SEEPEX.
ALL THINGS FLOW

Not Binding Operating and Assembly Instruction Progressive Cavity Pump

This operating and assembly instruction is only for general information.

Type
BN 2-12S up to 17-12S

Issue 26.06.2017

Index

1.1 Notes on these instructions

1.1.1 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 SEEPEX.

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

1.1.2 Validity of these instructions

- These operating and assembly instructions are valid exclusively for machines with the commission no. specified on the cover sheet.
- The operating and assembly instructions are correlated with the SEEPEX machine by means of the commission no. on the type plate **(TYS)**.

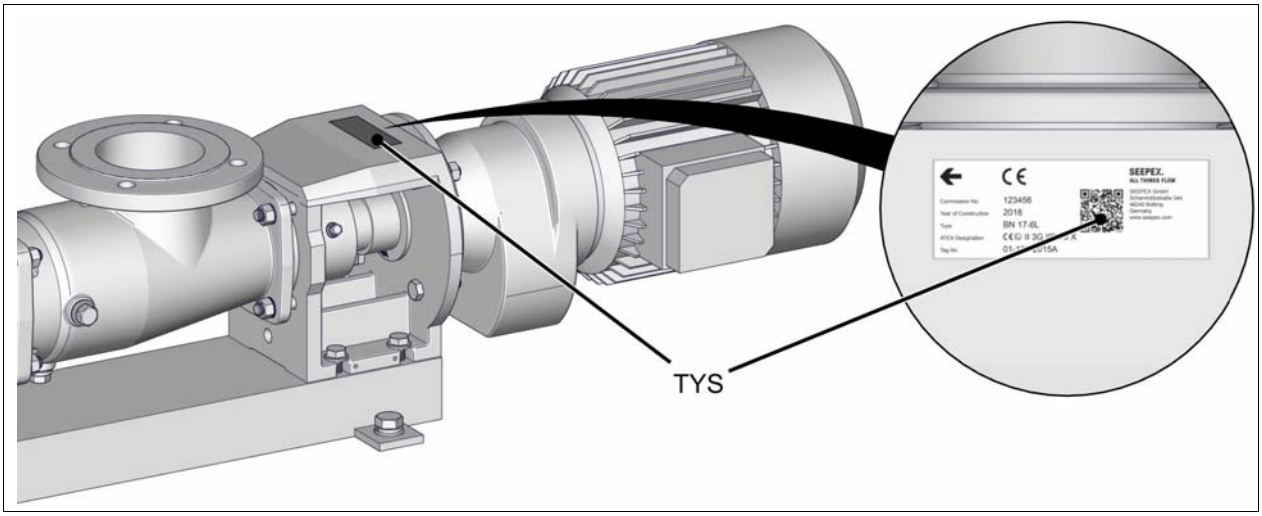


Figure similar

1.1.3 Symbols, notes and abbreviations

1.1.3.1 Information symbols

Symbol	Application
➢	Instruction/measure
–	supplementary instruction/measure
•	List item
i	Information
→	Cross-reference

1.1.3.2 Abbreviations

Abbreviations facilitate readability in drawings.
Abbreviations are explained below:

Abbreviation	Designation	Abbreviation	Designation
ANT	Drive	K	Terminal
AP	Lashing points	KF	Kinetic ring grease
ATG	Drive casing	KUL	Crank
CBH	Feed hopper screw fitting	P	Dimension for stator replacement
CFL	Flanged connection	RTE	Rotating unit
CTH	Threaded connection	S	Support
DFL	Flange seal	SCH	Screw fitting
ELT	Feed hopper	SCL	Holding band loop
ERD	Earth connection	SEA	Shaft sealing
FCO	Flange cover	SH	Protective cover
FLS	Flange bearing surface	SHL	Cutting lever
GC	Anti-seize graphite petroleum	SSU	Flush connection
GF	Joint grease	TSE	Dry-running protection device
GM	Lubricant	TYS	Type plate
GS	Soft soap	ZA	Sealing -/ centering surface
HBD	Holding band	ZD	Centering surface
HS	Label		

1.2 Safety-related Information

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

1.3 Designated use

SEEPEX machines are individually configured. The machine is allocated to the operating and assembly instructions based on the commission no. The commis-sion no. is indicated on the type plate of the machine and on the cover sheet of the operating and assembly instructions.

Observe the following points to ensure compliance with the intended use:

- Use the machine only for conveying media in accordance with the technical data (→ chapter 3)
- Use the machine only within the performance data as specified in the technical data (→ chapter 3)
- Make alterations and modifications to the machine only after obtaining the approval of SEEPEX
- Use the machine only in commercial and industrial areas
- Do not use the machine in explosive areas

1.4 Foreseeable misuse

Any use other than the intended use or any different use of the machine will be considered as improper use and can cause serious physical injury and damage to property.

In particular, the following is not admissable:

- Conveyance of conveying products other than those specified in the technical data (→ chapter 3)
- Operating the machine outside of the performance data specified in the technical data (→ chapter 3)
- Operating the machine without safety and protection devices
- Mechanical or electrical bypassing of machines or machine parts
- Use of parts other than the original parts
- Alterations, modification and manipulation
- Non-compliance with instructions and prescribed operating, maintenance and servicing conditions
- Non-compliance with the rules and regulations in the country of use and the statutory provisions and accident prevention regulations when handling the machine
- Operating the machine in explosive areas

1.5 Structure of warning notes

- For the protection of personnel and for the safe and efficient use of the machine, observe warning notes.

Preceding warning notes
Preceding warning notes are placed at the beginning of each chapter or sequence of actions, and relate to the instructions following directly after.

⚠ DANGER

Type and source of danger.
Possible consequences.
➢ Measures to avert the danger.

Preceding warning notes with warning or mandatory signs
Specific dangers are identified with additional warning or mandatory signs.

Example:

⚠ DANGER

Type and source of danger.
Possible consequences.
➢ Measures to avert the danger.

Embedded warning notes
Embedded warning notes describe immediately relevant dangers, and are shown within a sequence of actions. They are placed immediately before the danger.

*Example*s:

➢ **⚠ WARNING** Type and source of danger. Possible consequences. Measures to avert the danger.

⚠ WARNING Type and source of danger. Possible consequences.
➢ Measures to avert the danger.

1.5.1 Warning levels

Warning notes are identified by coloured warning symbols and signal word fields.
The different warning levels are identified by additional signal words, and describe the extent of the danger.

Personal injury

⚠ DANGER

DANGER indicates a dangerous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

WARNING indicates a dangerous situation which, if not avoided, may result in death or serious injury.

⚠ CAUTION

CAUTION indicates a dangerous situation which, if not avoided, may result in minor or moderate injury.

Property damage

NOTICE

NOTICE is used when the situation is not associated with personal injury.

1.5.2 Warning symbols

In these operating and assembly instructions and on the machine, there are warning symbols.

- ➢ Ensure that these warning symbols are complied with.
- ➢ Warning symbols on the machine must be fully present and easily legible at all times.

Warning symbols	Hazard
	Suspended load warning
	Electric voltage warning
	Hot surface warning
	Warning for automatic start

1.6 Qualification of the personnel

Detailed technical knowledge is essential for performing any work on the machine, in order to be able to independently recognise and avoid potential dangers.

Activity	Person	proven knowledge
➢ Instruction of personnel ➢ Definition of responsibilities ➢ Definition of responsibilities ➢ Monitoring of adequate qualification of personnel	Owner	➢ Knowledge of safety regulations ➢ Knowledge of these operating and assembly instructions
➢ Operation ➢ Operational monitoring ➢ Easy maintenance work and troubleshooting	Operator	➢ Instruction for the machine ➢ Before starting any activity, the operating and assembly instructions must be read and understood ➢ Knowledge of safety devices and regulations
➢ Electrical installation ➢ Commissioning ➢ Maintenance ➢ Repair ➢ Decommissioning ➢ Assembly and dismantling	Electrical technician	➢ Technical training, knowledge and experience with the machine in relation to electrical components ➢ Knowledge of the relevant standards and regulations ➢ Safe handling of tools ➢ Knowledge of these operating and assembly instructions
➢ Commissioning ➢ Maintenance ➢ Repair ➢ Decommissioning ➢ Assembly and dismantling	Mechanical technician	➢ Technical training, knowledge and experience with the machine in relation to mechanical components ➢ Knowledge of the relevant standards and regulations ➢ Safe handling of tools ➢ Knowledge of these operating and assembly instructions

1.7 Tasks, notes for the owners, operators and technicians

- Do not work on the machine or plant unless it is at a standstill and de-pressurised.
- Switch off the main switch and pull out the power plug before starting work on live components.
- Observe the procedure for shutting down the machine (→ chapter 6).
  - Follow decommissioning procedure.
  - Secure the machine against recommissioning.
- On completion of all work, attach all safety and protective devices and make sure they are functioning.
- Refer to chapter Commissioning before recommissioning the machine (→ chapter 6).

1.8 Personal protective equipment

- Wear personal protective equipment and/or additional equipment for your own safety.

Sign	Meaning	Scope of application
	Wear safety shoes	Work in the area of the machine
	Wear eye protection	Work on the machine during which parts may be ejected at speed and parts may be pressurised
	Wear protective gloves	Possible contact with aggressive media, hot surfaces or sharp edges
	Wear ear protection	Sustained sound pressure level > C 75 dB (A)

Sign	Meaning	Scope of application
	Wear safety helmet	Work with suspended loads and overhead work
	Wear protective clothing	Possible contact with aggressive media

1.9 Safety and protective devices

- Before commissioning, bolt SEEPEX machines to a suitable foundation to ensure stability.
- Start-stop equipment must be clearly recognisable. In order to avoid errors, the operator must arrange corresponding measures.

Protective devices 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.

- Equip pump with a protective device
  - In order to prevent contact with hot surfaces
  - In order to prevent contact with moving parts
  - – Use finger probe to check protective device.

2.1 General description

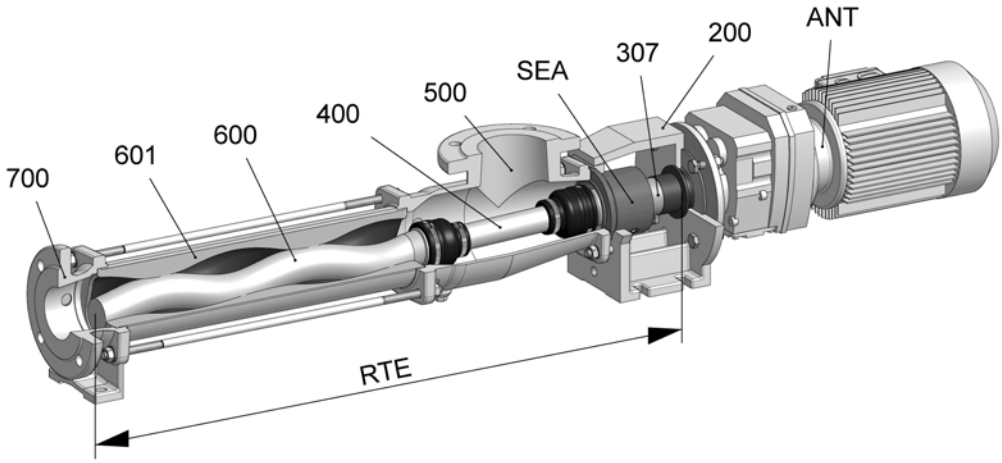
seepex pumps are members of the group of rotating displacement pumps.

- 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



No.	Designation
ANT	Drive
200	Lantern
307	Plug-in shaft
400	Coupling rod
SEA	Shaft seal
500	Suction casing
600	Rotor
RTE	Rotating unit
601	Stator
700	Pressure branch

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.

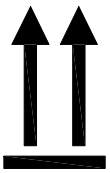
4.2 Transport

4.2.1 Dimensions, weights and center of gravity

➢ Note the dimensional drawing (→ chapter 5.6).

4.2.2 Symbols

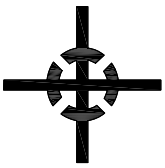
- Meaning of symbol



Top

Fragile item

Against moisture protect

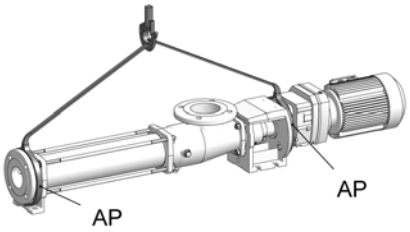
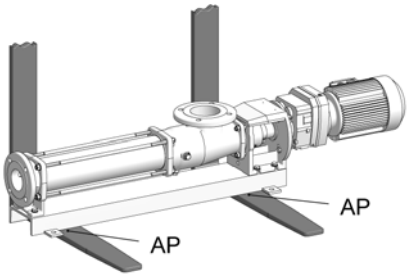


Centre of gravity

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 divices. ➢ Note the centre of gravity (→ dimensional drawing, chapter 5.6).

Lifting machine	Industrial trucks
	

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.

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.

4.4 Disposal

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 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.

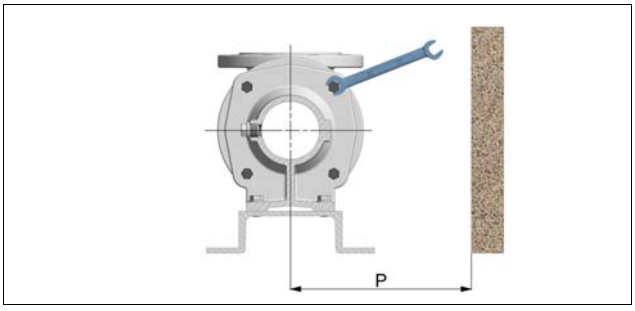
5.2 Determine the space requirement

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:

Size	Distance (P)
2-12S	300 mm
5-12S	315 mm
10-12S	350 mm
17-12S	375 mm
35-12S	430 mm
52-12S	530 mm
70-12S	530 mm



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.

- ➢ 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.

Master Copy

6.1 Commissioning report

Send commissioning report online to www.seepex.com\ **Must be specified with every order!**			**From:**
Commission: _____	**Model:** _____		Contact person: ..... Tel.: ..... Fax: ..... E-mail: .....
Customer Service: seepex GmbH Postfach 10 15 64 D-46215 Bottrop service@seepex.com	**Germany** **Rest of Europe** **Outside Europe**	Phone:+49 2041.996-231 Fax: +49 2041.996-431 Phone:+49 2041.996-224 Fax: +49 2041.996-424 Phone:+49 2041.996-120 Fax: +49 2041.996-432	**Address of plant:** ....

Delivery date:		
Date of installation:		
Assembly check carried out on:		
Please enter operational data:		
Conveying liquid:		
Temperature:		
Fuse level/motor protection or power consumption		
Frequency control	☐ no	
	☐ yes	If yes:
		☐ Supplied by seepex
		☐ Supplied by customer
		Frequency:
		Speed:
		Power consumption:

_____ _____

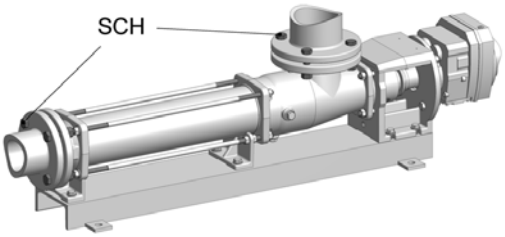
Place, date Signature / company stamp

6.2 Measures before commissioning

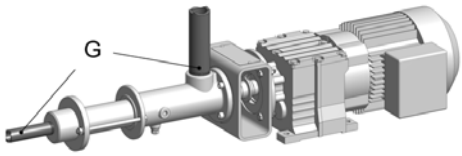
➢ Note the technical data (→ chapter 3.).

6.2.1 Checking pipelines

➢ Check flange screwed connections **(SCH)**.



➢ Check threaded connections **(G)**.



NOTICE

Ensure the liquid can flow through without obstruction.
Malfunction and/or irreparable damage to the pump.

➢ Open all shut-off elements before switching on the pump.

6.2.2 Protective devices on the pump

DANGER

Missing protective device.
Danger of pulling in and crushing.

➢ Equip the pump with a protective device. Protective devices provided for preventing contact with surfaces or moving parts must be regarded as suitable if contact is not possible in a test involving a test finger, with regard to the penetration possibility, strength and shock resistance.

➢ Comply with national protection regulations.

➢ In pumps with an open suction flange/feed hopper, attach touch protection. These safety clearances protect those persons who are attempting to reach danger areas without additional help and under the conditions defined for various situations of reaching up, reaching under or reaching through

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

6.2.3 Electrical/hydraulic connections

DANGER

Dangerous voltage.
Death or serious injury can occur.

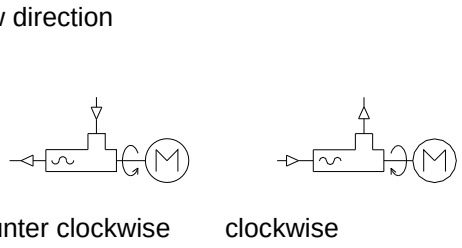
➢ Note safety regulations.

➢ Disconnect motor from all sources of energy.

➢ Secure electrical connections against restarting.

6.2.4 Direction of rotation check

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



6.2.5 Additional devices - optional

- Refer to additional devices (→ chapter 12.1).

6.3 Initial commissioning/repeated commissioning

- Start up the pump.

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

6.3.1 Avoid dry running of the pump

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

6.3.2 Pressure in the suction and pressure connection

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

Recommendation:

- Assemble an oil-filled contact pressure gauge to monitor and deactivate the pump.

6.4 De-commissioning

Protect the pump and additional devices against the following:

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

6.4.1 Switching off the pump

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.

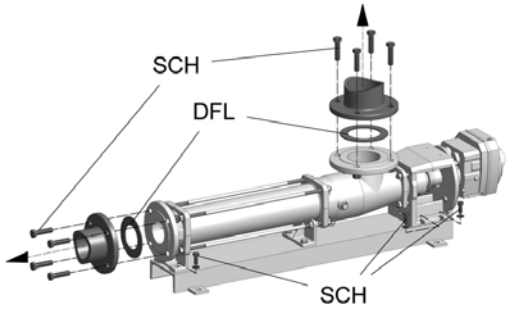
- Support the drive unit to guarantee stability.

Pipeline dismantling

- Remove flange bolts **(SCH)** and flange seals **(DFL)**.

with/without base plate

- Remove bolts **(SCH)** from the pump feet.

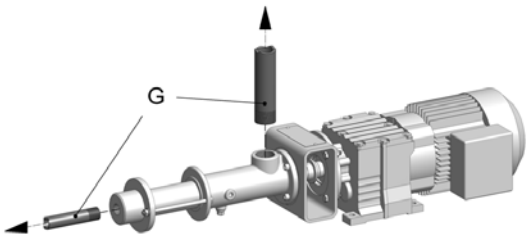


Pipeline dismantling

- 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

Dangerous voltage.
Death or serious injury can occur.

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

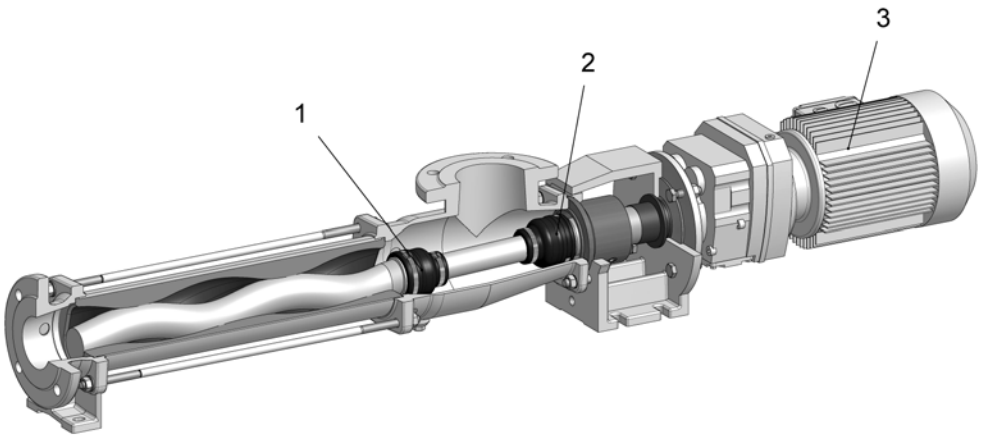
7.1.1 Pump down-time

NOTICE

Pump down-time.
Production failure due to wear.

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

7.2 Lubrication



No.	Denomination	Lubricant	Lubricant change in operating hours	Fill volume
1	Pin joint	seepex special grease *	10000 h	*
2	Pin joint	seepex special grease *	10000 h	*
3	Drive	Refer to manufacturer's documentation (chapter 13._)		
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

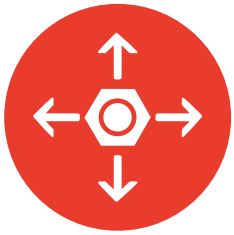
Component	Interval	Action
Joints	Every 10,000 operating hours	Renew joint grease
Stator	Every week	Visual check for leaks
Shaft seal	Every week	Visual check for leaks
Drive unit	Every 3000 operating hours, at least every 6 months	Comply with manufacturer's documentation

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

Malfunction										Causes	Rectification
Pump is not sucking	Pump pumping unevenly	Conveying capacity is not achieved	Pressure head is not reached	Pump does not start up	Pump seized / pump does not pump	Pump is loud when running	Motor gets too hot	Premature stator wear	Shaft seal is leaky		
				X			X		X	Static friction between stator/rotor too great.	Apply lubricant (liquid soap) between stator and rotor.
X										Incorrect direction of rotation.	Check direction of rotation and swap over motor connections if necessary.
X	X	X			X	X				Suction pipe or shaft seal leaking.	Eliminate leaks.
X	X	X				X				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.
X	X	X								Viscosity of conveying product too great.	Check/adapt (data sheet).
		X		X			X			Pump rotation speed incorrect.	Correct rotation speed (data sheet).
	X	X									Avoid air bubbles in the conveying product.
		X		X	X		X	X		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.
X	X	X			X			X		Pump running partially/ completely dry.	Check there is adequate conveying product available on the suction side. Dry running protection DRP.
						X	X			Check coupling.	If necessary, move pump in relation to drive, check wear on coupling gear, re-adjust coupling if necessary.
X		X								Rotation speed too low.	Increase rotation speed for low-viscosity media/large suction volume.

Malfunction										Causes	Rectification
Pump is not sucking	Pump pumping unevenly	Conveying capacity is not achieved	Pressure head is not reached	Pump does not start up	Pump seized / pump does not pump	Pump is loud when running	Motor gets too hot	Premature stator wear	Shaft seal is leaky		
X	X					X				Rotation speed too high.	Reduce rotation speed for high-viscosity media, risk of cavitation.
						X				Joint play too large.	Check mounting of coupling rod bushing.
X		X		X	X			X		Foreign objects in pump.	Dismantle pump, remove foreign bodies, replace defective parts.
X		X	X		X					Stator/rotor worn.	Dismantle pump and renew defective parts.
X		X			X	X				Joint parts worn.	Renew joint parts, use seepex pin joint grease.
X		X			X			X		Suction pipe blocked.	Clean the suction pipe.
X				X	X		X	X		Temperature of pumping liquid too high.	Check temperature, use an undersize rotor.
X		X		X			X		X	Gland packing too firm/ worn.	Loosen packing gland or tighten. Renew unusable packing rings.
X				X	X			X		Solid content and/or grain size too great.	Reduce pump speed, install screen with permitted mesh width. Increase liquid proportion.
X				X				X	X	Sedimentation/gumming of solids when pump stationary.	Rinse through and clean the pump immediately.
X				X	X			X	X	Conveying product hardens when the temperature drops below a certain limit.	Heat the pump.
				X	X		X	X		Stator swollen and unable to withstand conveying product.	Select a suitable stator material, use an undersize rotor.
						X			X	Bearings in pump drive housing or drive unit defective.	Renew bearings.
									X	Mechanical seal defective.	Check sliprings and O-rings for wear/resistance, renew if necessary.

9.1 Dismantling



All work steps and tools required for dismantling are specified in this chapter.

3-D ANIMATIONS

In addition to your SEEPEX operating and assembly instructions, 3-D animations of the individual dismantling steps are available.

Start animations

➢ For printed operating and assembly instructions, scan the adjacent QR code.

9.1 Dismantling

9.1.1 Keep tools ready for the dismantling

Recommended tools

Keep the listed tools ready (not part of the delivery scope):

Illustration	Denomination
	Hammer
	Set allen keys
	Set ring spanners size 10 - size 30
	Set fork spanners size 10 - size 30
	Metal saw **(WH)**
	Screwdriver **(WS)**
	Chisel **(WM)**
	Circlip pliers **(WZ)**

Recommended special tools

Special tools are not part of the delivery scope.

➢ Order special tools using the order form (→ chapter 11).

Illustration	Denomination
	Assembly mandrel **(W4)**
	Drift **(W5)**

Illustration	Denomination
	Mounting lever **(W9)**
	Dismantling tool **(W10)**

Recommended auxiliary materials

Keep the auxiliary materials listed available (not included in the scope of delivery):

- Lubricant **(GM)**

NOTICE

Damage to property due to inadequate lubricants (GM).
Damage to components. Contamination of the conveying medium.

- Observe resistance to the materials used and the conveying medium.
- Use suitable lubricants **(GM)** only.

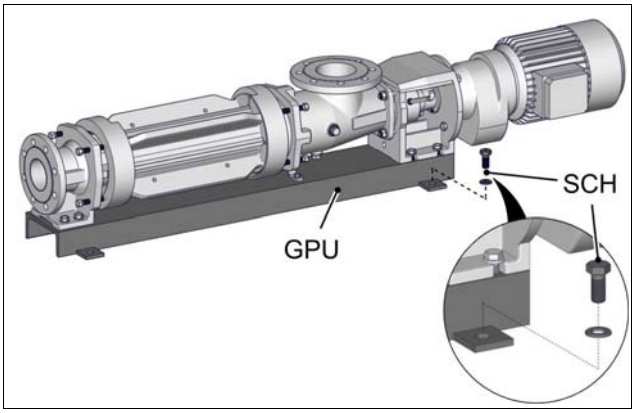
9.1.2 Prepare pump for dismantling

- Follow the instructions in the chapter Shut-down (→ chapter 6).

9.1.3 Dismantle pump

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

- Fasten base plate **(GPU)** to secure pump.
  - Recommendation: Fasten to suitable base using a screw fitting **(SCH)**.

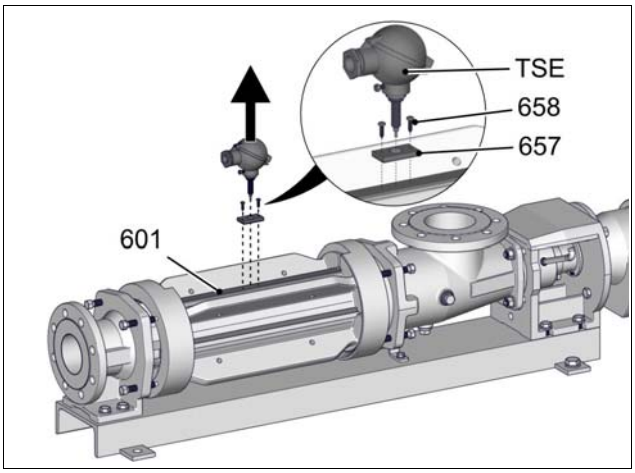


9.1.3.1 Dismantle stator (601)

Dismantle dry-running protection device (TSE) (optional)

NOTICE Damage to pump sided parts of the dry-running protection device **(TSE)** during dismantling the stator.

- ➢ Before dismantling the stator, remove all pump sided parts of the dry-running protection device **(TSE)**.
  - – Observe the chapter Options and additional accessories (→ chapter 12.1).



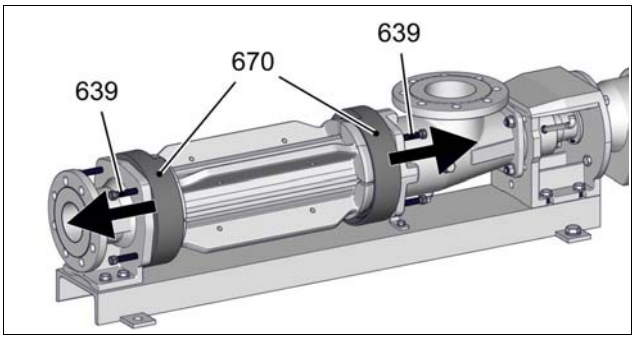
WARNING

Leaking conveying medium.
Personal injury and/or material damage can occur.
- ➢ Take safety precautions to protect people and the environment.
- ➢ Wear suitable protective clothing.
- ➢ When handling hazardous substances, comply with applicable regulations.

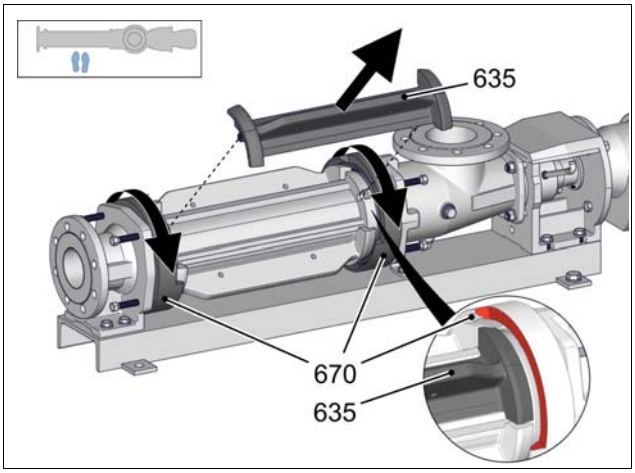
CAUTION

Risk of injury from moving and falling pump parts.
Body parts can get crushed.
- ➢ Turn kinetic rings **(670)** only on the outer surface.
- ➢ Secure lower adjusting segments **(635)** and stator half **(601)** to prevent them from falling.

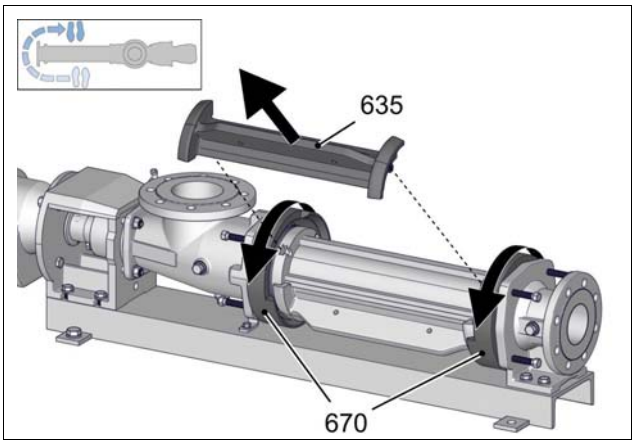
- ➢ Loosen adjusting screws **(639)** until kinetic rings **(670)** are flush.



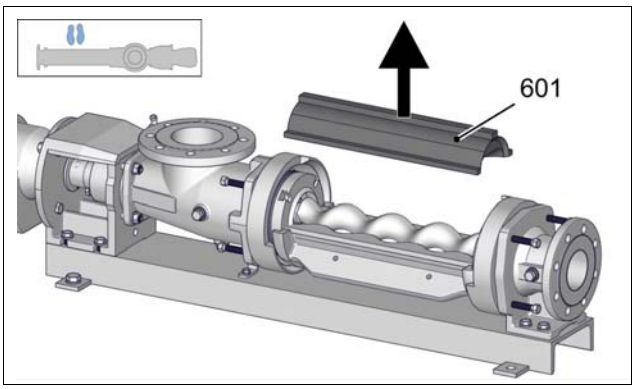
- Turn kinetic ring recess **(670)** until adjusting segment **(635)** is exposed.
- Remove adjusting segment **(635)**.



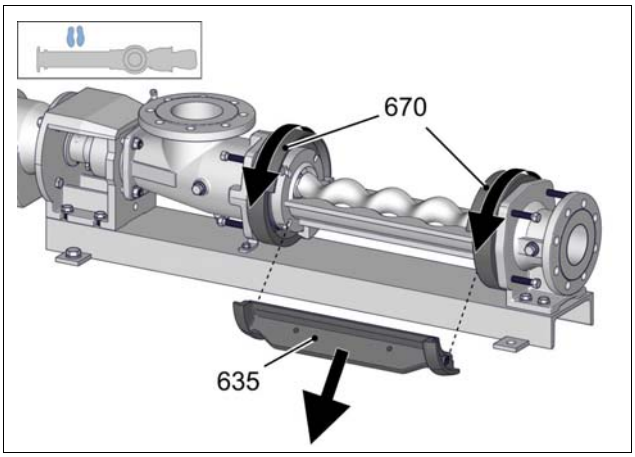
- Turn kinetic ring recess **(670)** until adjusting segment **(635)** is exposed.
- Remove adjusting segment **(635)**.



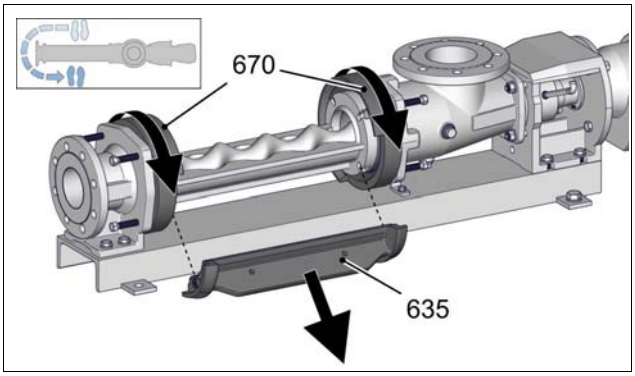
- Remove upper stator half **(601)**.



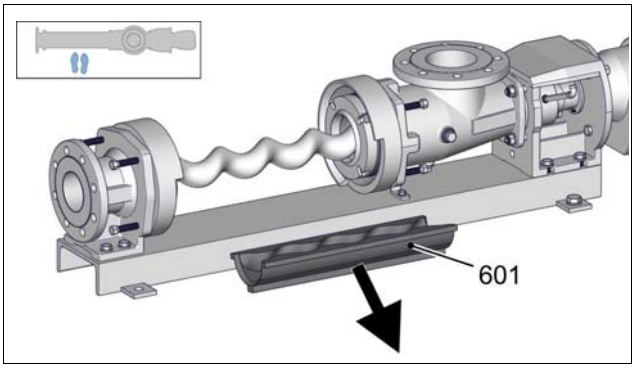
- Turn kinetic ring recess **(670)** until adjusting segment **(635)** is exposed.
- Remove adjusting segment **(635)**.



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

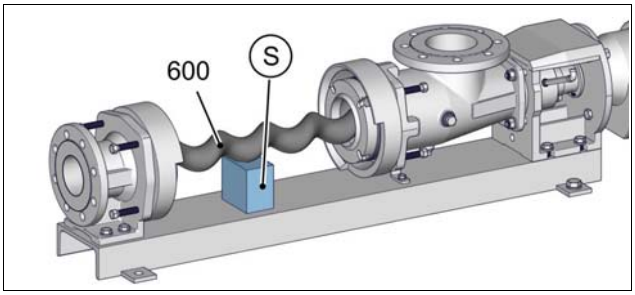


- Remove lower stator half **(601)**.

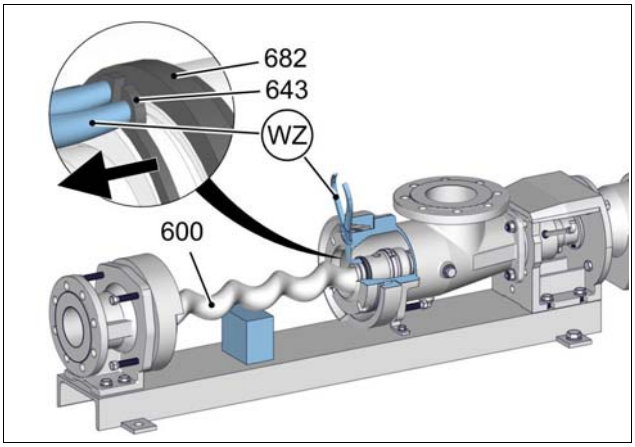


9.1.3.2 Dismantle rotor (600)

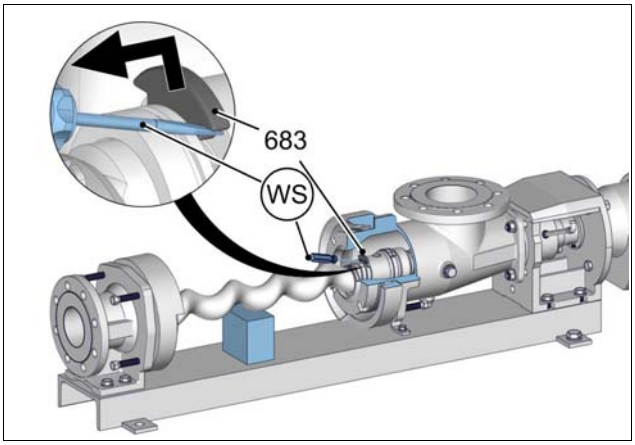
- Prop up rotor **(600)** with support **(S)**.



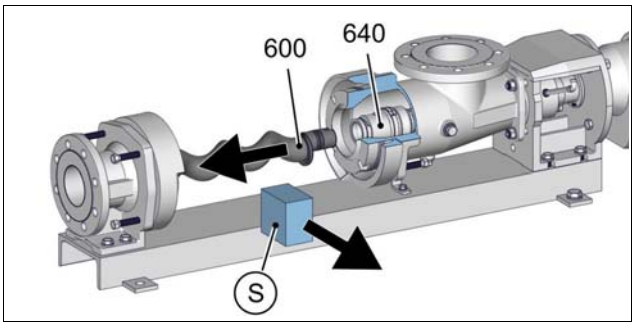
- Slide circlip **(643)** onto rotor **(600)**.
  - Use tool **(WZ)**.
- Slide support ring **(682)** towards rotor **(600)**.



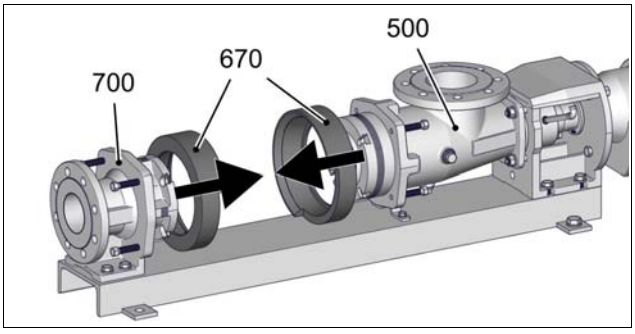
- Remove the lock washer **(683)**.
  - Use a suitable tool **(WS)**.



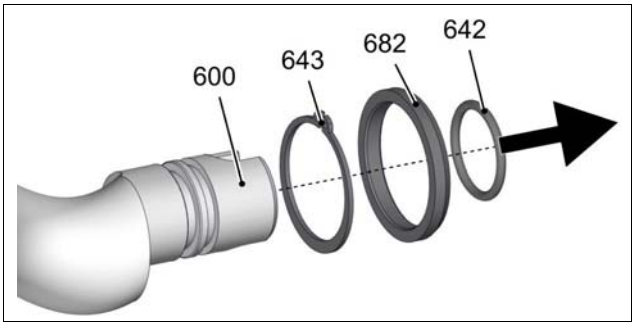
- Remove rotor **(600)** from rotor head **(640)**.
- Remove support **(S)**.



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

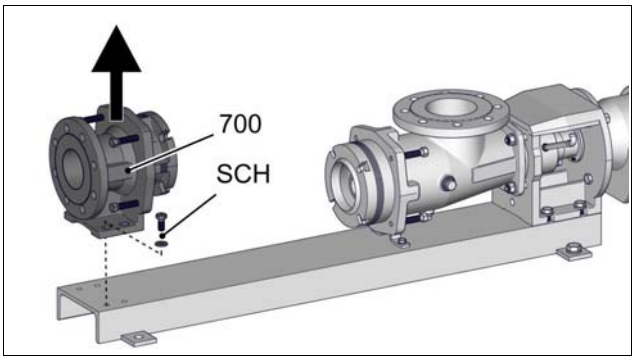


- Remove circlip **(643)**, support ring **(682)** and O-ring **(642)** from the rotor **(600)**.



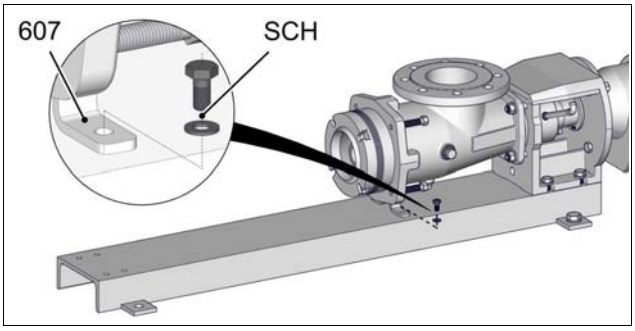
9.1.3.3 Dismantle pressure branch (700)

- Dismantle screw fitting **(SCH)**.
- Remove pressure branch **(700)**.

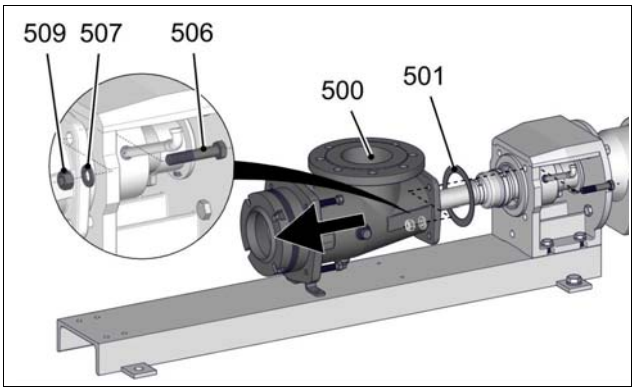


9.1.3.4 Dismantle suction casing (500)

- Dismantle screw fitting **(SCH)** from trestle **(607)**.



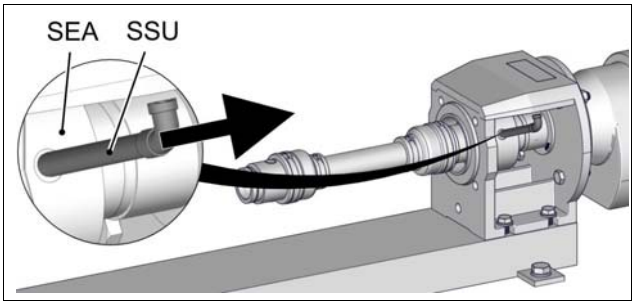
- Remove screw fitting **(506, 507, 509)**.
- Remove suction casing **(500)** and casing gasket **(501)**.



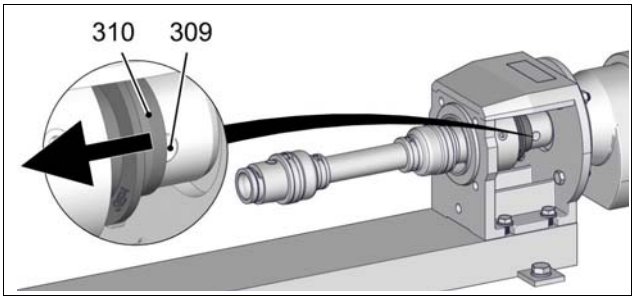
9.1.3.5 Dismantle rotating unit (RTE)

Dismantle flush connection (SSU) (optional)

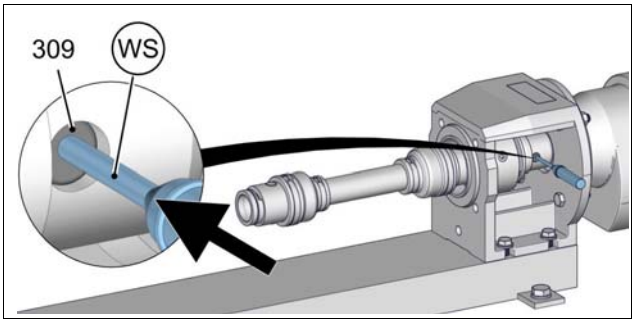
- Remove flush connection **(SSU)** from the casing of the shaft sealing **(SEA)**.



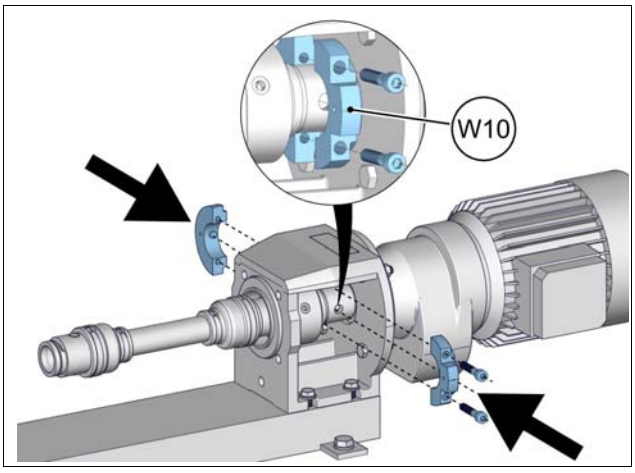
➢ Raise/reposition splash ring **(310)** to remove plug-in shaft pin **(309)**.



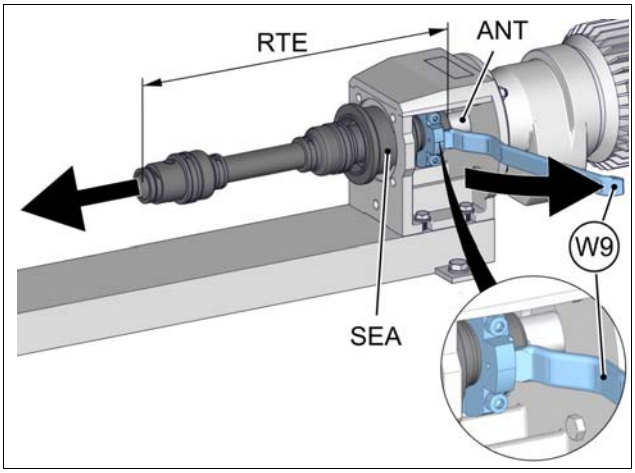
➢ Eject plug-in shaft pin **(309)**.
– Use a suitable tool **(WS)**.



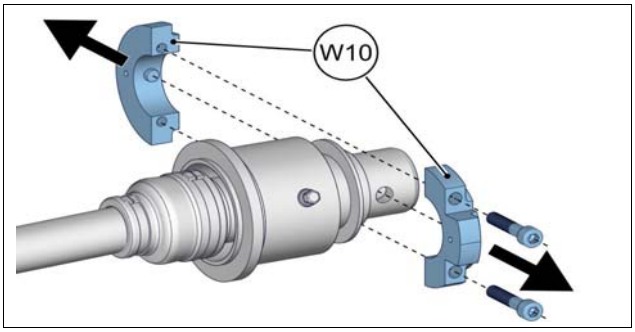
➢  Assemble tool **(W10)** as contact surface for mounting lever **(W9)**.



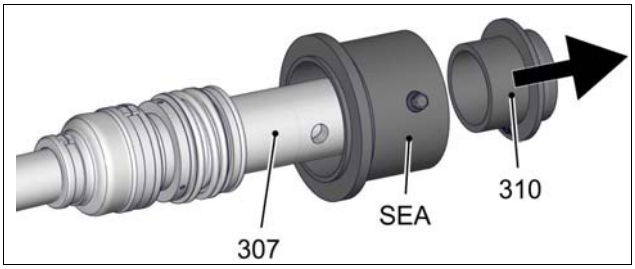
➢ Pull off rotating unit **(RTE)** with shaft seal **(SEA)** from output shaft of drive **(ANT)**.
–  Use tool **(W9)**.



➢ Dismantle tool **(W10)**.



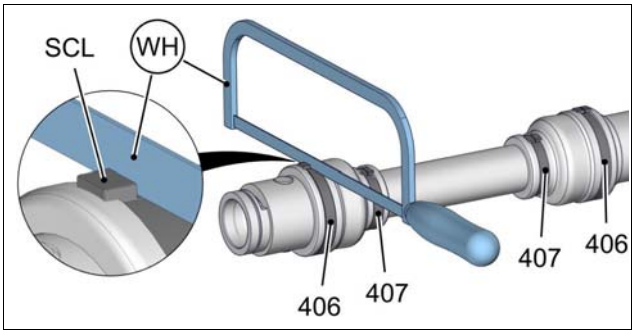
➢ Remove splash ring **(310)** and shaft seal casing **(SEA)** from plug-in shaft **(307)**.
  – See dismantling of shaft seal **(SEA)** (→ chapter 9.4).



9.1.3.6 Remove rotor head (640), coupling rod (400), plug-in shaft (307)

Dismantle holding band (406, 407)

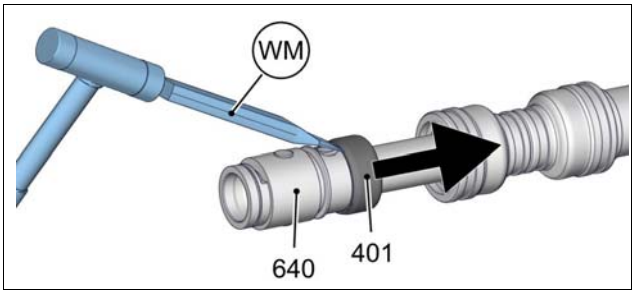
➢ **⚠ CAUTION** Parts can be ejected at speed. Risk of injury to eyes. Wear safety goggles.
➢ Disconnect holding band loop **(SCL)**.
  – Use suitable tools **(WH)**.
➢ Press out parts of the holding band loop **(SCL)**.
➢ Remove holding band **(406, 407)**.



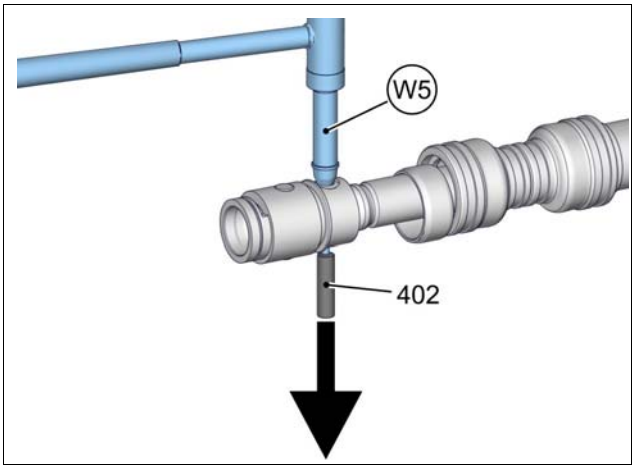
Separate joint - rotor side

➢ Pull back universal joint sleeve **(405)**.

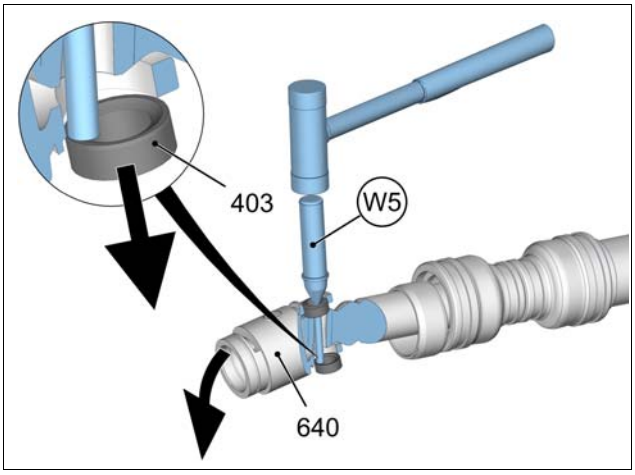
➢ Push retaining sleeve **(401)** off the rotor head **(640)**.
  – Use a suitable tool **(WM)**.



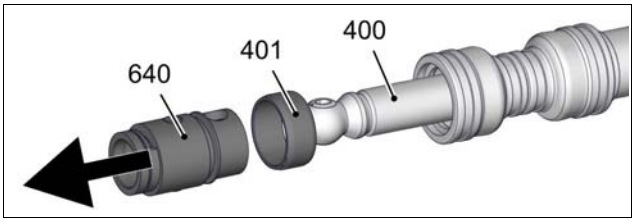
- Knock out coupling rod pin **(402)**.
  –  Use tool **(W5)**.



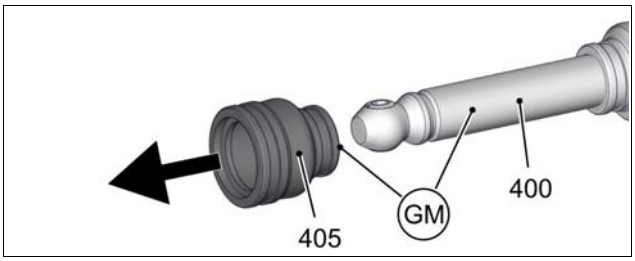
- Bend rotor head **(640)**.
- Knock out guide bushings **(403)**.
  –  Use tool **(W5)**.



- Remove rotor head **(640)** and retaining sleeve **(401)** from coupling rod **(400)**.

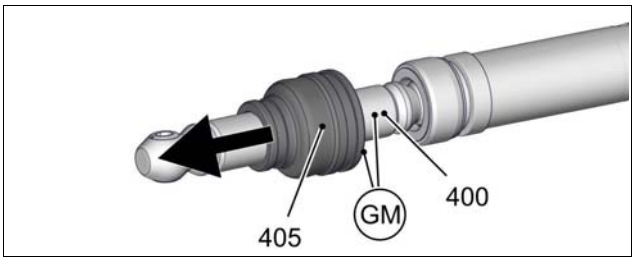


- For easier dismantling, apply lubricant **(GM)** to the interior of the universal joint sleeve **(405)** and the outer surface of the coupling rod **(400)**.
- Remove universal joint sleeve **(405)** from coupling rod **(400)**.

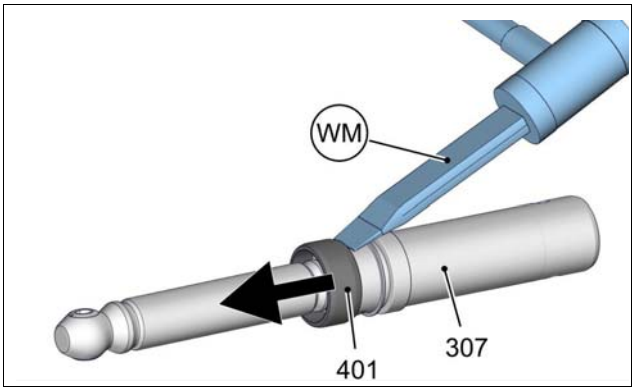


Separate joint - drive side

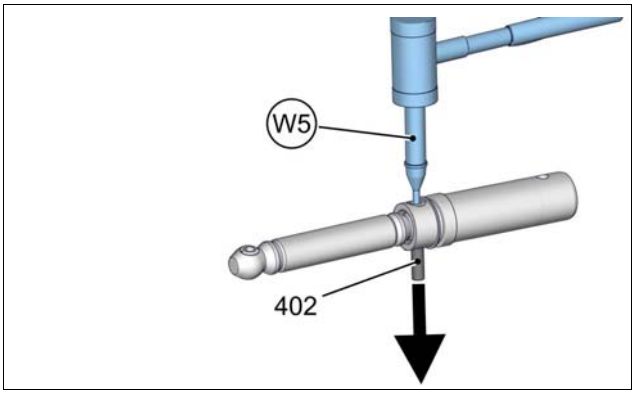
- For easier dismantling, apply lubricant **(GM)** to the interior of the universal joint sleeve **(405)** and the outer surface of the coupling rod **(400)**.
- Remove universal joint sleeve **(405)** from coupling rod **(400)**.



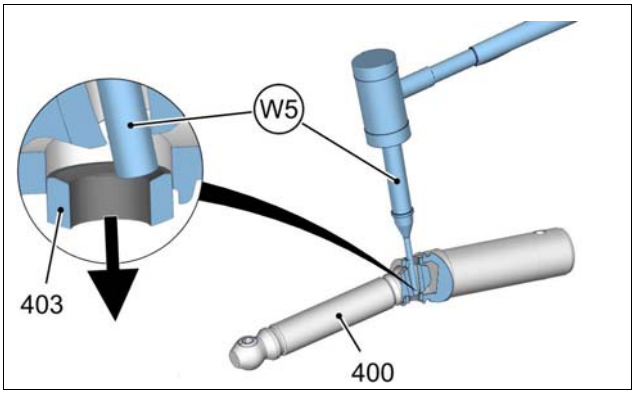
- Push retaining sleeve **(401)** off the plug-in shaft **(307)**.
  - Use a suitable tool **(WM)**.
- Remove retaining sleeve **(401)**.



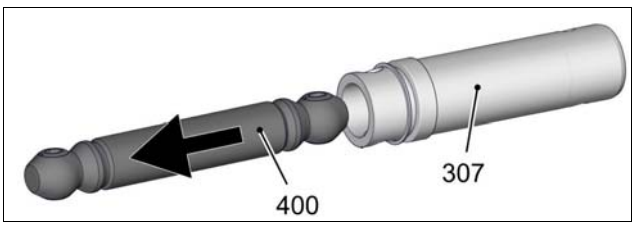
- Eject coupling rod pins **(402)**.
  -  Use tool **(W5)**.



- Bend the coupling rod **(400)**.
- Knock guide bushing **(403)**.
  -  Use tool **(W5)**.

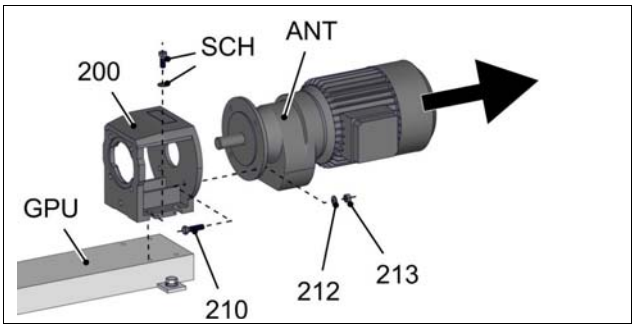


- Remove coupling rod **(400)** from plug-in shaft **(307)**.



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 **(SCH)**.
- Remove lantern **(200)** from base plate **(GPU)**.



9.2 Reassembly

All work steps and tools required for reassembly are specified in this chapter.

3-D ANIMATIONS

In addition to your SEEPEX operating and assembly instructions, 3-D animations of the individual assembly steps are available.

Start animations

➢ For printed operating and assembly instructions, scan the adjacent QR code.

9.2 Reassembly

9.2.1 Keep tools ready for assembly

Recommended tools

Keep the listed tools ready (not part of the delivery scope):

Illustration	Denomination
	Hammer
	Set allen keys
	Set ring spanners size 10 - size 30
	Set fork spanners size 10 - size 30
	Screwdriver **(WS)**
	Pliers **(WFZ)**
	Centre punch **(WK)**
	Spirit level **(WW)**
	Circlip pliers **(WZ)**
	Belt shears **(WBS)**
	Calliper gauge **(WG)**
	Cartridge gun **(WF)**

Recommended special tools

Special tools are not part of the delivery scope.
➢ Order special tools using the order form (→ chapter 11).

Illustration	Denomination
	Packing puller **(W1)**
	Mounting tool **(W3)**
	Assembly mandrel **(W4)**
	Drift **(W5)**
	Mounting lever **(W9)**
	Dismantling tool **(W10)**

Recommended auxiliary materials

Keep the auxiliary materials listed available (not included in the scope of delivery):
➢ Soft soap **(GS)**
➢ Anti-seize graphite petroleum **(GC)**
➢ SEEPEX joint grease **(GF)**
➢ Kinetic ring grease **(KF)** - SEEPEX BIO 10206

NOTICE

Damage to property due to inadequate lubricants (GM).
Damage to components. Contamination of the conveying medium.
➢ Observe resistance to the materials used and the conveying medium.
➢ Use suitable lubricants **(GM)** only.

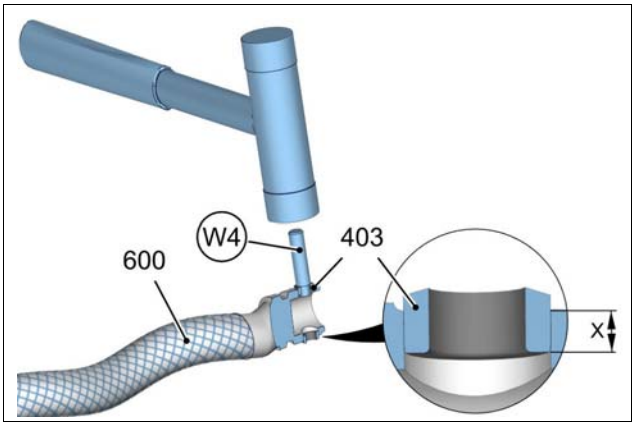
9.2.2 Prepare components parts for assembly

9.2.2.1 Prepare rotor head (640) for assembly

➢ Remove any damage.
➢ Clean rotor head **(640)**.

NOTICE Malfunction of the joints. Malfunction and/ or destruction of the joints. Renew coupling rod pin **(402)** and guide bushings **(403)** together.

- ➢ Drive in guide bushings **(403)** (Depth X = 2/3).
  - – Use tool **(W4)**.

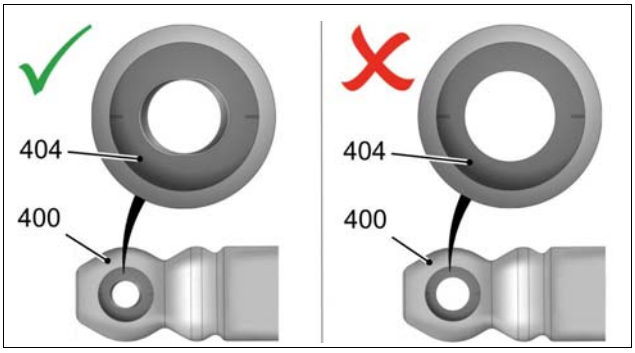


9.2.2.2 Prepare coupling rod (400) for assembly

- ➢ Clean coupling rod **(400)**.

NOTICE Malfunction of the joints. Malfunction and/ or destruction of the joints

- ➢ Check coupling rod bushings **(404)** for wear.
  - – In the event of wear, replace coupling rod **(400)**, including the coupling rod bushings **(404)**.

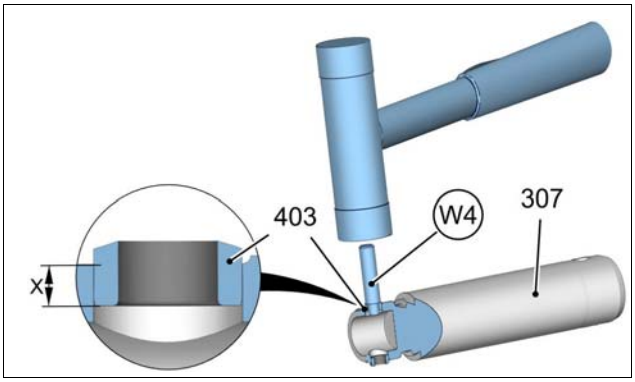


9.2.2.3 Prepare plug-in shaft (307) for assembly

- ➢ Remove any damage.
- ➢ Clean plug-in shaft **(307)**.

NOTICE Malfunction of the joints. Malfunction and/ or destruction of the joints. Renew coupling rod pin **(402)** and guide bushings **(403)** together.

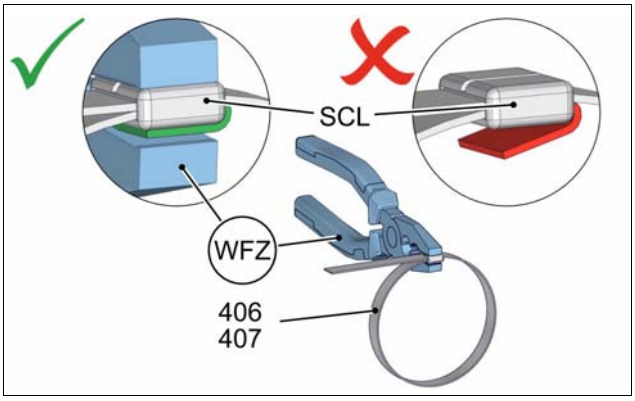
- ➢ Drive in guide bushings **(403)** (depth X = 2/3).
  - – Use tool **(W4)**.



9.2.2.4 Prepare holding band (406, 407)

- ➢ Use prefabricated double-band holding bands only.

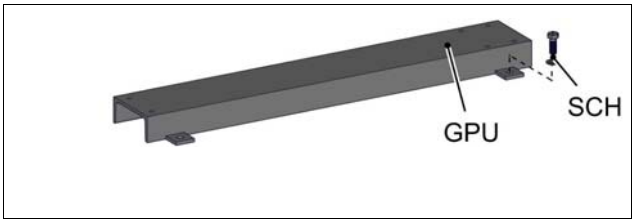
- Check the holding band **(406, 407)**
  - Bent-over holding band **(406, 407)** is in contact with holding band loop **(SCL)** to avoid damaging universal joint sleeve **(405)**.
  - Press on holding band **(406, 407)** using tool **(WFZ)** if necessary.



9.2.3 Assemble pump

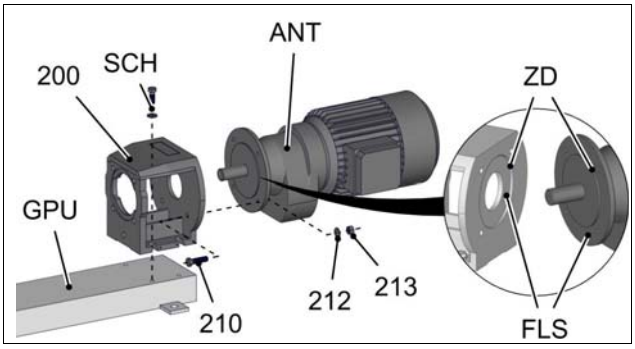
⚠ WARNING Risk of injury due to lack of stability of the pump. Crushing of body parts due to the pump or pump parts tipping or falling down.

- Fasten base plate **(GPU)** to secure pump.
  - Recommendation: Fasten to suitable base using a screw fitting **(SCH)**.



9.2.3.1 Assemble lantern (200) and drive (ANT)

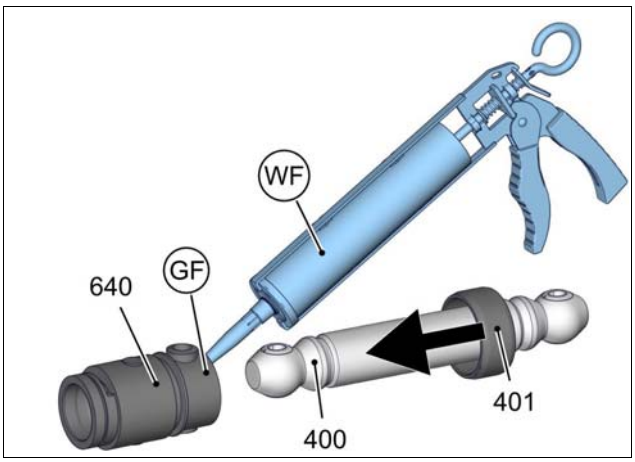
- Assemble lantern **(200)** with screw fitting **(SCH)** on base plate **(GPU)**.
- Clean flange bearing surfaces **(FLS)**, centering surface **(ZD)** and output shaft of the drive **(ANT)**.
- Assemble drive **(ANT)** with screw fitting **(210, 212, 213)** on lantern **(200)**.



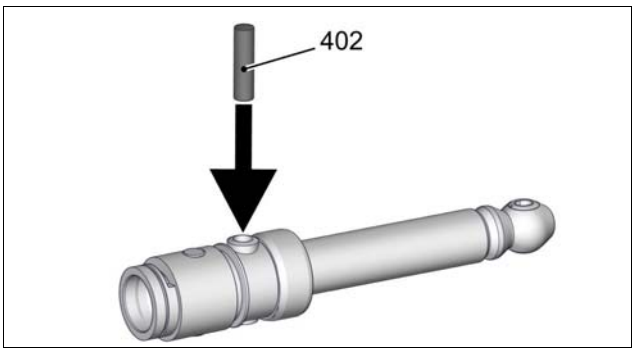
9.2.3.2 Assemble rotor head (640), coupling rod (400), plug-in shaft (307)

Connect rotor head (640) with coupling rod (400)

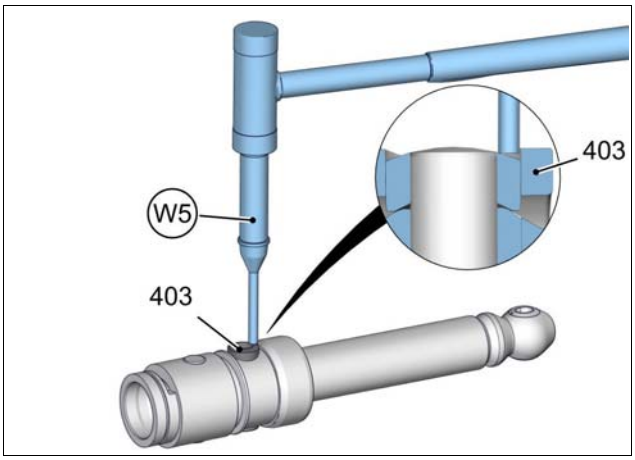
- Fill rotor head **(640)** with SEEPEX joint grease **(GF)**.
  - Use tool **(WF)**.
- Slide coupling rod **(400)** into rotor head **(640)**.
- Push on retaining sleeve **(401)**.



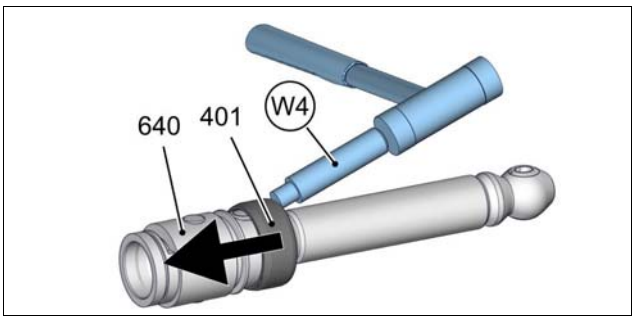
- Insert coupling rod pin **(402)**.



- Knock the guide bushings **(403)** in.
  -  Use tool **(W5)**.

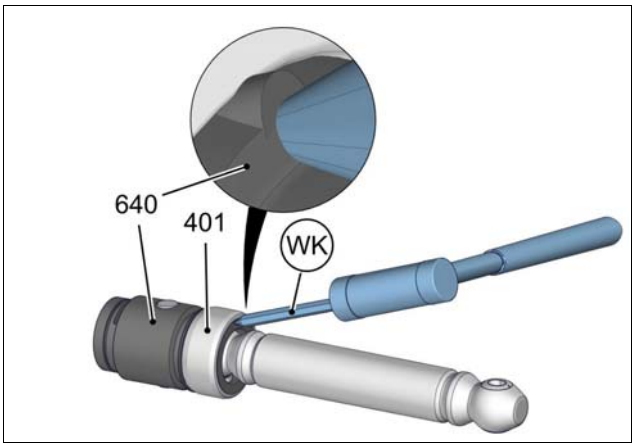


- Slide retaining sleeve **(401)** onto rotor head **(640)**.
  -  Use tool **(W4)**.



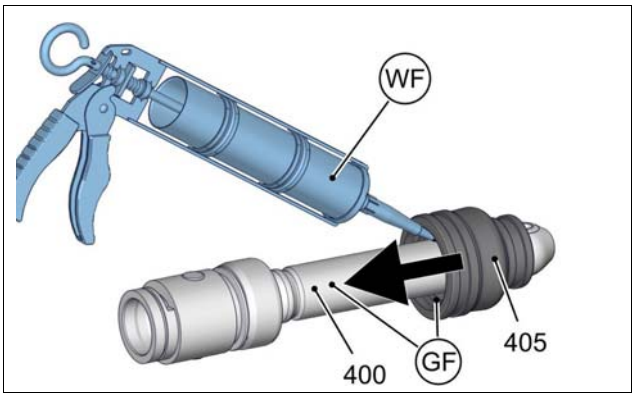
Secure retaining sleeve (401) - rotor-side

- ➢ Secure retaining sleeve **(401)** at a distance of 180° by means of material deformation at the rotor head **(640)**.
  - – Use a suitable tool **(WK)**.



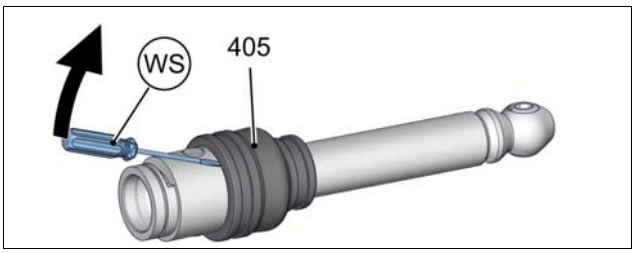
Assemble universal joint sleeve (405) - rotor-side

- ➢ For simpler assembly of the universal joint sleeve **(405)**, moisten the outer surface of coupling rod **(400)** with SEEPEX joint grease **(GF)**.
- ➢ Fill interior of universal joint sleeve **(405)** with SEEPEX joint grease **(GF)**.
  - – Filling grade SEEPEX joint grease **(GF)** find in the document Maintenance (→ chapter 7).
  - – Use tool **(WF)**.
- ➢ Slide universal joint sleeve **(405)** onto joint.



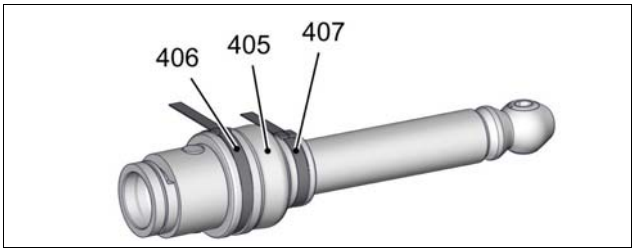
NOTICE Damage of universal joint sleeve due to sharp tools. Leak in universal joint sleeve.

- ➢ Ventilate inner area of joint by lifting the universal joint sleeve **(405)**.
  - – Use a suitable tool **(WS)**.

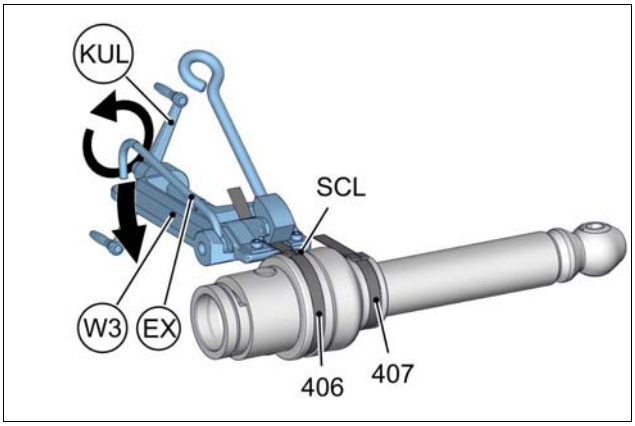


Assemble holding band - rotor-side

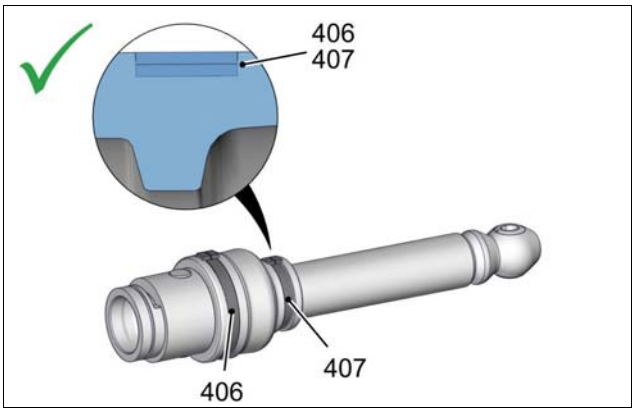
- ➢ Slide holding bands **(406, 407)** loosely onto universal joint sleeve **(405)**.



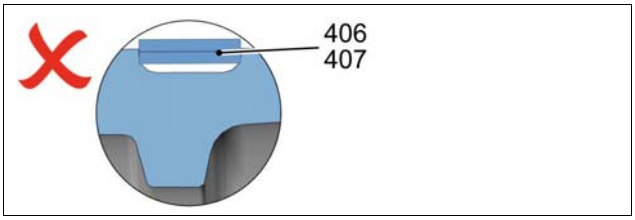
➢ Tighten holding band **(406, 407)** - rotor-side
  – Insert holding band **(406, 407)** into tool **(W3)**.
  – Clamp holding band firmly using eccentric lever **(EX)**.
  – Turn crank **(KUL)** until the holding band **(406, 407)** is tensioned and is in contact with holding band loop **(SCL)**.
  – Carefully pull the holding band **(406, 407)** together until it is in contact with the universal joint sleeve around the circumference.



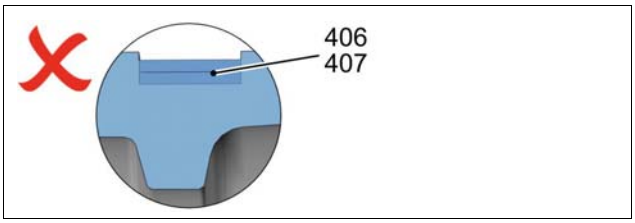
Correct
The holding band **(406, 407)** has drawn in the out shape of the universal joint sleeve and is firmly seated.



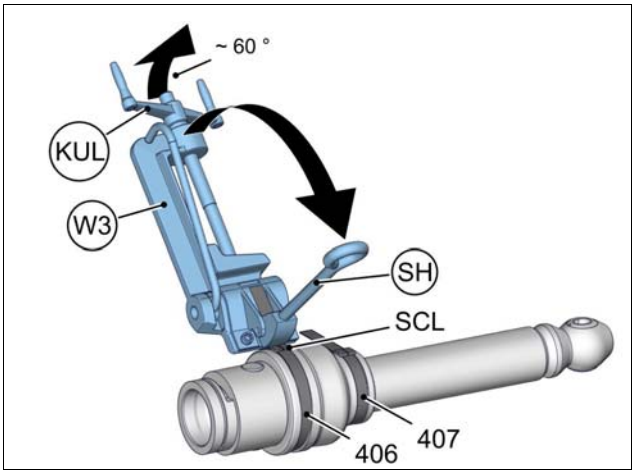
False
Holding band **(406, 407)** too loose, can slip off.



Incorrect
The holding band **(406, 407)** is too tight, universal joint sleeve will be damaged/sheared off.



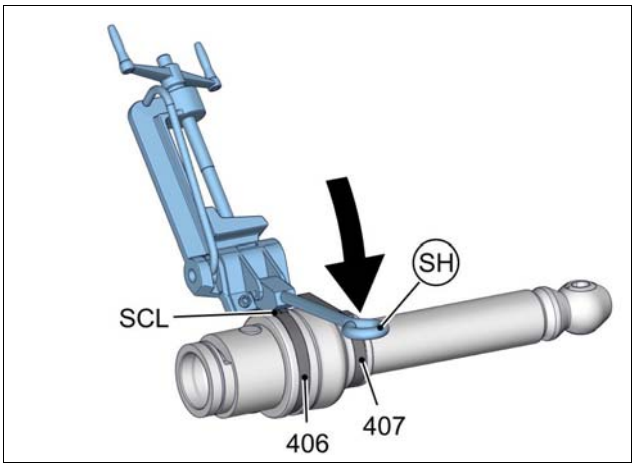
➢ Cant up the holding band **(406, 407)**.
➢ Swivel mounting tool **(W3)** approx. 60° upwards.
➢ Loosen crank **(KUL)** by a half turn.
➢ Swivel cutting lever **(SH)** forward until the pressure piece is lying behind the holding band loop **(SCL)**.



Shear off holding band (406, 407) for material design stainless steel, corrosion-resistant steel

NOTICE Universal joint sleeve can be damaged by hammering and striking. Joint grease **(GF)** can leak out. Avoid hammering or striking the universal joint sleeve.

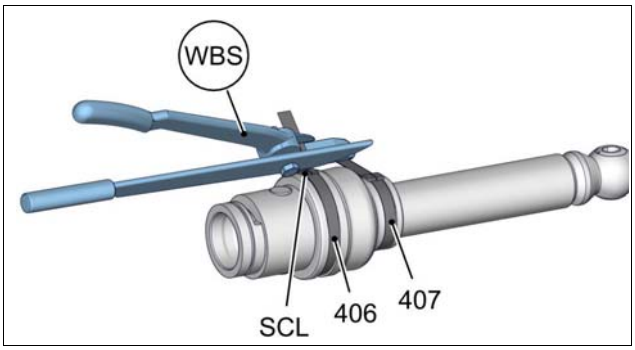
- Refer to the technical data (→ chapter 3) for the material design.
- Shear off holding band **(406, 407)** below holding band loop **(SCL)**.
  - Strike cutting lever **(SH)** with the palm of your hand.
- Straighten the holding band **(406, 407)** carefully if it lifts up at the sheared-off end.



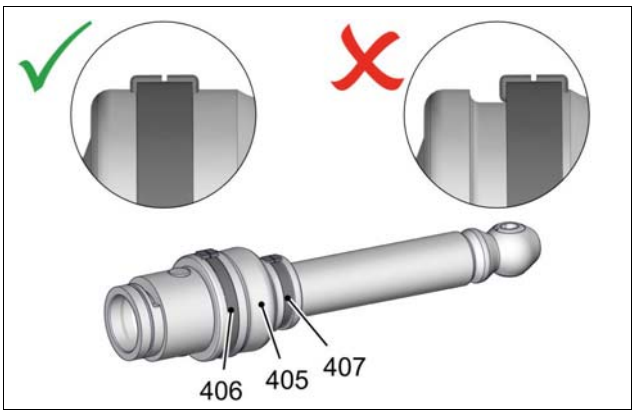
Cut off holding band (406, 407) for material design stainless steel, heat-resistant steel

NOTICE Universal joint sleeve can be damaged by hammering and striking. Joint grease **(GF)** can leak out. Avoid hammering or striking the universal joint sleeve.

- Refer to the technical data (→ chapter 3) for the material design.
- Cut off holding band **(406, 407)** below holding band loop **(SCL)**.
  - Use tool **(WBS)**.
- File down and deburr any projecting edges.

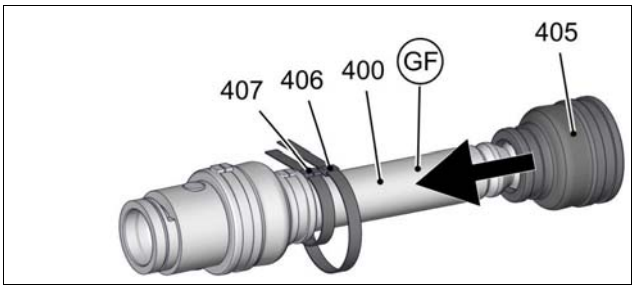


- The holding band **(406, 407)** must lie in the groove of the universal joint sleeve **(405)**.
- Replace the holding band **(406, 407)** if the holding band **(406, 407)** slips back through the loop.

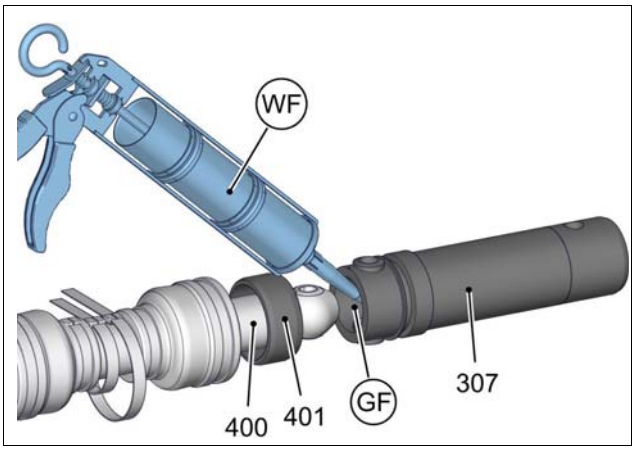


Connect coupling rod (400) and plug-in shaft (307)

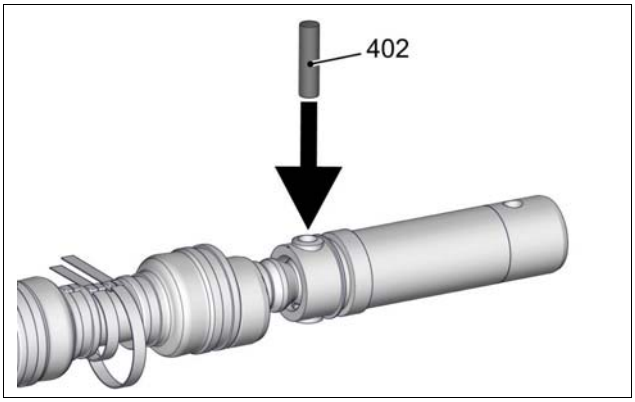
- For easier assembly of the universal joint sleeve **(405)**, lubricate the outer surface of coupling rod **(400)** with SEEPEX joint grease **(GF)**.
- Slide holding bands **(406, 407)** and universal joint sleeve **(405)** onto coupling rod **(400)**.



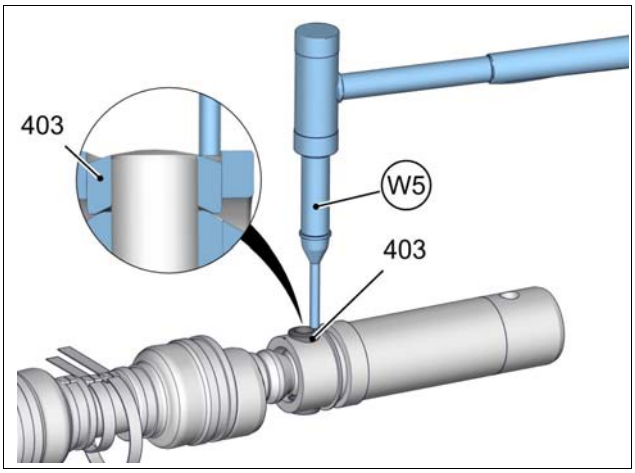
- Fill interior of joint head with SEEPEX joint grease **(GF)**.
  - Use tool **(WF)**.
- Slide the retaining sleeve **(401)** and plug-in shaft **(307)** onto the coupling rod **(400)**.



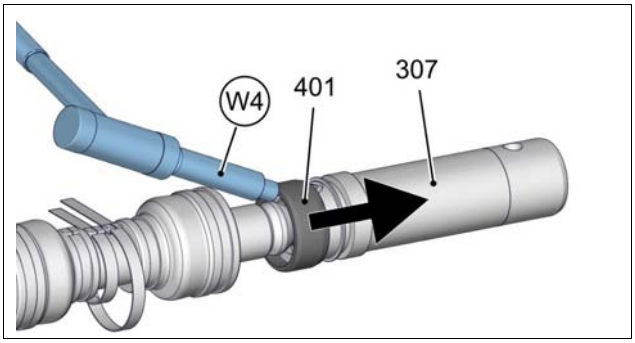
- Insert coupling rod pin **(402)**.



- Knock the guide bushings **(403)** in.
  -  Use tool **(W5)**.

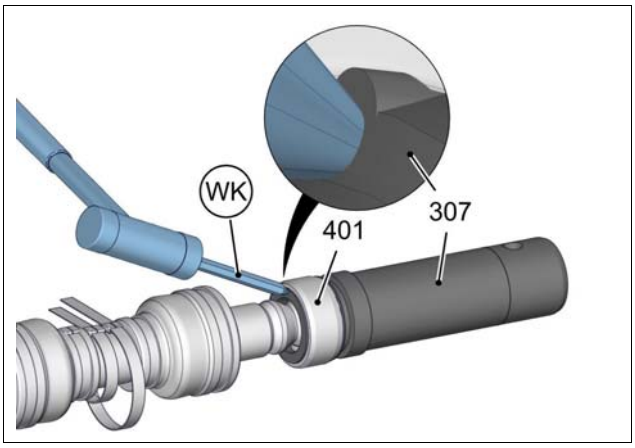


➢ Slide retaining sleeve **(401)** onto plug-in shaft **(307)**.
  –  Use tool **(W4)**.



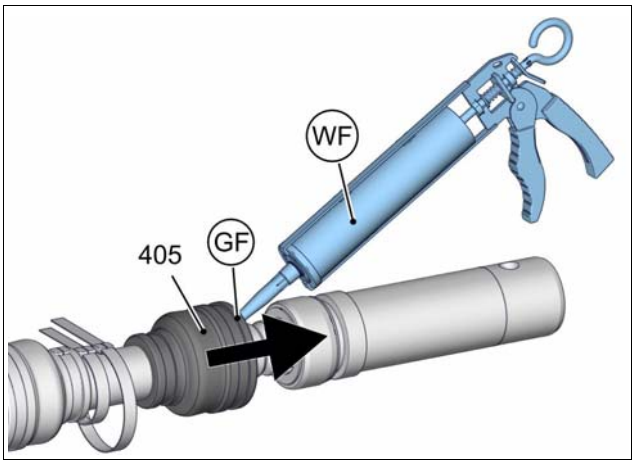
Secure retaining sleeve (401) - drive side

➢ Secure retaining sleeve **(401)** at a distance of 180° by means of material deformation at plug-in shaft **(307)**.
  – Use a suitable tool **(WK)**.



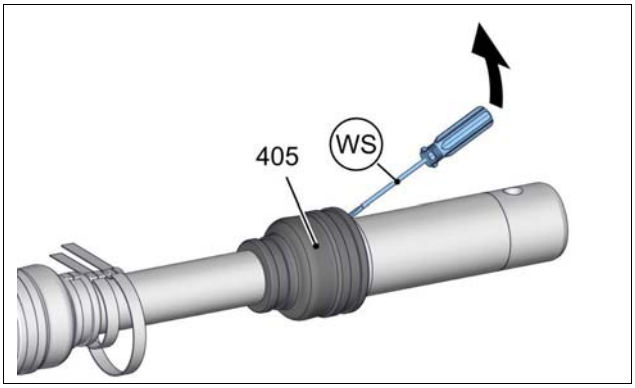
Assemble universal joint sleeve (405) - drive side

➢ Fill the inside of universal joint sleeve **(405)** with SEEPEX joint grease**(GF)**.
  – For filling grade of SEEPEX joint grease **(GF)**, refer to the maintenance document (→ chapter 7).
  – Use tool **(WF)**.
➢ Slide universal joint sleeve **(405)** onto joint.



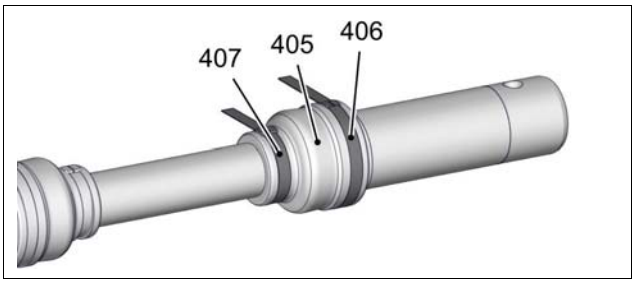
NOTICE Damage of universal joint sleeve due to sharp tools. Leak in universal joint sleeve.

- Ventilate inner area of joint by lifting the universal joint sleeve **(405)**.
  - Use a suitable tool **(WS)**.

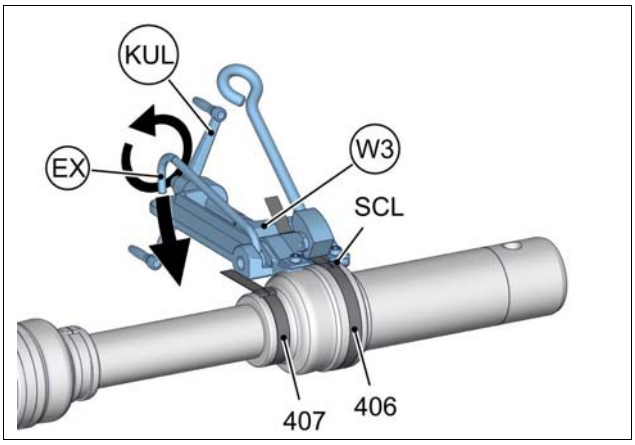


Assemble holding band - drive-side

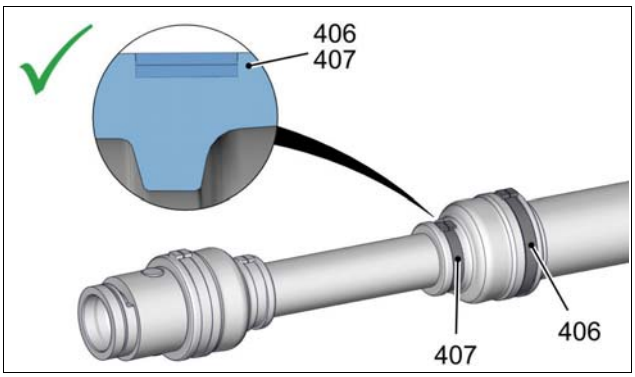
- Slide holding bands **(406, 407)** loosely onto universal joint sleeve **(405)**.



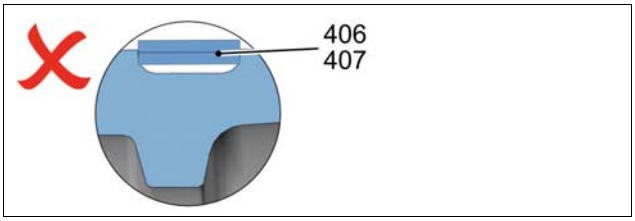
- Tighten holding band **(406, 407)** - drive-side.
  - Insert holding band **(406, 407)** into tool **(W3)**.
  - Clamp holding band firmly using eccentric lever **(EX)**.
  - Turn crank **(KUL)** until the holding band **(406, 407)** is tensioned and is in contact with holding band loop **(SCL)**.
  - Carefully pull the holding band **(406, 407)** together until it is in contact with the universal joint sleeve around the circumference.



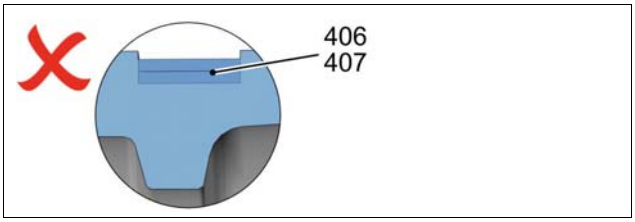
Correct
The holding band **(406, 407)** has drawn in the out shape of the universal joint sleeve and is firmly seated.



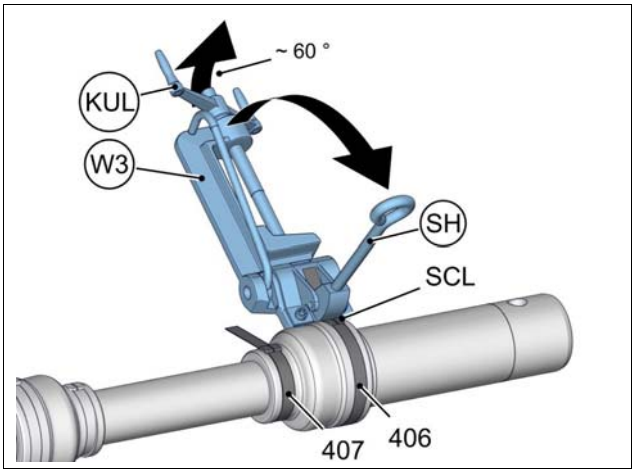
False
Holding band **(406, 407)** too loose, can slip off.



Incorrect
The holding band **(406, 407)** is too tight, universal joint sleeve will be damaged/sheared off.



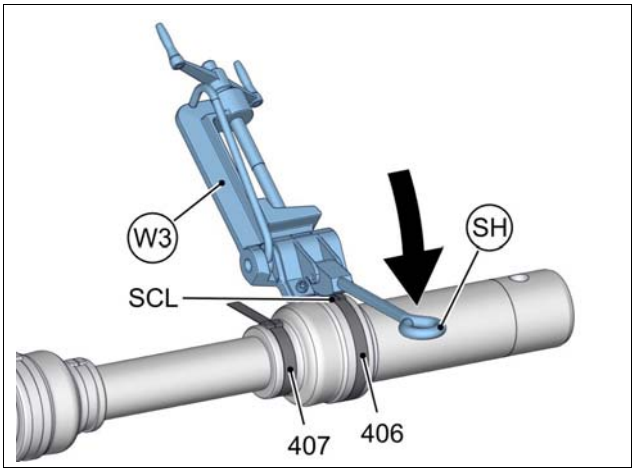
- Cant up the holding band **(406, 407)**.
- Swivel mounting tool **(W3)** approx. 60° upwards.
- Loosen crank **(KUL)** by a half turn.
- Swivel cutting lever **(SH)** forward until the pressure piece is lying behind the holding band loop **(SCL)**.



Shear off holding band (406, 407) for material design stainless steel, corrosion-resistant steel

NOTICE Universal joint sleeve can be damaged by hammering and striking. Joint grease **(GF)** can leak out. Avoid hammering or striking the universal joint sleeve.

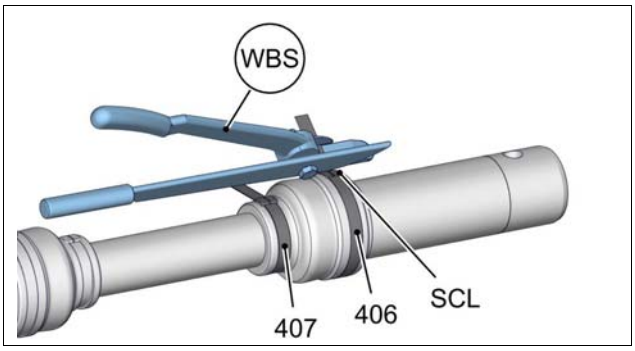
- Refer to the technical data (→ chapter 3) for the material design.
- Shear off holding band **(406, 407)** below holding band loop **(SCL)**.
  - Strike cutting lever **(SH)** with the palm of your hand.
- Straighten the holding band **(406, 407)** carefully if it lifts up at the sheared-off end.



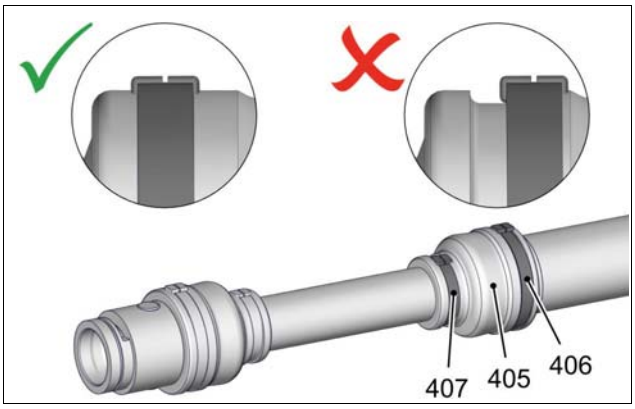
Cut off holding band (406, 407) for material design stainless steel, heat-resistant steel

NOTICE Universal joint sleeve can be damaged by hammering and striking. Joint grease **(GF)** can leak out. Avoid hammering or striking the universal joint sleeve.

- Refer to the technical data (→ chapter 3) for the material design.
- Cut off holding band **(406, 407)** below holding band loop **(SCL)**.
  - Use tool **(WBS)**.
- File down and deburr any projecting edges.

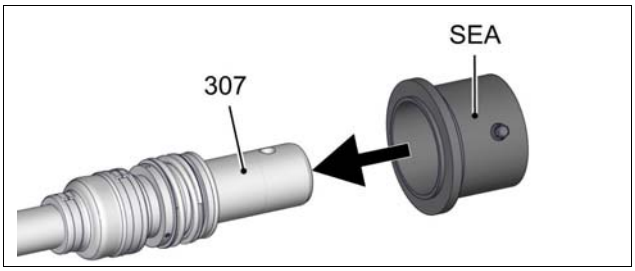


- The holding band **(406, 407)** must lie in the groove of the universal joint sleeve **(405)**.
- Replace the holding band **(406, 407)** if the holding band **(406, 407)** slips back through the loop.

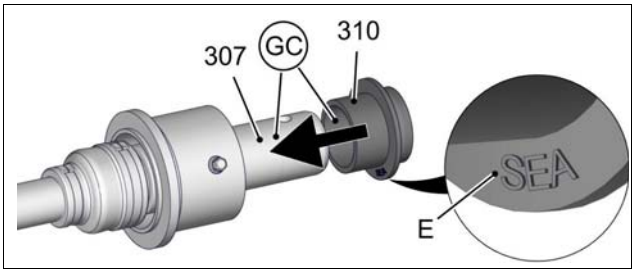


9.2.3.3 Assemble rotating unit (RTE)

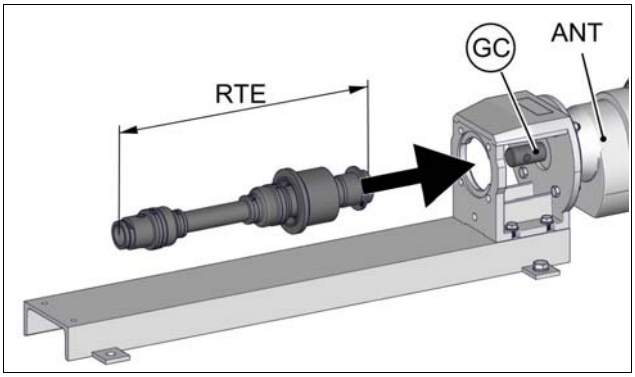
- Slide shaft seal casing **(SEA)** onto plug-in shaft **(307)**.
  - See chapter Shaft seal reassembly (→ chapter 9.4).



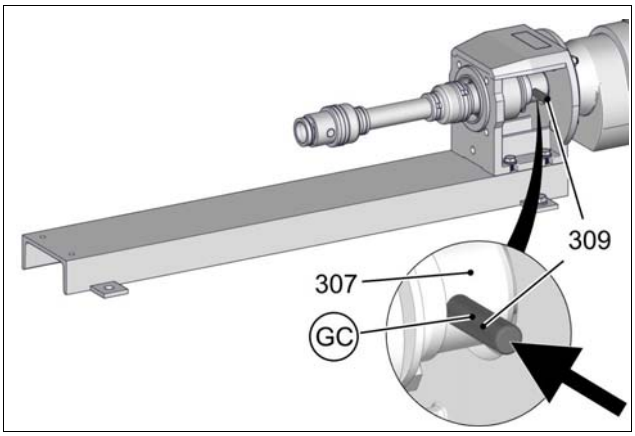
- Moisten inner surface of splash ring **(310)** and outer surface of plug-in shaft **(307)** with anti-seize graphite petroleum **(GC)** for easier assembly of the splash ring **(310)**.
- Slide splash ring **(310)** onto plug-in shaft **(307)**.
  - Observe fitting position of splash ring **(E)** (lettering „SEA“).



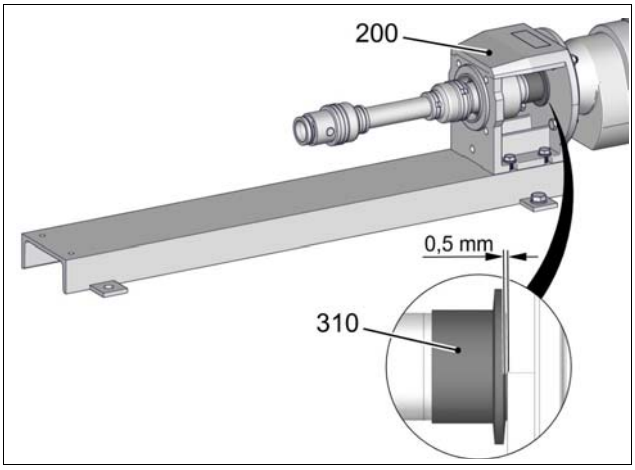
- Moisten output shaft of drive **(ANT)** with anti-seize graphite petroleum **(GC)** for easier assembly of the rotating unit **(RTE)**.
- Push rotating unit **(RTE)** onto output shaft of the drive **(ANT)**.



- Moisten plug-in shaft pin **(309)** with anti-seize graphite petroleum **(GC)** and insert into the plug-in shaft **(307)**.

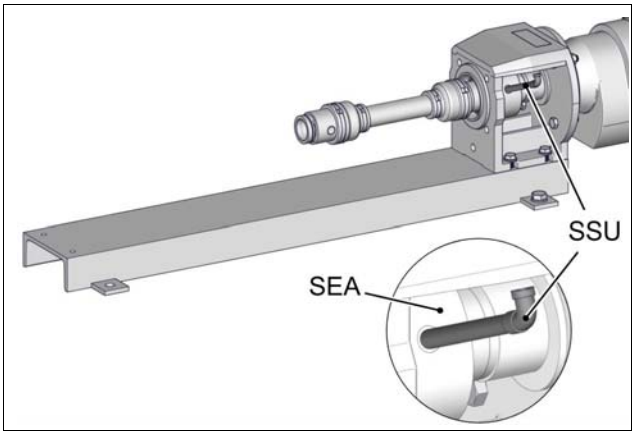


- Note position of splash ring **(310)**.
- Insert splash ring collar at a distance of 0.5 mm from the lantern **(200)**.



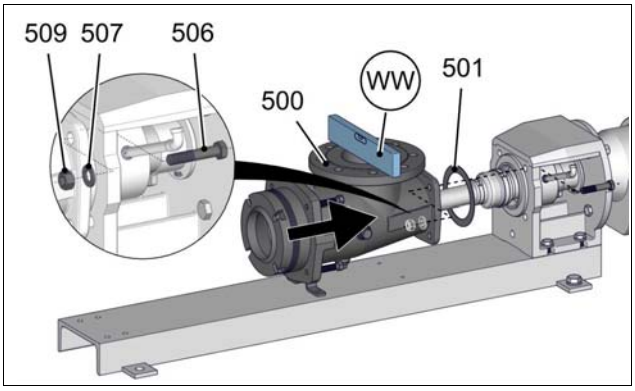
Assemble the flush connection (SSU) (optional)

- Assemble flush connection **(SSU)**.

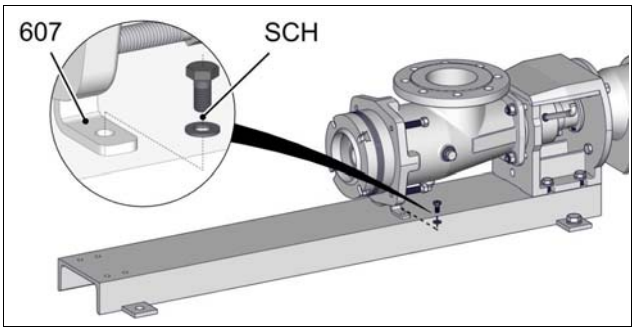


9.2.3.4 Assemble suction casing (500)

- Push on casing gasket **(501)**.
- Assemble and align suction casing **(500)** with screw fitting **(506, 507, 509)**.
  - Use spirit level **(WW)**.

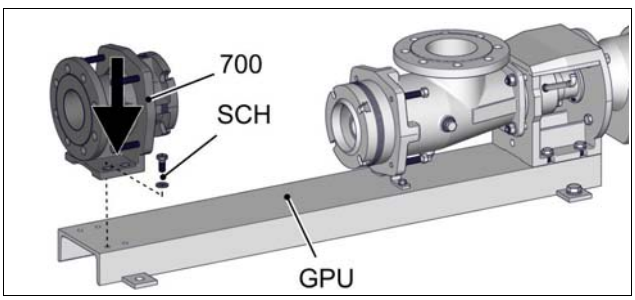


- Assemble screw fitting **(SCH)** on trestle **(607)**.



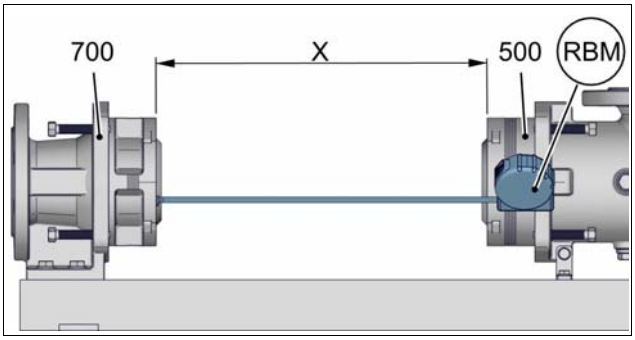
9.2.3.5 Assemble pressure branch (700)

- Assemble pressure branch **(700)** with screw fitting **(SCH)** to base plate **(GPU)**.



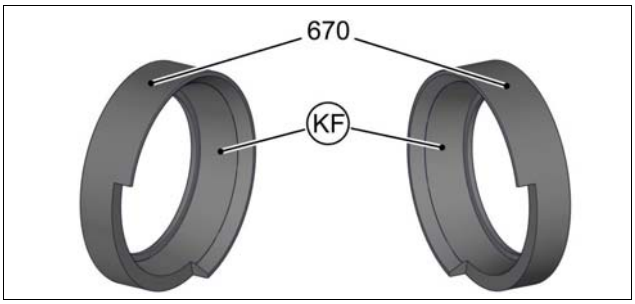
➢ Align pressure branch **(700)**.
– Observe distance **(X)**:
– Use tool **(RBM)**.

Size	Distance (X)
2-12S	257 mm
5-12S	332 mm
10-12S	424 mm
17-12S	518 mm

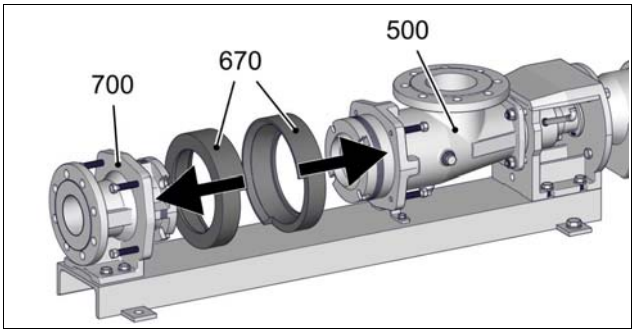


9.2.3.6 Assemble rotor (600)

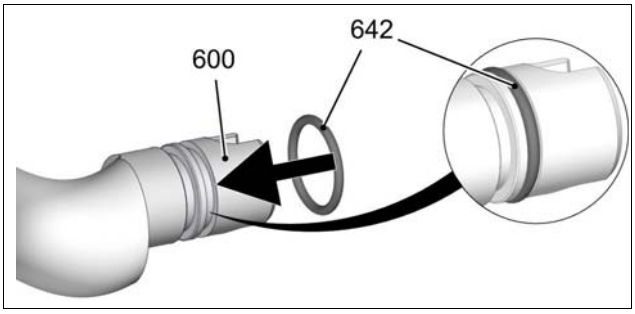
➢ Moisten inner surfaces of kinetic rings **(670)** with SEEPEX kinetic ring grease.



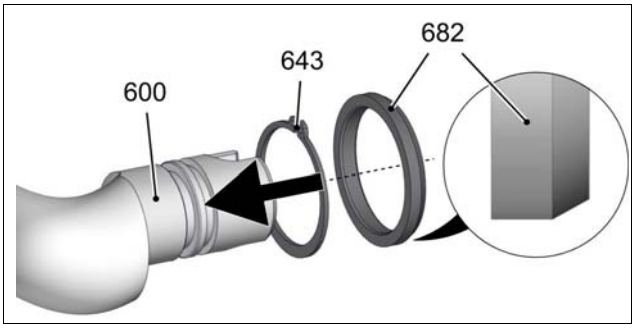
➢ Slide kinetic rings **(670)** onto suction casing **(500)** and pressure branch **(700)**.



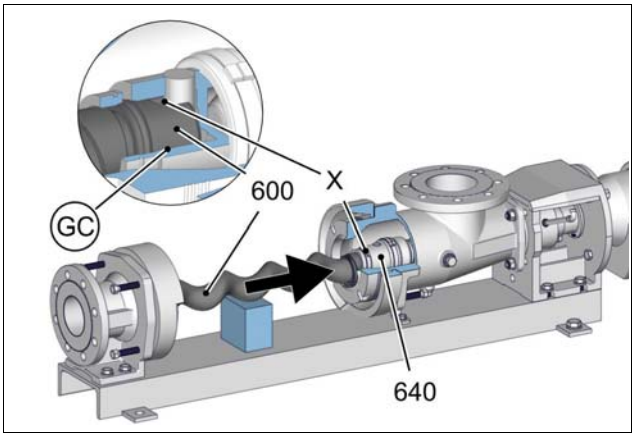
➢ Insert O-ring **(642)** into circumferential groove of the rotor **(600)**.



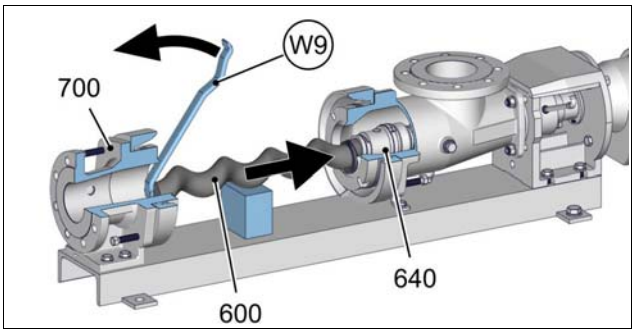
➢ Slide circlip **(643)** and support ring **(682)** onto rotor **(600)**.
– Observe the fitting position of support ring **(682)**.



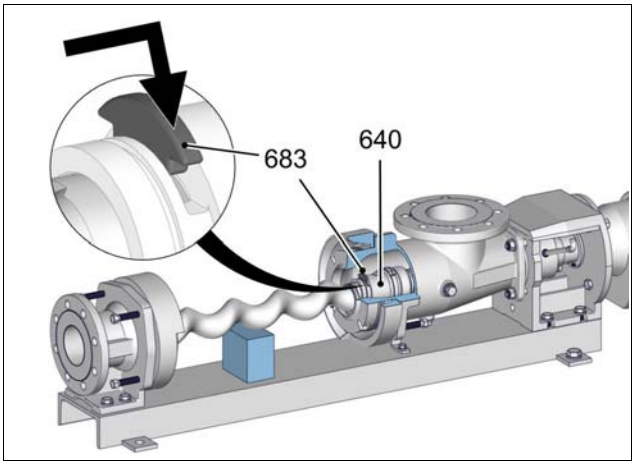
- Moisten inner surface of rotor head **(640)** with anti-seize graphite petroleum **(GC)**.
- Slide rotor **(600)** into rotor head **(640)**.
  - Note position of the groove **(X)**.
- Prop up rotor **(600)** with support **(S)**.



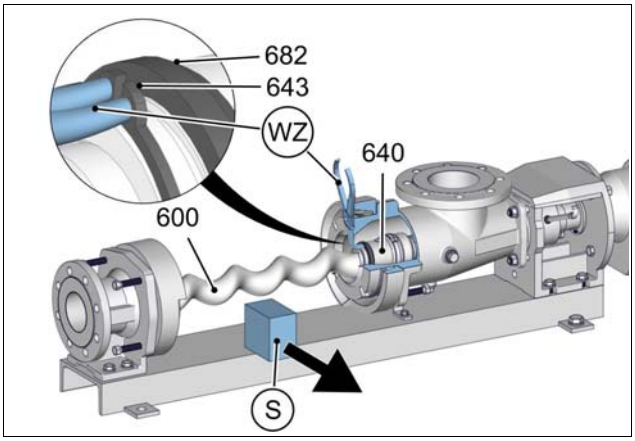
- Press rotor **(600)** into the rotor head **(640)**.
  - Use tool **(W9)**.
  - Protect stator capture surface on the pressure branch **(700)** from possible damage and deformation.



- Insert lock washer **(683)** into the rotor head **(640)**.



- Slide on support ring **(682)** onto the rotor head **(640)**.
- Secure support ring **(682)** with circlip **(643)**.
  - Use tool **(WZ)**.
- Remove support **(S)** from rotor **(600)**.



9.2.3.7 Assemble stator (601)

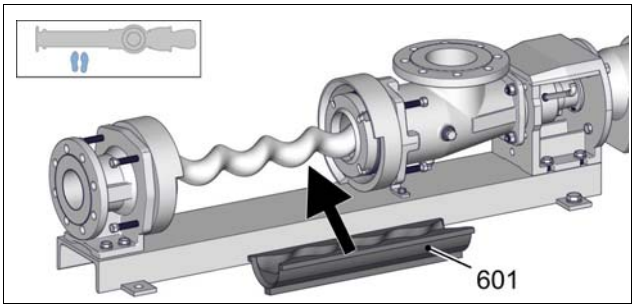
CAUTION

Risk of injury from moving and falling pump parts.
Body parts can get crushed.
- ➢ Turn kinetic rings **(670)** only on the outer surface.
- ➢ Secure lower adjusting segments **(635)** and stator half **(601)** to prevent them from falling.

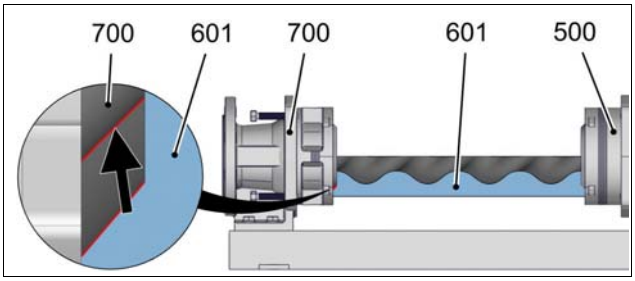
NOTICE

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

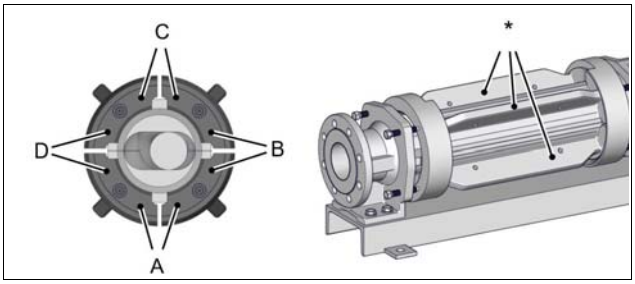
➢ Attach lower stator half **(601)**.



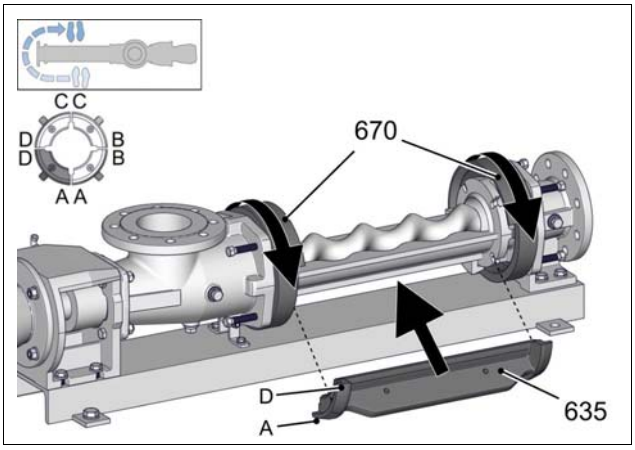
➢ Press stator half **(601)** onto tapered surfaces of pressure branch **(700)** and suction casing **(500)** and align.
  – Avoid damage to stator surfaces.



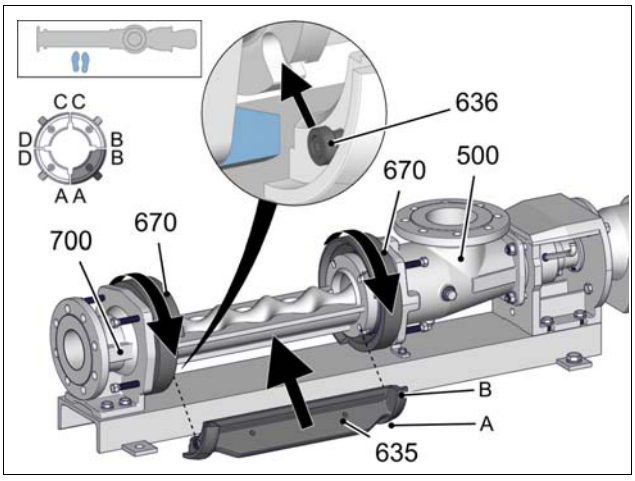
➢ Observe the segment order.
  – * = A-A, B-B, C-C, D-D



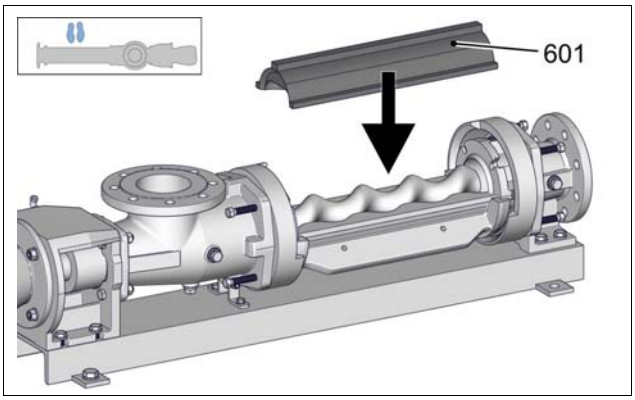
- Turn recess in kinetic rings **(670)** until adjusting segment **(635)** can be assembled.
- Insert guide bolt **(636)** for adjusting segment **(635)** into groove on pressure branch **(700)** and suction casing **(500)**.
- Observe the segment order **(A-A)**.



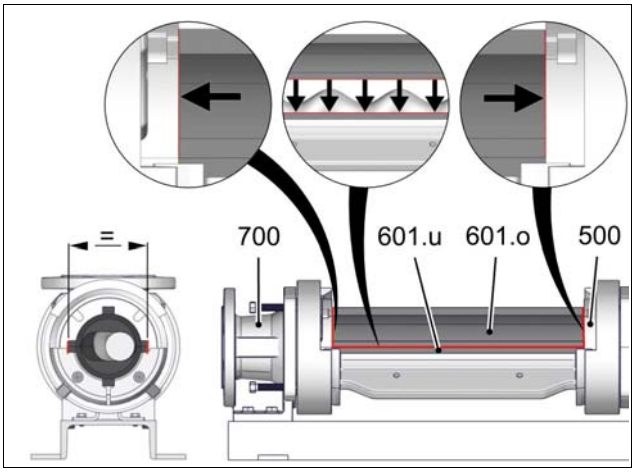
- Turn recess in kinetic rings **(670)** until adjusting segment **(635)** can be assembled.
- Insert guide bolt **(636)** for adjusting segment **(635)** into groove on pressure branch **(700)** and suction casing **(500)**.
- Use adjusting segment **(A-B)**.



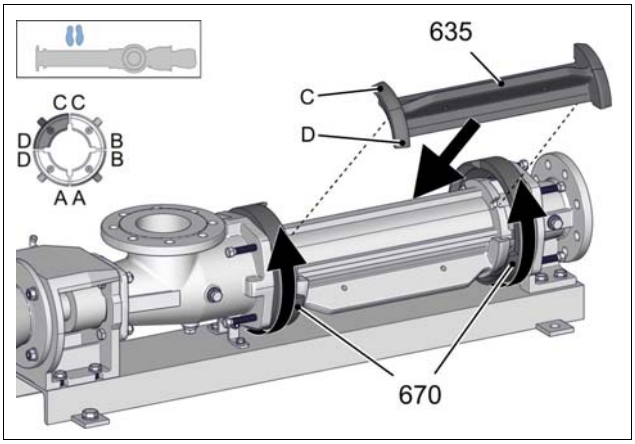
- Attach upper stator half **(601)**.



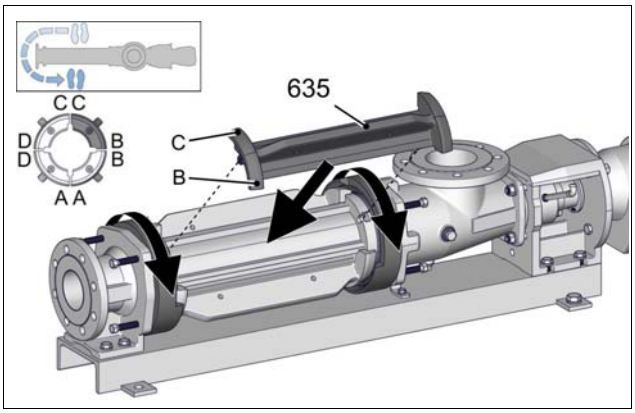
- Press stator half **(601)** onto tapered surfaces of pressure branch **(700)** and suction casing **(500)** and align.
  - Avoid damage to stator surfaces.
- Align long side of upper stator half **(601)** with lower stator half **(601)**.



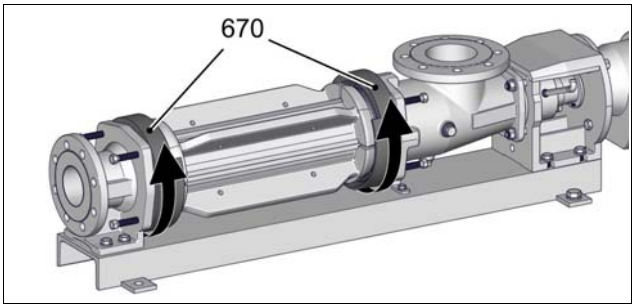
- Turn recess in kinetic rings **(670)** until adjusting segment **(635)** can be assembled.
- Insert guide bolt **(636)** for adjusting segment **(635)** into groove on pressure branch **(700)** and suction casing **(500)**.
- Observe the segment order **(D-D)**.



- 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)**.
- Observe the segment order **(B-B)**.

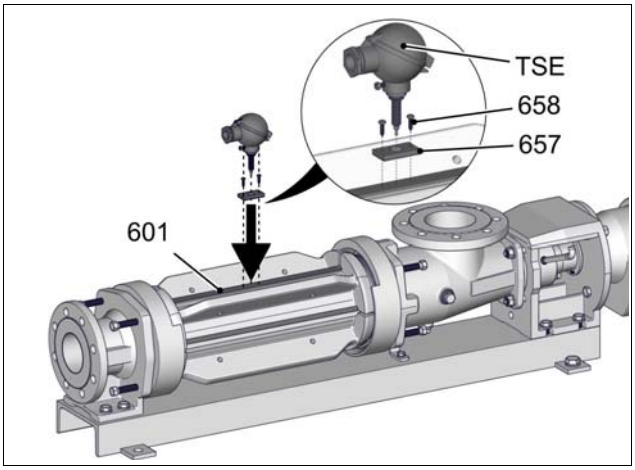


- Turn recess in kinetic rings **(670)** upwards.



Assembling the dry-running protection device (TSE) (optional)

- Assemble dry-running protection device **(TSE)**.
  - Refer to chapter Options and Additional accessories (→ chapter 12.1).



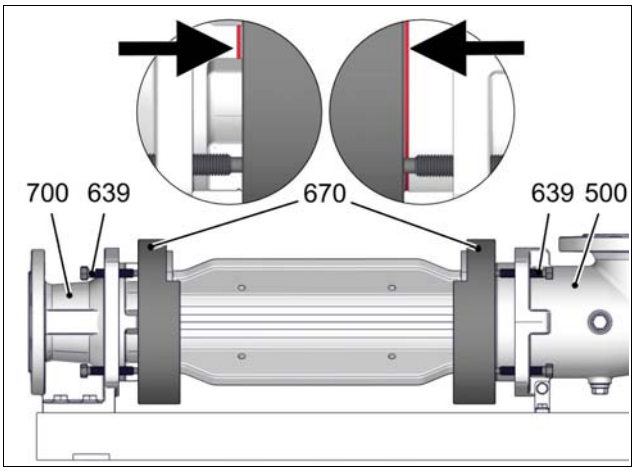
9.2.3.8 Smart Stator setting

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

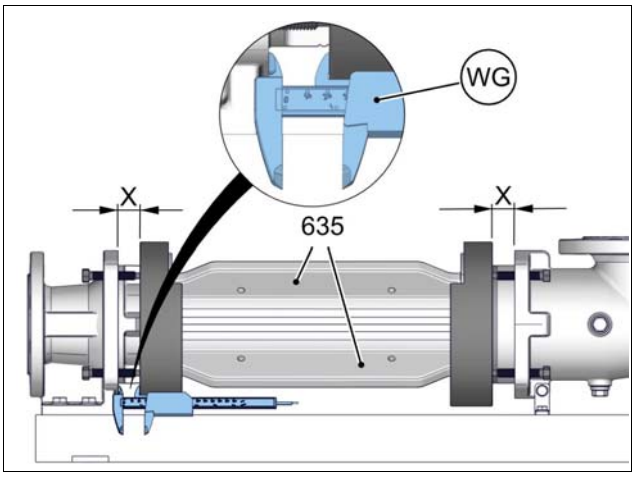
- Slide kinetic rings **(670)** by evenly tightening adjusting screws **(639)** until first marking groove on pressure branch **(700)** and suction casing **(500)** is visible.



Adjusting segments (635) - Precision setting

➢ Observe distance **(X)**:
–  Use tool **(WG)**.

Size	Distance (X)
2-12S	20.5 mm
5-12S	20.5 mm
10-12S	25.5 mm
17-12S	25.5 mm



9.4 / 9.5 Shaft sealing

9.4.1 Safety

WARNING

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

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

9.4.2 Operating conditions and material combination

- Adjust to the relevant application
  - Design variants you will find at http://www.seepex.com/en/service/downloads/.

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

10. Spare parts

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

Spare parts

Plug-in shaft and shaft seal		
No.	**Component**	**Qty.**
301	Packing ring (set) *	
307	Plug-in shaft	
309	Plug-in shaft pin	
310	Splash ring	
311	Flushing ring *	
330	Mechanical seal *	

Coupling rod and joint parts		
No.	**Component**	**Qty.**
400	Coupling rod + Coupling rod bushing	
401	Retaining sleeve	
402	Coupling rod pin	
403	Guide bushing	
405	Universal joint sleeve	
406	Holding band	
407	Holding band	

Pumping elements

No.	Component	Qty.
600	Rotor	☐
601	Stator half	☐
640	Rotor head	☐
642	O-ring	☐
643	Clirclip	☐
682	Support ring	☐
683	Locking plate	☐

Miscellaneous parts

No.	Component	Qty.
501	Casing gasket	☐
503	Sealing ring	☐
511	Seal *	☐
517	Sealing ring *	☐
706	Sealing ring	☐
098	Joint grease (GF) = 300 g (~ 315 cm³) for the required grease quantity refer to chapter 10	☐

Complete packages

Small wearing parts package

consisting of: **Qty.** ☐

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)

10. Spare parts

Large wearing parts package

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

* according to pump design

Place, date

Signature, company stamp

Ordering special tools

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 .....

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service@seepex.com

11. Special tools

Your order

Order special tools tailored to your pump type.

Tool no.		Denomination	For assembly of	Order no.	Qty.
W1		Packing puller	Packing	PKZ	☐
W3		Mounting tool	Holding band	MHB	☐
W4		Assembly mandrel	Joint	MTD	☐
W5		Drift	Joint	DHS	☐
W9		Mounting lever	General	MHL	☐
W10		Dismantling tool	Plug-in shaft	AZV	☐

_____ _____

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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