

Break units

User and operating instructions
series: Break units - DPV(M)E AF

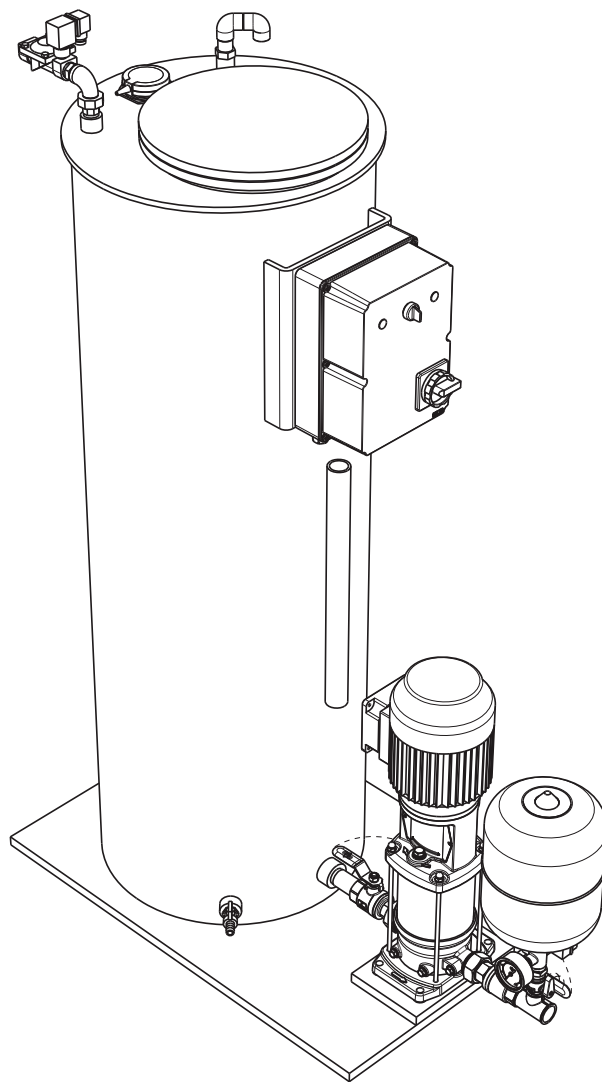


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1 Introduction

1.1 Preface

This manual contains important information for reliable, proper and efficient operation. Compliance with the operating instructions is of vital importance to ensure reliability and a long service life of the product and to avoid any risks.

The first chapters contain information about this manual and safety in general. The following chapters provide information about normal use, installation, maintenance and repairs of the product. The annex contains the declaration(s) of conformity.

- Make yourself familiar with the content.
- Accurately follow the directions and instructions.
- Never change the sequence of the operations to be carried out.
- Keep this manual or a copy of it together with the logbook in a fixed place near the product which can be accessed by all personnel.

1.2 Icons and symbols

In this manual and in all accompanying documentation the following icons and symbols are used.



WARNING

Danger of electric Voltage. Safety sign according to IEC 417 - 5036



WARNING

Operations or procedures, if carried out without caution, may cause personal injury or damage to the product.

General hazard sign according to ISO 7000-0434



ATTENTION

Is used to introduce safety instructions whose non-observance may lead to damage to the product and its functions.



ENVIRONMENTAL INSTRUCTION

Remarks with respect to the environment.



READ THE (SUPPLEMENTARY) DOCUMENTATION

Read the user and operating instructions.

2 Identification, service and technical support

2.1 Identification, service and technical support

The identification sticker mentions the type/size, the main operating data and the serial number. Please mention these data in all queries, repeat orders and particularly when ordering spare parts. If you need any additional information or instructions not included in this manual or in case of damage, please contact the nearest customer service centre of DP-Pumps.

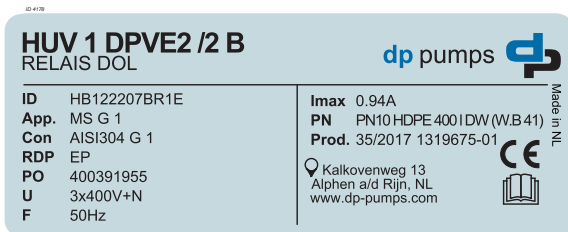


Figure 1: Example: Identification sticker

Table 1: explanation of the sticker

Indication	Meaning
HUV1DPVE2/2 B	Installation type
Relais DOL	Type of controller and start-up method
ID	Item number
App.	Material of fittings and connection size
Con.	Material of pipes and connection size
RDP	Type of run-dry protection
PO	Order number
U	Supply voltage of the installation
F	Frequency of the installation
I _{max}	Maximum absorbed power of the installation
PN	Pressure class of the installation and construction type
Prod.	Production week/year and number

The following address data are available for service and technical support:

Table 2: Address service department

DP-Pumps	Tel: +31 172 488388 Fax: +31 172 468930 Internet: www.dp-pumps.com E-mail: dp@dp-pumps.com
Kalkovenweg 13 2401 LJ Alphen a/d Rijn The Netherlands	

2.2 Supplementary documentation

Apart from this manual, the documentation given below is available as well:

Table 3: Supplementary documentation

Document	Code
General terms of delivery	119 / 1998
Documentation	
User and operating instructions for pumps	BE00000377
Instruction sheet: Adjusting closing delay time solenoid valve (\geq G 2/3 solenoid valve)	K370611016

3 Warranty

3.1 Terms of warranty

The warranty period is settled by the terms of your contract or at least by the general terms and conditions of sales.



ATTENTION

Modifications or alterations of the product supplied are only permitted after consultation with the manufacturer. Original spare parts and accessories authorized by the manufacturer ensure safety. The use of other parts can invalidate any liability of the manufacturer for consequential damage.



ATTENTION

The warranty relating to the operating reliability and safety of the product supplied is only valid if the product is used in accordance with its designated use as described in the following sections of this manual. The limits stated in the data sheet must not be exceeded under any circumstances.

The warranty becomes invalid if one or more of the points below occur.

- The buyer makes modifications himself.
- The buyer carries out repairs himself or has these carried out by a third party.
- The product has been handled or maintained improperly.
- The product has non original DP-Pumps spare parts fitted.

DP-Pumps repairs defects under warranty when:

- They are caused by flaws in the design, the material or the production.
- They are reported within the warranty period.

Other terms of warranty have been included in the general terms of delivery, which are available upon request.

4 Safety and environment

4.1 General

This DP-Pumps product has been developed using state-of-the-art technology; it is manufactured with utmost care and subject to continuous quality control. DP-Pumps does not accept any liability for damage and injury caused by not observing the directions and instructions in this manual, or in cases of carelessness during the installation procedure, use and maintenance of the product.

Non-compliance with safety instructions can jeopardize the safety of personnel, the environment and the product itself. Non-compliance with these safety instructions will also lead to forfeiture of any and all rights to claims for damages.

For example, in particular non-compliance can result in:

- failure of important pump/system functions,
- failure of prescribed maintenance and servicing practices,
- injury to persons by electrical, mechanical and chemical effects,
- hazard of the environment due to leakage of hazardous substances,
- explosions.

Depending on specific activities, extra safety measures may be required. Contact DP-Pumps if a potential danger arises during use.



ATTENTION

The owner of the product is responsible for compliance with the local safety regulations and internal company guidelines.



ATTENTION

Not only must the general safety instructions laid down in this chapter on "Safety" be complied with, but also the safety instructions outlined under specific headings.

4.2 Users

All personnel involved in the operation, maintenance, inspection and installation of the product must be fully qualified to carry out the work involved and be aware

of all applicable responsibilities, authorisations and super visions. If the personnel in question is not already in possession of the required know-how, appropriate training and instruction must be provided. If required, the operator may commission the manufacturer / supplier to take care of such training. In addition, the operator is responsible for ensuring that the contents of the operating instructions are fully understood by the responsible personnel.

4.3 Safety provisions

The product has been designed with the greatest possible care. Original parts and accessories meet the safety regulations. Modifications in the construction or the use of non-original parts may lead to a safety risk.



ATTENTION

Make sure that the product operates within its working range. Only then the product performance is guaranteed.

4.3.1 Labels on the product

The icons, warnings and instructions applied to the product are part of the safety provisions. The labels may not be removed or covered. Labels must remain legible during the entire life of the product. Replace damaged labels immediately.

4.4 Safety precautions

4.4.1 During normal use

- Contact the local electricity company for questions about the power supply.
- Protect the parts that can become hot, making direct contact impossible.
- When applicable, always place undeformed coupling guards to protect the coupling, before putting the pump into use. Make sure that the coupling guards are never in contact with the rotating coupling.
- Always close the terminal box of the motor.
- Always close the control panel where applicable

4.4.2 During installation, maintenance and repair

Only authorised personnel may install, maintain and inspect the product and repair electrical components. Observe the local safety regulations.



WARNING
Always disconnect the energy supply to the product first, before installation, maintenance and repairs. Secure this disconnection.



WARNING
Surfaces of a pump can be hot after continuous operation.



WARNING
Make sure that no one can be near rotating components when starting a pump.



WARNING
Handle a pump with dangerous liquids with the utmost care. Avoid danger for persons or the environment when repairing leakages, draining liquids and venting. It is strongly recommended to place a leakage tray under the pump.



WARNING
Immediately following completion of the work, all safety-relevant and protective devices must be re-installed and / or re-activated.



WARNING
Please observe all instructions set out in the chapter "Commissioning/Start-up" before returning the product to service.

4.5 Environmental aspects

4.5.1 General

The products of DP-Pumps are designed to function in an environmentally friendly way during their entire lifetime. Therefore, when applicable, always use biodegradable lubricants for maintenance.



ENVIRONMENTAL INSTRUCTION
Always act according to the laws, by-laws regulations and instructions with respect to health, safety and the environment.

4.5.2 Dismantling

The owner is responsible for the dismantling and environmentally friendly disposal of the product.



ENVIRONMENTAL INSTRUCTION
Ask at the local government about the re-use or the environmentally friendly processing of discarded materials.

5 Introduction

5.1 General

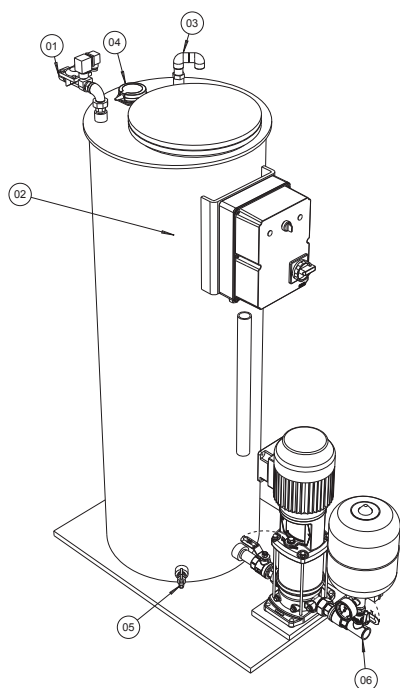


Figure 2: Installations of the type break unit AF break

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Table 4: Pos. numbers figure 2

Pos. no.	Description
01	Supply valve suppletion DWL
02	Overflow
03	Vacuum breaking/venting
04	Level control
05	Drain valve
06	Discharge connection

The installations break unit DPV(M)E AF are produced by DP-Pumps, Alphen aan den Rijn.

5.2 Intended use

The installation break unit is suitable for increasing the pressure in (process) water installations and for pumping liquids with a viscosity identical to the viscosity of water, within the indicated working range.

The installation break unit is set up in order to prevent water from flowing back from the system into the water mains. The waterworks makes a break unit compulsory in accordance with EN 1717 and EN 14622 (AF), if the water user works with substances that are dangerous to public health. For checking the process liquid we refer to EN 1717 and EN 14622. The constructive design requirements for the reservoir have been tested by EN 1717 and EN14622.

Any other or further use of the installation is not in conformity with its intended use. DP-Pumps does not accept any liability for any damage or injury resulting from this. The installation has been produced in accordance with the actual standards and guidelines. Use the installation exclusively in a perfect technical state, in conformity with the intended use described below.

The *Intended use* as laid down in ISO 12100:2010 is the use for which the technical product is intended according to the specifications of the manufacturer. The use of the product has been described in the available documentation and information. Always observe the instructions as given in the installation and operating instructions. When in doubt the product must be used as becomes evident from its construction, version and function.

5.3 Working range

The working range of the installation can be summarised as follows:

Table 5: Specification of the working range

Type	break unit
Ambient temperature [°C]	+4 to 30
Liquid temperature [°C]	+4 to 40
Maximum operating pressure [kPa]	1000
Minimum supply pressure [kPa]	20 (on solenoid valve)
Maximum supply pressure [kPa]	250 (on solenoid valve) ¹
Pressure class	PN10
Minimum conductance of medium	100 µS
Maximum height	1000 m above NAP

- The supply and discharge capacities of the installation have been explained for a maximum pre-pressure on the solenoid valve of 250 kPa. In case of higher pre-pressure values, the discharge capacity may be insufficient. This high pre-pressure will also cause problems with water hammer and incorrect filling of the reservoir. Also see figure: Diagram for passage of the solenoid valve. ADVICE: use a pressure reducing valve to reduce the increased pressure.

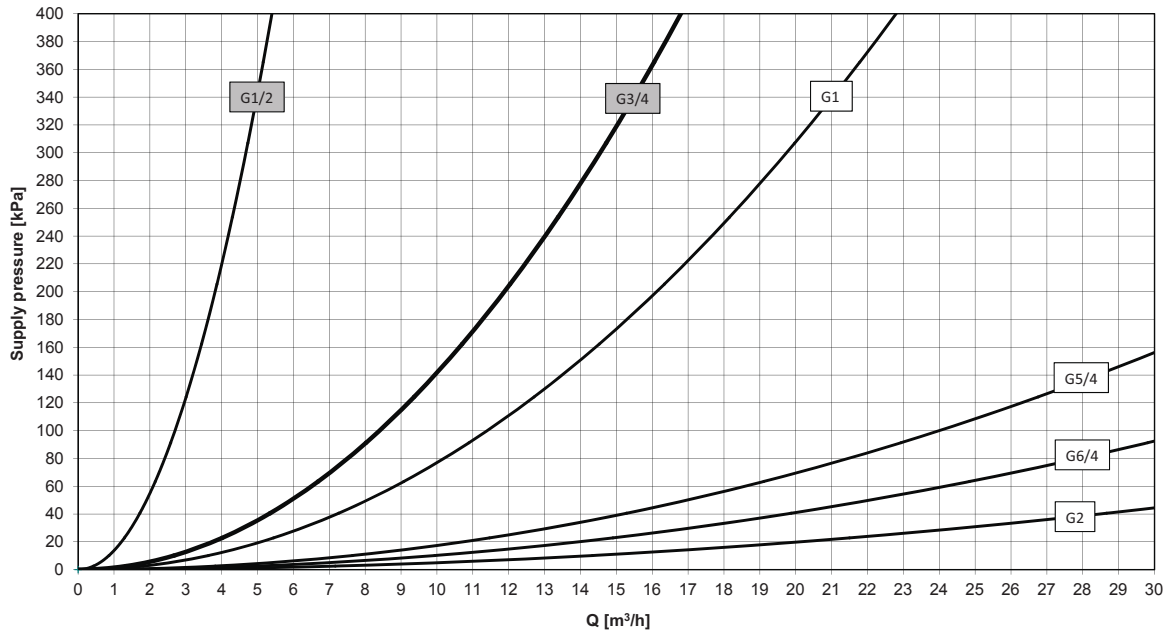



Figure 3: Diagram for passage of the solenoid valve / supply valve

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Table 6: Specific applications

type	application area
break unit 	(Process) water supply systems requiring a non-return protection that complies with class AF according to EN 1717 and NEN-EN 14622.

The reservoir has a separate vacuum breaker and venting device.

5.4 Operation

When the pressure drops because of use of water, the pump is switched on. Water is pumped from the reservoir to the draw-off points. When the pressure has reached the correct level, the pump is switched off with delay. The water level in the reservoir is controlled by level electrodes. The level electrodes control the supply valve and act as run-dry protection. The functioning of the level electrodes is based on the electric conductance of the liquid.

6 Transport

6.1 Transport



WARNING

The installation is transported on a pallet. Carefully slide the installation off the pallet at the place of destination.



WARNING

Hoist the installation according to the applicable hoisting guidelines. Only qualified personnel is allowed to hoist the installation.

Always observe the instructions as indicated by the stickers on the installation.



Figure 4: Piping sticker

1. Transport the installation in the position indicated on the pallet or packaging.
2. Check if the installation is stable.
3. Observe the instructions on the packaging (if present).

6.2 Storage

6.2.1 Preparations for storage

1. Protect the system against the risk of frost.
2. Store the installation in a frost-free environment.
3. Place the installation in the position as indicated on the packaging.
4. When applicable: Keep the vessel under pressure (1/2 bar).

6.2.2 Inspection during storage

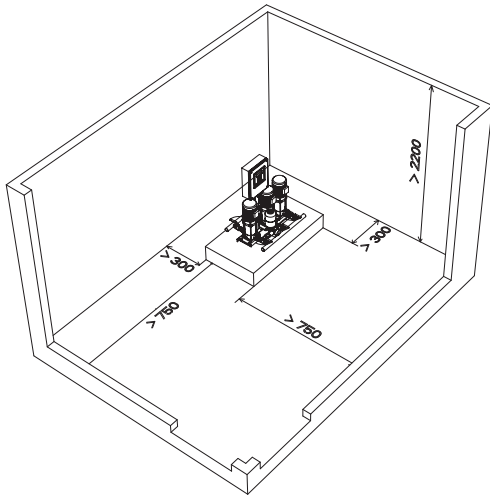
1. Turn a shaft every three months¹. This protects the seals from seizure.

1. period may vary per application or medium. Please consult your sales representative for application details.

2. After a storage period of six months or longer, inspect the installation before using it again.

7 Installation

7.1 Set up the system



Preferably set up the system² stand-alone in an area that has at least the following properties:

Item	Requirements
Area	<ul style="list-style-type: none"> • Clean, dry, dust-free, frost-free and well lit. • The surface must be large enough for easy access to the installation. • The height of the installation area must meet the minimum requirements. • The layout must be such (> 2200 mm), that any released water can be discharged without causing any inconvenience.
Foundation	<ul style="list-style-type: none"> • The system must be free from the walls. • The ground must be smooth and level. • The foundation must be large enough to carry all.

- Connect the supply pipe to the filling device of the installation (solenoid valve)



ATTENTION
The last metre may not have a diameter larger than the connecting diameter of the supply of the installation.

- Connect the discharge pipe to the discharge pipe of the building (indicated by a sticker).
-
2. The model of the installation may differ from the installation in the figure

Proceed as follows to minimise the noise level:

- Place the installation on a flat ground.
- Fix the supply and discharge pipes correctly using a bracket.
- Mount a pipe compensator in the supply and discharge pipes (option).
- In case of contamination, insert a filter in the supply pipe.
- Manifolds must be connected stress-freely.
- The diameter of the supply pipes must be large enough.



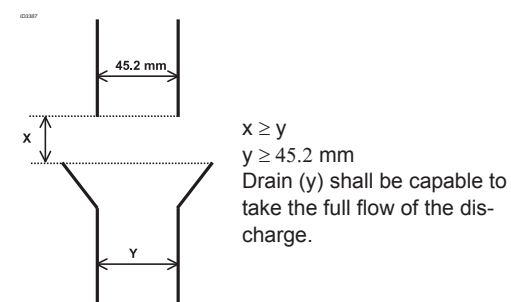
ATTENTION
The installation is delivered on a pallet. Carefully slide the installation off the pallet at the place of destination.



ATTENTION
Mount a valve in the discharge line. This in order to avoid having to drain the entire pipe in case of any repair.

Overflow connection:

Connect the overflow in accordance with EN 1717. A visible and free outflow must have been provided according to the drawing.



(The size is an example)

7.2 Electrical installation



WARNING
Only qualified personnel is allowed to perform the electrical connection of the installation in accordance with the local regulations.

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Electrical connections

- Make sure that the electrical specifications correspond with the voltage the installation is connected to.
- Connect the installation using an interruptible connection (plug).
- Close the door of the control panel after having completed the installation.

7.3 Commissioning



WARNING

Never switch on the break unit when it does not contain any liquid.

7.3.1 In a closed circuit with sufficient supply pressure

Proceed as follows when putting the installation into operation:

1. Open the filling nipple on the pump casing;
2. Fill the pump casing until the liquid to be pumped flows out of the filling nipple;
3. Close the filling nipple.

7.3.2 Reset after a fault



WARNING

Eliminating faults should only be done by qualified personnel after the cause has been determined.

When there is no water in the reservoir, the run-dry protection will switch off the installation. Filling the reservoir will automatically reset the installation.

In case of a power failure, the installation is automatically switched off. The installation will automatically switch on again when the power returns.

7.3.3 Pre-pressure

For a correct functioning of the installation, the pre-pressure in the pressure vessel must be 50 kPa lower than the switch-on pressure. Proceed as follows to determine the pre-pressure:

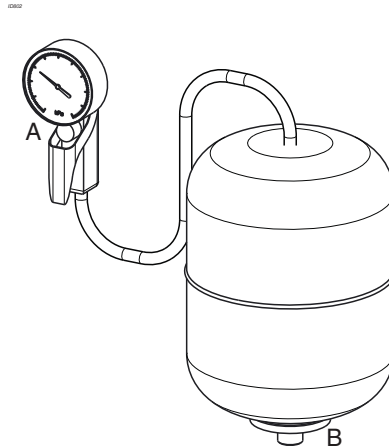


Figure 5: Set the pre-pressure

1. Measure the pressure (A) in the vessel when there is no pressure on the water side (B).
2. Fill the vessel with nitrogen or air. Preferably use nitrogen.



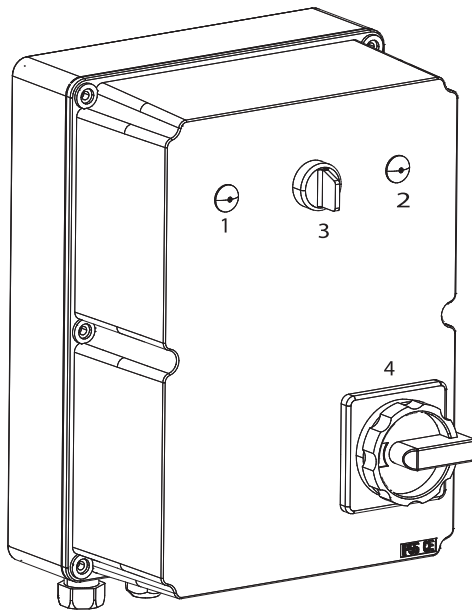
WARNING

Before putting the installation into use, first put the pressure vessel under pressure. Refer to the annexes for the correct setting.

8 Operation

8.1 Operation

The break unit is operated automatically.



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Table 7: Operation

Nr:	Explanation
1	Alarm light, pump is switched off by the thermal relay.
2	Alarm light, no water. Reservoir is empty, switch off installation.
3	M-0-A switch for the pump. M = Pump on manual control 0 = Pump is switched off A = Pump on automatic control
4	Main switch

8.1.1 Reset after a fault



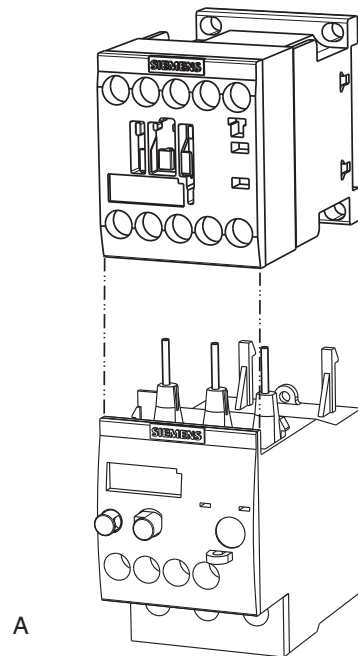
WARNING
Eliminating faults should only be done by qualified personnel after the cause has been determined.

When there is no water in the reservoir, the run-dry protection will switch off the installation. Filling the reservoir will automatically reset the installation.

In case of a power failure, the installation is automatically switched off. The installation will automatically switch on again when the power returns.

8.1.2 Pump overload

When the pump is overloaded, the motor protection will automatically switch off the pump. Proceed as follows to reset the installation:



A

Figure 6: Motor protection relay

1. Disconnect the power supply into the central distribution box or remove the connector/plug from the power socket
2. Open the control panel
3. Selector switch (A) for manual/automatic reset and reset button: With this switch you can choose between manual and automatic reset. A device set to manual reset can be reset locally by pressing the reset button.
4. Close the control panel
5. Connect the power supply into the central distribution box or put the connector/plug back into the power socket.

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9 Maintenance

9.1 Introduction



WARNING

Observe the general safety precautions for installation, maintenance and repair.

Regular maintenance is necessary for correct operation of the installation. For maintenance of the installation, please contact your supplier. A draft maintenance contract is available upon request.

9.2 Lubrification

Standard motors, with a maximum power of 7.5 kW, are provided with maintenance free sealed bearings.

9.3 Putting the pump out of operation for an extended period

Turn a shaft every three months. This prevents the seals from getting stuck.

Protect an installation against freezing when there is a risk of frost. For this purpose take the measures given below:

1. Close all pump valves.
2. Drain each pump and/or the system.
3. Remove all plugs from a pump.
4. Open the shut-off and drain valve, if present.

10 Faults

10.1 Fault table



WARNING

Observe the general safety precautions for installation, maintenance and repair.

Problem	Possible cause	Possible solution	Checkpoints
Leakage along the pump shaft of the pump.	The shaft seal is worn.	Replace the shaft seal.	Check the pump for dirt.
	The pump has run without water.	Replace the shaft seal.	
The pump is vibrating and makes a lot of noise.	There is no water in the pump.	Fill and vent the pump.	
	There is no supply.	Make sure there is sufficient supply.	Check for obstructions in the supply pipe.
	The bearings of the pump/motor are defective.	Have the bearings replaced by a certified company.	
	The hydraulic system is defective.	Replace the hydraulic system.	
The installation/pump does not start.	There is no power on the terminal clamps.	Check the power supply.	<ul style="list-style-type: none"> • Circuit • Main switch • Fuses
The red light 'pump therm' is lit.	The thermal motor protection has been triggered.	Reset the thermal relay. Contact the supplier if this occurs more often.	
	The pressure switch has been set incorrectly.	Have the supplier re-adjust the installation.	
The installation/pump supplies insufficient capacity and/or pressure.	There is air in the pump.	Vent the pump.	
	The water meter in the supply pipe is too small.	Install a larger water meter.	
	The outlet and/or inlet valve is closed.	Open both valves.	
The pumps continuously start and stop.	The membrane switch vessel(s) have a leak or an incorrect pressure value.	Have the supplier re-adjust the installation.	
The red light 'no water' is lit.	no water supply	Open the solenoid valve	Check the supply
	The solenoid valve is defective		Check the control of the solenoid valve. The medium must be conductive! This in connection with the functioning of the electrode control.
The overflow keeps flushing	The solenoid valve remains open	Contact the supplier	
	The power supply of the solenoid valve is malfunctioning	Contact the supplier	
	The solenoid valve stuck	Contact the supplier	

11 Annexes

11.1 P & ID diagram

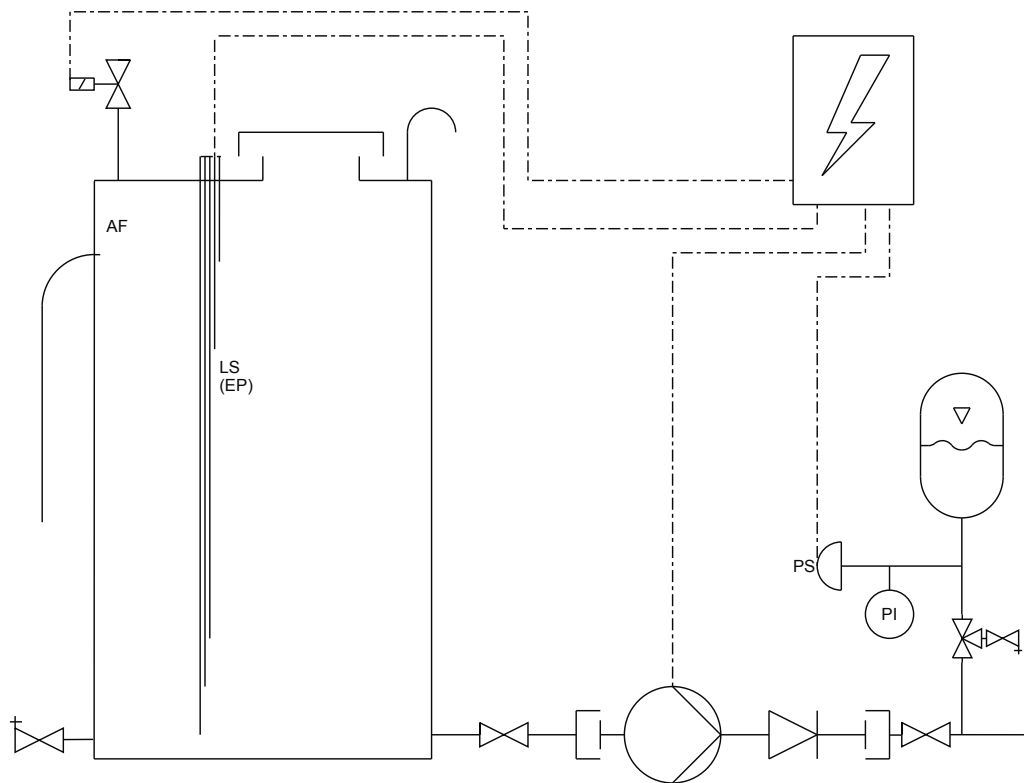


Figure 7: P&ID diagram HUV1 PW with AF overflow



ATTENTION
See supplied electrical wiring diagram
for the connection of external wiring.

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11.2 EC declaration of conformity

Undersigned:

DP-Pumps
Kalkovenweg 13
2401 LJ Alphen aan den Rijn, The Netherlands
Tel: +31 (0)172 - 48 83 88

Declares as manufacturer entirely on his own responsibility that the product:

Product: Break units
Type: HUV1 PW AF relay control DOL
Serial number: 43/2018 10000000-01 [...] 53/2020 99999999-99

to which this declaration refers, have been constructed in compliance with the following harmonised international standards:

- ISO 12100:2010
- EN 809+A1/C1:2010
- EN 1717:2000
- EN 14622:2005
- IEC 60204-1:2006

according to the stipulations of:

Machine directive 2006/42/EC

If the installation is used as a stand-alone product, it is subject to this declaration of conformity.

If the installation is built in into an appliance or assembled with other equipment in certain systems, it shall not be put into operation until a declaration has been issued for the appliance concerned that this complies with the directives listed above.



Alphen aan den Rijn,
06-11-2012

Responsible person:
W. Ouwehand, technical director



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10/2018

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Original instructions

Can be changed without prior notice

