

### Description

The mixing and circulation groups are used to adjust distribution and temperature of the heat carrying fluid in multi-storey and/or multi-zone systems.

They are ideal for underfloor heating systems and/or high temperature heating systems. The groups R001 can be installed on a special "inlet-outlet" distribution manifold (art. 785), after the hydraulic separator.

The groups are supplied with insulation shells and fastening brackets.

#### Group advantages:

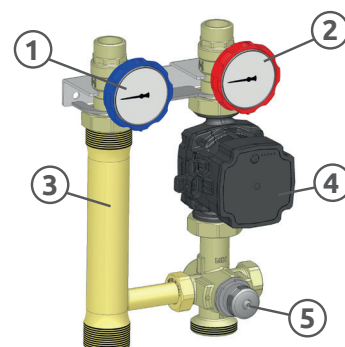
- Right/Left adaptability.
- Manual/automatic servomotor functioning.
- Compatible with every 125mm axis manifold (With shell type 93).



### Components List

#### Mixing group with fixed point regulation unit complete with:

1. Ball valve G3/4" or G 1"M with blue hand-wheel for connection to the return pipes, thermometer 0-120°C and incorporated check valve.
2. Ball valve G3/4" or G 1"M with red hand-wheel and thermometer 0-120°C for connection to the return pipes.
3. Steel pipe with ends threaded G1"1/2M.
4. 3-Speed circulating unit or variable speed electronic circulating unit, class "A", with union connection G1"1/2 and 130 mm. distance between centers.
5. Fixed point thermostatic mixing valve in the 20-50 °C version for underfloor heating or 30-70 °C for radiator heating.



### Technical features

#### TECHNICAL DATA:

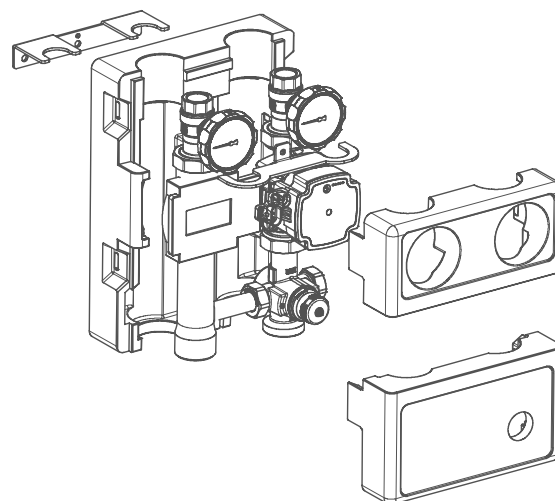
|                                |                                  |
|--------------------------------|----------------------------------|
| Fluids used:                   | Water and glycol based solutions |
| Maximum percentage of glycole: | 30%                              |
| Maximum operating pressure:    | 10 bar                           |
| Working range:                 | 5 °C ÷ 95 °C                     |
| Thermometers scale:            | 0÷120 °C                         |
| Circulators:                   | See specifications below         |

#### MATERIALS:

|                                        |                         |
|----------------------------------------|-------------------------|
| Bodies:                                | Brass CW617N - EN 12165 |
| Caps and unions:                       | Brass CW617N - EN 12165 |
| Stub:                                  | Tropicalized steel      |
| Thermometer:                           | Steel/Aluminium         |
| Locking brackets:                      | Galvanized steel        |
| Flat gaskets:                          | EPDM Perox              |
| Sealing gaskets:                       | PTFE                    |
| Sealing components:                    | EPDM Perox              |
| Insulation shell:                      | EPP                     |
| Density Ver. 93:                       | 40 kg/m3                |
| Density Ver. 94:                       | 60 kg/m3                |
| Conducibility of shell λ (ΔT) Ver. 93: | 0,036 W/(m·k) at 10°C   |
| Conducibility of shell λ (ΔT) Ver. 94: | 0,039 W/(m·k) at 10°C   |

#### CONNECTIONS:

|                    |                |
|--------------------|----------------|
| Upper connections: | G 3/4" F - 1"M |
| Lower connections: | G 1"1/2 M      |



#### THERMOSTATIC MIXING VALVE:

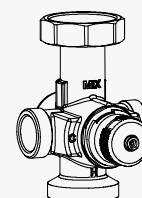
|                               |                            |
|-------------------------------|----------------------------|
| Application fluid:            | Water and glycol solutions |
| Maximum percentage of glycol: | 50%                        |
| Maximum working pressure:     | 10 bar                     |
| Operating temperature:        | 20-50°C o 30-70°C          |

#### Code. 93786AE052050

Operating temperature: 20°-50°C

#### Code 93786AE053070

Operating temperature: 30°-70°C



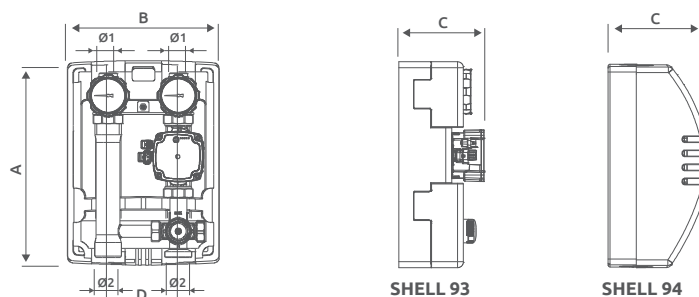
# Mixing and circulation group

## R004

**ICMA**

TECHNICAL DATA SHEET - 07/2020 - ENG

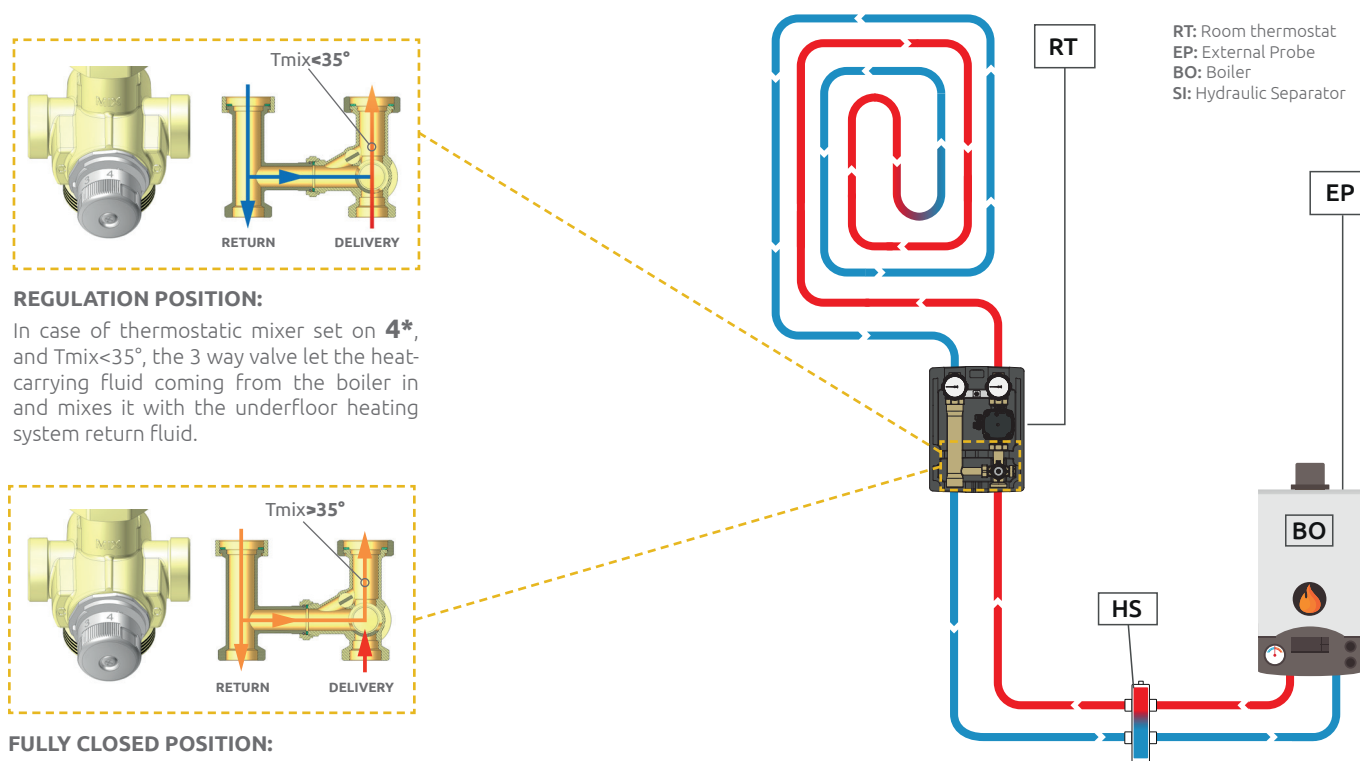
## Dimensions



| ART. | A   |     | B   |     | C   |     | D   | Ø 1    |        | Ø 2        |
|------|-----|-----|-----|-----|-----|-----|-----|--------|--------|------------|
|      | 93  | 94  | 93  | 94  | 93  | 94  |     | 93     | 94     |            |
| R004 | 350 | 360 | 248 | 270 | 200 | 180 | 125 | 3/4" F | G 1" M | G 1 1/2" M |

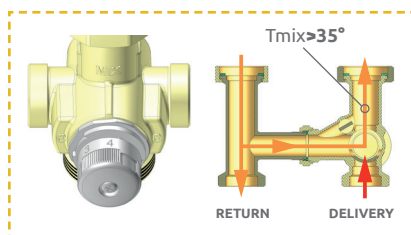
## Functioning

The Fixed point mixing and circulation group art. R004, in combination with the thermostat RT, switches on the pump directly, starting the system only when the room temperature is lower than the set temperature. The mixer valve with integrated sensor adjusts the works continuously to maintain the set temperature of the heat-transfer fluid stable. (A right-configuration R004 is shown as example below).



### REGULATION POSITION:

In case of thermostatic mixer set on 4\*, and  $T_{mix} < 35^\circ$ , the 3 way valve let the heat-carrying fluid coming from the boiler in and mixes it with the underfloor heating system return fluid.



### FULLY CLOSED POSITION:

In case of thermostatic mixer set on 4\*, and  $T_{mix} > 35^\circ$ , the 3 way valve excludes the heat-carrying fluid coming from the boiler completely, to let the underfloor heating return fluid recirculate.

The thermostatic mixing valve is available in two versions:

- 20-50 °C for underfloor heating systems;
- 30-70 °C high temperature heating systems.



| RANGE<br>20°- 50° | Position | 1    | 2    | 3    | 4*   | 5    | 6    | 7    |
|-------------------|----------|------|------|------|------|------|------|------|
|                   | °C       | 20°C | 25°C | 30°C | 35°C | 40°C | 45°C | 50°C |



| RANGE<br>30°- 70° | Position | 1    | 2    | 3    | 4    | 5    | 6    | 7    |
|-------------------|----------|------|------|------|------|------|------|------|
|                   | °C       | 30°C | 35°C | 40°C | 50°C | 55°C | 60°C | 70°C |

### / Group customization

#### Shells



Version 93



Version 94

#### Circulation pumps (Saleable in Extra-EU countries only)

**Art. P321 - Synchronous circulation pump with 3 speeds:**

##### TECHNICAL SPECIFICATIONS:

|                            |                     |
|----------------------------|---------------------|
| Brand:                     | Grundfos            |
| Model:                     | UPSO 25 – 65 130 mm |
| Centre to centre distance: | 130 mm              |
| Connections:               | G 1"1/2 M           |
| Electrical power supply:   | 230V – 50Hz         |
| Operating temperature:     | +2°C ÷ +110°C.      |
| Max operating pressure:    | 10 bar              |
| Protection level:          | IP44                |



#### Circulation pumps (Saleable in UE countries)



**Art. P326 - Circulation pump PWM:**

##### TECHNICAL SPECIFICATIONS:

|                            |                    |
|----------------------------|--------------------|
| Brand:                     | Grundfos           |
| Model:                     | UMP3 PWM 25 70 130 |
| Centre to centre distance: | 130 mm             |
| Connections:               | G 1"1/2 M          |
| Electrical power supply:   | 230V – 50Hz        |
| Operating temperature:     | +2° / +95°C.       |
| Max operating pressure:    | 10 bar             |
| Protection level:          | IP44               |
| Energy class (EEI):        | ≤0.23              |



**Art. P327 - Circulator with ΔP constant and ΔP variable:**

##### TECHNICAL SPECIFICATIONS:

|                            |                          |
|----------------------------|--------------------------|
| Brand:                     | Wilo                     |
| Model:                     | CIRCULATOR PARA 25/8 130 |
| Centre to centre distance: | 130 mm                   |
| Connections:               | G 1"1/2 M                |
| Electrical power supply:   | 230V – 50/60Hz           |
| Operating temperature:     | 0°C / 100°C.             |
| Max operating pressure:    | 10 bar                   |
| Protection level:          | IPx4D                    |
| Energy class (EEI):        | ≤0.21                    |



**Art. P328 - Circulator with PP (proportional pressure), CP (constant pressure) CC (constant curves), PWM (profile A o C), AA (auto adapt):**

##### TECHNICAL SPECIFICATIONS:

|                            |                     |
|----------------------------|---------------------|
| Brand:                     | Grundfos            |
| Model:                     | UPSO 25 – 65 130 mm |
| Centre to centre distance: | 130 mm              |
| Connections:               | G 1"1/2 M           |
| Electrical power supply:   | 230V – 50Hz         |
| Operating temperature:     | +2° / +110°C.       |
| Max operating pressure:    | 10 bar              |
| Protection level:          | IP44                |



**Art. P330 - Circulator with fixed ΔP , variable ΔP and 3 constant speed:**

##### TECHNICAL SPECIFICATIONS:

|                            |                          |
|----------------------------|--------------------------|
| Brand:                     | Wilo                     |
| Model:                     | CIRCULATOR PARA 25/8 130 |
| Centre to centre distance: | 130 mm                   |
| Connections:               | G 1"1/2 M                |
| Electrical power supply:   | 230V - 50 / 60Hz         |
| Working temperature:       | 0 ° C / 100 ° C.         |
| Max operating pressure:    | 10 bar                   |
| Protection level:          | IPx4D                    |
| Energy Class (EEI):        | ≤0.21                    |

# Mixing and circulation group

## R004

### Accessories



#### Art. 785

Collettore in ottone a doppia camera adatto per i gruppi di rilancio art. R001-R002-R003-R004, completi di guscio di isolamento in PPE nero. I collettori art. 785 possono essere utilizzati in modo singolo oppure collegati in serie (compreso di viti e guarnizioni).



#### Art. 789

G 1" F X G 1" 1/2 F plane seat union with nut and gasket. It reduces from G 1" 1/2 F to G 1" F.



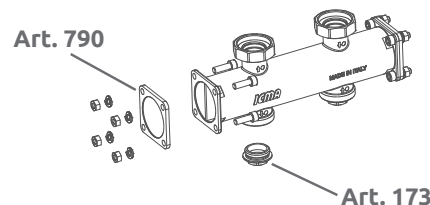
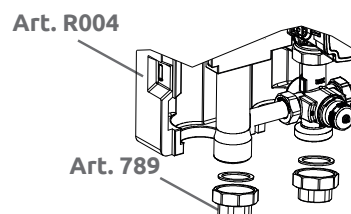
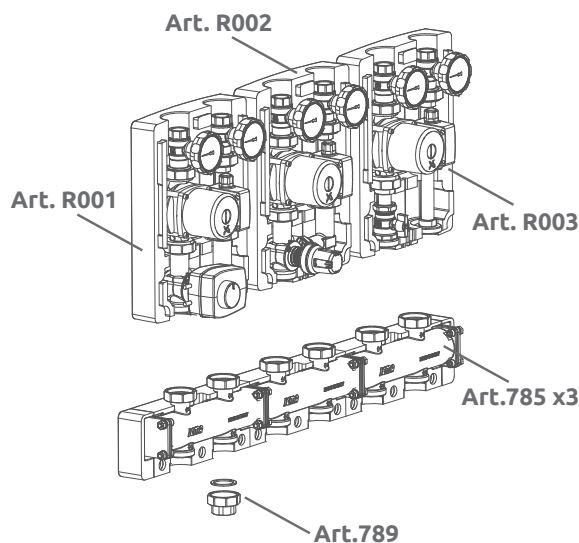
#### Art. 790

Head cap for manifold art. 785.



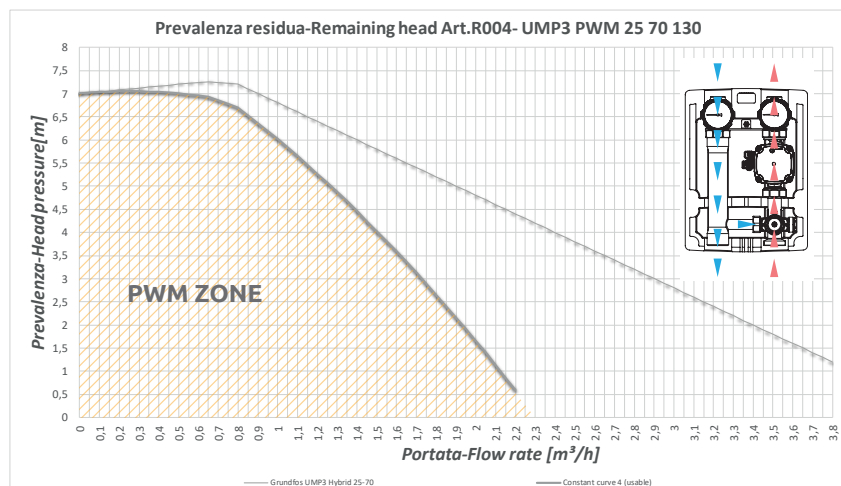
#### Art. 173

End cap with O-ring to close 1" exits of manifold art. 785.



## / Hydraulic Specifications

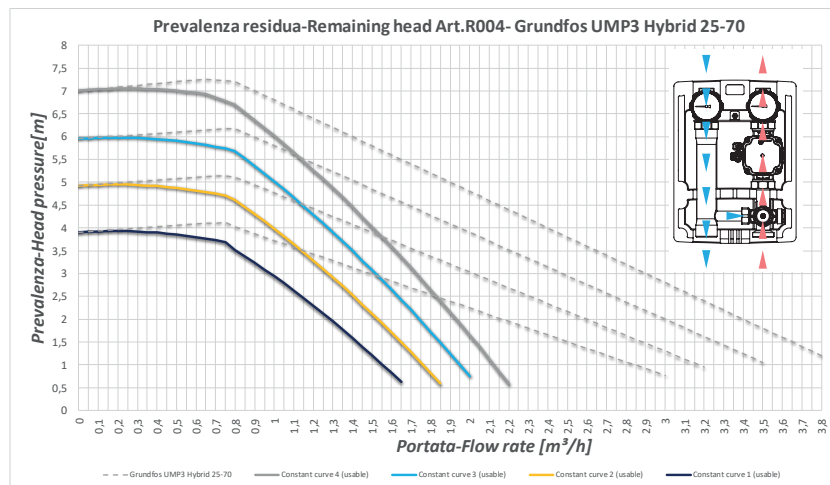
#### Art. P326



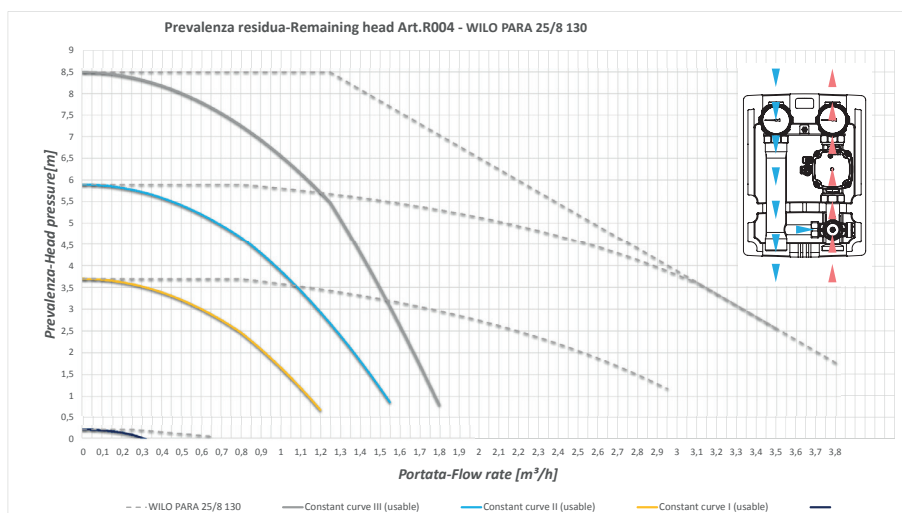
# Mixing and circulation group

## R004

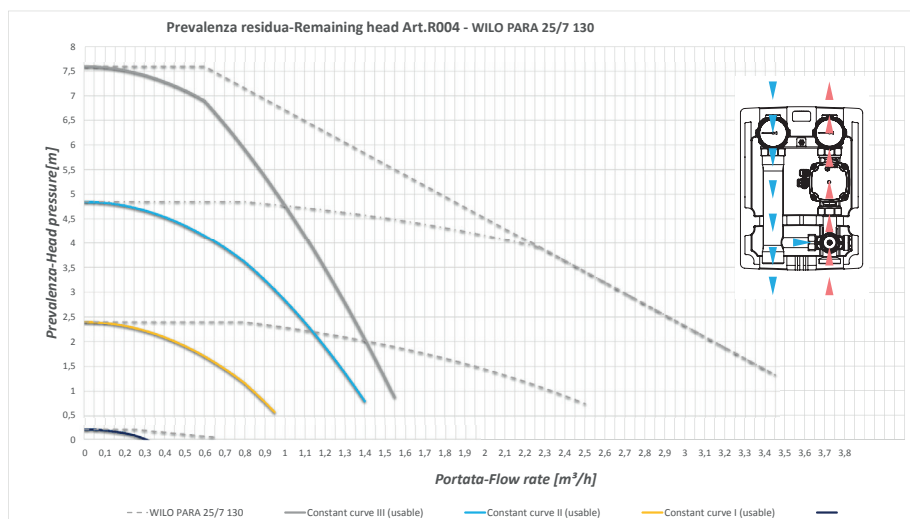
Art. **P328**



Art. **P327**

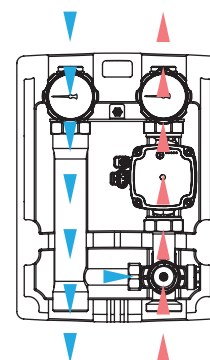
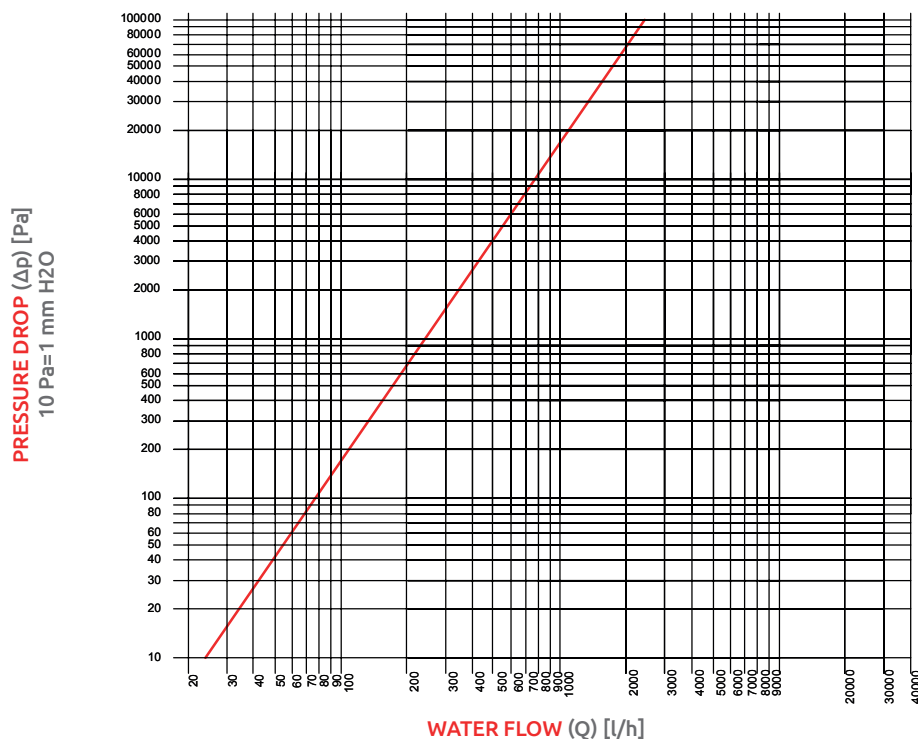


Art. **P330**



### / Hydraulic Specifications

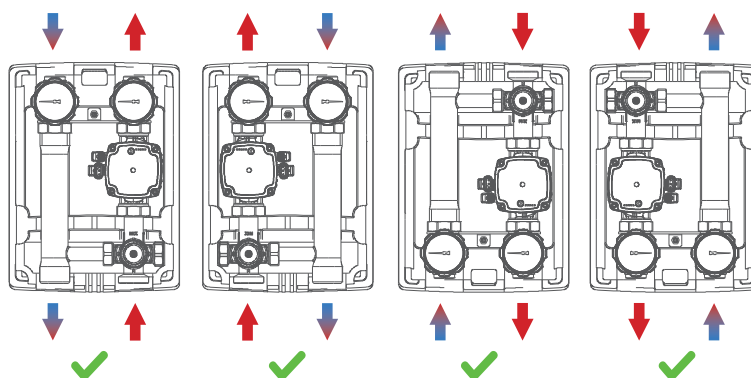
Circulation Unit Art. R004  
PRESSURE DROP DIAGRAM



|                                      |     |
|--------------------------------------|-----|
| Kv m <sup>3</sup> /h<br>Straight way | 2.3 |
|--------------------------------------|-----|

### / Positioning

#### Group orientation



#### Right-Left Switching

