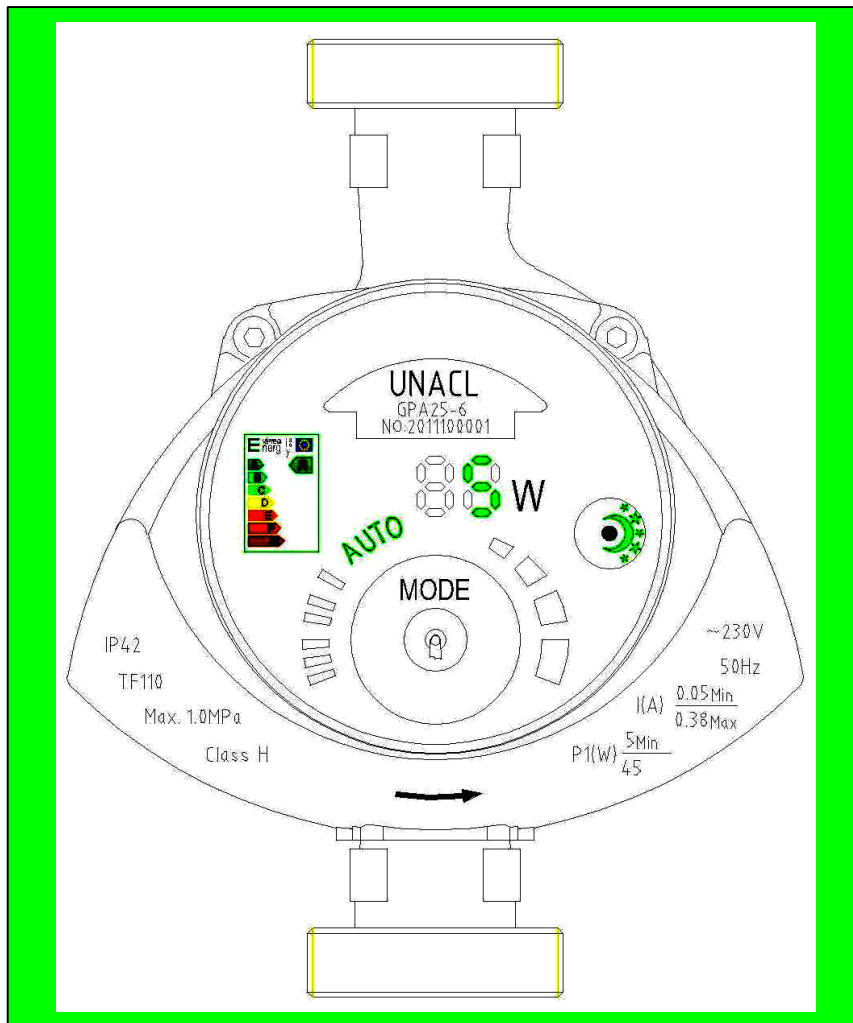


GPA Series

Installation and Operating Guide



Important information for installation and operation:

1. Please read the installation and operation guide carefully before proceeding with installation.
2. Failure to follow this guide and local government regulations which results in damage to the pump or injury to persons will not be the responsibility of the manufacturer.
3. The installer must comply with local building regulations when installing and commissioning this pump.
4. The installer must be a competent person qualified to carry out such installation and advise the end user of proper maintenance requirements (e.g. use of inhibitor within the system)
5. The pump must not be installed in places of high humidity or near external water sources (e.g. outside)
6. For easy maintenance isolation valves should be installed on either side of the pump.
7. The power supply must be switched off and isolated when installing the pump.
8. In order to avoid scale and corrosion, leading to reduced pump life, it is recommended inhibitors are used within the system
9. Do not start the pump without ensuring it has been primed with water. Do not run dry.
10. This pump must not be used for domestic drinking water.
11. The pump must be switched off and allowed to cool before the valves are closed and the pump removed. This will reduce the risk of scalding.
12. If the bleed screw is removed, any escaping water may be hot and pressurized. Care should be taken to prevent scalding.
13. Ensure the location of the pump is ventilated sufficiently so as to prevent the build up of condensation on the pump and its electrics.
14. If there is a risk of freezing the water should be drained from the system and pump to avoid frost damage.
15. If the pump is not going to be used for a long period of time isolate the power supply and close the valves on either side of the pump.
16. If the electrical cables become damaged they must be replaced by a competent person.
17. If the pump is not functioning properly switch off the system and contact your local service agent or plumber.
18. Where possible the pump should be installed out of the reach of small children.
19. The pump should be installed in a well ventilated area.

Contents

1. Symbols and Labels	4
2. Summary	4
3. Environmental conditions for operation	5
4. Installation	6
5. Control panel	7
6. Pump settings	11
7. Night auto mode	12
8. Use with a bypass valve	13
9. Commissioning sequence	14
10. Pump settings and performance	15
11. Performance curves	16
12. Features	18
13. Technical specifications	20
14. Trouble shooting	22
15. Warranty	23



Warning

Before installation, read the installation and operation guide carefully. Installation must meet local regulations and be installed according to these instructions.



Warning

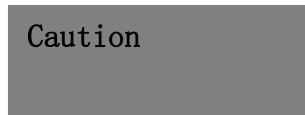
This pump must only be installed by a qualified and competent person. The manufacturer will not be held responsible for consequences caused by poor installation techniques.

1. Symbols and Labels



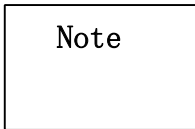
Warning

Risk of injury or electric shock if instructions are not followed.



The pump will be damaged if instructions are not followed.

Additional advice



or information.

2. Summary

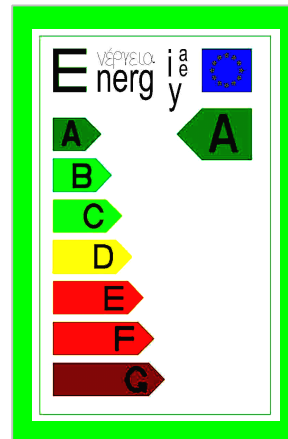
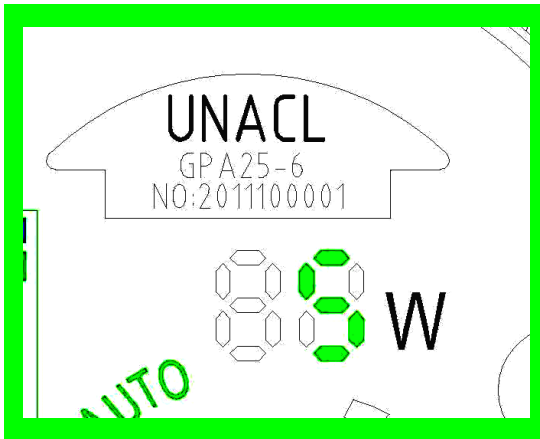
2.1 GPA Series circulator pump is designed to pump hot water around a domestic heating system. Systems best suited to the application of this pump are:

- Constant and variable flow
- Variable temperatures
- Systems with a night mode
- Air-conditioning
- Industrial circulation
- Domestic heating systems

The GPA series uses a permanent magnet motor and differential pressure controller which continuously adjusts the pump performance to meet the systems current demands. The control panel allows the user to set the pump to the desired performance level.

2.2 Advantages of the GPA Series circulator pump are:

- Easy installation and start up. The GPA Series circulator pump has an AUTO setting so the pump can be installed and started without any adjustments. In this configuration it automatically adjusts itself to meet the current requirements of the system.
- High comfort level. The pump is designed to run with a minimum noise level.
- Low power consumption. Compared to traditional circulating pumps the GPA Series circulator pump consumes much less power and conforms to the European Energy Efficiency Index as set out in directive 641/2009. This is equivalent to “A” rating.



A Rating—the lowest power consumption

3. Environmental operating conditions

- 3.1 Ambient temperature: **0°C to +40°C**
- 3.2 Maximum relative humidity of air (RH): **95%**
- 3.3 Water temperature range **+2°C to +110°C**

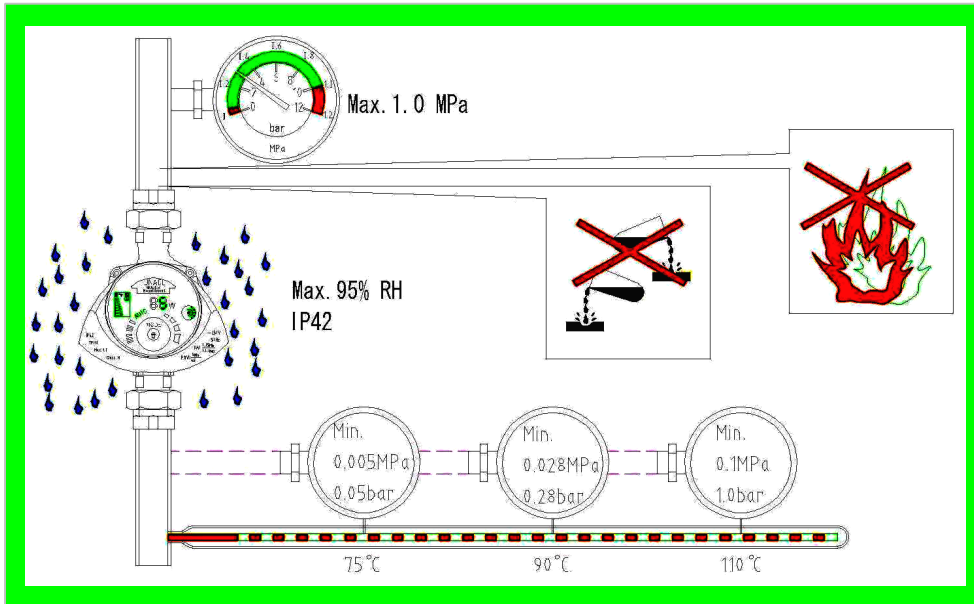
In order to prevent condensation in the control box and the stator the water temperature transferred by the pump must be always higher than the ambient temperature.

- 3.4 Maximum pressure: **1.0Mpa (10bar)**
- 3.5 Protection grade: **IP42**
- 3.6 Inlet pressure: to avoid damage caused by cavitation corrosion in the pump shaft, the inlet pressure should be kept as low as possible.

	Liquid temperature	<75°C	90°C	110°C
3.7	Inlet pressure	0.05bar	0.3bar	1bar
		0.5m(head)	3m(head)	10m(head)

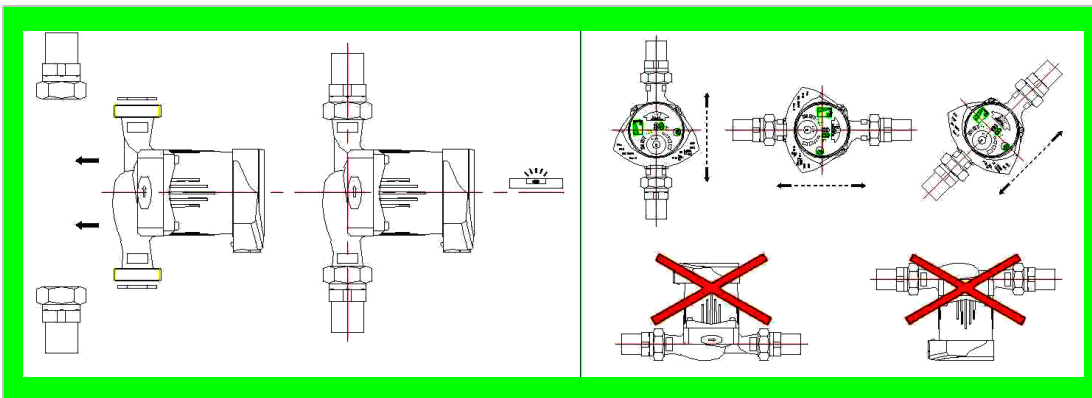
The fluid transferred by the pump must be non-viscous, clean, non-corrosive and not

contain solid particles. Flammable liquids such as oils and gasoline must not be transferred using this pump. If a liquid with a high viscosity is pumped, this will lead to increased power consumption and reduced life of the pump.

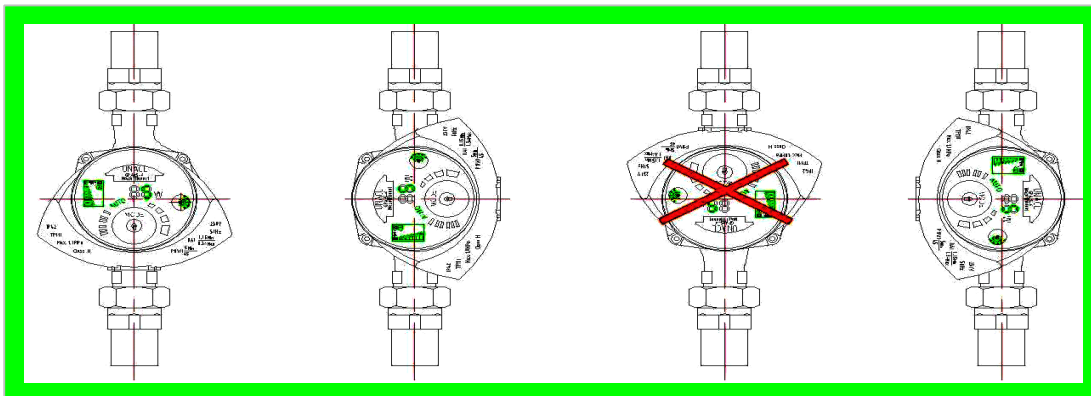


4. Installation

4.1. Install the GPA Series circulator pump so the fluid flows in the direction of the arrow on the pump body. The two gaskets supplied must be used to connect the pump to isolation valves (not supplied). The pump shaft must be horizontal as shown in the images below.



4.2 Orientation of the Control Panel



Control Panel Orientation



Warning

The liquid transferred by the pump is normally at a high temperature and pressure. The pump should be allowed to cool before it is opened to change the orientation of the control panel.

Caution

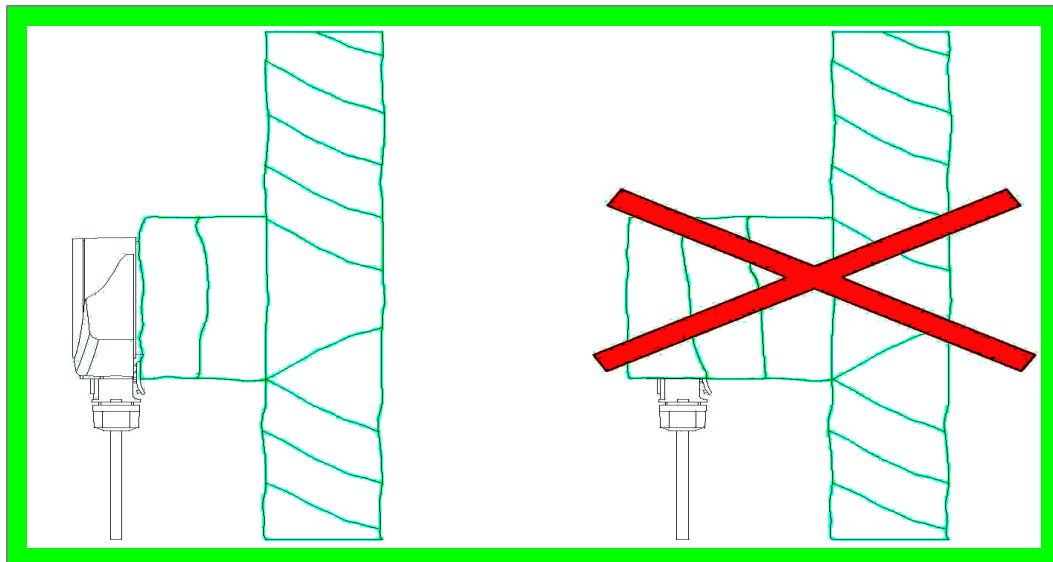
After changing the orientation of the control panel, the pump must only be started once it has been refilled with liquid. Failure to do so will result in damage to the pump or reduce operational life.

4.3 Changing the orientation of control panel

The control panel can be rotated at 90° steps on the pump body. This is done as follows:

1. If already installed - allow the pump to cool and close of the two isolating valves either side of the pump.
2. If already installed - disconnect the cable.
3. Loosen and remove the four hex screws that attach the pump body to its base. Be prepared for some water to escape.
4. Rotate the motor and control panel to the required position.
5. Replace the four hex screws and tighten them in a clockwise direction.
6. Reopen the isolating valves and allow the pump to fill before reconnecting the cable and switching back on.

4.4 Heat Insulation of the Pump Body



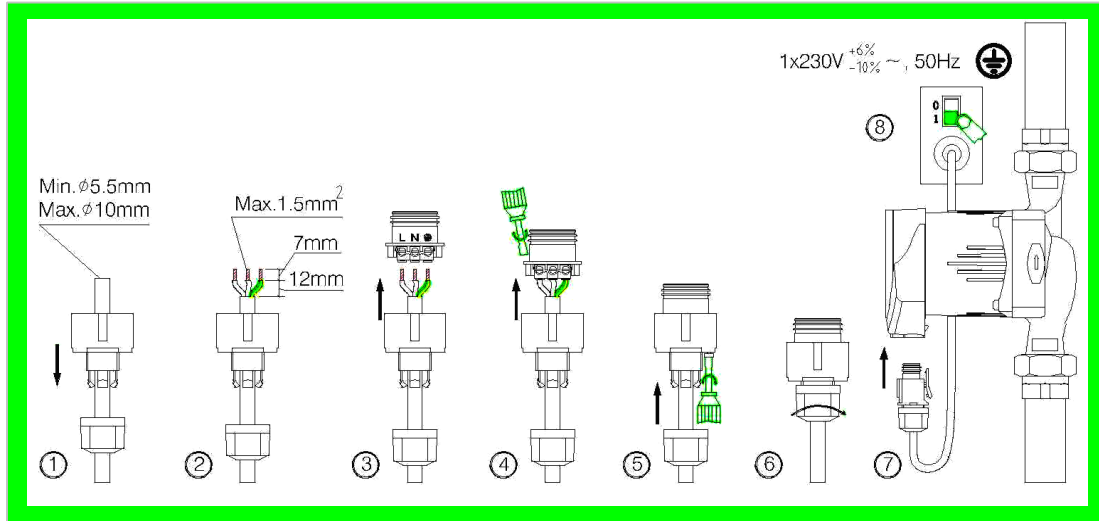
Note

To reduce the pumps heat loss it should be insulated as shown in drawing

Caution

Do not insulate or cover the control panel or electrical connection.


5. Electric connection



The electric connection and protection must be done by a qualified and competent person and comply with local regulations.



Warning

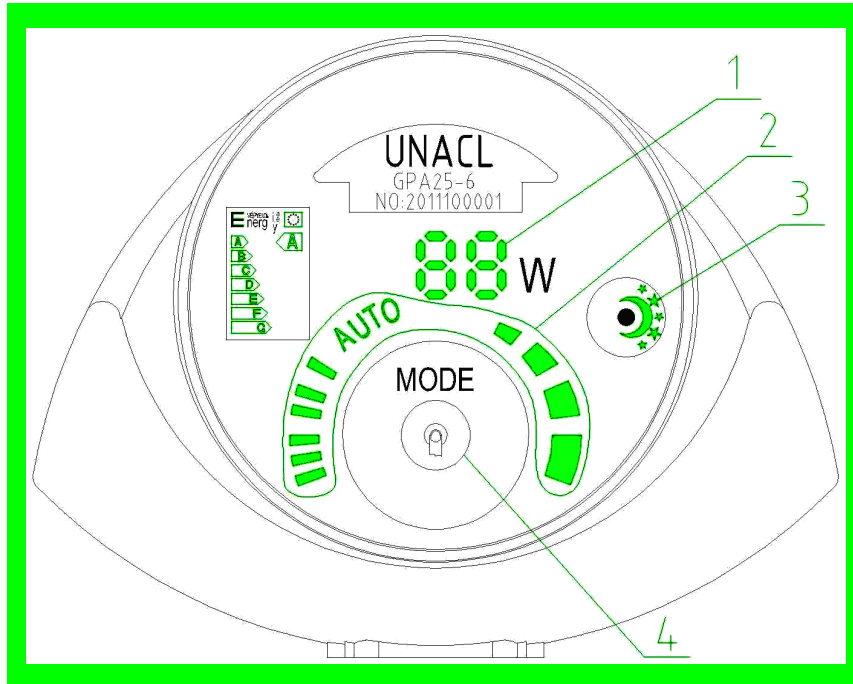
The pump must be connected with an earth wire 

The pump must be connected to an external switch with spacing between the poles no less than 3mm

- The GPA Series circulator pump does not require external protection.
- Voltages and the frequencies must comply with those on the control panel.
- Only connect the pump to the power supply using the connector provided.
- The indicator light on the control panel shows power is reaching the pump.

5. Control panel

5.1 Display



Label	Description
1	the actual power consumption in Watts (W)
2	Pump setting / operating indicator
3	Night mode button and indicator
4	Pump mode button

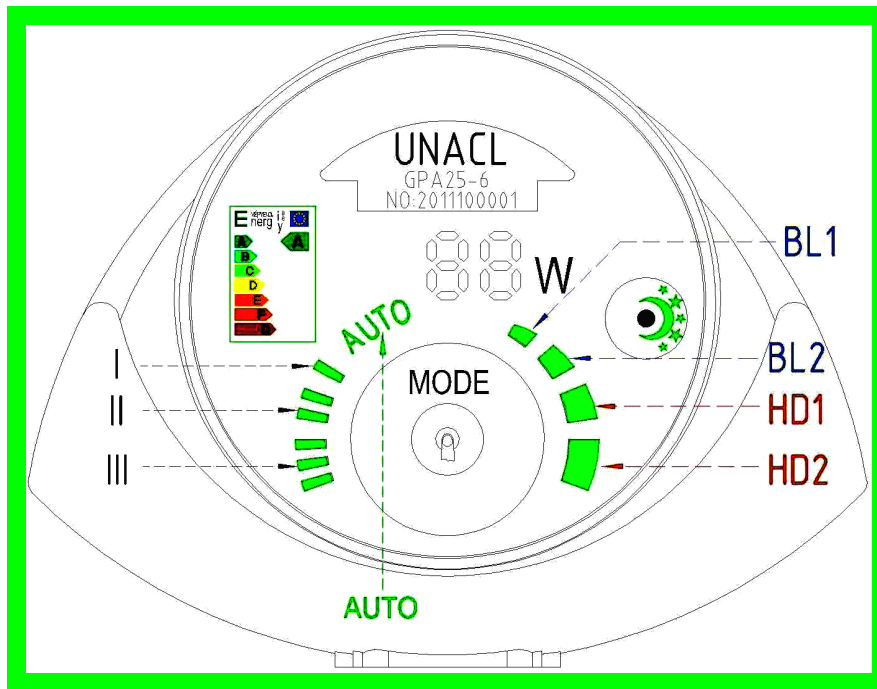
5.2 Power consumption indicator:

After switching the pump on the power consumption indicator will light up and show the amount of power being consumed. This will vary depending on the pump setting or its current energy consumption.

If this light shows “E” then the pump has developed a fault and should be switch off and the trouble shooting guide in this leaflet consulted. If the pump continues to show “E” then an engineer must be called.

5.3 Pump setting / operating Indicator:

The GPA Series circulator pump has eight settings, each being selected by pressing the Mode button to get the desired setting. Each setting will illuminate a different section of the indicator.




Label	Description
AUTO (factory settings)	Fully automatic setting. Pump will choose most efficient setting.
BL1	Lowest proportion pressure curve
BL2	Highest proportion pressure curve
HD1	Lowest constant pressure curve
HD2	Highest constant pressure curve
III	Speed III - constant speed curve
II	Speed II - constant speed curve
I	Speed I - constant speed curve

5.4 Pump mode button

Pressing the button every 2 seconds will change the pump setting and mode. Pressing the button eight times will be a full cycle of all the settings.

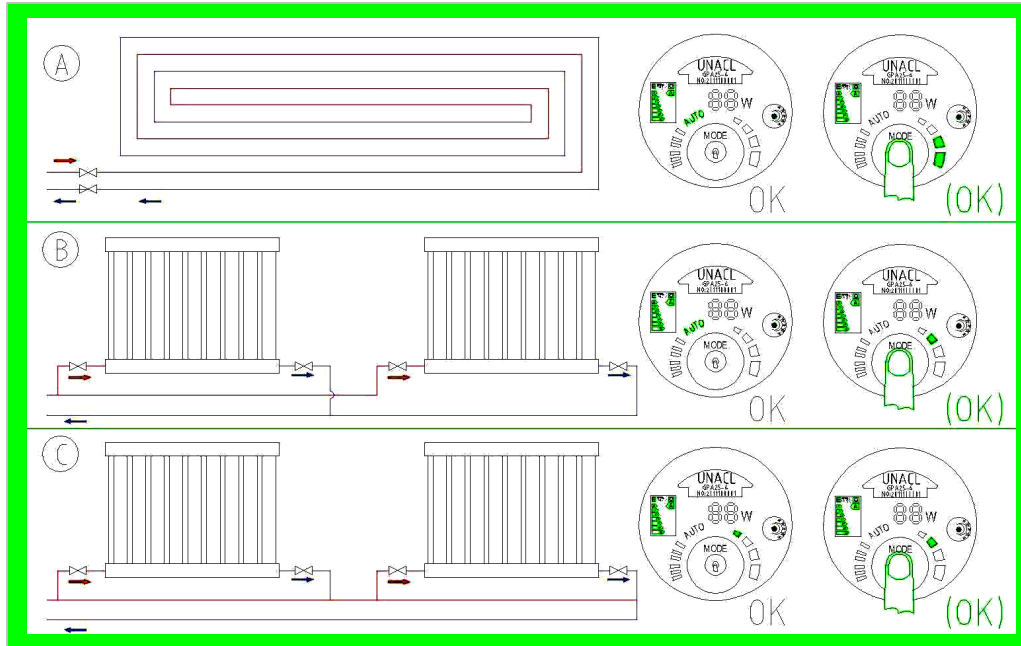
5.5 Night mode button and indicator - only functional if a night mode is available on the boiler or control system (see chapter 8).

Pressing the night mode button  will switch the pump to its night mode settings. The indicator will light showing the pump is in night mode. Pressing the button again switches off the night mode.

Note If the pump is on Auto - the night mode does not need to be activated. If the pump is set at speeds I, II or III the night mode must not be selected.

6. Pump setting

6.1 The pump should be set based on the type of heating system.



Label	Type	Pump settings	
		Recommended	Alternative
A	Under floor system	AUTO	HD1 / HD2
B	Two pipe system	AUTO	BL2
C	Single pipe system	BL1	BL2

- AUTO mode will automatically adjust the pump performance according to the actual heat demand of the system. Due to gradual performance changes of a new pump it is recommended that new pumps should be set at AUTO mode for at least one week before changing the settings to suit the system if required.
- The GPA Series pump automatically adjusts its performance based on the memory of the last setting point in AUTO mode, if AUTO mode is selected.
- The pump can be changed from Auto (recommended) to other settings if required.
- A heating system is a slow operating system and does not reach its normal operating conditions for several minutes or hours. If the recommended setting does not meet the requirements of the end user then the pump settings should be changed to another setting. For information about the relationship between the pump settings and the performance curve, please refer to Chapter 11.

6.2 Pump control modes

Depending upon the heat required in the system the pump will adjust its power requirements according to "proportional pressure control" (BL) or "constant pressure control" (HD) curves.

In these two control modes the pump performance and relative power consumption will be adjusted to meet requirement of the heating system

Proportional pressure control:

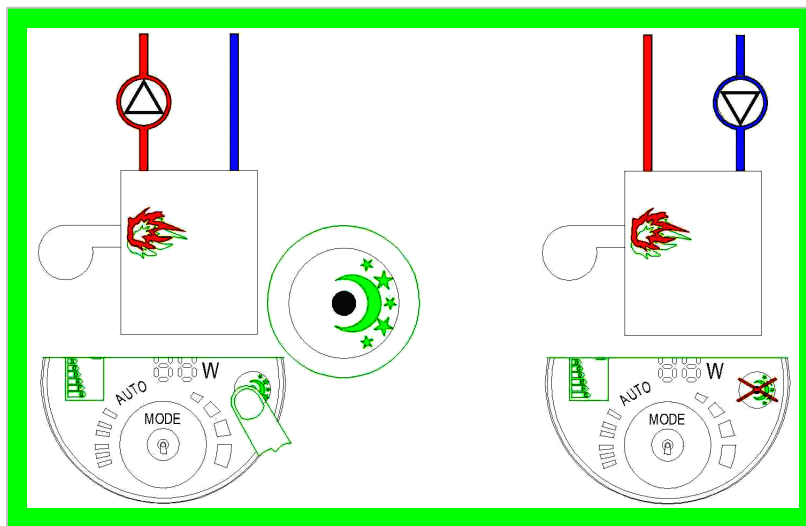
In this mode the pressure difference across the pump is determined by the flow. Proportional pressure curve is indicated by BL1 and BL2 in the Q/H diagram shown in Chapter 11.

Constant pressure control:

In this mode, the pressure difference across the pump is constant regardless of flow conditions within the system. The constant pressure curve is a level line indicated by HD1 and HD2 in the Q/H diagram shown in Chapter 11.

7. Night auto mode

7.1 Basic principles



The night auto-mode



Warning:
GPA Series night mode should not be used in a low water capacity system.

Note

The night auto mode is ineffective if the pump is set in Speed I, II or III.

If the power has been disrupted the night auto mode should restart.


Note

to

Note

If heat supplied by the heating system is not enough check ensure the night auto-model started. If enough heat is generated the auto mode should turn off.

In order to ensure the night auto mode operates at its optimum consider the following conditions:

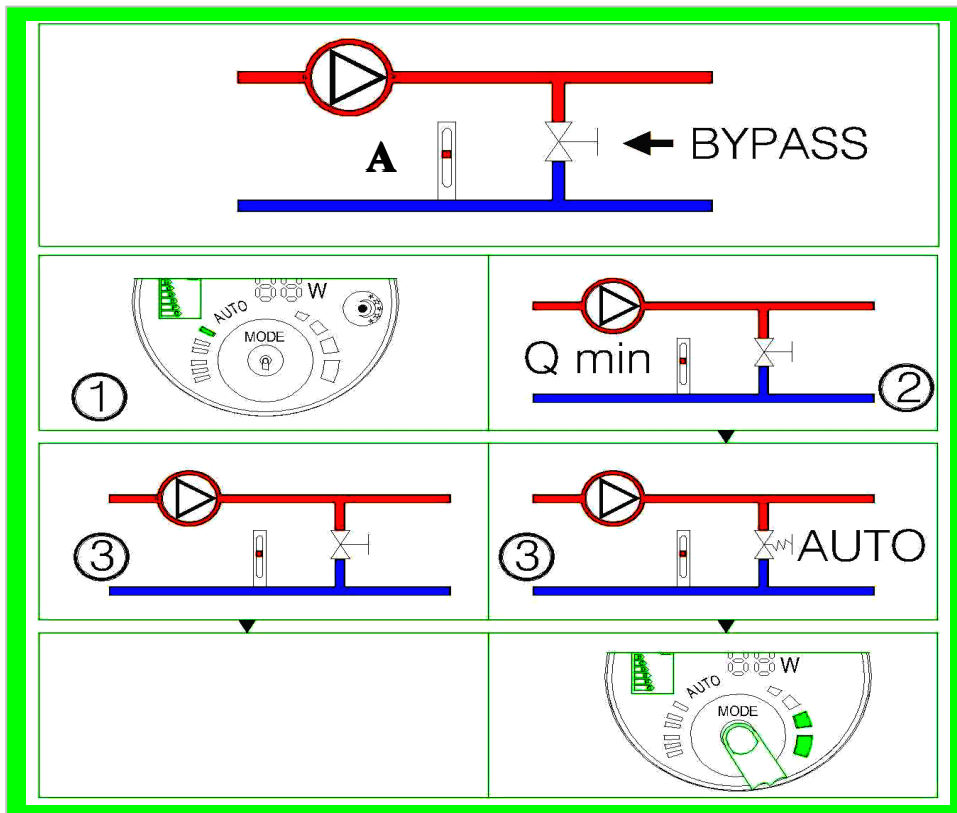
- The pump must be installed close to the boiler outlet at the start of the heating systems flow pipes. If the pump is located on the system return pipes the night auto mode will be ineffective.
- To start the night mode press the button . Refer to Chapter 6 (section5)

7.2 Night mode operation

If the night auto mode is selected the pump will automatically change between normal auto mode and the night auto mode. The change from normal to night mode depends on the temperature of the system inlet pipe. When the temperature of the inlet pipe is at 10~15°C for more than two hours, and temperature is decreasing by 0.1°C/min the pump will automatically adjust to the night auto mode. Once the temperature of system's flow pipe increases to 10°C the pump will automatically change to the normal auto mode.

8. Use with a bypass valve

8.1 Application



Bypass valve function:

When all the thermostatic radiator valves in the heating system are closed, the bypass valve allows water to continue to circulate around the system. This eliminates unnecessary heat and pressure building up inside the boiler and pump.

Parts of the system:

- Bypass valve
- Flow meter at A

The pump setting depends on type of bypass valve installed – manual operation or temperature controlled.

8.2 Manual operation valve

Steps:

1. To adjust the bypass valve the pump should be set at Speed I. The flow through the system must be kept at a minimum. Please refer to the bypass-valve instructions.
2. After adjusting the bypass valve please set the pump by referring to Chapter7

8.3 Automatic bypass valve (temperature control)

Steps:

1. To adjust the bypass valve the pump should be set at Speed I and the system kept at minimum flow. Please refer to the bypass valve instruction.
2. When the bypass valve is adjusted the pump should be set at lowest or highest constant pressure mode. Please refer to Chapter 11 for information about setting and performance.

9. Commissioning

9.1 Preparation

Before starting the pump:

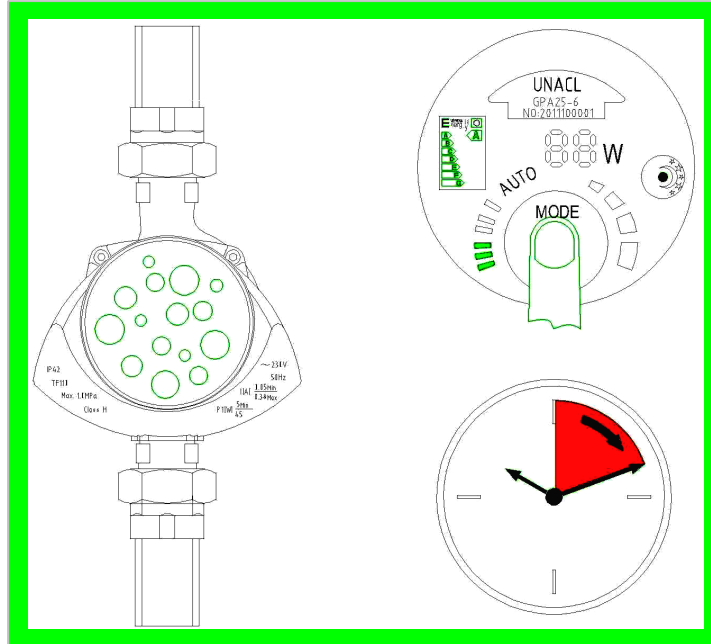
1. Open both isolating valves and prime the system with water
2. Bleed the system (not the pump) to ensure no air is trapped.
3. Pressurize the system to its lowest possible level.
- 4.

9.2 Bleeding the pump

- GPA Series has its own bleed function and therefore it is not necessary to manually bleed the pump.
1. Once power is connected the pump will self vent the air. Whilst doing this it may produce a slight noise as it escapes from the pump, but this will stop once
 2. all the air has been removed. This may take a short while.
 3. Set the pump to Speed III to reduce the bleed time and remove the air more quickly

if required.

- Once the air has been removed set the pump by according to the instructions, referring to Chapter7 for information.

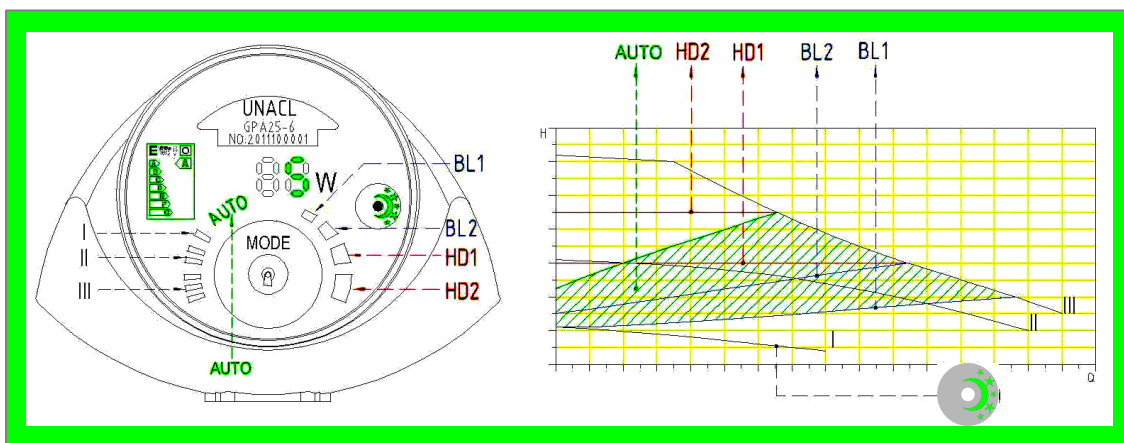


! Notice



Do not run the pump without water in the system. This will damage the pump and invalid the warranty.
 Do not start the pump to bleed air from the system or rely on the pump to vent air from the system once commissioned. The system must be bled manually first and an automatic air vent is recommended to be fitted to maintain an air free system.

10. Settings and performance

10.1 Relationship between settings and performance



Settings and performance

Setting	Performance curve	Function
AUTO	Maximum rate to minimum rate	The Auto function will automatically adjust pump performance within the standard range ensuing the optimum setting for system demands.
BL1	Lowest proportional pressure curve	Dependant on the demand of the system, the pump will adjust itself up and down this curve. Pressure will increase as demand increases
BL1	Highest proportional pressure curve	Dependant on the demand of the system, the pump will adjust itself up and down this curve. Pressure will increase as demand increases
HD1	Minimum constant pressure curve	Dependant on the demand of the system, the pump will adjust itself along this line. The pump will maintain a constant pressure regardless of system demand.
HD2	Maximum constant pressure curve	Dependant on the demand of the system, the pump will adjust itself along this line. The pump will maintain a constant pressure regardless of system demand.
III	speed III	The pump setting runs along the maximum curve on all working conditions.
II	speed II	The pump setting runs along the mid range curve on all working conditions.
I	speed I	The pump setting runs along the minimum curve on all working conditions.
		The pump will operate at minimum performance and power levels if certain conditions are met (see chapter 8)

11. Performance curves

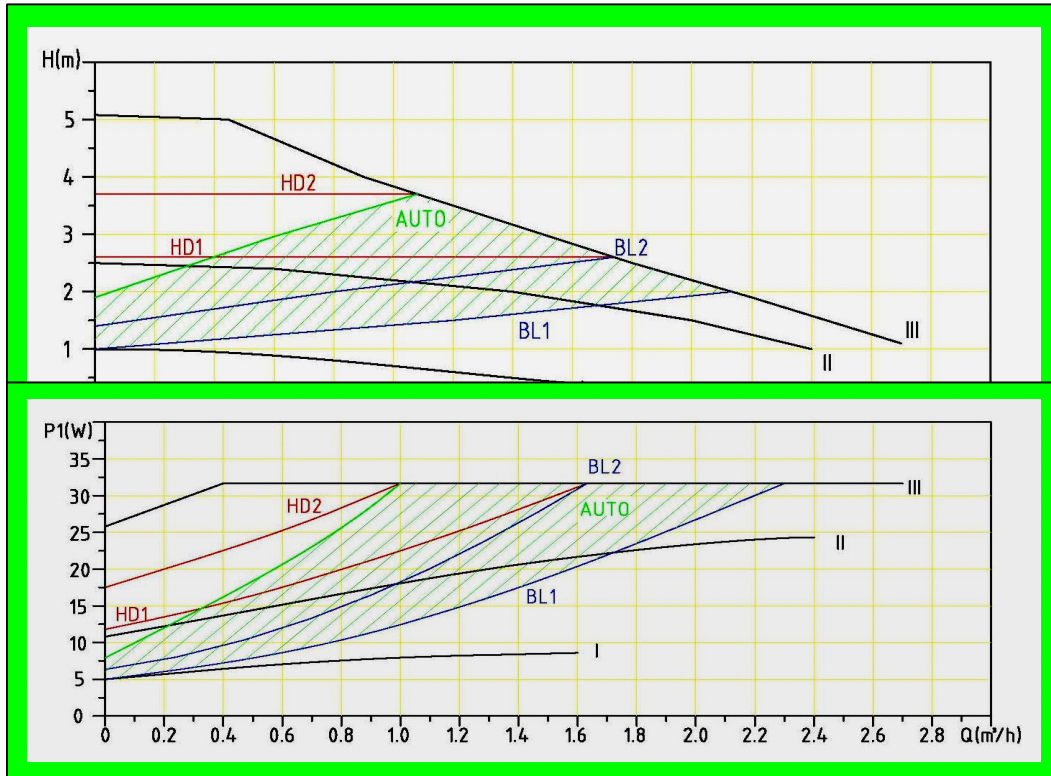
11.1 Direction

Each setting on the pump has its own performance curve (Q/H curve), but in Auto mode the pump can adjust to anywhere within its operating range within all these curves. Input power curve P1 covers every Q/H curve. This is the power the pump consumes in any given condition within the curve. Power is in Watts and is shown on the control panel of the pump.

11.2 Condition for performance curves

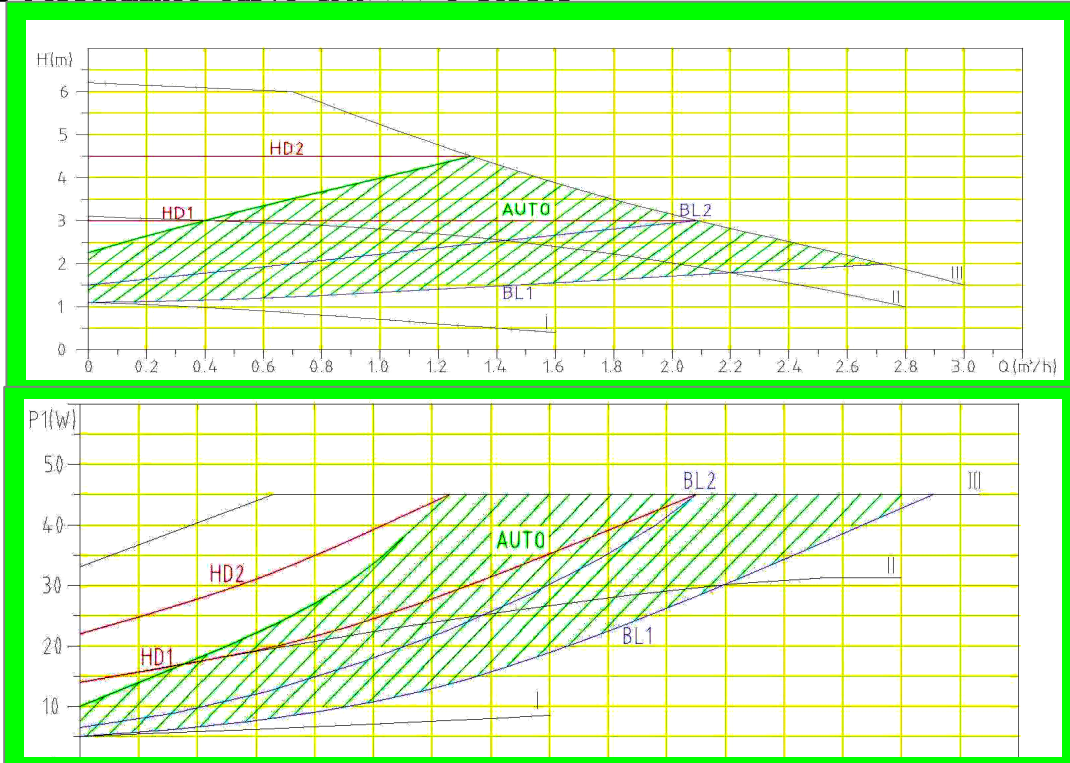
1. Test liquid: water - all air bled from system.
2. Adaptive density (ρ) of the curve is 983.2 kilos per cubic meter and liquid temperature +60°C.
3. All curves show average values and variation within individual pumps may vary from this shown. Individual test should be done if the specific performance needs are required.
4. Adaptive kinematic viscosity is 0.474 mm²/s (0.474 cST)

11.3 Performance Curve GPA××-5 series



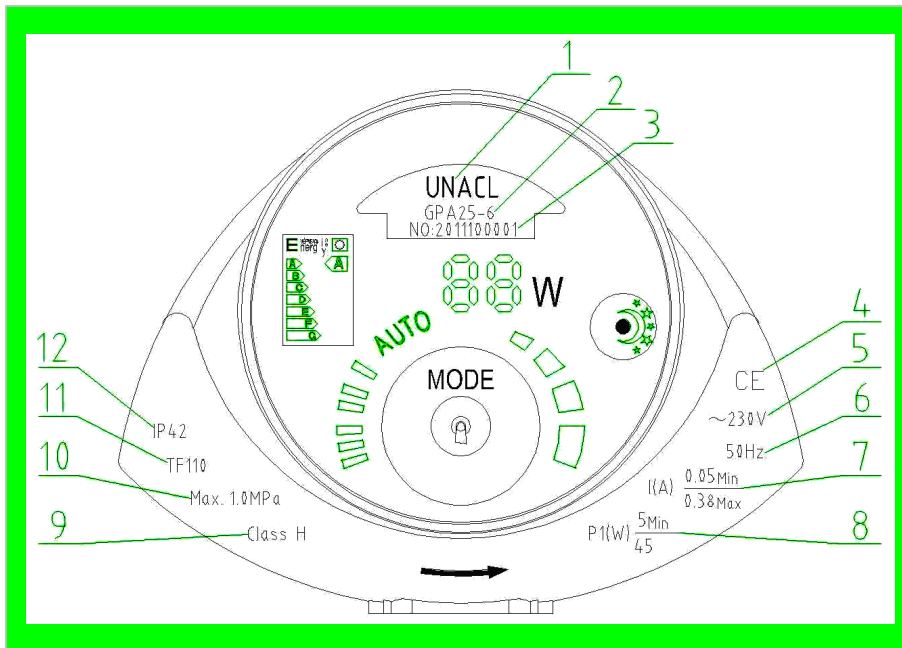
Performance curve

11.4 Performance Curve GPA××-6 series



12. Features

12.1 Name plate description

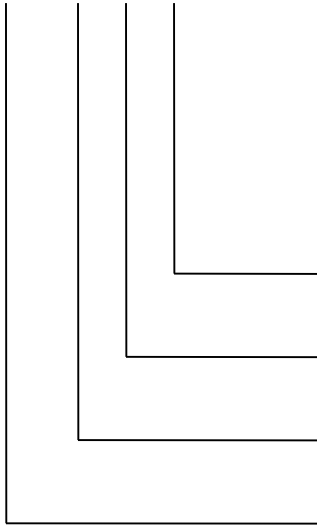


Name plate description

No.	Description		No.	Description
1	Brand		7	Amps (min and max)
2	Pump type, GPA25-6		8	Power - Watts (min and max)
3	Serial number	Date of manufacture: the first four numbers Serial number: the other four numbers	9	Insulation class, H
4	Certification mark		10	Max system pressure (MPa)
5	Voltage (V)		11	Maximum temperature, 110°C
6	Frequency (Hz)		12	Protection grade

12.2 Model designation

GPA □-□ □



C: Check valve mounted at outlet

F: Pipe connection: F—Flange; Non—screw

Z: Pump inlet direction

P: Plastic material

N: Stainless steel;

B: Copper

The maximum head of the pump (m)

The diameter of the inlet (DN)

A: pipeline shielding pump

Model examples:

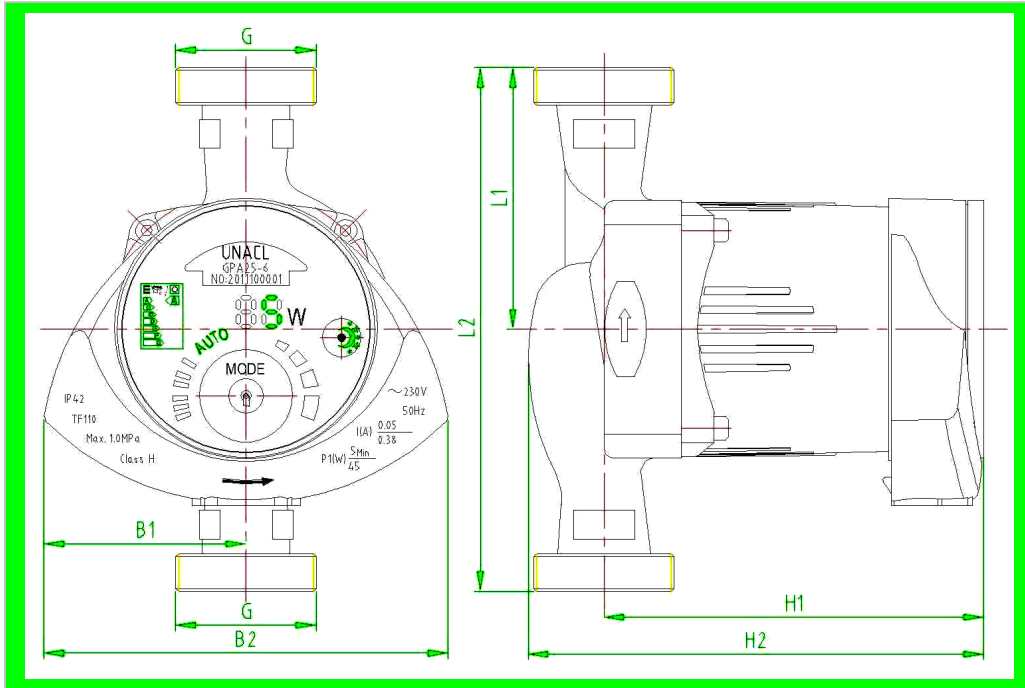
GPA25-6B means the pump is A-rated pump, the diameter inlet 25mm, the maximum head is 6 meters and the material of the pump body is copper.

13. Technical specifications

13.1 Technical specifications

Voltage	230V +6% / -10%, 50Hz, PE	
Protection	no external protection	
Protection grade	IP42	
Insulation class	H	
Air humidity in respect to environment (RH)	Max 95%	
System pressure	1.0 MPa	
Inlet pressure	liquid temperature	minimum pressures at inlet
	≤+75°C	0.05 MPa
	≤+90°C	0.028 MPa
	≤+110°C	0.108 MPa
EMC standard	EN61000-6-1 and EN61000-6-3	
Acoustic level	<42dB (A)	
Environmental temperature	0°C to 40°C	
Temperature grade	TF110	
Surface temperature	≤+125°C	
Liquid temperature	2°C to 110°C	
In order to prevent condensation in the control box and the stator the water temperature transferred by the pump must be always higher than environmental ambient temperature.		
Environmental temperature (°C)	Liquid temperature	
	minimum (°C)	maximum (°C)
0	2	110
10	10	110
20	20	110
30	30	110
35	35	90
40	40	70
It is recommended that water temperature should be kept under 65°C to reduce scaling in domestic hot water systems		

13.2 Pump dimensions



Model	size (mm)						
	L1	L2	B1	B2	H1	H2	G
GPA20-5	65	130	69	138	129	153	1"
GPA20-6							
GPA20-5P	65	130	69	138	129	153	1"
GPA20-6P							
GPA20-5N	65	130	69	138	129	153	1"
GPA20-6N							
GPA20-5B	65	130	69	138	129	153	1"
GPA20-6B							
GPA20-5B	75	150	69	138	129	153	1 1/4"
GPA20-6B							
GPA25-5	65	130	69	138	129	156	1 1/2"
GPA25-6							
GPA25-5	90	180	69	138	129	156	1 1/2"
GPA25-6							
GPA25-5B	90	180	69	138	129	156	1 1/2"
GPA25-6B							
GPA32-5	90	180	69	138	128	158	2"
GPA32-6							

14. Trouble Shooting



Warning

Ensure the power is disconnected before attempting any repairs or trouble shooting.

Malfunction	Control panel	Possible reason	Actions
The pump does not run	Power indicator not lit	Fuse has blown	Change the fuse
		Circuit breaker has tripped	Connect the breaker
		Faulty pump	Change the pump
	Show “E” sign	Low voltage	Check supply voltage
		Impeller is blocked	Clear impeller
Excessive noise in the system	Normal	Air in the system	Bleed out the air
		Excessive flow rate	Lower Inlet pressure
Noisy pump	Normal	Air in the pump	Bleed air from pump
		Low inlet pressure	Increase inlet pressure
Insufficient heat from system	Normal	Pump setting too low	Adjust pump setting

HeFei Xihu Product Warranty

HeFei Xihu Canned Motor Pump Co., Ltd offers 12-month quality assurance from the date of sale and is responsible for any malfunction or damage caused by manufacture or material defects. This warranty is valid on the assumption that the product installation complies with the Installation and Operating Guide supplied with the pump and all local regulations and has been installed by a competent person.

The warranty is invalid if:

1. The product is used outside the recommended applications of Xihu Co., Ltd.
2. The product is not used in accordance with the Installation and Operating guide set out by Xihu.
3. The product is not removed properly
4. The product is damaged by outside interference i.e. disassembly, tampering, etc.
5. The product is not installed by a competent person
6. The product is outside its warranty period.

Any product supplied by HeFei Xihu Canned Motor Pump Co., Ltd but not manufactured by the company will be also be covered by the manufacturers warranty.

HeFei Xihu Canned Motor Pump Co., Ltd does not accept any liability for damage caused by another company or third parties.

HeFei Xihu Canned Motor Pump Co., Ltd will not be responsible for any product malfunction or damage caused by inappropriate operating conditions or force majeure.

HeFei Xihu Canned Motor Pump Co., Ltd has the right to review any warranty claims not covered in this warranty statement.