seepex

Operating and Maintenance Instructions
Progressive Cavity Pump

Range

NS

Non binding Operating and Maintenance Instructions

seepex operating and maintenance instructions are individually compiled for each pump.
These operating instructions are non binding and give only an overview.
Binding operating instructions can be requested using the email address om@seepex.com.
For this purpose, please also indicate the relevant pump comm. number.

This operating and maintenance instruction includes important safety information and instructions for installation, commissioning, operating and maintenance of the **seepex** machinery. It is essential therefore, that the responsible specialist refers to it before starting any work on the machinery as well as prior to commissioning. Futhermore, this instruction must always be available on site.

seepex

Operating and Maintenance Instructions Progressive Cavity Pump

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1.
General

1.1
Application

These operating instructions contain basic information on the installation, commissioning and maintenance of **seepex** machines. Compliance with the work steps described in the individual sections is essential.

1.2
Details of the seepex machines

1.2.1
Operating Instructions

The Commission Number (comm. no) assigns the operating instructions to a particular **seepex** machine. The operating instructions are produced in relation to a specific job/commission and are valid only for the machine whose comm. no. is identical with that indicated on the cover sheet and possessing the associated data sheet, Point 9.

1.2.2
Manufacturer

The machines were manufactured by **seepex**.

1.2.3
Range, Size, Version

of the machines are stated in the appended data sheet, Point 9.

1.2.4
Machine Comm. No. and Year of Construction

are stated on the type plate at the machine.

1.2.5
Release Date of the Operating Instructions

is stated on the cover sheet of the operating instructions.

1.2.6
Modifications, Notes of Modification

If modifications to the machines are carried out in agreement with **seepex**, a new set of operating instructions will be provided, or the existing operating instructions will be supplemented by an additional sheet together with a new cover sheet. The date of modification and modification index will be noted on the new cover sheet.

1.2.7
EEC Machine Directive

1.2.7.1
Manufacturer's Declaration

seepex Manufacturer's Declaration as required by the EEC Machine Directive 89/392/EEC, Appendix II B:

The **seepex** machines delivered in accordance with our design are intended to be fitted in one machine or assembled together with other machines to form one machine/plant. The commissioning of the machine is forbidden until such a time as has been established that the entire machine/plant satisfies the requirements of the EEC Directive for Machines as amended 91/368/EEC and 93/44/EEC.

Particular attention must be paid to the safety requirements specified in EN809 (s and Equipment for Fluids) as well as the information in these operating instructions.

1.2.7.2
Declaration of Conformity

seepex machines possessing no safety accessories do not fulfill the requirements of the EEC Machine Directive 89/392/EEC as amended 91/368/EEC and 93/44/EEC.

For this reason, no Declaration of Conformity as required by the EEC Machine Directive 89/392/EEC, Appendix IIA can be issued before appropriate safety devices have been installed/mounted on the machine and/or plant with due regard to the information given in these operating instructions.

The following harmonized standards are particularly applicable:
EN 809, EN292T1, EN292T2
Applicable national standards and specifications must be taken into consideration.

Following assessment of the conformity of the machine/plant with the EEC Machine Directive, customers may on their own initiative place on the full machine/plant the EEC symbol 'CE' as defined in Identification Directive 93/68/EEC.

CAUTION

This documentation must be kept available for at least 10 years.

1.2.8
Copyright and Industrial Property Rights

These operating instructions are copyrighted. The reproduction, in particular by photocopying, of these instructions is not permitted (§§ 54, 54 UrhG) and constitutes a criminal offence (§ 106 UrhG). Proceedings will be instituted if the copyright is violated.

1.2.9
Specifications Required for Inquiries and Orders

The following information must be included when inquiring about replacement parts or placing orders:
- comm. no.
- / machine type
This information is given on the type plate mounted the machine.

1.2.10
Technical Data Sheet
see Point 9.

1.2.11
Performance Data, Load Index, Power Consumption

are indicated in the associated data sheet, Point 9.

1.2.12
Sound Pressure Level

The sound pressure level and/or noise characteris-tics of the **seepex** machines are ascertained in accordance with DIN 45635. The measuring guidelines are largely identical with the international standards ISO 3740-1980 and ISO 3744-1981.

1.2.13
Operating Range

Employment of the machine is not permissible for purposes other than those stated in the data sheet, see Point 9. **seepex** cannot accept liability for damage arising through failure to comply with this operating range.

1.3
Supplementary Information

1.3.1
Accessories, Optional Extras

Please refer to the data sheet, Point 9.

1.3.2
Company Address, Service Addresses

see Point 11

2.
Safety

These operating instructions contain basic require-ments to be observed during the installation, opera-tion and maintenance of the machine. Therefore, the instructions must be read by the mechanical fitter and by the technical personnel/operator responsible for the machine prior to assembly and commissioning, and kept available at the operating site of the machine/plant at all times.

Compliance is required not only with the general safety instructions given in this section but also with the detailed instructions, e.g. for private usage, given under the other main headings in these operating instructions.

2.1
Labeling of Advice in the Operating Instructions

In these operating instructions safety advice whose non-observance could lead to danger for life or limb is labeled with the following general hazard symbol:



safety symbol acc. to ISO 3864 - B.3.1

Warnings regarding electric power are labeled with:



safety symbol acc. to ISO 3864 - B.3.6

Safety instructions whose non-observance could jeopardize the machine and its functions are labeled by the word

CAUTION

Always comply with instructions mounted directly on the machine, e.g.
- rotational direction arrow
- fluid connection indicators

and ensure that the information remains legible.

2.2
Personnel Qualifications and Training

Personnel charged with operation, maintenance, inspection and assembly must be in possession of the appropriate qualifications for the tasks. The company operating the machine must define exact areas of responsibility, accountabilities and personnel supervision schemes. Personnel lacking the required skills and knowledge must receive training and instruction. If necessary, the opera-ting company may commission the manufacturer/ supplier to conduct these training courses. Further-more, the operating company must ensure that the personnel fully understand the contents of the operating instructions.

2.3
Dangers Resulting from Failure to Observe Safety Instructions

Failure to comply with the safety instructions may lead to hazards to life and limb as well as dangers for the environment and the machine. Non-obser-vance of safety instructions can invalidate the right of claim to damages.

The following are just some **examples** of possible dangers resulting from failure to comply with the safety instructions:

- Failure of important machine/plant functions
- Failure of prescribed methods of service and maintenance
- Danger to life and limb due to electrical, mechanical and chemical influences
- Danger to the environment due to the leakage of hazardous substances

2.4
Safety-conscious Working

Always comply with the safety instructions listed in this document, the existing national accident prevention regulations and any company-internal work, operating and safety rules.

2.5
Safety Instructions for the Operating Company/Machine Operator

- Any potentially hazardous hot or cold machine parts must be provided with protection against accidental contact at the customer´s premises.

- Protective guards for moving parts (e.g. coupling) must never be removed while the machine is in operation.

- Leakages (e.g. in the shaft seal) of hazardous conveying liquids (e.g. explosive, toxic, hot) must be drained in such a way that no danger arises for persons or for the environment. Always observe the relevant statutory requirements.

- The risk of exposure to electrical power must be eliminated (for details, see the VDE regulations, for example, or those of the local power supply company).

2.6
Safety Instructions for Maintenance, Inspection and Assembly Work

The operator must ensure that all maintenance, inspection and assembly tasks are carried out by authorized and qualified personnel who have studied the operating instructions closely and become sufficiently familiar with the machine.

As a basic rule, the machine must be brought to a standstill before work is carried out. Always comply with the de-commissioning procedure described in this document.

Any machiness or assemblies conveying media that are detrimental to health must be decontaminated.

Immediately following completion of work, all safety and protective devices must be replaced in position and, where applicable, re-activated.

Before re-starting the machine, observe the points listed under the heading "Initial Startup".

2.7
Unauthorized Modification and Manufacture of Replacement Parts

Conversions or modifications of the machine are permissible only in consultation with the manufacturers. Original manufacturer replacement parts and manufacturer-approved accessories enhance the operational safety of the machine. The usage of unauthorized parts may lead to the nullification of the manufacturer's liability for any resultant damages.

2.8
Impermissible Modes of Operation

The operational safety of the machines supplied is warranted only for employment in accordance with the intended use as defined in Section 1 - General - of these operating instructions. Never allow the threshold values specified in the data sheet to be exceeded.

3.
Transport and Intermediate Storage

3.1
Safety Precautions

Employ appropriate transport means, hoists and tools when transporting and storing the machine, always observing the safety instructions.

3.2
Transport

Depending on its weight, the **seepex** machine must be transported manually or with appropriate trans-port means. Comply with the transport instructions on the packing.

3.3
Unpacking

The design of the packing is such that the equip-ment can be removed manually or, if demanded by the weight, by means of appropriate hoists.

Any screw fittings between the machine and the packing must be undone. Comply with the attached information notices and symbols.

3.4
Intermediate Storage/Preservation

Unless otherwise indicated in the data sheet, **seepex** machines are provided with preservation only for the duration of transport. If a long period of intermediate storage is foreseen before the machine is commissioned, it is necessary to pro-vide supplementary preservation. If necessary, the appropriate measures should be drawn up in consultation with **seepex**.

Intermediate storage in extreme climatic conditions is permissible only for machine whose design is appropriate to the circumstances. If necessary, **seepex** must be consulted.

CAUTION

Pumps of the range MAP
If the period from supply and subsequent storage until the commissioning is more than 4 weeks, the hoses should be dismantled, refer to Point 7.

3.5
Protection against Environmental Influences

To afford protection against environmental influences, the intermediate storage location must be dry, enclosed and free from frost.

4.
Description of the seepex Progressive Cavity Pump and Accessories

4.1
General Description, Design and Mode of Operation

Like all progressive cavity pumps, **seepex** pumps belong to the rotating positive-displacement pump family. The characteristic attribute of these pumps is the special formation and arrangement of the two conveying elements, namely the rotor and the stator.

The difference in the number of threads possessed respectively by the rotor and stator produces a chamber that opens and closes alternately in line with the constant turning motion of the rotor, effecting the continuous transportation of the conveying product from the suction side to the pressure side.

The geometrical formation of the two conveying elements combined with the constant contact that exists between them result in sealing lines that effect an airtight seal between the suction and pressure side in every position of the eccentric screw, even when the pump is stationary. The pump owes its high suction capacity to this
sealing between the suction and pressure sides.

4.2
Mechanical Design

Please consult the sectional drawing, Point 9, for the mechanical design of the pump. The data sheet, Point 9, gives information on the design of the pump housing, stator, rotor and rotating components.

Refer to document OM. SEA. _ _, Point 9 for information on the design of the shaft seal.

The data sheet, Point 9, specifies details of the design of the drive engine. Further details are given in the appended manufacturer's documents, Point 10.

4.3
Accessories

Consult the data sheet in Point 9 for information.

4.4
Dimensions, Weight

Consult the appended dimensional drawing, Point 9.

4.5
Design Variants

Refer to the data sheet, Point 9, for the design of the **seepex** progressive cavity pump. Other design variants are possible, whereby **seepex** must first check whether a particular pump is suitable for the intended purpose.

4.6
Operating Site Specifications

Operating site specifications are listed in the data sheet, Point 9. Details of the space required for installation, operation and maintenance are given in Point 5.2.1.

5.
Assembly / Installation

5.1
Mounting Tools / Hoists

No special tools are required for the assembly and installation of the pump.

The customer must check the dimensions and weight of the **seepex** progressive cavity pump to ascertain whether the available hoisting apparatus is sufficient for the assembly and fitting of the pump.

5.2
Initial Assembly

5.2.1
Inspection Prior to Commencement of Assembly

5.2.1.1
Location

The place of installation for the pump must con-form with the site stated in the data sheet in Point 9. Any change of location must be checked and approved by **seepex**.

5.2.1.2
Space Requirements

Customers are responsible for determining the space requirements; the following factors must be taken into consideration:

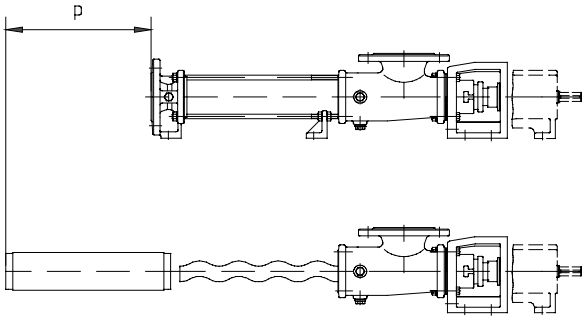
- dimensions and weight of the machine
- required transport and hoisting equipment
- possible piping layout with allowance for the space allowing disassembly of the rotor as defined in 5.2.1.3
- freedom of movement to:
  operate the drive /
  speed regulation
  read speed and pressure indicators
  adjust a stator retensioning device, if fitted
  operate a buffer fluid supply unit, if fitted
- space required for lubrication / renewal of lubricants
- disassembly of mechanical protective devices, e.g. V-belt or coupling protection
- space required for handling the mounting tools, e.g. sufficient wall clearance

5.2.1.3
Space Allowing Disassembly of Stator P

A specific space must be allowed for exchanging the stator. The required dimension "P" is indicated in the index of these operating instructions or in the appended dimensional drawing, Point 9.

CAUTION

Ensure also that the pipe work can be dismounted at this location too.



5.2.2
Installation of the Fully Assembled Pump

- Installation in conformity with data sheet
  Installation of the pump is permissible only in accordance with the data sheet specifications and the associated basic drawing, see Point 9. Any change in the position must be checked and approved by **seepex**.

- Tension-free mounting of pump
  This rule applies to pumps with and without drives, to versions with and without baseplate, for mounting on the foundation or other bearing elements. The entire area of all bearing surfaces of the machine must rest on the ground. Any unevenness must be corrected by appropriate supports.

- Correct seating of drives
  All drives have been aligned ready for operation and mounted by **seepex**. However, displace-ments may occur during transport or installation. For this reason, check that the alignment and fastening of the drive and coupling are correct.

- Protective devices
  On completion of the assembly and installation work, immediately mount all safety and protective devices in their proper locations and set them in operation.



5.2.3
Protective and Controlling Equipment

Information on equipment of this nature, where fitted, is provided in the data sheet, Point 9. Consult the attached manufacturer's specifications, Point 10, for instructions on assembly and installation.

5.2.4
Electric Connection of Electric Motor and Frequency Converter



The electric connections must be established in accordance with the manufacturer's specifications, Point 10, as well as the safety specifications applying at the installation site. The mains voltage and frequency must match the ratings indicated on the type and rating plates.

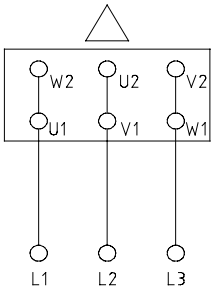
- Switch on electric motor „direct-on-line"

CAUTION

An increased starting torque is necessary due to the clamping between the rotor and stator conveying elements. This means the electric motors that drive the progressive cavity pumps must always be switched on directly. As a rule, star-delta startup is not possible unless special arrangements have been made with **seepex**.

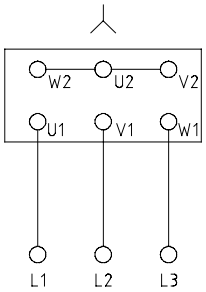
Three-phase cage motor

Delta connection



Terminal board

Star connection



low . . . high . . .
. . . voltage indicated on rating plate

- Speed regulation via frequency inverter
  When progressive cavity pumps with frequency-controlled drives are started up problems may occur due to unsuitable or wrongly set frequency inverters. For this reason we recommend the purchase of the complete drive, including frequency inverter, from **seepex**, so that the frequency inverter can be tuned on the **seepex** test field along with a trial run.

  Ensure that customer-supplied frequency inverters comply with the starting torque and running power specified in the appended data sheet, Point 9.

CAUTION

Consult the appended document TI.FRU.01, see Point 9, for further information on the electric connection and the setting of frequency inverter and variable-speed motor.

5.2.5
Piping

5.2.5.1
Suction and Pressure Flanges

The position, nominal width and standard of the suction and pressure flange of the progressive cavity pump are specified in the dimension drawing, Point 9, and data sheet, Point 9. Always observe the rotational direction and flow direction defined in Point 6.2.5.

5.2.5.2
Piping Dimensioning

CAUTION

The pipe diameters on the suction and pressure sides must be dimensioned in accordance with the customer's pressure-loss calculation in such a way that the pressures specified in the data sheet, Point 9, are not exceeded. The nominal width of the suction pipe should at least match that of the pump suction flange.

5.2.5.3
Residue-free Piping

CAUTION

Prior to starting up the pump, ensure that all pipelines are free from foreign bodies. Installation residues (such as weld spatter, screws, steel chips etc.) will lead to damage of the **seepex** pump for which guarantee claims will not be accepted.

5.2.5.4
Tension-free Mounting

CAUTION

Pipelines and other components requiring to be connected with the pump must be mounted without stresses.

5.2.5.5
Fluid Connections for Optional Extras
Consult the data sheets, Point 9, for information regarding the optional extras, if any, that are fitted. The technical description is given under Point 9.

6.
Commissioning/De-commissioning

6.1
Engineering Data

Details regarding all technical specifications and operating conditions are given in these operating instructions together with the data sheet, Point 9.

To guarantee the correct assignment of documentation to pump, the commission number on the
- cover sheet
- and data sheet of these operating instructions must match the commission number stated on
- the nameplate of the pump.

6.1.1
See Point 7.2.2 for Lubricant Chart

6.2
Preparation for Operation

6.2.1
Bearing

6.2.1.1

See Point 7.2.1.4 for pump bearing.

6.2.1.2

See manufacturer's documents, Point 10, for drive bearings.

6.2.2
Shaft Sealing

See document OM.SEA.__.

6.2.3
Filling Up of Suction Side to Avoid Dry Running at Startup

6.2.3.1
General

CAUTION

Before switching on the pump, fill the suction-sided pump casing with fluid so that the first rotations will lubricate the conveying elements immediately. A small quantity of fluid is sufficient for lubrication; the subsequent operation of the pump is self-priming, even if an air column up to the liquid level remains.

6.2.3.2
Pump with plastic rotor
Pump with plastic rotating unit

CAUTION

Important information about commissioning can be taken from the document OM.ROT.01.

6.2.4
Electric/Hydraulic Connections



The connections are listed in the appended manufacturer's documents, Point 10.

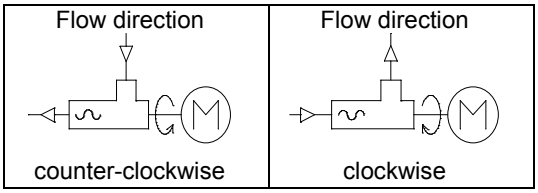


The risk of exposure to electrical hazards must be ruled out. Always observe the safety regulations valid at the site of installation.

6.2.5
Checking Direction of Rotation



The rotational direction of the pump determines the flow direction of the conveying medium.



Prior to commissioning the rotational direction of the pump must be checked for compliance with the data sheet specification and the rotational direction arrow on the type plate of the pump.

6.3
Control and Monitoring Equipment

Where applicable, please refer to the associated documents, Point 10, for information on commissioning.

6.3.1
Performance Check

Any optional extras must be subjected to a performance check in conformity with the specifications by **seepex** or other manufacturers, see manufacturer's documents.

6.3.2
Setting

Unless already performed in the factory, setting must be carried out in accordance with the appended manufacturer's specifications. Pay attention to the operating specifications in the data sheet.

6.4
Equipment for Protection of Persons

Machines must be fitted with mechanical protective devices complying with DIN EN 809.

- Moving or working parts must be protected against accidental contact.
- However, safety considerations demand it be possible at all times to check without hindrance whether the shaft seal is fully functional. A protective guard is necessary in this area only if components are mounted on the rotating, smooth shaft.



- If pumps are operated with an open suction flange/feed hopper, a suitable protective guard complying with DIN EN 294 must be mounted.
- Country-specific protective regu-lations must be observed at the site of installation. Prior to activation of the pump, check the proper function of all protective equipment.

6.5
Commissioning

6.5.1
Initial Startup/Re-starting

CAUTION

Every **seepex** progressive cavity pump is designed for the specific operating conditions documented in the data sheet. Commissioning is permissible only if the operating conditions conform with those indicated in the data sheet. Although the potential usages of the **seepex** pump are not confined to the specified operating conditions, any change in the original conditions must be checked and approved by **seepex**.

The right to make claims under the warranty agreement will be annulled if operating conditions are changed without prior approval by **seepex**.

6.5.2
Avoid Dry Running of Pump

CAUTION

The dry running of a pump increases the friction between rotor and stator, quickly causing an unacceptably high temperature to develop on the inner surface of the stator. This overheating leads to burning of the stator material and the total failure of the pump.

For this reason it is necessary to ensure that the suction-sided flow never dries up completely. If a continuous flow cannot be guaranteed for the plant, it is essential to fit the **seepex** dry running protection device TSE, available as an optional accessory.

6.5.3
Check Pressure at Suction and Pressure Flanges

6.5.3.1
Safeguard Pump Against Excessive Pressure at the Suction Flange

The **seepex** pump is designed to operate with the pressure at the suction flange (suction head or inlet pressure) specified in the data sheet. Deviating pressure conditions may lead to the failure and/or destruction of the shaft seal or entire pump.



For this reason the suction pressure specified in the data sheet must be guaranteed. Appropriate monitoring devices are oil-filled contact mano-meters that deactivate the pump.

6.5.3.2
Safeguard Pump Against Excessive Pressure at the Pressure Flange

The **seepex** pump operates according to the positive displacement principle. Operation of the pump against an excessive pressure caused by closed valves, by high pressure losses in the piping or by product sedimentation will lead to the destruction of the pump, drive, pipe work and/or downstream equipment. Every progressive cavity pump must therefore be protected against overpressure. Safety valves with bypass pipes or oil-filled contact manometers that disactivate the pump are appropriate protective devices.



6.5.4
Drive Engine

Consult the attached manufacturer's operating instructions, Point 10, for information on commissioning the drive engine.



6.5.5
Establish Clear Passage Through Pipelines

CAUTION

To prevent damage to the pump the unhindered flow of liquid must be guaranteed between the points of entry to and exit from the pipeline. For this reason, open all relevant valves etc. prior to activation of the pump.

6.6
De-commissioning

6.6.1
De-activation

The electric connections must be switched off and protected against accidental re-activation. Observe the safety regulations applying to the plants.



6.6.2
Stationary Pump

The pump and all optional equipment must be provided with the following protection modes while at a standstill:

- Frost protection
- Protection against solid particle deposits
- Protection against sedimentation of the medium
- Corrosion protection for parts in contact with the medium

We recommend that the pipeline and pump be emptied for the duration of the plant standstill. Following evacuation, the pump should be preserved.

6.6.3
Evacuation of the Pump

The pipeline must be evacuated on the suction and pressure side or shut-off directly behind the pump connections. Drain any residual liquid in the pump casing by opening/ removing the screwed sealing plugs (705) and (502), sealing rings (706) and (503).



CAUTION

Coated casings or housings without screw plug have to be drained by the connection branch (SAG and DRS).

Refer to the data sheet and the sectional drawing of the associated operating instruction for information on the pump design.

Conveying medium residues always remain in the rotor/ stator chambers and may run out during transport or disassembly of the pump. When conveying aggressive or hazardous media, therefore, wear appropriate protective clothes during all installation work.

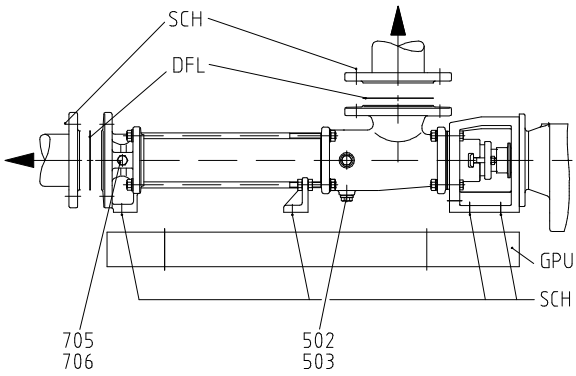
6.6.4
Disassembling the Pump

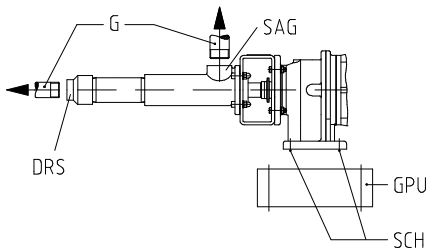
Dismantle the pipe work by removing the flange bolts (SCH) and flange seals (DFL) or the threaded connections (G).

Disassemble the pump together with the baseplate (GPU) or, as applicable, without the baseplate (GPU) following removal of the bolts (SCH) at the pump feet.

Block-design pumps with direct flange-mounted drive engine are liable to become unstable during disassembly. Stability can be restored by propping up the drive engine.







6.6.5
Preservation/Storage

The pump must be preserved prior to storage. Appropriate preservation measures must be agreed with **seepex**. Always state the pump commission number when making inquiries.

These operating instructions are valid for
range NS
size 025-12, 025-24, 05-12 and 1-6L

7.
Service and Maintenance

Contents
7.1 General Instructions
7.2 Service and Inspection
7.3 Dismantling
7.4 Re-assembly
The sectional drawing and parts list relevant for Points 7.3 and 7.4 can be found in Point 9.

7.1
General Instructions

A requirement for the reliable operation of any pump is service and maintenance in compliance with instructions. Maintenance personnel must therefore have access to these operating instructions and adhere to them meticulously. **seepex** will accept no liability for damages arising through non-observance of these operating instructions.

7.2
Maintenance and Inspection

7.2.1
Lubrication

7.2.1.1
Rotor and Stator

The rotor and stator are lubricated by the conveying medium.

7.2.1.2
Shaft Sealing

Consult document OM.SEA. ___ Point 9 for information on lubricating the shaft seal.

7.2.1.3
Pin Joint

The pin joints are filled with special grease and lubricated for the expected duration of service. The **seepex** joint grease specified in the index of these operating instructions should be used exclusively for any required maintenance work.

CAUTION

Usage of other grease types will lead to premature joint failure and render invalid any right to claims under guarantee.

7.2.1.4
Bearing of the Pump/Drive Casing

The bearing of the drive casing is filled with grease. A repeated lubrication shall take place every 3000-3500 operating hours.
Lubricant: grease

Quality:	Esso Beacon EP2 /	DIN KP2N-25
	Shell Alvania EP2 /	DIN KP2K-20
	Aral Lub HLP2 /	DIN KP2K-30

7.2.2
Lubricant Filling Levels

Details are specified in the index.

7.2.3
Drives and Optional Extras

For maintenance and inspection specifications, see the appended manufacturer's documents, Point 10.



7.2.4
Supervision during Operation

7.2.4.1
Shaft Sealing

See document OM.SEA.___ Point 9.

7.2.4.2
Optional Extras

These must be monitored in accordance with the separate documents, Point 9/Point 10.

7.2.4.3
Drive Engines

These must be monitored in accordance with the separate manufacturer's documents, Point 10.

7.2.5
Preventive Measures

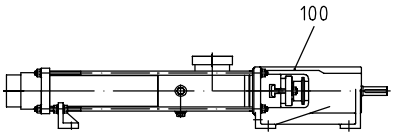
To avoid the expenses incurred by lengthy stop periods of the pump, **seepex** recommends the acquisition of a set of wearing parts and a set of gaskets. The contents are listed in the document OM.WPS.07e, Point 9.

7.3
Dismantling the seepex Progressive Cavity Pump

Tools are required for dismantling and re-assembly. These tools are listed in Point 9 of the document OM.SPT.01.

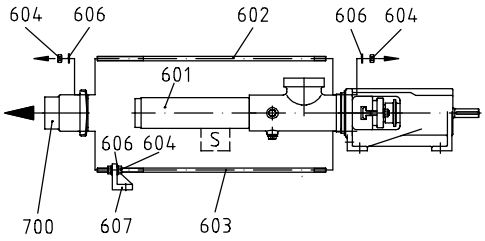
The stator (601) and the rotating pump parts can be exchanged in site. The rotating pump parts can be dismantled as a complete rotating unit (RTE) (Point 7.3.4) or as individual components (Point 7.3.5).

Before commencing the dismantling of pump parts, safeguard the pump against tipping over or falling down by fastening it at the drive casing (100).



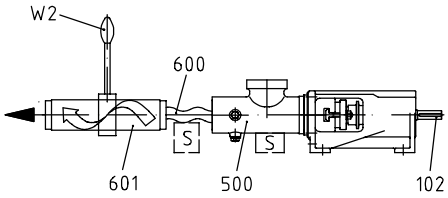
7.3.1
Pressure Flange (700) - Dismantling

Prior to dismantling see Point 7.3.2
Before dismantling the stator (601), provide it with a support (S) to prevent it from falling.



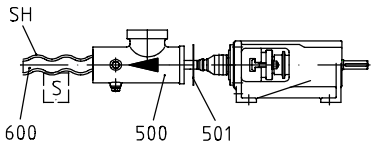
7.3.2
Stator (601) - Dismantling

- Maintenance tip:
  Disassembly of the stator can be made consider-ably easier by first moistening the inner surface of the stator with antiseize agent (soft or liquid soap). Before removing the pressure flange (700), pour the antiseize agent into the opening between rotor and stator on the pressure flange side. Several clockwise (see Point 6.2.5) revolutions of the rotor will then distribute the antiseize agent over the inner surface of the stator and reduce the friction between rotor and stator considerably.
- Lock drive shaft (102) against rotation.
  While dismantling the stator (601) with tool (W2/see Point 9) prop up the rotor (600) and the suction casing (500) with support (S) to prevent it from falling.



7.3.3
Suction Casing (500) - Dismantling

Fit the rotor (600) with a protective cover (SH) and underprop it with support (S) to prevent it from falling down.

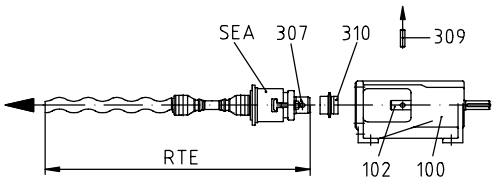


7.3.4
Rotating Unit (RTE) - Dismantling

CAUTION

Before dismantling the rotating unit it is essential to comply with the specifications in document OM.SEA.__ (Shaft Seal Dismantling).

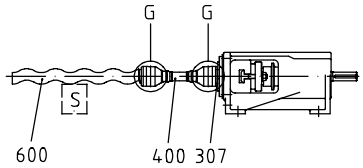
- Remove flushing connections at shaft seal housing (SEA).
- Raise/shift splash ring (310) and eject plug-in shaft pin (309) in horizontal direction.
- Remove rotating unit (RTE)/plug-in shaft (307), together with shaft sealing (SEA) from output shaft (102) in the drive casing (100). See Point 9 for tool (W10) used for pulling off.
- See in document OM.SEA.__, Point 9, for removal of the shaft seal (SEA) from the plug-in shaft (307).



7.3.5
Rotating Pump Parts - Dismantling

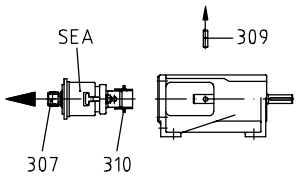
7.3.5.1
Rotor (600), Coupling Rod (400)

Detach the rotor (600) and coupling rod (400) from the plug-in shaft (307) by dismantling the joint (G) in accordance with Point 7.3.6.



7.3.5.2
Plug-in Shaft (307)

The plug-in shaft (307) is removed in the same way as the rotating unit (RTE), see Point 7.3.4.



7.3.6
Dismantling of Joint

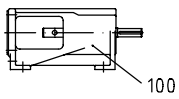
see document OM.PJT.01 Point 1.

7.3.7
Shaft Sealing

See document OM.SEA.___ Point 9 for information on dismantling the shaft sealing.

7.3.8
Drive Casing (ATG) - Dismantling

For dismanting of drive casing (100) please see to document OM.DCG.01.



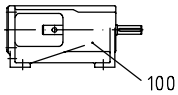
7.4
Re-assembly

Before commencing the re-assembly, fasten the completed drive casing (100) in such a way that it cannot tip over or fall down during the re-assembly of the pump components.



7.4.1
Drive Casing (100) - Re-assembly

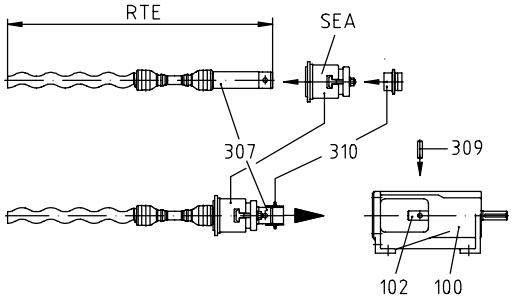
For assembly of drive casing (100) please see document OM.DCG.01.



7.4.2
Rotating Unit (RTE) - Re-assembly

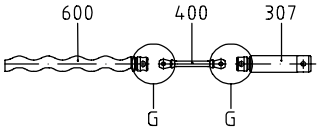
The rotating unit (RTE) has been assembled in accordance with the description in document OM.PJT.01

- Mount shaft seal (SEA) on plug-in shaft (307) in the way described in document OM.SEA.__ , see Point 9.
- Moisten splash ring (310) and plug-in shaft (307) with joint grease (see index for type) and slide splash ring (310) onto plug-in shaft (307), observing the fitting position of the splash ring, (see lettering on the splash ring).
- Apply antiseize graphite petroleum to the drive shaft (102) and slide on the rotating unit (RTE). Insert plug-in shaft pin (309) horizontally.
- Splash ring position (310)
  The collar of the splash ring should be mounted at a distance of 0.5 mm from the lantern (100).



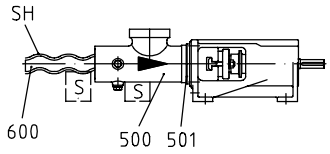
7.4.3
Rotating Pump Parts - Re-assembly

Prepare main components:
Prepare rotor (600), coupling rod (400) and plug-in shaft (307) as described in document OM.PJT.01 Point 2. to 2.3
Joint (G) re-assembly as described in document OM.PJT.01 Point 3.



7.4.4
Suction Casing (500), Casing Gasket (501) - Re-assembly

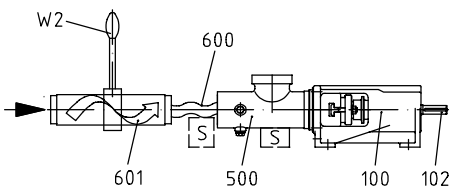
Fit protective cover (SH) on rotor (600) and prop it up with support (S). Prop casing gasket (501) and suction casing (500) by support.



7.4.5
Stator (601) - Assembly / Re-assembly

Maintenance tip:
Disassembly of the stator can be facilitated considerably by first moistening the inner surface of the stator with antiseize agent (soft or liquid soap). Before removing the pressure flanges (700), pour the antiseize agent into the opening between rotor and stator on the pressure flange side. Several clockwise (see Point 6.2.5) revolutions of the rotor will then distribute the antiseize agent over the inner surface of the stator and reduce the friction between rotor and stator considerably

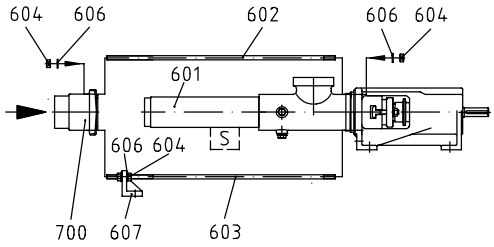
Lock drive shaft (102)in the drive casing (100) against rotation. Using tool (W2/see Point 9), turn stator (601) clockwise and simultaneously push it over rotor (600), propping up rotor with support (S) at the same time.



7.4.6
Pressure Flange (700) - Assembly

CAUTION

Tighten tie bolts (602 and 603) in equally.



These operating instructions are valid for
range NS
size 05-24 to 202-6L

7.
Service and Maintenance

Contents
7.1 General Instructions
7.2 Service and Inspection
7.3 Dismantling
7.4 Re-assembly
The sectional drawing and parts list relevant for Points 7.3 and 7.4 can be found in Point 9.

7.1
General Instructions

A requirement for the reliable operation of any pump is service and maintenance in compliance with instructions. Maintenance personnel must therefore have access to these operating instructions and adhere to them meticulously. **seepex** will accept no liability for damages arising through non-observance of these operating instructions.

7.2
Maintenance and Inspection

7.2.1
Lubrication

7.2.1.1
Rotor and Stator

The rotor and stator are lubricated by the conveying medium.

7.2.1.2
Shaft Sealing

Consult document OM.SEA. ___ Point 9 for information on lubricating the shaft seal.

7.2.1.3
Pin Joint

The pin joints are filled with special grease and lubricated for the expected duration of service. The **seepex** joint grease specified in the index of these operating instructions should be used exclusively for any required maintenance work.

CAUTION

Usage of other grease types will lead to premature joint failure and render invalid any right to claims under guarantee.

7.2.1.4
Bearing of the Pump/Drive Casing

The bearing of the drive casing is filled with grease. A repeated lubrication shall take place every 3000-3500 operating hours.
Lubricant: grease

Quality:	Esso Beacon EP2 /	DIN KP2N-25
	Shell Alvania EP2 /	DIN KP2K-20
	Aral Lub HLP2 /	DIN KP2K-30

7.2.2
Lubricant Filling Levels

Details are specified in the index.

7.2.3
Drives and Optional Extras

For maintenance and inspection specifications, see the appended manufacturer's documents, Point 10.



7.2.4
Supervision during Operation

7.2.4.1
Shaft Sealing

See document OM.SEA.___ Point 9.

7.2.4.2
Optional Extras

These must be monitored in accordance with the separate documents, Point 9/Point 10.

7.2.4.3
Drive Engines

These must be monitored in accordance with the separate manufacturer's documents, Point 10.

7.2.5
Preventive Measures

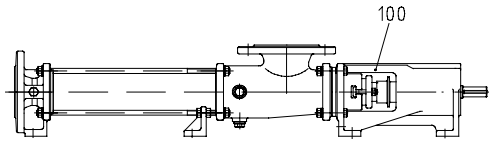
To avoid the expenses incurred by lengthy stop periods of the pump, **seepex** recommends the acquisition of a set of wearing parts and a set of gaskets. The contents are listed in the document OM.WPS.08e. Point 9.

7.3
Dismantling the seepex Progressive Cavity Pump

Tools are required for dismantling and re-assembly. These tools are listed in Point 9 of the document OM.SPT.01.

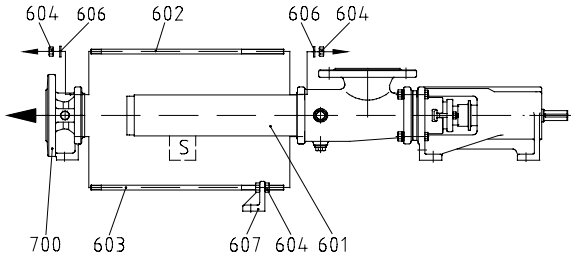
The stator (601) and the rotating pump parts can be exchanged in site. The rotating pump parts can be dismantled as a complete rotating unit (RTE) (Point 7.3.4) or as individual components (Point 7.3.5).

Before commencing the dismantling of pump parts, safeguard the pump against tipping over or falling down by fastening it at the drive casing (100).



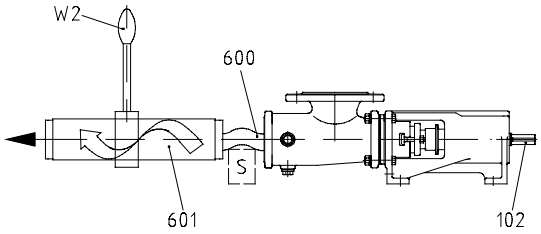
7.3.1
Pressure Flange (700) - Dismantling

Prior to dismantling see maintenance tip, Point 7.3.2
Before dismantling the stator (601), provide it with a support (S) to prevent it from falling.



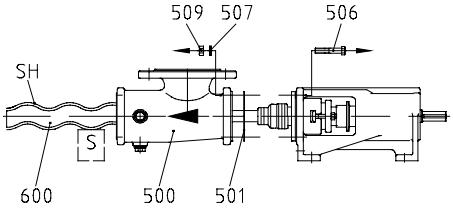
7.3.2
Stator (601) - Dismantling

- Maintenance tip:
  Disassembly of the stator can be made considerably easier by first moistening the inner surface of the stator with antiseize agent (soft or liquid soap). Before removing the pressure flange (700), pour the antiseize agent into the opening between rotor and stator on the pressure flange side. Several clockwise (see Point 6.2.5) revolutions of the rotor will then distribute the antiseize agent over the inner surface of the stator and reduce the friction between rotor and stator considerably
- Lock drive shaft (102) against rotation.
  While dismantling the stator (601) with tool (W2/see Point 9) prop up the rotor (600) with support (S) to prevent it from falling.



7.3.3
Suction Casing (500) - Dismantling

Fit the rotor (600) with a protective cover (SH) and underprop it with support (S) to prevent it from falling down.

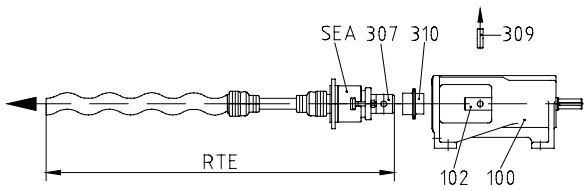


7.3.4
Rotating Unit (RTE) - Dismantling

CAUTION

Before dismantling the rotating unit it is essential to comply with the specifications in document OM.SEA.__ (Shaft Seal Dismantling).

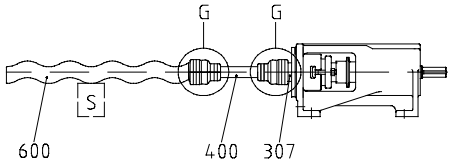
- Remove flushing connections at shaft seal housing (SEA).
- Raise/shift splash ring (310) and eject plug-in shaft pin (309) in horizontal direction.
- Remove rotating unit (RTE)/plug-in shaft (307), together with shaft sealing (SEA) from output shaft (102) in the drive casing (100). See Point 9 for tool (W10) used for pulling off.
- See in document OM.SEA.__, Point 9, for removal of the shaft seal (SEA) from the plug-in shaft (307).



7.3.5
Rotating Pump Parts - Dismantling

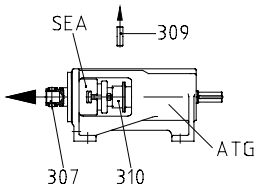
7.3.5.1
Rotor (600), Coupling Rod (400)

Detach the rotor (600) and coupling rod (400) from the plug-in shaft (307) by dismantling the joint (G) in accordance with Point 7.3.6.



7.3.5.2
Plug-in Shaft (307)

The plug-in shaft (307) is removed in the same way as the rotating unit (RTE), see Point 7.3.4.



7.3.6
Dismantling of Joint

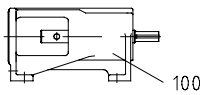
see document OM.PJT.02e Point 1.

7.3.7
Shaft Sealing

See document OM.SEA.___ Point 9 for information on dismantling the shaft sealing.

7.3.8
Drive Casing (ATG) - Dismantling

For dismanting of drive casing (100) please see to document OM.DCG.__e.



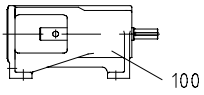
7.4
Re-assembly

Before commencing the re-assembly, fasten the completed drive casing (100) in such a way that it cannot tip over or fall down during the re-assembly of the pump components.



7.4.1
Drive Casing (100) - Re-assembly

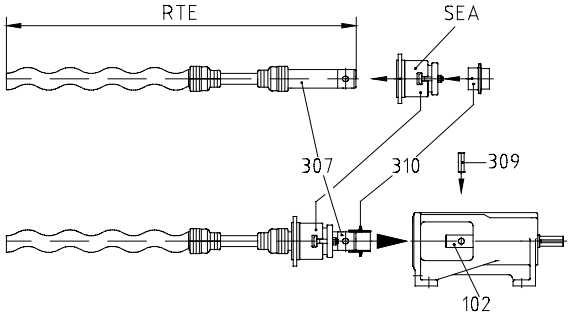
For assembly of drive casing (100) please see document OM.DCG.__e .



7.4.2
Rotating Unit (RTE) - Re-assembly

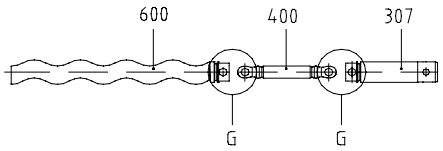
The rotating unit (RTE) has been assembled in accordance with the description in document OM.PJT.02e

- Mount shaft sealing (SEA) on plug-in shaft (307) in the way described in document OM.SEA.__ , see Point 9.
- Moisten splash ring (310) and plug-in shaft (307) with joint grease (see index for type) and slide splash ring (310) onto plug-in shaft (307), observing the fitting position of the splash ring, see writing on the splash ring.
- Apply antiseize graphite petroleum to the drive shaft (102) and slide on the rotating unit (RTE). Insert plug-in shaft pin (309) horizontally.
- Splash ring position (310)
  The collar of the splash ring should be mounted at a distance of c. 0.5 mm from the lantern (200).



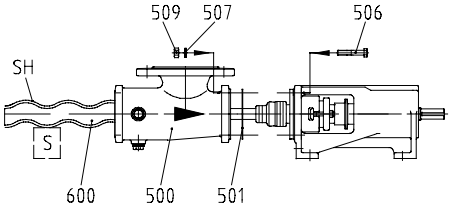
7.4.3
Rotating Pump Parts - Re-assembly

Prepare main components:
Prepare rotor (600), coupling rod (400) and plug-in shaft (307) as described in document OM.PJT.02e Point 2. to 2.3
Joint (G) re-assembly as described in documen OM.PJT.02e Point 3.



7.4.4
Suction Casing (500), Casing Gasket (501) - Re-assembly

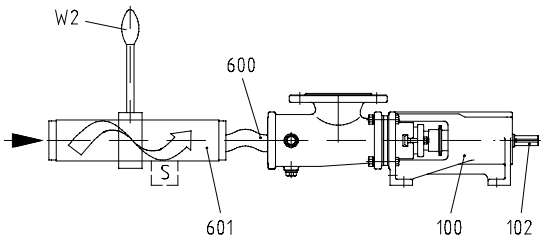
Fit protective cover (SH) on rotor (600) and prop it up with support (S).



7.4.5
Stator (601) - Assembly / Re-assembly

Maintenance tip:
Disassembly of the stator can be facilitated considerably by first moistening the inner surface of the stator with antiseize agent (soft or liquid soap). Before removing the pressure flanges (700), pour the antiseize agent into the opening between rotor and stator on the pressure flange side. Several clockwise (see Point 6.2.5) revolutions of the rotor will then distribute the antiseize agent over the inner surface of the stator and reduce the friction between rotor and stator considerably

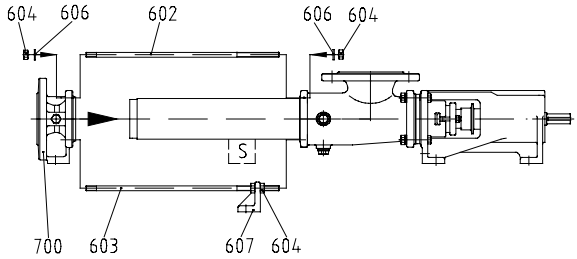
Lock drive shaft (102)in the drive casing (100) against rotation. Using tool (W2/see Point 9), turn stator (601) clockwise and simultaneously push it over rotor (600), propping up stator with support (S) at the same time.



7.4.6
Pressure Flange (700) - Assembly

CAUTION

Tighten tie bolts (602 and 603) in equally.



This operating instruction refers to drive casing sizes: 025-12, 025-24, 05-12, 1-6L

Table of contents:

1. Disassembly
2. Reassembly
3. Lubrication

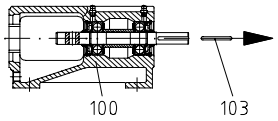
Refer to the data sheet of the respective pump concerning the appertaining sectional drawing and parts list.

Mounting Tools
Some mounting tools are required for the disassembly and reassembly. Refer to the document OM.SPT.01e regarding these tools.

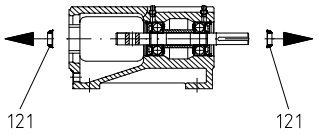
1. Disassembly

1.1 Drive Casing (100) - Disassembly

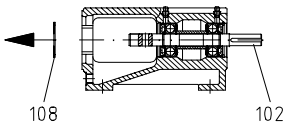
Remove coupling, V-belt pulley and fitting key (103)

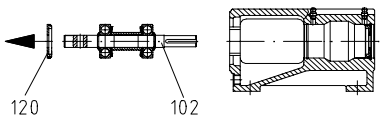


- Bearing seal (121) - Removal

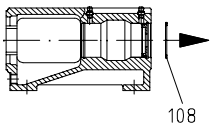


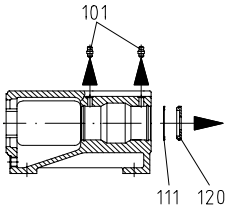
- Drive shaft (102) - Disassembly
  Remove circlip (108)
  Press out drive shaft (102)



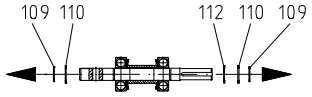


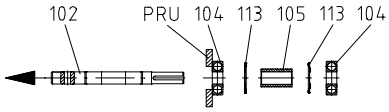
Bearing cover (120) and lubrication nipple (101) - Disassembly
Remove circlip (108),pull-out bearing cover (120) and fitting discs (111).
Disassemble lubrication nipple (101).





- Drive shaft (102) - Disassembly
  Remove circlips (109), supporting rings(110) and fitting discs (112). Bearing (104) on compression base (PRU) and press drive shaft (102) from bearings (104).



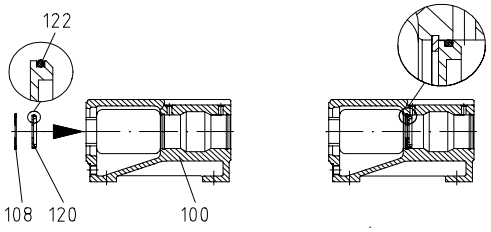


2. Reassembly

2.1 Drive casing (100) - Preassembly

Remove burrs, flaws and edgesand clean drive casing (100).

Install bearing cover (120) with o-ring (122) and circlip (108) as illustrated.



2.2
Drive shaft (102) - Preassembly

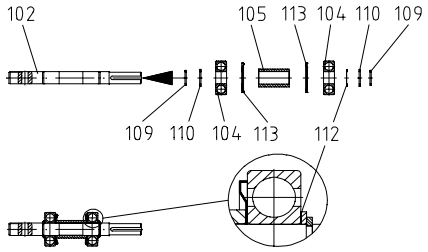
Examine drive shaft (102) for damage, then remove any burrs and flaws and clean it.

Heat groove ball bearing (104) to max. 80 °C to facilitate assembly and press it evenly onto drive shaft (102) without clearance using mounting tool (W7).

ATTENTION

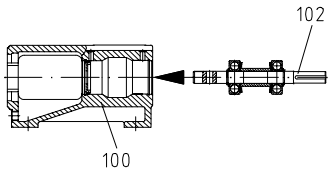
All components on drive shaft (102) have to be axially adjusted without clearance by means of fitting discs (112). Consequently, both circlips (109) have to fit closely to the external edge of the shaft groove without any clearance.

Fitting discs (112) - Position of installation as illustrated



2.3
Drive casing (100) - Final assembly

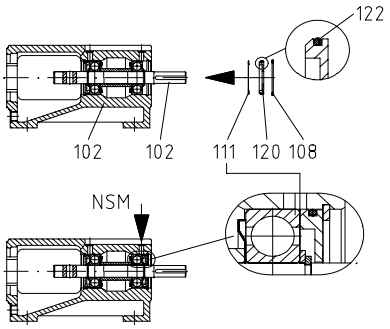
- Drive casing (100) was preassembled acc. to item 2.1 and drive shaft (102) was preassembled acc. to item 2.2.
- Fit drive shaft (102) into drive casing (100)



- Assemble bearing cover (120)

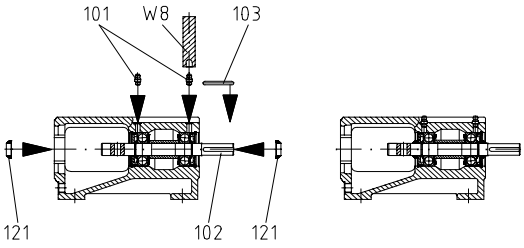
A Assemble fitting discs (111):
- Installating position of fitting disc as illustrated, install 1 fitting disc with thickness of 0.1 mm
- Assemble bearing cover (120) with o-ring (122) and circlip (108).
- Mount circlip without any clearance.

B Clerance between circlip (108) and bearing cover (120)
- In case that there is some clearance between bearing cover (120) and circlip (108) the bearing cover (120) is dismanted acc. to item C. Afterwards, proceed acc. to item A, again, but additionally install one fitting disc (111).



C Dismantling of bearing cover (120):
To this end, the lubrication nipple (101) at the driving end has to be dismantled.
- Remove circlip (108)
- Remove bearing cover (120) as follows: Blow compressed air into the drilling of the lubrication nipple (NSM) so that the bearing cover (120) is pressed out.

- Bearing lubrication
  - Tap lubrication nipple (101) using mounting tool (W8)
  - Fill both bearings with grease (see Point 3.) until grease penetrates the space between drive shaft (102) and bearing cover(120).
- Bearing seal
  Slip V-ring (121) onto both sides of the drive shaft (102) up to the bearing cover (120).
- Eject fitting key (103) into drive shaft (102).



3.
Drive casing (100) - Lubrication

The first regreasing has to be carried out upon termination of the running-in period. A regreasing should be effected every 3,000 - 3,500 operating hours depending on the respective operating conditions.

Grease quality: alternatively
Esso Beacon EP2 / DIN KP2 N-25
Shell Alvania EP2 / DIN DP2 K-20
ARAL LUB HLP2 / DIN KP2 K-30

Greases of equal quality may be used.

This operating instruction refers to drive casing
sizes: 05-24 to 200-6L, not 26-6L

Table of contents:

1. Disassembly
2. Reassembly
3. Lubrication
4. Bearing clearance / Effect / Corrective actions

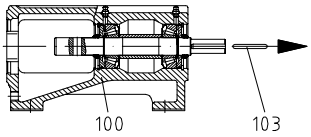
Refer to the data sheet of the respective pump concerning the appertaining sectional drawing and parts list.

Mounting Tools
Some mounting tools are required for the disassembly and reassembly. Refer to the document OM.SPT.__ regarding these tools.

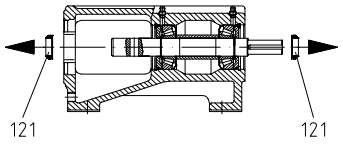
1. Disassembly

1.1 Drive Casing (100) - Disassembly

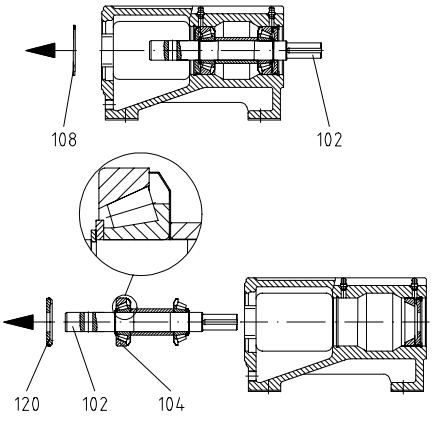
Remove coupling, V-belt pulley and fitting key (103)



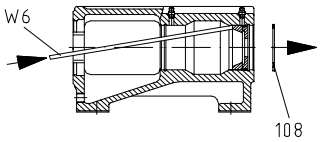
- Bearing seal (121) - Removal

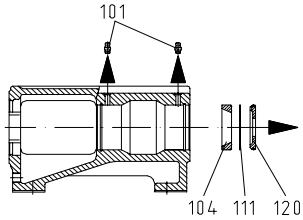


- Drive shaft (102) - Disassembly
  Remove circlip (108)
  Press out drive shaft (102)

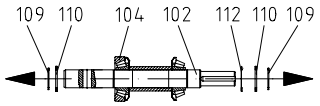


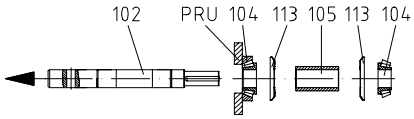
- External bearing ring (104) and lubrication nipple (101) - Disassembly
  Remove circlip (108) and evenly press out external bearing ring using mounting tool W6
  Disassemble lubrication nipple (101).





- Drive shaft (102) - Disassembly
  Remove circlips (109), fitting discs (112) and supporting rings (110). Support bearing (104) with external bearing ring on compression base (PRU) and press drive shaft (102) from bearings (104).



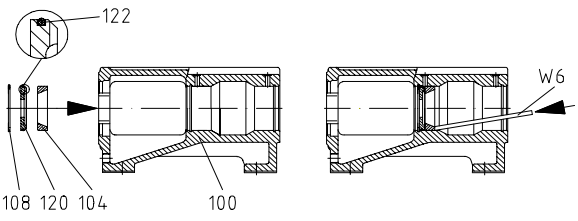


2. Reassembly

2.1 Drive casing (100) - Preassembly

Before mounting: Remove burrs, flaws and edges and clean drive casing (100).

Install external bearing ring (104), bearing cover (120) with o-ring (122) and circlip (108) as illustrated. Evenly press back external bearing ring (104) using mounting tool W6, until circlip (108) fits closely to external edge of casing groove without any clearance.



2.2
Drive shaft (102) - Preassembly

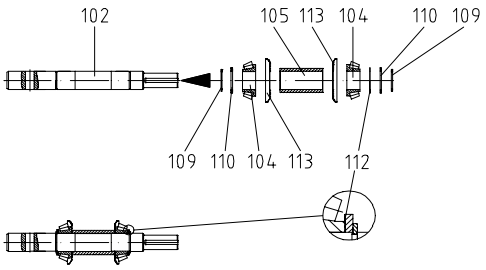
Examine drive shaft (102) for damage, then remove any burrs and flaws and clean it.

Heat internal rings of taper roller bearing (104) to max. 80 °C to facilitate assembly and press it evenly onto drive shaft (102) without clearance using mounting tool (W7).

ATTENTION

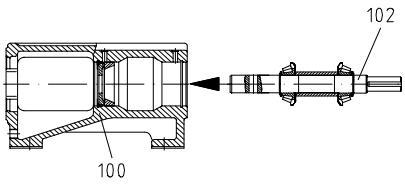
All components on drive shaft (102) have to be axially adjusted without clearance by means of fitting discs (112). Consequently, both circlips (109) have to fit closely to the external edge of the shaft groove without any clearance.

Fitting discs (112) - Position of installation as illustrated

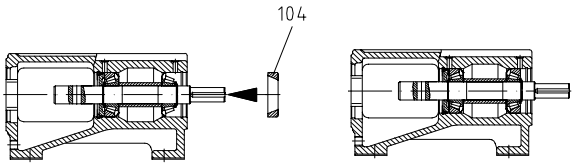


2.3
Drive casing (100) - Final assembly

- Drive casing (100) was preassembled acc. to item 2.1 and drive shaft (102) was preassembled acc. to item 2.2.
- Fit drive shaft (102) into drive casing (100)

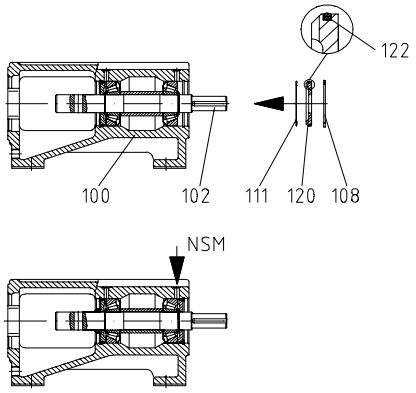


- Press in external bearing ring (104)



- Bearing (104) - Bearing adjustment:
  The bearing is adjusted without clearance by means of fitting discs (111). In this connection see item 4.

A Assemble fitting discs (111):
- Installating position of fitting disc as illustrated, install 1 fitting disc with thickness of 0.1 mm
- Assemble bearing cover (120) with o-ring (122) and circlip (108).
- Fit installed parts axially without clearance; to this end tap the drive shaft (102) axially on both ends (use a hammer either made of aluminium or brass)
- Check bearing adjustment acc. to item B.



B Examine bearing adjustment
The bearing is correctly set if the drive shaft (102) can be turned manually with medium effort - also refer to B1 and B2.

B1 Bearing adjustment - easy-running / with clearance
If the turning of the drive shaft (102) is too easy, a fitting disc (111) with a thickness of 0.1 mm has additionally to be installed.
Procedure: item C, A, B.

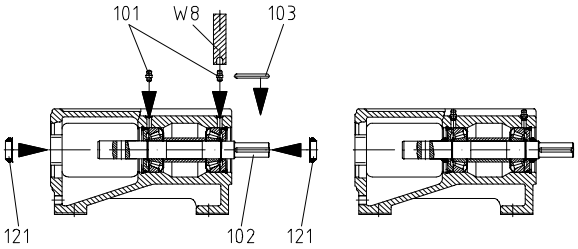
B2 Bearing adjustment - stiff / initial tension too high
If the turning of the drive shaft (102) is too stiff, a fitting disc (111) has to be removed.
Procedure: item C, item A (remove fitting disc (111) with thickness of 0.1 mm), item B.

C Dismantling of bearing cover (120):
To this end, the lubrication nipple (101) at the driving end has to be dismantled.
- Remove circlip (108)
- Remove bearing cover (120) as follows:
  Blow compressed air into the drilling of the lubrication nipple (NSM) so that the bearing cover (120) is pressed out.

- Bearing lubrication
  - Tap lubrication nipple (101) using mounting tool (W8)
  - Fill both bearings with grease [1)] until grease penetrates the space between drive shaft (102) and bearing cover(120).

- Bearing seal
  Slip V-ring (121) onto both sides of the drive shaft (102) up to the bearing cover (120).

- Eject fitting key (103) into drive shaft (102).



2.4
Drive casing (100) - Running-in period

The drive casing requires a running-in period after reassembly of the bearing.

During the running-in period of approx. 2-4 hours, the bearing temperature will increase. In this connection, this temperature must not exceed 80 °C. If this temperature is exceeded the operation has to be stopped. After a cooling down period, the bearing in the drive has to be regreased and recommissioned. If the temperature of 80 °C is furthermore exceeded, the initial tension of bearing has to be reduced acc. to item 2.3 - B2. If drive casings are admissble for temperatures >80°C, this has to be indicated in the data sheet.

3.
Drive casing (100) - Lubrication

The first regreasing has to be carried out upon termination of the running-in period. A regreasing should be effected every 3,000 - 3,500 operating hours depending on the respective operating conditions.

Grease quality: alternatively
Esso Beacon EP2 / DIN KP2 N-25
Shell Alvania EP2 / DIN DP2 K-20
ARAL LUB HLP2 / DIN KP2 K-30

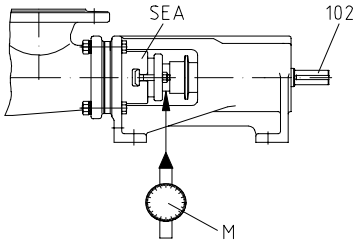
Greases of equal quality may be used.

4.
Bearing clearance regarding taper roller bearings
Effects - Corrective actions

If the pump is in operation, the drive shaft (102) can be tested for radial run-out at the side of shaft sealing (SEA) using a dial gauge (M).
This radial run-out of the drive shaft arises due to axial bearing clearance regarding a taper roller bearing.

This radial run-out of drive shaft (102) is also decisive for the wear of the shaft sealing (SEA) and the scope of the leakage. In case that the radial run-out of the drive shaft (102) existing at the shaft sealing (SEA) exceeds + / - 0.05 mm, the bearing clearance should be compensated using a fitting disc (111).

The assembly is effected as described in item 2.3, procedure: refer to item C, A, B.



1.
Dismantling of Joint

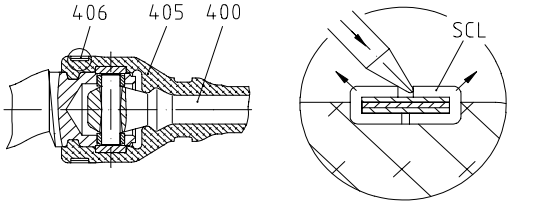
1.1
Holding Band (406) and Universal Joint Sleeve (405)

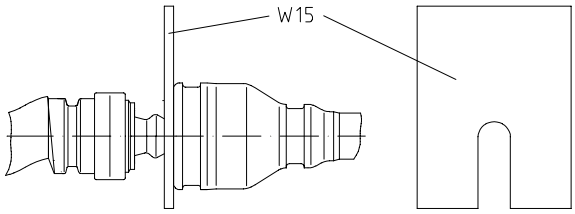
Cut through loop (SCL) of the holding band (406) with a metal saw.

Wear protective goggles when squeezing out the two halves of the holding band loop (SCL).



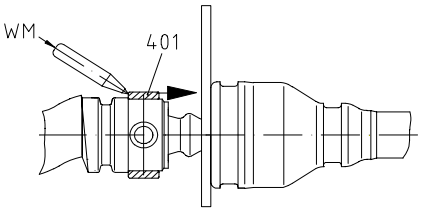
Remove holding band (406). Withdraw universal joint sleeve in coupling rod direction and fix it by using a special maintenance tool (W15/see Point 9)





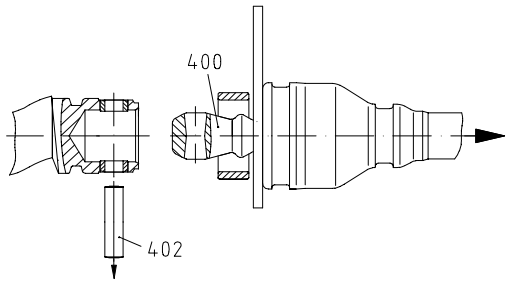
1.2
Retaining Sleeve (401) - Dismantling

Knock back retaining sleeve (401) with tool/chisel (WM).



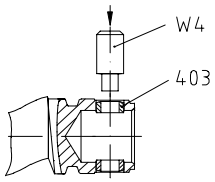
7.3.6.3
Separation of Joint

Eject coupling rod pins (402). Pull coupling rod (400) out of joint top.



1.4
Guide bushes (403) - Dismantling

Press out guide bushes (403) by means of a tool (W4/see Point 9).



2.
Prepare main components for Re-assembly

2.1
Rotor (600) - Preparation for Joint Assembly

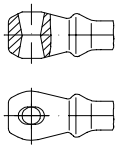
First remove any burr, flaws or similar defects from the rotor, then clean it.

2.2
Coupling Rod (400) - Preparation for the Joint Assembly

Clean coupling rod and check top drilling regarding wear.

CAUTION

If the top drilling shows wear, a new coupling rod will have to be used.



Correct top drilling

2.3
Plug-in Shaft (307) - Preparation for Joint Assembly

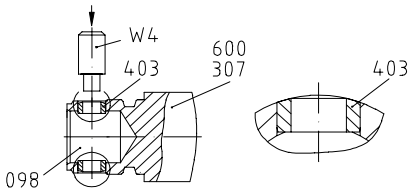
Remove any burr, flaws or similar defects from the plug-in shaft (307), then clean it.

3.
Joint - Re-assembly

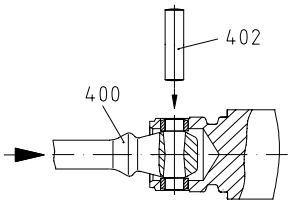
CAUTION

To guarantee the proper function of the joints, it is advisable to renew the coupling rod pins (402), guide bushes (403) all at the same time.

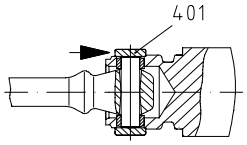
- Joint top on rotor (600) and plug-in shaft (307)
- Press guide bushes (403) in using tool (W4/see Point 9)
- Fill joint top with joint grease (098), see index for special grease



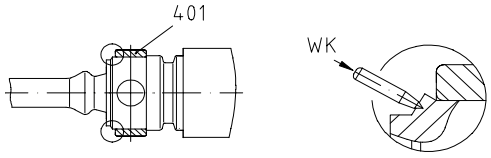
- Coupling rod (400)



- Retaining sleeve (401)

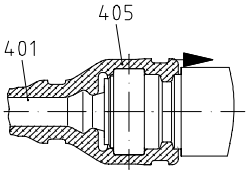


- Securing of retaining sleeve
  Secure offset by 2x180° with tool/center punch (WK)

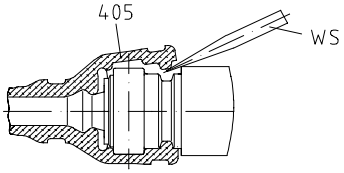


- Universal joint sleeve (405)
  Moisten surface of coupling rod (400) and inner surface of universal joint sleeve with joint grease (see index for special grease).

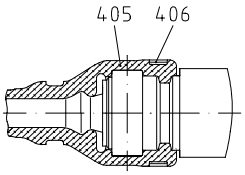
  Slip on universal joint sleeve



De-aerate interior of joint with tool/screw driver (WS)



- Holding band re-assembly
  Mount holding band (406) using tool (W3/see Point 9) as described in document OM.HBD.01e .



1.
Dismantling of Joint

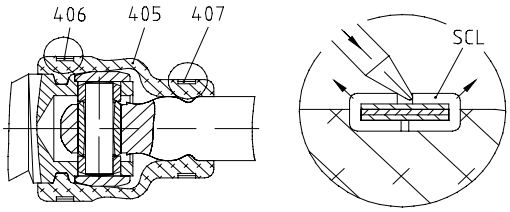
1.1
Holding Band (406, 407) and Universal Joint Sleeve (405)

Cut through loop (SCL) of the holding bands (406 and 407) with a metal saw.

Wear protective goggles when squeezing out the two halves of the holding band loop (SCL).

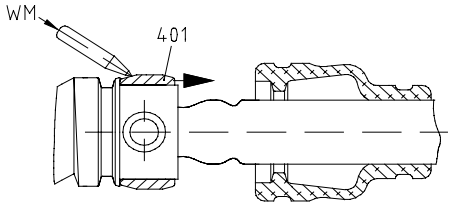


Remove holding bands (406,407). Pull universal joint sleeve (405) off joint.

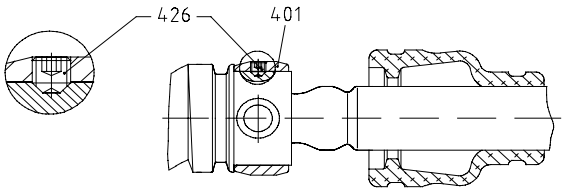


1.2
Retaining Sleeve (401) - Dismantling

- For rotors and plug-in shafts made of hardened and unhardened materials, knock back retaining sleeve (401) with tool/chisel (WM).



- For rotors made of synthetic material, release set screw (426).

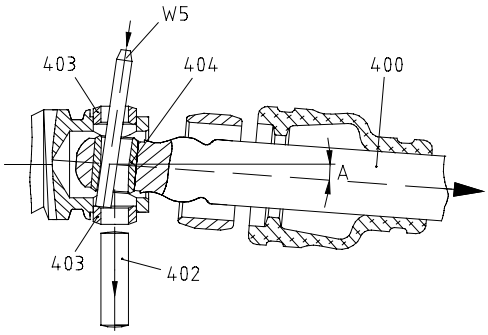


1.3
Separation of Joint

Eject coupling rod pin (402). Position coupling rod (400) at the correct angle (A) and, using tool (W5/see Point 9), drive both guide bushes (403) outwards.This releases the coupling rod (400), which can then be extracted.

CAUTION

To guarantee the proper function of the joints, it is advisable to renew the coupling rod pins (402), guide bushes (403) and coupling rod bushes (404) all at the same time.

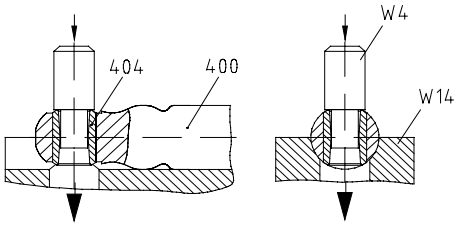


1.4
Coupling Rod Bushes (404) - Dismantling

CAUTION

As a precaution against incorrect re-assembly of coupling rod bushes (404), we recommend the employment of coupling rods (400) whose coupling rod bushes (404) have been pressed in by **seepex**.

The coupling rod bush (404) is pushed out of the coupling rod (400) with tools (W4 and W14/see Point 9).



2.
Prepare main components for Re-assembly

2.1
Rotor (600) - Preparation for Joint Assembly

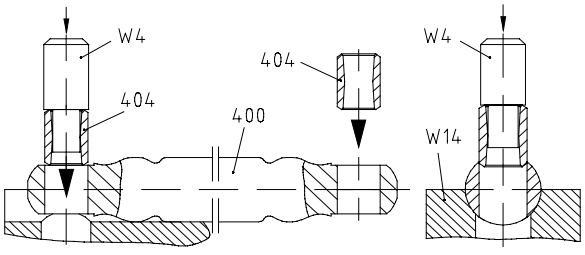
First remove any burr, flaws or similar defects from the rotor, then clean it.

2.2
Coupling Rod (400) - Preparation for the Joint Assembly

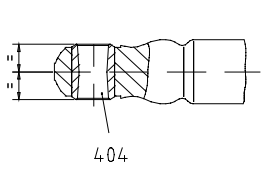
CAUTION

As a precaution against the incorrect re-assembly of coupling rod bushes (404), we recommend the employment of coupling rods (400) whose bushes (404) have been pressed in by **seepex**.

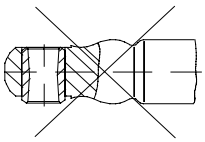
Press in new coupling rod bushes (404 using tool (W4) and (W14/see Point 9).



- Position of coupling rod bush (404)

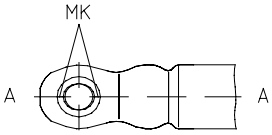


correct
pressed in centrically

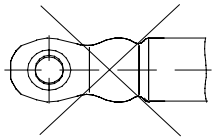


incorrect
pressed in eccentrically
result: joint fracture

Marking notches in (MK) in A-A axis
permissible rotation 1,5°



correct
pressed into A-A axis



incorrect
pressed in rotated
result: joint fracture

2.3
Plug-in Shaft (307) - Preparation for Joint Assembly

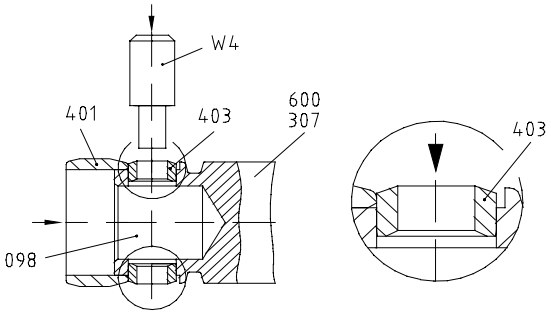
Remove any burr, flaws or similar defects from the plug-in shaft (307), then clean it.

3.
Joint - Re-assembly

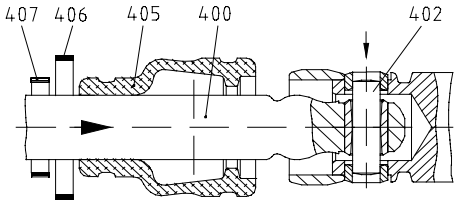
CAUTION

To guarantee the proper function of the joints, it is advisable to renew the coupling rod pins (402), guide bushes (403) and coupling rod bushes (404) all at the same time.

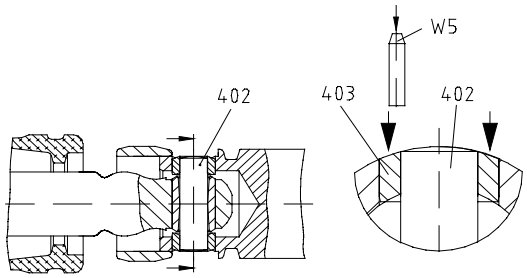
- Joint head on rotor (600) and plug-in shaft (307)
- Press guide bushes (403) in by only 2/3 of their length using tool (W4/see Point 9)
- Fill joint head with joint grease (098), see index for special grease
- Slip on joint sleeve (401)



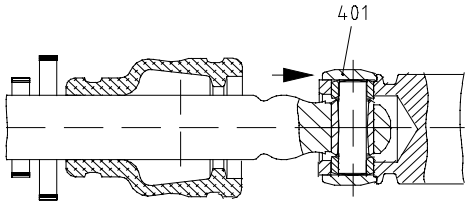
- Coupling rod (400)
  Slide holding bands (406/407).
  Moisten inner surface of universal joint sleeve (405) with joint grease (see index for special grease) and slide it.
  Push coupling rod (400) into joint head.
  Push in coupling rod pin (402).



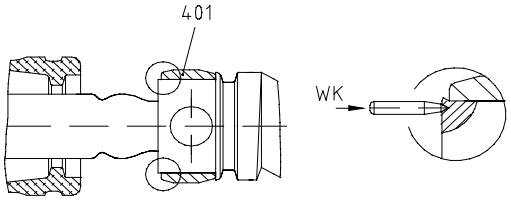
- Guide bush (403)
  Press in with tool (W5/see Point 9)



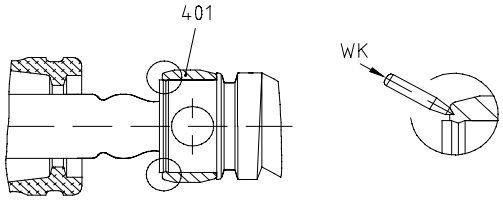
- Retaining sleeve (401)



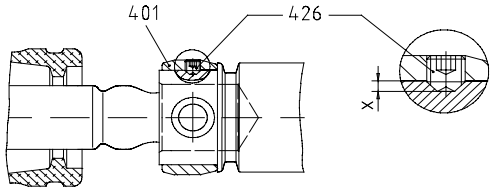
- Securing of retaining sleeve
  For drive shafts, plug-in shafts and rotors made of unhardened materials such as St 70, AISI 304, AISI 316, Hastelloy C, secure 2 x 180° offset indents, with tool/centre punch (WK)



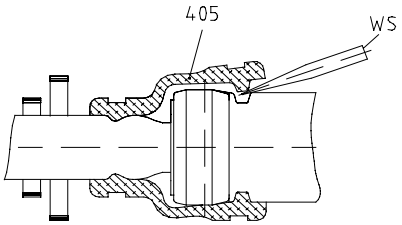
For rotors made of hardened materials such as tool steel (AISI D6), 1.2842, secure 2 x 180° offset indents with tool/centre punch (WK)



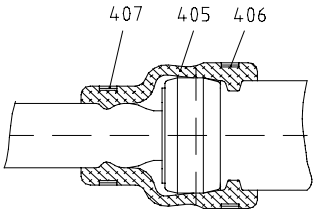
- For rotors made of synthetic material, secure using set screw (426). During this process, point of set screw presses into the synthetic surface (X). Set screw (426) is medium strengh secured by screw locking device /adhesive.



- Universal joint sleeve (405)
  Remove air from interior of joint with tool/screw driver (WS).



- Holding bands re-assembly
  Mount holding bands (406 and 407) using tool (W3/see Point 9) as described in document OM.HBD.01e.



Holding Band (HBD) - Assembly

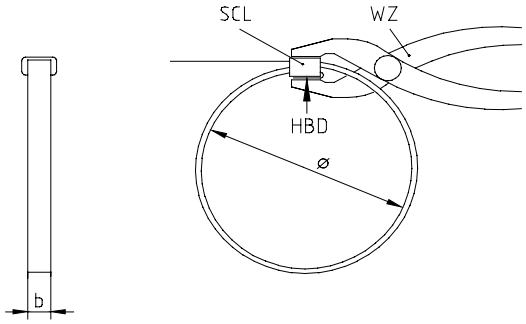
Tools required for the re-assembly, see document OM.STP.01, Point 9.

- Prepare holding band

  Only prefabricated double-band holding bands should be used. The diameter (∅) and in particular the breadth (b) of the holding band is matched to the universal joint sleeve.

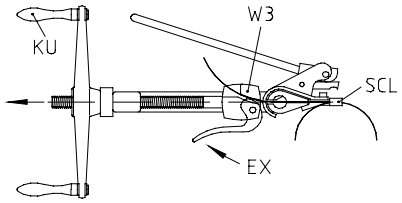
- Test holding band

  The bent holding band (HBD) must fit against the holding band loop (SCL), if necessary apply pressure with the tool/pliers (WZ).

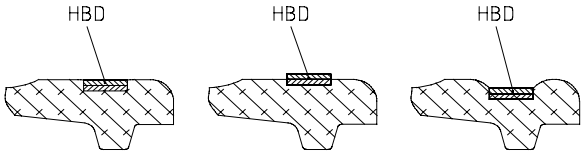


- Assembly of holding band

  Insert holding band in tool (W3/ see Point 9). Hold free end of holding band with control lever (EX), turn crank (KU) until the holding band is strained and fitting against the holding band loop (SCL). Carefully contract holding band until it fits inside the circular groove of the universal joint sleeve.



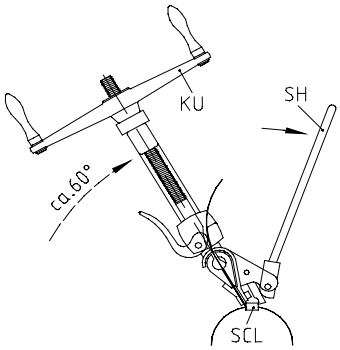
- Correct holding band tension (HBD)



Correct	**Incorrect**	**Incorrect**
Holding band (HBD) has slightly contracted outer form of universal joint sleeve and is stuck in position.	Holding band (HBD) is too slack and liable to slip.	Holding band (HBD) is too tight. Universal joint sleeve will be damaged/sheared off.

- Folding back the holding band (HBD)

  Slowly swivel mounting tool upward by 60°, at the same time slackening the crank (KU) by approximately one half revolution. Swivel cutting lever (SH) forward until the pressure plate fits against the holding band loop (SCL).

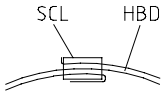


- Shearing off holding band (HBD) made of material AISI 304 and AISI 316

  A blow with the palm of the hand against the cutting lever (SH) causes the end of the holding band behind the loop (SCL) to be folded back and sheared off. If the holding band on the sheared off side is slightly raised as a result, it must be straightened carefully.

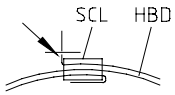
CAUTION

Never tap or hammer against the loop of the holding band (SCL), otherwise damage to the universal joint sleeve may occur.



- Shearing off holding band (HBD) made of Hastelloy C

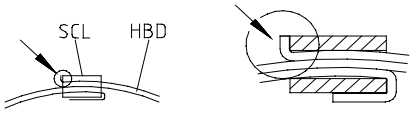
  The high strength of this material makes it impossible to shear off the holding band (HBD) with the cutting lever (SH). Once the end of the holding band is folded back, cut off the holding band (HBD), file off projecting edges and remove burr.



- Check after mounting of holding band

  The holding band must run all the way round the groove of the universal joint sleeve.

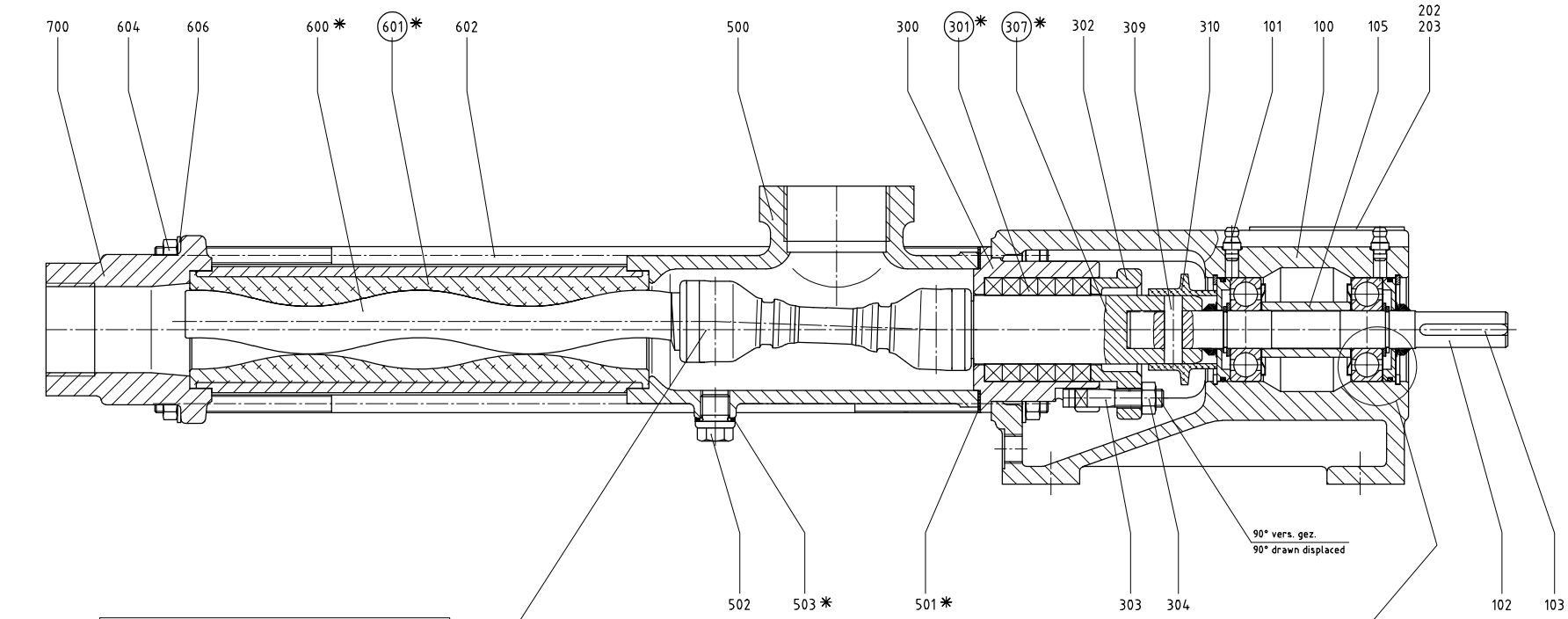
  The holding band (HBD) must be bent back and sheared off at the holding band loop (SCL) in such a way that the holding band (HBD) is unable to slip back through the holding band loop (SCL). If this has not been accomplished, then the holding band (HBD) must be replaced by a new one.

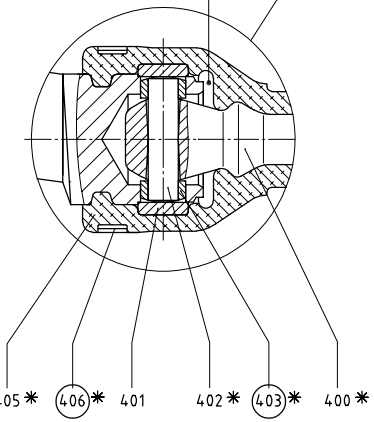


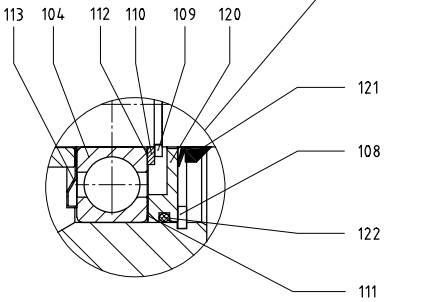
8.
Breakdown, reasons, remedies

Breakdown											
pump has no suction	pump conveys irregularly	the conveying capacity is not achieved	pressure is not achieved	pump does not start	pump has seized or has stopped conveying	pump operates noisily	motor becomes too warm	the stator wears out early	shaft sealing leaks	**seepex** progressive cavity pumps will operate trouble-free if they are used in accordance with our data sheet (see item 9) and our operating and maintenance instructions:	
1	2	3	4	5	6	7	8	9	10		Reasons / Remedies
				○			○			a	Adhesion between rotor and stator excessive (as delivered). Lubricate (soft soap, genuine soap) between stator and rotor. Then turn the pump by means of the tool W2 .
○										b	Check rotational direction of the pump per data sheet and nameplate. In case of wrong direction, change wiring of motor.
○	○	○			○	○				c	Suction pipe or shaft sealing leak. Eliminate the leakage.
○	○	○				○				d	Suction head too high (item 6.5.3.1). Check suction head with vacuum gauge. Increase the suction pipe diameter and fit larger filters. Open the suction valve
○	○	○								e	Viscosity of the liquid too high. Check and accommodate per data sheet.
		○		○			○			f	Wrong pump speed. Correct pump speed per data sheet.
	○	○								g	Avoid inclusions of air in the conveying liquid.
		○		○	○		○	○		h	Pressure head too high (point 6.5.3.2). Check pressure head with manometer. Reduce the pressure head by increasing the pressure pipe diameter or by shortening the pressure pipe.
○	○	○			○			○		i	Pump runs partially or completely dry (point 6.5.2). Check flow in the suction chamber. Install dry running protection TSE.
						○	○			j	Check coupling, possibly pump shaft is misaligned to drive. Check whether coupling gear is worn. Realign coupling. The coupling gear has perhaps to be replaced.
○		○								k	Speed too low. Increase the speed when high suction performances are required and when the liquid is very thin.
○	○					○				l	Speed too high. Reduce the speed when pumping products with high viscosities - danger of cavitation.
						○				m	Check the axial play in the coupling rod linkage. Check that the bush has been installed correctly see document OM.PJT. e item 2.2
○		○		○	○			○		n	Check for foreign substances in the pump. Dismantle the pump, remove foreign substances and replace worn parts.
○		○	○		○					o	Stator or rotor worn. Dismantle the pump and replace defective parts.
○		○			○	○				p	Joint parts worn. Replace worn parts and fill with special pin joint grease .
○		○			○			○		q	Suction pipework partially or completely blocked. Clean suction pipework.
○				○	○		○	○		r	Temperature of the pumping liquid too high. Excessive expansion of the stator. Check temperature and install rotor with diameter smaller than specified.
○		○		○			○		○	s	Gland packing too strongly tightened or worn. Ease or tighten stuffing box. Replace defective packing rings.
○				○	○			○		t	Solid contents and/or size of solids too large. Reduce pump speed and install perhaps a screen with suitable meshes. Increase fluid share.
○				○				○	○	u	When the pump is non operational the solids settle out and become hard. Clear and flush the pump immediately.
○				○	○			○	○	v	The liquid becomes hard when temperature falls below a certain limit. Heat the pump.
				○	○		○	○		w	Stator swollen and unsuitable for the pumped liquid. Select a suitable stator material. Use perhaps rotor with diameter smaller than specified.
						○			○	x	The bearing in the drive casing of the pump or in the drive engine is defective. Replace bearing.
									○	y	Mechanical seal defective. Check seal faces and O-rings. If necessary replace corresponding defective parts.

9.
Auxiliary seepex documentation







seepex Gelenkfett

Typ und Füllmenge siehe Angaben im Inhaltsverzeichnis der zur Pumpe gehörenden Betriebsanleitung.

seepex joint grease

type and filling quantity see notes indicated on the index of the operating and maintenance instructions belonging to the respective pump.

○ Werkzeug

für die Demontage und Wiedermontage erforderlich siehe Dokument OM.SPT.01

tool for the dismantling and assembly requested see document OM.SPT.01

✱ Verschleißteile und Dichtungen

siehe Dokument OM.WPS.07

Wearing parts and sealings see document OM.WPS.07

Baugröße / size 025-12, 025-24, 05-12, 1-6L

Werkstoff-Ausführung: Grauguss
material construction: grey cast iron

Stück Unit	Norm Standard	Pos./Item	Benennung/Denomination Zeichnungs-Nummer/Drawing-Number	Werkstoff/Material	Bemerkung/Remark	Gewicht Weight kg

seepex
GmbH + Co. KG
Schumacherstrasse 344
D-46240 Bottrop

seepex.

Änderung Modification	Name Name	Datum Date
Bearbeitet/Drawn	haf	15.05.1995
Geprüft/Checked	hue	16.05.1995
Normiert/Standard		
Gedruckt/Printed		

Maßstab/Scale: %
Werkstoff/Material:
Gewicht/Weight:
Vordruck:
CAD

Bezeichnung/Denomination
Schnittzeichnung Baureihe "NS"
sectional drawing range "NS"

Zeichnungs-Nummer/Drawing-Number: 061-001A1
EDV-Nr./EDP-No.: L:\LFDZCHNG.105\10863.DWG
Ersatz für/Replacement for:
Ersetzt durch/Replacement by:

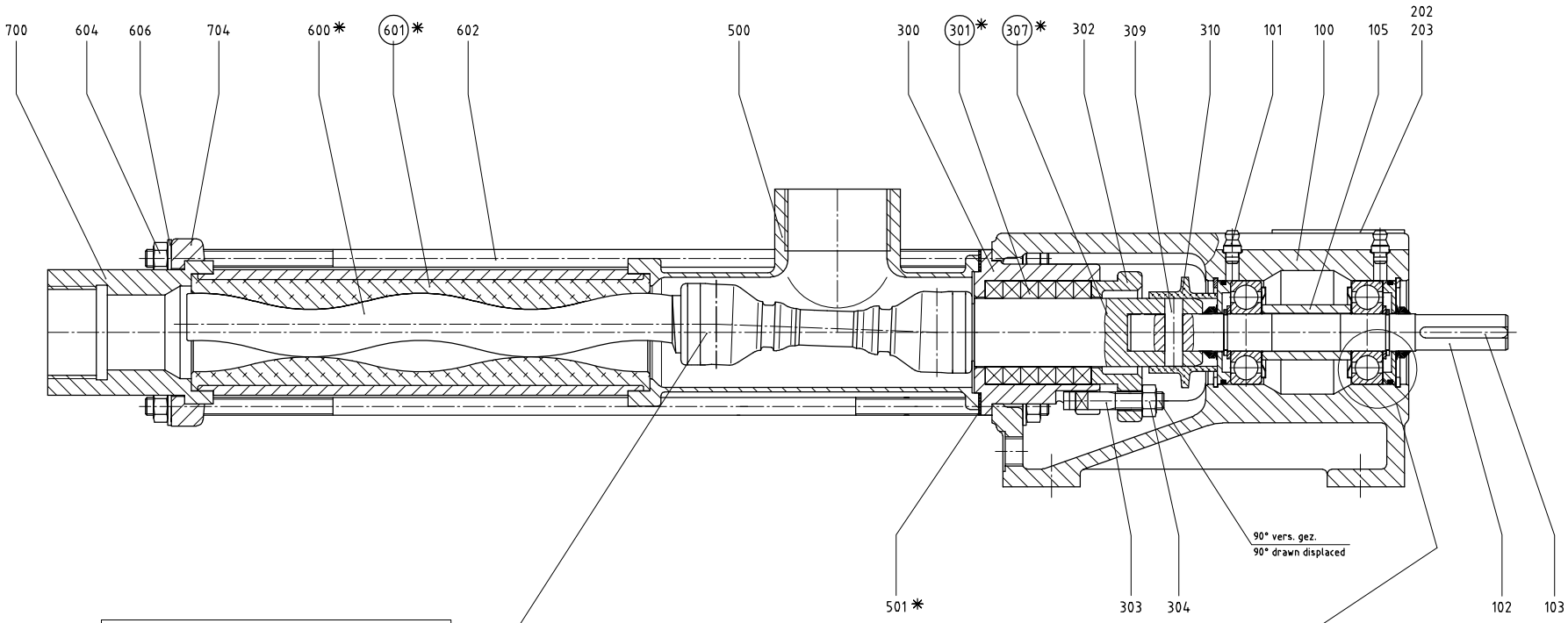
Urheberrechtsschutz: Diese Zeichnung ist unser Eigentum und uns nach dem Gesetz über Urheberrecht und verwandte Schutzrechte geschützt.
Protection of Copyright: This drawing is our property and is protected acc. to the law referring to copyright and related protective laws.

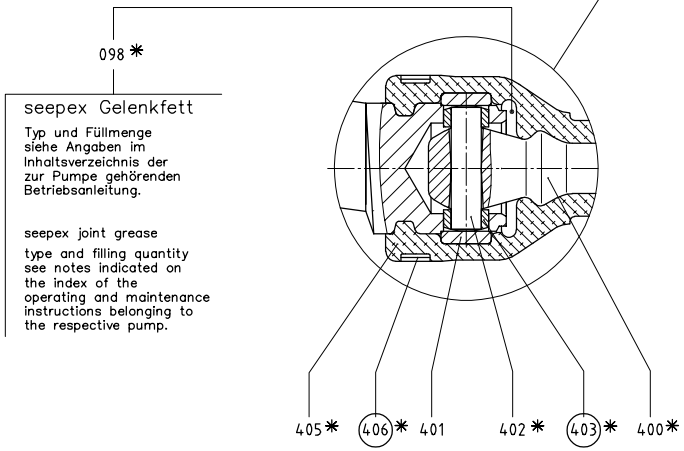
seepex

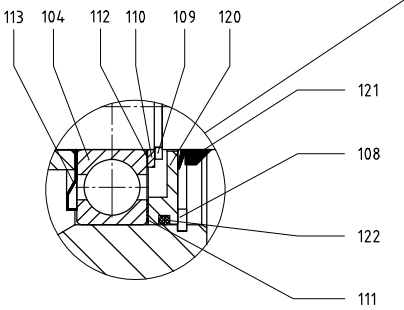
Stückliste Baureihe NS
Baugrössen 025-12, 025-24, 05-12, 1-6L
Schnittzeichnung Nr. 061-001A1

Dokument / document **SL.061.001def**
Ausgabe / issue A / 01.12.95
Blatt / sheet 1 (1)

		d	e	f
		Stückliste Baureihe NS **Baugrössen** **Schnittzeichnung Nr.**	**Parts list range NS** **sizes** **sectional drawing No.**	**Liste des pièces série NS** **tailles** **plan no.**
Stck.	**Pos.**	**Benennung** **Stck. / Pos.**	**denomination** **Qty. / item**	**désignation** **Qté. / Poste**
1	100	Antriebsgehäuse	drive casing	carter d'entraînement
2	101	Schmiernippel	lubrication nipple	raccord fileté de graissage
1	102	Antriebswelle	drive shaft	arbre d'entraînement
1	103	Passfeder	shaft key	clavette
2	104	Rillenkugellager	groove ball bearing	roulement rainuré à billes
1	105	Distanzrohr	spacer	douille d'écartement
2	108	Sicherungsring	circlip	circlip
2	109	Sicherungsring	circlip	circlip
2	110	Stützscheibe	supporting ring	rondelle pour bague frein
1	111	Passscheibensatz	set of fitting discs	jeu de rondelle d'adjustage
1	112	Passscheibensatz	set of fitting discs	jeu de rondelle d'adjustage
2	113	Nilosring	Nilos ring	joint Nilos
2	120	Lagerdeckel	bearing cover	couvercle de roulement
2	121	V-Ring	V-ring	joint du type V
2	122	O-Ring	O-ring	O-ring
2	202	Halbrundkerbnägel	round head grooved pins	rivet
1	203	Typenschild	type plate	plaque signalitique
1	300	Stopfbuchsgehäuse	gland housing	boitier de presse étoupe
6	301	Packungsring	packing ring	bague d'étoupage
1	302	Stopfbuchsbrille	packing gland	fouloir
2	303	Hammerschraube	gland bolt	vis à tête rectangulaire
2	304	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	400	Kuppelstange	coupling rod	barre d'accouplement
2	401	Gelenkhülse	retaining sleeve	douille d'articulation
2	402	Kuppelstangenbolzen	coupling rod pin	axe d'articulation
4	403	Führungsbuchse	guide bushing	douille de guidage
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	Verschlussschraube	screwed plug	bouchon de vidange
3	503	Dichtring	sealing ring	joint d'étanchéité
1	600	Rotor	rotor	rotor
1	601	Stator	stator	stator
4	602	Spannschraube	tie bolt	tirant
8	604	6kt-Mutter	hexagon nut	écrou
8	606	Scheibe	washer	rondelle
1	700	Druckstutzen	pressure branch	bride de refoulement
	098	**seepex** Gelenkfett Typ und Füllmenge siehe Angaben im Inhaltsverzeichnis der zur Pumpe gehörenden Betriebsanleitung	**seepex** joint grease for type and filling quantity refer to index of operating instruction belonging to pump	**seepex** graisse d´articulations voir sommaire pour type et quantité
		Verschleissteile und Dichtungen: siehe Dokument OM.WPS.07d	**Wear parts and sealings** refer to document OM.WPS.07e	**Pièces d´usure et étanchéités** voir document OM.WPS.07f
		Werkzeuge: Für Demontage und Wiedermontage erforderlich siehe Dokument OM.SPT.01	**Tools:** required for disassembly and reassembly, refer to document OM.SPT.01	**Outils:** Requis pour le démontage et le rémontage, voir document OM.SPT.01
		versetzt gezeichnet	drawn displaced	plan separé







Baugröße / size 025-12, 025-24, 05-12, 1-6L

Werkstoff-Ausführung: Edelstahl

material construction: stainless steel

○ Werkzeug

für die Demontage und Wiedermontage erforderlich siehe Dokument OM.SPT.01

tool for the dismantling and assembly requested see document OM.SPT.01

* Verschleißteile und Dichtungen

siehe Dokument OM.WPS.07

Wearing parts and sealings see document OM.WPS.07

Stück / Unit	Norm / Standard	Pos./Item	Benennung/Denomination, Zeichnungs-Nummer/Drawing-Number	Werkstoff/Material	Bemerkung/Remark	Gewicht/Weight kg

seepex GmbH + Co. KG, Schumannstrasse 344, D-46240 Bottrop

seepex.

Änderung / Modification	Name	Datum / Date

Maßstab/Scale: % | Werkstoff/Material | Gewicht/Weight | Vordruck | CAD

Bezeichnung/Denomination: Schnittzeichnung Baureihe "NS" / sectional drawing range "NS"

	Name	Datum / Date
Bearbeitet/Drawn	haf	15.05.1995
Geprüft/Checked	hue	15.05.1995
Normiert/Standard		
Gedruckt/Printed		

Zeichnungs-Nummer/Drawing-Number: 061-003A1

EDV-Nr./EDP-No.: L:\LFDZCHNG.105\10865.DWG

Ersatz für/Replacement for: | Ersetzt durch/Replacement by:

Allgemeintoleranzen für Masse ohne einzelne Toleranzeintragung DIN ISO 2768-mittel

General tolerances for dimensions without individual tolerance entry DIN ISO 2768-average

Rauheit für Oberflächenzeichen DIN ISO 1302 Reihe 2

Roughness for surface finish indication DIN ISO 1302 Reihe 2

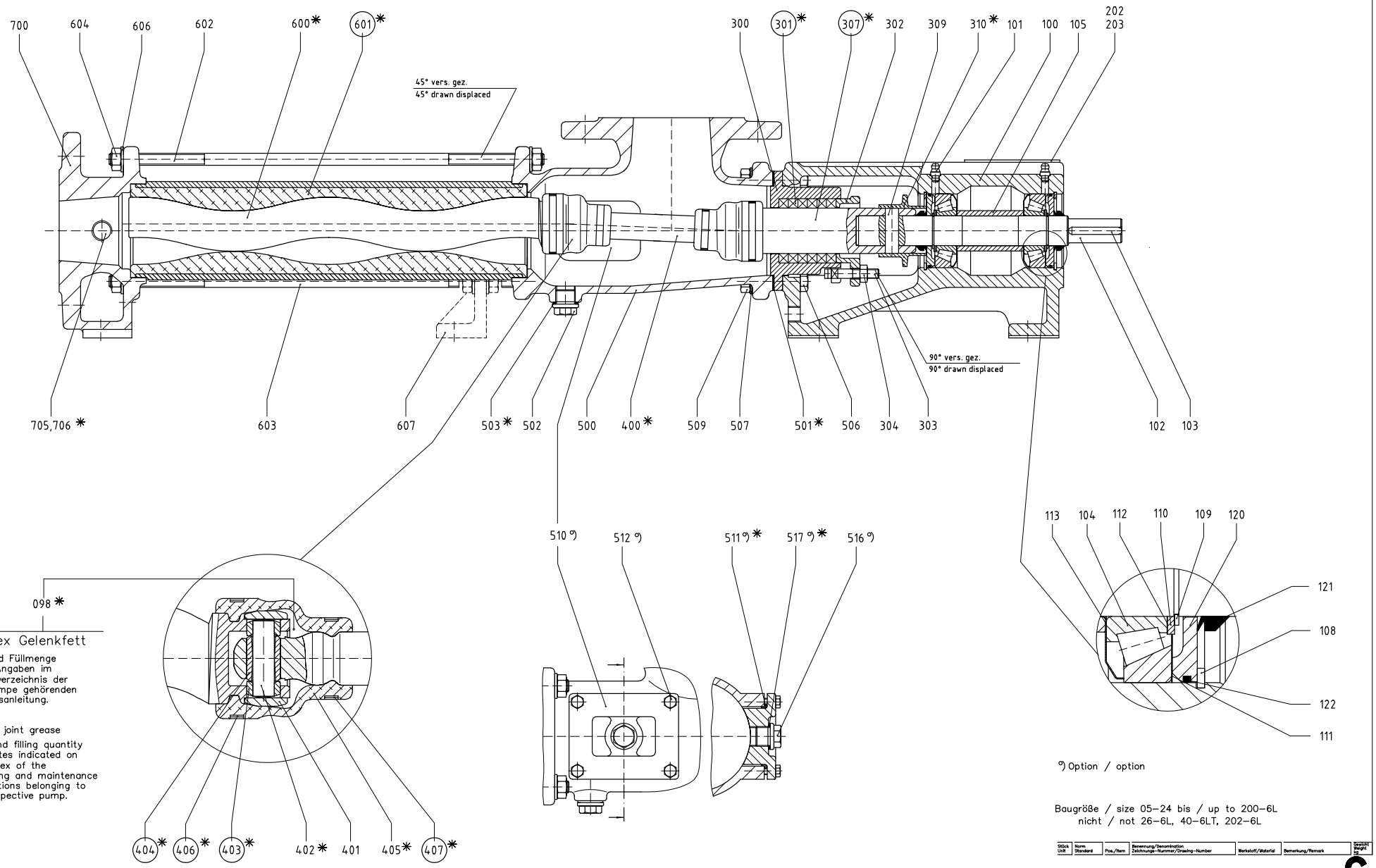
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Stückliste Baureihe NS
Baugrössen 025-12, 025-24, 05-12, 1-6L
Schnittzeichnung Nr. 061-003A1

Dokument / document **SL.061.003def**
Ausgabe / issue A / 01.12.95
Blatt / sheet 1 (1)

		d	e	f
		Stückliste Baureihe NS **Baugrössen** **Schnittzeichnung Nr.**	**Parts list range NS** **sizes** **sectional drawing No.**	**Liste des pièces série NS** **tailles** **plan no.**
Stck.	**Pos.**	**Benennung** **Stck. / Pos.**	**denomination** **Qty. / item**	**désignation** **Qté. / Poste**
1	100	Antriebsgehäuse	drive casing	carter d'entraînement
2	101	Schmiernippel	lubrication nipple	raccord fileté de graissage
1	102	Antriebswelle	drive shaft	arbre d'entraînement
1	103	Passfeder	shaft key	clavette
2	104	Rillenkugellager	groove ball bearing	roulement rainuré à billes
1	105	Distanzrohr	spacer	douille d'écartement
2	108	Sicherungsring	circlip	circlip
2	109	Sicherungsring	circlip	circlip
2	110	Stützscheibe	supporting ring	rondelle pour bague frein
1	111	Passscheibensatz	set of fitting discs	jeu de rondelle d'adjustage
1	112	Passscheibensatz	set of fitting discs	jeu de rondelle d'adjustage
2	113	Nilosring	Nilos ring	joint Nilos
2	120	Lagerdeckel	bearing cover	couvercle de roulement
2	121	V-Ring	V-ring	joint du type V
2	122	O-Ring	O-ring	O-ring
2	202	Halbrundkerbnägel	round head grooved pins	rivet
1	203	Typenschild	type plate	plaque signalitique
1	300	Stopfbuchsgehäuse	gland housing	boitier de presse étoupe
6	301	Packungsring	packing ring	bague d'étoupage
1	302	Stopfbuchsbrille	packing gland	fouloir
2	303	Hammerschraube	gland bolt	vis à tête rectangulaire
2	304	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	400	Kuppelstange	coupling rod	barre d'accouplement
2	401	Gelenkhülse	retaining sleeve	douille d'articulation
2	402	Kuppelstangenbolzen	coupling rod pin	axe d'articulation
4	403	Führungsbuchse	guide bushing	douille de guidage
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
1	600	Rotor	rotor	rotor
1	601	Stator	stator	stator
4	602	Spannschraube	tie bolt	tirant
8	604	6kt-Mutter	hexagon nut	écrou
8	606	Scheibe	washer	rondelle
1	700	Druckstutzen	pressure branch	bride de refoulement
1	704	Druckflansch	pressure flange	bride de pression
	098	**seepex** Gelenkfett Typ und Füllmenge siehe Angaben im Inhaltsverzeichnis der zur Pumpe gehörenden Betriebsanleitung	**seepex** joint grease for type and filling quantity refer to index of operating instruction belonging to pump	**seepex** graisse d´articulations voir sommaire pour type et quantité
		Verschleissteile und Dichtungen: siehe Dokument OM.WPS.07d	**Wear parts and sealings** refer to document OM.WPS.07e	**Pièces d´usure et étanchéités** voir document OM.WPS.07f
		Werkzeuge: Für Demontage und Wiedermontage erforderlich siehe Dokument OM.SPT.01	**Tools:** required for disassembly and reassembly, refer to document OM.SPT.01	**Outils:** Requis pour le démontage et le rémontage, voir document OM.SPT.01
		versetzt gezeichnet	drawn displaced	plan separé



Stück Unit	Norm Standard	Pos./Item	Benennung/Denomination Zeichnungs-Nummer/Drawing-Number	Werkstoff/Material	Bemerkung/Remark	Gewicht Weight kg

seepex GmbH + Co KG
Schermbeckstrasse 344
D-46240 Bottrop

seepex.

Änderung Modification	Name Name	Datum Date
B AD 372	di	19.11.2002

Maßstab/Scale: % | Werkstoff/Material | Gewicht/Weight | Vordruck | CAD

Bezeichnung/Denomination
Schnittzeichnung Baureihe "NS"
sectionaldrawing range "NS"

Zeichnungs-Nummer/Drawing-Number: 061-002B1

	Name Name	Datum Date
Bearbeitet/Drawn	hof	24.04.1995
Geprüft/Checked	wgr	24.04.1995
Normiert/Standard		
Gedruckt/Printed	hof	14.10.1998

EDV-Nr./EDP-No. 10864.dwg

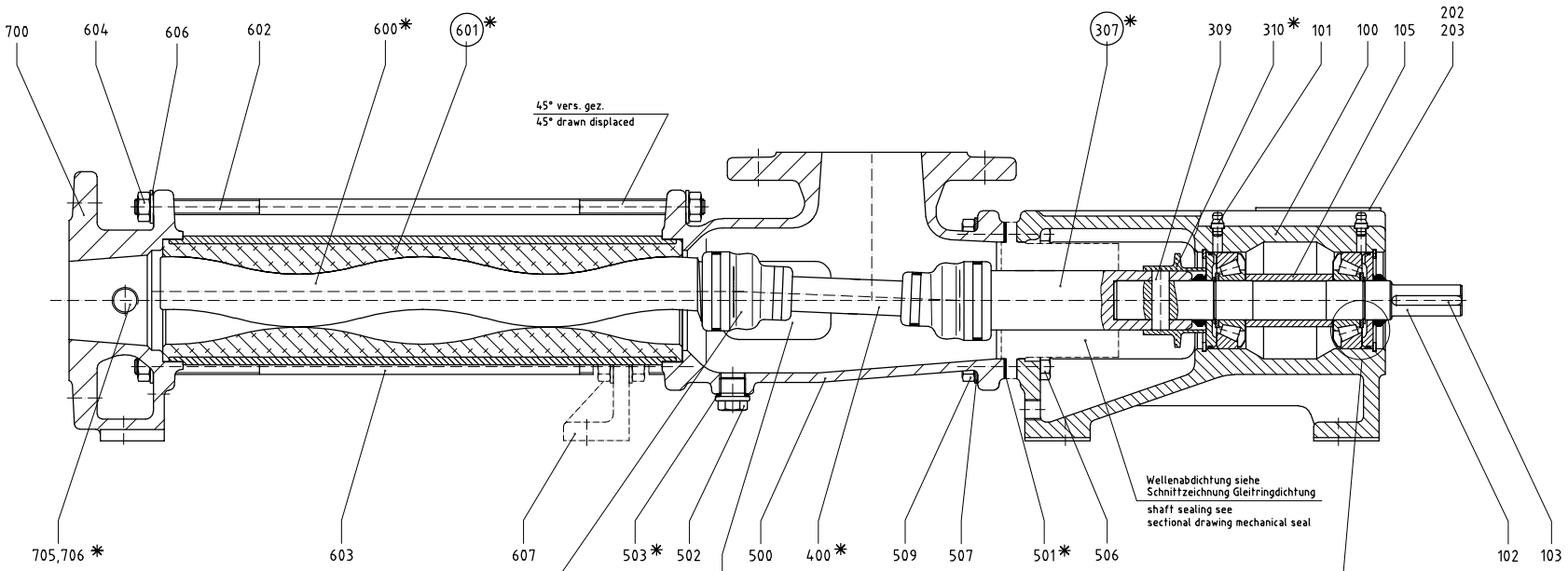
Ersetzt für/Replacement for: | Ersetzt durch/Replacement by:

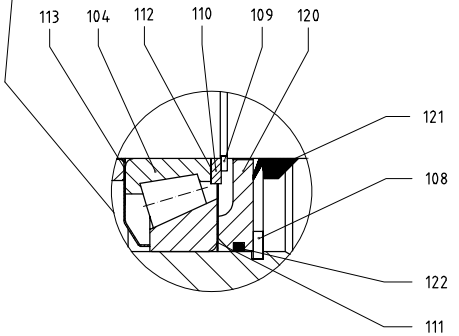
Allgemeintoleranzen für Masse ohne einzelne Toleranzeintragung DIN ISO 2768-mittel
General tolerances for mass without individual tolerance entry DIN ISO 2768-average
Rauheit für Oberflächenzeichen DIN ISO 1302 Reihe 2
Roughness for surface finish indication DIN ISO 1302 Reihe 2

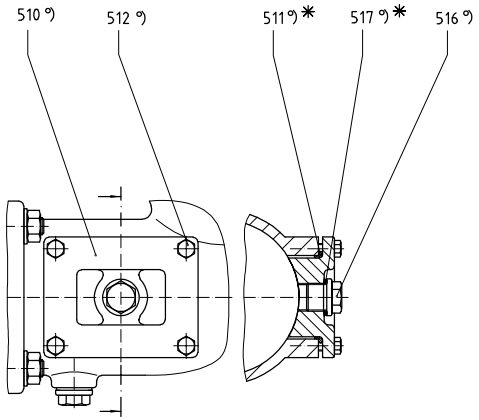
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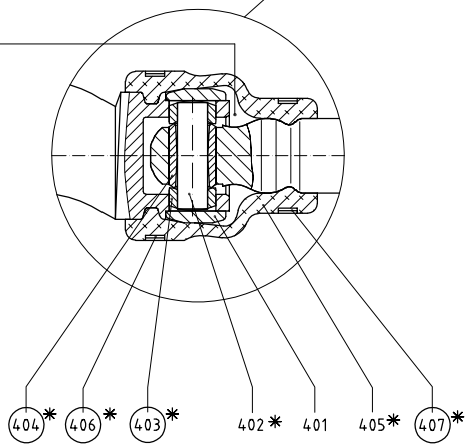
		d	e	f
		Stückliste Baureihe NS **Baugrössen** **Schnittzeichnung Nr.**	**Parts list range NS** **sizes** **sectional drawing No.**	**Liste des pièces série NS** **tailles** **plan no.**
Stck.	**Pos.**	**Benennung** **Stck. / Pos.**	**denomination** **Qty. / item**	**désignation** **Qté. / Poste**
1	100	Antriebsgehäuse	drive casing	carter d'entraînement
2	101	Schmiernippel	lubrication nipple	raccord fileté de graissage
1	102	Antriebswelle	drive shaft	arbre d'entraînement
1	103	Passfeder	shaft key	clavette
2	104	Kegelrollenlager	taper roller bearing	roulement à rouleaux coniques
1	105	Distanzrohr	spacer	douille d'écartement
2	108	Sicherungsring	circlip	circlip
2	109	Sicherungsring	circlip	circlip
2	110	Stützscheibe	supporting ring	rondelle pour bague de frein
1	111	Passscheibensatz	set of fitting discs	jeu de rondelle d'adjustage
1	112	Passscheibensatz	set of fitting discs	jeu de rondelle d'adjustage
2	113	Nilosring	Nilos ring	joint Nilos
2	120	Lagerdeckel	bearing cover	couvercle de roulement
2	121	V-Ring	V-ring	joint du type V
2	122	O-Ring	O-ring	o-ring
2	202	Halbrundkerbnägel	round head grooved pins	rivet
1	203	Typenschild	type plate	plaque signalitique
1	300	Stopfbuchsgehäuse	gland housing	boitier de presse étoupe
6	301	Packungsring	packing ring	tresses
1	302	Stopfbuchsbrille	packing gland	fouloir
2	303	Hammerschraube	gland bolt	vis de fouloir
2	304	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	400	Kuppelstange	coupling rod	barre d'accouplement
2	401	Gelenkhülse	retaining sleeve	douille d'articulation
2	402	Kuppelstangenbolzen	coupling rod pin	axe d'articulation
4	403	Führungsbuchse	guide bushing	douille de guidage
2	404	Kuppelstangenbuchse	coupling rod bushing	chemise d'axe
2	405	Manschette	universal joint sleeve	manchette
2	406	Halteband	holding band	collier de serrage
2	407	Halteband	holding band	collier de serrage
1	500	Sauggehäuse	suction casing	carter d'aspiration
1	501	Sauggehäusedichtung	casing gasket	étanchéité du carter d'aspiration
1	502	Verschlussschraube	screwed plug	bouchon de vidange
1	503	Dichtring	sealing ring	joint d'étanchéité
4	506	6kt-Schraube	hexagon bolt	vis
4	507	Fächerscheibe	fan type lock washer	rondelle à dents chevauchantes extérieures
4	509	6kt-Mutter	hexagon nut	écrou
2	°) 510	Reinigungsdeckel	cleanout	couvercle de nettoyage
2	°) 511	Rundschnurring	toroidal sealing ring	joint torique
8	°) 512	6kt-Schraube	hexagon bolt	vis
2	°) 516	Verschlussschraube	screwed plug	bouchon de vidange
2	°) 517	Dichtring	sealing ring	joint d'étanchéité
1	600	Rotor	rotor	rotor
1	601	Stator	stator	stator
2	602	Spannschraube	tie bolt	tirant
2	603	Spannschraube	tie bolt	tirant
12	604	6kt-Mutter	hexagon nut	écrou
12	606	Scheibe	washer	rondelle
1	607	Stützbock	trestle	pied
1	700	Druckstutzen	pressure branch	bride de refoulement

Stck.	Pos.	d	e	f
		Stückliste Baureihe NS **Baugrössen** **Schnittzeichnung Nr.**	**Parts list range NS** **sizes** **sectional drawing No.**	**Liste des pièces série NS** **tailles** **plan no.**
Stck.	**Pos.**	**Benennung** **Stck. / Pos.**	**denomination** **Qty. / item**	**désignation** **Qté. / Poste**
1 1	705 706	Verschlussschraube Dichtring	screwed plug sealing ring	bouchon de vidange joint d'étanchéité
		seepex Gelenkfett Typ und Füllmenge siehe Angaben im Inhaltsverzeichnis der zur Pumpe gehörenden Betriebsanleitung	**seepex joint grease** for type and filling quantity refer to index of operating instruction belonging to pump	**seepex graisse d´articulations** voir sommaire pour type et quantité
		Verschleissteile und Dichtungen: siehe Dokument OM.WPS. **Werkzeuge:**	**Wear parts and sealings** refer to document OM.WPS._ **Tools:**	**Pièces d´usure et étanchéités** voir document OM.WPS._ **Outils:**
		Für Demontage und Wiedermontage erforderlich siehe Dokument OM.SPT.01	required for disassembly and reassembly, refer to document OM.SPT.01	Requis pour le démontage et le rémontage, voir document OM.SPT.01
	°)	Option	option	option
		nicht 26-6L	not 26-6L	ne pas 26-6L









seepex Gelenkfett

Typ und Füllmenge siehe Angaben im Inhaltsverzeichnis der zur Pumpe gehörenden Betriebsanleitung.

seepex joint grease

type and filling quantity see notes indicated on the index of the operating and maintenance instructions belonging to the respective pump.

○ Werkzeug

für die Demontage und Wiedermontage erforderlich siehe Dokument OM.SPT.01

tool for the dismantling and assembly requested see document OM.SPT.01

* Verschleißteile und Dichtungen

siehe Dokument OM.WPS.08

Wearing parts and sealings see document OM.WPS.08

°) Option / option

Baugröße / size 05–24, 1–6, 1–12, 1–24, 2–6L bis 200–6L
nicht / not 26–6L, 40–6LT, 202–6L

Stück / Unit	Norm / Standard	Pos./Item	Benennung/Denomination Zeichnungs-Nummer/Drawing-Number	Werkstoff/Material	Bemerkung/Remark	Gewicht/ Weight kg

seepex GmbH + Co. KG, Schumannstrasse 344, D-46240 Bottrop

seepex.

Änderung Modification	Name Name	Datum Date
B AD 372	dl	19.11.2002
Bearbeitet/Drawn	haf	14.04.1998
Geprüft/Checked	hue	21.04.1998
Normiert/Standard		
Gedruckt/Printed		

Maßstab/Scale 1:1.5 | Werkstoff/Material | Gewicht/Weight | Vordruck | CAD

Bezeichnung/Denomination
Schnittzeichnung Baureihe "NS"
sectional drawing range "NS"

Zeichnungs-Nummer/Drawing-Number
061-008B1

EDV-Nr./EDP-No. 28146.dwg

Ersatz für/Replacement for: | Ersetzt durch/Replacement by:

Allgemeintoleranzen für Masse ohne einzelne Toleranzeintragung DIN ISO 2768-mittel

General tolerances for mass without individual tolerance entry DIN ISO 2768-average

Rauheit für Oberflächenzeichen DIN ISO 1302 Reihe 2

Roughness for surface finish indication DIN ISO 1302 Reihe 2

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		d	e	f
		Stückliste Baureihe NS **Baugrössen** **Schnittzeichnung Nr.**	**Parts list range NS** **sizes** **sectional drawing No.**	**Liste des pièces série NS** **tailles** **plan no.**
Stck.	**Pos.**	**Benennung** **Stck. / Pos.**	**denomination** **Qty. / item**	**désignation** **Qté. / Poste**
1	100	Antriebsgehäuse	drive casing	carter d'entraînement
2	101	Schmiernippel	lubrication nipple	raccord fileté de graissage
1	102	Antriebswelle	drive shaft	arbre d'entraînement
1	103	Passfeder	shaft key	clavette
2	104	Kegelrollenlager	taper roller bearing	roulement à rouleaux coniques
1	105	Distanzrohr	spacer	douille d'écartement
2	108	Sicherungsring	circlip	circlip
2	109	Sicherungsring	circlip	circlip
2	110	Stützscheibe	supporting ring	rondelle pour bague de frein
1	111	Passscheibensatz	set of fitting discs	jeu de rondelle d'adjustage
1	112	Passscheibensatz	set of fitting discs	jeu de rondelle d'adjustage
2	113	Nilosring	Nilos ring	joint Nilos
2	120	Lagerdeckel	bearing cover	couvercle de roulement
2	121	V-Ring	V-ring	joint du type V
2	122	O-Ring	O-ring	o-ring
2	202	Halbrundkerbnägel	round head grooved pins	rivet
1	203	Typenschild	type plate	plaque signalitique
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	400	Kuppelstange	coupling rod	barre d'accouplement
2	401	Gelenkhülse	retaining sleeve	douille d'articulation
2	402	Kuppelstangenbolzen	coupling rod pin	axe d'articulation
4	403	Führungsbuchse	guide bushing	douille de guidage
2	404	Kuppelstangenbuchse	coupling rod bushing	chemise d'axe
2	405	Manschette	universal joint sleeve	manchette
2	406	Halteband	holding band	collier de serrage
2	407	Halteband	holding band	collier de serrage
1	500	Sauggehäuse	suction casing	carter d'aspiration
1	501	Sauggehäusedichtung	casing gasket	étanchéité du carter d'aspiration
1	502	Verschlussschraube	screwed plug	bouchon de vidange
1	503	Dichtring	sealing ring	joint d'étanchéité
4	506	6kt-Schraube	hexagon bolt	vis
4	507	Fächerscheibe	fan type lock washer	rondelle à dents chevauchantes extérieures
4	509	6kt-Mutter	hexagon nut	écrou
2	°) 510	Reinigungsdeckel	cleanout	couvercle de nettoyage
2	°) 511	Rundschnurring	toroidal sealing ring	joint torique
8	°) 512	6kt-Schraube	hexagon bolt	vis
2	°) 516	Verschlussschraube	screwed plug	bouchon de vidange
2	°) 517	Dichtring	sealing ring	joint d'étanchéité
1	600	Rotor	rotor	rotor
1	601	Stator	stator	stator
2	602	Spannschraube	tie bolt	tirant
2	603	Spannschraube	tie bolt	tirant
12	604	6kt-Mutter	hexagon nut	écrou
12	606	Scheibe	washer	rondelle
1	607	Stützbock	trestle	pied
1	700	Druckstutzen	pressure branch	bride de refoulement
1	705	Verschlussschraube	screwed plug	bouchon de vidange
1	706	Dichtring	sealing ring	joint d'étanchéité

Stck.	Pos.	d **Stückliste Baureihe NS** **Baugrössen** **Schnittzeichnung Nr.** **Benennung** **Stck. / Pos.**	e **Parts list range NS** **sizes** **sectional drawing No.** **denomination** **Qty. / item**	f **Liste des pièces série NS** **tailles** **plan no.** **désignation** **Qté. / Poste**
	098	**seepex** Gelenkfett Typ und Füllmenge siehe Angaben im Inhaltsverzeichnis der zur Pumpe gehörenden Betriebsanleitung	**seepex** joint grease for type and filling quantity refer to index of operating instruction belonging to pump	**seepex** graisse d´articulations voir sommaire pour type et quantité
		Verschleissteile und Dichtungen: siehe Dokument OM.WPS.08d	**Wear parts and sealings** refer to document OM.WPS.08e	**Pièces d´usure et étanchéités** voir document OM.WPS.08f
		Werkzeuge: Für Demontage und Wiedermontage erforderlich siehe Dokument OM.SPT.01	**Tools:** required for disassembly and reassembly, refer to document OM.SPT.01	**Outils:** Requis pour le démontage et le rémontage, voir document OM.SPT.01
	°)	Option	option	option
		nicht 26-6L, 40-6LT, 202-6LT	not 26-6L, 40-6LT, 202-6LT	ne pas 26-6L, 40-6LT, 202-6LT
		Wellenabdichtung siehe Schnittzeichnung Gleitringdichtung	shaft sealing see sectional drawing mechanical seal	Dispositif d'etanchéité d'arbre voir vue éclatée garniture mécanique

1.
Safety for Shaft Sealings
(in compliance with DIN EN 809)

Sufficient precautions must be taken to prevent the emergence into the atmosphere of any leakage constituting a hazard due to its toxicity, explosive-ness or combustibility. The leakage must be dis-posed of at a safe location. Always pay due regard to the applicable national standards and specifica-tions.

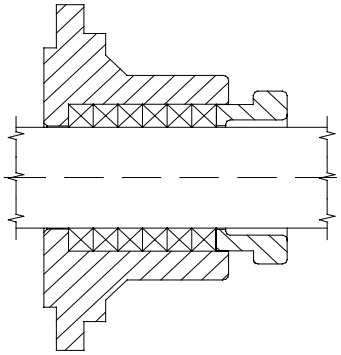
2.
Shaft Sealing

2.1
Operating Conditions

The permissible operating conditions and material combination are matched with the particular application in each case and are indicated in the data sheet of the associated pump.

2.2
Design

- standard
- 6 packing rings



associated operating instructions OM.SEA.01e

Gland Packing seepex Code A, C, E, F, S, V

1.
Commissioning

1.1
Adjusting the Gland Packing

When commissioned the factory-set gland packing is only slightly tightened. For this reason, the packing must be adjusted on-site to suit the prevailing operating conditions.

1.2
Gland Packing at Overpressure in Suction Chamber

50-100 drops per min. leakage is permissible at startup until the packing material has settled (duration: c. 10-15 min.). Following the settle time, the leakage must be reduced to 1-10 drops per min. by uniformly tightening the gland stuffing box. Leaking fluid drains into the drip pan, lantern and/
or drive housing and carried off via a threaded drilling.

1.3
Gland Packing at Partial Vacuum in Suction Chamber

With the low pre-set tightening level, the gland packing requires c. 10-15 minutes before the packing material settles. After this time, tighten
the gland stuffing box uniformly until no more air
is drawn in from the atmosphere.

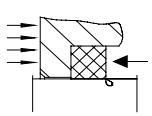
2.
Monitoring during Operation

2.1
Checking for Leaks

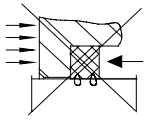
Gland packings must be checked for leaks at regular intervals while the pump is running. In the case of excessive leakage (overpressure in suction chamber) or intake of air (partial vacuum in suction chamber), the gland stuffing box (302) must be tightened until the permissible leakage rate is achieved see Point 1.2 or 1.3. If the gland packing has been tightened to such an extent that the gland stuffing box (302) fits up against the gland housing (300), it is neces-sary to fit a new packing ring (301). If following tightening of the new packing ring the gland stuf-fing box again fits up against the gland housing, then it is advisable to replace the entire gland packing. Timely renewal of the packing will largely rule out the incidence of shaft wear.

2.2
Operating Errors and Consequences

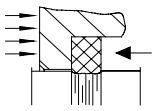
Gland packings are intended to limit, but not pre-vent, the escape of the medium. Some leakage
is necessary to reduce friction and carry off the associated friction heat.



Correct:
lubrication by liquid and antiseize agent



Incorrect:
no liquid lubrication due to excessive stuffing box pressure; impregnation is squeezed out.

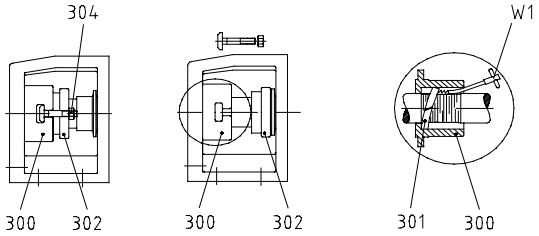


Consequence:
dry running, burning of the packing. Severe shaft wear leading to heavy leakage.

3.
Service and Maintenance

3.1
Renewing Gland Packing

The tool (W1/see Point 9) should be used to remove the individual packing rings (301). Before re-fitting the rings, clean the gland area and replace any damged shafts.
See Point 4.2 for instructions on re-fitting the packing rings (301).

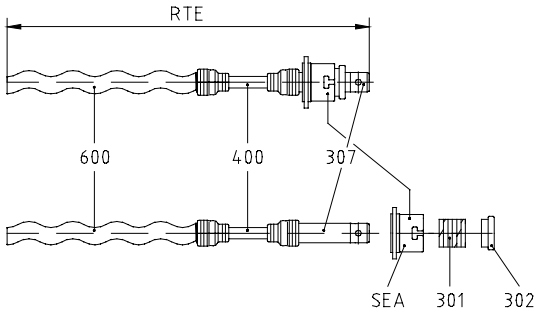


4.
Dismantling / Re-mounting

4.1
Dismantling

Following the dismantling of the rotating unit (RTE) in the manner described in OM.MAI.01 Point 7.3.5, clean the plug-in shaft (307) and remove any pro-jecting edges and burring that could damage the shaft sealing elements.

Remove shaft sealing (SEA) from the plug-in shaft.



4.2
Re-assembly

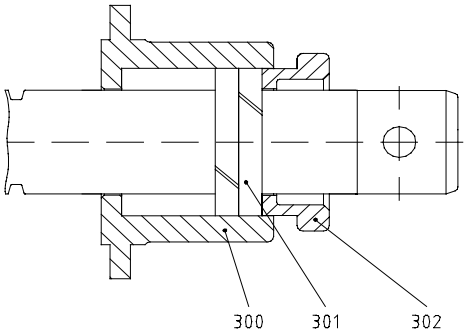
CAUTION

As a basic rule, only packing materials conforming to the operating conditions as well as suitable packing diameters and lengths should be used.

CAUTION

Please refer to the added document OM.SEA.__e “shaft sealing design“ for details of the layout of any seal cage, grease lantern and/or thrust collar, if existent, as well as connection possibilities in the gland housing.

Fit the packing rings (301) with cut ends offset by 90°. Using the gland stuffing box (302), insert the individual rings uniformly into the gland packing chamber (never use a pointed implement, otherwise damage to the shaft could result and the packing material become deformed).



1.
General

- Please take the appertaining drawing from respective pump data sheet.

- The mechanical seal is suitable for the operating conditions indicated in the pump data sheet. Modifications are only admissible after the customer has consulted with **seepex**. Additionally, attention must be paid to the manufacturer's operating manual.

2.
Safety

Any mode of operation impairing the operating safety of the mechanical seal has to be avoided.

The operator is advised to consider the possible effects on the environment which could be caused by a defective mechanical seal and what additional measures must be taken to protect the environment and the public.

The pump must be mounted and operated in such a way that operation with a defective mechanical seal will not result in injury or harm to the public and that any leakage can be safely and properly dealt with.

Mechanical seals are often used to seal hazardous material (chemicals, drugs, etc.). It is essential that rules pertaining to the handling of hazardous materials are adhered to.

Modifications effected by the customer himself and changes influencing the safety of the mechanical seal are not allowed.

3.
Emissions

A mechanical seal is a dynamic seal and leakage is unavoidable.

ATTENTION

Components that may contact leakage must be resistant to corrosion or be protected accordingly.

Mechanical seal leakage must be drained in a safe and proper manner.

4.
Flushing or circulation of single-acting mechanical seals

Single-acting mechanical seals contacting the conveying liquid require no additional flushing or a circulation pipe because sufficient flushing and heat exchange occurs around the seal due to the conveying liquid.

However, in particular cases, a direct flushing pipe can be installed into the flushing connection on the mechanical seal housing.

5.
Commissioning

Regardless of the pump's operating status, the conveying medium to be sealed must always be in liquid form at the mechanical seal. This particularly applies to the pump's commissioning and its placing out of service.

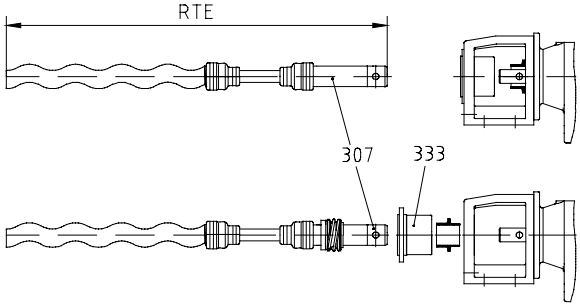
6.
Maintenance

When operating the pump according to the instructions, no maintenance is required.

7.
Disassembly / Reassembly

7.1
Disassembly

- Remove flushing connections at shaft seal housing (SAE).
- Lift / displace splash ring (310) and eject plug-in shaft pin (309) horizontally.
- Withdraw rotating unit (RTE) together with shaft seal parallel from output shaft of drive and avoid chocking.
- Clean plug-in shaft (307) and remove burrs etc., which may damage sealing elements. Moisten plug-in shaft (307) with slip additive (diluted fluid soap).
- Loosen axial safety device of mechanical seal (330 or 372) and withdraw mechanical seal (330) from plug-in shaft (307).
- Remove mechanical seal housing (333) from lantern (200).
- Press counter-ring of mechanical seal with o-ring out of mechanical seal housing (333).



7.2
Reassembly

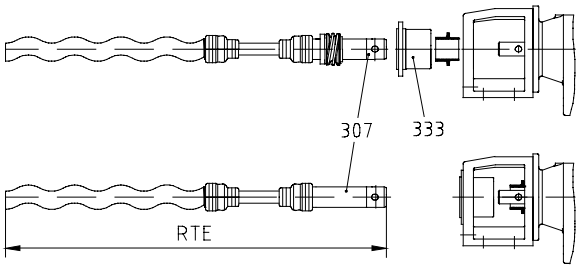
ATTENTION

Mechanical seals are precision parts of high quality. Therefore, the installation must be effected with care. Gentle handling and extreme neatness are essential.

- Clean mechanical seal housing (333)
- Evenly press counter-ring with o-ring into mechanical seal housing (333). To facilitate assembly, the o-ring should be moistened with a lubricant (diluted fluid soap).

ATTENTION

- Oil or grease must not be used to facilitate assembly.
- Install mechanical seal housing (333) to lantern (200) and onsure correct position of flushing connections.
- Remove plug-in shaft (307), burrs and roughness and clean the unit.
- Check / adjust set dimension of mechanical seal on plug-in shaft (307). Moisten plug-in shaft (307) and elastomer parts of mechanical seal with lubricant (diluted fluid soap).
- Slip mechanical seal onto plug-in shaft (307) as far as set ring.
- Lubricate drive shaft (ANT) with antiseize graphite petroleum.
- Moisten splash ring (310) and plug-in shaft (307) with pin joint grease, (for type, please see index) and slip splash ring (310) onto output shaft of drive. Note installating position of splash ring and refer to description on splash ring.
- Move rotating unit (RTE) through mechanical seal housing (333) and splash ring (310) and slip splash ring (310) onto output shaft of drive (ANT). Push in plug-in shaft pin (309) in horizontal position.
- Position of splash ring:
  Collar of splash ring shall be fitted in a distance of about 0.5 mm to lantern (200).



Wearing parts and gaskets

Sizes: 025-12, 025-24, 05-12 and 1-6L
Range: NS

To avoid the expenses incurred by lengthy stop periods of the pump, **seepex** recommends the acquisition of a set of wearing parts and a set of gaskets.
The table below shows the contents of these sets.

Part designation	small set of wearing parts	big set of wearing parts	set of gaskets	Item number acc. to sectional drawing of pump and parts list
	Number			
Rotor		1		600
Stator 2)	1	1		601
Universal joint sleeve		1		405
Coupling rod pin		2		402
Guide bush 2)		4		403
Coupling rod/ with coupling rod bush		1/-		400 / -
Coupling rod bush 2)		-		-
Casing gasket			1	501
Holding band, small 2)		-		-
Holding band, large 2)		2		406
Packing ring set 2)	1	1		301
Mechanical seal			1	330
Sealing ring			3	503
Splash ring			1	310
O-ring/cleanout			-	-
Plug-in shaft 2)		1		307
Special joint grease				098 — 1 cart. 300 gr (c. 315cm³) grease quantity per pin joint, see tech. specifications
Tool				Essential for assembly, see Point 9, document OM.SPT.01

2) see tools Point 9. document OM.SPT.01

Wearing parts and gaskets

Range: N, NS
Sizes: 05-24, 1-6 to 202-6L

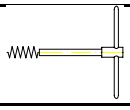
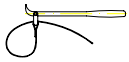
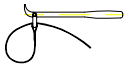
To avoid the expenses incurred by lengthy stop periods of the pump, **seepex** recommends the acquisition of a set of wearing parts and a set of gaskets. The table below shows the contents of these sets.

Part designation	small set of wearing parts	big set of wearing parts	set of gaskets	Item number acc. to sectional drawing of pump and parts list
	Number			
Rotor		1		600
Stator 2)	1	1		601
Universal joint sleeve		2		405
Coupling rod pin		2		402
Guide bush 2)		4		403
Coupling rod/ with coupling rod bush		1/2		400 / 404
Coupling rod bush 2)		2		404
Casing gasket			1	501
Holding band, small 2)		2		407
Holding band, large 2)		2		406
Packing ring set 2)	1	1		301
Mechanical seal			1	330
Sealing ring			4	503, 517, 706
Splash ring			1	310
O-ring/cleanout			2	511
Plug-in shaft 2)		1		307
Special joint grease				098 — 1 cart. 300 gr (c. 315cm³) grease quantity per pin joint, see tech. specifications
Tool				Essential for assembly, see Point 9, document OM.SPT.01

2) see tools Point 9. document OM.SPT.01

Allgemeine normierte Werkzeuge

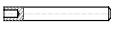
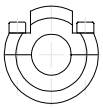
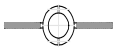
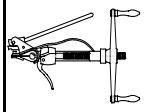
Standardized tools

Werkzeug Nr. / tool No.	W1	W2	W5	W6	W9	W11	W13
zur Montage von: / tool for mounting of:	Packung / packing	Stator / stator	Gelenk / joint	Lager / bearing	allgemein / general	Mutter für Teflonmanschette / nut for teflon universal joint sleeve	Stator / stator 1)
Benennung: / denomination:	Packungszieher / packing lever	Ketten-Rohrzange + Ersatzkette / chain pipe wrench +replacement chain	Durchschlag / drift	Bolzen / pin	Montierhebel / mounting lever	Bandschlüssel / strap wrench	Bandschlüssel / strap wrench
Baugröße / size							
0015-24 003-12/-24 006-12/-24 012-12/-24	PKZ XX 000 0000 0 X35M0	**Siehe W 13** **see W 13**					WKZ SBD 140
025-12 025-24 05-12 1-6L			DHS 00 020 0000 0 00000				
05-24 1-6 1-12 2-6L 1-24 2-6 2-12 5-6L	PKZ XX 000 0000 0 X0FQ0	KRZ XX Z55 0250 0 00000 KEZ XX Z55 0250 0 00000	DHS 00 050 0000 0 00000	BLZ 00 020 0008 0 00000			
2-24 5-6 5-12 10-6L/15-6LT	PKZ XX 000 0000 0 XOHV0		DHS 00 050 0000 0 00000	BLZ 00 020 0010 0 00000			
5-24 10-6 10-12 17-6L/30-6LT			DHS 00 100 0000 0 00000	BLZ 00 020 0010 0 00000	2 Stück 2 pieces MHL XX SA 610	WKZ SBD 140	
26-6L/40-6LT 10-24 17-6 17-12 35-6L/55-6LT 52-6L/75-6LT		KRZ XX Z55 0300 6 00000 KEZ XX Z55 0300 6 00000	DHS 00 120 0000 0 00000	BLZ 00 025 0012 0 00000			
17-24 52-12 35-6 35-12 70-6L/110-6LT	PKZ XX 000 0000 0 XA01A	KRZ XX Z55 0300 8 00000	DHS 00 160 0200 0 00000	BLZ 00 030 0012 0 00000			
35-24 70-6 70-12 130-6L 200-6L		KEZ XX Z55 0300 8 00000	DHS 00 200 0200 0 00000	BLZ 00 035 0012 0 00000			
70-18 70-24 130-6 130-12 202-6L		KRZ XX Z55 0301 2 00000 KEZ XX Z55	DHS 00 240 0250 0 00000	BLZ 00 040 0015 0 00000			
130-24 240-12 350-6L		0301 2 00000		BLZ 00 040 0015 0 00000			

Die Preise sind dem Preisblatt AL.SPTde zu entnehmen / prices are listed on price sheet AL.SPTde

1) Gilt nur für Pumpen in Edelstahl Ausführung / only valid for pumps in special steel design

Exzenterschneckenpumpe - Werkzeuge
Progessive Cavity Pumps - Tools

	Empfohlene **seepex** Werkzeuge Aufgrund der Ausführung für bestimmte Montagen empfohlen, durch allgemeine normierte Werkzeuge bedingt ersetzbar. Recommended **seepex** tools Due to the design recommended for certain repairs, these tools partially replace the standardized tools.							Spezialwerkzeuge für bestimmte Montagen unbedingt erforderlich Special tools definitely needed for certain repairs	
Werkzeug Nr. tool No.	W4	W7	W8	W10	W12	W14	W15	W3	
zur Montage von: tool for mounting of:	Gelenk joint	Lager bearing	Schmiernippel lubrication nipple	Steckwelle plug-in-shaft	Teflon-manschette teflon universal joint sleeve	Kuppelstangen-buchsen coupling rod bushing	Manschette universal joint sleeve	Halteband holding band	
Benennung: denomination:	Montagedorn assembly mandrel	Montagehülse mounting sleeve	Einschlag-hülse drive-in sleeve	Demontage Werkzeug dismantling tool	Montage-werkzeug mounting tool	Preßwerkzeug pressing tool	Montage-platte mounting plate	Montagewerkzeug mounting tool	
Baugröße **size**									
0015-24 003-12/-24 006-12/-24 012-12/-24	MTD L2 060 M120 0 XXXXX 2)						MTP A7 703 M120 0 002XX		
025-12 025-24 05-12 1-6L	MTD L2 060 M500 0 XXXXX	MTH M8 060 M500 0 XXXXX		AZV B2 262 M500 0 XXXXX			MTP A7 703 M500 0 002XX		
05-24 1-6 1-12 2-6L 1-24 2-6 2-12 5-6L	MTD L2 060 0020 0 XXXXX	MTH M8 060 0020 0 XXXXX		AZV B2 262 0020 0 XXXXX	MMT M8 060 0020 0 XXXXX	PWZ C6 060 0020 0 XXXXX			
2-24 5-6 5-12 10-6L/15-6LT	MTD L2 060 0050 0 XXXXX	MTH M8 060 0050 0 XXXXX		AZV B2 262 0050 0 XXXXX	MMT M8 060 0050 0 XXXXX	PWZ C6 060 0050 0 XXXXX			
5-24 10-6 10-12 17-6L/30-6LT	MTD L2 060 0100 0 XXXXX	MTH M8 060 0100 0 XXXXX		AZV B2 262 0100 0 XXXXX	MMT M8 060 0100 0 XXXXX	PWZ C6 060 0100 0 XXXXX		MHB WH A00 1WHV 0 01000	
26-6L/40-6LT	MTD L2 060 0140 0 XXXXX	MTH M8 060 0140 0 XXXXX	ESH N0 000 0000 0 XXXXX	AZV B2 262 0140 0 XF5XX	MMT M8 060 0140 0 XXXXX	PWZ C6 060 1400 0 XXXXX			
10-24 17-6 17-12 35-6L/55-6LT 52-6L/75-6LT	MTD L2 060 0170 0 XXXXX	MTH M8 060 0170 0 XXXXX		AZV B2 262 0170 0 XG0XX	MMT M8 060 0170 0 XXXXX	PWZ C6 060 0170 0 XXXXX			
17-24 52-12 35-6 35-12 70-6L/110-6LT	MTD L2 060 0350 0 XXXXX	MTH M8 060 0350 0 XXXXX			MMT M8 060 0350 0 XXXXX	PWZ C6 060 0350 0 XXXXX			
35-24 70-6 70-12 130-6L 200-6L	MTD L2 060 0700 0 XXXXX	MTH M8 060 0700 0 XXXXX				PWZ C6 060 0700 0 XXXXX			
70-18 70-24 130-6 130-12 202-6L	MTD L2 060 1300 0 XXXXX	MTH M8 060 1300 0 XXXXX				PWZ C6 060 1300 0 XXXXX			
130-24 240-12 350-6L						PWZ C6 060 2400 0 XXXXX			

Die Preise sind dem Preisblatt AL.SPTde zu entnehmen / prices are listed on price sheet AL.SPTde

2) entfällt ab Pumpen-Herstellungsdatum 01.04.93 / can be omitted as from 01.04.93 (pump manufacturing date)

10.
Manufacturer's documents from sub-supplier

seepex

We deliver your success

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