

Design series ESD 34 S and ESD 44 S**Product Information****Technical Data**

- Mechanical seal ESD34S with complete sterile installation
- Mechanical seal ESD44S with complete sterile installation

Quality

The ESD Sterile System is supplied ready for use. The ESD34S as a component of the ESD Sterile System is supplied as a cartridge unit ready for installation. Prior to delivery every mechanical seal is dynamically tested under process conditions according to an internal QM System that conforms to DIN EN ISO 9001:2000, and receives a test certificate.

Function

Special requirements in mechanical seals occur in the operation of sterile processes such as food processing, in the pharmaceutical industry and in biotechnology. The much used mechanical seal ESD34 is particularly designed for applications in sterilisation processes. The sterile seal ESD34S fulfils its task in this application because attention has been paid to the smallest details. The sealing ring is mounted opposite the product wetted side of the O-ring. Due to slanting surfaces the product flows away from the seal. The O-ring grooves are so narrow that they are completely filled by the O-ring and no gap occurs on the product side. There are mainly smooth surfaces free from gaps which is an important detail for a perfectly sterile process.

Applications

The ESD34S is delivered complete as an ESD Sterile System. During the process the seal system is filled with condensate. This is kept at a required temperature through a temperature controlled steam trap. When a temperature drop occurs, the steam trap opens, fresh steam surges in causing the condensate to regain the required temperature. The hot condensate causes a heat barrier in the seal liquid chamber so that no bacteria can enter the vessel side. Through dynamic pressure and a steam jet pump the condensate is circulated and continuously renewed. This circulation and refreshing of the condensate will be accelerated by the heat exchanger. The ESD sterile installation is maintenance-free and works with a minimum amount of energy.

The main areas of application are:

- Food processing
- Pharmacy
- Biotechnology





Gap Free Design
Ideal for sterile process.



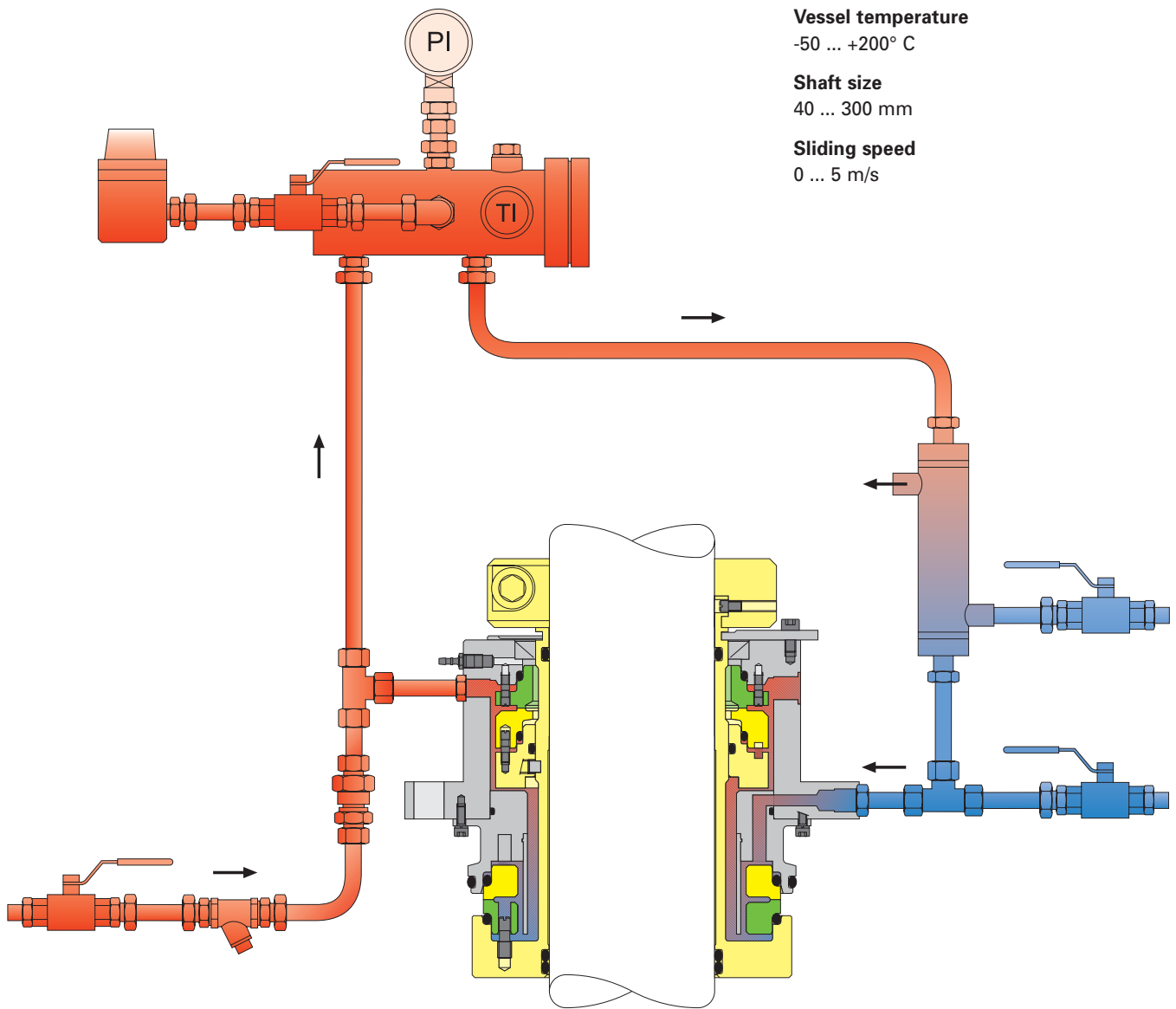
Sterile Installation
The complete system from one source.

Sterilsysteme: Gleitringdichtungen ESD34S / ESD44S mit Installation

Installation mit ESD44S

Application Limits

- Vessel pressure**
Vacuum ... 3 bar (abs.)
- Vessel temperature**
-50 ... +200° C
- Shaft size**
40 ... 300 mm
- Sliding speed**
0 ... 5 m/s



Installation

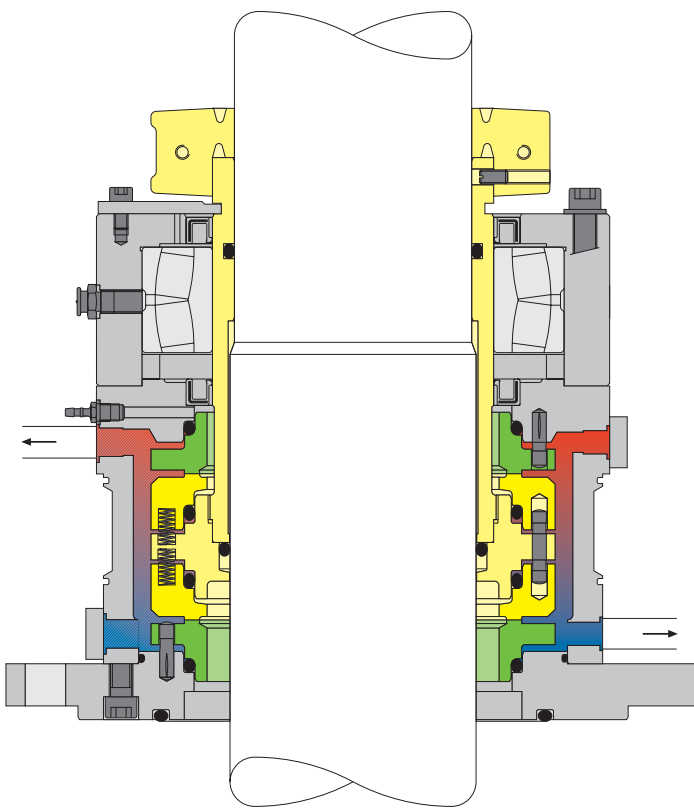
During sterile operation a stable thermal barrier between the shaft and the vessel must exist in order to avoid the escape of pathogenic microbes to a reliable degree. The sterile condensate takes over the function of the seal liquid in the seal liquid chamber of the mechanical seal.

To avoid the grease layer in the seal gap of the mechanical seal from tearing through partial evaporation, the condensate is subject to a cyclical sterilizing and cooling process before it enters the seal.

The mechanical seal is filled with condensate and connected to a storage vessel via two pipes. Efficient circulation of the condensate is ensured by use of a pump which is integrated in the mechanical seal. The sterilization of the condensate is effected through the supply of fresh steam after the condensate escaped through the steam trap, and this also supports the circulation. The storage vessel accumulates condensate through a flow of steam until the pressure in the storage vessel is equal to the pressure in the steam supply.



ESD34S



Materials

Housing

Stainless steel

Product-wetted parts

Stainless steel, Hastelloy, Titanium, other special materials

Seal rings

Carbon, Silicon Carbide, Tungsten Carbide, etc.

O-rings

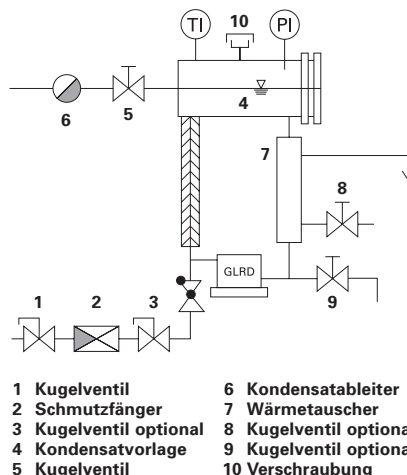
EPDM, Perfluor elastomers, special elastic materials

FDA approval

Possible for all product-wetted parts

Function

The condensate which enters the mechanical seal must be cooled below the vaporizing temperature whereby the dissipated friction heat has to be taken into account in addition. If the cooling process is set sufficiently high, the seal liquid cools down to the effect that at temperatures below the limit condensate is diverted from the storage vessel by a steam trap. This leads to reduced pressure in the system and consequently to new sterilization through new steam which replenishes the system again.



The frequency of this sterilization processes can be influenced via the cooling water flow through the heat exchanger. However, the type of seal liquid guide, the surface quality and the tight fit of all construction parts reduce the need of energy for sterilization to a minimum. If not in operation, the mechanical seal can be filled up and sterilized with saturated steam.

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