



# Operating Manual

**Water pump as suction pump AV 1000 standalone with integrated pressure switch-off and flow meter**

**AV1000 with Handle 230V 50Hz**

**Safety – Overview – Operation – Spare Parts Lists**



Item number of operating manual: 00254386

Item number of the machine parts list: 00493686



**Read the operating manual before starting any work!**

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# Contents

<b>23</b>	<b>Initial start-up Pressure and flow monitor .....</b>	<b>34</b>	<b>26</b>	<b>Low water level .....</b>	<b>39</b>
23.1	Switching the pump on .....	34	<b>27</b>	<b>Spare parts drawing, spare parts list .....</b>	<b>40</b>
<b>24</b>	<b>Electrical connections .....</b>	<b>35</b>	27.1	Spare parts drawing – High pressure pump AV1000 .....	40
<b>25</b>	<b>How the pressure and flow monitor works .....</b>	<b>35</b>	27.2	Spare parts list of the assemblies .....	41
25.1	No power supply .....	35	27.3	Spare parts drawing – High pressure pump AV1000 .....	42
25.2	NORMAL SERVICE: the pump is inactive .....	35	27.4	Spare parts list of the assemblies .....	42
25.3	NORMAL SERVICE: the pump is running .....	36	27.5	Spare parts drawing - prefilter AV1000 cpl. ....	43
25.4	OUT OF SERVICE.....	36	27.6	Spare parts list - prefilter AV1000 cpl. ....	43
25.5	ERROR: stopped temporarily due to dry running .....	36	<b>28</b>	<b>Index.....</b>	<b>44</b>
25.6	ERROR: temporary shut down due to frequent start up.....	37			



# 1 General information

## 1.1 Information regarding the operating manual

This manual gives important notes and instructions on the correct use of the equipment. The adherence to all specified safety and handling instructions is a prerequisite for a safe working environment.

Additionally, the locally applicable accident prevention regulations and general safety guidelines for the equipment must be followed at all times.

Read the entire operating manual carefully before starting any work! It is an integral part of the product and must be kept near the machine and accessible to operators at all times.

Always include the operating manual when transferring the machine to third parties.

The diagrams and illustrations shown in the manual are intended for better understanding of tasks and descriptions. They are not necessarily shown to the correct scale and may vary slightly from the actual equipment used.

## 1.2 Information on the safety instructions

These safety instructions give important notes and instructions on the correct use of the equipment. The adherence to all defined safety and handling instructions is a prerequisite for a safe working environment.

## 1.3 Symbols

### Warning symbols

Warnings are shown by symbols in this manual. The warnings themselves open with signal words that express the seriousness of the danger.

Adhere to these warnings at all times to avoid accidents, personal injury and equipment damage.



#### **DANGER!**

... Indicates an immediate dangerous situation that will lead to death or serious injury if it is not avoided.

## General information



### **WARNING!**

... Indicates a potentially dangerous situation that can lead to death or serious injury if it is not avoided.



### **CAUTION!**

... Indicates a potentially dangerous situation that can lead to minor or slight injury if it is not avoided.



### **CAUTION!**

... Indicates a potentially dangerous situation that can lead to material damage if it is not avoided.

## Tips and recommendations



### **NOTE!**

... Contains useful tips and recommendations, plus further information on efficient and problem-free operation.

## Special safety instructions

The following symbols are used in conjunction with safety instructions in order to illustrate certain types of danger:



### **DANGER!**

#### **Danger of death due to electric current!**

... Indicates a potentially life-threatening situation caused by electricity in the affected area. Non-compliance with the safety instruction could lead to death or serious injury.

Work on electrical systems may only be carried out by specialist electricians.



## 1.4 Limitation of liability

All specifications and instructions in this manual have been compiled according to the currently valid norms and instructions, up-to-date technology and our many years of experience in the branch.

The manufacturer accepts no liability for damages caused under the following conditions:

- Non-compliance with the manual
- Improper operation
- Operation by untrained personnel
- Unauthorised rebuilding
- Technical changes
- Use of unauthorised spare parts

The actual scope of delivery may vary from the explanations and diagrams detailed here due to special models, additional order options and technological changes.

Additionally, the obligations defined in the delivery contract, the general terms and conditions, the delivery requirements of the manufacturer and the valid regulations at the time of contract conclusion all apply.

## 1.5 Copyright protection

Keep the manual and its contents confidential. It is only to be used by personnel who actively use the machine. Forwarding of the manual to third-parties without prior written permission from the manufacturer is not permitted.



### NOTE!

*The specifications, text, illustrations, pictures and other representations within the manual are copyright protected and are subject to business copyright laws. Any improper use shall be liable to prosecution.*

All forms of reproduction - both in whole and in part - plus the utilisation or publication of the manual contents are not permitted without prior written approval by the manufacturer. Violation of these terms can lead to claims for compensation. We reserve all other further rights.

## 1.6 Spare parts



### **WARNING!**

#### **Danger of injury due to incorrect spare parts!**

Incorrect or defective spare parts can lead to damage, improper functionality or complete system breakdowns. They can also negatively affect system safety.

Therefore:

- Only use original spare parts from the manufacturer.

Only purchase spare parts from approved dealers.

## 1.7 Customer service

Our customer hotline is available in case of technical queries.

Information on the respective contact partners can be found by telephone, fax, e-mail or on the Internet. The address of the manufacturer can be found on page 2.

Our employees are always happy to receive new information resulting from practical operation. This information may be used for future product improvements.

# 2 Safety

This section provides an overview of all important safety aspects. These offer optimal levels of safety for personnel and safe and problem-free operation.

Significant danger may result from non-compliance with the operating steps and safety instructions detailed in this manual.

## 2.1 Owner responsibility

The equipment is intended for industrial use. The owner of the equipment is therefore subject to the statutory health and safety regulations.

Apart from the work safety instructions detailed in this manual, all valid safety, accident prevention and environmental protection guidelines for the equipment must be adhered to.

This especially applies to the following:

- The owner must be aware of the valid health and safety regulations and is responsible for carrying out a hazard analysis in order to determine additional dangers resulting from the individual working conditions on the operating site. These additional dangers must be summarised as operational instructions for the correct use of the equipment.





- During the entire operation time of the equipment, the owner is responsible for coordinating the operating instructions with the current operational status and for adapting them as required.
- The owner is responsible for clearly allocating and defining the responsibilities for installation, operation, maintenance and cleaning.
- The owner must ensure that all persons employed to work on or with the equipment have read and understood the operating manual. In addition he must train the personnel at regular intervals and inform them of the dangers associated with equipment use.

The owner is also responsible for the technical functionality and condition of the equipment. The following rules apply here:

- The owner must ensure that the maintenance intervals detailed in this operating manual are observed.
- The owner must have all safety devices regularly checked for functionality and completeness.
- The owner must provide the personnel with the necessary protective equipment.

## 2.2 Operating personnel

### 2.2.1 Requirements



#### **WARNING!**

#### **Risk of injury due to lack of qualification!**

Improper use of the equipment can lead to serious personal injury and material damage.

Therefore:

- Only have certain tasks carried out by the responsible persons detailed in the individual chapters of this manual.
- Contact specialists in case of doubt.

The following qualifications are specified for various tasks within this manual:

- **Authorised personnel**

Instructed by the owner on the assigned tasks and on the possible dangers of improper operation.

### ■ Specialists

Due to their professional qualifications, experience and knowledge of the system, specialists are able to work independently and recognise possible dangers without special instructions.

### ■ Electricians

Due to their professional qualifications, experience and knowledge of system standards, electricians are able to work independently on electrical systems and recognise possible dangers without special instructions.

Electricians are specially trained for the work environment in question and are aware of the relevant standards and instructions.

Only persons that carry out their work responsibly are permitted to work with the system. Persons with impaired reactions (e.g. due to drugs, alcohol or medication) are not permitted.

Observe the age and job-specific regulations when selecting personnel for the work on site.

## Unauthorised individuals



### **WARNING! Unauthorised individuals are put at risk!**

Unauthorised individuals that do not fulfil the requirements here are not fully aware of the dangers in the work area.

Therefore:

- Keep unauthorised individuals away from the work area.
- In case of doubt, ask the persons involved and guide them away from the work area.
- Stop operation as long as unauthorised individuals are found within the work area.



## 2.3 Proper use of the machine

The equipment has been designed and constructed only for the intended use described below.

The PFT High Pressure Pump AV1000 is used predominantly as a pressure booster pump for installation between the mortar mixer and the mortar mixer pumps when the water pressure is too low. It can also be used as a primer pump for drawing liquids from containers, for emptying small tanks and ponds, for pumping water out of cellars and for irrigation.



### **WARNING!**

#### **Danger due to improper use of the machine!**

Improper or unauthorised additional use of the system can lead to dangerous situations.

Therefore:

- Use the machine only for its intended purpose.
- Always observe all processing guidelines from the material manufacturer.
- Strictly observe all instructions in this operating manual.

We accept no responsibility for damages caused by improper or unauthorised use.

The owner is solely liable for all damage or injury caused by improper or unauthorised use.

## 2.4 Personal protective equipment

In order to minimise negative effects on personal health, personal protective equipment must be worn during operation.

- Always wear the necessary protective equipment for each individual task.
- Pay attention to the signs in the work area regarding personal protective equipment.

**Always wear**

Always wear the following during all work:

**Protective work clothing**

The protective work clothing is tight-fitting, rips easily if caught, has narrow sleeves and has no protruding parts. It is primarily intended as protection from being caught by moving machine parts.

Do not wear rings, chains and other jewellery.

**Safety shoes**

Protect against heavy falling parts and slipping on slippery surfaces.

**Safety goggles**

Protect the eyes from flying projectiles and splashing liquids.

**Ear protection**

Protects against damage caused by loud noises.

**Safety helmet**

Protects against falling and flying parts and materials.

**Safety gloves**

Protect hands from friction, scraping, punctures or deeper injuries as well as from contact with hot surfaces.



### Wear for special tasks

Special protective equipment is necessary for certain specialist tasks. These are specially indicated in the individual manual chapters. These special pieces of equipment are as follows:



#### Face guard

Protects the eyes and face from flames, sparks or embers as well as from hot particles or exhaust gases.

## 2.5 Special dangers

The following section details other elements of risk that can occur according to the risk assessment.

Pay attention to the safety instructions and warnings in the other chapters of this manual in order to reduce health risks and avoid dangerous situations.

### Electric current



#### **DANGER!** **Danger of death due to electric current!**

Contact with live components can lead to death or serious injury. Damage to electrical insulation or individual components can be potentially life-threatening.

Therefore:

- If insulation damage occurs, switch off the electrical supply immediately and organise repairs.
- Work on electrical systems should only be carried out by qualified electricians.
- When working on electrical systems, first ensure that they are completely switched off and isolated.
- Before starting maintenance, cleaning and repair work, switch off the power supply and secure to prevent switching on again.
- Do not bypass fuses or disable them. Pay attention to the correct amperage when replacing fuses.
- Keep electrical parts away from sources of moisture. This can lead to a short-circuit.

## Safety



### Escaping liquids



#### **DANGER!** **Danger of injury due to escaping liquids!**

Escaping liquids can lead to injuries to the eyes and face.

Therefore:

- Always wear protective goggles.
- Always position the machine so that you cannot be hit by escaping liquids.

### Noise



#### **WARNING!** **Danger of damage to hearing!**

The loud noises associated with the work area can cause serious damage to hearing.

Therefore:

- Always wear ear protection when working.
- Only remain in the danger zone for as long as absolutely necessary.

### Moving parts



#### **WARNING!** **Danger of injury due to moving parts!**

Rotating and oscillating parts can cause serious injuries.

Therefore:

- Do not reach into or handle moving parts during operation.
- Do not open safety covers during operation.
- Pay attention to run-down times:  
Before opening covers, ensure that parts are no longer moving.
- Wear close-fitting protective clothing in the danger zone.

### Dirt and other impedances



#### **CAUTION!** **Risk of tripping due to dirt and obstacles lying around!**

Dirt and other impedances can form a slipping or tripping hazard, and can lead to significant injuries.

Therefore:

- Always keep the work area clean.
- Remove objects when they are no longer needed.
- Indicate tripping hazards with yellow and black tape.



## 2.6 Safety devices



### **WARNING!**

#### **Danger of death due to non-functioning safety devices!**

Safety devices provide the highest possible levels of operational safety. Even if they make work processes more complicated, they must never be disabled. Safety is only assured when the safety devices are intact.

Therefore:

- Check that the safety devices are functional and correctly installed before starting work.
- Never deactivate safety devices.
- Do not block the access to safety devices such as emergency stop push-buttons, pull cords, etc.

## 2.7 Dealing with dangerous situations and accidents

### **Preventative measures**

- Always be prepared in case of accidents or fires!
- Make first-aid equipment (bandages, blankets etc.) and fire extinguishers easily accessible.
- Inform your personnel about accident reporting, first-aid and rescue equipment.
- Keep access roads free for emergency service vehicles.

### **In an emergency: Act correctly**

- Activate the emergency stop immediately.
- Organise first-aid measures.
- Remove persons from the danger zone.
- Inform the responsible on-site department.
- Notify the emergency services.
- Clear access roads for emergency service vehicles.

## 2.8 Signs

The following symbols and notices are located in the work area. They refer to the immediate vicinity in which they are attached.



### **WARNING!**

#### **Danger of injury due to illegible symbols!**






Over the course of time, labels and signs can become dirty or unreadable.

Therefore:

- Always maintain all safety, warning and operating notices in legible condition.
- Replace damaged signs or labels immediately.

## 3 Operating Manual

[Knauf PFT - Downloads - Datenblätter](#)

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### 3.1 Accessories

For recommended accessories / equipment see PFT machine and device catalog or under:

[Knauf PFT - Wasserpumpen](#)

### 3.2 Device catalog

[pft.katalog-0420-de \(1kcloud.com\)](http://pft.katalog-0420-de (1kcloud.com))





## Technical data High pressure pump AV1000 assy.

### 4 Technical data High pressure pump AV1000 assy.

Article No. PFT AV1000

00493686

#### 4.1 General specifications

Specification	Value	Unit
Weight	13.4	kg

#### 4.2 Connected load

##### Water

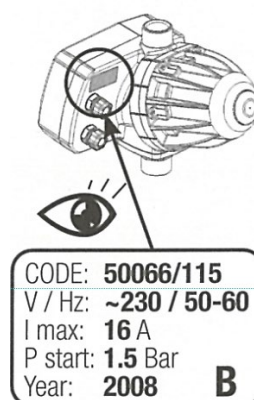
Specification	Value	Unit
Connection	1	inches

##### Electrical

Specification	Value	Unit
Voltage, 3-phase current 50 Hz	230 / 115	V
Frequency	50-60	Hz
Current	max for 3 sec.	12 A
Current	max for 3 sec.	16 A
Protection grade		IP 65
Start-up pressure (Pm):	0,8 / 1,5 / 2,2	bar
Shut-off f10w rate (Qa):	1-2 litres	min
Maximum working pressure	10	bar
Bursting pressure	40	bar

##### Protection against:

- dry running (automatic restart)
- repeated start-ups
- Max room temperature: 40°C
- Max liquid temperature: 55°C
- Type of drive: 1C
- Max manual Operations on push button: 1000
- Max automatic Operations on relay: 100000
- Ciass 3A PTI
- Pollution degree: 2
- Max rated voltage pulse: 2,5 kV
- Pressure operating differential: 10 bar



**Sound power level****4.3 Operating requirements**

Temperature	Specification	Value	Unit
	Liquid temperature	1-40	°C
	Admissible working pressure	5,5	bar

**4.4 Output values**

m³/h	0	0,3	0,6	1,2	1,5	1,8	2,4	2,7	3,0	3,3		
l/min	0	5	10	20	25	30	40	45	50	55		
H/m	48	43	39	32	29,5	27,5	23	21,5	19,5	18		

**5 Sound power level**

Sound power level LWA	75 dB(A)
-----------------------	----------

**6 Vibrations**

Weighted effective acceleration value to which the upper limbs are exposed = < 2.5 m/s²



## 7 Dimension sheet AV1000



Fig. 1: Dimension sheet – High pressure pump AV1000

## Overview – High pressure pump AV1000



### 8 Overview – High pressure pump AV1000

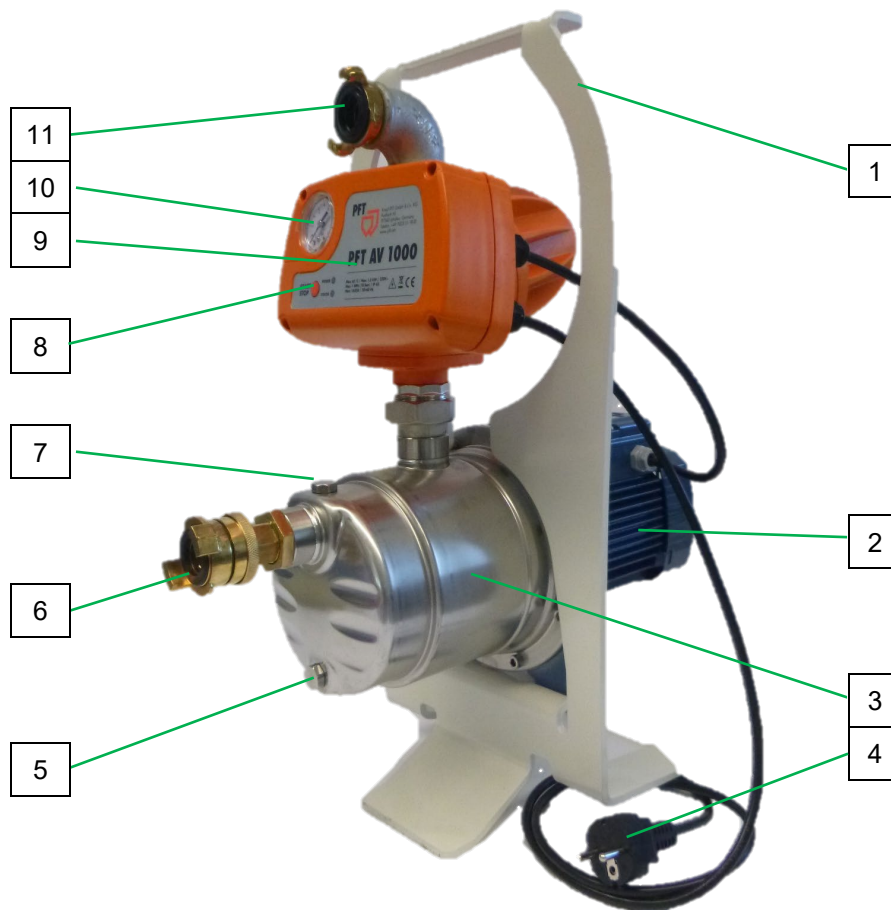


Abb. 2: Übersicht AV1000

- |                                       |                                       |
|---------------------------------------|---------------------------------------|
| 1. Handle bracket                     | 7. Water filler plug                  |
| 2. Pump motor                         | 8. Operating push-button ON/OFF       |
| 3. Pump AV1000                        | 9. Pressure controller / flow monitor |
| 4. Connector                          | 10. Pressure gauge for water pressure |
| 5. Water drain tap (frost protection) | 11. Water outlet 1"                   |
| 6. Water inlet 1"                     |                                       |



9

## 10 Description – PFT AV1000

### 10.1 Advantages of PFT AV1000

- No dry running thanks to run-dry protection
- Automatic pressure cut-out
- High delivery rate
- Stainless steel housing

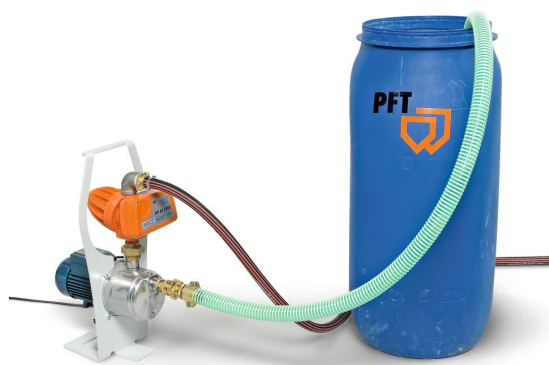
### 10.2 AV1000 fields of application

The PFT High Pressure Pump AV1000 is used predominantly as a pressure booster pump for installation between the mortar mixer and the mortar mixer pumps when the water pressure is too low. It can also be used as a primer pump for drawing liquids from containers, for emptying small tanks and ponds, for pumping water out of cellars and for irrigation.

The water supply is automatically ensured from a water tank by the PFT AV1000 for the constant water supply to the PFT machine engineering.

The flow pressure of min. 2.5 bar when the machine is running is ensured on size by drawing water from the water tank.

#### Connection example



#### Accessories



Inlet strainer with stainless steel filter screen, 1" suction hose, 2.5 m

Art. No. 00136619

### 10.3 Proper use of the machine



#### Caution!

The PFT AV1000 is intended only for pumping clean and turbid water and water-like liquids. Media with fibrous and abrasive constituents must be avoided.

## Transport, storage and packaging



# 11 Transport, storage and packaging

## 11.1 Safety instructions for transport

### Improper transport



#### CAUTION!

#### Damage can be caused by improper transport!

Significant damage may occur if the equipment is transported incorrectly.

Therefore:

- Proceed with care when unloading packages and transporting goods on-site. Always observe the symbols and instructions on the packaging.
- Only remove packaging immediately before assembly.

## 11.2 Transportation checklist

Inspect the goods for damage and missing parts immediately on delivery.

If external transportation damage can be seen, proceed as follows:

- Do not accept the delivery, or accept it only under reservations.
- Note the damage on the transportation documents or the delivery note of the carrier.
- Submit the appropriate claim.



#### NOTE!

*Always submit a claim for the defects as soon as they are detected. Damage claims can only be accepted within the applicable deadlines for submission.*

## 11.3 Packaging

### Handling the packaging materials

Provided no agreements for the return of packaging have been made, separate the materials according to type and size and reuse or recycle them accordingly.



#### CAUTION!

#### Environmental damage can result from improper disposal of materials!

Packaging materials are valuable resources and can often be reused or recycled.

- Dispose of packaging materials in an environmentally sound manner.
- Observe locally applicable waste disposal guidelines. If necessary, contract a specialist waste disposal company.



## Packaging information

Individual packages are packed according to the applicable transportation requirements.

Only environmentally-friendly materials were used for the packaging.

The packaging is intended to protect individual components from harm during transportation, corrosion and other damage up to the point of assembly. Do not destroy the packaging and only remove it shortly before assembly.

# 12 Safety

## 12.1 Fundamental safety instructions

### Personal protective equipment

All machine operators must wear the following protective equipment:

- Protective work clothing
- Safety goggles
- Safety gloves
- Safety shoes
- Ear protection



#### NOTE!

*The warning signs illustrated in this chapter relate to additional protective equipment that must be worn for particular working conditions.*

### Basic information



#### WARNING!

#### Danger of injury due to improper operation!

Improper operation can lead to serious injuries or equipment damage. Therefore:

- Carry out all operating steps according to this operating manual.
- Before starting any work, ensure that all covers and protective devices are installed and functioning properly.
- Never disable protective devices during operation.
- Keep the operating area clean and tidy. Components and tools that are stacked on one another or left lying around can cause accidents.

## Preparation – High pressure pump AV1000



### 13 Preparation – High pressure pump AV1000

#### Electrical system



##### Important!

Connect the pump only to plug sockets with PE contact. In order to increase safety, we recommend that the electrical circuit to which the pump is connected has a ground fault interrupt system with a residual-current circuit breaker with a rated residual current of 30 mA. This applies in particular for installation close to water tanks, ponds, etc.

#### Hose connection



##### Important!

Ensure that the suction line or intake line is connected to the port marked "Intake" and the pressure line to the port marked "Pressure".

If the pump is operated in suction mode, ensure that the suction line is kept as short as possible.

### 14 Initial operation, filling the pump

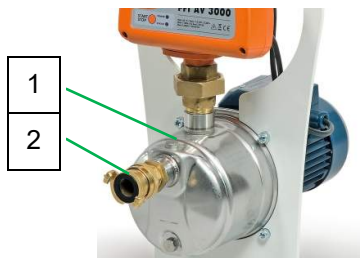


Fig. 3: Filling the pump

Before putting the PFT High Pressure Pump into operation for the first time, fill the pump with water so that the air in the pump housing is displaced.

Fill the pump with water via the water filler plug (1) or the water inlet (2).

Do not fill too quickly so that the air has time to completely escape from the housing.

It is advantageous if the suction hose is also filled with water.

#### 14.1 Commissioning – AV1000

Before operating the pump, observe the following instructions.





## Initial operation, filling the pump



Fig. 4: Mortar pressure gauge

The pump must be installed in a horizontal position.

Both the suction line (1) and the pressure line (2) must be connected before the pump is put into operation. Pay attention to adequate dimensioning of both lines.

- At least 1" for the suction line
- At least 3/4" for the pressure line

Ensure that the hose is completely air-tight and that the end is immersed in the liquid to be pumped to avoid drawing in air.

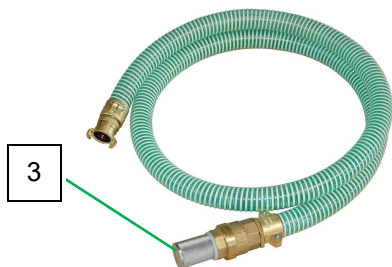


Fig. 5: Inlet strainer with filter screen,  
Article No. 00006906

The end of the suction line (3) must be fitted with an inlet strainer with filter screen and integral non-return valve.

An additional fine filter in the suction line is recommended.



### NOTE!

*The delivery of the pump decreases with increasing suction line length. Connect the high pressure pump as close as possible to the water supply point (pressing is better than sucking).*



Fig. 6: Prefilter AV1000 cpl.  
Article No. 00130219

Empfohlen wird ein zusätzlicher Vorfilter in der Saugleitung, um Fremdkörper von der Pumpe abzuhalten.

## Initial operation, filling the pump



When all these points have been observed, the pump can be switched on. Depending on the length of the suction hose, priming may take a few seconds. If the pump is still not delivering after a few minutes, this may have one of the following causes:

- There is still air in the pump and the pump has to be completely filled with water again.
- The suction line is not air-tight and the pump is drawing in air.
- The suction-side screen is clogged.
- The suction hose is kinked.
- The maximum suction head is exceeded.



### Important!

The pump must not be allowed to run dry in order to avoid damage.

## Basic information



### WARNING!

#### **Danger of injury due to improperly performed maintenance work!**

Improper maintenance can lead to serious injuries or equipment damage.

Therefore:

- Ensure there is adequate space for assembly before starting any work.
- Keep the assembly area clean and tidy. Loose components and parts in the operating area can cause accidents.
- If components are removed, make sure they are properly reassembled with all fastening elements.

## Electrical system



### DANGER!

#### **Danger of death due to electric current!**

Contact with live components can lead to death or serious injury. Live electrical components can move uncontrollably and cause serious injury.

Therefore:

- Before starting work, switch off the electrical power supply and secure it against being switched back on again.



## 15 Switching off in an emergency

### Switching off in an emergency

Machine movements must be halted and the energy supply switched off as quickly as possible in dangerous situations.

### After the emergency response

- If the seriousness of the emergency warrants this, inform the responsible authorities.
- Assign specialist personnel to begin rectifying the fault.



#### **WARNING!**

#### **Danger of death due to premature restarting!**

All persons in the danger zone are at extreme risk when the machine is switched back on.

Therefore:

- Ensure that the danger zone is clear before switching the machine back on.

- Check the equipment before switching it back on and ensure that all safety devices are in place and functioning properly.

## 16 Troubleshooting

### 16.1 Handling malfunctions

#### Handling malfunctions

Generally, the following applies:

1. For all malfunctions posing the risk of material damage or personal injury, perform an emergency stop immediately.
2. Determine the cause of the malfunction.
3. If troubleshooting requires working in the danger zone, switch off the machine and secure it against being switched back on again.
4. Inform the responsible on-site department of the malfunction immediately.
5. Depending on the malfunction, either rectify it yourself or have authorised specialists do so.

### 16.2 Safety

#### Personnel

- Some tasks may only be carried out by specially trained personnel or only by the manufacturer. Repairing the pump or having the pump repaired by personnel not authorised by the manufacturer will void the warranty and entails the risk of working under unsafe and potentially dangerous conditions.
- Work on electrical systems should only be performed by qualified electricians.

## Maintenance



### Personal protective equipment

Wear the following protective equipment for all maintenance work:

- Protective work clothing
- Safety goggles, protective gloves, safety shoes, ear protection

## 17 Maintenance

### 17.1 Maintenance work on the machine

#### Basic information



#### **WARNING!**

#### **Danger of injury due to improperly performed maintenance work!**

Improper maintenance can lead to serious injuries or equipment damage.

Therefore:

- Ensure there is adequate space for assembly before starting any work.
- Keep the assembly area clean and tidy. Components and tools that are stacked on one another or left lying around can cause accidents.
- If components are removed, make sure they are properly reassembled with all fastening elements.

#### Electrical system



#### **DANGER!**

#### **Danger of death due to electric current!**

Contact with live components can lead to death or serious injury. Live electrical components can move uncontrollably and cause serious injury.

- Before starting work, switch off the electrical power supply and secure it against being switched back on again.
- Interrupt the power supply by removing the connection cable.

#### Securing against restarting



#### **DANGER!**

#### **Danger of death due to unauthorised restarting!**

When working on malfunctions, there is a danger of unauthorised switching on of the electrical supply. This puts those in the danger area at extreme risk.

Therefore:

- Before starting work, switch off all electrical power supplies and secure them against being switched back on again.



## Measures to be taken if there is a risk of frost

### Damage to the pump



#### **WARNING!**

Any damage to the pump results in a loss of pump power and creates dangers for persons and/or material assets.

## 17.2 After performing maintenance

After maintenance has been completed, carry out the following steps before switching on again:

1. Check that all previously loosened screw connections have a tight fit.
2. Check that all previously removed protective devices and covers have been properly reattached.
3. Ensure that all tools, materials and other equipment have been removed from the work area.

## 18 Measures to be taken if there is a risk of frost



#### **Caution!**

##### **Damage due to frost!**

Water that expands on freezing inside the pump can cause serious damage to the pump.

Carry out the following if the pump is not in operation at temperatures close to freezing.

1. In the event of a frost risk, open the water drain plug (1) and empty the pump completely; refill the pump before starting operation again.
2. Check that the non-return valve in the suction hose is clean.
3. If the pump is not to be used for a prolonged period (winter time), we recommend that the pump is completely emptied and rinsed with clean water.
4. Store the pump in a dry place.



Fig. 6: Pump system



#### **Important!**

Never allow the pump to run dry.

Dry running of the pump causes damage to the mechanical seal.

## Disassembly



### Electrical system



#### **DANGER!**

##### **Danger of death due to electric current!**

Contact with live components can lead to death or serious injury. Live electrical components can move uncontrollably and cause serious injury.

- Before starting work, switch off the electrical power supply and secure it against being switched back on again.
- Interrupt the power supply by removing the mains plug.

## 19 Disassembly

The machine must be disassembled and disposed of in an environmentally sound manner after reaching the end of its useful life.

### 19.1 Safety

#### Personnel

- Disassembly may only be performed by specially trained personnel.
- Work on electrical systems may only be performed by qualified electricians.

#### Basic information



#### **WARNING!**

##### **Danger of injury due to improper disassembly!**

Residual energy, sharp-edged components and corners on and around the device or on necessary tools can cause injuries.

Therefore:

- Ensure there is adequate space before starting any work.
- Exercise caution when working with open, sharp-edged components.
- Keep the work area clean and tidy. Components and tools that are stacked on one another or left lying around can cause accidents.
- Disassemble components correctly. Bear in mind that individual components can be heavy. Use lifting equipment if necessary.
- Secure components so they do not fall or tip over.
- Consult your dealer if questions arise.



## Electrical system



### **DANGER!**

#### **Danger of death due to electric current!**

Contact with live components can lead to death or serious injury. Live electrical components can move uncontrollably and cause serious injury.

Therefore:

- Switch off and completely disconnect the power supply before starting disassembly.

## 19.2 Disassembly

When decommissioning, clean the device and dismantle it according to valid work safety and environmental protection regulations.

Proceed as follows before disassembly:

- Switch off the device and secure it against being switched on again.
- Disconnect the entire energy supply from the device and discharge the residual energy.
- Remove operating and auxiliary materials as well as residual processing material and dispose of them in an environmentally sound manner.

## 19.3 Disposal

Provided no return or disposal agreements have been made, recycle the disassembled parts:

- Metallic parts are scrapped.
- Plastic elements are recycled.
- Remaining components are disposed of sorted by individual material.



### **CAUTION!**

#### **Environmental damage can result from improper disposal of materials!**

Electric parts and goods, lubricating material and other auxiliary substances are subject to special guidelines and may only be disposed of by approved waste disposal specialists!

Local authorities and waste disposal specialists can provide more details on the correct disposal of materials.

## Operating conditions for pressure and flow monitor



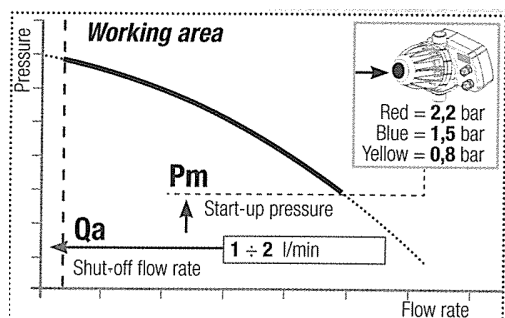
## 20 Operating conditions for pressure and flow monitor

The pressure and flow monitor is a device for switching the electric pump on which it is installed ON and OFF, eliminating the need for the conventional systems.

The pump switches on when the system pressures drops below the "working pressure" ( $P_m$ ) due to the opening of a tap and is stopped when the required flow rate is cancelled or drops below the "cut-out flow rate" ( $Q_a$ ). The electronics of the flow monitor protect the pump against abnormal operating conditions, such as dry running or frequent starting due to losses in the system.

## 21 Operating conditions

### 21.1 Working area



### 21.2 Compatible/non compatible fluids

EASY PRESS is suitable for use with clean water and chemically non-aggressive liquids. If the fluid contains impurities, a filter should be fitted upstream.

### 21.3 Environmental conditions

EASY PRESS should not be used where there is the risk of an explosion. The temperature of the location should range between  $0^{\circ}\text{C}$  and  $40^{\circ}\text{C}$ , and the humidity should not exceed 90%.





## 21.4 Power supply

Make sure that the variation in the power supply is never more or less than 10 % of the RATING value. Higher values may cause damage to the electronic components.

EASY PRESS can only be used with single-phase pumps.

## 22 Safety regulations

Before the EASY PRESS is installed and used, carefully read through all of the parts of this operating manual. Installation and maintenance must be carried out by qualified personnel who are responsible for ensuring that the water and electricity connections are made in accordance with the regulations. Knauf PFT GmbH & Co. KG is not liable for damage that may arise as a result of maintenance or repair work carried out by unqualified personnel and / or the use of non-original spare parts. The use of non-original spare parts, tampering or improper use will invalidate any claim for replacement under guarantee.

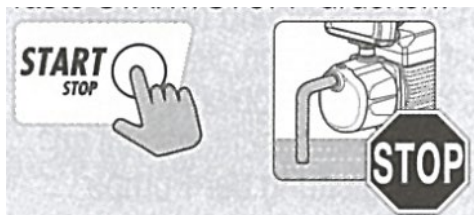
When starting the installation, check the following:

- The power supply is switched Off.
- The power lines can withstand the maximum current.
- The cable bushings and circuit board cover have been properly assembled and secured.
- Power supply network must be fitted with proper protection device (fuse or magneto thermal relay) upstream of EASYPRESS.

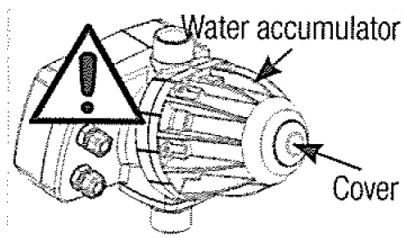
When servicing the product, check the following:

- The system is not pressurized (turn a tap on).
- The power supply is switch off.

### 22.1 Emergency Stop



When in use, the pump can be stopped in the event of an emergency:  
press START/STOP

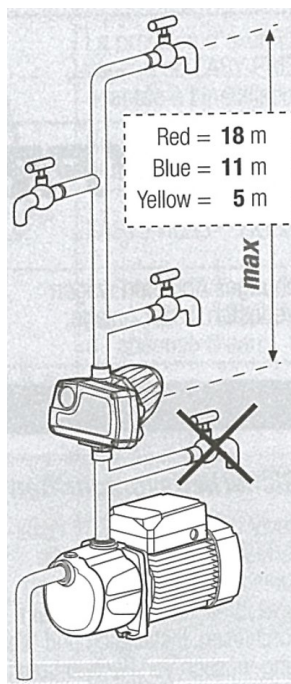


EASY PRESS is put OUT OF SERVICE.  
Never disassemble water accumulator and cover.

## Initial start-up Pressure and flow monitor



## 23 Initial start-up Pressure and flow monitor

**Attention!**

The pressure applied by the water column above EASY PRESS must not exceed that of the pump start-up pressure ( $P_m$ ). If, for example, EASY PRESS is installed at a height 20 metres below that of the highest tap in the system, the pressure detected by EASY PRESS will be approximately 2 bar. A model with  $P_m = 2.2$  bar should, therefore, be installed in order to guarantee that the pumps started when a tap is turned on.

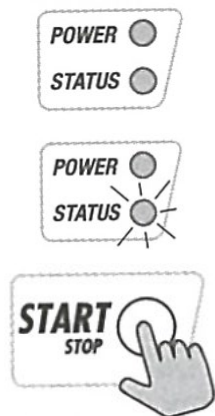
**Attention!**

The maximum pressure produced by the pump must be at least 1-1.5 bar higher than the start-up pressure ( $P_m$ ). If the pressure produced by the pumps too low, EASY PRESS will stop the pump and indicate a dry running error message.

**Attention!**

EASY PRESS is fitted with a check valve: do not use the EASY PRESS's outlet to fill the pump for priming.

## 23.1 Switching the pump on



The red (Power) LED lights up; EASY PRESS instantly detects that there is no pressure within the system and starts the pump (the green Status LED lights up). If, within 15 seconds of starting up EASY PRESS does not detect the correct priming of the pump, it stops the pump and indicates a dry running error message.

**Attention!**

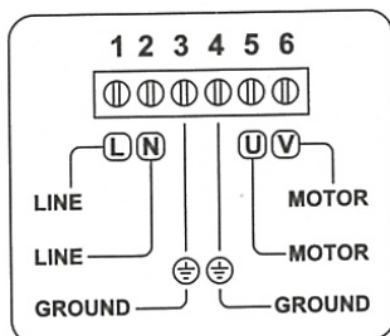
When the pump is started for the first time, it may have to be run for longer in order to complete the priming procedure.

Press the START/STOP button to restart the pump and complete the priming procedure.



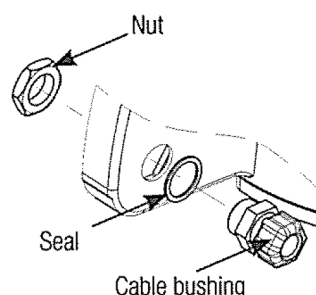
## 24 Electrical connections

The electrical connections should be made as indicated in the diagram which can also be found on the inside of the circuit cover.



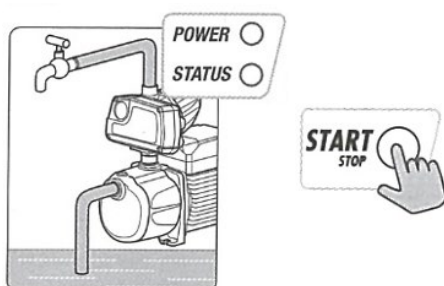
### Attention!

The cable bushings and circuit board cover must be properly assembled and secured in order to guarantee IP 65 grade protection of the electrical components.



## 25 How the pressure and flow monitor works

### 25.1 No power supply



EASY PRESS is switch off.

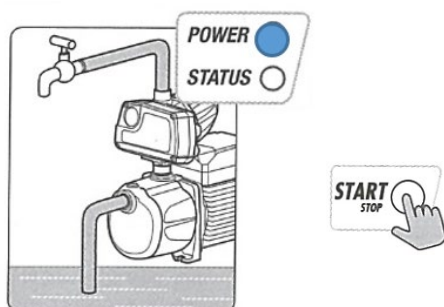
Press briefly or hold down:

- Nothing happens

Power is restored:

- EASY PRESS resumes normal service and starts the pump (if necessary).

### 25.2 NORMAL SERVICE: the pump is inactive



The system is pressurised. All taps are turned off. There is no demand for water. EASY PRESS detects an assembly pressure higher than that of the start-up pressure (PM) and no flow.

Press briefly:

- The pump is started manually and runs for a few seconds before stopping again.

Hold down:

- The pump is put OUT OF SERVICE. For instructions on how to reactivate the pump.

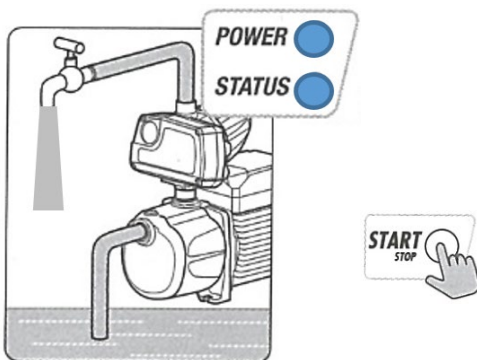
A tap is turned on:

- As soon as the pressure falls below the start-up pressure (Pm), the pump is started.

## How the pressure and flow monitor works



### 25.3 NORMAL SERVICE: the pump is running



The assembly requires water. One or more taps are turned on. EASY PRESS detects a flow, the assembly pressure is normally higher than the START-DR pressure, but it may also be lower.

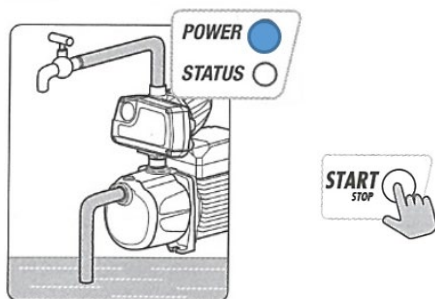
Press briefly or hold down:

- The pump is stopped and put OUT OF SERVICE. For instructions on how to reactivate the pump.

The taps are turned off:

- If there is no flow for a few seconds, the pump is stopped.

### 25.4 OUT OF SERVICE



The pump has been stopped manually. The pump will remain inactive until a new command is given.

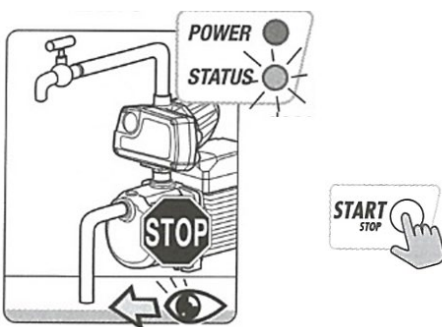
Press briefly:

- Nothing happens.

Hold down:

- The pump resumes NORMAL SERVICE.

### 25.5 ERROR: stopped temporarily due to dry running



EASY PRESS has detected that the pump is dry running and has therefore stopped it temporarily.

Press briefly:

- The pump is started manually and resumes normal service.

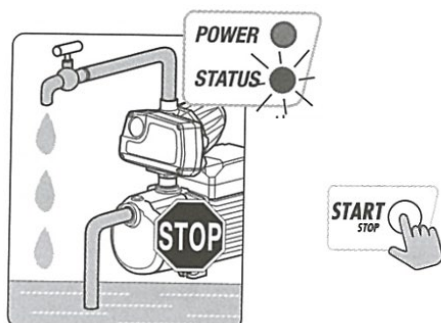
Hold down:

- The pump is put OUT OF SERVICE. For instructions on how to reactivate the pump.



## How the pressure and flow monitor works

### 25.6 ERROR: temporary shut down due to frequent start up



Die EASY PRESS hat erkannt, dass die Pumpe häufig anläuft und sie vorübergehend angehalten.

Press briefly:

- The pump is started and manually and resumes normal service.

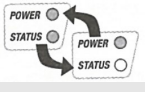
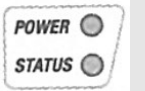
Hold down:

- The pump will not restart and goes out of order. The pump is put out of service. For instructions on how to reactivate the pump.

Problems	Signals	Possible causes	Solutions
The EASY PRESS will not turn on		No power	Check the electrical connections
The pump will not start when a tap is turned on		EASY PRESS model with an inadequate start-up pressure (Pm) for the chosen application.	Relocate EASY PRESS to another position Install a model with a higher start-up pressure (Pm)
		Faulty electrical connections or pump out of service	Check the electrical connections and that the pump is working
		EASY PRESS "OUT OF SERVICE"	Reset EASY PRESS
		EASY PRESS in temporary shut down due to dry running due to lack of water	Wait for the automatic restart or press START to restart manually
		Maximum pump pressure is insufficient	Replace the pump with one with more suitable characteristics install a model with a lower start-up pressure (Pm)
		EASY PRESS in temporary shut down due to "frequent start-up"	Wait for the automatic restart or press START to restart manually. Remove any cause of leakage from system or install an expansion tank
The pump delivers no or low pressure		Filters or pipes may be partly blocked	Check the water pipes
		EASY PRESS valve will not open completely	Check that the valve is not blocked by any foreign objects and clean if necessary

## How the pressure and flow monitor works



The pump stops and starts repeatedly		Leaks within the system (less than the shut-off flow rate $Q_a$ )	Check the hydraulic connections and repair any leaks. If a leak cannot be repaired, install an expansion tank
The pump will not stop		The flow rate is higher than the shut-off flow rate ( $Q_a$ )	Make sure that all taps are turned off and that there are no leaks within the system
		EASY PRESS check valve will not close	Check that the valve is not blocked by any foreign objects and clean if necessary



## 26 Low water level



### NOTE!

**DRY RUNNING** = No flow rate and pressure below the working pressure of the pump (Pm).

Such conditions are caused by a lack of water. After 15 seconds, the pressure and flow monitor stops the pump and outputs an ERROR MESSAGE.

The pressure and flow monitor tries AUTOMATICALLY at increasing intervals (15, 30, 60 minutes and then every hour) to restore the NORMAL FUNCTION. As soon as the monitor measures a pressure and/or flow rate again, the NORMAL FUNCTION is restored, otherwise the pump is stopped until the next attempt to restore the function. In addition, MANUAL attempts can be made to restore the normal function at any time.



### NOTE!

**FREQUENT STARTING** = Repeated stopping and starting of the pump at intervals of less than 2 minutes. This is caused by a flow rate of less than 1-2 litres/min.

This can endanger the pump. In the event of minor losses (dripping), the tank of the monitor ensures that stopping and starting occurs at intervals of at least 2 minutes (less than 30 starts of the pump per hour), and no abnormal conditions due to FREQUENT STARTING occur. If serious losses occur in the system or in the case that the pump is not used for prolonged periods at extremely low flow rates (under 1-2 litres/min.), stopping and starting can occur at intervals of a few seconds, thus endangering the pump. In this case the pressure and flow monitor stops the pump after approx. 30 minutes, leaves it switched off for the next 30 minutes (to allow it to cool down) and outputs an ERROR MESSAGE. If the frequency of stopping and starting is lower and consequently less harmful for the pump, the flow monitor enables use for more than 30 minutes. At the end of the cooling time, the pump is switched on again AUTOMATICALLY. The pump can also be switched on again MANUALLY.

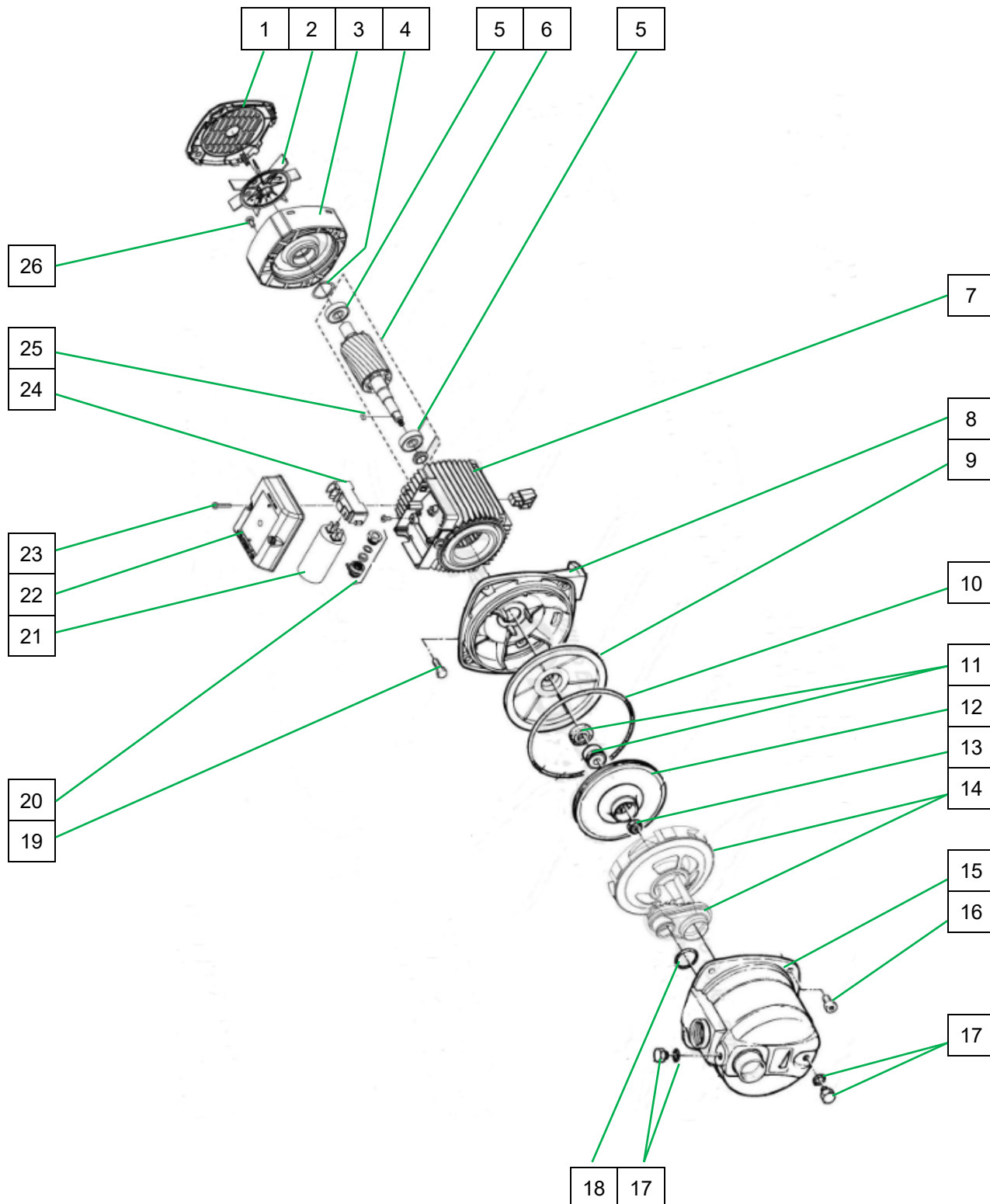


## Spare parts drawing, spare parts list



### 27 Spare parts drawing, spare parts list

#### 27.1 Spare parts drawing – High pressure pump AV1000







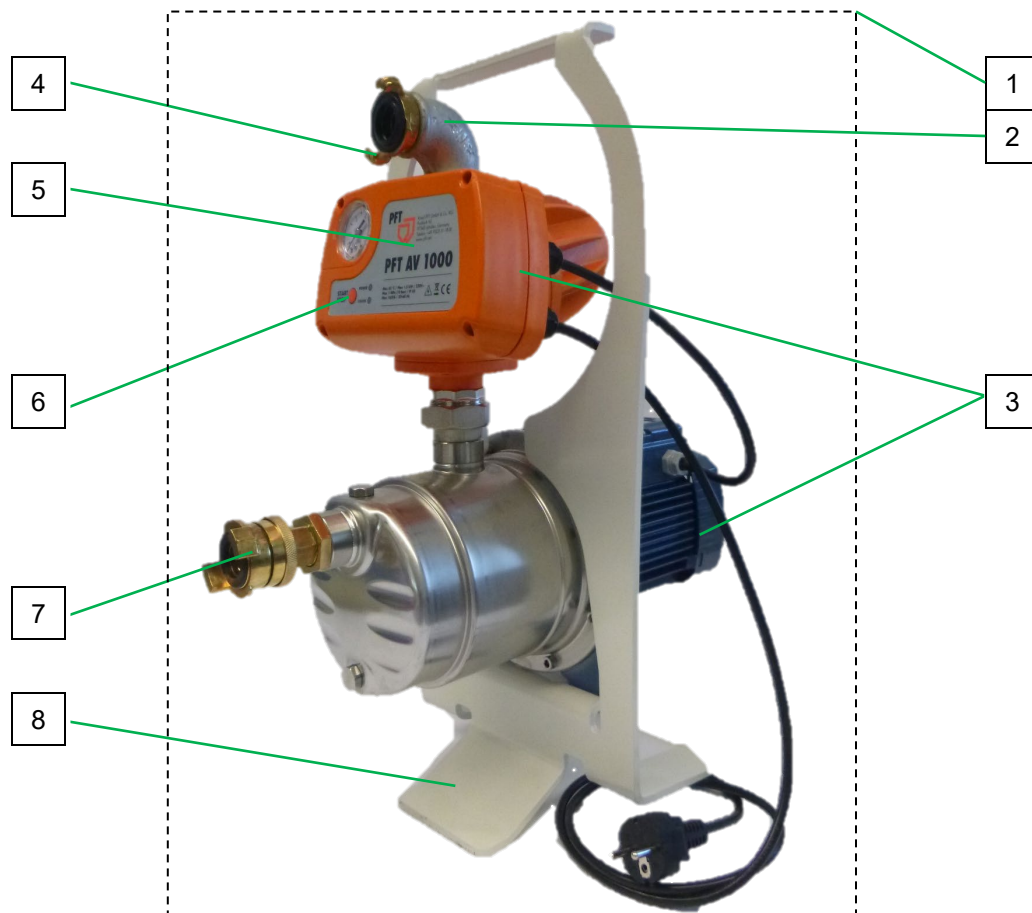
## 27.2 Spare parts list of the assemblies

Pos.	Item no.	Description
1	00598502	Fan hood AV 1000, AV 1000/1
2	20470002	Fan wheel – AV1000
3	on request	Rear bearing cover – AV1000
4	on request	Rear bearing cover compensating spring – AV1000
5	on request	Rear bearing cover deep-groove ball bearing – AV1000
6	on request	Impeller – AV1000
7	on request	Stator package – AV1000
8	on request	Front bearing cover – AV1000
9	on request	Pump body cover – AV1000
10	on request	O-ring – AV1000 pump body
11	20470008	Circlip dia. AV1000
12	00598430	Impeller for pressure booster pump AV 1000, AV 1000 standalone, 110 V, 50 Hz
13	20207200	Impeller groove – AV1000
14	on request	Diffusor – AV1000
15	on request	AV1000 pump body
16	on request	Screw – pump body
17	on request	Screw with gasket
18	on request	O-ring – AV1000
19	on request	Screw
20	on request	Cable leadthrough
21		Condenser – AV1000 No longer available, no replacement
22	on request	Terminal box cover – AV1000
23	on request	Screw
24	on request	Terminal box – AV1000
25	on request	Spring
26	on request	Screw

## Spare parts drawing, spare parts list



## 27.3 Spare parts drawing – High pressure pump AV1000



## 27.4 Spare parts list of the assemblies

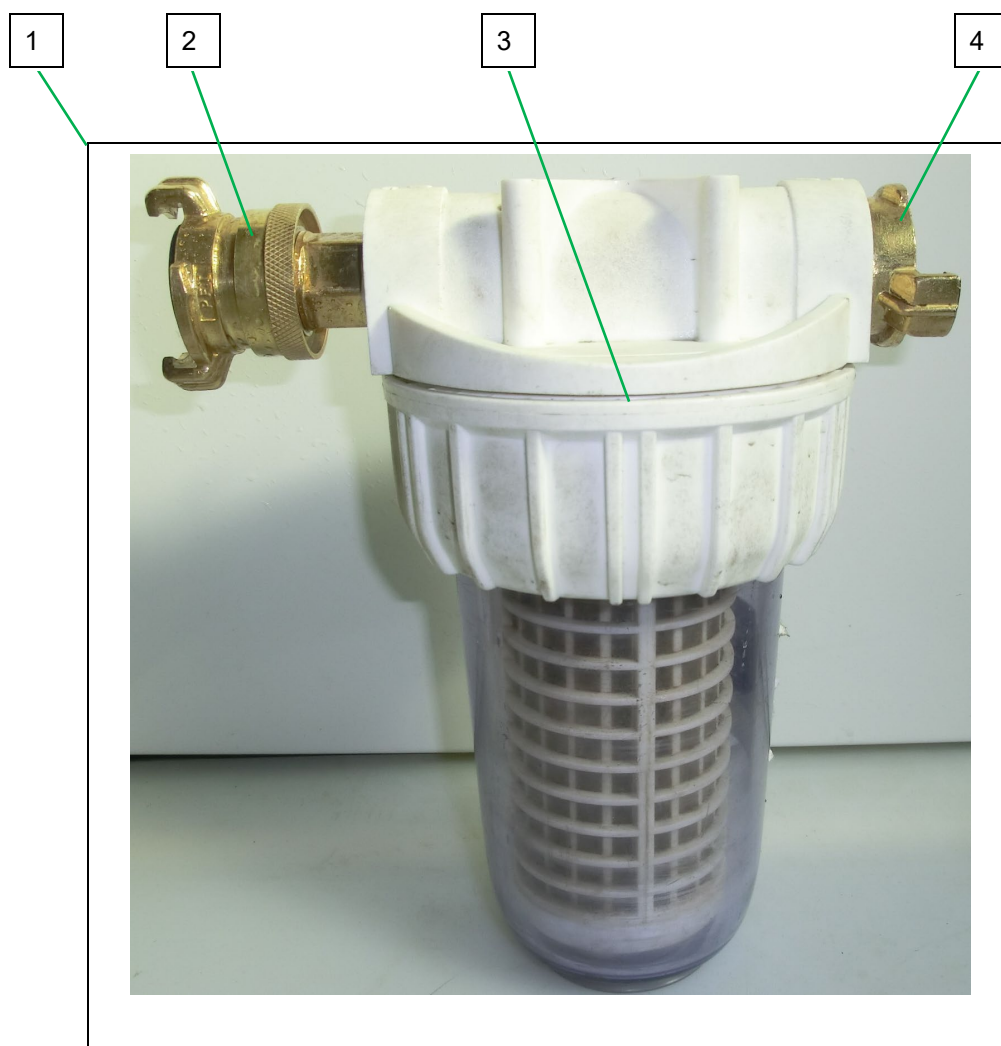
Pos.	Qty.	Item no.	Description
1	1	00493686	Water pump as suction pump AV 1000 standalone with integrated pressure switch-off and flow meter, 230 V, 1 Ph, 50 Hz, 0.6 kW
2	1	00130454	Angle 1" internal thread V2A
3	1	00493685	Water pump as suction pump AV 1000 standalone, 230 V, 1 Ph, 50 Hz, 0.6 kW with pressure switch**
4	1	20200800	Geka coupling 1" external thread (packing unit = 10 pcs)
5	1	00130218	Sticker AV 1000 standalone
6	1	00130221	Pressure switch AV 1000 standalone, 50/60 Hz
7	1	20201691	High-pressure suction coupling 1" external thread with gasket
8	1	00493085	Handle console AV 1000 standalone RAL9002

\*\* Without items 1,2,4,5,7 und 8



## Spare parts drawing, spare parts list

### 27.5 Spare parts drawing - prefilter AV1000 cpl.



### 27.6 Spare parts list - prefilter AV1000 cpl.

Pos.	Qty.	Item no.	Description
1	1	00130219	Prefilter AV1000 cpl.
2	1	20201681	High pressure coupling 3/4" ext. thread with seal
3	1	00130220	Pre-filter AV 1000 standalone
4	1	20200910	Geka coupling 3/4" ext. thread

## 28 Index

Accessories.....	16	Initial start-up Pressure and flow monitor .....	34
Accidents .....	15	Instruction.....	9
<b>Advantages of PFT AV1000</b> .....	21	<b>Intended use</b> .....	11
<b>After performing maintenance</b> .....	29	Labels.....	16
<b>AV1000 fields of application</b> .....	21	Liability .....	7
<b>Commissioning – AV1000</b> .....	24	Low water level .....	39
Compatible/non compatible fluids.....	32	<b>Maintenance</b> .....	28
<b>Connected load</b> .....	17	<b>Maintenance work on the machine</b> .....	28
Contact partner .....	8	<b>Measures to be taken if there is a risk of frost</b> .....	29
Copyright protection.....	7	Moving parts.....	14
Customer service .....	8	No power supply .....	35
Dangerous situations .....	15	<b>Noise</b> .....	14
<b>Description – PFT AV1000</b> .....	21	NORMAL SERVICE	
Device catalog .....	16	the pump is inactive.....	35
<b>Dimension sheet – AV1000</b> .....	19	the pump is running .....	36
<b>Dirt and other impedances</b> .....	14	Operating conditions .....	32
<b>Disassembly</b> .....	30, 31	<b>Operating conditions for pressure and flow monitor</b> .....	32
<b>Disposal</b> .....	31	Operating Manual.....	16
Ear protection.....	12	Operating personnel .....	9
<b>Electric current</b> .....	13	<b>Operating requirements</b> .....	18
Electrical connections .....	35	OUT OF SERVICE .....	36
Electricians.....	10	<b>Output values</b> .....	18
Emergency stop .....	27	<b>Overview – High pressure pump AV1000</b> .....	20
Emergency Stop .....	33	Owner responsibility.....	8
Environmental conditions.....	32	<b>Packaging</b> .....	22
ERROR		Personnel	
stopped temporarily due to dry running .....	36	Commissioning .....	27
temporary shut down due to frequent start up .....	37	Disassembly .....	30
Face guard.....	13	Installation .....	27
<b>Fundamental safety instructions</b> .....	23	Power supply.....	33
General information .....	5	<b>Preparation – High pressure pump AV1000</b> ..	24
<b>General specifications.</b> .....	17	<b>Proper use of the machine</b> .....	21
<b>Handling malfunctions</b> .....	27	<b>Protective equipment</b> .....	11
How the pressure and flow monitor works.....	35	Installation .....	28
Index. ....	44	Protective equipment for operators.....	23
Information on the safety instructions .....	5		
Information regarding the operating manual.....	5		



Protective work clothing.....	12	Spare parts drawing, High pressure pump .....	40
Requirements .....	9	Spare parts drawing, spare parts list .....	40
<b>Safety</b> .....	23, 30	Spare parts list of the assemblies.....	41
Safety.....	8	Spare parts list of the assemblies.....	42
<b>Safety</b> .....	27	Spare parts list prefilter AV1000 cpl. ....	43
<b>Safety devices</b> .....	15	<b>Special dangers</b> .....	13
Safety gloves .....	12	Specialists.....	10
Safety goggles .....	12	<b>Switching off in an emergency</b> .....	27
Safety helmet.....	12	Switching the pump on .....	34
<b>Safety instructions for transport</b> .....	22	Symbols in the danger zone .....	16
Safety regulations.....	33	Symbols in the manual .....	5
Safety shoes .....	12	<b>Technical data High pressure pump AV1000</b>	
Signs.....	16	<b>assy.</b> .....	17
<b>Sound power level</b> .....	18	<b>Transport, storage and packagingt</b> .....	22
Spare parts .....	8	<b>Transportation checklist</b> .....	22
Spare parts drawing – High pressure pump		<b>Troubleshooting</b> .....	27
AV1000 .....	42	<b>Vibrations</b> .....	18
Spare parts drawing - prefilter AV1000 cpl.....	43	Working area .....	32



PFT - ALWAYS AT YOUR SITE



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