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CSE MIX W iPWM 1 F

Installation and Operation Manual
CSE MIX W iPWM 1 F PUMP STATION with mixing valve

EN

CSE MIX W iPWM 1 F

1. Introduction

CSE MIX W iPWM 1 F pump station is designed to be installed in heating circuits where it provides heating water mixing and circulation through the circuit. Its typical application is in mixed heating circuits in buildings where it provides circulation and mixing of heating water to a desired temperature, or for solid-fuel boiler circuits where it provides circulation and mixing to a min. heating water temperature as a protection against low-temperature corrosion. Actuator of the mixing valve is controlled by an external controller through 3-point control with 230V outputs. The circulation pump is switched by an external controller, the pump speed is controlled by a PWM signal. When the PWM signal is disconnected, the pump runs at its maximum speed. The controller is not included in supply. The pump station is designed to be installed directly on the pipe, with 100 mm min. distance of the pipe axis from a wall.

2. Pump Station Description

The pump station consists of a Wilo PARA 25/8 iPWM1 pump including a power cable and a PWM control cable, a 3-way mixing valve with actuator incl. a power cable, a ball valve and insulation.

Main Features	
Application	control of flow to a mixed heating circuit by external controller or control of a solid fuel boiler return line temperature; pump speed controlled by PWM signal; with no PWM signal the pump runs at max. speed
Description	consists of WILO PARA 25/8 iPWM1 pump, LK 840 three-way mixing valve with AVC actuator and insulation
Working fluid	water; water/glycol mixture (max. 1:1) or water-glycerine mixture (max. 2:1)
Installation	flow pipe to heating circuit / solid fuel boiler return pipe, min. pipe centre distance from wall is 100 mm
Code	**18128**

Technical Data of CSE MIX W iPWM 1 F pump station	
Fluid working temperature	5 - 100 °C
Max. working pressure	6 bar
Ambient temperature	5 - 40 °C
Max. relative humidity	95 %, non condensing
Power supply	230 V, 50 Hz
Insulation material	EPP RG 60 g/l
Overall dimensions	305 x 195 x 135 mm
Total weight	3.1 kg
Connections	3 x G1“ F

3. Installation options

The pump station comes with a mixing valve in the left-hand position (see Fig. 1).
If this installation position is convenient, there is no need to make any adjustments. When needed, the mixing valve can be rotated to the right-hand position (see Fig. 2). After the valve is turned by 180° and the fittings tightened, the actuator lock shall be unscrewed and screwed into the opening at the other valve side (see Fig. 2) and the position of the valve member and actuator changed (see the paragraph and pictures below).

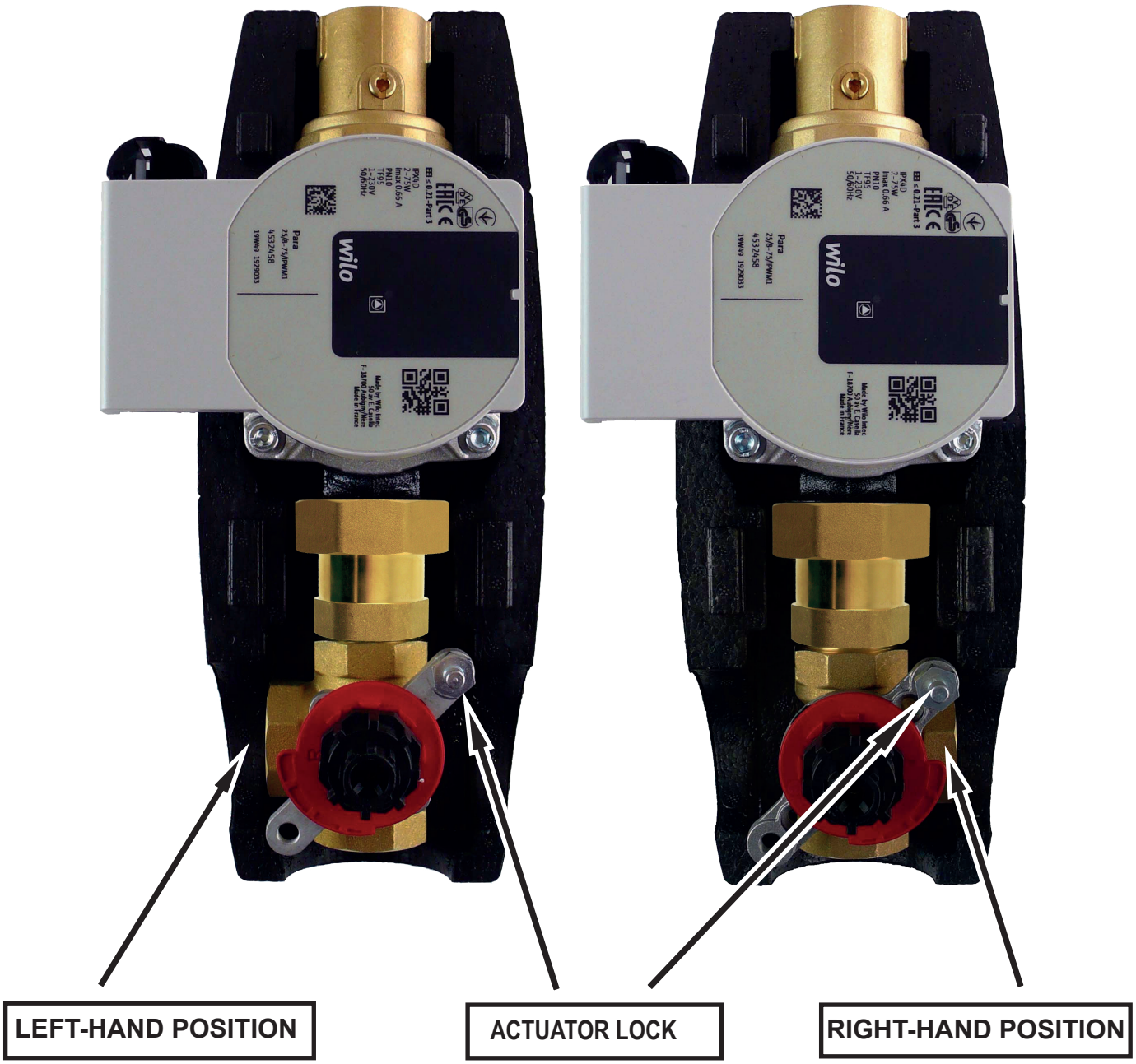


Fig. 1

Fig. 2

Actuator adjustment

Having turned the valve to the right hand position, turn the D-shaft in such a manner that the valve member is between inlets 1 and 3, turn the plastic red wheel into its proper position (see Fig. 3), and finally fit the plastic adapter (see Fig. 4).
The flat edge of the shaft and the arrow on the plastic adapter are located at the same side as the valve member!

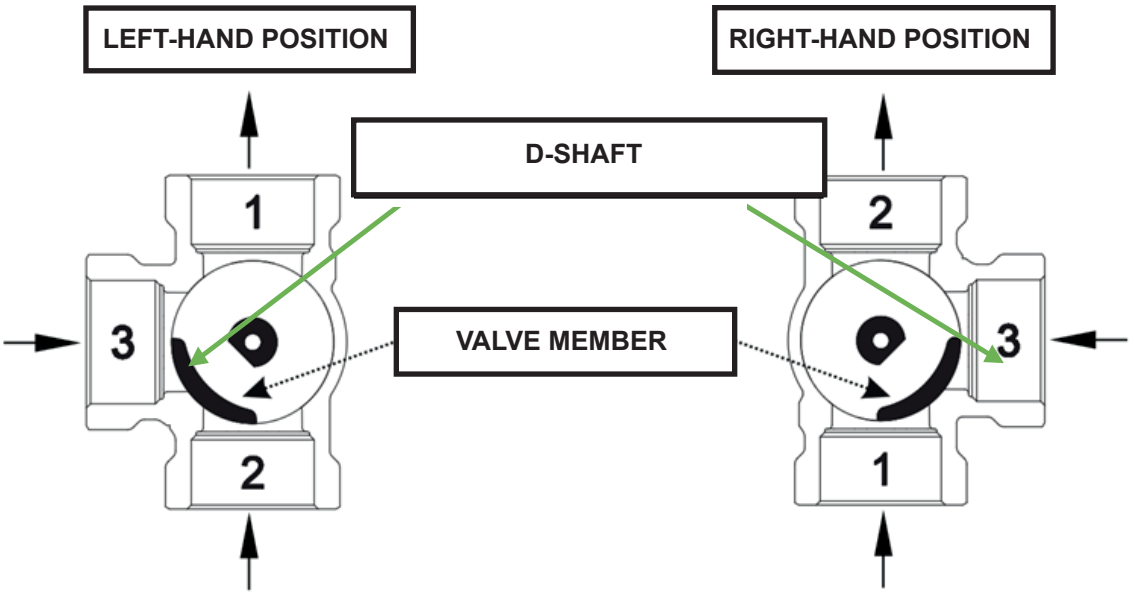


Fig. 3

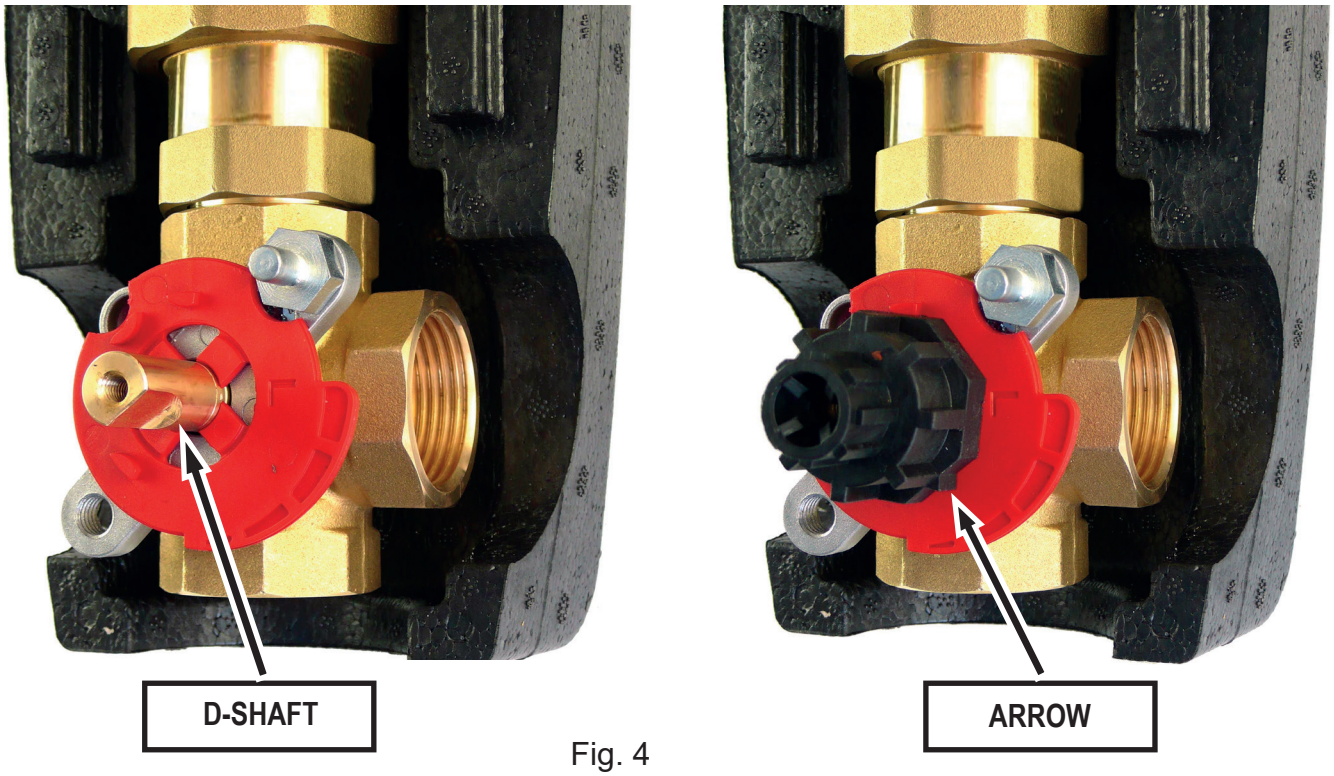
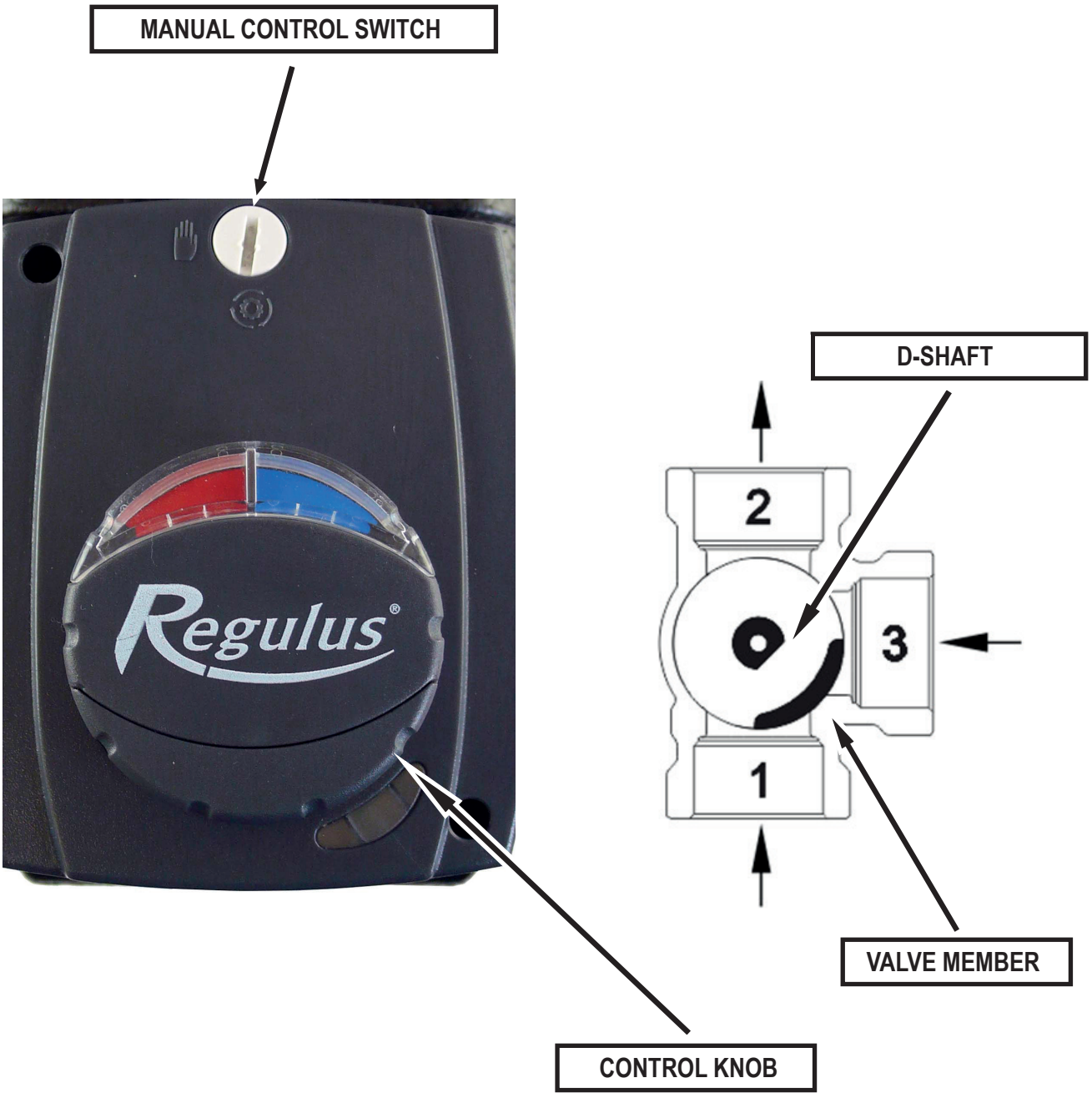


Fig. 4

Prior to fitting the actuator on the plastic adapter, switch it to manual control, set the control knob to the middle of its control range and then fit the actuator onto the adapter already on the valve. The control knob shall be able to turn freely both to left and right by 45°. When turned to the right by 45°, the path 1 is closed, and when turned to the left by 45° the path 3 is closed. Having performed the check, turn the knob back to automatic control.



After the actuator is fitted, the correct position of the round indication label (hot/cold, red/blue) shall be checked as to the right function and position of the valve.
In case of a vertical installation in central heating, the red mark on the label shall be on the right-hand side for left-hand installations (see Fig. 5) and on the left-hand side for right-hand installations (see Fig. 6).

Fig. 5

Fig. 6

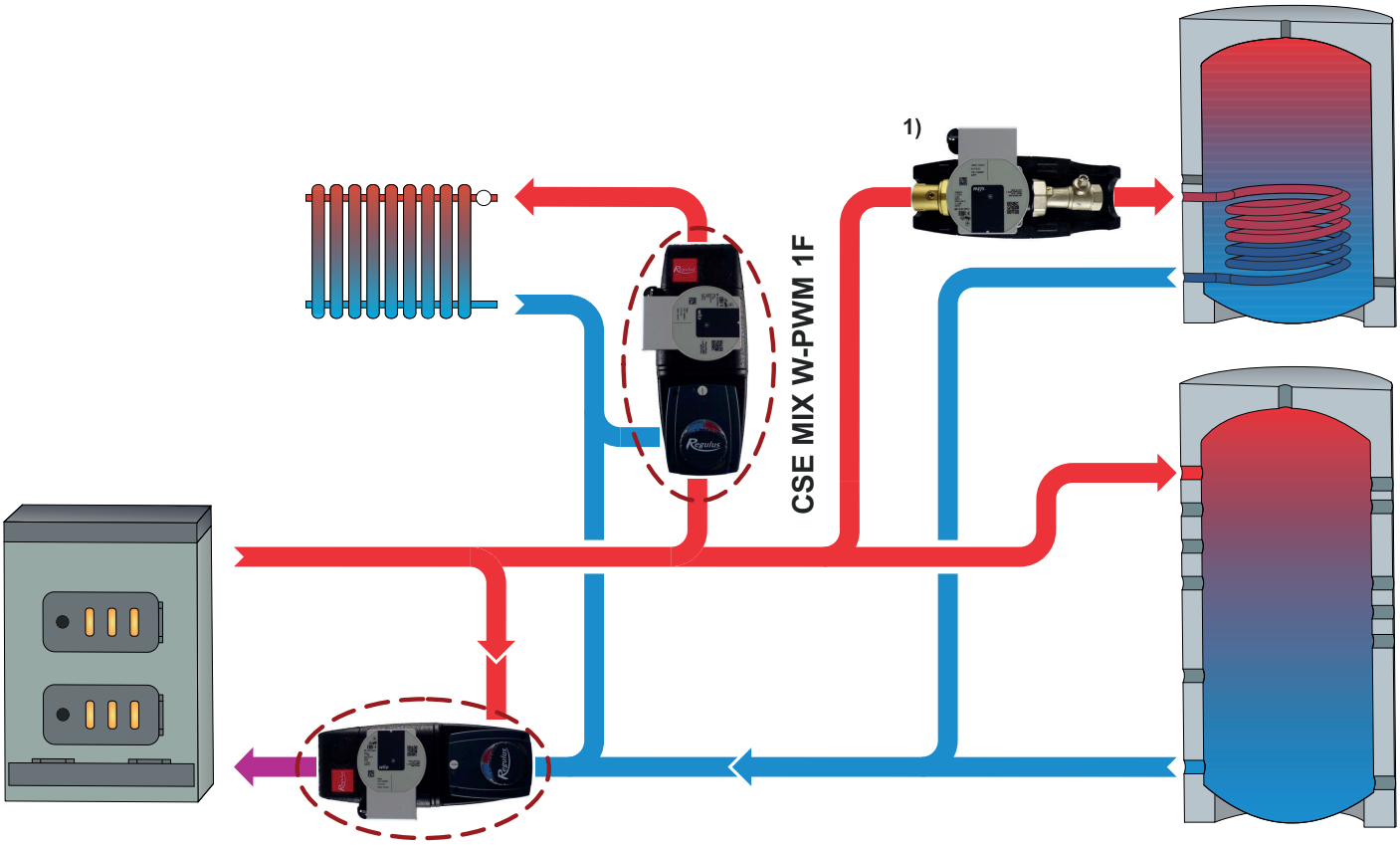
In case of a horizontal installation with a solid fuel boiler, the red mark on the label shall be on the right-hand side for right-hand installations (boiler to the left from the pump station, see Fig. 7) and on the left-hand side for left-hand installations (boiler to the right from the pump station, see Fig. 8).

Fig. 7

Fig. 8

4. Pump Station Connection Diagram

The pump station may be installed in either horizontal or vertical position.



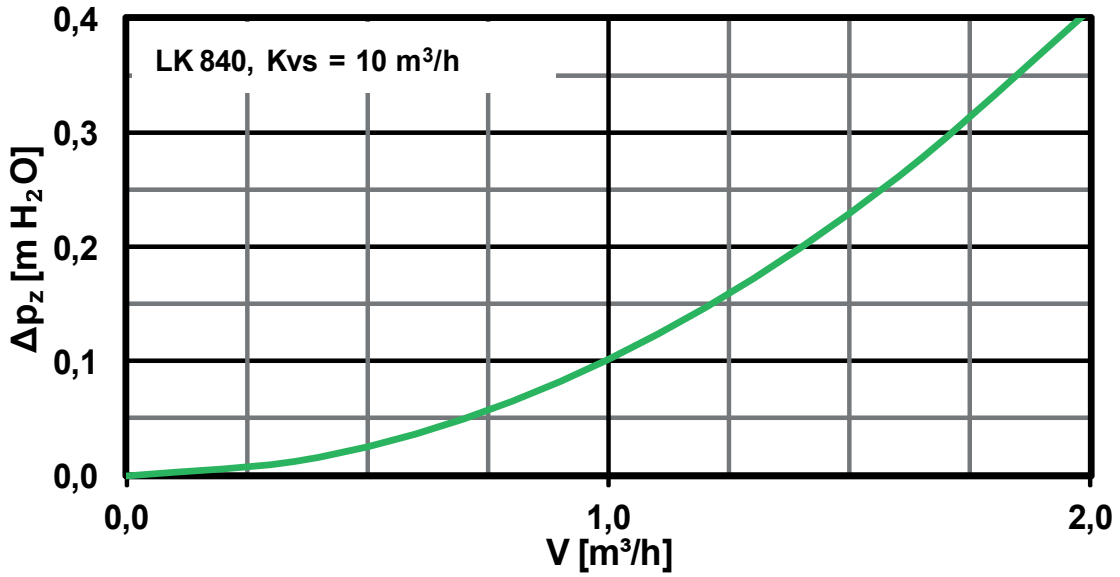
1) CSE OTS ZV W PWM - code 18127

5. LK Mixing Valve

Technical data	
Working temperature	5 - 110 °C (120 °C in short term)
Max. working pressure	10 bar
Ambient working temperature	5 - 60 °C
Valve K_{vs}	10.0 m^3/h
Max. pressure difference	5 m H_2O
Leak rate	< 1% K_{vs} at 5 m H_2O pressure difference
Connections	3 x G 1“ F

Materials	
Valve housing, spindle, member	brass
Seal	EPDM

Valve pressure drop graph

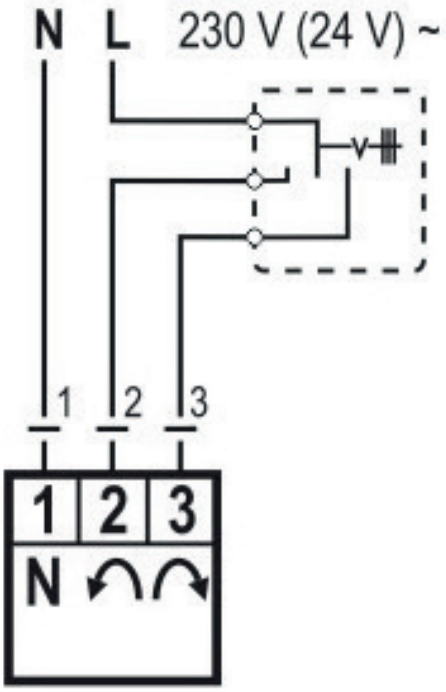


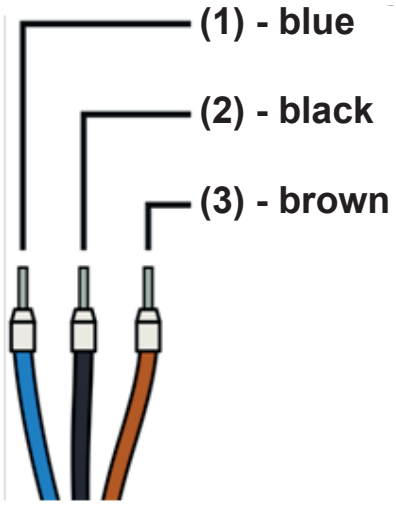
6. Mixing Valve Actuator

Technical data	
Torque	5 Nm
Angle of rotation	90°
Shift time	120 s
Control	3-point
Auxiliary switch	none
Power supply	230 V AC
Max. power input	2.5 VA
IP rating	IP42
Protection class	II by EN 60730-1
Ambient temperature	0 - 40 °C
Cable (cross section area - length)	3 x 0.5 mm² - 2 m

actuator wiring

- marking 1, 2, 3 located on the cables



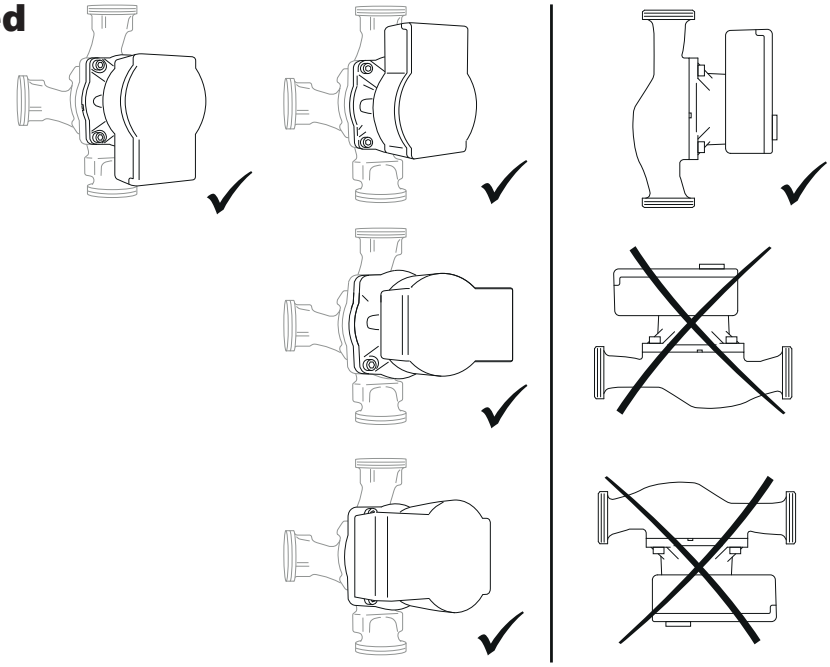


7. Wilo Para iPWM1 Pump

7.1. General info

The Wilo Para 25/8 iPWM1 is a wet running circulation pump. The pump speed is controlled by the PWM signal. When the PWM signal is disconnected, the pump runs at its maximum speed. The operating status and possible faults of the pump are indicated by LEDs directly on the pump. The pump is able to send the current flowrate electronically to an external controller. The controller must be equipped with an iPWM read input and a flow calculation function. The high efficiency circulation pumps of the PARA iPWM1 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.

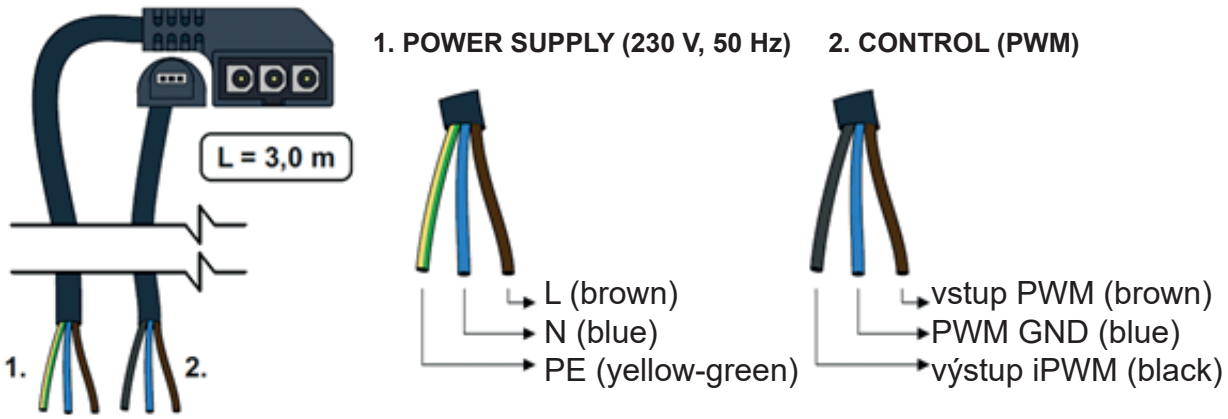
7.2. Permitted and Prohibited Pump Positions



7.3. Pump Wiring

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

Wilo PARA 25/8 iPWM1 pump wiring



7.4. Technical Data

Wilo PARA 25/8 iPWM1	
Electric Data	
Power supply	230 V, 50 Hz
Power input (min./max.)	2 / 75 W
Current (min./max.)	0.03 / 0.66 A
Max. speed	4800 rpm
Speed control	frequency converter
Energy Efficiency Index	≤ 0.21 by EN 16 297/3
IP rating	IPX4D
Motor protection	integrated
Min. pressure at the suction port to avoid cavitation	
Min. pressure at the suction port	0.5 mH_2O at 50 °C
	4.5 mH_2O at 95 °C
Min. pressure at the suction port	
Fluid working temperature	0 - 95 °C
Max. static pressure	10 bar
Max. head	8.4 m

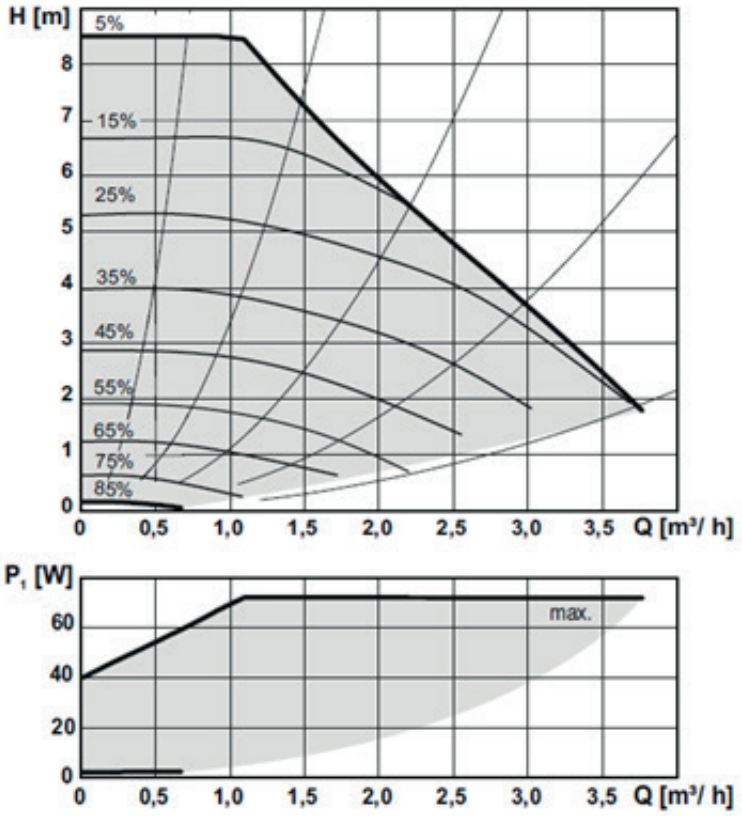
7.5. FAULTS AND THEIR REASONS

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

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

7.6. Performace curves for Wilo Para 25/8 iPWM1 pump



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