

CR, CRI, CRN 1s, 1, 3, 5, 10, 15, 20 CR, CRN 32, 45, 64, 90, 120, 150

Double seal (tandem)

Installation and operating instructions



Original installation and operating instructions.

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Warning
Prior to installation, read these installation and operating instructions. Installation and operation must comply with local regulations and accepted codes of good practice.

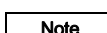
1. Symbols used in this document



Warning
If these safety instructions are not observed, it may result in personal injury.



Caution
If these safety instructions are not observed, it may result in malfunction or damage to the equipment.



Note
Notes or instructions that make the job easier and ensure safe operation.

2. General information

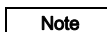
These installation and operating instructions are a supplement to installation and operating instructions for standard CR, CRI, CRN pumps, publication No 96462123, and for CRN-SF pumps, publication No 96530119.

3. Product description

This type of double seal consists of two shaft seals mounted in a tandem arrangement in a separate seal chamber.

The seal can be used in these cases:

- The pump is operating with a negative pressure (vacuum).
- The pump is pumping crystallised liquids (e.g. sugar).
- The pump is pumping hardening liquids (oil products).
- The liquid temperature is up to +150 °C.



Note *Only Grundfos cartridge seals can be used.*

If the primary seal is leaking, the pumped liquid will be flushed away by the flushing liquid.

4. Applications

The seal shaft is available for the following Grundfos pumps:

Pump type	CR 1s	CR 1	CR 3	CR 5	CR 10	CR 15	CR 20	CR 32	CR 45	CR 64	CR 90	CR 120	CR 150
CR	•	•	•	•	•	•	•	•	•	•	•	•	•
CRI	•	•	•	•	•	•	•						
CRN	•	•	•	•	•	•	•	•	•	•	•	•	•

5. Flushing liquid

The flushing liquid should be selected according to the application and must not chemically attack the material of the pump and the shaft seal.

The flushing-liquid flow should also be matched to the application (recommended flow rate 25-200 l/h).



Warning
Never connect the flushing-liquid supply directly to the public water supply system. Local regulations must be observed.

It is possible to connect the seal chamber to a separate flushing-liquid tank. In such cases, the manufacturer's installation and operating instructions must be observed.

5.1 Maximum flushing-liquid pressure and temperature

Due to the shaft seal design, the pressure in the seal chamber must not exceed 25 bar. The pressure of the flushing liquid must always be lower than the pressure of the pumped liquid.

The maximum temperature of the flushing liquid depends on the rubber material of the shaft seal.

Shaft seal	Maximum temperature [°C]
EPDM	+120
FKM	+90
FFKM	+120
FXM	+120

6. Flushing-liquid connections

Legend to the letters used in the drawings:

Pos. A = pumped liquid.

Pos. C/D = outlet, flushing liquid.

Pos. E = inlet, flushing liquid, CR, CRN, CRI 1-20 and CR, CRN 120-150 (C/D for CR and CRN 32-90).

Figures 4, 5 and 6 show seal chamber connections for flushing liquid. They also show where to fit the sensor (pos. A), if retrofitted.

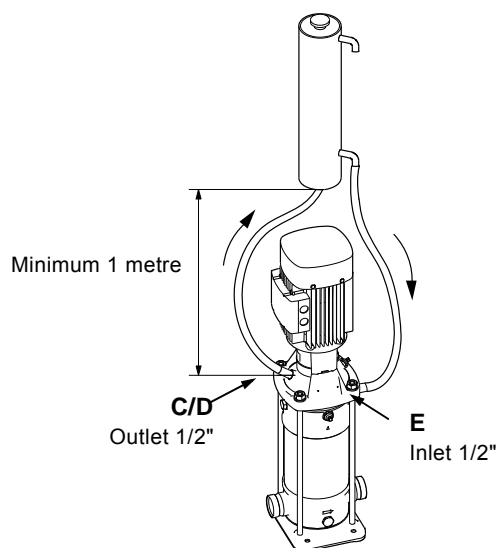


Fig. 1 Tandem seal arrangement with circulating flushing liquid

In fig. 1, the flushing liquid circulates between an elevated tank and the pump by natural circulation. Heated flushing liquid rises from the seal chamber to the tank where it cools down.

The cooled-down flushing liquid returns to the seal chamber.

At high temperatures, the circulation of flushing liquid through the seal chamber cools the seal faces of the shaft seal and reduces noise.

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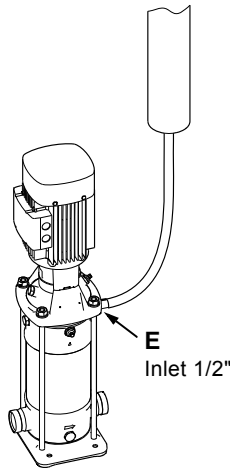


Fig. 2 Tandem seal arrangement with flushing-liquid supply

In fig. 2, the flushing liquid enters the seal chamber via a pipe from an elevated tank. The flushing liquid in the seal chamber prevents leakage of pumped liquid to the environment. No heat is dissipated from the system.

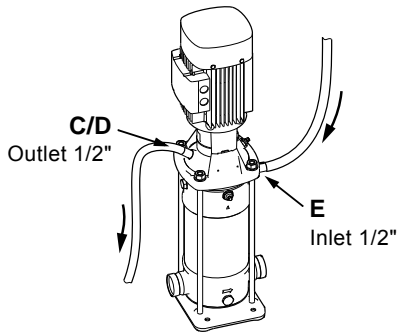


Fig. 3 Tandem seal arrangement with flushing liquid connected to a drain

In fig. 3, the flushing liquid enters the seal chamber via a pipe from a central flushing system. In case of seal leakage, the pumped liquid is washed away to the drain by the flushing liquid.

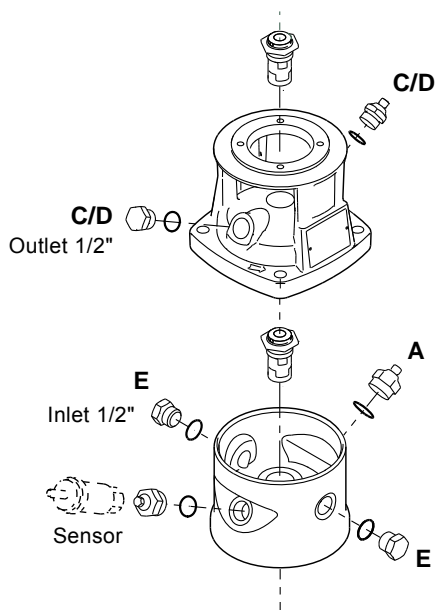


Fig. 4 Seal chamber CR, CRI, CRN 1s, 1, 3, 5

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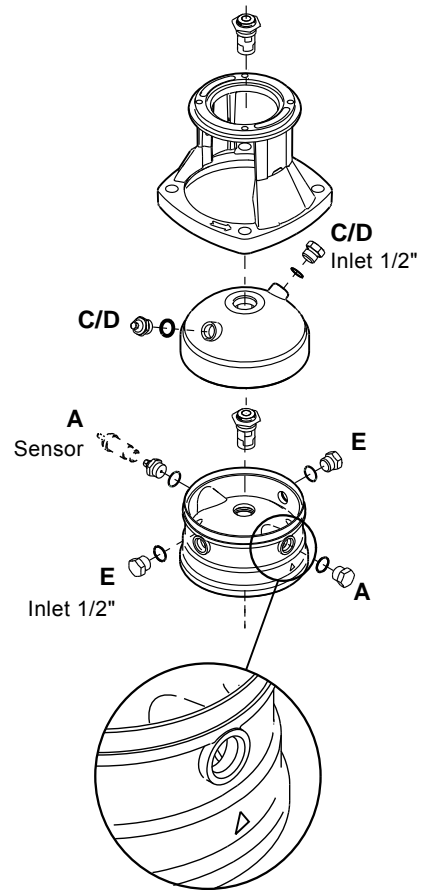


Fig. 5 Seal chamber CR, CRI, CRN 10, 15, 20



Warning

If the flushing-liquid supply pipe is inserted more than 9 mm into the seal chamber, it will damage the shaft seal. This applies to both inlet and outlet.

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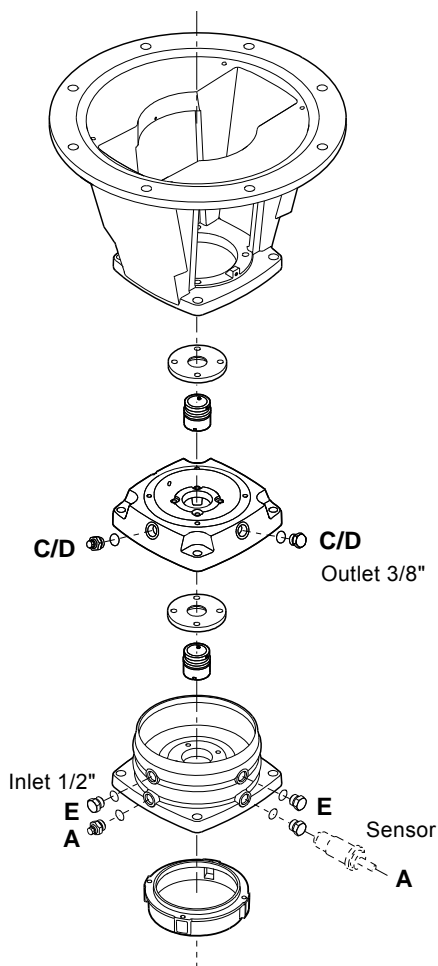


Fig. 6 Seal chamber CR, CRN 32, 45, 64, 90, 120, 150

7. Startup

See also installation and operating instructions for the standard pump.

Caution *Before startup, the seal chamber and the pump must be completely filled with liquid and vented.*

1. Start the pump, and check the direction of rotation.
See the correct direction of rotation on the motor fan cover.

Caution *The seal chamber must always be filled with the flushing liquid during operation. Risk of dry-running.*

8. Operation

To ensure optimum function and performance, make sure that the flow of flushing liquid is always sufficient, and check that the elevated tank never runs dry of flushing liquid.

Depending on the pumped liquid, the quality of the flushing liquid must be checked at regular intervals to ensure optimum operation.

8.1 Frost protection and draining of liquid



Warning

Pay attention to the directions of the vent holes, and take care to ensure that the escaping liquid does not cause injury to persons or damage to the motor or other components.

When handling hot or hazardous liquids, special attention should be paid to the risk of personal injury.

Pump

See the installation and operating instructions for the standard pump.

Seal chamber

Drain the seal chamber by loosening the lower plug (pos. E). (Pos. C/D for CR and CRN 32-90.)

9. Dimensions

Pump type	Additional height of seal chamber [mm]
CR, CRI, CRN 1s, 1, 3, 5	108
CR, CRI, CRN 10, 15, 20	90
CR, CRN 32, 45, 64, 90	140
CR, CRN 120, 150	111

10. Disposal

This product or parts of it must be disposed of in an environmentally sound way:

1. Use the public or private waste collection service.
2. If this is not possible, contact the nearest Grundfos company or service workshop.

Subject to alterations.

TM04 4081 07/09

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