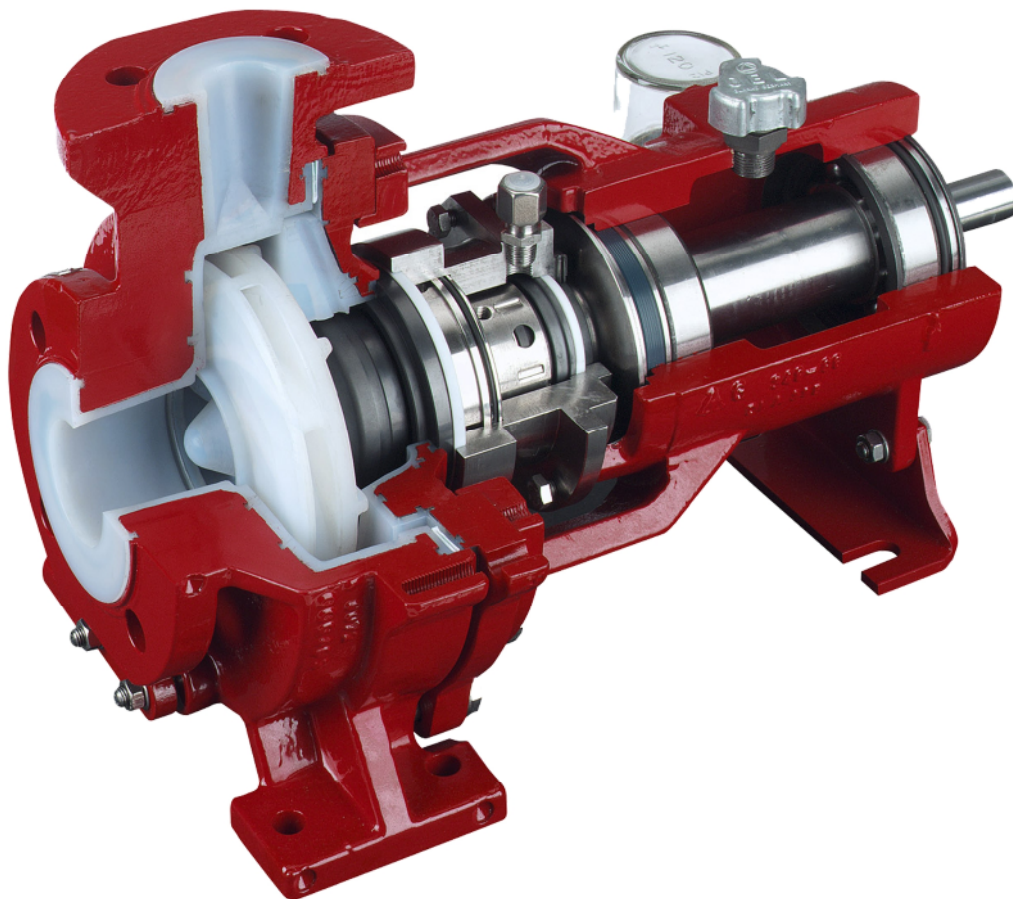


Series SCK

Mechanical Seal RG-4

stationary, double, liquid sealed



Keep for future use!

This operating manual must be strictly observed before transport, installation, operation and maintenance

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Relevant documents

- ◆ Operating manual SCK long-life grease and oil bath lubrication **9220-050-en**
- ◆ Operating manual mechanical seal of the manufacturer

1 Technical data

Manufacturer :

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 2006/42/EG: Gregor Kleining

Designation :

Series SCK mechanical seal:
 ◆ RG-4, stationary, double, liquid sealed

Materials :

Seal housing: Stainless steel
Wetted parts:
 Mechanical seal: SSiC, FKM, FFKM etc.,
 see also data sheet

Temperature range : see installation and operating manual SCK, Section 1.

Temperature classes : see installation and operating manual SCK, Section 2.6.7.

2 Safety, transport and storage

The relevant sections in the adjacent installation and operating manuals apply to safety, transport and storage.

This installation and operating manual is only valid in conjunction with the installation and operating manuals of

SCK long-life grease and oil bath lubrication
9220-050-en

2.1 Intended use

Double mechanical seals for plastic-lined pumps of the series SCK are suitable for the use of aggressive, toxic, pure and inflammable media.

The instructions contained in the operating manual or contractual documentation are to be observed, if necessary consult the manufacturer.

All the important features are documented in the data sheet included in the scope of delivery.

3 Product description

For a product description of the pump, see the installation and operating manual for the SCK series.

The **sectional drawing** shows a stationary, double mechanical seal RG-4, liquid sealed. See **Section 7**.

All components which come into contact with the process medium are either lined with plastic or are made of other resistant materials, e.g. silicon carbide.

4 Commissioning / Shutdown

4.1 Initial commissioning

See installation and operating manual for the series SCK.

4.2 Mechanical seals

The design and material combination are specified in the data sheet.



The proper condition of the components and the protective facilities must be ensured to prevent any risk from escaping medium.



The regulations and recommendations of the mechanical seal manufacturer must always be observed.

4.2.1 Use in an explosive area



Use in an explosive area means that only mechanical seals may be employed which permit observation of temperature.

The operating manual of the respective mechanical seal manufacturer is an integral part of this general operating manual.

This permits, amongst other things, the calculation of the expected surface temperature at the mechanical seal. The suitability for the permissible temperature class as per ATEX is hereby given.

CAUTION:

The permissible temperature class of the complete unit (pump, mechanical seal, coupling, motor) is determined by the lowest temperature class of the individual components.

Example: Pump **T4**, mechanical seal **T3**, coupling **T4**, motor **T4**

In both cases the unit may only be used in atmospheres which may ignite above the temperature class T3, i.e. >200 °C (>392°F).

4.2.2 Stationary, double mechanical seal RG-4, liquid sealed

A pump fitted with a double mechanical seal must not be filled with a product before the pressurisation system provided has been started up.

Otherwise damage could occur, e.g. opening of the wetted sealing gap, before start-up.

To guarantee safe operation, the pressure of the sealing medium must be 1-2 bar above the pressure of the process medium at the mechanical seal at Q=0 m³/h. To guarantee safe operation, the pressure of the sealing medium must be 1-2 bar above the pressure of the process medium at the mechanical seal at Q=0 m³/h. The required sealing pressure can be determined as follows:

2/3 of the delivery pressure at Q = 0 m³/h

- + supply pressure
- + 1 - 2 bar safety margin

The supply pressure is measured in bar at the pump suction nozzle. If no measuring point is available, the supply pressure can be calculated using the following formula.

Using the same formula, the delivery pressure at $Q=0 \text{ m}^3/\text{h}$ can be determined with the pump characteristic curve.

$$p \text{ (bar)} = \frac{H \text{ (mFS)} \times \rho \text{ (kg/dm}^3\text{)}}{10,2}$$

- p = supply pressure or delivery pressure
 H = supply height or delivery head
 ρ = density



Are the available connections correctly made?

SE - quench or sealing medium inlet

SA - quench or sealing medium outlet

See also sectional drawing in [Section 7.2](#)

5 Maintenance



The regulations of the mechanical seal manufacturer must always be observed.

See also the installation and operating manual for the SCK series.

It is important to replenish in good time any sealing liquid which has escaped and to monitor the sealing liquid pressure. The minimum sealing liquid pressure must never be undershot as long as the pump housing is under pressure (refer also to the description of the pressurisation system used and [Section 4.2.2](#))

If the sealing liquid pressure is too high, this indicates a defect in the mechanical seal even though the mechanical seal on the atmosphere side is completely tight. The pump must then be shut down so that no serious damage occurs. Substantial damage generally occurs if the aggressive process medium enters the pressurisation system as a result of a drop in the sealing liquid pressure to below the minimum pressure.

If there is a risk that, for example, pressure surges occur in the plant, precautions must be taken to prevent damage. To this end, for example, the sealing liquid pressure can be increased. However, this is only possible up to the pressure limit of the mechanical seal used.

5.1 Dismantling of a mechanical seal RG-4, liquid sealed

Dismantling can be checked using the sectional drawings in [Section 7](#) and [Section 9](#) of the installation and operating manual SCK as well as the components available.

4.3 Improper operation and their consequences (examples)



Improper operation, even for a short time, can result in serious damage to the unit.

In connection with explosion protection, potential sources of ignition (overheating, electrostatic and induced charges, mechanical and electric sparks) may result from these inadmissible modes of operation; their occurrence can only be prevented by adhering to the intended use.

For examples, see installation and operating manual SCK, [Section 6.6](#).

5.1.1 Dismantling of back plate, impeller and RG-4

- First of all relieve the mechanical seal by undoing the attachment screws **901/5**.
- Undo screws **901/6** and washers **554/6** of the bearing pedestal / back plate.
- Move the back plate almost up to the impeller with light hammer blows.
- Undo back plate (for instructions, see [Sections 4.2.1 and 7.7.4](#) in the installation and operating manual SCK).
- Move the back plate almost up to the impeller with light hammer blows.
- Bearing pedestal group 3:
 - ⓘ Labyrinth disc **555** must be secured with two bolts **prior** to the dismantling of the impeller. For this purpose there are 2 bores $\varnothing 5\text{mm}$ in the bearing pedestal. The double mechanical seal is relieved of pressure as a result. See Dismantling [in Sections 7.7.1 and 7.7.5](#) in the installation and operating manual SCK.
- Loosen impeller **230** with a strap wrench or assembly wrench. **Right-hand thread**. For assembly aid for impeller, see [Section 10.1](#) in the installation and operating manual SCK.
- With some pump the work sequence is to be repeated once or twice sizes so that the cup springs **950/1** can be completely relieved.
- Then completely remove the impeller **230**. Remove the mating ring **475/1** and the flat gasket **400/1**.
- Remove back plate (for sequence, see [Sections 4.2.1 and 7.7.4](#) in the installation and operating manual SCK) with centering ring **511**, O-ring **412/3**, seal face **472/1** and intermediate ring **509/1**.

- Pull the entire rotary ring carrier **483**, comprising the parts rotary ring carrier **485/1** (O-ring **412/5**, thrust ring **474**, spring **477/1**, and stud **560/1**) out of the seal housing **483**.

5.1.2 Dismantling of shaft sleeve

- Pull the shaft sleeve **524** with the rotating unit **470/1** which is still installed off the shaft.
- For changing the rotating unit, undo the setscrew **904/2** (depending on the design of the shaft sleeve) and pull it off the shaft sleeve **524**.
- Observe the operating manual of the mechanical seal manufacturer.
- Remove mating ring **475/2**.
- If plastic bearing points of the mating ring **475** or of the shaft sleeve **524** are destroyed, they can be renewed by the pump manufacturer.

5.2 Notes on assembly

- Only use original spare parts.
- Do not use any defective parts.
- The recommendations of the mechanical seal manufacturer are to be observed.
- Bearing pedestal group 3:
Always make sure that when installing the mechanical seal the labyrinth disc is secured by 2 bolts.
The bolts must be removed again after assembly of the impeller.
- The rotary ring carrier **485/1** must engage in the spring-type slotted pin **531/1**. Mark position beforehand.
- The seal face **472/1** must engage in the studs **560/1**. Mark position beforehand.
- In the case of the shaft sleeve made of Al₂O₃ the rotating unit **470/1** must be flush with the key **940/2** and tightened with the setscrew **904/2**. In the case of the shaft sleeve made of stainless steel the key is positioned firmly against one end.
- When pushing on the mating ring **475/1**, make sure that the position of the flat section matches that on the shaft.

6 Faults



Faults may result from inadmissible modes of operation. Such inadmissible modes of operation – even brief ones – may cause serious damage to the unit.

In connection with explosion protection, potential sources of ignition (overheating, electrostatic and induced charges, mechanical and electric sparks) can result from these inadmissible modes of operation; their occurrence can only be prevented by adhering to the intended use.

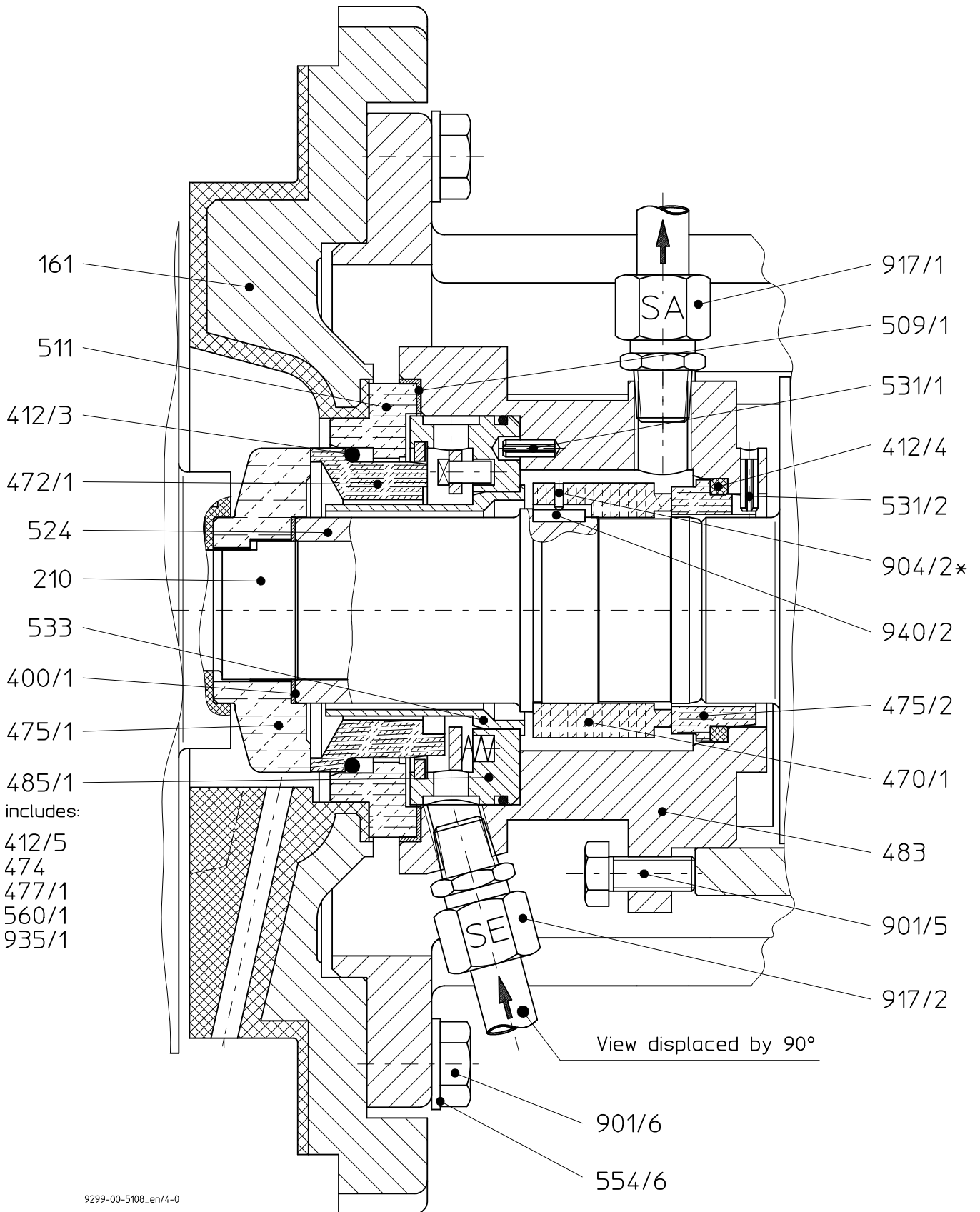
See also [Section 2.1](#).

Should there be any uncertainty about the remedy to be applied, please inquire at the in-house pump office or at the pump manufacturer's.

See also [Section 8](#) in the installation and operating manual of the SCK series.

7 Sectional drawing

7.1 Stationary, double mechanical seal RG-4, liquid sealed



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7.2 Legend

161	back plate	509/1	intermediate ring
210	shaft	511	centering ring
400/1	flat gasket	524	shaft sleeve
412/x	O-ring	531/x	spring-type slotted pin
470/1	rotating unit	901/5	hex. screw
472/1	seal face	904/2 *	setscrew
475/x	mating ring	917/x	screw-in pipe connector
483	seal housing	940/2	key
485/1	rotary ring carrier		
includes			
412/5	o-ring	SE=	Flushing inlet
474	thrust ring	SA=	Flushing outlet / venting connection
477/1	spring		
533	guide sleeve		
560/1	stud		
935/1	snap ring		
		*	Drilled during assembly only with shaft sleeves made of Al ₂ O ₃