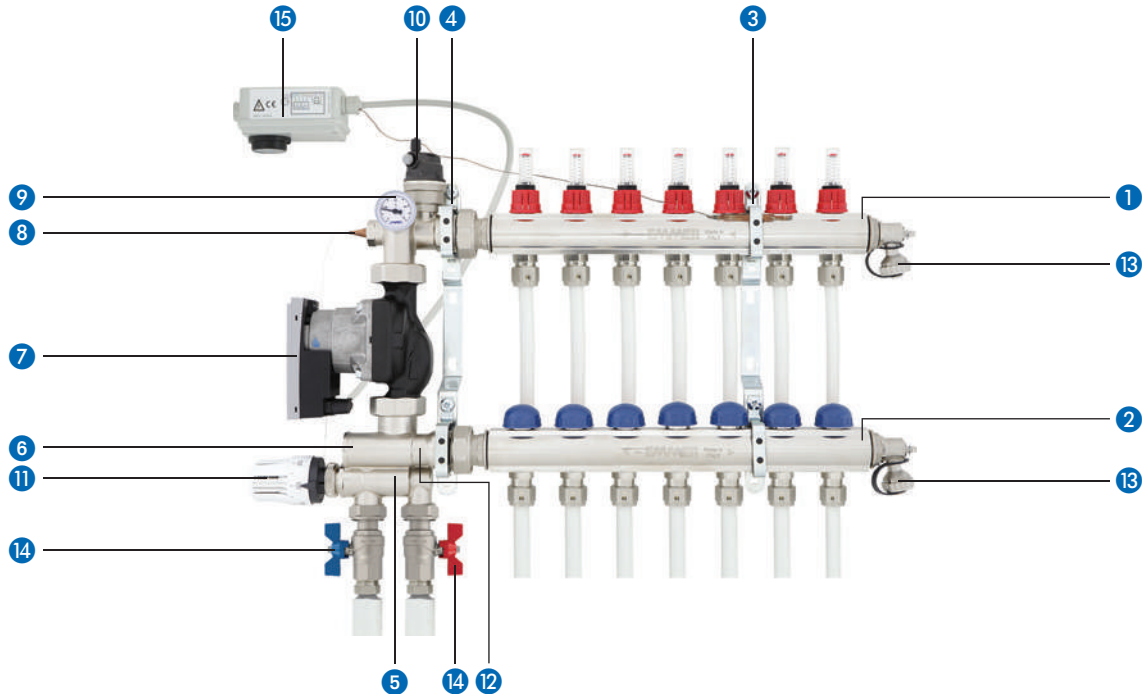


# TM3

It is a regulation and distribution unit for low temperature heating systems. The mixing system with fixed-point regulation and thermostatic head reacts to any variation in the flow and heat emission and keeps the temperature of the fluid of the radiant panel system constant.

The unit comes complete with an electronic circulator, a thermostatic head with remote sensor for fixed-point regulation and brackets for wall-mounting or for mounting inside a metal cabinet.



## Construction

- 1 Flow bar for underfloor system with flow meters
- 2 Return bar for the underfloor heating system designed for mounting electrothermic heads
- 3 Bracket to attach manifolds
- 4 Bracket to attach mixing unit
- 5 Mixing valve with M30x1.5 connection for the mounting of a thermostatic head with immersion probe
- 6 By-pass calibration valve
- 7 Electronic circulator Wilo Yonos Para RS 25/6 wired (triple-pole cable L = 1000 mm)
- 8 Space for Flow temperature probe
- 9 Control thermometer from 0 to 80°C
- 10 Automatic air exhaust valve 1/2"
- 11 Thermostatic head with immersion probe from 20 to 65 °C for fixed-point control
- 12 Integrated non-return valve
- 13 Filling taps with swivel connection and safety cap
- 14 Ball-valve kit (not supplied as standard)
- 15 Electrical box with safety thermostat for the wiring of the low temperature circulator, or 6T base unit for electrothermic heads (not supplied as standard)

## Operation

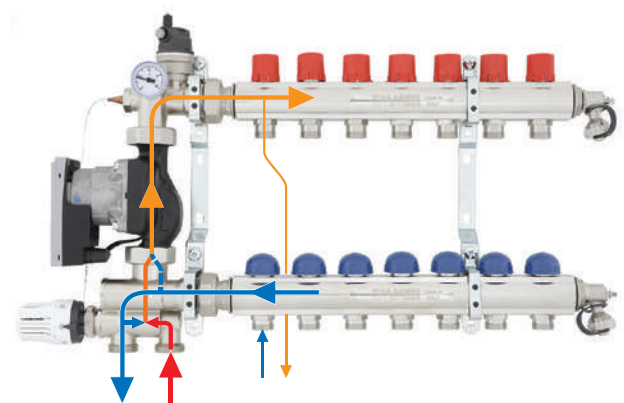
The mixing system with fixed-point regulation (via thermostatic head) reacts to any variation in the flow and heat emission and keeps the temperature of the fluid of the underfloor heating system constant.

### Operation in mixing with use of the adjustable by-pass

Using the mixing system, the temperature of the supply water of the underfloor heating system (low temperature mixed water) is regulated at a fixed point, by means of the application on the mixing valve of a thermostatic head with a remote temperature sensor.

The temperature sensor with capillary tubing (8) inserted in the valve box detects the temperature of the fluid downstream of the circulator, keeping it at the value set on the knob of the head (from 20 to 65 °C).

By acting on the calibration and by-pass valve (6), it is possible to adjust the by-pass flow of the underfloor heating system, thus ensuring that the  $\Delta T$  of the original design is reached.



## Use

The TM3 mixing units can operate with zero head, connected to an open manifold (hydraulic separator) or to a storage tank (puffer).  
The electronic circulator Wilo Yonos Para RS 25/6 keeps the differential pressure at the ends of the circuits of the underfloor heating system constant, with respect to the variation of the load required (opening/closing of one or more circuits).

### Warning

In accordance with UNI EN 1264-4, there must be a safety device (thermostat) that blocks the supply of the low temperature zone over certain limits.

This function is integrated in the accessories of the Electrical box with safety thermostat and 6T base unit.

## Technical specifications

### Operating conditions and performance data

Max temperature on primary circuit: 90 °C

Maximum operating pressure: 6 bar

$\Delta p$  max on primary circuit: 1 bar

Temperature interval on secondary circuit: 20÷65 °C

Thermal power exchangeable with  $\Delta T=7^\circ\text{C}$  and  $\Delta p=0.25$  bar on the secondary circuit:

- 10 kW with by-pass in position 0 (by-pass completely closed)
- 12.5 kW with by-pass in position 5 (by-pass completely open)

### Mixing kit materials

Brass UNI EN 12168 CW614N

Brass UNI EN 12165 CW617N

O-ring seals EPDM 70 Sh

### Materials of manifolds

Manifolds obtained from drawn bar in brass UNI EN 12168 CW617

Manifold seals in EPDM 70 Sh

### Manifolds

Size: 1"

End thread: G 1" female

Derivations: 24x19 male, distance 50 mm

### Regulation unit

Connections to primary: G 1 1/2 male, flat seal, distance 50 mm

Connections to secondary: G 1 1/2 male, O-Ring seal, distance 210 mm

### Electronic circulator Wilo Yonos Para RS 25/6

Connections: G 1 1/2 male, distance 130 mm

Variable speed of rotation: 800÷4250 rpm

Usable fluids:

- heating and cooling water
- water and glycol, max 1:1

Maximum head: 6.2 m

Maximum capacity: 3.3 m<sup>3</sup>/h

Maximum water temperature:

- 95 °C (with ambient temperature 57 °C)
- 90 °C (with ambient temperature 59 °C)
- 70 °C (with ambient temperature 70 °C)

Power supply: 230 Vac, 50/60 Hz

Protection class: IPX 4D

Insulation class: F

Rated power of motor: 37 W

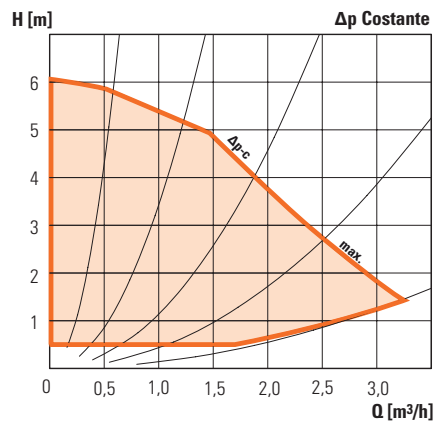
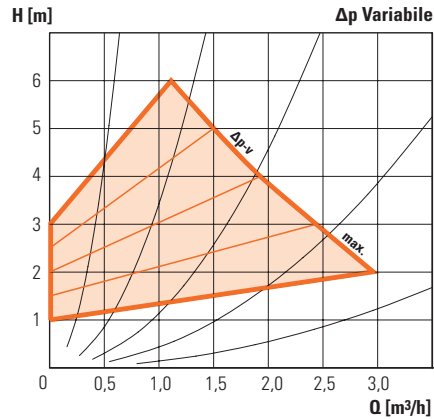
Absorbed power: 3÷45 W

Absorbed current: 0.03÷0.44 A

Conformity:

- Directive ErP
- EN 61800-3
- EN 61600-6-3/EN 61600-6-4
- EN 61600-6-2/EN 61600-6-1

### Diagram of hydraulic performance of Wilo Yonos Para RS 25/6 circulator

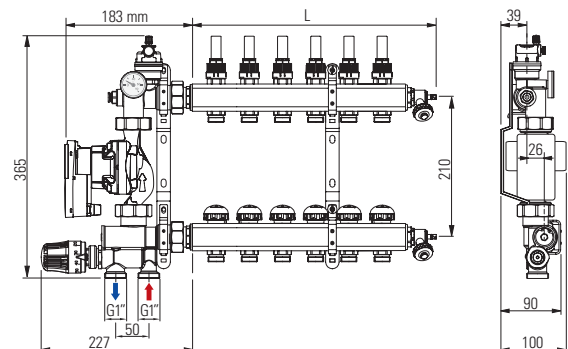


## The Range

Pre-assembled low temperature regulation and distribution unit (from 2 to 12 ways), with manifolds equipped with flow meters (4 l/min), complete with a thermostatic head with immersion probe.

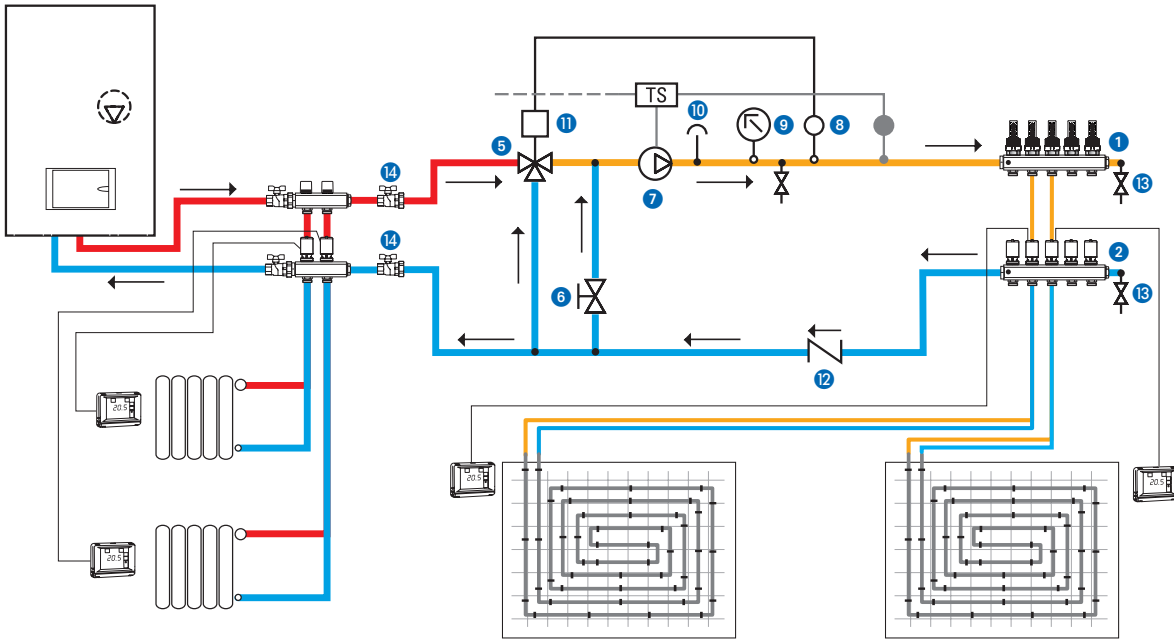


## Dimensions



N of ways	2	3	4	5	6	7	8	9	10	11	12
L [mm]	160	210	260	310	360	410	460	510	560	610	660

## Hydraulic diagram



Description of components: see introduction photos

## Accessories

Electrical box with safety thermostat



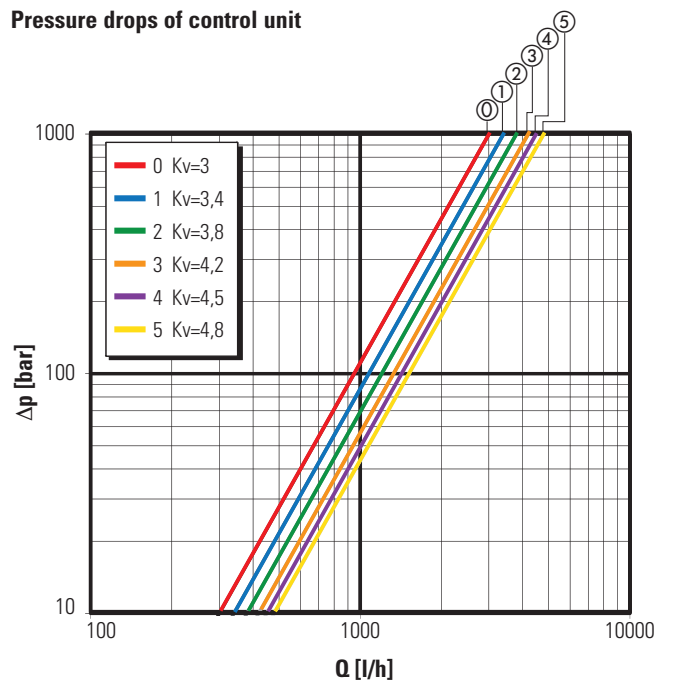
Base unit 6T



Electrothermic head



Pressure drops of control unit



Kit Progress ball valves F<sup>3/4</sup>"



Auxiliary fitting kit for high temperature branches



Complete with: lockshields with double micrometric control on the supply, connecting fittings and mounting bracket. Install in box H850.

①...⑤ Position adjusting valve and by-pass  
Performance detected at -2K

## Examples of dimensioning

### Fixed point control

Design information:

**P** = power to be supplied to the underfloor system = 6000W

**Tip** = Flow temperature of the underfloor system = 40°C

**Tc** = temperature of water from boiler = 70°C

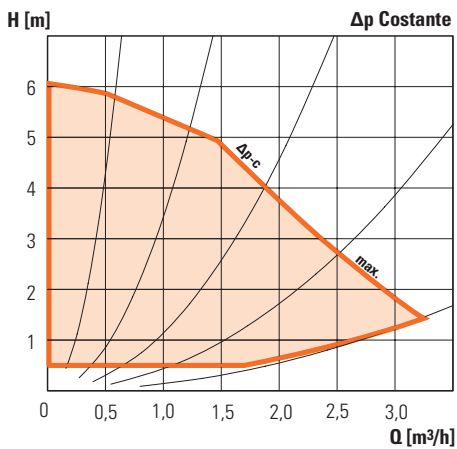
$\Delta T_{ip}$  = temperature difference of original design of underfloor system = 5°C

**Tr** = return temperature of underfloor heating system =  $T_{ip} - \Delta T_{ip} = 40 - 5 = 35^\circ\text{C}$

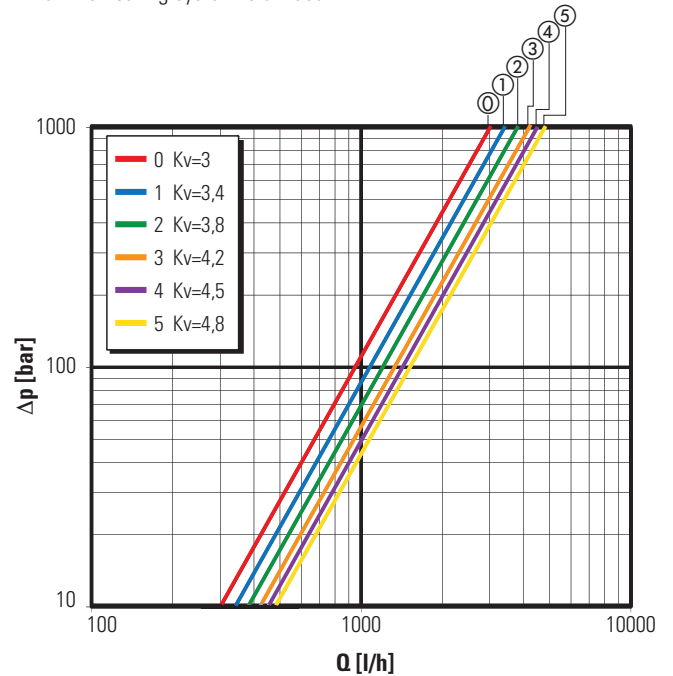
**Qip** = flow of underfloor heating system =  $(P[W] \times 0.86) / (\Delta T_{ip}) = (6000 \times 0.86) / 5 = 1032 \text{ l/h}$

$\Delta p_{\text{valv}}$  = pressure drop of regulation valve

### Circulator Wilo Yonos Para RS 25/6 diagram



In the diagram below, a flow rate of 1032 l/h corresponds to 6 different curves corresponding to the different settings of the by-pass (ref. ⑥ introduction photo): the lower the opening of the by-pass the lower the reaction times of the mixing valves with respect to the temperature variations and the faster the required Flow temperature is reached; on the other hand, the opening of the by-pass reduces the drops increasing the flow of the system and reducing, at the same time, the oscillations of the Flow temperature due to the opening-closing of the various zones in which the heating system is divided.



①...⑤ Position adjusting valve and by-pass  
Performance detected at -2K

By setting the by-pass to position 1, a flow rate of 1032 l/h corresponds to a pressure drop  $\Delta p_{\text{valv}} = 90 \text{ mbar}$  (0.09 bar).

Assumed that  $\Delta p_{\text{pav}}$  = pressure drop of underfloor heating system = 0.25 bar adjust the power of the Wilo Yonos PARA circulator so as to ensure a flow rate of 1032 l/h (1.03 m³/h) and a head  $H = \Delta p_{\text{valv}} + \Delta p_{\text{pav}} = 0.09 + 0.25 = 0.34 \text{ bar}$  ( $\approx 3.4 \text{ m CA}$ ).

