Regulus

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RPA

Installation and Operation Manual

RPA Circulation Pump

EN

RPA

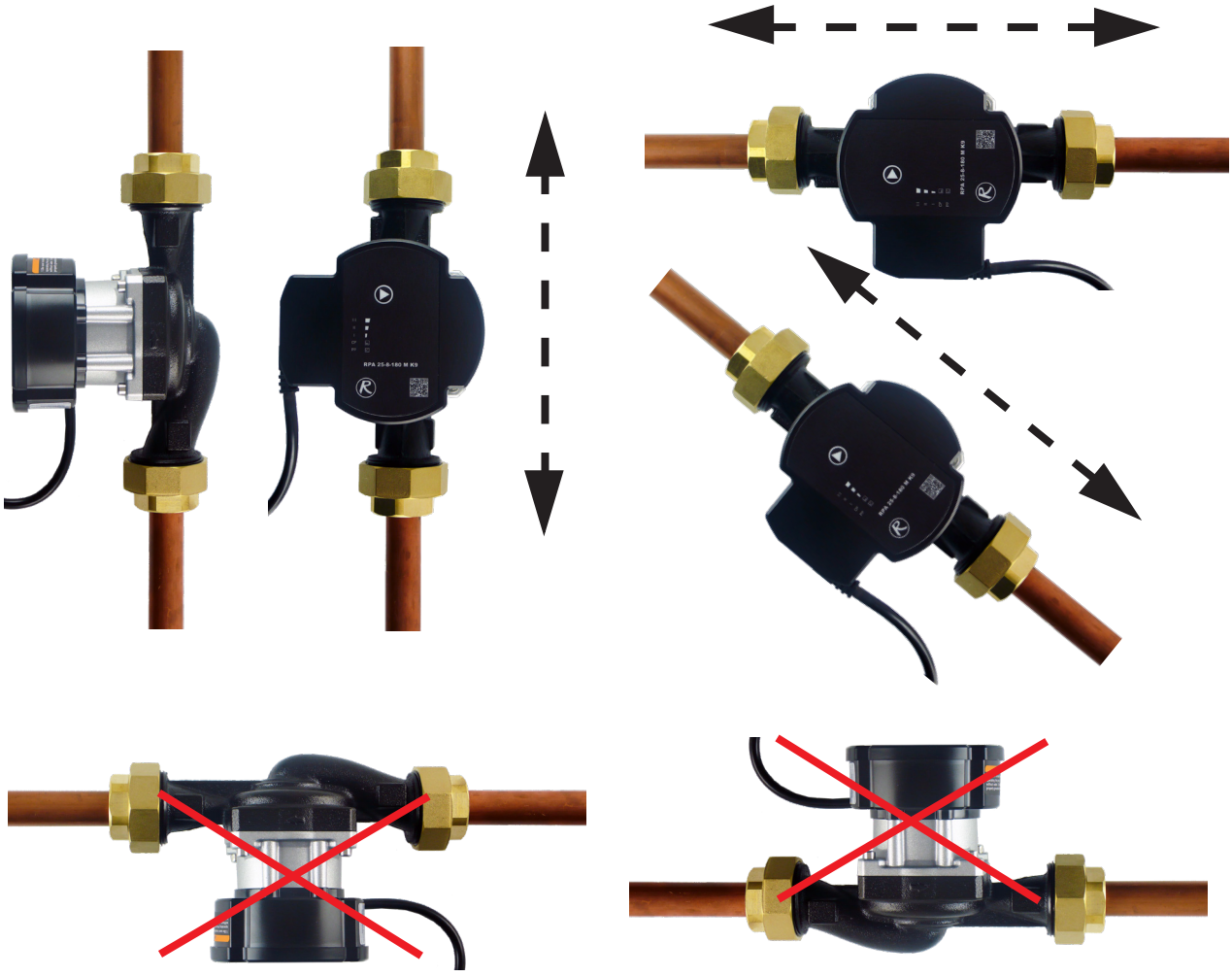
1. General Information

The high efficiency circulation pumps of the RPA series are used exclusively for the circulation of liquids in hot water heating systems. Operating the pump in other systems or in systems containing too little water, air bubbles or not pressurized can lead to its rapid destruction.

2. Pump Description

High efficiency wet-running ON/OFF circulation pump designed for circulation of fluids in heating systems; the pump is equipped with an anti-blocking motor and integrated electronic performance control; LED indication of operation for an easy check; choice between constant speed mode I, II, III, PP mode for variable differential pressure or CP mode for constant differential pressure.

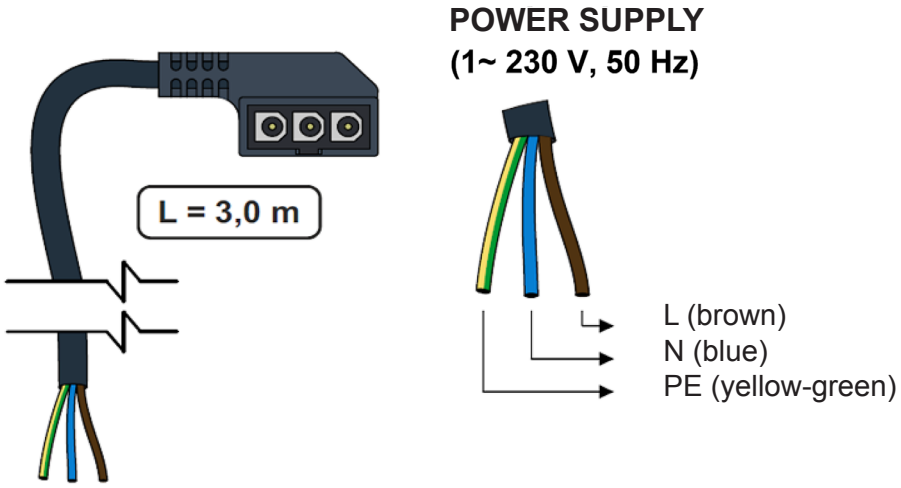
3. Permitted and Prohibited Pump Positions



4. Pump Wiring

Connecting/disconnecting the pump must be done by a professionally qualified person!

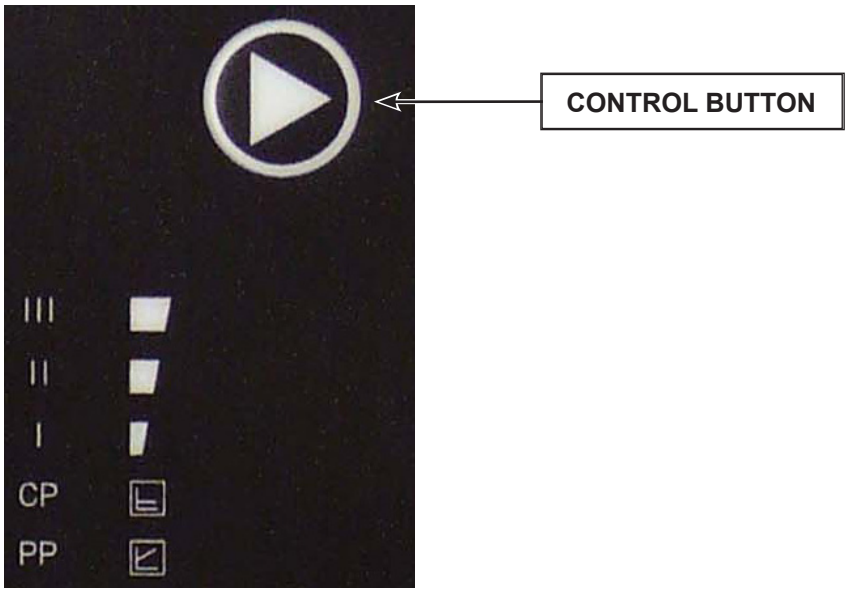
Insert the power cable into the connector on the pump. Connect the wires at the other end of the cable to the corresponding terminals in the terminal block.



5. Pump Control

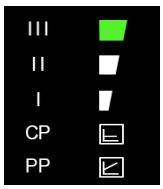
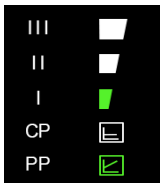
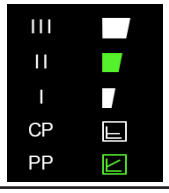
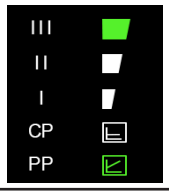
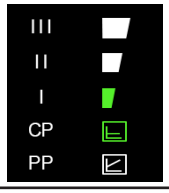
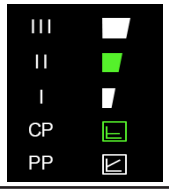
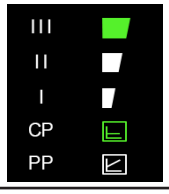
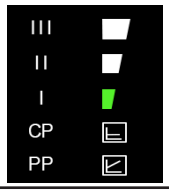
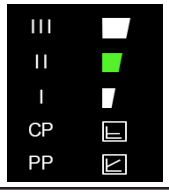
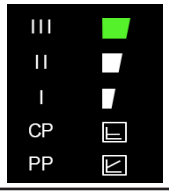
In the factory settings of the RPA 25-8 pump, the Constant Speed (CS) operating mode and the pump performance curve III are preset. After switching on, the pump runs at the factory setting or at the last setting.

The settings can be changed using the control button, see below.



By briefly pressing the control button:

You select the **operating mode** of the pump: constant speed (CS), proportional pressure (PP) or constant pressure (CP) and the pump **performance curve** (I, II, III). The LED lights show the pump settings (operating mode and performance curve).

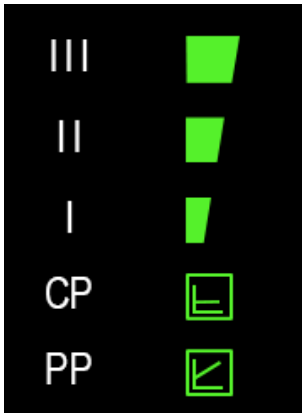
NUMBER OF PRESSES	OPERATING MODE		LED INDICATORS
0	CS III (factory setting)	constant speed III	
1	PP I	proportional pressure I	
2	PP II	proportional pressure II	
3	PP III	proportional pressure III	
4	CP I	constant pressure I	
5	CP II	constant pressure II	
6	CP III	constant pressure III	
7	CS I	constant speed I	
8	CS II	constant speed II	
9	CS III	constant speed III	

PUMP AIR VENTING

If the pump is aerated:

Activate the vent function by pressing and holding the control button for 5 seconds. Venting is indicated by five flashing LED lights - see picture.

The pump alternately switches on and off during venting. Venting lasts for 5 minutes, after which the pump switches to normal mode.

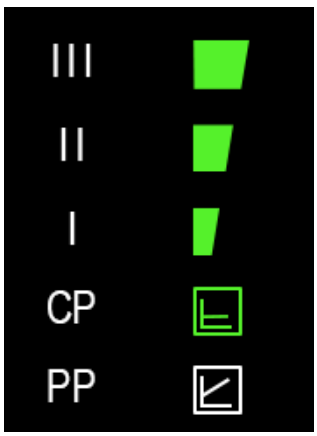


MANUAL RESTART

In case the pump has been stopped for a long time or is blocked, activate the manual restart by holding the control button for 8 seconds. A manual restart is signalled by four flashing LED lights - see the pic., and during it the pump alternately switches on and off.

Manual restart lasts for 5 minutes, after which the pump switches to normal mode.

If the pump is not unblocked, contact a specialist technician.



PUMP OPERATING MODES

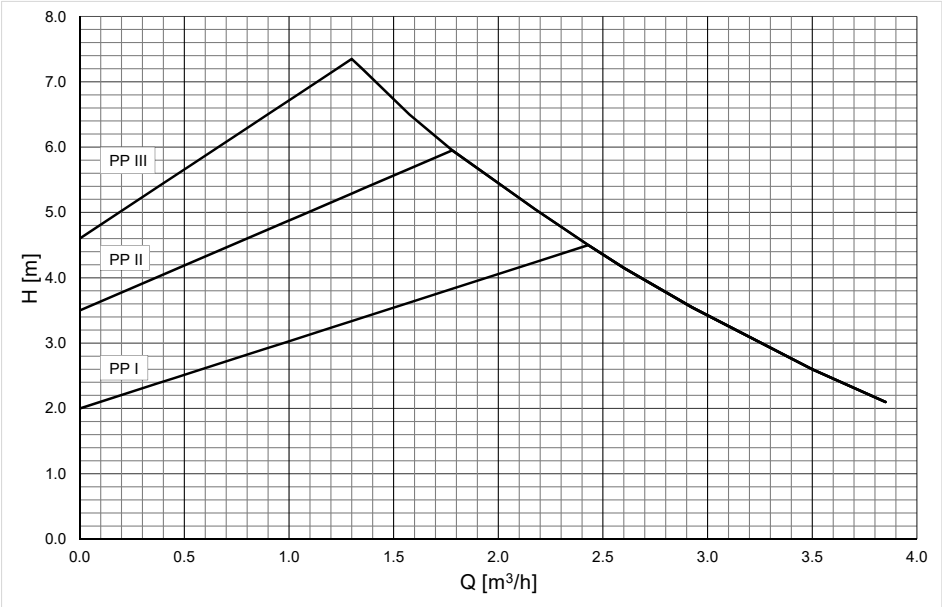
Proportional pressure PP

The operating mode "proportional pressure" is recommended in systems where it is appropriate to reduce the pump discharge pressure together with the decrease of the required flow rate. A typical example is a heating circuit with radiators equipped with thermostatic valves, when choosing this operating mode can reduce the noise of the thermostatic valves, which is usually caused by closing of a larger number of radiators in the system. **This mode, on the other hand, is unsuitable for circuits of heat sources where a decrease in head together with flow rate can even cause that these sources stop working.**

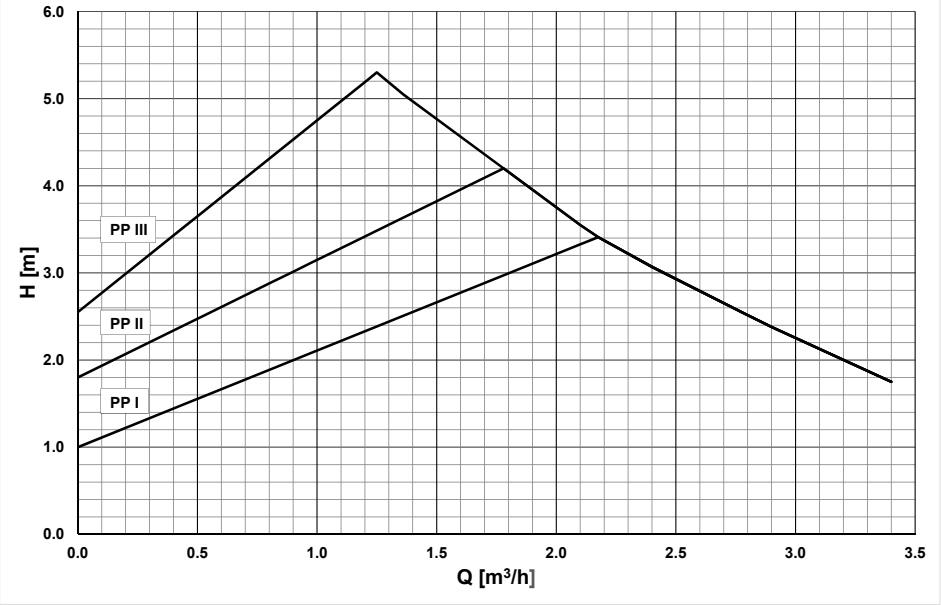
As the pump also reduces the head when reducing the flow rate, there is a substantial reduction in the pump power consumption and thus also the operating costs. For larger heating circuits and for circuits where there are significant differences in the heating performance requirements in separate heating zones, this mode can temporarily cause underheating. For these systems, it may be more appropriate to switch the pump to constant pressure mode CP.

Performance curves

RPA 25-8



RPA 25-6



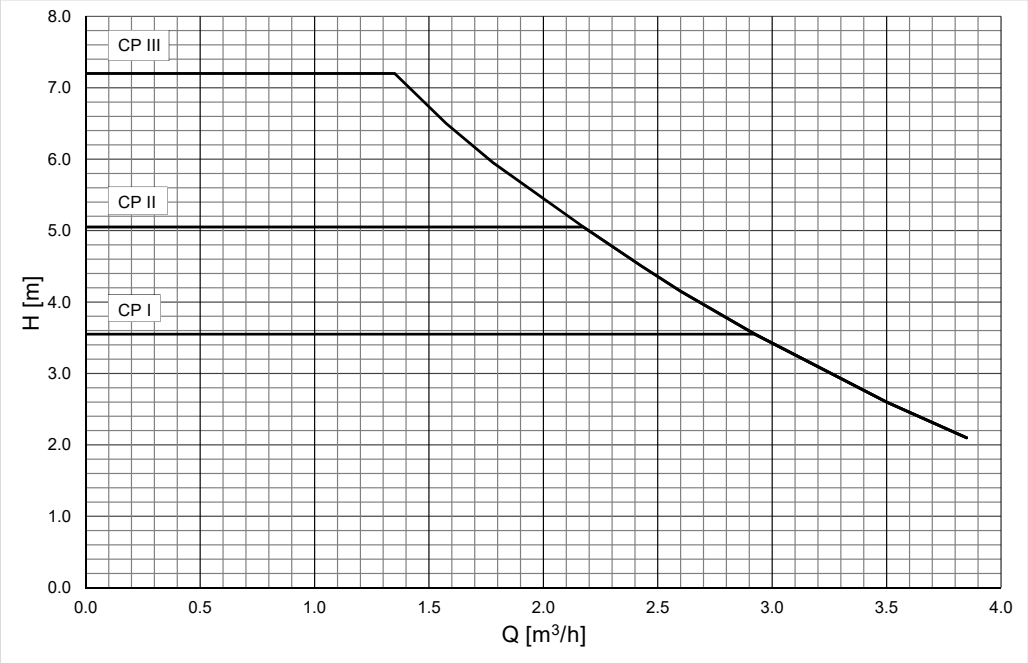
Constant pressure CP

The operating mode "constant pressure" (constant head) is suitable for hydraulic circuits of heat sources (boilers, heat pumps, solar thermal systems, etc.), hot water tanks, hot water heaters, floor heating systems and extensive heating circuits where the previous PP mode could cause underheating by reducing the head.

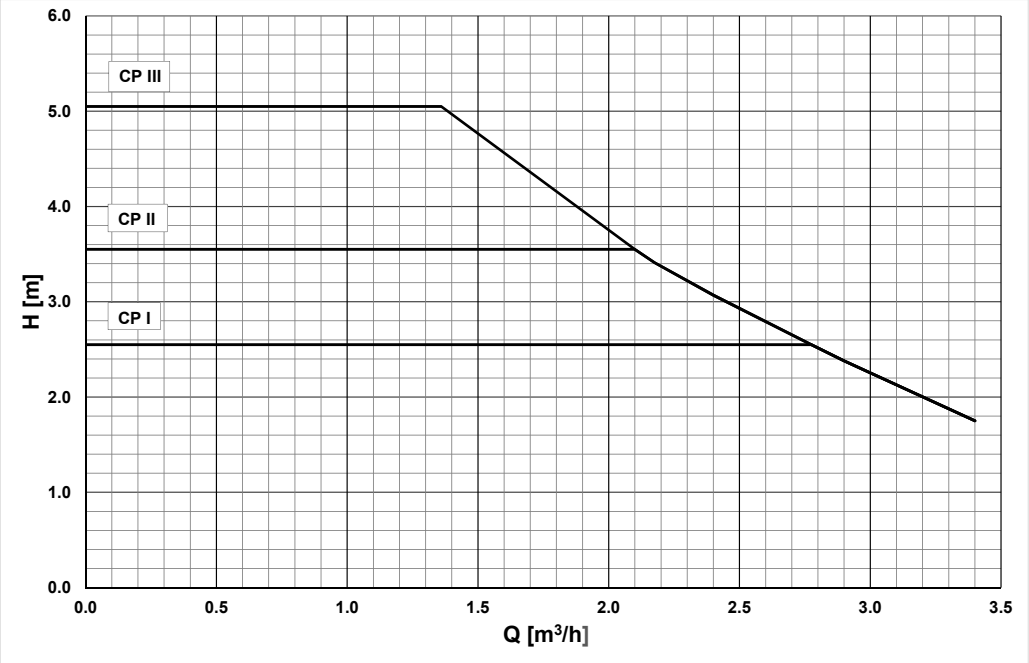
By reducing the required flow, the pump maintains a constant head, so the reduction of pump performance is more gradual than in the PP mode.

Performance curves

RPA 25-8



RPA 25-6



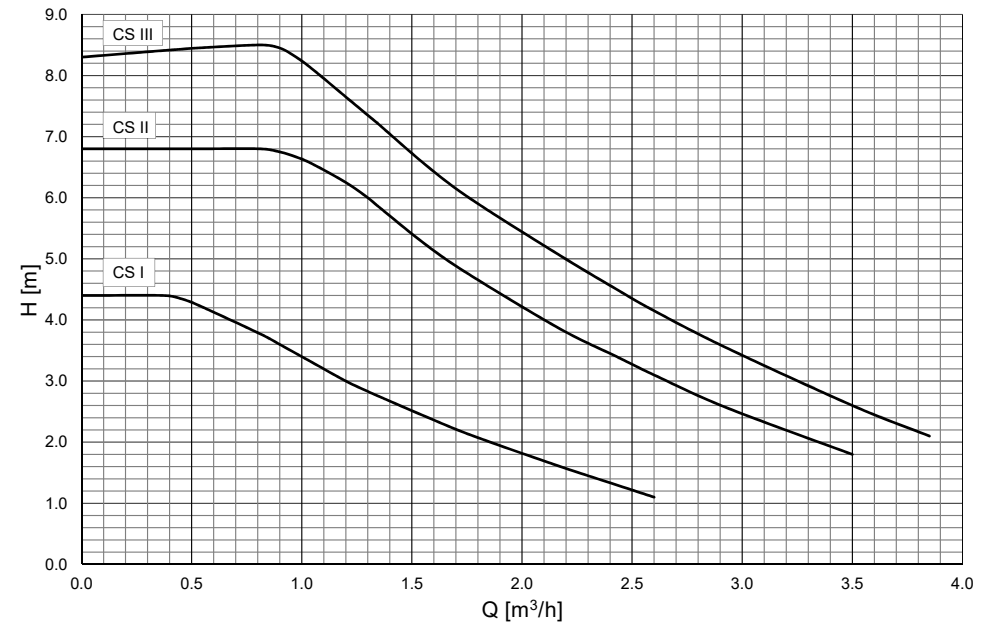
Constant speed CS

The operating mode "constant speed" means that the pump does not adjust its speed in any way depending on the flow rate or head of the hydraulic circuit. The flow rate and head of the pump is therefore completely dependent on the set speed level (I, II, III) and on the setting of the hydraulic circuit. This mode is used where the more economical CP mode is not suitable. This is the same mode that older types of classic circulation pumps had, where the speed mode I, II, III was selected with a switch.

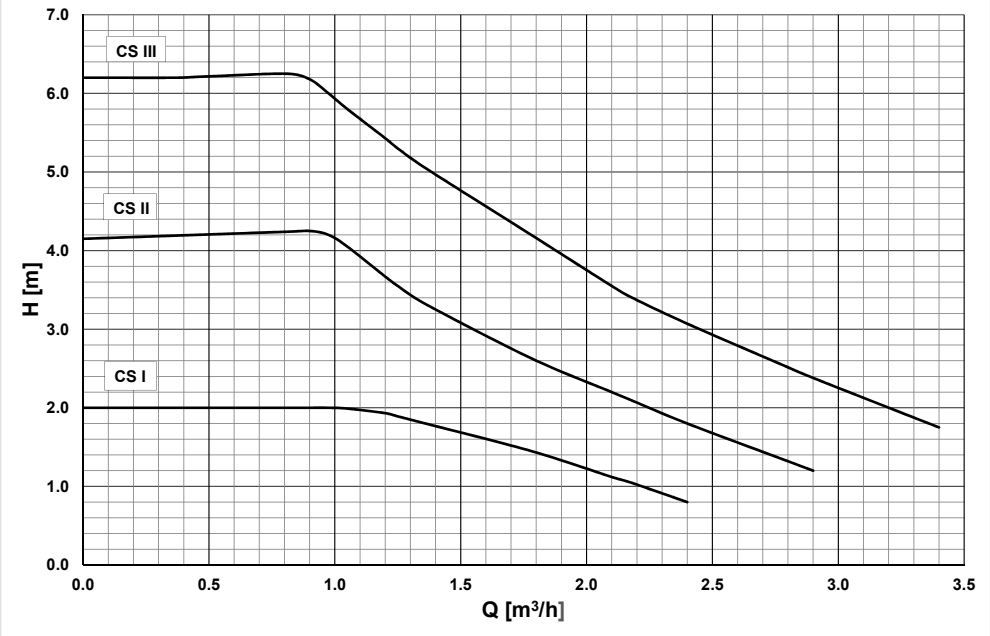
The mode may be suitable e.g. for older types of circuits where the flow rate is regulated by a throttle and the requirement is to maintain it. Furthermore, it can be suitable for solid fuel boilers that are equipped with older types of TSV valves with balancing by means of a manual throttle valve, or in other similar specific cases of a requirement for a constant pumping performance of the pump.

Performance curves

RPA 25-8



RPA 25-6



6. Technical Data

Main Features	
Description	High-efficiency wet-running ON/OFF circulation pump intended for circulation of fluids in heating systems; the pump is equipped with an anti-block motor w. integrated electronic performance control; LED operation indication for easy monitoring; selection from the following modes possible: constant speed I, II, III, PP mode for variable differential pressure or CP for constant differential pressure. The pump is available in two variants, with max. head either 8.5 m or 6.25 m. Its port-to-port length is 180 mm.
Working fluid	Water, water-glycol mixture (max. 1:1) - pH 6.5-8.5. We recommend placing a filter with a mesh size of max. 0.6 mm upstream of the pump - e.g. Magnetfilterball - see the Catalogue for codes.
Codes	type 25-8: **21416** - 180 mm, **21415** - 130 mm type 25-6: **21683** - 180 mm, **21684** - 130 mm

Technical Data	
Fluid working temperature	5–110 °C
Ambient temperature	0–40 °C
Max. relative humidity	95 % non condensing
Max. working pressure	10 bar
Max. head	8.5 m - RPA 25-8 pump 6.3 m - RPA 25-6 pump
Port-to-port length	130 or 180 mm
Connection	G 6/4"
Weight	130 mm – 1.75 kg/180 mm – 1.86 kg

Electric Data	
Power supply	1~230 V, 50/60 Hz
Max. power consumption	65 W - RPA 25-8 pump 45 W - RPA 25-6 pump
Max. current	0.65 A - RPA 25-8 pump 0.42 A - RPA 25-6 pump
IP rating	IP 44
Insulation class	F
Motor protection	not needed (block resistant)

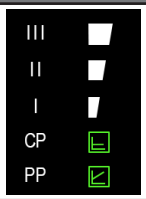
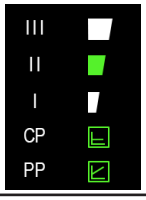
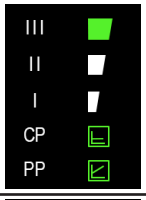
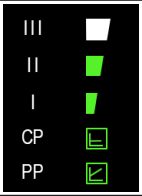
Minimum pressures at suction port to avoid cavitation	
Minimum pressures at suction port	0.5 mH_2O at 85 °C 2.8 mH_2O at 90 °C 11.0 mH_2O at 110 °C

3 m long power supply cable with connector is included in supply.

7. FAULTS, THEIR CAUSE AND TROUBLESHOOTING

FAULT	PROBABLE CAUSE	TROUBLESHOOTING
Pump not running	Loose cable or power interruption	Check the power supply and power cable connection
	Damaged pump control electronics	Replace the pump
	Blocked pump impeller	Disconnect the actuator and clean the pump
Noise in heating system / pump	Low pump suction pressure	Increase the pump suction pressure above the min. pump suction pressure - see chapt. 6
	Air in the system or pump	Vent the system and the pump
Pump is running but no fluid circulation through system	Closed valve in system	Check that valves are open
	Air in the system	Vent the system

Some types of faults are signaled on the pump with LED lights:

FAULT	SIGNAL	PROBABLE CAUSE	TROUBLESHOOTING
Blocked pump impeller		Impurities in the pump	Remove the actuator and clean the pump
Overvoltage or undervoltage		The mains voltage is too high or too low	Check that the power cable is correctly attached and that the mains voltage is correct
Power phase interruption inside the pump		Broken motor winding or other interruption of the power phase inside the pump	Replace the pump
Electrical short circuit inside the pump		Damaged motor winding or other electrical short inside the pump	Replace the pump

If the fault cannot be rectified, contact a specialist technician.

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