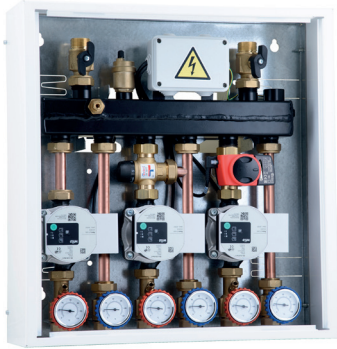


DN 20 KIT WITH DISTRIBUTION AND REGULATING GROUPS IN BOX

Description



70G.DN20



71G.DN20



72G.DN20



73G.DN20

The 70G.DN20 kits, pre-assembled in the box, allow the thermal regulation of heating and cooling systems. They include the following components, which can also be purchased individually:

- a box for wall or recessed installation (70G.00);
- a manifold with hydraulic separator that can be deactivated (present in the 70G.00 box);
- two or three distribution and regulating groups in the following models:
 - direct distribution groups (71G.DN20);
 - thermostatic regulating groups (72G.DN20);
 - 3-point motorized regulating groups (73G.DN20).

The groups are supplied ready for use, pre-assembled on

the manifold and pre-wired to the wiring box (99B.08).

In addition to the solutions proposed on the catalogue, it is possible to:

- add a third group to the kit versions containing only two groups;
- create completely customized kits in box, choosing the type of each group based on your system needs and assembling them independently on the bench or site.

The manifold features a built-in hydraulic separator that can be activated/deactivated using a specific screw.

The 71G.DN20 direct distribution group allows the circulation of the thermal fluid, coming from the primary circuit, without performing any thermal regulation. It is used when the same flow temperature of the primary circuit is requested by the user in heating and cooling systems. The 72G.DN20 thermostatic regulating group allows the circulation of the thermal fluid, coming from the primary circuit, by keeping the temperature at a pre-set value (fixed point) through the help of a mixing valve with thermostatic element. It is used in heating systems in general and radiant panel systems.

The 73G.DN20 motorized regulating group 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 cooling systems and radiant panel systems with flow temperature regulation based on room and outside temperature (also called outside or weather or climate compensated control).

Depending on the models, the groups are composed of a pump, flow/return shut-off valves with probe pocket, thermostatic or motorized mixing valve, 3-point actuator, flow/return temperature gauges, overrideable check valve.

Range of products

70G.DN20: pre-assembled kit in box		XXX	XX	X
Pre-assembled kit composed of a box, manifold with hydraulic separator, 2 or 3 distribution or regulating groups, connections G 1 M-G 3/4 F	70G			
Type of the three groups composing the kit (each of the three digits can be 0, 1, 2 or 3) 0 = no group, connections closed with a plug 1 = Direct distribution group 71G.DN20 2 = Thermostatic regulating group 72G.DN20 3 = Motorized regulating group 73G.DN20		000		
No variant			00	
Pump Grundfos UPM3 AUTO 15-70 130				L
Pump Wilo Para 15-130/7-50/SC-9				P

70G.00: box with manifold +hydraulic separator and wiring box		XX	X
Box with manifold +integrated hydraulic separator and pre-wired wiring box	70G 000		
No variant		00	
Pre-wired cables for pumps Grundfos UPM3 AUTO 15-70 130			L
Pre-wired cables for pumps Wilo Para 15-130/7-50/SC-9			P

71G.DN20, 72G.DN20, 73G.DN20: distribution and regulating groups for pre-assembled kit in box		XXX	XX	X
Direct distribution group 71G.DN20, connections G 1 RN - G 3/4 F	71G	020		
Thermostatic regulating group 72G.DN20, connections G 1 RN - G 3/4 F	72G	020		
3-point motorized regulating group 73G.DN20, connections G 1 RN - G 3/4 F	73G	020		
No variant			00	
Pump Grundfos UPM3 AUTO 15-70 130				L
Pump Wilo Para 15-130/7-50/SC-9				P

Technical features

Max. working temperature: **90 °C**
 Max. working pressure: **4 bar**
 Threaded connections: **ISO 228-1**
 Connection centre distance:
 - primary (manifold+separator): **270 mm**
 - secondary (groups): **70 mm**
 Pump: Grundfos UPM3 AUTO 15-70 130
 Wilo Para 15-130/7-50/SC-9
 Suitable fluids: **water, glycol solutions (max 30%)**
 Adjustment temperature range (72G.DN20): **20–55 °C**
 Factory setting (72G.DN20): **MIN**
 Factory configurations:
 - hydraulic separator: **open**
 - 73G.DN20: **actuator and valve at half run**
 Temperature gauge scale: **0–120 °C**
 Max. tightening torque of the hydraulic separator screw: **15 N·m**
 (10 mm hexagonal key)

Materials

Ball valves

- Body: **brass EN 12165 CW617N**
- Gaskets: **PTFE, EPDM, Viton**

Manifold+hydraulic separator:

- Body: **painted steel**
- Gaskets: **non asbestos fiber + EPDM**
- Screw for separator activation: **brass CW614N/CW617N**

Thermostatic mixing valve (72G.DN20)

- Body: **brass EN 12165 CW617N**
- Fittings: **brass CW614N/CW617N**
- Hydraulic seals: **EPDM, non asbestos fiber**
- Spring: **stainless steel AISI 302**

Motorizable mixing valve (73G.DN20)

- Body: **brass EN 12165 CW617N**
- Obturator: **brass EN 12164 CW617N**
- Hydraulic seals: **EPDM**

3 point actuator (73G.DN20 - M10.03P.3MM)

- Supply: **230±10% Vac/50–60 Hz**
- Consumption: **4,5 VA**
- Protection class/Electric protection: **IP 40/Class II**
- Cable length (14D.18): **0,65 m**
- Ambient temperature (max. humidity 95% non condensing)
 - Functioning: **-5–50 °C EN 60721-3-3 Cl. 3K4**
 - Transport: **-30–70 °C EN 60721-3-2 Cl. 2K3**
 - Storage: **-10–50 °C EN 60721-3-1 Cl. 1K2**

Elongations: **copper**

Check valve insert

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

Air vent:

- Body: **brass EN 12165 CW617N**
- Floating device: **PPE**
- Spring: **stainless steel**
- Gasket: **NBR**

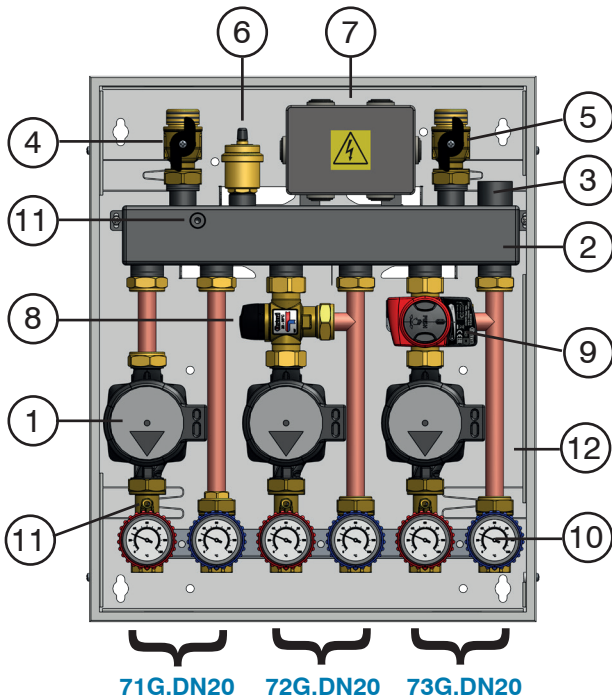
Pump

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

Box: **painted steel**

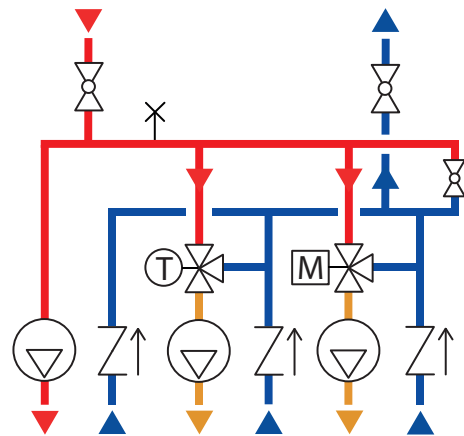
Optional insulation (43D.02)

- Material: **closed cell expanded PE-X**
- Thickness: **15 mm**
- Density: **30 kg/m³ (inner-outer)**
- Thermal conductivity(ISO 2581):
 - **0,036-0,043 W/(m·K) (10 °C) (inner-outer)**
 - **0,041-0,047 W/(m·K) (40 °C) (inner-outer)**
- Coefficient of resistance to water vapour diffusion (ISO 12572): **1300**
- Working temperature range: **0–100 °C**
- Reaction to fire (DIN 4102): **class B2**

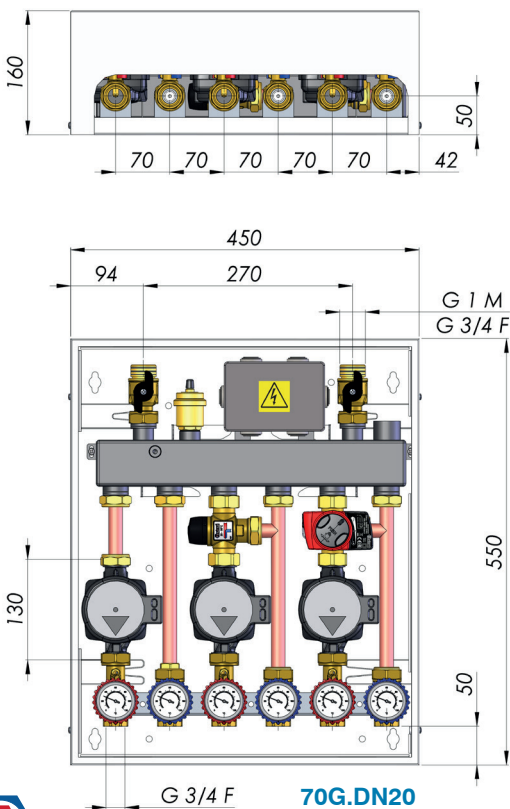


70G.DN20-71G.DN20-72G.DN20-73G.DN20		
1	Pump	Grundfos UPM3 AUTO, Wilo Para
2	Manifold with hydraulic separator	
3	Hexagonal screw for activation/deactivation of the hydraulic separator	
4	Ball valve, primary side flow	
5	Ball valve, primary side return	
6	Automatic air vent	
7	Wiring box	
8	Thermostatic mixing valve (72G.DN20)	
9	3-point motorized mixing valve (73G.DN20)	
10	Ball valve with temperature gauge and overridable check valve (under the blue knob)	
11	Pocket for 7 mm probe	
12	Box	

- Pump
- Thermostatic mixing valve
- Motorized mixing valve
- Check valve
- Automatic air vent
- Temperature gauge
- Ball shut-off valve

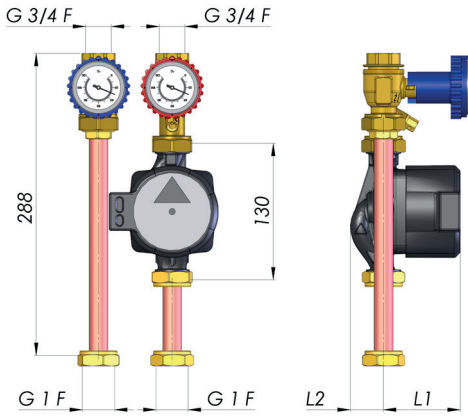


Dimensions



Code	Component groups	Pump	Manifold volume [litres]	P [bar]	Weight [kg]	N. P/B	N. P/C
70G 130 00L	71G+73G	Grundfos UPM3 AUTO 15-70 130	1,13	4	19	-	1
70G 130 00P	71G+73G	Wilo Para 15-130/7-50/SC-9	1,13	4	18,8	-	1
70G 110 00L	71G+71G	Grundfos UPM3 AUTO 15-70 130	1,13	4	18,3	-	1
70G 110 00P	71G+71G	Wilo Para 15-130/7-50/SC-9	1,13	4	18	-	1
70G 120 00L	71G+72G	Grundfos UPM3 AUTO 15-70 130	1,13	4	18,7	-	1
70G 120 00P	71G+72G	Wilo Para 15-130/7-50/SC-9	1,13	4	18,5	-	1
70G 330 00L	73G+73G	Grundfos UPM3 AUTO 15-70 130	1,13	4	19,7	-	1
70G 330 00P	73G+73G	Wilo Para 15-130/7-50/SC-9	1,13	4	19,6	-	1
70G 133 00L	71G+73G+73G	Grundfos UPM3 AUTO 15-70 130	1,13	4	22,7	-	1
70G 133 00P	71G+73G+73G	Wilo Para 15-130/7-50/SC-9	1,13	4	22,4	-	1
70G 220 00L	72G+72G	Grundfos UPM3 AUTO 15-70 130	1,13	4	19,2	-	1
70G 220 00P	72G+72G	Wilo Para 15-130/7-50/SC-9	1,13	4	19	-	1
70G 123 00L	71G+72G+73G	Grundfos UPM3 AUTO 15-70 130	1,13	4	22,4	-	1
70G 123 00P	71G+72G+73G	Wilo Para 15-130/7-50/SC-9	1,13	4	22,1	-	1
70G 122 00L	71G+72G+72G	Grundfos UPM3 AUTO 15-70 130	1,13	4	22,2	-	1
70G 122 00P	71G+72G+72G	Wilo Para 15-130/7-50/SC-9	1,13	4	21,9	-	1

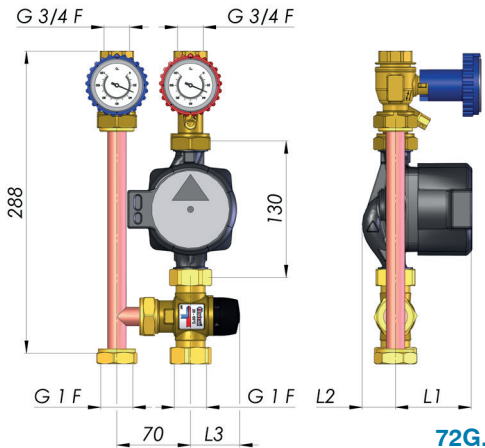
N. P/B: number of pieces in box - N. P/C: number of pieces in carton
Other types of pumps should be evaluated



71G.DN20

Code	Pump	L1 [mm]	L2 [mm]	P [bar]	Weight [kg]	N. P/B	N. P/C
71G 020 00L	Grundfos UPM3 AUTO 15-70 130	92	36	4	2,9	-	1
71G 020 00P	Wilo Para 15-130/7-50/SC-9	93	32	4	2,8	-	1

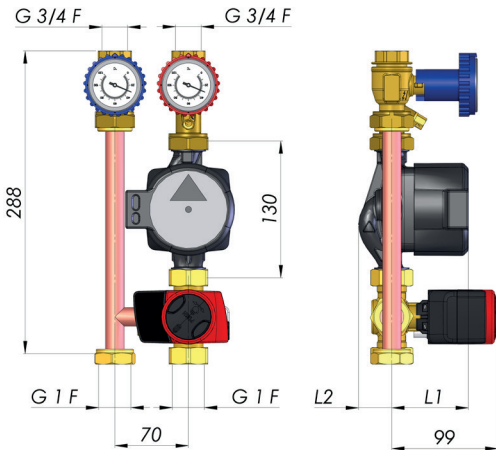
N. P/B: number of pieces in box - N. P/C: number of pieces in carton
Other types of pumps should be evaluated



72G.DN20

Code	Pump	°C	Kv of mixing valve	L1 [mm]	L2 [mm]	L3 [mm]	P [bar]	Weight [kg]	N. P/B	N. P/C
72G 020 00L	Grundfos UPM3 AUTO 15-70 130	20-55	3,5	92	36	47-53	4	3,25	-	1
72G 020 00P	Wilo Para 15-130/7-50/SC-9	20-55	3,5	93	32	47-53	4	3,35	-	1

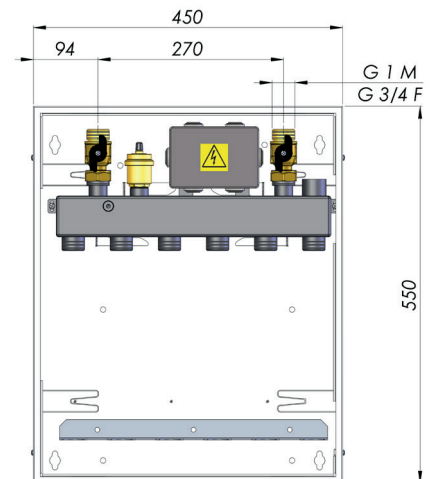
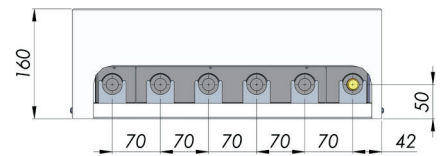
N. P/B: number of pieces in box - N. P/C: number of pieces in carton
Other types of pumps should be evaluated



73G.DN20

Code	Pump	Kv of mixing valve	L1 [mm]	L2 [mm]	P [bar]	Weight [kg]	N. P/B	N. P/C
73G 020 00L	Grundfos UPM3 AUTO 15-70 130	4	92	36	4	3,6	-	1
73G 020 00P	Wilo Para 15-130/7-50/SC-9	4	93	32	4	3,5	-	1

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



70G.00

Code	Cable for pump	Manifold volume [litres]	P [bar]	Weight [kg]	N. P/B	N. P/C
70G 000 00L	Grundfos	1,13	4	12,57	-	1
70G 000 00P	Wilo	1,13	4	12,58	-	1

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

Configurator

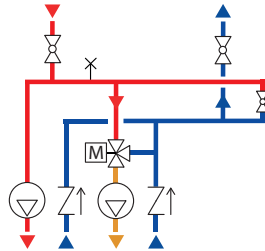
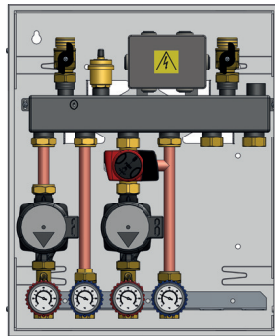
The catalog contains the configurations shown in the figure below, all factory pre-assembled and pre-wired (codes and dimensions visible at the bottom of page 3). Kits are always supplied with the manifold suitable for three groups. In codes with only two groups, the connections for the third group are equipped with caps.

It is always possible to add a third group, choosing it among the various models of 71G.DN20 (direct distribution groups), 72G.DN20 (thermostatic regulating groups) and 73G.DN20 (3-point motorized regulating groups).

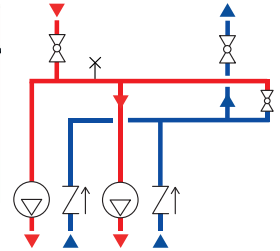
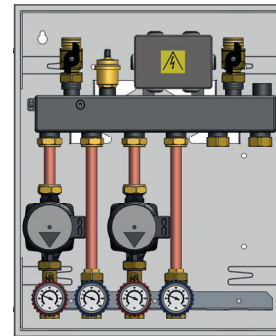
It is possible to create completely customized kits in box, choosing the type of each group according to the system needs and assembling them on the bench or field. For this purpose, it's necessary to purchase:

- a pre-assembled 70G.00 kit consisting of a box, manifold with deactivable hydraulic separator, pre-wired box to connect three pumps and two M10.03P.3MM 3-point actuators;
- two or three distribution or regulating groups 71G.DN20, 72G.DN20 and 73G.DN20;
- if necessary, an additional cable 14D.18 for 3-point actuator M10.03P.3MM if there are three motorized groups;
- optional inner insulation 43D.02.

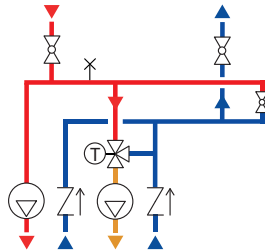
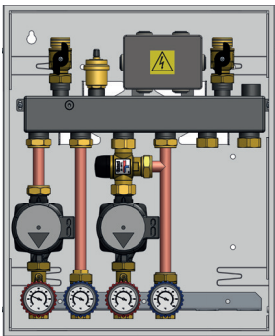
NB: when assembling a fully customized kit in box, we suggest installing the 71G.DN20 direct groups, if present, starting from the left connections of the manifold, i.e. closer to the hot water inlet from the boiler.



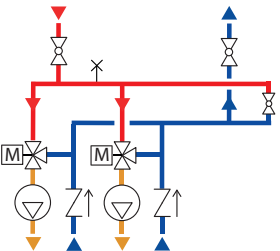
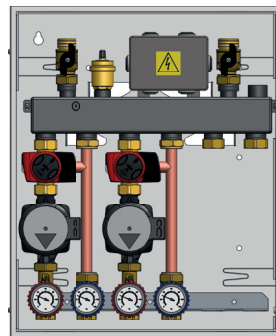
70G 130 00L
70G 130 00P



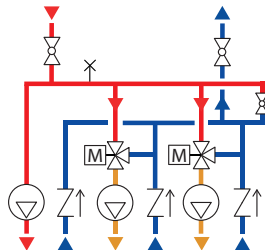
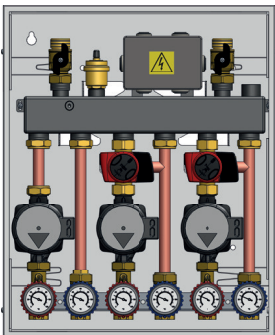
70G 110 00L
70G 110 00P



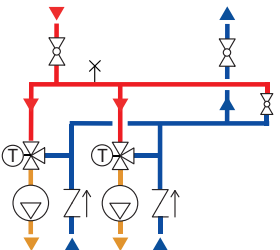
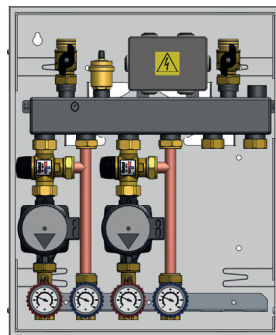
70G 120 00L
70G 120 00P



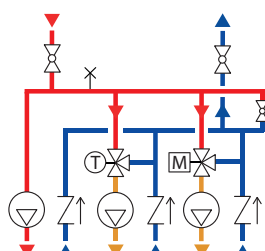
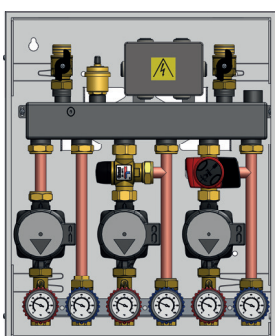
70G 330 00L
70G 330 00P



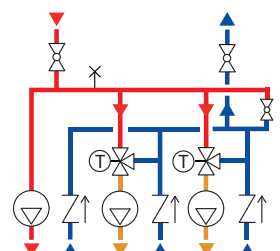
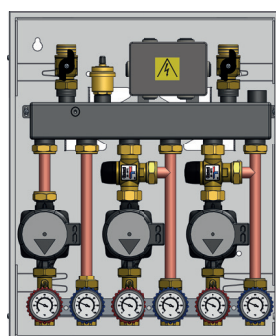
70G 133 00L
70G 133 00P



70G 220 00L
70G 220 00P



70G 123 00L
70G 123 00P



70G 122 00L
70G 122 00P

Diagrams

1) Sizing of the manifold with integrated hydraulic separator (operation for specialized/authorized technical personnel).

- Operation as simple manifold, hydraulic separator closed. Use diagram 1 to calculate the head losses between the flow and return of the groups (blue curve).

- Operation as a manifold with integrated hydraulic separator (open, factory configuration). Diagram 1 shows the head losses of the primary circuit (red curve, path between the primary connections, towards the boiler, and the hydraulic separator) and the head losses of the secondary circuit (green curve, path between the flow and return of the secondary connections of the regulating groups through the hydraulic separator).

2) Partial opening of the hydraulic separator (hydraulic characteristic of the integrated hydraulic separator): the table shows the Kv value corresponding to the number of opening turns of the screw (1), starting from the screw fully screwed clockwise (hydraulic separator closed). Use the configuration with partially open separator when the pump, upstream of the separator, must supply water both to the separator and to other circuits in parallel, upstream of the separator as well. In this way the fluid is also allowed to reach the circuits upstream of the separator.

Diagram 1. Hydraulic characteristics: head losses of the manifold with integrated hydraulic separator

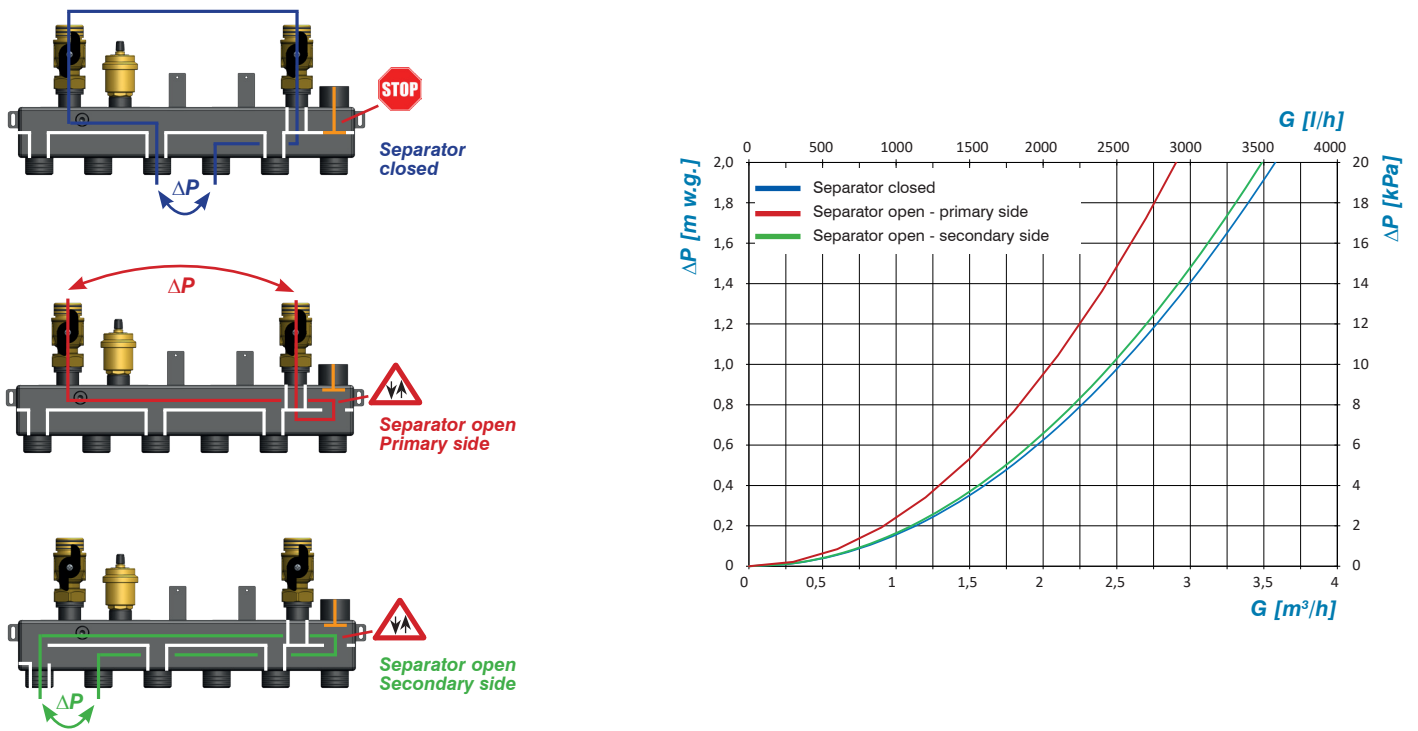
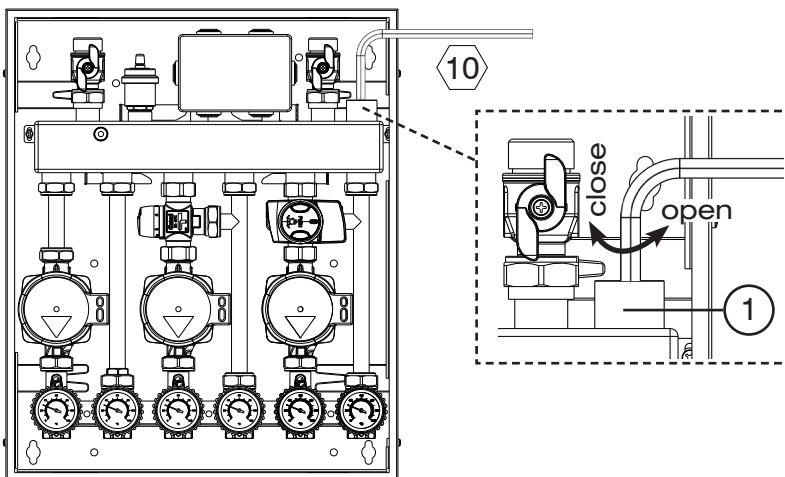


Table: hydraulic characteristics of the integrated hydraulic separator



Nr. of opening turns of the hydraulic separator screw	Kv [m³/h]
0 (Fully closed)	0
1	1,3
2	2,6
3	3,6
4	5,0
5	5,8
6	6,2
7	6,4
Fully open	6,5

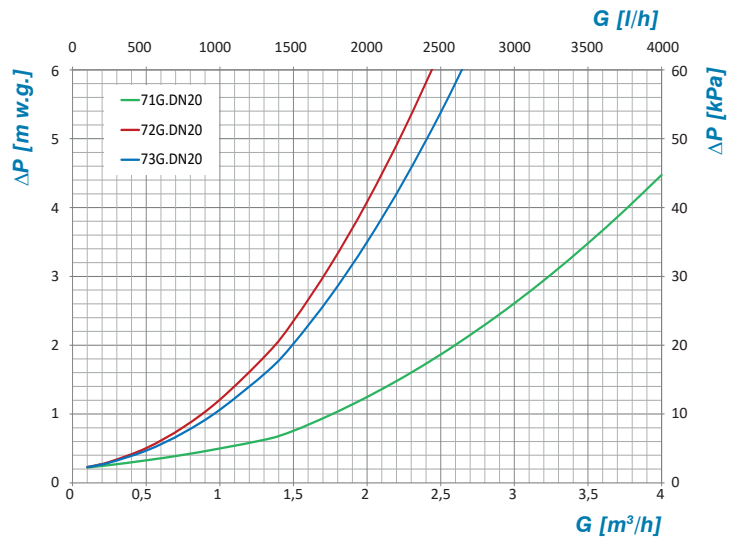
Group sizing (operation for specialized/authorized technical personnel).

Step 1: head losses of the group without pump. Enter on the x-axis of the first diagram (here beside) 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 the y-axis.

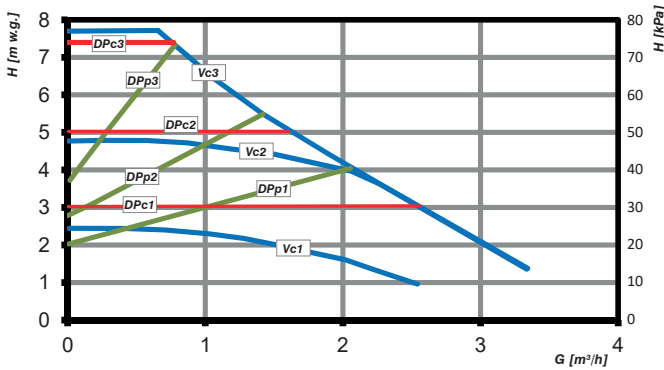
Step 3: pump validation. Calculate the difference between the available head of the pump and the head losses of the group without pump. The remaining pump head should be higher than the head losses of the rest of the system: if so, the selected pump is suitable to supply water to the rest of the system, 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 direct distribution group 71G.DN20, thermostatic regulating group 72G.DN20 and motorized regulating group 73G.DN20, all of them without pump



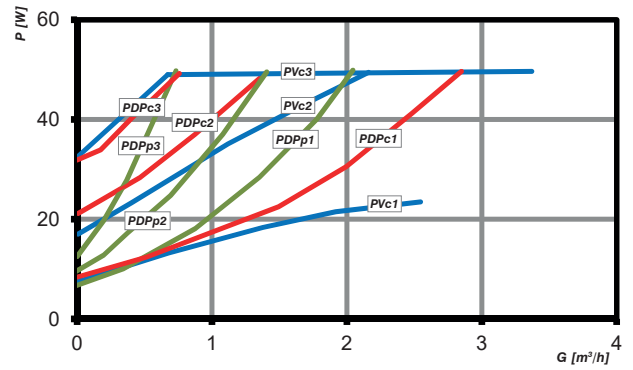
Head and power consumption of the pumps

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



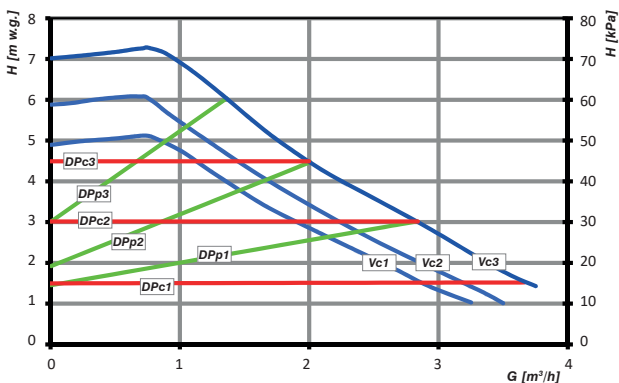
Vc: Constant speed
 DPp: Proportional pressure
 DPc: Constant pressure

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



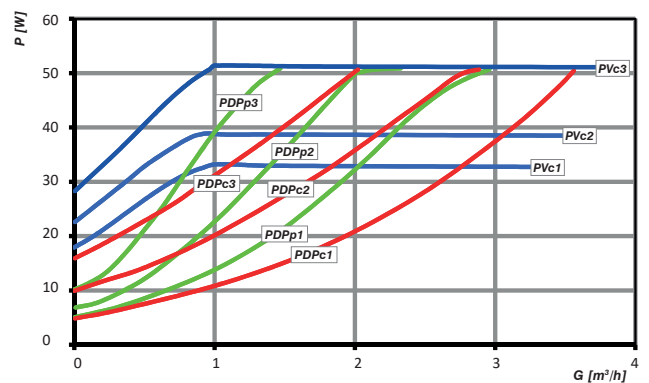
PVC: Power consumption at constant speed
 PDPp: Power consumption at proportional pressure
 PDPc: Power consumption at constant pressure

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)



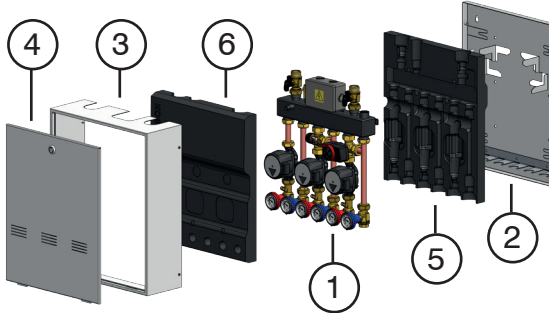
PVC: Power consumption at constant speed
 PDPp: Power consumption at proportional pressure
 PDPc: Power consumption at constant pressure



Features

The pre-assembled kit in the box is composed of:

- manifold with integrated hydraulic separator, pre-installed groups and pre-wired wiring box(1);
- box bottom (2);
- box sides (3);
- box cover (4);
- optional rear insulation shell (5);
- optional front insulation shell (6).



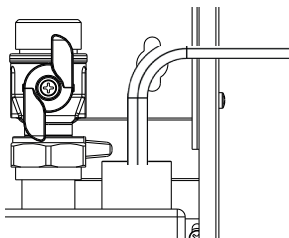
Advantages

High performance. The thermostatic mixing valve of the 72G.DN20 group has the same flow coefficient Kv as the similar DN 25 groups. This allows similar performances to the DN 25 family with reduced installation spaces.

Pre-assembled and pre-wired, fast “layer” installation. The groups are supplied pre-installed on the manifold and pre-wired to the wiring box, ready to use. This allows to easily and quickly install the different “layer” components: rear part of the box, optional rear insulation, groups with manifold, optional front insulation, frame and cover.

Deactivable hydraulic separator.

Through the specific screw, it's possible to close, partialize and open the hydraulic separator. The product is therefore suitable for several system configurations.



Extreme compactness.

Only 45 cm wide and 55 high for a complete kit for building thermal regulation. The 130 mm pump and the 70 mm center distance of the groups have made it possible this remarkable reduction in overall dimensions.

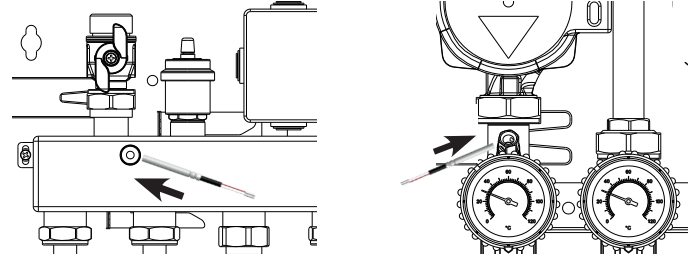
Customizable. Choosing among the direct groups 71G.DN20, thermostatic groups 72G.DN20 and motorized groups 73G.DN20 it's possible to complete the kits equipped with two groups only or create completely customized kits based on your system needs and assembling them directly on the bench or site.

Aesthetic box. The box can be both wall-mounted and wall-recessed.

Insulation, energy saving. The optional insulation allows the thermal insulation of the kit with energy savings in both heating and cooling systems.

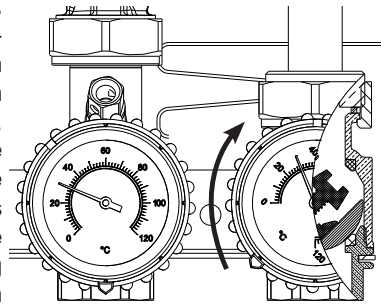
Probe pockets. The kit is equipped with pockets for 7 mm diameter probe:

- one on the manifold to measure the flow temperature of the primary side;
- one under the red knob of each group to measure the flow temperature to each secondary circuit.

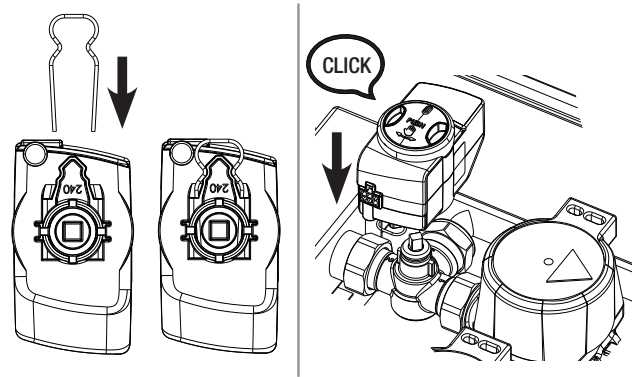


Check valve with override.

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.



Actuator with fast assembly system. The 3-point actuator of the 73G.DN20 group is equipped with a fast “one-hand assembly” system through a clip. Simply manually engage the actuator on the valve body by pressing until it “clicks”. No screws or other tools are needed. To extract the actuator, remove the clip and unlock the actuator from the valve stem.



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.

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

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 during the customization of the kits.

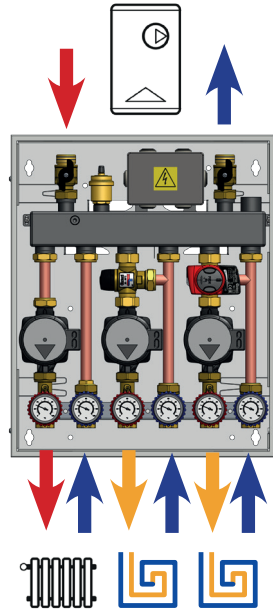
Installation

The possible installation ways of the kits are as follows:

- wall-mounted installation;
- wall-recessed installation.

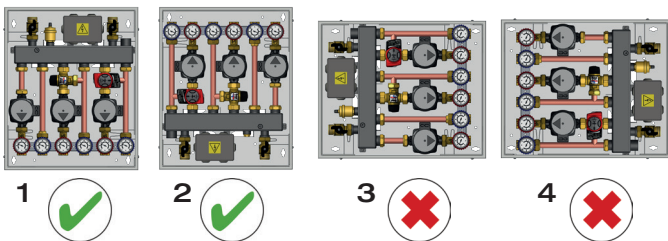
The 71G.DN20, 72G.DN20 and 73G.DN20 groups are not reversible, therefore the flow directions indicated in the figure here beside must be respected. In case of a totally customized kit setup (box+manifold 70G.00 with choice of two or three groups), it is recommended to install the 71G.DN20 direct groups near the boiler flow.

Complete information on installation can be found in the instruction sheet LB00225.



Installation position. The kit can be installed in one of the ways shown in the picture, with the pump rotation axis and manifold always horizontal:

- position 1: recommended;
- position 2: allowed only after replacing the air vent by applying a 1/2" plug;
- position 3 and 4: the kit cannot be installed with the manifold in vertical position since air, difficult to evacuate, could accumulate in the upper part;
- lay-down position (on the floor or ceiling): not allowed.



Adding a group/Customized kits. Kits with two groups can be later completed by adding a third group. It is also possible to create completely customized kits by inserting groups of the preferred type (see configurator on page 5):

- screw the groups to the manifold using the nuts with flat gasket;
- connect the pipes and carry out a tightness test with water;
- connect the electrical devices to the wiring box and, if necessary, add additional terminal pins.

Manifold with integrated hydraulic separator

The kit's manifold integrates, in its side part, a deactivable hydraulic separator. The hydraulic separator creates an area with almost negligible head losses so as to make the pumps on the primary side independent from those on the secondary side, avoiding mutual influences. Two hydraulically independent circuits are therefore created:

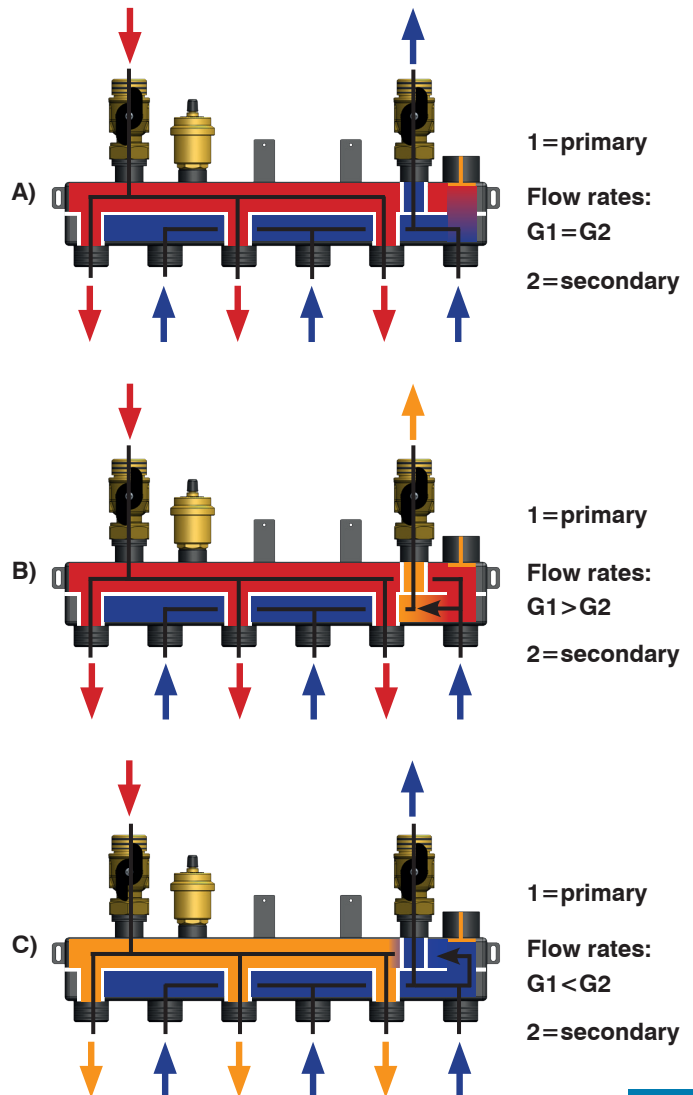
- 1) primary circuit from the generator to the separator chamber,
- 2) secondary circuit from the separator chamber to the secondary systems.

On the primary side there may be one or more pumps as well as on the secondary side one or more groups, with their own pump, can operate at different times (variable flow rate). Depending on the flow rate supplied by the primary side pumps and the flow rate supplied by the secondary side pumps, three operating phases can be visible:

A) primary flow rate G_1 = secondary flow rate G_2 : the flow rate passes through the separator and does not undergo temperature variations;

B) primary flow rate G_1 > secondary flow rate G_2 : the primary flow rate in excess recirculates in the separator chamber and returns to the generator. An increase in the return temperature to the generator is obtained;

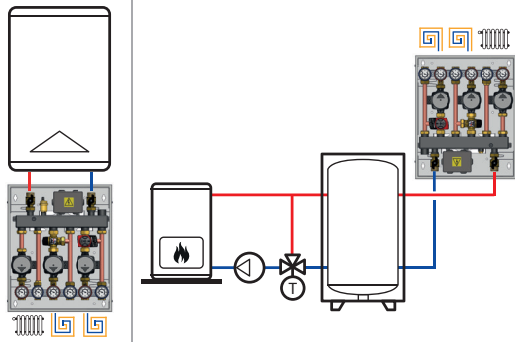
C) primary flow rate G_1 < secondary flow rate G_2 : the missing flow rate for the secondary pumps is taken from the return of the systems. A decrease of the flow temperature to the secondary circuits is obtained.



Opening/closing/partialization of the hydraulic separator.

Depending on the presence of pumps on the primary side, these are some system recommendations:

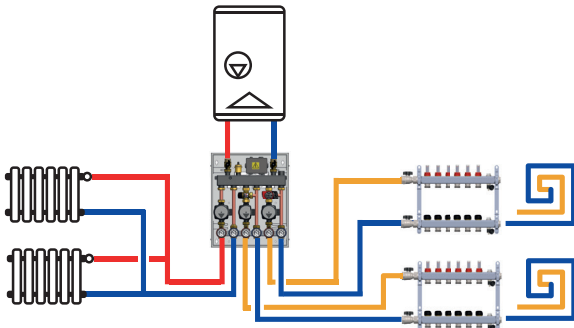
- Closing of the hydraulic separator. If there are no circulation pumps upstream of the kit, the kit must be installed with the hydraulic separator completely closed. Example: inertial water storage or upstream generator without pump.



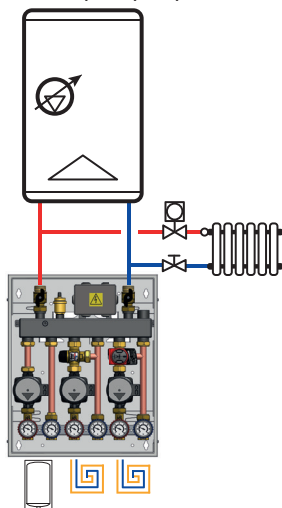
- Opening of the hydraulic separator. If there are circulation pumps upstream of the kit, the kit must be installed with the hydraulic separator completely open. Advantages:

- efficient management of variable flow rate systems;
- the secondary side pumps are independent of one other and are not in series with the primary side pump (the heads are not summed);
- when the mixing valves of the groups work with the hot water inlet port almost closed (the building is at temperature), the primary side pump does not push on this port but the flow rate is recirculated through the hydraulic separator;
- mixing valve operation is stable as it is managed only by the pump of the respective group, positioned correctly downstream of the valve.

Example: installation under wall-mounted boilers.



- Partial opening of the hydraulic separator. Use the configuration with partially open separator when the pump, upstream of the separator, must supply water both to the separator and to other circuits in parallel, upstream of the separator as well. In this way the fluid is also allowed to reach the circuits upstream of the separator.



Setting of mixing valves

- Thermostatic mixing valve setting (72G.DN20).

FIRST SYSTEM START UP. The fixed point temperature value can be set with the knob before installing the group or, after the installation, exclusively with the SYSTEM COLD. To set a temperature value different from the factory one, proceed as follows:

1) The graduated scale on the knob (fig. 1) corresponds to the temperature values shown in the table beside.

2) Set a mixed water temperature value slightly lower than the design temperature (fig. 2). Activate the generator and wait until it reaches its design working temperature (higher than the valve setting). Activate the pump group. Wait until the mixed water temperature gets stable. Read its value on the flow temperature gauge.

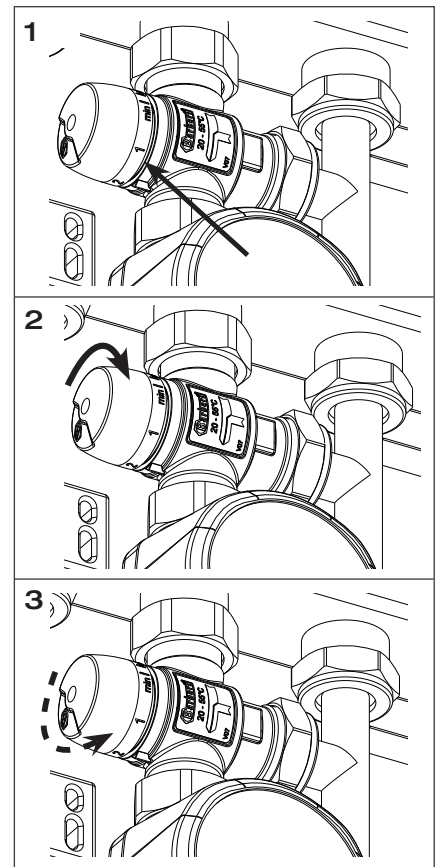
	20-55 °C
Min	20
1	28
2	35
3	41
4	47
5	51
Max	55
	Min

3) Counterclockwise rotate step by step the knob to increase the temperature (fig. 3). Then wait until the temperature gets stable. Read its value on the flow temperature gauge. Proceed in the same way until the design temperature is reached.

NEXT SETTING. If later a change should be needed in the valve setting, proceed as follows.

Case 1: temperature lower than the current setting. Let the system get cold to obtain at least a return temperature lower than the new valve setting. Follow points 1, 2, 3.

Case 2: temperature higher than the current setting. In this case, the setting can be carried out also with the system running as well as with the system cold. Follow points 1 and 3.



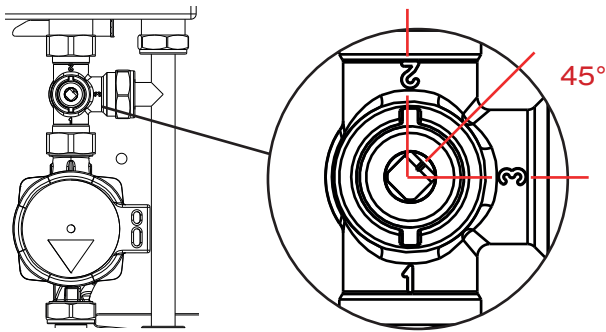
- Motorized mixing valve setting (73G.DN20).

The valve ports are marked with numbers:

- 1: mixed water outlet;
- 2: hot water inlet (flow from the manifold);
- 3: cold water inlet (return from the system).

Factory configuration: valve in the intermediate position between the hot and cold water inlet ports (the chamfer with reference notch on the valve stem is oriented at 45° between port 2 and 3).

The temperature of the mixed water in the system flow (design value) is obtained by combining the actuator with a controller (not supplied in the package).



Installation of the 3 point actuator M1003P016001 (73G.DN20)

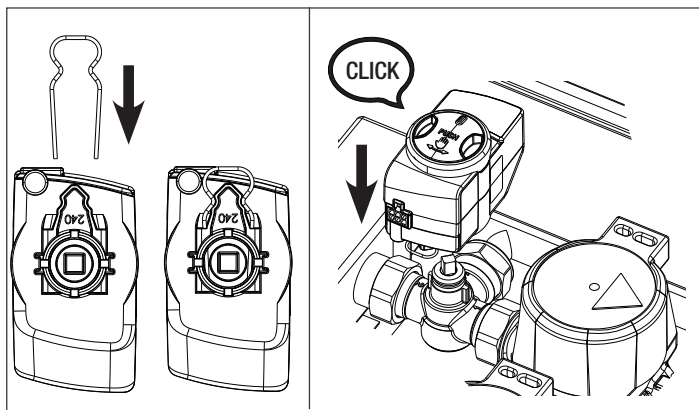
The actuator is equipped with a fast installation system with one hand ("one-hand assembly") by clip. It is supplied in "Mid position" factory configuration, rotated halfway (45°, the indicator is longitudinal to the actuator, halfway along the white/black arrow).

To remove the actuator, slide off the clip and lift the actuator from the valve stem.



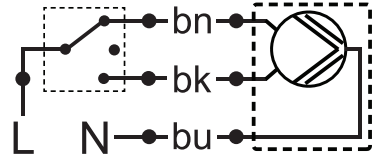
To reinstall the actuator, proceed as follows:

- apply the clip to the actuator;
- restore the factory conditions of the valve and actuator, if necessary;
- orient the actuator with the upper data label facing the port n. 3;
- manually engage the actuator on the valve body by pushing, until hearing "click".



Wiring diagram of 3 point actuator M1003P016001

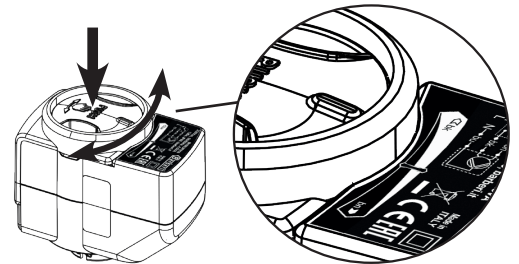
Clockwise/anticlockwise rotation. By closing the electrical contact on the brown cable, the valve rotates clockwise. By closing the electrical contact on the black cable, the valve rotates counterclockwise. When both contacts (brown and black wires) are open, the valve remains steady in its current position (mixing function).



M10.03P.3MM: 3 points		
Colour		Indication
BN		Live for clockwise rotation
BK		Live for anti-clockwise rotation
BU		Neutral
L	-	Live
N	-	Neutral

Connect the actuator to a weather compensated controller or other device able to manage 3-point actuator, to adjust the flow temperature according to the outside and internal room temperatures.

Manual operation for system fill/drain. This operation separates the valve stem from the actuator rotation mechanism. Press and rotate the knob to the actuator mid position in order to manually connect the common port 1 to both ports 2 and 3 ("Mid position").

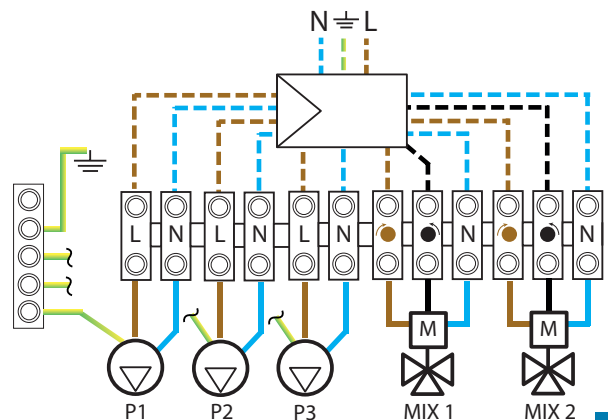


Wiring diagram - Wiring box (99B.08)

The kits on the catalogue are supplied pre-wired to the wiring box. When purchasing only the box with manifold (70G.00) or only the wiring box 99B.08, the wiring box is fitted with cables to supply three pumps and two actuators.

In the following diagram, the wirings shown with a continuous line are factory made, those ones shown with a dashed line must be made during the installation.

In case of composition of a customized kit with all groups on choice or the addition of a third group, follow the wiring diagram and, if necessary, add more clamps.



Accessories

99B.08



Pre-wired electric box to connect 3 pumps and 2 actuators (3 point type) M10.03P.3MM.



Code	Cable for pump	
99B 000 008 0	Grundfos UPM3	1
99B 000 008 1	Wilo Para	1

43D.02



Optional inner insulation for groups in box 70G.DN20.



Material: PE-X

Code	Size	
43D 020 000 21	for 2 groups	1
43D 020 000 22	for 3 groups	1

M10.03P.3MM



Spare 3 point actuator for motorized group 73G.DN20. With rapid assembling on the valve, manual knob and cable.



Protection class: **IP 40**
Frequency: **50-60 Hz**
Power consumption: **4,5 VA**

Code	V	Running time [s]	Nr. poles	Cable connection		
M10 03P 016 001	230	120	3	Rapid	1	10

14D.18



Spare cable for M10.03P.3MM actuator with plug connector - 3 poles

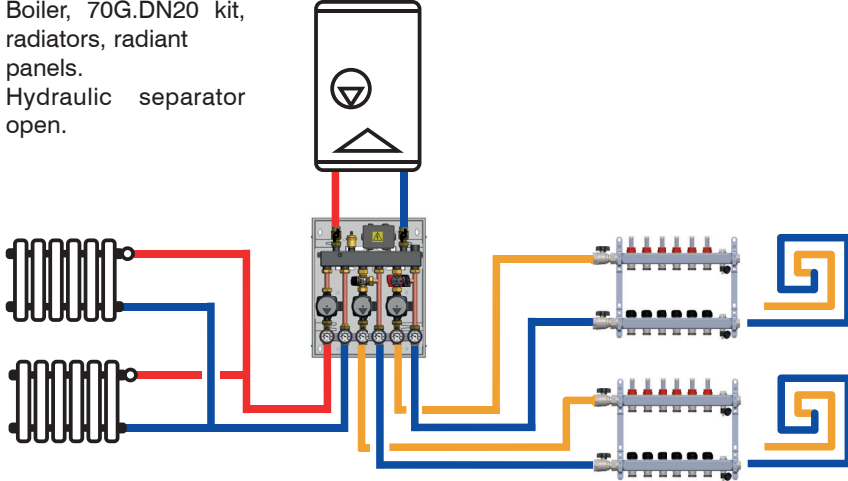


Max working temperature: **105 °C**
Pole cross-section: **3 x 0,75 mm²**
Max electrical resistance (20 °C): **26 Ω/km**

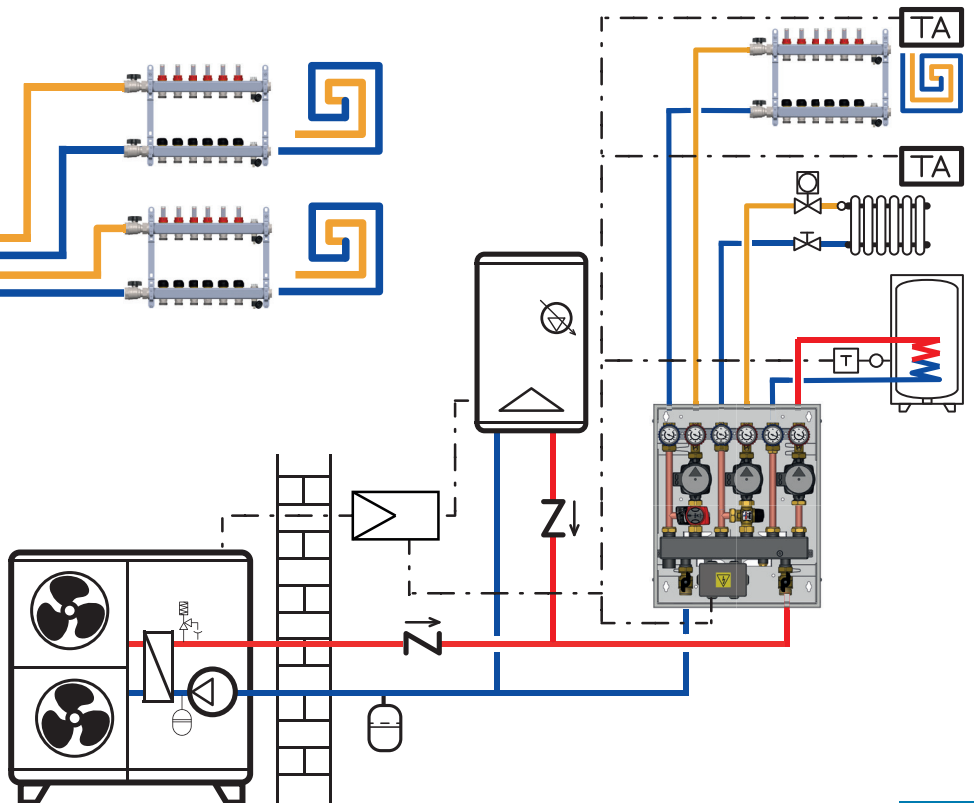
Code	Nr. poles		
14D 050 018	3	-	-

Application diagrams

Boiler, 70G.DN20 kit, radiators, radiant panels. Hydraulic separator open.



Heat pump, boiler, 70G.DN20 kit, radiant panels, radiators, DHW storage. Hydraulic separator open.



Specifications

Series 70G.DN20

Pre-assembled kit for heating and cooling composed of a box, manifold with deactivable hydraulic separator, pre-wired wiring box, 2 or 3 DN 20 groups on choice among: direct distribution 71G.DN20, thermostatic regulating 72G.DN20, 3 point motorized 73G.DN20. Maximum working temperature 90 °C, maximum working pressure 4 bar. Centre distance of primary side connections (manifold+separator) 270 mm, secondary side (groups) 70 mm. Suitable fluids water, glycol solutions (max 30%). Temperature gauge scale 0–120 °C. Components (depending on the models). Box in painted steel. Ball shut-off valves in brass with PTFE, EPDM and Viton gaskets. Manifold with hydraulic separator in painted steel with non asbestos fiber and EPDM gaskets, brass screw for separator activation.

Thermostatic mixing valve (72G.DN20) with brass body and fittings, hydraulic seals in EPDM and non asbestos fiber, stainless steel spring, temperature adjustment range 20–55 °C. Motorizable mixing valve (73G.DN20) with brass body and obturator, EPDM hydraulic seals. 3 point actuator (73G.DN20 - M10.03P3MM) with supply $230 \pm 10\%$ Vac/50–60 Hz, fast assembly by clip. Copper elongations. Check valve insert with POM body and obturator, NBR gasket. Brass air vent with PPE floating device, stainless steel spring, NBR gasket. High-efficiency pump Wilo Para 15-130/7-50/SC-9 (Grundfos UPM3 AUTO 15-70 130), electric supply 230 V (50 Hz). Optional insulation (43D.02) in closed cell expanded PE-X. Plastic wiring box.

Series 71G.DN20

Direct distribution group with G 1 RN connections with flat gaskets to the primary circuit and G 3/4 F connections to the secondary circuit. Centre distance between flow and return connections 70 mm. Height of flow and return lines 288 mm. The group is composed of: 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), electric supply 230 V (50 Hz). Maximum working temperature range 90 °C, maximum working pressure 10 bar.

Series 72G.DN20

Temperature regulating group with thermostatic mixing valve. G 1 RN connections with flat gaskets to the primary circuit and G 3/4 F connections to the secondary circuit. Centre distance between flow and return connections 70 mm. Height of flow and return lines 288 mm. The group is composed of: thermostatic mixing valve in brass with wax thermostatic sensor, temperature adjustment range 20–55 °C; 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), electric supply 230 V (50 Hz). Maximum working temperature range 90 °C, maximum working pressure 10 bar.

Series 73G.DN20

Temperature regulating group with motorizable mixing valve. G 1 RN connections with flat gaskets to the primary circuit and G 3/4 F connections to the secondary circuit. Centre distance between flow and return connections 70 mm. Height of flow and return lines 288 mm. The group is composed of: motorizable mixing valve in brass; 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), electric supply 230 V (50 Hz). Maximum working temperature range 90 °C, maximum working pressure 10 bar. Complete with 3 point actuator M10.03P3MM with manual knob and fast assembly system by clip: running time 120s/90°; electric supply $230 \pm 10\%$ Vac, frequency 50–60 Hz; electric consumption 4,5 VA; number of poles 3 with fast connection cable; protection class IP 40; electric protection class II.

Series M10.03P3MM

3 point spare actuator for 73G.DN20 regulating group with manual knob and fast assembly system by clip: running time 120s/90°; electric supply $230 \pm 10\%$ Vac, frequency 50–60 Hz; electric consumption 4,5 VA; number of poles 3 with fast connection cable; protection class IP 40; electric protection class II.

Series 70G.00

Pre-assembled kit for heating and cooling composed of a box, manifold with deactivable hydraulic separator, pre-wired wiring box. Maximum working temperature 90 °C, maximum working pressure 4 bar. Centre distance of primary side connections (manifold+separator) 270 mm, secondary side (groups) 70 mm. Suitable fluids water, glycol solutions (max 30%). Box in painted steel. Ball shut-off valves in brass with PTFE, EPDM and Viton gaskets. Manifold with hydraulic separator in painted steel with non asbestos fiber and EPDM gaskets, brass screw for separator activation. Brass air vent with PPE floating device, stainless steel spring, NBR gasket. Plastic wiring box.

Series 99B.08

Spare wiring box for 70G.DN20 and 70G.00 kits. Pre-wired with 3 cables to supply 3 pumps and 2 cables to supply 2 actuators M10.03P3MM (3 point type).

Series 43D.02

Optional insulation (43D.02) for 70G.DN20 kits for heating and cooling in closed cell expanded PE-X. Working temperature range 0–100 °C.

Series 14D.18

Spare cable for M10.03P3MM actuator. Number of poles 3 with fast connection, length 0,65 m.