Seal Arrangements

Seal the Deal with Liquiflo Sealed Pumps

MECHANICAL SEALS

As a standard, Liquiflo uses type 9 or type 9T (wedge style) mechanical seals for all of it's gear pumps. The materials of construction of the seal are described by the model coding.

The standard wedge material is always virgin Teflon. The stationary seal seat material is always alpha sintered silicon carbide. The metal body, springs, set screws and retainer of a single internal mechanical seal will always match the base material of the pump; e.g. a 316SS pump will have a 316SS seal body and an Alloy-C pump will have an Alloy-C seal body. The metallic components of a double mechanical seal will always have a 316ss construction because the barrier fluid will be less corrosive than the pumped fluid.

A seal with a Teflon face should be limited to 50 PSI and 180°F. A carbon faced seal will be limited by the pressure rating of the pump and to 350°F by the Teflon wedge. For higher temperature applications, consult Liquiflo.

Model Code	Style	Seal Face
U	Single Internal	Carbon
S	Single Internal	Teflon
F	Double	Carbon
H	Double	Teflon

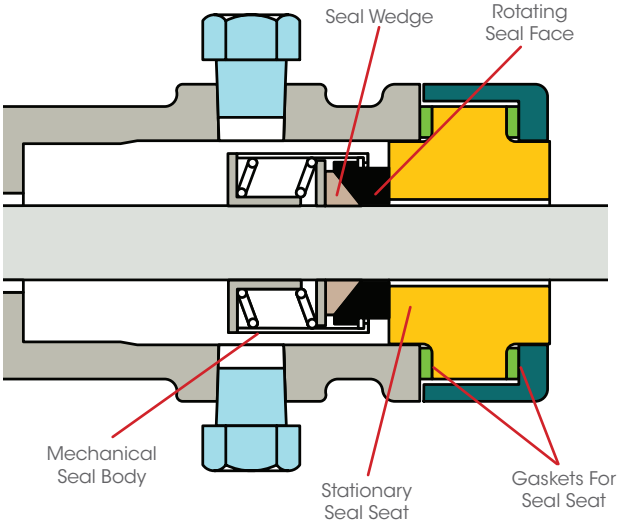
For Liquiflo's Centry Series centrifugal pumps, two styles of seals are used. The 620 uses a type 9A and the 621 and 622 use a type 21. The 620 seal is a carbon face against an alpha sintered silicon carbide seat. The body and metallic components are 316SS for 316SS pumps and Alloy-C for Alloy-C pumps. This seal can be used to the pump's maximum ratings of 65ft of differential head /300PSI system pressure and 500°F.

The 621 and 622 seal is a carbon face against an alpha sintered silicon carbide seat. The body is 18-8 stainless and the bellows is Buna-N. This seal can be used to the maximum pressure rating of 100ft of differential head/300 PSI system pressure, but is limited to 200°F.

PACKING

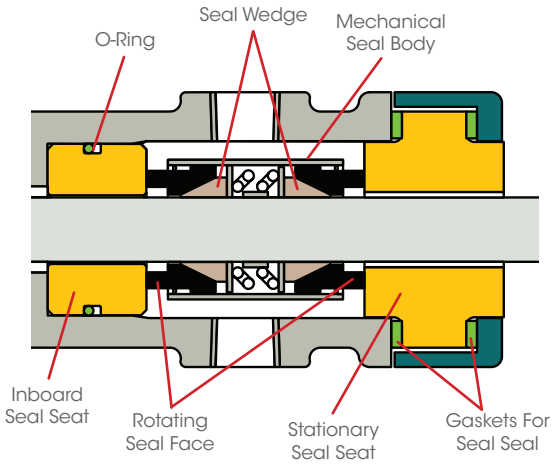
For safe, viscous fluids Teflon packing is the first choice and can be used up to 300°F. For temperatures between 300°F to 500°F, Graphoil is the preferred packing method and can be applied for fluids such as asphalts and hot resins. If the fluid is too viscous to drip, a grease fitting is provided to grease the packing with compatible grease (to reduce friction between the packing and shaft) after the pump is installed.

Model Code	Style	Material
L	Packing	Teflon
R	Packing	Graphoil



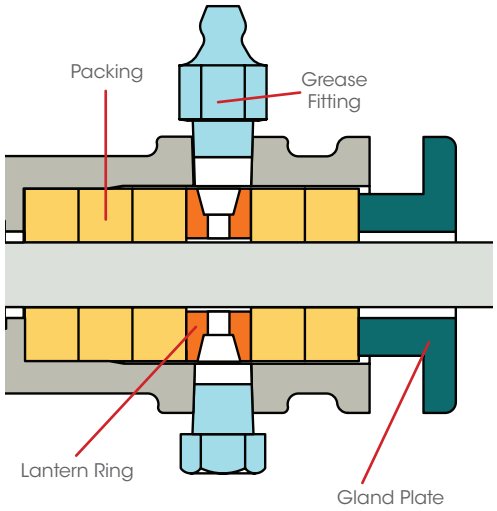
SINGLE MECHANICAL SEAL (MOST COMMON)

The **Single Mechanical Seal** arrangement is the standard style of dynamic seal and is the most commonly used when pumping any type of chemical where leakage needs to be minimized. **During normal operation this type of seal does not need to be adjusted.** Although widely used, this seal has some important limitations. During normal operation, the equivalent of 3-5 drops of fluid per day will cross the seal face as a vapor. This is important to note when pumping toxic or flammable fluids which may not be compatible with the surrounding environment. The seal can tolerate only limited amounts of abrasive particles and because it is non-hermetic, it is not ideal for pumping fluids that can crystallize on contact with air. Crystals can build up around the edges of the seal and cause premature seal failure. The maximum recommended fluid viscosity for single mechanical seal is 5,000 cP.



DOUBLE MECHANICAL SEAL

The **Double Mechanical Seal** arrangment relies on a lubricating system to cool the seal faces. The lubricating barrier liquid washes the seal faces and must be safe and compatible with the pumpage. Accordingly, double seals are preferred for crystallizing or abrasive liquids as the seal faces are only exposed to the flush liquid. Double seals must be pressurized so that the seal chamber has about 15 PSI higher pressure than the pump discharge pressure.



PACKING

Although **Packing** is still used, it is not very common in the chemical processing industry. It is still an acceptable solution when pumping safe liquids or where the seal drainage can be captured. Flocculants, water, and resins are common examples of fluids which use this type of seal. Teflon is the standard packing material. Graphoil packing is used for high-temperature applications. During operation, the shaft packing interface must be lubricated to reduce frictional forces on the rotating drive shaft. Depending on the fluid, this can be accomplished in several ways: The gland screws are adjusted to provide a leak rate of about **8 to 10 drops per minute with low to moderate viscosity liquids**. With **high viscosity liquids, the packing can be greased** via the grease fitting.

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