

## MOTORIZED AND MOTORIZABLE REGULATING GROUP DN 20

### Description



07G.04.DN20



07G.DN20

Preassembled pump group for regulation and circulation of fluid at variable temperature. Allows the circulation of the thermal fluid, coming from the primary circuit, by adjusting its temperature by means of a motorized mixing valve. It is used in general heating and radiant panel systems with flow temperature regulation based on room and outside temperature (also called outside or weather or climate compensated control). The group is composed of a pump, flow/return shut-off valves, motorizable mixing valve, flow/return temperature gauges, anti-thermosiphon check valve, thermal insulation. In this group, the differential by-pass can be installed only externally. The group is reversible (flow line can be exchanged with the return line). Male and female thread on system side connections. The 07G.04.DN20 series is supplied already equipped with 3 point actuator of M03.3 series.

### Range of products

**BAFA**  
LIST

Motorized regulating group & Regulating group fitted to be actuated (motorizable)	07G	XXX	XX	X
Male and female thread on system side connections G 1 M + G 3/4 F		020		
Without accessories			00	
With 3 point actuator M030101DAB			04	
Without pump				X
Pump Wilo Para 15-130/7-50/SC-9				P
Pump Grundfos UPM3 AUTO 15-70 130 				L
Pump Grundfos UPSO 15-65 130 (Extra EU)				F

 on request

### Features

Working temperature range: **5–90 °C**

Max working pressure: **10 bar**

Female connections: **EN 10226-1**

Male connections: **ISO 228-1**

Connection centre distance: **90 mm**

Pump: **Wilo Para 15-130/7-50/SC-9**

**Grundfos UPM3 AUTO 15-70 130** 

**Grundfos UPSO 15-65 130 (Extra EU)**

Suitable fluids: **water, glycol solutions (max 30%)**

Temperature gauge scale: **0–120 °C**

### Materials

#### Ball valves

- Body: **brass EN12165 CW617N**
- Gaskets: **PTFE, EPDM, Viton**

#### Motorizable mixing valve

- Body: **brass EN 1982 CB752S (DZR)**
- Obturator: **brass EN 12164 CW614N**
- Gaskets: **EPDM**

Extension: **galvanized steel**

T-joint: **brass EN12165 CW617N**

#### Check valve insert

- Body and obturator: **POM**
- Gasket: **NBR**

#### Pump

- Body: **cast iron**
- Electric supply: **230 V-50/60 Hz**
- Protection class:
  - Wilo Para: **IPx4D**
  - Grundfos UPM3: **IP 44**
  - Grundfos UPSO (Extra EU): **IP 44**
- Centre distance: **130 mm**
- Connections: **G 1 M (ISO 228-1)**

#### 3 point actuator M030101DAB (07G.04.DN20 series)

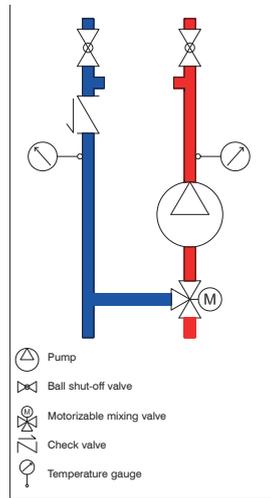
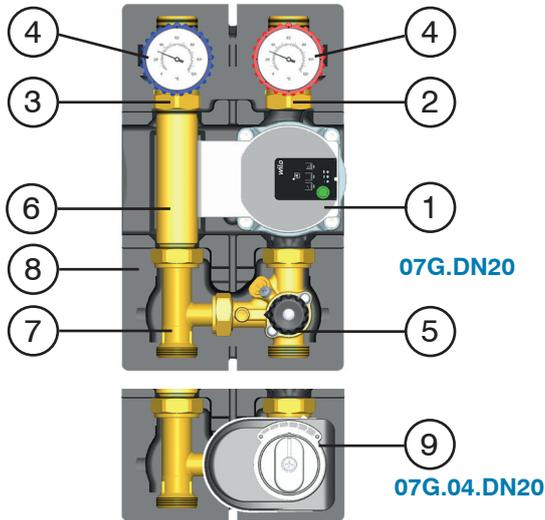
- Torque: **10 N·m**
- Protection class: **IP 44**
- Supply: **230 Vac-50 Hz**
- Power consumption: **4 VA**
- Running time: **120 s (90°)**
- Cable length: **1,5 m**

#### Insulation shell

- Body: **EPP**
- Density: **60 kg/m<sup>3</sup>**
- Working temperature range: **-5–120 °C**
- Thermal conductivity: **0,04 W/(m·K)**

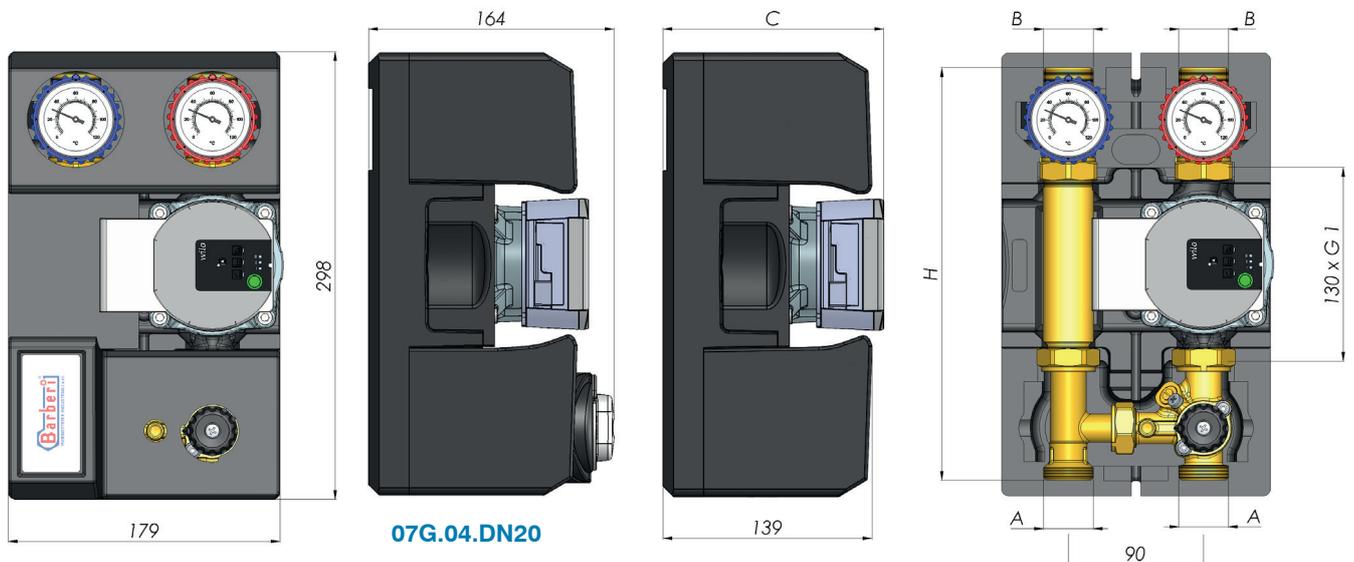
MOTORIZED AND MOTORIZABLE REGULATING GROUP DN 20

Components



07G.04.DN20-07G.DN20		
1	Pump	Wilo Para, Grundfos UPM3 AUTO, Grundfos UPSO (Extra EU)
2	Ball shut-off valve	
3	Ball shut-off valve with check valve	
4	Temperature gauge	
5	Motorizable mixing valve	
6	Extension	
7	T-joint	
8	Insulation shell	
9	3 point actuator M030101DAB (07G.04.DN20 series)	

Dimensions



Code	P [bar]	A	B	C [mm]	H [mm]	Pump	Weight [kg]	N. P/B	N. P/C
07G 020 04X*	10	G 1 M	G 1 M+G 3/4 F	-	277	Without pump	2,64	-	1
07G 020 04P*	10	G 1 M	G 1 M+G 3/4 F	147	277	Wilo Para 15-130/7-50/SC-9	4,14	-	1
07G 020 04L* 	10	G 1 M	G 1 M+G 3/4 F	145	277	Grundfos UPM3 AUTO 15-70 130	4,34	-	1
07G 020 04F*	10	G 1 M	G 1 M+G 3/4 F	156	277	Grundfos UPSO 15-65 130 (Extra EU)	5,04	-	1
07G 020 00X	10	G 1 M	G 1 M+G 3/4 F	-	277	Without pump	2,2	-	1
07G 020 00P 	10	G 1 M	G 1 M+G 3/4 F	147	277	Wilo Para 15-130/7-50/SC-9	3,7	-	1
07G 020 00L 	10	G 1 M	G 1 M+G 3/4 F	145	277	Grundfos UPM3 AUTO 15-70 130	3,9	-	1
07G 020 00F	10	G 1 M	G 1 M+G 3/4 F	156	277	Grundfos UPSO 15-65 130 (Extra EU)	4,6	-	1

\* complete with M030101DAB actuator

N. P/B: number of pieces in box - N. P/C: number of pieces in carton  
Other pump types should be evaluated

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### Diagrams

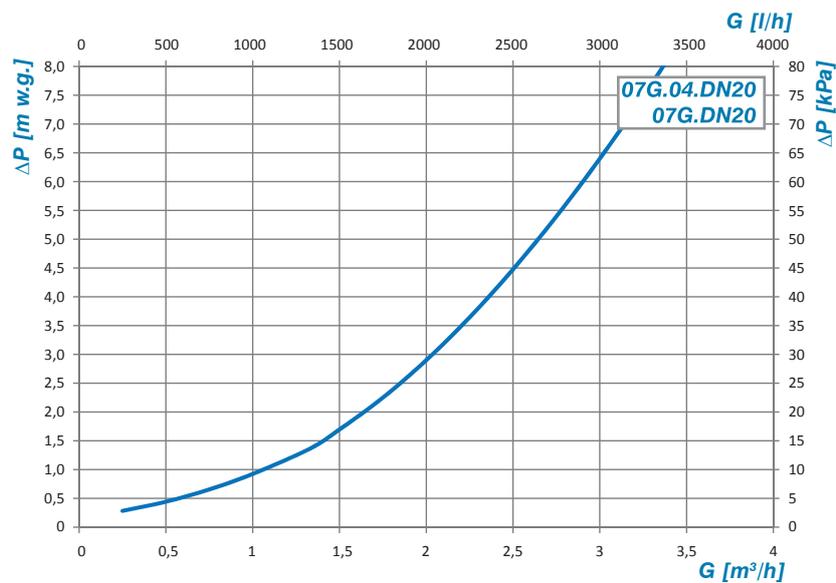
**Group sizing** (operation for specialized/authorized technical personnel).

**Step 1: head losses of the group without pump.** Enter on the x-axis of the first diagram with the design flow rate value. Cross the curve of the group and read the corresponding head losses of the group (without pump) on the y-axis.

**Step 2: available head of the pump.** With the same design flow rate value, enter on the x-axis of the selected pump diagram ("Head of pump"). Cross the curve of the selected working mode (Constant speed, Proportional pressure, Constant pressure) and read the corresponding available head of the pump on the y-axis.

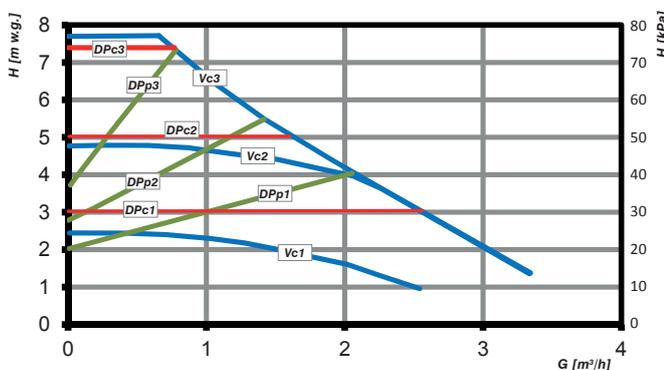
**Step 3: pump validation.** Calculate the difference between the available head of the pump and the head losses of the group without pump. The remaining pump head should be higher than the head losses of the rest of the system: if so, the selected pump is suitable to supply water to the rest of the system, otherwise a different pump working mode or pump size or different group size or a system resizing could be necessary.

### Hydraulic characteristics: head losses of the motorized (and fitted to be actuated) regulating group without pump



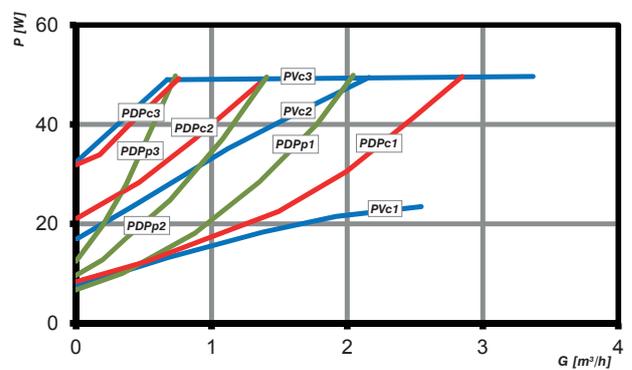
### Head and power consumption of the pumps

Head of pump Wilo Para 15-130/7-50/SC-9



Vc: Constant speed  
DPp: Proportional pressure  
DPc: Constant pressure

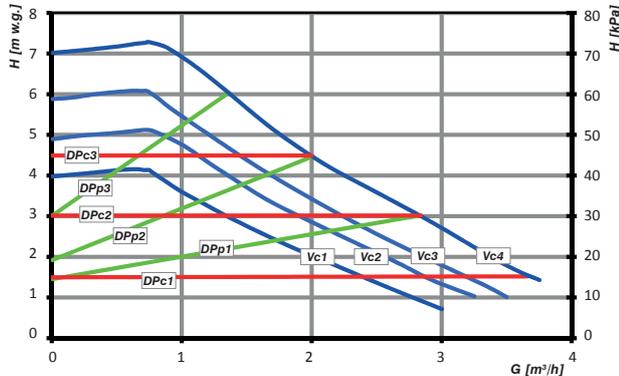
Power of pump Wilo Para 15-130/7-50/SC-9



PVc: Power consumption at constant speed  
PDPp: Power consumption at proportional pressure  
PDPc: Power consumption at constant pressure

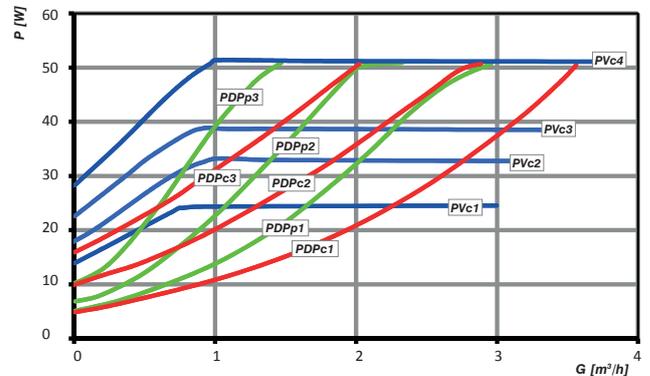
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Head of pump Grundfos UPM3 AUTO 15-70 130



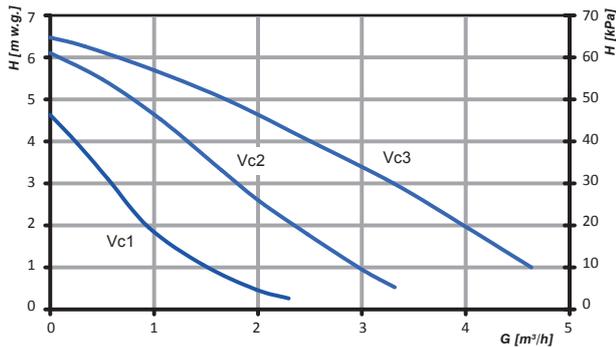
Vc: Constant speed  
DPp: Proportional pressure  
DPc: Constant pressure

Power of pump Grundfos UPM3 AUTO 15-70 130



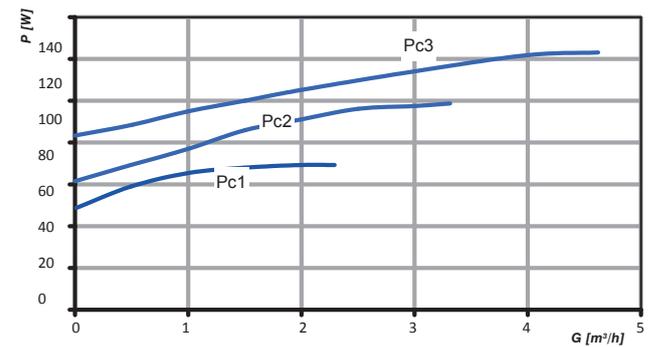
Pvc: Power consumption at constant speed  
PDPp: Power consumption at proportional pressure  
PDPc: Power consumption at constant pressure

Head of pump Grundfos UPSO 15-65 130 (Extra EU)



Vc: Constant speed

Power of pump Grundfos UPSO 15-65 130 (Extra EU)

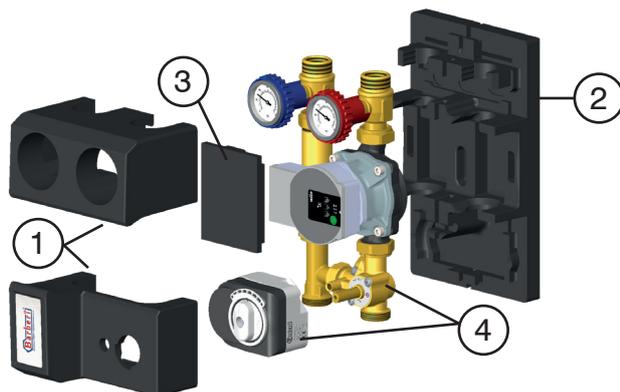


Pvc: Power consumption

### Features

The regulating group, fitted to be actuated, consists of:

- Front insulation shell (1) upper and lower part,
- Rear insulation shell (2),
- Central front insulation shell (3),
- Flow line (4) including motorizable mixing valve, actuator (only 07G.04.DN20), shut-off valve, temperature gauge and pump,
- Return line (5) including ball shut-off valve, check valve and temperature gauge.



### Advantages

**Energy saving:** the front (1) and rear shells (2) help the thermal insulation of the group and allow energy saving.

**Pump protective shell (3):** maintains the thermal insulation and avoids overheating of the pump electronic part. In this way the risk of damage is reduced.

**Fast assembling insulation:** the rear insulation shell (2) remains hanging to the group also after removing the front shell parts (1). This allows a fast and easy reassembling of the insulation after completing the work.

**Compact installation:** 90 mm centre distance with 130 mm pump connections makes the installation very compact.

**Frontal devices:** all devices, such as the pump menu, temperature gauges, shut-off valves and, in mixed groups, the thermostatic valve and actuator, are frontal. This allows fast regulation and functional check, in particular for the installation of several groups very close to one another.

**Check valve with override:** the groups are factory equipped with a check valve on the return line, placed within the monobloc with blue knob. By rotating at 45° the blue knob, it is possible to override the check valve function, thus allowing the water passage in two directions and making the filling phase of the system much faster. The mixed groups have the

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T-fitting, connecting the mixing valve, suitable for the insertion of a further removable check valve insert.

**Versatility of the wall mounting bracket:** the universal bracket 42D.DN20 (accessory) makes it possible to install the group with flow upward, downward or with the group laying on a side. Pay however the maximum attention to correctly fix the group to the wall when installed laying on a side. The bracket, in addition to the traditional two side holes, has a third central hole to screw the group to the wall with one only central anchor, after making a specific hole in the insulation shell. This allows to fix the whole group to the wall already hanging to the bracket.

**Transformability:** in case of need, the groups are easily transformable from one version to another (eg. from direct distribution group to thermostatic, mixed and vice versa) as they share the vast majority of components.

**Identical actuators for all DN:** the motorized groups DN 20 can be combined with the same actuators of the DN 25 and DN 32 ranges, allowing a reduction of the models to be purchased and consequently of the warehouse.

**Pump range:** the groups are available with three different pump models. For the use of other models and/or manufacturers, it is advisable to contact Barberi for verification.

**Quick pump replacement:** the circulators can be quickly replaced without completely removing the rear insulation.

**Flat gaskets:** the various components of the groups are connected to each other by means of flat seal fittings. This makes the installation faster by avoiding the use of hemp or other sealants.

**Cable glands:** the insulation of the groups is equipped with cable glands pointing upward and downward to allow the cables to be laid safely and tidy.

**Accessibility and maneuverability of the nuts:** the insulation is designed in such a way as to leave the space necessary to maneuver all the nuts, with a suitable hexagonal key, without having to remove it. This is an advantage especially in the wall installation where the insulation is laying against the wall or when pipes pass behind the insulation.

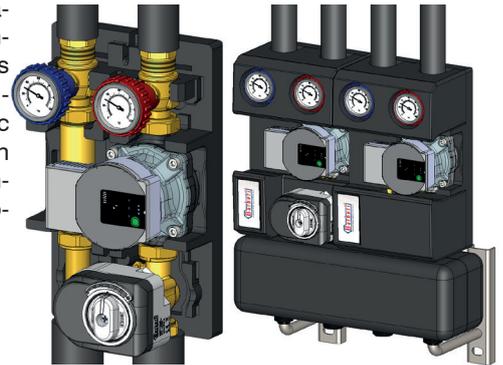
**The nuts are supplied loosened to facilitate the group reversion on the installation field. Fully screw the nuts before installing the group.**

### Installation

The mounting options of the group are:

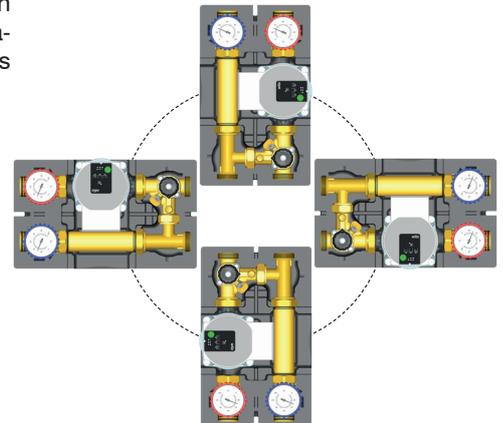
- Wall installation
- Manifold installation

The group can be installed on manifolds with integrated hydraulic separator, on standard manifolds with independent hydraulic separator, on manifolds connected to a storage.



### Group position

The group can be installed in one of the ways shown in the picture, with the pump rotation axis always horizontal.



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### Group reversibility

The group is factory set with pump on the RH side and flow upwards (or, by rotating it, pump on the LH side and flow downwards). The reversibility is allowed on the installation field by the following procedure:

1) Fully unscrew the extension from the T-joint and the pump from the mixing valve.

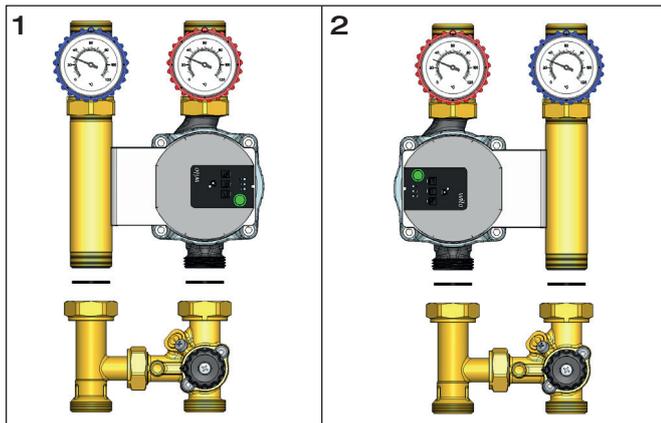
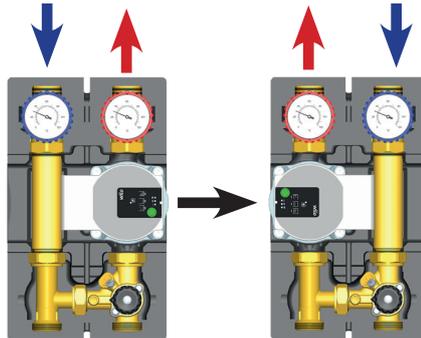
2) Exchange the group "pump + red knob monobloc" with the group "extension + blue knob monobloc".

3) Leave the mixing valve and the T-joint in the factory position:

in this new configuration, the mixing valve will work as diverting valve.

4) Move the controller probe on the new flow line, downstream of the pump.

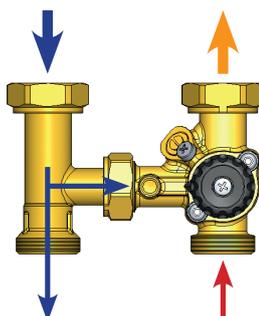
5) Connect all the components again and fully screw the nuts. Warning: due to the presence of a check valve, keep the ball shut-off valve with red knob on the pump line and the blue knob on the return. For some pump models, it is necessary to rotate the electronic part to place it within the insulation.



### Adjustment of motorizable mixing valve

The motorizable mixing valve adjusts the flow temperature by mixing the hot fluid, coming from the generator, and the system cold return fluid.

The mixed water temperature on the system flow (design value) can be obtained by combining the valve with an actuator, managed by a controller.



The mixing valve is equipped with a built-in adjustable by-pass (1), connecting the system return port with the mixed water port. The by-pass use allows to make the adjustment more stable, especially when the inlet water temperature from the generator is much higher than the mixed one (for example: biomass generator at the inlet, radiant panel supply at the outlet). Through the by-pass, part of the system return water is always sent to the mixed water outlet, to oblige the controller to increase the valve hot port opening. In this way, work is avoided in the vicinity of the complete closing of the hot port and the actuator huntings are limited. In case of slight difference between the inlet hot temperature from the boiler and the mixed water temperature, the setting can be carried out through the by-pass only, with the system return port of the valve fully closed.

In general, to set the valve proceed as follows.

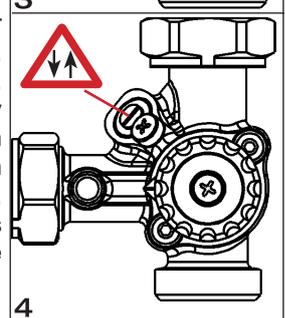
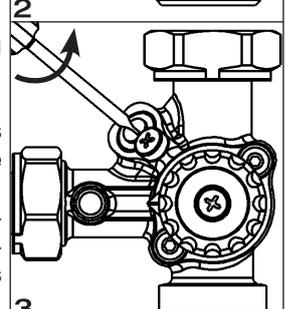
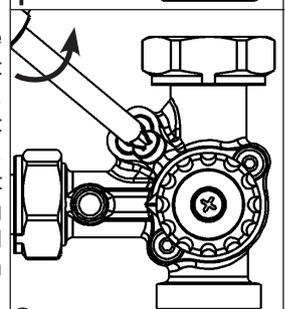
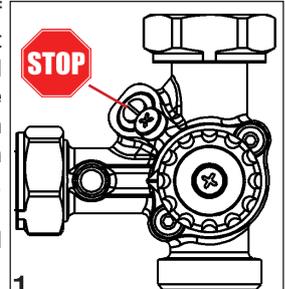
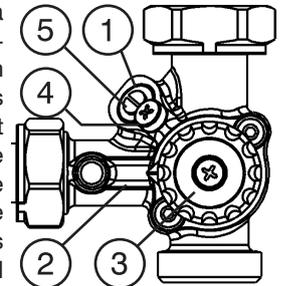
1) Install the knob (3) with the screw provided in the package. Put the knob (3) arrow in position 10, condition of null mixing (return port closed, hot water inlet port open). Activate the generator and wait until it reaches its design working temperature (higher than the mixed water temperature on the system flow). Activate the pump group.

2) Loosen the by-pass locking screw (4).

3) Open and modulate the by-pass adjustment screw (5). Check the following cases.

Case 1: in low temperature systems, the design mixed water temperature can be obtained with this by-pass setting.

Case 2: if the design mixed water temperature cannot be obtained, neither with the fully open by-pass, the adjustment is later optimized by the actuator and controller, which properly open the system return port of the valve. In this case, the fully open by-pass works as flow temperature limiter, because

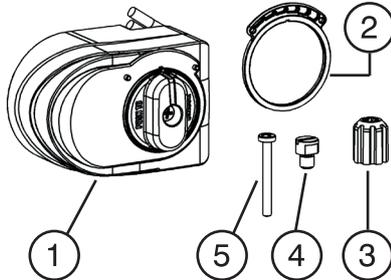


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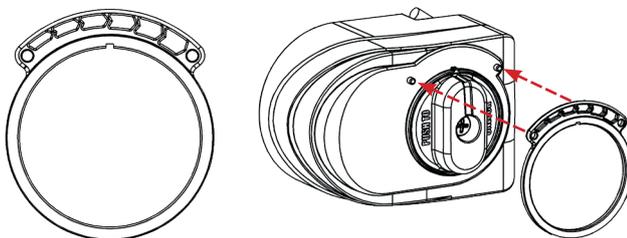
it makes the water temperature decrease of some degrees, especially in case of generator overtemperature. Fully tighten the locking screw (4), close the insulation and install the actuator.

### Installation of the actuator M030101DAB

The 3 point M030101DAB actuator for the 07G.04.DN20 regulating group is supplied with the components in picture: actuator (1), reference ring (2), mixing valve adaptor (3), anti-rotation pin (4), locking screw (5). For the installation on the mixing valve proceed as follows.

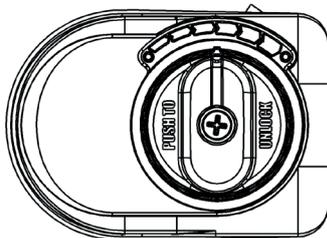


1) Orient the reference ring (2) as in the left picture (arrow dimensions increasing clockwise). Insert the oriented ring (2) into

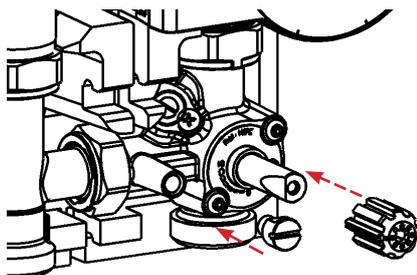


the actuator guides (1).

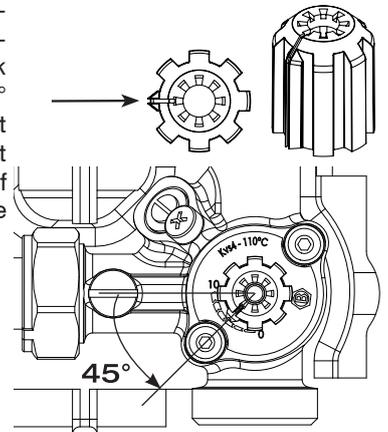
2) Verify that the indicator on the actuator knob is at half way run (factory setting), aligned with the notch on the reference ring (2). If necessary, restore this configuration by pressing and rotating the actuator knob and then release it.



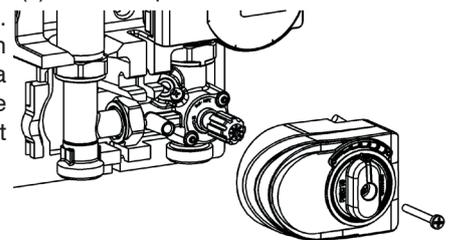
3) Insert the adaptor (3) on the valve stem and screw the anti-rotation pin (4).



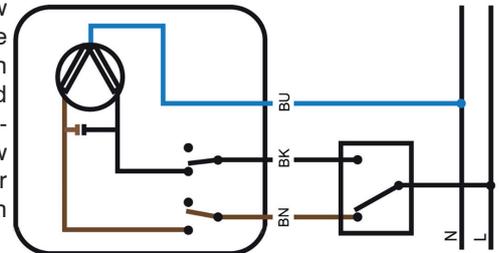
4) Rotate the valve obturator, acting on the adaptor, positioning the mark on the adaptor (3) at 45° between the hot inlet port and the system return port (corresponding to half way of the mixing valve run).



5) Apply the actuator (1) as in the picture and screw it with the locking screw (5). This configuration corresponds to a 50% mixing mode (hot and cold port half way open).



Connect the actuator to a 3 point weather compensated controller, or other device able to manage such actuator, to regulate the flow temperature depending on the outside and room temperatures. Follow the actuator wiring diagram shown here.

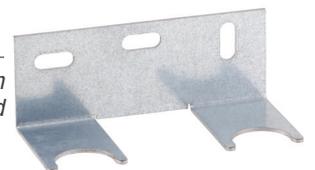


**This procedure is valid also for the group reversed on the installation field.**

### Accessories

## 42D.DN20

Bracket for wall mounting of the distribution and regulating group, with screws and anchors



Hole centre distance: 45 mm  
Hole diameter: 8 mm

Code

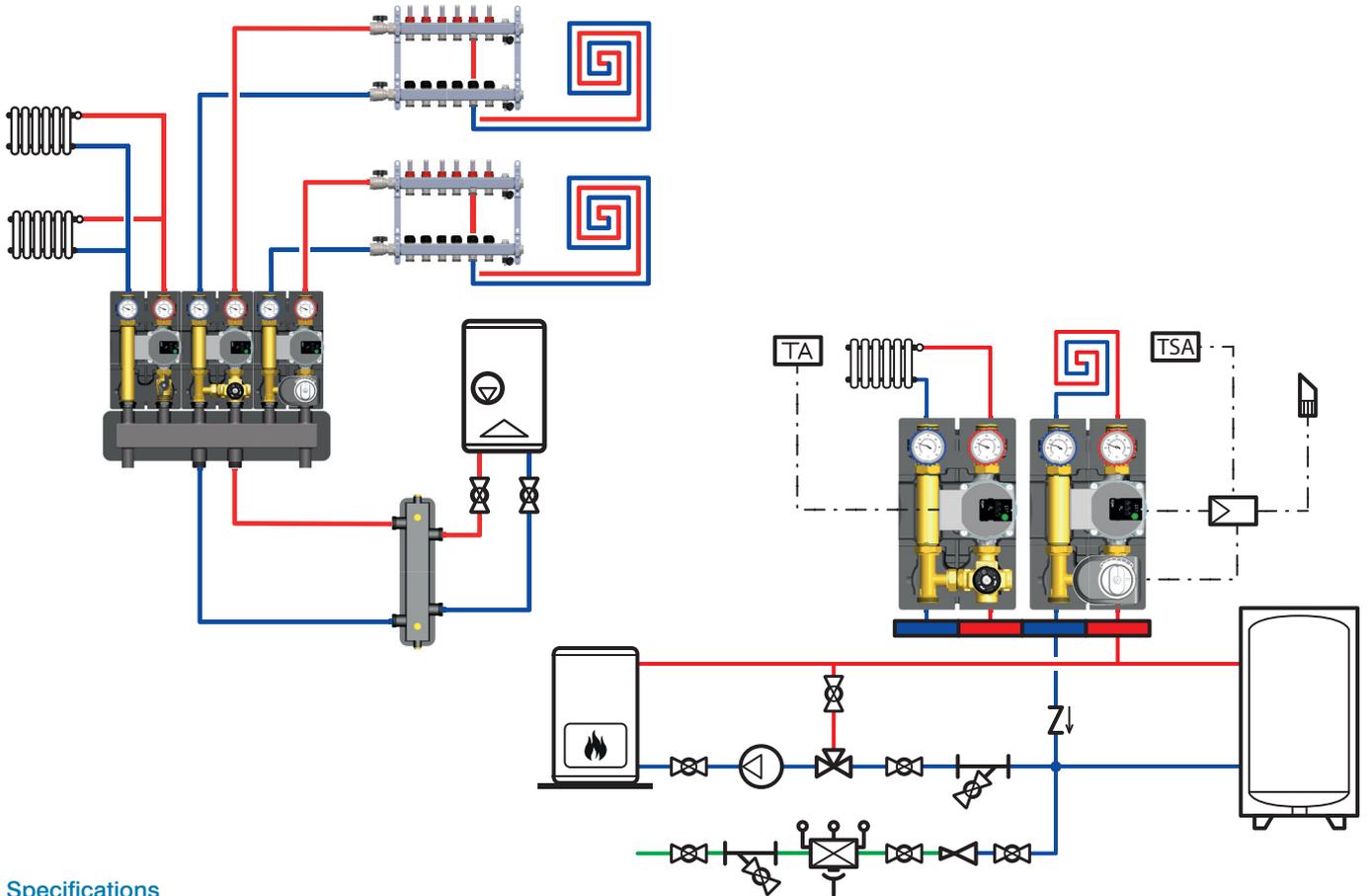


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## MOTORIZED AND MOTORIZABLE REGULATING GROUP DN 20

### System diagrams



### Specifications

#### Series 07G.04.DN20

Regulating group with mixing valve fitted to be actuated. G 1 M connections with plane gaskets to the primary circuit and G 1 M+G 3/4 F double thread connection to the secondary circuit. Centre distance between flow and return connections 90 mm. Height of flow and return lines 277 mm. Dimensions of the group with shell 179x298x139 mm (Width x Height x Depth). The group is composed of: mixing valve in brass fitted to be actuated; ball shut-off valves in brass on the flow and return of the secondary circuit; POM check valve on the return line; flow and return temperature gauges with 0–120 °C scale. High-efficiency pump Wilo Para 15-130/7-50/SC-9 (Grundfos UPM3 AUTO 15-70 130, 3 constant speed pump Grundfos UPSO 15-65 130 (Extra EU)), electric supply 230 V (50 Hz). Complete with 3 point actuator M030101DAB with torque 10 N·m, protection class IP 44, electric supply 230 Vac-50 Hz, power consumption 4 VA, running time 120 s (90°), supply cable length 1,5 m. Insulation shell in EPP. Working temperature range 5–90 °C. Maximum working pressure 10 bar.

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Regulating group with mixing valve fitted to be actuated. G 1 M connections with plane gaskets to the primary circuit and G 1 M+G 3/4 F double thread connection to the secondary circuit. Centre distance between flow and return connections 90 mm. Height of flow and return lines 277 mm. Dimensions of the group with shell 179x298x139 mm (Width x Height x Depth). The group is composed of: mixing valve in brass fitted to be actuated; ball shut-off valves in brass on the flow and return of the secondary circuit; POM check valve on the return line; flow and return temperature gauges with 0–120 °C scale. High-efficiency pump Wilo Para 15-130/7-50/SC-9 (Grundfos UPM3 AUTO 15-70 130, 3 constant speed pump Grundfos UPSO 15-65 130 (Extra EU)), electric supply 230 V (50 Hz). Insulation shell in EPP. Working temperature range 5–90 °C. Maximum working pressure 10 bar.