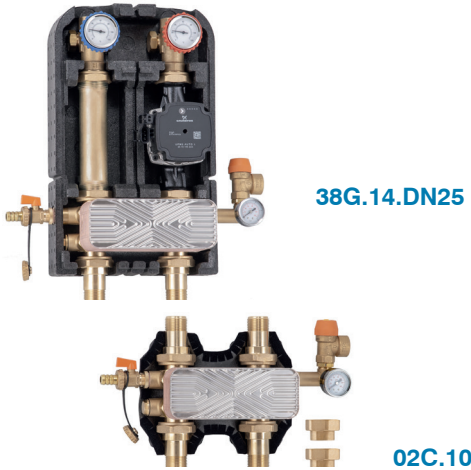


KIT WITH HEAT EXCHANGER

Description



The kit 38G.14.DN25 is composed of a heat exchanger, complete with fill/drain cock and safety group, and a direct distribution group on the secondary side. The kit 02C.10 is composed of the only heat exchanger, complete with fill/drain cock and safety group, and the fittings necessary for the primary and secondary side connection. The kits with heat exchanger can be used in several system types, as for example biomass, solar, heating. They can be installed to separate circuits with different fluids (i.e. with/without glycol), to avoid dirt from entering the circuit of a new generator, to couple an open vessel primary circuit to a closed vessel secondary circuit or to avoid the sum of the power outputs of two generators supplying the same system (according to the Italian standard). The kit with heat exchanger 02C.10 is complete with fittings for distribution group connection. The safety relief valve and the expansion vessel connection should be considered as the basic safety requirement for the system connected on the secondary side of the heat exchanger.

Range of products

BAFA
LIST

| <i>Kit with heat exchanger and safety group 02C.10</i> <i>Kit with heat exchanger and direct distribution group 38G.14.DN25</i> | | <i>34 plates</i> | <i>28 plates</i> | <i>18 plates</i> |
|--|-----------|------------------|------------------|------------------|
| Kit with heat exchanger and safety group, connections G 1 M - G 1 M | 02CM2510X | I | L | M |
| Kit with heat exchanger, safety group and direct distribution group, connections G 1 M - G 1 F | 38G02514 | | | |
| Without pump | | XI | XL | XM |
| Pump Grundfos UPM3 AUTO L 25-70 180 | | VI | VL | VM |
| Pump Wilo Yonos Para 25-6 180 RKA | | LI | LL | LM |
| Pump Grundfos UPSO 25-65 180 (Extra EU) | | CI | CL | CM |

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: **125 mm**
 Pump: **Grundfos UPM3 AUTO L 25-70 180**
Wilo Yonos Para 25-6 180 RKA
Grundfos UPSO 25-65 180 (Extra EU)
 Suitable fluids: **water, glycol solutions (max 30%)**
 Temperature gauge scale: **0–120 °C**
 Pressure gauge scale: **0–10 bar**

Materials

Ball valves

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

Extension: **galvanized steel**

Check valve insert

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

Fill/drain cock

- Body and plug: **brass EN 12165 CW617N**
- Ball: **brass EN 12164 CW614N**
- Hose connection: **brass EN 12165 CW508L**
- Gaskets: **viton, EPDM, PTFE**

Safety relief valve

- Body: **brass EN 12165 CW617N**
- Headwork: **nylon 66**
- Membrane: **EPDM**
- Spring: **stainless steel**
- Control knob: **nylon 66**
- Working temperature range: **0–160 °C**
- Setting: **3 bar**
- Opening overpressure: **10%**
- Reseating pressure: **-20%**
- Outflow coefficient: **K=0,05**
- Suitable fluids: **water, glycol solutions (max 50%)**
- 2014/68/EU PED - Category IV

Brazed heat exchanger

- Plates: **stainless steel**

Instrument holder manifold: **brass EN 12165 CW617N**

T-joints/Fittings for primary and secondary side: **brass EN 12165 CW617N/brass EN 12164 CW614N**

Gaskets: **asbestos free fiber**

Pump

- Body: **cast iron**
- Electric supply: **230 V - 50/60 Hz**
- Protection class:
 - Grundfos UPM3: **IP 44**
 - Wilo Yonos Para: **IPx4D**
 - Grundfos UPSO (Extra EU): **IP 44**
- Centre distance: **180 mm**
- Connections: **G 1 1/2 M (ISO 228-1)**

KIT WITH HEAT EXCHANGER

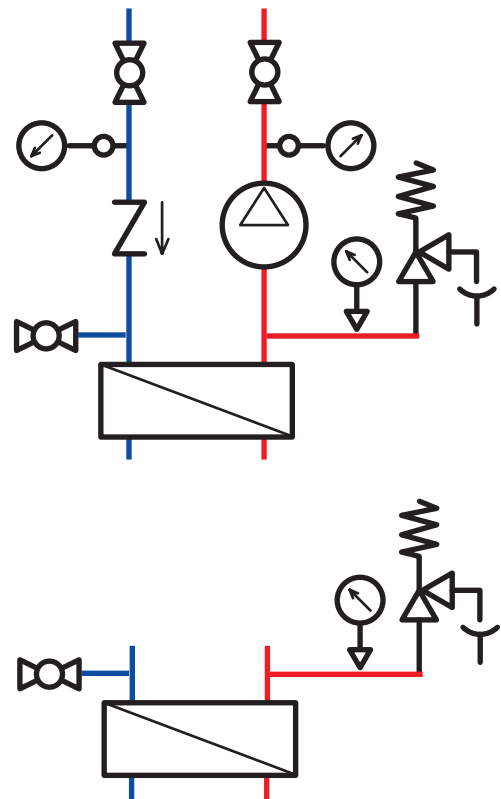
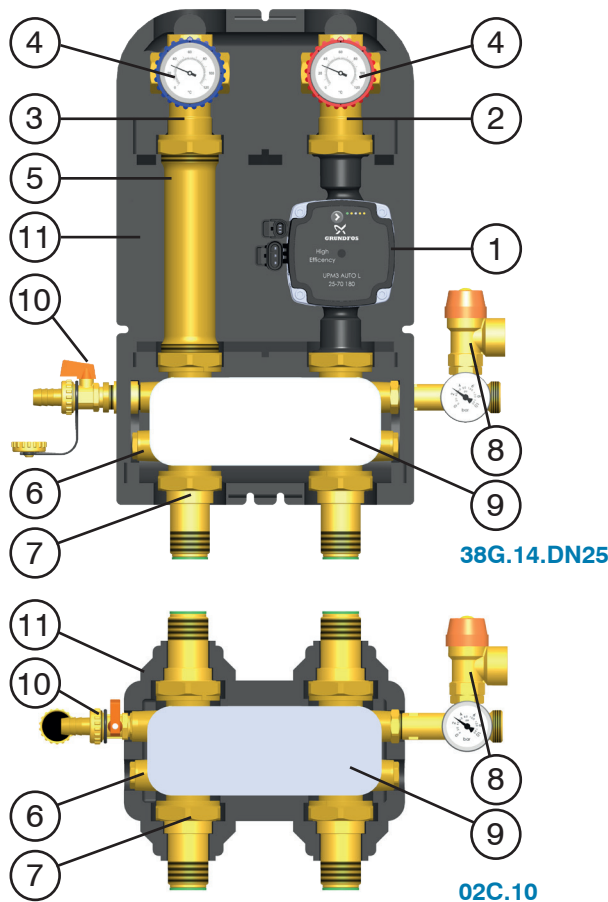
Insulation shell 38G.14.DN25

- Material: **EPP**
- Density: **60 kg/m³**
- Working temperature range: **-5-120 °C**
- Thermal conductivity: **0,04 W/(m·K)**

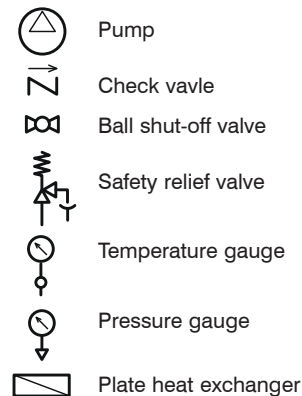
Insulation shell 02C.10

- Material: **closed cell expanded PE-X**
- Thickness: **15 mm**
- Density: **30-70 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 (ISO 12572): **1300**
- Working temperature range: **0-100 °C**
- Reaction to fire (DIN 4102): **class B2**

Components

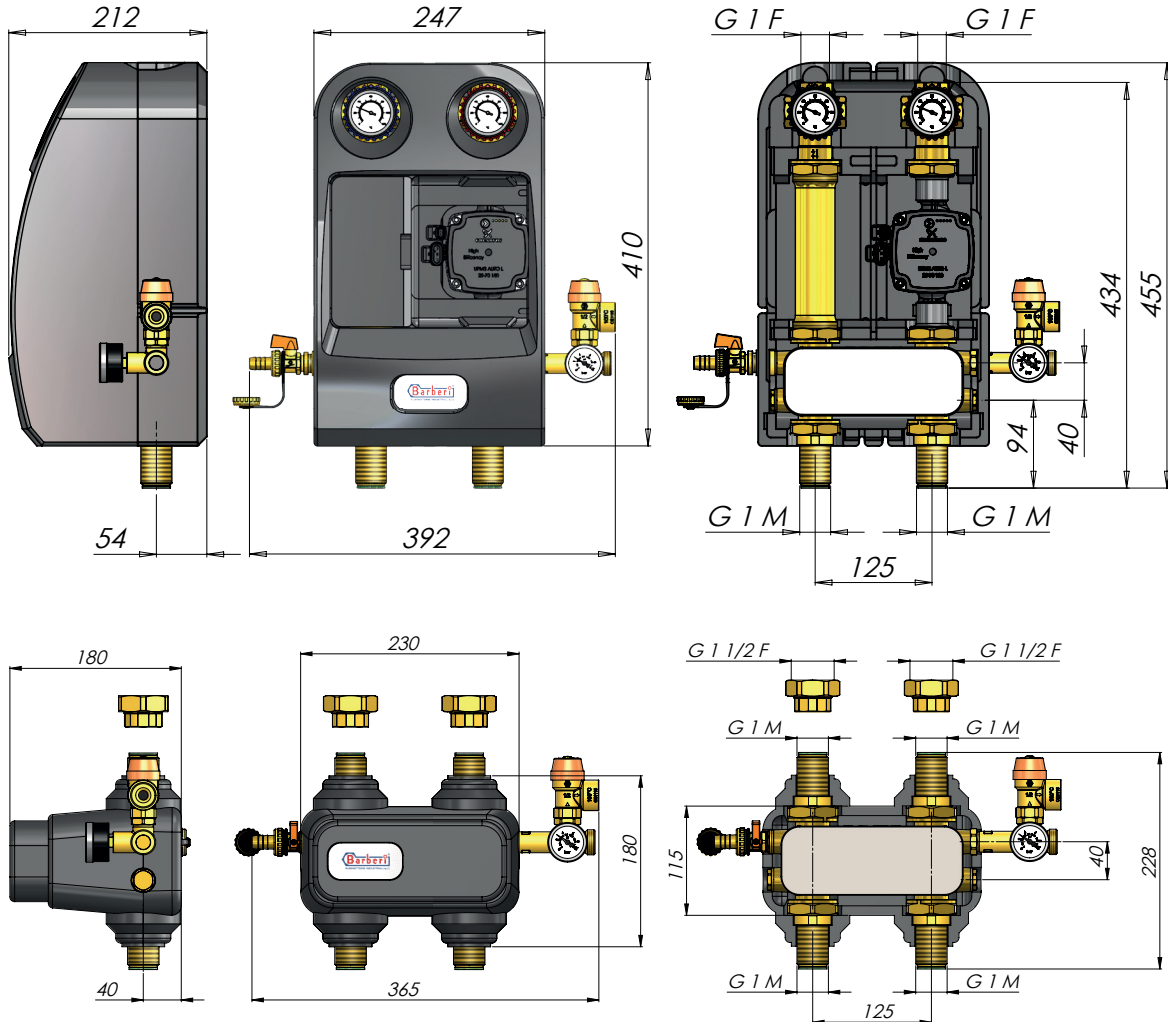


| 38G.14.DN25-02C.10 | | |
|--------------------|--|---|
| 1 | Pump | Grundfos UPM3 AUTO L, Wilo Yonos Para, Grundfos UPSO (Extra EU) |
| 2 | Ball shut-off valve | |
| 3 | Ball shut-off valve with check valve | |
| 4 | Temperature gauge | |
| 5 | Extension | |
| 6 | T-joints | |
| 7 | Fittings for primary and secondary circuit | |
| 8 | Safety group | |
| 9 | Plate heat exchanger | |
| 10 | Fill/drain cock | |
| 11 | Insulation | |



KIT WITH HEAT EXCHANGER

Dimensions



| Code | P [bar] | | | Plates | Pump | Weight [kg] | N. P/B | N. P/C |
|----------------|---------|-------|-------|--------|------------------------------------|-------------|--------|--------|
| 38G 025 14X I | 10 | G 1 M | G 1 F | 34 | Without pump | 6,00 | - | 1 |
| 38G 025 14V I | 10 | G 1 M | G 1 F | 34 | Grundfos UPM3 AUTO L 25-70 180 | 8,00 | - | 1 |
| 38G 025 14L I | 10 | G 1 M | G 1 F | 34 | Wilo Yonos Para 25-6 180 RKA | 8,00 | - | 1 |
| 38G 025 14C I | 10 | G 1 M | G 1 F | 34 | Grundfos UPSO 25-65 180 (Extra EU) | 8,40 | - | 1 |
| 38G 025 14X L | 10 | G 1 M | G 1 F | 28 | Without pump | 6,44 | - | 1 |
| 38G 025 14V L | 10 | G 1 M | G 1 F | 28 | Grundfos UPM3 AUTO L 25-70 180 | 8,44 | - | 1 |
| 38G 025 14L L | 10 | G 1 M | G 1 F | 28 | Wilo Yonos Para 25-6 180 RKA | 8,44 | - | 1 |
| 38G 025 14C L | 10 | G 1 M | G 1 F | 28 | Grundfos UPSO 25-65 180 (Extra EU) | 8,84 | - | 1 |
| 38G 025 14X M | 10 | G 1 M | G 1 F | 18 | Without pump | 6,70 | - | 1 |
| 38G 025 14V M | 10 | G 1 M | G 1 F | 18 | Grundfos UPM3 AUTO L 25-70 180 | 8,70 | - | 1 |
| 38G 025 14L M | 10 | G 1 M | G 1 F | 18 | Wilo Yonos Para 25-6 180 RKA | 8,70 | - | 1 |
| 38G 025 14C M | 10 | G 1 M | G 1 F | 18 | Grundfos UPSO 25-65 180 (Extra EU) | 9,10 | - | 1 |
| 02C M25 10 X I | 10 | G 1 M | G 1 M | 34 | - | 3,95 | - | 1 |
| 02C M25 10 X L | 10 | G 1 M | G 1 M | 28 | - | 4,28 | - | 1 |
| 02C M25 10 X M | 10 | G 1 M | G 1 M | 18 | - | 4,55 | - | 1 |

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

KIT WITH HEAT EXCHANGER

Diagram

Heat exchanger sizing (operation for specialized/authorized technical personnel).

The heat exchanger shows different head losses on the two sides. A label is applied to the side with “low” head losses, which is named “primary side” in the following table. **The choice about which side has to be used for the generator and which one for the system is up to the designer.**

| Heat exchanger: transferred power, delta T, flow rates and head losses | | | | | | | | | | | | |
|--|--|-------------------------------------|---------------------------------------|--|-------------------------------------|---------------------------------------|--|-------------------------------------|---------------------------------------|--|-------------------------------------|---------------------------------------|
| System | Heating: radiators | | | Heating: radiators | | | Heating: condensing boiler | | | Heating: radiant panels | | |
| ΔT - Δp | ΔT primary: 80-70 °C ($\Delta p < 30$ kPa) ΔT secondary: 60-70 °C ($\Delta p < 50$ kPa) | | | ΔT primary: 70-56 °C ($\Delta p < 30$ kPa) ΔT secondary: 50-60 °C ($\Delta p < 50$ kPa) | | | ΔT primary: 65-51 °C ($\Delta p < 30$ kPa) ΔT secondary: 45-55 °C ($\Delta p < 50$ kPa) | | | ΔT primary: 65-54 °C ($\Delta p < 30$ kPa) ΔT secondary: 45-55 °C ($\Delta p < 50$ kPa) | | |
| Plates | Power kW | Primary flow rate m ³ /h | Secondary flow rate m ³ /h | Power kW | Primary flow rate m ³ /h | Secondary flow rate m ³ /h | Power kW | Primary flow rate m ³ /h | Secondary flow rate m ³ /h | Power kW | Primary flow rate m ³ /h | Secondary flow rate m ³ /h |
| 18 | 18 | 1,584 | 1,578 | 6 | 0,372 | 0,522 | 6 | 0,372 | 0,522 | 12 | 0,456 | 1,302 |
| 28 | 24,5 | 2,16 | 2,15 | 12 | 0,750 | 1,050 | 12 | 0,750 | 1,044 | 24,7 | 1,99 | 2,15 |
| 34 | 28,5 | 2,51 | 2,5 | 14 | 0,876 | 1,224 | 14 | 0,876 | 1,218 | 28,7 | 2,24 | 2,5 |

Kit 02C.10 sizing (operation for specialized/authorized technical personnel).

The fluid flows, on both the sides, through the following devices:

- pipe fittings
- T-joints
- heat exchanger channels.

For both sides, here following the Kv values of the entire path just described, visible also in the diagram at the side.

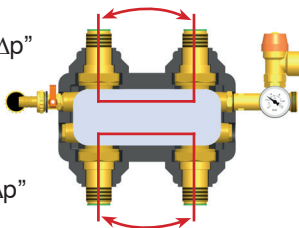
Kv of the side with “low” head losses (see label) [m³/h], curves with continuous line named “Low Δp ”:

4,30 (34 plates); 4,11 (28 plates); 3,43 (18 plates)

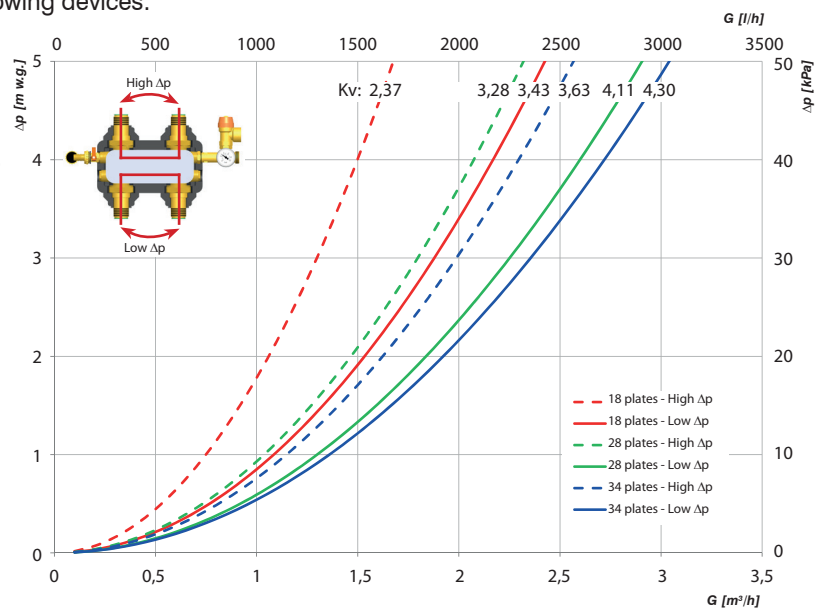
Kv of the side with “high” head losses [m³/h], curves with dashed line named “High Δp ”:

3,63 (34 plates); 3,28 (28 plates); 2,37 (18 plates).

Side with “High Δp ”



Side with “Low Δp ”

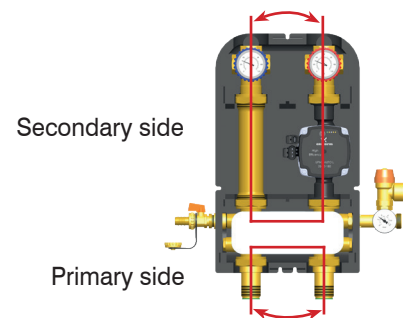


Kit 38G.14.DN25 sizing (operation for specialized/authorized technical personnel).

The group is factory supplied with the “low” head loss side of the heat exchanger on the primary circuit and the direct distribution group connected to the “high” head loss side of the heat exchanger. **Designers can decide to exchange the two sides by reversing the heat exchanger of a 180° angle.**

The fluid flows through the following devices:

- **primary side** (the same as 02C.10 kit):
 - pipe fittings
 - T-joints
 - heat exchanger channels.
- **secondary side:**
 - direct distribution group
 - pipe fittings
 - T-joints
 - heat exchanger channels.



In the following page, we show the hydraulic characteristic diagram of the secondary side of our 38G.14.DN25 groups, in all the possible configurations (Diagram 2): the direct distribution group was connected to the 18, 28 and 34 plate heat exchangers both

KIT WITH HEAT EXCHANGER

to the "high" head loss side (factory configuration) and to the "low" head loss side (configuration to be set on the installation field).

The primary side Kv value corresponds to the primary side Kv value of the 02C.10 kit, since the components are the same.

To size the primary side, evaluate the Kv value, shown in the table here at the side or in the Diagram 1 of this page.

To size the secondary size, by calculating the available head, proceed as follows.

Step 1: head losses of the group without pump. Enter on the x-axis of the Diagram 2 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 (to be combined to the kit 02C.10), or a system resizing could be necessary.

| 38G.14.DN25: Kv of primary side and hydraulic characteristic of secondary side connected to the direct distribution group. FACTORY CONFIGURATION | | |
|---|--------------------------------------|---|
| | Primary side with "low" head losses | Secondary side with "high" head losses connected to the direct distribution group |
| Plates | Kv [m ³ /h] | Curve in the diagram |
| 18 | 3,43 | 18p+HighLosses+DirectGr |
| 28 | 4,11 | 28p+HighLosses+DirectGr |
| 34 | 4,30 | 34p+HighLosses+DirectGr |
| 38G.14.DN25: Kv of primary side and hydraulic characteristic of secondary side connected to the direct distribution group. CONFIGURATION TO BE SET ON INSTALLATION FIELD | | |
| | Primary side with "high" head losses | Secondary side with "low" head losses connected to the direct distribution group |
| Plates | Kv [m ³ /h] | Curve in the diagram |
| 18 | 2,37 | 18p+LowLosses+DirectGr |
| 28 | 3,28 | 28p+LowLosses+DirectGr |
| 34 | 3,63 | 34p+LowLosses+DirectGr |

Diagram 1: Kv of the primary side circuit of the heat exchanger

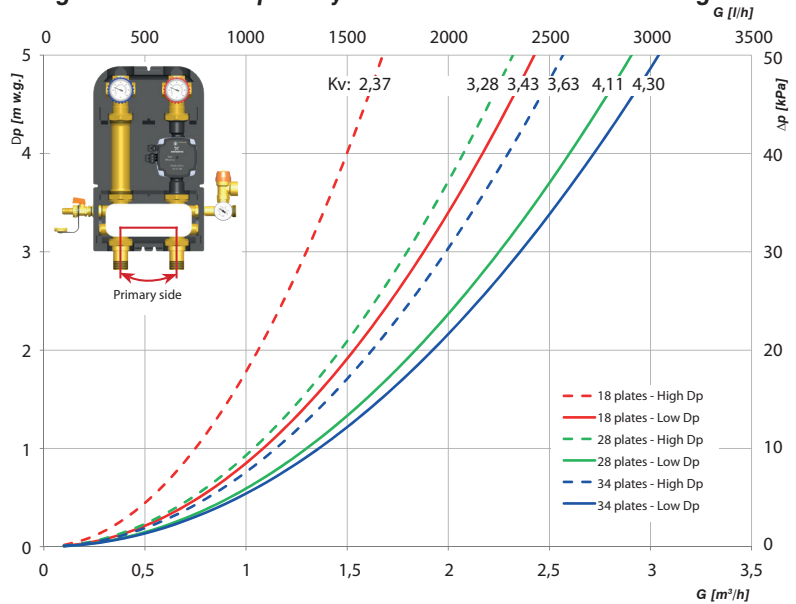
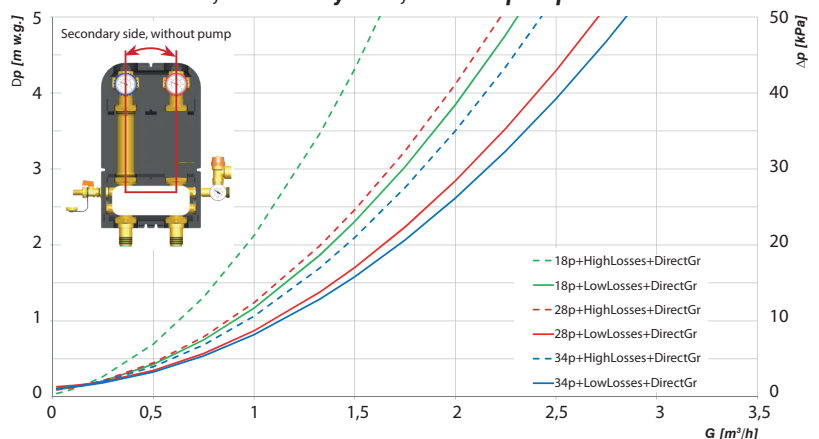


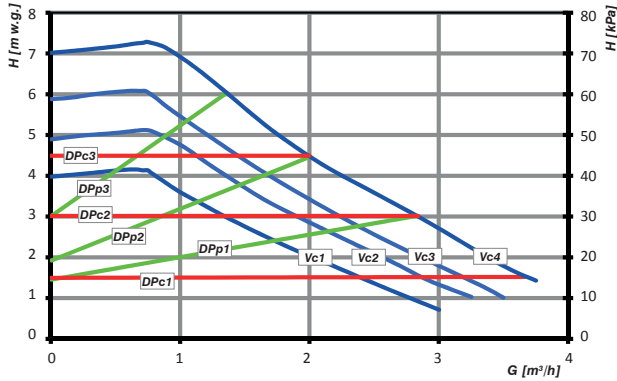
Diagram 2 - Hydraulic characteristics: head losses of the 38G.14.DN25 kit, secondary side, without pump



KIT WITH HEAT EXCHANGER

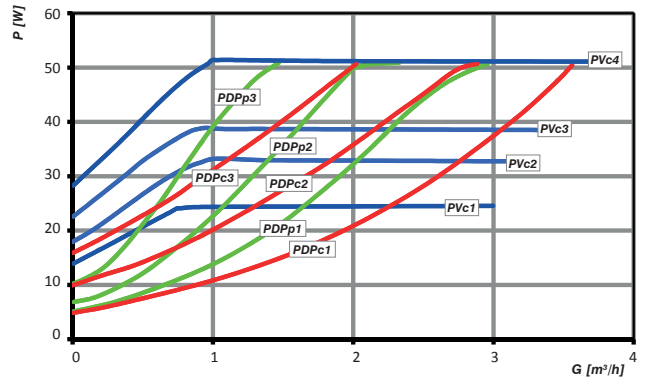
Head and power consumption of the pumps

Head of pump Grundfos UPM3 AUTO L 25-70 180



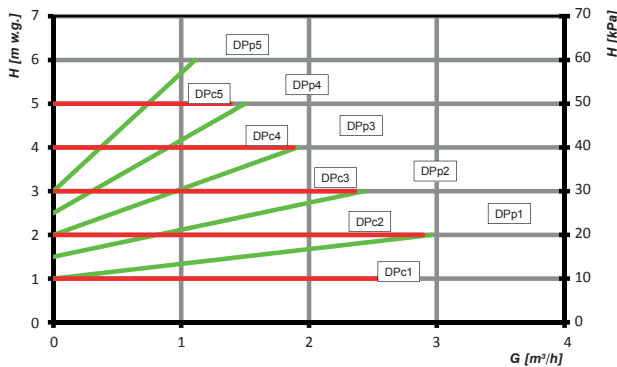
Vc: Constant speed
 DPP: Proportional pressure
 DPC: Constant pressure

Power of pump Grundfos UPM3 AUTO L 25-70 180



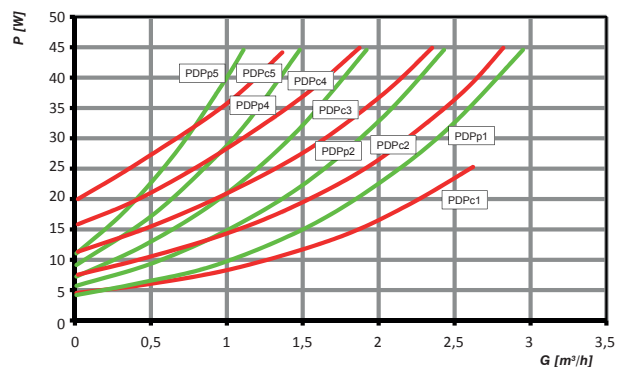
PVC: Power consumption at constant speed
 PDPp: Power consumption at proportional pressure
 PDPc: Power consumption at constant pressure

Head of pump Wilo Yonos Para 25-6 180 RKA



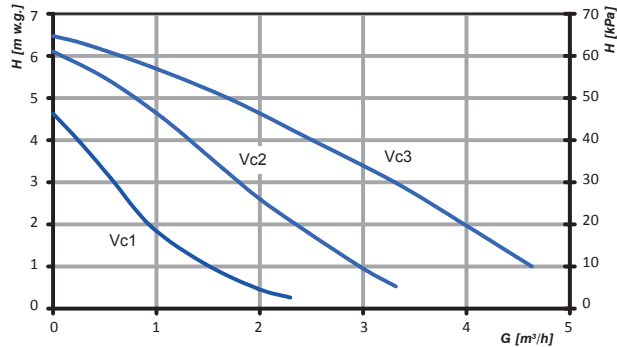
DPP: Proportional pressure
 DPC: Constant pressure

Power of pump Wilo Yonos Para 25-6 180 RKA



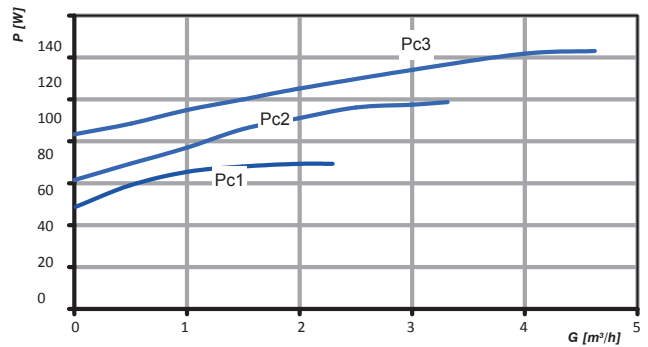
PDPp: Power consumption at proportional pressure
 PDPc: Power consumption at constant pressure

Head of pump Grundfos UPSO 25-65 180 (Extra EU)



Vc: Constant speed

Power of pump Grundfos UPSO 25-65 180 (Extra EU)



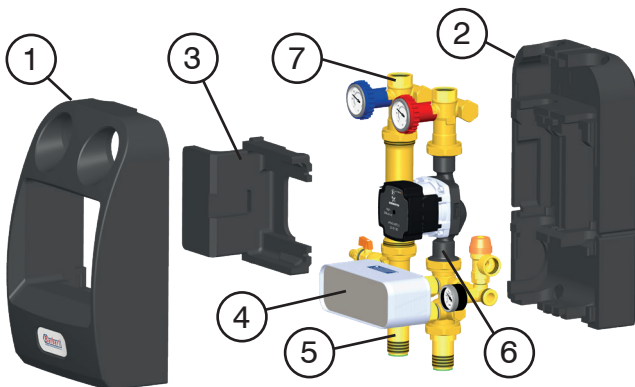
PVC: Power consumption

KIT WITH HEAT EXCHANGER

Features

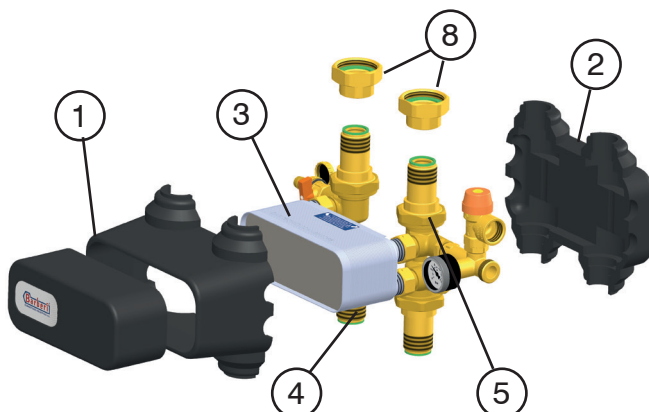
The kit with heat exchanger 38G.14.DN25 consists of:

- Front insulation shell (1),
- Rear insulation shell (2),
- Central front insulation shell (3),
- Plate heat exchanger (4),
- Primary side with T-joints and fittings (5),
- Flow line on the secondary side (6) including T-joints, fittings, safety group (safety relief valve, expansion vessel connection, pressure gauge), ball shut-off valve, temperature gauge and pump,
- Return line on the secondary side (7) including ball shut-off valve, check valve, temperature gauge, extension, fill/drain cock, fittings, T-joints.



The kit with heat exchanger 02C.10 consists of:

- Front insulation shell (1),
- Rear insulation shell (2),
- Plate heat exchanger (3),
- Primary side with T-joints and fittings (4),
- Secondary side (5) with T-joints, fittings, unions for group connection, safety group (safety relief valve, expansion vessel connection, pressure gauge), fill/drain cock.
- Fittings 44D.DN25 (G 1 F - G 1 1/2 RN) for direct connection of DN 25 Barberi groups on the secondary side (8).



Advantages

Versatility: the kit with heat exchanger 02C.10, equipped with safety group, is available as single component to be installed as simple heat exchanger in several system solutions.

Fast installation: the kit 38G.14.DN25 is composed of a kit with heat exchanger 02C.10, with safety group, coupled to a direct distribution group, ready for a fast installation.

Compactness: the insulation covers all the main components to obtain a compact and tidy installation.

Safety: the safety relief valve, the pressure gauge and the expansion vessel connection* should be considered as the basic safety requirement for the system connected on the secondary side of the heat exchanger.

Wide product range: 3 sizes of heat exchanger are available, which are 34, 28, 18 plates.

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.

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.

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.

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.

Reversibility: versatility of installation and reversibility of the flow line from RH to LH side on the installation field.

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

***NB: Position and temperatures of the expansion vessel.** Italian and European standards prescribe the safety relief valve installation on the flow pipe. If you want to use the expansion vessel connection, please keep in mind that the vessel would be installed on the flow pipe. We suggest to care about the working temperatures of the vessel in order to respect the vessel product standard (system and membrane working temperature range). If necessary, install the vessel on the return pipe.

For both kits, the safety group and fill/drain cock are supplied unassembled.

KIT WITH HEAT EXCHANGER

Installation

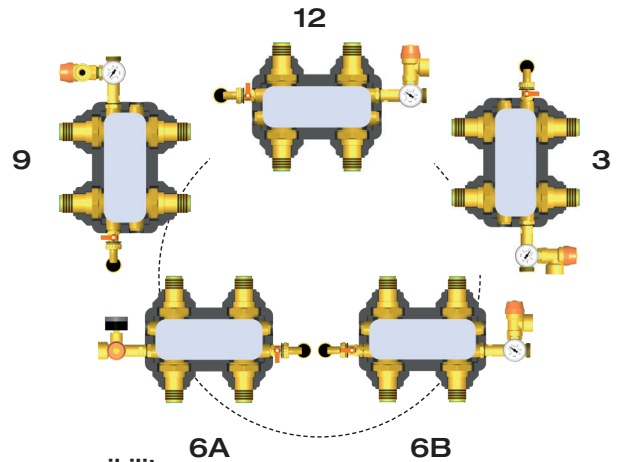
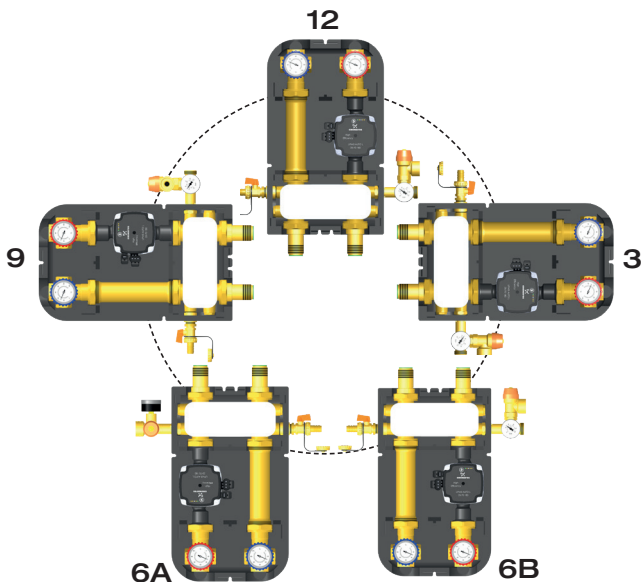
Group position

The 38G.14.DN25 e 02C.10 kits can be installed in one of the shown positions, paying attention to the following.

- 1) The heat exchanger must be kept with the plates in vertical position to avoid encrustations and deposits which could impair the thermal exchange efficiency;
- 2) According to the Italian and European Standards, the safety relief valve must be installed on the flow pipe and placed on the top or beside the connection manifold, with the discharge port pointing horizontally or downwards. In this way it's possible to prevent encrustations and deposits on the obturator and counterpressures on the outgoing fluid. The valve discharge port must be conveyed to the sewage system through a tundish at ambient pressure;
- 3) Whith the kit laying on a side (3 o'clock position), the fill/drain cock points upwards. There is no contraindication during the system filling phase while, during the draining phase, a part of the water could remain within the system. This quantity of water should therefore be drained through another outlet.

According to these assumptions, the installation positions are the following:

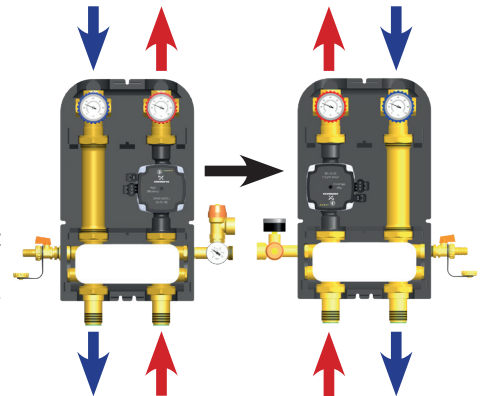
- 12 o'clock: suggested position;
- 3 o'clock: problems during the system discharge phase due to the fill/drain cock pointing upwards;
- 6A o'clock: rotate by 90° the safety group manifold to place the safety relief valve horizontally and the pressure gauge with the dial pointing upwards;
- 6B o'clock: exchange the safety group with the fill/drain cock, reverse the distribution group, reverse the pipes on the heat exchanger primary side to keep the exchanger working in counterflow mode;
- 9 o'clock: orient the safety relief valve to place the discharge port in horizontal position.



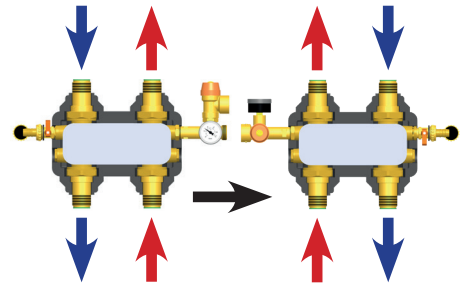
Group reversibility

The kit 38G.14.DN25 is factory set with pump on the RH side and flow upwards. The reversibility is allowed on the installation field simply by exchanging the flow line with the return one and the safety relief with the fill/drain cock, in order to keep the safety valve on the flow pipe. 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.



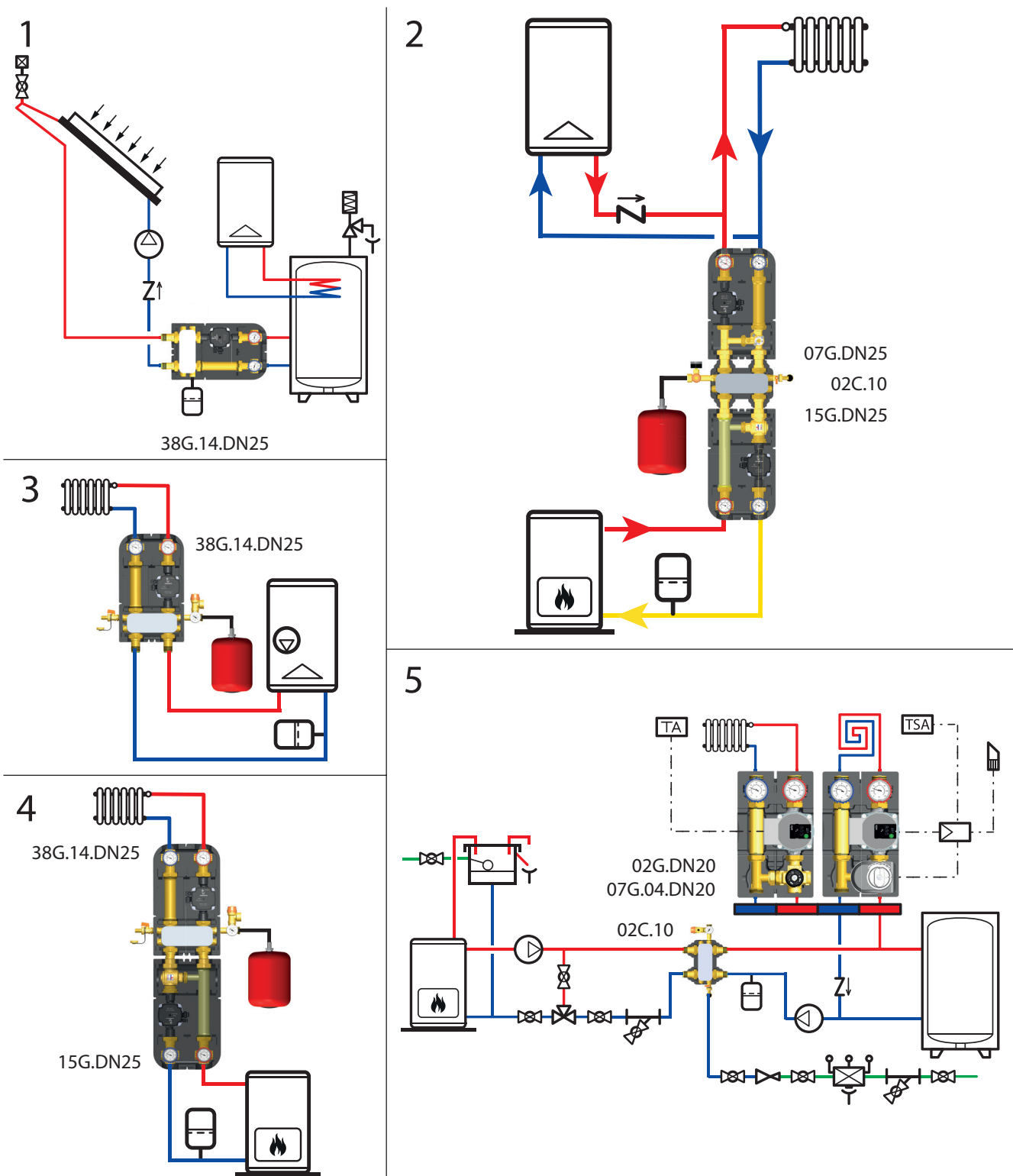
The fluid can pass through the kit 02C.10 in both the circulation directions. However, we always recommend the installation in counterflow, to maximise the thermal exchange efficiency, as well as to keep the safety relief valve on the flow pipe.



KIT WITH HEAT EXCHANGER

System diagrams

System diagrams: 1) connection of a solar system to a multi-energy buffer storage with 38G.14.DN25 - 2) coupling of two generators with 02C.10 - 3) installation of a new generator on a pre-existing system with 38G.14.DN25 - 4) direct supply to the system with 38G.14.DN25 - 5) open vessel generator connected to a closed vessel system by means of 02C.10



KIT WITH HEAT EXCHANGER

Accessories

42D.DN25

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



Hole centre distance: **90 mm**

Hole diameter: **8 mm**

| Code |  |  |
|---------------|---|---|
| 42D 025 Z00 I | 1 | 25 |

Specifications

Series 38G.14.DN25

Kit with heat exchanger, safety group and direct distribution group. Connections G 1 M at the primary side, G 1 F at the secondary side. Centre distance between flow and return connections 125 mm. Dimensions of the group with shell 392x455x212 mm (Width x Height x Depth). The group is composed of heat exchanger with 34 plates (28 and 18 plates) in brazed stainless steel; fittings and T-joints in brass; fill/drain cock in brass with viton, EPDM, PTFE gaskets; safety group complete with ordinary safety relief valve with brass body, EPDM membrane, nylon headwork and knob, stainless steel spring, working temperature range 0–160 °C, setting 3 bar, opening overpressure 10%, reseating pressure -20%, 2014/68/EU PED - Category IV; instrument holder manifold in brass; asbestos free gaskets, pressure gauge scale 0–10 bar. Direct distribution group complete with 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 Grundfos UPM3 AUTO L 25-70 180 (Wilo Yonos Para 25-6 180 RKA, 3 constant speed pump Grundfos UPSO 25-65 180 (Extra EU)), supply 230 V (50 Hz). Insulation shell in EPP. Working temperature range 5–90 °C. Maximum working pressure 10 bar.

Series 02C.10

Kit with heat exchanger and safety group. Connections G 1 M - G 1 M. In the package union fittings G 1 F - G 1 1/2 RN for the connection of distribution/regulating groups. Centre distance between flow and return connections 125 mm. Dimensions of the group with shell 392x228x207 mm (Width x Height x Depth). Heat exchanger with 34 plates (28 and 18 plates) in brazed stainless steel; fittings and T-joints in brass; fill/drain cock in brass with viton, EPDM, PTFE gaskets; safety group complete with ordinary safety relief valve with brass body, EPDM membrane, nylon headwork and knob, stainless steel spring, working temperature range 0–160 °C, setting 3 bar, opening overpressure 10%, reseating pressure -20%, 2014/68/EU PED - Category IV; instrument holder manifold in brass; asbestos free gaskets, pressure gauge scale 0–10 bar. Insulation shell in EPP. Working temperature range 5–90 °C. Maximum working pressure 10 bar.