



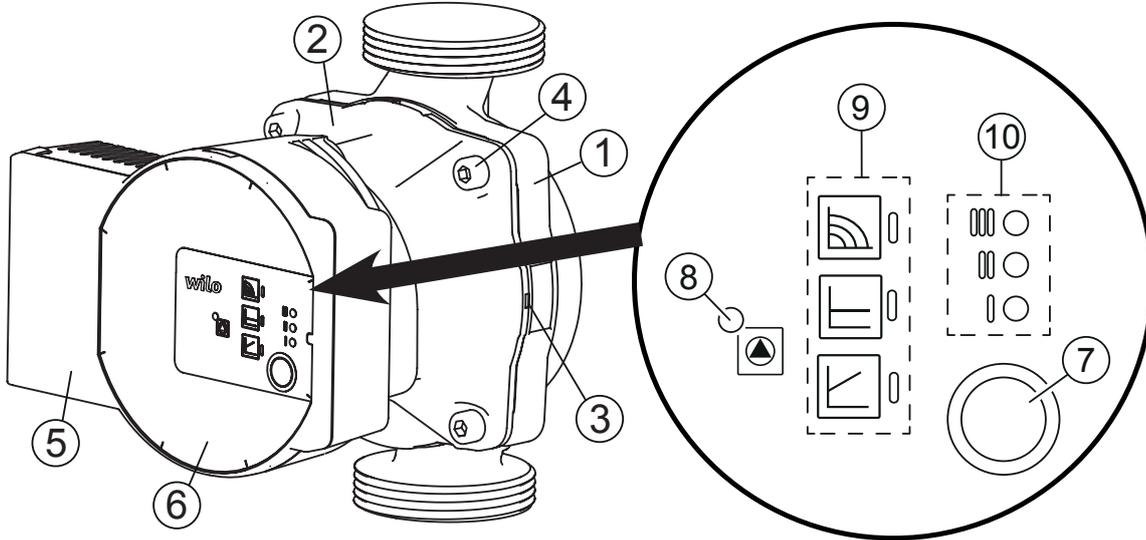
## Installation and Operation Manual Wilo-Para SC Circulation Pump

EN

# 1. General Information

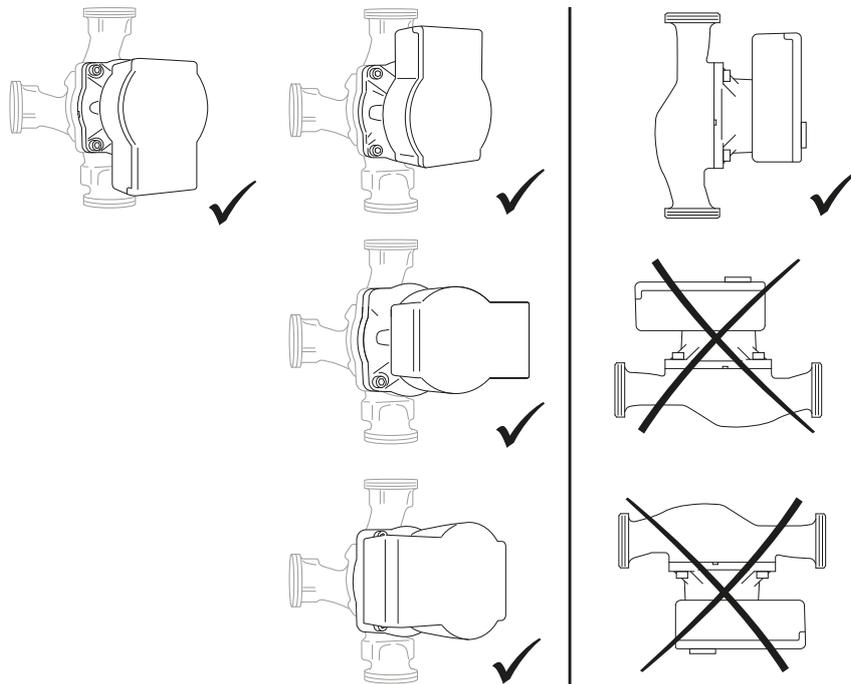
The high efficiency circulation pumps of the PARA SC series are used exclusively for the circulation of liquids in hot water heating systems. Operating the pump in other systems or in systems lacking water, containing air or in unpressurized systems can lead to its rapid destruction.

# 2. Pump Description



- 1 - Pump housing
- 2 - Pump motor
- 3 - Condensate drain openings
- 4 - Pump housing bolts
- 5 - Control module
- 6 - Rating plate
- 7 - Pump adjustment button
- 8 - LED indication of operation/fault
- 9 - Display of the selected pump operating mode
- 10 - Display of the selected pump curve (I, II, III)

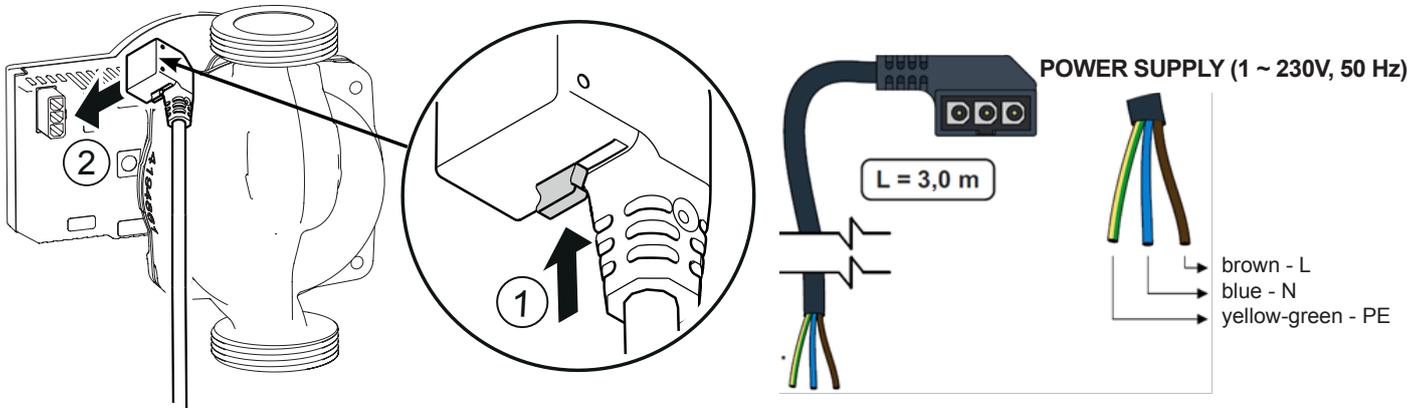
# 3. Permitted and Prohibited Pump Positions



## 4. Pump Wiring

The pump must be wired / disconnected by a qualified person in compliance with EN 50110-1!

Plug the power cable (2) into the connector on the pump so that the connector lock (1) is in the correct position, see Fig.



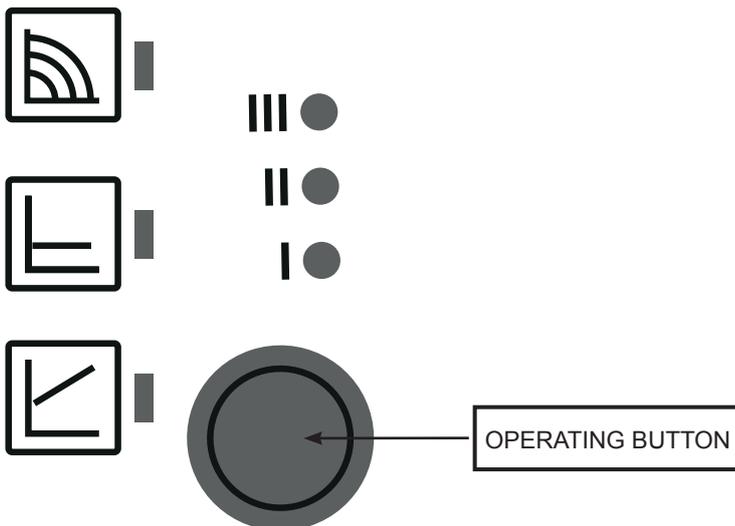
1 Lock

2 Power cable connector

## 5. Pump Control

Constant speed operating mode and pump performance curve III are preset as factory settings for the PARA SC pump. After switching on, the pump runs at the factory setting or at the last setting.

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



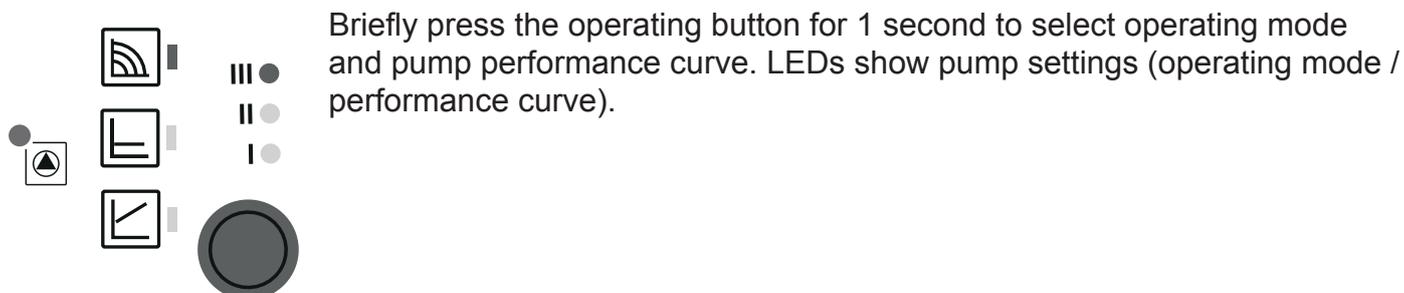
**Briefly press the control button to:**

select the pump operating mode: constant speed,  $\Delta p$ -v or  $\Delta p$ -c and the pump performance curve (I,II,III)

## Press and hold the operating button for the specified time to activate:

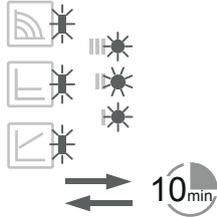
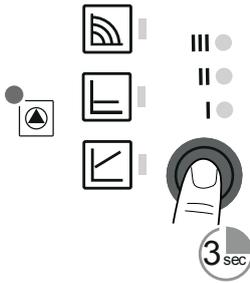
- **Pump venting function** - hold the control button for 3 seconds.
- **Manual restart** - hold the operating button for 5 seconds.
- **Locking the operating button** - hold the button for 8 seconds.
- **Factory setting** - hold the control button for at least 4 seconds and switch off the pump by disconnecting it from the mains.

## SETTING THE PUMP PROFILE



	LED indicators	Operating mode	Performance curve
1		constant speed	II
2		constant speed	I
3		$\Delta p$ -v variable	III
4		$\Delta p$ -v variable	II
5		$\Delta p$ -v variable	I
6		$\Delta p$ -c constant	III
7		$\Delta p$ -c constant	II
8		$\Delta p$ -c constant	I
9		constant speed	III

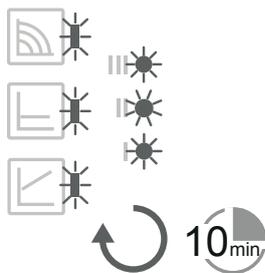
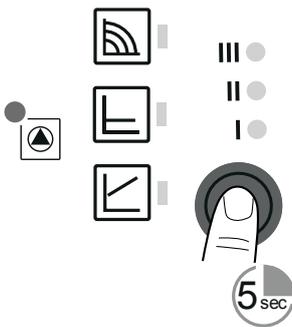
## PUMP VENTING



### If air is present in the pump:

- o Activate the pump venting function by pressing and holding the operating button for 3 sec. The upper and lower rows of LEDs will flash in 1sec interval, see Fig.
- o Pump venting takes 10 minutes, after that the pump returns to current mode. In order to cancel pump venting, press and hold the operating button for 3 sec.

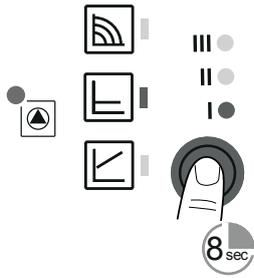
## MANUAL RESTART



If the pump has been inactive for a long time or is blocked, activate the manual restart by holding the operating button for 5 seconds. The LEDs flash sequentially clockwise. The manual restart takes max. 10 minutes before the pump returns to normal operation. To cancel the manual restart, hold down the operating button for 5 seconds.

If the pump does not get unblocked, contact a qualified technician.

## OPERATING BUTTON LOCKING



To lock the operating button, press it for 8 seconds.

The selected setting then starts flashing and cannot be changed. To unlock, hold down the operating button again for 8 seconds and the LEDs will stop flashing.



## FACTORY SETTINGS

To return to the factory settings, press and hold the operating button for at least 4 seconds (all LEDs flash for 1 second) and turn off the pump by unplugging. When switched on again, the pump will run at the factory settings.

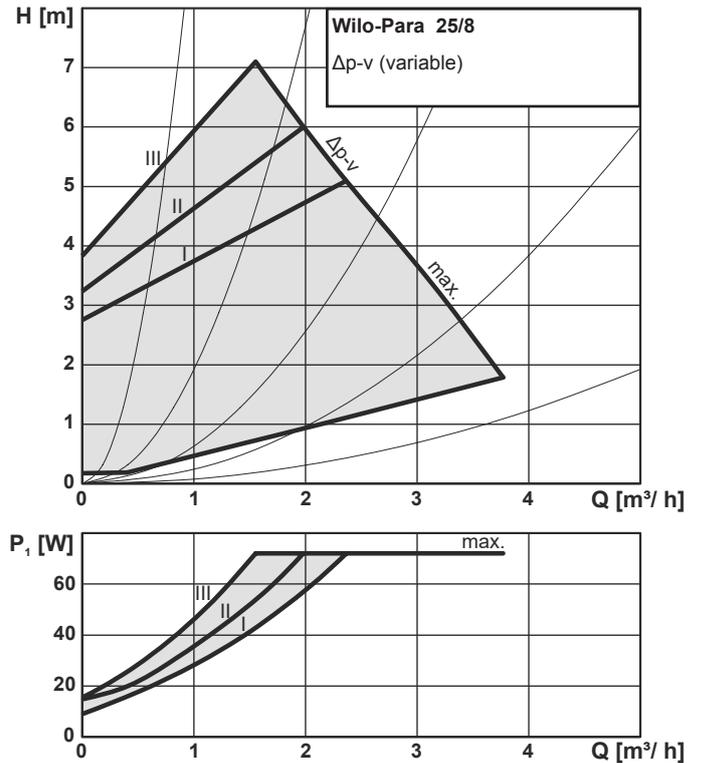
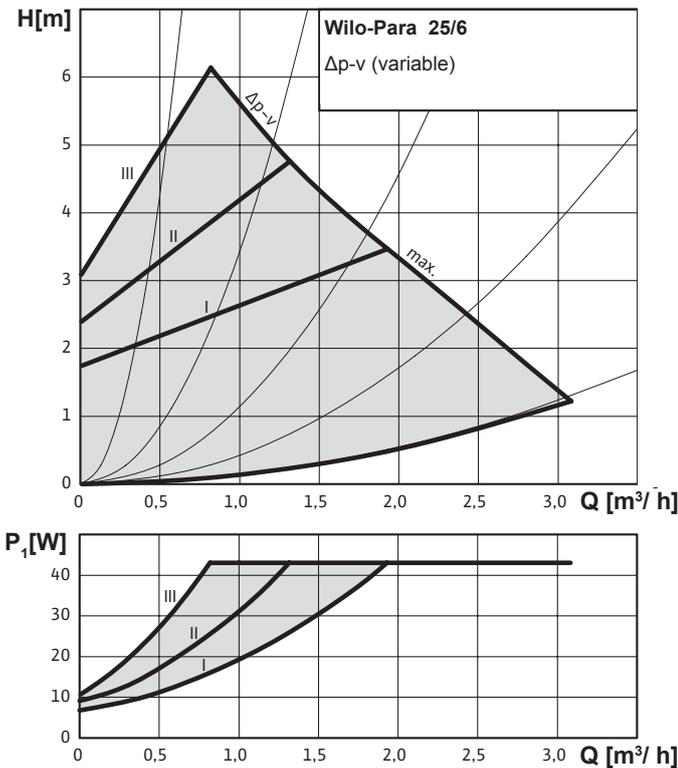
# PUMP OPERATING MODES

## Variable differential pressure $\Delta p-v$

The Variable differential pressure operating mode is recommended in systems where it is advisable to reduce the discharge pressure of the pump in parallel with the decreasing required flow rate. A typical example is a heating circuit with radiators equipped with thermostatic valves, where the selection of this operating mode can reduce the noise from thermostatic valves which is caused by closing too many radiators in the system. This mode, on the other hand, is unsuitable for circuits with heat sources where the reduction of the head and flow can make these sources even inoperable.

By reducing the discharge as the flow decreases, the pump's power consumption and therefore the operating costs are significantly reduced (see graph Q-P). In larger heating circuits and in circuits where there are significant differences in heating demand in separate heating zones, this mode may temporarily cause insufficient heating. In these systems, it may be preferable to switch the pump to  $\Delta p-c$  mode.

### Performance curves



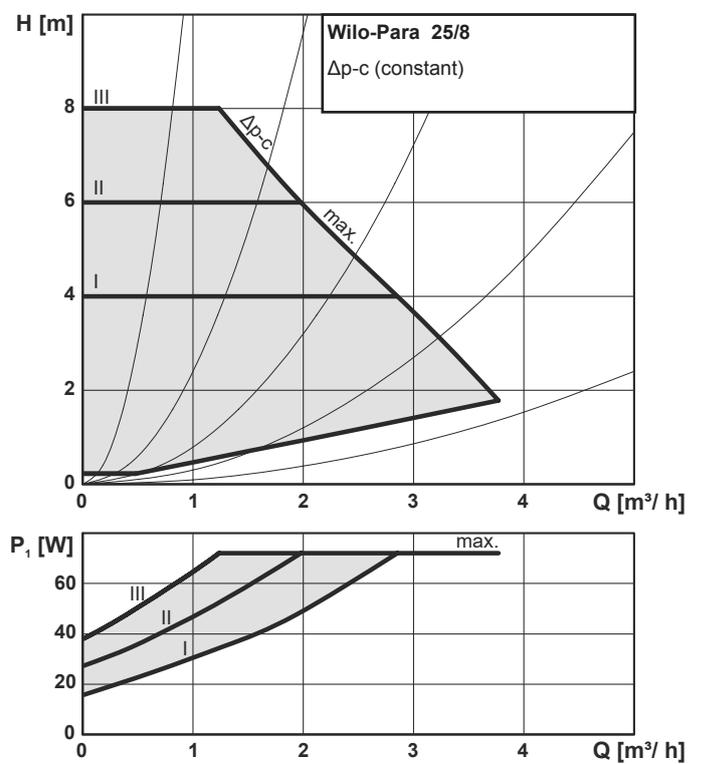
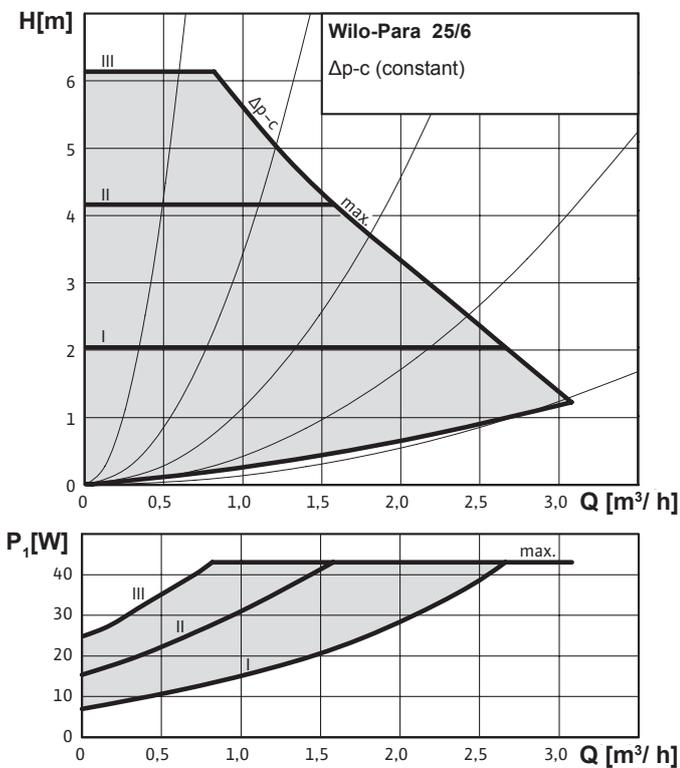
## Constant differential pressure $\Delta p$ -c

The Constant differential pressure (constant delivery head) operating mode is suitable for hydraulic circuits of heat sources (boilers, heat pumps, solar thermal systems etc.), hot water storage tanks, heaters, underfloor heating systems and large heating circuits where the previous mode  $\Delta p$ -v could cause insufficient heating through discharge reduction.

By decreasing the required flow, the pump maintains a constant delivery head, thus the pump power consumption decrease is more gentle than in the  $\Delta p$ -v mode.

The  $\Delta p$ -c mode is not suitable for circuits in which “flow control by throttling” is designed or used - in this mode the pump responds to throttling by increasing the power input and the control is ineffective.

### Performance curves



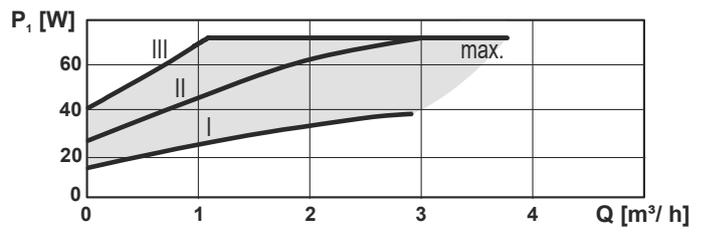
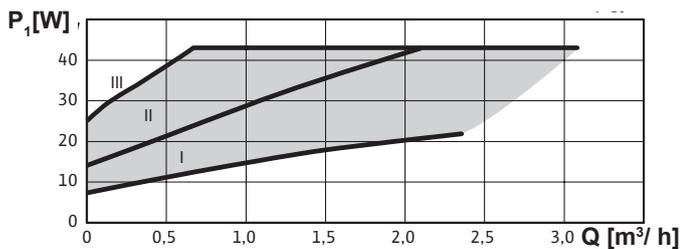
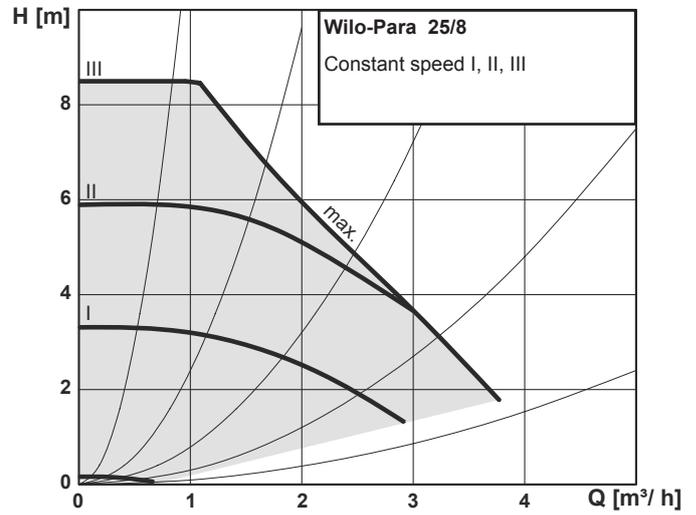
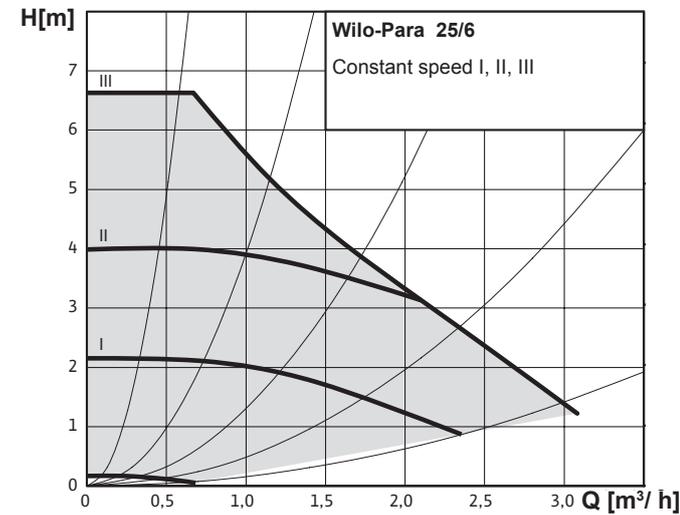


## Constant speed

Constant speed operating mode means that the pump does not adjust its speed in any way depending on the flow rate or discharge of the hydraulic circuit. The flow and discharge of the pump are thus entirely dependent on the speed setting set (I, II, III) and the hydraulic circuit settings. This mode is used when the more economical  $\Delta p$ -c mode is not suitable. This is the same mode as in the older types of classic circulation pumps where the speed I, II, III was set by a selector switch.

For example, this mode may be suitable for older circuit types where flow is regulated by throttling and this method required to be maintained. Furthermore, it may be suitable for solid fuel boilers that are equipped with older types of TSV valves with balancing using a manual throttle valve, or in other similar specific cases of requiring a constant pump performance.

### Performance curves



## 6. Technical Data

	Wilо PARA 25/6 SC	Wilо PARA 25/8 SC
<b>Electric Data</b>		
Power supply	1 ~ 230 V, 50 - 60 Hz	
Power input (min./max.)	3 / 43 W	2 / 75 W
Current (min./max.)	0.04 / 0.44 A	0.03 / 0.66 A
Max. speed	4300 rpm	4800 rpm
Speed control	frequency converter	
Energy Efficiency Index	≤ 0.21 dle EN 16 297/3	
IP rating	IPX4D	
Motor protection	integrated	
<b>Min. pressure at the suction port to avoid cavitation</b>		
Min. pressure at the pump suction port	0.5 mH <sub>2</sub> O at 50 °C	
	4.5 mH <sub>2</sub> O at 95 °C	
<b>Operating Parameters</b>		
Fluid working temperature	0 - 100 °C at 58 °C ambient temperature	
Max. static pressure	10 bar	
Max. head	6.7 m	8.4 m

## 7. FAULTS, THEIR REASONS AND REMOVAL

 The LED light signals a defect. The pump will switch off (depending on the defect type) and try to restart.

LED signals	State description and possible fault reasons
 GREEN IS LIT	1 - pump is running in trouble-free operation
 RED IS LIT	1 - rotor is blocked 2 - electric motor winding defect
 FLASHING RED	1 - power supply lower/higher than 230 V 2 - electric short circuit in pump 3 - pump overheated
 FLASHING RED AND GREEN	1 - unforced fluid circulation through the pump 2 - pump speed lower than desired 3 - air in pump

FAULTS	REASONS	TROUBLESHOOTING
The pump is not running despite the power supply turned on	Faulty electrical fuse	Check the fuses
	The pump is not energized	Remove the power interruption
The pump makes noises	Cavitation due to insufficient inlet pressure	Increase the pressure within the permitted range
		Check the head adjustment, or set a lower head
The building is not warming up	Heat output of heating surfaces too low	Increase the desired value
		Set the control method to $\Delta p$ -c

**If the fault cannot be rectified, contact a qualified technician.**

