

Progressing cavity pump

Operating and maintenance instructions Series AEB1E, AEB2E, AEB2N
with instructions for assembly and
disassembly

Construction Types ME, SE, VE

Retain the **operating instructions** for future use!

This is a translation of the original operating instruction.

Refer to the order-specific section of the documentation for operational data, dimensions and other additional information.

Order No.:

Pump ID No.:

Machine No.:

Pump model:



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ALLWEILER AG – Bottrop plant
P.O. Box 200123 · 46223 Bottrop
Kirchhellener Ring 77-79 · 46244 Bottrop
Germany
Telephone: +49 (0) 2045-966-60
Fax: +49 (0) 2045 966-679
E-mail: service@allweiler.de
Internet: www.allweiler.com



Subject to technical changes!

Important note:

These operating instructions are supplemented with order-specific information.



These operating and maintenance instructions contain notices from the pump manufacturer. It may be necessary to amend these instructions with instructions from the company that operates the pump.

Specific notices about operating and maintaining the overall system in which the pump is integrated are not provided here. These must be provided by the persons who are responsible for planning and constructing the system (system manufacturer).

Specific notices of this type regarding operation and maintenance of the overall system in which the pump is integrated have precedence over the pump manufacturer's notices. The systems manufacturer must comply with operational limits at all times!

Refer to the system manufacturer's operating instructions!

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1 About these instructions

These instructions:

- are part of the pump,
- are valid for the specified series and construction types,
- describe safe and proper usage in all phases of operation.

1.1 Who should read these instructions

Target group	Task
Operators	Keep these instructions accessible for later use at the place where the system is operated.
	Require employees to read and observe these instructions and other valid documents, especially safety and warning notices.
	Observe all other stipulations and regulations related to the system.
Technical assembly personnel	Read, observe, and follow these instructions and related documents, especially safety and warning notices.

Tab. 1 Who should read these instructions

1.2 Related documents

Document	Purpose
Order data sheet	Technical specifications, operating conditions, operating limits
Unit drawing	Setup and connection dimensions, etc.
Technical description	Technical specifications
Sectional drawing	Sectional drawing, parts numbers, component names
Supplier documentation	Technical documentation for third-party parts
List of spare parts	Ordering spare parts
Declaration of conformity	Standards conformity
ATEX supplemental instructions	Instructions for operation in potentially explosive atmospheres.



Tab. 2 Other applicable documents

1.3 Warning notices and symbols



Several names and symbols are used in the operating instructions to represent hazards and safety regulations.

Together with written safety notices, the safety symbols are designed to draw attention to unavoidable residual hazards during usage of the machine. These residual hazards are related to:

- people
- the machine
- other objects
- the environment

Warning notice	Level of danger and consequences for failure to observe
	Danger! Draws attention to an immediate danger that could result in death or serious injury.
	Warning! Draws attention to a potentially dangerous situation that could result in death or serious injury.
	Caution! Draws attention to a potentially dangerous situation that could result in minor injuries or property damage.
	Caution! Draws attention to the danger of electrical shock.

Tab. 3 Overview of dangers

Warning notice	Level of danger and consequences for failure to observe
	Safety symbol Comply with all measures identified by the safety symbol in order to avoid injury or death.
▶	Instructions for action
1. , 2. , ...	Multi-step instructions for action
✓	Requirement
→	Cross-reference
	Notice! Draws attention to information that can contribute to a better understanding of machine operations.

Tab. 4 Symbols and their meaning

1.4 Technical terms

Pump: "Pump" refers to the pump without coupling, drive, or any other components.

Pump unit: "Pump unit" refers to the pump with coupling, drive, and any other components.

1.5 Safety notices

Please carefully read the operating instructions before beginning work on the system.

Knowledge of basic safety notices and safety regulations is a fundamental requirement for safe activities and disturbance-free operation of this machine.

All persons involved with set-up, start-up, operation, maintenance, or repair of the system must be properly qualified or trained and comply with all aspects of these operating instructions.

Furthermore, they must comply with accident-prevention rules and regulations at the place of usage.

Unauthorized conversions and modifications to the system are not permitted for safety reasons.

Notices applied directly to the machine, such as:

- arrow indicating direction of location,
- fluid connection labels, and
- safety notices

must be observed at all times and maintained in a readable condition.

1.6 Keep information accessible

Operating instructions must be retained at the machine. All persons expected to perform activities on the machine must have access to the operating instructions at all times. In addition to the operating instructions, other instructions related to the German Work Protection Law (*ArbSchG*) and Work Equipment Ordinance (*AMBV*) must also be provided.

All signs containing safety and operating notices must be kept in readable condition at all times. Signs that are damaged or become unreadable must be replaced immediately.

1.7 Inspection

All pumps are subjected to leak and performance tests before leaving our factory. Only flawlessly operating pumps that meet our performance specifications leave the factory. Therefore, observance of the following operating instructions will provide the conditions necessary for disturbance-free operation.

1.8 Warranty

Our liability for defective products is defined in our delivery terms. We accept no liability for damage caused by a failure to observe the operating instructions and operating conditions.

If operating conditions change (different liquid, speed, viscosity, temperature or pressure conditions) at a later time, we must investigate and decide on a case-by-case basis whether the pump is suitable for the new conditions. Absent special agreements, only we or authorized and contracted customer service workshops may during the warranty time period open or modify the pumps that we delivered. Only original parts or parts approved by the manufacturer may be used. Failure to observe these requirements will remove our liability for any defects as well as invalidate the machine's EC declaration of conformity.

2 Safety

The operating instructions contain important notices that must be observed during set-up, operation, and maintenance. For this reason, the installer and all technical personnel/operators must read these operating instructions before installation and operation; these instructions must remain with the machine/system at all times. In addition to the general safety notices listed under this main section "Safety", all special safety notices inserted below the other main points, such as notices applicable to private usage, must also be observed.

2.1 Dangers of failure to observe safety notices

Failure to observe the safety notices can result in dangers for people and the environment as well damage to the machine. Failure to observe safety notices will lead to loss of all damage compensation claims.

In particular, failure to observe safety notices may result in the following dangers:

- Failure of important functions on the machine/system
- Failure of required methods for maintenance and repair.
- Danger of injury from electrical, mechanical, and chemical hazards.
- Environmental damages caused by escape of hazardous materials.

2.2 Proper use

The pump as well as its parts and modules may be used only for their intended purposes. Any other or additional usage is improper usage. ALLWEILER will not be liable for any resulting damages.

Proper use also refers to observation of all notices in the operating instructions and completion of inspection and maintenance tasks.

Use only original spare parts, wearing parts, and accessories. These parts are designed specifically for the system. There is no assurance that third-party parts are designed to withstand operating loads and safety specifications.

We do not approve the use of any parts or special equipment that we did not deliver.

2.3 Avoiding common mistakes (examples)

- Always observe the pump's operational limits regarding temperature, pressure, capacity, viscosity, and speed.
(→ order data sheet)
- If pumping liquids loaded with solids, comply with limitations on the proportion of solids and grain size.
(→ order data sheet, technical description)

2.4 General safety notices

2.4.1 Product safety

The pump was built according to the current state of technology and recognized safety regulations. Despite this, dangers to life and limb of the user or other persons or damage to the pump or other property remain possible.

- Operate the pump in accordance with these instructions and in a technically flawless condition and use it only in the proper manner with awareness of safety and dangers.
- Keep these instructions and related documents in their entirety in readable condition and keep them available at all times.
- Prohibit any activity that will endanger your employees or unrelated third parties.
- In the event of a potentially dangerous failure of the pump, stop the pump immediately and have the disturbance removed by the responsible person.
- In addition to the documentation, comply with all legal and other safety and accident-prevention regulations as well as applicable standards and directives in the country of operation.

2.4.2 Operator's responsibilities

Work in a safe manner

- ▶ Operate the pump in accordance with these instructions and in a technically flawless condition and use it only in the proper manner with awareness of safety and dangers.
- ▶ Ensure compliance and monitoring of:
 - proper use
 - legal or other safety and accident-prevention regulations
 - safety stipulations controlling the handling of hazardous materials

- applicable standards and directives of the country where the pump is operated

- ▶ Provide access to personal protective equipment.

2.4.3 Personnel responsibilities

- ▶ Observe notices on the pump and keep them in readable condition, i.e. arrow indicating direction of rotation.
- ▶ Do not remove safety guarding for hot, cold, and moving parts during operation.
- ▶ Use personal protective equipment whenever necessary.
- ▶ Perform work on the pump only when the pump is shut down.
- ▶ Shut off the motor's power supply and lock it in the off position before all assembly and maintenance tasks.
- ▶ After completing work on the pump, always properly reinstall the safety equipment.
- ▶ Never step on the pump, coupling guard, and attached parts or use them as a climbing aid.

2.5 Safety precautions

2.5.1 Authorized operating personnel

Only authorized and trained personnel may work on the progressing cavity pump. Operators must be at least 18 years of age. Apprentices may work on the system only under the supervision of an experienced person.

The operator is responsible for other people within his area of activity.

Responsibilities for various activities on the system must be clearly defined and respected. Lack of clarity regarding responsibilities represents a safety risk.

All persons who perform activities on the machine must read the operating instructions and confirm with their signature that they have understood the operating instructions.

2.5.2 Safety measures during normal operation

The progressing cavity pump may be operated only when all safety devices are fully functional.

No safety equipment may be removed or taken out of operation before or during operation of the system.

Before switching on the system, ensure that no one will be endangered by starting of the system.

The system must be regularly checked for visible damage and functionality of the safety equipment.

2.5.3 Safety at the place of installation

Safe access to the system must be provided at all times.

Do not block any escape paths!

The operator must provide a nonslip, level floor and adequate illumination in the workplace.

Keep the area immediately surrounding the system clean at all times.

Children and the public may not have access to the system.

Safety devices (emergency stop switch) must be freely accessible and reachable at all times.

2.6 Maintenance and repair, removal of malfunctions

The operator must ensure that all maintenance, inspection, and assembly tasks are performed by authorized and qualified personnel who have obtained adequate information through careful reading of the operating instructions.

Work on the machine may be performed only when the machine is shut off. Comply under all circumstances with the shutdown procedures (Shutdown → page 14) described in the operating instructions.

Pumps or systems that move hazardous liquids must be decontaminated.

The points listed under the section "Initial startup" (→ page 13) must be observed before bringing the machine back into operation.

Required adjustment, maintenance, and inspection tasks must be performed according to schedule.

Operating personnel must be informed before starting maintenance and repair tasks.

All upstream and downstream parts of the system and operating media like compressed air and hydraulics must be secured against unintentional restarting.

When performing any maintenance, inspection, and repair tasks, always shut off the power to the system and secure the switch against unintentional restarting.

- ▶ If possible, lock the main switch and remove the key.
- ▶ Or attach a sign that warns against restarting.

Immediately after concluding the work, replace all safety and protection devices, bring them back into operation, and test their functionality.

2.7 Unauthorized conversion and production of spare parts

Changes to or conversion of the machine is permissible only with the approval of the manufacturer. Original spare parts and manufacturer-approved accessories promote safety. Use of other parts will nullify liability for any resulting consequences.

2.8 Impermissible operating methods

Operational safety of the delivered machine is ensured only through proper use as described in Section 1 of the operating instructions. Never exceed the limit values specified in the data sheet.

2.9 Protective clothing



Protective gloves

Wear protective gloves at all times.



Footwear

Wear sturdy, insulated safety shoes with steel tips. This will protect your feet from falling parts.



Safety glasses

Wear safety glasses when working near the shaft seal area.



Clothing

Wear suitable clothing. Do not wear synthetic items of clothing. These have a risk of catching fire.

2.10 Residual risks

If the progressing cavity pump is used and handled properly, there are no residual risks.

3 Danger points

3.1 Hazards when working with the system

The progressing cavity pump was built according to the current state of technology and recognized safety regulations. Nevertheless, danger to life and limb of the user or third parties may arise during use of the pump or damage may occur to the system or other property.

Dangerous parts of the system include:

- Moving parts,
- Components of the electrical equipment (mains connection).

Hazardous materials include:

- Poisonous materials,
- Materials that are hazardous to health,
- Acidic materials,
- Irritants,
- Potentially explosive materials,
- Oxidants; highly, easily, and flammable materials,
- Carcinogens,
- Teratogenic materials,
- Mutagens,
- Materials that are hazardous to humans in other ways.

3.2 Dangers of leaks

Leaks (such as at the shaft seal) of hazardous pumped liquids (explosive, poisonous, hot, etc.) must be led away in such a way that there is no danger to people or the environment. Always obey all legally defined directives.

3.3 Dangers of electrical energy

Electrical hazards are present when working on the pump, such as:

- through direct contact with live parts or parts that have become energized due to faulty conditions,
- through electrostatic energy,
- through high voltage and
- through short circuits and overloads.

Only electrical technicians may perform work on the electrical power supply.

The machine's electrical equipment must be inspected on a regular basis. Loose connections and charred cables must be removed immediately.

Proper earthing must be provided whenever there is the potential for electrostatic charges.

If it is necessary to work on live parts, always work with a second person who can shut off the main switch in an emergency.

3.4 Hazards caused by dust

When operating pump units in dust-filled environments (such as in a mill, during production of particle board, in a baked goods factory, etc.) regularly clean the surfaces of the pumps and motors according to the actual concentration of dust in order to maintain the cooling effect and eliminate the possibility of spontaneous ignition. → Refer to explosion protection directives (BGR 104)

3.5 Dangers of moving parts

The safety guarding for moving parts (such as the coupling) may not be removed while the machine is in operation.

3.6 Danger of hot or cold parts

If hot or cold parts represent a hazard, these parts must be secured against contact at the site of installation.

3.7 Operating in potentially explosive atmospheres

If the pump or pump unit is operated in potentially explosive atmospheres, follow the ATEX supplemental instructions.

3.8 Danger of pumped liquid

Squirting pumped liquid can cause injury or poisoning. Use the proper protective clothing whatever working at the pump.

4 Design and function

4.1 Application and area of usage

Progressing cavity pumps are self-priming, rotating displacement pumps suitable for pumping and metering low-viscosity and high-viscosity liquids, neutral or aggressive liquids, undiluted or abrasive liquids, liquids containing gases, liquids prone to foaming, and liquids with fibrous or solid particles.

4.2 Labeling

4.2.1 Nameplate

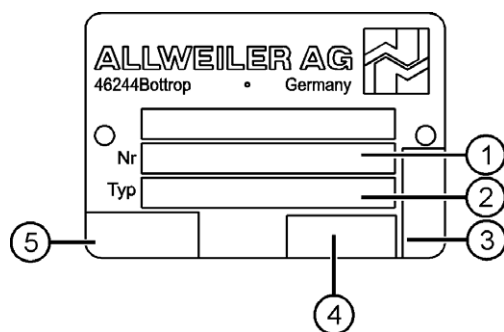


Fig. 1 Nameplate (example)

- 1 Pump number
- 2 Pump model
- 3 Direction of rotation or pumping
- 4 Direction of rotation or pumping
- 5 CE Mark, Year of Manufacture

4.2.2 ATEX nameplate

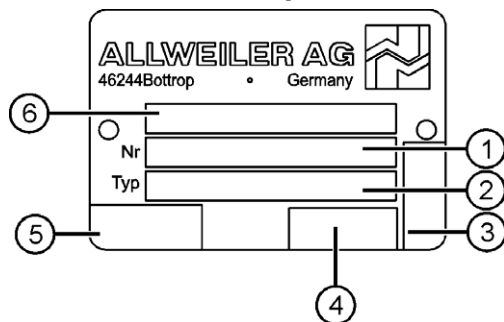


Fig. 2 ATEX nameplate

- 1 Pump number
- 2 Pump model
- 3 Direction of rotation or pumping
- 4 Direction of rotation or pumping
- 5 CE Mark, Year of Manufacture
- 6 Explosion Protection Designation



Danger!

If the pump or pump unit is operated in potentially explosive atmospheres, follow the ATEX supplemental instructions.

4.2.3 Pump model label

The model code for progressing cavity pumps has several components, as shown in this example:

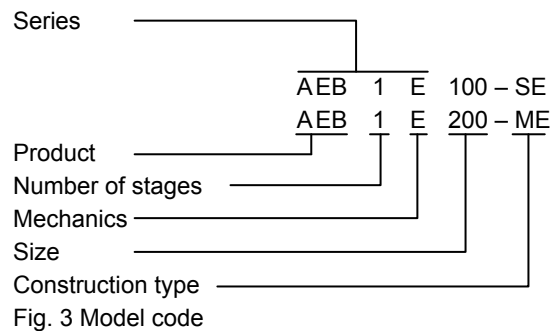


Fig. 3 Model code

This model code is engraved on the nameplate.

4.3 Performance data

Refer to the order data sheet for the exact performance data applicable to the pump.

4.4 Design

4.4.1 Structural design

Self-priming single, double progressing cavity pump. Pumping elements are the rotor and stator. A coupling transfers the drive torque to the stub shaft, the universal joint shaft, and the rotor.

External housing connection screws (clamp bolts) hold together the discharge casing, stator, and suction casing.

4.4.2 Bearing and lubrication

Both sides of the universal joint shaft have liquid-sealed encapsulated pin joints. Lubrication is provided by joint oil.

Bearing of the driveshaft/stub shaft is provided in the drive's reinforced bearings.

4.4.3 Shaft seal

Shaft sealed by a maintenance-free, unbalanced, single-acting mechanical seal.

4.4.4 Dimensions/ branch positions/flanges

Please refer to the unit drawings for dimensions of the pump and pump unit, for branch positions, and flange dimensions.

4.4.5 Noise level

The conditions for measuring noise are as follows: 1 meter away from the pump.

If the pump speed and/or the differential pressure fall below the value specified in the table below, the noise level will decrease.

Pump size	Number of stages	Pump speed [min ⁻¹]	Differential pressure Δ p [bar]	Noise level L _p (A) [dB(A)]
25	1	1000	6	< 70 dB(A)
50	1	860	6	
100	1	700	6	
200	1	600	6	
380	1	500	6	
550	1	500	6	73,8 dB(A)
3	2	1500	12	< 70 dB(A)
6	2	1400	12	
12	2	1200	12	
25	2	1000	12	
50	2	860	12	
100	2	700	12	71,8 dB(A)
1) 100 G	1	700	12	74,3 dB(A)
1) 200 G	1	600	12	72,3 dB(A)
1) 380 G	1	500	12	76,0 dB(A)

1) Stator with uniform elastomer wall thickness.

Tab. 5 Noise level

4.4.6 Non-ionizing radiation

No non-ionizing radiation, such as from magnetic fields, is emitted from the progressing cavity pump.

4.4.7 Operation

Self-priming, rotating displacement pump. The pumping elements are the rotor and the fixed stator. The rotor and stator contact each other at two points of their cross-section. When viewed over the length of the pumping elements, these two points form an equal number of sealing lines along the length of the pumping elements. As the rotor turns, the contents located in the resulting sealed chambers are moved axially and continuously from the suction to the pressure side of the pump. Despite rotation of the rotor, no turbulence results.

The consistent chamber volumes eliminate crushing forces and ensure an extremely gentle, low-pulse pumping action.

4.5 Pump unit design

4.5.1 Drive

Drive provided by three-phase and pole-changing three-phase gear motors.

Transport equipment

The ME-type pump units are equipped with wheels on the drive side and a support with an elastic foot on the discharge branch side.

5 Transport, storage, and disposal

5.1 Packaging

Observe the graphical symbols on the packaging.

The pump's suction and pressure sides and auxiliary connections must be closed with plugs during transport and storage.

- ▶ Remove the plugs when installing the pump unit.

5.2 Transportation

The pump or pump unit must be transported safely to the place of installation, if necessary through the use of lifting gear.



Danger!

Be aware of the danger of falling and loss of stability. Observe the requirements for lifting in accordance with VBG 9a. Crane equipment and attachment equipment must be properly dimensioned!

- ▶ Attachment equipment may not be fastened to the motor's eyelets, unless being used as additional safety against tilting when top-heavy.

Refer to the order-specific documents for weight specifications.

When using a crane to transport a pump, place the attachment ropes securely around the suction casing. If transporting a complete pump unit, attach an additional rope to the drive motor.

The attachment ropes must be placed around the pump and pump unit so that they are precisely balanced during lifting.

Make sure that the pump unit is transported safely and in a stable position to and at the place of installation. Make sure that it cannot tip over due to top-heaviness.



Notice!

When receiving the pump, inspect it for transport damages. Immediately report any damages!

5.3 Preserving progressing cavity pumps and placing them into storage

5.3.1 Preserving



Notice!

Not necessary with stainless materials.

5.3.2 Storage



Caution!

Improper storage can result in property damages!

- ▶ Properly preserve and store the pump.
- Seal all openings with blank flanges, blank plugs, or plastic covers.
- Ensure that the storage space meets the following conditions:
 - dry
 - frost-free
 - vibration-free
- Fully rotate the shaft once per month.
- When doing so, make sure the shaft, rotor, and bearing move as well.
- If storage time is greater than 12 months:
 - Inspect all elastomers (stator, round seal rings, shaft seals) for shape elasticity and replace if necessary.
 - Replace elastomers made of EP rubber (EPDM).



Notice!

The elastomer stator in the progressing cavity pump is particularly sensitive to the elements (ozone, light, temperature). Depending on the pump size and type of storage, it may be necessary to remove the stator, package it in dark film and store it within the temperature range of -10 to +25 °C.

- ✓ Discuss with factory.

5.4 Disposal

Plastic parts and elastomers can be contaminated by toxic or radioactive pumped liquids in such a way that cleaning is not adequate.



Warning!

Danger of poisoning or environmental damage by pumped liquid or oil!

- ▶ Use personal protective clothing when performing any work on the pump.
- ▶ Before disposing of the pump:
Capture escaping liquid and oil
Dispose of them separately according to local regulations.
- ▶ Neutralize residual liquid in the pump.
- ▶ Remove plastic parts and elastomers and dispose of them according to local regulations.

Dispose of pump according to local regulations.

6 Installation and connection

6.1 Setting up the pump

Pumps of the ME and SE construction types must be set up horizontally. Pumps of the VE construction type can be set up horizontally or vertically with the drive pointing upward.



Notice!

Observe the volume of gear oil and position of the vent screws on the gear box. Refer to specifications on the order data sheet.



Caution!

Improper installation position can result in damage to the shaft seal and bearing.

Refer to the order data sheet for the proper installation position!



Warning!

Danger of burns and scalding!

To avoid burns and personal injury, protective equipment according to EN 809 must be provided at the site of installation when the temperature of pumped liquids exceeds 60 °C.

6.1.1 Space requirement for maintenance and repair



Caution!

The pump must be accessible from all sides in order to enable the necessary visual inspections.

Provide enough room for maintenance and repair tasks, especially for the replacement of pumping elements. Disassembly dimensions for the stator and rotor are provided in the dimension sheet for the pump and pump unit. Also make sure that all pipes can be installed and removed without hindrance.

6.2 Laying the pipes

6.2.1 Nominal widths

The nominal widths of the suction and pressure lines should match the nominal widths of the pump branches. Any major

deviations, particularly on the suction side, must be discussed with the factory.

Stopping devices must be present in the suction and pressure lines.

6.2.2 Supports and connection lines

Connect all lines to the pump without tension. The lines require support close to the pump and should screw in easily to avoid twisting. After loosening of the screw connections, they may not be tilted, nor spring, nor be under mutual pressure. Any heat stress at the lines must be kept away from the pump with suitable measures, such as installation of compensators.

6.2.3 Cleaning the connections lines before installation

It is essential to flush and clean the suction-side pipes, gate valves, and valves before installing the pump.

Use the cleaning, disinfectant, and flushing agents recommended by the operator together with the related process.



Notice!

Residual items from assembly, such as screws, nuts, weld beads, or pieces of metal will destroy the pump's internal parts.

Warranty claims of any kind are invalidated whenever damages are caused by such residual items. Flange gaskets may not protrude inward. Blank flanges, plugs, protective film, and/or protective coatings on flanges and sealing strips must be completely removed.

6.3 Safety and inspection equipment

6.3.1 Pressure and vacuum gauges

Attach a pressure gauge to the pressure line and a vacuum gauge to the suction line.

6.3.2 Safety device in the pressure line



Warning!

Driving the pump with a pressure-side liquid column is dangerous due to the risk of reverse flow.

A return flow-stop must be located between the discharge branch and the stop valve to ensure that the pumped liquid does not flow backwards when the pump is shut off!

If a shut-off device is located in the pressure line or if there is the possibility that the pressure line could become clogged, a safety device must be installed, such as a diversion line with integrated overpressure valve, space diaphragm, motor protection switch, etc.



Warning!

High pressure

Progressing cavity pumps are displacement pumps and are theoretically capable of generating unlimited pressure.

If the pressure lines are closed (due to clogging or mistaken closing of a valve), the pressure generated by the pump could be several times higher than the pressure permitted in the system. This may lead, for example, to rupturing of the lines, which is particularly dangerous when pumping hazardous materials. For this reason, appropriate safety devices (such as pressure switches) must be installed in the system!

6.3.3 Electrical connections



Caution!

A professional electrician must attach the coupled drive motor's power supply cable in accordance with the connection diagram provided by the motor manufacturer. All VDE regulations and regulations from the local power supply company must be obeyed. Hazards associated with electrical power must be eliminated. An emergency off switch must be installed!

7 Operation

7.1 Preparing for initial start-up

7.1.1 Filling the pump with liquid



Caution!

The pump may not run dry!

- ▶ The pump must be filled with liquid before initial start-up or when starting after a long period of downtime.

Even just a few revolutions without liquid can damage the stator. For this reason, the suction casing must be filled with water or pumped liquid before start-up in order to lubricate the stator and rotor. Repeat the filling procedure after long periods of downtime, i.e. when you suspect that the residual fluid in the pump has evaporated, or after repairs.

After filling, the pump will prime itself. Ventilation is not necessary, because the pump is able to immediately begin moving a liquid/gas mixture.

7.1.2 Pump rotation difficulties

When restarting the pump or starting after a long period of downtime, make sure that the drive machine cranks the pump without great effort. If this does not occur (due to high adhesion between the rotor and stator on a new pump, for example), you can use a suitable tool to turn the rotor via the front-side hexagon on the rotor of the ME construction type or by turning the fan vane of the drive motor.



Caution!

Avoid damage to the fan vane.

7.1.3 Checking the direction of rotation

Viewed from the drive to the stub shaft, the normal direction of rotation is to the left. The suction connection is on the shaft seal side so the shaft seal is balanced. In special cases the pump will turn to the right, such as when sucking from a vacuum or when pumping liquids that do not tolerate any gas inclusions. The suction and pressure sides are then reversed.



Caution!

The pump's direction of rotation must match the "n" directional arrow on the pump's nameplate. Improper direction of rotation can damage the pump!

- ▶ To check the direction of rotation, turn the pump on and immediately back off.

7.2 Bringing the pump into operation

7.2.1 Starting



Caution!

Open all blocking devices on the suction and pressure sides before starting.

7.2.2 Drive

- ▶ Switch the motor on.



Caution!

Observe the characteristics of the specific drive you are using. **Refer to the drive manufacturer's operating instructions.**

7.2.3 Checking pump capacity

Once the drive has reached its operating speed, use the vacuum gauge and pressure gauge to check the pump's inlet and outlet pressures.

Do not overload the motor. Power consumption can be checked with an ampere meter. The temperature and viscosity of the pump liquid should be monitored in this context. Compare the values obtained with the order data sheet and inspection protocol.

7.2.4 Dry-running protection

If there is no pumped liquid on the suction-side of the pump, the heat generated by dry friction and deformation forces in the pumping elements of the progressing cavity pump will no longer be adequately dissipated. This will result in thermal destruction of the stator elastomer after only a short period of time. A variety of dry-running protection devices are available for protection of the pumping elements. Please inquire at the factory for more information.

7.3 Taking the pump out of operation

7.3.1 Stoppage

- ▶ Switch the motor off.

7.3.2 Measures for longer periods of downtime

If operations will be interrupted for a longer period of time and there is a danger of frost, the pump must be emptied.

7.4 Special applications of the pump

If the progressing cavity pump will be used to transport food or if it will be used in the cosmetics or pharmaceutical industries, special cleaning, disinfection, and flushing agents must be used in conjunction with the proper procedures.

Make sure that the regular pumped liquids do not become contaminated with residuals of the cleaning and/or flushing/disinfection agents. We recommend using only liquids that, should they contaminate the pumped liquid, will not have harmful effects.

If the pump or pump unit is operated in potentially explosive atmospheres, follow the ATEX supplemental instructions.

8 Maintenance cycles and intervals

Maintenance may be necessary for the following parts:

Rotor + stator:

Wear to the rotor and/or stator is manifested in the form of lower pump capacity and lower pressure. Maintenance can be planned when this is noticed, i.e. it is not necessary to immediately replace the rotor and/or stator.

For detailed information about maintenance procedures and intervals for other components, please refer to section 9, page 16 and section 10, page 17.

9 Preventive Maintenance

9.1 Maintenance

- Observe the information provided in section 2 Safety whenever performing maintenance and repair tasks.
- Regular monitoring and maintenance of the pump and drive will extend the service life.



Caution!

Use protective equipment whenever necessary.

9.1.1 General monitoring

- Do not run the pump dry.
- Do not overload the drive motor.
- Check suction and pressure lines for leaks.
- A mechanical seal may not have any significant leaks.
- Observe pressure- and temperature-monitoring devices and compare them with the order data sheet and inspection protocol.

9.1.2 Universal joints

Universal joints must be lubricated with ALLWEILER special joint oil of type BL or oil 1810/460 from Tribol Lubricants GmbH of Mönchengladbach, Germany.



Caution!

We have not tested any other lubricants and therefore cannot recommend any others!

The joints have lifetime lubrication. However, if the pump must be opened for other reasons, we recommend checking the joint collar for leaks and replacing the joint oil after 8000 operating hours.

The oil fill volumes of each joint are as follows:

Pump size	3	6	12	25	50	100	200	380	550
Oil volume (cm ³)	4	4	4	4	10	18	37	52	52

Tab. 6 Oil fill volume for each pump size

9.1.3 Shaft seal

The shaft is sealed via a mechanical seal.

9.1.3.1 Mechanical seal

Unbalanced mechanical seals are used. The mechanical seal is maintenance free.

In the event of strong wear-induced leaks, the mechanical seal must be replaced (→ section 10.1 page 17).



Caution!

Since dry-running of a mechanical seal must be avoided, the pump may be switched on only when.

9.1.4 Drive motors and (variable) gear

Refer to the manufacturer's operating and maintenance instructions.

10 Maintenance

For the positions of parts referenced in the following chapters → sectional drawings on pages 27, 28, 29 and 30.

10.1 Disassembly and assembly instructions

Trained customer service technicians are available upon request for assembly and repair tasks.



Caution!

Before starting repairs with your own personnel or our technicians, ensure that the pump is completely empty and clean.

Make sure that any pumps sent for repairs to our factory or a contracted service station are clean and empty!

In the interest of our employees and the environment, we must refuse any pumps sent for repair that are filled with liquid.

If we receive a pump that is filled with liquid, we must invoice the customer/operator for the cost of environmentally-sound disposal.

If pumps used to move hazardous materials and/or environmentally harmful liquids require repair, the customer/operator must independently inform his internal assembly personnel or, if the pump is sent back to our factory or a contracted service center, our technicians before sending the pump. In these situations, documentation of the pumped liquid, such as a DIN safety data sheet, must be presented when requesting a customer service technician.

Whenever tasks are performed on-site, always inform your internal personnel or our assembly technicians of any hazards that may arise during the repairs.

These instructions describe the most important disassembly and assembly tasks. The assembly steps described in each of the sections must be followed consistently.

10.1.1 Disassembling the progressing cavity pump

Perform the following tasks before disassembly:

1. Disconnect the motor's power cord. Prevent the motor from switching on unexpectedly.
2. All blocking devices in the feed and pressure lines must be closed.

✓ Be certain that the pump is pressureless.

3. Remove feed and pressure lines.
4. Loosen and remove screws on the pump feet, if present.
5. Remove the pumped liquid from the suction casing.



Notice!

Use a collection container.

10.1.2 Removing the stator

1. Remove hexagon nuts (609) and washers (610) from the clamp bolts (611).
2. Pull off discharge casing (504) and bracket (612).
3. Remove clamp bolts (611).
4. Pull off stator (402) from rotor (401).



Notice!

If difficult to move, simultaneously turn stator (402) with a chain wrench. To do this, hold the rotor (401) stationary via the face-side hexagon on the rotor or via the drive motor's fan impeller.

10.1.3 Removing the rotor and rotor-side joint

Remove the rotor and the rotor-side joint after removing the stator (402) → Section 10.1.2 page 17.

1. Pull off suction casing (505) over the rotor (401).



Caution!

The rotor is manufactured to close tolerances. Make sure it is not damaged.

2. Remove the seal for the suction case (501).
3. Use a metal saw to cut open the seal on the joint clamp (306); use a screwdriver to press it outward to both sides. Remove the joint clamp (306) from the joint collar (308) (see image below).

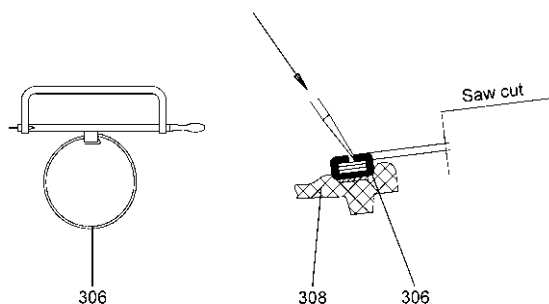


Fig. 4 Removing the joint clamp

4. Lift up the joint collar (308) with a screwdriver and remove it axially in the direction of the joint shaft (307).



Notice!

Use a collection container.

5. Drive the joint sleeve (304) over the collar of the universal joint shaft (307). Do not deflect the universal joint shaft (307) (see image below).

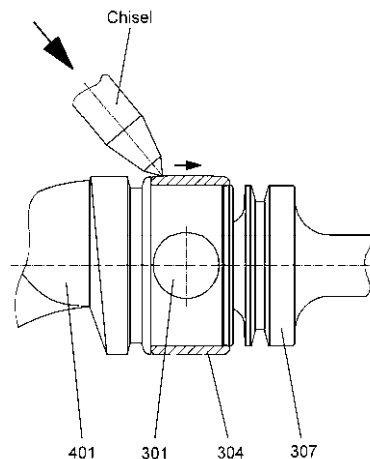


Fig. 5 Removing the joint sleeve

6. Knock out the joint bolt (301).
7. Use a brass pin punch to drive out half-way both bushes for the joint bolt (303). Deflect the universal joint shaft (307) to do this (see image below).

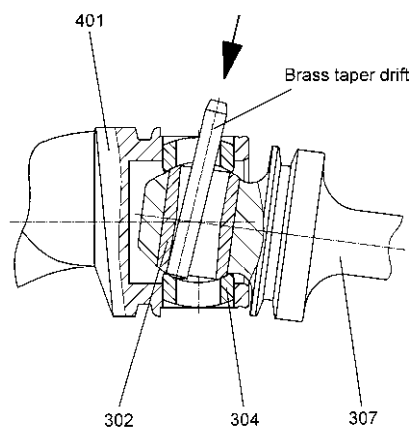


Fig. 6 Removing the bushes for joint bolt

8. Pull off the rotor (401) from the universal joint shaft (307).
9. Push out the joint bush (302) from the universal joint shaft (307). This step not performed for pump size 3, 6, 12, 25 and 50.
10. Use a brass punch to fully drive out the bush for the universal joint shaft (303) from the rotor (401).

10.1.4 Removing the universal joint shaft and the drive-side joint

Remove the universal joint shaft and the drive-side joint after removing the stator (402) and the rotor (401) → section 10.1.2 page 17 and 10.1.3 page 18.

1. Disassemble the drive-side joint as described under section 10.1.3.
2. Pull off the universal joint shaft (307) from the stub shaft (125).
3. Push out the joint bush (302) from the universal joint shaft (307).
4. Use a brass punch to fully drive out the bush for the universal joint shaft (303) from the stub shaft (125).

10.1.5 Removing the shaft seal and stub shaft

1. Remove stator (402) (→ Section 10.1.2 page 17).
2. Pull off suction casing (505) over the rotor (401).



Caution!

The rotor is manufactured to close tolerances. Make sure it is not damaged.

3. Remove the seal for the suction case (501).
4. Loosen the clamp bolts of the clamp set (123) evenly and **in order**.
5. If necessary, turn the stub shaft (125) and/or mechanical seal housing (214). If the outer ring of the clamp set does not loosen from the inner ring on its own, a few clamp bolts may be screwed against the mechanical seal casing. To do this, use the bracket (612) and suitable screws to tighten the mechanical seal casing with the gear box flange. Loosening will then go smoothly.



Warning!

Never fully remove the clamp bolts in order to avoid losing parts.

6. Pull the stub shaft (125) with all parts of the shaft seal and the clamp set (123) from the drive shaft.
7. Pull the clamp set (123) from the stub shaft (125).

10.1.6 Removing the mechanical seal, single-acting

1. Pull off from the stub shaft the mechanical seal casing (214) with the mechanical seal's (219) atmosphere-side counterering.



Notice!

To avoid damaging the counterering, be sure to pull off the casing with the mechanical seal's counterering concentrically and without canting.

2. Push out the mechanical seal's counterering and collar from the mechanical seal casing (214). Be sure to apply pressure evenly.
3. Pull off from the stub shaft (125) the rotating part of the mechanical seal (219).

10.2 Assembling the progressing cavity pump

To assemble the pump, carefully clean all parts and proceed in the reverse order.

10.2.1 Installing the shaft seal and stub shaft

10.2.1.1 Installing the mechanical seal, general

Mechanical seals are manufactured to highly precise tolerances. Always follow the manufacturer's installation instructions. Gentle handling and extreme cleanliness are required during installation to ensure flawless functionality. To facilitate installation, surfaces over which O-rings glide may be lubricated with silicon oil, polydiol, or lubricating soap, for example.



Caution!

Do not use petroleum-based or synthetic oil as a lubricant!



Notice!

Always replace in pairs those parts that glide over each other.

10.2.1.2 Installing the mechanical seal, single-acting

1. Concentrically press the mechanical seal's counterering (219) with collar into the clean mechanical seal casing (214).



Notice!

Be sure to apply pressure evenly.

2. Slide the rotating part of the mechanical seal (219) onto the stub shaft (125).
3. Slide the mechanical seal casing (214) with the mechanical seal counterering (219) over the stub shaft (125).



Notice!

To avoid damaging the mechanical seal counterering, make sure that the mechanical seal casing does not become canted when sliding it onto the stub shaft.

10.2.2 Installing the stub shaft with shaft seal

1. The clamp sets (123) are delivered ready for installation. Therefore, do not take them apart before initial tightening.
2. Removed clamp sets (123) must not be taken apart and re-lubricated before retightening.
3. The clamp set (123) must be cleaned and re-lubricated only if it becomes contaminated.
4. Use a solid lubricant with a frictional value of $\mu = 0.04$.

Lubricant	Commercial form/manufacturer
Molykote 321 R (sliding lacquer)	Spray/ Dow Corning
Molykote Spray (powder spray)	Spray/ Dow Corning
Molykote G Rapid	Spray or paste/ Dow Corning

Aemasol MO 19 R	Spray or paste/ A.C. Matthes
Molykomin UMFT 1	Spray/ Klüber Lubrication
Unimoly P 5	Powder/ Klüber Lubrication

Tab. 7 Lubricants

5. If the tapered surfaces are damaged, the clamp set must be replaced.
6. Grease the clamp bolt threads and connecting surface with Molykote; manually screw in the clamp bolts until their heads contact the inside ring of the clamp set.



Caution!

Do not tighten the clamp bolts (125) until the stub shaft has been slid onto the shaft of the drive. Avoid damage to the clamp set.



Caution!

Clean and **degrease** the shaft of the drive and hole of the stub shaft (125).

7. Lightly grease the seat of the clamp set (123) on the stub shaft (125) and slide the clamp set (123) onto the stub shaft (125) until it stops.
8. Slide the stub shaft (125) onto the shaft of the drive until it stops.
9. Tighten the clamp bolts of the clamp set (123) uniformly and in order. Turn the stub shaft (214) if necessary.



Caution!

Tighten all clamp bolts until the front surfaces of the outer and inner rings are flush and the tightening torque increases greatly (→ see functional condition in Figure 7). The permissible tightening torques in Nm are engraved in the clamp set (123).

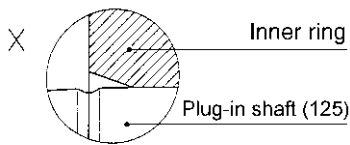
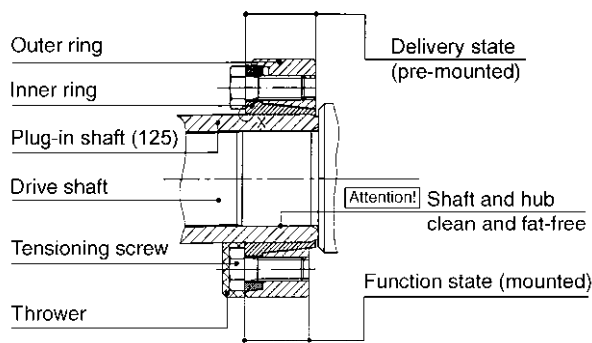


Fig. 7 Clamp sets in inner collar

10. Make sure the clamp set (123) is in the proper location on the stub shaft (125) as depicted in Figure 7, Detail X.

10.2.3 Installing the rotor and rotor-side joint

1. Use a brass punch to drive the bushes for the joint pin (303) halfway into the rotor (401).
2. Press the joint pin (302) into the joint shaft (307) as follows:



Caution!

The longitudinal axis of the oval hole (marked with two cuts) must align with the longitudinal axis of the joint shaft, and the joint bush must protrude uniformly from both sides of the joint shaft (see image below).

Joint bush (302) not present on pump size 3, 6, 12, 25 and 50.

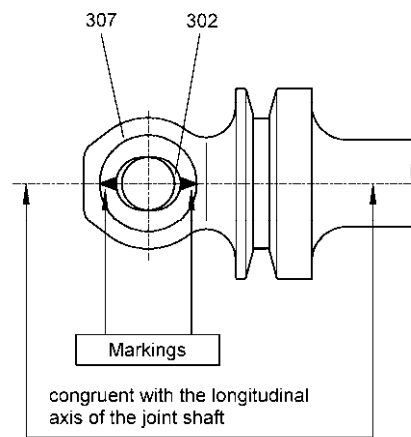


Fig. 8 Pressing in the joint bush

3. Slide joint clamps (306), joint collars (308), and joint sleeve (304) onto the joint shaft (307).
4. Slide the joint shaft (307) into the head of the rotor (401).
5. Slide the joint pin (301) into the joint bush (302) and fully drive in bushes for joint pin (303).
6. Where needed, grind the outer diameter of the joint sleeve (304) and pull onto the head of the rotor (401).
7. After pulling on the joint sleeve (304) secure it against axial shifting on the head of the rotor (401).



Caution!

To do this, drive the face side of the joint sleeve (304) with a prick punch into the groove on the head of the rotor (401) (see image below)!

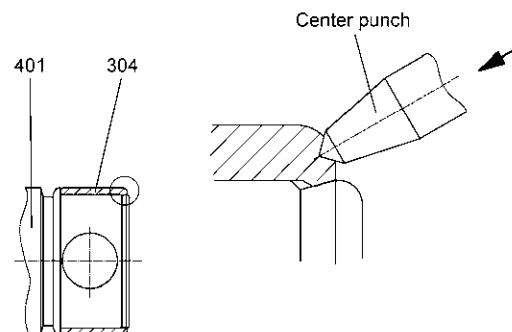


Fig. 9 Securing the joint sleeve

8. Use a screwdriver to pull up the joint collar (308), lift up on top with screwdriver, guide the oil bottle's thrower under the collar and fill the joint area with ALLWEILER special joint oil type BL or oil 1810/460 from Tribol Lubricants GmbH of Mönchengladbach, Germany. Filling volume see table section 9.1.2 page 16.
9. Check if the joint clamp's (306) bent strap is contacting the joint clamp seal. If it is not, apply pressure with a commercially available pliers (see next image).

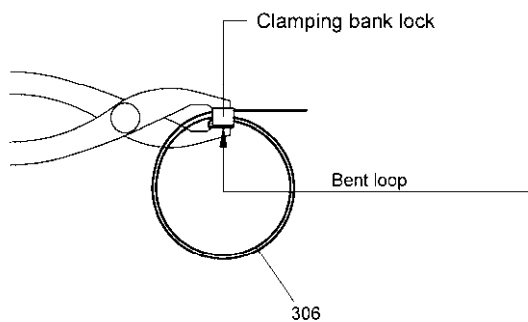


Fig. 10 Apply pressure to the joint clamp strap on the joint clamp seal.

10. Place the joint clamps (306) into the grooves around the joint collar (308) and tighten.



Notice!
Use the clamping tool below:

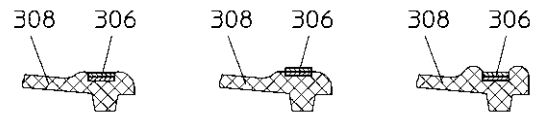
These tools can be obtained from us. Tightening the joint clamps is described in the next section.

10.2.3.1 Tightening with clamping tool PoK-It II

1. Insert the end of the joint clamp (306) into the tightening tool through its shearing and tightening cam (up to the collar seal).
2. Rotate the tightening lever to tighten the joint clamp (306).



Notice!
Figure 11 shows proper tightening of the joint clamps (306).



Correct

The joint clamp (306) has slightly drawn in the external shape of the collar and sits securely.

Incorrect

Joint clamp (306) is too loose and can slide off.

Incorrect

Joint clamp (306) too tight. Collar will be damaged (sheared off).

Fig. 11 Tightening the joint clamps

3. Make sure that the joint clamp (306) lies in the collar groove along the entire circumference of the joint collar (308).
4. After tightening, swivel the tool in order to cant the end of the joint clamp (306) at the collar seal in such a way that the clamp cannot slip back through the seal. After canting at the joint clamp seal, use metal shears to shear off the joint clamp; deburr the cut edges (→ see following image).

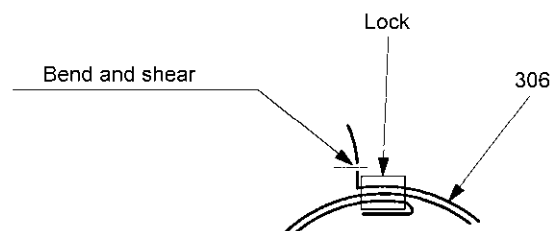


Fig. 12 Canting and shearing off the joint clamp



Caution!

Make sure the joint clamp is properly bent so that it cannot slide back through the joint clamp seal (→ image above). Otherwise, remove the joint clamp and replace it with a new one!

10.2.4 Installing the universal joint shaft and the drive-side joint

1. Mount the drive-side joint onto the stub shaft (125) as described under Section 10.2.3 page 21.
2. Slide the universal joint shaft into the stub shaft's (125) joint head.
3. Secure the joint sleeve (304) with prick punch as shown.
4. Pull on joint collar (308), fill joint area with joint oil, and fasten joint clamps as described.
5. Insert seal for the suction casing (501).
6. Slide suction casing (505) over the rotor (401) and onto the mechanical seal casing (214). The rotor is manufactured to close tolerances. Make sure it is not damaged.

**Notice!**

To aid in assembly, lubricate the suction casing surface that slides over the O-ring (501) with a lubricant such as silicon oil, polydiol, or lubricating soap.

**Caution!**

Do not use petroleum-based or synthetic oil as a lubricant.

10.3 Installing the stator

1. Coat the stator (402) and rotor (401) with lubricant (silicon oil, polydiol, lubricating soap, or similar) before mounting.

**Caution!**

Do not use petroleum-based or synthetic oil as a lubricant!

**Notice!**

If difficult to move, simultaneously turn stator (402) with a chain wrench. To do this, hold the rotor (401) stationary via the face-side hexagon on the rotor or via the drive motor's fan impeller.

2. Use the clamp bolts (611) and hexagon nuts (609) to screw into place the pressure casing (504), stator (402), suction casing (505), and mechanical seal casing (214). Tighten hexagon nuts uniformly.

**Notice!**

Align the suction casing's (505) connection flange before tightening the hexagon nuts (609).

11 Spare parts

The following sectional drawings show all referenced. Index of parts also included. The parts labeled in the index of parts can be used as spare/reserve parts.



Caution!

For safety reasons, stock and use only original spare parts provided by Allweiler. Refer to the information provided under Section 2.7 (→ page 5)!

When ordering spare or reserve parts, always provide the following information:

- Pump number,
- Pump model,
- Part number,
- Description and quantity of the part
- or ID number and quantity.



Notice!

The pump number and pump model are stamped onto the nameplate. Refer to the attached list of spare parts for the ID number and quantity.

11.1 Index of spare parts and recommended spare/reserve parts

Legend:

R = large repair kit

r = small repair kit

Part No.	Description	Repair kit	Quantity	Remarks
123	Clamp set		1	
125	Stub shaft	R	1	
214	Mechanical seal casing		1	
219	Mechanical seal	R	1	
301	Joint pin	R, r	2	
302	Joint bush	R, r	2	❶
303	Bush for joint pin	R, r	4	
304	Joint sleeve	R, r	2	
305	Joint oil	R, r		❷
306	Joint clamps	R, r	4	
307	Joint shaft	R, r	1	
308	Joint collar	R, r	2	
401	Rotor	R, r	1	
402	Stator	R, r	1	
501	Seal for suction casing	R	1	
504	Discharge casing		1	
504	Seal ring		1	❸
505	Suction casing		1	
505	Seal ring		1	❸
601	Nameplate		1	
602	Round head grooved pin		2	
603	Information plate "Start-up"		1	
609	Hexagon nut		8	

❶ not present on AEB2N 3, AEB2N 6, AEB2N 12, AEB.E 25, AEB.E 50

❷ see Section 9.1.2

❸ not present on DN 90 mash screw thread and VE construction type

Spare parts

 Index of spare parts and recommended
 spare/reserve parts

Part No.	Description	Repair kit	Quantity	Remarks
610	Washer		8	
611	Clamp bolt		4	
612	Bracket		1	④
612	Support foot		1	⑤ ⑦
612	Hand grip		1	⑤ ⑦
001	Circlip		4	⑤ ⑦
002	Wheel		2	⑤ ⑦
003	Hexagon nut		4	⑦
004	Hexagon head screw		4	⑦
005	Washer		8	⑦
006	Drive		1	
007	Transport equipment		1	⑤ ⑦
008	Leveling foot plate		1	⑥ ⑦

Tab. 8 Single part labeling

- ④ not present on AEB1E 50 and AEB1E 100 with DN 90 mash thread screw connection
- ⑤ not present on SE construction type
- ⑥ only when set up on adjustable feet
- ⑦ not present on VE construction type

11.2 Sectional drawings for ME construction type

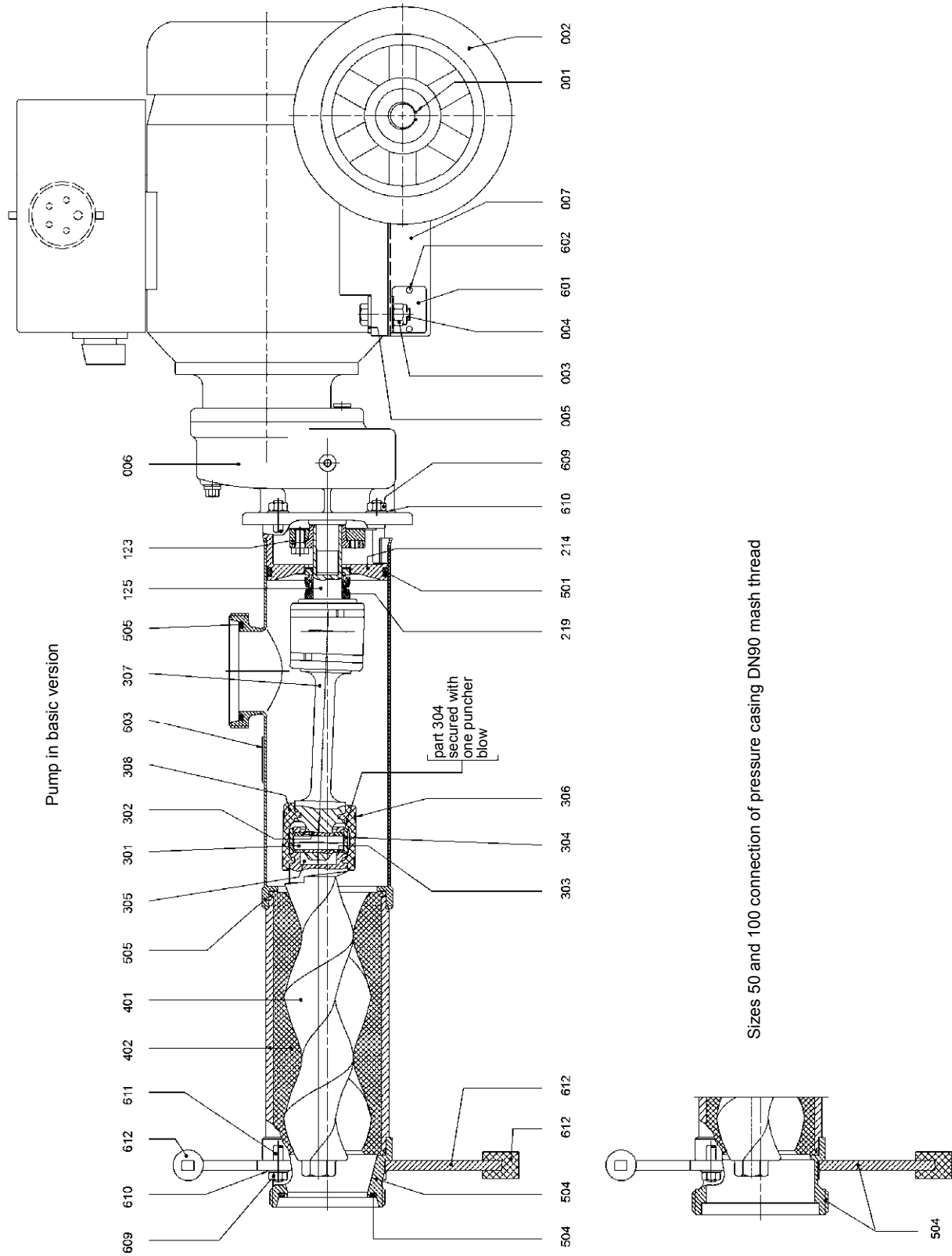


Fig. 13 Sectional drawings for ME construction type

11.3 Sectional drawing of SE construction type on leveling feet

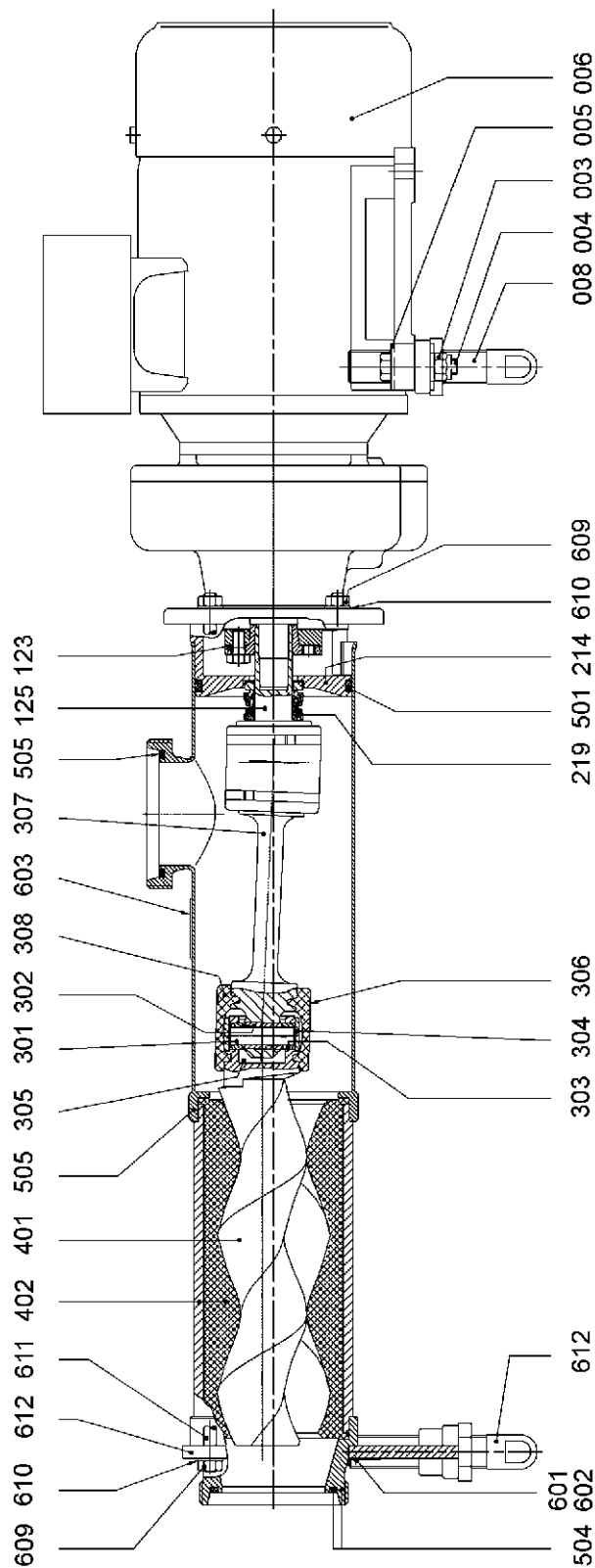


Fig. 14 Sectional drawing of SE construction type on leveling feet

11.4 Sectional drawings for SE construction type

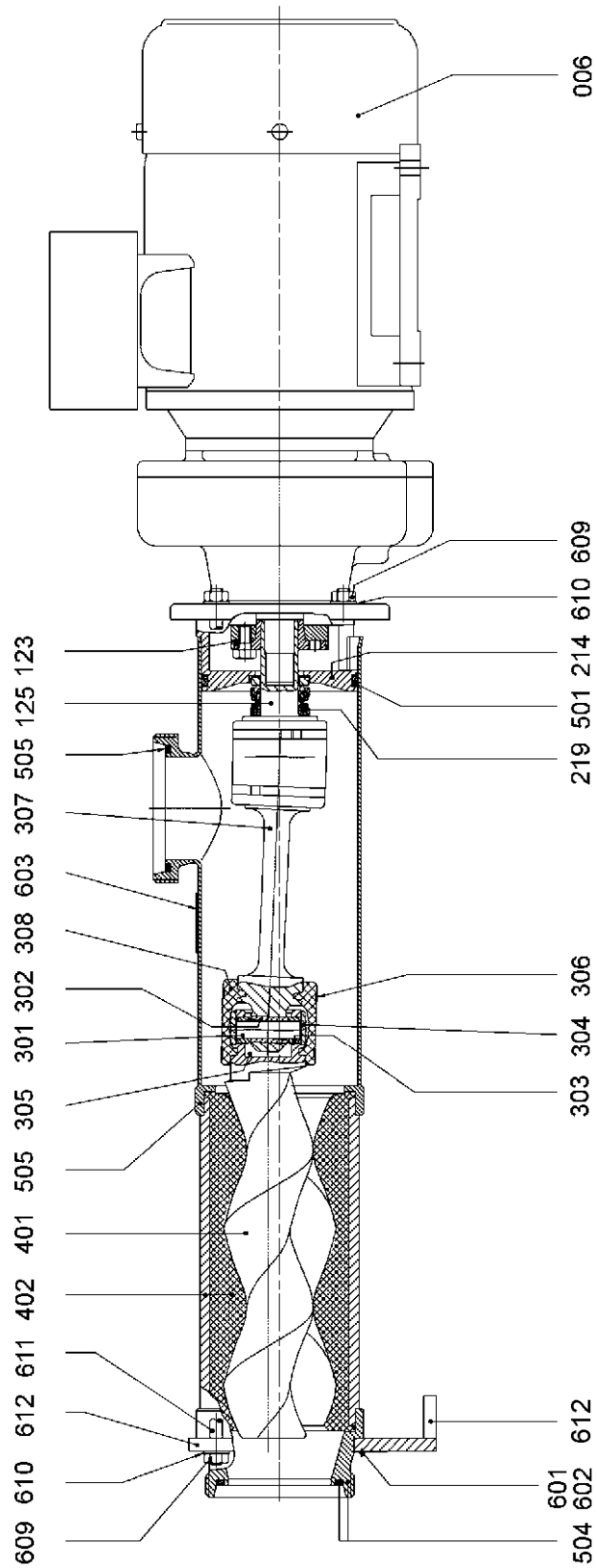


Fig. 15 Sectional drawings for SE construction type

11.5 Sectional drawings for VE construction type

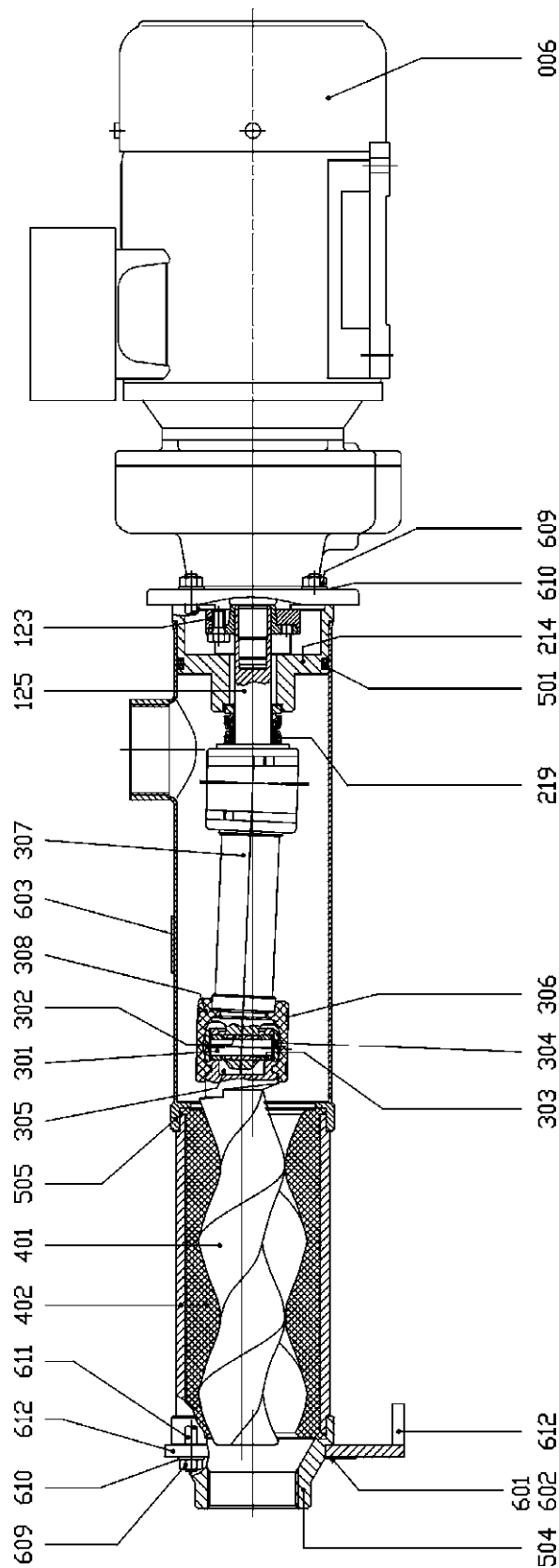


Fig. 16 Sectional drawings for VE construction type

12 Causes and removal of operational faults

Discuss with the manufacturer any disturbances not contained in the following table or that cannot be traced to the causes listed below.

Each possible disturbance is labeled with a letter in the table below. Reference this letter in the table of disturbances to find the corresponding cause and correctional measure.

→Refer to letter f in the following table to reduce noise and vibrations.

Letter	Disturbance
a:	Pump does not start
b:	Pump does not generate suction
c:	Capacity not reached
d:	Delivery head not reached
e:	Pumping is not uniform
f:	Pump is loud or vibrates
g:	Pump has seized or no longer pumps
h:	Motor gets too warm
i:	Stator wears out prematurely
k:	Shaft seal leaks

Tab. 9 Overview of potential disturbances

No	Operational disturbances										Causes and removal
	a	b	c	d	e	f	g	h	i	k	
1	●							●			High adhesion between rotor and stator in new condition after long period of downtime Use tool to manually turn pump.
2		●									Reference arrow on pump to check direction of rotation; reverse polarity of motor if necessary.
3		●	●		●	●	●				Check suction line and shaft seal for leaks.
4		●	●		●	●					Check suction head; enlarge cross-section of suction line if necessary. Install larger filter. Open suction valve completely.
5		●	●		●						Check viscosity of pumped liquid.
6	●		●					●			Check speed of rotation. Check speed and power consumption of drive motor. Check voltage and frequency.
7			●		●						Avoid air inclusions in pumped liquid.
8	●		●				●	●	●		Check delivery head. Fully open gate valve in pressure line, remove blockage in the pressure line.
9		●	●		●		●		●		Pump is running partially or completely dry. Make sure enough pumped liquid is present on the suction side.
10		●	●								Increase speed with low-viscous liquids and large suction volume.
11		●			●	●					Reduce speed with viscous liquids - danger of cavitation.
12						●					Check longitudinal tolerance of joint pins, joint bush may be improperly installed.
13	●	●	●				●		●		Check for foreign objects in the pump, disassemble pump, remove foreign objects, replace any defective parts.
14		●	●	●		●	●				Stator and rotor are worn. Disassemble pump, replace defective parts
15		●	●			●	●				Joint parts (f, g) and/or stub shaft (b, c) are worn. Disassemble pump, replace defective parts
16		●	●				●		●		Suction line partially or completely blocked.
17	●	●					●	●	●		Check temperature of pumped liquid. Stator expansion too large; stator stuck on rotor; stator may be burned or swollen.
18	●	●					●		●		Proportion of solids and/or grain size too large. Reduce speed. Install screen in front of pump with permissible mesh size.
19	●	●							●	●	Solids settle and harden when pump stops. Immediately flush pump; disassemble and clean if necessary.

Tab. 10 Troubleshooting disturbances

13 Clearance certificate

The pump and accessories submitted for inspection / repairs together with the safety certificate by us, the signatory,

Type: _____ Delivery date: _____

Part no.: _____ Order no.: _____

Reason for inspection / repair: _____

Was not used with liquids that are hazardous to health or the environment.


Used for the following application: _____
and came into contact with liquids that must be labeled for safety or are considered to be polluting.

Last pumped liquid: _____

The pump has been carefully emptied and cleaned on the outside and inside prior to delivery or provision.

Special safety precautions are not necessary for subsequent handling.

The following safety precautions regarding rinsing liquids, liquid residue and disposal are necessary:

 If the pump was used with critical liquids, please make sure you enclose a **safety data sheet** in the package.

We hereby declare that the information given is correct and complete, and that the pump is being shipped in accordance with legal requirements.

Company / address: _____ Phone: _____

_____ Fax: _____

Customer no.: _____

Issuer name: (capital letters) _____ Position: _____

Date: _____ **Company stamp / signature:** _____

Fig. 17 Clearance certificate

14 Declaration according to EC machinery directive

Declaration of conformity according to EC
machinery directive



Notice!

The following declaration contains
neither serial numbers nor
signatures. The original declaration
with the name of the documentation
officer and signatures is included
with each pump.



EG-Konformitätserklärung

EC Declaration of Conformity
Déclaration de conformité CE

gemäß / acc. to / d'après

Maschinenrichtlinie 2006/42/EG Anhang II A
Machinery Directive 2006/42/EC Annex II A
Directive 2006/42/CE Annexe II A

Hiermit erklären wir, / We hereby declare / Par la présente, nous déclarons

Allweiler AG, Postfach 200123, 46223 Bottrop, Tel. +49 (0)2045-966-60, Fax. +49 (0)2045 966-679

dass die Maschine / that the machine / que le machine

Ident Nr. / Ident no / N° d'ident :
Benennung / Designation / Désignation :
Equipment Nr. / Equipment no./ N° d'équipement :
Auftrag Nr. / Order no. / N° de commande :

übereinstimmt mit folgenden einschlägigen EG-Richtlinien:

corresponds to the following relevant EC directives:
répond à la directive communautaires s'y affèrent:

Maschinenrichtlinie (2006/42/EG) / Machinery Directive 2006/42/EC / Directive 2006/42/CE relative aux machines
Niederspannungsrichtlinie (2006/95/EG) / Low Voltage Directive (LVD) 2006/95/EG / Directive Basse Tension (DBT) 2006/95/EG
EMV-Richtlinie (2004/108/EG) / Electromagnetic Compatibility (EMC) Directive 2004/108/EG / directive sur la Compatibilité électromagnétique (CEM) 2004/108/CEE

Dokumentationsverantwortlicher, person authorised to compile the technical file, la personne autorisée à constituer le dossier technique

Angewandte harmonisierte Normen in der jeweils gültigen Ausgabe:

harmonized standards applied in the valid version:
norme harmonisée employée dans l'édition valable:

EN 809
EN ISO 12100-1
EN ISO 12100-2
EN ISO 14121-1

05.01.11

Datum

Date

Date

Geschäftsführer

general manager

gérant

Qualitätsleiter

Quality manager

conducteur de qualité

Dieses Dokument wurde maschinell erstellt und gilt als rechtsverbindlich.
This document has been created automatically and is legally binding
Le présent document a été établi à l'aide d'une machine et a force obligatoire

Fig. 18 EC Declaration of Conformity

Subject to technical changes!



ALLWEILER AG
P.O. Box 20 01 23 · 46223 Bottrop
Kirchhellener Ring 77-79 · 46244 Bottrop
Germany
Tel.: +49 (0)2045 966-60
Fax: +49 (0)2045 966-679
E-mail: service@allweiler.de
Internet: <http://www.allweiler.com>
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