

Set point temperature regulating unit with medium distribution kit for primary circuit



01156/17 GB
replaces dp 01156/07 GB

172 series



Function

The temperature regulating unit with primary circuit distribution kit has been developed for use in mixed installation solutions: radiant panels and radiators, in conjunction with distribution manifolds for radiant panels.

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.

The function of the kit is to distribute a portion of the medium flowing from the primary boiler circuit to the heating elements. It is supplied with manifolds with built-in shut-off and balancing valves and a 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.

Reference documentation

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

Product range

Code 1725.1A2L 003 Set point temperature regulating unit with medium distribution kit for primary circuit, 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
Seals: EPDM

Flow adapter unit

Body: brass EN 1982 CB753S

Primary circuit by-pass kit

Body: brass EN 1982 CB753S
By-pass valve: PA6G30
Spring: stainless steel EN 10270-3 (AISI 302)

Shut-off valves

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

Primary circuit distribution manifolds

Flow manifold

Body: brass EN 1982 CB753S

Flow rate regulating valve

Obturator: brass EN 12164 CW614N
Hydraulic seals: EPDM

Return manifold

Body: brass EN 1982 CB753S

Shut-off valve

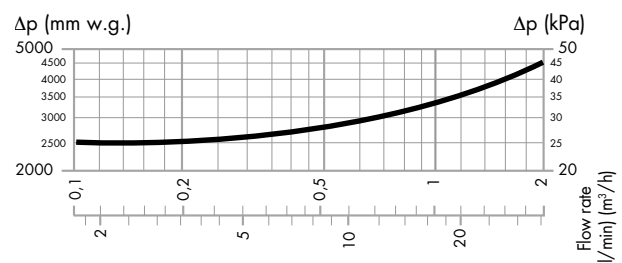
Obturator stem: stainless steel EN 10088-3 (AISI 303)
Obturator and seals: EPDM
Springs: stainless steel EN 10270-3 (AISI 302)

Knob: ABS

Performance

Medium: water, glycol solutions
Max. percentage of glycol: 30%
Adjustment temperature range: 25–55°C
Accuracy: ± 2°C
Primary inlet working temperature range: 5–100°C
Max. working pressure: 1000 kPa (10 bar)
Min. working pressure: 80 kPa (0.8 bar)
Panel manifold differential by-pass setting: 25 kPa (2500 mm w.g.)
Primary circuit differential by-pass setting range: 2–30 kPa (0,2–3 m w.g.)
Primary circuit manifold inner diameter: Ø 27 mm
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
- primary circuit manifold outlets: 3/4" M - Ø 18 mm
- outlet centre distance: 50 mm

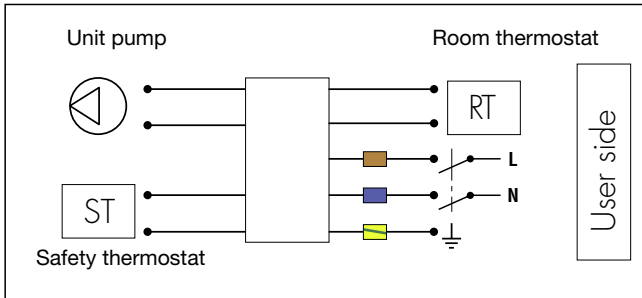
Panel circuit differential by-pass graph



Safety thermostat

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

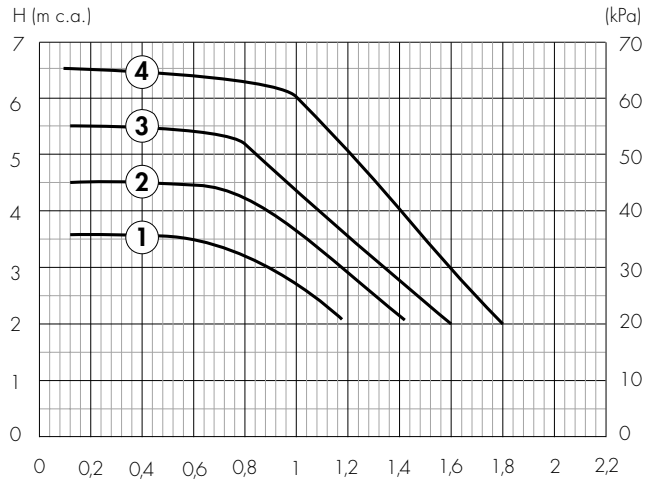
Electrical connection diagram



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.



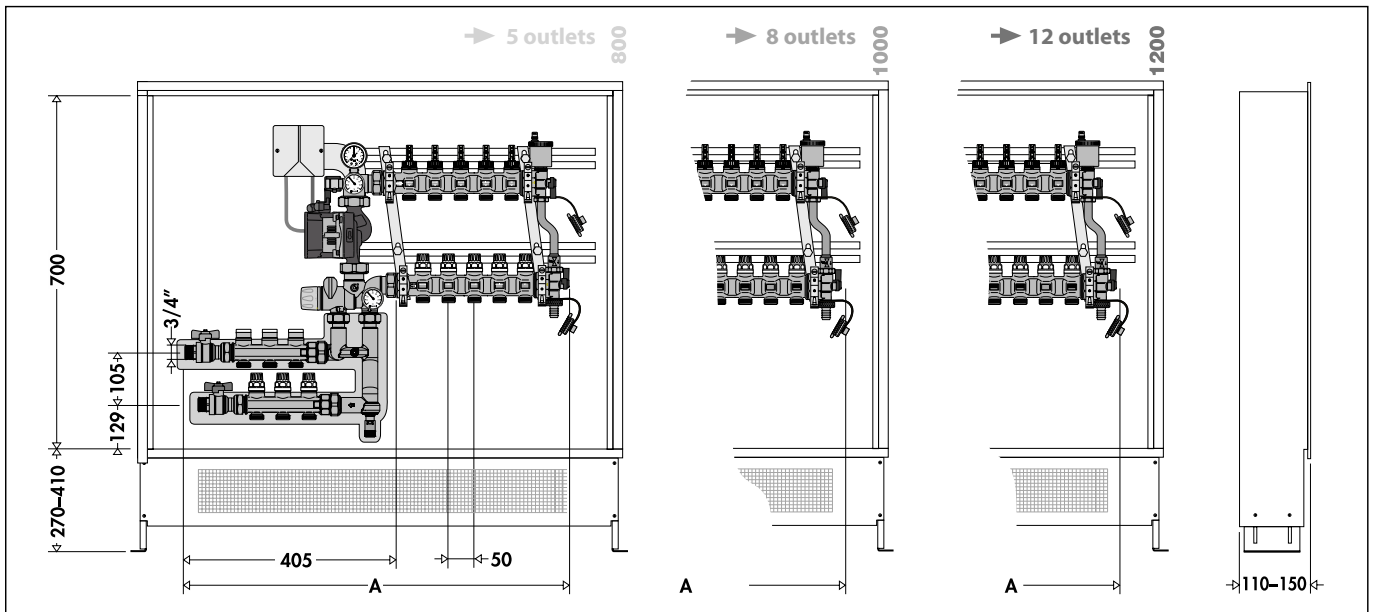
Note:

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.

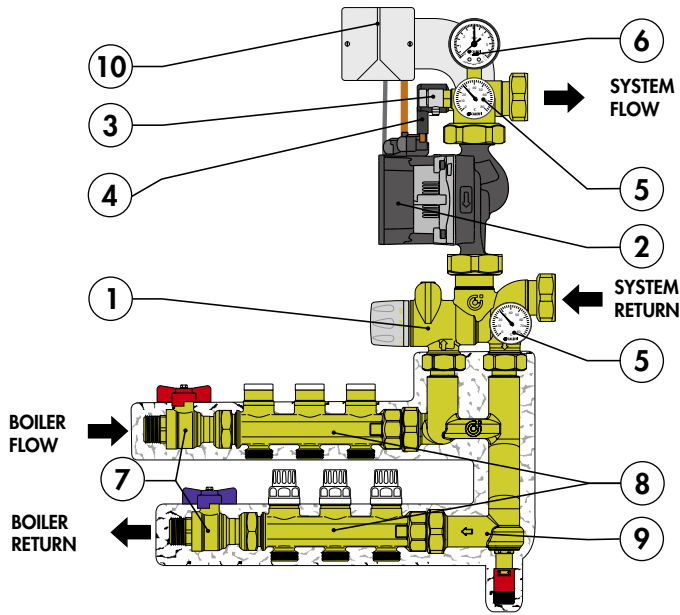
Insulation

Material: closed cells 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

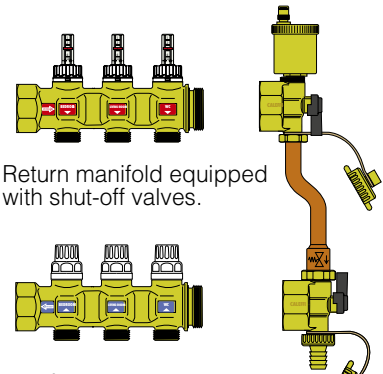
Dimensions



	1725C1A2L 003	1725D1A2L 003	1725E1A2L 003	1725F1A2L 003	1725G1A2L 003	1725H1A2L 003	1725I1A2L 003	1725L1A2L 003	1725M1A2L 003	1725N1A2L 003
Radiator outlets	3	3	3	3	3	3	3	3	3	3
Panel outlets	3	4	5	6	7	8	9	10	11	12
A	655	705	755	805	855	905	975	1025	1075	1125



Flow manifold equipped with flow meters and balancing valves.



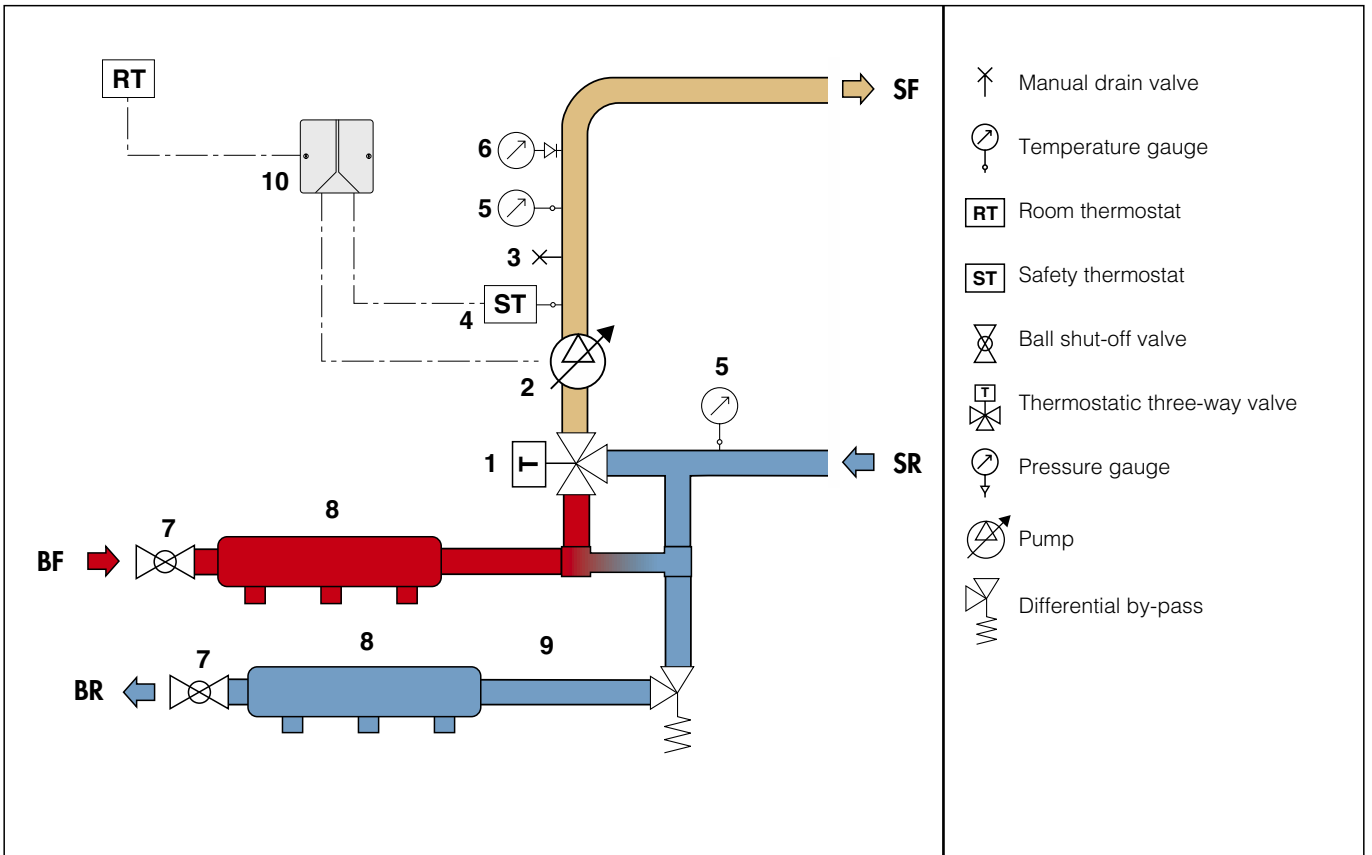
Return manifold equipped with shut-off valves.

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

- | | |
|--|--|
| <ul style="list-style-type: none"> 1 Thermostatic three-way mixing valve with built-in sensor 2 High-efficiency pump UPM3 Auto L 25-70 3 Adjustable drain valve 4 Safety thermostat 5 Flow and return temperature gauges with pockets | <ul style="list-style-type: none"> 6 Pressure gauge 7 Primary circuit shut-off valves 8 Primary circuit distribution manifolds with built-in valves 9 Primary circuit differential by-pass kit 10 Electrical wiring box |
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Hydraulic diagram

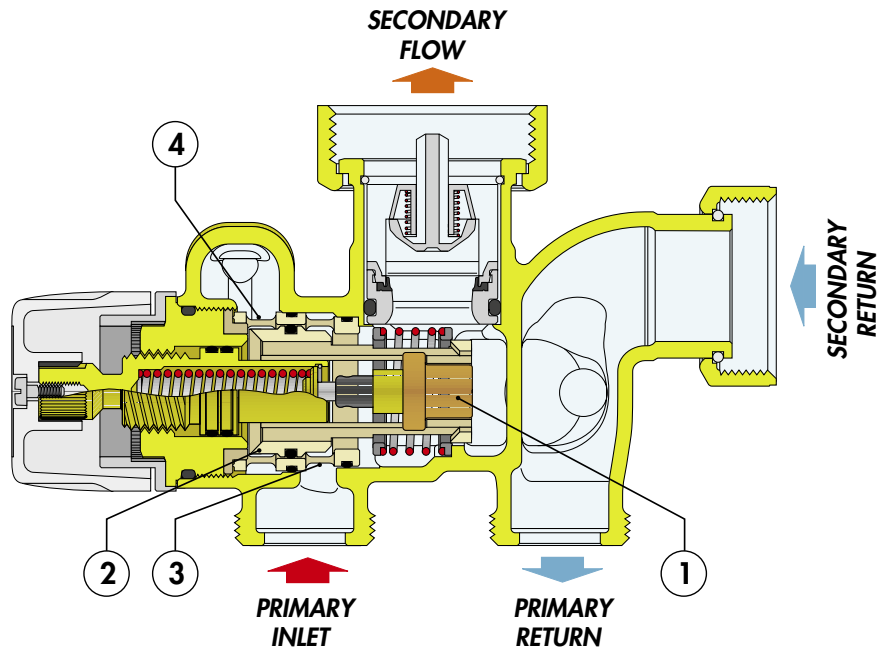


Operating principle

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

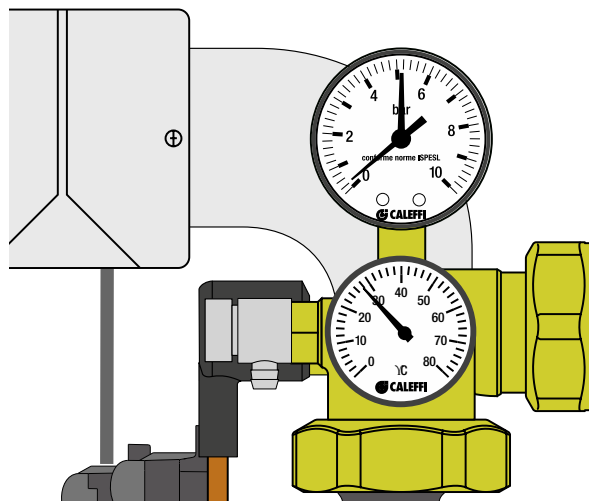
The temperature-sensitive element, the "engine" of the thermostatic three-way valve, has low thermal inertia; in this way it can quickly react to changes in the conditions of inlet pressure and temperature, shortening the valve response time to the changes in thermal load.

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.

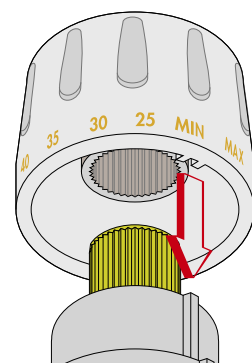
Flow unit

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.

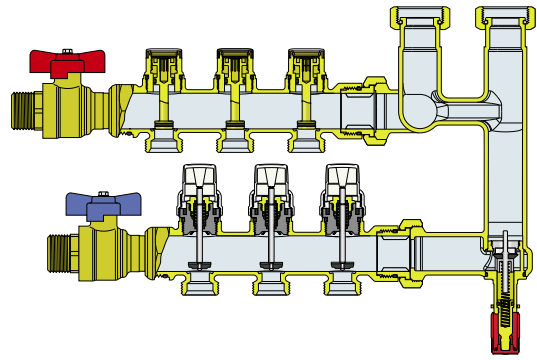


Distribution and differential by-pass kit for primary circuit

Operating principle

The distribution and 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.

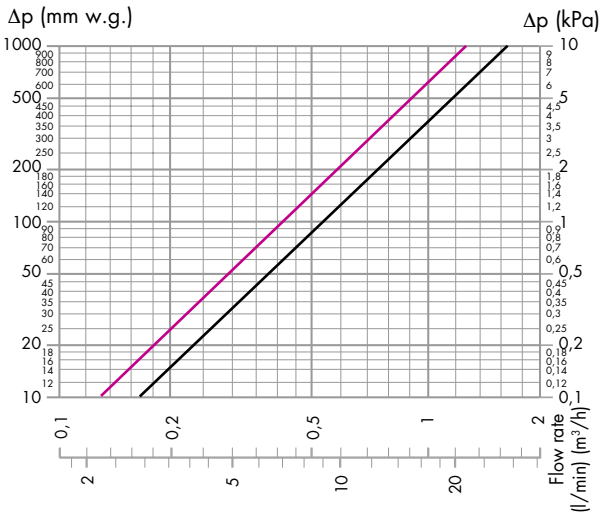
It is composed of distribution manifolds with built-in regulating and shut-off valves and the differential by-pass kit for the primary circuit.



Primary circuit distribution manifolds

The distribution manifolds are equipped with:

- flow rate regulating valves built into the flow manifold. In this way it is possible to set the right flow rate and balance the various connected circuits.
- shut-off valves built into the return manifold. The same circuits can be automatically shut off by using the thermo-electric actuators.

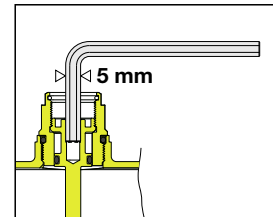


Flow rate regulating valve fully open	Kv	Kv _{0,01}
Shut-off valve	4,10	410

- Kv = flow rate in m³/h for a head loss of 1 bar
- Kv_{0,01} = flow rate in l/h for a head loss of 1 kPa

Hydraulic characteristics of the flow rate regulating valve

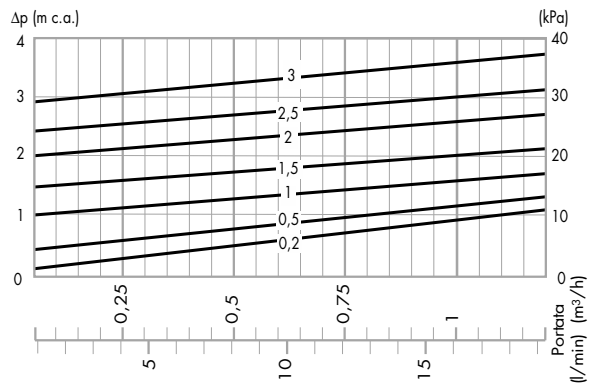
Adjustment position	Kv (m ³ /h)	Kv _{0,01} (l/h)
2 turns	0,22	22
3 turns	1,30	130
4 turns	3,20	320
5 turns	4,70	470
F.O.	5,40	540



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 setting can be adjusted. It is preset to 5 kPa, the mean value for the loss of head in the primary circuit. If necessary, the trigger value can be adjusted within the range 2–30 kPa (0,2–3 m w.g.), using the corresponding knob with graduated scale.

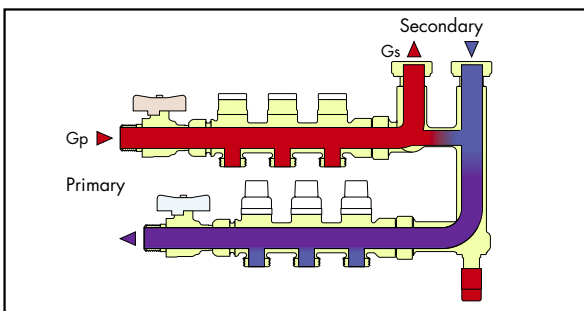


Primary circuit by-pass kit

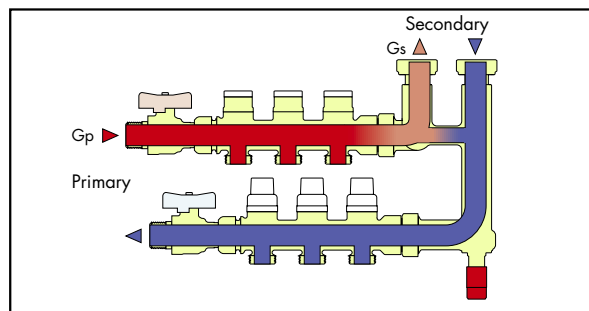
The by-pass kit permits hydraulic separation between the primary and secondary circuits. This hydraulic separation optimizes the operation of the secondary circuit at the panels thus preventing the influence on the secondary circuit by any primary circuit flow rate variation. In this case, the flow rate 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_{primary} maximum recommended: 1,5 m³/h

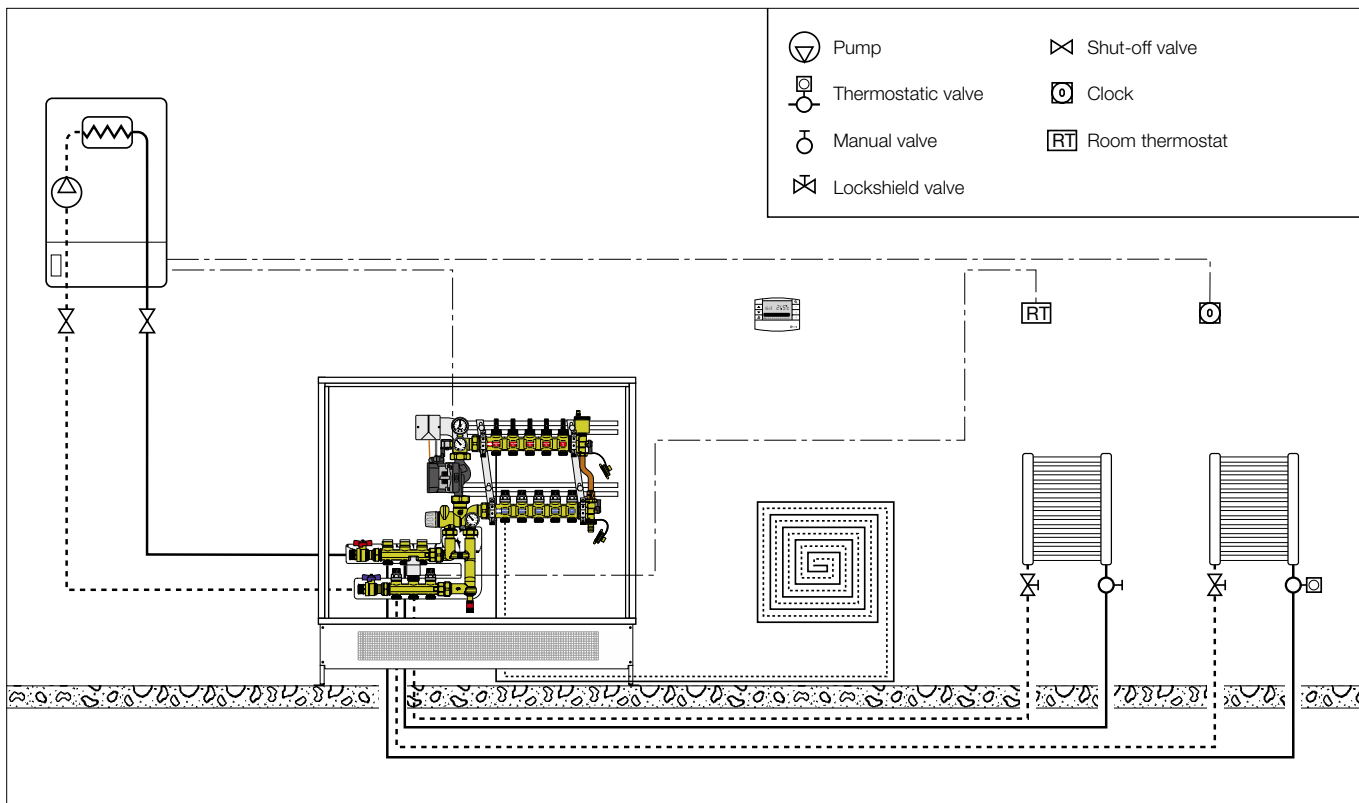


$G_{\text{primary}} > G_{\text{secondary}}$



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

Application diagram



SPECIFICATION SUMMARY

Code 1725.1A2L 003

Set point temperature regulating unit with medium distribution kit for primary circuit. 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 - Ø 18 mm. Primary circuit manifold outlet connections 3/4" M - Ø 18 mm. Medium: water and glycol solutions; maximum percentage of glycol 30%. Adjustment temperature range 25–55°C. Primary inlet working temperature range: 5–100°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 range 2–30 kPa (0,2–3 m w.g.). 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 12) with brass body, flow rate regulating valves with flow meter with a scale of 1–5 l/min; return manifold for panel system with 3 outlets (from 3 to 12) with brass body, shut-off valves. Regulating unit with thermostatic three-way valve with brass body and headwork, PSU obturator and EPDM seals. Flow adapter unit with brass body. Flow adapter unit with brass primary circuit distribution manifolds with 3 outlets, brass body and flow rate regulating and shut-off valves. By-pass kit with brass body, PA6G30 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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