INSTALLATION AND OPERATING MANUAL

GPA 11 / 17 H

High-efficiency electronic circulators

GPA XX-11/17 H XXX



GPA 11 H



GPA 17 H

Installation and operating instructions

Read the manual carefully before installation and keep these instructions for future reference.

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USING THE MANUAL

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SAFETY | WARNINGS 1-7

Installation and maintenance

1. Read the manual

Read the installation manual carefully before installation and use.

2. Observe the warnings

Failure to observe the safety warnings and symbols may cause personal injury and damage to the pump and other property. The manufacturer accepts no liability or obligation to compensate for these consequences.

3. Local regulations

The installer, operator and user must comply with safety standards and local regulations.

4. Qualified personnel

The user must ensure that installation and maintenance are carried out by personnel who are familiar with the instructions and hold the required professional qualifications.

5. Protection against moisture

Do not install the circulator in damp environments or in locations exposed to water splashes.

6. Shut-off valves

Install a shut-off valve at the pump inlet and another at the outlet to facilitate maintenance.

7. Disconnect the power supply

Disconnect the electrical power supply to the pump during installation and maintenance.

SAFETY | WARNINGS 8-14

Liquids, temperature and environment

8. Make-up water

Do not fill the system with unsoftened water, to prevent an increase in the calcium content of the circulating water.

9. Pressurised system

Do not start the pump when the system is not pressurised.

10. Hot liquid under pressure

Before moving or removing the pump, drain the liquid from the system or close the valves on both sides. The liquid may be at high temperature and pressure and cause burns.

11. Ventilation

In summer or at high ambient temperatures, ensure adequate ventilation to prevent condensation and electrical faults.

12. Frost protection

In winter, if the system is not operating or the ambient temperature is below 0 °C, drain the system to prevent frost damage to the pump body.

13. Extended periods of inactivity

If the pump will not be used for a long period, close the inlet and outlet valves and disconnect the power supply.

14. Abnormal motor temperature

If the motor is hot or has an abnormal temperature, immediately disconnect the power supply to the pump or the appliance to which the circulator is connected.

Use, storage and servicing

15. Damaged power supply cable

Contact the service centre to have the damaged power supply cable replaced together with the connector.

16. Unresolved fault

If the fault cannot be rectified by following the instructions, immediately close the inlet valve, disconnect the power supply and contact the dealer or service centre.

17. Child protection

Keep the product out of the reach of children. After installation, provide guards to prevent them from touching it.

18. Storage

Store the product in a dry, ventilated and cool place at room temperature.

19. Use under supervision

The appliance may be used by children aged 8 years and over and by persons with reduced physical, sensory or mental capabilities or lacking experience, only under supervision or after instruction on safe use and the risks involved. Children must not play with the appliance or clean or maintain it without supervision.

Before starting

Read the instructions before installation. Installation and use must comply with local regulations and good operating practice. Persons with reduced capabilities or lacking experience must be guided by someone responsible for their safety.

Symbols and overview

Indication	Meaning
Warning	Failure to comply may cause personal injury.
Caution	Failure to comply may cause faults or equipment damage.
Note	Instructions that make work easier and ensure operational safety.

2. Overview

The GPA H series is mainly intended for water circulation in domestic heating and cooling. It is suitable for systems with variable flow rate controlled by an external PWM signal, heating with variable pipe temperatures and industrial circuits.

The permanent-magnet motor allows performance to be adjusted manually to suit system requirements. The front panel has a button for adjusting the circulator.

2.2 Benefits

• Simple installation and start-up.

• Multiple settings and external PWM1/A control.

• High comfort and low noise from the pump and system.

• Low energy consumption compared with conventional circulators; minimum consumption as low as 5 W.

Energy class A

3 | OPERATING CONDITIONS

Pressure, temperature and liquids

Parameter	Operating condition
Ambient temperature	0 °C to +70 °C
Maximum relative humidity	95%
Liquid temperature	-5 °C to +95 °C
Maximum system pressure	1.0 MPa
Protection rating	IP44

3.6 Minimum inlet pressure

Maintain the required minimum pressure to prevent cavitation and damage to the pump bearings.

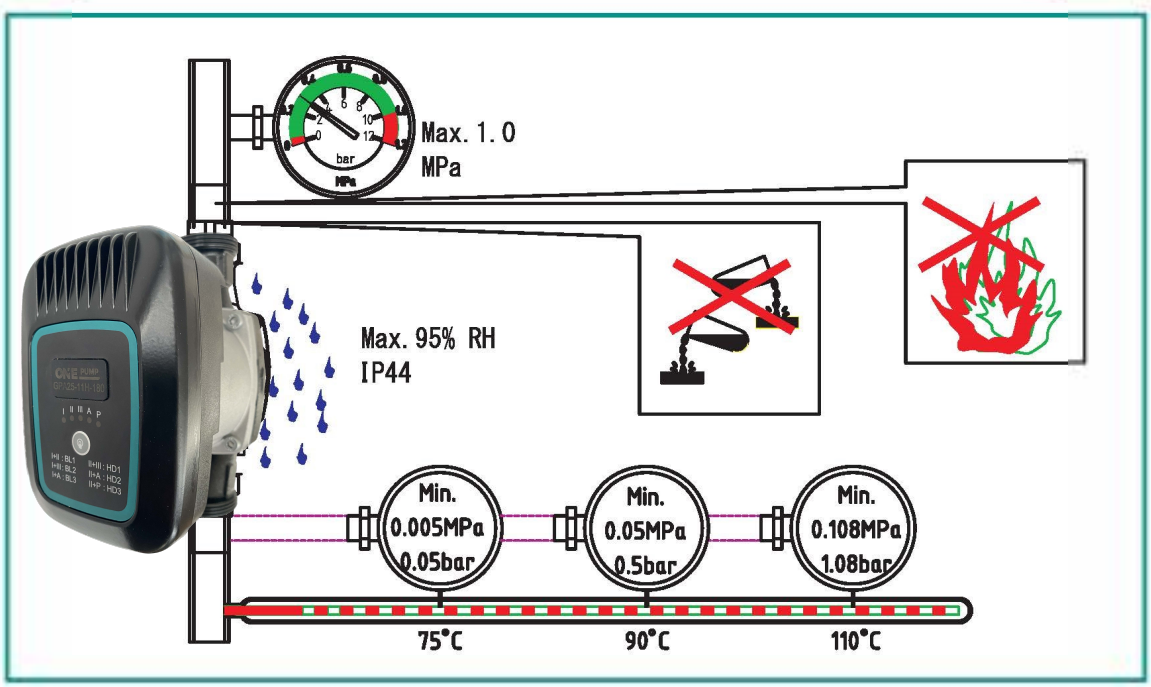
Liquid temperature	< 75 °C	80 °C	95 °C
Minimum pressure	0.05 bar	0.5 bar	1.08 bar
Equivalent head	0.5 m	5 m	10.8 m

3.7 Pumped liquids

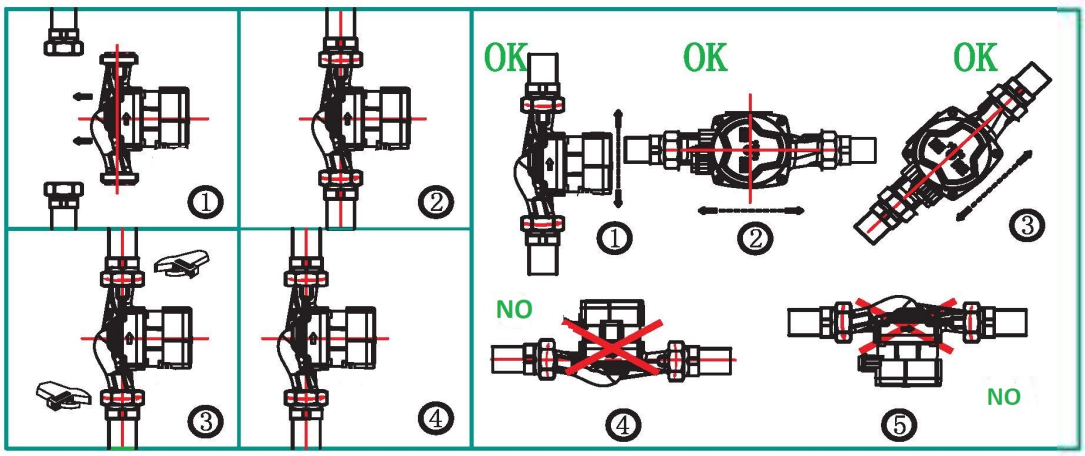
Use clean, non-corrosive and non-explosive liquids, free from solid particles, fibres and mineral oils. Do not pump flammable liquids such as vegetable oil or petrol. High viscosity reduces performance: take this into account when selecting the circulator.

4.1 | INSTALLATION

Installing the circulator

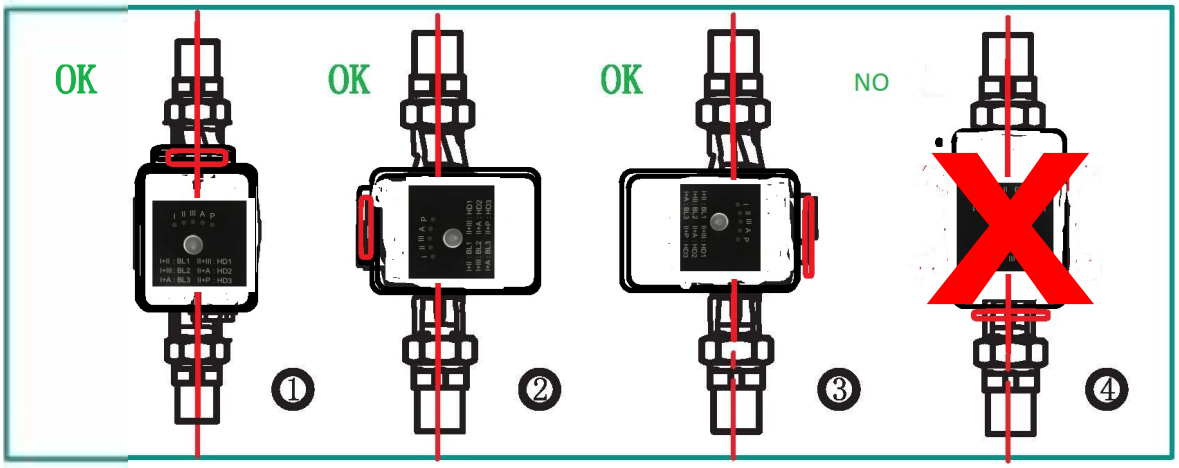


- The arrows on the pump body indicate the direction of liquid flow.
- Connect the inlet and outlet to the pipework using two union fittings or ball valves.
- Keep the pump shaft horizontal.



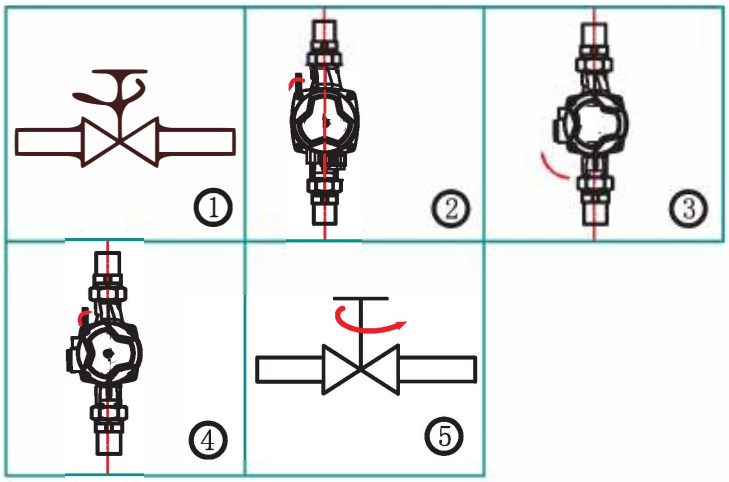
4.2 / 4.3 | ORIENTATION

Terminal box position



The terminal box can be rotated by 90°. Follow this procedure:

1. Close the inlet and outlet valves.
2. Loosen and remove the four screws securing the pump body.
3. Rotate the motor to the required position, aligning the four holes.
4. Refit the four screws and tighten them in a crosswise sequence.
5. Open the inlet and outlet valves.



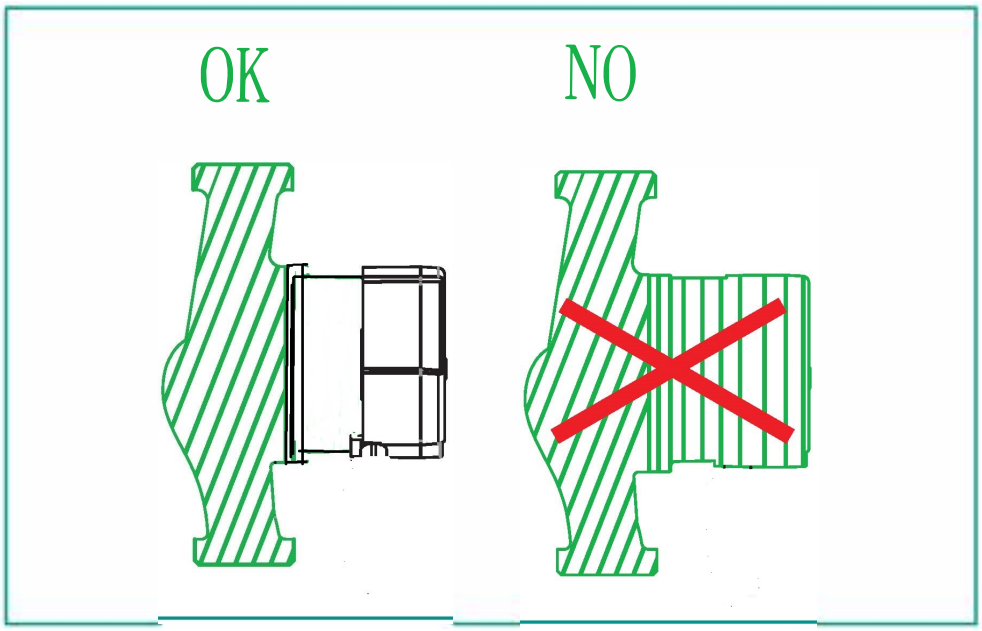
4.4 | THERMAL INSULATION

Insulation and precautions

Hot liquid under pressure

Before removing the motor mounting screws, drain the system or close the valves on both sides of the pump.

After changing the terminal box position, start the pump only when the system is full of liquid and the valves on both sides are open.



Thermally insulate the pump body and pipes to reduce heat loss.

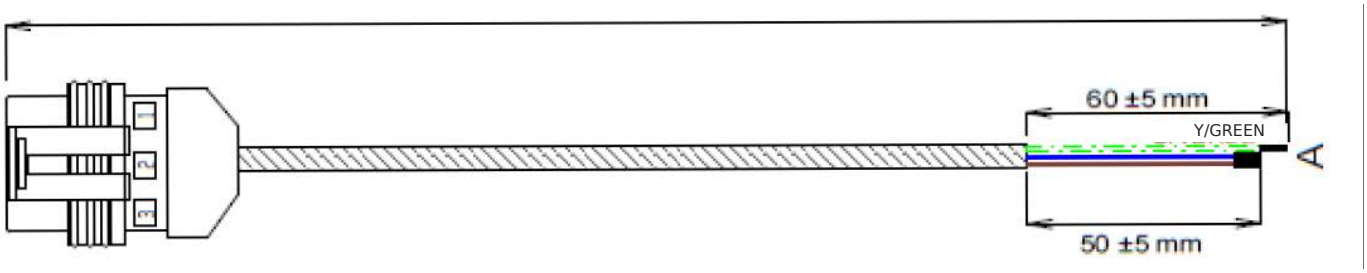
Do not cover the controls

Do not insulate or cover the electrical terminal box, control panel or drainage holes, if present.

5 | ELECTRICAL CONNECTIONS

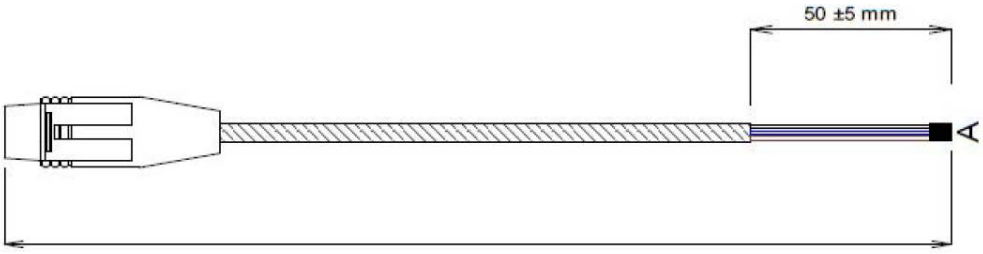
Cables and connectors

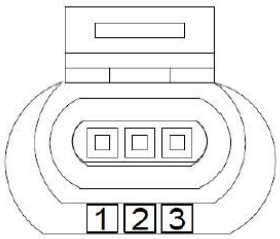
Power supply cable



Contact	Conductor colour
1	Brown
2	Yellow/green
3	Blue

Signal cable - front view



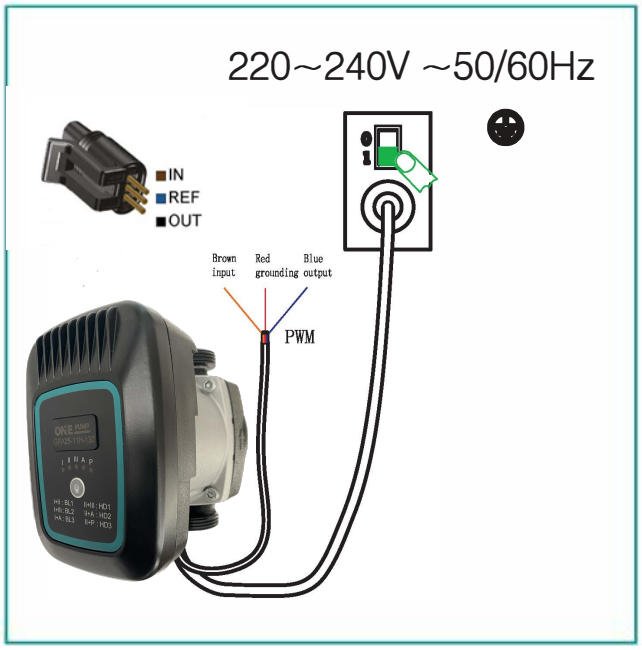


Contact	Conductor colour
1	Brown
2	Blue
3	Black

5 | POWER SUPPLY AND SIGNAL

Electrical connections

Power supply: 220-240 V, 50/60 Hz.



PWM signal

Connection	Colour
IN - input	Brown
REF - reference	Red
OUT - output	Blue

- Make electrical connections and provide protection in accordance with local regulations.
- Connect the pump to protective earth.
- Use an external switch with a minimum gap of 3 mm between contacts.
- External motor protection is not required.
- Check that the voltage and frequency match the nameplate.
- For the power supply, use the Superseal cable supplied separately from the pump.
- The indicator light on the panel shows that power is present.

6 | CONTROL PANEL

Settings and LED indicators

LED area	Mode	LEDs on
HS3	Maximum speed (factory setting)	○ ○ ● ○ ○ (I II III A P)
AUTO	Self-adapting function	○ ○ ○ ● ○ (I II III A P)
BL1	Proportional pressure, low speed	● ● ○ ○ ○ (I II III A P)
BL2	Proportional pressure, medium speed	● ○ ● ○ ○ (I II III A P)
BL3	Proportional pressure, high speed	● ○ ○ ● ○ (I II III A P)
HD1	Constant pressure, low speed	○ ● ● ○ ○ (I II III A P)
HD2	Constant pressure, medium speed	○ ● ○ ● ○ (I II III A P)
HD3	Constant pressure, high speed	○ ● ○ ○ ● (I II III A P)
HS1	Low speed	● ○ ○ ○ ○ (I II III A P)
HS2	Medium speed	○ ● ○ ○ ○ (I II III A P)
P	PWM1 control	○ ○ ○ ○ ● (I II III A P)

Adjust the circulator using the button on the front panel. The indicator lights identify the active mode.

Diagnostics and protection

Flashing green LEDs (1-5) identify the fault.

Indication	Protection and reset
1 flash	Overvoltage: 278 ± 10 V. Restarts when the voltage returns to normal.
2 flashes	Undervoltage: 140 ± 5 V. Restarts when the voltage returns to normal.
3 flashes	Overcurrent. The pump stops and must be restarted.
4 flashes	Phase loss. The pump stops and must be restarted.
5 flashes	Locked rotor. The pump stops and must be restarted.
6 flashes	Light load. The pump stops and must be restarted.
7 flashes	Overtemperature. The pump stops; it restarts when the ambient temperature returns to the operating range.

Before any work

In the event of a fault, disconnect the power supply to carry out the check. After the problem has been resolved, reconnect the power supply and restart the pump.

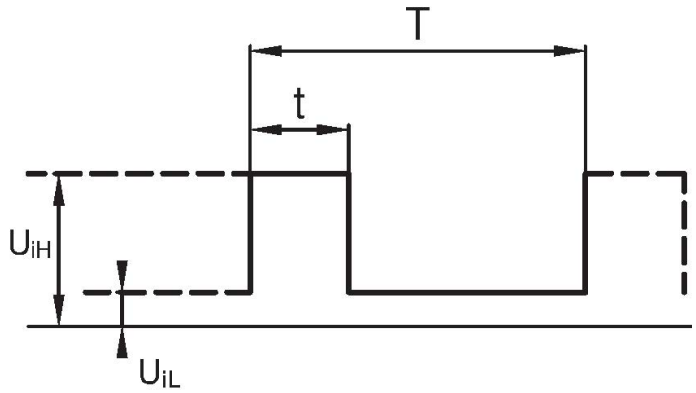
8.1 | PWM CONTROL

Signal characteristics

The LV PWM (Pulse Width Modulation) digital signal controls circulator speed through the duty cycle of the external control signal. The output signal provides pump feedback.

Parameter	Value / meaning
PWM IN frequency	40-4,000 Hz
PWM OUT frequency	75 Hz
T	Signal period
d	Duty cycle
UiH - high input voltage	4-24 V
UiL - low input voltage	≤ 1 V
IiH - input current	≤ 10 mA

Duty cycle calculation

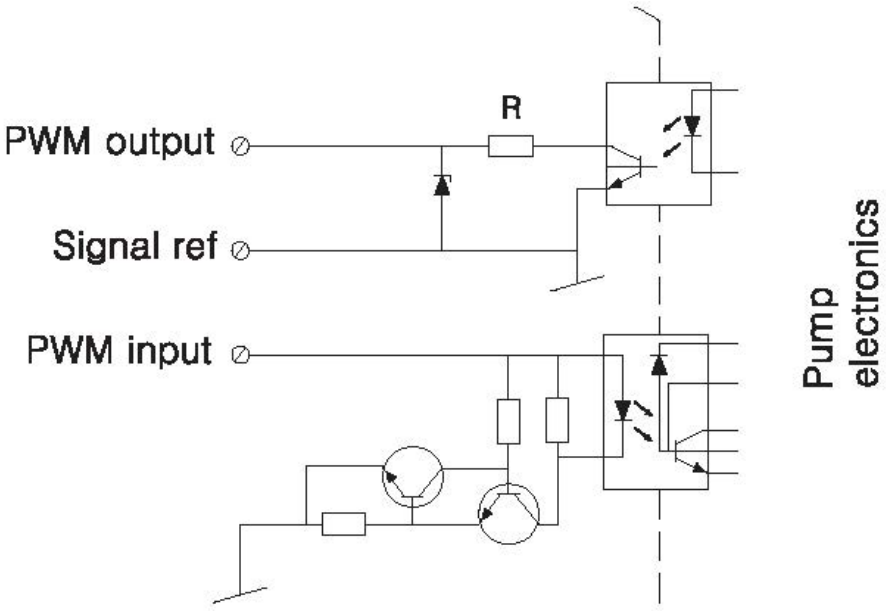


d = t / T

T = 2 ms (500 Hz)
t = 0.6 ms
d% = 100 × 0.6 / 2 = 30%

8.2 / 8.3 | PWM INTERFACE

Interface and control logic



The interface converts external electrical signals into signals recognised by the pump microprocessor. With a 230 V power supply, it protects against contact with high voltage through the signal cable. Galvanic isolation is 8 mm.

"Signal Ref" is the signal reference ground and is not connected to protective earth.

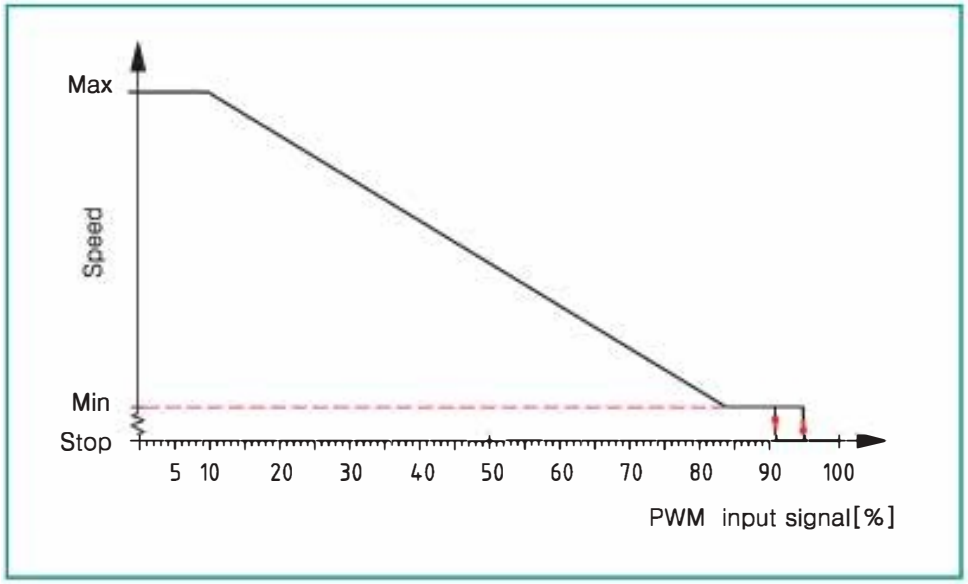
Control logic

At high duty cycles, a hysteresis zone prevents frequent starting and stopping when the signal fluctuates near the critical point.

At low duty cycles, the circulator runs at high speed for system safety. If the signal cable from the boiler or heat pump is damaged, the pump continues to run at maximum speed to transfer heat through the main heat exchanger.

8.3 | SPEED CONTROL

PWM input signal



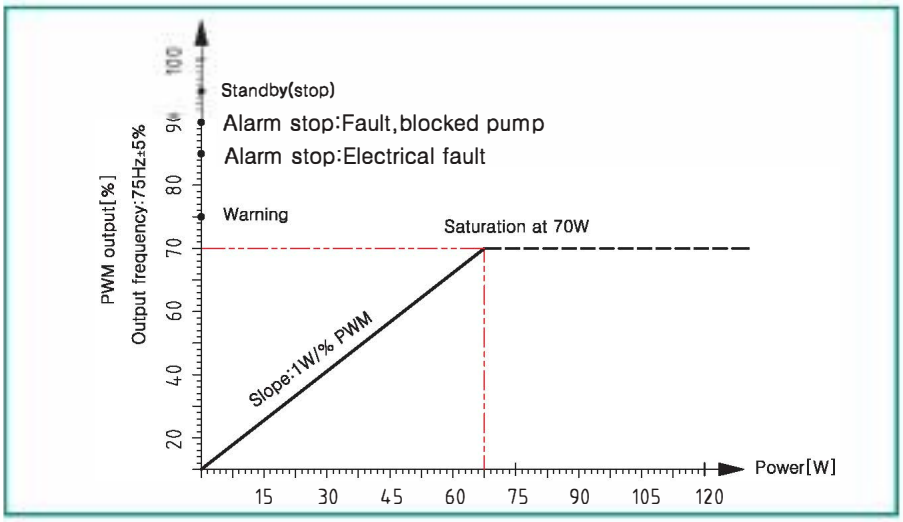
PWM input	Circulator status
0%	Normal mode, non-PWM; the system considers the signal absent.
< 10%	Maximum speed.
10-84%	Speed decreases from maximum to minimum.
85-91%	Minimum speed.
91-95%	Hysteresis zone to prevent frequent starting and stopping if the signal fluctuates.
96-99%	Standby: the pump stops.
100%	Normal mode, non-PWM; the system considers the signal absent.

Switching between PWM and non-PWM modes is automatic. When a PWM input signal is present, the system enters PWM mode.

8.4 / 8.5 | STATUS SIGNAL

PWM feedback

The feedback indicates operating status, power and alarms. Undervoltage produces a 75% signal; a locked rotor produces a 90% signal, which has higher priority.

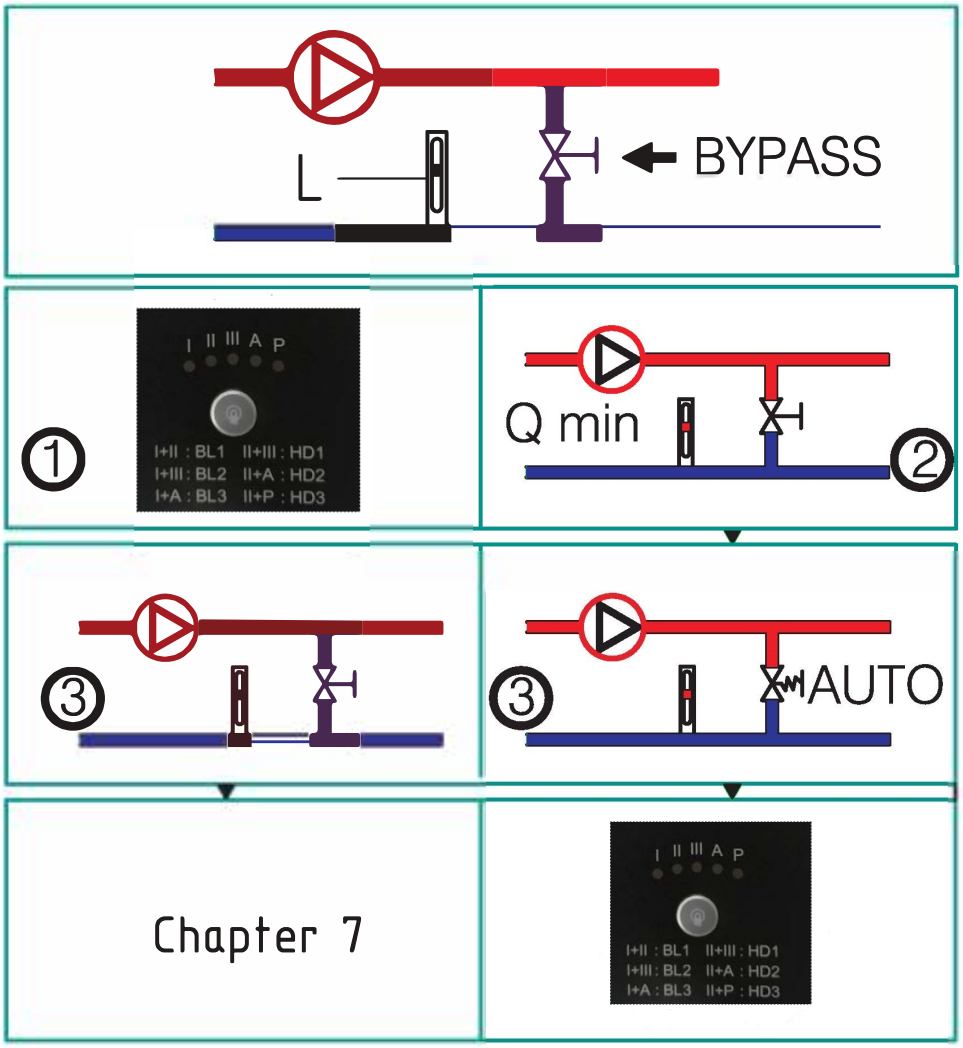


PWM OUT	Status / description
95%	Standby: the circulator stops.
90%	Locked-pump alarm. Restart only after the problem is resolved.
85%	Electrical-fault alarm. Restart only after the problem is resolved.
75%	Non-critical warning: the pump continues to run.
0-70%	Power 0-70 W; slope of 1 W per PWM percentage point.

The signal allows energy consumption to be measured, the actual system operating point to be detected and the set speed to be compared with the feedback.

9.1 | HYDRONIC SYSTEM

Bypass valve



Valve function

The bypass valve is installed between the inlet and return pipes. It ensures a sufficient minimum flow rate when all system valves are closed.

The system includes the bypass valve and the flow meter at position L. The minimum flow rate must always be ensured when all valves are closed.

9.2 | SYSTEM ADJUSTMENT

Bypass setting

The pump setting depends on the type of bypass valve installed: manual or automatic with temperature control.

Manual bypass valve

1. While adjusting the valve, set the pump to minimum speed.

2. Always ensure the minimum system flow rate Q min in accordance with the bypass valve manufacturer's manual.

3. After adjustment, set the pump reference curve: see the curves on pages 22-23 and the modes on page 24.

Automatic temperature-controlled valve

1. While adjusting the valve, set the pump to its lowest speed HS1.

2. Always ensure Q min in accordance with the valve manufacturer's instructions.

3. After adjustment, set the pump curve to suit system requirements. Refer to the panel settings on page 13 and the curves on pages 22-23.

10 | START-UP

Filling and air venting

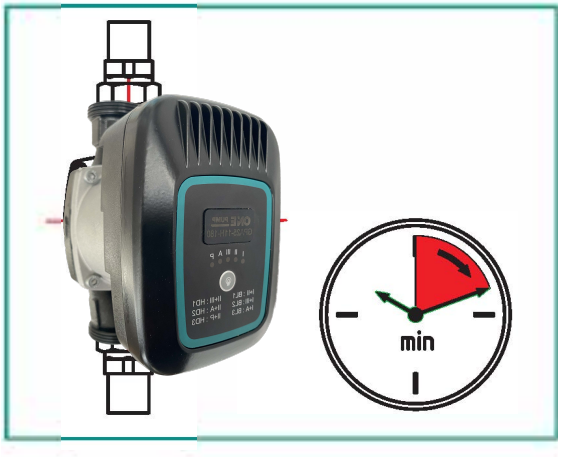
10.1 Before start-up

Check that the system is full of liquid, that air has been vented and that the inlet pressure is equal to or higher than the minimum specified under operating conditions on page 7.

10.2 Air venting

Air must be vented before start-up. Air in the pump may cause noise, which disappears after a few minutes of operation.

Temporarily select mode HS3, according to the size and structure of the system, to help expel air. Once the noise has disappeared, set the pump as required: refer to the settings on page 13 and the curves on pages 22-23.



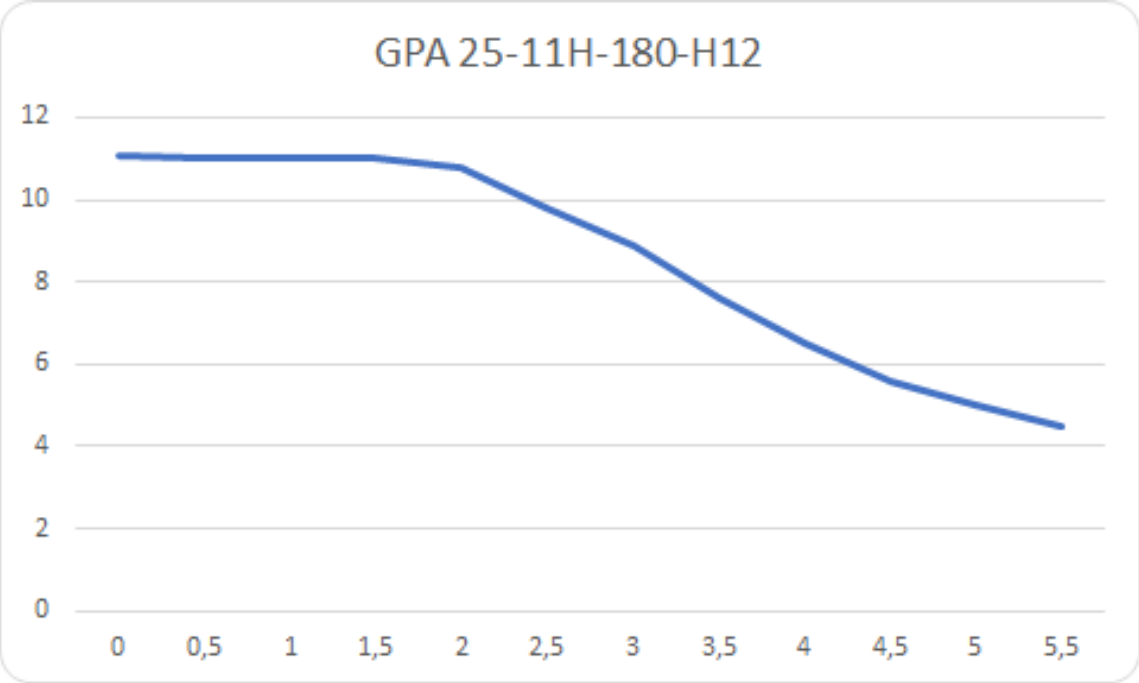
Do not start without water

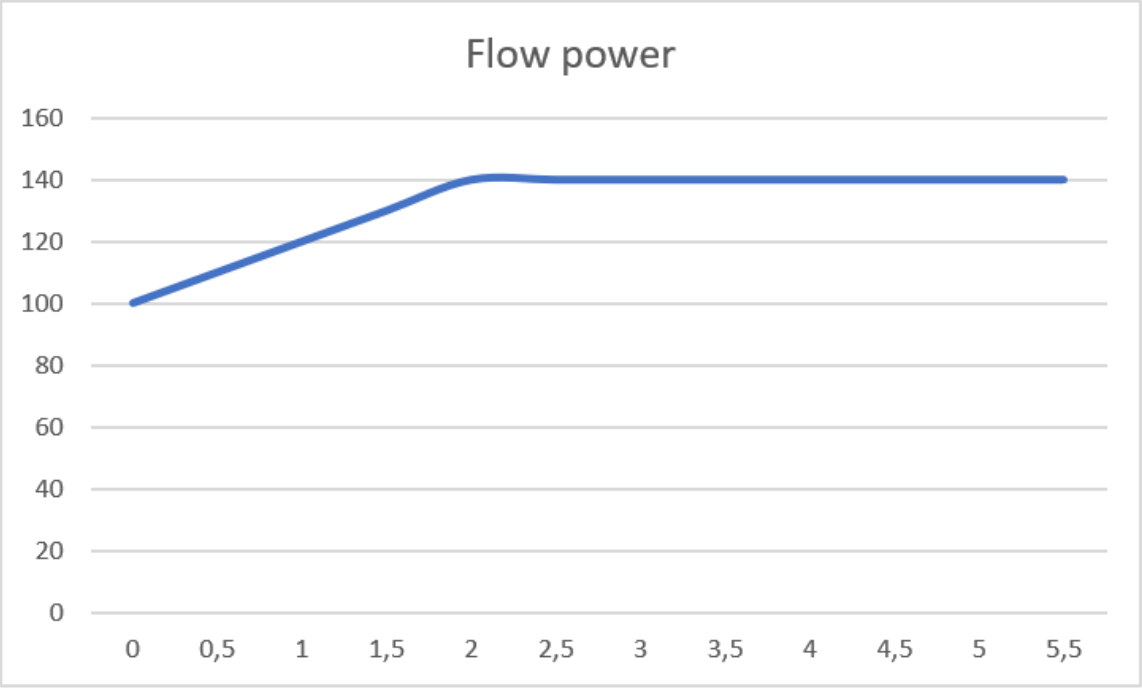
The circulator must not run without liquid.

11 | SETTINGS AND PERFORMANCE

GPA 11 H curves

GPA 25-11H-180-H12

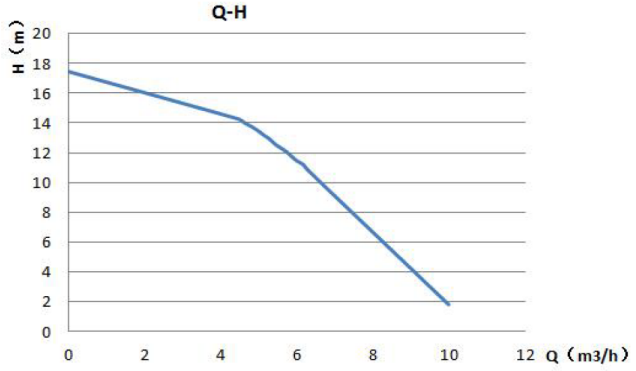


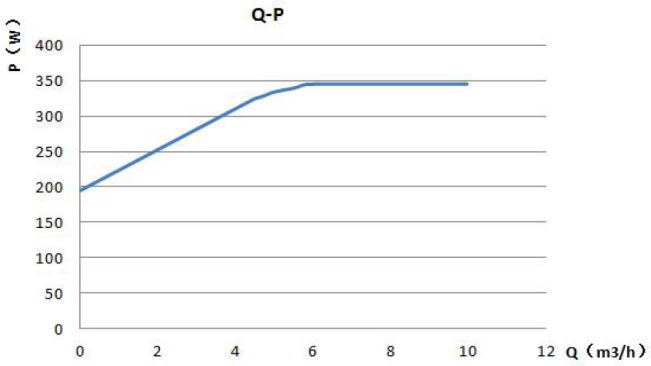


11 | SETTINGS AND PERFORMANCE

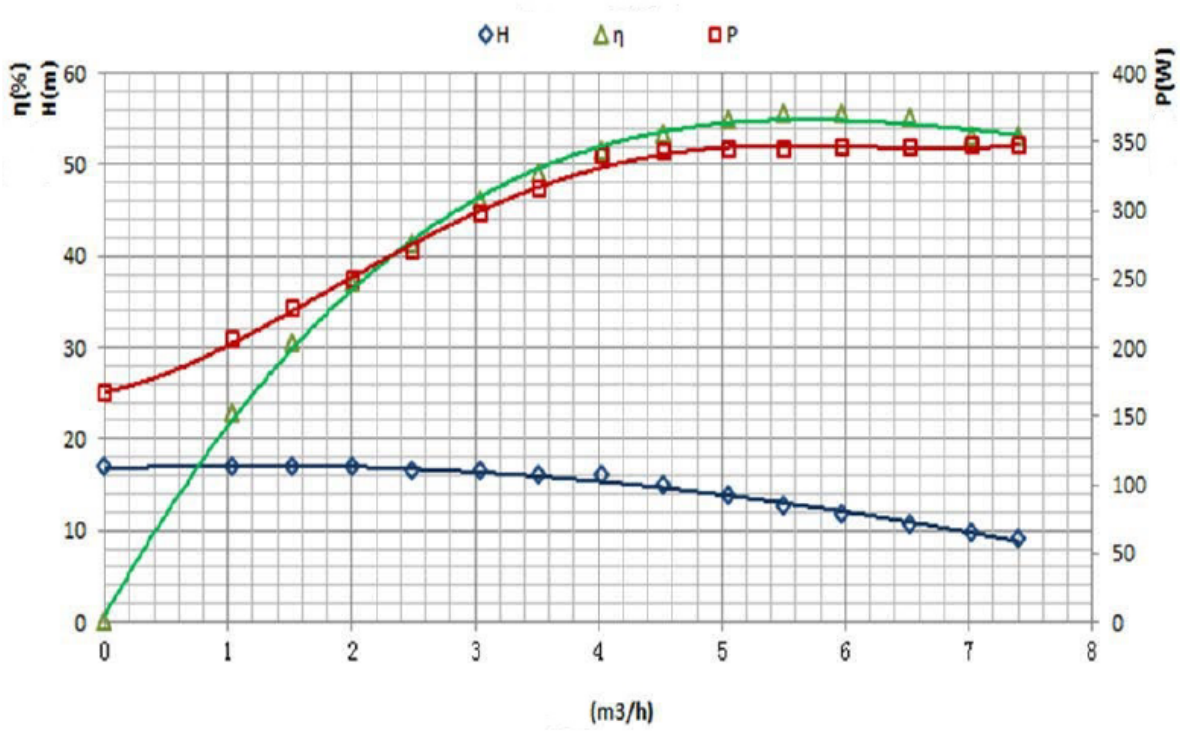
GPA 17 H curves

GPA 32-17H





GPA 25-17 H



CONTROL | CONTROL PANEL

Operating modes

AUTO - Self-adapting function

Proportional-pressure curve based on system characteristics (Dp/Va). AUTO automatically controls the specified range and adjusts performance according to system size and load variations over time. In this mode, the pump operates with proportional-pressure control.

BL 1-3 - Proportional pressure

Dp/V curve. The operating point moves along the curve according to flow requirements. When flow demand decreases, pressure falls; when demand increases, pressure rises.

HD 1-3 - Constant pressure

Dp/c curve. The operating point moves along the curve according to the flow rate required by the system. Pump pressure remains constant as flow demand changes.

HS 1-3 - Constant speed

In HS mode (1-3), the pump is set to operate on the maximum curve under all operating conditions. Temporarily select HS3 to quickly expel air from the pump.

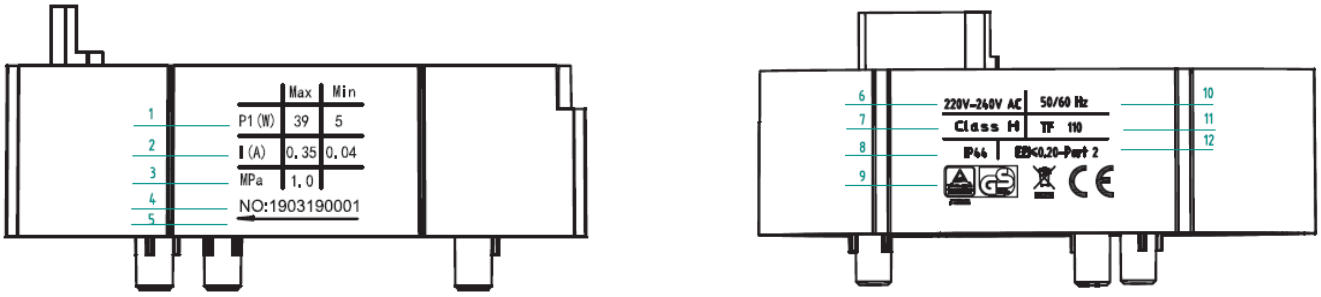
If an external controller is present, the circulator automatically reads the PWM signal that enables modulation.

Energy efficiency

EEI ≤ 0.23 - Part 2, with standard pump body.

13 | IDENTIFICATION

Reading the nameplate



No.	Indication
1	Maximum and minimum power in the respective modes
2	Maximum and minimum current in the respective modes
3	Maximum system pressure (MPa)
4	Product number
5	Motor rotation direction
6	Voltage (V)
7	Insulation class
8	Protection rating
9	Certification mark
10	Frequency (Hz)
11	Temperature class
12	Energy efficiency label
13	Model

13.2 | IDENTIFICATION

Model designation

The model designation consists of letters and numbers identifying the circulator's characteristics.

Element	Meaning
GPA	Class A in-line wet-rotor circulator
DN	Nominal diameter of the inlet and outlet ports
Head	Maximum head, expressed in metres
P	Plastic pump body
N	Stainless steel pump body
B	Brass pump body
No material letter	Cast iron pump body
H	Product for cooling

Identification example

GPA25-11-H-130: nominal inlet and outlet port diameter 25 mm, maximum head 7.5 m, cast iron pump body, third-generation product with self-regulating function and PWM.

14.1 | SPECIFICATIONS

Technical data

Parameter	Specification
Voltage and frequency	220-240 V, 50/60 Hz
Motor protection	External protection is not required
Protection rating	IP44
Insulation class	H
Maximum relative humidity	95%
Inlet pressure	1.0 MPa
EMC standards	EN 61000-6-1 / EN 61000-6-3
Sound pressure level	< 42 dB(A)
Ambient temperature	0 °C to +70 °C
Temperature class	TF110
Maximum surface temperature	+125 °C
Liquid temperature	-5 °C to +95 °C

Minimum suction pressure

Liquid temperature	Minimum pressure
≤ +75 °C	0.005 MPa
≤ +80 °C	0.028 MPa
≤ +95 °C	0.100 MPa

14.1 | OPERATING LIMITS

Permitted temperatures

To prevent condensation on the control box and stator, the liquid temperature must always be higher than the ambient temperature.

Liquid temperatures without glycol

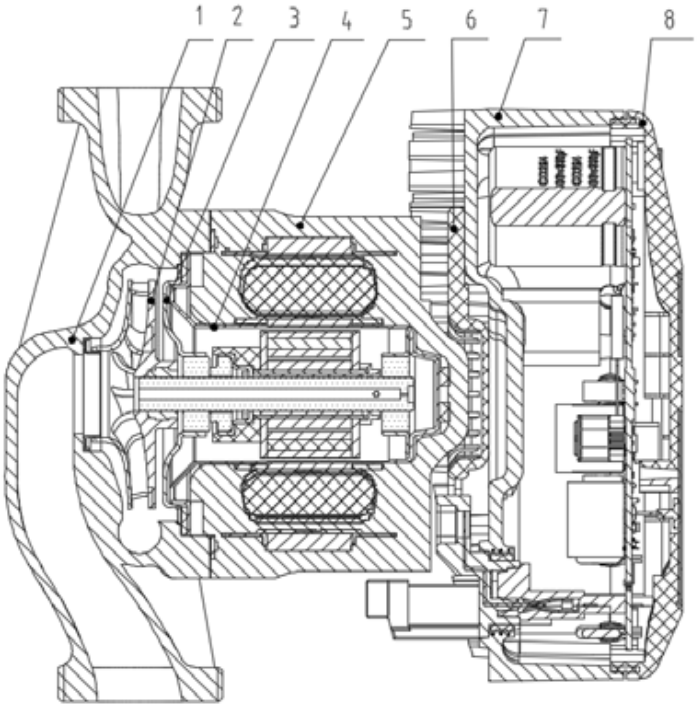
Ambient temperature	Liquid - minimum	Liquid - maximum
0 °C	2 °C	95 °C
10 °C	10 °C	95 °C
20 °C	20 °C	95 °C
30 °C	30 °C	95 °C
35 °C	35 °C	90 °C
40 °C	40 °C	70 °C

Domestic hot water

It is recommended to keep the water temperature below 55 °C to reduce scale formation.

14.2 | CONSTRUCTION

Sectional view and materials



No.	Component	Material
1	Pump body	Cast iron
2	Impeller	Technopolymer
3	Rotor	Assembly
4	Panel cover	Steel
5	Motor housing	Aluminium alloy
6	Support	Technopolymer
7	Terminal box base	Aluminium alloy
8	Thermal box cover	Technopolymer

15 | MAINTENANCE AND END OF LIFE

Servicing and disposal

Before any work

Disconnect the power supply and prevent it from being restored accidentally before carrying out maintenance or repairs.

Troubleshooting and servicing

Refer to the fault indications and reset procedures on page 14. Disconnect the power supply to check the fault; after resolving the problem, reconnect it and restart the circulator.

If the problem is not resolved by following the instructions, close the inlet valve, disconnect the power supply and contact the dealer or service centre.

Product disposal

Do not dispose of the circulator with unsorted municipal waste. Use separate collection systems and contact the local authority for information about available services.

Improper disposal of electrical appliances may release hazardous substances into groundwater and the food chain, harming health and well-being.

When the appliance is replaced with a new one, the dealer must accept the old appliance for disposal free of charge.

One Pump service support

Tel. +39 051 19616352 - info@onepump.it

PRODUCT DOCUMENTATION

Declaration of conformity

CE

DECLARATION OF CONFORMITY
KONFORMITÄTSERKLÄRUNG

Dichiariamo sotto la nostra esclusiva responsabilità che questi tipi di circolatori a rotore bagnato della serie, We declare under our sole responsibility that these glandless circulating pump types of the series,

GPA XX-11-17-H

(Il numero di serie è contrassegnato sulla targhetta del sito del prodotto)
(The serial number is marked on the product site plate)
(Die Seriennummer ist auf dem Typenschild des Produktes angegeben)

Allo stato di consegna sono conformi alle seguenti direttive pertinenti e alla legislazione nazionale pertinente: In their delivered state comply with the following relevant directives and with the relevant national legislation: **in der gelieferten AusfUhrung folgenden einschl/:!igen Bestimmungen entsprechen 'und entsprechender** nationaler Gesetzgebung:

_ 2014/35/EU - LOW VOLTAGE / NIEDERSPANNUNGSRICHTLINIE

_ 2014/30/EU - ELECTROMAGNETIC COMPATIBILITY / ELEKTROMAGNETISCHE VERTRÄGLICHKEIT - RICHTLINIE

_ 2009/125/EC - ENERGY-RELATED PRODUCTS / NERGIEVERBRAUCHSRELEVANTER PRODUKTE - RICHTLINIE (and according to the regulation 641/2009 on glandless circulators amended by 622/2012 / und gemäß der Verordnung (EG) Nr. 641/2009 überNassläuferpumpen, geändert durch 622/2012)

_ 2011/65/EU + 2015/863 - RESTRICTION OF THE USE OF CERTAIN HAZARDOUS SUBSTANCES / DER VERWENDUNG BESTIMMTER GEFÄHRLICHER STOFFE-RICHTLINIE

comply also with the following relevant standards :
essere conformi anche alle seguenti norme pertinenti

EN 60335-1:2012+A11:2014+A13:2017+A1:2019+A2:2019+A14:2019; EN 60335-2-51:2003+A1:2008+A2:2012; EN IEC 61000-6-1:2019; EN IEC 61000-6-2:2019; EN IEC 61000-6-3:2021; EN IEC 61000-6-4:2019; EN 16297-1:2012; EN 16297-2:2012; EN IEC 63000:2018;

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Castenaso, li 28.11.2022

Davide Costa
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