Not Binding Operating and Assembly Instruction
Progressive Cavity Pump

This operating and assembly instruction is only for general information.

Type
BN 025-12 up to 1-6L
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1.1 General notes

- Always keep the operating and maintenance instructions close by the machine.
- If problems cannot be solved with reference to the operating and maintenance instructions, please contact the manufacturer.

Observe the following points in addition to these operating and maintenance instructions:
- Prohibition, warning and mandatory signs, warning notes on the machine
- Relevant laws and ordinances
- Statutory provisions on accident prevention
- Corresponding harmonised standards and regulations

1.2 Safety and warning notes

- Comply with safety and warning notes for safe and efficient use of the product.

Signal words for specific dangers and (possible) consequences are explained below. These are supplemented by symbols (pictograms) if necessary.

1.2.1 Warning notes

<table>
<thead>
<tr>
<th>Signal Word</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NOTICE</strong></td>
<td>Caution for machine! Possible danger. Material damage can occur.</td>
</tr>
<tr>
<td><strong>CAUTION</strong></td>
<td>Caution for people and machine! Possible danger. Minor injury or damage to property can occur.</td>
</tr>
<tr>
<td><strong>WARNING</strong></td>
<td>Warning for people! Possible danger. Death or serious injury can occur.</td>
</tr>
<tr>
<td><strong>DANGER</strong></td>
<td>Danger for people! Possible danger. Immediate risk of severe or fatal injury.</td>
</tr>
</tbody>
</table>

1.2.2 Danger symbols

- Warning: Suspended load.
- Warning: Dangerous electrical voltage.
1.2.3 Information symbols

NOTICE

Ensure environmental protection.
Wear eye protection.

- Instruction to act/take measures
- List item

1.3 Dangers that can be caused by the machine

Seepex machines are built in accordance with the state of the art.
Nevertheless, there is a residual risk, because the machine works with:
- Mechanical movements that pose a danger
- Electrical voltages and currents

We have used design measures and applied safety technology to minimise the risk to the health of people posed by this danger.

1.4 Qualification of the personnel

This handbook is intended for:
- Owner
- Operators
- Setters
- Maintenance personnel

1.5 Authorised people

People authorised to undertake operation, set up and maintenance are instructed and trained specialists employed by the owner/manufacturer.

Detailed technical knowledge is essential for performing any work on the machine.

The owner is responsible for:
- Personnel training
- Compliance with safety regulations
- Compliance with operating and maintenance instructions

The operator must:
- Have received instruction
- Read and understood the relevant parts of the operating instructions before starting work
- Know the safety devices and regulations
1.5.1 Tasks and information for the owner/operators

- Regularly check and maintain the machine, replacing all parts in good time which no longer guarantee safe operation.
- It is essential to comply with the procedure described in the operating instructions for shutting down the machine.
  - On completion of work, attach all safety and protective devices and make sure they are functioning.

1.5.2 Safety notes for maintenance, inspection and assembly work

- Do not work on the machine or system unless it is stationary and depressurised.
- Switch off the master switch and pull out the power plug before starting work on live components.
- Comply with the procedure for shutting down the machine as described in the Shut-down chapter.
- Decontaminate (de-toxify) machines that are used for pumping media that can be harmful to health.
- Refer to the Initial start-up chapter before repeated start-up of the machine.

1.6 Personal protective equipment

- Wear personal protective equipment and/or additional equipment for your own safety.
- Avoid/limit risks by the use of collective technical protective equipment or by organisational measures at work.

1.7 Safety and protective devices

- Prior to start-up, bolt seepex machines onto a concrete foundation so as to ensure stability.
- Starting and stopping devices must be clearly recognisable. Take appropriate measures to avoid defects.
  - No protective device is necessary for checking and/or setting the shaft seal.
  - Hot surfaces are identified with a danger symbol on the machine.

1.8 Foreseeable misuse

Serious personal injury and damage to property can be caused by:

- Incorrect use
- Incorrect installation or operation of the machine
- Impermissible removal of necessary protective equipment
1.9 Designated use

- Only use seepex machines if they are in perfect condition and in compliance with the operating and maintenance instructions.
- Do not start up the machine unless the system in which the machine is installed is in accordance with the provisions of the applicable guidelines and statutory regulations.
- Equivalent sustained sound pressure level at workplaces of operating personnel C75 dB (A). Cavitation-free operation of the machine and screwed connection to concrete foundation are essential.
- seepex machines are components that are exclusively intended for pumping media in accordance with the technical data (→ chapter 3). Written approval must be obtained from the manufacturer before other media are pumped.
- Refer to the information on the type plate and the operating instructions for technical data (→ chapter 3), and comply with them.
- The operating instructions are assigned to the seepex machine based on the commission number.

1.10 Warranty

- Warranty in accordance with our terms and conditions of delivery and order confirmation.
- It is a condition of the machine warranty that the machine must correspond to the listed operating instructions in accordance with the type plate/data sheet.
- All wearing parts are excluded from the warranty.
- These operating instructions are subject to copyright. Reproduction is not permitted and will be punished. Contravention will be pursued through the courts.

Fig. 1-1 Similar illustration
2.1 General description

seepex pumps are members of the group of rotating displacement pumps.

- Characteristic features
  - Special configuration/arrangement of the rotor and stator pumping elements.
  - Motion sequence

2.2 Mode of action and pumping principle of the seepex pump

- Sealing bands are produced through geometric design/contact of both conveying elements.
- Sealing bands ensure a perfect fit between the suction and pressure side.

Result:
- Increased pump suction.
- Higher pressure build-up independent of speed possible.

2.3 Constructive design

<table>
<thead>
<tr>
<th>No.</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANT</td>
<td>Drive</td>
</tr>
<tr>
<td>200</td>
<td>Lantern</td>
</tr>
<tr>
<td>307</td>
<td>Plug-in shaft</td>
</tr>
<tr>
<td>400</td>
<td>Coupling rod</td>
</tr>
<tr>
<td>SEA</td>
<td>Shaft seal</td>
</tr>
<tr>
<td>500</td>
<td>Suction casing</td>
</tr>
<tr>
<td>600</td>
<td>Rotor</td>
</tr>
<tr>
<td>RTE</td>
<td>Rotating unit</td>
</tr>
<tr>
<td>601</td>
<td>Stator</td>
</tr>
<tr>
<td>700</td>
<td>Pressure branch</td>
</tr>
</tbody>
</table>
3.1 Data sheet

3.2 Characteristic Curves

3.3 Declaration

- Data sheet, characteristic curves and declarations are commission specific documents and not part of this not binding operating and assembly instruction.
4.1 Safety

**CAUTION**

<table>
<thead>
<tr>
<th>Damage to property/injuries due to incorrect transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slight injury or damage to property can occur</td>
</tr>
<tr>
<td>- Comply with the safety notes and transport notes on the packaging.</td>
</tr>
<tr>
<td>- Use suitable means of transport, lifting devices and tools.</td>
</tr>
<tr>
<td>- Use protective equipment.</td>
</tr>
</tbody>
</table>

4.2 Transport

4.2.1 Dimensions, weights and center of gravity

- Note the dimensional drawing (→ chapter 5.6).

4.2.2 Symbols

- Meaning of symbol

![Top](top_icon.png)
![Fragile item](fragile_icon.png)
![Against moisture protect](moisture_icon.png)
![Centre of gravity](gravity_icon.png)
![Lashing points](lashing_icon.png)

4.2.3 Sling points (AP) for lifting devices

**WARNING**

<table>
<thead>
<tr>
<th>Warning of suspended load.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death of serious injury can occur.</td>
</tr>
<tr>
<td>- Use the lashing points (AP) for lifting devices.</td>
</tr>
<tr>
<td>- Note the centre of gravity (→ dimensional drawing, chapter 5.6).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lifting machine</th>
<th>Industrial trucks</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="lifting_machine.png" alt="Lifting machine" /></td>
<td><img src="industrial_trucks.png" alt="Industrial trucks" /></td>
</tr>
</tbody>
</table>

4.2.4 Unpacking the machine

- Comply with the symbols and notices on the packaging.
- Remove the screwed connection between the machine and packaging.
- Remove the machine with a lifting machine/industrial truck.

4.3 Temporary storage/Corrosion protection

- All seepex machines have corrosion protection applied as standard prior to transport.
4.4 Disposal

**NOTICE**

**Damage to property if corrosion protection is missing**

Property damage can occur due to corrosion.

- Temporary storage must be in a dry, enclosed, frost-free room in order to provide protection against ambient influences.
- Contact seepex regarding the necessary corrosion protection for temporary storage.

**NOTICE**

**Environmental protection**

Material damage can occur.

- Drain the pumping medium and dispose of it in accordance with the regulations.
- Dispose of the machine with regard to its composition and existing regulations.
5.1 Mounting tools / lifting gear

![CAUTION]

**Pump falling over.**
Slight injury or damage to property can occur.
- Adhere to the lifting tool’s starting point.
- Pay attention to the dimensions, weight and centre of gravity of the pump.
- Use suitable mounting tools/lifting gear.

5.2 Space requirement

The required space should be determined by considering the following factors:
- Dimensions and weight.
- Requisite transport and lifting equipment.
- Pipe routing – dismantling (dimension for stator replacement).

5.2.1 Dimension for stator replacement (P)

- Refer to the dimensional drawing.

5.3 Assembly of the complete mounted pump

- Assemble according to technical data (→ chapter 3.).
- Note dimensional drawing.

**Tension-free mounting of the pump**

- Balance unevenness with suitable supports.
- Applies to mounting on foundations/load-bearing elements.
- Total areas of all pump bearing areas are resting on the surface.

**Correct position of the drives**

- All drives are set up ready for operation and mounted.
- Correct displacements of the drive during transport/installation of the pump by adjusting/fixing the drive.

![CAUTION]

**Safety protection equipment.**
Slight injury or damage to property may result.
- Connect safety protection equipment and activate.
5.4 Power supply of the seepex pump

![DANGER]

Supply voltage and power frequency.
Death or serious injury will result.
- Heed type plate on the pump.
- Pay attention to manufacturer’s directions (→ chapter 13.).
- Pay attention to safety regulations.

5.5 Pipelines

5.5.1 Suction and pressure connection
- Refer to the dimensional drawing for the position, nominal width and standard.
- Note direction of rotation/flow direction.

5.5.2 Pipeline dimensions
- Adhere to specifications regarding pressure in the pressure respectively suction connection.
- Note technical data (→ chapter 3.).
- Nominal width of suction pipe = nominal width of suction connection of pumps.

5.5.3 Residue-free pipelines

![NOTICE]

Damage to property through assembly residue.
No claims under guarantee if violated.
- Keep all pipe work free of foreign objects.
- Remove weld spatters, screws, steel chips etc.

5.5.4 Tension-free assembly
- Assemble pipelines and other components in a tension-free manner on the pump.
Commissioning / De-commissioning

6.1 Commissioning report

Send commissioning report online to www.seepex.com

Must be specified with every order!

<table>
<thead>
<tr>
<th>Commission</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From:

Contact person: .............................................
Tel.: ............................................................
Fax: ............................................................
E-mail: ...........................................................

Customer Service: seepex GmbH
Postfach 10 15 64
D-46215 Bottrop
service@seepex.com

Germany
Phone: +49 2041.996-231
Fax: +49 2041.996-431

Rest of Europe
Phone: +49 2041.996-224
Fax: +49 2041.996-424

Outside Europe
Phone: +49 2041.996-120
Fax: +49 2041.996-432

Address of plant:

Delivery date: ____________________________
Date of installation: ______________________
Assembly check carried out on: _______________

Please enter operational data:

Conveying liquid:

Temperature:

Fuse level/motor protection or power consumption:

Frequency control

☐ no

☐ yes If yes:

☐ Supplied by seepex

☐ Supplied by customer

Frequency:
Speed:
Power consumption:

Place, date Signature / company stamp
6.2 Measures before commissioning

- Note the technical data (→ chapter 3.).

6.2.1 Checking pipelines

- Check flange screwed connections (SCH).

- Check threaded connections (G).

**NOTICE**

Ensure the liquid can flow through without obstruction.
Malfunction and/or irreparable damage to the pump.
- Open all shut-off elements before switching on the pump.

6.2.2 Protective devices on the pump

**DANGER**

Missing protective device.
Danger of pulling in and crushing.
- Equip the pump with a protective device. Protective devices provided for preventing contact with surfaces or moving parts must be regarded as suitable if contact is not possible in a test involving a test finger, with regard to the penetration possibility, strength and shock resistance.
- Comply with national protection regulations.
- In pumps with an open suction flange/feed hopper, attach touch protection. These safety clearances protect those persons who are attempting to reach danger areas without additional help and under the conditions defined for various situations of reaching up, reaching under or reaching through.

In shaft seals, touch protection is only necessary if there are components on the rotating shaft.

6.2.3 Electrical/hydraulic connections

**DANGER**

Dangerous voltage.
Death or serious injury can occur.
- Note safety regulations.
- Disconnect motor from all sources of energy.
- Secure electrical connections against restarting.
6.2.4 Direction of rotation check

- The pump direction of rotation determines the flow direction of the pumping medium.
- Note the direction of rotation arrow on the type plate.

6.2.5 Additional devices - optional

- Refer to additional devices (→ chapter 12.1).

6.3 Initial commissioning/repeated commissioning

- Start up the pump.

**NOTICE**

Dry running of the pump.
Malfunction and/or irreparable damage to the pump.
- Fill the suction casing with liquid in order to lubricate the pumping elements.

6.3.1 Avoid dry running of the pump

**NOTICE**

High temperature between rotor and stator.
Stator material burned. Complete failure of the pump.
- Make sure that the suction-side conveying capacity does not cavitate.
- If this cannot be guaranteed on the machine side, assemble a seepex dry running protection (TSE).

6.3.2 Pressure in the suction and pressure connection

**CAUTION**

High pressure.
Malfunction and/or irreparable damage to the shaft seal or pump.
- Maintain pressure in the suction connection in accordance with the technical data (→ chapter 3.).

**Recommendation:**
- Assemble an oil-filled contact pressure gauge to monitor and deactivate the pump.
6.4 De-commissioning

Protect the pump and additional devices against the following:

- Frost
- Deposit of solids
- Sedimentation from the liquid
- Corrosion of parts that come into contact with the medium

6.4.1 Switching off the pump

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
</thead>
</table>

Dangerous voltage.
Death or serious injury can occur.

- Note safety regulations.
- Disconnect motor from all sources of energy.
- Secure electrical connections against restarting.

6.4.2 Emptying the pump

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
</table>

Liquid draining out.
Minor injury or damage to property can occur.

- Wear suitable protective clothing.
- Refer to the technical data (→ chapter 3.) for the corresponding configuration of the pump housing.

To drain the pump:

- If the pump housing has screwed plugs, remove the screwed plugs.
- Drain using a connection branch (suction casing, pressure branch) if the pump housing is coated or the housing does not have screwed plugs.
- Drain the residual liquid from the pump housing.
- Drain the pipelines on the suction and pressure sides, or shut off behind the pump connections.
6.4.3 Removing the pump

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
</table>
| Risk of pump tipping or falling.  
Death or serious injury can occur. |
| - Support the drive unit to guarantee stability. |

Pipeline dismantling

- Remove flange bolts (SCH) and flange seals (DFL).  
  with/without base plate
- Remove bolts (SCH) from the pump feet.

Pipeline dismantling

- Remove threaded connections (G).  
  with/without base plate
- Remove bolts (SCH) from the pump feet.

6.4.4 Preservation/storage of the pump

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
</table>
| Damage to property due to lack of corrosion protection.  
Property damage can occur due to corrosion. |
| - Contact seepex to discuss suitable preservation measures. |
|       - State the commission number of the pump. |
7.1 Preventive measures

The maintenance personnel must have these operating instructions, follow them and also require corresponding qualifications.

DANGER

Dangerous voltage.
Death or serious injury can occur.

- Note safety regulations.
- Disconnect pump from all sources of energy.
- Secure electrical connections against restarting.

7.1.1 Pump down-time

NOTICE

Pump down-time.
Production failure due to wear.

- Acquisition of a set of wearing parts and a set of gaskets.

7.2 Lubrication

<table>
<thead>
<tr>
<th>No.</th>
<th>Denomination</th>
<th>Lubricant</th>
<th>Lubricant change in operating hours</th>
<th>Fill volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pin joint</td>
<td>seepex special grease *</td>
<td>10000 h</td>
<td>*</td>
</tr>
<tr>
<td>2</td>
<td>Pin joint</td>
<td>seepex special grease *</td>
<td>10000 h</td>
<td>*</td>
</tr>
<tr>
<td>3</td>
<td>Drive</td>
<td>Refer to manufacturer's documentation (chapter 13._)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rotor/stator</th>
<th>Conveying medium</th>
<th>---</th>
<th>---</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaft seal</td>
<td>Conveying medium</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

* Type and filling quantities are commission specific information.
7.2.1 Joint grease

### NOTICE

**Other grease types.**
Malfunction and/or irreparable damage to the joints or the pump.

- Exclusively use seepex special grease.

---

7.3 Inspection

<table>
<thead>
<tr>
<th>Component</th>
<th>Interval</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joints</td>
<td>Every 10,000 operating hours</td>
<td>Renew joint grease</td>
</tr>
<tr>
<td>Stator</td>
<td>Every week</td>
<td>Visual check for leaks</td>
</tr>
<tr>
<td>Shaft seal</td>
<td>Every week</td>
<td>Visual check for leaks</td>
</tr>
<tr>
<td>Drive unit</td>
<td>Every 3000 operating hours, at least every 6 months</td>
<td>Comply with manufacturer's documentation</td>
</tr>
</tbody>
</table>
Malfunctions, causes, rectification

Refer to technical data (chapter 3.) for application range of the pump.

<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Causes</th>
<th>Rectification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump is not sucking</td>
<td>Pressure head is not reached</td>
<td>Apply lubricant (liquid soap) between stator/rotor too great.</td>
</tr>
<tr>
<td>Pump pumping unevenly</td>
<td>Pump does not start up</td>
<td>Incorrect direction of rotation. Check direction of rotation and swap over motor connections if necessary.</td>
</tr>
<tr>
<td>Conveying capacity is not achieved</td>
<td>Pump does not pump</td>
<td>Suction pipe or shaft seal leaking. Eliminate leaks.</td>
</tr>
<tr>
<td>Pressure head is not reached</td>
<td>Pump is loud when running</td>
<td>Suction head too great. Check the suction head, if necessary increase pipe cross section on suction pipe and use a larger filter, open suction-side valve fully.</td>
</tr>
<tr>
<td>Pump does not pump</td>
<td>Motor gets too hot</td>
<td>Viscosity of conveying product too great. Check/adapt (data sheet).</td>
</tr>
<tr>
<td>Pump is loud when running</td>
<td>Premature stator wear</td>
<td>Pump rotation speed incorrect. Correct rotation speed (data sheet).</td>
</tr>
<tr>
<td>Motor gets too hot</td>
<td>Shaft seal is leaky</td>
<td>Avoid air bubbles in the conveying product.</td>
</tr>
<tr>
<td>Premature stator wear</td>
<td>Static friction between stator/rotor too great.</td>
<td>Pressure head too great. Check pressure head with pressure gauge, reduce pressure head by using larger pressure pipe crossed section or shortening the pressure pipe.</td>
</tr>
<tr>
<td>Shaft seal is leaky</td>
<td><strong>X</strong></td>
<td><strong>X</strong></td>
</tr>
<tr>
<td>Static friction between stator/rotor too great.</td>
<td><strong>X</strong></td>
<td><strong>X</strong></td>
</tr>
</tbody>
</table>
## Malfunctions, causes, rectification

<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Causes</th>
<th>Rectification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump is not sucking</td>
<td></td>
<td>Reduce rotation speed for high-viscosity media, risk of cavitation.</td>
</tr>
<tr>
<td>Pump pumping unevenly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conveying capacity is not achieved</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressure head is not reached</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pump does not start up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pump seized / pump does not pump</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pump is loud when running</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor gets too hot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Premature stator wear</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shaft seal is leaky</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **X** Rotation speed too high.  
  Reduce rotation speed for high-viscosity media, risk of cavitation.

- **X** Joint play too large.  
  Check mounting of coupling rod bushing.

- **XX** Foreign objects in pump.  
  Dismantle pump, remove foreign bodies, replace defective parts.

- **XX** Stator/rotor worn.  
  Dismantle pump and renew defective parts.

- **XX** Joint parts worn.  
  Renew joint parts, use seepex pin joint grease.

- **XX** Suction pipe blocked.  
  Clean the suction pipe.

- **XX** Temperature of pumping liquid too high.  
  Check temperature, use an undersize rotor.

- **XX** Gland packing too firm/ worn.  
  Loosen packing gland or tighten. Renew unusable packing rings.

- **XX** Solid content and/or grain size too great.  
  Reduce pump speed, install screen with permitted mesh width. Increase liquid proportion.

- **XX** Sedimentation/gumming of solids when pump stationary.  
  Rinse through and clean the pump immediately.

- **XX** Conveying product hardens when the temperature drops below a certain limit.  
  Heat the pump.

- **XX** Stator swollen and unable to withstand conveying product.  
  Select a suitable stator material, use an undersize rotor.

- **XX** Bearings in pump drive housing or drive unit defective.  
  Renew bearings.

- **XX** Mechanical seal defective.  
  Check sliprings and O-rings for wear/resistance, renew if necessary.
9.1 Pump Dismantling/Reassembly

Range: BN
Size: 025-12 up to 1-6L

9.1.1 Preparing the pump for dismantling

![Danger Sign]

**DANGER**

- Dangerous voltage.
  - Death or serious injury can occur.
  - Note safety regulations.
  - Disconnect motor from all sources of energy.
  - Secure electrical connections against restarting.

- Empty pipelines.
- Allow pipelines to cool down.
- Remove pipeline connections (suction side/pressure side).
- Note decommissioning (→ chapter 6.4).

![Warning Sign]

**WARNING**

- Risk of pump tipping or falling.
  - Death or serious injury can occur.

- Fasten the lantern (200) to secure the pump.

9.1.2 Dismantling

9.1.2.1 Pressure branch (700) - Dismantling

- Prop up stator (601) with a support (S).
- Remove screw fitting (604, 606).
- Remove pressure branch (700).
- Remove tie bolt (602).
9.1.2.2 Stator (601) - Dismantling

- Raise/move splash ring (310).
- Remove the plug-in shaft pin (309).
- Insert tool (WS).
- Turn tool (WS) upwards.

![Tool (W2/chain wrench)]

- Add lubricant (GM) to the opening on pressure branch side between the rotor (600) and the stator (601).
- Turn the stator (601) in the “leftt” rotating direction and remove.
  - Use tool (W2).
- Prop up the rotor (600) with support (S).

9.1.2.3 Suction casing (500) - Dismantling

- Provide rotor (600) with protective cover (SH).
- Prop up rotor (600) with support (S).
- Dismantle the suction casing (500).
- Remove tool (WS).

9.1.2.4 Rotating unit (RTE) - Dismantling

![Tool (W10/dismantling tool)]

- Remove the flush connection (SSÜ) on the shaft seal casing (SEA).

- Assemble tool (W10/dismantling tool).
9.1.2.5 Rotor (600), coupling rod (400), plug-in shaft (307) - Dismantling

➤ Joint (G) dismantling note rotating unit - individual parts (→ chapter 9.2).
9.1.2.6 Lantern (200)/drive (ANT) - Dismantling

**CAUTION**

**Falling or tilting drive.**
Slight injury can occur.
- Secure the drive (ANT).

- Remove the screw fitting (210, 212, 213).
- Remove the drive (ANT).

9.1.3 Reassembly

**WARNING**

**Risk of pump tipping or falling.**
Death or serious injury can occur.
- Fasten the lantern (200) to secure the pump.

9.1.3.1 Lantern (200)/drive (ANT) - Reassembly

- Clean the flange bearing surfaces (FLS), bolt circle (ZD) and the output shaft of the drive unit (ANT).
- Mount the drive (ANT) to the lantern (200) with screw fittings (210, 212, 213).

9.1.3.2 Rotor (600), coupling rod (400), plug-in shaft (307) - Reassembly

- Joint (G) reassembly note rotating unit - individual parts (→ chapter 9.2).

9.1.3.3 Rotating unit (RTE) - Reassembly

- Slide on shaft seal casing (SEA).
  - Note reassembly shaft seal (→ chapter 9.4).
- Moisten splash ring (310) and plug-in shaft (307) with antiseize graphite petroleum.
- Slide splash ring (310) onto plug-in shaft (307).
  - Observe fitting position of splash ring (see lettering).
9.1.3.4 Suction casing (500) - Reassembly

- Apply antiseize graphite petroleum to the output shaft of drive (ANT).
- Slide on rotating unit (RTE).

with flush connection
- Mount the flush connection (SSÜ).

9.1.3.5 Stator (601) - Reassembly

- Provide rotor (600) with protective cover (SH).
- Prop up rotor (600) with support (S).
- Slide on casing gasket (501).
- Assemble suction casing (500) and adjust.
  - Use spirit level (W).
- Remove protective cover (SH).

- Insert tool (WS).
- Turn tool (WS) down.

- Moisten outer surface of the rotor (600) with lubricant (GM).
- Moisten inner surface of the stator (601) with lubricant (GM).
- Prop up stator (601) with support (S).
- Turn stator (601) in the "right" rotating direction and slide onto rotor (600).
  - Use tool (W2).
- Remove tool (WS).
- Slide in plug-in shaft pin (309).
Pay attention to the position of the splash ring (310).

Insert the splash ring collar at a distance of 0.5 mm from the lantern (200).

9.1.3.6 Pressure branch (700) - Reassembly

Prop up stator (601) with a support (S).

Insert tie bolts (602) loosely into the lantern (200).

Push pressure branch (700) on to the stator (601).

Insert tie bolts (602) loosely in the pressure branch (700).

Remove the support (S).

Mount screw fitting (604, 606).

Tighten tie bolts (602) equally.
9.2 Rotating unit individual parts

9.2.1 Dismantling

9.2.1.1 Holding band (406) - dismantling

**CAUTION**

_Danger of injury._
Parts might be thrown out.

- Wear safety glasses.
- Detach holding band loop (SCL).
  - Use suitable tool (WM).
- Push out parts of holding band loop (SCL).
- Remove holding band (406).

- Tool (W15/mounting plate)
  - Pull back universal joint sleeve (405).
  - Secure tool (W15).

**Dismantling/reassembly**

9.2.1.2 Retaining sleeve (401) - dismantling

- Knock back retaining sleeve (401).
  - Use suitable tool (WM).

9.2.1.3 Detach joint

- Eject coupling rod pin (402)
- Remove coupling rod (400).

- Tool (W4/assembly mandrel)
  - Knock out guide bushings (403) using tool (W4).
9.2.2 Rotating unit (RTE) - prepare individual parts for reassembly

9.2.2.1 Rotor (600)

- Remove any damage.
- Clean rotor (600).

---

Tool (W4/assembly mandrel)

- Press in guide bushings (403) (depth = 2/3).
  - Use tool (W4).

9.2.2.2 Coupling rod (400)

- Clean coupling rod (400).
- Check bore head for wear.
  - If wearing is detec on the bore head, renew coupling rod (400).

9.2.2.3 Plug-in shaft (307)

- Remove any damage.
- Clean rotor (600).

---

Tool (W4/assembly mandrel)

- Press in guide bushings (403) (depth = 2/3).
  - Use tool (W4).

9.2.3 Rotating unit (RTE) - individual parts - reassembly

NOTICE

Malfunction of the joints.
Malfunction and/or destruction of joints.
- Replace coupling rod pins (402) and guide bushings (403) jointly.

9.2.3.1 Coupling rod (400) - reassembly

- Slide the universal joint sleeve (405) and holding bands (406) onto coupling rod (400).
- Adapt diameter and width of the holding band to the universal joint sleeve.
- Fill the joint head with seepex joint grease.
Rotors (600)
- Insert coupling rod pins (402).
- Slide on retaining sleeve (401).
- Connect rotor/coupling rod.

Plug-in shaft (307)
- Insert coupling rod pins (402).
- Slide on retaining sleeve (401).
- Connect plug-in shaft/coupling rod.

9.2.3.2 Retaining sleeve (401) - reassembly

- Tool (W4/assembly mandrel)

- Knock back retaining sleeve (401).
  - Use tool (W4).

- Secure retaining sleeve (401) in a displaced manner (2x180°).
  - Use suitable tool (WK).
9.2.3.3 Universal joint sleeve (405) - reassembly

- Moisten the surface of coupling rod (400) / inner surface of universal joint sleeve (405) with joint grease (maintenance chapter 7.).
- Slide on universal joint sleeve (405).

- Remove air from the inside of the joint.
  - Use suitable tool (WS).

- Assemble the holding band.
  - Holding band assembly (chapter 9._).
9.3 Holding band - assembly

9.3.1 Prepare the holding band

➢ Only use prefabricated double-band holding bands.

9.3.2 Check the holding band

- Bent-over holding band (HBD) is in contact with holding band loop (SCL) to avoid damaging universal joint sleeve.

➢ Press on holding band (HBD) using tool (WZ) if necessary.

9.3.3 Assemble the holding band

➢ Use tool (W3/mounting tool)

➢ Feed holding band into tool (W3).

➢ Hold ends of holding band with the eccentric lever (EX).

➢ Turn the crank (KU) until the holding band is strained and lies against the holding band loop (SCL).

➢ Carefully pull the holding band together until it is in contact with the circular groove of universal joint sleeve.

9.3.4 Correct tension of holding band (HBD)

Correct
The holding band (HBD) has drawn in the outer shape of the universal joint sleeve and is firmly seated.

Incorrect
The holding band (HBD) is too loose, can slip off.

Incorrect
The holding band (HBD) is too tight, universal joint sleeve will be damaged/sheared off.
9.3.5 Cant up the holding band

- Swivel mounting tool (W3) approx. 60° upwards.
- Loosen crank (KU) by a half turn.
- Swivel cutting lever (SH) forward until the pressure piece is lying behind the holding band loop (SCL).

9.3.6 Shear the holding band (material: 1.4301; 1.4401)

- Hit the cutting lever (SH) with the inside of your hand.
  - Cant up and shear the end of the holding band behind the loop (SCL).
  - Carefully straighten up the holding band (HBD) if it rises up on the sheared side.

**NOTICE**

Universal joint seal damage. Pin joint grease can emerge.

- Avoid hammering or striking.

9.3.7 Check the holding band after assembly

- The holding band must lie in the groove of the universal joint sleeve.
- Replace the holding band if the holding band slips back through the loop.
9.4 / 9.5 Shaft sealing

9.4.1 Safety

**WARNING**

*Shaft seal is leaky.*
Leakage may escape into the atmosphere.

- Take safety measures to protect persons and the environment.
- Wear suitable protective clothing.
- Dispose of leakage appropriately.
- Note applicable regulations when handling hazardous substances.

9.4.2 Operating conditions and material combination

- Adjust to the relevant application
10.1 Spare parts list
### 10.1 Spare parts list

Spare parts can be ordered online or requested from [www.seepex.com](http://www.seepex.com/)

<table>
<thead>
<tr>
<th>Number</th>
<th>Quantity</th>
<th>Component</th>
<th>Material</th>
<th>Comment</th>
</tr>
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<tbody>
<tr>
<td>301</td>
<td>1</td>
<td>Set of packing rings</td>
<td>according to data sheet (chapter 3.1)</td>
<td></td>
</tr>
<tr>
<td>330</td>
<td>1</td>
<td>Mechanical seal</td>
<td>according to data sheet (chapter 3.1)</td>
<td></td>
</tr>
<tr>
<td>601</td>
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<td>Stator</td>
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#### Minor set of wearing parts

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<td>Set of packing rings</td>
<td>according to data sheet (chapter 3.1)</td>
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<tr>
<td>307</td>
<td>1</td>
<td>Plug-in shaft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>330</td>
<td>1</td>
<td>Mechanical seal</td>
<td>according to data sheet (chapter 3.1)</td>
<td></td>
</tr>
<tr>
<td>400</td>
<td>1</td>
<td>Coupling rod with coupling rod bushings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>402</td>
<td>2</td>
<td>Coupling rod pin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>403</td>
<td>4</td>
<td>Guide bushing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>405</td>
<td>2</td>
<td>Universal joint sleeve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>406</td>
<td>2</td>
<td>Holding band, large</td>
<td></td>
<td></td>
</tr>
<tr>
<td>600</td>
<td>1</td>
<td>Rotor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>601</td>
<td>1</td>
<td>Stator</td>
<td></td>
<td></td>
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</tbody>
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#### Major set of wearing parts

Contact: .........................................................
Tel.: ..........................................................
Fax: ..........................................................
E-mail: ..........................................................

**Customer service:**

**seepe GmbH**
Postfach 10 15 64
D-46215 Bottrop
service@seepex.com

**Delivery address:**

**Germany**
Tel +492041.996-231
Fax +492041.996-431

**Rest of Europe**
Tel +492041.996-224
Fax +492041.996-424

**Outside Europe**
Tel +492041.996-120
Fax +492041.996-432

---

Place, date

Signature / company stamp
### Spare parts

#### Set of gaskets

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<tr>
<td>310</td>
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<td>Splash ring</td>
<td></td>
<td>according to data sheet (chapter 3.1)</td>
</tr>
<tr>
<td>330</td>
<td>1</td>
<td>Mechanical seal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>501</td>
<td>1</td>
<td>Casing gasket</td>
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<tr>
<td>503</td>
<td>3</td>
<td>Sealing ring</td>
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#### Plug-in shaft & shaft seal

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<td>301</td>
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<tr>
<td>307</td>
<td>Plug-in shaft</td>
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<td></td>
</tr>
<tr>
<td>309</td>
<td>Plug-in shaft pin</td>
<td></td>
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<tr>
<td>310</td>
<td>Splash ring</td>
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<td>according to data sheet (chapter 3.1)</td>
</tr>
<tr>
<td>330</td>
<td>Mechanical seal</td>
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#### Coupling rod & joint parts

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<tr>
<td>400</td>
<td>Coupling rod with coupling rod bushings</td>
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<tr>
<td>401</td>
<td>Retaining sleeve</td>
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</tr>
<tr>
<td>402</td>
<td>Coupling rod pin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>403</td>
<td>Guide bushing</td>
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<tr>
<td>405</td>
<td>Universal joint sleeve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>406</td>
<td>Holding band, large</td>
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</tr>
<tr>
<td>401-406</td>
<td>Complete set of joint parts</td>
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#### Conveying elements

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<td>600</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>601</td>
<td>Stator</td>
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#### Miscellaneous parts

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<tr>
<td>098</td>
<td>Pin joint grease</td>
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<td>1 cartridge = 300 g (approx. 315 cm³)</td>
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<td>Grease quantity according to maintenance</td>
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Place, date: ____________________________  Signature / company stamp: ____________________________
Version for copying

Spare parts can be ordered online or requested from www.seepex.com

**Must be specified with every order!**

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<tr>
<th>Customer service:</th>
<th>Germany</th>
<th>Delivery address:</th>
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<tbody>
<tr>
<td>seesepex GmbH</td>
<td>Tel +492041.996-231</td>
<td>Rest of Europe</td>
</tr>
<tr>
<td>Postfach 10 15 64</td>
<td>Fax +492041.996-431</td>
<td>Tel +492041.996-224</td>
</tr>
<tr>
<td>D-46215 Bottrop</td>
<td></td>
<td>Fax +492041.996-424</td>
</tr>
<tr>
<td><a href="mailto:service@seepex.com">service@seepex.com</a></td>
<td></td>
<td>Tel +492041.996-120</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fax +492041.996-432</td>
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For installation of:

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<tr>
<th>Packing gland</th>
<th>Stator</th>
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<td>Tool no.</td>
<td>Denomination</td>
<td>Order no.</td>
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<td>W1</td>
<td>Packing puller</td>
<td>PKZ</td>
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<tr>
<td>W2</td>
<td>Chain wrench plus spare chain</td>
<td>KRZ</td>
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<td>W15</td>
<td>Mounting plate</td>
<td>MTP</td>
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For installation of:

<table>
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<th>Rotating unit</th>
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<td>Tool no.</td>
<td>Denomination</td>
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<tr>
<td>W3</td>
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<tr>
<td>W4</td>
<td>Drift</td>
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<tr>
<td>W10</td>
<td>Dismantling tool</td>
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</table>
12.1 Accessories/Technical information

- Accessories and technical information are commission specific documents not part of this not binding operating and assembly instruction.
13.1 Manufacturer's and supplier's documents

- Manufacturer's and supplier's documents are commission specific documents and not part of this not binding operating and assembly instruction.
SEEPEX

ALL THINGS FLOW

Great Britain
SEEPEX UK Ltd.
3 Armtech Row
Houndstone Business Park
Yeovil Somerset BA22 8RW
Tel +44.1935.472376
Fax +44.1935.479836
sales@seepex.co.uk

Austria
SEEPEX GmbH
Vertriebsbüro Österreich
Obermüllergasse 18
3003 Gailitz
Tel +43.2231.61085
Fax +43.2231.610852
hfriedl@seepex.com

Belgium
SEEPEX GmbH
Bureau België
Industriezone Klein Gent-Link 21
Welaarstraat 14-1 bus 15
2200 Herentals
Tel +32.14.501471
Fax +32.14.501481
seepex.be@seepex.com

Denmark
SEEPEX Nordic A/S
Krakasvej 7C
3400 Hillerød
Tel +45.49.192200
Fax + 45.49.193200
info.nordic@seepex.com

France
SEEPEX France SARL
1, Rue Pelloutier
77183 Croissy Beaubourg
Tel +33.1.64114450
Fax + 33.1.64114489
info.fr@seepex.com

Hungary
SEEPEX GmbH
Magyarországi iroda
Hecskő Tamás okl.vill.mérn.
Ev. utca 5.
7632 Pécs
Tel +36.205806134
Fax +36.72952587
theckso@seepex.com

Ireland
SEEPEX UK Ltd.
Branch Office Ireland
29 Lackenfune
Dungarvan
Co. Waterford
Tel +353.860450439
sales@seepex.co.uk

Poland
SEEPEX GmbH
Przedstawicielstwo w Polsce
ul. Romana Maya 1
61-371 Poznan
Tel +48.61.6469270
Fax +48.61.6469271
info.pl@seepex.com

Sweden
SEEPEX Nordic A/S
Hamnålsvägen 58
61633 Åby
Tel +46.1166940
Fax +46.1166941
info.nordic@seepex.com

Spain
SEEPEX GmbH
Oficina de Representación en España
C/Copenhagen, 12
Edif. Tifan Oficina 207
28232 La Rozas
Madrid
Tel +34.91.6361353
Fax +34.91.6409371
info.es@seepex.com

The Netherlands
SEEPEX GmbH
Bureau Nederland
Visbystraat 13
7418 BE  Deventer
Tel +31.570.516644
Fax +31.570.516077
seepex.nl@seepex.com

Russia
SEEPEX Ltd. Ugreshskaya
Str. 2 Bidg. 23
115088 Moscow
Tel +7.495.2874830
Fax +7.495.2874830
info.cis@seepex.com

USA
SEEPEX Inc.
511 Speedway Drive
Enon
Ohio 45323
Tel +1.937.8647150
Fax +1.937.8647157
sales.us@seepex.com

China
SEEPEX Pumps (Shanghai) Co., Ltd.
Xuanzhong Rd. 399, Building 13
Nanhui Industrial Area
201300 Shanghai
Tel +86.21.38108888
Fax +86.21.38108999
info.cn@seepex.com

India
SEEPEX India Pvt. Ltd.
Office No. 305.
Raheja Arcade Building
Sector 11, C.B.D. Belapur
Navi Mumbai 400614
Tel +91.22.40240434/35
Fax +91.22.40240436
info.ind@seepex.com

Japan
日本シーペックス株式会社
5-2-44 Onna, Atsugi-shi,
Kanagawa-ken, 243-0032
Tel +81.46.2595941
Fax +81.46.2595941
info.jp@seepex.com

Malaysia
SEEPEX (M) Sdn. Bhd.
No. 2, Jalan 51/203A
Kaw. Perindustrian Tong
Nam Seksyen 51
46050 Petaling Jaya Selangor
Darul Ehsan
Tel +60.3.86009988
seepex.m@seepex.com

Australia
SEEPEX Australia Pty. Ltd.
Unit 3, 4 Bounty Close
Tuggerah Business Park
NSW 2259
Tel +61.2.43554500
Fax +61.2.43554222
info.au@seepex.com

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SEEPEX GmbH
Scharnhöhlstrasse 344
46240 Bottrop
Postfach 10 15 64
46215 Bottrop
Germany
Tel +49.2041.996-0
Fax +49.2041.996-400
info@seepex.com
www.seepex.com