DISTRIBUTION UNITS AND MANIFOLDS FOR CENTRAL HEATING SYSTEMS

ADVANTAGES AND INSTALLATION TECHNIQUE

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CENTRAL HEATING SYSTEMS

Central heating systems have always played a crucial role in supplying heat to residential, commercial and industrial buildings. In recent years, the installation of distribution units for central heating systems has become an increasingly widespread practice. This is due to fact that they can be used in both traditional radiator systems and in the more modern radiant-panel systems. Moreover, they can be installed together with boilers or heat pumps.

These devices offer several advantages in terms of performance, including more efficient heat distribution, greater operating flexibility and improved control of the system.

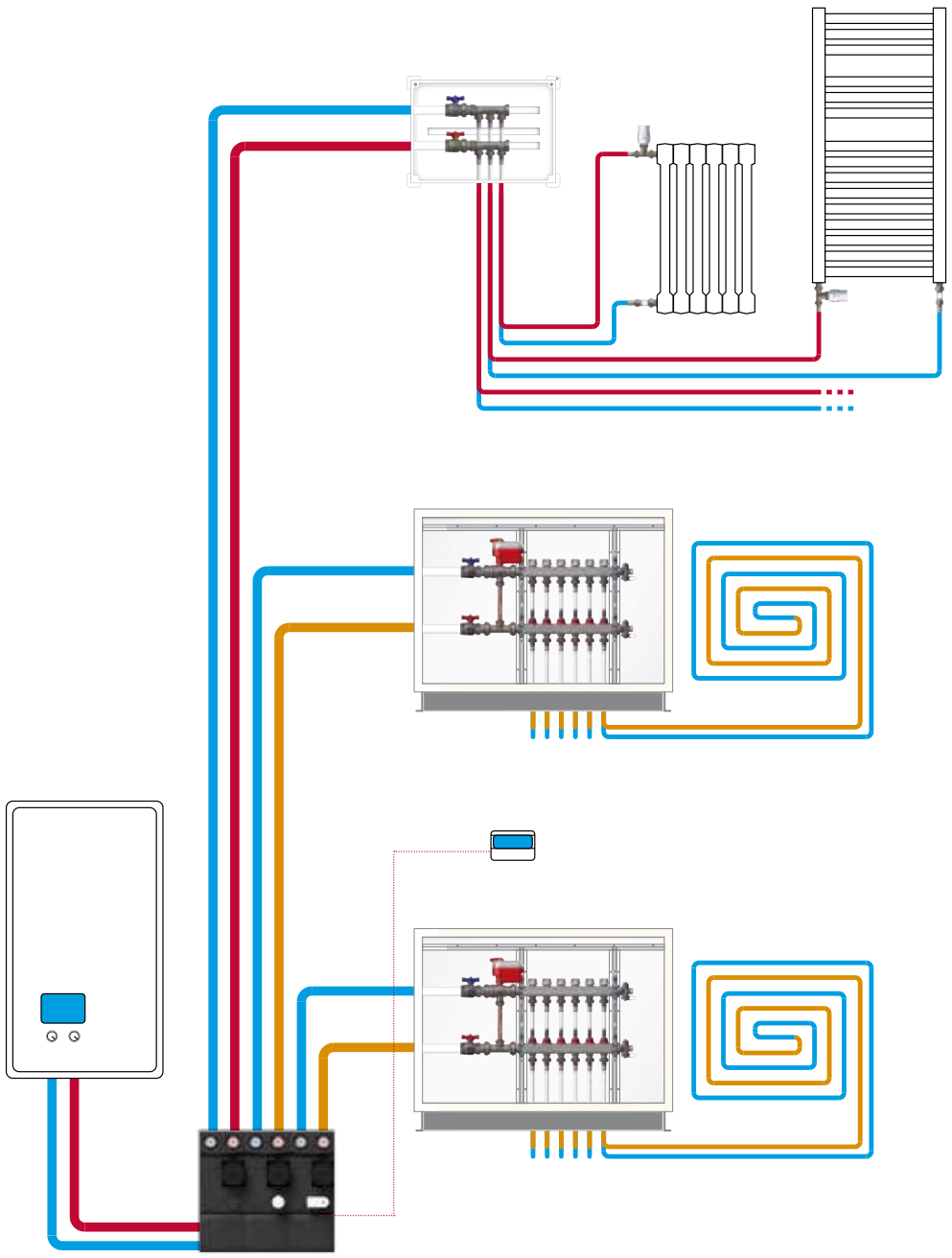


Fig. 1 - Central heating system – Installation example with distribution units and manifolds for central heating systems

REDUCING WASTAGES AND EFFECTIVELY MONITORING THE SYSTEM

Distribution units and manifolds for central heating systems are designed to supply heating or air conditioning systems through a heat-transfer fluid. They can operate in a straightforward way (direct distribution units) or by intervening on the delivery temperature of the fluid (fixed-point or motorised distribution units).

The units are supplied with an insulation shell, a circulator pump, shut-off ball valves and a pair of thermometers (delivery and return). They are reversible: the delivery and return can be inverted, provided that the positioning of the components inside the insulation shell is duly modified.
The units are supplied with a wall-mounting bracket, if there is no distribution manifold for central heating systems.
The centre-to-centre distance between the delivery and return is 90 mm: in this way, it is possible to have extremely compact installations.

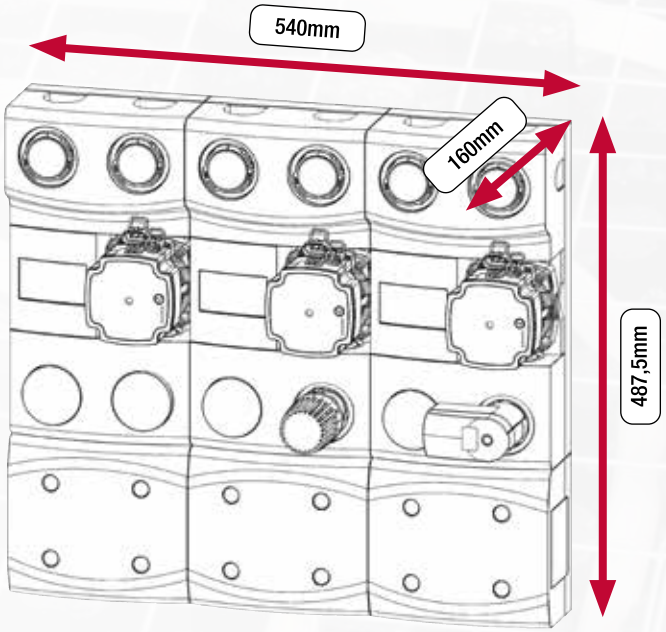


Fig. 2 - Overall dimensions of complete unit

In order to operate on different usage zones when there is only a single heat source, several distribution units can be assembled on a distribution manifold for central heating systems, so as to ensure proper optimisation of the zones.
The manifold is supplied complete with insulation, integrated wall-mounting brackets, integrated hydraulic separator and adjustable by-pass.

These operating characteristics make distribution units ideal components for optimising a central heating system, in terms of both improved energy efficiency and system management and maintenance.
The operating flexibility offered by distribution units means that the heating system can be adapted to the specific needs of each installation, guaranteeing optimal comfort for all users.

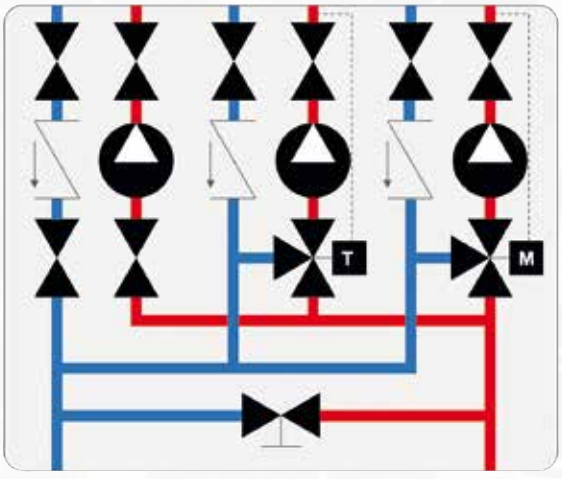


Fig. 3 - Hydraulic diagram of complete unit

DIRECT DISTRIBUTION UNITS

These distribution units operate by directly pumping the heat-transfer fluid at high temperature from a primary circuit to a secondary circuit on which the points of use are situated.

Fig. 4 - Direct distribution unit

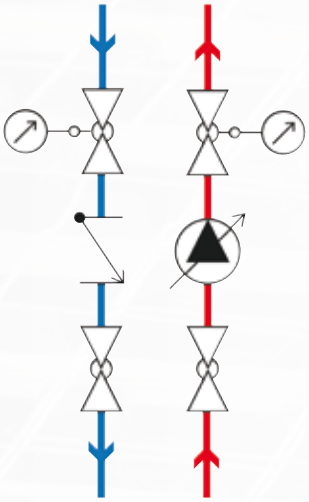


Fig. 5 - Hydraulic diagram of the direct distribution unit

Technical specifications:
Supplied with insulation.
Kv = 23 m^3/h.
Flow coefficient Kv referred to the ball valve only.
Maximum operating pressure: 6 bar.
Maximum operating temperature: 100°C.
System side fitting: 1".
Boiler side fitting: 1".
Centre-to-centre distance: 90 mm.
ISO 228 threaded fittings (equivalent to DIN EN ISO 228 and BS EN ISO 228).
Check valve on return circuit.
Reversible RH – LH.

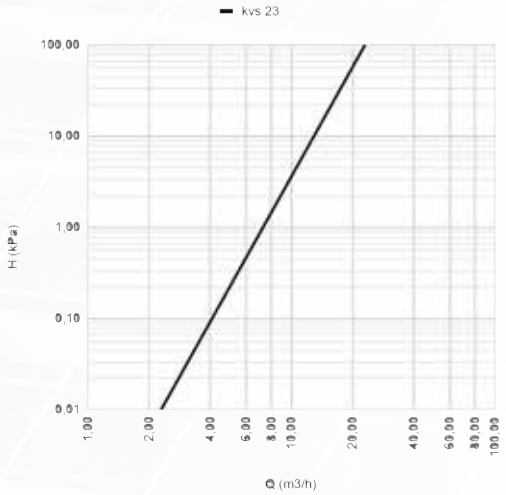


Fig. 6 - Components of the direct distribution unit

Components:
- EPP insulation shell
- Wall-mounting bracket included
- Ball valves for shutting off primary circuit
- Ball valves for shutting off secondary circuit with thermometers
- High-efficiency circulator pump

More complex than the previous devices, these distribution units pump the heat-transfer fluid from a primary circuit to a secondary circuit while keeping the fluid at the set temperature in low-temperature systems with radiant panels.

Fig. 7 - Distribution and regulation units

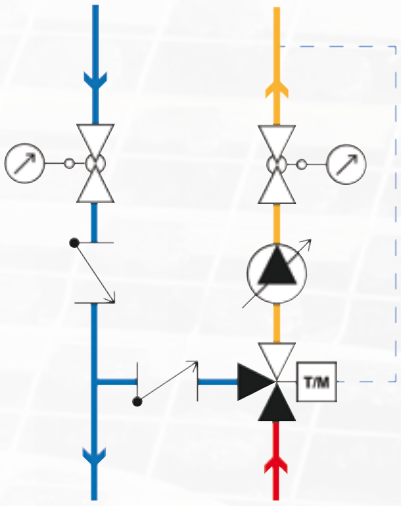


Fig. 8 - Hydraulic diagram of distribution and regulation units

Technical specifications:
Supplied with insulation.
Kv = 7.5 m^3/h.
Flow coefficient Kv referred to the mixing valve only.
Maximum operating pressure: 6 bar.
Maximum operating temperature: 100°C.
System side fitting: 1".
Boiler side fitting: 1".
Centre-to-centre distance: 90 mm.
ISO 228 threaded fittings (equivalent to DIN EN ISO 228 and BS EN ISO 228).

Check valve on return circuit.
Reversible RH – LH.

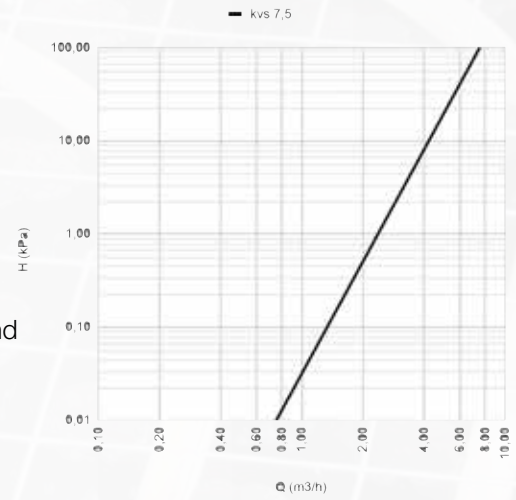


Fig. 9 - Components of distribution and regulation units

Components:
- EPP insulation shell
- Mixing valve with thermostatic control or actuator
- Wall-mounting bracket included
- Ball valves for shutting off primary circuit
- Ball valves for shutting off secondary circuit with thermometers
- High-efficiency circulator pump

Temperature setting:

Thermostatic valve: the temperature is set to the desired value by turning the adjustment ring (1) of the thermostatic control, which has a graduated scale. The number indicated by the indicator (2) corresponds to the delivery temperature value, as per the table below.

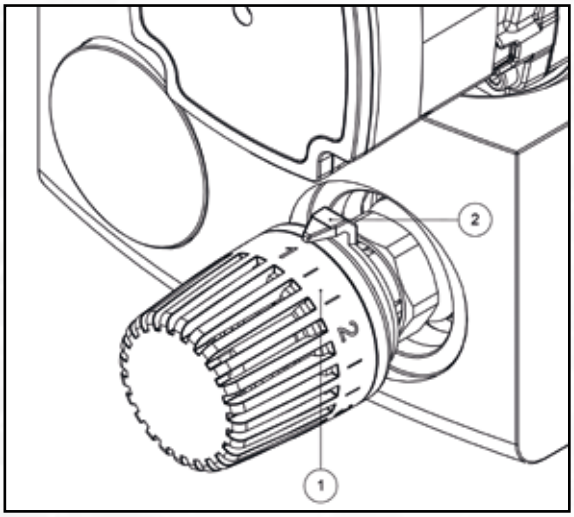


Fig. 10 - Installation of the thermostatic valve

1	2	4	5	6	7
20°C	30°C	40°C	50°C	60°C	70°C

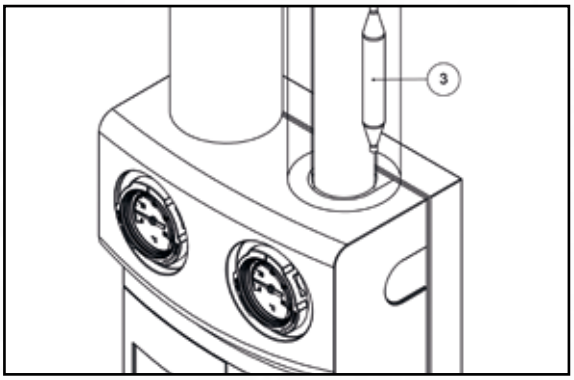


Fig. 11 - Installation of the probe

The capillary-tube contact sensor (3) of the thermostatic control must be installed on the delivery pipe on the secondary circuit using ties. For improved accuracy of the temperature reading, we suggest covering the sensor with adhesive insulating material or placing it under the insulating sheath of the delivery pipe.

Actuator: Depending on the variant, the regulation unit can be equipped with an electric actuator so as to control the opening and closing of the mixing valve by means of a thermostat or electronic control unit.
To install the actuator on the mixing valve, proceed as follows (see Fig. 12):

1. Screw the plastic ferrule (1) onto the mixing valve fitting.
2. Attach the actuator (2) to the plastic ferrule.
3. By removing the anti-dismantling device (3) it is possible to prevent the actuator's removal from the mixing valve.

Cable the actuator by following the instructions contained in the actuator box.

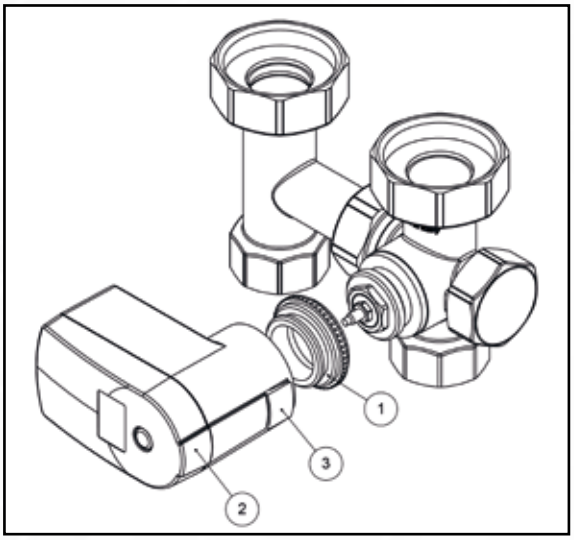


Fig. 12 - Installation of the actuator

Delivery reversal:

In the standard configuration, the regulation units are supplied with the delivery pipe on the right-hand side. The position of the delivery pipe and of the return pipe can be reversed by simply reconfiguring the elements, in particular by inverting the assembly of the mixing valve.

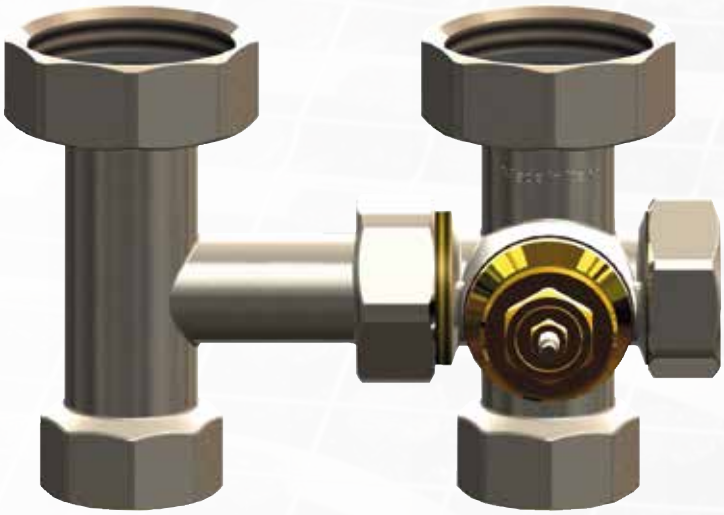


Fig. 13 - Standard installation

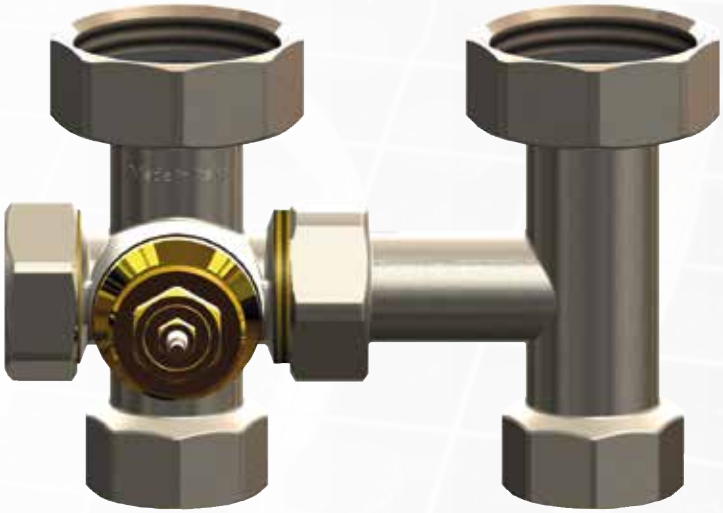


Fig. 14 - Installation with reversed delivery

DISTRIBUTION MANIFOLD

The manifold for central heating systems is used in heating systems to distribute the heat-transfer fluid to multiple distribution or regulation units in the presence of a single heat source.

Fig. 15 - Distribution manifold

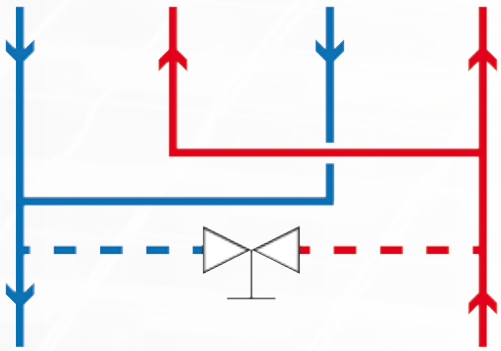


Fig. 16 - Hydraulic diagram of the distribution manifold

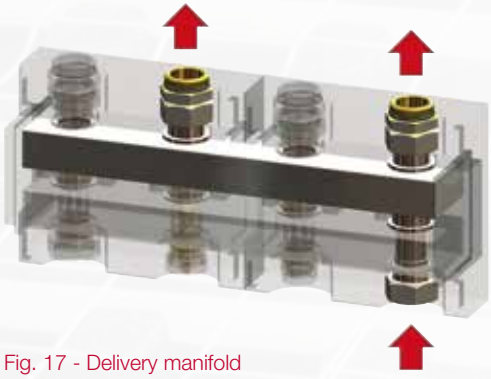


Fig. 17 - Delivery manifold

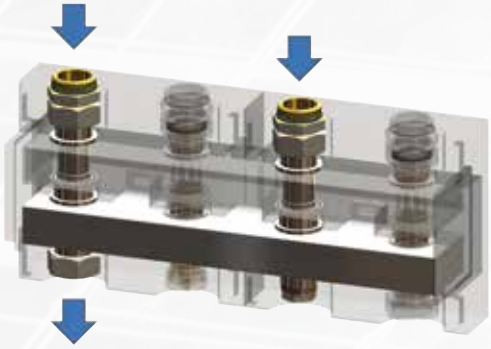


Fig. 18 - Return manifold

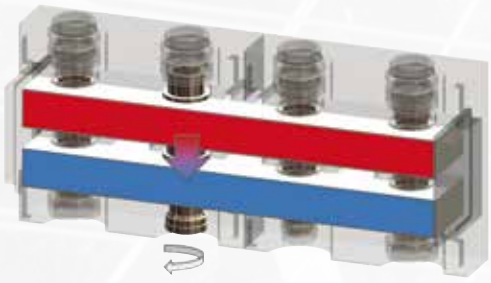


Fig. 19 - Hydraulic separator

Technical specifications:
Supplied with insulation and wall-mounting brackets.
Grade AISI 304 stainless steel manifold.
Maximum operating pressure: 6 bar.
Maximum operating temperature: 100°C.
Ideal for flow rates of up to 2 m^3/h (for the single zone).
Main fittings: 1".
Branch fittings: 1".
Centre-to-centre distance of branches: 90 mm.
ISO 228 threaded fittings (equivalent to DIN EN ISO 228 and BS EN ISO 228).

Components:

- EPP insulation shell
- Adjustable hydraulic separator that can be excluded as required
- Stainless steel body
- Wall-mounting bracket included
- Swivel couplings

The circulator pump, the real core of pump units, can work in three different modes depending on needs:

- CC (Constant Speed): the circulator pump works on a constant-speed curve, which means that it works at constant speed or power. The circulator pump work point shifts upwards or downwards on the selected constant curve on the basis of the system's heat demand.

- CP (Constant Pressure): the head (pressure) is kept constant, regardless of the heat demand. The circulator pump work point shifts outwards or inwards on the selected constant-pressure curve on the basis of the system's heat demand.

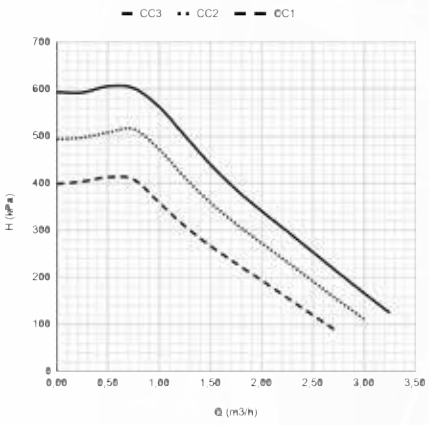
- PP (Proportional Pressure): the head (pressure) reduces as the heat demand drops and increases as the heat demand increases. The circulator pump work point shifts upwards or downwards on the selected proportional-pressure curve on the basis of the system's heat demand.

Some circulator pumps can also be set to the Auto Adapt (AA) function which, through an algorithm, automatically selects the most suitable CP or PP curve on the basis of operating conditions.

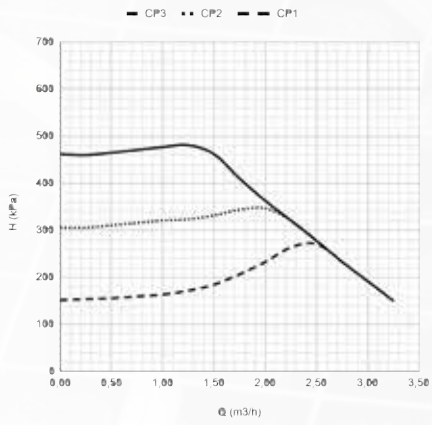
Examples of curves based on our high-efficiency circulator pumps:

Circulator pump UPM3 S AUTO 25-60

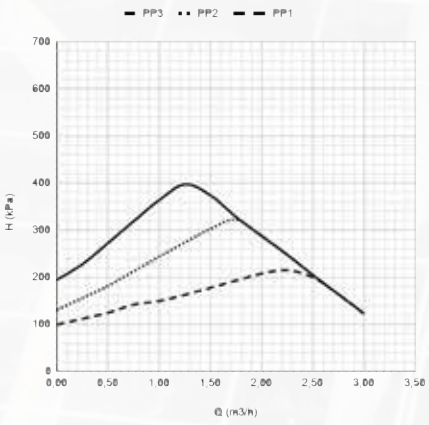
CC



CP

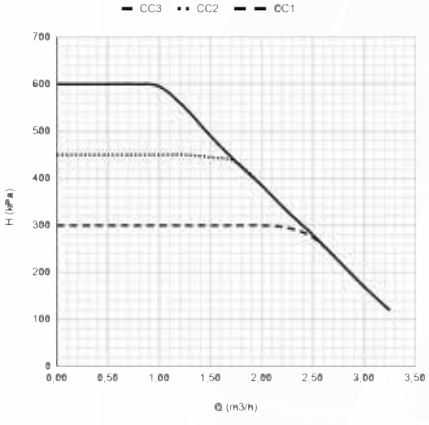


PP

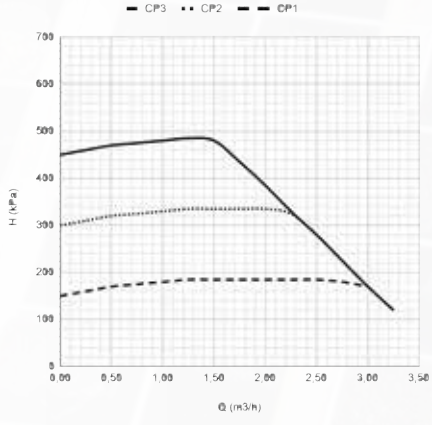


Circulator pump GO.TEC H 25-60

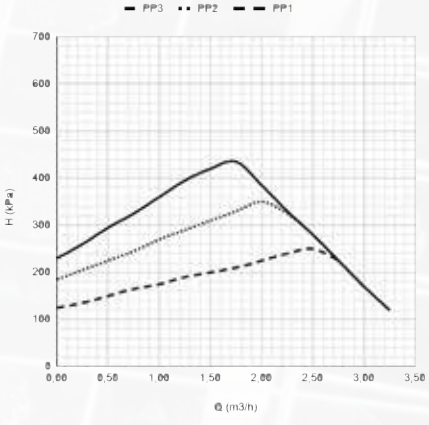
CC



CP



PP

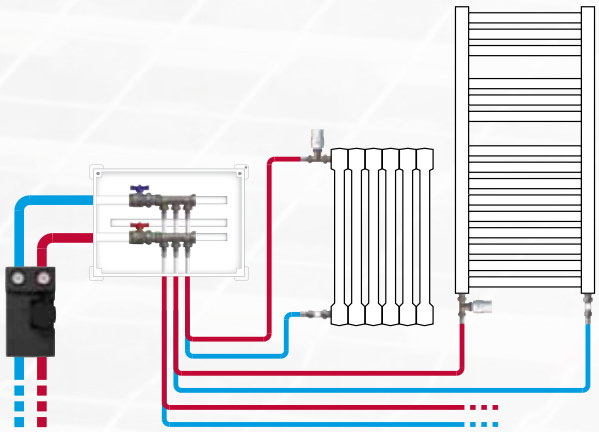


THERMAL COMFORT: A QUESTION OF PERFORMANCES

The high performance and efficiency of central heating systems mounting distribution units allow for a more efficient heat distribution and an optimal level of thermal comfort.

Below we include some theoretical usage data derived from our units for central heating systems. The data shows how the circulator pump maximum head varies in relation to the ΔT variation:

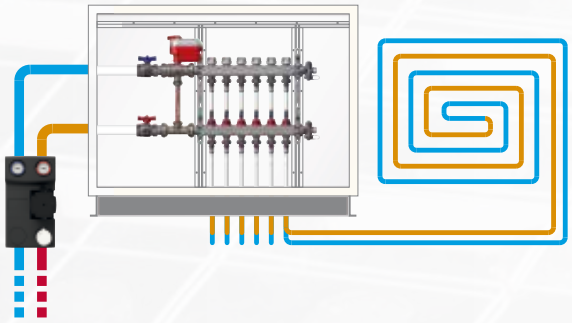
Direct distribution unit, Kvs = 23.0



Maximum head: 6 metres
Available head: 4 metres
Available flow rate: 1,700 l/h
Available power with ΔT 20 K = 40 kW

Maximum head: 8 metres
Available head: 4 metres
Available flow rate: 2350 l/h
Available power with ΔT 20 K = 55 kW

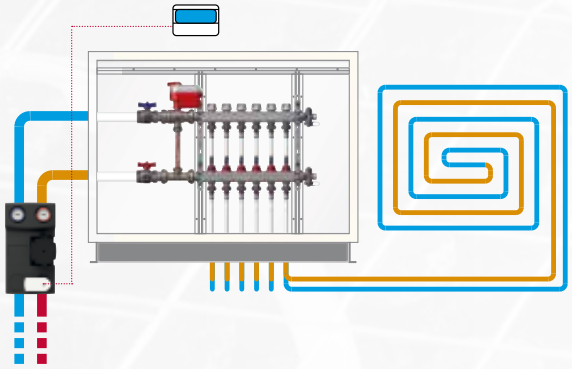
Fixed-point distribution and regulation unit, Kvs = 7.5



Maximum head: 6 metres
Available head: 4 metres
Available flow rate: 1650 l/h
Available power with ΔT 8 K = 15 kW

Maximum head: 8 metres
Available head: 4 metres
Available flow rate: 2300 l/h
Available power with ΔT 8 K = 21 kW

Motorised distribution and regulation unit, Kvs = 7.5



Maximum head: 6 metres
Available head: 4 metres
Available flow rate: 1650 l/h
Available power with ΔT 15 K = 29 kW

Maximum head: 8 metres
Available head: 4 metres
Available flow rate: 2300 l/h
Available power with ΔT 15 K = 40 kW

COMFORT, SAFETY AND EFFICIENCY FOR YOUR HOME

Notes

Notes

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