

Mixing and circulation group

R001

ICMA[®]

ST.R001.06.23.EN (NC1263)

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:

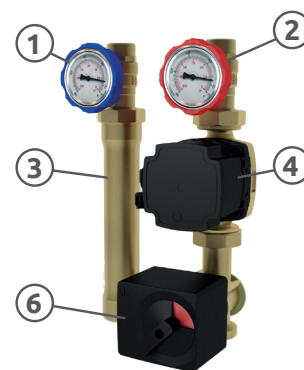
- Right/Left adaptability.
- Manual/automatic servomotor functioning.
- Compatible with every 125mm axis manifold (With shell type 93).



Components List

Mixing group with variable 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. Electric modulating 24 Volt or 230 Volt servomotor, for mixing valve regulation.



Technical features

TECHNICAL DATA:

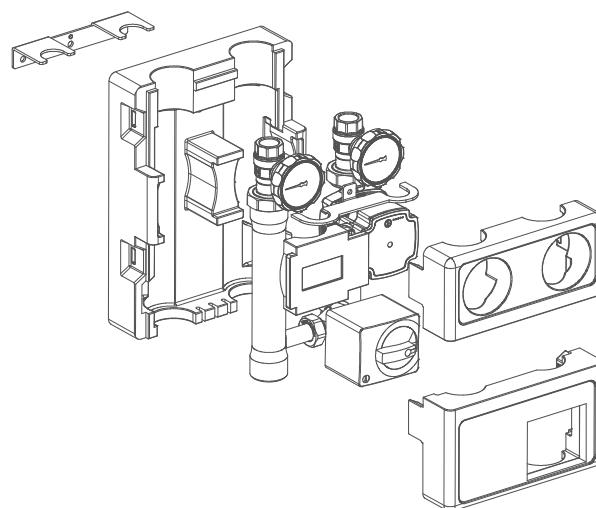
Fluids used:	Water and glycol based solutions
Maximum percentage of glycol:	30%
Maximum operating pressure:	10 bar
Working range:	See circulators specifications on page 3
Thermometers scale:	0÷120 °C
Circulators:	See specifications on page 3

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

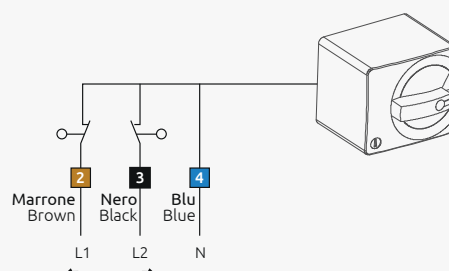
CONNECTIONS:

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



MODULATING SERVOMOTOR:

Electric power supply:	AC 230V - 50 Hz / AC 24V - 50 Hz
Max power absorption:	3,5 VA
Execution time on 90°:	135 sec
Nominal load torque:	10 Nm
Operating temperature:	-10 / +50°C
Protection degree:	IP 40
External shell material:	Polycarbonate



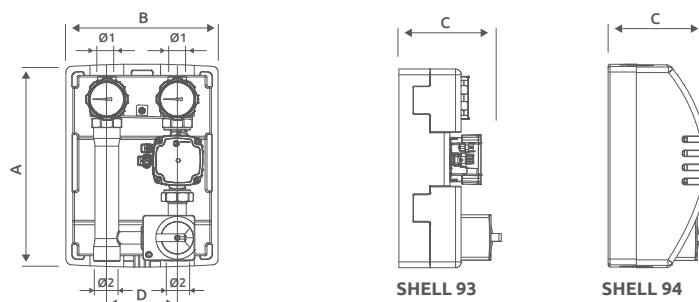
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Dimensions



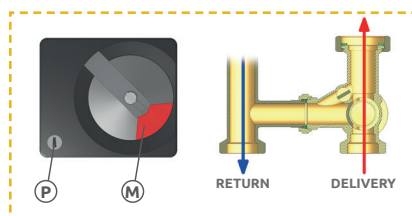
ART.	A		B		C		D	Ø 1		Ø 2
	93	94	93	94	93	94		93	94	
R001	350	360	248	270	200	180	125	3/4" F	G 1" M	G 1 1/2 M

Functioning

The **Variable point mixing and circulation group art. R001**, in combination with the RT thermostat and EP temperature probe, maintains the delivery temperature of the heat-transfer fluid stable.

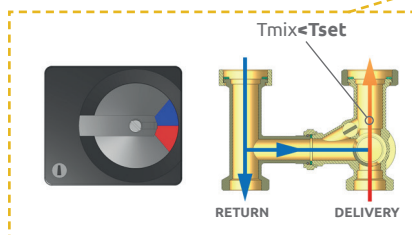
The electronic control station EC controls directly both the recirculating pump and 3-point servomotor. The temperature of the heat conveying fluid is adjusted according to the set environmental conditions. **(A right-configuration R001 is shown as an example below).**

The three-way valve can work in three different positions during its operation:



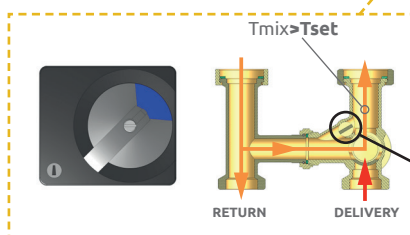
FULLY OPEN POSITION:

With the handle "M" of the servomotor in this position, the mixing valve is fully open. The heat carrying fluid coming from the boiler is conveyed directly to the heating system.



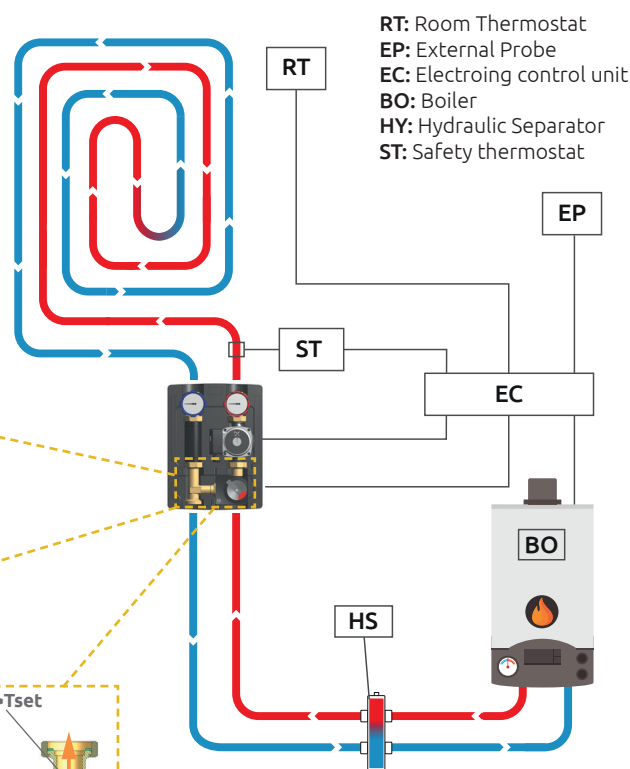
REGULATION POSITION:

With the handle "M" of the servomotor in this position, the mixing valve is under regulation. The heat carrying fluid coming from the boiler is mixed with the return fluid from the heating system.



FULLY CLOSED POSITION:

With the handle "M" of the servomotor in this position, the 3 way valve excludes the heat-carrying fluid coming from the boiler completely to let the underfloor heating return fluid recirculate.



RT: Room Thermostat
EP: External Probe
EC: Electronic control unit
BO: Boiler
HY: Hydraulic Separator
ST: Safety thermostat



BY-PASS OPEN
Kv 3.5



BY-PASS 50%
Kv 1.5



BY-PASS CLOSED
Kv 0

The 3-way valve has an adjustable BY-PASS. Its main function is to keep the temperature in the system not too high, connecting the system return flow with the mixed flow. The by-pass makes the regulation more stable and prevent possible damages to the system.

/ 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
Minimum pressure on the intake side:	85°C = 0,049 bar 90°C = 0,27 bar 110°C = 1,08 bar
Max. percentage of glycol:	50%
Protection level:	IP44

Circulation pumps (Saleable in UE countries)



Art. P326 - Circulation pump with PWM:

TECHNICAL SPECIFICATIONS:

Brand:	Grundfos
Model:	UMP4 PWM 25/70 130
Centre to centre distance:	130 mm
Connections:	G 1"1/2 M
Electrical power supply:	230V – 50Hz
Operating temperature:	+2°÷110°C.
Temp. ambiente max.:	70°C
Max operating pressure:	10 bar
Minimum pressure on the intake side:	75°C = 0,05 bar 95°C = 0,5 bar 110°C = 1,08 bar
Max. percentage of glycol:	50%
Protection level:	IP44
Energy class (EEI):	≤0.20



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

TECHNICAL SPECIFICATIONS:

Brand:	Wilo
Model:	PARA RS 25/8 130
Centre to centre distance:	130 mm
Connections:	G 1"1/2 M
Electrical power supply:	230V – 50/60Hz
Operating temperature:	Ambient. temp. 50°C = 2 ÷ 105°C Ambient. temp. 55°C = 2 ÷ 90°C Ambient. temp. 60°C = 2 ÷ 77°C Ambient. temp. 65°C = 2 ÷ 66°C
Max operating pressure:	10 bar
Minimum pressure on the intake side:	0,5 bar
Max. percentage of glycol:	50%
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:	UPM3 hybrid 25/70 130
Centre to centre distance:	130 mm
Connections:	G 1"1/2 M
Electrical power supply:	230V – 50/60Hz
Operating temperature:	+2°C ÷ 110°C
Max. ambient temperature:	70°C
Max operating pressure:	10 bar
Minimum pressure on the intake side:	75°C = 0,05 bar 95°C = 0,5 bar 110°C = 1,08 bar
Max. percentage of glycol:	50%
Protection level:	IP44
Energy Class (EEI):	≤0.20



Art. P329 - Circulator with nr. 2 proportional-pressure curves, nr. 2 constant-pressure curves, min-max mode – Fixed speed

TECHNICAL SPECIFICATIONS:

Brand:	Taco
Model:	ES2 25-70/130
Centre to centre distance:	130 mm
Connections:	G 1"1/2 M
Electrical power supply:	230V – 50/60Hz
Operating temperature:	Ambient. temp. 30°C = 30 ÷ 95°C Ambient. temp. 35°C = 35 ÷ 90°C Ambient. temp. 40°C = 40 ÷ 70°C
Max operating pressure:	6 bar
Minimum pressure on the intake side:	50°C = 0,3 bar 95°C = 1,0 bar
Max. percentage of glycol:	30%
Protection level:	IP44
Energy Class (EEI):	≤0.21



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

TECHNICAL SPECIFICATIONS:

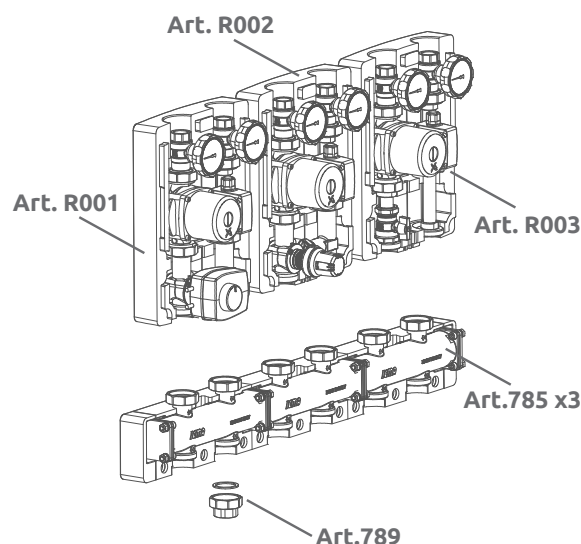
Brand:	Wilo
Model:	PARA RS 25/7 130
Centre to centre distance:	130 mm
Connections:	G 1"1/2 M
Electrical power supply:	230V – 50/60Hz
Operating temperature:	Ambient. temp. 50°C = 2 ÷ 105°C Ambient. temp. 55°C = 2 ÷ 90°C Ambient. temp. 60°C = 2 ÷ 77°C Ambient. temp. 65°C = 2 ÷ 60°C
Max operating pressure:	10 bar
Minimum pressure on the intake side:	0,5 bar
Max. percentage of glycol:	50%
Protection level:	IPx4D
Energy Class (EEI):	≤0.21

Accessories



Art. 785

Modular brass double chamber manifold equipped with black EPP insulation shell, suitable for circulation modules art. R001-R002-R003-R004. Manifolds art. 785 can be used as single units or connected in series up to a maximum of 6 (Nuts, bolts and two O-ring included in the package).



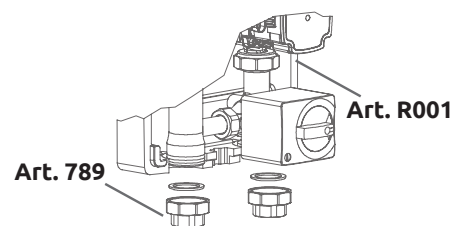
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Art. 789

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. 789

Art. R001



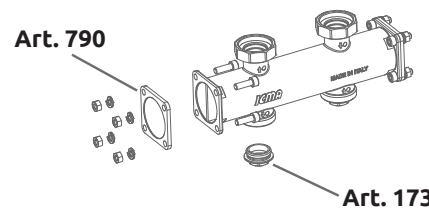
Art. 790

Head cap for manifold art. 785.



Art. 173

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

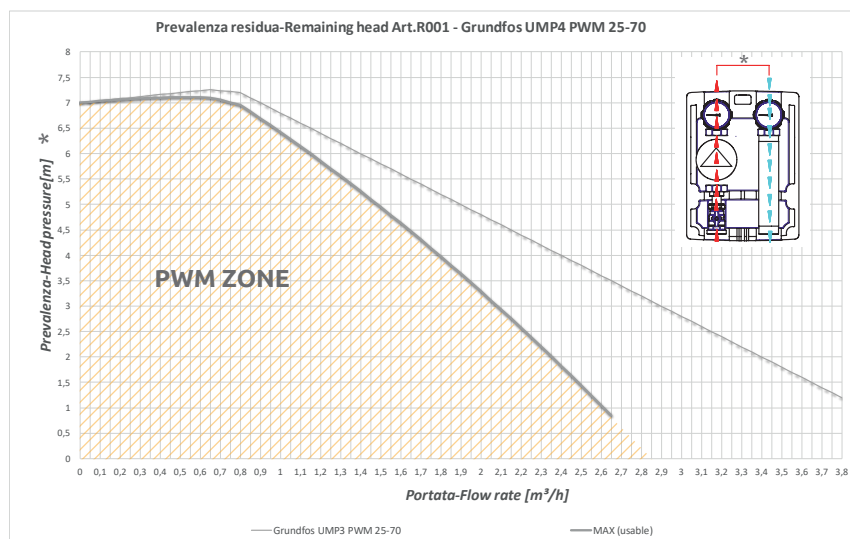


Art. 790

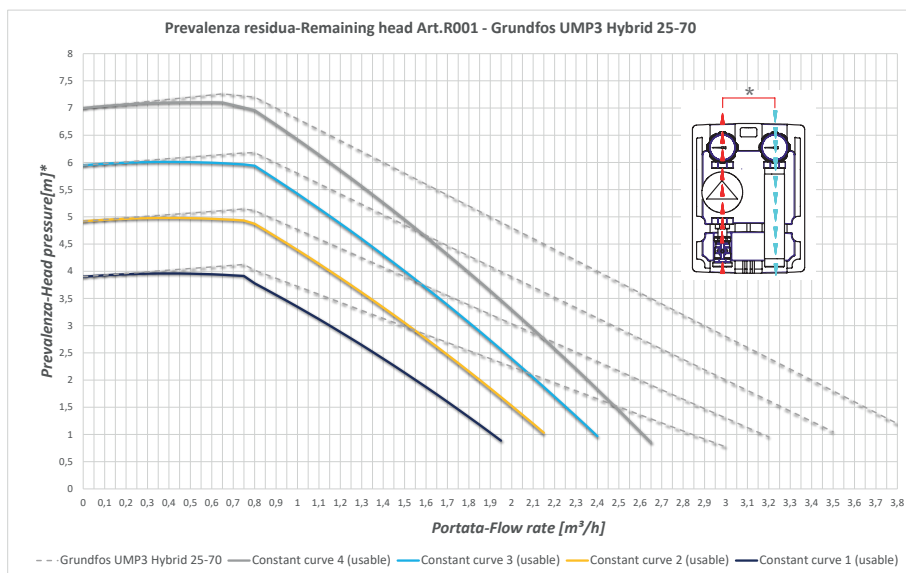
Art. 173

Hydraulic Specifications

Art. **P326**



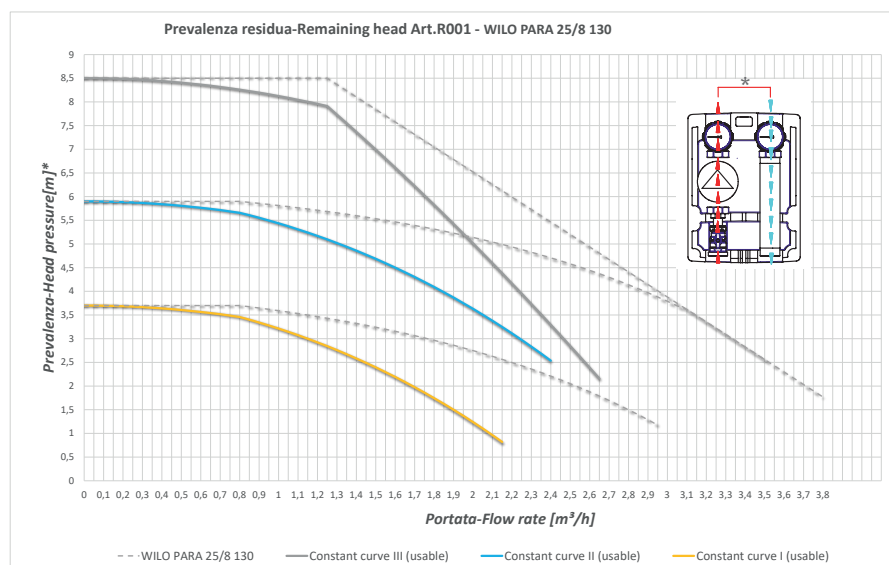
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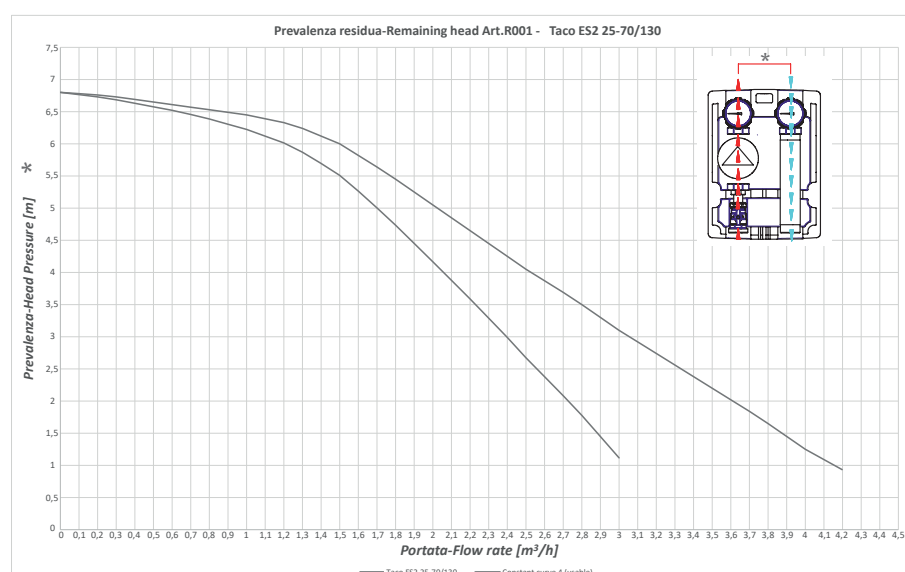
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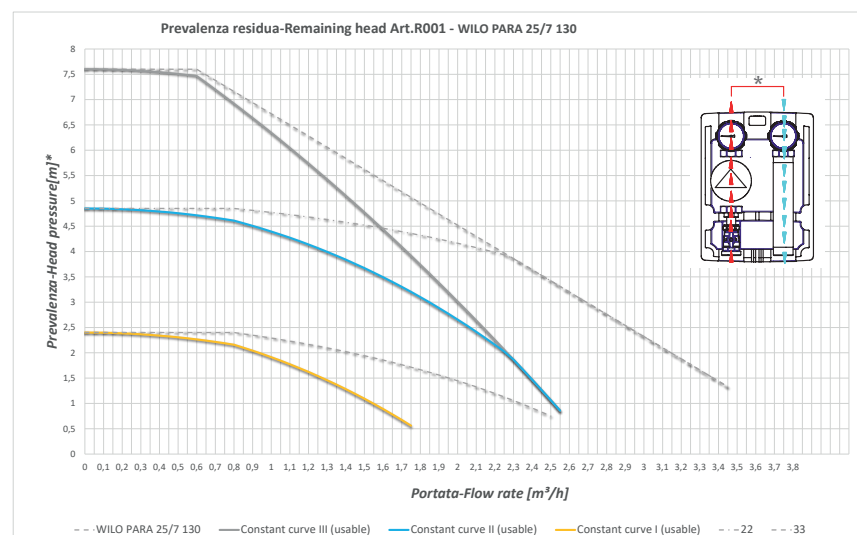
Art. **P327**



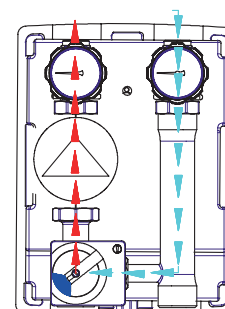
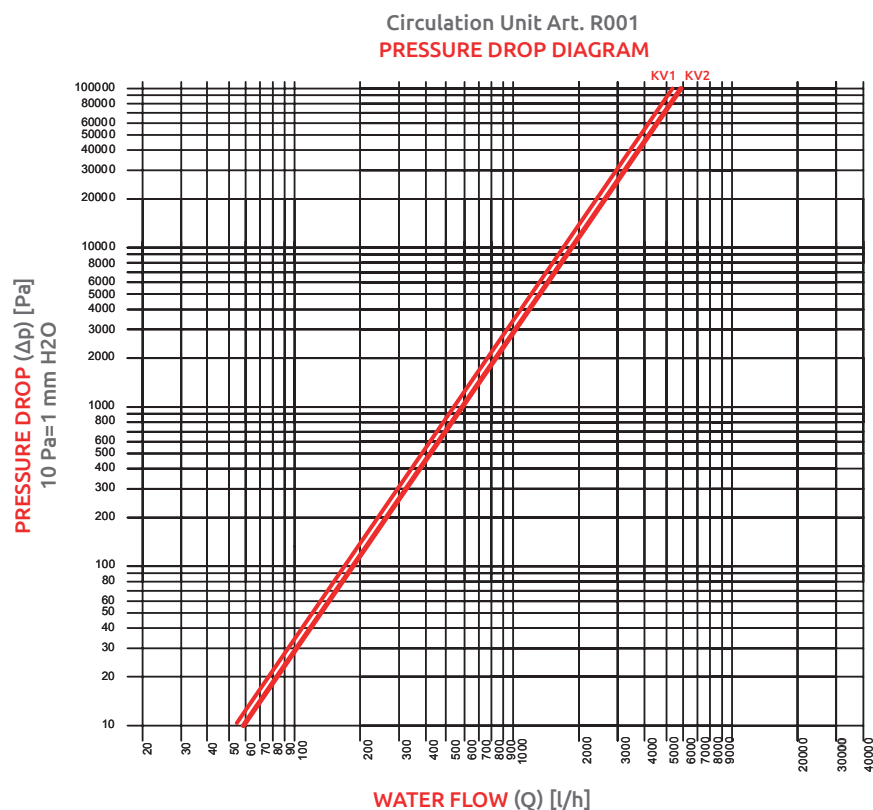
Art. **P329**



Art. **P330**

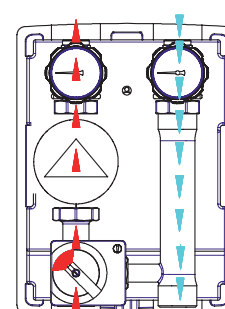


/ Hydraulic Specifications



KV1 m³/h
Angled way

5.2

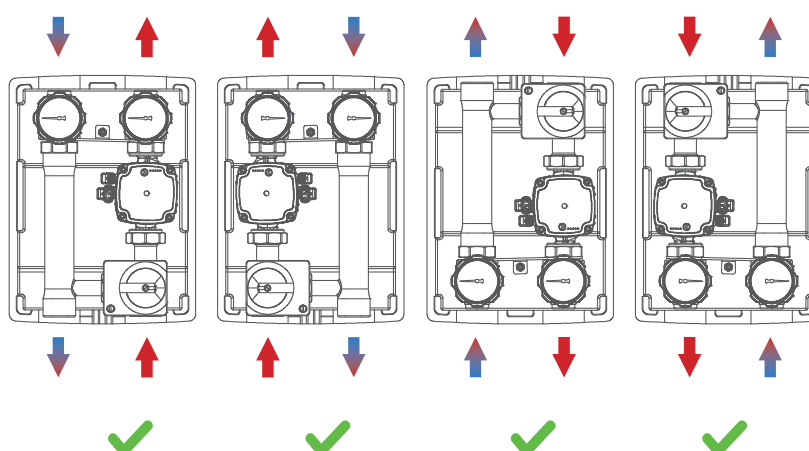


KV2 m³/h
Straight way

5.85

/ Positioning

Group orientation



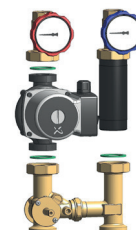
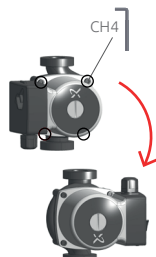
Right-Left Switching

The unit is supplied in two versions:

- **with right side delivery and upwards flow direction** (equivalent, if reversed, to a left side delivery and flow downwards)
- **with left side delivery and upwards flow direction** (equivalent, if reversed, to a right side delivery and flow downwards).

The delivery and return way can be easily reversed.

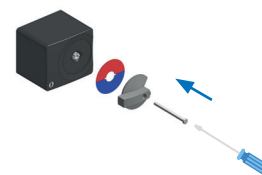
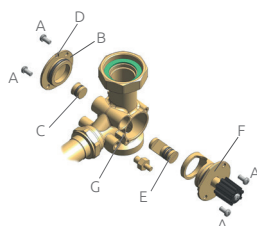
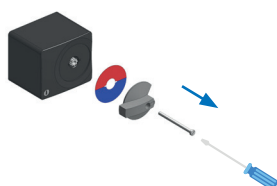
Below are the steps to be carried out in order to achieve a right-to-left delivery reversal.



1) Remove the insulation shells that are slightly paired to each other.

5) Unscrew the marked screws on the picture, remove the impeller, rotate it by 180° and reassemble it on the pump body. Finally, rotate the pump body upside down.

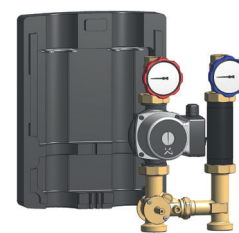
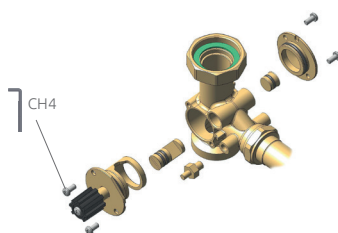
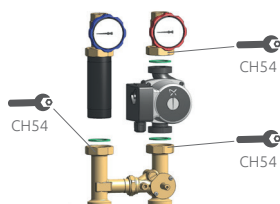
7) Assemble the unit according to the new layout with pump located on the left side, as shown in the picture. Tighten all the caps using suitable wrenches; carefully check the correct positioning of the gaskets.



2) Unscrew the Servomotor screw.

6) The layout of the mixing valve must be reversed.
6.1) Unscrew the 4 screws "A".
6.2) Pull out the cap "B" and the regulation unit "F".
6.3) Pull out the two elements of the by-pass "C" and "E".

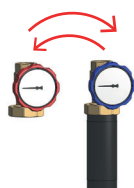
8) Reassemble the Servomotor.



3) Unscrew the nuts by using the wrenches shown in the picture. Be careful to avoid damages to the gaskets.

6.4) Reverse the elements "C" and "E"; be careful to avoid damages to the gaskets.
6.5) Install the cap "B" and the regulation unit "F"; reverse the position of this unit, as well. Both elements are provided with a small reference slot "D" on the outer edge which must always match the notch on the valve body "G". Care must be taken in avoiding damages to the sealing O-Rings.
6.6) Fasten the whole assembly with the 4 screws "A".

9) Finally replace the insulation shells by slotting them in to each other.



4) Reverse the position of both on/off valves RED/BLU.