

AQUABOOST

Installation, Operation & Maintenance Instructions

Please leave this instruction booklet in a safe place as it contains important warranty, maintenance and safety information

Read this manual carefully before commencing installation.

This manual covers the following products:



Model

VARiFLO Single Pump Booster set
VARiFLO Twin Pump Booster Set
VARiFLO Three Pump Booster Set

Please note images are representative only and may not portray your model

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1 PRODUCT OVERVIEW

1.1 Product Description

The VARiFLO range consists of a single pump unit and single, twin and three pump booster sets comprising centrifugal pump(s) and electronic control.

1.2 Application

The Aquaboost VARiFLO range is designed to meet the demand of pressurised systems in domestic applications where the existing mains water supply is insufficient.

1.3 Storage

If this product is not to be installed immediately on receipt, ensure that it is stored in a dry, frost and vibration free location in its original packaging.

2 WARNINGS



- This pump/pump set must not be used for any other application without the written consent of Stuart Turner Limited.
- This appliance can be used by adults aged from 18 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.
- Children shall not play with the appliance.
- This product should not be used for the supply of water to more than one dwelling (house, apartment, flat).
- Cleaning and user maintenance shall not be made by children without supervision.
- The motor casing can become very hot under normal operating conditions. Care must be taken to ensure it cannot be touched during operation.
- The electrical installation must be carried out in accordance with the current national electrical regulations.



- The electrical installation must be undertaken by a qualified person.
- RCDs/ELCBs are not recommended for use with variable speed drives/motors. If an RCD is mandatory use type B RCDs.
- For single phase sets with inverter motors the earth leakage circuit breaker must trip out when an earth fault currents with DC content (pulsating DC) occur.
- RCD's suitable for use with variable speed drives/motors are not suitable for personnel protection.



- Before starting work on the electrical supply ensure power supply is isolated.
- DO NOT allow the supply cord to contact hot surfaces, including the motor shell, pump body or pipework. The cord should be safely routed and secured by cable clips.
- This appliance must be earthed via the supply cord, which must be correctly connected to the earth point located in the terminal box.
- The supply cord and internal wiring within the terminal box are routed and secured to ensure compliance with the electrical standard



- EN 60335-1. It is essential that prior to any disturbance of this internal wiring, all cable routing and securing details are carefully noted to ensure re-assembly to the same factory pattern is always maintained.
- If the supply cord is to be changed or is damaged, it must be replaced with a special cord assembly available from Stuart Turner or one of their approved repairers.

Please read installation details carefully as they are intended to ensure this product provides long, trouble free service. Failure to install the unit in accordance with the installation instructions will lead to invalidation of the warranty.

3 CHECKLIST

IMPORTANT: With the appliance removed from its packaging check for any damage prior to installation. If any damage is found contact Stuart Turner Ltd within 24 hours of receipt.

3.1 VARiFLO Pump

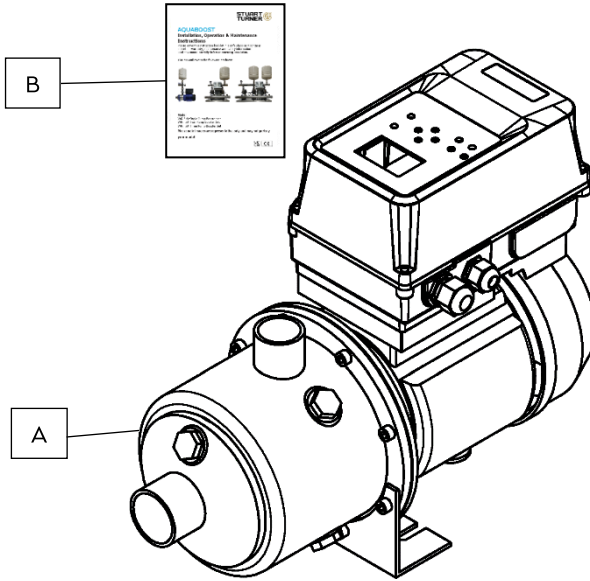


Figure 1

Item	Description	Qty
A	VARiFLO pump	1
B	Instruction guide	1

Your product may vary slightly from the illustration above.

3.2 VARiFLO Single Pump Booster Set

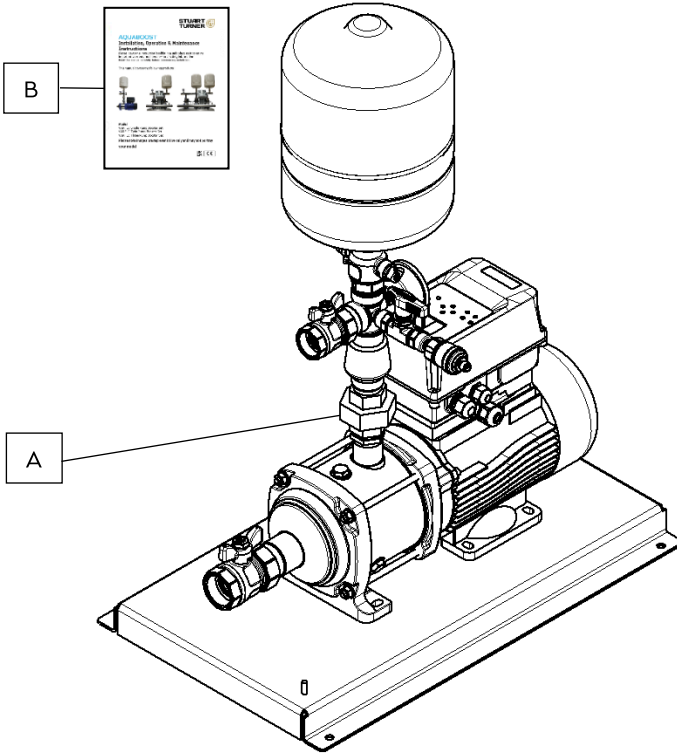


Figure 2

Item	Description	Qty
A	VARiFLO booster set	1
B	Instruction guide	1

Your product may vary slightly from the illustration above.

3.4 VARiFLO Three Pump Booster Set

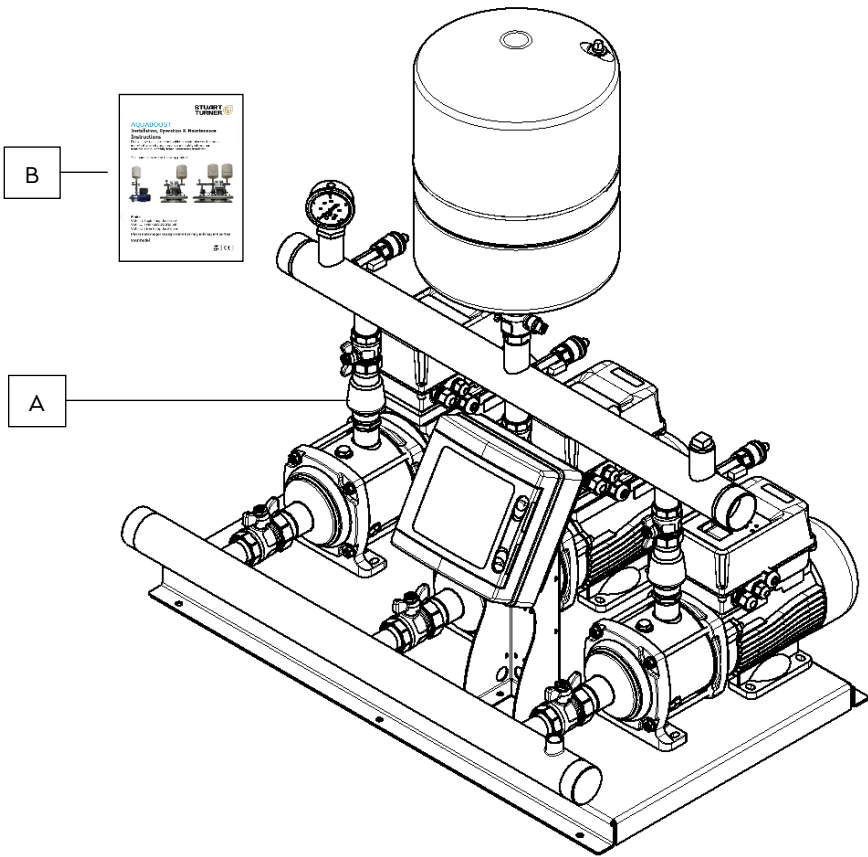


Figure 4

Item	Description	Qty
A	VARiFLO booster set	1
B	Instruction guide	1

Your product may vary slightly from the illustration above.

4 IMPORTANT - READ BEFORE COMMENCING INSTALLATION

4.1 Water Temperature

This unit is designed to pump cold water only which should not exceed the following values:

The maximum allowable water temperature is 23 °C.

The minimum allowable water temperature is 4 °C.

4.2 Pipework - General

Do not drill holes or put fastenings into the VARiFLO tank, this will cause leakage.

System leaks: Ensure the system to be boosted is able to hold pressure and is leak free before installing VARiFLO products. Failure to do so will cause abnormal operation and damage to the unit.

Secure pipework: Ensure pipework to and from pump / pump set is independently supported & clipped to prevent forces being transferred to inlet and outlet branches of pump. Do not secure pipework to the VARiFLO, this will cause damage and possible leakage.

Flux: Solder joints must be completed and flux residues removed prior to VARiFLO installation (flux damage will void any warranty).

Pipework design: Care should be taken in the design of pipework runs to minimize the risk of air locks e.g. use drawn bends rather than 90° bends.



DO NOT introduce solder flux to flexible hose, pump or any parts manufactured from plastic.

DO NOT allow contact with oil or cellulose based paints, paint thinners or strippers, acid based descalents or aggressive cleaning agents.

DO NOT feed other header or gravity tanks with VARiFLO. It is acceptable to feed toilet cisterns provided the toilet fill valve operates correctly and is leak free.

4.3 Plumbing Installation Regulations

The plumbing installation must comply with the current water and building regulations.

The plumbing installation must be installed by a qualified person.

4.4 Pressure Vessel

The pressure vessel is pre-charged at the factory and must be set correctly during installation see Section 10 - Maintenance for details.

5 LOCATION - GENERAL



- **Access:** For emergencies and maintenance the pump must be easily accessible.
- **Protection:** The VARIFLO must be located in a dry, frost free area. The VARIFLO must not be installed in a loft space.
- **Ventilation:** Ensure an adequate air flow to cool the VARIFLO. Separate the VARIFLO from other appliances that generate heat.
- **Water retention:** Site the unit in a location where in the unlikely event of a water leak, any spillage is contained or routed to avoid electrics or areas sensitive to water damage.
- **Ambient temperature:** The VARIFLO must be sited in a location where the ambient temperature does not exceed 30°C.
- **Isolating valves:** Separate system isolating valves (non-restrictive) must be fitted to allow easy pump service. Isolating valves must be mounted where specified to allow the system isolation and removal of the VARIFLO if needed. See Section 9 for installation details.
- **Preferred VARIFLO location:** The preferred VARIFLO location is on a smooth level floor of sufficient strength to support the weight of the VARIFLO close to the water source.

The VARIFLO must not be installed in a loft space.

It must also be considered that the noise and vibration from the VARIFLO may be transmitted through the structure the VARIFLO is sited on.

6 KEY FEATURES

6.1 VARiFLO Single Pump Booster Set

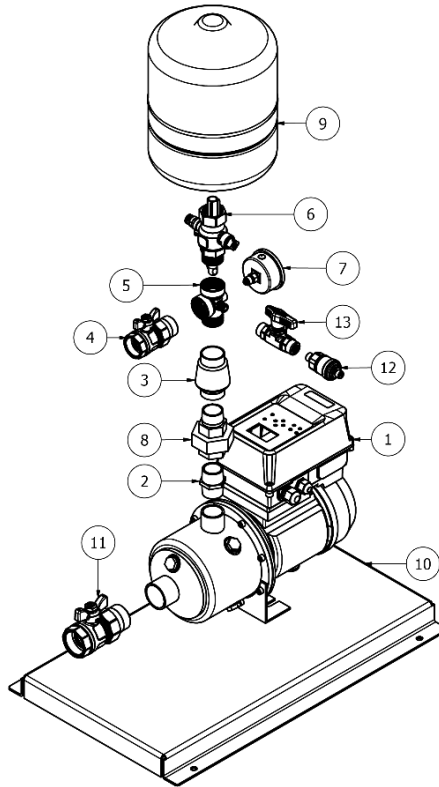


Figure 5

ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	VARiFLO Pump & Variable Speed Controller	8	M / F Union
2	Nipple	9	8 Litre Pressure Vessel
3	Non-Return Valve	10	Base Plate
4	Union Ball Valve	11	Union Ball Valve
5	5 Way Connector	12	Pressure Transducer
6	Isolation & Drain Valve	13	Isolation Valve
7	Pressure Gauge		

6.2 VARiFLO Twin Pump Booster Set

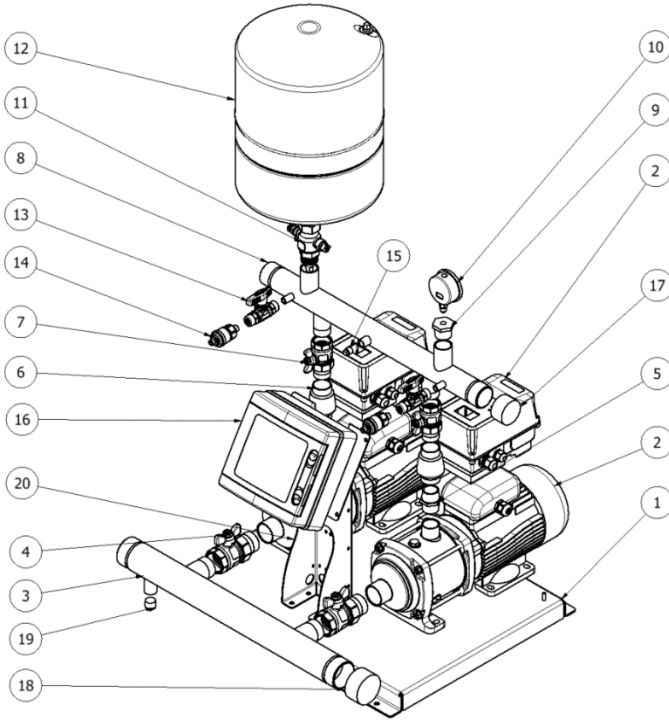


Figure 6

ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	Base Plate	11	Flow Through Isolating & Drain Valve
2	VARiFLO Pump & Variable Speed Controller	12	24 Litre Pressure Vessel
3	Suction Manifold	13	Isolation Valve
4	Union Ball Valve	14	Pressure Transducer
5	Nipple	15	Plug
6	Non-Return Valve	16	Junction Box
7	Union Ball Valve	17	Discharge End Cap
8	Discharge Manifold	18	Suction End Cap
9	Reducing Bush	19	Drain Plug
10	Pressure Gauge	20	Panel Stand

6.3 VARiFLO Three Pump Booster Set

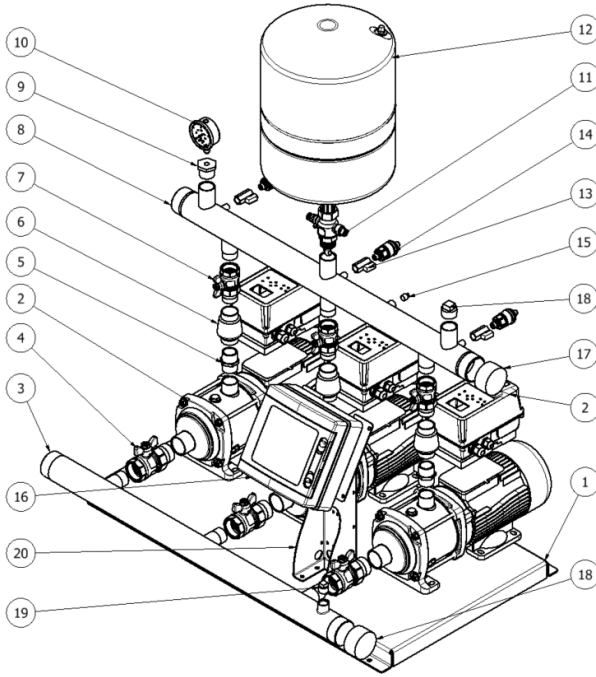


Figure 7

ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	Base Plate	11	Flow Through Isolating & Drain Valve
2	VARiFLO Pump & Variable Speed Controller	12	24 Litre Pressure Vessel
3	Suction Manifold	13	Isolation Valve
4	Union Ball Valve	14	Pressure Transducer
5	Nipple	15	Plug
6	Non-Return Valve	16	Junction Box
7	Union Ball Valve	17	Discharge End Cap
8	Discharge Manifold	18	Suction End Cap
9	Reducing Bush	19	Drain Plug
10	Pressure Gauge	20	Panel Stand

7 INSTALLATION & CONNECTIONS

7.1 Water Connection

The VARiFLO is to be permanently connected to a cold water storage tank using rigid pipe or suitably sized and rated flexible hose to comply with current building and plumbing regulations. Ensure there is a demountable joint in the pipe to allow the removal of the VARiFLO if needed.

7.2 Unit Location

The VARiFLO is intended to be installed as a freestanding unit.

1. Slide the VARiFLO into position
2. Connect the services using isolation valves and demountable fittings
3. The positioning of these fittings allow the VARiFLO to be removed without cutting pipes or draining the system.

7.3 Drinking Water Tap

It is recommended that at least one drinking water tap is connected into the unpumped water supply (typically a kitchen sink), so the water supply is maintained in the event of a failure of the pumped supply.

8 ELECTRICAL INSTALLATION & EARTHING

8.1 Regulations



- The electrical installation must be carried out in accordance with the current national electrical regulations and installed by a qualified person.

8.2 Safety



- RCD's/ELCB's are not recommended for use with variable speed drives/motors. If an RCD is mandatory use type B RCDs.
- For single phase sets with inverter motors the earth leakage circuit breaker must trip out when an earth fault currents with DC content (pulsating DC) occur.
- RCD's suitable for use with variable speed drives/motors are not suitable for personnel protection.
- Do not touch any electrical components for at least 5 minutes after the unit has stopped to allow any discharge to occur safely.

8.3 Before Starting Work



- Before starting work on the electrical supply ensure power supply is isolated.

8.4 Supply Cord

- DO NOT allow the supply cord to contact hot surfaces, including the motor shell, pump body or pipework. The cord should be safely routed and secured by cable clips.

8.5 Adjacent Pipes

- Adjacent suction and delivery pipes should be fitted with earthing clamps in accordance with current regulations (Figure 7 Earth continuity connections).

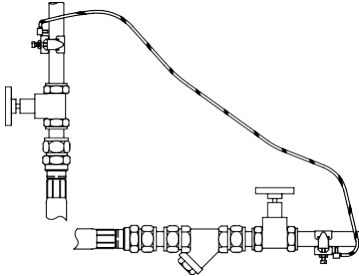


Figure 8

8.6 Earthing

- This appliance must be earthed via the supply cord, which must be correctly connected to the earth point located in the terminal box.

8.7 Pipework

- Copper or metallic pipework must have supplementary earth bonding where the continuity has been broken by flexible hoses or plastic components.

8.8 Additional Earthing

- Certain installations may require additional earthing arrangements such as equipotential bonding. Reference should be made to the relevant regulations concerning this subject to ensure compliance.

8.9 Connections

- The pump must be permanently connected to the fixed wiring of the mains supply using the factory fitted supply cord, via a double pole switched (with a minimum of 3 mm contact separation) fused spur off the ring main and NOT connected to the boiler or the immersion heater circuits.
- The electrical connection must be made adjacent to (not behind) the VARI-FLO to allow disconnection of the electrical supply should the pump module need to be removed for service or maintenance.

8.10 Wiring of Connection Unit




- WARNING: This appliance must be earthed.
- The wires in the mains lead (supply cord) are coloured in accordance with the following code:

Green and Yellow: Earth
Blue: Neutral

Brown: Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your connection unit proceed as follows:

The wire which is coloured green and yellow must be connected to the terminal in the connection unit which is marked with the letter E or by the earth symbol:  or coloured green or green and yellow.

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

8.11 Wiring Diagrams

Connection Master & Slave Communication, Pressure Transducer and External Level Sensor

Use cables with reinforced isolation.

1. Unscrew the cover and loosen the PG located on the lateral side of the plastic body.
2. Insert the cord through the PG.
3. Remove the connector from its housing.
4. Set up the connection following the schema.
5. Relocate the connectors on its housing. Screw the cover and the PG.

If the devices are provided with the communication cable, refer to the following color code:

1-black, 2-brown, 3-grey, 4-yellow / blue

They will be connected by following detail A; the two central wires (brown and grey) must be crossed.

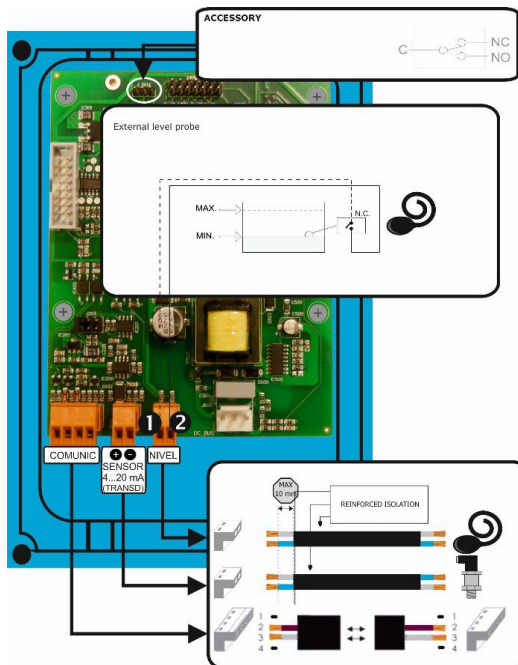


Figure 9

8.12 VARiFLO (Twin Controller)

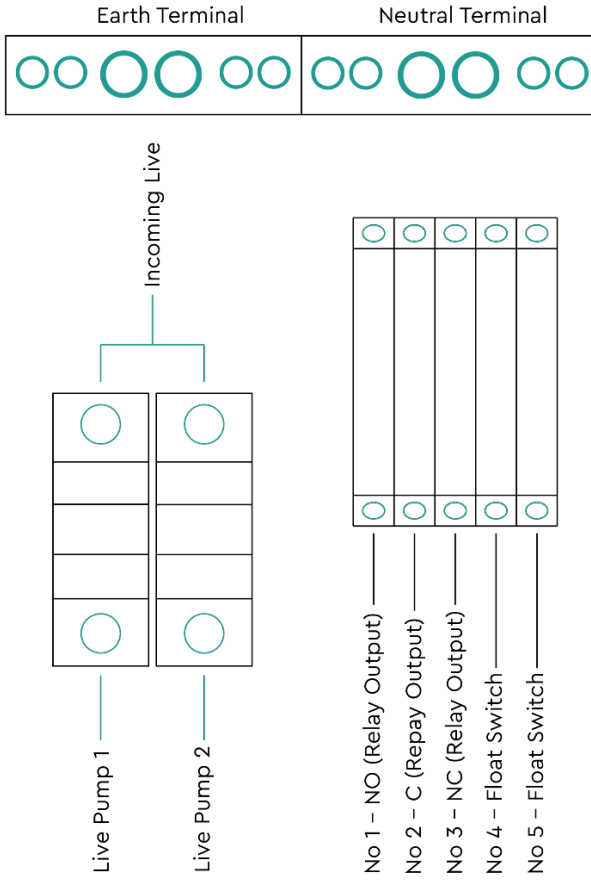


Figure 10

8.13 VARiFLO (Three Controller)

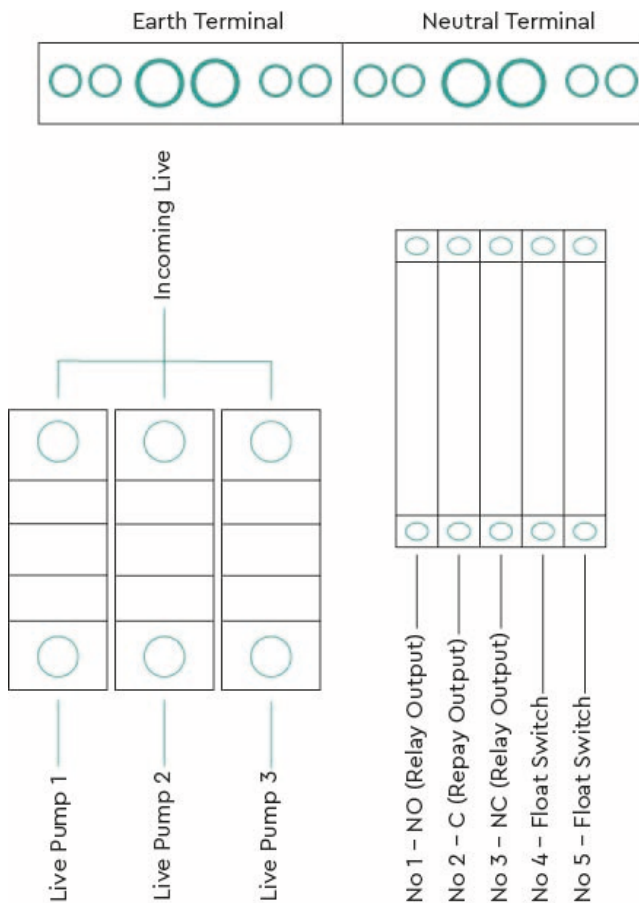


Figure 11

8.14 Fuses

The following fuse size should be used:

Model	Fuse Size (AMPS)
VARI-FLO all models	10

8.15 Supply Cord Replacement



- The supply cord and internal wiring within the terminal box are routed and secured to ensure compliance with the electrical standard EN 60335-1. It is essential that prior to any disturbance of this internal wiring, all cable routing and securing details are carefully noted to ensure re-assembly to the same factory pattern is always maintained.

If the supply cord is to be changed or is damaged, it must be replaced with a special cord assembly available from Stuart Turner or one of their approved repairers.

On disassembly note the cord retention and routing system. Re-assemble to the same pattern.

For information on cable connection consult the wiring diagram and cable gland fitting instructions.

9 COMMISSIONING & STARTING

9.1 Pump Controller

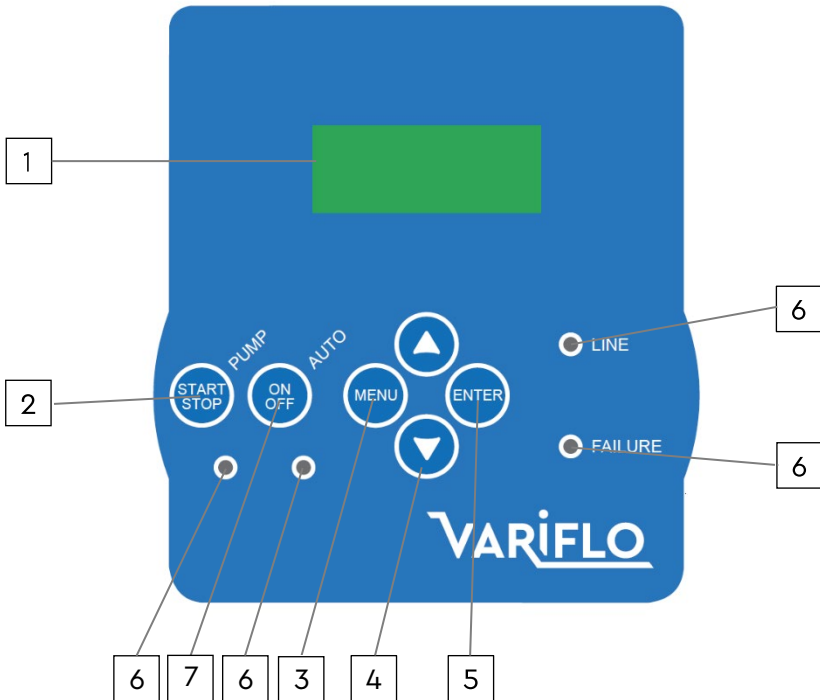


Figure 12

1. LCD screen. Shows the pressure in working mode.
2. MANUAL START-STOP pushbutton.
3. Pushbutton for ENTER or EXIT menu.
4. Pushbuttons for changing programming values showed in the LCD screen (1).
5. ENTER for saving programmed values.
Every press is succeeded by a new field of the CONFIGURATION MENU.
To quit the configuration sequence press MENU (3).
6. Led lights:
 - a. LINE green: Electric supply. ON when it is connected.
 - b. FAILURE red: Bright or intermitten depending on type of failure.

- c. PUMP yellow: When it is bright means pump working. It is lit with the pump stopped or when the device is not connected.
 - d. AUTOMATIC green: it is bright in AUTOMATIC mode. When it is intermittent in MASTER&SLAVE mode it means that this device will be auxiliary in the following cycle.
7. ON/OFF: Change from AUTOMATIC to MANUAL mode or vice versa.

9.2 Operation

Automatic control device designed for single and three-phase pump's automation, with an electronic system managed by software responding to the rigorous requirements of efficiency and safety.

It includes a frequency inverter that regulates the speed of the pump in order to keep constant the pressure independently of the flow.

The system incorporates an LCD screen where the parameter configuration is very easy and intuitive. Once the configuration parameters are set, the device manages the start-up of the pump and the frequency inverter. It assures a constant pressure and an important costs reduction because at any time the control will feed the system with the right and necessary output.

9.3 Master and Slave Operation (Twin Pump Version)

The group MASTER-SLAVE is constituted by a device configured as MASTER - responsible of the group's control - and another device configured as SLAVE controlled by the master device. Due to the alternating sequence of operation, the device configured as MASTER began the first cycle as MAIN device - its pump is the first to start - but in the next cycle it becomes SECONDARY - its pump is the second to start - and so on. Therefore, the fact that a device is configured as MASTER involves control of the group, but this fact does not avoid its operation alternately as SECONDARY device. Each device must be provided with its transmitter.

9.4 Three Pump Operation

The group CHANNEL BUS operation is constituted by the devices configured as Channel 1, 2 & 3. Each device is responsible of the group's control when alternating sequence of operation, the device configured as MASTER at the time began the first cycle as MAIN device - its pump is the first to start - but in the next cycle it becomes SECONDARY - its pump is the second to start - and so on. Therefore, the fact that the devices are configured as Channel 1,2 & 3 each pump will be MASTER with cyclic changeover.

9.5 Key Features

- ON-BOARD frequency inverter for pump control.
- Control and safety system against over-intensities.
- Control and safety system against dry operation.
- ART function (Automatic Reset Test). If the device has been stopped due to the action of the safety system against over-current, the ART tries to connect the pump, with a programmed periodicity because the water supply could have been restored.
- Automatic restore system after an interruption of power supply. System is activated in AUTOMATIC mode keeping the configuration parameters (see "CONFIGURATION" chapter).
- External pressure transducer (4 to 20 mA) under demand.
- Possibility of communication with another device to operate in MASTER & SLAVE regime.
- Control panel
 - A. Display with back light for alarm menu with permanent pressure indication as digital gauge.
 - B. START/STOP push-button to manually start and stop the pump. ENTER pushbutton to save data in memory.
 - C. ON/OFF pushbutton to change from AUTOMATIC to MANUAL mode or vice versa.
 - D. MENU push-button.
 - E. Keyboard for the access to programming menu.
- Connections for detection of minimum water level in aspiration tank. This system is independent of the safety against dry operation.
- Common alarm volt-free contact (under request).
- Register of operational controls: information about operating hours, counter of starts, counter of connections to the power supply.
- Register of alarms: information about type and number of alarms since the starting up of the device.

9.6 Classification and Type

According to EN:60730-1 and EN:60730-2-6 this unit is a control electronic device for pressure groups, with flexible cable for permanent assembly type Y, action type 1Y (transistor output). Operating value: flow 2.5 l/min. Degree of contamination 2 (clean environment). Software Class A.

Impulse rating voltage: cat II / 2500V. Applied temperature for the ball pressure test: enclosure (75°C) and PCB (125°C). Control circuit for AC motor with $\cos \phi_i \geq 0,6$ (single-phase) and $\cos \phi_i \geq 0,75$ (3-phase). According to EN61800-3 this device is C2 class - C1 class under request.

9.7 Start Up (Single Pump Unit)

1. Be sure that the pump is correctly primed.
2. Connect the device to the electric supply with the magnetothermic switch

FAILURE led light will be ON. Wait for 10 seconds while the device is doing the autotest.

Once it finishes, led light FAILURE is OFF and led light LINE is ON.

The LCD screen will show message "SPEEDBOARD" and immediately the language display of the configuration mode.

3. The device is ready for being configured.

9.8 Start Up (Multiple Pump Unit)

1. If we wish to mount multiple devices for working in groups, previous point should be exactly followed - the order of connection is irrelevant. During the configuration process we will be able to choose which device is the MASTER (Twin pump version) or CHANNEL (Three pump version).

9.9 Configuration

Use **▲▼** to change the values and press **ENTER** for validation. To quit the configuration sequence press **MENU**.

After every press of the **ENTER key** the different screens that constitute the configuration sequence will be displayed

	<p>To start the sequence of configuration press MENU during 3"</p>
	<p>Use keys ▲▼ to select language "LANGUAGE ENGLISH", "LANGUE FRANÇAISE", "LINGUA ITALIANA" and "IDIOMA ESPAÑOL"</p>
	<p>Use keys ▲▼ input the nominal current intensity value in A of the pump enabling the thermal protection. This value is located over the characteristics plate of the motor.</p> <p>Press ENTER for validation.</p> <p>WARNING: this value is linked with the flow detection system, it is very important to enter the exact current consumption indicated on the nameplate.</p>
	<p>ROTATION SENSE</p> <p>Using the START/STOP pushbutton verify the rotation sense.</p> <p>Using keys ▲▼ (0/1) it can be changed.</p> <p>Press ENTER for validation.</p>
	<p>MINIMUM FREQUENCY</p> <p>Using ▲ to increase the lower frequency value, within the range 15-48 Hz for 3-phase pumps and 30-48 Hz for single-phase pumps.</p> <p>* The minimum frequency value will be used as frequency stop in installations where the automatic detection of the device does not operate due to leaks in the system.</p> <p>See hydraulic installation.</p>

<table border="1"> <tr> <td>L</td><td>E</td><td>V</td><td>E</td><td>L</td><td>?</td><td></td><td></td> </tr> <tr> <td>N</td><td>O</td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>	L	E	V	E	L	?			N	O							<p>EXTERNAL LEVEL SENSOR</p> <p>If the installation does not have a level probe press ENTER to validate NO.</p> <p>If the installation has a level probe, use keys ▲▼ to change NO to YES</p>
L	E	V	E	L	?												
N	O																

<table border="1"> <tr> <td>P</td><td>R</td><td>E</td><td>S</td><td>S</td><td>U</td><td>R</td><td>E</td> </tr> <tr> <td>0</td><td>3</td><td>,</td><td>0</td><td></td><td>b</td><td>a</td><td>r</td> </tr> </table>	P	R	E	S	S	U	R	E	0	3	,	0		b	a	r	<p>SYSTEM OPERATING PRESSURE</p> <p>Use keys ▲▼ to modify the initial value (2 bar).</p> <p>WARNING: The input pressure must be at least 1 bar lower than the maximum pressure of the pumps.</p> <p>NOTE: In case of twin pump systems the system operates at the pressure set in the MASTER device, so that the configuration of set pressure in the slave device has no effect.</p>
P	R	E	S	S	U	R	E										
0	3	,	0		b	a	r										

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T	Y	P	E														
S	I	N	G	L	E	?											

<table border="1"> <tr> <td>P</td><td>.</td><td>S</td><td>E</td><td>N</td><td>S</td><td>O</td><td>R</td> </tr> <tr> <td>0</td><td>-</td><td>1</td><td>0</td><td></td><td>b</td><td>a</td><td>r</td> </tr> </table>	P	.	S	E	N	S	O	R	0	-	1	0		b	a	r	<p>The range of lecture of the pressure transmitter installed must be adjusted.</p> <p>If the range is within 0-10 bar confirm by pressing ENTER.</p> <p>If the range is within 0-16 bar change it using ▲▼ and then confirm with ENTER.</p>
P	.	S	E	N	S	O	R										
0	-	1	0		b	a	r										

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P	s	e	t		4	,	0										
P	b	a	r		3	,	9										

In case of multiple pump systems, after pressing **AUTOMATIC** in the **MASTER** device, the **AUTOMATIC LED LIGHT** of the **SLAVE** device will start to flash intermittently, indicating that communication between both devices is ready. If this does not happen verify the connection (fig 5).

9.10 Screen Display

Being the unit in automatic mode (LED AUTO ON) by pressing ▲ can be displayed several operation parameters. Where:

1. Pset is the set pressure or target pressure in bar.
2. Pbar is the instantaneous lecture of pressure in bar.
3. Hz is the rotation frequency of the motor in Hz.
4. A is the instantaneous current consumption in A.
5. °C is the module temperature in °C.

P	s	e	t	4	,	0
P	b	a	r	3	,	9

P	b	a	r	3	,	9
H	z					37

A						9	,	8
°	C							20

9.11 Expert Menu

There is normally no need to adjust these values, they are factory set. Using ▲▼ we can change the values and press **ENTER** for validation. To quit the configuration sequence press **MENU**. After every **ENTER** the messages of the configuration sequence will be displayed.

<pre> P s e t 4 , 0 P b a r 3 , 9 </pre>	<p>To start the sequence of configuration press MENU + ENTER during 3"</p>
<pre> E X P E R T V . X X </pre>	<p>Press ENTER</p>
<pre> Q 0 1 9 </pre> <pre> Q 1 - 1 9 </pre> <pre> Q 2 8 </pre>	<p>PID parameter, factory set.</p>
<pre> A C C E L E R . 1 0 </pre>	<p>ACCELERATION Using ▲▼ adjusts the aceleration. Rank 5-20 (Hz/s). Press ENTER to confirm.</p>
<pre> D E C E L E R . 1 0 </pre>	<p>DECELERATION Using ▲▼ adjusts the deceleration. Rank 5-20 (Hz/s). Press ENTER to confi</p>
<pre> F R E Q . 8 K H z </pre>	<p>COMMUTATION FREQUENCY Using ▲▼ adjusts the commutation frequency 8KHz to 4KHz. Press ENTER to confirm</p>

9.12 System Flushing



- The pipework system should be flushed out prior to the VARiFLO being connected to ensure any contaminants/chemical residues and foreign bodies are removed from elsewhere in the system.

9.13 Water Supply

Always ensure that water supply is adequate to meet the demand. Ensure the pump chamber is full of water before starting the pump. Failure to do this could result in seal damage. To ensure dry running does not occur the pump must be primed as described in priming section below. **Do not run pump dry.**

9.14 Priming



- Never operate pump with inlet and/or outlet isolating valves in the closed position. Damage will occur!
 - The tank must be filled with water before starting the pump.
1. Turn on the service valves nearest the VARiFLO and allow the air to vent from the system.
 2. Turn on the VARiFLO and allow the pump to build up pressure purging the air from the system.
 3. Open all the service valves (including flushing WCs) in turn to fully purge the air from the system.

9.15 Starting

1. Ensure all outlets are closed, turn power supply 'on' - pump will start, pressurise the system then stop.
2. Open and close all outlets in turn associated with the pump, (including w/c systems) allowing water to flow from each outlet until all air is purged. As each outlet is opened and closed, the pump will start and stop respectively.

Note: After closing the outlet there will be a small time delay before the pump stops, which is normal.

3. Any tap or control valve within the system when opened and closed will now turn the VARiFLO on/off, there will be a delayed start due to the water stored in the pressure vessel. Providing this is the case the system is now operating correctly.
4. Carefully check pump and pipework for leaks whilst pump running and stationary before leaving the installation unattended.

9.16 For Further Technical Support

Phone the Stuart Turner Aquabooast team on +44 (0) 800 31 969 80. Our staff are trained to help and advise you over the phone.

10 MAINTENANCE

10.1 Pressure Vessel

The pressure vessel should be checked once every 12 months to have its pre-charge checked or replenished, this should be carried out as follows:

1. Isolate pump electrically.
2. Remove the front cover.
3. Isolate the water supply by closing the appropriate isolating valves.
4. Release system water pressure by opening an outlet on the system.
5. Check pre-charge pressure at Schrader valve using a tyre pressure gauge.
6. Replenish pre-charge by injecting air into the vessel via the Schrader valve using a car or bicycle pump.
7. Close all system outlets, open inlet and outlet isolating valves.
8. After maintenance is completed refer to Section 11 - Commissioning for instructions on re-starting pump.

Model	Pre-charge bar (psi)
VARiFLO	The pressure vessel pre-charge must be set at 0.7 Bar (10psi) below the pump set pressure. i.e. If pump pressure is set to 3 bar, then the pre-charge value should be 2.3 bar (33 psi).

10.2 Water Scale

In areas of hard water, scale can cause the mechanical pump seal to stick if left without use for long periods. The pump must be run for at least 5 minutes every four weeks to "exercise" all working parts.

11 TROUBLE SHOOTING

11.1 Alarms (Single Pump Systems)

In case of simultaneous alarms, quit the automatic mode and go to manual mode, pressing the pushbutton AUTOMATIC ON/OFF (led light PUMP will turn off). Using key ▲▼ will be displayed the successive alarms. Once visualized, for leaving the menu, press ENTER returning to MANUAL mode.

A1 DRY RUNNING

⊗ Failure verification

- Final failure

DESCRIPTION: if the system detects dry running during more than 10 seconds, it will stop the pump and the ART (Automatic Reset Test) will be activated.

SYSTEM REACTION: after 5 minutes ART system will start again the pump for 30 seconds, trying to restore the system. In case of persistent lack of water, it will try it again every 30 minutes for 24 hours. If after all these cycles, the system still detects lack of water, pump will remain permanently out of order until the damage will be repaired.

SOLUTION: dry running, it has been activated the safety system: you should verify the feeding of the hydraulic network. The pumps can be primed using the push-button START/STOP (the LED light AUTOMATIC should be off, if it is not, press the push-button to disable it).

Special case: if the pump cannot provide the programmed pressure (configuration mistake) the unit reacts as it was dry-running.

Special Case 2: this device manages the dry running control through the nominal current consumption of the pump. It must be verified the introduced current consumption in the setup menu.

A2 OVER-INTENSITY

⚙ Failure verification

- Final failure

DESCRIPTION: the pump is protected against over currents by mean of the intensity values established in the installation menu. These over currents are produced generally by dysfunctions in the pump or in the electric supply.

SYSTEM REACTION: when detecting the thermal failure, the pump will be automatically stopped. The system will try again to restart the pump when the demand of consumption requires it. The control system will carry out 4 attempts in these circumstances. If the system remains locked after the 4th attempt, the pump will remain definitively out of order.

SOLUTION: verify the state of the pump, for example the impeller could be blocked. Verify intensity values introduced in the configuration menu. Once the problem have been solved the operation will be restored going to the "SET UP" menu (see the chapter configuration) and configuring the adequate intensity values.

A3 DISCONNECTED P.

- Final failure

DESCRIPTION: the device has an electronic safety system in case of no-load detection.

SYSTEM REACTION: the device is disconnected.

SOLUTION: the wound of the motor and the pump consumption should be verified. Once the problem has been solved the operation will be restored going to the "SET UP" menu (see the chapter configuration) and introducing the adequate intensity values.

A5 TRANSDUCER

- Final failure

DESCRIPTION: the transducer damages are showed in the device LCD screen.

SYSTEM REACTION: the device operation is interrupted.

SOLUTION: check the external pressure transmitter.

A6 EXCESSIVE TEMP

- Final failure

DESCRIPTION: the system is cooled by the motor fan to keep the INVERTER in optimum working conditions.

SYSTEM REACTION: if an excessive temperature is reached the own system leaves the inverter out of service and as consequence the pump too.

SOLUTION: verify the temperature environment should be under 50 °C. Contact with technical service.

A7 SHORTCIRCUIT

- Final failure

DESCRIPTION: the device has an electronic system for protection against short circuits as well as peaks of current.

SYSTEM REACTION: the pump stops and then it starts again -performing 4 successive attempts. If the problem is not solved, the pump will remain definitively out of order.

SOLUTION: check the pump, if the problem persists, contact the technical service.

A8 OVERVOLTAGE - A9 UNDERVOLTAGE

- ✧ Failure verification

DESCRIPTION: the device has an electronic safety system against overvoltage's and too low supply voltages.

SYSTEM REACTION: in case of overvoltage or undervoltage the system remains stopped until an adequate value of voltage is reached. In this case, the system is automatically restored.

SOLUTION: check the electric supply.

11.2 Alarm Installation Master-Slave

A10 COMUNICA (Failure verification)

DESCRIPTION: If you have configured a Master-Slave or Channel Bus system and communication cable is disconnected or there is a bad connection, the system stops.

SYSTEM REACTION: The Master-Slave system stops and starts to operate individually.

SOLUTION: Check the cable connection and if this is OK, check the connection inside the unit. Check the configuration of the Master-Slave system (setup menu).

DESCRIPTION: blank screen.

SOLUTION: check the electric supply 230 V. In case of being in right conditions, the general fuse (10 A), located in the main plate (fig 1) should be verified.

11.3 Alarms - Multiple Pump Systems

The alarms for assembled devices, are similar to those of the individual one with the specific particularities of operation with 2 or 3 communicated devices. Depending on the system's reaction there are 3 types of alarm:

1. Communication Failure

Not any alarm is activated. Both devices continue operating independently as single. There will not be flashing led light in any unit.

2. Dry Running Operation

If there is a lack of water alarm in a single pump, the other one assumes the role of "main device", if there is an over-demand during next operating cycles, the system will try to restore the device in failure. If the device is restored in these conditions, then it will be also restored the alternated operating mode. If there is lack of water on both devices, the system will activate the ART system in the MASTER unit.

3. Other Alarms

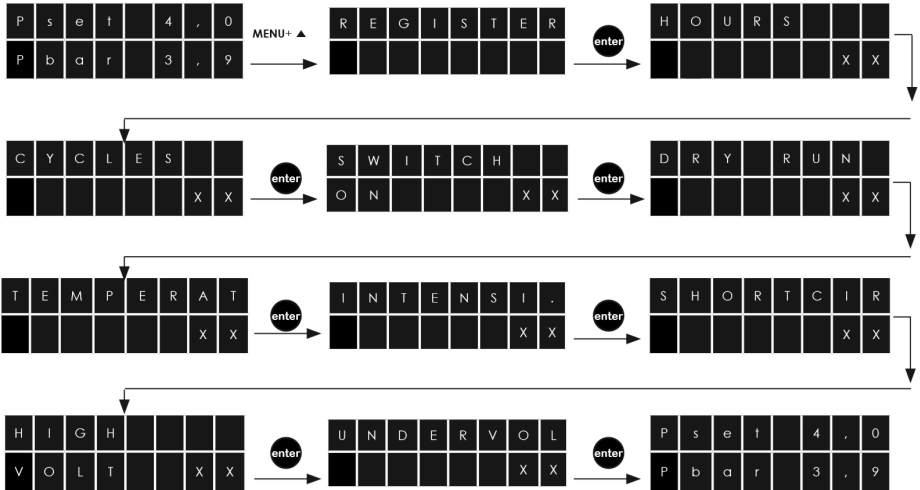
If the alarm has occurred in a single device, the other will act as "main device". The system will try to restore the disabled device only in case of over demand, after 4 successive attempts without success the device is turned off, it should be restored manually. In case of alarms in both devices the system performs 4 restore attempts, if it does not succeed the system is disabled.

To restore manually a device disabled by an alarm push AUTOMATIC ON/OFF in MASTER device and then ENTER in the device with the alarm.

11.4 Register of Operational Data and Alarms

By using simultaneously MENU + → during 3" is acceded to register of operation data and alarms, by mean of **ENTER** we can advance through the sequence, once finished the sequence we come back to the main display.

Sequence:



REGISTER HOURS Counter of total time that the pump has been operating.

REGISTER STARTS Number of cycles of operation, a cycle is a start and a stop.

REGISTER SWITCH Number of connections to the electric supply.

MAX PRESSURE Maximum pressure reached by the installation. It allows the detection of water hammer.

ALARM COUNT SHORTCIRC Number of short circuit alarms.

ALARM COUNT I MAX Number of overcurrent alarms.

ALARM COUNT. TEMP Number of alarms by excessive temperature.

ALARM COUNT DRY RUN Number of dry-running alarms.

All the records are saved even if the device has been disconnected from the electric supply.

12 PRODUCT WARRANTY

Congratulations on purchasing a Stuart Turner product.

We are confident this product will provide many years of trouble free service as all our products are manufactured to the very highest standard.

The Aquaboost VARI-FLO is warranted to be free from defects in materials or workmanship for 2 years from the date of purchase.

Within the warranty period we will repair, free of charge, any defects in the product resulting from faults in material or workmanship, repairing or exchanging the whole unit as we may decide.

Not covered by this warranty: Damage arising from incorrect installation, improper use, unauthorised repair, normal wear and tear and defects which have a negligible effect on the value or operation of the product.

Reasonable evidence must be supplied that the product has been purchased within the warranty term prior to the date of claim (such as proof of purchase or the product serial number).

This warranty is in addition to your statutory rights as a consumer. If you are in any doubt as to these rights, please contact your local Trading Standards Department.

In the event of a claim please telephone 'Aquaboost' with proof of purchase and product serial number.

+44 (0) 800 31 969 80

You should obtain appropriate insurance cover for any loss or damage which is not covered by Stuart Turner Ltd in this provision.

Please record here for your reference:

TYPE NO.	SERIAL NO.	DATE PURCHASED

NOTES:

NOTES:



DECLARATION OF CONFORMITY



Supply of Machinery Regulations - 2008

EN ISO 12100:2010, EN 809:1998+A1:2009/AC:2010

Electrical Equipment Regulations - 2016

EN 60335-1:2012/A2:2019, EN 60335-2-41:2003/A2:2010

EMC Regulations - 2016

EN 55014-1:2017/A11:2020, EN 55014-2:2015, EN 61000-3-2:2014, EN 61000-3-3:2013

Machinery Directive - 2006/42/EC

EN ISO 12100:2010, EN 809:1998+A1:2009/AC:2010

Low Voltage Directive - 2014/35/EC

EN 60335-1:2012/A2:2019, EN 60335-2-41:2003/A2:2010

EMC Directive - 2014/30/EU

EN 55014-1:2017/A11:2020, EN 55014-2:2015, EN 61000-3-2:2014, EN 61000-3-3:2013

IT IS HEREBY CERTIFIED THAT THE VARIFLO BOOSTER SET AS SERIAL NUMBER BELOW, COMPLIES WITH THE ESSENTIAL REQUIREMENTS OF THE ABOVE STATUTORY REGULATIONS & E.U. DIRECTIVES.



STUART TURNER LIMITED
HENLEY-ON-THAMES, OXFORDSHIRE
RG9 2AD, ENGLAND.
RESPONSIBLE PERSON AND MANUFACTURER

EU AUTHORISED REPRESENTATIVE
ARC (AUTHORISED REP COMPLIANCE)
GND FLOOR, 71 LOWER BAGGOT
STREET, DUBLIN,
D02 P593, IRELAND.

Signed.....

Stuart Turner are an approved company to BS EN ISO 9001:2015



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