

Operating and Assembly Instruction Progressive Cavity Pump



24h Helpline:
www.seepex.com

Commission No.

800000-800001

Type

MD

Job#

XXX

Read instructions before
beginning any work!

Always keep instructions
handy on the worksite.

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Subsidiaries

1.1 General notes

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

Observe the following points in addition to these operating and maintenance instructions:

- Prohibition, warning and mandatory signs, warning notes on the machine
- Relevant laws and ordinances
- Statutory provisions on accident prevention
- Corresponding harmonised standards and regulations

1.2 Safety and warning notes

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

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

1.2.1 Warning notes

NOTICE	
Caution for machine! Possible danger. Material damage can occur.	
CAUTION	
Caution for people and machine! Possible danger. Minor injury or damage to property can occur.	
WARNING	
Warning for people! Possible danger. Death or serious injury can occur.	
DANGER	
Danger for people! Possible danger. Immediate risk of sever or fatal injury.	

1.2.2 Danger symbols

Warning:
Suspended load



Warning:
Tipping over



Warning:
Hand injuries



Warning:
Dangerous electrical
voltage.



Warning:
Pull-in hazard.



Warning:
Excess pressure.



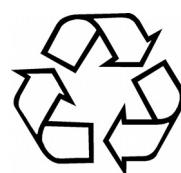
Warning:
Risk to the environ-
ment.



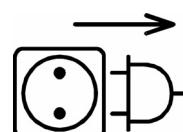
Warning:
Hot surfaces.

1.2.3 Information symbols**NOTICE**

Observe operating
and maintenance
instructions.



Ensure environmen-
tal protection.



Disconnect power
plug before opening.



Wear eye protection.



Wear gloves.

- 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 3.0). 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 3.0), and comply with them.
- The operating instructions are assigned to the seepex machine based on the commission number.



Fig. 1-1 Similar illustration

1.10 Statutory guarantee

- 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

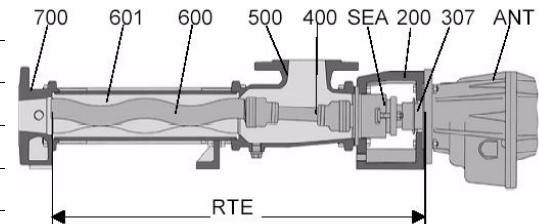
- Seal lines are created by the geometrical configuration/contact between both pumping elements.
- Seal lines provide total separation between the suction and pressure sides.

Result:

- Increased suction lift capability of the pump
- High pressure build-up irrespective of the rotation speed

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****3.3 Declaration of conformity / declaration by the manufacturer**

Data Sheet**Page 1****seepex**

order no.

commission no.

date

customer

purchase order no.

item/denomination

project_ of _**seepex progressive cavity pump****type BN _- / A1-A7-A7-F0-GAM3.2-X****conveying product**

denomination

t

viscosity

rate of solids

pH-value

size of solids

temperature

specific gravity

composition

remarks

performance data

nom.

min

max

m3/h

conveying capacity

rpm

pump speed

bar

press in press. branch

press in suct. branch

bar

operating torque

Nm

differential pressure

kW

starting torque

Nm

required drive power

remarks

technical pump data

range

kind of install.

size

direction of rot.

pressure stage

pos. of branch

component**material****design/option**

lantern

suction casing

suction connection

pressure branch

pressure connection

joint

joint grease

joint seal

coupling rod

rotor

stator

mechanical seal casing

mechanical seal

plug-in shaft

special designs

Data Sheet**Page 2****general operating data****kind of operation****site of installation****remarks****drive****type****make****model****mounting position****flange dia****output shaft****ratio****nom./ min - max****output speed****motor speed****frequency****type of adjustment****speed transmitter****speed indication****special/accessories****electric motor****make****model****nominal power****voltage****nominal speed****rated frequency****mounting position****protection****starting****thermal class****size****flange/shaft dia.****fitting of motor****provid. of motor****baseplate****standard****material****drawing no.****surface****special/accessories****painting****execution****color****remarks****packing****packing type****marking****documentation****dimensional drawing no.****operating manual****sectional drawing no.****shaft sealing sect. view****QA-documentation**

EC Declaration of Conformity

complying with the Machinery Directive 98/37/EC, Appendix II A

Manufacturer: seepex GmbH
Address: Scharnhölzstrasse 344
D-46240 Bottrop

We hereby declare that the following product

Progressive cavity pump

of ranges

- **BN, BE, BK, BS, BC, BCSB, BCSO, BW, BA, MD, MDC, MDF, MDP**
 - as block pump complete **with** flanged drive

and ranges

- **NS, N, S, C, CSB, CSO**
 - as pump with free bareshaft, **with** drive
 - as pump **with** drive preassembled on a common baseplate

meets the regulations of the above mentioned directive as well as its amendments which are valid at the time of declaration.

The following harmonized standards are applicable:

DIN EN ISO 12100-1	Safety of machinery Part 1
DIN EN ISO 12100-2	Safety of machinery Part 2
DIN EN 294	Safety distances to prevent danger zones being reached by the upper limbs
DIN EN 809	Pumps and pump units for liquids
DIN EN 811	Safety distances to prevent danger zones being reached by the lower limbs

The appertaining operating instruction includes important safety advices and rules for installation, commissioning and maintenance of the seepex machinery.

The safeguarding of the machinery against inadmissible pressure, dry running and wrong direction of rotation must be ensured at site.

Bottrop, 16.09.2005



i.V. Klemens Fockenberg
Manager Engineering
seepex GmbH



i.V. Roland Hecker
Manager Quality Assurance
seepex GmbH

EC Declaration by the Manufacturer

as defined by the Machinery Directive 98/37/EC, Annex II B

Manufacturer: seepex GmbH

Tel +49.2041.996-0
Fax +49.2041.996-400
info@seepex.com
www.seepex.com

Address: Scharnhölzstrasse 344
D-46240 Bottrop

We hereby declare that the following product

Progressive cavity pump

of the ranges

- **BN, BE, BK, BS, BC, BCSB, BCSO, BW, BA, MD, MDC, MDF, MDP**
 - as block pump **without** flanged drive

as well as

- **NS, N, S, C, CSB, CSO**
 - as pump with free bareshaft **without** drive
 - as pump preassembled on a baseplate, **without** drive

meets the regulations of the above mentioned directive as well as its amendments which are valid at the time of declaration.

The following harmonized standards are applicable:

DIN EN ISO 12100-1	Safety of machinery Part 1
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The safeguarding of the machinery against inadmissible pressure, dry running and wrong direction of rotation must be ensured at site.

Bottrop, 03.06.2004



i.V. Klemens Fockenberg
Manager Engineering
seepex GmbH



i.V. Roland Hecker
Manager Quality Assurance
seepex GmbH

4.1 Safety

 CAUTION
<p>Damage to property/injuries due to incorrect transport. Slight injury or damage to property can occur.</p> <ul style="list-style-type: none"> ➤ 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, weight and centre of gravity

- Note the dimensional drawing (chapter 5.6).

4.2.2 Symbol

- Meaning of symbol



Top

Fragile item

Against moisture
protect

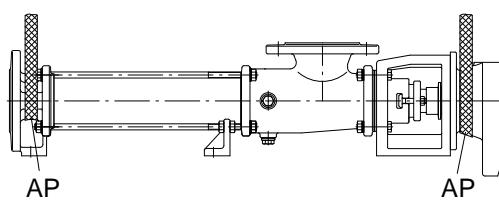
Centre of gravity

Lashing points

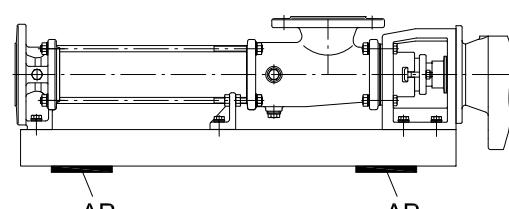
4.2.3 Lashing points (AP) for lifting devices

 WARNING
<p>Warning of suspended load. Death or serious injury can occur.</p> <ul style="list-style-type: none"> ➤ Use the lashing points (AP) for lifting devices.

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.

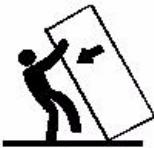
4.4 Disposal

**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 Mounting tools / lifting gear

	<p>CAUTION</p> <p>Pump falling over. Slight injury or damage to property can occur.</p> <ul style="list-style-type: none"> ➤ Adhere to the lifting tool's starting point. ➤ Pay attention to the dimensions, weight and centre of gravity of the pump. ➤ Use suitable mounting tools/lifting gear.
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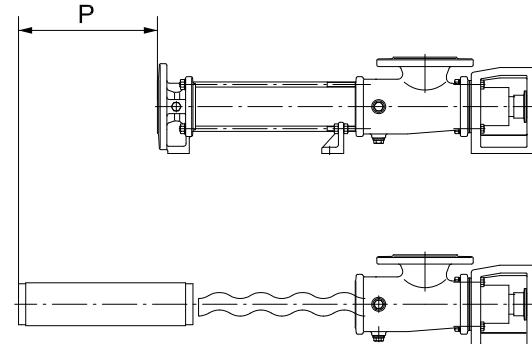
5.2 Space requirement

The required space should be determined by considering the following factors:

- Dimensions and weight.
- Requisite transport and lifting equipment.
- Pipe routing – dismantling (dimension for stator replacement).

5.2.1 Dimension for stator replacement (P)

- Refer to the dimensional drawing.



5.3 Assembly of the complete mounted pump

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

Tension-free mounting of the pump

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

Correct position of the drives

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

	<p>CAUTION</p> <p>Safety protection devices. Slight injury or damage to property may result.</p> <ul style="list-style-type: none"> ➤ Connect safety protection devices and activate.
---	--

5.4 Power supply of the seepex pump



DANGER

Line voltage and line frequency.

Death or serious injury can occur.

- Note type plate on the pump.
- Pay attention to manufacturer's directions (chapter 13.).
- Pay attention to safety regulations.

5.5 Pipelines

5.5.1 Suction and pressure connection

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

5.5.2 Pipeline dimensions

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

5.5.3 Residue-free pipelines

NOTICE

Damage to property through assembly residue.

No claims under guarantee if violated.

- Keep all pipelines free of foreign objects.
- Remove weld spatters, screws, steel chips etc.

5.5.4 Tension-free assembly

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

Master Copy**6.1 Commissioning report**

Send commissioning report online to
www.seepex.com/Inbetriebnahme/

Must be specified with every order!

Commission:

Model:

From:

Contact person:

Tel.:

Fax:

E-mail:

Customer Service:

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

Germany

Phone: +49 2041.996-231

Fax: +49 2041.996-431

Rest of Europe

Phone: +49 2041.996-224

Fax: +49 2041.996-424

Outside Europe

Phone: +49 2041.996-120

Fax: +49 2041.996-432

Address of plant:

.....

.....

.....

.....

Delivery date:

Date of installation:

Assembly check carried out on:

Please enter operational data:

Conveying liquid:

Temperature:

Fuse level/motor protection or power consumption

Frequency control

no

yes

If yes:

Supplied by seepex

Supplied by customer

Frequency:

Speed:

Power consumption:

Place, date

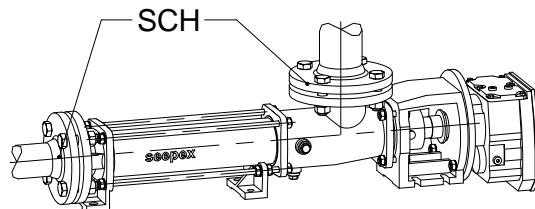
Signature / company stamp

6.2 Measures before commissioning

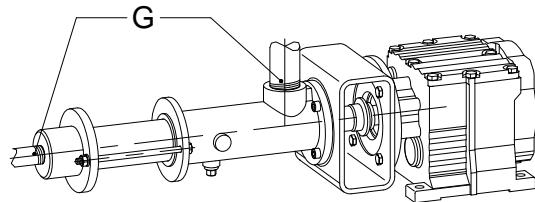
- Note the technical data (chapter 3.).

6.2.1 Checking pipelines

- Check flange screwed connections (SCH).



- Check threaded connections (G).



NOTICE

Ensure the liquid can flow through without obstruction.

Malfunction and/or irreparable damage to the pump.

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

6.2.2 Protective devices on the pump



DANGER

Missing protective device.

Danger of pulling in and crushing.

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

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

6.2.3 Electrical/hydraulic connections

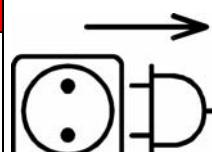


DANGER

Dangerous voltage.

Death or serious injury can occur.

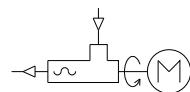
- Observe safety regulations.
- Disconnect the pump from all sources of energy.
- Prevent electrical connections from being switched on again.



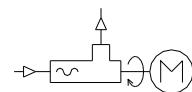
6.2.4 Direction of rotation check

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

flow direction



counter clockwise



clockwise

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 (DRP)

6.3.2 Pressure in the suction and pressure connection



CAUTION

High pressure.

Malfunction and/or irreparable damage to the shaft seal or pump.

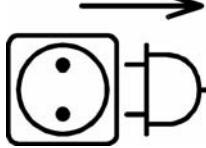
- Maintain pressure in the suction connection in accordance with the technical data (chapter 3.).
- Assemble an oil-filled contact pressure gauge to monitor and deactivate the pump.

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	
	<p>Dangerous voltage. Death or serious injury can occur.</p> <ul style="list-style-type: none"> ➤ Observe safety regulations. ➤ Disconnect the pump from all sources of energy. ➤ Prevent electrical connections from being switched on again. 	

6.4.2 Emptying the pump

	CAUTION
	<p>Liquid draining out. Minor injury or damage to property can occur.</p> <ul style="list-style-type: none"> ➤ Wear suitable protective clothing. ➤ Refer to the technical data (chapter 3.) for the corresponding configuration of the pump housing.

To drain the pump:

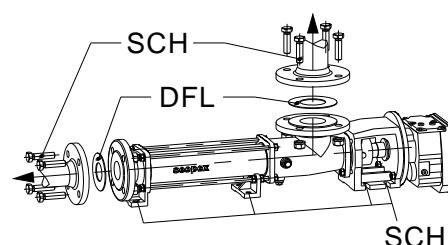
- If the pump housing has screwed plugs, remove the screwed plugs.
- Drain using a connection branch (suction casing, pressure branch) if the pump housing is coated or the housing does not have screwed plugs.
- Drain the residual liquid from the pump housing.
- Drain the pipelines on the suction and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

6.4.3 Removing the pump

	WARNING
	<p>Risk of pump tipping or falling. Death or serious injury can occur.</p> <ul style="list-style-type: none"> ➤ Support the drive unit to guarantee stability.

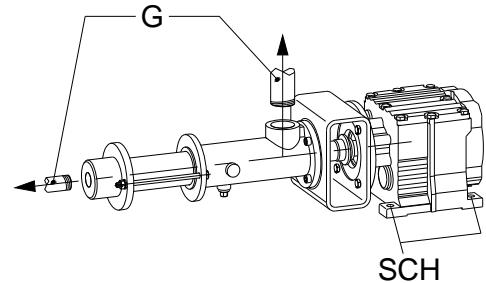
Pipeline dismantling

- 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.

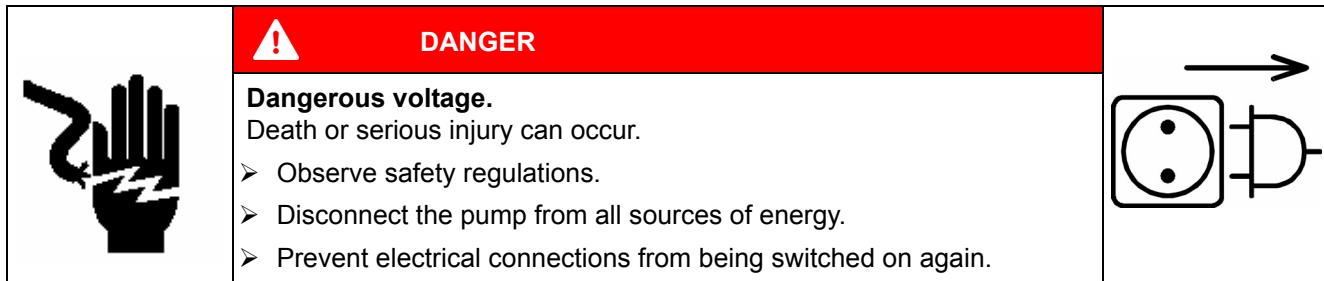
- Contact seepex to discuss suitable preservation measures.
 - State the commission number of the pump.

7.1 Preventive measures

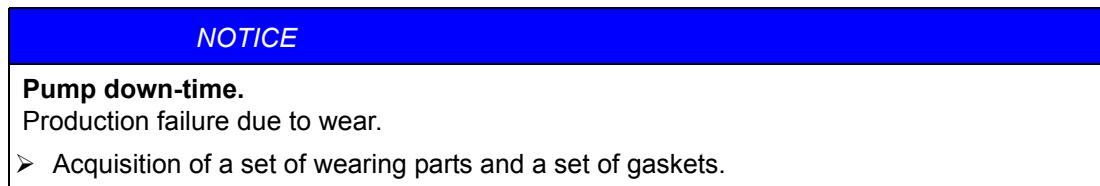


The maintenance personnel must have these operating instructions, follow them and also require corresponding qualifications.

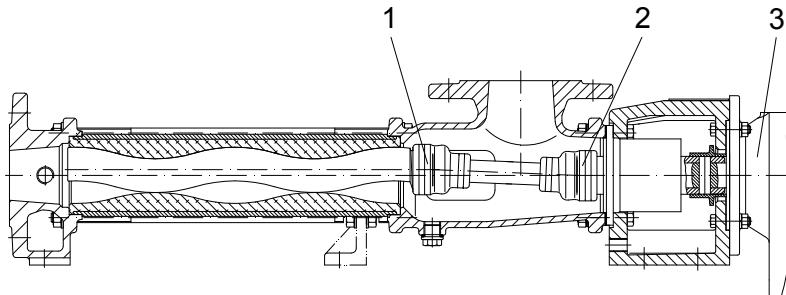
- No liability will be accepted in the event of violation.



7.1.1 Pump down-time

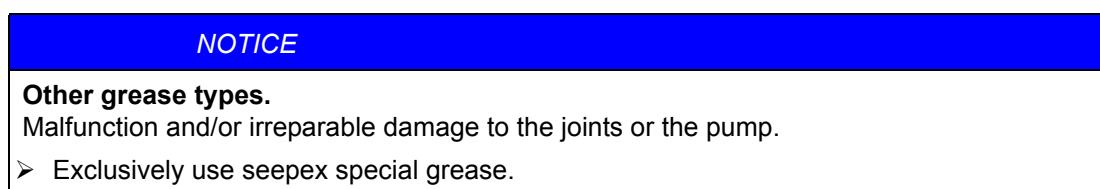


7.2 Lubrication



No.	Denomination	Lubricant	Lubricant change in operating hours	Fill volume
1	Pin joint	seepex special grease (30321)	10000 h	4.2 cm ³
2	Pin joint	seepex special grease (30321)	10000 h	4.2 cm ³
3	Drive	Refer to manufacturer's documentation (chapter 13.1)		
Rotor/stator		Conveying medium	---	---
Shaft seal		Conveying medium	---	---

7.2.1 Joint grease



7.3 Inspection

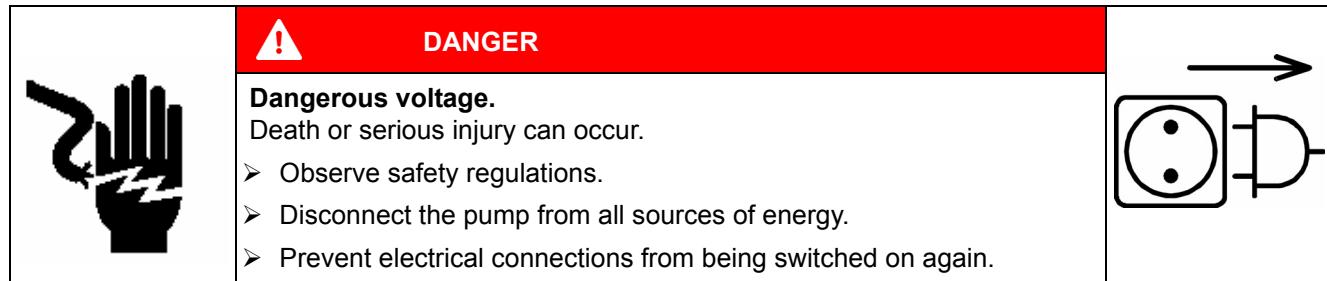
Component	Interval	Action
Joints	Every 10,000 operating hours	Renew joint grease
Shaft seal	Every week	Visual check for leaks
Drive unit	Every 3000 operating hours, at least every 6 months	Comply with manufacturer's documentation

7.1 Preventive measures

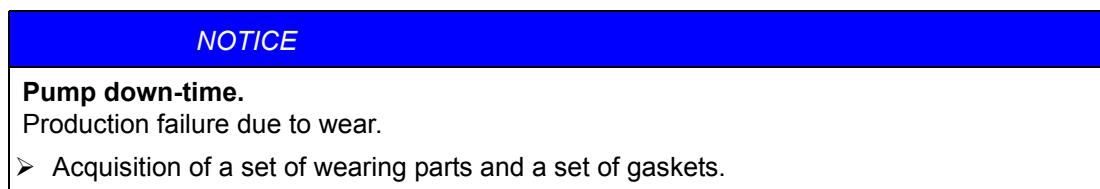


The maintenance personnel must have these operating instructions, follow them and also require corresponding qualifications.

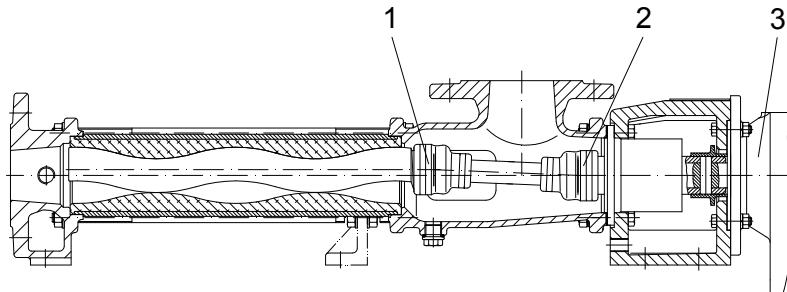
- No liability will be accepted in the event of violation.



7.1.1 Pump down-time

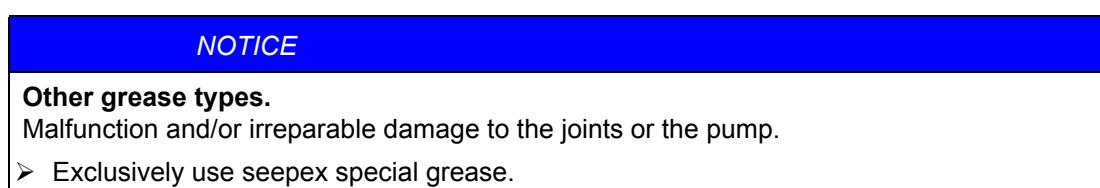


7.2 Lubrication



No.	Denomination	Lubricant	Lubricant change in operating hours	Fill volume
1	Pin joint	seepex special grease (10325)	10000 h	4.2 cm ³
2	Pin joint	seepex special grease (10325)	10000 h	4.2 cm ³
3	Drive	Refer to manufacturer's documentation (chapter 13.1)		
Rotor/stator		Conveying medium	---	---
Shaft seal		Conveying medium	---	---

7.2.1 Joint grease



7.3 Inspection

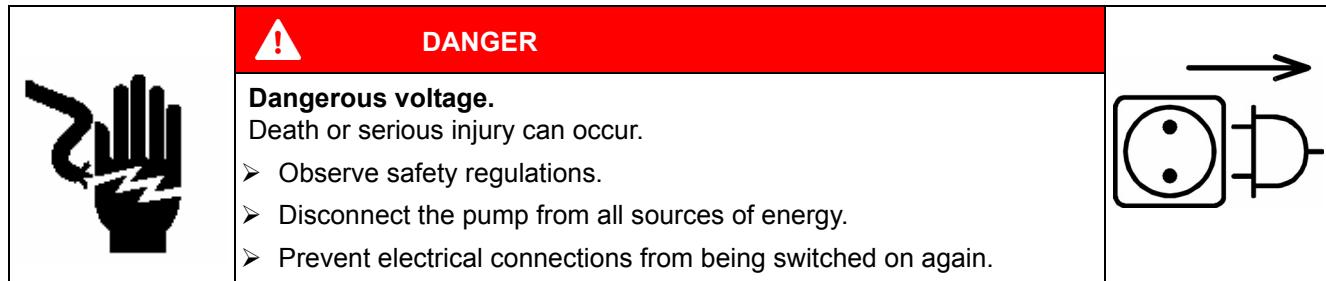
Component	Interval	Action
Joints	Every 10,000 operating hours	Renew joint grease
Shaft seal	Every week	Visual check for leaks
Drive unit	Every 3000 operating hours, at least every 6 months	Comply with manufacturer's documentation

7.1 Preventive measures

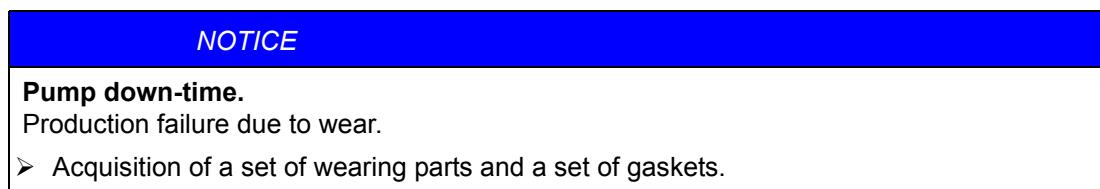


The maintenance personnel must have these operating instructions, follow them and also require corresponding qualifications.

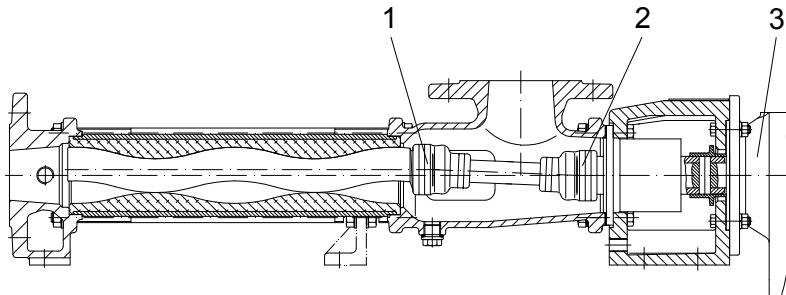
- No liability will be accepted in the event of violation.



7.1.1 Pump down-time

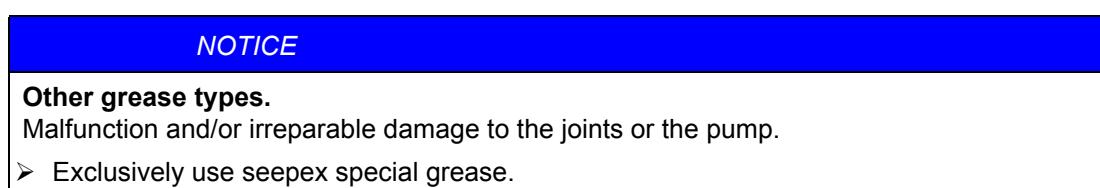


7.2 Lubrication



No.	Denomination	Lubricant	Lubricant change in operating hours	Fill volume
1	Pin joint	seepex special grease (30322)	10000 h	4.2 cm ³
2	Pin joint	seepex special grease (30322)	10000 h	4.2 cm ³
3	Drive	Refer to manufacturer's documentation (chapter 13.1)		
Rotor/stator		Conveying medium	---	---
Shaft seal		Conveying medium	---	---

7.2.1 Joint grease



7.3 Inspection

Component	Interval	Action
Joints	Every 10,000 operating hours	Renew joint grease
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		
			X				X		X	Static friction between stator/rotor too great.
X										Incorrect direction of rotation.
X	X	X		X	X					Suction pipe or shaft seal leaking.
X	X	X			X					Suction head too great.
X	X	X								Viscosity of conveying product too great.
		X	X			X				Pump rotation speed incorrect.
	X	X								Avoid air bubbles in the conveying product.
		X	X	X	X	X	X	X		Pressure head too great.
X	X	X			X			X		Pump running partially/completely dry.
						X	X			Check coupling.
X		X								Rotation speed too low.

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		
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		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		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	Sedimentation/gumming of solids when pump stationary.	Rinse through and clean the pump immediately.
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 slippings and O-rings for wear/resistance, renew if necessary.

9.1 Pump Dismantling / Reassembly

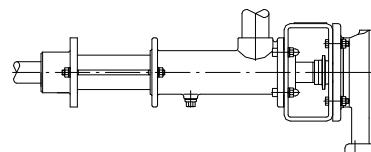
Range: MD, stainless steel / tie bolt design

Size: 0015-24 to 012-24

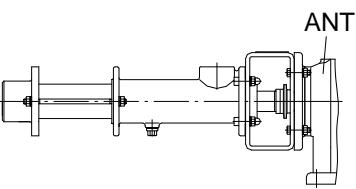
9.1.1 Prepare the pump for dismantling

 DANGER	Dangerous voltage. Death or serious injury can occur. <ul style="list-style-type: none"> ➤ Observe safety regulations. ➤ Disconnect the pump from all sources of energy. ➤ Prevent electrical connections from being switched on again. 	
---	---	---

- Empty pipelines.
- Allow pipelines to cool down.
- Remove pipeline connections (suction side/pressure side).
- Note decommissioning (chapter 6...).



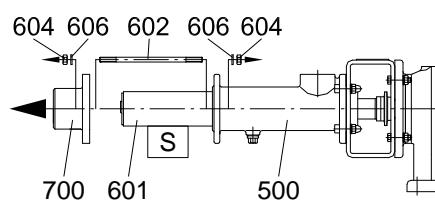
9.1.2 Dismantling

 WARNING	Tilting or falling pump. Death or serious injury can result. <ul style="list-style-type: none"> ➤ Attach the drive (ANT) to secure the pump. 	
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9.1.2.1 Pressure branch (700) - dismantling

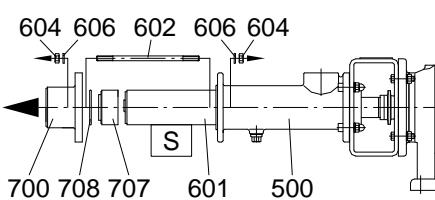
Without reducing unit

- Prop up stator (601) with support.
- Remove screwed connection (604, 606).
- Remove the pressure branch (700).



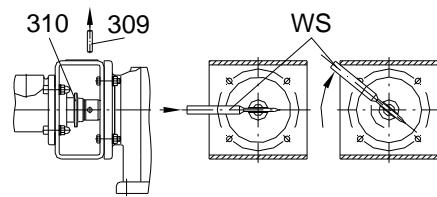
With reducing unit

- Remove reducing unit (707).

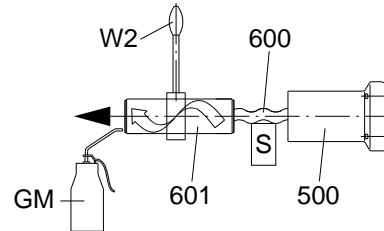


9.1.2.2 Stator (601) - dismantling

- Lift/slide splash ring (310).
- Remove plug-in shaft pin (309).
- Insert tool (WS).
- Turn tool (WS) upwards.



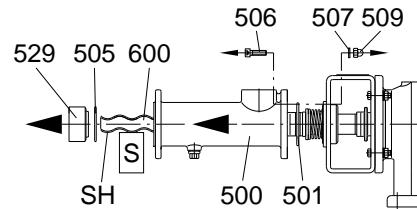
- Add lubricant (liquid soap) to the opening on pressure branch side between the rotor (600) and the stator (601).
- Turn the stator in the "right" rotating direction.
- Dispense lubricant (GM) on the stator internal surface in order to reduce friction between the rotor and stator.
- Prop up the rotor (600) with support (S).



9.1.2.3 Suction casing (500) - dismantling

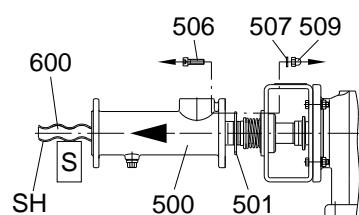
With reducing unit

- Remove reducing unit (529).



Without reducing unit

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



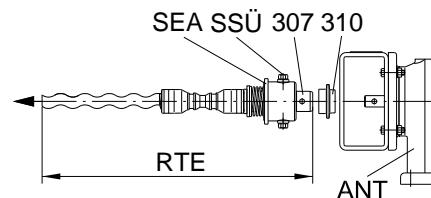
9.1.2.4 Rotating unit (RTE) – dismantling

With flushing connection



Tool (W10/ dismantling of the plug-in shaft)

- Remove the flushing connections (SSÜ) on the casing of the shaft seal (SEA).
- Pull the rotating unit (RTE) with shaft seal (SEA) off from the output shaft of the drive (ANT).
- Dismantle shaft seal (SEA).
 - Note dismantling shaft seal (chapter 9._).

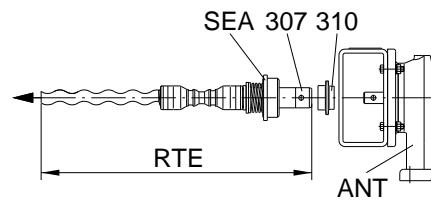


Without flushing connection



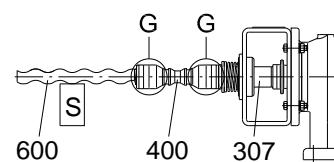
Tool (W10/ dismantling of the plug-in shaft)

- Pull rotating unit (RTE) with shaft seal (SEA) off from the output shaft of the drive (ANT).
- Dismantle shaft seal (SEA).
 - Note dismantling shaft seal (chapter 9._).

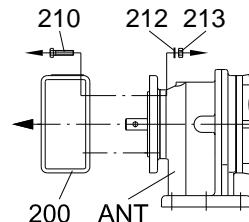


9.1.2.5 Rotor (600), coupling rod (400), plug-in shaft (307) - dismantling

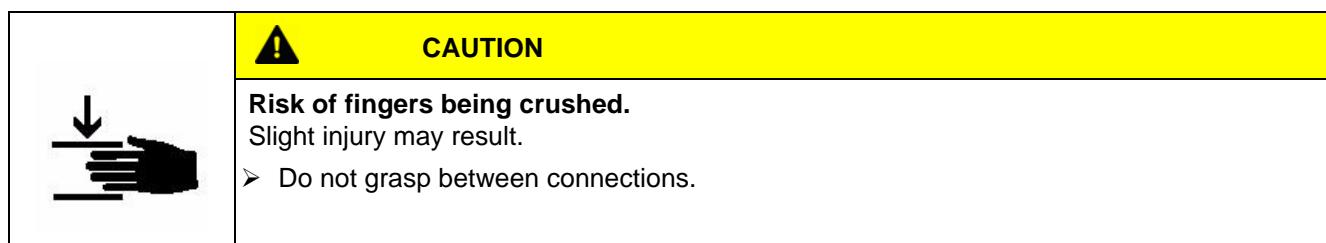
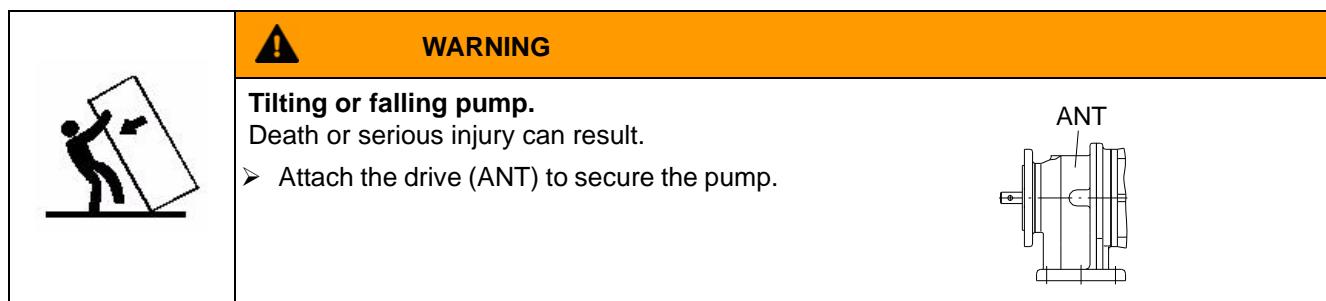
- Dismantling joint (G)
 - Note rotating unit – individual parts (chapter 9._).



9.1.2.6 Lantern (200)/drive (ANT) - dismantling

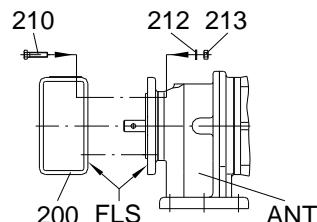


9.1.3 Reassembly



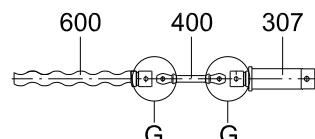
9.1.3.1 Lantern (200)/drive (ANT) - reassembly

- Clean the flange bearing surfaces (FLS), bolt circle (ZD) and output pivots of the drive (ANT).



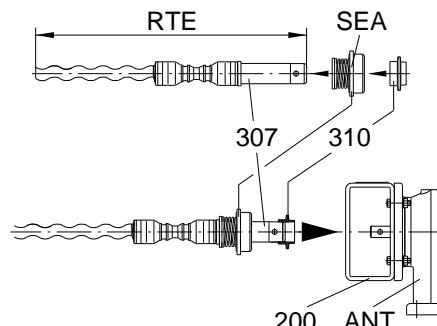
9.1.3.2 Rotor (600), coupling rod (400), plug-in shaft (307) - reassembly

- Joint (G) reassembly
 - Note rotating unit - individual parts (chapter 9._).



9.1.3.3 Rotating unit (RTE) - reassembly

- Assemble shaft seal carter (SEA).
 - Note reassembly shaft seal (chapter 9._).
- Moisten splash ring (310)/plug-in shaft (307) with joint grease.
- Slide splash ring (310) onto plug-in shaft (307).
 - Observe fitting position of splash ring (see writing on splash ring).
- Apply antiseize graphite petroleum to the output pivot of drive (ANT).
- Slide on rotating unit (RTE).



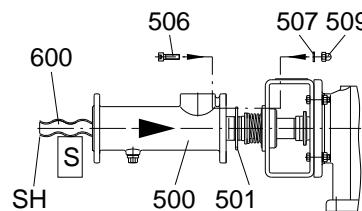
With flushing connection

- Mount the flushing connections.

9.1.3.4 Suction casing (500) - reassembly

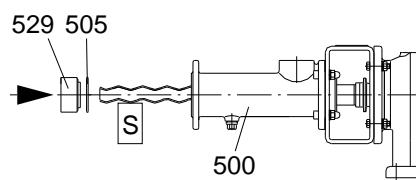
Without reducing unit

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



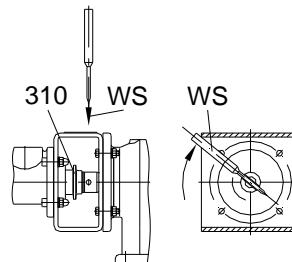
With reducing unit

- Assemble reducing unit (529).



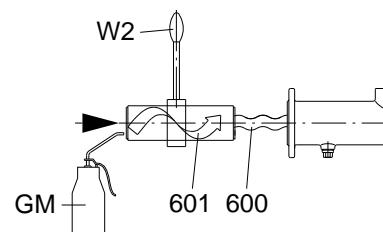
9.1.3.5 Stator (601) - reassembly

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

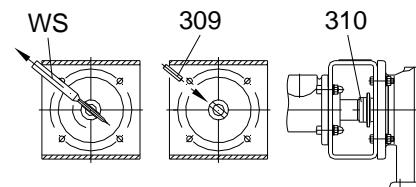


 Tool (W2/chain pipe wrench)

- Prop up rotor (600) with support (S).
- Add lubricant (GM) to the opening on the pressure branch side between the rotor (600) and stator (601).
- Turn stator (601) in the "right" rotating direction and slide onto rotor (600).



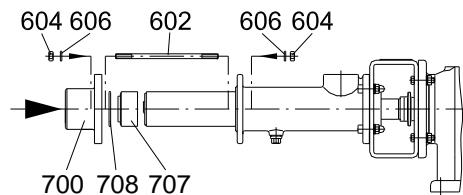
- Remove tool (WS).
- Slide in plug-in shaft pin (309).
- Pay attention to the position of the splash ring (310).
- Insert the splash ring collar at a distance of 0.5 mm from the lantern (200).



9.1.3.6 Pressure branch (700) - reassembly

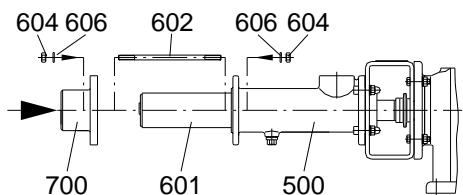
With reducing unit

- Assemble reducing unit (707).
- Assemble pressure branch (700).
- Tighten tie bolts (602) evenly.



Without reducing unit

- Tighten the tie bolts (602) evenly.



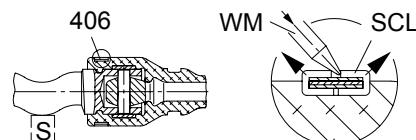
9.2 Rotating unit individual parts

9.2.1 Dismantling

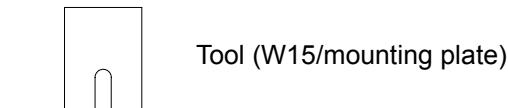
9.2.1.1 Holding band (406) - dismantling

 CAUTION
<p>Risk of injury. Possibility of parts spinning out. Slight injury or damage to property may occur.</p> <ul style="list-style-type: none"> ➤ Wear protective goggles.

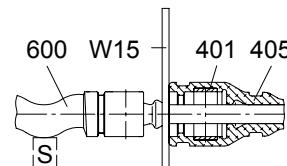
- Disconnect the holding band strap (SCL).
 - Use suitable tool (WM).
- Push the strap components (SCL) out of the holding band.
- Remove the holding band (406).



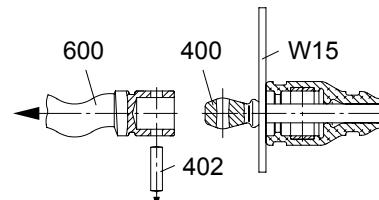
9.2.1.2 Rotor (600) - dismantling



- Pull back the universal joint sleeve (405) with retaining sleeve (401).
- Secure tool (W15).

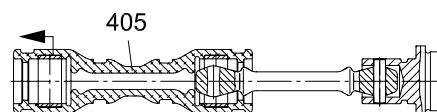


- Push the coupling rod bolts (402) out.
- Remove the coupling rod (400).



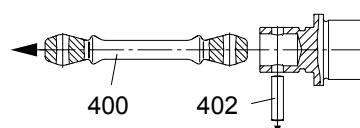
9.2.1.3 Universal joint sleeve (405) - dismantling

- Pull off the universal joint sleeve (405).



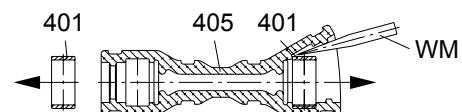
9.2.1.4 Coupling rod (400) - dismantling

- Push the coupling rod bolts (402) out.
- Remove the coupling rod (400).



9.2.1.5 Retaining sleeve (401) - dismantling

- Remove the retaining sleeve (401) from the universal joint sleeve (405).
 - Use suitable tool (WM).



9.2.2 Preparation for reassembly

9.2.2.1 Rotor (600)

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

9.2.2.2 Coupling rod (400)

- Clean the coupling rod (400).
- Inspect the head bore for wear.
 - If wear to the head bore is detected, replace the coupling rod (400).



9.2.2.3 Plug-in shaft (307)

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

9.2.3 Reassembly

NOTICE

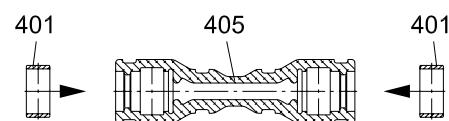
Faulty joint function

Functional deficiency and/or ruining of joints.
Damage to property may result.

- Replace coupling rod bolts (402) and coupling rod (400) in the event of wear.

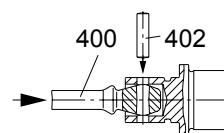
9.2.3.1 Retaining sleeve (401) - reassembly

- Moisten retaining sleeve (401) with joint grease.
- Insert the retaining sleeve (401) into the universal joint sleeve (405).



9.2.3.2 Coupling rod (400), plug-in shaft 307) - reassembly

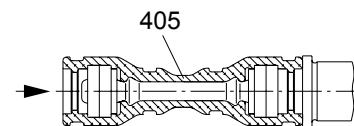
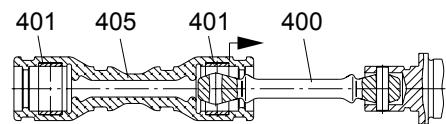
- Fill the joint head with seepex joint grease.
- Connect the plug-in shaft (307)/coupling rod (400).
- Slide in the coupling rod bolts (402).



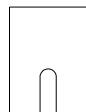
9.2.3.3 Universal joint sleeve (405) - reassembly

- Moisten the surface of the coupling rod (400) / inside of the universal joint sleeve (405) with joint grease (Maintenance Chapter 7.0).

- Slide the universal joint sleeve (405) on.



9.2.3.4 Coupling rod (400), rotor (600) - reassembly

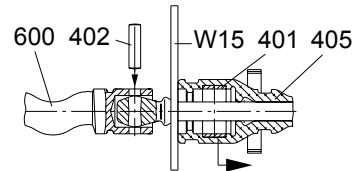


Tool (W15/mounting plate)

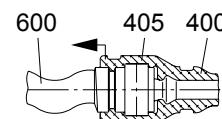
- Pull back the universal joint sleeve (405) with retaining sleeve (401).

- Secure tool (W15).

- Slide in the coupling rod bolts.

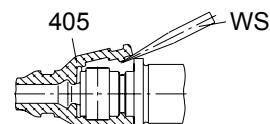


- Slide the universal joint sleeve (405) onto the joint head.



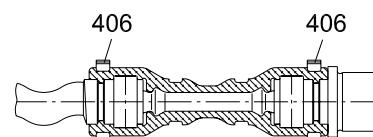
9.2.3.5 De-aerate universal joint sleeve (405)

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



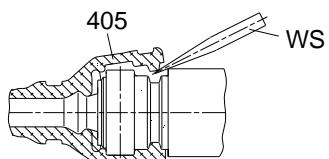
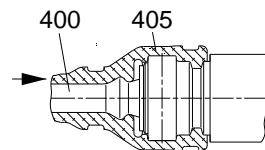
9.2.3.6 Holding band (406) - reassembly

- Mount the holding band (406).
 - Holding band assembly (Chapter 9._).

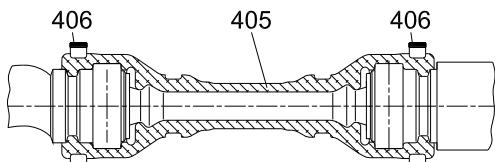


9.2.3.3 Universal joint sleeve (405) - reassembly

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



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



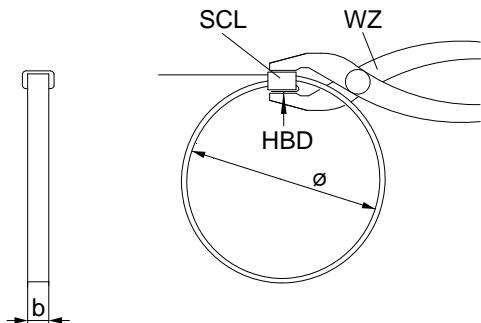
9.3 Holding band - assembly

9.3.1 Prepare the holding band

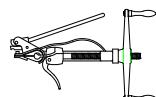
- Only use prefabricated double-band holding bands may.

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.

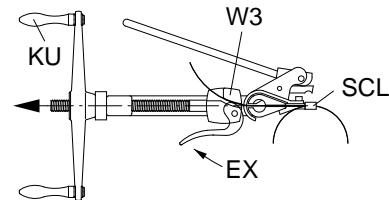


9.3.3 Assemble the holding band



- Use tool (W3/mounting tool)

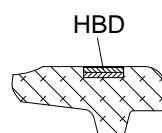
- Feed holding band into tool (W3).
- Hold ends of holding band with the eccentric lever (EX).
- Turn the crank (KU) until the holding band is strained and lies against the holding band loop (SCL).
- Carefully pull the holding band together until it is in contact with the circular groove of universal joint sleeve.



9.3.4 Correct tension of the holding band (HBD)

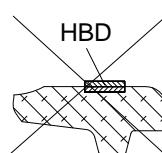
Correct

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



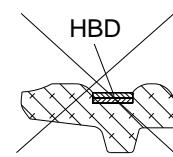
Incorrect

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

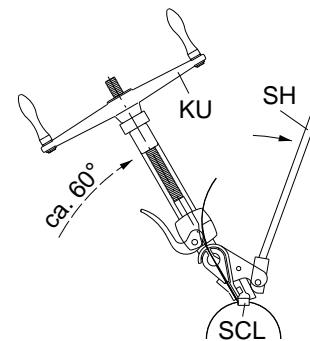


Incorrect

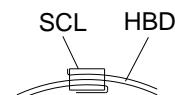
The holding band (HBD) is too tight, universal joint sleeve will be damaged/sheared off.

**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; 1.4571)**

- 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 if it rises up on the sheared side.

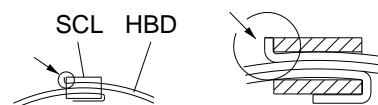
**CAUTION**

Universal joint sleeve damage.
Pin joint grease can emerge.

- Avoid hammering or knocking.

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.



9.1 Shaft sealing single acting

9.1.1 Safety

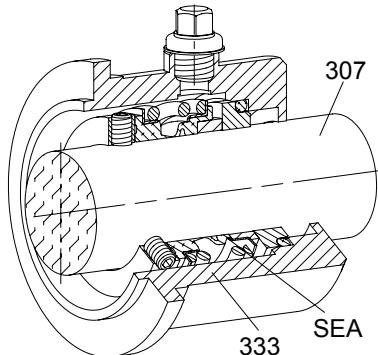
	WARNING
	<p>Shaft sealing is leaky. Leakage may escape into the atmosphere.</p> <ul style="list-style-type: none"> ➤ Take safety measures to protect persons and the environment. ➤ Wear suitable protective clothing. ➤ Dispose of leakage appropriately. ➤ Heed applicable regulations when handling hazardous substances.

9.1.2 Application conditions and material version

- Refer to the relevant application
 - technical data (Chapter 3.)

9.1.3 Design

- Single acting mechanical seal



9.1.4 Commissioning

NOTICE

Dry running of the mechanical seal.

Damage to property may result.

- The mechanical seal must be laid in liquid medium before being commissioned.

Circulation, flushing and/or flushing pipe

- Additional flushing or circulation pipes are not required where shaft sealing lies in medium.
- Flushing pipes may be possible under special circumstances and after speaking to seepex.

NOTICE

Shaft sealing is not leakage free.

Damage to property through leakage.

- Components which come into contact with leakage must be corrosion-resistant or otherwise suitably protected.

Adjust shaft sealing

- It is absolutely vital to adjust at the application site in a manner appropriate for the application conditions.
- Refer to the sectional drawing of the shaft sealing for setting measurements.
- Set the setting measurements of the shaft sealing to the plug-in shaft (307).

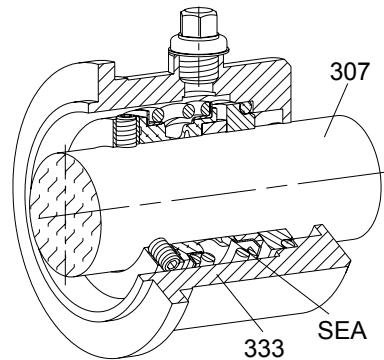
9.1.5 Monitoring during operation

NOTICE

Shaft wearing.

Damage to property may result.

- Conduct a daily visual inspection.
- Install a new shaft sealing (SEA).
- Possibly renew the plug-in shaft (307).

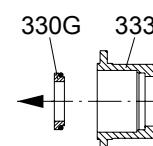
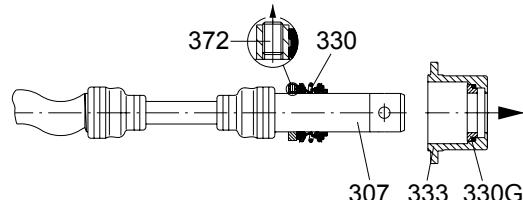


9.1.6 Dismantling of the mechanical seal

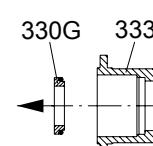
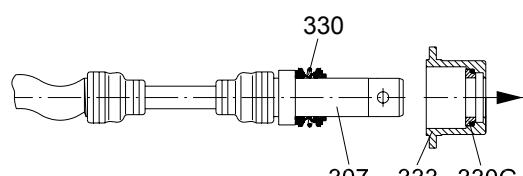
Refer to Data Sheet (Chapter 3.1)/sectional drawing of the shaft sealing (Chapter 9._) for version.

With axial locking device

- Clean plug-in shaft (307), remove edges/burrs.
- Moisten plug-in shaft (307) with lubricant (thinned liquid soap).
- Pull mechanical seal casing (333) from the plug-in shaft (307).
- Loosen the axial locking device of the mechanical seal (330/372); pull mechanical seal (330) from the plug-in shaft (307).
- Push counter ring of the mechanical seal (330G) with seal out of the mechanical seal casing (333).

**Without axial locking device**

- Clean plug-in shaft (307), remove edges/burrs.
- Moisten plug-in shaft (307) with lubricant (thinned liquid soap).
- Pull mechanical seal casing (333) from the plug-in shaft (307).
- Pull the mechanical seal (330) from the plug-in shaft (307).
- Push counter ring of the mechanical seal (330G) with seal out of the mechanical seal casing (333).



9.2 Reassembly of mechanical seal



Shaft sealings are premium precision parts.

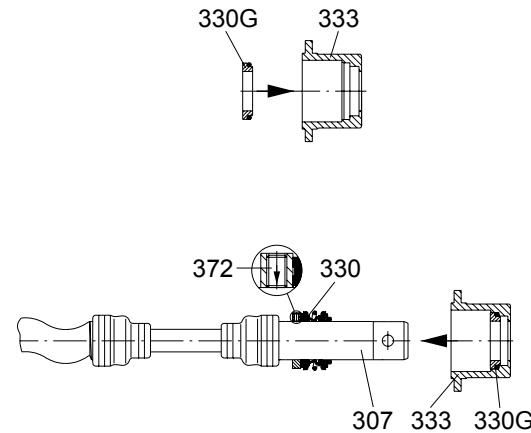
Their installation is therefore to be undertaken with care.

Gentle handling and the utmost of cleanliness are prerequisites.

- Assembly aids such as oil/grease are not permitted.

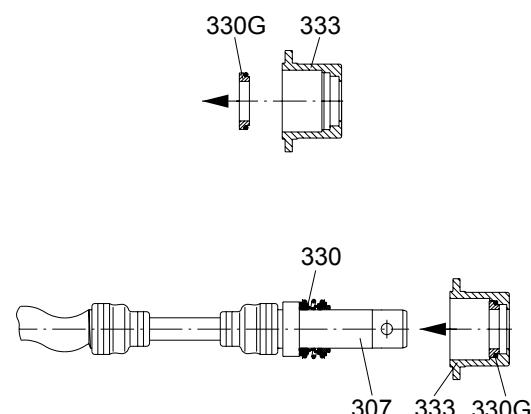
With axial locking device

- Clean the mechanical seal casing (333).
- Moisten seal with lubricant (thinned liquid soap).
- Press counter ring and seal using even pressure into the mechanical seal casing (333).
- Clean the plug-in shaft (307), remove edges/burrs.
- Adjust the set collar (372) in accordance with sectional drawing of shaft sealing (Chapter 9._).
- Stick the set screw on (medium torque) and anchor.
- Moisten plug-in shaft (307) and Elastomer parts of the mechanical seal with lubricant (thinned liquid soap).
- Push mechanical seal casing (333) onto the plug-in shaft (307) until the plant edge has been reached.



Without axial locking device

- Clean the mechanical seal casing (333).
- Moisten the seal with lubricant (thinned liquid soap).
- Press the counter ring and seal using even pressure onto the mechanical seal casing (333).
- Clean the plug-in shaft (307), remove edges/burrs.
- Adjust mechanical seal in accordance with sectional drawing of shaft sealing (Chapter 9._) to the plug-in shaft (307).
- Moisten plug-in shaft (307) and Elastomer parts with lubricant (thinned liquid soap).
- Slide mechanical seal onto the plug-in shaft (307) until the plant edge has been reached.



10.1 Version for copying**10.2 Sectional Drawing and Part List**

Version for copying

10.1 Spare parts list

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

Type: MD 0015-24 to 025-6L
MDT 0015-24 bis 025-6L
Version: Stainless steel/tie bolts

<input type="checkbox"/> Request	<input type="checkbox"/> Order	Sender:
Must be included in every order or enquiry!		Contact:
Commission:	Type:	Tel.:
		Fax:
		E-mail:
Customer service: seepex GmbH Postfach 10 15 64 D-46215 Bottrop service@seepex.com	Germany Tel +492041.996-231 Fax +492041.996-431	Delivery address:
	Europe outside Germany Tel +492041.996-224 Fax +492041.996-424
	Intercontinental outside Germany Tel +492041.996-120 Fax +492041.996-432

No.	Quantity	Component	Material	Comment
Major set of wearing parts				
301	1	Set of packing rings		according to data sheet (chapter 3.1)
330	1	Mechanical seal		according to data sheet (chapter 3.1)
601	1	Stator		

No.	Quantity	Component	Material	Comment
Minor set of wearing parts				
301	1	Set of packing rings		according to data sheet (chapter 3.1)
307	1	Plug-in shaft		
330	1	Mechanical seal		according to data sheet (chapter 3.1)
400	1	Coupling rod		
402	2	Coupling rod pin		
405	2	Universal joint sleeve		
406	2	Holding band, large		
600	1	Rotor		
601	1	Stator		

Place, date

Signature / company stamp

Version for copying

No.	Quantity	Component	Material	Comment
Set of gaskets				<input type="checkbox"/>
301	1	Set of packing rings		according to data sheet (chapter 3.1)
310	1	Splash ring		
330	1	Mechanical seal		according to data sheet (chapter 3.1)
501	1	Casing gasket		
503	3	Sealing ring		
505	2	O ring		
571	2	Sealing ring		
572	1	O ring		
708	1	O ring		
726	2	Sealing ring		
No.	Quantity	Component	Material	Comment
Plug-in shaft & shaft seal				<input type="checkbox"/>
301		Set of packing rings		according to data sheet (chapter 3.1)
307		Plug-in shaft		
309		Plug-in shaft pin		
310		Splash ring		
330		Mechanical seal		according to data sheet (chapter 3.1)
No.	Quantity	Component	Material	Comment
Coupling rod & joint parts				<input type="checkbox"/>
400		Coupling rod		
402		Coupling rod pin		
405		Universal joint sleeve		
406		Holding band, large		
401-406		Complete set of joint parts		

Place, date

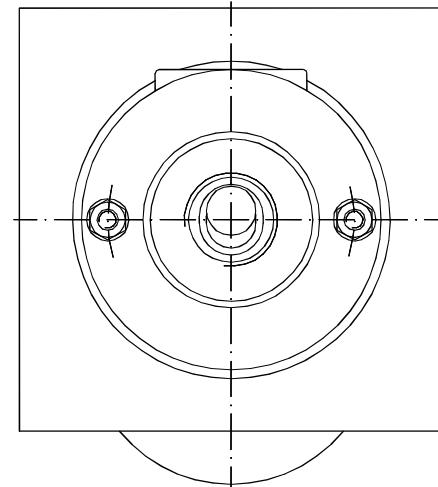
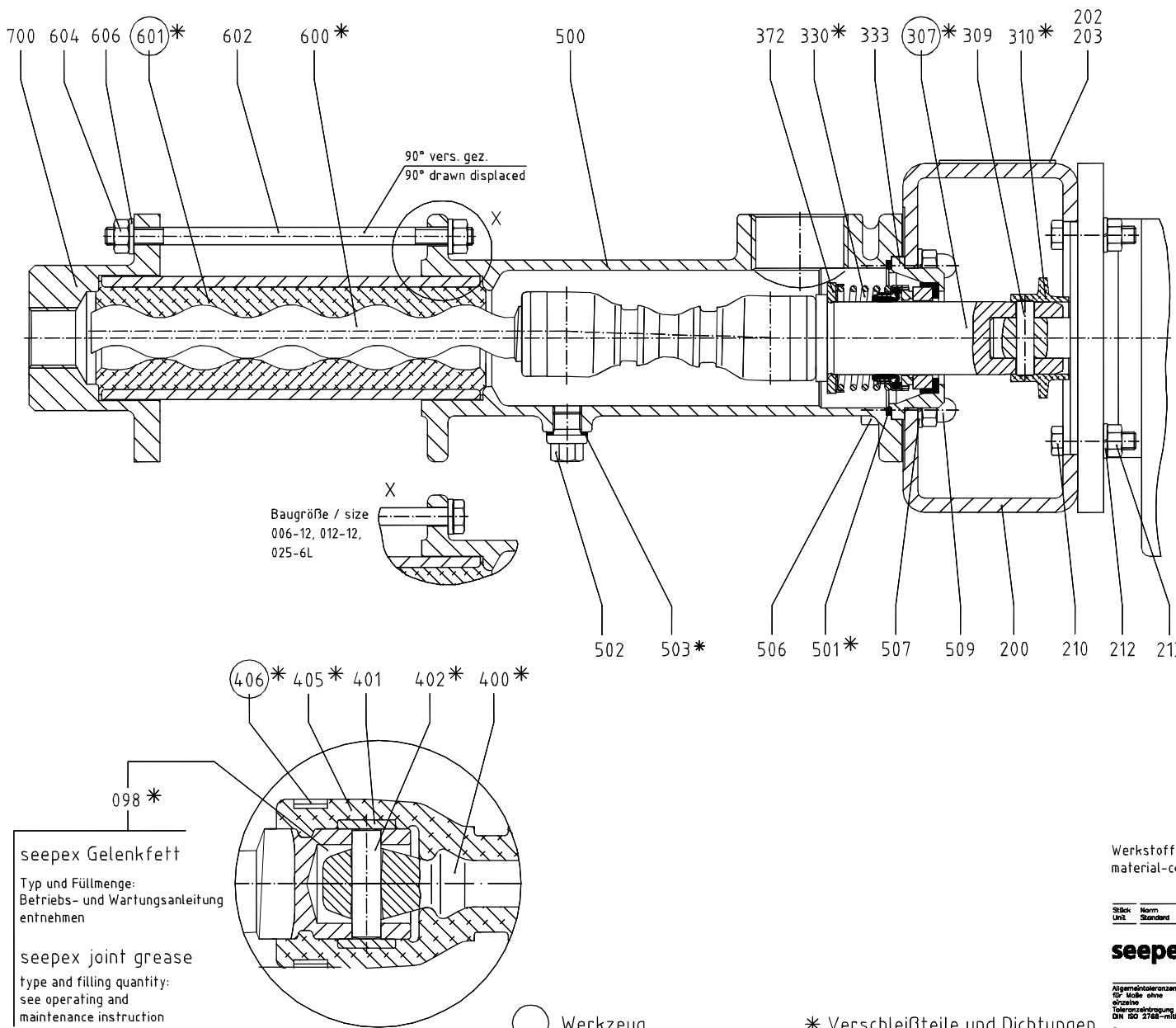
Signature / company stamp

Version for copying

No.	Quantity	Component	Material	Comment
Pumping elements				<input type="checkbox"/>
600		Rotor		
601		Stator		
No.	Quantity	Component	Material	Comment
Miscellaneous parts				<input type="checkbox"/>
501		Casing gasket		
098		Pin joint grease		1 cartridge = 300 g (approx. 315 cm ³) Grease quantity according to maintenance (chapter 7.0)

Place, date

Signature / company stamp



seepex Gelenkfett

Typ und Füllmenge:
Betriebs- und Wartungsanleitung
entnehmen

seepex joint grease
type and filling quantity:
see operating and
maintenance instruction

seepex joint grease
type and filling quantity:
see operating and
maintenance instruction

Werkzeug Betriebs- und Wartungsanleitung entnehmen

tool
see operating and
maintenance instruction

* Verschleißteile und Dichtungen

Wearing parts and sealings
see operating and
maintenance instruction

Stick List-Nr. Norm Standard	Pre-/Item	Benennung/Denomination Zeilenummer/Line-Number	Werkstoff/Material	Dimensions / Dimension	Ge wicht Weight
---------------------------------------	-----------	---	--------------------	------------------------	--------------------

seepex.com

Algemeiner toleranzraum für kleine ohne einzige Toleranzangabe DIN ISO 2760-mittel	Abgabe Issue	Änderung Modification	Name Name	Datum Date	Maßstab/Scale %	Werkstoff/Material @	Gewicht/Weight
Bezeichnung/ Denomination							
General tolerance range for small without individual tolerance entry	—	—	—	—	Schnitzeichnung Baureihe "MD" sectional drawing range "MD"	—	—
DIN ISO 2760-erweite	—	—	—	—	mit 2 Spannschrauben with 2 tie bolts	—	—

Staats- oder Gesellschaftszeichen DIN ISO 1302 Reihe 2	Name Name Name	Datum Datum Datum	Zeichnung-Nummer/Drawing-Number 103-007A2
Bearbeitet/Drawn Roughness for surface finish DIN ISO 1302	ov Geprüft/Checked hue	18.08.1997 18.08.1997	EDV-Nr./EDP-No. L\LFDCZHNG.245\24646
Reinheits-/Standard			Ersetzt für/Replacement for: _____ Ersetzt durch/Replacement by: _____

Stck.	Pos.	DE	EN	FR
		Baureihe MD	range MD	série MD
		Schnittzeichnung Nr. 103-007_2	sectional drawing No. 103-007_2	plan no. 103-007_2
Stck.	Pos.	Benennung Stck. / Pos.	denomination Qty. / Item	désignation Qté. / Poste
1	200	Laterne	lantern	lanterne
2	202	Halbrundkerbnägel	round head grooved pin	rivet
1	203	Typenschild	type plate	plaque signalétique
4	210	6kt-Schraube	hexagon bolt	vis
4	212	Federring	spring washer	rondelle frein
4	213	6kt-Mutter	hexagon nut	écrou
1	307	Steckwelle	plug-in shaft	arbre à broche
1	309	Steckwellenbolzen	plug-in shaft pin	cheville pour arbre à broche
1	310	Spritzring	splash ring	bague de projection
1	330	Gleitringdichtung	mechanical seal	garniture mécanique
1	333	Gleitringdichtungsgehäuse	mechanical seal casing	carter de la garniture mécanique
1	372	Stützring	support ring	bague d'appui
1	400	Kuppelstange	coupling rod	barre d'accouplement
2	401	Gelenkhülse	retaining sleeve	douille d'articulation
2	402	Kuppelstangenbolzen	coupling rod pin	axe d'articulation
1	405	Manschette	universal joint sleeve	manchette
2	406	Halteband	holding band	collier de serrage
1	500	Sauggehäuse	suction casing	carter d'aspiration
1	501	Sauggehäusedichtung	casing gasket	étanchéité du carter d'aspiration
3	502	Verschlusschraube	screwed plug	bouchon de vidange
3	503	Dichtring	sealing ring	joint d'étanchéité
4	506	Zylinderschraube	socket screw	vis à tête cylindrique
4	507	Federring	spring washer	rondelle frein
4	509	6kt-Mutter	hexagon nut	écrou
1	600	Rotor	rotor	rotor
1	601	Stator	stator	stator
2	602	6kt-Schraube	hexagon bolt	vis
2	604	6kt-Mutter	hexagon nut	écrou
2	606	Scheibe	washer	rondelle
1	700	Druckstutzen	pressure branch	bride de refoulement
	098	seepex Gelenkfett Typ und Füllmenge: Betriebs- und Wartungsanleitung entnehmen	seepex joint grease type and filling quantity: see Operating and Maintenance Instruction	seepex graisse d' articulations sommaire pour type et quantité: voir Instructions de service et d'entretien
		Verschleißteile und Dichtungen: Betriebs- und Wartungsanleitung entnehmen	Wear parts and sealings: see Operating and Maintenance Instruction	pièces d'usure et étanchéités: voir Instructions de service et d'entretien
		Werkzeuge: Betriebs- und Wartungsanleitung entnehmen	Tools: see Operating and Maintenance Instruction	Outils: voir Instructions de service et d'entretien
		versetzt gezeichnet	drawn displaced	plan séparé

Version for copying

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

Must be specified with every order!

Commission:

Mark tool!

Sender:

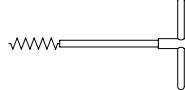
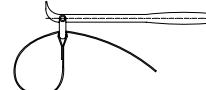
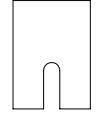
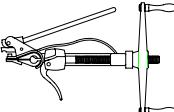
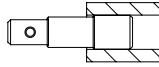
Contact:

Tel.:

Fax:

E-mail:

Customer service: seepex GmbH Postfach 10 15 64 D-46215 Bottrop service@seepex.com	Germany	Tel +492041.996-231 Fax +492041.996-431	Delivery address:
	Rest of Europe	Tel +492041.996-224 Fax +492041.996-424	
	Outside Europe	Tel +492041.996-120 Fax +492041.996-432	

For installation of:	Packing gland	Stator	Universal joint sleeve	
Tool no.	W1 <input type="checkbox"/>	W13 <input type="checkbox"/>	W15 <input type="checkbox"/>	
Denomination:	Packing puller	Strap wrench	Mounting plate	
Order no.	PKZ	WKZ	MTP	
				
For installation of:	Holding band	Lip seal		
Tool no.	W3 <input type="checkbox"/>	W16 <input type="checkbox"/>	W17 <input type="checkbox"/>	
Denomination:	Mounting tool	Mounting sleeve	Impact cylinder, Centring pin, Mounting pin	
Order no.	MHB	MTH	ZSH	
				

12.1 Additional components**12.2 Technical information**

13.1 Manufacturer's documents / suppliers

- available

Europe:

Great Britain

seepex UK Ltd.
3 Armttech Row
Houndstone Business Park
Yeovil Somerset BA22 8RW
Tel +44.19 35.47 23 76
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Fax +60.3.78 80 69 59
seepex.m@seepex.com

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