

MECHANICAL SEAL INFORMATION

Mechanical seal

The principle of the mechanical seal is:

To seal a device used on rotating machinery. When the pump operates, the liquid could leak out of the pump between the shaft and the stationary parts (pump housing).

A single mechanical seal consists of two flat surfaces: one stationary face (Static) and one rotating face (Dynamic). The surfaces are pressed together by a spring to keep the seal from leaking.

Mechanical seals' materials are commonly **hard-to-soft** combinations where the soft face is carbon-graphite. The hard surface is usually stainless steel, silicon-carbide (SiC), Tungsten carbide or ceramic. However, for abrasive media **hard-to-hard** faces are used, generally **SiC to SiC**.

During installation of a mechanical seal take care of the following:

- Try not to touch the polished sealing face with your fingers; the oils from your fingertips can cause the seal to leak.
- Do not lubricate seals with any type of oil or grease. The seal face will be lubricated by the product being pumped. It is only recommended to lubricate the O-ring of the mechanical seal.
- Clean the mating ring surface with isopropyl alcohol to remove any fingerprints and any other contaminants.
- Wash your hands. Keep everything that might come into contact with the seal clean. Even the smallest particles left on the seal faces could cause it to have a leakage.

Premature seal failure or leakage can be caused by numerous reasons but the most common are:

- Running Dry:

The seal lubrication is provided from the pumped liquid. If the pump runs dry, your seal will fail.

- Loss of spring tension:

A mechanical seal consists of two main components. One is stationary (Back-plate) and the other rotates against it to achieve a seal (Carbon seal), the rotating component and stationary component are pressed against each other usually by means of spring force. Spring compression provides initial face pressure. This pressure is maintained when the seal is at rest via the spring(s) thus preventing leakage between the faces.

- Excessive wear on seals due to abrasive in-product.

If you are pumping an abrasive liquid, check the compatible seal materials. As a seal wears, the originally smooth seal face is pitted or damaged, resulting in leaks.

- Improper cleaning:

At the end of a production run, if the pump is not properly cleaned, the product can solidify between the faces, and the seal face is damaged. This could be caused by sugared beverages. The sugar solution trapped between the two faces can crystallize and damage the mechanical seal or back plate.

- Chemical degradation:

The mechanical seal O-ring must be chemically compatible with any fluids that will be pumped through the system and that includes the product and the chemicals used in the CIP (Clean in Place)

- Temperature degradation:

You must not exceed the temperature of the seal components.

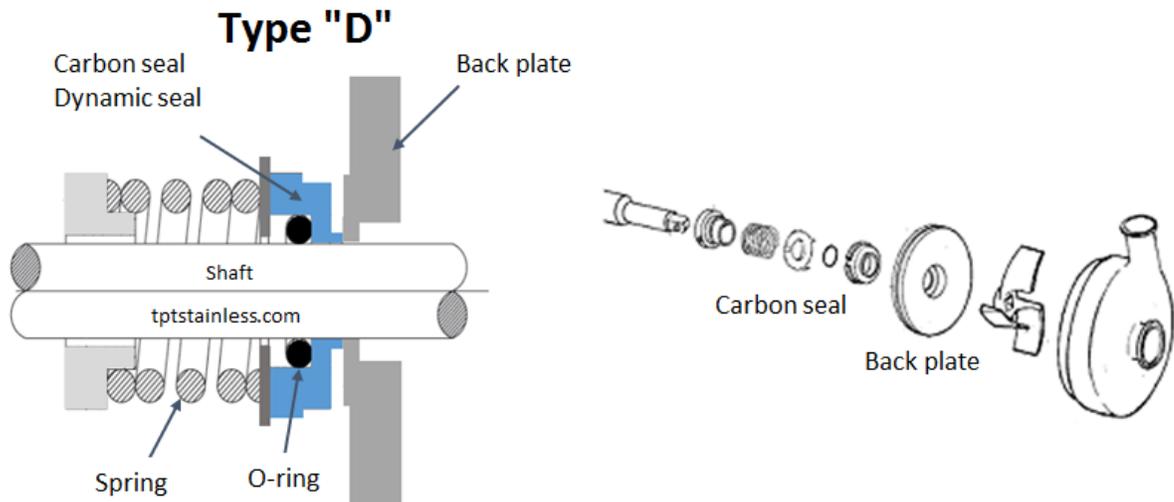
- Foreign matter between seal running faces.
- Cracked carbon seal ring, usually caused by damaging during installation or thermal shock.
- Cavitation can cause vibration, and the vibration can cause the carbon face to open and close. Seal face opening can result in foreign contaminants to penetrate between the seal faces and chip or crack the seal

Mechanical seal types in our centrifugal pump C-series:

Type "D" (Standard)

Seal material is carbon (Carbon-graphite) rotating on stationary stainless steel 316L back plate.

- Suitable for sanitary applications where fluid is non-abrasive and lubricating.



Type "DG" (Optional)

This seal utilizes the standard "D" type rotating components but has an added stationary seal of silicon carbide, ceramic or tungsten carbide for added wear resistance.

The standard stationary seal material is silicon carbide. This stationary seal is reversible, you can changeover very quickly if one side is damaged.

- Suitable for most sanitary applications, including those using non-lubricating and abrasive fluids.

