Calculation and selection - Self-acting temperature controller

Initial data

10.00 m3/h	Estimated water flow rate	**7.00 bar**	Pressure before the control valve
90 °C	The maximum water temperature at the place of installation of the valve	**0.50 bar**	Permissible pressure drop on the control valve
50 °C	Temperature maintained by the regulator	**1.00 bar**	Pressure drop on the controlled section
		0.50 bar	Pressure loss on other elements of the controlled section excluding pressure loss on the valve

Calculation results

[10.00 m3/h] / [0.50 bar]^0.5 = 14.14 [m3/h]	Required Kv value
0.00000005 * [90 °C]^3.658 = 0.70 [bar]	Absolute saturation vapor pressure of water at temperature 90°C
0.2*(7.00+1-0.70) = 1.46 [bar]	Lower limit without cavitation pressure loss at the valve
0.6*(7.00+1-0.70) = 4.38 [bar]	Upper limit without cavitation pressure loss at the valve
0.50 [bar] <= 1.46 [bar]	There will be no cavitation on the valve
([G 10.00 m3/h] / [Kvs 25 m3/h])^2 = 0.16 [bar]	Pressure drop on a fully open valve with Kvs=25 [m3/h] at flow rate 10.00 [m3/h]
[1.00 bar] *1.2 = 1.20 [bar]	The maximum possible pressure drop across the valve, taking into account 20% reserve
[10.00 m3/h] / {3600 *3.14 *([DN40] *0.001)^2 *0.25} = = 2.2 [m/s]	The flow rate is within normal limits V < 3.0[m/s]

Selection result : Self-acting temperature controller

LDM : RT 122 T

Czechia

closes when the temperature increases

DN 40 [mm]	Nominal valve diameter
Kvs 25 [m3/h]	Flow coefficient
PN 25 [bar]	Nominal pressure
25 [bar]	The maximum pressure difference between the inlet and outlet of the valve at which the thermostatic actuator will be able to close the valve
dT 2.0 ... 150°C	Operating temperature
dT 25 ... 70°C	Temperature maintained by the regulator
cast iron	Body material
57 %	The percentage of the opening of the valve gate at which Kv=14.14 [m3/h], and the pressure loss on the valve will be 0.50 [bar] when passing the calculated flow rate 10.00 [m3/h]