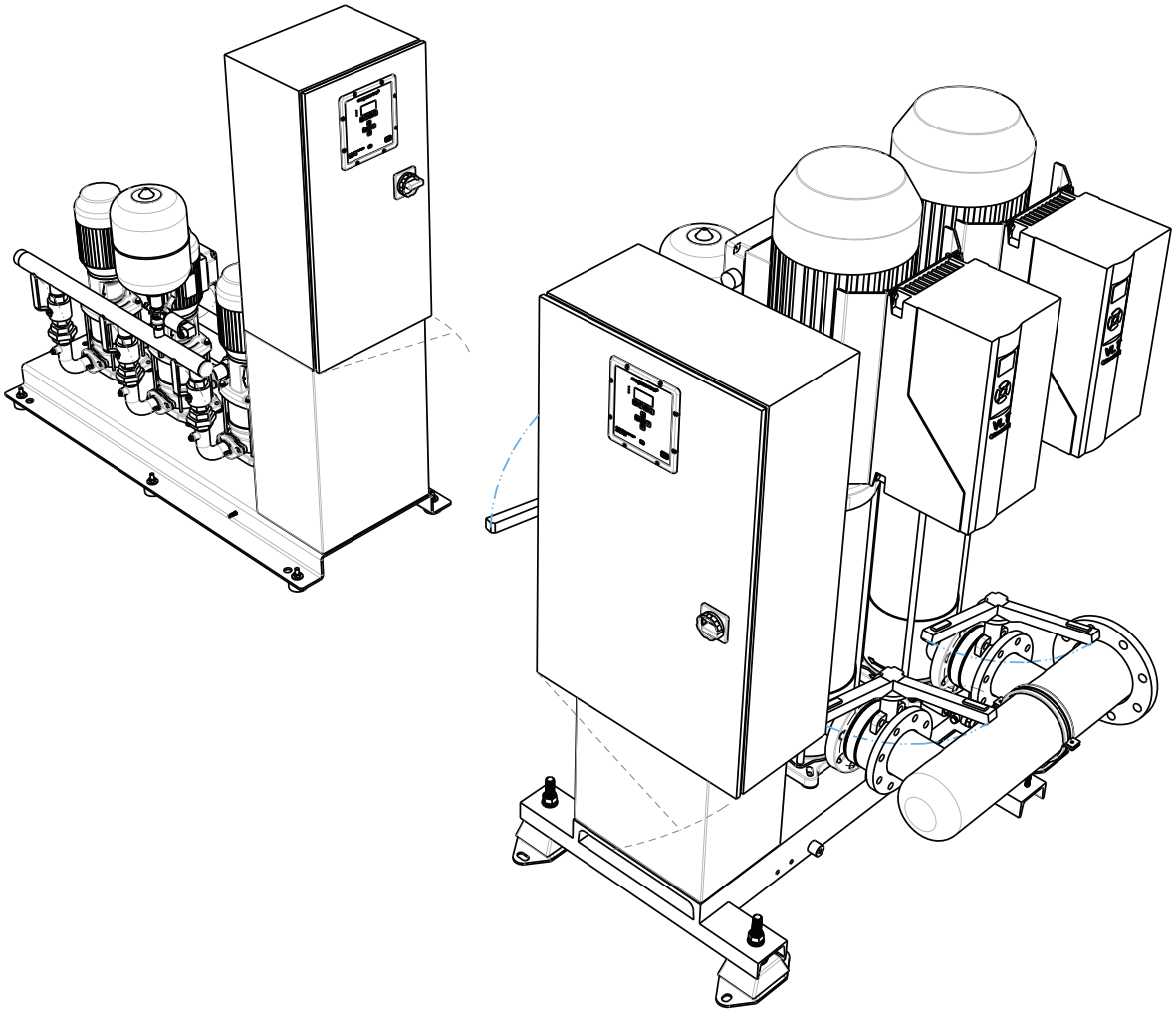
Hydro-Unit UTILITY

Installation and operating instructions
series: HU UTILITY MC(MF)



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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 tension. Safety indication for IEC 417 - 5036.

WARNING
Operations or procedures that, if carried out without caution, may lead to personal injury or damage to the product. General hazard indication for ISO 7000-0434.

ATTENTION
Is used to introduce safety instructions non-observance of which 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.

WEEE MARKING
Marking of electrical and electronic equipment in accordance with Article 15(2) of Directive 2012/19/EU.

Look / recognise the product

Visual inspection
Point of attention

2 Identification, service and technical support

2.1 Identification, service and technical support

The name plate indicates the type series / size, main operating data and identification number. Please quote this information in all queries, repeat orders and particularly when ordering spare parts. If you need any additional information or instructions exceeding the scope of this manual or in case of damage please contact DP-PUMPS's nearest customer service centre.

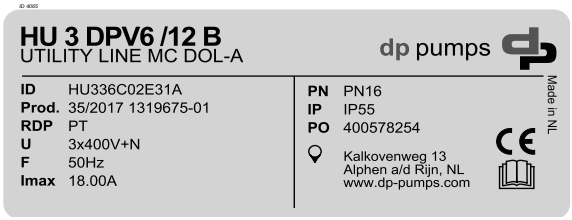


Figure 1: Example: Identification sticker

Table 1: sticker identification

Indication		Meaning
	HU 3 DPV6/12 B	Installation type
	UTILITY	Product family
	MC	Controller type
	DOL	Boot method
	A	Control panel size
ID	HU336C02E31A	Article number
Prod.	35/2017 1319675-01	Production week/year and number
RDP	PT	Run-dry protection type
U	3x400V+N	Required supply voltage
F	50Hz	Required frequency of the power supply
Imax	18.00A	Maximum current consumption of the installation
PN	PN16	Pressure class
IP	IP55	International Protection marking
PO	400578254	Purchase order number

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

Table 2: Address service department

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

2.1.1 MC(F) version

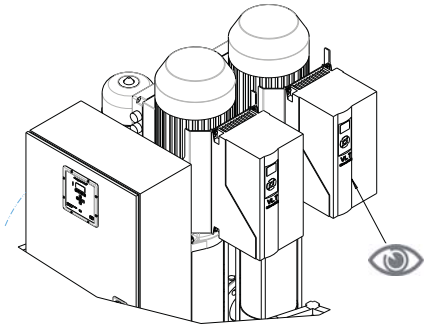
MC(F) DOL, - SFT and - star-delta

The pumps in the unit have a fixed speed

2.1.2 MCMF version

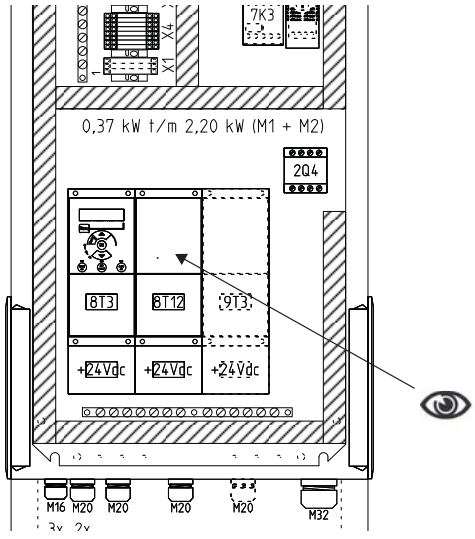
MC FRP

The unit has the frequency converters on the pump.



MC FRK

The frequency inverters are built in the control panel.



2.2 Supplementary documentation

Apart from this manual, the additional documentation given below is also available:

Table 3: Supplementary documentation

Document	Code
General terms of delivery	119 / 1998
Documentation	
Installation and operating instructions pumps	BE00000377
Installation and operating instructions Megacontrol	BE00000508

See also: www.dp-pumps.com

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 and is manufactured with utmost care and is subject to continuous quality control.
DP-PUMPS does not accept any liability for damage or injury caused by not following the directions and instructions in this manual or by carelessness during the installation, use or maintenance of the product. Non-compliance with the 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.
Non-compliance can result in:

- failure of important pump/system functions,
- failure of prescribed maintenance or service,
- injury caused by electrical, mechanical and chemical effects,
- leakage to the environment of hazardous substances,
- explosions.

Depending on the application, 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.

ATTENTION
Persons and/or children who are not qualified to do work on the product should only have access to the product under the supervision of a properly trained person.

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 supervisions. If the personnel in question is not in possession of the required know-how, appropriate training and instruction must be provided. The operator may require the manufacturer/supplier to provide sufficient training and/or instructions. 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

- For questions regarding the power supply contact the local electricity company.
- Isolate possible hot parts to avoid injury through direct contact.
- For your safety always assemble undeformed coupling guards (when applicable) before putting the pump into use.
- 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
Before proceeding with any installation, maintenance or repair, disconnect the power supply and secure this disconnection.

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

WARNING
Secure the area before starting a pump to avoid hazardous situations with rotating parts.

WARNING
Take utmost care when handling dangerous liquids. Avoid danger to persons or the environment when conducting repairs, draining liquids or venting. It is strongly recommended to place a leakage tray under the pump.

WARNING
Immediately after completing 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" before returning the product to service.

4.5 Return to supplier

- Drain the pressure booster system as per operating instructions.
- Always flush and clean the pressure booster system, particularly if it has been used for handling noxious, explosive, hot or other hazardous fluids.
- If the pressure booster system has handled fluids whose residues could lead to corrosion damage in the presence of atmospheric humidity or could ignite upon contact with oxygen, the pressure booster system must also be neutralised, and anhydrous inert gas must be blown through the pressure booster system to ensure drying.
- Always complete and enclose a certificate of decontamination when returning the pressure booster system, see chapter 13.5 Certificate of Decontamination.
  Always indicate any safety and decontamination measures taken.

ATTENTION
If required, a blank certificate of decontamination can be downloaded from the web site at: www.dp-pumps.com/certificates-of-decontamination

4.6 Environmental aspects

4.6.1 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.

4.6.2 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

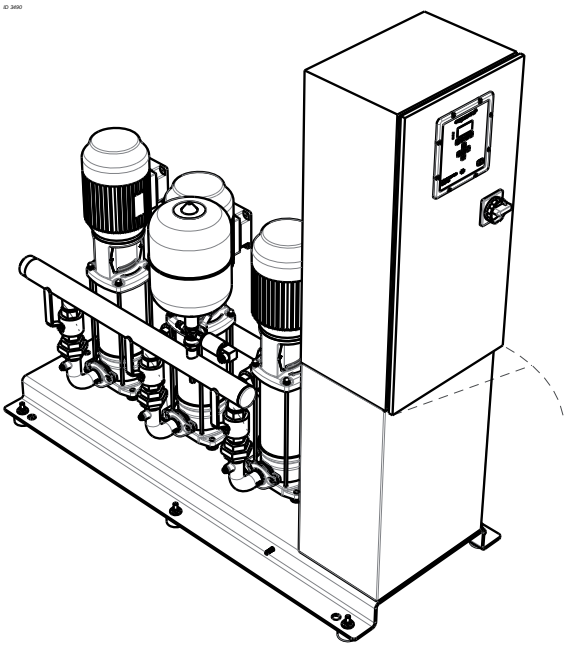


Figure 2: Installations of the type HU MC(MF) Utility line

Installations of the HU MC(MF) Utility line type are produced by DP-PUMPS.

5.2 Intended use

The installation HU MC(MF) Utility line is suitable for increasing the pressure in (drinking) water installations and for pumping liquids with a viscosity identical to the viscosity of water, within the indicated working range (see "Working range").

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 is summarised as follows:

Table 4: Specification of the working range

Type	HU MC(MF) Utility line
Ambient temperature [°C]	0 - 30 (should not freeze)
Liquid temperature [°C]	-15 - 70[1]
Maximum working pressure [kPa]	1.600
	Unless indicated otherwise
Supply pressure [kPa]	Non-cavitating[1]. Minimum: 120 kPa Maximum: supply pressure plus pump pressure together may not exceed 1600 kPa
Maximum height	1000 m above sea level

1. Contact your supplier for more detailed advice.

Table 5: Specific applications

Type	Area of application
HU MC(MF) Utility line	(Drinking) water supply systems, irrigation systems, water treatment systems, car-wash systems, sprinkler systems and discharge of condensed water.
	Inside use Do not use demiwater[1]

1. Demiwater can be used by an AISI316 unit

5.4 Functioning

5.4.1 Standard operation

The Megacontrol is an intelligent control unit for different components of pressurization systems consisting out of a maximum of 6 pumps. The required system pressure is sensed by a pressure sensor on the outlet side of the installation.

When as a result of a decreasing water volume the pressure drops below the pressure set point, a pump will be switched on.

When the required system pressure has been reached, the pumps are switched off one at a time. The minimum run time is optimized constantly, which results in a considerable energy saving.

5.4.2 Custom made settings

The Megacontrol can be programmed through the human machine interface (HMI) operating panel and has been protected against unauthorized use by a password.

Also, the service port provides access to the parameters of the program which can be used to optimize the functionality of the installation, (see: “Parameter list”).

WARNING
For access to the parameters of the program using the service port, always use the special service port cable!

The special service port cable (Art. nr. 6147117698) can by ordered separately.

5.4.3 Number of operating hours per pump

The current number of operating hours of a pump determines which pump will be switched on or off next. The pump with the fewest operating hours will be switched on first and the pump with the most operating hours will be switched off first. This makes sure that all pumps have an equal number of operating hours, including the backup pump.

5.4.4 Test run

In order to prevent pumps from standing still for a longer period of time, an automatic test run procedure is provided as a standard.

5.4.5 Functioning Hydro-Unit (option)

In combination with the Megacontrol, the Hydro-Unit can generate a failure message when, during a (adjustable) period of time, insufficient refreshment of the membrane switch vessel occurs.

The failure message is generated when:
- Insufficient refreshment occurs;
- The membrane of the membrane switch vessel is defective;
- There is no air left in the membrane switch vessel;
- The installation is not set / installed correctly.

5.4.6 Temperature-sensor (option)

When the Megacontrol is fitted with a temperature sensor, it can generate a temperature-dependent failure message.

Not Urgent:
- An not urgent alarm is generated when the ambient temperature exceeds the set temperature.

Urgent:
- An urgent alarm is generated when the average temperature of one day, comes above the set temperature.

5.4.7 Monitoring of suction side by:

1. Pressure sensor in supply manifold (option)
A pressure sensor can be installed in the supply manifold. This sensor will register the pre-pressure for:

- The PID control.
- Reading of the display.
- The run-dry protection.

2. (Float) switch in receiver tank or in supply valve.
In the receiver tank (or in the supply line) a pressure switch or float switch can be mounted. This switch records the supply pressure for the run dry protection.

3. Pressure sensor in receiver tank and supply valve (option).
A pressure sensor can be mounted in the receiver tank. The pressure sensor records the water level for:

- High-water alarm.
- Control of the supply valve. The supply valve can optionally be open/closed or proportionally controlled (option).
- Critical water-level indication.
- Run-dry protection.
- Two digital contacts for two extra level reports (option).

4. Flow switch in the supply

A flow switch can be installed in the supply manifold. This switch will register whether there is an actual flow running through the installation. In combination with the delivery pressure, it may be concluded whether the pumps are running dry.

5.4.8 Industry (Optional)

If the industry option is selected, the following components are installed:
Phase net-work monitor:

- this device will check of all three phase are present. When not, the device will give a fault and switch off.

E-0-A switch for each pump

- By using the emergency-0-automatic switch you can always start one or more pumps.
  - HU MC is directly connected to the power supply.
  - HU MCMF started the pump with a fixed speed, this speed is set in the frequency converter.

WARNING
If the pump is started by emergency, the running dry protection is not active, only the thermal protection is active.

Potential-free contacts:

- The unit potential-free contact which indicates that the unit operates;
- Each pump has a potential-free contact for:
  - Pump on duty;
  - Pump failure.

6 Transport

6.1 Transport

WARNING
Lift the installation using a hoist and suitable slings. Attach the slings to the hoisting eyes, where present. Never lift the installation from the manifolds.

WARNING
The installation must be hoisted according to the current hoist guidelines. Only qualified personnel are allowed to hoist the installation.

Always observe the directions as indicated on the installation by means of stickers.

Figure 3: Piping label

1. Transport the installation in the position as indicated on the pallet or packaging.
2. Make sure that 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 months[1]. This protects the seals from seizure.
2. After a storage period of six months or longer, inspect the installation before using it again.

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

7 Installation

7.1 Set up the installation

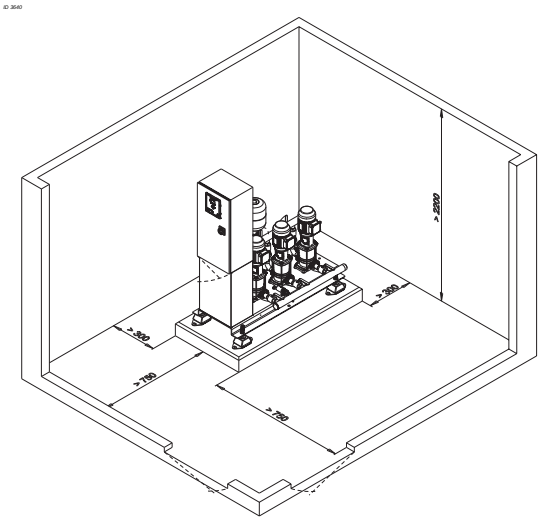


Figure 4: Installation set-up

Preferably set up the installation in an environment with at least the following properties:

Table 6:

Item	Requirements
Room	• Clean, dry, frost-free, cool[1] and ventilated, and can be provided with light; • The surface must be large enough for easy access to the installation. • The height of the installation room must meet the minimum requirements. • The layout must be such, that any released water can be discharged without causing inconvenience. • The room must be lockable.
Foundation	• The installation must be free from the walls. • The concrete base must be smooth and level. • The foundation must be large enough to carry all support points

1. Cool is defined as a temperature of between 4 °C and 25 °C, and preferably lower than 20 °C.

- Connect the suction pipe to the supply pipe (indicated with label).
- Connect the delivery pipe to the delivery pipe of the building (indicated with label).

In order to minimise the noise level, proceed as follows:

- Support the suction and delivery pipes correctly, e.g. 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 free of tension, which means that the supply and discharge pipes have to be supported.
- Diameter of the supply pipes sufficiently large.

ATTENTION
Use a run-dry protection. Connection contacts can be found in the control panel.

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

7.1.1 Machine mountings

the HU DPV Utility line is provided with 4 or more machine mountings for vibration damping and adjustment purposes in case of an uneven floor.

7.1.2 Indicators

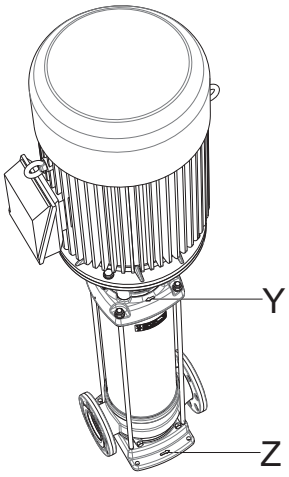


Figure 5: Indicators

20080201

The arrow (Z) on the pump foot indicates the flow direction of the liquid. The arrow (Y) on the head piece indicates the rotating direction of the motor.

7.2 Electrical installation

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

Electrical connections:

- Make sure that the electrical specifications correspond with the voltage the installation is connected to. Consult 'Electrical circuit diagrams' for the correct connection diagram.
- Connect the installation using an interruptible connection (separator).
- Close the door of the control panel after having completed the installation.
- Earthing:

WARNING
The ground plate of the Hydro-Unit has been equipped with an earthing connection. This earthing connection must be directly corrected to the central earthing point of the building. The earthing connection requires periodic checking and protection against corrosion with an electrically conductive agent, e.g. MOLYKOTE® HSC PLUS.

WARNING
In case of installations fitted with a frequency converter, the earthing connection must be connected before installing the power cable.

7.3 Commissioning

WARNING
Never switch on the installation when it does not contain any liquid.

Before you run the system:

- Flush the installation with potable water, disinfect the system if necessary.

7.3.1 In a open or closed circuit with sufficient supply pressure (see figure 6 Closed circuit)

Proceed as follows:

1. Turn off the main power.
2. Close the supply valve (C) and the discharge valve (A).
3. Remove the plug (B) from the motor stool.
4. Gradually open the supply valve (C) until the liquid flows from the plug opening.
5. Close the plug (B) opening.
6. Fully open the supply (C) valve.
7. Turn on the main power
8. Check the direction of rotation of the pump.
9. Fully open the discharge valve (A).

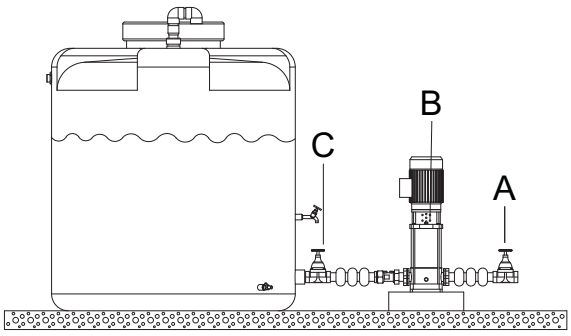


Figure 6: Closed circuit

ATTENTION
Seen from the top of the motor the pump must rotate clockwise. In case of a 3-phase motor the rotating direction can be changed by switching two of the three contact wires.

WARNING
Turn off the main from the central control panel

7.3.2 Pre-pressure pressure vessel

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:

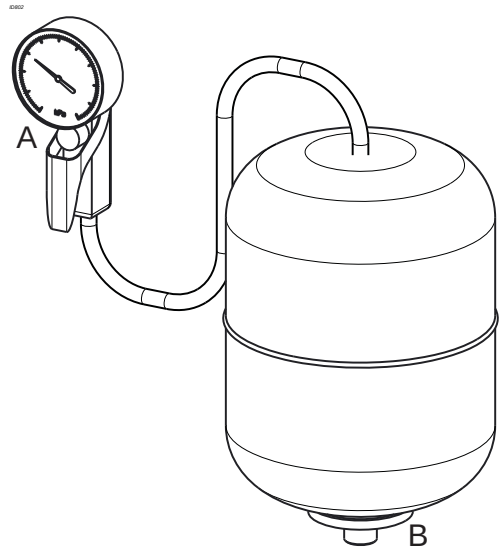


Figure 7: Set the pre-pressure

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. The maximum pre-pressure: 200 kPa below the pressure class (PN).

8 Operation

8.1 Control panel (HMI)

The control panel comprises a back-lit display, function, navigation, and operating keys, LED's, and 2 access points for the service interface. The display shows important information for pump system operation. Data can be displayed in plain text and parameters can be set.

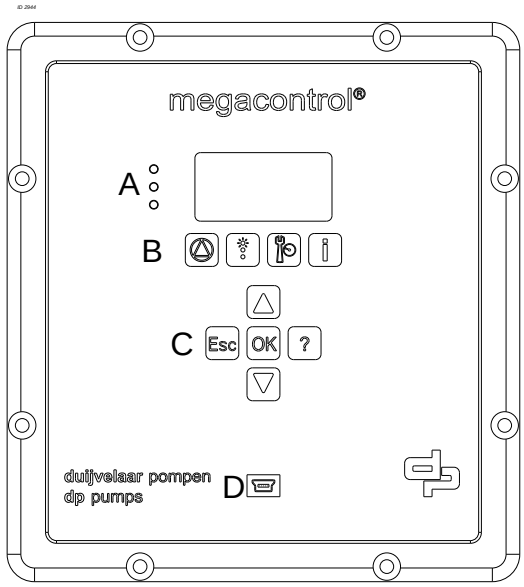


Figure 8: Front Megacontrol

Table 7: Traffic lights

A: LED's
The "traffic light" signals provide information about the pump system's operating status. LED's:
• Red: Alert / urgent alarm is active. • Amber: Warning / non-urgent alarm is active. • Green: O.K. / trouble-free operation.

Table 8: Function keys

B: Function keys	
You can use the function keys to access the elements at the first menu level directly: Operation, Diagnosis, Settings and Information.	
	**Operation**
	**Diagnosis**
	**Settings**
	**Information**

Table 9: Navigation keys

C: Navigation keys	
The navigation keys are used for navigating in the menu and for confirming settings.	
	**Up or Down** • Move up / down through the root menu (displays the measured values of the system input); • Move up / down through the menu options or; • Increase / decrease a value when you are entering numerals.
	**Escape key** • Delete / reset entry (the entry is not saved); • Return to the previous menu level.
	**OK key** • Access to the quick menu; • Confirm a setting; • Confirm a menu selection. • Go to the next number when you are entering numerals.
	**Help key** • Displays a help text for each selected menu option.

D: Service interface RS232
The service interface allows a PC / Notebook to be connected with use of the special service port cable. The Megacontrol PC software can be used to configure and parameterize the pump system if you do not have access to a control panel. The Megacontrol software can also be updated via this interface. A second service interface is located on the back side of the controller.

8.1.1 Display

The 7-row display contains the following information:

Table 10: Display rows

	Display	Meaning
1	**1-1**-1	Displays the selected parameter no.
2	**Parameter / Function**	Parameter name, Function key: • Operation • Diagnosis • Settings • Info
3	**Parameter name**	List of selectable parameters
4	**Level**	Operating level: • All • User • Service • Factory
		“Scroll bar” within the list of selectable parameters
5	**MM-YY 00:00**	Current date and time

The number of the current menu or parameter is displayed in the top left of the screen. This number indicates the path through the menu levels and, therefore, allows you to quickly locate parameters (see “Parameter list”).

The date and time is displayed in the bottom right of the screen. If a fault occurs, this is displayed in the bottom line and alternating with the date and time.

8.1.2 Continuous display

When in operation the most common values, like the system pressure are shown on the display continuously. By pushing the navigation buttons Up and Down all selected values are passing by. In Parameter setting **3-10 “Root menu”** these values can be selected as preset value. The selected values are marked with a “ √ “

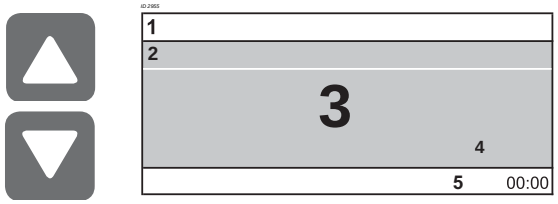


Table 11: Display example

	Display
1	**1**-1-1
2	System pressure
3	525
4	kPa
5	**MM-JJ 00:00**

8.1.2.1 Quick menu

Having access to the most used parameters a Quick menu can be entered by pressing the OK key.

8.1.3 Access levels

To prevent accidental or unauthorized access to the Megacontrol parameters, various access levels have been defined.

Table 12: Access levels

Access levels:	Explanation:
Standard	Unless users log on to one of the access levels, they will only have limited access to parameters.
User	Access level for expert users. It enables access to all the parameters required for commissioning. You have to enter a password under 3-2-1 “Log in”. The standard password for users is **7353**.
Service	Access level for service technicians. You have to enter a password under 3-2-1 Log in.
Factory	Access level for the manufacturer only.

ATTENTION
If no keys are pressed for ten minutes, the system automatically returns to the default access level.

8.1.4 Displaying and changing parameters

The parameter numbers contain the navigation path, which helps you find a particular parameter quickly and easily. The first digit of the parameter number indicates the first menu level, which can be called up directly via the four function keys. Subsequent steps are carried out via the navigation keys.

Example: Parameter 3-5-10 Delta p correction:

First digit of parameter number: **3**-5-10
3 Settings 5 Pressure 10 Delta p correction
 Press the third function key for Settings. **3-1** appears in the top left of the screen.
Second digit of parameter number: **3-5**-10
3 Settings **5 Pressure** 10 Delta p correction
 Change the display **3-1** on the screen (top left) to **3-5** by pressing the navigation keys.
 To confirm the selection, press OK. **3-5** appears in the top left of the screen.
Third digit of parameter number: **3-5-10**
3 Settings **5 Pressure** **10 Delta p correction**
 Change the display **3-5-1** on the screen (top left) to **3-5-10** by pressing the navigation keys.
 To confirm the selection, press OK. **3-5-10** appears in the top left of the screen.

8.2 Manual operation of the pumps

By pressing the Quick access key “**Operation**”, information like system pressure and pump load can be retrieved. Also, the pump operating mode like **Automatic**, **Manual** and **Disabled** can be alternated / selected. Subsequent steps are carried out by using the navigation keys.

Example: Parameter 1-2-1 (Pumps) Operation mode:

First digit of parameter number: **1**-2-1
1 Operation 2 Pumps 1 Operation mode
 Press the first function key for Operation. **1-1** appears in the top left of the screen.
Second digit of parameter number: **1-2**-1
1 Operation **2 Pumps** 1 Operation mode
 Change the display **1-1** on the screen (top left) to **1-2** by pressing the navigation keys.
 To confirm the selection, press OK. **1-2** appears in the top left of the screen.
Third digit of parameter number: **1-2-1**
1 Operation **2 Pumps** **1 Operation mode**
 To confirm the selection, press OK. **1-2-1** appears in the top left of the screen.
 Select the **pump number** by pressing the navigation keys.
 To confirm the selection, press OK.
 Select the operation mode **manual (on (10 s))**.
 To confirm the selection, press OK.

The selected pump will run for a period of 10 seconds and stops. The pump operation mode is changed to **Disabled (off)** This is to avoid that the pump runs unprotected.

8.2.1 Putting the pump into automatic operation again

The pump has to be put in operation again by selecting the **Automatic mode**.

Stay in the selected parameter **1-2-1 Operation mode** and press OK.

Select the **pump number** again by pressing the navigation keys.

To confirm the selection, press OK.

Select the operation mode **Automatic**.

To confirm the selection, press OK.

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 Lubrication

The standard motors, with a maximum electrical power of 7.5 kW, have been provided with closed bearings that need no specific maintenance.

Motors with lubricating nipples must be lubricated annually. If the installation works under extreme conditions, such as vibrations and high temperatures, the motors must be lubricated more often.

Use a lithium based -30 °C / 160°C bearing lubricant (about 15 grams)

9.3 Maintaining the pump for an extended period of non-operation

Turn the shaft every three months[2]. This protects the seals from seizure.

Protect the pump if there is a risk of frost. Proceed as follows:

1. Close all pump valves.
2. Drain each pump and/or the system.
3. Remove all plugs from the pump.
4. Open the shut-off and fill/air vent plug, if present.

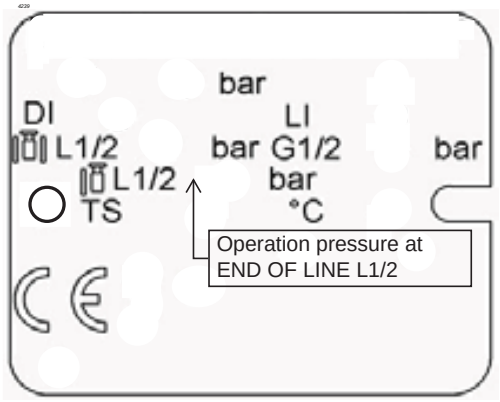
Let inspect the pump(s) or unit, after a storage period of 6 months or longer, before use again.

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

WARNING
See section 7.3 Commissioning.

9.4 Disassembly of a pump from the installation

Check the maximum “end-of-line” pressure if a pump has to build out for service. The suction and discharge valves must be closed. When the pump is removed it will create a “end-of-line” situation. The valve blades must resist the full pressure when the valves are closed. The maximum “end-of-line” pressure is mentioned on the name plate of the valve. The pressure in the system may not supersede this value.



20090459-B

Figure 9: Name plate valve

10 Hydro-Unit configuration

10.1 Hydro-Unit MC

ATTENTION

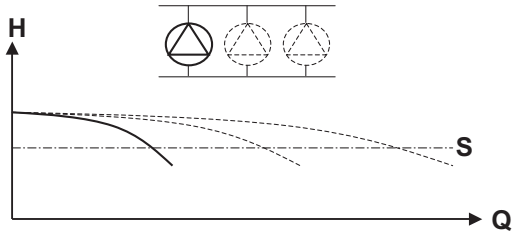


Figure 10: 1 pump operation

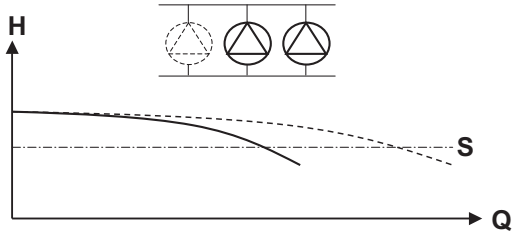


Figure 11: 2 pump operation

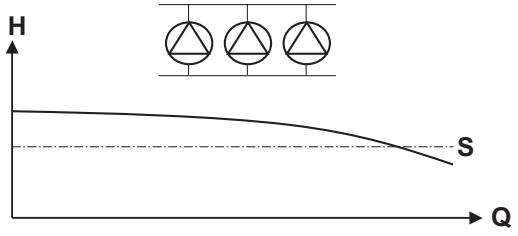


Figure 12: 3 pump operation

When as a result of an increasing water volume the pressure drops below the pressure set point, a pump will be switched on. When the required system pressure has been reached, the pumps are switched off one at a time. The minimum run time related switch-off delay is optimized constantly, which results in a considerable energy saving.

Table 13: Specific parameter settings MC

Parameter		Value
3-3-1	Number of pumps	1 2 **3** 4 5 6
3-3-2	Inlet	Switch Pressure Level / valve ON-OFF Level / valve prop.
3-3-3	Discharge	Fixed Speed
3-5-1	Set point	... kPa
3-5-3	Bandwidth	30
3-5-13	Low pressure alarm	100
3-6-1	Opt. pump starts/h	10
3-6-2	Min. run time	Default 180 s
		DOL ≤ 2.2 kW 90 s
3-6-3	Min. run time corr.	10 s
3-6-8	Run-dry delay	Default 30 s
		Float/level control 1 s

10.2 Hydro-Unit MC ++

ATTENTION

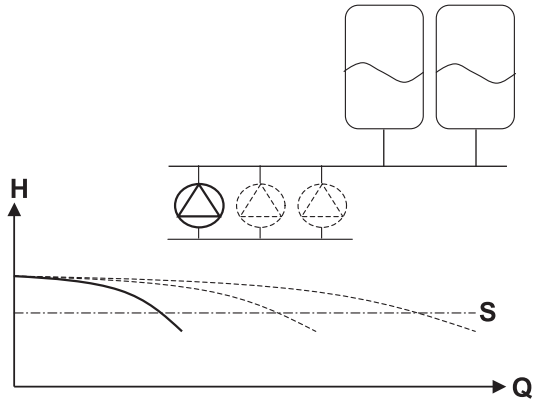


Figure 13: 1 pump operation

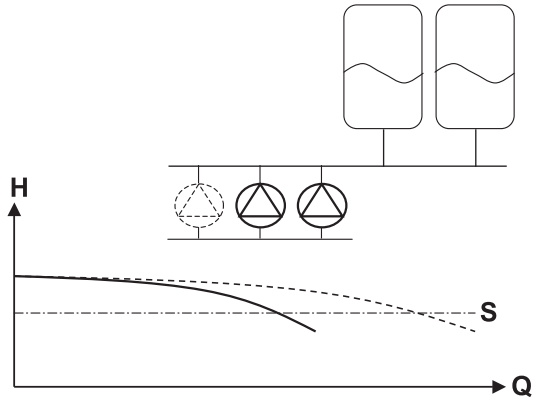


Figure 14: 2 pump operation

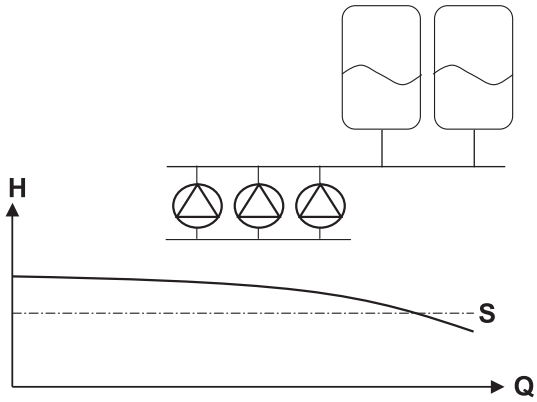


Figure 15: 3 pump operation

When as a result of a increasing water volume the pressure drops below the pressure set point, a pump will be switched on. When the required system pressure has been reached, the pumps are switched off one at a time. The minimum run time related switch-off delay is optimized constantly, which results in a considerable energy saving.

Table 14: Specific parameter settings MC ++

Parameter		Value
3-3-1	Number of pumps	1 2 3 4 5 6
3-3-2	Inlet	Switch Pressure Level / valve ON-OFF Level / valve prop.
3-3-3	Discharge	Fixed Speed
3-5-1	Set point	.... kPa
3-5-3	Bandwidth	50
3-5-13	Low pressure alarm	100 kPa
3-6-1	Opt. pump starts/h	30
3-6-2	Min. run time	1 s
3-6-3	Min. run time cor.	1 s
3-6-8	Run-dry delay	Default 30 s
		Float/level control 1 s

10.3 Hydro-Unit MCMF

ATTENTION

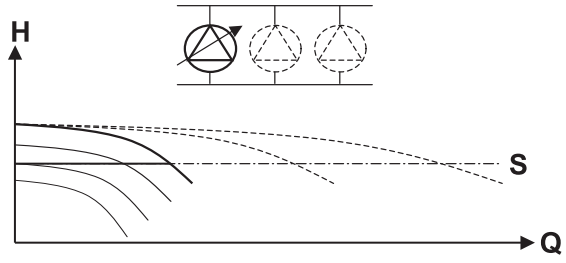


Figure 16: 1 pump operation, 1 pump variable

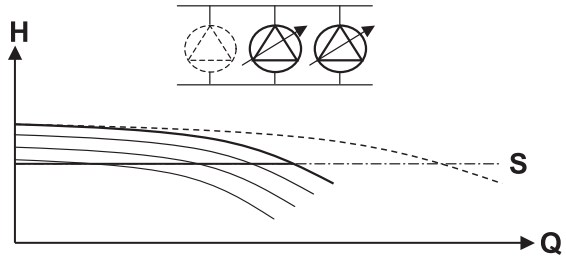


Figure 17: 2 pump operation, 2 pump variable

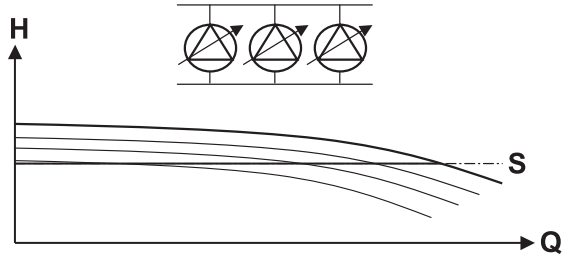


Figure 18: 3 pump operation, 3 pump variable

The Hydro-Unit MCMF is equipped with multiple variable frequency drives. If the Hydro-Unit is rotation-controlled, the required system pressure is sensed by a pressure sensor on the outlet side of the installation. An integrated adjustable PID-controller in the software of the Megacontrol ensures that the system pressure remains constant by successively switching on or off one or more (whether or not) rotation-controlled pumps with delay. A pump is only switched on when 100 % or respectively 0 % of the speed has been reached.

Table 15: Specific parameter settings MCMF

Parameter		Value
3-3-1	Number of pumps	1 2 3 4 5 6
3-3-2	Inlet	Switch Pressure Level / valve ON-OFF Level / valve prop.
3-3-3	Discharge	VFD fixed all
3-4-3-1	Communication	Danfoss MidiDrive Danfoss MicroDrive Danfoss AquaDrive
3-4-3-2	Proportional const.	3
3-4-3-3	Integral time.	0.9
3-4-3-4	Differential time.	0
3-4-3-5-1	No flow bandwidth 0-1000 kPa	6
	0-2500 kPa	16
3-4-3-5-3	No flow step	1
3-4-3-9	VFD Ramp-Up	3
3-4-3-10	VFD Ramp-Down	3
3-4-3-11	VFD min. frequency	30
3-4-3-12	VFD max. frequency	140
3-4-3-13	P nominal of VFD	1500 See VFD
3-4-3-14	U nominal of VFD	400 See VFD
3-4-3-15	F nominal of VFD	50/60
3-4-3-16	I nominal of VFD	4 See VFD
3-4-3-17	RPM nominal of VFD	IE3 Motor. See motor name plate
3-5-1	Set point	.... kPa
3-5-3	Bandwidth	10
3-5-4	Accumulation press.	30 kPa
3-5-13	Low pressure alarm	100 kPa
3-6-1	Opt. pump starts/h	30
3-6-2	Min. run time	1 s
3-6-3	Min. run time corr.	0 s
3-6-8	Run-dry delay	Default 30 s
		Float/level control 1 s

10.4 Hydro-Unit Level control

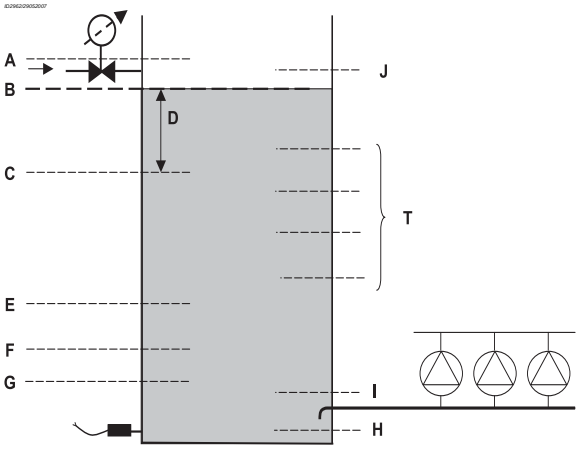


Figure 19: Megacontrol Level control

Table 16: Parameters supply valve ON/OFF

ID	Parameter	
	3-4-1-4-9	**Supply valve ON/OFF**
A	3-4-1-4-7	High water level
B	3-4-1-4-9-2	Level 1 closed
	3-4-1-4-9-4	Level 1A closed
C	3-4-1-4-9-1	Level 1 open
	3-4-1-4-9-3	Level 1A open
E	3-4-1-4-6	Critical water level
F	3-4-1-4-5	Low level reset
G	3-4-1-4-4	Low level shutdown

Table 17: Parameters supply valve prop.

ID	Parameter	
	3-4-1-4-10	**Supply valve prop.**
A	3-4-1-4-7	High water level
	3-4-1-4-10-1	Level setpoint 1
	3-4-1-4-10-2	Level setpoint 1A
	3-4-1-4-10-6	Open band
D	3-4-1-4-10-3	Hysteresis
E	3-4-1-4-6	Critical water level
F	3-4-1-4-5	Low level reset
G	3-4-1-4-4	Low level shutdown

Table 18: Parameters general.

ID	Parameter	
H	3-4-1-4-3	Sensor level
I	3-4-1-4-1	0 % level
J	3-4-1-4-2	100 % level

Table 19: Parameters threshold

ID	Parameter	
	3-4-1-4-8	**Threshold**
T	3-4-1-4-8-1	Threshold 1 ON
	3-4-1-4-8-2	Threshold 1 OFF
	3-4-1-4-8-3	Threshold 2 ON
	3-4-1-4-8-4	Threshold 2 OFF

ATTENTION
Treshold 1/2 contacts are only available with MCIII 6 pumps version by using max. 4 pumps.

10.5 Explanation of parameters

10.5.1 Pressure settings set points

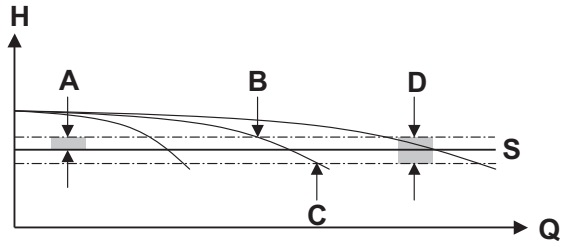
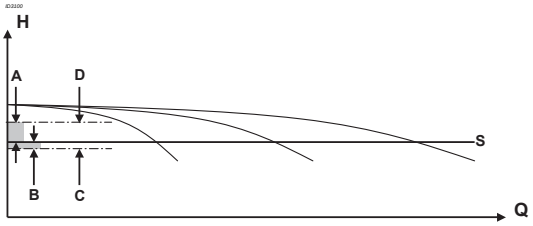


Figure 20: Pressure settings set points fixed speed

Table 20: Pressure settings set points fixed speed

ID	Parameter	
S	3-5-1	Set point
A	3-5-3	Bandwidth
B		Switch-off pressure
C		Switch-on pressure
D		2 x bandwidth



3100/31032008

Figure 21: Pressure settings set points variable speed

Table 21: Pressure settings set points variable speed

ID	Parameter	
A	3-5-4	Accumulation pressure
B	3-5-3	Bandwidth
C		Switch-on pressure 1st pump
D		Switch-off pressure last pump
S	3-5-1	Set point

10.5.2 Delta p + correction

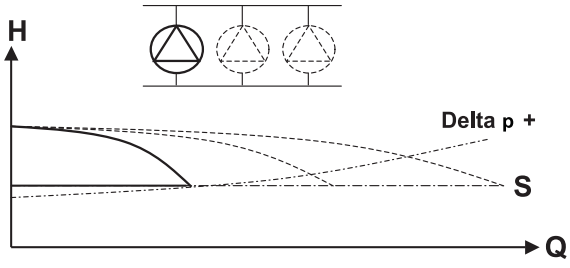


Figure 22: 1-pump operation

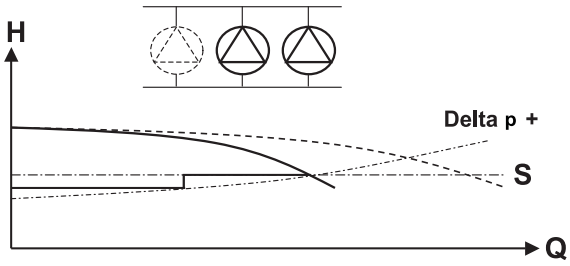


Figure 23: 2-pumps operation

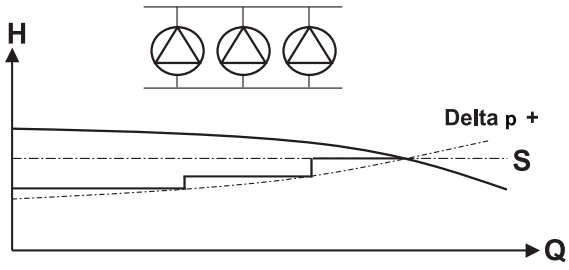


Figure 24: 3-pumps operation

Table 22: Parameters set points

ID	Parameter	
S	3-5-1	Set point
+	3-5-10	Delta p

Delta p +

$$y = \frac{\Delta p}{(n^2-1)} x^2 + SP - \frac{\Delta p}{(n^2-1)}$$

SP = Set point

y = New set point

Δp = Delta p (always positive)

n = Total number of pumps of the installation

x = Number of pumps switched on

10.5.3 Delta p - correction

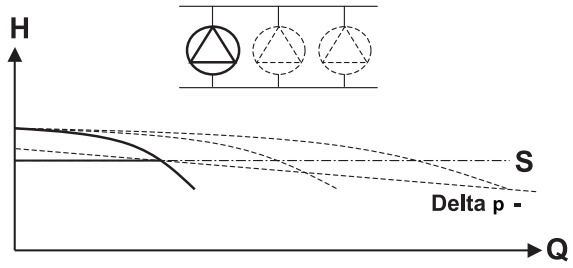


Figure 25: 1-pump operation

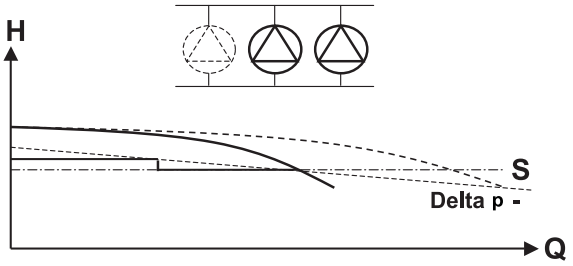


Figure 26: 2-pumps operation

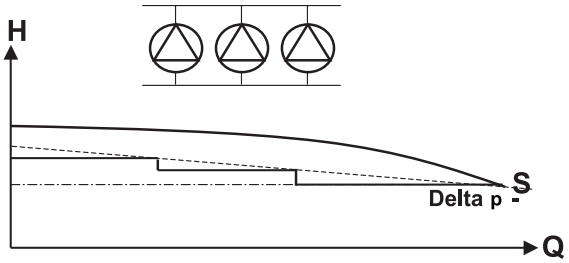


Figure 27: 3-pumps operation

Table 23: Parameters set points

ID	Parameter	
S	3-5-1	Set point
-	3-5-10	Delta p

Delta p -

$$y = \frac{\Delta p}{(1-n)} x + SP - \frac{\Delta p}{(1-n)}$$

SP = Set point

y = New set point

Δp = Delta p (always positive)

n = Total number of pumps of the installation

x = Number of pumps switched on

10.5.4 Special input/output

Table 24: Special input/output

Input		
External from (27-29 NC)[1]	The unit can be switched off through an external contact.	
Fire Alarm (28-29 NC)[2]	All pumps can be switched on through an external contact.	
Input1 (connection WSD1 6-7)[3]	Only active when WSD parameter 3-3-4 is on 1 (off) or on 8 (temp).	See parameter 3-8-1-1 for extra functions if this input isn't used for the WSD function
Input2 (connection WSD2 8-9)	Only active when WSD parameter 3-3-4 is not on 3, 4, 6 or 7.	See parameter 3-8-1-2 for extra functions if this input isn't used for the WSD function
Input3 (connection WSD3 10-11)[3]	Only active when WSD parameter 3-3-4 is not on 4 or 7.	See parameter 3-8-1-3 for extra functions if this input isn't used for the WSD function

1. the entire control keeps functioning, but the pumps will be switched off.
2. Fire alarm has higher priority over external contact ‘off’.
3. This is a pulse contact

Table 25: Special outputs

Parameter	Output		See param. for the function
3-8-2-1	Output1	P4	3-8-2-1
3-8-2-2	Output2	P5	3-8-2-2
3-8-2-3	Output3	P6	3-8-2-3
3-8-2-4	Output4	FR4	3-8-2-4
3-8-2-5	Output5	FR5	3-8-2-5
3-8-2-6	Output6	FR6	3-8-2-6

ATTENTION
Special outputs only available with the 6 pumps Megacontrol. They are only available if the connection is not occupied by a pump.

11 Parameters

11.1 Parameter list

The parameters of the main menu are related to the standard (default) settings of the installation. The standard (default) settings can be adjusted where necessary and may also be reset whenever required. On the basis of the standard set parameters, an installation will operate as it should. Additional, extra parameters may be used, e.g. those under 'advanced', 'pressure', 'delays' and 'clock'. In order to use these additional parameters, you should activate the corresponding sub menus.

ATTENTION
For unit-specific values see: 'Factory settings'.

ATTENTION
Certain parameters are not visible, depending on the configuration.

Table 26: Access level parameter list

Access level	Read	Write
Everybody	e	e
User	c	c
Service	s	s
Factory	f	f
Nobody		n
Development	d	d

11.1.1 Parameter list

For the parameter list: See BE00000508 Control units chapter 10

12 Failures

12.1 Failure messages Megacontrol

Table 27: Faults list Megacontrol

Failure message:	Explanation:	Failure output:
Failure PT. Dis.	Failure Pressure Transmitter discharge side (value >20mA) replace PT and reset system	Urgent
Sys. press.to low	System pressure too long under minimum value (3-5-13)	Urgent[1]
Sys press.to high	System pressure too long above maximum value (3-5-11)	Urgent[1]
Sys. press.to low	System pressure too long under minimum value (3-5-13)	Non urgent[2]
Sys press.to high	System pressure too long above maximum value (3-5-11)	Non urgent[2]
No water	No sufficient water or -pressure available at suction side	Urgent[1]
No water	No sufficient water or -pressure available at suction side	Non urgent[2]
Maintenance req.	Maintenance is required	Non urgent
More pumps fail	More than two pumps out of order	Urgent
No refresh tank #	No water refreshm in tank # (sensed by the flow detector) check precharged air pressure	Urgent
Aver temp to high	Average room temperature to high (sensed by the temperature sensor)	Urgent
Curr temp to high	Current room temperature to high (sensed by the temperature sensor)	Non urgent
Temp.failure Pump #	Failure pump #. Solve problem and reset the system	Non urgent
Failure valve	Failure supply valve. Solve problem and reset the system	Urgent
Inlet sensor fail	Failure inlet Sensor for level or pressure. (signal out of range) replace Sensor and reset system.	Urgent
High water level	Water level in receiver tank too high	Non urgent
Crit. water level	Water level in receiver tank critical (near to empty)	Non urgent
Low water level	Water level in receiver tank too low (system shut down for run dry protection)	Urgent[1]
Low water level	Water level in receiver tank too low (system shut down for run dry protection)	Non urgent[2]
Comm. Error FC #	Communication to variable frequency drive # is broken	Non urgent
Incor. check sum F #	FC # Incorrect check sum within the protocol	Non urgent
Temp. sensor fail	Failure Room Temperature Sensor. replace R.T.S. and reset system	Non urgent
24V out of range	Failure message due to internal 24V supply out of range	Non urgent
5V out of range	failure message due to internal 5V supply out of range	Non urgent
3V out of range	Failure message due to internal 3V supply out of range	Non urgent
External off	Failure message due to an external off command	Urgent
Fire alarm	Failure message due to an external fire alarm command	Urgent
Failure VFD	Failure of the VFD drive at discharge mode VFD change-over or VFD fixed one	Urgent
Br. Wire Sens.dis	Failure Pressure Transmitter discharge side (value lower then 4mA) connect or replace Pressure Transmitter and reset system	Urgent
Br. Wire Sens.Inl	Failure inlet Sensor for level or pressure. (wire break detection) Replace Sensor and reset system.	Urgent
Fail. several FCs	Failure for more than one FC occurs	Urgent
Leakage	There is a leakage in the unit. Solve problem and reset the system	Urgent
Eeprom HW Error	The Eeprom data was not saved due to HW problem	Urgent
Manual off Pump # off		Not urgent
Manual On Pump #		Not urgent
More Pumps off		Not urgent

Failure message:	Explanation:	Failure output:
Internal Failure P#		Not urgent
Mains Failure P#		Not urgent
Over voltageP#		Not urgent
Under voltage P#		Not urgent
Overload Failure P#		Not urgent
Brake resistor P#		Not urgent
Temp. Failure P#		Not urgent
ATM Failure P#		Not urgent
Flushing		Not urgent
Valve opened oftenly		Urgent
Circuit Fail. FC#		Not urgent
Ext. Power Operation	External power supply operation	Not urgent
Setpoint Reduction	Automatic Setpoint Reduction because of inlet pressure dropdown	Not urgent
Factory Test		Not urgent
MPO Failure	Incorrect switching point configured or sensor failure	Not urgent
ASR Shutdown	Automatic Setpoint Reduction Shutdown because of inlet pressure dropdown	Urgent
BC IO not connected		
Failure RW-pump 1	Failure rainwater pump 1. Solve problem and reset the system.	Not urgent
Failure RW-pump 2	Failure rainwater pump 2. Solve problem and reset the system.	Not urgent
No rainwater	No rainwater is available.	Not urgent
Failure DW-valve	Failure of the drinking water inlet valve.	Not urgent
Starts/h RW-pump 1	Maximum starts per hour of rainwater pump 1 are exceeded.	
Starts/h RW-pump 2	Maximum starts per hour of rainwater pump 2 are exceeded.	
Use of potable water	Potable water was used.	Not urgent
Hygienic addition	The tank inlet was flushed with potable water.	Not urgent
Forced hyg. Addition	Flushing of tank inlet with potable water was forced.	Not urgent
Manual Off RW-pump 1		
Manual Off RW-pump 2		
Manual On RW-pump 1		
Manual On RW-pump 2		
Tank filling	The tank is filled due to a triggered start of the rainwater pumps.	
Hyg. add. Incomplete	Hygienic addition was incomplete, because tank was filled or failure of drinking water inlet valve.	
Occured:	Failures that have occurred recently.	
Acknowledged:	Failures that got acknowledged.	
Cleared:	Failures that got cleared	
Data:		
No failures		

1. Manual alarm reset = Urgent.
2. Automatic alarm reset = Not urgent.

12.2 Failure messages Danfoss VFD

ATTENTION
The error codes are displayed in the error log of the Megacontrol. For specific information about the error codes please consult the (technical) documentation of the VFD concerned.

Table 28: VLT 2800

Error code:	Explanation:	Warning:	Alarm:	Trip lock:
2	Live zero error (LIVE ZERO ERROR)	x	x	x
4	Mains phase loss (MAINS PHASE LOSS)	x	x	x
5	Voltage warning high (DC LINK VOLTAGE HIGH)	x		
6	Voltage warning low (DC LINK VOLTAGE LOW)	x		
7	Overvoltage (DC LINK OVERVOLTAGE)	x	x	x
8	Undervoltage (DC LINK UNDERVOLT)	x	x	x
9	Inverter overload (INVERTER TIME)	x	x	
10	Motor overloaded (MOTOR TIME)	x	x	
11	Motor thermistor (MOTOR THERMISTOR)	x	x	
12	Current limit (CURRENT LIMIT)	x	x	
13	Overcurrent (OVERCURRENT)	x	x	x
14	Earth fault (EARTH FAULT)		x	x
15	Switch mode fault (SWITCH MODE FAULT)		x	x
16	Short-circuit (CURR. SHORT CIRCUIT)		x	x
17	Serial communication timeout (STD BUS TIMEOUT)	x	x	
18	HPFB bus timeout (HPFB TIMEOUT)	x	x	
33	Out of frequency range (OUT FREQ RNG/ROT LIM)	x		
34	HPFB communication fault (PROFIBUS OPT. FAULT)	x	x	
35	Inrush fault (INRUSH FAULT)		x	x
36	Overtemperature (OVERTEMPERATURE)	x	x	
37-45	Internal fault (INTERNAL FAULT)		x	x
50	AMT not possible		x	
51	AMT fault re. nameplate data (AMT TYPE. DATA FAULT)		x	
54	AMT wrong motor (AMT WRONG MOTOR)		x	
55	AMT timeout (AMT TIMEOUT)		x	
56	AMT warning during AMT (AMT WARN. DURING AMT)		x	
99	Locked (LOCKED)	x		

Table 29: VLT Aquadrive FC202

Error code:	Explanation:	Warning:	Alarm/Trip:	Alarm/Trip Lock:
1	10 Volts low	X		
2	Live zero error	(X)	(X)	
3	No motor	(X)		
4	Mains phase loss		X	
5	DC link voltage high	X		
6	DC link voltage low	X		
7	DC over voltage	X	X	
8	DC under voltage	X	X	
9	Inverter overloaded	X	X	
10	Motor overload temperature	(X)	(X)	

Error code:	Explanation:	Warning:	Alarm/Trip:	Alarm/Trip Lock:
11	Motor thermistor over temperature	(X)	(X)	
12	Torque limit	X	X	
13	Over Current	X	X	X
14	Earth fault	X	X	X
15	Hardware mismatch		X	X
16	Short Circuit		X	X
17	Control word time out	(X)	(X)	
23	Internal fan fault	X		
24	External fan fault	X		
25	Brake resistor short-circuit	X		
26	Brake resistor power limit	(X)	(X)	
27	Brake chopper fault	X	X	
28	Brake check failed	(X)	(X)	
29	Heatsink temp	X	X	X
30	Motor phase U missing	(X)	(X)	(X)
31	Motor phase V missing	(X)	(X)	(X)
30	Motor phase W missing	(X)	(X)	(X)
33	Inrush fault		X	X
34	Field bus communication fault	X	X	
35	Out of frequency range	X	X	
36	Mains failure	X	X	
37	Phase imbalance	X	X	
38	Internal fault			
39	Heatsink sensor		X	X
40	Overload of digital output terminal 27	(X)		
41	Overload of Digital Output Terminal 29	(X)		
42	Overload of Digital Output On X30/6 or overload of digital output on X30/7	(X)		
46	Power card supply		X	X
47	24 V supply low	X	X	X
48	1.8 V supply low		X	X
49	Speed limit	X		
50	AMA calibration failed		X	
51	AMA check U_{nom} and I_{nom}		X	
52	AMA low I_{nom}		X	
53	AMA motor too big		X	
54	AMA motor too small		X	
55	AMA parameter out of range		X	
56	AMA interrupted by user		X	
57	AMA time out		X	
58	AMA internal fault	X	X	
59	Current limit	X		
60	External interlock	X		
62	Output frequency at maximum limit	X		
64	Voltage limit	X		
65	Control Board Over-temperature	X	X	X
66	Heat sink Temperature Low	X		

Error code:	Explanation:	Warning:	Alarm/Trip:	Alarm/Trip Lock:
67	Option Configuration has Changed		X	
68	Safe Stop Activated		X[1]	
69	Power Card Temp		X	X
70	Illegal FC configuration			X
71	PTC 1 safe stop	X	X[1]	
72	Dangerous Failure			X[1]
73	Safe Stop Auto Restart			
76	Power unit setup	X		
79	Illegal PS config		X	X
80	Drive Initialised to Default Value		X	
91	Analog input 54 wrong settings			X
92	No flow	X	X	
93	Dry pump	X	X	
94	End of curve	X	X	
95	Broken belt	X	X	
96	Start delayed	X		
97	Stop delayed	X		
98	Clock fault	X		
220	Overload trip		X	
243	Brake IGBT	X	X	
244	Heatsink temp	X	X	X
245	Heatsink sensor		X	X
246	Power card supply		X	X
247	Power card temp		X	X
248	Illegal PS config		X	X
250	New spare part			X
251	New Type Code		X	X

1. Can not be Auto reset via par. 14-20 Reset Mode
   A trip is the action when an alarm has appeared. The trip will coast the motor and can be reset by pressing the reset button or make a reset by a digital input (parameter group 5-1* (See Danfoss manual). The origin event that caused an alarm cannot damage the frequency converter or connected parts. A Trip Lock situation can only be reset by a power cycling.

Table 30: VLT Microdrive FC 51

Error code:	Explanation:	Warning:	Alarm:	Trip lock:	Error
2	Live zero error	X	X		
4	Mains phase loss[1]	X	X	X	
7	DC over voltage[1]	X	X		
8	DC under voltage[1]	X	X		
9	Inverter overloaded	X	X		
10	Motor ETR over temperature	X	X		
11	Motor thermistor over temperature	X	X		
12	Torque limit	X			
13	Over Current	X	X	X	
14	Earth fault		X	X	
16	Short Circuit		X	X	
17	Control word time out	X	X		

Error code:	Explanation:	Warning:	Alarm:	Trip lock:	Error
25	Brake resistor short-circuited		X	X	
27	Brake chopper short-circuit		X	X	
28	Brake check		X		
29	Power board over temp	X	X	X	
30	Motor phase U missing		X	X	
31	Motor phase V missing		X	X	
32	Motor phase W missing		X	X	
38	Internal fault		X	X	
44	Earth fault		X	X	
47	Control Voltage Fault		X	X	
51	AMT check U_{nom} and I_{nom}		X		
52	AMT low I_{nom}		X		
59	Current limit	X			
63	Mechanical Brake Low		X		
80	Drive Initialised to Default Value		X		
84	The connection between drive and LCP is lost				X
85	Button disabled				X
86	Copy fail				X
87	LCP data invalid				X
88	LCP data not compatible				X
89	Parameter read only				X
90	Parameter database busy				X
91	Parameter value is not valid in this mode				X
92	Parameter value exceeds the min/max limits				X
nw run	Not While RUNning				X
Err.	A wrong password was entered				X

1. These faults may be caused by mains distortions. Installing Danfoss Line Filter may rectify this problem.

12.3 Failure table Hydro-Unit UTILITY

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

Problem	Possible cause	Possible solution	Checkpoints
Leakage along the shaft.	Shaft seal worn.	Replace the shaft seal.	Check the pump for fouling.
	Pump has been operated without water.	Replace the shaft seal.	
Pump is vibrating and produces a lot of noise.	There is no water in the pump.	Fill and de-aerate the pump.	
	No water supply.	Restore the water supply.	Check if the supply pipes are not clogged.
	Bearings of pump and/or motor defective.	Have the bearings replaced by a certified company.	
	Hydraulic assembly defective.	Replace the hydraulic assembly.	
Installation / pump does not start.	No voltage on the connecting clamps.	Check the power supply.	• Circuit • Main switch • Fuses
	Thermal motor safety switch triggered	Reset the thermal motor safety. Contact the supplier, if this problem occurs more often	
	Run-dry protection triggered.	Restore the water supply. Reset the installation.	
	Pressure set point incorrect.	Adjust the pressure setpoint.	
Installation / pump supplies insufficient capacity and/or pressure.	There is air in the pump.	Vent the pump.	
	Capacity of water meter in the supply line is too small.	Increase the capacity of the water meter.	
	Discharge and/or suction shut-off valve is closed.	Open both shut-off valves.	
	System resistance too high.	Adjust the set points	
		Let the supplier check the system	
Pumps continuously start and stop.	Pressure vessel(s) leaky or incorrect pre-pressure.	Have your supplier check the installation.	

12.4 Failure table Hydro-Unit in combination with membrane switch vessel (option)

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

Problem	Possible cause	Possible solution	Checkpoints
There is no input signal when a pump is started.	Shut-off valve to the Hydro-Unit is closed.	Open the shut-off valve.	Shut-off valve should always be opened.
	Pump is operating against the maximum pressure of the unit and does not deliver.	Adjust the switch-on pressure of the pump to at least 80 kPa below the maximum pressure of the unit.	Adjust the pressure set point.
	Pressure in the membrane switch vessel(s) is too high.	Adjust the air pressure.	Make sure maintenance is performed regularly.
	Pressure in the membrane switch vessel(s) is too low, or there is no pressure at all.	Adjust the air pressure.	Check if the membrane switch vessel is not leaking, if so, replace the membrane switch vessel.
	Reed contact on the Hydro-Unit defective.	Replace the reed contact.	Adjust the reed contact.
	Magnet in the Hydro-Unit is stuck.	Replace / clean the interior of the Hydro-Unit.	Deposits / dirt.
Input signal remains active.	Magnet in the Hydro-Unit is stuck.	Replace / clean the interior of the Hydro-Unit.	Deposits / dirt.
	Short circuit on the input signal.		Check the wiring.
	Reed contact defective.	Replace the Reed contact.	
Nothing responds	There is no voltage on the HU MC(MF) Utility line.	Fuse defective.	Check the correct voltage.

13 Annexes

13.1 P&ID

ID 3541

---------- = DEPENDING ON IMPLEMENTATION

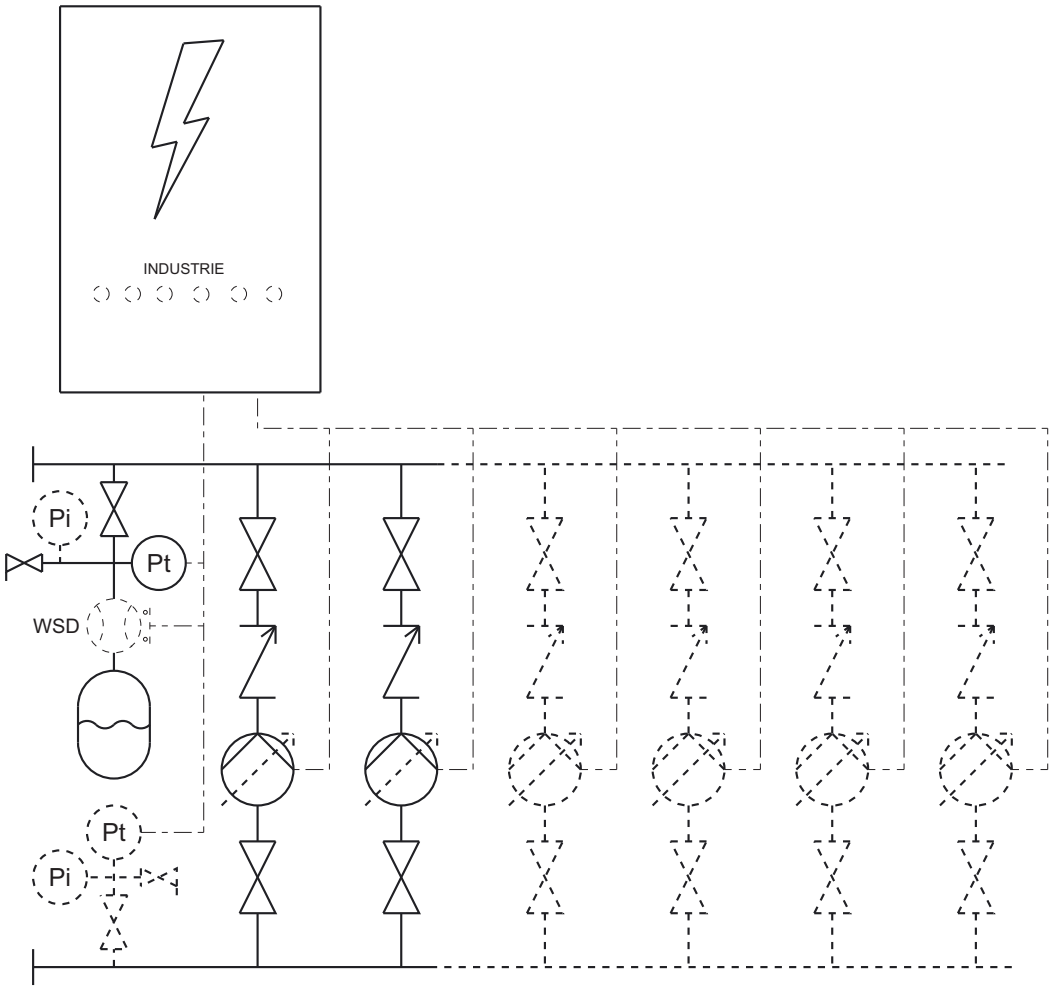


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Figure 28: HU MCMF P&ID

13.2 Connections

See electrical diagram. Note pin 1 & 2.

13.3 EC declaration of conformity

Undersigned:

D.P. Industries B.V.
Kalkovenweg 13
2401 LJ Alphen aan den Rijn, The Netherlands
Tel: (+31)(0)-172-48 83 88

Declares as the manufacturer in his own responsibility, that the products:

Product: Hydro-Unit
Type: Utility line MC

Serial number: 20/2019 1000000-01 [...] 52/2021 9999999-99

to which this declaration relates, are constructed in conformity with the following harmonized international standards:

- EN 809+A1/C1:2010
- EN ISO 12100:2010
- IEC 60204-1:2006
- IEC 61000-6-1:2007
- IEC 61000-6-3/A1:2011
- IEC 61000-3-2 (I ≤ 16 A)
- IEC 61000-3-12 (16 A ‹ I ‹ 75 A)

in according with the provisions of:

- Machinery directive 2006/42/EC
- EMC directive 2014/30/EU
- RoHS 2011/65/EU

The installation is subject to this declaration of conformity as a stand alone product.

Make sure the appliance or installation in which the Hydro-Unit UTILITY is built in, has got a declaration of compliance with the directives listed above, for its complete assembly.

Alphen aan den Rijn, 2018-05-13

Authorized representative
M.H. Schaap, Manager Competence Centre Products

13.4 CE conformity marking

The product is CE-marked and fulfils the requirements specified in the European Electromagnetic Compatibility Directive 2004/108/EC dated 15 December 2004, Annex I. Compliance with the provisions of the directive is certified by a Declaration of Conformity. In accordance with the EN 61000-6-1 standard, the product meets Class B requirements (limits to EN 55011). The integrated frequency inverter fulfils the requirements of the EN 61800-3 product standard.

Table 31: Classification by category

Category	**C1**	**C2**	**C3**	**C4**
Mode of sales distribution	Unrestricted distribution	Restricted distribution	Restricted distribution	Restricted distribution
Environment	1ste environment	1ste or 2nd environment (operator's decision)	2nd environment	2nd environment
Voltage/current	‹1000 V			≥ 1000 V I_n > 400 A Connection to IT network
EMC competence	No special requirement	Installation and commissioning by personnel suitably trained in EMC applications		EMC plan required
Limit to EN 55011	Class B	Class A1 (+warning)	Class A2 (+warning)	Value exceed class A2 limits

13.5 Certificate of Decontamination

Type: _____

Order number: _____

Delivery date: _____

Applications: _____

Fluid handled: _____

Please tick where applicable:

☐ Corrosive

☐ Oxidising

☐ Flammable

☐ Explosive

☐ Hazardous to health

☐ Seriously hazardous to health

☐ Toxic

☐ Radioactive

☐ Bio-hazardous

☐ Safe

Reason(s) for return: _____

Comments: _____

The product/accessories have been carefully drained, cleaned and decontaminated inside and outside prior to dispatch/placing at your disposal.
We herewith declare that this product is free from hazardous chemicals, biological and radioactive substances.

☐ No special safety precautions are required for further handling.

☐ The following safety precautions are required for flushing fluids, residual fluids and disposal:

_____

We confirm that the above data and information are correct and complete and that dispatch is effected in accordance with the relevant legal provisions.

_____	_____	_____
Place, date and signature	Address	Company stamp

dp pumps

dp pumps
P.O. Box 28
2400 AA Alphen aan den Rijn
The Netherlands

t +31 172 48 83 88

dp@dp-pumps.com
www.dp-pumps.com

2020-05

BE00000435-J / EN
Can be changed without prior notice
Original instructions