

Calculation and Selection - Water Flow Controller

Initial data

7.00 m3/h	Water flow rate to maintain	6.00 bar	Water pressure before the controller
40 °C	Maximum water temperature at the installation place	0.50 bar	Allowable pressure loss across controller

Calculation results

$[7.00 \text{ m3/h}] / [0.50 \text{ bar}]^{0.5} = 9.90 \text{ [m3/h]}$	Required Kv value
$T_{\text{max}} 40^{\circ}\text{C} \leq 70^{\circ}\text{C}$	There will be no cavitation on the controller
$([G 7.00 \text{ m3/h}] / [Kvs 20 \text{ m3/h}])^2 = 0.12 \text{ [bar]}$	Pressure drop across a fully open controller with Kvs=20 [m3/h] with flow rate 7.00 [m3/h]
$[7.00 \text{ m3/h}] / \{3600 * 3.14 * ([DN40] * 0.001)^2 * 0.25\} = 1.5 \text{ [m/s]}$	The flow rate is within normal limits $V < 3.0 \text{ [m/s]}$

Selection result : Flow controller

Danfoss : AFQ VFQ2

Denmark

maintains a set water flow rate at the installation place

closes when the flow rate increases

normally open

DN 40 [mm]	Nominal controller diameter
Kvs 20 [m3/h]	Flow coefficient
PN 16 [bar]	Nominal pressure
0.60...11 [m3/h]	Flow setting range
0.20...20 [bar]	Pressure loss range on the controller
dT 5 ... 200°C	Operating temperature
cast iron / steel	Body material
50 %	The percentage of the opening of the controller gate at which $Kv=9.90 \text{ [m3/h]}$, and the pressure loss on the controller will be 0.50 [bar] when passing the calculated flow rate 7.00 [m3/h]

