INSTALLATION AND OPERATING MANUAL

GPA III PRO

High-efficiency electronic circulator

GPA-XX-7.5-III-PRO-XXX



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 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 during installation and maintenance.

SAFETY | WARNINGS 8-14

Liquids, temperature and environment

8. Domestic hot water

For domestic hot-water circulation, use a pump with a copper or stainless steel body.

9. Make-up water

Avoid frequent replenishment of heating pipes with unsoftened water, to prevent an increase in the calcium content of the circulating water.

10. Dry running

Do not start the circulator without liquid.

11. Water for food use

Some models cannot be used for water intended for food use.

12. 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.

13. Ventilation

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

14. Frost protection

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

SAFETY | WARNINGS 15-21

Use, storage and servicing

15. 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.

16. Damaged cable

If the flexible cable is damaged, contact the service centre to have it replaced together with the connector.

17. Motor overheating

If the motor burns out, is excessively hot or has an abnormal temperature, immediately disconnect the power supply to the pump or system.

18. 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.

19. Child protection

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

20. Storage

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

21. Persons requiring 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.

Symbols and overview

1. Meaning of the indications

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 III series is designed to circulate water in heating and domestic water systems. It is suitable for systems with variable flow or temperature and for industrial circuits.

The permanent-magnet motor and differential-pressure controller automatically and continuously adjust performance to meet system requirements. The front panel makes operation easy.

2.2 Benefits

• Simple installation and start-up.

• Self-adapting AUTO mode is the factory setting: in most cases, no initial adjustment is required.

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

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

3 | OPERATING CONDITIONS

Pressure, temperature and liquids

Parameter	Operating condition
Ambient temperature	0 °C to +70 °C
Maximum relative humidity	95%
Liquid temperature	+2 °C to +110 °C
Maximum system pressure	1.0 MPa
Protection rating	IP44

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

3.6 Minimum inlet pressure

Liquid temperature	< 75 °C	90 °C	110 °C
Minimum pressure	0.05 bar	0.5 bar	1.08 bar
Equivalent head	0.5 m	5 m	10.8 m

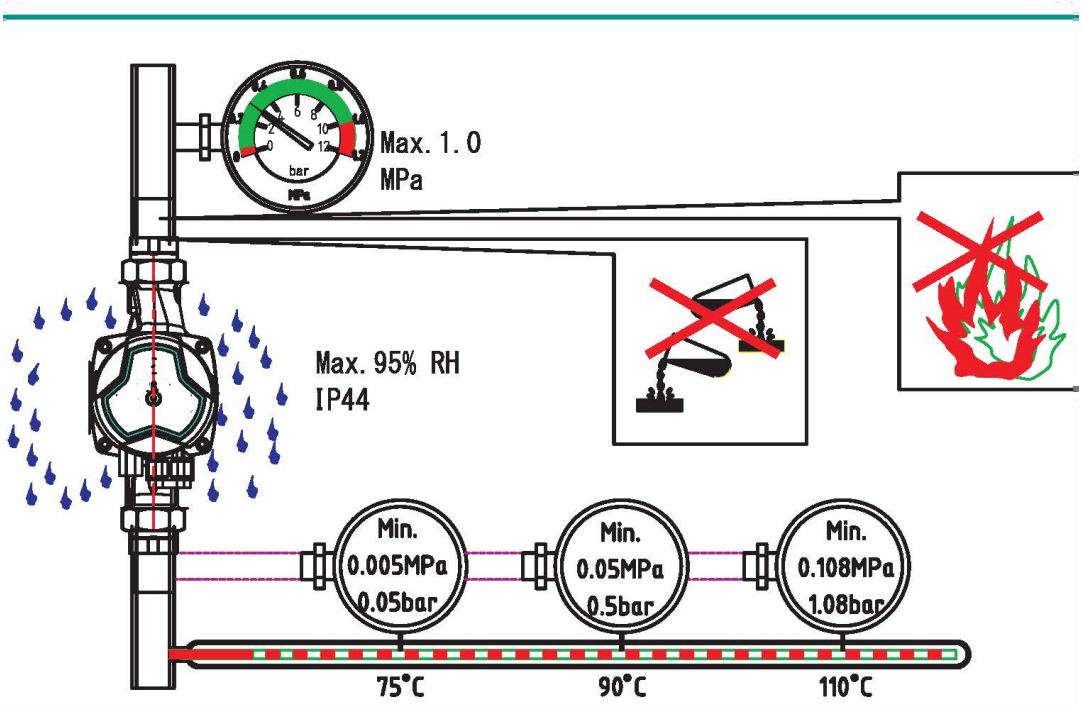
Maintain the required minimum pressure to prevent cavitation and bearing damage.

3.7 Pumped liquids

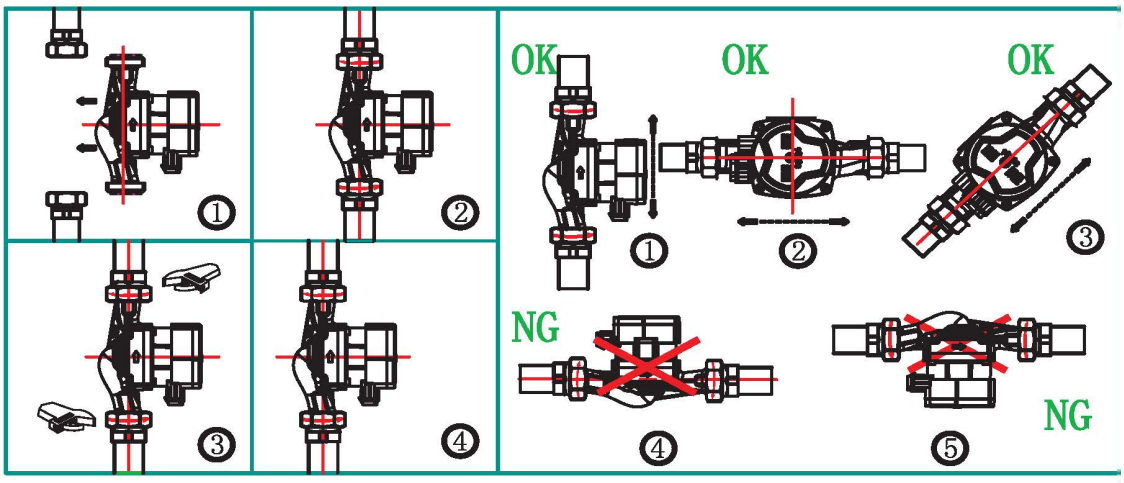
Use low-viscosity, clean, non-corrosive and non-explosive liquids, free from solid particles, fibres and mineral oils. Do not pump flammable liquids such as vegetable oil or petrol. High viscosity reduces performance: take this into account when selecting the circulator.

4.1 | INSTALLATION

Installing the circulator

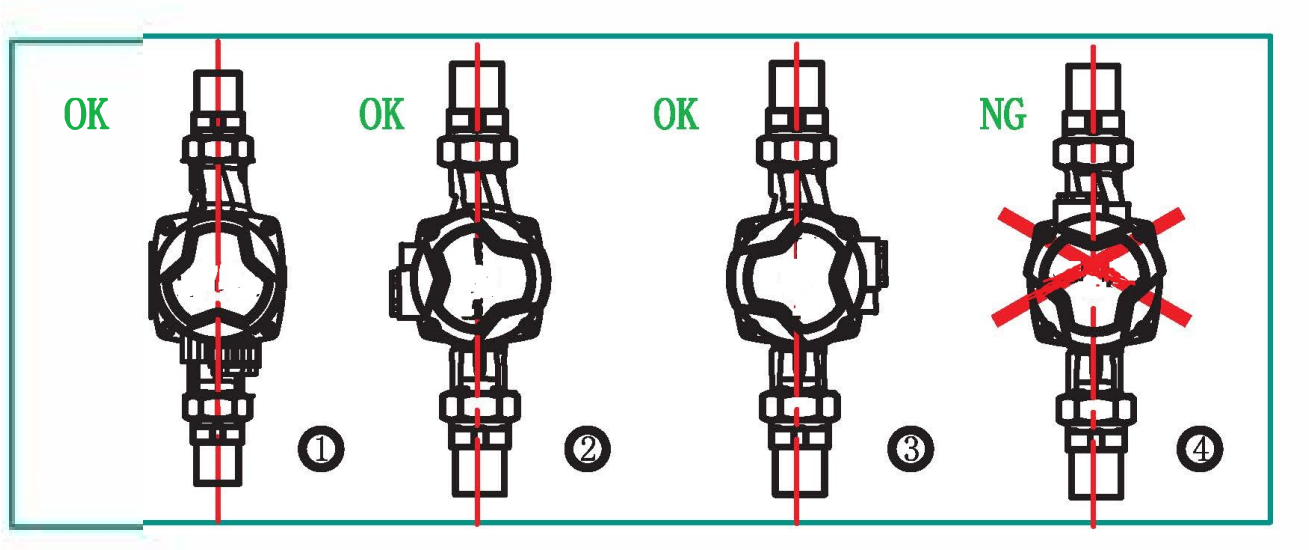


- The arrows on the pump body indicate the direction of liquid flow.
- Fit the two insulating shells provided at the inlet and outlet.
- Keep the pump shaft horizontal.



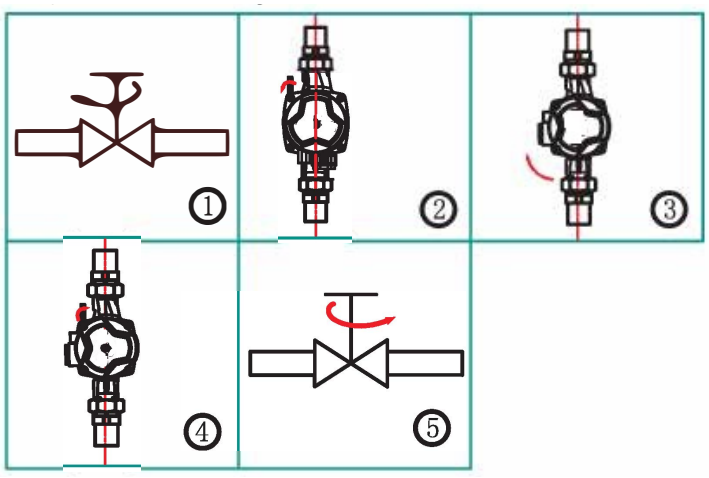
4.2 / 4.3 | ORIENTATION

Control box position



The control box can be rotated by 90°.

1. Close the inlet and outlet valves and depressurise the circuit.
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.



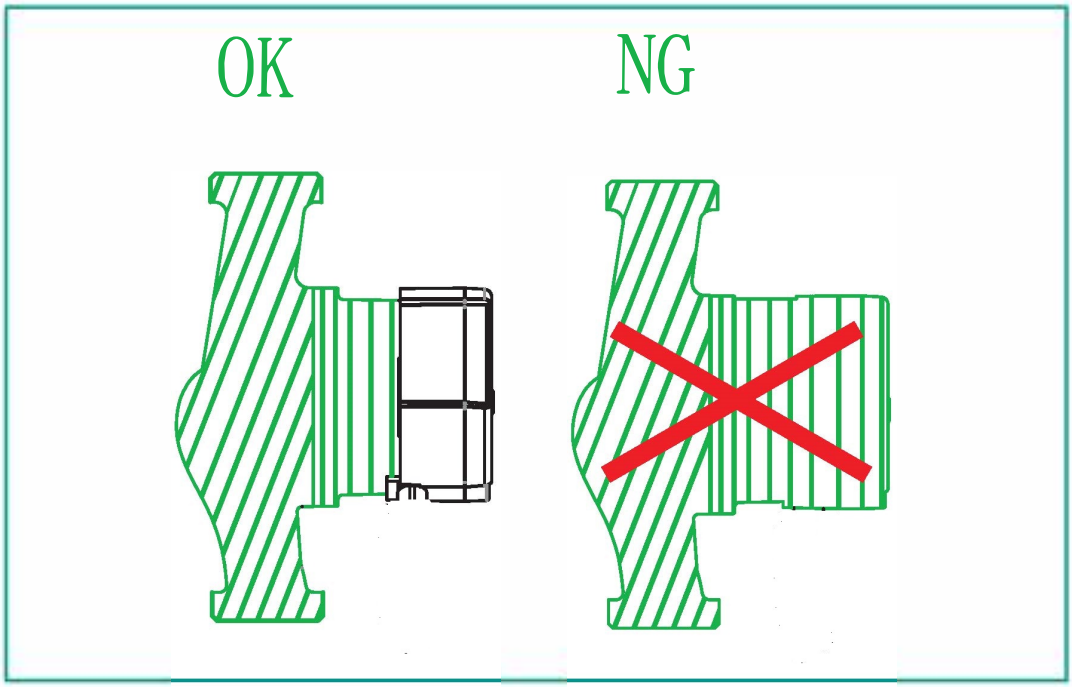
4.4 | THERMAL INSULATION

Insulation and precautions

Hot liquid under pressure

Before removing the screws, drain the system or close the valves on both sides. This pump is intended for heating, not cooling.

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



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

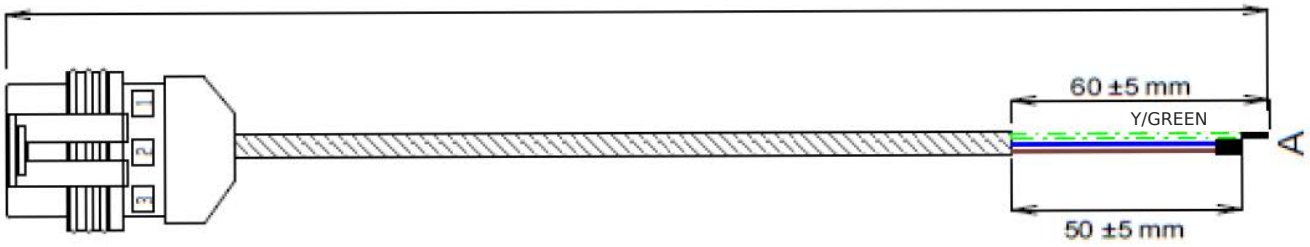
Do not cover the controls

Do not insulate or cover the control box or control panel.

5 | ELECTRICAL CONNECTIONS

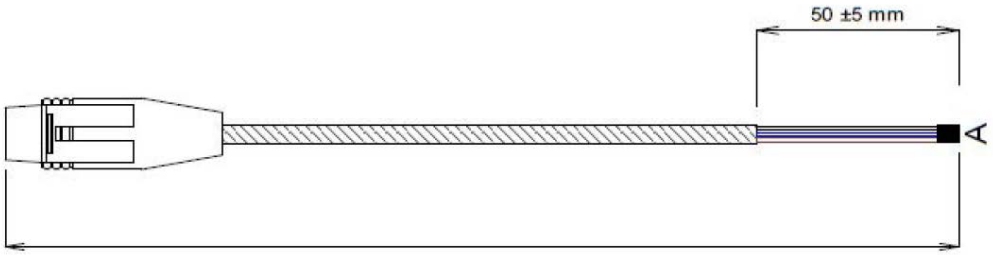
Cables and connectors

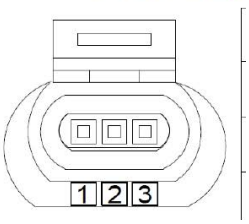
Power supply cable



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 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 all contacts.
- External motor protection is not required.
- Check that the voltage and frequency match the nameplate.
- Connect the power supply using the plug supplied with the pump.
- The indicator light on the panel shows that power is present.

6 | CONTROL PANEL

Settings and controls



Indication	Operation
5	5 m curve
6	6 m curve
7	7 m curve
7.5	7.5 m curve
PWM	External PWM1 control for heating

Briefly press the button to change the setting: 5 m, 6 m, 7 m, 7.5 m and PWM, when an external controller is provided.

Power at the different settings

Head	5 m	6 m	7 m	7.5 m
Power	33 W	39 W	52 W	60 W

Energy efficiency index: EEI ≤ 0.20 - Part 2, with standard pump body. A flashing green light indicates an error.

Diagnostics and protection

Before checking a fault, disconnect the power supply. Once the problem has been resolved, reconnect the power and restart the circulator.

Signal	Protection and reset
1 flash	Overvoltage: 270 ± 5 V. Restart when the voltage returns to normal.
2 flashes	Undervoltage: 165 ± 5 V. Restart when the voltage returns to normal.
3 flashes	Overcurrent. Restart after 8 seconds.
4 flashes	Phase loss. Restart after 8 seconds.
5 flashes	Locked rotor. Restart after 8 seconds.
6 flashes	Light load. Restart after 8 seconds.
7 flashes	Overtemperature. Restart after the ambient temperature has been normal for 5 seconds.
All indicators flash during operation	Overheating: when the IPM module surface temperature exceeds 120 ± 5 °C, power is reduced to 0.5 times its rated value. Below 115 ± 5 °C, the circulator returns to normal operation.
All indicators flash when power is first applied	The circulator is running without water.

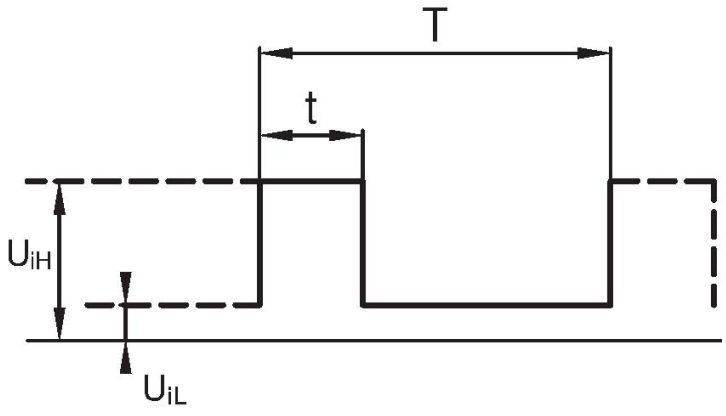
8.1 | PWM CONTROL

Signal characteristics

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

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



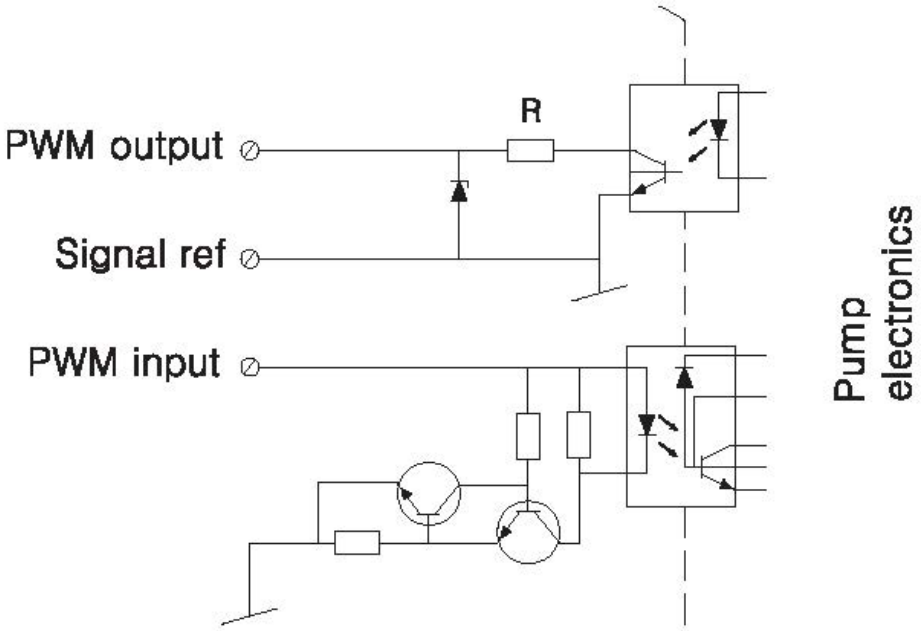
d = t / T

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 signals from external electrical components into signals recognised by the circulator microprocessor. With a 230 V power supply, it separates the signal cable from the high voltage, providing 8 mm of galvanic isolation.

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

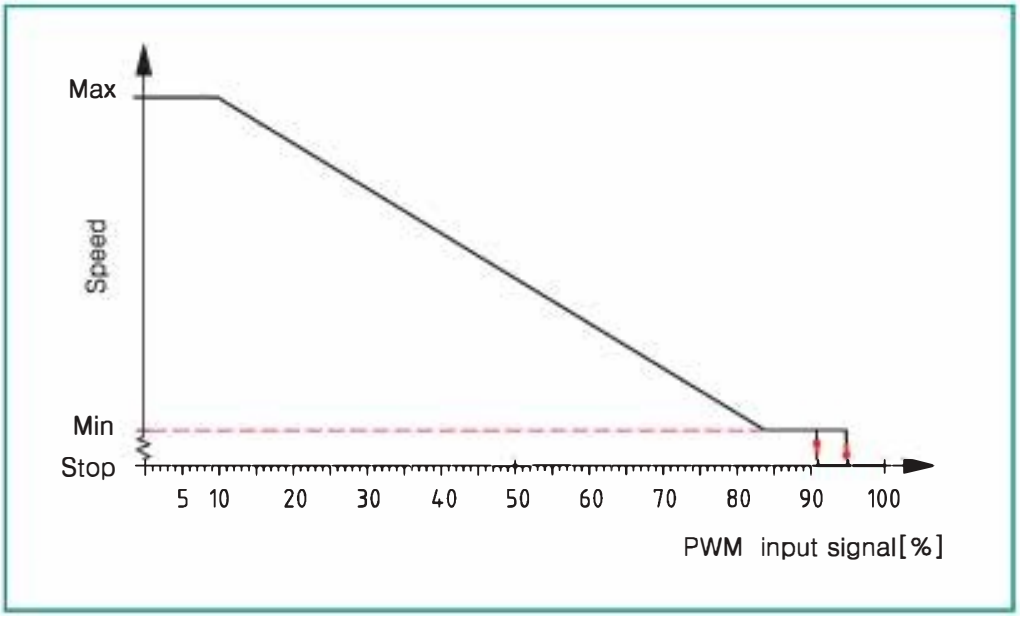
Control logic

At high duty cycles, a hysteresis zone prevents frequent starting and stopping when the signal fluctuates near the switching 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 circulator continues to transfer heat through the main heat exchanger.

8.3 | SPEED CONTROL

PWM input signal



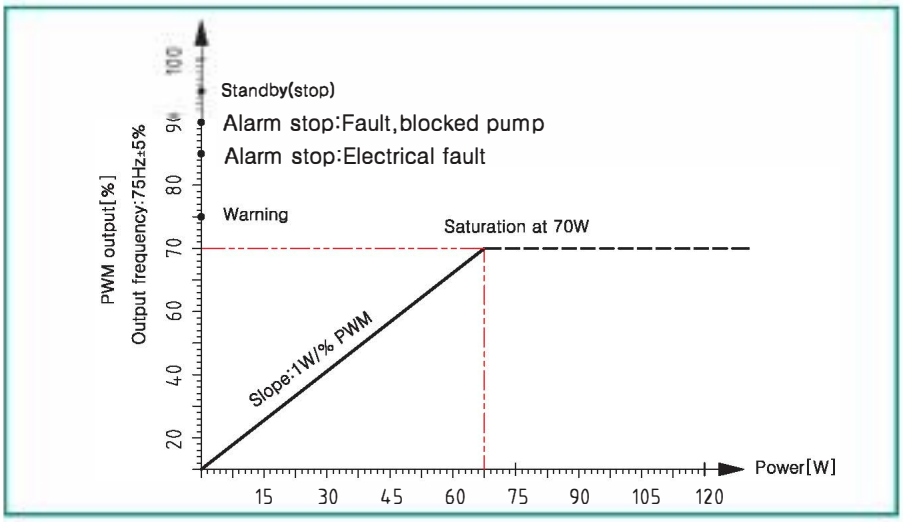
PWM input	Circulator status
0%	Normal mode, non-PWM; the system considers the signal absent.
< 10%	Maximum speed.
10-84%	Speed decreases from maximum to minimum.
85-91%	Minimum speed.
91-95%	Hysteresis zone to prevent frequent starting and stopping if the signal fluctuates.
96-99%	Standby: the pump stops.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

Switching between PWM and non-PWM modes is automatic. When a PWM 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.

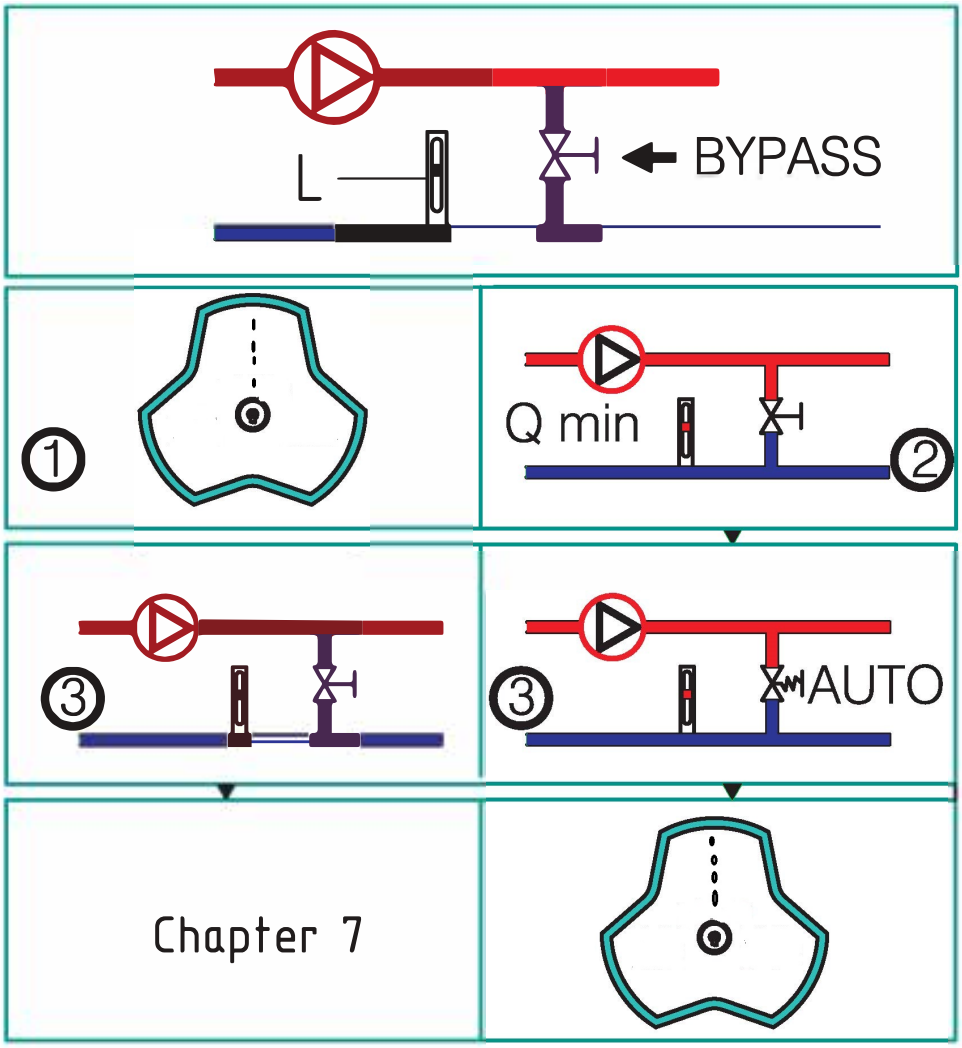


PWM OUT	Status / description
95%	Standby: the circulator is stopped.
90%	Locked-pump alarm: restart after the problem is resolved.
85%	Electrical-fault alarm: restart after the problem is resolved.
75%	Warning: non-critical problem; the pump continues to run.
0-70%	Power 0-70 W; slope of 1 W per PWM 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



9.1 Valve function

The bypass valve is installed between the flow and return pipes. It allows heat from the boiler to be dissipated when all underfloor circuit valves or radiator thermostatic valves are closed.

The system includes the bypass valve and the flow meter at position L. Always ensure the minimum flow when all valves are closed.

Bypass setting

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

9.2 Manual bypass valve

1. While adjusting the valve, set the circulator to speed 5.

2. Always ensure the minimum system flow Q min specified in the valve manufacturer's manual.

3. After adjustment, set the circulator according to the curves and instructions in chapter 11, on pages 22-23.

9.3 Automatic temperature-controlled valve

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

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

3. After adjustment, select constant-pressure mode. For the relationship between settings and performance, see chapter 11 on pages 22-23.

10 | START-UP

Filling and air venting

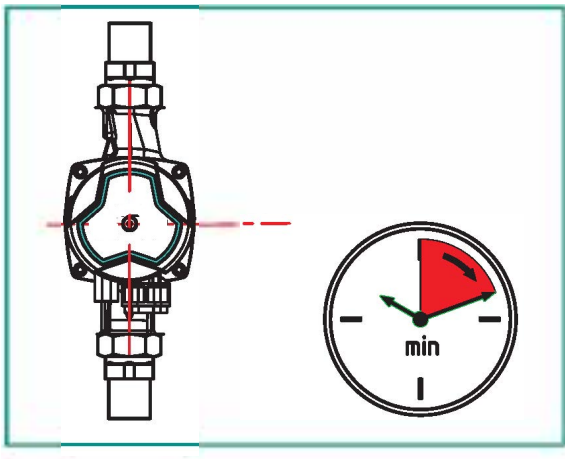
10.1 Before start-up

Check that the system is full of liquid, that air has been vented from the system and that the inlet pressure reaches the minimum required in chapter 3, on page 7.

10.2 Venting the pump

The circulator has an automatic air-expulsion function; the pump does not need to be vented before start-up. Air inside it may cause noise, which disappears after a few minutes of operation.

Temporarily select mode 7, according to the size and structure of the system, to help expel air. Once the noise has disappeared, restore the setting recommended in chapter 6, on page 13.

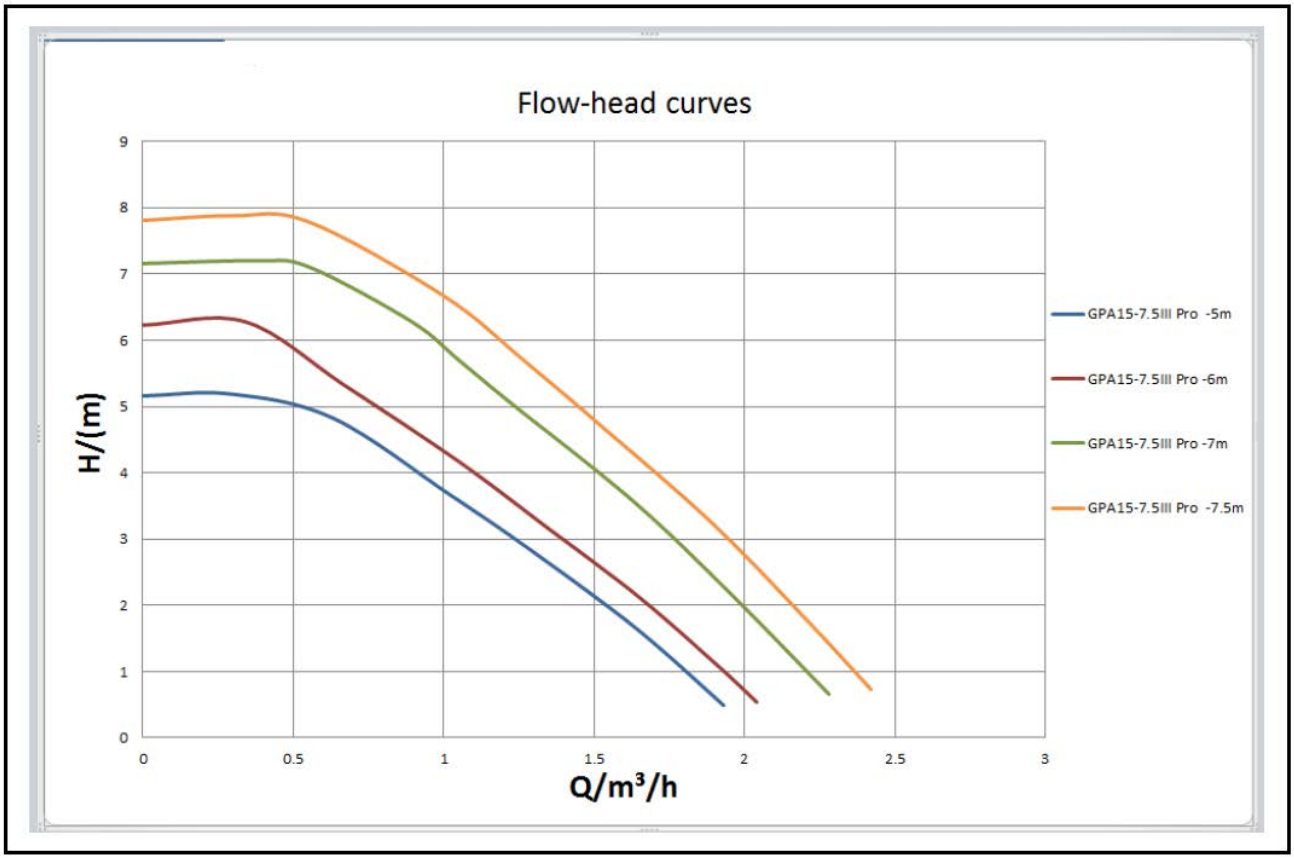


Do not start without water

The circulator must not run without liquid.

11 / 12 | PERFORMANCE

Head / flow curves



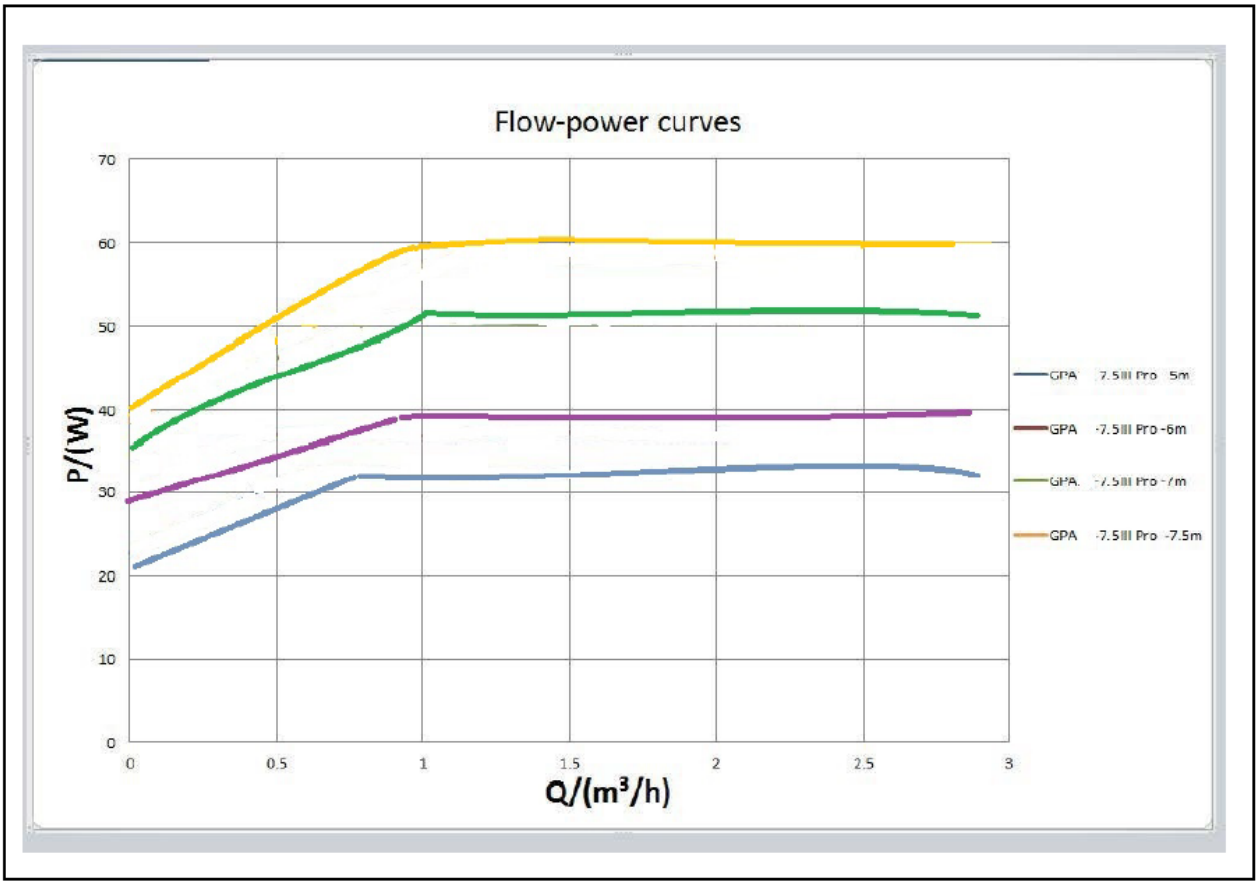
12.1 Reading the curves

Each circulator setting corresponds to a Q/H curve. The curves show the relationship between flow and head for the 5 m, 6 m, 7 m and 7.5 m settings.

12.2 Curve conditions

Liquid: gas-free water. Temperature: +60 °C. Density: 983.2 kg/m³. Kinematic viscosity: 0.474 mm²/s (0.474 cSt).

Power / flow curves

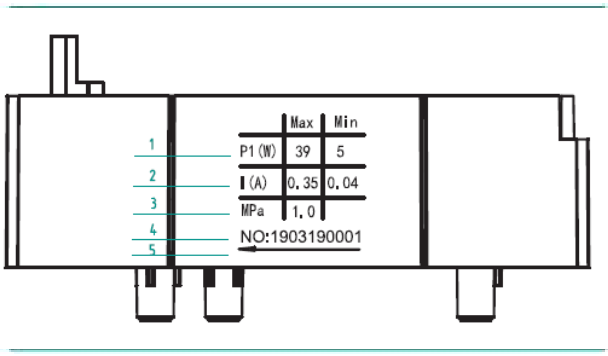


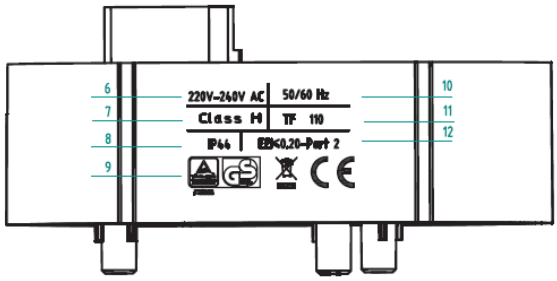
Setting	5 m	6 m	7 m	7.5 m
Power	33 W	39 W	52 W	60 W

The values shown in the curves are average values and do not constitute guaranteed curves. If a specific performance is required, carry out a dedicated measurement.

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
III	Series code / third generation

Identification example

GPA25-7.5-III-130: nominal inlet and outlet diameter 25 mm, maximum head 7.5 m, copper pump body, third-generation product with four settings 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%
Maximum system 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	+2 °C to +110 °C

Minimum inlet pressure

Liquid temperature	Minimum pressure
≤ +75 °C	0.005 MPa
≤ +90 °C	0.028 MPa
≤ +110 °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.

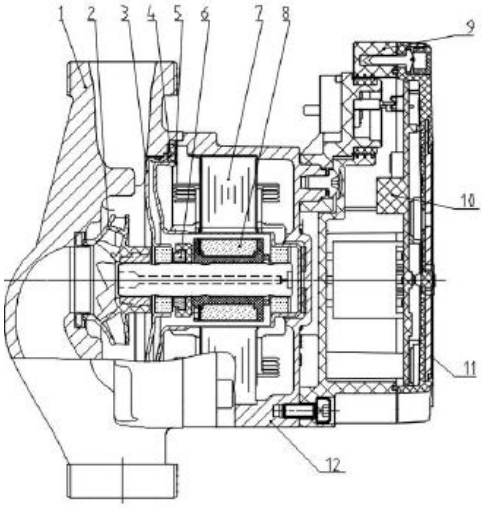
Ambient temperature	Liquid - minimum	Liquid - maximum
0 °C	2 °C	110 °C
10 °C	10 °C	110 °C
20 °C	20 °C	110 °C
30 °C	30 °C	110 °C
35 °C	35 °C	90 °C
40 °C	40 °C	70 °C

Domestic hot water

Keep the water temperature below 65 °C to reduce scale formation.

14.2 | CONSTRUCTION

Sectional view and materials



No.	Component	Material	Qty
1	Pump body	Cast iron	1
2	Impeller	PPE + 30% GF	1
3	Lower bearing support assembly	SUS304	1
4	Gasket	EPDM	1
5	Rotor can assembly	SUS304	1
6	Thrust bearing assembly	EPDM	1
7	Stator module		1
8	Rotor		1
9	Control panel	Composite material	1
10	Driver		1
11	Nameplate	PC	1
12	Motor base	ADC12	1

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

Product disposal

The crossed-out wheeled bin symbol indicates that the electrical appliance must not be disposed of with unsorted municipal waste. Use separate collection systems.

Contact the local authority for information about available collection services. Improper disposal may release hazardous substances into groundwater and the food chain, harming health and the environment.

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-7,5-III-PRO

(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/:!gigen 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;

La persona autorizzata a compilare il file tecnico è:Person authorized to compile the technical file is:
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Castenaso, li 01.10.2022

Davide Costa
Amministratore One Pump

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ORIGINAL DECLARATION / ORIGINAL-ERKLÄRUNG