Not Binding Operating and Assembly Instruction
Progressive Cavity Pump

This operating and assembly instruction is only for general information.

Type
BN 35-12S up to 70-12S
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Subsidiaries
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>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caution for machine!</td>
</tr>
<tr>
<td>Possible danger.</td>
</tr>
<tr>
<td>Material damage can occur.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caution for people and machine!</td>
</tr>
<tr>
<td>Possible danger.</td>
</tr>
<tr>
<td>Minor injury or damage to property can occur.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warning for people!</td>
</tr>
<tr>
<td>Possible danger.</td>
</tr>
<tr>
<td>Death or serious injury can occur.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger for people!</td>
</tr>
<tr>
<td>Possible danger.</td>
</tr>
<tr>
<td>Immediate risk of sever 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.
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**

*Damage to property/injuries due to incorrect transport*
Slight injury or damage to property can occur
- Comply with the safety notes and transport notes on the packaging.
- Use suitable means of transport, lifting devices and tools.
- Use protective equipment.

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
- Fragile item
- Against moisture protect
- Centre of gravity
- Lashing points

4.2.3 Sling points (AP) for lifting devices

**WARNING**

*Warning of suspended load.*
Death of serious injury can occur.
- Use the lashing points (AP) for lifting devices.
- Note the centre of gravity (→ dimensional drawing, chapter 5.6).

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. Assembly, installation

5.1 Safety during assembly and installation

**CAUTION**

Risk of injury due to improper assembly and installation of the machine. Improper installation of the machine can lead to minor injuries and significant damage to property.

- Before starting work, ensure there is sufficient space for assembly.
- Ensure that the assembly location is clean and tidy. Loose components and tools lying on top of one another or left around the area are potential sources of accidents.
- Assemble the machine correctly.

5.2 Determine the space requirement

Define the space required based on the following factors:

- Dimensions and weight of the machine
- Required transport and hoisting devices
- Freedom of movement to:
  - Operate the drive
  - Read rotation speed and pressure displays
  - Set the retensioning device (optional)
  - Operate the seal flush supply system (optional)
- Space required for lubrication processes / lubricant replacement
- Dismantling of mechanical protective devices
- Required space for assembly work on the machine

Space requirement for service and setting work on SCT pumps:

<table>
<thead>
<tr>
<th>Size</th>
<th>Distance (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-12S</td>
<td>300 mm</td>
</tr>
<tr>
<td>5-12S</td>
<td>315 mm</td>
</tr>
<tr>
<td>10-12S</td>
<td>350 mm</td>
</tr>
<tr>
<td>17-12S</td>
<td>375 mm</td>
</tr>
<tr>
<td>35-12S</td>
<td>430 mm</td>
</tr>
<tr>
<td>52-12S</td>
<td>530 mm</td>
</tr>
<tr>
<td>70-12S</td>
<td>530 mm</td>
</tr>
</tbody>
</table>

5.3 Assemble the complete mounted pump

- Assemble the pump in compliance with the technical data (→ chapter 3) and the specifications in the dimensional drawing (→ chapter 5.6).
- Comply with the specified screw tightening torques (→ chapter 9).
- Assemble the pump tension-free.
  - For assembly on foundations or load-bearing elements, compensate for any unevenness with suitable supports to ensure that all pump support surfaces are solidly seated.
5. Assembly, installation

Ensure that the drives are seated correctly.
- Shifting of the drive during transport/installation of the pump must be compensated for by aligning/securing the drive.

Attach protective devices and make sure they are functioning.

5.4 Adjust and connect pipelines

Refer to the dimensional drawing (→ chapter 5.6) and the technical data (→ chapter 3) for the position, nominal width and standard for the intake and pressure connection.

Comply with the specified screw tightening torques (→ chapter 9).

5.4.1 Check pipeline dimensioning

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

5.4.2 Check that the pipelines are free of residue

Notice Damage to property due to assembly residues in the pipeline and machine. Keep all pipelines free from foreign bodies. Remove welding spatter, screws, steel chips, etc.

5.4.3 Assemble pipeline tension-free

Assemble pipelines and other components in a tension-free manner on the pump.

5.5 Assemble liquid connections for add-on devices (optional)

Refer to technical data (→ chapter 3) for type of additional device.
Refer to chapter options and accessories (→ chapter 12.1) for technical description of additional devices.

5.6 Connect the power supply

DANGER
Risk of fatal injury from electrical current.
There is an immediate danger of fatal electric shock through contact with live parts.
- Observe applicable safety regulations.
- Prevent electrical connections from being switched on again.
### 6.1 Commissioning report

Send commissioning report online to [www.seepex.com](http://www.seepex.com)  

**Must be specified with every order!**

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

**From:**

<table>
<thead>
<tr>
<th>Contact person:</th>
<th>Tel.</th>
<th>Fax</th>
<th>E-mail:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</table>

**Customer Service:**

<table>
<thead>
<tr>
<th>Germany</th>
<th>Phone: +49 2041.996-231</th>
<th>Fax: +49 2041.996-431</th>
</tr>
</thead>
<tbody>
<tr>
<td>seepex GmbH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postfach 10 15 64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-46215 Bottrop</td>
<td></td>
<td></td>
</tr>
<tr>
<td><a href="mailto:service@seepex.com">service@seepex.com</a></td>
<td></td>
<td></td>
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</table>

**Address of plant:**

<table>
<thead>
<tr>
<th>Rest of Europe</th>
<th>Phone: +49 2041.996-224</th>
<th>Fax: +49 2041.996-424</th>
</tr>
</thead>
</table>

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

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<table>
<thead>
<tr>
<th>Delivery date:</th>
<th>Date of installation:</th>
<th>Assembly check carried out on:</th>
</tr>
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<tr>
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</tbody>
</table>

**Please enter operational data:**

**Conveying liquid:**

**Temperature:**

**Fuse level/motor protection or power consumption**

<table>
<thead>
<tr>
<th>Frequency control</th>
<th>no</th>
<th>yes</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

If yes:

- [ ] Supplied by seepex
- [ ] Supplied by customer

<table>
<thead>
<tr>
<th>Frequency:</th>
<th>Speed:</th>
<th>Power consumption:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

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<table>
<thead>
<tr>
<th>Place, date</th>
<th>Signature / company stamp</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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).

![Image of a pump with SCH and G labels]

---

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

DANGER

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

6.4.2 Emptying the pump

CAUTION

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

**WARNING**

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.

**NOTICE**

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.

6.4.4 Preservation/storage of the pump

**Pipeline dismantling**

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

- Rotor/stator: Conveying medium
- Shaft seal: Conveying medium

* 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>
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>Static friction between stator/rotor too great.</td>
<td>Apply lubricant (liquid soap) between stator and rotor.</td>
</tr>
<tr>
<td>Pump pumping unevenly</td>
<td>Incorrect direction of rotation.</td>
<td>Check direction of rotation and swap over motor connections if necessary.</td>
</tr>
<tr>
<td>Conveying capacity is not achieved</td>
<td>Suction pipe or shaft seal leaking.</td>
<td>Eliminate leaks.</td>
</tr>
<tr>
<td>Pressure head is not reached</td>
<td>Suction head too great.</td>
<td>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 start up</td>
<td>Viscosity of conveying product too great.</td>
<td>Check/adapt (data sheet).</td>
</tr>
<tr>
<td>Pump is loud when running</td>
<td>Pump rotation speed incorrect.</td>
<td>Correct rotation speed (data sheet).</td>
</tr>
<tr>
<td>Motor gets too hot</td>
<td>Avoid air bubbles in the conveying product.</td>
<td></td>
</tr>
<tr>
<td>Premature stator wear</td>
<td>Pressure head too great.</td>
<td>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>Pump running partially/completely dry.</td>
<td>Check there is adequate conveying product available on the suction side. Dry running protection DRP.</td>
</tr>
<tr>
<td></td>
<td>Check coupling.</td>
<td>If necessary, move pump in relation to drive, check wear on coupling gear, re-adjust coupling if necessary.</td>
</tr>
<tr>
<td></td>
<td>Rotation speed too low.</td>
<td>Increase rotation speed for low-viscosity media/large suction volume.</td>
</tr>
<tr>
<td>Malfunction</td>
<td>Causes</td>
<td>Rectification</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>-------------------</td>
<td>----------------------------------------------------</td>
</tr>
<tr>
<td>Pump is not sucking</td>
<td></td>
<td>- Reduce rotation speed for high-viscosity media, risk of cavitation.</td>
</tr>
<tr>
<td>Conveying capacity not achieved</td>
<td>Rotation speed too high.</td>
<td></td>
</tr>
<tr>
<td>Pressure head is not reached</td>
<td></td>
<td>- Check mounting of coupling rod bushing.</td>
</tr>
<tr>
<td>Pump does not start up</td>
<td></td>
<td>- Dismantle pump, remove foreign bodies, replace defective parts.</td>
</tr>
<tr>
<td>Pump seized / pump does not pump</td>
<td></td>
<td>- Renew joint parts, use seepex pin joint grease.</td>
</tr>
<tr>
<td>Motor gets too hot</td>
<td></td>
<td>- Rinse through and clean the pump immediately.</td>
</tr>
<tr>
<td>Shaft seal is leaky</td>
<td></td>
<td>- Heat the pump.</td>
</tr>
<tr>
<td>Rotation speed too high.</td>
<td></td>
<td>- Select a suitable stator material, use an undersize rotor.</td>
</tr>
<tr>
<td>Joint play too large</td>
<td></td>
<td>- Rinse through and clean the pump immediately.</td>
</tr>
<tr>
<td>Foreign objects in pump.</td>
<td></td>
<td>- Heat the pump.</td>
</tr>
<tr>
<td>Stator/rotor worn</td>
<td></td>
<td>- Select a suitable stator material, use an undersize rotor.</td>
</tr>
<tr>
<td>Joint parts worn</td>
<td></td>
<td>- Rinse through and clean the pump immediately.</td>
</tr>
<tr>
<td>Suction pipe blocked</td>
<td></td>
<td>- Renew bearings.</td>
</tr>
<tr>
<td>Temperature of pumping liquid too high.</td>
<td></td>
<td>- Check sliprings and O-rings for wear/resistance, renew if necessary.</td>
</tr>
<tr>
<td>Gland packing too firm/worn.</td>
<td></td>
<td>- Renew unusable packing rings.</td>
</tr>
<tr>
<td>Solid content and/or grain size too great.</td>
<td></td>
<td>- Reduce pump speed, install screen with permitted mesh width. Increase liquid proportion.</td>
</tr>
<tr>
<td>Conveying product hardens when the temperature drops below a certain limit.</td>
<td></td>
<td>- Rinse through and clean the pump immediately.</td>
</tr>
<tr>
<td>Sedimentation/gumming of solids when pump station- ary.</td>
<td></td>
<td>- Renew bearings.</td>
</tr>
<tr>
<td>Conveying product hardens when the temperature drops below a certain limit.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stator swollen and unable to withstand conveying product.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bearings in pump drive housing or drive unit defective.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical seal defective.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
9. Dismantling/reassembly

9.1 Pump with Smart Conveying Technology (SCT)

- For rotor/stator dismantling/reassembly, see chapters 9.1.1 and 9.1.2.
- For pump dismantling/reassembly, see chapters 9.1.3 and 9.1.4.

**Required tools**

Provide the tools listed.

<table>
<thead>
<tr>
<th>Illustration</th>
<th>Denomination</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Hammer" /></td>
<td>Hammer</td>
</tr>
<tr>
<td><img src="image" alt="Set allen keys" /></td>
<td>Set allen keys</td>
</tr>
<tr>
<td><img src="image" alt="Set ring spanners size 10 - size 30" /></td>
<td>Set ring spanners size 10 - size 30</td>
</tr>
<tr>
<td><img src="image" alt="Set fork spanners size 10 - size 30" /></td>
<td>Set fork spanners size 10 - size 30</td>
</tr>
<tr>
<td><img src="image" alt="Metal cutting saw (WH)" /></td>
<td>Metal cutting saw (WH)</td>
</tr>
<tr>
<td><img src="image" alt="Screwdriver (WS)" /></td>
<td>Screwdriver (WS)</td>
</tr>
<tr>
<td><img src="image" alt="Centre punch" /></td>
<td>Centre punch</td>
</tr>
<tr>
<td><img src="image" alt="Chisel (WM)" /></td>
<td>Chisel (WM)</td>
</tr>
<tr>
<td><img src="image" alt="Spirit level (W)" /></td>
<td>Spirit level (W)</td>
</tr>
<tr>
<td><img src="image" alt="Snap ring pliers (WZ)" /></td>
<td>Snap ring pliers (WZ)</td>
</tr>
<tr>
<td><img src="image" alt="Calliper gauge (WG)" /></td>
<td>Calliper gauge (WG)</td>
</tr>
</tbody>
</table>
9. Dismantling/reassembly

Required special tools

To order special tools, use order form (→ chapter 11).

<table>
<thead>
<tr>
<th>Illustration</th>
<th>Denomination</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="mounting_tool.png" alt="Mounting tool" /></td>
<td>Mounting tool (W3)</td>
</tr>
<tr>
<td><img src="assembly_mandrel.png" alt="Assembly mandrel" /></td>
<td>Assembly mandrel (W4)</td>
</tr>
<tr>
<td><img src="drift.png" alt="Drift" /></td>
<td>Drift (W5)</td>
</tr>
<tr>
<td><img src="mounting_lever.png" alt="Mounting lever" /></td>
<td>Mounting lever (W9)</td>
</tr>
<tr>
<td><img src="dismantling_tool.png" alt="Dismantling tool" /></td>
<td>Dismantling tool (W10)</td>
</tr>
<tr>
<td><img src="hoisting_device.png" alt="Hoisting device" /></td>
<td>Hoisting device (W34)</td>
</tr>
<tr>
<td><img src="hoisting_device.png" alt="Hoisting device" /></td>
<td>Hoisting device (W35)</td>
</tr>
<tr>
<td><img src="hoisting_device.png" alt="Hoisting device" /></td>
<td>Hoisting device (W36)</td>
</tr>
</tbody>
</table>

Required auxiliary materials

Provide the auxiliary materials listed:
- Soft soap
- Anti-seize graphite petroleum
- SEEPEX BIO 10206 - kinetic ring grease
9. Dismantling/reassembly

9.1.1 Dismantle rotor (600) and stator (601)

9.1.1.1 Preparing pump for dismantling

**DANGER**

Risk of fatal injury from electrical current.
There is an immediate danger of fatal electric shock through contact with live parts.
- Observe safety regulations.
- Disconnect motor from all sources of energy.
- Secure electrical connections against restarting.

- Allow pipelines to cool.
- Follow instructions in chapter decommissioning (→ chapter 6).

No space needs to be left for stator removal when dismantling/reassembling the stator and rotor.

9.1.1.2 Dismantle stator (601)

**CAUTION**

Risk of injury from moving and falling pump parts.
Body parts can get crushed.
- Only turn kinetic ring (670) on outer surface.
- Secure lower adjusting segments (635) and stator half (601) to prevent them from falling.

Pump with dry-running protection device (TSE) (optional).
- Holding device for dry running protection device (TSE) can get in the way when dismantling adjusting segments (635).
- If this is the case, remove holding device (657) and self-tapping screws (658).

- Loosen adjusting screws (639) until kinetic rings (670) are flush.
9. Dismantling/reassembly

- Insert tool (W36.1) in hole on adjusting segment (635) and secure with split pin (W36.2).

- Turn kinetic ring recess (670) until adjusting segment (635) is exposed.

- Remove adjusting segment (635).
  - Use tool (W36).

- Turn kinetic ring recess (670) until adjusting segment (635) is exposed.

- Remove adjusting segment (635).
  - Use tool (W36).

- Remove upper stator half (601).
9. Dismantling/reassembly

- Mount tool (W34) on adjusting segment (635).

- Turn kinetic ring recess (670) until adjusting segment (635) is exposed.

- Remove adjusting segment (635).
  - Use tool (W34).

- Turn kinetic ring recess (670) until adjusting segment (635) is exposed.

- Remove adjusting segment (635).
  - Use tool (W34).

- Assemble tool (W35) with screw fitting (SCH) on suction casing (500).
- Insert stud bolt (632) in hole on tool (W35).
- Secure loop (SCL) on rotor (600) and tool (W35).
9. Dismantling/reassembly

9.1.1.3 Dismantle rotor (600)

- Remove the lock washer (683).
  - Use a suitable tool (WS).

- Slide circlip (643) onto rotor (600).
  - Use tool (WZ).
- Slide support ring (682) towards rotor (600).

- Remove rotor (600) from rotor head (640).

- Remove kinetic rings (670) from suction casing (500) and pressure branch (700).

- Remove support ring (682), circlip (643) and o-ring (642) from rotor (600).
9.1.2 Assemble rotor (600) and stator (601)

9.1.2.1 Assemble rotor (600)

- Moisten inner surfaces of kinetic rings (670) with SEEPEX kinetic ring grease.

- Slide kinetic rings (670) onto suction casing (500) and pressure branch (700).

- Insert o-ring (642) in rotor (600) groove.

- Slide circlip (643) and support ring (682) onto rotor (600).
  - Observe the fitting position of support ring (682).

- Moisten inner surfaces of rotor head (640) with anti-seize graphite petroleum.

- Slide rotor (600) into rotor head (640).
  - Use tool (W35).
  - Ensure correct fitting position of rotor (600). Ensure locking plate (683) is installed.

- Press rotor (600) onto rotor head (640) using tool (W9).
  - Protect pressure branch (700) against possible deformation.
  - Ensure locking plate (683) is installed.
9. Dismantling/reassembly

9.1.2.2 Assemble stator (601)

- Insert lock washer (683).
- Slide on support ring (682).
- Secure support ring (682) with circlip (643).
  - Use tool (WZ).

**CAUTION**
Risk of injury from moving and falling pump parts.
Body parts can get crushed.
- Only turn kinetic ring (670) on outer surface.
- Secure lower adjusting segments (635) and stator half (601) to prevent them from falling.

**NOTICE**
Moisten stator outer surfaces with soft soap.
Damage to stator halves (601).
- For easier assembly, only moisten seal faces, stator internal surfaces of stator halves (601) and rotor (600) with soft soap.

- Support rotor (600).
  - Use tool (W35).
- Attach lower stator half (601).
9. Dismantling/reassembly

- Dismantle tool (W35).

- Press stator half (601) onto tapered surfaces of pressure branch (700) and suction casing (500) and align.
  - Avoid damage to stator surfaces.

- Observe the segment order.
  - * = A-A, B-B, C-C, D-D

- Mount tool (W34) on adjusting segment (635).

- Insert guide bolt (636) for adjusting segment (635) into groove on pressure branch (700) and suction casing (500).
  - Use tool (W34).

- Turn recess in kinetic rings (670) until adjusting segment (635) can be assembled.
9. Dismantling/reassembly

- Insert guide bolt (636) for adjusting segment (635) into groove on pressure branch (700) and suction casing (500).
  - Use tool (W34).

- Turn recess in kinetic rings (670) until adjusting segment (635) can be assembled.

- Attach upper stator half (601).

- Press stator half (601) onto tapered surfaces of pressure branch (700) and suction casing (500) and align.
  - Avoid damage to stator surfaces.
- Align long side of upper stator half (601) with lower stator half (601).

- Observe the segment order.
  - * = A-A, B-B, C-C, D-D

- Insert guide bolt (636) for adjusting segment (635) into groove on pressure branch (700) and suction casing (500).
  - Use tool (W36).
9. Dismantling/reassembly

9.1.2.3 Smart Stator setting

- Turn recess in kinetic rings (670) until adjusting segment (635) can be assembled.

- Insert guide bolt (636) for adjusting segment (635) into groove on pressure branch (700) and suction casing (500).
  - Use tool (W36).

- Turn recess in kinetic rings (670) upwards.

- Pump with dry-running protection device (TSE) (optional).
  - Assemble self-tapping screws (658) and holding device (657).

**NOTICE**

Gap between stator halves due to inappropriate setting.
Possible leakage at stator.
- Set stator halves according to specified basic and precision setting.
9. Dismantling/reassembly

Adjusting segments (635) - Basic setting

- Slide kinetic rings (670) by evenly tightening adjusting screws (639) until first marking groove on pressure branch (500) and suction casing (700) is visible.

Adjusting segments (635) - Precision setting

- Observe distance (X):

<table>
<thead>
<tr>
<th>Size</th>
<th>Distance (X)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-12S</td>
<td>20.5 mm</td>
</tr>
<tr>
<td>5-12S</td>
<td>20.5 mm</td>
</tr>
<tr>
<td>10-12S</td>
<td>25.5 mm</td>
</tr>
<tr>
<td>17-12S</td>
<td>25.5 mm</td>
</tr>
<tr>
<td>35-12S</td>
<td>25.5 mm</td>
</tr>
<tr>
<td>52-12S</td>
<td>25.5 mm</td>
</tr>
<tr>
<td>70-12S</td>
<td>25.5 mm</td>
</tr>
</tbody>
</table>

Re-adjust Smart Stator (601)

**NOTICE**

Motor overload due to excessive compression between rotor and stator. Damage to pump and drive can occur.

- Do not exceed drive power consumption value established with new rotor and stator.
9. Dismantling/reassembly

9.1.3 Dismantle pump

- In case of wear to rotor and stator, restore pump performance data. Evenly tighten or loosen adjusting screws (639).
  - + 90° = Increase clamping.
  - - 90° = Reduce clamping.
- Use marking grooves on pressure branch (700) and suction casing (500) as a guideline for parallel positioning of kinetic rings (670).

9.1.3.1 Preparing pump for dismantling

**WARNING** Risk of injury due to lack of stability of the pump. Crushing of body parts due to the pump or pump parts tipping or falling down.
- Fasten base plate (GPU) to secure the pump.

**DANGER**

Risk of fatal injury from electrical current.
There is an immediate danger of fatal electric shock through contact with live parts.
- Observe safety regulations.
- Disconnect motor from all sources of energy.
- Secure electrical connections against restarting.

- Allow pipelines to cool.
- Follow instructions in chapter decommissioning (→ chapter 6).

No space needs to be left for stator removal when dismantling/reassembling the stator and rotor.
9. Dismantling/reassembly

9.1.3.2 Dismantle stator (601)

![CAUTION]

Risk of injury from moving and falling pump parts.
Body parts can get crushed.

- Only turn kinetic ring (670) on outer surface.
- Secure lower adjusting segments (635) and stator half (601) to prevent them from falling.

- Holding device for dry running protection device (TSE) (optional).
  - If this is the case, remove holding device (657) and self-tapping screws (658).

- Loosen adjusting screws (639) until kinetic rings (670) are flush.

- Insert tool (W36.1) in hole on adjusting segment (635) and secure with split pin (W36.2).

- Turn kinetic ring recess (670) until adjusting segment (635) is exposed.

- Remove adjusting segment (635).
  - Use tool (W36).
9. Dismantling/reassembly

- Turn kinetic ring recess (670) until adjusting segment (635) is exposed.

- Remove adjusting segment (635).
  - Use tool (W36).

- Remove upper stator half (601).

- Mount tool (W34) on adjusting segment (635).

- Turn kinetic ring recess (670) until adjusting segment (635) is exposed.

- Remove adjusting segment (635).
  - Use tool (W34).
9. Dismantling/reassembly

- Turn kinetic ring recess (670) until adjusting segment (635) is exposed.

- Remove adjusting segment (635).
  - Use tool (W34).

- Assemble tool (W35) with screw fitting (SCH) on suction casing (500).
- Insert stud bolt (632) in hole on tool (W35).
- Secure loop (SCL) on rotor (600) and tool (W35).

- Remove lower stator half (601).

---

9.1.3.3 Dismantle pressure branch (700)

- Prop up rotor (600) with support (S).
- Dismantle screw fitting (SCH).
- Remove pressure branch (700) with kinetic ring (670).
9. Dismantling/reassembly

9.1.3.4 Dismantle suction casing (500)

- Remove kinetic ring (670) from pressure branch (700).
- Dismantle screw fitting (SCH) on trestle (607).
- Fit the rotor (600) with protective cover (SH).
- Dismantle screw fitting (506, 507, 509).
- Remove kinetic ring (670) and suction casing (500).
- Remove flush connection (SSU) on shaft seal casing (SEA).
- Push back splash ring (310).
- Remove plug-in shaft pin (309).

9.1.3.5 Dismantle rotating unit (RTE)

Dismantle flush connection (SSU) - optional

- Remove flush connection (SSU) on shaft seal casing (SEA).
- Assemble tool (W10).
9. Dismantling/reassembly

- Pull off rotating unit (RTE) with shaft seal (SEA) from output shaft of drive (ANT).
  - Use tool (W9).

- Dismantle tool (W10).

- Remove splash ring (310).
- Remove shaft seal casing (SEA).
  - Note dismantling shaft seal (chapter 9.4).

9.1.3.6 Dismantle rotor (600), coupling rod (400) and plug-in shaft (307)

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

9.1.3.7 Dismantle lantern (200) and drive (ANT)

- Dismantle screw fitting (210, 212, 213).
- Remove drive (ANT) from lantern (200).
- Dismantle screw fitting (8002, 8003, 8004).
- Remove lantern (200) from base plate (GPU).

9.1.4 Assemble pump

**WARNING** Risk of injury due to lack of stability of the pump. Crushing of body parts due to the pump or pump parts tipping or falling down.

- Fasten base plate (GPU) to secure pump.
9. Dismantling/reassembly

CAUTION
Risk of fingers being trapped.
Minor injuries can occur.
▷ Do not reach in between connections.

9.1.4.1 Assemble base plate (GPU), lantern (200) and drive (ANT)

▷ Assemble lantern (200) with screw fitting (8002, 8003, 8004) on base plate (GPU).
▷ Clean flange bearing surfaces (FLS), centering surface (ZD) and output shaft of drive (ANT).
▷ Assemble drive (ANT) with screw fitting (210, 212, 213) on lantern (200).

9.1.4.2 Assemble rotor (600), coupling rod (400) and plug-in shaft (307)

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

9.1.4.3 Assemble rotating unit (RTE)

▷ Slide on shaft seal casing (SEA).
  – Observe instructions for shaft seal reassembly (→ chapter 9.4).
▷ Moisten inner surface of splash ring (310) and outer surface of plug-in shaft (307) with anti-seize graphite petroleum.
▷ Slide splash ring (310) onto plug-in shaft (307).
  – Note fitting position of splash ring (lettering).
▷ Moisten output shaft of drive (ANT) with anti-seize graphite petroleum.
▷ Slide on rotating unit (RTE).
9. Dismantling/reassembly

- Push in plug-in shaft pin (309).

- Note position of splash ring (310).
  - Install splash ring collar at a distance of 0.5 mm from the lantern (200).

Assemble the flush connection (SSU) - optional

- Assemble flush connection (SSU).

9.1.4.4 Assemble suction casing (500)

- Moisten inner surfaces of kinetic rings (670) with SEEPEX kinetic ring grease.

- Prop up rotor (600) with support (S).
- Slide on casing gasket (501).
- Assemble and align suction casing (500) with screw fitting (506, 507, 509).
  - Use spirit level (W).
- Slide kinetic ring (670) onto suction casing (500).

- Assemble screw fitting (SCH) on trestle (607).
9. Dismantling/reassembly

9.1.4.5 Assemble pressure branch (700)

- Moisten inner surfaces of kinetic rings (670) with SEEPEX kinetic ring grease.

- Push kinetic ring (670) onto pressure branch (700).

- Assemble pressure branch (700) and kinetic ring (670) on base plate (GPU) with screw fitting (SCH).

- Align pressure branch (700).
  - Observe distance (X):
    | Size  | Distance (X) |
    |-------|--------------|
    | 2-12S | 257 mm |
    | 5-12S | 332 mm |
    | 10-12S | 424 mm |
    | 17-12S | 518 mm |
    | 35-12S | 688 mm |
    | 52-12S | 818 mm |
    | 70-12S | 878 mm |

9.1.4.6 Assemble stator (601)

**CAUTION**

Risk of injury from moving and falling pump parts. Body parts can get crushed.
- Only turn kinetic ring (670) on outer surface.
- Secure lower adjusting segments (635) and stator half (601) to prevent them from falling.
9. Dismantling/reassembly

**NOTICE**

Moisten stator outer surfaces with soft soap.
Damage to stator halves (601).
- For easier assembly, only moisten seal faces, stator internal surfaces of stator halves (601) and rotor (600) with soft soap.

- Support rotor (600).
  - Use tool (W35).

- Attach lower stator half (601).

- Dismantle tool (W35).

- Press stator half (601) onto tapered surfaces of pressure branch (700) and suction casing (500) and align.
  - Avoid damage to stator surfaces.

- Observe the segment order.
  - * = A-A, B-B, C-C, D-D
> Mount tool (W34) on adjusting segment (635).

> Insert guide bolt (636) for adjusting segment (635) into groove on pressure branch (700) and suction casing (500).
  > Use tool (W34).

> Turn recess in kinetic rings (670) until adjusting segment (635) can be assembled.

> Insert guide bolt (636) for adjusting segment (635) into groove on pressure branch (700) and suction casing (500).
  > Use tool (W34).

> Turn recess in kinetic rings (670) until adjusting segment (635) can be assembled.

> Attach upper stator half (601).
9. Dismantling/reassembly

- Press stator half (601) onto tapered surfaces of pressure branch (700) and suction casing (500) and align.
  - Avoid damage to stator surfaces.
- Align long side of upper stator half (601) with lower stator half (601).

- Insert guide bolt (636) for adjusting segment (635) into groove on pressure branch (700) and suction casing (500).
  - Use tool (W36).

- Turn recess in kinetic rings (670) until adjusting segment (635) can be assembled.

- Insert guide bolt (636) for adjusting segment (635) into groove on pressure branch (700) and suction casing (500).
  - Use tool (W36).

- Turn recess in kinetic rings (670) upwards.

Pump with dry-running protection device (TSE) (optional).
- Assemble self-tapping screws (658) and holding device (657).
9.1.4.7 Smart Stator setting

**NOTICE**

Gap between stator halves due to inappropriate setting. Possible leakage at stator.

- Set stator halves according to specified basic and precision setting.

Adjusting segments (635) - Basic setting

- Slide kinetic rings (670) by evenly tightening adjusting screws (639) until first marking groove on pressure branch (500) and suction casing (700) is visible.

<table>
<thead>
<tr>
<th>Size</th>
<th>Distance (X)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-12S</td>
<td>20.5 mm</td>
</tr>
<tr>
<td>5-12S</td>
<td>20.5 mm</td>
</tr>
<tr>
<td>10-12S</td>
<td>25.5 mm</td>
</tr>
<tr>
<td>17-12S</td>
<td>25.5 mm</td>
</tr>
<tr>
<td>35-12S</td>
<td>25.5 mm</td>
</tr>
<tr>
<td>52-12S</td>
<td>25.5 mm</td>
</tr>
<tr>
<td>70-12S</td>
<td>25.5 mm</td>
</tr>
</tbody>
</table>

Adjusting segments (635) - Precision setting

- Observe distance (X):

Re-adjust Smart Stator (601)

**NOTICE**

Motor overload due to excessive compression between rotor and stator. Damage to pump and drive can occur.

- Do not exceed drive power consumption value established with new rotor and stator.
9. Dismantling/reassembly

- In case of wear to rotor and stator, restore pump performance data. Evenly tighten or loosen adjusting screws (639).
  - + 90° = Increase clamping.
  - - 90° = Reduce clamping.
- Use marking grooves on pressure branch (700) and suction casing (500) as a guideline for parallel positioning of kinetic rings (670).
9.2 Rotating unit individual parts

9.2.1 Dismantling

9.2.1.1 Dismantle holding band (406, 407)

**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, 407).
- Halteband (406, 407) entfernen.
- Pull back universal joint sleeve (405).

9.2.1.2 Dismantle retaining sleeve (401)

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

9.2.1.3 Detach joint

- Tool (W5/drift)
  - Eject coupling rod pins (402).
  - Use tool (W5).
9.2.2 Rotating unit (RTE) – preparing component parts for assembly

9.2.2.1 Prepare rotor head (640) for assembly

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

9.2.2.2 Prepare coupling rod (400) for assembly

- Clean the coupling rod (400).
- Examine bore head for wear.
  - If wearing is detected on the bore head, replace the coupling rod (400).

9.2.2.3 Prepare plug-in shaft (307) for assembly

- Remove existing damage.
- Clean the plug-in shaft (307).

- Press in guide bushings (403) (depth = 2/3).
  - Use tool (W4).
9.2.3 Rotating unit (RTE) – component parts – mounting

**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 Rotor head (640) – coupling rod (400) – connecting

- Fill rotor head (640) with joint grease (GF).
- Slide the rotor head (640) onto the coupling rod (400).
- Push on retaining sleeve (401).
- Insert coupling rod pin (402).

**Tool (W5/drift)**

- Slide in the coupling rod pins (402).
- Knock the guide bushings (403) in.
  - Use tool (W5).

**Mount retaining sleeve (401) on rotor side**

**Tool (W4/assemblies mandrel)**

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

**Rotor (600) unhardened material**

- Secure retaining sleeve (401) in a displaced manner (2x180°).
  - Use suitable tool (WK).

**Rotor (600) hardened material**

- Secure retaining sleeve (401) in a displaced manner (2x180°).
  - Use suitable tool (WK).
9.2.3.2 Mount universal joint sleeve (405) on rotor side

- 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.).

9.2.3.3 Coupling rod (400) – connect plug-in shaft (307)

- Adapt diameter and width of the holding bands to the universal joint sleeve.
- Push universal joint sleeve (405) and holding bands (406, 407) onto coupling rod (400).
- Push on retaining sleeve (401).
- Fill joint head of the plug-in shaft (307) with joint grease (GF).
- Slide the plug-in shaft (307) onto the coupling rod (400).
- Insert coupling rod pin (402).
- Slide in the coupling rod pins (402).
- Knock the guide bushings (403) in.
  - Use tool (W5).
9.2.3.4 Mount retaining sleeve (401) on drive side

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

Rotor (600) unhardened material

- Secure retaining sleeve (401) in a displaced manner (2x180°).
  - Use suitable tool (WK).

Rotor (600) hardened material

- Secure retaining sleeve (401) in a displaced manner (2x180°).
  - Use suitable tool (WK).

9.2.3.5 Mount universal joint sleeve (405) on drive side

- 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

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
</table>
| **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

10.2 Sectional drawing and parts list
## Ordering spare parts

**Commission number** ..........................................................  
The commission number and type are printed on the type plate of your SEEPEX machine.

**Type** ......................................................................................

**Request** ☐  
After placing the order, you will receive an order confirmation and deadline before the parts are shipped.

**Order** ☐

### Your data

First Name .............................................................................

Surname ................................................................................

Company ...............................................................................

Department ............................................................................

Street ....................................................................................

Postcode, City .......................................................................

Telephone ..............................................................................

Fax ........................................................................................

E-mail ....................................................................................

### Our contact data

Customer Service  
Fax +49.2041.996-5350  
service@seepex.com
10. Spare parts

Order spare parts or complete packages tailored to your pump type.

**Spare parts**

### Plug-in shaft and shaft seal

<table>
<thead>
<tr>
<th>No.</th>
<th>Component</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>301</td>
<td>Packing ring (set) *</td>
<td></td>
</tr>
<tr>
<td>307</td>
<td>Plug-in shaft</td>
<td></td>
</tr>
<tr>
<td>309</td>
<td>Plug-in shaft pin</td>
<td></td>
</tr>
<tr>
<td>310</td>
<td>Splash ring</td>
<td></td>
</tr>
<tr>
<td>311</td>
<td>Flushing ring *</td>
<td></td>
</tr>
<tr>
<td>330</td>
<td>Mechanical seal *</td>
<td></td>
</tr>
</tbody>
</table>

### Coupling rod and joint parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Component</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>400</td>
<td>Coupling rod + Coupling rod bushing</td>
<td></td>
</tr>
<tr>
<td>401</td>
<td>Retaining sleeve</td>
<td></td>
</tr>
<tr>
<td>402</td>
<td>Coupling rod pin</td>
<td></td>
</tr>
<tr>
<td>403</td>
<td>Guide bushing</td>
<td></td>
</tr>
<tr>
<td>405</td>
<td>Universal joint sleeve</td>
<td></td>
</tr>
<tr>
<td>406</td>
<td>Holding band</td>
<td></td>
</tr>
<tr>
<td>407</td>
<td>Holding band</td>
<td></td>
</tr>
</tbody>
</table>
## 10. Spare parts

### Complete packages

<table>
<thead>
<tr>
<th>No.</th>
<th>Component</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>Rotor</td>
<td></td>
</tr>
<tr>
<td>601</td>
<td>Stator half</td>
<td></td>
</tr>
<tr>
<td>640</td>
<td>Rotor head</td>
<td></td>
</tr>
<tr>
<td>642</td>
<td>O-ring</td>
<td></td>
</tr>
<tr>
<td>643</td>
<td>Clirclip</td>
<td></td>
</tr>
<tr>
<td>682</td>
<td>Support ring</td>
<td></td>
</tr>
<tr>
<td>683</td>
<td>Locking plate</td>
<td></td>
</tr>
</tbody>
</table>

### Miscellaneous parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Component</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>501</td>
<td>Casing gasket</td>
<td></td>
</tr>
<tr>
<td>503</td>
<td>Sealing ring</td>
<td></td>
</tr>
<tr>
<td>511</td>
<td>Seal *</td>
<td></td>
</tr>
<tr>
<td>517</td>
<td>Sealing ring *</td>
<td></td>
</tr>
<tr>
<td>706</td>
<td>Sealing ring</td>
<td></td>
</tr>
<tr>
<td>098</td>
<td>Joint grease (GF) = 300 g (~ 315 cm³) for the required grease quantity refer to chapter 10</td>
<td></td>
</tr>
</tbody>
</table>

### Small wearing parts package

consisting of:

<table>
<thead>
<tr>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 x Rotor (600)</td>
</tr>
<tr>
<td>2 x Stator half (601)</td>
</tr>
<tr>
<td>1 x O-ring (642)</td>
</tr>
<tr>
<td>1 x Clirclip (643)</td>
</tr>
<tr>
<td>1 x Support ring (682)</td>
</tr>
<tr>
<td>1 x Locking plate (683)</td>
</tr>
</tbody>
</table>
## 10. Spare parts

### Large wearing parts package

<table>
<thead>
<tr>
<th>consisting of</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 x Packing ring (set) (301) *</td>
<td></td>
</tr>
<tr>
<td>1 x Plug-in shaft (307)</td>
<td></td>
</tr>
<tr>
<td>1 x Splash ring (310)</td>
<td></td>
</tr>
<tr>
<td>1 x Flushing ring (311) *</td>
<td></td>
</tr>
<tr>
<td>1 x Mechanical seal (330) *</td>
<td></td>
</tr>
<tr>
<td>1 x Coupling rod (400)</td>
<td></td>
</tr>
<tr>
<td>2 x Retaining sleeve (401)</td>
<td></td>
</tr>
<tr>
<td>2 x Coupling rod pin (402)</td>
<td></td>
</tr>
<tr>
<td>4 x Guide bushing (403)</td>
<td></td>
</tr>
<tr>
<td>2 x Universal joint sleeve (405)</td>
<td></td>
</tr>
<tr>
<td>2 x Holding band (406)</td>
<td></td>
</tr>
<tr>
<td>2 x Holding band (407)</td>
<td></td>
</tr>
<tr>
<td>1 x Casing gasket (501)</td>
<td></td>
</tr>
<tr>
<td>1 x Rotor (600)</td>
<td></td>
</tr>
<tr>
<td>2 x Stator half (601)</td>
<td></td>
</tr>
<tr>
<td>1 x Rotor head (640)</td>
<td></td>
</tr>
<tr>
<td>1 x O-ring (642)</td>
<td></td>
</tr>
<tr>
<td>1 x Clirclip (643)</td>
<td></td>
</tr>
<tr>
<td>1 x Support ring (682)</td>
<td></td>
</tr>
<tr>
<td>1 x Locking plate (683)</td>
<td></td>
</tr>
<tr>
<td>Joint grease (098)</td>
<td></td>
</tr>
</tbody>
</table>

* according to pump design

__________________________  __________________________
Place, date               Signature, company stamp
11. Special tools

Ordering special tools

Commission number ...........................................................  The commission number and type are printed on the type plate of your SEEPEX machine.

Type ......................................................................................

Request ☐ After placing the order, you will receive an order confirmation and deadline before the parts are shipped.

Order ☐

Your data

First Name .............................................................................

Surname ................................................................................

Company .............................................................................

Department ...........................................................................

Street ....................................................................................

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E-mail ....................................................................................

Our contact data

Customer Service
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service@seepex.com
11. Special tools

Your order

Order special tools tailored to your pump type.

<table>
<thead>
<tr>
<th>Tool no.</th>
<th>Denomination</th>
<th>For assembly of</th>
<th>Order no.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1</td>
<td>Packing puller</td>
<td>Packing</td>
<td>PKZ</td>
<td></td>
</tr>
<tr>
<td>W3</td>
<td>Mounting tool</td>
<td>Holding band</td>
<td>MHB</td>
<td></td>
</tr>
<tr>
<td>W4</td>
<td>Assembly mandrel</td>
<td>Joint</td>
<td>MTD</td>
<td></td>
</tr>
<tr>
<td>W5</td>
<td>Drift</td>
<td>Joint</td>
<td>DHS</td>
<td></td>
</tr>
<tr>
<td>W9</td>
<td>Mounting lever</td>
<td>General</td>
<td>MHL</td>
<td></td>
</tr>
<tr>
<td>W10</td>
<td>Dismantling tool</td>
<td>Plug-in shaft</td>
<td>AZV</td>
<td></td>
</tr>
<tr>
<td>W34</td>
<td>Hoisting device</td>
<td>Lower adjusting segments</td>
<td>MVR</td>
<td></td>
</tr>
<tr>
<td>W35</td>
<td>Hoisting device</td>
<td>Rotor SST, SCT</td>
<td>MVR</td>
<td></td>
</tr>
<tr>
<td>W36</td>
<td>Hoisting device</td>
<td>Upper adjusting segments</td>
<td>MVR</td>
<td></td>
</tr>
</tbody>
</table>

Place, date

Signature, company stamp
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.
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