

# Calculation and Selection - Differential Pressure Controller

## Initial data

<b>10.00 m3/h</b>	Estimated water flow rate	<b>6.00 bar</b>	Pressure before controller
<b>100 °C</b>	Maximum water temperature at the installation place	<b>0.50 bar</b>	Allowable pressure loss across controller
		<b>0.50 bar</b>	Differential pressure to maintain

## Calculation results

$[10.00 \text{ m3/h}] / [0.50 \text{ bar}]^{0.5} = 14.14 \text{ [m3/h]}$	Required Kv value
$0.00000005 * [100 \text{ °C}]^{3.658} = 1.04 \text{ [bar]}$	Absolute saturation vapor pressure of water at temperature 100°C
$0.2 * (6.00 + 1 - 1.04) = 1.19 \text{ [bar]}$	Lower limit without cavitation pressure loss at the controller
$0.6 * (6.00 + 1 - 1.04) = 3.58 \text{ [bar]}$	Upper limit without cavitation pressure loss at the controller
$0.50 \text{ [bar]} <= 1.19 \text{ [bar]}$	There will be no cavitation on the controller
$( [G \text{ 10.00 m3/h}] / [Kvs \text{ 21 m3/h}] )^2 = 0.23 \text{ [bar]}$	Pressure drop across a fully open controller with Kvs=21 [m3/h] with flow rate 10.00 [m3/h]
$[10.00 \text{ m3/h}] / \{3600 * 3.14 * ([DN40] * 0.001)^2 * 0.25\} = 2.2 \text{ [m/s]}$	The flow rate is within normal limits $V < 3.0 \text{ [m/s]}$

## Selection result : Differential pressure controller

### LDM : RD 122 D

Czechia

maintains the set pressure drop

**closes when the pressure differential increases**

normally open

<b>DN 40 [mm]</b>	Nominal controller diameter
<b>Kvs 21 [m3/h]</b>	Flow coefficient
<b>PN 25 [bar]</b>	Nominal pressure
<b>dP 0.15...0.60 [bar]</b>	Pressure setting range
<b>dT 2 ... 150°C</b>	Operating temperature
<b>cast iron</b>	Body material
<b>67 %</b>	The percentage of the opening of the controller gate at which Kv=14.14 [m3/h], and the pressure loss on the controller will be 0.50 [bar] when passing the calculated flow rate 10.00 [m3/h]

