

Wilo-MultiVert-MVIE 2G



- D Einbau- und Betriebsanleitung**
- GB Installation and Operating Instructions**
- F Notice de montage et de mise en service**

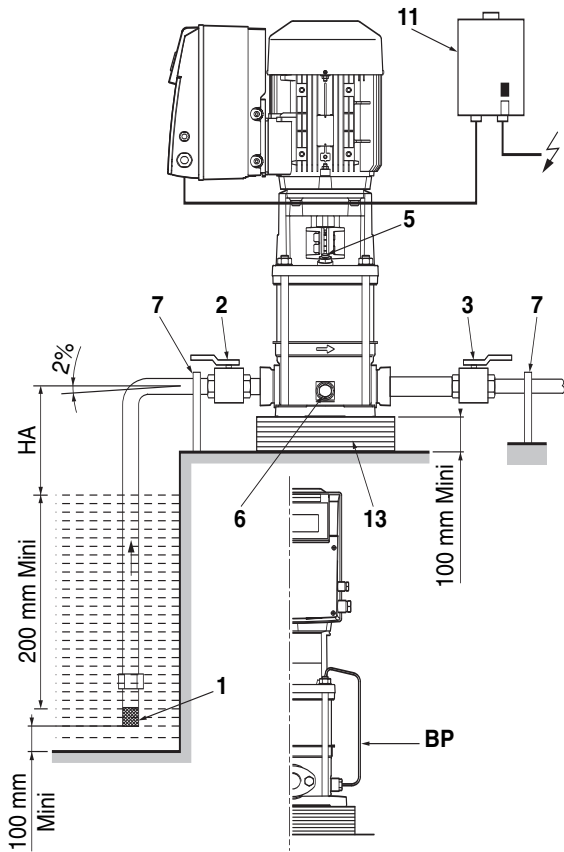


Fig. 1

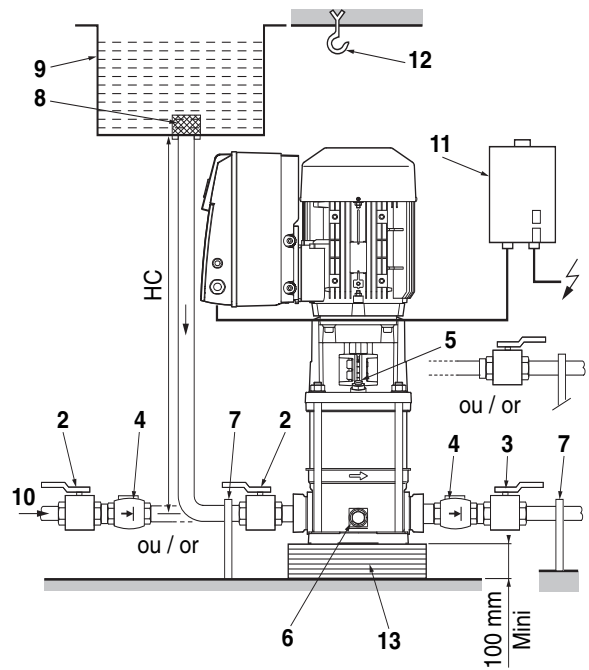


Fig. 2

TYPE	PN corps mm	L mm	P mm	X mm	Y mm
200	16	157	180	100	
	25	172	180	100	
400	16	157	180	100	
	25	172	180	100	
800	16	157	180	100	
	25	172	180	100	
1600	16	252	187	215	130
	25	252	187	215	130

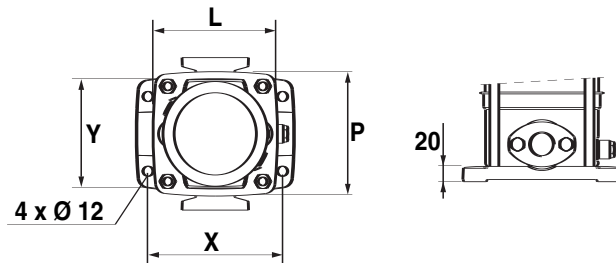


Fig. 3

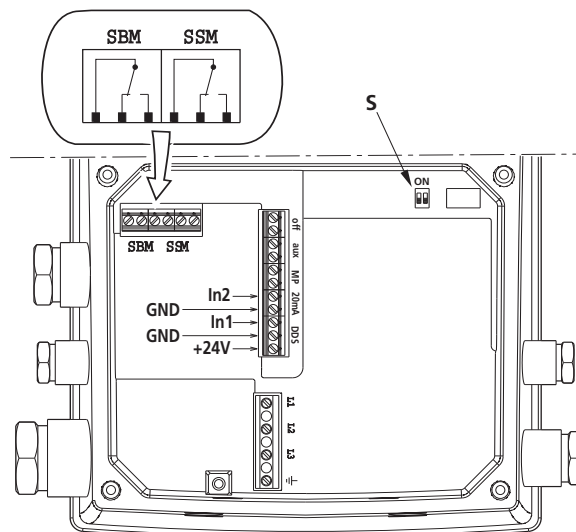


Fig. 4

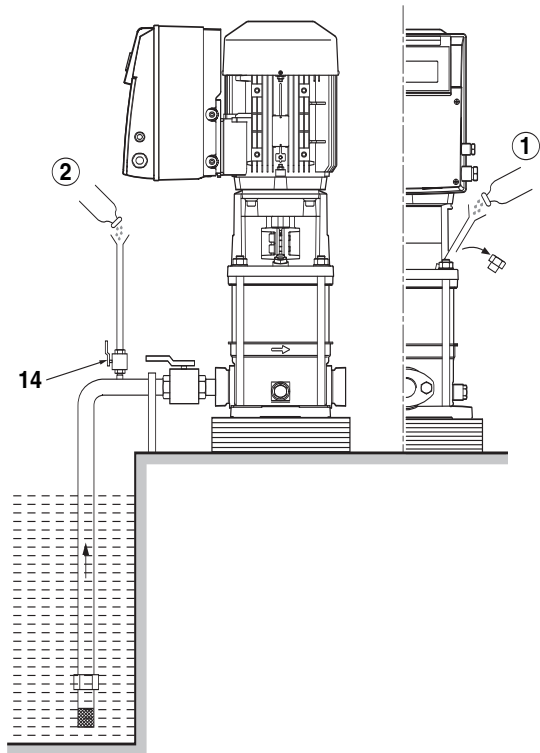


Fig. 5

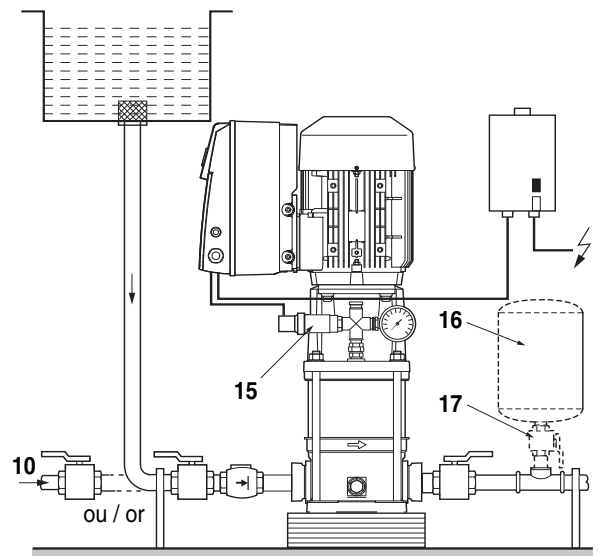


Fig. 6

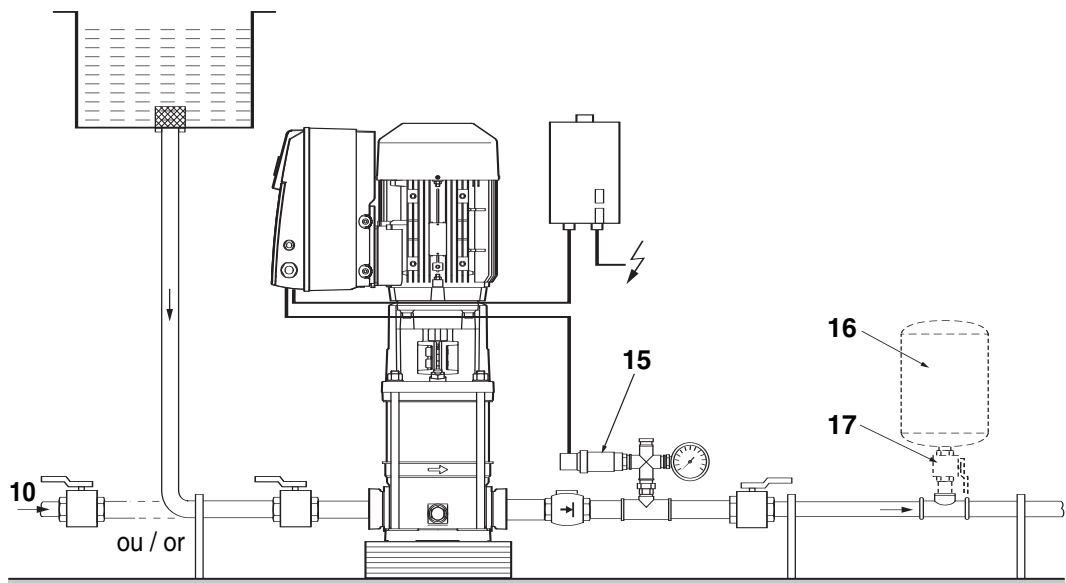
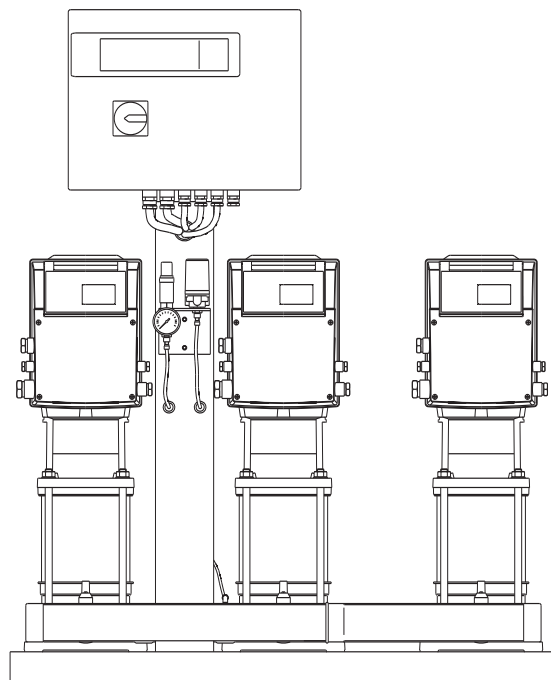
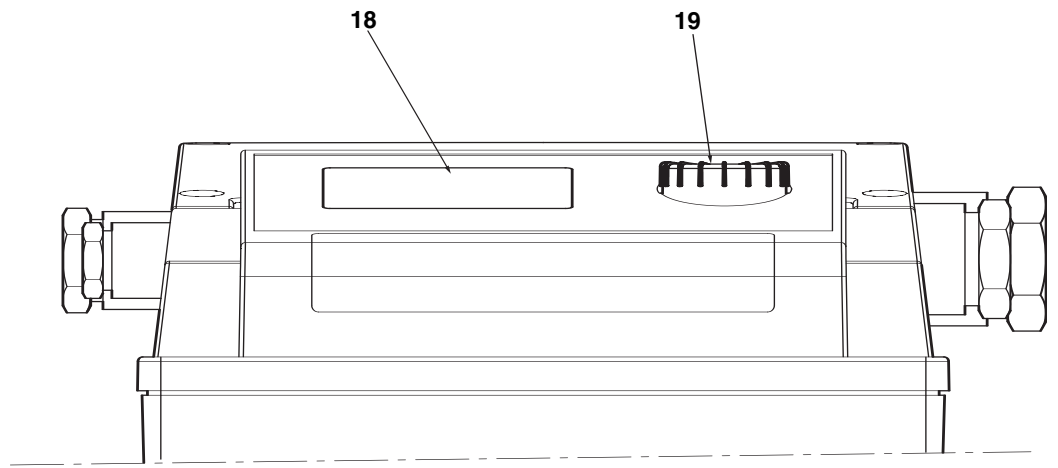
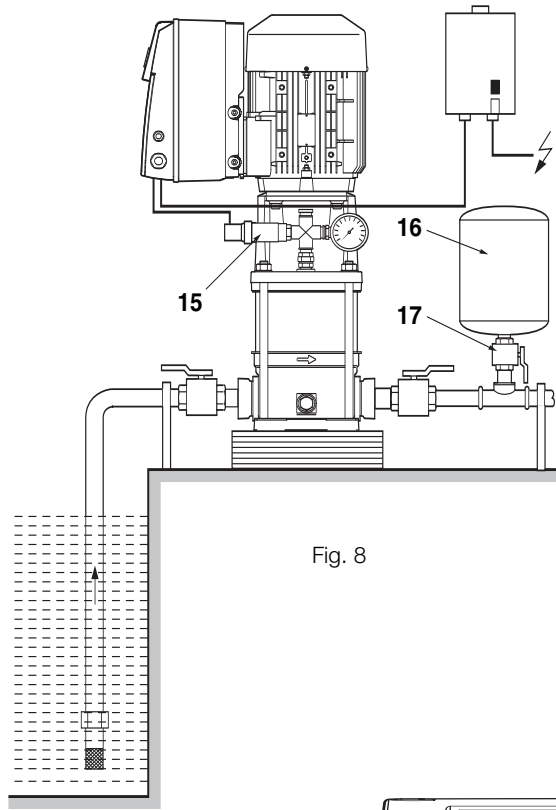


Fig. 7



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- 18 - Display
- 19 - Adjustment button
- BP : By-pass
- HA : Maximum suction head
- HC : Minimum inlet pressure

4.2 Design of pump and motor

- Multistage vertical pump not self-priming, with ports in line on the same axis in bottom part.
- Asynchronous motor with standardized flange and shaft end for vertical operation fitted with its converter.
- Motor-pump linked by a coupling with safety guards.
- Shaft sealing by standardized mechanical seal.
- Materials used inside the pump : see technical description.
- Hydraulic connection:
 - Oval flanges on the PN 16 pump casing: pump supplied with oval cast iron counter flanges for screw-on tube, rings and bolts.
 - Round flanges: pump delivered with rings and bolts without counter flanges (accessories as option).
 - Rapid hose coupling (only 2, 4, 8m³/h) for "Victaulic" bracket: pump delivered without brackets (accessories as option).

4.3 Accessories as option

See catalogue or data sheet.

5. Assembly

ATTENTION! Installation and service by qualified personnel only.

5.1 Installation

Two standard types :

Fig. 1: pump in suction.

Fig. 2: pump under pressure on storage tank (item9) or town water supply (item10).

- Install the pump in a place easy to reach, protected against frost and as close as possible from the drawing point.
- For heavy pumps provide a point of attachment (lifting hook) in the pump axis (item12) to facilitate removal.
- Install the pump on a concrete block (at least 10 cm high) (item13) and fix with anchor bolts (installation plan see fig.3).
- Foresee an insulating material under the concrete block (cork or reinforced rubber) to avoid any noise and vibration transmission into the installation.
- Before final tightening of anchor bolts, ensure that the pump axis is vertical : use shims if necessary.

ATTENTION! Bear in mind that the altitude of the installation place and the water temperature may reduce the suction possibilities of the pump.

Altitude	Loss of head	Temperature	Loss of head
0 m	0 mCL	20 °C	0,20 mCL
500 m	0,60 mCL	30 °C	0,40 mCL
1000 m	1,15 mCL	40 °C	0,70 mCL
		50 °C	1,20 mCL
		60 °C	1,90 mCL
		70 °C	3,10 mCL
		80 °C	4,70 mCL
		90 °C	7,10 mCL
		100 °C	10,30 mCL
		110 °C	14,70 mCL
		120 °C	20,50 mCL

ATTENTION! Possible damage of the pump! (cavitation). Above 80° C, plan to install the pump under pressure.

5.2 Hydraulic connections

ATTENTION! Possible damage of the pump! The installation has to bear the pressure reached when the pump runs at maximum frequency and zero flow rate.

- Pump with oval flange pump casing : with threaded screw-on tubes directly on the tapped oval counter flanges delivered with the pump.
- Pump with round flange pump casing : with weld-on or screw-on tube in the counter flanges (counter flanges available as accessories).
- Pump casing with rapid hose coupling : with a bracket, to install with an end to fix on the pipe (bracket and threaded end available as accessories).
- The diameter of the pipe must never be smaller than the one of the counter flange.
- The direction of the fluid flow is indicated on the identification label of the pump.
- Limit the length of the suction pipe and avoid all features that cause losses of head (bends, valves, tapers). **Connections have to be correctly sealed : no air entrance is allowed on the suction pipe which is showing a mounting declivity of at least 2%** (fig. 1).
- Use supports or collars (fig.1 & 2 - item 7) so that the pump does not bear the weight of the pipes.

ATTENTION! Possible damage of the pump! When the pump is under pressure, it is recommended to connect the non-return valve to the pump discharge to protect it against hammer blow effects.

NOTE! To pump water with a large content of air or hot water, we recommend to install the by-pass kit (fig. 1 - item BP). Mount the pressure sensor on the discharge pipe (fig. 7).

5.3 Electrical connections



The electric connections and inspections have to be carried out by a qualified electrician and have to comply with the relevant local standards.

- The electric characteristics (frequency, voltage, nominal current) of the motor-variator are mentioned on the nameplate. Check that the motor-variator complies with the mains supply used.
- The electric protection of the motors is integrated into the variator. The parameters take into account the characteristics of the pump and must ensure its protection and the one of the motor.
- In case of impedance between earth and neutral point, install a protection before motor-variator.
- Provide a fuse disconnecting switch (type GF) to protect the mains installation (fig. 1 & 2 - item 11).
- Use power cables conforming with standards.



DO NOT FORGET TO CONNECT TO EARTH.

- The electric connection of the variator (fig.4) according to its operating modes (see chapter 8 for starting) has to comply with the schemes of the following table.

ATTENTION! A connection error would damage the variator!



The power cable must never touch the pipe or the pump ; make sure that it is sheltered from any humidity.

- You can change the orientation of the motor-variator by quarter turn when removing the fixing screws of the motor and reorientating the motor to the wished position.



Place the screws back.

5.3 Details of electrical connections

- Loosen the screws and remove the converter cover

CONNECTION TO MAINS SUPPLY		POWER TERMINALS																																	
Connect the cable 4 wires (3 phases + earth)	(see fig. 4)	<table border="1"> <tr> <td>L1</td> <td>L2</td> <td>L3</td> <td>PE</td> </tr> </table> <p>wires Ø 2,5 mm²</p>	L1	L2	L3	PE																													
L1	L2	L3	PE																																
CONNECTION OF INPUTS/OUTPUTS		TERMINAL FOR INPUTS/OUTPUTS																																	
<p>3 Operating modes : (see chapter 6 : Starting up)</p> <ul style="list-style-type: none"> - Manual mode : Mode 1 - Single pump in regulation mode : Mode 2 - External frequency control mode : Mode 3 	(see fig. 4)	<table border="1"> <thead> <tr> <th colspan="2">aux</th> <th colspan="2">ext.off</th> <th colspan="2">MP</th> <th colspan="2">20mA/10V</th> <th colspan="3">DDS</th> </tr> <tr> <th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th><th>9</th><th>10</th><th>11</th> </tr> </thead> <tbody> <tr> <td colspan="2">not used</td> <td colspan="2">remote control ON/OFF</td> <td colspan="2">not used</td> <td colspan="2">external set value</td> <td colspan="3">sensor 20mA/10V</td> </tr> </tbody> </table>	aux		ext.off		MP		20mA/10V		DDS			1	2	3	4	5	6	7	8	9	10	11	not used		remote control ON/OFF		not used		external set value		sensor 20mA/10V		
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MODE 1

<p>1) In manual mode : Mode 1</p> <ul style="list-style-type: none"> - The remote control allows the switching On or Off of the pump (free contact), this function has priority on the others. - This remote control can be removed by shunting the terminals (3 and 4). 	<table border="1"> <thead> <tr> <th colspan="2">aux</th> <th colspan="2">ext.off</th> <th colspan="2">MP</th> <th colspan="2">20mA/10V</th> <th colspan="3">DDS</th> </tr> <tr> <th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th><th>9</th><th>10</th><th>11</th> </tr> </thead> <tbody> <tr> <td colspan="2"></td> <td colspan="2">remote control</td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="3"></td> </tr> </tbody> </table> <p>Example : Float switch, pressure gauge for dry-running...</p>	aux		ext.off		MP		20mA/10V		DDS			1	2	3	4	5	6	7	8	9	10	11			remote control								
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		remote control																																

MODE 2

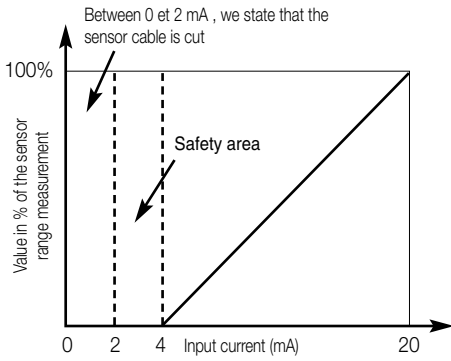
<p>2) In mode with pressure regulation : Mode 2</p> <ul style="list-style-type: none"> - With pressure sensor 2 wires - and ajustement of set value by encodeur. 	<table border="1"> <thead> <tr> <th colspan="2">aux</th> <th colspan="2">ext.off</th> <th colspan="2">MP</th> <th colspan="2">20mA/10V</th> <th colspan="3">DDS</th> </tr> <tr> <th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th><th>9</th><th>10</th><th>11</th> </tr> </thead> <tbody> <tr> <td colspan="2"></td> <td colspan="2">remote control</td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="3">Pressure sensor</td> </tr> </tbody> </table>	aux		ext.off		MP		20mA/10V		DDS			1	2	3	4	5	6	7	8	9	10	11			remote control						Pressure sensor		
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MODE 3																								
<p>3) In mode with external control : Mode 3</p>		<table border="1" style="margin: auto;"> <tr> <th colspan="2">aux</th> <th colspan="2">ext.off</th> <th colspan="2">MP</th> <th colspan="2">20mA/10V</th> <th colspan="3">DDS</th> </tr> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td> </tr> </table> <div style="text-align: center; margin-top: 10px;"> </div>	aux		ext.off		MP		20mA/10V		DDS			1	2	3	4	5	6	7	8	9	10	11
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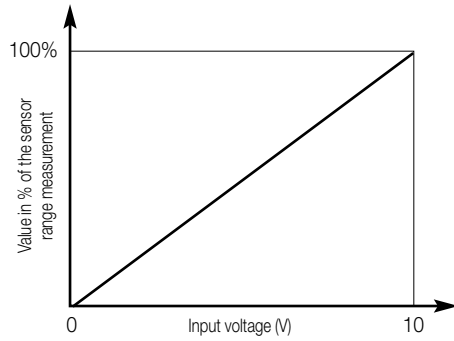
CONNECTION FOR THE SERIE CONTACTS	TERMINAL FOR THE SERIE CONTACTS
<p>The speed variator is fitted with 2 output relays with free contact aimed for an interface to centralized control. For example : control box, pumps control...</p> <p>1) "Unavailable transfer" relay : SBM (see fig. 4)</p> <ul style="list-style-type: none"> - feature of the contact..... <p>When a first defect appears or by main supply cutoff (the pump stops), the contact is closing. Information is given to the control box, regarding the un-availability of the pump, even temporarily. The relay is activated when the pump runs or is in a position to run.</p> <p>2) "Failures transfer" relay : SSM (see fig. 4)</p> <ul style="list-style-type: none"> - feature of the contact..... <p>After a series of detection (from 1 to 6, 6 according to significance) of the same type of defect, the pump stops and this relay is activated (up to manual action).</p>	<div style="text-align: center; margin-bottom: 10px;"> </div> <p>Example : 6 defects with a variable time-limit on 24 sliding hours according to the following scale :</p> <div style="text-align: center;"> </div>

Control laws in MODE 2

Sensor signal 4-20mA

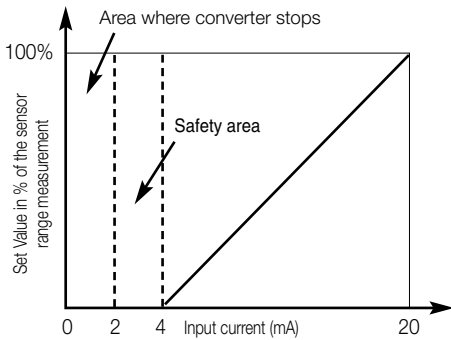


Sensor signal 0-10V

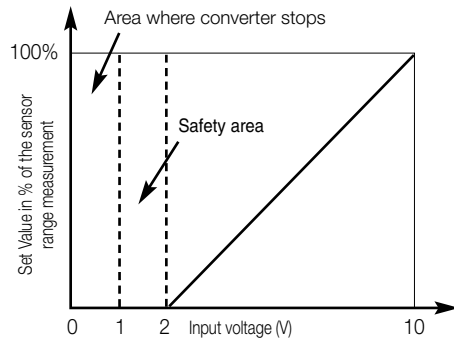


External set value control in MODE 2

Set value 4-20mA

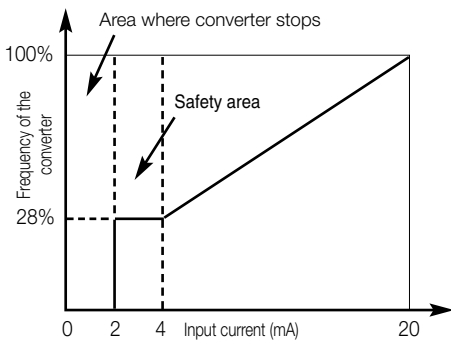


Set value 0-10V

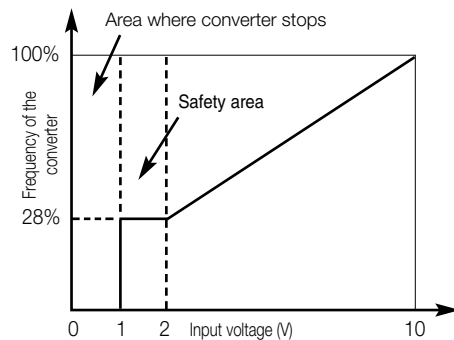


External frequency control in MODE 3

External signal 4-20mA



Signal externe 0-10V



6. Starting up

6.1 Preliminary rinsing



Each of our pumps is tested regarding hydraulic features in factory, some water may remain in them.
It is recommended for hygiene purposes, to carry out a rinsing of the pump before any using with potable water supply.

6.2 Filling - venting

ATTENTION! Never operate the pump dry, even briefly.

Pump under pressure (see fig. 2)

- Close the discharge valve (item 3)
- Open the venting plug (item 5), the suction valve (item 2) and completely fill the pump.
- Close the venting plug only after water flows out and complete aeration.



Beware of scalding !

In hot water, a stream of water may escape from the venting plug port.
Take all required precautions as regards persons and motor-variator.

Pump in suction (see fig. 1)

Two possible cases:

1st case (see fig. 5.1)

- Close the discharge valve (fig. 1 - item 3), open the suction valve (fig. 1 - item 2).
- Remove the venting plug (fig. 1 - item 5).
- Unscrew about 4 turns the bottom drain-priming plug (fig. 1 - item 6) located on the pump casing.
- Put a funnel into the venting plug port and completely fill the pump and the suction pipe.
- After water flows out and total air exit, filling is achieved.
- Screw the venting plug and the bottom drain-priming plug back in.

2nd case (see fig. 5.2)

Filling can be made easier by fitting on the suction pipe of the pump, a vertical pipe (fig. 5 - item 14) fitted with a Ø 1/2" stopcock and a funnel.

ATTENTION! The length of the pipe must be at least 50 mm taller than the venting plug level.

- Close the discharge valve (fig. 1 - item 3), open the suction valve (fig. 1 - item 2).
- Open the stopcock (fig. 5 - item 14) and the venting device (fig. 1 - item 5).
- Unscrew about 4 turns the bottom drain-priming plug (fig. 1 - item 6) located on the pump casing.
- Completely fill the pump and the suction pipe until water flows out of the venting plug (fig. 1 - item 5).
- Close the stopcock (fig. 5 - item 14) (which can be left in place), remove the pipe, close the venting device (fig. 1 - item 5) and screw again the drain-priming plug (fig. 1 - item 6).

Pump under pressure !

ATTENTION! Operating in pressure regulation mode : MODE2 ensure the detection of zero flow, set the non-return valve before the pressure sensor (i.e. at pump suction if the sensor is mounted on this one – see figure 6).

6.3 Starting up



Depending on conveyed fluid and operating cycles of the pump, surface temperature (pump, motor) can exceed 68°C :
Take necessary means to avoid injuries.

ATTENTION! The pump must not operate at zero flow (closed discharge valve) for more than 10 minutes with cold water (T°C < 40°C) and more than 5 minutes above 60° C.

NOTE!

We recommend ensuring a minimum flow of about 10 % of the nominal flow of the pump to avoid the formation of a vapour lock at the top of the pump.

- Keep the discharge valve closed.
 - Start the pump.
 - Open draining plug to drain air. If no water leaks within 20s, close the plug and stop the pump, then wait 20s to allow air to settle.
 - Start again the pump.
- If necessary (particularly if the suction height exceeds 5 m) repeat these operations.
If water leaks at draining plug (it means the pump delivers its pressure), slowly open the discharge valve.
The pump has to be primed.
- Check pressure stability at discharge with a manometer, if instability, perfect air draining.
 - In case of failure, do the filling in again and start the operation again.
 - To perfect air draining, close the discharge valve and the draining plug, then stop the pump 20s, start the pump again and open the draining plug. Do it as long as air comes out.
 - Open the discharge valve in order to have the wished working point.
 - Check that the current input does not exceed the value indicated on the pump data plate.

7. Operating and setting

7.1 Configuration

This variator is composed of a two switches block with two positions each :

Switch 1

- The **SERVICE** position is used to enter the parameters of the different modes.
- The **OPERATION** position allows the selected mode to run and hinders the access to parameters input (normal operating).

Switch 2

- The position (**key**) is used to lock encoder.
- The position (**no key**) allows to use encoder.

Example : Locking of set value in mode 1 or 2.

This variator is fitted with a encoder :

Setting with encoder :

The selection of a new parameter is done only with simple rotation. " + " on right and " - " on left.
A short impulse on the encoder validates this new setting.

7.1.1 Manual mode : MODE 1

When changing the motor speed with the encoder you reached the operating point.

Parameters input in Mode 1

(If the pump is new and not integrated inside a system, parameters are already in with operation in Mode 1 ; (see § "Operation in Mode 1").

- Set the switch (fig. 4 - item S) on position SERVICE.
- Select M1.
- Validate.
- Visualisation of the Operating time meter. (number of pump operating hours).
- Validate.

- Set the switch again on position OPERATION.

Operating in MODE 1

NOTE! For the starting up, we recommend to set the motor speed at 2400 RPM.

When turning the encoder the requirement value can be changed.

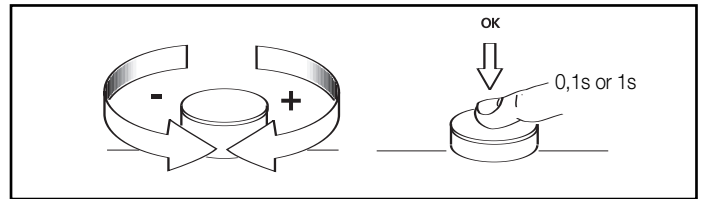
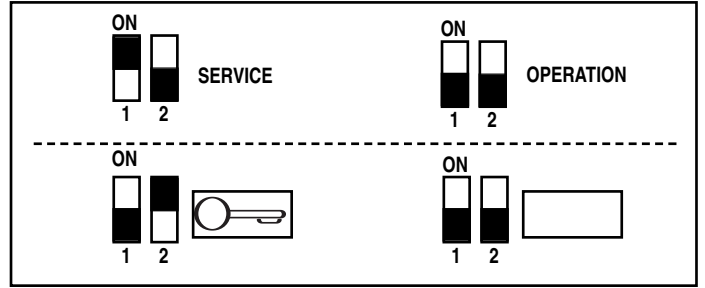
- Validate the new value.

With a short impulse on the encoder the actual speed can be displayed ; after 30 seconds or a new impulse the requirement value reappears.

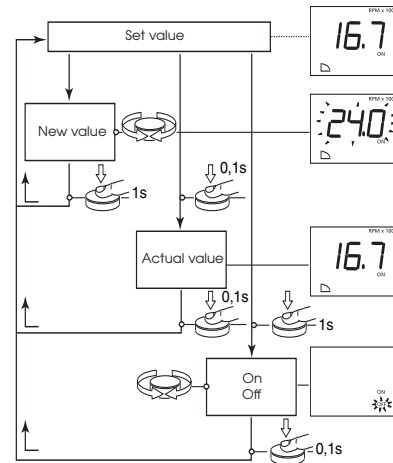
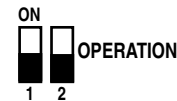
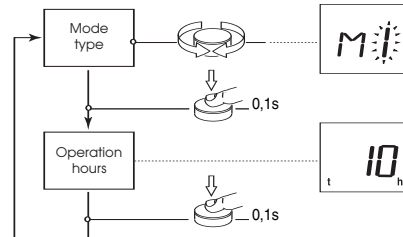
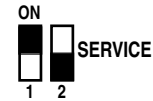
An impulse = 1s allows the ON/OFF function).

- Select OFF.
- Validate.

Note : the remote control (ex : switch) allows a stop of the pump (variator ON).
When stopping the pump, the sign "OFF" appears.



MODE 1 - Manual mode



7.1.2 MODE 2 : Pressure regulation

The pump can run in different regulation types (pressure, temperature, flow..).

The P, I, D factors are fixing on the software for the pressure regulation. And on the other hand, for another regulation, the P, I, D factors will be configured when you put in parameters.

MODE 2 : Pressure regulation (fig. 6 - 7 - 8)

The addition of a pressure sensor and a tank allows a pressure regulation of the pump.

The accuracy of the sensor is $\leq 1\%$ and it is used between 30 % and 100 % of the measuring scale range. The tank must have a useful volume of 8L minimum (tank and sensor kit delivered as accessories).

Parameters input in MODE 2

- Set the switch (fig. 4 - item S) on position SERVICE.
- Select M2.
- Validate.
- Select the source of set value Internal/External, Default "I" (set value adjustment by encoder)
- Validate.
- If the external set value "E" is validated (set value adjustment by external signal), sélectionner le type de signal (0-10V) ou (4-20mA).
- select the signal type (0-10V) or (4-20mA).
- _ Validate.
- Select the regulation type "P" for the pressure regulation.
- Validate.
- Select the range of the pressure sensor (6, 10, 16, 25 bars).
- Validate.
- Select the type of sensor (0-10V) or (4-20mA). (the information which is blinking is the one validated).
- Validate.
- Select the stop delay (time between detection of zero output and complete stop of the pump): range from 0 to 180 seconds (with notice 180 s).
- Validate.
- Visualisation of the Operating time meter. (number of pump operating hours).
- Validate.
- Set the switch back on position OPERATION.

Operating in Mode 2 and set value control with encoder.

For the starting up, we recommend to set the motor speed at 60% of its maximum pressure.

NOTE!

By turning the encoder the requirement value can be changed.

- Validate the new value.

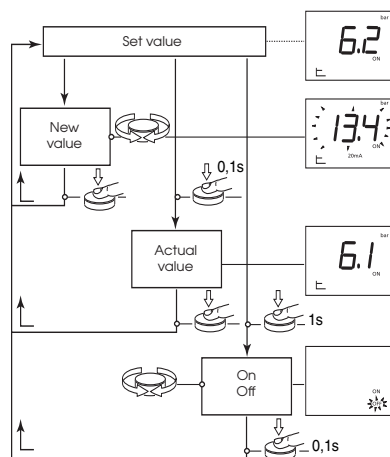
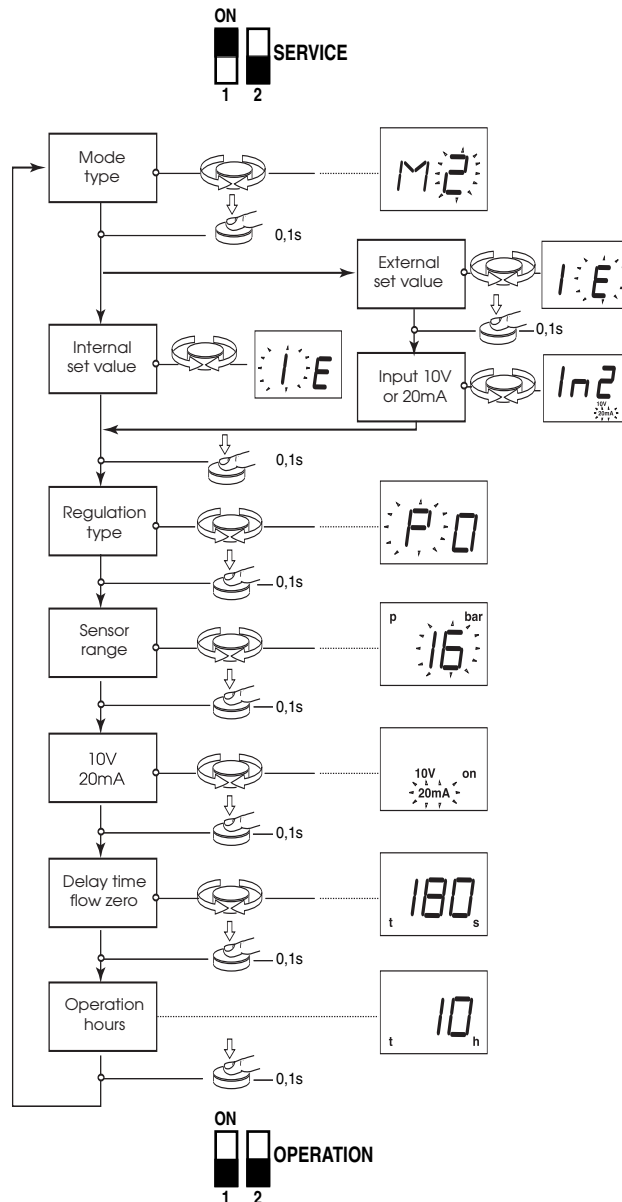
With a short impulse on the encoder the actual pressure can be displayed; the requirement pressure reappears after 30 seconds or after on other impulse.

An impulse = 1s allows the ON/OFF function.

- Select OFF.

- Validate.

MODE 2 - Pressure regulation



Operating in Mode 2 – pressure regulation and external set value control

The set value is controlled by the input signal 0-10V or 4-20mA.

For the starting up, we recommend to set the motor speed at 60% of its maximum pressure.

With a short impulse on the encoder the actual pressure can be displayed; the requirement pressure reappears after 30 seconds or after on other impulse.

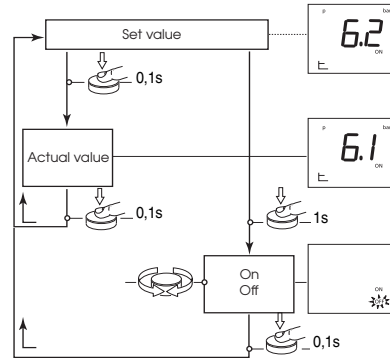
An impulse = 1s allows the ON/OFF function.

– Select OFF.

– Validate.

Note : the remote control (ex : switch) allows a stop of the pump (variator ON).

When stopping the pump, the sign "OFF" appears.



MODE 2 : Other regulation

Paramétrage en MODE 2

– Set the switch (fig.4-item S) on position SERVICE.

– Select "M2".

– Validate.

– Select the source of set value Internal/External".
(Default "I").
(set value adjustment by encoder).

– Validate.

– If the external set value "E" is validated.
(set value adjustment by external signal).
select the signal type (0-10V) or (4-20mA).

– Validate.

– Select the regulation type "0" for "Other regulation"
(other type).

– Validate.

– Select the type of sensor (0-10V) or (4-20mA).
(the information which is blinking is the one validated).

– Validate.

– Display "P" parameter of PID.

– Validate.

– Select "P" value.
(default P = 1).

– Validate.

– Display "I" parameter of PID.

– Validate.

– Select "I" value.
(default I=1s).

– Validate.

– Display "D" parameter of PID.

– Validate.

– Select "D" value
(default D=0ms)

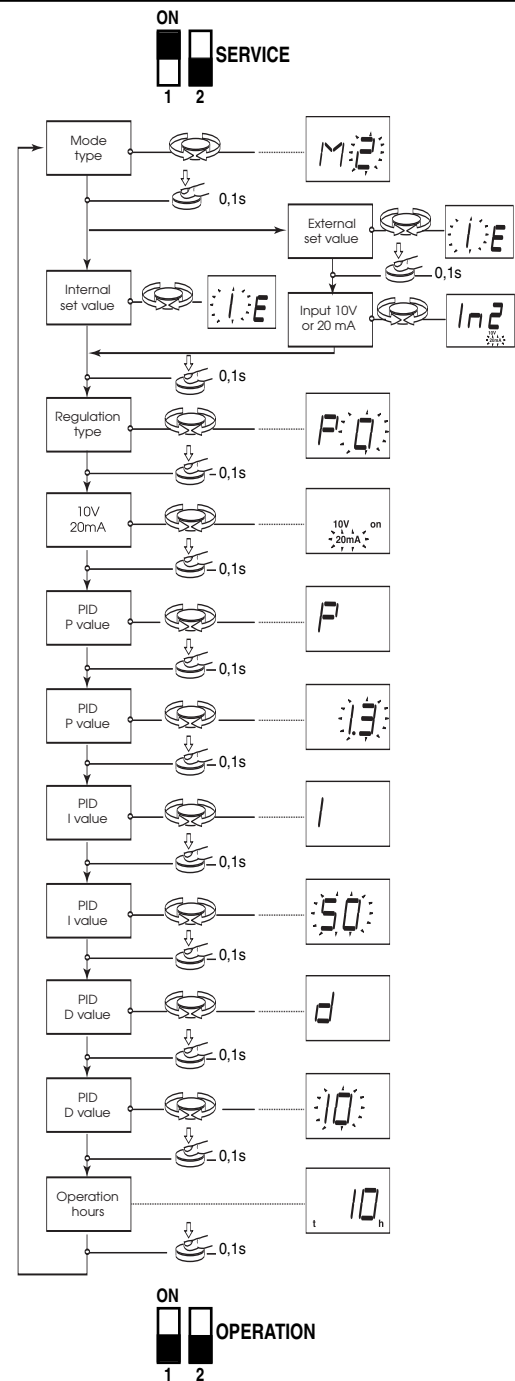
– Validate.

– Visualisation of the Operating time meter.
(number of pump operating hours).

– Validate.

– Set the switch back on position "OPERATION".

MODE 2 - Autre régulation



MODE 2 : Other regulation

Operating in Mode 2 and set value control with encoder

In this case, the displayed value is a percentage of the sensor range measurement.

By turning the encoder the requirement value can be changed.

- Validate the new value.

With a short impulse on the encoder the actual value can be displayed; the requirement value reappears after 30 seconds or after on other impulse.

An impulse ^a1s allows the ON/OFF function.

- Select OFF.

- Validate.

Operating in Mode 2 and external set value control

The set value is controlled by the input signal 0-10V or 4-20mA.

In Mode 2 – other regulation - the displayed value is a percentage of the sensor range measurement.

With a short impulse on the encoder the actual value can be displayed; the requirement value reappears after 30 seconds or after on other impulse.

An impulse around 1s allows the ON/OFF function.

- Select OFF.

- Validate.

Note : the remote control (ex : switch) allows a stop of the pump (variator ON).

When stopping the pump, the sign "OFF" appears.

7.1.3 With external control in frequency : MODE 3 (fig. 10)

The pump is controlled with an external system.

Parameters input in Mode 3

- Set the switch (fig. 4 - ref. S) on position SERVICE.

- Select M3.

- Validate.

- Select the external signal type (0-10V) or (4-20mA).

- Validate.

- Visualisation of Operating time meter.

- Validate.

- Set the switch back on position "OPERATION".

Operating in Mode 3

In Mode 3 the displayed value is a percentage of the maximum pump speed.

With a short impulse on the encoder the actual pressure can be displayed ; The requirement value reappears after 30 seconds or after an other impulse.

An impulse around 1s allows the ON/OFF function).

- Select OFF.

- Validate.

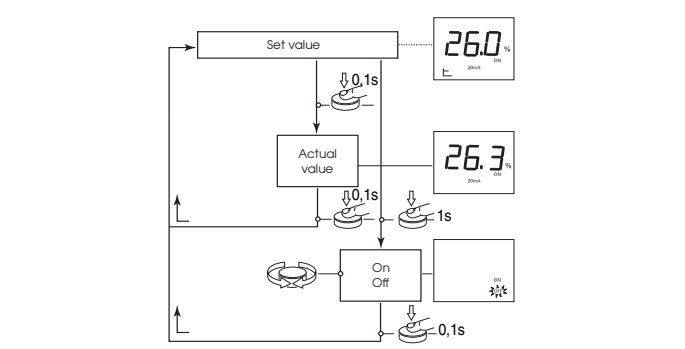
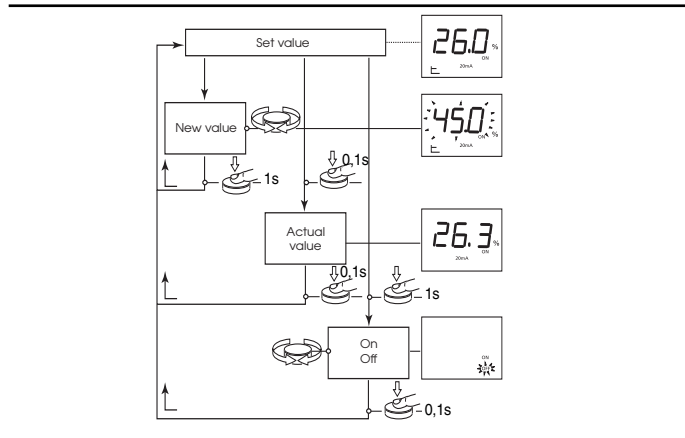
Note :

- The remote control (ex : switch) allows a stop of the pump (variator ON).

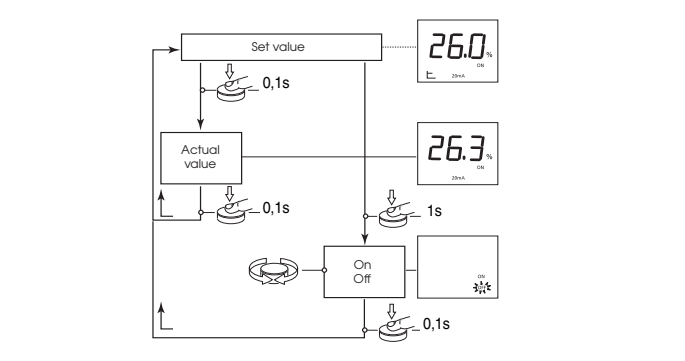
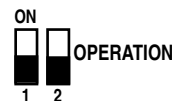
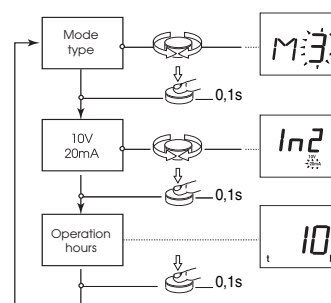
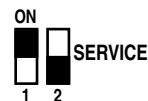
When stopping the pump, the sign "OFF" appears.

- If a voltage signal (0-10V) is used and is lower than 1V, the sign "OFF" automatically appears.

- If a current signal (4-20mA) is used and is lower than 2mA, the sign "OFF" automatically appears.



MODE 3



ENGLISH

7.1.4 Programming option

It is possible to reduce the maximum allowable frequency of the pump thanks to the encoder.

This option must be used for special liquid (high density, high viscosity,...) in order to avoid any overload.

Option

- Set the switch (fig. 4 - ref. S) on position SERVICE.
 - According to the chosen mode, "M1" or "M2" or "M3" appears.
 - Select "OP" thanks to encoder.
 - "OP" appears.
 - Validate.
 - Select "ON" or "OFF".
(the information which is blinking is the one validated).
 - Validate.
- Set the switch back on position "OPERATION".

8. MAINTENANCE

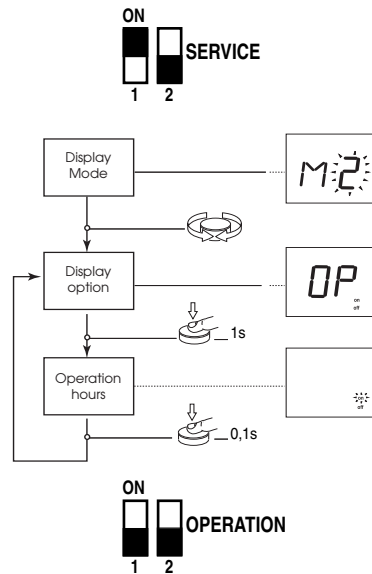


Before carrying out any maintenance work, switch off the pump and ensure that it cannot be switched on again by unauthorised people.

ATTENTION! Never carry out work on a running pump.

- No special maintenance in operation.
- Keep the pump and the motor-variator perfectly clean.
- In case of prolonged stopping, if there is no risk of frost, it is best not to drain the pump.
- The bearing holding the coupling and the motor bearings are lubricated for their total lifetime and do not require any lubrication.

The mechanical seal does not require any maintenance in operation. It must never operate dry.



9. Defects-Causes-Remedies



Before carrying out any maintenance work, switch off the pump and ensure that it cannot be switched on again by unauthorised people.

ATTENTION! Never carry out work on a running pump.

All incidents hereafter mentioned give rise to :

- The resting of the SBM relay (unavailable transfer).
- The activation of the SSM relay (failure transfer) when the maximum quantity of one type of defect is reached over a 24 hours range.
- Lightening of a red LED and the defect code display.

SIGNALLING CODE DEFECT	BEHAVIOUR OF THE VARIATOR				STATE OF THE RELAYS		INCIDENTS / POSSIBLE CAUSES	REPAIRING
	Reaction time before variator stop	Waiting time before restart	Max qty of defects over 24 hours	SBM	SSM			
E00	1mn	1mn	6	rest	active ①		Pump is no more primed or runs dry	Prime the pump once again by filling it (see chapter 6-3). Check the tightness of the foot valve
E01	1mn	1mn	6	rest	active ①		Load of the pump is excessive, pump is defective, or the pump is obstructed by particles.	Density and/or viscosity of the conveyed fluid are too big. Dismantle the pump and replace the defective components or clean them
E04	≤5s	5s ②	6	rest	active ①		The variator supply is in under-voltage	Check voltage at the variator terminals Mini 380V -6%
E05	≤5s	5s ②	6	rest	active ①		The variator supply is in over-voltage	Check voltage at the variator terminals Maxi 440V +6%
E06	≤5s	5s ②	6	rest	active ①		A supply phase is missing	Check the supply
E10	3s	no restart	1	rest	active ①		The pump is locked	Dismantle the pump, clean it and replace the defective parts It may be a mechanical failure of the motor (bearings)
E20	3s	5mn ②	6	rest	active ①		The motor heats Ambient temperature higher than +50°C	Clean the cooling ribs of the motor The motor is foreseen to run at an ambient temperature of +50°C
E23	immédiat	5mn ②	6	rest	active ①		The variator or the motor is in short-circuit	Dismantle the motor-variator of the pump, check it or replace it
E26	immédiat	5mn ②	6	rest	active ①		The thermal sensor of the motor is defective or has a wrong connection	Dismantle the motor-variator of the pump, check it or replace it
E30 E31	3s	5mn ②	6	rest	active ①		The variator heats Ambient temperature higher than +50°C	Clean the cooling ribs rearside and under the variator as well as the fan cover The variator is foreseen to run at a maximum ambient temperature of +50°C
E36	1,5s	no restart	1	rest	active ①		Internal problem of converter	Call on after-sales technician
E42	5s	no restart	1	rest	active ①		The cable of the sensor (4-20mA) is cut (Mode 2)	Check the correct supply and the cable connection of the sensor

① State of the relay if the number of failure > than the allowed number of failure.

② If the failure is suppressed.

Restart of the pump after a detection of defects :

• 1st case - The pump has reached the maxi quantity of defects

(from 1 to 6, according to the significance) of the same defect type over a 24 sliding hours period. In this case, the SSM relay is activated and the SBM relay is at rest. The pump can be restarted by pressing on the encoder or by switching off the supply and by restoring it.

• 2nd case - The pump hasn't reached the maxi quantity of defects

In this case, the SSM and SBM relays are at rest. Only a switch off and a restoration of the supply allow the restart.

- For both cases, it is necessary to proceed at first to the deletion of the defect. In case of intervention on the pump, switch off the supply beforehand.

If the defect is major, the action of an after-sales technician is required.

Other defects, not detected by the converter, due to the pum.



Before carrying out any maintenance work, switch off the pump.

If the liquid is toxic, corrosive or dangerous for human being, WILO or the qualified person in charge of the repairing must be informed. In this case, clean the pump to ensure a complete safety to the repairing man.

Defects	Causes	Remedies
The pump is running but no delivery	The pump does not run quickly enough	Check the adequate adjustment of the requirement (conformity to the required points)
	The internal parts are obstructed by particles	Let dismantle the pump and clean it
	Suction pipes are obstructed	Clean all the pipes
	Air in suction pipes	Check tightness of the whole pipe up to the pump and make it tight
	Suction pressure is too low, it causes generally cavitation noise	Too high losses of load on suction or suction head is too high (check the NPSH of the pump installed and of the installation)
The pump is vibrating	Loose on its foundation	Check and tighten completely the nuts of the stud bolts
	Particles obstructing the pump	Have the pump dis-mantled and cleans it
	Difficult rotation of the pump	Check the pump turns freely without abnormal sticking
No sufficient pressure for the pump	The motor speed is not high enough	Check if the set value is correctly adjusted
	The motor is defective	Replace it
	Bad filling of the pump	Open the venting device and vent until there are no more air bubbles
	The drain-priming plug is not fully tightened	Check it and screw it again
The flow is irregular	The suction head (Ha) is not respected	Study again the conditions and the recommendations described in this instruction
	The suction pipe has a lower diameter than the one of the pump	The suction pipe must have at least the same diameter as the suction pump port
	The strainer and the suction pipe are partially obstructed	Remove and clean
	In mode 2, the pressure sensor is not adequate	Put a sensor with conforming pressure scale and accuracy (see chapter 5.3)
In mode 2, the pump don't stop if the flow is zero	The non-return valve is not tight	Clean it or change it
	The non-return valve is not adequate	Replace it by an adequate non-return valve
	The tank has low capacity due to installation	Change it or add an other one on the installation

If the fault cannot be remedied, please contact your plumbing and heating specialist or your nearest WILO customer services or representative.

Subject to technical alterations!

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GB ***EC – Declaration of conformity***
F ***Déclaration de conformité CE***

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91/263/EWG

92/31/EWG

93/68/EWG

Niederspannungsrichtlinie
Low voltage directive
Direction basse-tension

73/23/EWG

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Applied harmonized standards, in particular:

Normes harmonisées, notamment:

EN 809

EN 61800-5-1

EN 61800-3

Dortmund, 2.03.2005


Erwin Prieß
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