

Macerator

Operating and maintenance instructions
with instructions for assembly and
disassembly

Series AM, ABM

Construction Types S, I

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

This is a translation of the original operating instruction.

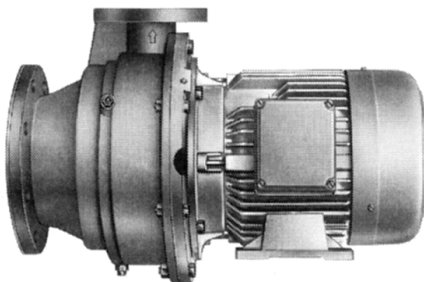
Refer to the order-specific section of the documentation for operational data, dimensions and other additional information.

Order No.:

Macerator ID No.:

Machine No.:

Macerator model:



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Subject to technical changes!

Important note:

These operating instructions are supplemented with order-specific information.



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

Specific notices about operating and maintaining the overall system in which the macerator 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 macerator is integrated have precedence over the macerator 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 macerator,
- 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

Macerator: "Macerator" refers to the macerator without coupling, drive, or any other components.

Macerator unit: "Macerator unit" refers to the macerator 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 macerators are subjected to leak and operating tests before leaving our factory. Only flawlessly operating macerators 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 macerator 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 macerators 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 macerator 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)

- Observe the macerator's operational limits regarding temperature, pressure, throughput volume, viscosity, and the proportion of solids (→ order data sheet).
- If using auxiliary operating systems, ensure a permanent supply of the required operating liquid.

2.4 General safety notices

2.4.1 Product safety

The macerator 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 macerator or other property remain possible.

- Operate the macerator 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 macerator, stop the macerator 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 macerator 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 macerator is operated

- ▶ Provide access to personal protective equipment.

2.4.3 Personnel responsibilities

- ▶ Observe notices on the macerator and keep them in readable condition, i.e. liquid connection labels.
- ▶ Do not remove safety guarding for hot, cold, and moving parts during operation.
- ▶ Use personal protective equipment whenever necessary.
- ▶ Perform work on the macerator only when the macerator 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 macerator, always properly reinstall the safety equipment.
- ▶ Never step on the macerator 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 macerator. 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 macerator 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.

Macerators or systems that move hazardous liquids must be decontaminated.

The points listed under the section "Initial startup" (→ page 14) 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 macerator is used and handled properly, there are no residual risks.

3 Danger points

3.1 Hazards when working with the system

The macerator 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 macerator 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 macerator, 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 macerator 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 macerators 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 macerator or macerator 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 macerator.

4 Design and function

4.1 Application and area of usage

Macerators are wet choppers for breaking up, homogenizing, and dispersing free-flowing liquid/solid preparations.

4.2 Labeling

4.2.1 Nameplate

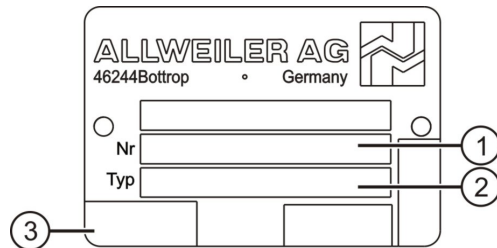


Fig. 1 Nameplate (example)

1 Macerator number

2 Macerator model

3 CE Mark, Year of Manufacture

4.2.2 ATEX nameplate

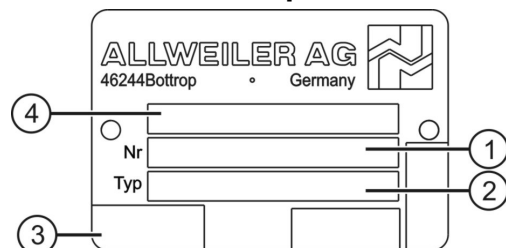


Fig. 2 ATEX nameplate

1 Macerator number

2 Macerator model

3 CE Mark, Year of Manufacture

4 Explosion Protection Designation



Danger!

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

4.2.3 Macerator model label

The model code for macerators has several components, as shown in this example:

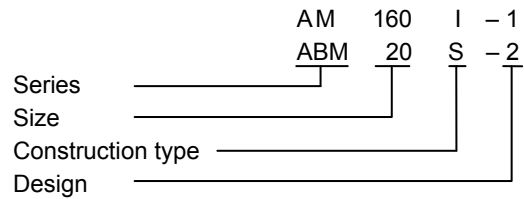


Fig. 3 Model code

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 macerator.

4.4 Design

4.4.1 Structural design

Wet choppers for breaking up, homogenizing, and dispersing free-flowing liquid/solid preparations. The chopping elements are the rotating impeller and the stationary cutting ring. Drive torque is transferred over the shaft to the impeller.

4.4.2 Bearing and lubrication

The shaft bearing of series AM takes the form of grease-lubricated cylindrical roller bearings and groove ball bearings in the bearing housing; the ABM series utilizes reinforced drive bearings.

The bearings are splash proof.

4.4.3 Shaft seal

The macerator's shaft is 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 macerator and macerator 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 macerator.

The macerator's noise level L_p (A) is below 70 dB (A).

4.4.6 Non-ionizing radiation

No non-ionizing radiation, such as from magnetic fields, is emitted from the macerator.

4.4.7 Operation

The rotating impeller captures solids suspended in the liquid and accelerates the solids against the cutting ring. The solids are uniformly reduced in size between the impeller's milling cutters and the edges of the cutting ring. Narrow slots in the impeller and the gap between the cutting tools allow the chopped solids to enter the macerator casing's holding area together with the carrying liquid; from here macerators of the S construction type independently move the mixture further; macerators of the I construction type require a downstream pump.

4.5 Macerator unit design

4.5.1 Drive

Driven by electric motors with or without explosion protection.

4.5.2 Shaft coupling and safety guarding

Shaft coupling according to DIN 740.

A safety guard according to DIN EN 809 is attached whenever macerators of the AM series are delivered together with the shaft coupling and drive.



Warning!

Danger of being caught, wound, drawn in and trapped.

In accordance with accident-prevention regulations, the macerator may be operated only with safety guarding according to DIN EN 809!

- ▶ If safety guarding is not included, the operator must install safety guarding.

5 Transport, storage, and disposal

5.1 Packaging

Observe the graphical symbols on the packaging.

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

- ▶ Remove the plugs when installing the macerator unit.

5.2 Transportation

The macerator or macerator 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.

If transporting the macerators with a crane, attach the lifting ropes securely to the lifting lugs on the bearing housing and/or place them around the motor.

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

Make sure that the macerator 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 macerator, inspect it for transport damages. Immediately report any damages!

5.3 Preserving macerators and placing them into storage

5.3.1 Preserving



Notice!

Not necessary with stainless materials.



Caution!

Improper preservation can result in property damages!

- ▶ Properly apply a preservative inside and outside.
- Select a preservative according to the type and duration of storage (→ Preservatives, page 10).
- Use preservatives according to manufacturer specifications.
- Preserve all exposed metal parts inside and outside.



Caution!

Improper preservatives will damage the seal.

- ▶ Ensure that the seals are preserved with silicone oil only.

5.3.2 Storage



Caution!

Improper storage can result in property damages!

- ▶ Properly preserve and store the macerator.
- 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 and bearing move as well.

5.3.3 Removing preservative



Notice!

Necessary only for preserved macerator.



Warning!

Danger of food or water poisoning by preservatives and cleaning agents.

- ▶ Use only cleaning agents that are compatible with the liquid (→ Cleaning agents, page 10).
- ▶ Completely remove the preservatives



Caution!

High water pressure or spray water may damage the bearing!

- ▶ Do not clean the bearing areas with spray water or steam jets.



Caution!

Use of improper cleaning agents will damage the seal!

- ▶ Make sure that the cleaning agent does not attack the seals.

- Internal preservatives can be removed by rinsing the macerator with the liquid. But, if contamination in the liquid is impermissible, the macerator must be disassembled and the metal parts cleaned with an approved cleaning agent.
- Choose cleaning agents appropriate for the area of usage (→ Cleaning agents, page 10).
- Dispose of preservatives according to local regulations.
- If storage time is greater than 12 months:
 - Inspect all elastomers (round seal rings, shaft seals) for shape elasticity and replace if necessary.
 - Replace elastomers made of EP rubber (EPDM).

5.3.4 Preservatives



Notice!

Preservatives from Valvoline or comparable are recommended.

| Type of storage | Storage time (months) | Internal preservative | Replacement (months) internal | External preservative | Replacement (months) external |
|---|-----------------------|-----------------------|-------------------------------|-----------------------|-------------------------------|
| In a closed, dry, and dust-free area. | 6-12 | Tectyl 502-C-EH | - | Tectyl 846-K-19 | - |
| | >12 | Tectyl 502-C-EH | 24 | Tectyl 846-K-19 | 36 |
| Outdoors, central European climate | 6-12 | Tectyl 502-C-EH | 3 | Tectyl 846-K-19 | - |
| | >12 | Tectyl 502-C-EH | 3 | Tectyl 846-K-19 | 12 |
| Outdoors, tropical climate, aggressive industrial air, or near the ocean. | 6-12 | Tectyl 502-C-EH | 3 | Tectyl 846-K-19 | - |
| | >12 | Tectyl 502-C-EH | 3 | Tectyl 846-K-19 | 12 |

Tab. 5 Valvoline preservatives

- 1) Reference to "Internal preservation" point from Table 5, page 10.



Caution!

Improper preservatives will damage the seal.

- ▶ Ensure that the seals are preserved with silicone oil only.

5.3.5 Cleaning agent

| Operational range | Cleaning agent |
|-------------------------|---|
| Food and drinking water | Such as spirits, Ritzol 155, highly alkaline soap base, steam jets (for individual parts only). |
| Miscellaneous | Cleaning ether, cleaning solvent, diesel fuel, petroleum, alkaline cleaner |

Tab. 6 Cleaning agents

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!

- ▶ Use personal protective clothing when performing any work on the macerator.
- ▶ Before disposing of the macerator:
Capture escaping liquid.
Dispose of them separately according to local regulations.
- ▶ Neutralize residual liquid in the macerator.
- ▶ Remove preservative → 5.3 Preserving macerators and placing them into storage page 9.
- ▶ Remove plastic parts and elastomers and dispose of them according to local regulations.

Dispose of macerator according to local regulations.

6 Installation and connection

6.1 Setting up the macerator

Macerators can be installed horizontally or vertically, with the bearing pointing upward.



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.

6.2 Foundation

The type of foundation depends on the size of the macerator and macerator unit and conditions at the site of installation.

Refer to our dimension sheets and unit drawings for precise macerator and unit dimensions.

The foundation may take the form of a concrete foundation or a weight-bearing frame constructed of steel, for example.

Regardless of foundation type, the foundation must be designed so that it can absorb the weight of the macerator unit along the entire surface area.

Fasten the macerator to the foundation without residual tension.

6.3 Assembling macerator and drive

If the macerator unit will be put together at the place of installation, establish the coupling connection as follows:

1. Apply a very thin layer of molybdenum disulfide (such as Molykote) to the ends of the macerator and drive shaft; insert keys.

2. Use a hoisting device to hoist the macerator and motor sides of the coupling until the shaft end overlaps the coupling hub. If a hoisting device is not available, warming the halves of the coupling to approx. 100 °C will make it easier to slide the coupling halves.



Notice!

Be sure to remove the rubber cushions first.

3. Use a threaded pin according to DIN EN ISO 4029 to fasten the coupling halves in the axial direction.



Caution!

When putting together the macerator and motor, make sure that the coupling halves are precisely aligned and that the distance between the coupling halves is maintained (distance 2 – 8 mm, refer to Unit drawings and coupling manufacturer's specifications).



Warning!

Danger of being caught, wound, drawn in and trapped.

Install safety guarding according to DIN EN 809!

6.3.1 Space requirement for maintenance and repair



Caution!

The macerator 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 cutting tools. Removal dimensions are specified in the macerator dimension sheet. Also make sure that all pipes can be installed and removed without hindrance. Laying the pipes

6.4 Laying the pipes

6.4.1 Nominal widths

The nominal widths of the suction and drain lines should match the nominal widths of the macerator branches. Major deviations must be discussed with the factory.

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

6.4.2 Supports and flange connections

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

6.4.3 Cleaning the pipes before installation

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

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, large stones, or pieces of metal will destroy the pump's cutting tools.

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.

6.4.4 Laying auxiliary piping for additional equipment

Attach the auxiliary piping for supplying the mechanical seal so it is free of tension and leaks.

6.5 Safety and inspection equipment

6.5.1 Protecting the cutting tools

A suitable collection container should be installed on the feed side of the macerator in order to protect the cutting tools from metal parts and stones.

We recommend our proven collection systems for stones and metal parts.

6.5.2 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 Switching on additional equipment for shaft seals

Before starting the macerator for the first time, existing stop valves must be opened and set to the downstream pressure.



Notice!

Supplying the mechanical seal with flushing water

To maintain functionality, the mechanical seal requires a flushing liquid that carries off frictional heat and limits the amount of pumped liquid that can enter the seal chamber.

The pressure of the flushing liquid must be within the range of 0.5 and 2.0 bar above the macerator casing's internal pressure.

Minimum flow rate of flushing water is 1.5 L per minute.

The mechanical seal must be charged with flushing water for 30 seconds before switching on the macerator and for 30 seconds after switching it off. Never allow interruption of the cleaning water during operation. We recommend use of our macerator control unit and buffer-water supply unit.

7.1.2 Quality and properties of the flushing liquids

Any liquid can be used as flushing liquid that does not violate the corrosion resistance of any contacted parts and that is compatible with the liquid being sealed.



Caution!

The liquid must be free of solids, it may not tend to form deposits, should have the lowest boiling point possible, have a good ability to conduct heat, and have low viscosity.

Clean, medium-hardness water fulfills these requirements.

7.1.3 Checking the direction of rotation

The macerator turns to the left or right.



Notice!

Changing the direction of rotation each time the motor is switched on will significantly extend the service life of the cutting tools. We recommend our macerator control unit for this purpose.

7.2 Bringing the macerator 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.**



Caution!

A pump installed before or after the macerator may be operated only while the macerator is switched on.

7.3 Taking the macerator out of operation

7.3.1 Stoppage

- Switch the motor off.



Caution!

A pump installed before or after the macerator may be operated only while the macerator is switched on.

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 macerator must be emptied.

- The macerator must then be treated with preservatives (→ Section 5.3 Page 9).

7.4 Special applications of the macerator

If using the macerator in the food, cosmetics, or pharmaceutical industries, use special cleaning, disinfection, and flushing agents as well as corresponding 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 macerator or macerator 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:

Impeller + cutting ring: Wear of the impeller and/or cutting ring can be detected through lower chopping quality. Maintenance can be planned when this is noticed, i.e. it is not necessary to immediately replace the impeller and/or cutting ring.

For detailed information about maintenance procedures and intervals for other components, please refer to section 9, page 17 and section 10, page 18.

9 Preventive Maintenance

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



Caution!

Use protective equipment whenever necessary.

9.1 General monitoring

- Do not overload the drive motor.
- Check suction and drain 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.
- Observe any additional equipment that may be present, such as the unit supplying buffer water to the shaft seal.
- If present, occasionally empty stones and metal parts from the separator, as required by local conditions.

9.2 Drive shaft bearing and bearing lubrication on AM series

The drive shaft bearings in the bearing housing are regreasable cylindrical roller and groove ball bearings

Grease for antifriction bearings

We recommend using the antifriction bearing grease listed below or grease of equal quality for lubrication of the antifriction bearing. The order of the listing does not indicate a quality ranking.

| Manu- facturer | Brand | Designation according to DIN 51825 |
|-------------------|---------------------|--|
| Agip | Agip GR MU3 | K3K-20 |
| ARAL | Aralub HL3 | K3K-20 |
| BP | BP Energ grease LS3 | K3K-20 |
| ESSO | BEACON 3 | K3N-30 |
| Fuchs | RENOLIT FWA 220 | K3N-20 |

| | | |
|-----------|-------------------------|--------|
| Klüber | MICROLUBE GL 263 | K3N-20 |
| Mobil-Oil | Mobilux 3 | K3K-20 |
| Shell | Shell Alvania grease R3 | K3N-30 |
| SKF | SKF grease LGMT3 | K3K-30 |

Tab. 7 Overview of antifriction bearing grease

If none of the antifriction bearing greases listed above are available, we recommend using a multi-purpose lithium-based grease that complies with the DIN designations above.

Mixing different types of grease with differing base oils and thickening agents will lower the lubrication properties and must therefore be avoided.

| Bearing | Grease volume in grams |
|----------------|------------------------|
| AM 10, AM 20 | 400g |
| AM 40, AM 80 | 750g |
| AM 120, AM 160 | 1600g |

Tab. 8 Overview grease volume in grams per bearing

Relubrication time

The bearing must be relubricated every 3000 operating hours.

Relubrication

Relubrication is performed via the lubrication nipple (119) screwed into bearing housing (105). Add grease until the used grease escapes at the grease regulator (101). Wipe away the used grease (→ sectional drawings on pages 26, 30 and 31).

9.3 Drive motors

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 26, 30 and 31.

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 macerator is completely empty and clean. Make sure that any macerators 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 macerators sent for repair that are filled with liquid.

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

If macerators 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 macerator is sent back to our factory or a contracted service center, our technicians before sending the macerator. 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 macerator

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 suction and drain lines must be closed.

✓ Be certain that the macerator is pressureless.



Gefahr!

Danger of cuts or amputation. When the hand-hole cover (509) is removed for cleaning purposes, the cutting tools will be easily accessible.

- Prevent the motor from switching on unexpectedly.

3. Remove suction and drain lines as well as all secondary piping.
4. Loosen and remove screws between the foundation and macerator.

10.1.1.1 Removing the impeller, replacing milling cutters

1. Remove screwed connections (601 ...604) and (613).
2. Lift off from the macerator housing (502) the bearing housing (105) with coupling housing (305) and motor on series AM; on series ABM remove the motor with sealing cover (210).
3. Uncrimp the locking plate (402) and screw off the shaft nut (401). Fix the shaft over the impeller (403) while doing this.
4. Take off the locking plate (402).
5. Use a pulling device to pull the impeller (403) from the shaft.
6. The four milling cutters soldered into the impeller can be turned around or replaced when worn. To do this, the section of the impeller in which the milling cutters are soldered must be heated to about 600 °C.

After removing the milling cutters, clean the guide slots (remove remaining solder). You can then solder the reversed or new milling cutters back into their original locations.

Solder: Castolin 1802 or similar
Flux: 1802 F or similar

- After soldering into place, grind the milling cutters to the outer diameter of the impeller.

10.1.1.2 Removing the cutting ring

Remove the cutting ring after removing the impeller (403) (→ see Section 10.1.1.2, page 19).

1. Remove hexagon nut (405) and hexagon screw (404).
2. Remove machine screw (406), spring ring (407), and thrust ring (408).
3. Remove upper cutting ring bearing (410) and pull cutting ring (409) from the macerator housing (502).
4. Take off lower cutting ring bearing (410).

10.1.1.3 Removing the mechanical seal

AM series

1. Take off key (118).
2. Pull spacer ring (201) from the shaft (113).
3. Remove machine screw (202) and spring ring (203).
4. Press the mechanical seal housing (204) with the mechanical seal (208) from the shaft (113). When doing this, use the two threaded holes in the mechanical seal housing (204) and M8x50 screws to exert pressure.



Notice!

Do not cant the mechanical seal housing (204).

5. Remove machine screw (205), spring ring (206), mechanical seal housing cover (207), and O-ring (209).
6. Remove mechanical seal (208).

ABM series

1. Take off key (118).
2. Remove screwed connections (301...303).
3. Pull off sealing cover (210) with spacer ring (201) and mechanical seal (208) from the end of the motor's shaft.



Notice!

Do not cant sealing cover (210).

4. Remove spacer ring (201) and mechanical seal (208) from the sealing cover (210).

10.1.1.4 Removing the motor from series ABM

Remove the motor after removing the mechanical seal (208) (→ see Section 10.1.1.3, page 19).

- Pull thrower (106) from the motor shaft.

10.1.1.5 Removing the shaft and bearing from the AM series

Remove the shaft (113) after removing the impeller (403) (→ see Section 10.1.1.1, page 18) and the mechanical seal (→ see Section 10.1.1.3, page 19).

1. Remove screwed connection (605...607) and lift off coupling housing (305) with motor.
2. Pull off coupling halves (307) and remove the key (117).
3. Screw out the grease regulator (101).
4. Pull off the thrower (106).
5. Remove hexagon screw (102) and serrated washer (103).
6. Pull off bearing cover (104) together with the shaft seal ring (116).
7. Press shaft (113) from bearing housing (105).
8. Remove grease (107) and circlip (108).
9. Pull cylindrical roller bearing (111), supporting washer (109), spacer rings (110), and groove ball bearing (112) from the shaft (113).
10. Remove spacer ring (114) from bearing housing (105).
11. Use a suitable tool (pin punch) to drive the outer ring of the cylindrical roller bearing (111) from the bearing housing (105).
12. Remove supporting washer (115).
13. Press shaft seal ring (116) from bearing housing (105) and bearing cover (104).

10.1.2 Assembling the macerator

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

10.1.2.1 Installing the shaft and bearing on the AM series

1. Fill the space of the shaft seal ring (116) with antifriction bearing grease and coat sealing lips.
2. Press the shaft seal ring (116) into the clean seat of the bearing housing (105) or bearing cover (104).



Notice!

The sealing lip with the shaft seal ring's hose spring must always face the side being sealed (pointing inward).

Use a suitable pressing die to press it inward.

It is extremely important that the pressing force be applied as close to the outer diameter of the shaft seal ring as possible.

3. Insert supporting washer (115) into the bearing housing (105).
4. If necessary, use diesel fuel to carefully clean the antifriction bearings. If the running surfaces are smooth and undamaged, the antifriction bearings (111) and (112) can be reused. Otherwise, the antifriction bearing must be replaced.
5. Fill antifriction bearings (111) and (112) with antifriction bearing grease. Apply grease filling as described below.
 - Fill the empty spaces between the rolling elements 30% to 50 % with grease.
 - Wipe off excess grease (ideally use fingers, never use a metallic object). Use our recommended antifriction bearing grease (→ see Section 9.2, page 17).
6. Use a suitable length of pipe to press the outer ring of the cylindrical roller bearing (111) into the bearing housing (105).

► First apply a thin coating of oil to the surface of the bearing seat.

7. Coat the inner surface of the spacer ring (114) with approximately 20 mm of antifriction bearing grease and install into the bearing housing (105).



Caution!

Insert the spacer ring (114) so that the grease regulator (101) engages in the hole of the spacer ring (114).

If the spacer ring is improperly installed, the bearing may be damaged.

8. Screw in the grease regulator (101).
9. Use a suitable length of pipe to press the inner ring of the drive-side cylindrical roller bearing (111) and the greased groove ball bearing (112) onto the shaft (113).
 - First apply a thin coating of oil to the shaft.
10. Install the groove ball bearing's (112) guard disc so it points towards the impeller. Pull on the spacer ring (110), supporting washer (109), and circlip (108).
11. Use a suitable length of pipe to press the inner ring of the impeller-side cylindrical roller bearing (111) onto the shaft (113). Pull on the circlip (108).
12. Use a suitable length of pipe to press the shaft (113) over the outer ring of the cylindrical roller bearing (111) and into the bearing housing (105).
 - First apply a thin coating of oil to the surface of the bearing seat.
13. Pull on the bearing cover (104) and screw into place with the serrated washer (103) and hexagon screw (102).
14. Insert key (117) into the shaft (113) and secure on the face side with two center punches.
15. Use a hoisting device to hoist the macerator- and motor-sides of the coupling until the shaft end overlaps the coupling hub. If a hoisting device is not available, warming the halves of the coupling to approx. 100 °C (without rubber cushions) will make it easier to slide the coupling halves.

16. Use the threaded connector (306) to secure the halves of the coupling in the axial direction.
17. Set down the coupling housing (305) and motor and secure with screwed connections (605...607) and (301...303).
18. Slide the thrower (106) against the shaft collar.

10.1.2.2 Installing the mechanical seal

General information

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!

Use normal or low-surface-tension water (with rinsing additive) to pull the mechanical seals with elastomer bellows onto the shaft. Fully coat the gasket seat and shaft.



Caution!

Do not use oil or grease. Insert the static sealing element (bearing ring) only with water or alcohol.



Notice!

Parts that glide over each other must always be replaced in pairs. Never apply lubricant to sliding surfaces; instead, install them in a completely dry, dust-free, and clean condition.

For the positions of referenced parts → sectional drawings on pages 26, 30 and 31.

ABM series

1. Concentrically press the mechanical seal's counterring (208) with O-ring into the clean seal cover (210).



Notice!

Be sure to apply pressure evenly.

2. Slide the thrower (106) onto the motor shaft.
3. Slide the sealing cover (210) over the motor shaft. Do not cant the sealing cover.
4. Use screwed connections (301...303) to fasten seal cover (210) to the motor.
5. Using the spacer ring (201) as an aid, press rotating part of mechanical seal (208) onto the motor shaft.

AM series

1. Insert the mechanical seal's counterring (208) with O-ring into the clean mechanical seal housing (204).
2. Use the spring ring (206) and machine screw (205) to screw the mechanical seal housing cover (207) to the mechanical seal housing (204).
3. Pull on O-ring (209).
4. Press the mechanical seal housing (204) into the bearing housing (105).



Caution!

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

5. Use machine screw (202) and spring ring (203) to fasten the mechanical seal housing to the bearing housing (105).
6. Using the spacer ring (201) as an aid, press rotating part of mechanical seal (208) into the mechanical seal housing.

10.1.2.3 Installing the cutting ring

1. Pull the cutting ring bearing (410) onto the cutting ring (409) and press them together into the clean seat of the macerator housing (502).
2. The macerator housing seat can be lubricated with silicone oil, polydiol, or lubricating soap, for example, to facilitate installation.


Caution!

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

3. Tighten the thrust ring (408) onto the macerator housing (502) with the spring ring (407) and machine screw (406).
4. Tighten the hexagon screws (404) uniformly, observing the centric position of the cutting ring; counter with hexagon nut (405).

10.1.2.4 Installing the impeller

1. Insert key (118).
2. Press impeller onto the shaft.
 - First apply a thin coating of oil to the shaft.


Caution!

Turn the spacer ring (201) so that the pins protrude into the holes on the impeller; otherwise, the mechanical seal will be damaged.

3. Put locking plate (402) into position and tighten impeller with shaft nut (401).


Caution!

Expelled rotating parts can cause property damage.

Crimp the locking plate (402) to secure the shaft nut (401) against loosening.

4. Place O-ring (501) into position.

5. Place bearing housing (501) or sealing cover (210) onto the macerator housing (502) with all installed parts.


Caution!

Improper installation will cause damage to the cutting tools. When putting into position, make sure that the impeller (403) is guided concentrically into the cutting ring (409).

6. Use screwed connections (601...604) to secure bearing housing (105) or sealing cover (210) onto the macerator housing (502).

10.1.2.5 Inspecting the gap between the impeller and cutting ring


Caution!

Cutting tools can be damaged during starting.

After assembly and before starting the macerator, make sure that the impeller (403) does not run up against the cutting ring (409).

- Perform inspection by manually turning the impeller 360° at the break-out ring on the coupling half (307); on series ABM, turn the impeller at the motor fan. To do this, remove the motor's fan cover.

- If necessary, use the hexagon screws (404) to adjust the gap between the impeller and cutting ring.

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.

Recommended spare/reserve parts:

R = large repair kit

r = small repair kit



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:

- Machine number
- Abbreviated name of macerator
- Part number(s)
- Name and quantity of parts or ID number and quantity



Notice!

The machine number and the abbreviated name of the macerator are stamped onto the nameplate. Refer to the attached list of spare parts for the ID number and quantity.

11.1 Series ABM

11.1.1 Index of spare parts and recommended spare/reserve parts

Legend:

R = large repair kit

r = small repair kit

| Part No. | Description | Repair kit | Qty. for type S | Qty. for type I | Remarks |
|----------|------------------------------------|------------|-----------------|-----------------|---------|
| 106 | Thrower | | 1 | 1 | |
| 118 | Key | | 1 | 1 | |
| 201 | Spacer ring with grooved dowel pin | R | 1 | 1 | |
| 208 | Mechanical seal | R | 1 | 1 | |
| 210 | Sealing cover | | 1 | 1 | |
| 301 | Hexagon nut | | 4 | 4 | |
| 302 | Serrated lock washer | | 4 | 4 | |
| 303 | Stud bolt | | 4 | 4 | |
| 312 | Loctite | | | | |
| 401 | Shaft nut | | 1 | 1 | |
| 402 | Locking plate | R, r | 1 | 1 | |
| 403 | Impeller, complete | R, r | 1 | 1 | ❶ |
| 404 | Hexagon head screw | | 3 | 4 | |
| 405 | Hexagon nut | | 3 | 4 | |
| 406 | Machine screw | R, r | 8 | 8 | ❷ |
| 407 | Spring ring | R, r | 8 | 8 | ❷ |
| 408 | Thrust ring | | 1 | 1 | |
| 409 | Cutting ring | R, r | 1 | 1 | |
| 410 | Cutting ring bearing | R, r | 2 | 2 | |
| 501 | O-ring | R, r | 1 | 1 | |
| 502 | Macerator housing | | 1 | 1 | |
| 503 | Hexagon nut | | - | 8 | |
| 504 | Serrated lock washer | | - | 8 | |
| 505 | Hexagon head screw | | - | 8 | |
| 506 | Baseplate | | - | 1 | |
| 507 | O-ring | | - | 1 | |
| 508 | Hexagon nut | | - | 8 | |
| 509 | Hand-hole cover | | - | 2 | |
| 510 | Hand-hole seal | | - | 2 | |

❶ Consisting of:

Impeller with four soldered milling cutters that can be reversed when worn.
(→ See also Section 10.1.1.1 page 18).

❷ 12 pieces on sizes 40 and 60

| Part No. | Description | Repair kit | Qty. for type S | Qty. for type I | Remarks |
|----------|----------------------|------------|-----------------|-----------------|---------|
| 511 | Stud bolt | | - | 8 | |
| 512 | Screw plug | | - | 2 | |
| 513 | Seal ring | | - | 2 | |
| 601 | Hexagon nut | | 8 | 8 | |
| 602 | Serrated lock washer | | 8 | 8 | |
| 603 | Hexagon head screw | | 6 | 6 | |
| 604 | Stud bolt | | 2 | 2 | |
| 613 | Washer | | 8 | 8 | |

Tab. 9 Single part labeling series ABM

11.1.2 Section drawings

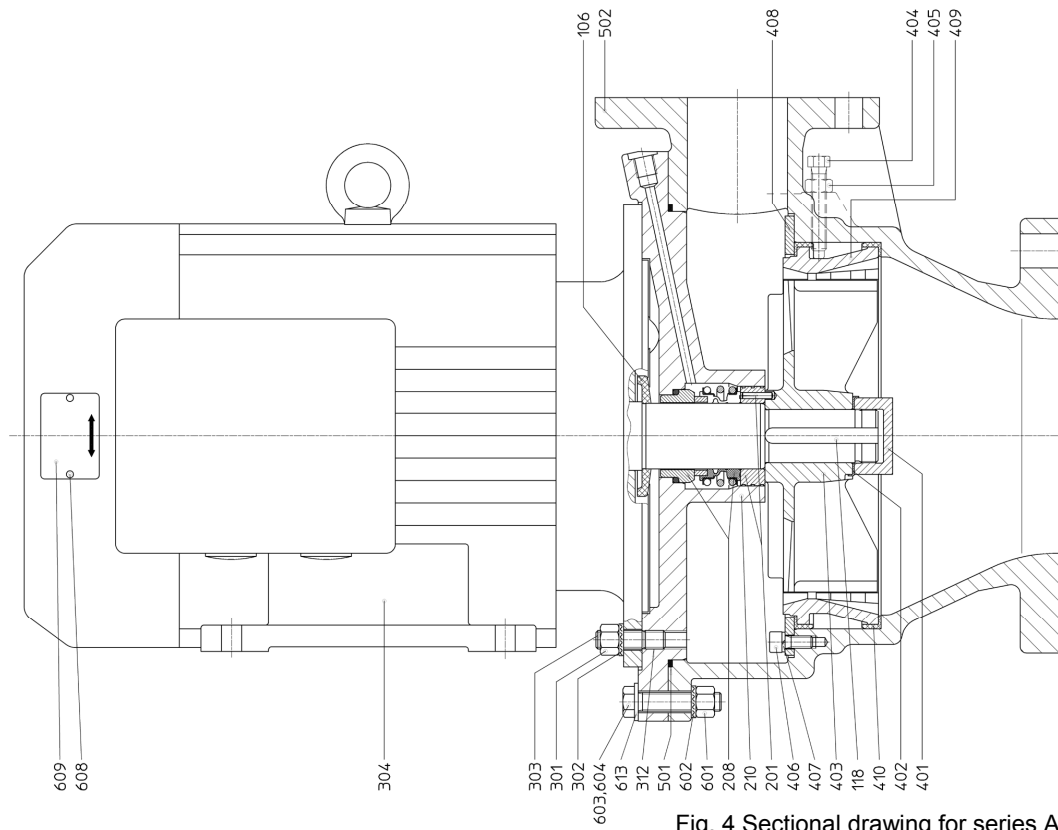


Fig. 4 Sectional drawing for series ABM...S

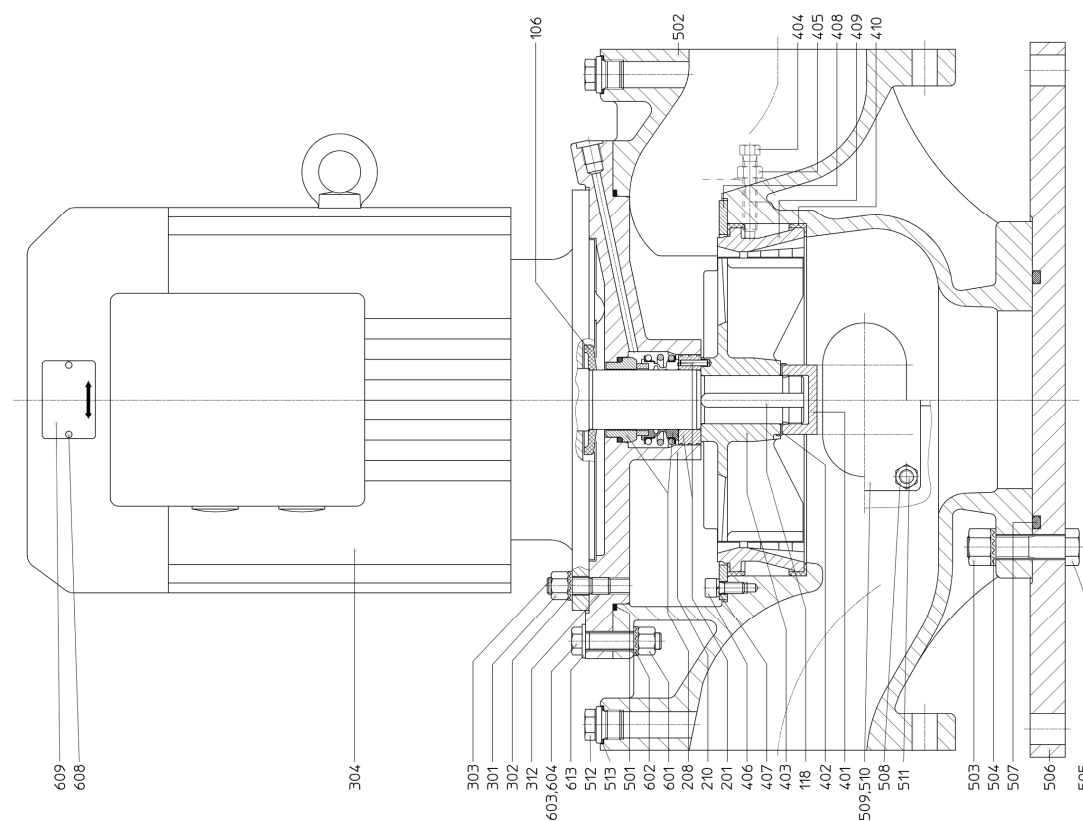


Fig. 5 Sectional drawing for series ABM...I

11.2 Series AM

11.2.1 Index of spare parts and recommended spare/reserve parts

Legend:

R = large repair kit

r = small repair kit

| Part No. | Description | Repair kit | Qty. for type S | Qty. for type I | Remarks |
|----------|------------------------------------|------------|-----------------|-----------------|---------|
| 101 | Grease regulator | | 1 | 1 | |
| 102 | Hexagon head screw | | 4 | 4 | ⑨ |
| 103 | Serrated lock washer | | 4 | 4 | ⑨ |
| 104 | Bearing cover | | 1 | 1 | |
| 105 | Bearing housing | | 1 | 1 | |
| 106 | Thrower | | 1 | 1 | |
| 107 | Grease | R | | | |
| 108 | Circlip | | 4 | 4 | |
| 109 | Supporting washer | | 2 | 2 | |
| 110 | Spacer ring | | 6 | 6 | ⑧ |
| 111 | Cylindrical roller bearing | R | 2 | 2 | |
| 112 | Groove ball bearing | R | 1 | 1 | |
| 113 | Shaft | | 1 | 1 | |
| 114 | Spacer ring | | 1 | 1 | |
| 115 | Supporting washer | | 1 | 1 | |
| 116 | Radial shaft seal ring | R | 2 | 2 | |
| 117 | Key | | 1 | 1 | |
| 118 | Key | | 1 | 1 | |
| 119 | Grease nipple | | 2 | 2 | |
| 120 | Screw plug | | 1 | 1 | |
| 121 | Seal ring | | 1 | 1 | |
| 201 | Spacer ring with grooved dowel pin | R | 1 | 1 | |
| 202 | Machine screw | R | 4 | 4 | |
| 203 | Spring ring | R | 4 | 4 | |
| 204 | Mechanical seal housing | | 1 | 1 | |
| 205 | Machine screw | | 4 | 4 | |
| 206 | Spring ring | | 4 | 4 | |
| 207 | Mechanical seal housing cover | | 1 | 1 | |
| 208 | Mechanical seal | R | 1 | 1 | |
| 209 | O-ring | R | 1 | 1 | |

⑨ 8 units on sizes AM 40, AM 80, AM 120, and AM 160

⑧ 3 units on sizes AM 40 and AM 80

| Part No. | Description | Repair kit | Qty. for type S | Qty. for type I | Remarks |
|----------|-------------------------|------------|-----------------|-----------------|---------|
| 301 | Hexagon nut | | 4 | 4 | ③ |
| 302 | Serrated lock washer | | 4 | 4 | ③ |
| 303 | Hexagon head screw | | 4 | 4 | ③ |
| 305 | Coupling housing | | 1 | 1 | |
| 306 | Threaded pin | | 2 | 2 | |
| 307 | Coupling half, complete | | 1 | 1 | ② |
| 308 | Coupling half | | 1 | 1 | |
| 309 | Hexagon head screw | | 4 | 4 | |
| 310 | Tension strip | | 2 | 2 | |
| 311 | Plug plate | | 2 | 2 | |
| 401 | Shaft nut | | 1 | 1 | |
| 402 | Locking plate | R, r | 1 | 1 | |
| 403 | Impeller, complete | R, r | 1 | 1 | ① |
| 404 | Hexagon head screw | | 3 | 4 | |
| 405 | Hexagon nut | | 3 | 4 | |
| 406 | Machine screw | R, r | 8 | 8 | ④ |
| 407 | Spring ring | R, r | 8 | 8 | ④ |
| 408 | Thrust ring | | 1 | 1 | |
| 409 | Cutting ring | R, r | 1 | 1 | |
| 410 | Cutting ring bearing | R, r | 2 | 2 | |
| 501 | O-ring | R, r | 1 | 1 | |
| 502 | Macerator housing | | 1 | 1 | |
| 503 | Hexagon nut | | - | 8 | |
| 504 | Serrated lock washer | | - | 8 | |
| 505 | Hexagon head screw | | - | 8 | |
| 506 | Baseplate | | - | 1 | |
| 507 | O-ring | | - | 1 | |
| 508 | Hexagon nut | | - | 8 | |
| 509 | Hand-hole cover | | - | 2 | |
| 510 | Hand-hole seal | | - | 2 | |
| 511 | Stud bolt | | - | 8 | |
| 512 | Screw plug | | - | 2 | |
| 513 | Seal ring | | - | 2 | |
| 601 | Hexagon nut | | 8 | 8 | ⑤ |
| 602 | Serrated lock washer | | 8 | 8 | ⑤ |
| 603 | Hexagon head screw | | 6 | 6 | ⑥ |

③ 8 units on size AM 160

② Consisting of: Coupling half and break-out ring

① Consisting of:
Impeller with four soldered milling cutters that can be reversed when worn.
(→ See also 10.1.1.1 page 18).

④ 12 units on sizes AM 40, AM 80, AM 120, and AM 160

⑤ 12 units on sizes AM 120 and AM 160

⑥ 8 units on sizes AM 120 and AM 160

| Part No. | Description | Repair kit | Qty. for type S | Qty. for type I | Remarks |
|----------|------------------------|------------|-----------------|-----------------|---------|
| 604 | Stud bolt | | 2 | 2 | ⑦ |
| 605 | Hexagon nut | | 4 | 4 | |
| 606 | Serrated lock washer | | 4 | 4 | |
| 607 | Hexagon head screw | | 4 | 4 | |
| 608 | Round head grooved pin | | 2 | 2 | |
| 609 | Nameplate | | 1 | 1 | |
| 610 | Information plate | | 1 | 1 | |
| 611 | Information plate | | 1 | 1 | |

Tab. 10 Single part labeling series AM

⑦ 4 units on sizes AM 120 and AM 160

11.2.2 Section drawing

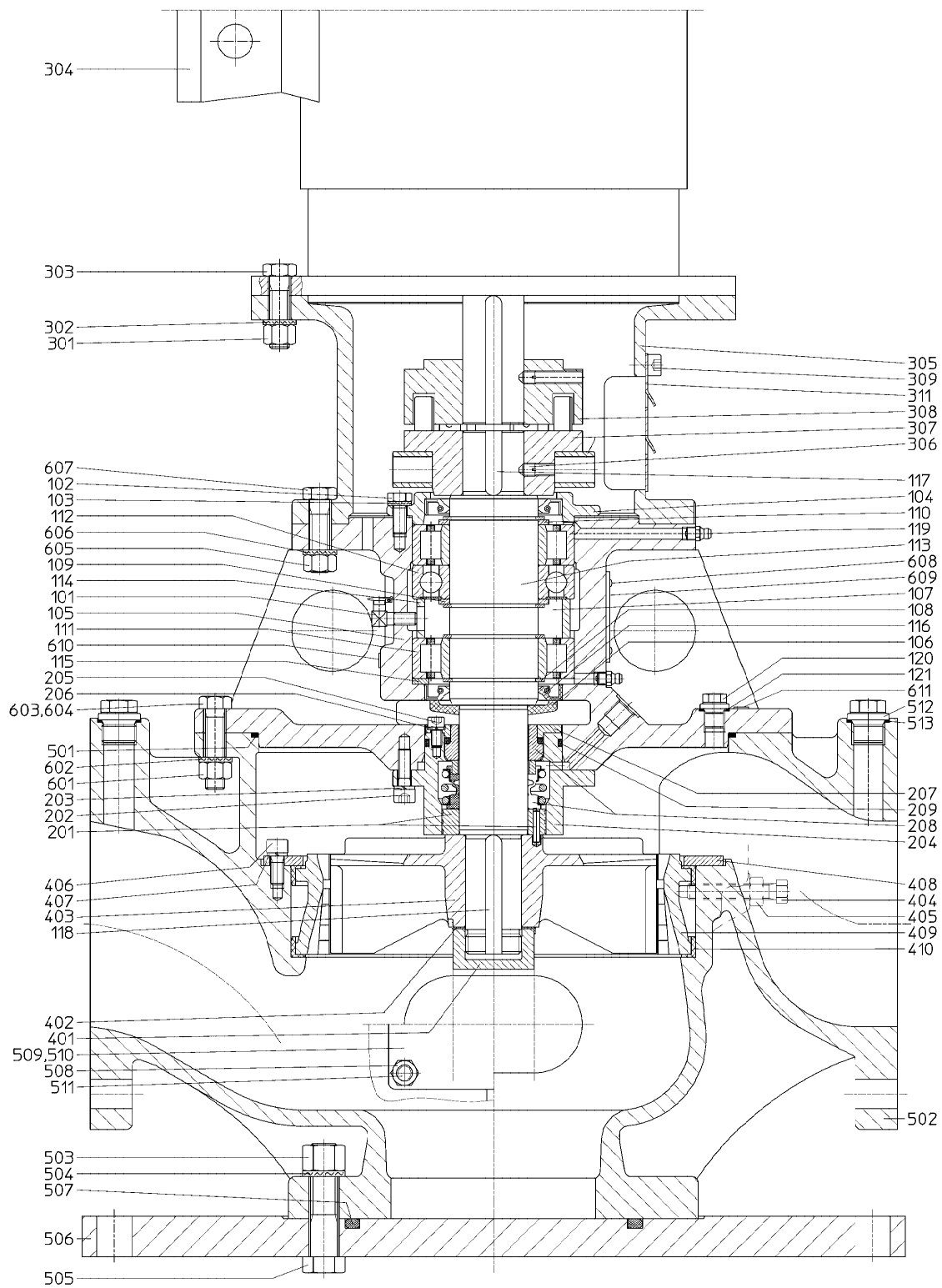


Fig. 6 Sectional drawing for series AM...I

11.2.3 Exploded drawing AM...S, AM...I

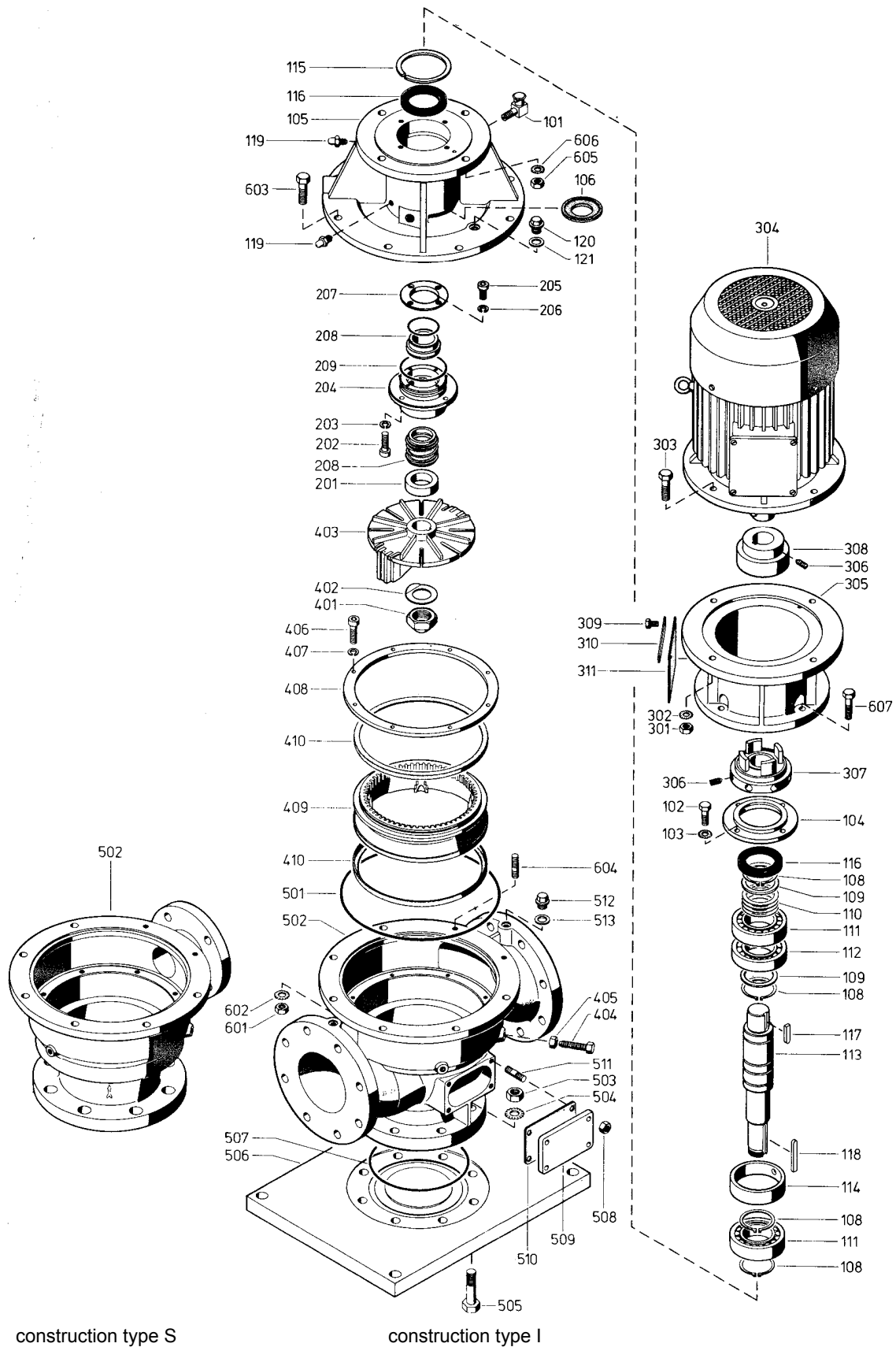


Fig. 7 Exploded drawing AM...S, AM...I

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.

| Operational faults on macerator | Causes and removal |
|------------------------------------|---|
| Throughput not reached | Proportion of solids too high. Check proportion of solids. |
| Motor's power consumption too high | Proportion of solids too high. Check proportion of solids. |
| Macerator blocked | Foreign object in macerator housing. Remove foreign object. |
| Macerator does not run smoothly | Proportion of solids/throughput is too large. Reduce proportion of solids or throughput. |

Tab. 11 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: _____ | |
| <div style="display: flex; align-items: flex-start;"> <div style="margin-right: 10px;"> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> </div> <div> <p>Was not used with liquids that are hazardous to health or the environment.</p> <p>Used for the following application: _____</p> <p>and came into contact with liquids that must be labeled for safety or are considered to be polluting.</p> <p>Last pumped liquid: _____</p> <p>The pump has been carefully emptied and cleaned on the outside and inside prior to delivery or provision.</p> <p>Special safety precautions are not necessary for subsequent handling.</p> <p>The following safety precautions regarding rinsing liquids, liquid residue and disposal are necessary:</p> <p>_____</p> </div> </div> | |
| <div style="display: flex; align-items: center;">  <p>If the pump was used with critical liquids, please make sure you enclose a safety data sheet in the package.</p> </div> | |
| <p>We hereby declare that the information given is correct and complete, and that the pump is being shipped in accordance with legal requirements.</p> | |
| Company / address: _____ | Phone: _____ |
| | Fax: _____ |
| Customer no.: _____ | |
| Issuer name: (capital letters) _____ | Position: _____ |
| Date: _____ | Company stamp / signature: _____ |

Fig. 8 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

18.02.10

Datum

Date

Date

Geschäftsführer

general manager

gérant

Qualitätsleiter

Quality manager

conducteur de qualité

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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. 9 EC Declaration of Conformity

Subject to technical changes!



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