Tender specification:
Oventrop regulating set for surface heating systems for flow temperature control, for instance in combined radiator/surface heating systems. The regulating sets no. 1 and 2 consist of a straight pattern valve, a bypass valve, a temperature controller with contact sensor and an electric pipe contact safety switch. The regulating set no. 3 consists of a three-way diverting valve, a temperature controller with contact sensor, an electric pipe contact safety switch and a piston type spring assisted check valve.

Models:	**Item no.:**
Floor surface	
Set no. 1 up to 85 m² with bypass valve	1144251
Set no. 2 up to 120 m² with bypass valve	1144252
Set no. 3 up to 200 m² with three-way diverting valve “Tri-D TR”	1144253

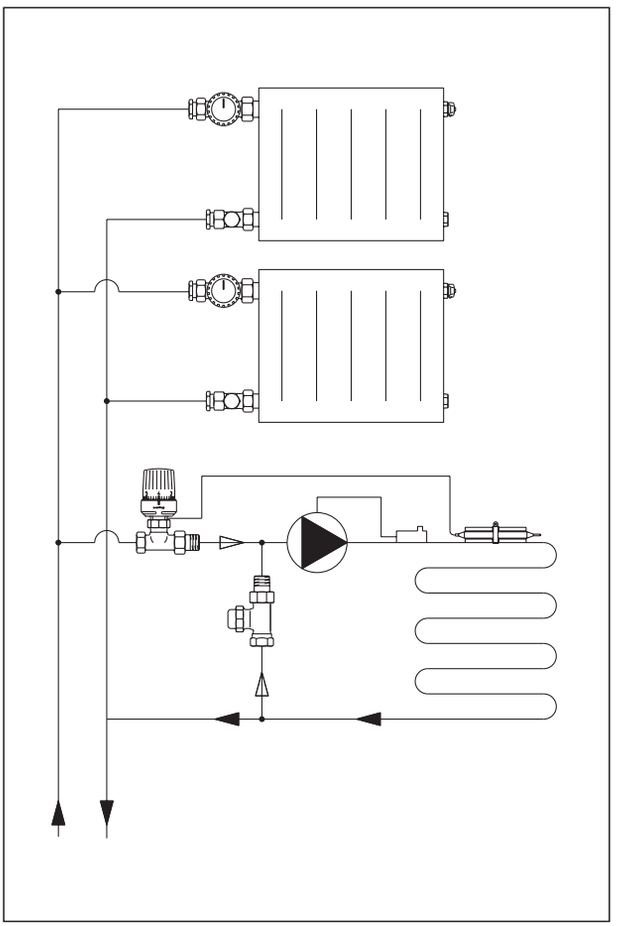
Installation:
The regulating sets for surface heating systems have to be installed according to the system illustration. By adding hot water which is, for instance, taken from the radiator circuit, the flow temperature of the surface heating circuit is maintained constant within the necessary proportional band. Any change in the flow temperature is registered by the contact sensor of the temperature controller and is transmitted to the straight pattern valve of the sets no. 1 and 2 or to the three-way diverting valve of set no. 3. To avoid a wrong flow against the three-way diverting valve, a piston type spring assisted check valve is installed in the bypass. If the set value is exceeded due to a failure, the electric pipe contact safety switch switches off the pump.

Regulation:
Regulation of the sets no. 1 and 2 is carried out with the bypass valve in the open position. The required flow temperature is set at the temperature controller. If the flow temperature does not reach the required value, the bypass valve has to be closed step by step until the set value is reached. The electric pipe contact safety switch has to be set to a value exceeding the nominal value of the temperature controller by approx. 5 K. As for set no. 3, the required flow temperature is also set at the temperature controller. Depending on the position of the temperature controller, the passing fluid is diverted to the return pipe or the bypass or is divided between the two.

Components:

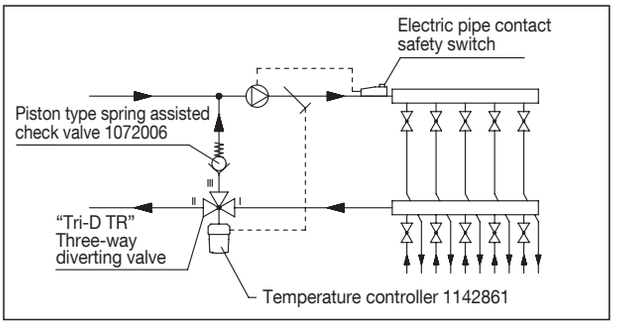
Set no.1 up to 85 m²	Item no.:
Straight pattern valve DN 15, M 30 x 1.5	1180104
Bypass valve DN 20	1027666
Temperature controller with contact sensor, M 30 x 1.5, control range 20 – 50 °C, 2 m capillary	1142861
Electric pipe contact safety switch with concealed temperature setting, control range 20 – 90 °C	1143000

Set no. 2 up to 120 m²	Item no.:
Straight pattern valve DN 20, M 30 x 1.5	1187106
Bypass valve DN 25	1027668
Temperature controller with contact sensor, M 30 x 1.5, control range 20 – 50 °C, 2 m capillary	1142861
Electric pipe contact safety switch with concealed temperature setting, control range 20 – 90 °C	1143000

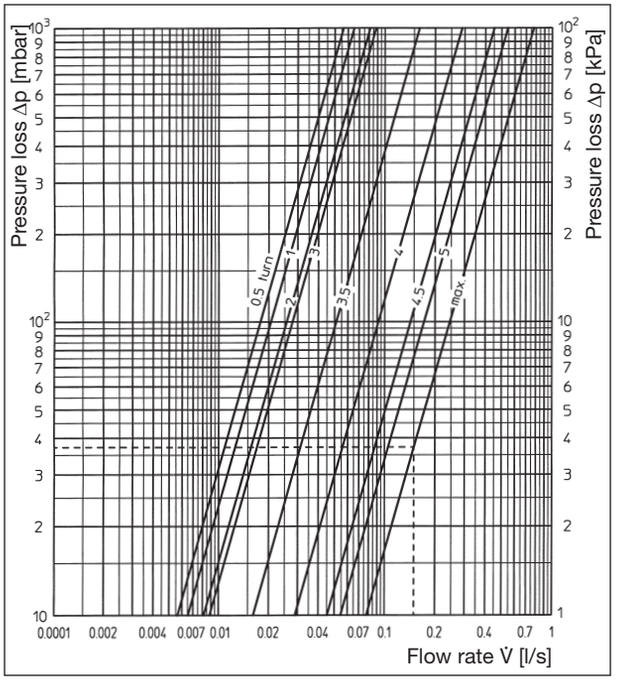


System illustration

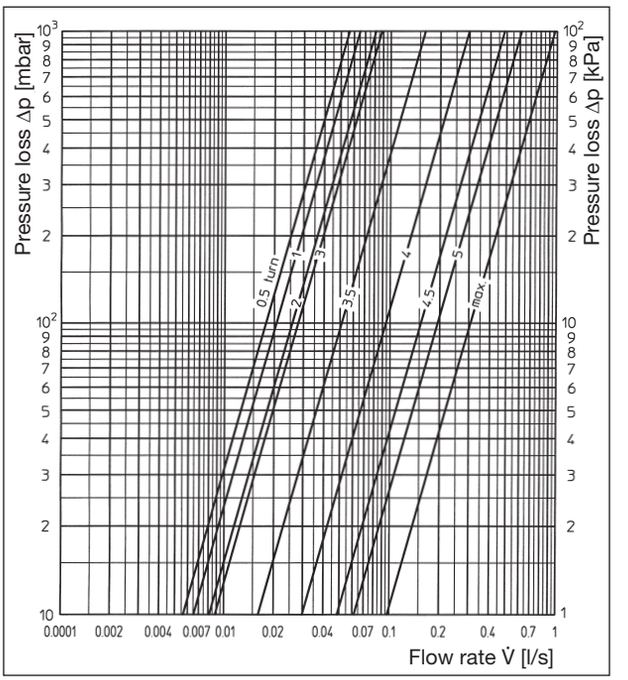
Set no. 3 up to 200 m²	Item no.:
Three-way diverting valve “Tri-D TR” DN 20, M 30 x 1.5 (see separate “Technical information”)	1130206
Temperature controller with contact sensor, M 30 x 1.5, control range 20 – 50 °C, 2 m capillary	1142861
Electric pipe contact safety switch with concealed temperature setting, control range 20 – 90 °C	1143000
Piston type spring assisted check valve DN 20	1072006



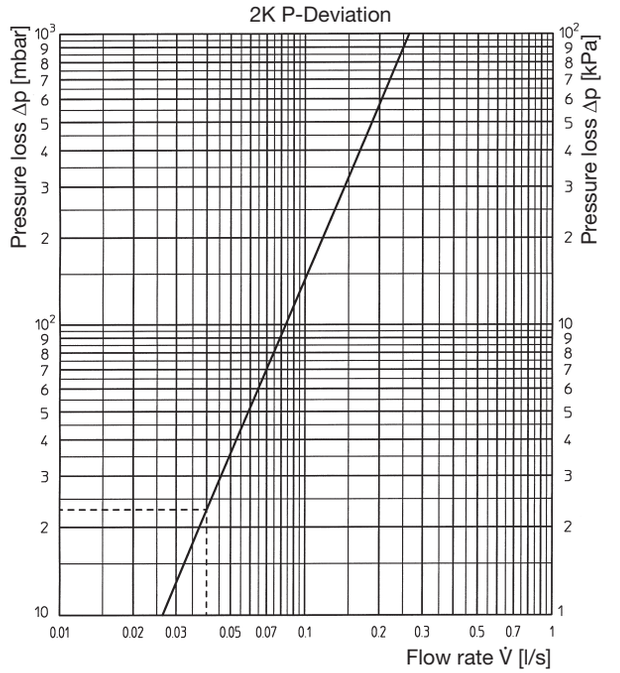
Installation example regulating set no. 3



Bypass valve DN 20, item no. 1027666



Bypass valve DN 25, item no. 1027668



Straight pattern valves DN 15 and DN 20, item no. 1180104 and 1187106

Example:

Given:

Floor surface:	A = 65 m²
Heat demand including floor loss:	P = 4550 W
Temperature difference of the surface heating circuit	Δt = 8 K (46/38 °C)
Flow temperature of the heating circuit:	t_F = 70 °C

Solution:
Regulating set for surface heating systems no. 1 is selected as the floor surface is < 85 m².

Pressure loss straight pattern valve:

$$\text{Flow rate } q_m = \frac{P}{c \cdot \Delta t} = \frac{4550}{1.163 \cdot (70\text{-}38)} \text{ kg/h} = 122.3 \text{ kg/h}$$

$$= 0.0345 \text{ l/s}$$

Pressure loss Δp = 18 mbar (taken from chart, dotted lines)

Pressure loss bypass valve:

$$\text{Flow rate } q_m = \frac{P}{c \cdot \Delta t} = \frac{4550}{1.163 \cdot 8} \text{ kg/h} = 489 \text{ kg/h}$$

$$= 0.138 \text{ l/s}$$

Pressure loss Δp = 31 mbar (taken from chart, dotted lines), bypass valve fully open.

Subject to technical modifications without notice.

Product range 2
ti 106-EN/30/MW
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