Not Binding Operating and Assembly Instruction
Progressive Cavity Pump

This operating and assembly instruction is only for general information.

Type
BN 5-6LS to 35-6LS
6.2 Measures before commissioning ............................................................................................ 14
  6.2.1 Checking pipelines
  6.2.2 Protective devices on the pump
  6.2.3 Electrical / hydraulic connections
  6.2.4 Direction of rotation check
  6.2.5 Additional devices - optional
6.3 Initial commissioning/repeated commissioning
  6.3.1 Avoiding dry running of the pump
  6.3.2 Pressure in the suction and pressure connection
6.4 De-commissioning
  6.4.1 Switching off the pump
  6.4.2 Emptying the pump
  6.4.3 Dismantling the pump
  6.4.4 Preservation/storage of the pump

7 Maintenance ........................................................................................................................................ 19
  7.1 Preventative measures
    7.1.1 Pump down-time
  7.2 Lubrication
    7.2.1 Joint grease
  7.3 Inspection

8 Malfunctions, causes, rectification ........................................................................................................ 21

9 Pump Dismantling / Reassembly ..................................................................................................... 23
  9.1 Pump Dismantling / Reassembly ........................................................................................... 23
  9.2 Rotating unit – individual parts ............................................................................................ 39
    9.2.1 Dismantling
    9.2.2 Rotating unit (RTE) - prepare individual parts for reassembly
    9.2.3 Rotating unit (RTE) - individual parts - reassembly
  9.3 Holding band - assembly ........................................................................................................... 44
    9.3.1 Prepare the holding band
    9.3.2 Check the holding band
    9.3.3 Assembling the holding band
    9.3.4 Correct tension for the holding band (HBD)
    9.3.5 Cant up the holding band
    9.3.6 Shear the holding band
    9.3.7 Check the holding band after assembly
9.4 Mechanical seal..................................................................................................................... 47
  9.4.1 Safety
  9.4.2 Application conditions and material version
  9.4.3 Design
  9.4.4 Commissioning
  9.4.5 Monitoring during operation
  9.4.6 Dismantling of mechanical seal
  9.4.7 Reassembly of mechanical seal

10 Spare parts............................................................................................................................... 48
  10.1 Order template for spare parts............................................................................................. 50

11 Special tools............................................................................................................................ 55

12 Related documents..................................................................................................................... 57

13 Appendix..................................................................................................................................... 58
  13.1 Manufacturer's documents / suppliers

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

![Diagram of seepex pump]

<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

  ![Symbols](image)

  - 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 divices.
- 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.
5.1 Mounting tools / lifting gear

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump falling over.</td>
</tr>
<tr>
<td>Slight injury or damage to property can occur.</td>
</tr>
<tr>
<td>➢ Adhere to the lifting tool’s starting point.</td>
</tr>
<tr>
<td>➢ Pay attention to the dimensions, weight and centre of gravity of the pump.</td>
</tr>
<tr>
<td>➢ Use suitable mounting tools/lifting gear.</td>
</tr>
</tbody>
</table>

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)

<table>
<thead>
<tr>
<th>Range</th>
<th>Dimension (P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-6LS</td>
<td>320 mm</td>
</tr>
<tr>
<td>10-6LS</td>
<td>350 mm</td>
</tr>
<tr>
<td>17-6LS</td>
<td>405 mm</td>
</tr>
<tr>
<td>35-6LS</td>
<td>510 mm</td>
</tr>
<tr>
<td>52-6LS</td>
<td>570 mm</td>
</tr>
<tr>
<td>70-6LS</td>
<td>605 mm</td>
</tr>
<tr>
<td>100-6LS</td>
<td>605 mm</td>
</tr>
<tr>
<td>130-6LS</td>
<td>720 mm</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety protection equipment.</td>
</tr>
<tr>
<td>Slight injury or damage to property may result.</td>
</tr>
<tr>
<td>➢ Connect safety protection equipment and activate.</td>
</tr>
</tbody>
</table>
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 caused by residues from installation
Failure to comply invalidates the warranty.
- Keep all pipelines free from foreign bodies.
- Remove welding spatter, bolts, 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!*

### Commission: | Model:
--- | ---
| | |

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

### Customer Service:

<table>
<thead>
<tr>
<th>Country</th>
<th>Address</th>
<th>Phone</th>
<th>Fax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>seepex GmbH, Postfach 10 15 64, D-46215 Bottrop</td>
<td>+49 2041.996-231</td>
<td>+49 2041.996-431</td>
</tr>
<tr>
<td>Rest of Europe</td>
<td></td>
<td>+49 2041.996-224</td>
<td>+49 2041.996-424</td>
</tr>
<tr>
<td>Outside Europe</td>
<td><a href="mailto:service@seepex.com">service@seepex.com</a></td>
<td>+49 2041.996-120</td>
<td>+49 2041.996-432</td>
</tr>
</tbody>
</table>

### Address of plant:

<table>
<thead>
<tr>
<th>Region</th>
<th>Address</th>
<th>Phone</th>
<th>Fax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rest of Europe</td>
<td></td>
<td>+49 2041.996-224</td>
<td>+49 2041.996-424</td>
</tr>
<tr>
<td>Outside Europe</td>
<td></td>
<td>+49 2041.996-120</td>
<td>+49 2041.996-432</td>
</tr>
</tbody>
</table>

Delivery date:
Date of installation:
Assembly check carried out on:

### Please enter operational data:

Conveying liquid:
Temperature:
Fuse level/motor protection or power consumption:

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

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).

6.2.2 Protective devices on the pump

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.

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.

![Diagram showing clockwise and counter clockwise flow direction]

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

**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.

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

**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.
7.1 Preventive measures

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

![DANGER]

**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]

**NOTICE**

**Pump down-time.**
Production failure due to wear.
- Acquisition of a set of wearing parts and a set of gaskets.

7.2 Lubrication

![Diagram]

<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>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></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>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incorrect direction of rotation</td>
<td>Incorrect direction of rotation. Check direction of rotation and swap over motor connections if necessary.</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suction pipe or shaft seal leaking</td>
<td>Suction pipe or shaft seal leaking. Eliminate leaks.</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suction head too great</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>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pump rotation speed incorrect</td>
<td>Pump rotation speed incorrect. Correct rotation speed (data sheet).</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressure head 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>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pump running partially/completely dry</td>
<td>Pump running partially/completely dry. Check there is adequate conveying product available on the suction side. Dry running protection DRP.</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check coupling.</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>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotation speed too low</td>
<td>Rotation speed too low. Increase rotation speed for low-viscosity media/large suction volume.</td>
<td></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>X X</td>
<td>Rotation speed too high.</td>
</tr>
<tr>
<td>Pump pumping unevenly</td>
<td>X</td>
<td>Reduce rotation speed for high-viscosity media,</td>
</tr>
<tr>
<td>Conveying capacity is not achieved</td>
<td></td>
<td>risk of cavitation.</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>X</td>
<td></td>
</tr>
<tr>
<td>Motor gets too hot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shaft seal is leaky</td>
<td>X</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>Stator/rotor worn</td>
<td>X</td>
<td>Dismantle pump and renew defective parts.</td>
</tr>
<tr>
<td>Joint parts worn</td>
<td>X X</td>
<td>Renew joint parts, use seepex pin joint grease.</td>
</tr>
<tr>
<td>Suction pipe blocked</td>
<td>X X</td>
<td>Clean the suction pipe.</td>
</tr>
<tr>
<td>Temperature of pumping liquid too high</td>
<td>X X</td>
<td>Check temperature, use an undersize rotor.</td>
</tr>
<tr>
<td>Gland packing too firm/worn</td>
<td>X X</td>
<td>Loosen packing gland or tighten. Renew unusable</td>
</tr>
<tr>
<td>Solid content and/or grain size too great</td>
<td>X X</td>
<td>Reduce pump speed, install screen with permitted mesh width. Increase liquid proportion.</td>
</tr>
<tr>
<td>Sedimentation/gumming of solids when pump stationary</td>
<td>X X</td>
<td>Rinse through and clean the pump immediately.</td>
</tr>
<tr>
<td>Conveying product hardens when the temperature drops below a certain limit</td>
<td>X X</td>
<td>Heat the pump.</td>
</tr>
<tr>
<td>Stator swollen and unable to withstand conveying product</td>
<td>X X</td>
<td>Select a suitable stator material, use an undersize rotor.</td>
</tr>
<tr>
<td>Bearings in pump drive housing or drive unit defective</td>
<td>X</td>
<td>Renew bearings.</td>
</tr>
<tr>
<td>Mechanical seal defective</td>
<td>X</td>
<td>Check sliprings and O-rings for wear/resistance, renew if necessary.</td>
</tr>
</tbody>
</table>
9.1 Pump with Smart Conveying Technology - SCT

Range: BN
Size: 5-6LS to 35-6LS
Version: New Pump

Table of contents:

- 9.1.1 Stator, Rotor - dismantling - SCT
- 9.1.2 Rotor, stator - reassembly - SCT
- 9.1.3 Pump - dismantling - SCT
- 9.1.4 Pump - reassembly - 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.

9.1.1 Stator (601), rotor (600) - dismantling - SCT

9.1.1.1 Preparing the pump for dismantling

![DANGER]

Dangerous voltage.
Death or serious injury can occur.
➢ Note safety regulations.
➢ Disconnect pump from all sources of energy.
➢ Secure electrical connections against restarting.
➢ Allow pipelines to cool.
➢ See chapter 6 of the operating and assembly instructions for instructions regarding de-commissioning.

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

9.1.1.2 Stator (601) - Dismantling

Pump with dry-running protection option (TSE)

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

➢ Remove upper half of the stator (601.o).
  – Conveying product can escape.
9.1.1.3 Rotor (600) - dismantling

- Dismantle adjusting segments (635.u).
  - Secure adjusting segments (635.u) to prevent them from falling down.

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

- Remove upper half of the stator (601.o).
  - Conveying product can escape.

- Dismantle adjusting segments (635.u).
  - Secure adjusting segments (635.u) to prevent them from falling down.

- Remove lower half of the stator (601.u) smoothly.
  - Conveying product can escape.

9.1.1.3 Rotor (600) - dismantling

- up the rotor (600) with lining plate (S).
Dismantling/reassembly

9.1.2 Rotor (600), stator (601) - reassembly - SCT

9.1.2.1 Rotor (600) - reassembly

- Spread the circlip (643) wide enough so that it can be released.
  - Use tool (WZ).
- Slide circlip (643) towards rotor (600).
- Slide support ring (682) towards rotor (600).
  - Note the fitting position of support ring (682).

- Use tool (WZ/circlip tongs 45°).
- Spread the circlip (643) wide enough so that it can be released.
- Use a suitable tool (WS).
- Remove the lock washer (683).
- Remove rotor (600) from rotor head (640).
- Remove support ring (682), circlip (643) and O-ring (642) from rotor (600).
- Insert O-ring (642) in rotor (600) groove.
- Slide circlip (643) and support ring (682) onto rotor (600).
  - Note the fitting position of support ring (682).
- Coat the inner surfaces of the rotor head (640) with graphite petroleum.
- Slide rotor (600) into rotor head (640).
9.1.2.2 Stator (601) – Reassembly

➢ For easier assembly, moisten sealing surfaces, geometry of the stator halves and rotor with soft soap.
  ➢ Do not moisten the outer surfaces of the stator with soft soap.

NOTICE

Coating the stator outer surfaces
Damage to property can occur
➢ Remove any coating on the stator outer surfaces.
➢ Coat only the stator internal surfaces.

➢ Prop up the rotor (600) with lining plate (S).
Dismantling/reassembly

- Attach the lower half of the stator (601.u).
- Press the stator half (601.u) onto the tapered surfaces of the segment retainer (671) and align it.

- Avoid damage to the stator surfaces.
- The tapered stator surface (601.u) is in contact with the segment retainer (671) tapered surface.

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

- Secure the lower half of the stator (601.u).
  - Fix the lower adjusting segments (635) to the segment retainer (671).

- Tighten the screws until the adjusting segments (635) interlock with the guide of the segment retainer (671) (detail x).

- Attach the upper half of the stator (601.o).

- Align the long side of the upper half of the stator (601.o) to the lower half of the stator (601.u).

**Pump with dry-running protection option (TSE)**

- The holding device for the dry running protection (TSE) can get in the way when dismantling the adjusting segments (635).
- If this is the case, remove the holding device (657) and the self-tapping screws (658).
9.1.2.3 Smart Stator setting

**NOTICE**

Stator is leaky!
Damage to property can occur.
- A gap between the stator halves is not allowed.

Alignment of the adjusting segments (635)

- Align the gap (S2) of the lower adjusting segments (635.u) to the gap (S1) of the upper adjusting segments (635.o).
- Tighten screws of the adjusting segments (635.u) evenly using the hexagon nuts (639) in 180° / 90° steps.
- Observe the order.
  - 1-1', 2-2'
Adjusting segment basic setting

Tool (W30/feeler gauge).
5-6LS, 10-6LS => 3 mm
17-6LS - 130-6LS => 4 mm

- Tighten screws of the adjusting segments (635) evenly using the hexagon nuts (639) in 180°/90° steps.
- Observe the order.
  - 1-1’, 2-2’, 3-3’, 4-4’

- Use tool (W30) for setting the gap (S) at the setting nuts (639).
- Tighten the screws of the adjusting segments (635) until there is resistance from the tool (W30).

Fine adjustment of the pump parameters:

Fine adjustments for the pump parameters can be made by evenly adjusting the nuts at the adjusting segments (635).
- +10° = increases clamping.
- -10° = reduces clamping.

- Observe the order.
  - 1-1’, 2-2’, 3-3’, 4-4’

NOTICE

Motor overload
Damage to property can occur.
- Do not exceed motor’s maximum power consumption.

WARNING

Risk of pump tipping or falling.
Death or serious injury can occur.
- Fasten the base plate (GPU) to secure the pump.

9.1.3 Pump - dismantling - SCT
9.1.3.1 Preparing the pump for dismantling

**DANGER**

_Dangerous voltage._

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

- Allow pipelines to cool.
- See chapter 6 of the operating and assembly instructions for instructions regarding decommissioning.

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

9.1.3.2 Stator (601) - Dismantling

**Pump with dry-running protection option (TSE)**

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

- Remove upper adjusting segments (635.o).
  - Conveying product can escape.

**Pump with dry-running protection option (TSE)**

- Mount self-tapping screws (658) and holding device (657).

- Remove upper half of the stator (601.o).
  - Conveying product can escape.
Dismantling/reassembly

9.1.3.3 Pressure branch (700) - Dismantling

- Dismantle adjusting segments (635.u).
  - Secure adjusting segments (635.u) to prevent them from falling down.

- Remove lower half of the stator (601.u) smoothly.
  - Conveying product can escape.

9.1.3.4 Suction casing (500) - Dismantling

- Dismantle the pressure branch (700).

9.1.3.5 Segment retainer (671) - dismantling - pressure branch

- Dismantle the segment retainer (671) on the pressure branch (700).

- Remove the O-ring (731) from the centring recess on the pressure branch (700).
9.1.3.6 Rotating unit (RTE) – Dismantling

with flush connection

- Remove the O-ring (731) from the centring recess on the suction casing (ZA, 500).

Tool (W10/dismantling tool)

- Remove the flushing connection (SSÜ) on the casing of the shaft seal (SEA).
- Lift/slide splash ring (310) and turn out plug-in shaft pin (309).
- Pull the rotating unit (RTE) with shaft seal (SEA) off from the output shaft of the drive (ANT).
- Dismantle shaft seal (SEA).
  - Note dismantling the shaft seal (chapter 9.2).

without flush connection

- Lift/slide splash ring (310) and turn out plug-in shaft pin (309).
- Pull the rotating unit (RTE) with shaft seal (SEA) off from the output shaft of the drive (ANT).
- Dismantle shaft seal (SEA).
  - Note dismantling the shaft seal (chapter 9.2).

9.1.3.7 Rotor (600), coupling rod (400), plug-in shaft (307) - Dismantling

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

- Disconnect the drive (ANT) from the lantern (200).
- Remove the lantern (200) from the base plate (GPU).

9.1.4 Pump - reassembly (SCT)

### WARNING

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

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

### CAUTION

Risk of fingers being trapped. Minor injuries can occur.

- Do not reach in between connections.

9.1.4.1 Base plate (GPU), lantern (200), drive unit (ANT) – reassembly

- Assemble the lantern (200) on the base plate (GPU).
- Clean the flange bearing surfaces (FLS), bolt circle (ZD) and output shaft of the drive (ANT).

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

- Joint (G) reassembly note rotating unit - individual parts (chapter 9.2).
### 9.1.4.3 Rotating unit (RTE) - Reassembly

- Push on the shaft seal (SEA).
  - Note shaft seal reassembly. See chapter 9.4 of the operating and assembly instructions.
- Coat the splash ring (310)/plug-in shaft (307) with pin joint grease.
- Push the splash ring (310) onto the plug-in shaft (307).
  - Observe the fitting position of the splash ring (splash ring marking).
- Apply antiseize graphite petroleum to the drive unit's (ANT) drive shaft. Push on the rotating unit (RTE).
- Push in the plug-in shaft pin (309).
- Install the splash ring collar at a distance of 0.5 mm from the lantern (200).

**with flush connection**

- Mount the flush connection.

### 9.1.4.4 Segment retainer (671), suction casing (500) - pre-assembly

- Remove contaminants such as paint and corrosion from all seal faces/centring recesses (ZA).
- Coat O-ring (731) with soft soap.
- Insert the O-ring (731) into the centring recess on the suction casing (ZA, 500).

- Assemble the segment retainer (671) on the suction casing (500) and align it using a spirit level (W).

### 9.1.4.5 Suction casing (500) - Reassembly

- Provide rotor (600) with protective cover (SH).
- Prop up rotor (600) with support (S).
- Slide on casing gasket (501).
- Mount pre-assembled suction casing (500) and adjust (using spirit level).
9.1.4.6 Segment retainer (671), pressure branch (700) – pre-assembly

- Remove contaminants such as paint and corrosion from all seal faces/centring recesses (ZA).
- Coat O-ring (731) with soft soap.
- Insert the O-ring (731) into the centring recess on the suction casing (ZA, 500).
- Assemble the segment receiver (671) on the pressure branch (700) and align it using a spirit level.

9.1.4.7 Pressure branch (700) – Reassembly

- Observe the segment order.
  - * = A-A, B-B, C-C, D-D
- Prop up the rotor with lining plate (S).
- Align the pressure branch (700)/lantern (200) axially and radially on the base plate (GPU).
  - If necessary, undo the connection to the base plate (GP).
  - Use at least 2 adjusting segments (635) opposite each other for the alignment. To secure, gently tighten the hexagon nuts (639).
- Assemble the pressure branch (700)/lantern (200) on the base plate (GPU).
- Remove adjusting segments (635).

9.1.4.8 Stator (601) – Reassembly

- For easier assembly, moisten sealing surfaces, geometry of the stator halves and rotor with soft soap.
  - Do not moisten the outer surfaces of the stator with soft soap.

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
</table>
| **Coating the stator outer surfaces**  
Damage to property can occur |
- Remove any coating on the stator outer surfaces.  
- Coat only the stator internal surfaces.  

- Prop up the rotor (600) with lining plate (S).
➢ Attach the lower half of the stator (601.u).
➢ Press the stator half (601.u) onto the tapered surfaces of the segment retainer (671) and align it.

➢ Avoid damage to the stator surfaces.
➢ The tapered stator surface (601.u) is in contact with the segment retainer (671) tapered surface.

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

➢ Secure the lower half of the stator (601.u).
   – Fix the lower adjusting segments (635) to the segment retainer (671).

➢ Tighten the screws until the adjusting segments (635) interlock with the guide of the segment retainer (671) (detail x).

➢ Attach the upper half of the stator (601.o).

➢ Align the long side of the upper half of the stator (601.o) to the lower half of the stator (601.u).

Pump with dry-running protection option (TSE)
• The holding device for the dry running protection (TSE) can get in the way when dismantling the adjusting segments (635).
• If this is the case, remove the holding device (657) and the self-tapping screws (658).
Observe the segment order.
- "A-A, B-B, C-C, D-D"

Secure upper half of the stator (601.o).
- Fix the upper adjusting segments (635) on the segment retainer (671).

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

Tighten the screws until the adjusting segments (635) interlock with the guide of the segment retainer (671) (detail x).

9.1.4.9 Smart Stator setting

NOTICE

Stator is leaky!
Damage to property can occur.
- A gap between the stator halves is not allowed.

Alignment of the adjusting segments (635)

- Align the gap (S2) of the lower adjusting segments (635.u) to the gap (S1) of the upper adjusting segments (635.o).
- Tighten screws of the adjusting segments (635.u) evenly using the hexagon nuts (639) in 180° / 90° steps.
- Observe the order.
  - 1-1', 2-2'
Adjusting segment basic setting

Tool (W30/feeler gauge).
5-6LS, 10-6LS => 3 mm
17-6LS - 130-6LS => 4 mm

➢ Tighten screws of the adjusting segments (635) evenly using the hexagon nuts (639) in 180°/90° steps.
➢ Observe the order.
   – 1-1’, 2-2’, 3-3’, 4-4’

➢ Use tool (W30) for setting the gap (S) at the setting nuts (639).
➢ Tighten the screws of the adjusting segments (635) until there is resistance from the tool (W30).

Fine adjustment of the pump parameters:

Fine adjustments for the pump parameters can be made by evenly adjusting the nuts at the adjusting segments (635).
• +10° = increases clamping.
• -10° = reduces clamping.

➢ Observe the order.
   – 1-1’, 2-2’, 3-3’, 4-4’

NOTICE

Motor overload
Damage to property can occur.
➢ Do not exceed motor’s maximum power consumption.
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

- Eject coupling rod pins (402).
  - Use tool (W5).
Dismantling/reassembly

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).

Tool (W4/assembly mandrel)

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

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).

Tool (W4/assembly mandrel)

- 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).

<table>
<thead>
<tr>
<th>Tool (W5/drift)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slide in the coupling rod pins (402).</td>
</tr>
<tr>
<td>Knock the guide bushings (403) in.</td>
</tr>
<tr>
<td>- Use tool (W5).</td>
</tr>
</tbody>
</table>

Mount retaining sleeve (401) on rotor side

<table>
<thead>
<tr>
<th>Tool (W4/assembly mandrel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knock back retaining sleeve (401).</td>
</tr>
<tr>
<td>- Use tool (W4).</td>
</tr>
</tbody>
</table>

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).

  Tool  (W5/drift)

- 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>
<tbody>
<tr>
<td>Shaft seal is leaky.</td>
</tr>
<tr>
<td>Leakage may escape into the atmosphere.</td>
</tr>
<tr>
<td>➢ Take safety measures to protect persons and the environment.</td>
</tr>
<tr>
<td>➢ Wear suitable protective clothing.</td>
</tr>
<tr>
<td>➢ Dispose of leakage appropriately.</td>
</tr>
<tr>
<td>➢ Note applicable regulations when handling hazardous substances.</td>
</tr>
</tbody>
</table>

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 ........................................................................................................................................

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

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

Request ......................................................................................................................................................

Order ..........................................................................................................................................................

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

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
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

**Pumping elements**

<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)</td>
<td>300 g (~ 315 cm³)</td>
</tr>
</tbody>
</table>

For the required grease quantity refer to chapter 10.

**Small wearing parts package**

- 1 x Rotor (600)
- 2 x Stator half (601)
- 1 x O-ring (642)
- 1 x Clirclip (643)
- 1 x Support ring (682)
- 1 x Locking plate (683)
### Large wearing parts package

- **Qty.**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</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
Ordering special tools

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

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

Request

Order

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

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
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>
</tr>
</thead>
<tbody>
<tr>
<td>W1</td>
<td>Packing puller</td>
<td>Packing*</td>
<td>PKZ</td>
</tr>
<tr>
<td>W3</td>
<td>Mounting tool</td>
<td>Holding band</td>
<td>MHB</td>
</tr>
<tr>
<td>W4</td>
<td>Assembly mandrel</td>
<td>Joint</td>
<td>MTD</td>
</tr>
<tr>
<td>W5</td>
<td>Drift</td>
<td>Joint</td>
<td>DHS</td>
</tr>
<tr>
<td>W9</td>
<td>Mounting lever</td>
<td>General</td>
<td>MHL</td>
</tr>
<tr>
<td>W10</td>
<td>Dismantling tool</td>
<td>Plug-in shaft</td>
<td>AZV</td>
</tr>
<tr>
<td>W29</td>
<td>Hoisting device incl. tension belt</td>
<td>Rotor SST, SCT</td>
<td>MVR</td>
</tr>
<tr>
<td>W30</td>
<td>Feeler gauge</td>
<td>Adjusting segment</td>
<td>ESL</td>
</tr>
</tbody>
</table>

*see sectional drawing and parts list (→ Chapter 10.2)

__________________________________ _______________________________________
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.
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
2200 Herentals
Tel +32.14.501471
Fax +32.14.501461
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
Heckső Tamás okl.vill.mérn.
Eva utca 5.
7632 Pécs
Tel +36.205806134
Fax +36.72952587
theckszo@seepex.com

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

Italy
SEEPEX Italia S.r.l.
Via Alberto da Giussano 23
20145 Milano (MI)
Tel +39.02.36569360
Fax +39.02.9277955
info.it@seepex.com

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
Hamndalsvägen 58
61633 Äby
Tel +46.1166940
Fax +46.1166941
info.nordic@seepex.com

Spain
SEEPEX GmbH
Oficina de Representación en España
C/Copenhague, 12
Edif. Tlfan 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 +86.21.38108899
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
SEEPEX (M) Sdn. Bhd.
No. 2, Jalan 51/203A
Kaw. Perindustrian Tong
Namp Seksyen 51
46050 Petaling Jaya Selengor
Darul Ehsan
Tel +60.3.88009988
seepex.m@seepex.com

Malaysia
SEEPEX Australia Pty. Ltd.
Unit 3, 4 Bounty Close
Tuggerah Business Park
NSW 2259
Tel +61.2.43554500
Fax +61.2.43554022
info.au@seepex.com

More SEEPEX sales partners in Europe, America, Asia, Africa and Oceania
you will find on our website.