seal technology.

GW seals

- Originating from the Flowserve GW gas seal used in *Sundyne* LMC in-line compressors, the Flowserve GW liquid seals are traditional, flat-faced, hydraulically balanced, OD-pressurized, stationary multi-spring pusher end face mechanical seals run against a hard carbide rotor. API 682 refers to this as a Type A seal. An optional PTFE Tec-ring does not produce or transmit moments to the stationary face to cause it to lose relative flatness, react to temperature extremes, or hang up due to high friction like wedge-shaped PTFE elements can. GW liquid seals can be used in all Sundyne pumps and assembled in any of the standard sealing arrangements: single, dual unpressurized, and dual pressurized.
  - The standard balance liquid GW is recommended for fluids having a specific gravity between 0.60 and 1.50.
  - The high balance liquid GWQ is recommended for light ends having a specific gravity between 0.30 and 0.60.
  - The liquid lube groove GWW is specifically designed for direct drive unit use in hot water services up to 338° F (170° C) without the need for external cooling piping plans such as API Plans 21, 23, or 32 that would be costly to install and operate.

Materials of Construction

- Metal Components: Stainless Steel
- Rotating Face: Tungsten Carbide
- Stationary Face: Resin Carbon or Metallized Carbon
- Springs: Alloy C-276
- Secondary Seals: Fluoroelastomer, Perfluoroelastomer, PTFE/Elgiloy Tec-ring



Operating Parameters

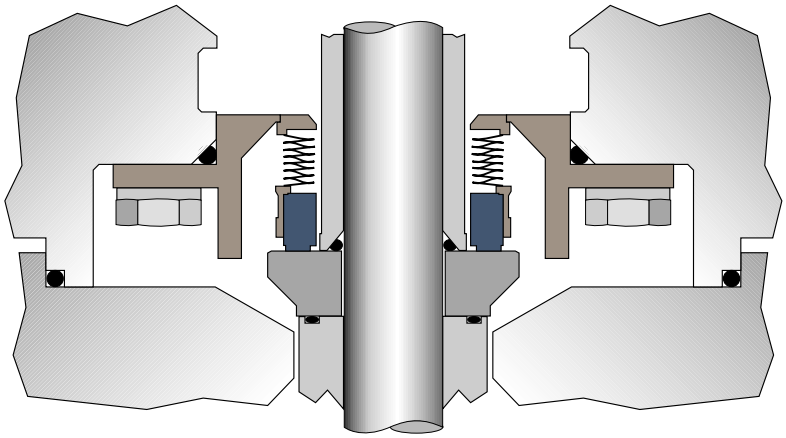
- Pressures: To 675 psi (46.6 bar)
- Temperatures: -46° F to 400° F (-43° C to 204° C)
- Shaft Speeds: To 18,000 rpm
- Specific Gravity: 0.30 to 1.50
- Available Sizes: 1.250" and 1.500"

BAW seals

- The Flowserve BAW liquid seals are traditional, flat-faced, hydraulically balanced, stationary metal bellows end face mechanical seals run against a hard carbide rotor. API 682 refers to this as a Type C seal. The bellows convolutions provide the spring force orienting the faces to each other while also acting as the secondary sealing component. The BAW liquid seals can be used in all Sundyne pumps and assembled in any of the standard sealing arrangements: single, dual unpressurized, and dual pressurized. Additionally, a BAW single seal can be "backed up" by a gas seal for light hydrocarbon service or a conventional GW liquid seal using an API Plan 52 buffer fluid system to allow for use in higher temperature services. The liquid BAW seals are commonly applied when process fluids have the following characteristics:
  - When the process temperature is too low or too high for standard elastomeric O-rings.
  - The process fluid contains particles that can block axial travel of the dynamic elastomeric O-rings used in spring pusher seal designs.
  - The process fluid tends to coke, crystallize, polymerize, or scale.

Materials of Construction

- Metal Components: Stainless Steel, Alloy C-276, engineered materials
- Stationary Face: Resin Carbon or Metallized Carbon
- Rotating Face: Tungsten Carbide
- Bellows: Alloy C-276
- Secondary Seals: Fluoroelastomer, Perfluoroelastomer, Graphite



Operating Parameters

- Pressures: To 400 psi (27.6 bar) typical
  To 800 psi (55.2 bar) with engineering approval
- Temperatures: -150° F to 650° F (-101° C to 343° C)
- Shaft Speeds: To 17,000 rpm
- Specific Gravity: 0.55 to 1.20
- Available Sizes: 1.250" and 1.500"

Note: For materials and conditions not listed, contact your local representative.

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REV 10/00 USA

Printed in USA

ISO 9000
Certified

FSD168