



Aqua Pro Pump Systems
a Tomiko Inc. Company

OPERATIONS AND MAINTENANCE INSTRUCTIONS



RESIDENTIAL SERIES

RB203-F, RB204-F, RB303.5-F, RB207-P



*****Do not accept any package that is damaged or appears to be damaged. Contact Aqua Pro Pump Systems immediately.*****

Carefully follow the instructions below to obtain the best performance and a long service life from your pump. Contact Aqua Pro Pump Systems technical support if you have any problem.

OPERATING CONDITIONS: These pumps have been designed to pump neutral clean liquids in which no abrasive solids are suspended at temperatures of no more than 176°F (140°F for electric pumps with plastic impellers or diffusers) continuous operation.

INSTALLATION: The installation should be conducted by specialized professional and/or technical persons.

The pumps must be installed in a dry well-ventilated place with an ambient temperature of no more than 104°F (Fig A). Pumps used for cleaning and swimming pool maintenance purposes should not be used when there are people in the pool and must be operated through a ground fault interrupt (GFI) with a rated residual operating current not exceeding 30mA.

Pumps for outdoor fountains, garden ponds and similar places must be supplied through a ground fault interrupt (GFI) with a rated residual operating current not exceeding 30mA.

Fix the pump in place on a solid flat surface using suitable bolts to avoid vibration.

The pump must be installed in horizontal position to ensure that the bearings operate correctly. The diameter of the discharge pipe from the pump must be smaller than that of the suction pipe to the pump. If the suction pipe height exceeds 13', use a pipe with a larger diameter. The diameter of the suction pipe must be chosen to suit the flow rate and pressure required at the takeoff points. The suction pipe must be slightly angled up towards the pump suction to avoid the formation of air locks. Make sure that the suction pipe is completely airtight and submerged in the water by at least 1.5' to avoid the formation of vortices. Always fit a foot valve at the end of the intake pipe. It is advisable to fit a non-return valve between the delivery mouth and flow rate adjustment gate valve to avoid dangerous water hammering in the event of the pump suddenly stops. This measure is necessary if the suction pipe is over 65'.

The pipes must always be fitted using the related brackets to avoid transmitting stress to the pump body. Take care not to damage any part by over tightening the pipes when fitting them.

ELECTRICAL CONNECTIONS: The installer is responsible for making the electrical connections to the mains supply in compliance with the local codes.

-The electric pump is not equipped with a supply cable; the installer must cover the three wires of the supply cable inside the terminal box with three small tubes of the isolation material with the following characteristics: Working temperature not inferior to 194°F and electric strength more than 2,5kV.

-note that most local regulations demand that fixed installations incorporate a cut out device ensuring disconnection from the main power supply;

- make sure that the specifications on the pump rating plate and the rated line values are the same.
- connect the pump to an effective earth circuit and then connect the phases following the diagram on the terminal block cover or rating plate.
- single-phase motors are protected against overloads using a thermal device (overload cutout) fitted in the winding. Users are responsible for fitting a suitable protection device for three-phase motors;
- check that three-phase pumps rotate clockwise when looking at the pump from the motor (rear) side, swapping over two of the phase connections if the motor turns counterclockwise.

For pumps meant to be used in swimming pools and for outdoor use the supply cord should be properly sized depending on the motor amperage draw and length of the run. Please contact APPS for assistance if you think you have an application that fits this description.

If a pump is not equipped with a supply cord and a plug, the power supply network should include a cut-off device or system having a contact separation of at least 3mm in all pools.

If a pump is provided with a supply cord and a plug, the pump must be positioned so that the plug is accessible. It's advisable to install a residual current device (RCD) with a rated residual operating current not exceeding 30 mA.

PRIMING: Fill the pump completely with clean water before energizing. The water should be poured in through the priming plug of the volute (housing) of the pump. When you have completed the operation, screw the plug back in again and start the pump. The pump should be primed again whenever it has not been used for a long period of time or when air has made its way into the system.

IMPORTANT: Never run the pump empty. If this happens by mistake, switch the pump off, wait for it to cool down and then prime it using clean water.

MAINTENANCE: APPS residential series pumps do not require any maintenance provided one takes the following precautions:

When there is a risk of freezing, empty the pump through the drain plug on the bottom of the pump body, making sure you prime it when subsequently starting it again; check that the foot valve is clean at regular intervals; if the pump is to remain unused for a long period of time (e.g. in the winter) it is advisable to empty it completely, rinse it with clean water and store it in a dry place; if the shaft does not turn freely, release it using a flat head screwdriver inserting it in the rear of the motor; if this is not sufficient to solve the problem, remove the pump body, undoing the relevant mounting bolts, and clean it thoroughly to remove any encrustation.

Never carry out any work on the pump without having first disconnected it from the mains supply.

PROBLEM	CAUSE	SOLUTION
Motor won't start	- No power -Impeller stuck -Motor seized	-Check connections and voltage values -See section on maintenance -Replace motor
Motor turns without pumping water	-Clogged filter -Excessive intake height -Air intake	-Clean filter -Move pump closer to water outlet level -Check intake pipe is airtight -Make sure foot valve is immersed by at least 20" -Pump needs to be primed again
Flow rate insufficient	-Intake height at limit -Filter partially clogged -Impeller blocked	-Check intake height -Clean foot valve and, if necessary whole intake pipe -Disassemble pump and carefully clean Pump body and impeller
Tripped motor overload cutout	-Overheated motor -Impeller stuck	-Check voltage and ventilation -Release impeller (See maintenance section)

Failure to take the above precautions could damage your pump and invalidate the guarantee



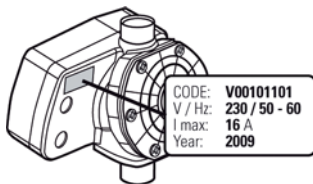
User's manual

FLUX® is a device that starts and stops the pump to which it is fitted. The pump installed with positive suction head or water supplied with aqueduct is started when a tap is turned on to generate a flow and is stopped when the flow rate required is zero or less than the "shut-off flow rate" (Qa).

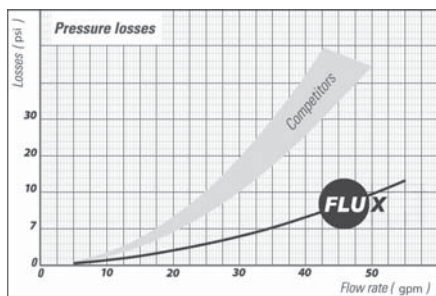
Technical specifications

- Voltage: 230 Volt a.c. or 110 Volt a.c.
- Frequency: 50-60 Hz
- Maximum current: 16A
- Protection grade: IP 65
- Run/stop flow rate (Qa) : 0.225-0.5 gpm
- Connections: 1" M NPT
- Operating pressure – bursting pressure: 140 psi - 570 psi
- Weight: 2.61 lbs

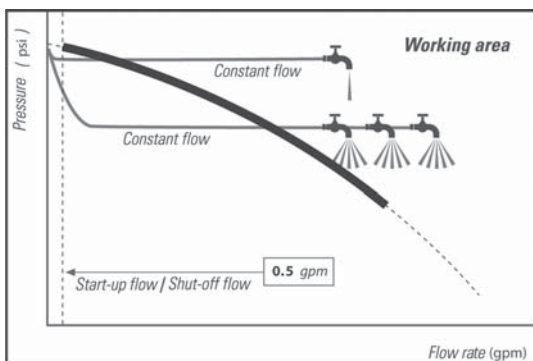
Before installing the product, check that the RATINGS correspond with those required.



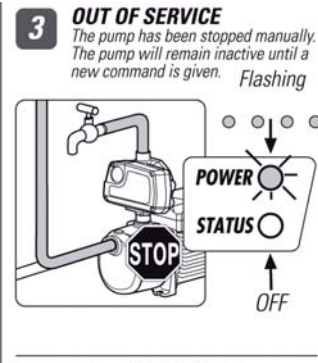
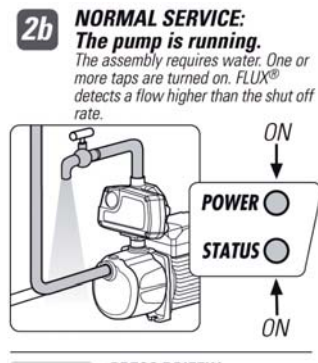
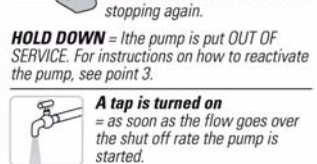
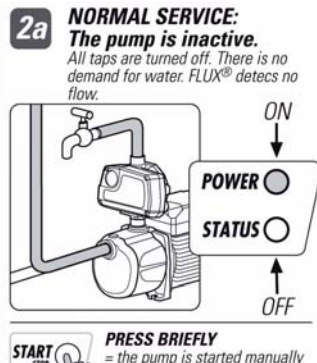
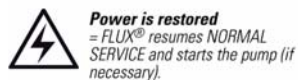
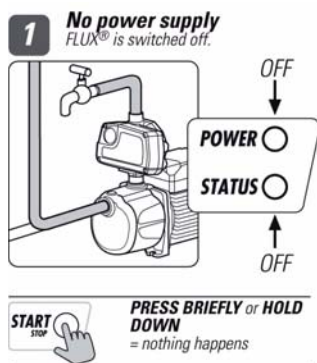
Losses



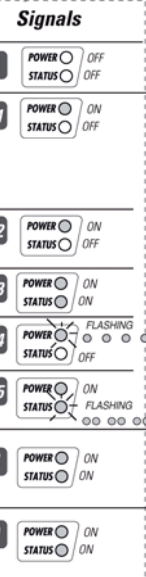
Working area



Operation



Problems	Possible causes	Solutions
FLUX® will not turn on.	A - No power	A - Check the electrical connections
The pump will not start when a tap is turned on.	B1 - The flow is lower than start-up/ shut-off flow rate	B1-1 - check whether there is incoming water in the suction pipes B1-2 - Open the tap more B1-3 - Modify the system so that even when the pump stops, flow rates higher than 0.75 gpm can be generated at the opening of a tap
	B2 - FLUX® does not detect a flow even when replace the circuit board	B2-1 - Change circuit board
	B3 - Detective Electrical Connections	B3-1 - Check electrical connections between FLUX and the water pump.
	B4 - FLUX® is in OUT OF SERVICE state	B4-1 - Turn on FLUX® again (see Operation, point 3)
	B5 - FLUX® is near to stop because of insufficient flow	B5-1 - None; restore the flow
The pump delivers no or low pressure.	C1 - Filters or pipes may be partly blocked	C1-1 - Check the water pipes
	C2 - FLUX®'s valve will not open completely	C2-1 - Check that the valve is not blocked by any foreign objects and clean if necessary
The pump will not stop.	D1 - Leaks in the system are higher than the shut-off flow rate (Qa)	D1-1 - Make sure that all taps are turned off and that there are no leaks within the system
	D2 - FLUX®'s check valve will not close	D2-1 - Check that the valve is not blocked by any foreign objects and clean if necessary



Highly Recommended:

- Do not alter the diameter of the inlet and outlet of the system. (Do not use diameter reduction for the pipes)
- In case of ball valve usage, it is highly recommended to install a full flow ball valve.
- **FLUX® must be installed with a pressure reducer valve.**
- Before installing the pump, be sure that the maximum flow of the water meter will not be exceeded (see reference below).

Reference:

Meter Size	Flow (gpm)
5/8"	12gpm
3/4"	30 gpm
1"	40 gpm
1.5"	65 gpm

STATEMENT OF COMPLIANCE

Under our exclusive responsibility, we hereby declare that this product is compliant with the following EU Directive and relevant implementing national regulations:

73/23/CEE, 89/336/CEE, EN 60730-2-6, EN 61000-6-3

DGFLOW S.r.l.
President - Amministratore Unico
Stefano Concini

Bigarello 24.05.08

ATTENTION

Please make sure to follow your state electrical code's for installation.

WARNING

Do not shut down violently the valve on the discharge to avoid damages on system due to water hammer effect.

Operating conditions

A. Compatible/non compatible fluids

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

B. Environmental conditions

FLUX® should not be used where there is the risk of an explosion. The temperature of the location should range between 32° F and 180° F, and the humidity should not exceed 90%.

C. Power supply

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

FLUX® can only be used with single-phase pumps.

Safety regulations

Before installing or using FLUX®, read this manual carefully and thoroughly.

The pump should be installed and serviced by qualified personnel, responsible for making the hydraulic and electrical connections in compliance with the relevant regulations.

DGFLOW® shall not be held liable for any damage relating to, or resulting from, an improper use of the product, or for any damage relating to, or resulting from, servicing or repairs carried out by unqualified personnel and/or with non-OEM spare parts. The warranty, which is valid for 24 months from the date of purchase, will no longer be applicable should the product suffer damage as a consequence of the use of non-OEM spare parts, tampering or improper use.

When starting the installation, check the following:

- The power supply is switched off.
- The power lines can withstand the maximum current.
- The cable bushings and circuit board cover have been properly assembled and secured (see Electrical Connections).
- The power supply is fitted with regulation earthing and safety devices.

When servicing the product, check the following:

- The system is not pressurised (turn a tap on)
- The power supply is switched off.

EMERGENCY STOP

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

FLUX® is put OUT OF SERVICE



Installation

Preliminary checks

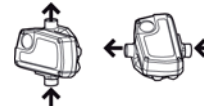
Take the FLUX® out of the packaging and check the following:

- Check for damages.
- Check that RATINGS correspond with those required.
- Check that cable bushings and screws are in place.
- Check FLUX®'s inlets and outlets to be clean and free of any packaging materials.
- Check valve that moves smoothly.

Hydraulic connections

Orientation

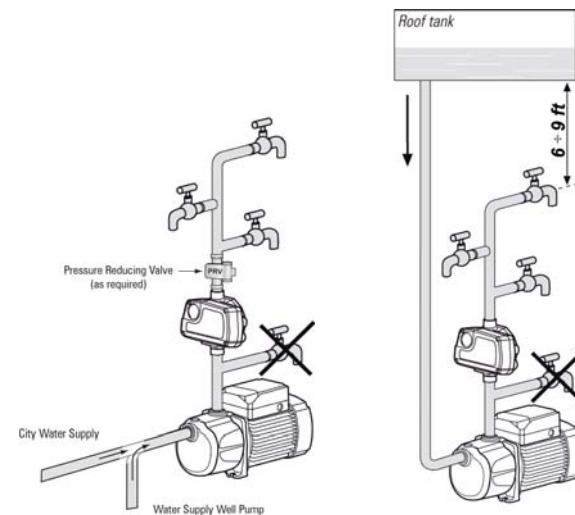
FLUX® can be installed at any angle depending on the flow direction, as indicated in the diagrams.



Position

FLUX® can either be fitted directly to the pump discharge or anywhere along the delivery or suction line, but in any case upstream outlet network.

No taps have to be installed between the pump and FLUX®.



First start-up

ATTENTION

FLUX® has to be used with a pump installed with positive suction head or water supplied with aqueduct. In such conditions the priming starts automatically at the opening of any tap, shower, washing machine etc.

When the pump is turned off the system must be able to guarantee a flow not lower than 0.75 gpm, even when we use a tap at the highest level in the system.

RUNNING DRY = no flow.

It is caused by the lack of water; after 15 seconds FLUX® stops the pump.

When the water is back FLUX® RESUMES AUTOMATICALLY THE NORMAL SERVICE.

Switching the pump on

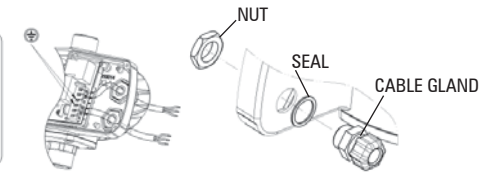
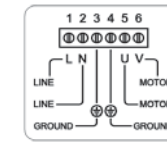
The red (Power) LED lights up; FLUX® instantly goes in standby and at the request of water starts the pump (the green "Status" LED lights up).

15 seconds after the flow has become zero or got under the value 0.25gpm FLUX® stops the pump and goes in standby (only the red (Power) LED is on)



Electrical connections

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



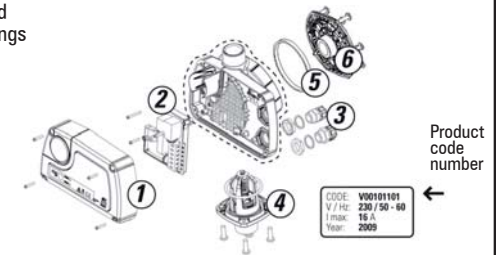
ATTENTION

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

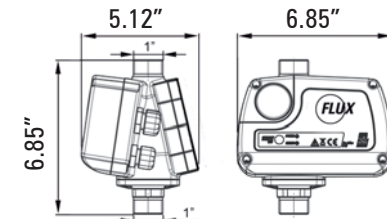
Parts Break Down

ATTENTION: when ordering spare parts, always state the position n° from the diagram below and the product code number found in the pressure-flow regulator technical data table.

- 1 - Circuit board cover
- 2 - Circuit board
- 3 - Cable bushings
- 4 - Valve kit
- 5 - Gasket
- 6 - Back cover



Size



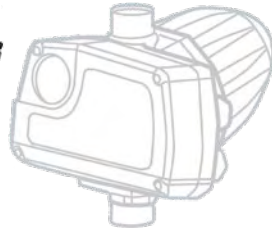
Disposal

When disposing of any FLUX® parts, adhere to the relevant laws and regulations in force in the country in which the equipment is being used. Do not dispose of any polluting parts in the environment.



PRESFLO

ELECTRONIC
PUMP CONTROLLER



NOTE 1
RUNNING DRY = there is no flow and the pressure is lower than that of the pump start-up pressure (Pm).

It occurs when there is no water. After 15 seconds PRESFLO® stops the pump and indicates an ERROR message. PRESFLO® AUTOMATICALLY tries to resume NORMAL SERVICE at intervals of increasing time (15, 30, 60 minutes and successively once every hour). If PRESFLO® detects any pressure and/or flow, NORMAL SERVICE is resumed, otherwise, the pump is stopped again until the next attempt is made. A MANUAL attempt to resume NORMAL SERVICE can be made at any time.

NOTE 2
FREQUENT START-UP = the repeated stopping and starting of the pump at intervals of less than 2 minutes from each other. This occurs when the flow rate is less than 0.25 gpm.

This may cause damage to the pump. In event of small leaks (dripping), PRESFLO®'s water accumulator guarantees that the pump starts/stops at time intervals of over 2 minutes (less than 30 starts/hour) and that FREQUENT START-UP errors do not occur. In the event of a major leak or extended use at excessively low flow rates (less than 0.25 gpm, the pump may be started/stopped as often as once every few seconds, putting the pump at risk of damage. In this case, after about 30 minutes, PRESFLO® stops the pump for the following 30 minutes (in order to let it cool down) and indicates an ERROR message. If the time interval between the starts-stops is more than 10 seconds (and therefore poses less of a risk to the pump), PRESFLO® will allow the pump to be used for more than 30 minutes. Once enough time has passed to allow the pump to cool down, it is restarted AUTOMATICALLY. The pump may be restarted MANUALLY any time.

User's manual

PRESFLO® is a device that starts and stops the pump to which it is fitted, thus replacing traditional pressure switch / surge tank systems. The pump is started when, as a tap is turned on, the pressure within the system drops below the "start-up pressure" (Pm), and is stopped when the flow rate required is zero or less than the "shut-off flow rate" (Qa).

PRESFLO®'s electronics protect the pump against unsuitable operating conditions such as running dry or repeated startups due to leaks.

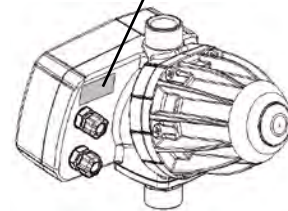
Technical specifications

- Voltage: 230 Volt a.c. or 110 Volt a.c.
- Frequency: 50-60 Hz
- Maximum current: 10 / 16 / 30 A
- Protection grade: IP 65
- Start-up pressure (Pm) : 11 / 21 / 31 psi
- Shut-off flow rate (Qa) : 0.25 – 0.52 gpm
- Connections: 1" M BSP / 1" M NPT
- Operating pressure – bursting pressure: 140 psi - 570 psi
- Weight: 3.2 lbs
- Protection against:
 - Running dry (automatic restart)
 - repeated start-ups

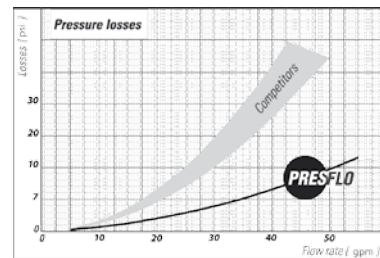
CODE: **V00101101**
V / Hz: **230 / 50 - 60**
I max: **16 A**
P start: **22 psi**
Year: **2008**

RATINGS

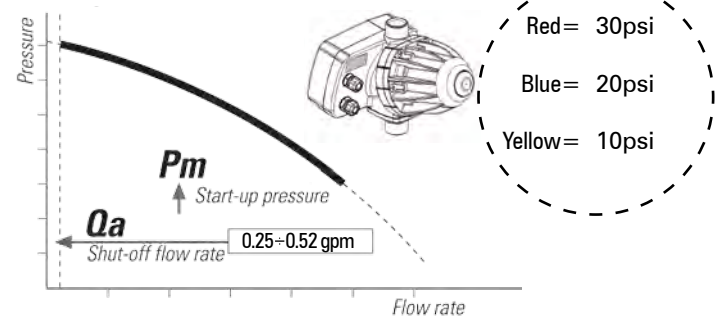
Before installing the product, check that the RATINGS correspond with those required.



Losses



Working area



Operating conditions

A. Compatible/non compatible fluids

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

B. Environmental conditions

PRESFLO® should not be used where there is the risk of an explosion. The temperature of the location should range between 32°F and 150°F, and the humidity should not exceed 90%.

C. Power supply

Make sure that the variation in the power supply is never more or less than 10 % of the RATING value.

Higher values may cause damage to the electronic components. PRESFLO® can only be used with single-phase pumps.

ATTENTION

Please make sure to follow your state electrical code's for installation.

Safety regulations



Before installing or using PRESFLO®, read this manual carefully and thoroughly.

The pump should be installed and serviced by qualified personnel, responsible for making the hydraulic and electrical connections in compliance with the relevant regulations.

DGFLOW® shall not be held liable for any damage relating to, or resulting from, an improper use of the product, or for any damage relating to, or resulting from, servicing or repairs carried out by unqualified personnel and/or with non-OEM spare parts.

The warranty, which is valid for 24 months from the date of purchase, will no longer be applicable should the product suffer damage as a consequence of the use of non-OEM spare parts, tampering or improper use.

When starting the installation, check the following:

- the power supply is switched off.
- the power lines can withstand the maximum current.
- the cable bushings and circuit board cover have been properly assembled and secured (see Electrical Connections).
- the power supply is fitted with regulation earthing and safety devices.

When servicing the product, check the following:

- the system is not pressurised (turn a tap on)
- the power supply is switched off.

EMERGENCY STOP

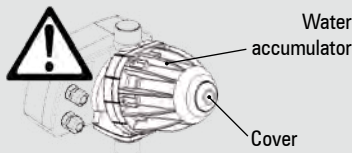
- When in use, the pump can be stopped in the event of an emergency: press START/STOP.



PRESFLO® is put OUT OF SERVICE.



Never disassemble water accumulator and cover



Installation

Preliminary checks

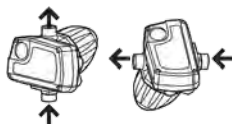
Take the PRESFLO® out of the packaging and check the following:

- Check for damages.
- Check that RATINGS correspond with those required.
- Check the cable bushings and screws are in place.
- Check PRESFLO®'s inlets and outlets to be clean and free of any packaging materials.
- Check that valve moves smoothly.

Hydraulic connections

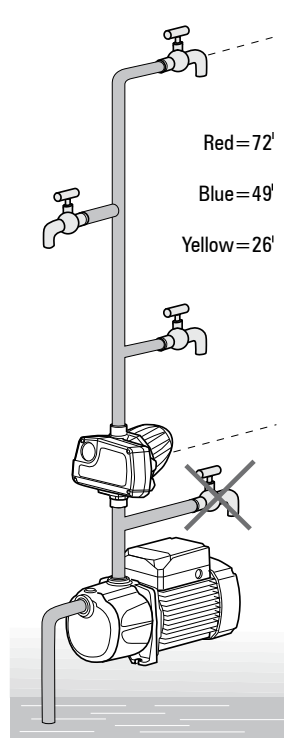
Orientation

PRESFLO® can be installed at any angle depending on the flow direction, as indicated in the diagrams.



Position

PRESFLO® can either be fitted directly to the pump outlet or anywhere along the delivery line. No taps or check valves need to be installed between the pump and PRESFLO®. A foot valve should be installed on the suction pipe.



ATTENTION

The pressure applied by the water column above PRESFLO® must not exceed that of the pump start-up pressure (P_m).

If, for example, PRESFLO® is installed at a height of 65 feet below that of the highest tap in the system, the pressure detected by PRESFLO® will be approximately 28 psi.

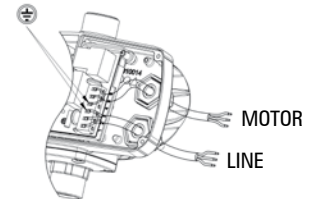
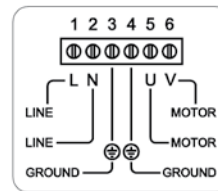
A model with P_m = 30 psi should, therefore, be installed in order to guarantee that the pump is started when a tap is turned on.

ATTENTION

The maximum pressure produced by the pump must be at least 14-20 psi higher than the start-up pressure (P_m). If the pressure produced by the pump is too low, PRESFLO® will stop the pump and indicate a 'dry running' error message.

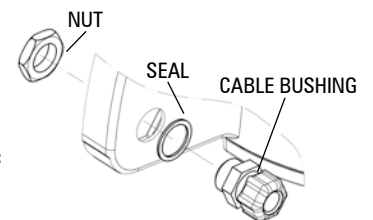
Electrical connections

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



ATTENTION

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



STATEMENT OF COMPLIANCE

Under our exclusive responsibility, we hereby declare that this product is compliant with the following EU Directive and relevant implementing national regulations:

73/23/CEE, 89/336/CEE, EN 60730-2-6, EN 61000-6-3

Bigarello 24.05.08

DGFLOW S.r.l.
Director
Stefano Concini

First start-up

Priming the pump

For instructions on how to prime (fill) the pump, see the pump manual.

ATTENTION

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

Switching the pump on

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



ATTENTION

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

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



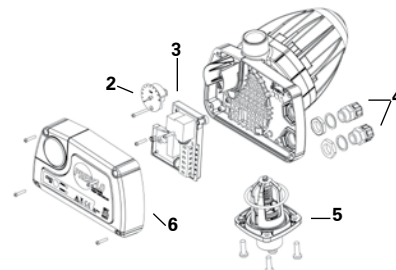
Parts Break Down

ATTENTION: when ordering spare parts, always state the position n° from the diagram below and the product code number found in the pressure-flow regulator technical data table.

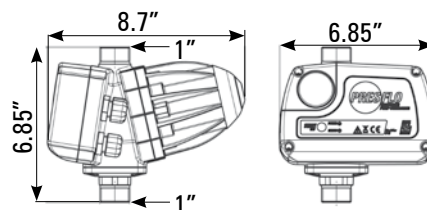
- 1 - Circuit board cover
- 2 - Pressure gauge
- 3 - Circuit board
- 4 - Cable bushings
- 5 - Valve unit

CODE: **V00101101**
 V / Hz: **230 / 50 - 60**
 I max: **16 A**
 P start: **22 psi**
 Year: **2008**

← Product code number



Size



Disposal

When disposing of any PRESFLO® parts, adhere to the relevant laws and regulations in force in the country in which the equipment is being used. Do not dispose of any polluting parts in the environment.



Problems	Signals	Possible causes	Solutions
PRESFLO® will not turn on.		No power	Check the electrical connections
The pump will not start when a tap is turned on.		PRESFLO® model with an inadequate start-up pressure (Pm) for the chosen application.	Relocate PRESFLO® to another position Install a model with a higher start-up pressure (Pm)
		Faulty electrical connections or pump out of service.	Check the electrical connections and that the pump is working
		PRESFLO® "OUT OF SERVICE"	Reset PRESFLO® (See Operation, point 3).
		PRESFLO® in temporary shut down due to "RUNNING DRY" due to lack of water Maximum pump pressure is insufficient	Wait for the automatic restart or press START to restart manually (See Operation, point 4a) Replace the pump with one with more suitable characteristics Install a model with a lower start-up pressure (Pm)
The pump delivers no or low pressure.		PRESFLO® in temporary shut down due to "FREQUENT START-UP"	Wait for the automatic restart or press START to restart manually (See Operation, point 4b). Remove any cause of leakage from system or install an expansion tank
		Filters or pipes may be partly blocked PRESFLO®'s valve will not open completely	Check the water pipes Check that the valve is not blocked by any foreign objects and clean if necessary
The pump stops and starts repeatedly.		Leaks within the system (less than the shut-off flow rate Qa)	Check the hydraulic connections and repair any leaks If a leak cannot be repaired, install an expansion tank
The pump will not stop.		The flow rate is higher than the shut-off flow rate (Qa)	Make sure that all taps are turned off and that there are no leaks within the system
		PRESFLO®'s check valve will not close	Check that the valve is not blocked by any foreign objects and clean if necessary

Operation

1

No power supply

PRESFLO® is switched off.

PRESS BRIEFLY or HOLD DOWN
= nothing happens

Power is restored
= PRESFLO® resumes NORMAL SERVICE and starts the pump (if necessary).

2a

**NORMAL SERVICE:
The pump is inactive.**

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

PRESS BRIEFLY
= the pump is started manually and runs for a few seconds before stopping again.

HOLD DOWN
= the pump is put OUT OF SERVICE. For instructions on how to reactivate the pump, see point 3.

A tap is turned on
= as soon as the pressure falls below the start-up pressure (Pm), the pump is started.

2b

**NORMAL SERVICE:
The pump is running.**

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

PRESS BRIEFLY or HOLD DOWN
= the pump is stopped and put OUT OF SERVICE. For instructions on how to reactivate the pump, see point 3.

The taps are turned off
= If there is no flow for a few seconds, the pump is stopped.

3

OUT OF SERVICE

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

PRESS BRIEFLY
= nothing happens.

HOLD DOWN
= the pump resumes NORMAL SERVICE. See points 2a - 2b.

4a

**ERROR:
stopped temporarily due to
RUNNING DRY**
(See NOTE 1)

PRESFLO® has detected that the pump is running dry and has therefore stopped it TEMPORARILY.

PRESS BRIEFLY
= the pump is started and manually and resumes NORMAL SERVICE. See points 2a - 2b.

HOLD DOWN
= the pump is put OUT OF SERVICE. For instructions on how to reactivate the pump, see point 3.

4b

**ERROR:
temporary shut down due to
FREQUENT START UP**
(see NOTE 2)

PRESFLO® has detected that the pump starting-up too often and has therefore stopped it TEMPORARILY.

PRESS BRIEFLY
= the pump is started and manually and resumes NORMAL SERVICE. See points 2a - 2b.

HOLD DOWN
= the pump will not restart and goes OUT OF ORDER. The pump is put OUT OF SERVICE. For instructions on how to reactivate the pump, see point 3.

Highly Recommended:

- Do not alter the diameter of the inlet and outlet of the system. (Do not use diameter reduction for the pipes)
- In case of ball valve usage, it is highly recommended to install a full flow ball valve.