

Flow coefficient K_v

DN	NPS	Degree of disc rotation								
		10°	20°	30°	40°	50°	60°	70°	80°	90°
50	2"	3	12	24	37	48	57	66	73	79
65	2 1/2"	5	21	40	62	79	94	109	121	130
80	3"	7	26	51	79	101	120	139	159	166
100	4"	17	63	121	188	240	286	331	367	395
125	5"	19	72	131	197	262	340	485	600	655
150	6"	22	85	142	223	325	445	635	790	858
200	8"	80	192	335	475	655	935	1250	1600	1810
250	10"	114	277	480	686	945	1350	1740	2310	2610
300	12"	180	430	745	1065	1470	2090	2790	3590	4050
350	14"	220	530	920	1315	1810	2580	3450	4420	5000
400	16"	305	730	1270	1815	2500	3570	4760	6110	6900
500	20"	530	1270	2210	3160	4340	6200	8280	10600	12000
600	24"	790	1910	3310	4730	6520	9300	12400	15950	18000
800	32"	1330	3500	6440	9200	12670	18090	24150	30970	35000

K_v = Water flow ($\rho=1000 \text{ kg/m}^3$) in m^3/h passing through the valve at a pressure drop of 1 bar

C_v = Water flow ($\rho=1000 \text{ kg/m}^3$) in US gal/min passing through the valve at a pressure drop of 1 psi

$C_v = K_v \times 1,16$

Basic formula for calculation of K_v -value

Pressure drop	Liquid	Gas	Steam
$\Delta p < \frac{p_1}{2}$ $p_2 > \frac{p_1}{2}$	$K_v = Q \cdot \sqrt{\frac{\rho}{1000 \cdot \Delta p}}$	$K_v = \frac{Q_N}{514} \cdot \sqrt{\frac{\rho_N \cdot (t_1 + 273^\circ)}{\Delta p \cdot p_2}}$	$K_v = \frac{G}{31,6} \cdot \sqrt{\frac{v_2}{\Delta p}}$
$p_2 < \frac{p_1}{2}$ $\Delta p > \frac{p_1}{2}$	$K_v = Q \cdot \sqrt{\frac{\rho}{1000 \cdot \Delta p}}$	$K_v = \frac{2 \cdot Q_N}{514 \cdot p_1} \cdot \sqrt{\rho_N \cdot (t_1 + 273^\circ)}$	$K_v = \frac{G}{31,6} \cdot \sqrt{\frac{2 \cdot v}{p_1}}$

Q = Flow during operation in m^3/h

Q_N = Flow at 0 °C, 1013,3 mbar in m^3/h

G = Mass flow in kg/h

p_1 = abs. inlet pressure in bar

p_2 = abs. outlet pressure in bar

Δp = Pressure drop ($p_1 - p_2$) in bar

ρ = Specific gravity of fluid during operation in kg/m^3

ρ_N = Specific gravity of fluid at 0 °C, 1013,3 mbar in kg/m^3

v_2 = Specific volume at p_2 in m^3/kg

v = Specific volume at $p_{1/2}$ and t_1 in m^3/kg

t_1 = Working temperature in C°

Subject to changes