

# Set point temperature regulating unit



01155/17 GB  
replaces dp 01155/07 GB

## 172 series



### Function

The temperature regulating unit is made to be used in radiant panel systems, in combination with distribution manifolds. The set point regulating unit performs the function of keeping the flow temperature constant, at the set value, for the medium distributed in a low temperature system for floor radiant panels. In this particular series, the temperature is regulated by a specific hydraulic unit equipped with a thermostatic three-way valve with a built-in sensor. It is supplied with a removable differential by-pass kit for the primary circuit. This accessory is essential when there is a primary circuit circulation pump and the radiator circuits are controlled by thermostatic or thermo-electric valves. In case of connection with a SEPCOLL or an hydraulic separator without primary pump, the kit can be removed and the hydraulic unit is connected directly.

### Reference documentation

- Tech. Brochure 01144 Pre-assembled distribution manifolds for radiant panel systems 668...S1 series

### Product range

Code 1725.1A2L Pre-assembled set point temperature regulating unit with manifolds and box, with UPM3 Auto L 25-70 pump

### Technical specifications

#### Materials

##### Regulating unit with thermostatic three-way valve

Body: brass EN 1982 CB753S  
Headwork: brass EN 12164 CW614N  
Obturator: PSU  
Hydraulic seals: EPDM

##### Flow adapter unit

Body: brass EN 1982 CB753S

##### Primary circuit by-pass kit

Body: brass EN 1982 CB753S  
By-pass valve: POM  
Spring: stainless steel EN 10270-3 (AISI 302)

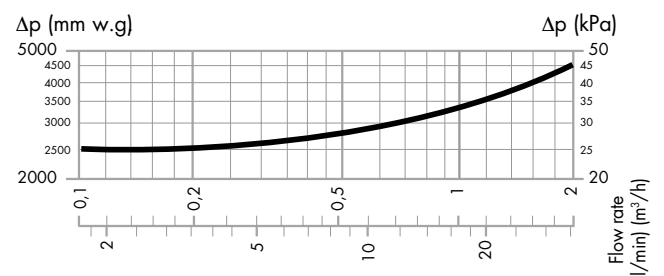
##### Shut-off valves

Body: brass EN 12165 CW617N  
Ball: brass EN 12164 CW614N, chrome plated

### Performance

Medium: water, glycol solutions  
Max. percentage of glycol: 30%  
Adjustment temperature range: 25–55°C  
Accuracy: ±2°C  
Primary inlet max. temperature: 90°C  
Max. working pressure: 1000 kPa (10 bar)  
Min. working pressure: 80 kPa (0,8 bar)  
Panel manifold differential by-pass setting: 25 kPa (2.500 mm w.g.)  
Primary circuit differential by-pass setting: 6 kPa (600 mm w.g.)  
Temperature gauge scale: 0–80°C  
Pressure gauge scale: 0–10 bar  
Connections: - primary circuit: 3/4" M (ISO 228-1)  
- to regulating unit: 1" F (ISO 228-1) with nut  
- panel circuit outlets: 3/4" M - Ø 18 mm  
- outlet centre distance: 50 mm

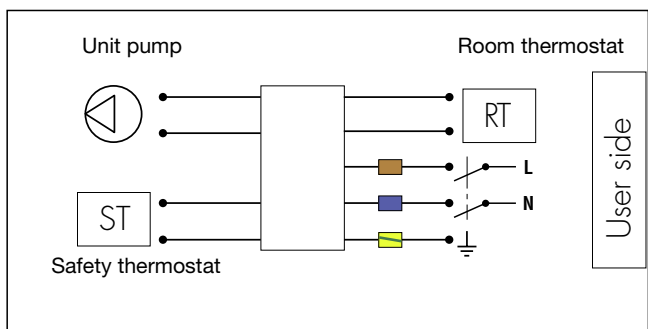
### Panel circuit differential by-pass graph



### Safety thermostat

Factory setting: 55°C ±3°C  
 Protection class: IP 55  
 Contact rating: 10 A / 240 V

### Electrical connection diagram

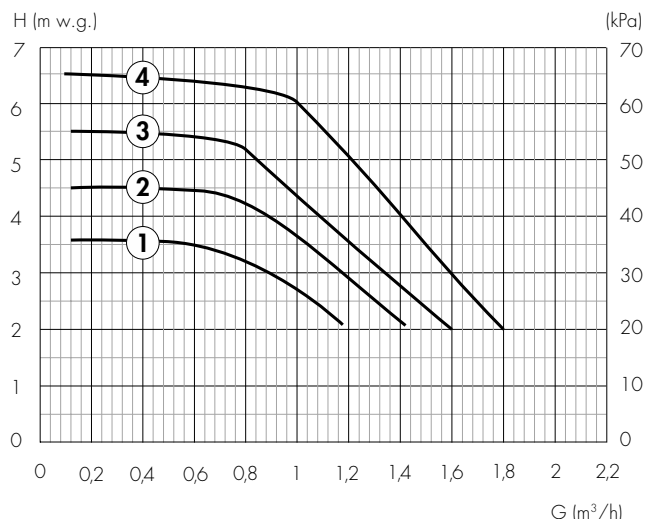


### Pump

High-efficiency pump: model UPM3 Auto L 25-70  
 Body: cast iron GG 15/20  
 Electric supply: 230 V - 50 Hz  
 Max. ambient humidity: 95%  
 Max. ambient temperature: 70°C  
 Protection class: IP 44  
 Pump centre distance: 130 mm  
 Pump connections: 1 1/2" F (ISO 228-1) with nut

### Head available at the regulating unit connections

Tests carried out with constant speed control



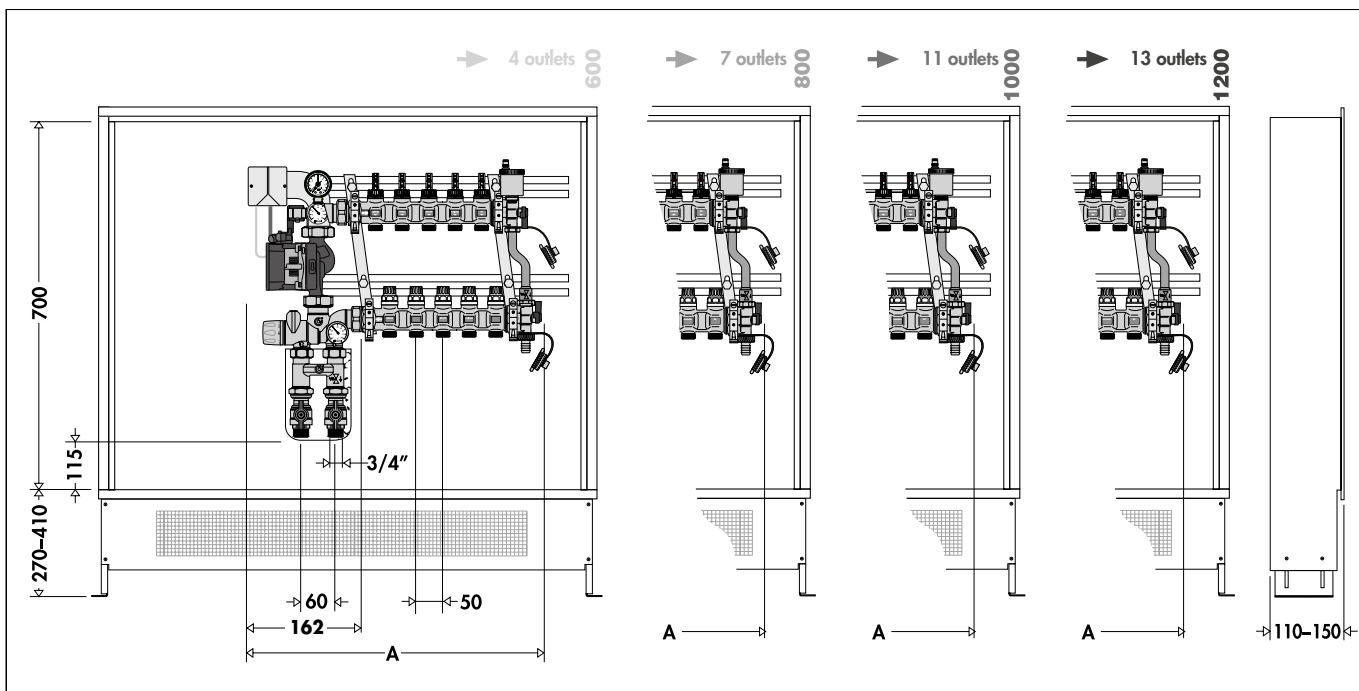
### Note:

The pump can operate with constant speed, constant pressure and proportional pressure control, which adapts the performance to the system requirements. For further details, see the installation instruction sheet of the pump supplied in the package.

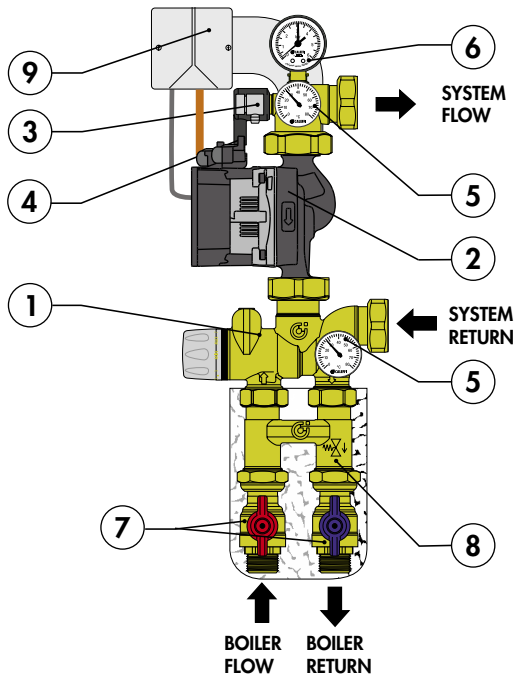
### Insulation

Material: closed cell expanded PE-X  
 Thickness: 15 mm  
 Density: - inner part: 30 kg/m³  
 - outer part: 50 kg/m³  
 Thermal conductivity (DIN 52612): 0°C: 0,038 W/(m·K)  
 40°C: 0,045 W/(m·K)  
 Coefficient of resistance to the diffusion of water vapour (DIN 52615): >1300  
 Working temperature range: 0–100°C  
 Reaction to fire (DIN 4102): class B2

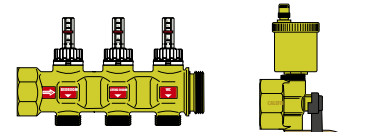
### Dimensions



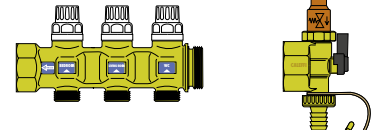
Code	1725C1A2L	1725D1A2L	1725E1A2L	1725F1A2L	1725G1A2L	1725H1A2L	1725I1A2L	1725L1A2L	1725M1A2L	1725N1A2L	1725O1A2L
Panel outlets	3	4	5	6	7	8	9	10	11	12	13
A	465	515	565	615	665	715	765	815	865	915	965



Flow manifold equipped with flow meters and balancing valves.



Return manifold equipped with shut-off valves.



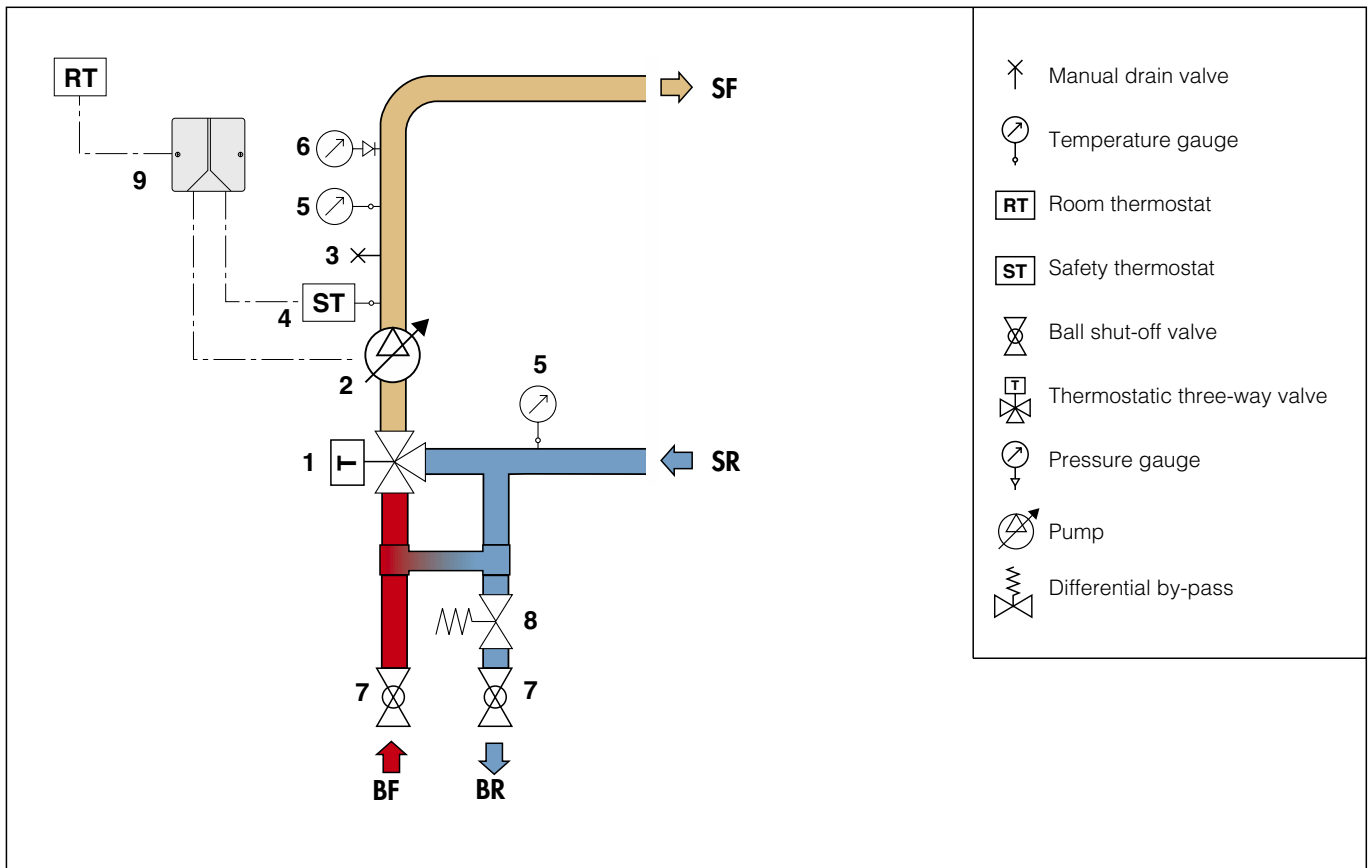
End fittings with multi-position ball valves, automatic air vent valve, **by-pass kit for differential pressure check** and fill/drain hose connection.

**Characteristic components**

- 1 Thermostatic three-way mixing valve with built-in sensor
- 2 High-efficiency circulation pump UPM3 Auto L 25-70
- 3 Adjustable drain valve
- 4 Safety thermostat
- 5 Flow and return temperature gauges with pockets

- 6 Pressure gauge
- 7 Primary circuit shut-off valves
- 8 Primary circuit differential by-pass kit
- 9 Electrical wiring box

**Hydraulic diagram**

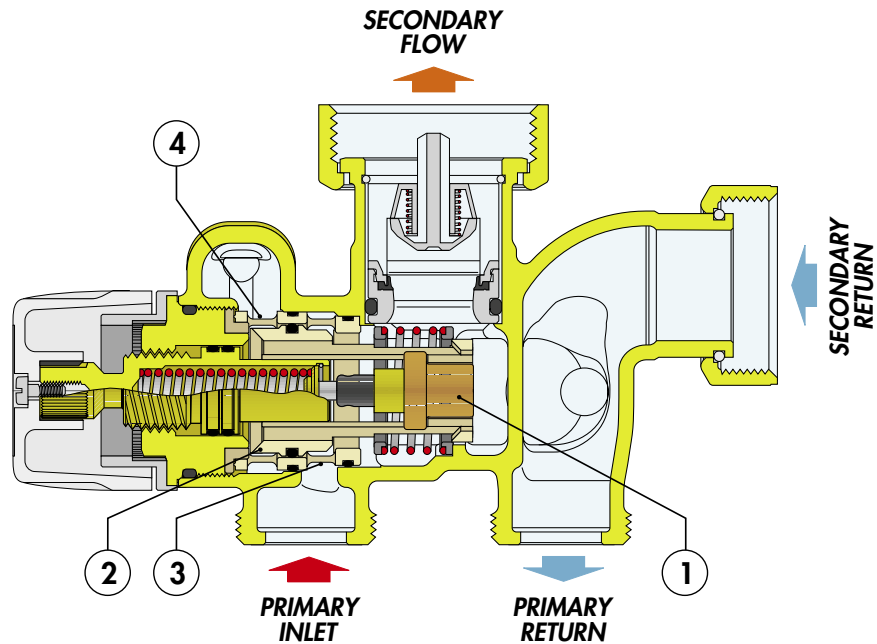


## Operating principle

The regulator element inside the thermostatic three-way valve consists of a temperature sensor (1) fully immersed in the mixed water outlet chamber. By expanding and contracting, it continuously ensures a correct proportioning of hot water, coming from the boiler, and water returning from the panel circuit.

The water intake is regulated by a shaped obturator (2) that slides inside a special cylinder placed between the hot water flow (3) and the water returning from the circuit (4).

Even if the thermal load of the secondary circuit or the inlet temperature from the boiler changes, the mixing valve automatically adjusts the flow rates until it obtains the set temperature.



## Construction details

### Regulating unit body

The valve body, containing the temperature regulating device, is made out of a single casting with connections to the primary and secondary circuits. A specific internal channel carries the system return medium to the regulating valve, making it possible for the unit to be smaller in size and easy to connect.

### Reduced head losses

The three-way mixing valve is equipped with a special obturator that acts on calibrated water orifices. This ensures a high flow rate and a reduced size, while maintaining accurate temperature control.

### Non-sticking materials

The materials used for the mixing valve construction eliminate potential sticking due to scale. All functional parts, such as the obturator, valve seats and guides, have been made using a special material with low friction coefficient, which ensures product performance over time.

### Low-inertia thermostatic sensor

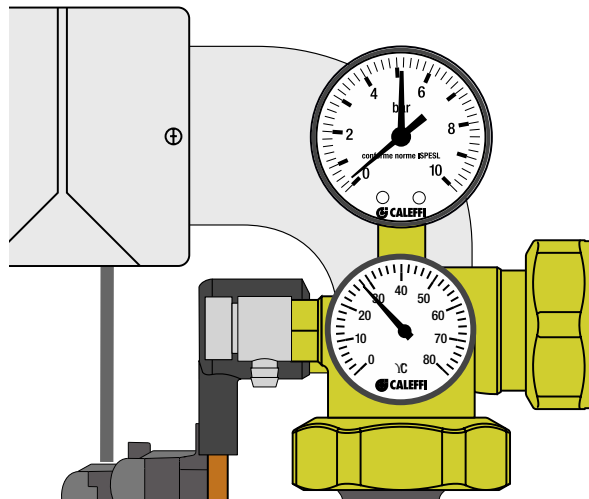
The temperature-sensitive element, the "engine" of the thermostatic three-way valve, has low thermal inertia; in this way it can quickly react to changes in the conditions of inlet pressure and temperature, shortening the valve response time to the changes in thermal load.

### Temperature adjustment and locking

The control knob is used to adjust the temperature in a full turn (360°) between min. and max. It also has tamper protection for locking the temperature at the set value.

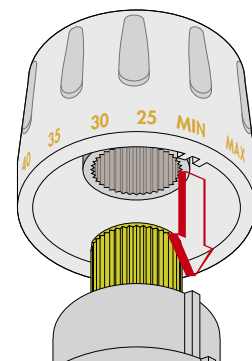
### Flow unit

The flow unit is made out of a single casting with the necessary ports to connect with the functional components such as the safety thermostat, temperature gauge, pressure gauge and drain valve.



### Adjustment locking

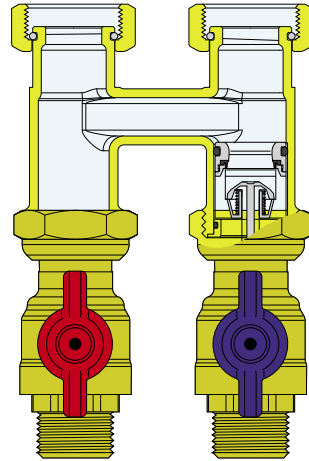
Turn the knob onto the required number, unscrew the upper screw, remove the knob and put it back on so that the internal reference couples with the protrusion on the knob holder nut.



## Primary circuit differential by-pass kit

### Operating principle

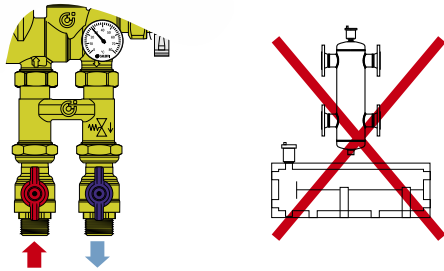
The differential by-pass kit for the primary circuit enables controlling the flow supplied to the heating elements connected before the outlet to the regulating unit for the panel circuit.



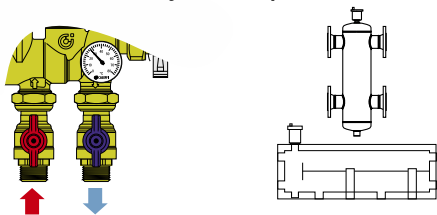
### Removable kit

In case of a hydraulic circuit connected to a SEPCOLL or to a hydraulic separator without primary pump, the kit can be removed and the hydraulic unit is connected directly. The circuit shut-off valves, equipped with nut connection, can be removed easily and used directly on the unit.

#### Connection without a hydraulic separator or SEPCOLL



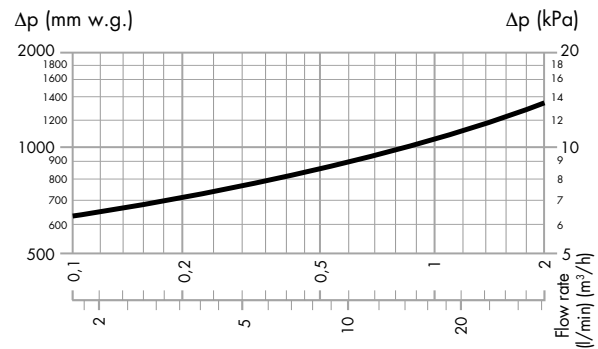
#### Direct connection to hydraulic separator or SEPCOLL



### Differential valve

The differential valve is used to control the head in the primary distribution circuit. It aids flow circulation towards the heating elements and limits overpressure if there are thermostatic or thermo-electric valves.

The differential valve has a fixed setting that cannot be changed. It is preset to 6 kPa, the mean value for the loss of head in the primary circuit.



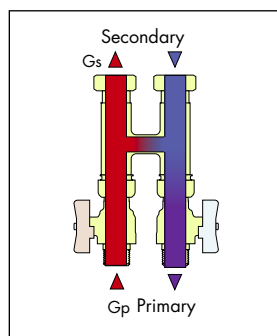
### Primary circuit by-pass kit

The by-pass kit permits hydraulic separation between the primary and secondary circuits. This hydraulic separation optimizes the operation of the secondary circuit at the panels thus preventing the influence on the secondary circuit by any primary circuit flow rate variation. In this case, the flow rate in the respective circuits depends exclusively on the flow rate characteristics of the pumps, preventing reciprocal influence caused by connection in series. Two possible conditions of hydraulic balance are described here.

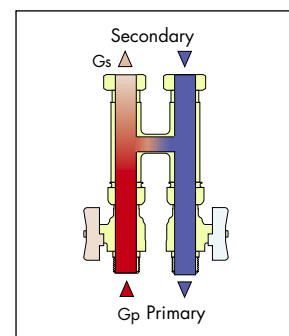
The component is typically sized in order to have the following working rate:

$$G_{\text{primary}} = G_{\text{secondary}} \text{ (inlet to the mixing valve)} + G_{\text{heating elements}}$$

$G_{\text{primary}}$  maximum recommended: 1,5 m<sup>3</sup>/h

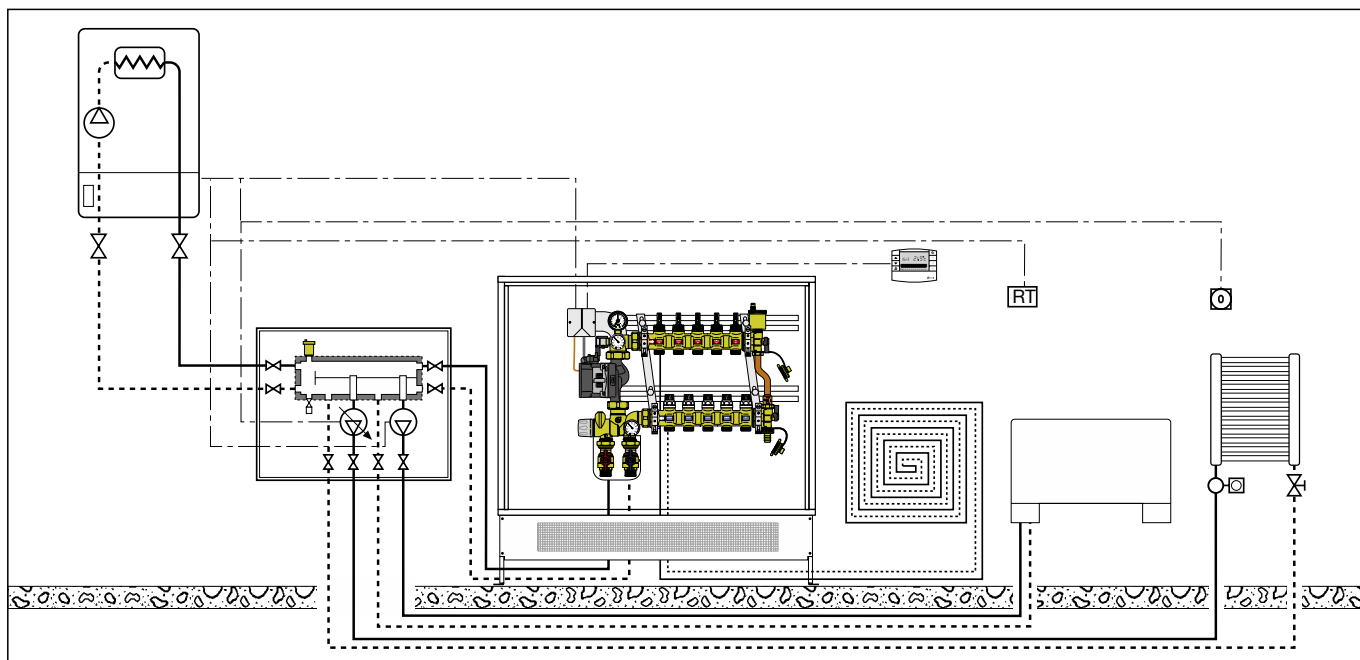
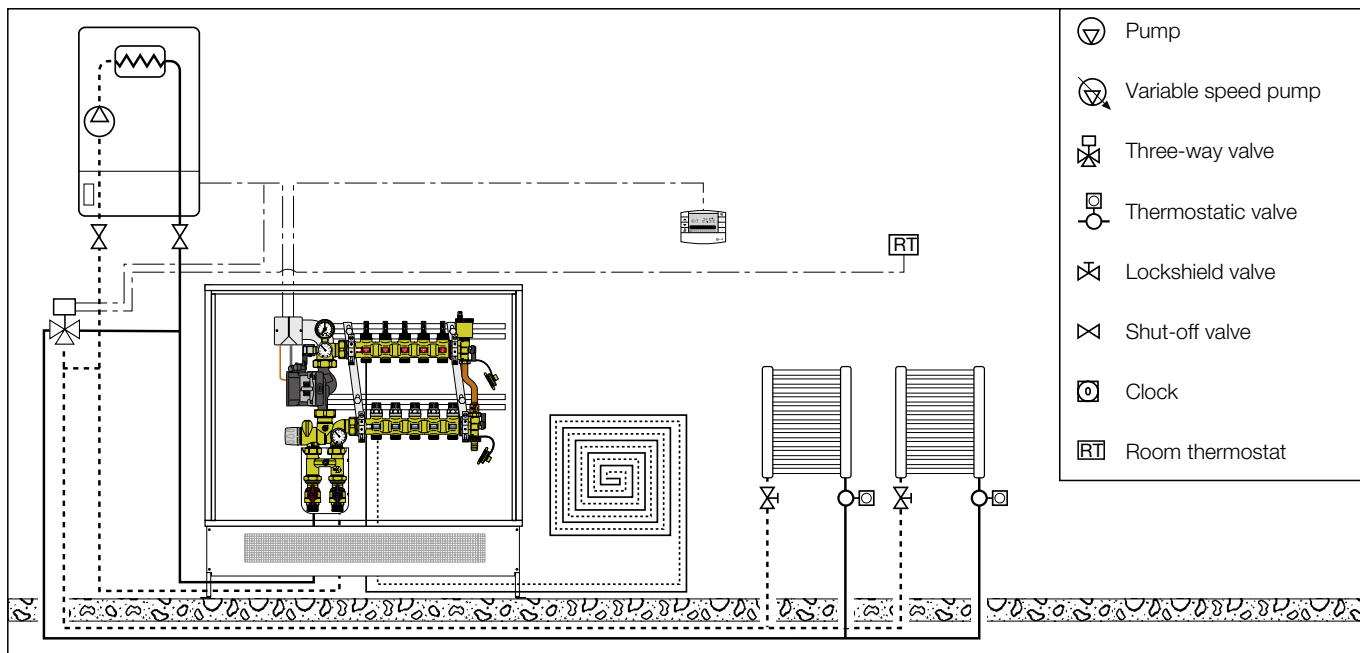


$G_{\text{primary}} > G_{\text{secondary}}$



$G_{\text{primary}} < G_{\text{secondary}}$

## Application diagrams



## SPECIFICATION SUMMARY

### Code 1725.1A2L

Set point temperature regulating unit. Connections to primary circuit 3/4" M (ISO 228-1). Connections to regulating unit 1" F (ISO 228-1) with nut. Panel circuit outlet connections 3/4" M (ISO 228-1) - Ø 18 mm. Medium: water and glycol solutions; maximum percentage of glycol 30%. Regulation temperature range 25–55°C. Maximum temperature at primary circuit inlet 90°C. Maximum working pressure 1000 kPa (10 bar). Minimum working pressure 80 kPa (0,8 bar). Panel manifold differential by-pass setting 25 kPa. Primary circuit differential by-pass setting 6 kPa. Temperature gauge scale 0–80°C. Pressure gauge scale 0–10 bar. Complete with: flow manifold for panel system with 3 outlets (from 3 to 13) with brass body, flow rate regulating valve with flow meter with a scale of 1–5 l/min; return manifold for panel system with 3 outlets (from 3 to 13) with brass body, shut-off valve. Regulating unit with thermostatic three-way valve with brass body and headwork, PSU obturator and EPDM seals. Flow adapter unit with brass body. By-pass kit with brass body, POM differential by-pass valve and stainless steel spring. Shut-off valves with brass body and chrome plated brass ball. Electric supply 230 V - 50 Hz. Safety thermostat factory setting 55°C ± 3°C, protection class IP 55, contact rating 10 A / 240 V. Pump UPM3 Auto L 25-70, protection class IP 44. With pre-formed shell insulation in PE-X for primary circuit. Supplied pre-assembled in a painted plate box with lock, depth adjustable from 110 to 150 mm, including floor supports adjustable in height from 270 to 410 mm.

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