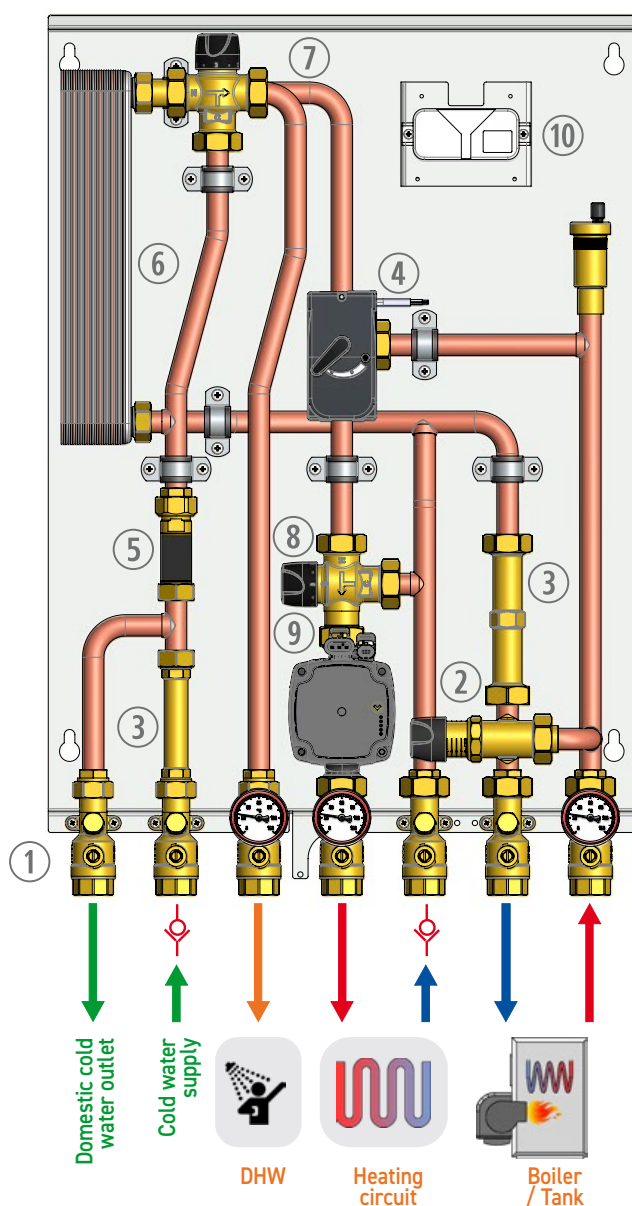




SAFETY: Please read carefully the mounting and the setting working instructions before starting the unit, in order to avoid accidents and failures caused by an incorrect use of the product. Please keep this manual for future consultations.

List and basic technical features of the main components



① - **Isolation valves with sensor holder connection.** Equipped with check valve both on the water supply and on the heating circuit return. 8 mm whidt control rod with screwdriver slot. Thermometers 0÷120°C positioned on DHW supply, heating circuit flow, and energy source flow.

② - **Differential pressure by-pass valve** with setting range 1÷5 mH₂O.

③ - **Distance pieces** for the possible insertion of a water meter (3/4"x130 mm) on the water mains supply and of a heat meter (1"x130 mm) on the return to the heat source.

④ - **Motorized diverter valve** with heating priority. The diverter is activated for DHW production by the flow switch ⑤ as soon as delivery of DHW is required.

⑤ - **Flow switch.** It detects the flow of water already starting from 1,5 L/min.

⑥ - **Large surface brazed plate heat exchanger** in AISI 316 steel. It ensures an important heat exchange and can be easily removed for any maintenance and/or cleaning. Appropriately sized to produce DHW up to 30 L/min.

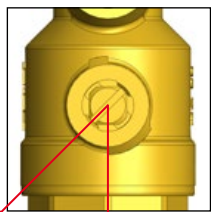
⑦ - **Thermostatic mixing valve** with piston shutter for the production of DHW, setting range 35÷60 °C.

⑧ - **Thermostatic mixing valve** with piston shutter to control the low temperature heating circuit, adjustable from 20 to 45 °C. For power up to 25 kW and flow rate up to 1100 L/h.

⑨ - **High efficiency synchronous circulating pump** for the mixed circuit, compliant with European Directive 2009/125/EC. The circulator is always powered; possibly manageable with room thermostat (not included in the delivery).

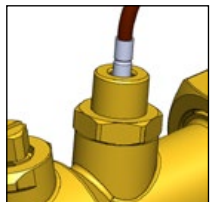
⑩ - **Electrical connection box.** The group is supplied pre-wired. It is not necessary to intervene on the electrical connections. A remote thermostat can be connected to the box to control the circulating pump.

MODVFLAT - HEAT INTERFACE UNIT (HIU) - THERMOSTATIC CONTROL - HEATING AND DHW



20 mbar check valve

It is present in the ball valve of the return side of the heating circuit. It avoids the natural circulation of the fluid (thermosyphon effect). It is also present on the water mains supply. The check valve is fitted into the ball of the valve. To exclude the non-return valve, turn the handle 45° clockwise from the open position.



Sensor holder connection

It is present on all ball valves, it allows the connection of temperature sensors and thermometers, through specific adapter fittings. Where accessories are not used, the connection is sealed with a cap.

Motorized diverter valve

The diverter is managed by the flow switch, but in case of maintenance it can be operated manually using the appropriate selector.



Diversion to the heating circuit. **Priority position.**



Diversion to the DHW circuit. Position controlled by the request for DHW from the end user.

Optional components



Box Cover (Optional)

Sheet metal, RAL 9010 white powder coating.
Dimensions: 726x520x155 mm.



Heat meter (Optional)

Compact heat meter.
1" x 130 mm. Qn 2,5.
Nominal flow rate: 2,5 m³/h (Kvs 5,0)

Technical features

- Heating (**not applicable to cooling systems**).
- Nominal size: DN20
- Fluids used in the heating circuit: Water (glycol max. 50%)

Field of use

DHW flow rate up to 30 L/min (*)

Mixed circuit up to 25 kW and 1100 L/h

(*) DHW production at 45 °C with cold water at 10 °C.

With heat pump at 55°C: 18 L/min

With boiler at 68°C: 30 L/min

Technical features

Centre distance: 70 mm

PN 10, maximum temperature 95°C.

Available external connections: 3/4" Female.

Heating side circulating pump

Model	Grundfos UPM3S Auto 15-60
Nominal head	6 m
Maximum flow rate	3 m ³ /h
EEL	≤ 0,2
Maximum temperature	110 °C
Maximum pressure	PN10
Power supply	230 VAC 50/60 Hz
Control	Δp-v / Δp-c / const. speed rpm / Auto
Power	2-42 W
Maximum current	0,40 A

Product manufactured in compliance with the ISO 9001:2015 certified Quality System, ICIM / IQNET

Materials

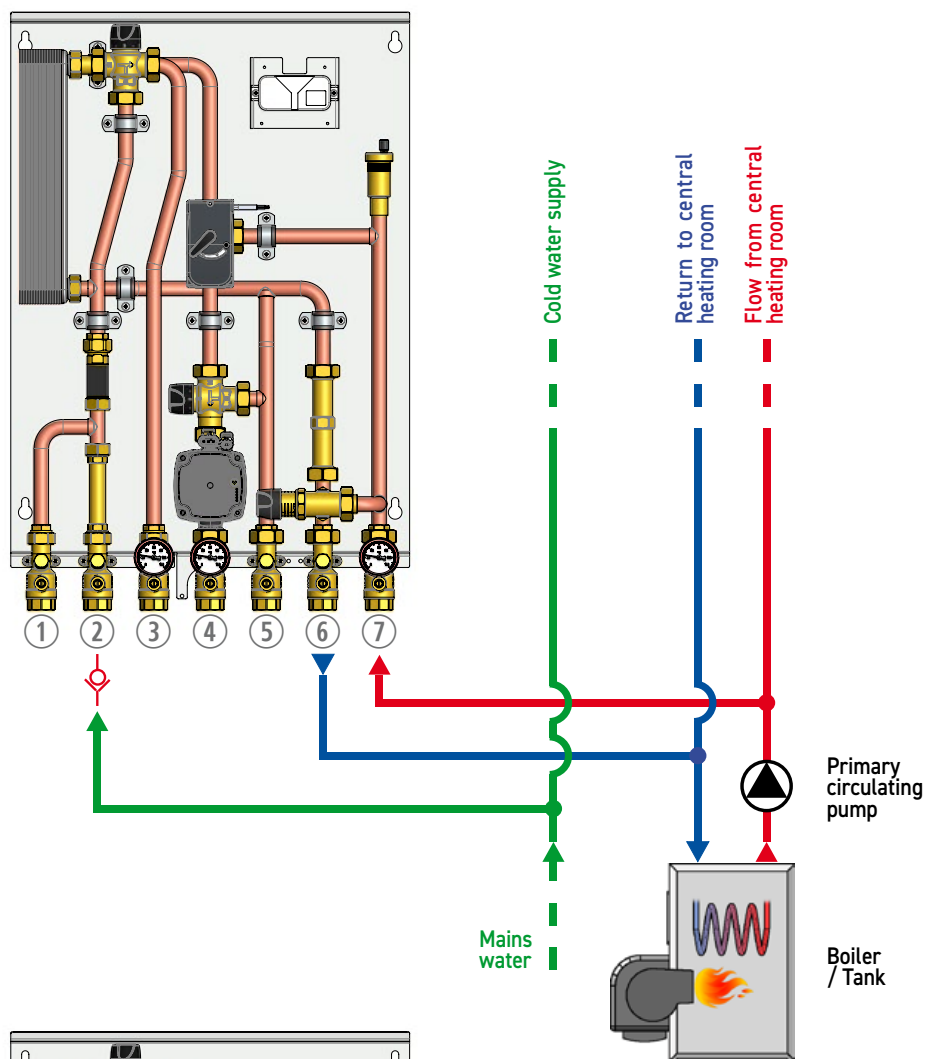
Fittings	Piping	Mantle	Heat exchanger	Gaskets	Circulating pump
Copper alloy CW617N	Copper	Fe37 steel	AISI 316 L stainless steel	EPDM	Cast iron body

MODVFLAT - HEAT INTERFACE UNIT (HIU) - THERMOSTATIC CONTROL - HEATING AND DHW

Hydraulic connection diagrams

Inlet connections

Caution. The diagrams are purely indicative: hydraulic safety components or devices required by specific standards or laws are not represented.

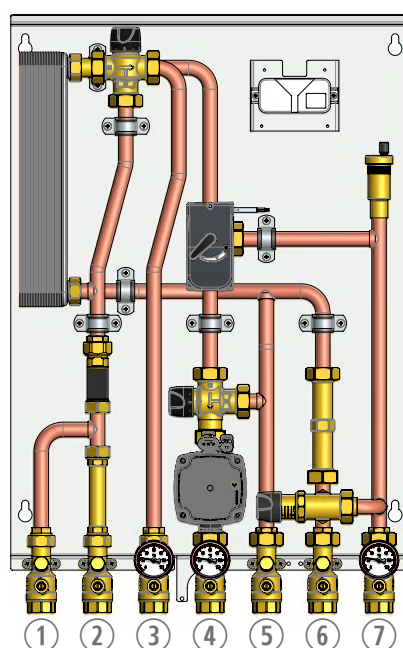


End user connections



Domestic cold water outlet

Domestic hot water outlet



Heating circuit return

heating circuit flow



Dimensions and centre distances

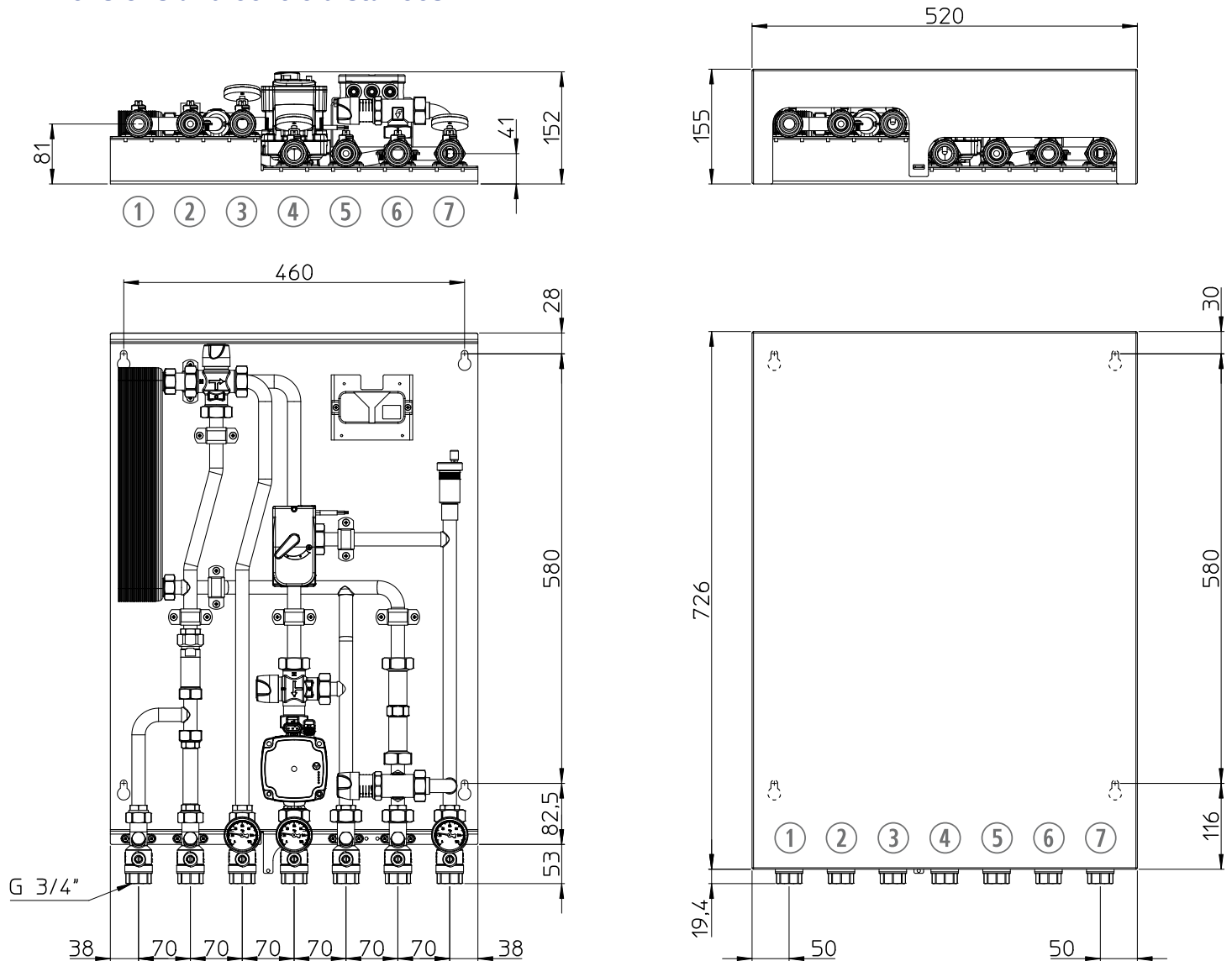


Fig.1 - Module wall installation scheme, dimensions and significant centre distances.

Wall installation

The hydraulic module is to be installed on the wall in a vertical position. Proceed as follows:

- ✓ Identify and mark the position of the 4 holes to be made on the wall according to the scheme in Fig. 1.
- ✓ Drill and insert the plastic dowels suitable for the type of masonry.
- ✓ Position the group by fixing it.
- ✓ Connect the pipes according to the hydraulic connection diagrams.
- ✓ Close all ball valves: they will be reopened in sequence according to the procedure "Filling and commissioning of the system" on the following pages.
- ✓ Install the box cover (if provided).
- ✓ **Do not connect to the household power yet, follow the instructions of the following pages.**

Electrical connections



ATTENTION

ELECTRICAL CONNECTIONS

A Schuko plug is necessary to connect to the electric system.

Voltage: 230 VAC $\pm$ 10%. Frequency: 50÷60 Hz.

Maximum absorbed power: 55 W.

The group is supplied pre-wired. **The power cord must be connected to 230 VAC power supply only after having completed the electrical connections and following the “Filling and commissioning of the system” procedure on the following pages. To carry out these operations, rely only on qualified personnel. Have the electrical connections made only by an electrician in compliance with the local regulations in force.**

Proceed with the installation according to all listed below.

Optional remote thermostat connection

Any thermostat or chronothermostat must be equipped with a voltage free contact, suitable for a voltage of 230V, which must be connected in the connection box as shown in the figure, after having removed (if present) the jumper described in the previous paragraph.

The wiring must be carried out by the installer on site using cables with a minimum section of 1 mm². To connect the cable it is necessary to open the electrical connection box and carry out the wiring as shown in the image:

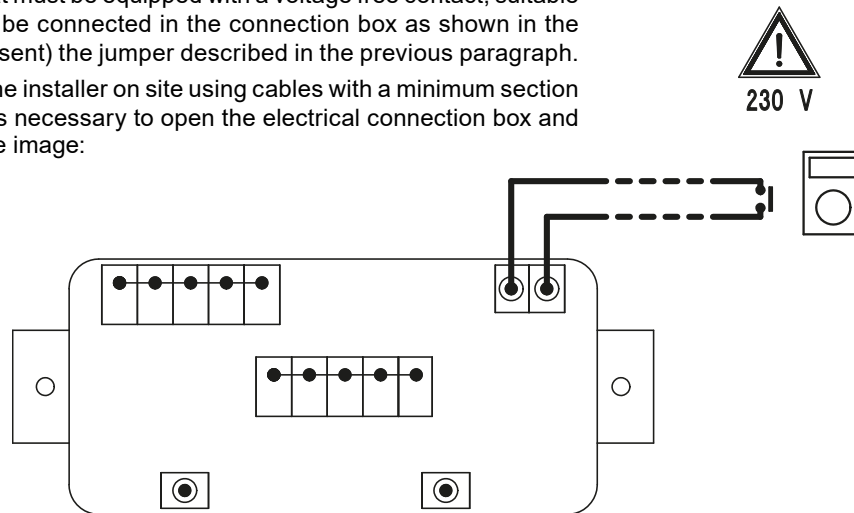


Fig.2 - Optional thermostat connection diagram

Activation of the circulating pump in the absence of the thermostat

If a remote thermostat is not used, it is necessary to add a jumper (not provided) to activate the circulating pump, which will work constantly without interruption. The jumper must be installed by the installer using a cable with a minimum section of 1 mm². To connect the jumper it is necessary to open the electrical connection box and make the connection as shown in the image:

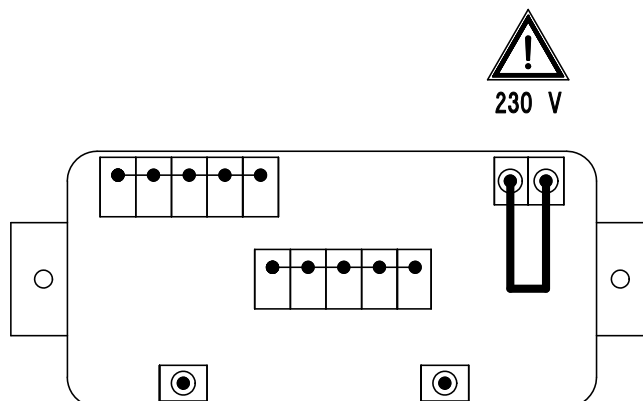


Fig.3 - Jumper for circulating pump activation



230 V



ATTENTION

It is necessary to insert the jumper, otherwise the circulating pump will not work.

Filling and commissioning of the system

During the factory testing phase, the unit is subjected to a pressure seal test. However, it is recommended that all connections be further checked before filling.

- ✓ Slowly open the valves:
 - position 7 (*heat source flow*),
 - position 6 (*heat source return*),
 - position 4 (*heating side flow*);
 - position 5 (*heating side return*);
- ✓ Vent the heating side system; also act on the air-vent of the system to vent the group in turn;
- ✓ If necessary, restore the pressure in the system;
- ✓ Set the diverter valve actuator in manual mode and manually activate the deviation towards the DHW side, to allow the purging of this section of piping (primary circuit of the exchanger);
- ✓ Slowly open the valves relating to the DHW circuit:
 - position 2 (*inlet from the water mains*),
 - position 3 (*DHW supply*),
 - position 1 (*DCW supply*);
- ✓ Deliver the domestic water to the user, so as to vent this section of piping;
- ✓ **It is now possible to plug-in the power plug.**



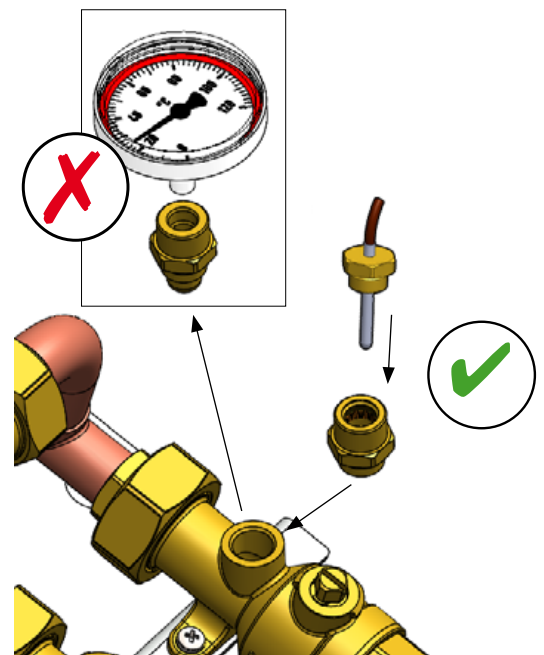
ATTENTION

Depending on the needs, for example in the summer season, to avoid unwanted circulation it is necessary to manually close the two valves (flow and return) of the heating circuit.

Heat meter installation (optional)

Once the system has been put into operation, and having thus ensured that the pipes are clean, it is possible to install a heat meter on the side returning to the heat source. The correspondent 1" x 130 mm distance-piece must be removed, and the meter must be inserted in its place. The meter temperature sensor, to be positioned on the opposite side of the circuit (flow from the heat source) must be housed in the sensor holder connection of the ball valve. It is necessary to use the specific sensor holder fitting.

- ✓ Close the valves:
 - position 7 (*heat source flow*),
 - position 6 (*heat source return*),
 - position 4 (*heating side flow*);
 - position 5 (*heating side return*);
- ✓ Replace the 1" x 130 mm distance-piece with the meter;
- ✓ Remove the thermometer from the ball valve in position 7
- ✓ Insert the sensor holder fitting and the respective sensor (*see image on the side*);
- ✓ Reopen all previously closed valves.



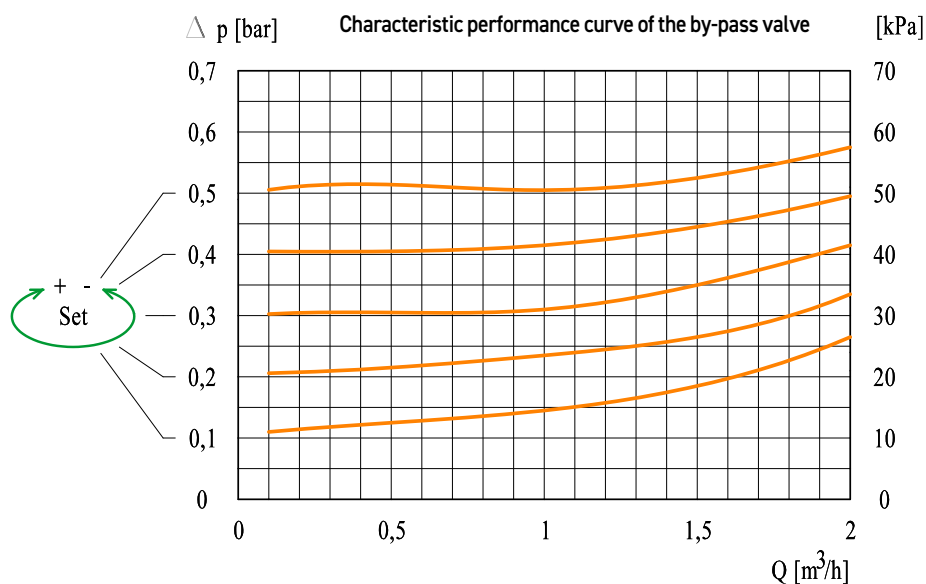
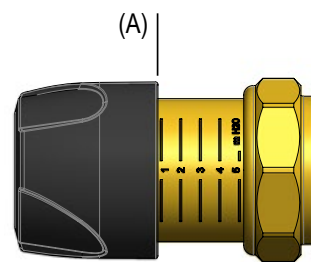
Installation of the DHW meter (optional)

A 3/4" x 110 mm meter can be installed on the DHW side. The meter is positioned on the water supply inlet, downstream of the cold water supply connection: it is thus possible to count only the water used for DHW consumption.

Balancing by-pass valve

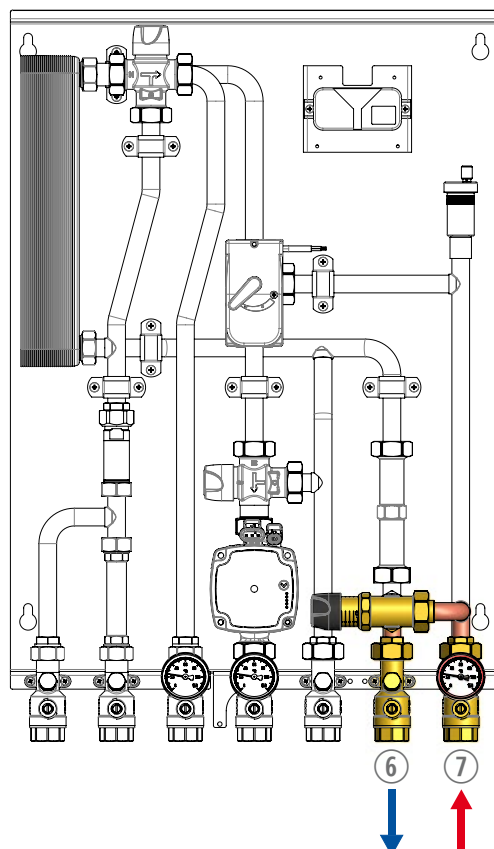
The by-pass ensures a recirculation of flow rate proportional to the closure of the sides in use, limiting the maximum value of the differential pressure generated by the primary circulating pump of the heat source.

The reference for the adjustment scale is the lower edge of the adjustment knob (A).



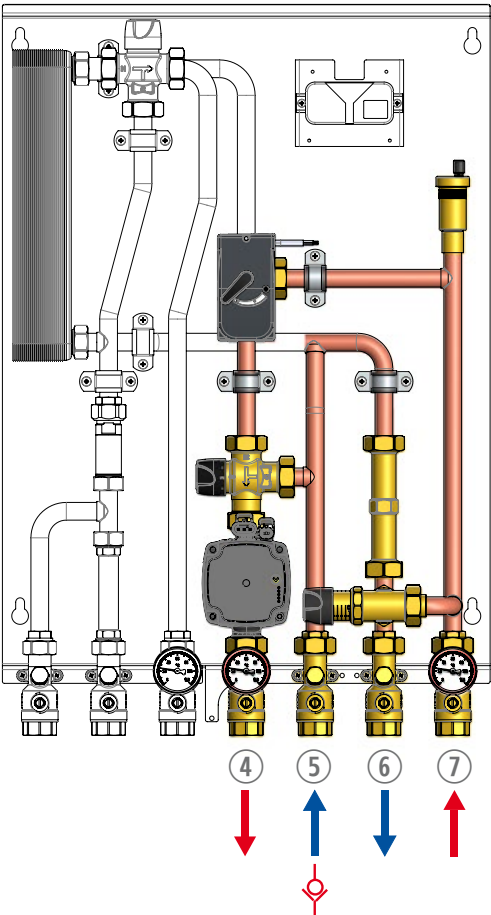
Hydraulic characteristics and management of the various functions

1) - No function (by-pass valve fully open)



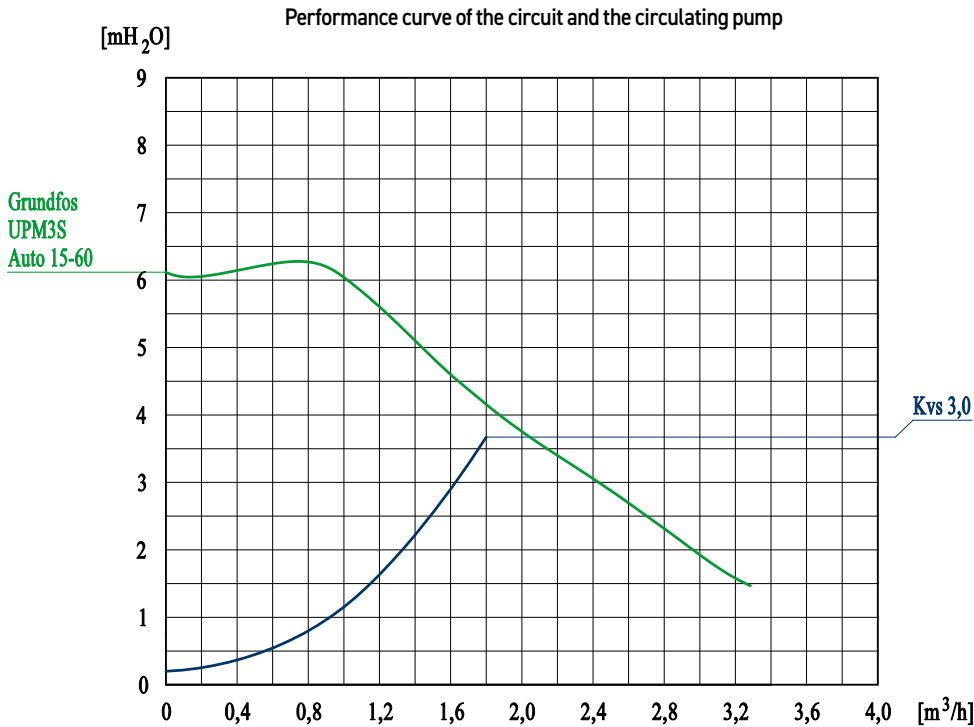
In this operating condition there is no end-user supply.
Both circuits, heating and DHW, are not active.
The flow from the boiler recirculates completely towards its return through the by-pass valve, which results completely open.

2) - Heating function - 25 kW, 1100 L/h

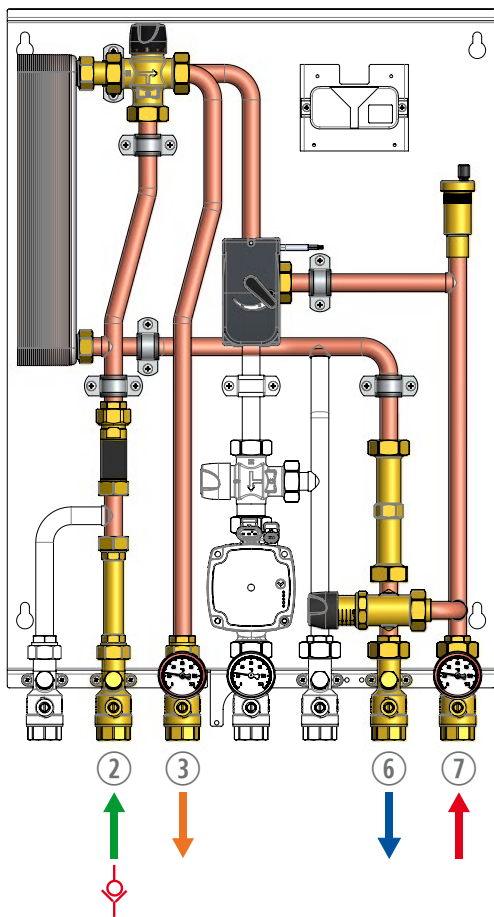


This is the default operating condition. The DHW circuit is not active as no supply is requested. The flow from the boiler feeds the heating circuit directly, by means of the position of the diverter valve. The pressure drops of the circuit and the performance of the circulator are shown in the diagram below.

Reference temperatures heating mix knob (with cold water 24 °C and flow temp. 55 °C)							
T°	MIN	1	2	3	4	5	MAX
20-45 °C	(24 °C)	24	29	34	39	44	45

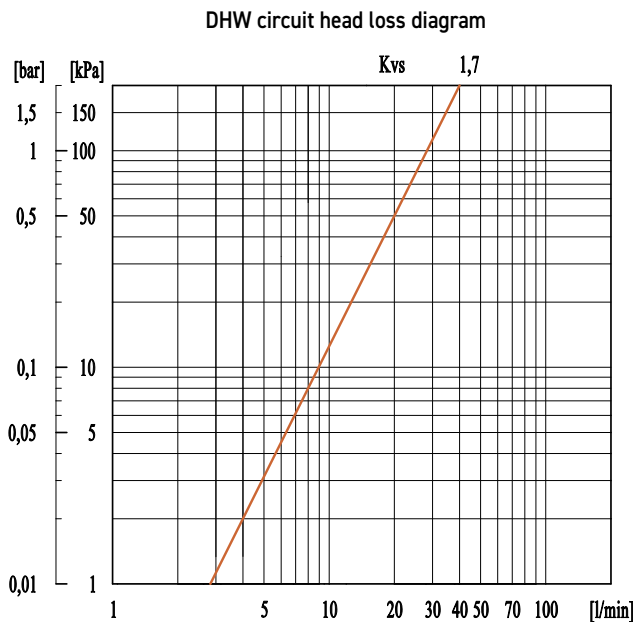


3) - Domestic hot water function - 30 L/min



This operating condition is **activated when the flow switch detects a request for DHW by the user**. The climatic control unit operates the diverter valve that quickly directs the flow from the boiler towards the exchanger.

When the demand for DHW by the user is interrupted, the control unit brings back the diverter valve to the heating position.



Reference temperatures DHW mix knob (with cold water 10 °C and flow temp. 65 °C)							
T°	MIN	1	2	3	4	5	MAX
35-60°C	37	40	44	49	53	57	59

Tips / considerations about draw-off capacity

The temperature supplied by the heat source must be at least 10 K higher than the desired sanitary one; in case of use of an accumulator, higher temperature differentials allow to extend the draw-off time. In the presence of hard water, however, we recommend not exceeding the temperature of 70°C of the flow to avoid limestone deposits on the secondary side of the plate heat exchanger.

Minimum draw-off

To ensure a constant temperature of the DHW supplied, a minimum draw-off flow rate is required. The following table shows an example of draw-off with a cold water temperature at the inlet equal to 10°C: the minimum draw-offs, necessary to ensure stability at the desired 45°C by the user, are shown, making various assumptions about the temperature of the water supplied by the heat source.

Flow temperature (heat source)	Minimum draw-off
55 °C	2,5 l/min
60 °C	3 l/min
65 °C	3 l/min
70 °C	3,5 l/min
75 °C	3,5 l/min
80 °C	4 l/min

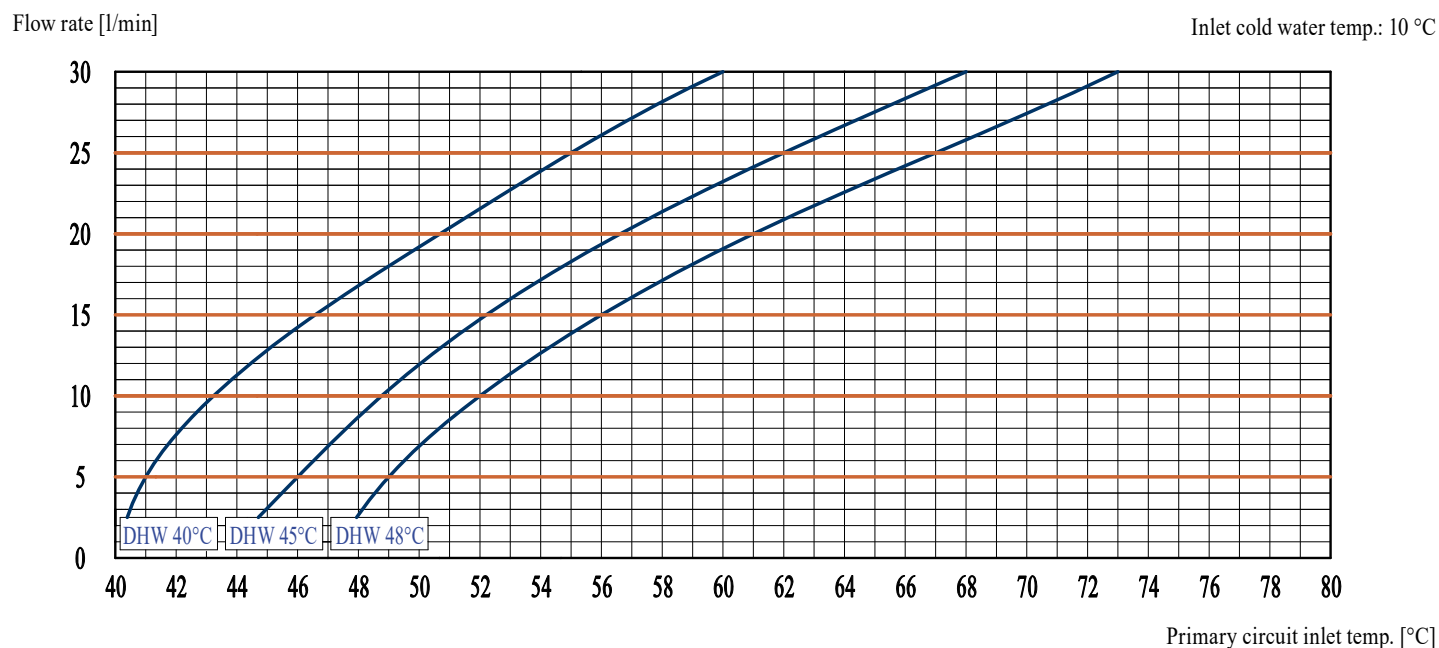
DANGER OF BURNS

To prevent user burns, never exceed 60°C of water temperature.

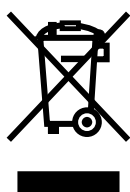
DHW performance diagram

The following diagram relates the flow rate to the user and the flow temperature from the heat source, depending on the temperature required for the DHW. This allows you to identify the minimum flow temperature necessary for the DHW to be delivered at a desired temperature and flow rate. Conversely it is also possible to determine which one will be the maximum usable flow rate at the temperature chosen for the DHW, against an available flow temperature.

The performance also depends on the temperature of the water entering the water network; the diagram considers the entry at 10°C.



Electric waste - Disposal



Information on the collection of used electrical or electronic products:

With the correct disposal and proper recycling of this product, environmental damage and risks to human health are avoided. Disposal in household waste is prohibited!

It means that the affected electrical and electronic products must not be disposed of with household waste.

For proper treatment, recycling and disposal of used products, the following points must be kept in mind:

- These products should only be delivered to appropriate certified collection points.
- Local regulations must be observed!

You can get information on proper disposal at the local municipalities, at the nearest waste disposal service, or at the supplier from whom the product was purchased