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RGMAT E W 5/4-iPWM

# Installation and Operation Manual RegulusRGMAT E W 5/4-iPWM LOAD UNIT with PARA 25/8 for heating systems

EN

RGMAT E W 5/4-iPWM

# 1. Introduction

RegulusRGMAT E W 5/4-iPWM Load Unit makes boiler installation quicker as it contains all components needed for boiler circuit circulation and for boiler protection against low-temperature corrosion. It is designed to be installed directly on return piping. The distance of pipe axis from a wall shall be at least 100 mm to enable insulation removal if needed.

This Load Unit is intended for hydronic fireplaces and solid-fuel boilers.

## 2. RGMAT E W-iPWM Load Unit Description

RGMAT E W 5/4-PWM keeps the temperature in a hydraulic boiler circuit above the flue gas condensation temperatures, which prevents so called low-temperature corrosion of the boiler combustion chamber. This limits condensation and boiler tarring significantly, the efficiency of fuel combustion increases and service life of the boiler is extended.

Main Features	
Application	maintaining a boiler (fireplace) min. inlet temperature by means of a load valve
Description	consists of PARA 25/8 iPWM1 pump, fittings, TSV3B valve w. nut (automatic bypass balancing), thermometer and insulation
Function	Load Unit for solid-fuel boilers and fireplaces; it prevents low-temperature corrosion and boiler (fireplace) fouling
Flow rate measurement	the current flow rate is sent by the pump electronically to the external controller *
Working fluid	water; water/glycol mixture (max. 1:1) or water-glycerine mixture (max. 2:1)
Installation	on return piping, min. distance of the pipe axis from a wall is 100 mm

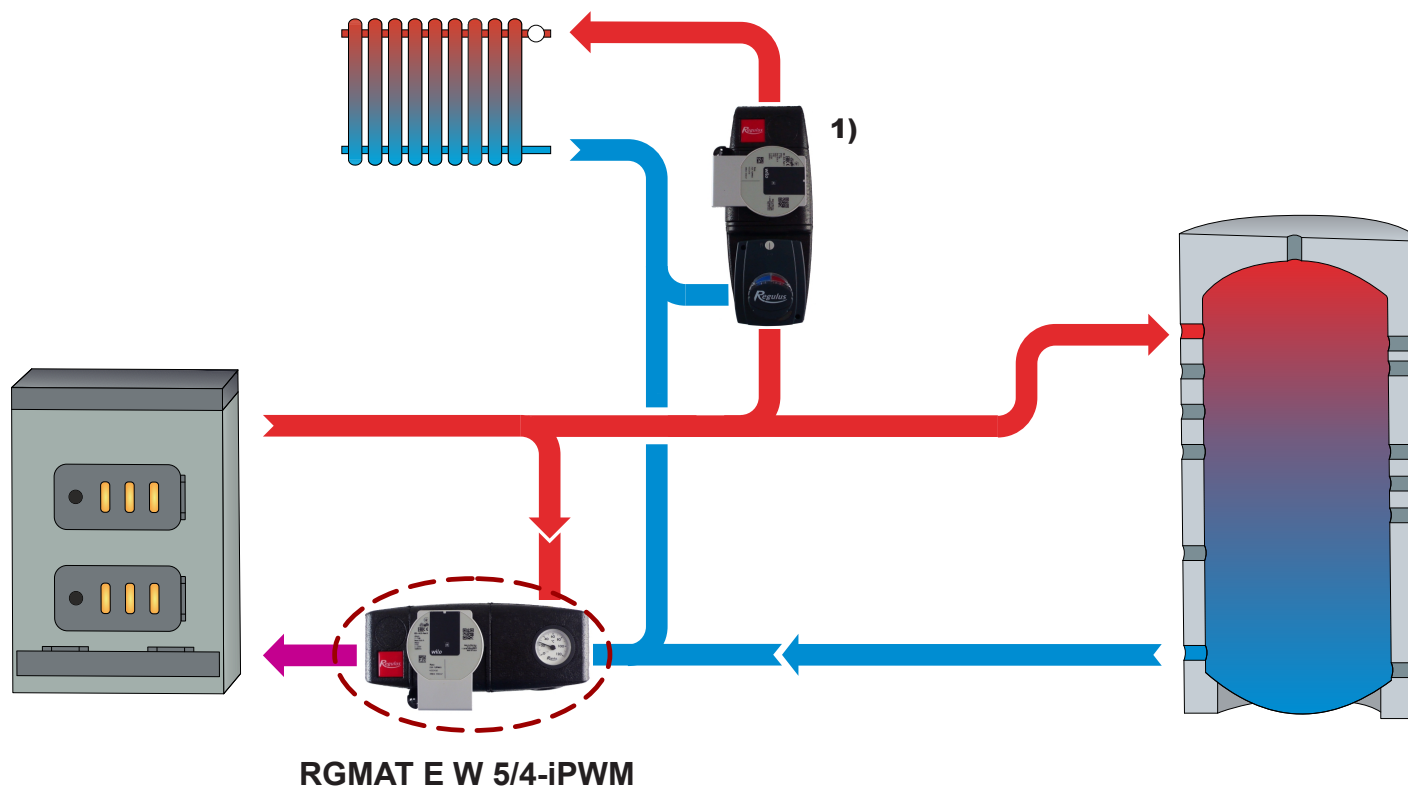
*\*The controller must be equipped with an iPWM read input and a flow rate calculation function.*

Codes	max. boiler output
18129 for 65°C opening temperature	max. 40 kW
18132 for 55°C opening temperature	max. 55 kW

Data for RGMAT E W 5/4-iPWM Pump Station	
Fluid working temperature	0 - 95 °C
Max. working pressure	6 bar
Max. ambient temperature	58 °C
Power supply	230 V, 50 Hz
Insulation material	EPP RG 60 g/l
Overall dimensions	305 x 170 x 135 mm
Total weight	4.2 kg
Connections	3x G 5/4" F

Accessories	
Bypass with non-return valve	code 16 139

### 3. RGMAT E W 5/4-iPWM Connection Diagram



1) CSE MIX W 1F (16 219) or CSE MIX W 1M (16 082) or CSE MIX W 5/4F (16215)  
or CSE MIX W 1F 7,5 (16 372)

#### Install the Load Unit respecting the following instructions:

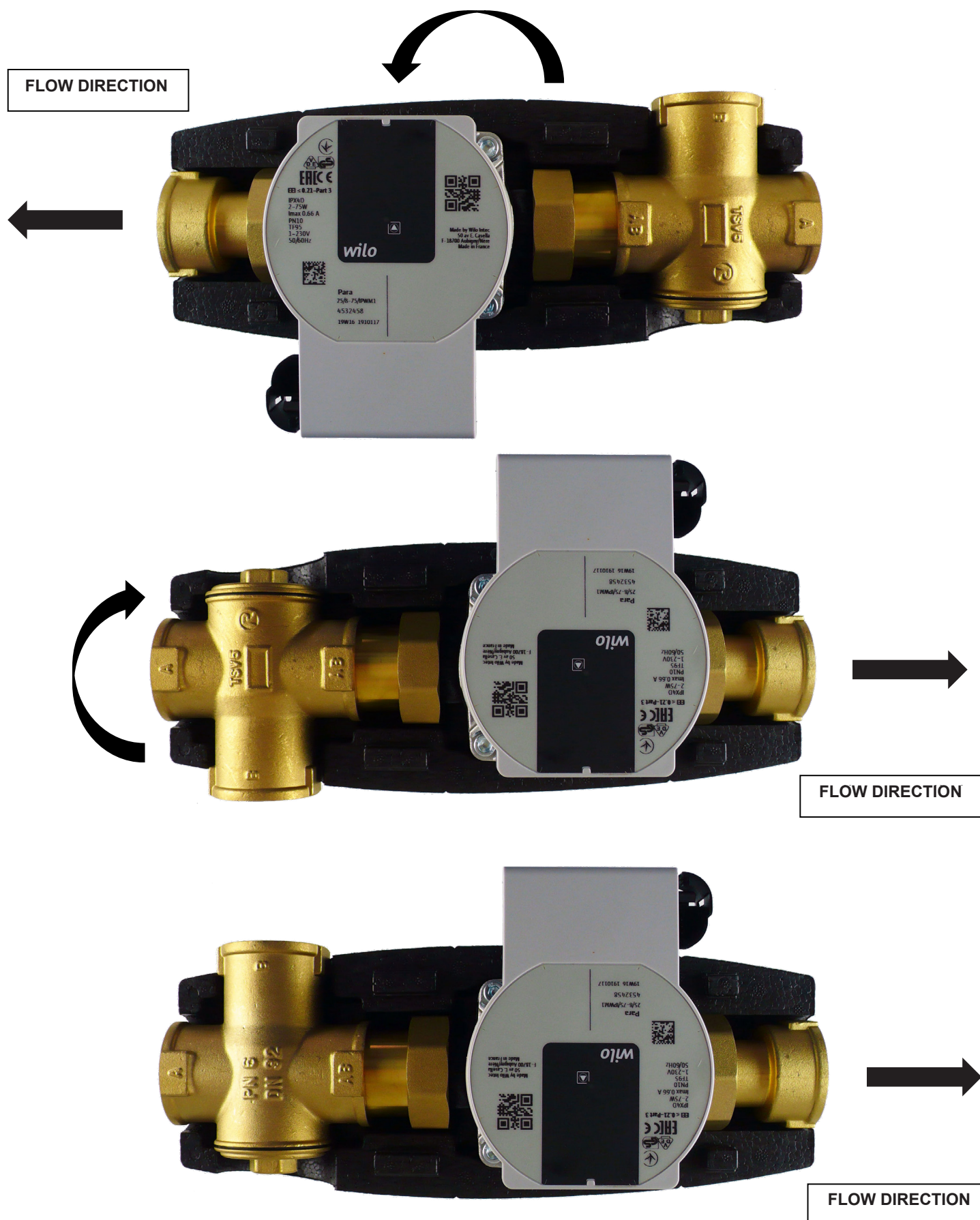
Connect the Load Unit outlet marked **AB** to the piping entering the boiler. Connect the return line from the heating system to the **A** inlet, and the outlet pipe from the boiler to the **B** inlet via a T-piece. Take care to install shut-off valves where necessary to avoid draining the whole system for valve cleaning or replacing the thermostatic element.

When the connecting pipes are not arranged or sloped properly, the thermostatic valve may get blocked by air inside. This may hinder or even disable its operation.

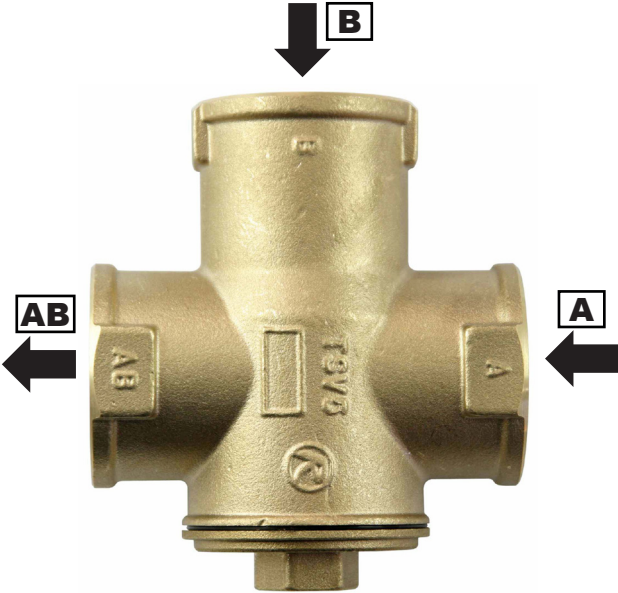
Always respect valid rules and boiler manufacturer's data during installation.

## 4. Installation options

This Load Unit comes in the version for horizontal installation to the right of a boiler. However, it can be installed also into vertical piping or horizontally to the left of a boiler. When being installed horizontally to the left of a boiler, the Load Unit needs to be turned by 180° and the TSV5B valve turned as shown in the pics below.



5. Function description of TSV5B valve

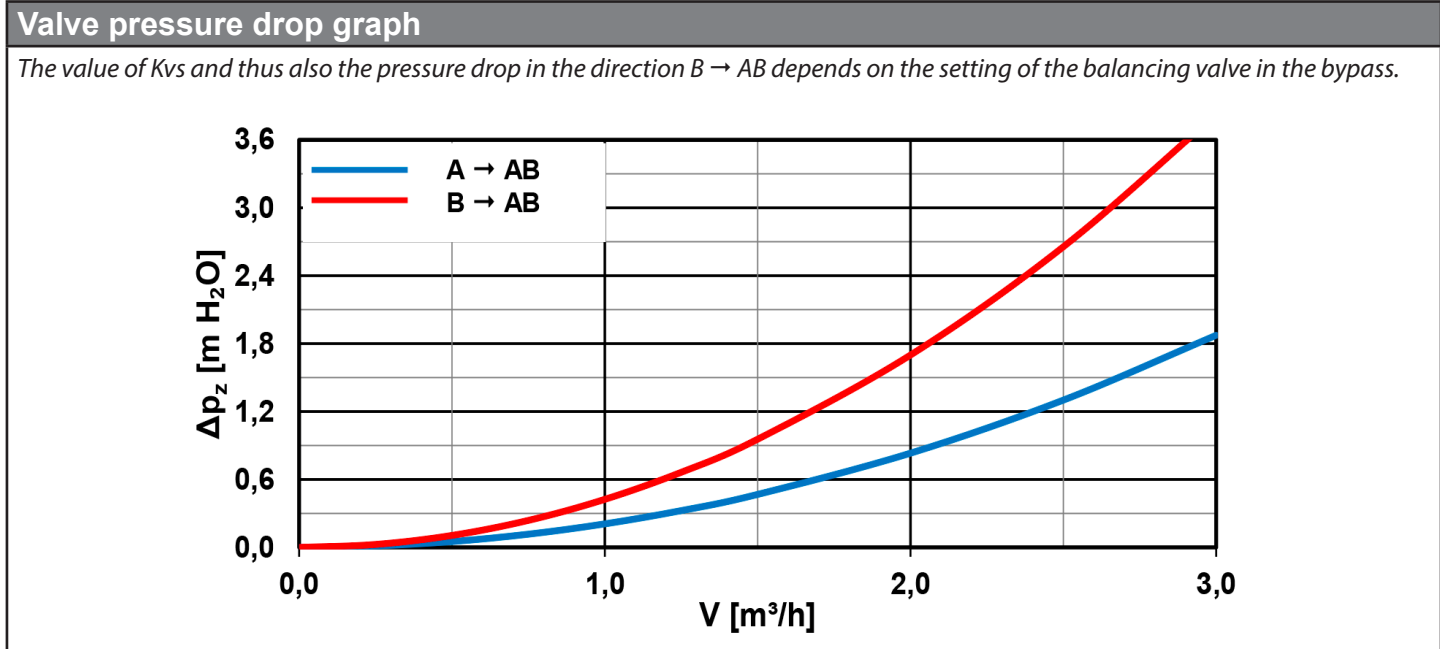


The TSV5B load valve is fitted with an integrated thermostatic insert that will close the **A** inlet (from a heating system), if the return water temperature to the boiler (**AB** outlet) is lower than the opening one. As soon as the opening temperature is reached, the thermostat starts opening the **A** inlet slowly and mixing the cold return water with the hot water from the **B** inlet (boiler flow) with the aim to reach the opening temperature (**AB** outlet) in the return pipe.

At the same time, the valve closes the **B** inlet, limiting so the hot water flow coming from the bypass till its complete tight closure. Thanks to this, no balancing valve is needed. The load valve is made of brass, element and plug seals are in EPDM, cone seal is made of NBR.

Technical Data	
Max. working temperature	95 °C
Max. working pressure	6 bar
Valve opening temperature	depending on the thermostatic element
Control range	$t_{\text{valve opening}} + 5\text{ °C}$
Valve Kvs (A→AB direction)	7.0 m³/h
Valve Kvs (B→AB direction)	4.9 m³/h
Connections	3x G 5/4" F
Nominal inner diameter	DN 32

Materials	
Housing, cone and plug	brass
Spring	stainless steel
Element and plug seals	EPDM
Cone seal	NBR





## 6. Wilo-Para iPWM1 Pump

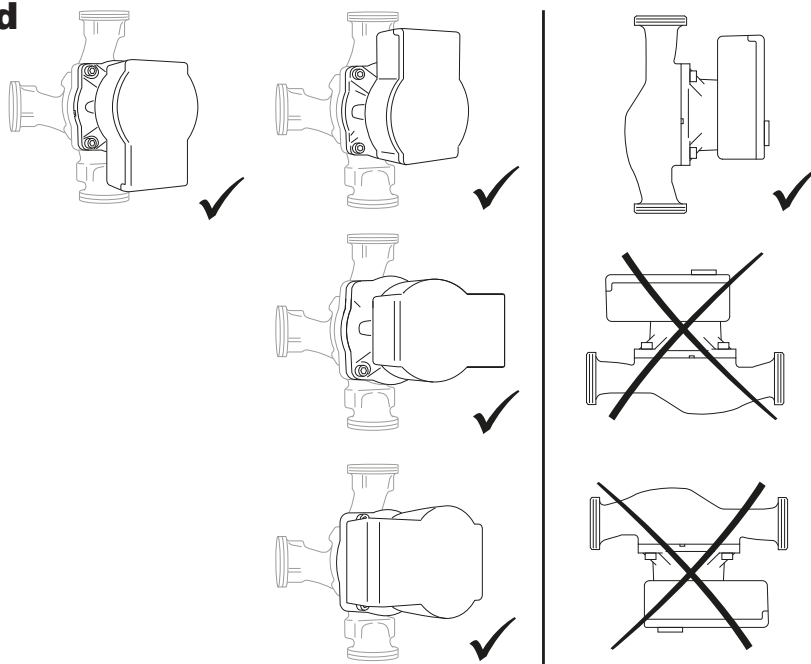
### 6.1. General Info



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.

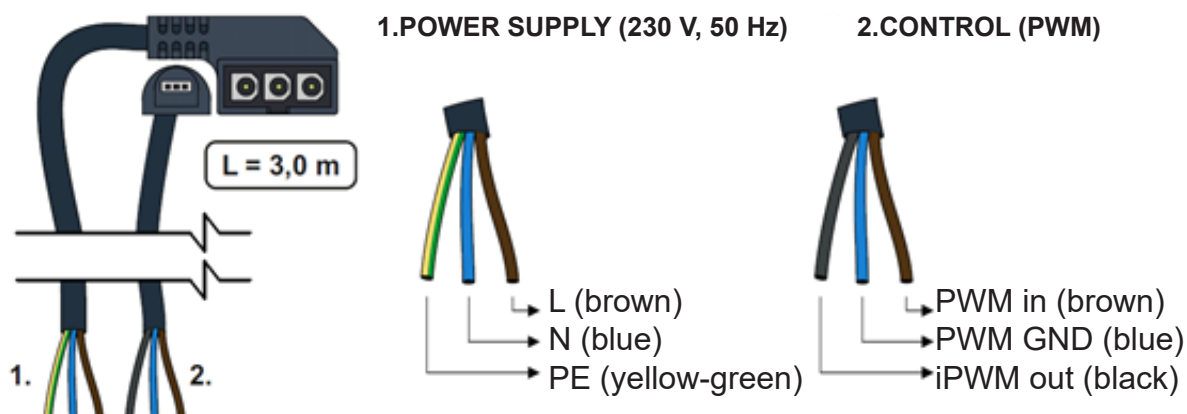
### 6.2. Permitted and Prohibited Pump Positions



### 6.3. 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







## 6.4. 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 <sub>2</sub> O at 50 °C
	4.5 mH <sub>2</sub> O at 95 °C
Operating Parameters	
Fluid working temperature	0 - 95 °C
Max. static pressure	10 bar
Max. head	8.4 m

## 6.5. 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
	FLASHING RED	2 - electric motor winding defect
		1 - power supply lower/higher than 230 V
		2 - electric short circuit in pump
	FLASHING RED AND GREEN	3 - pump overheated
		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.

## 6.6. Performace curves for Wilo Para 25/8 iPWM1 pump

