

Kv values

When calculating and dimensioning pipe systems, the following values or formulas for valve resistance must be used. In calculating work, they provide the actual capacity of the valve since the pressure drop is based on measurements (see SMS 1000) at the feed outlet at such a distance from the valve that turbulence inside the valve itself does not influence the values.

Kv values for various presettings

Turns \ Size	65	80	100	125	150
0.5	1.8	2	2.5	5.5	6.5
1.0	3.5	4	6	10.5	12
1.5	4.6	6	9	15.5	22
2	6.9	8	11.5	21.5	40
2.5	10.8	11	16	27	65
3	17	14	26	36	100
3.5	25.5	19.5	44	55	135
4	33	29	63	83	169
4.5	43	41	80	114	207
5	52	55	98	141	242
5.5	60.5	68	115	167	279
6	68	80	132	197	312
6.5	73	92	145	220	340
7	77	103	159	249	367
7.5	80.5	113	175	276	391
8	85	120	190	300	420

FORMULAS

$$K_v = A + B \text{ turns} + C \text{ turns}^2 + D \text{ turns}^3 + E \text{ turns}^4 + F \text{ turns}^5$$

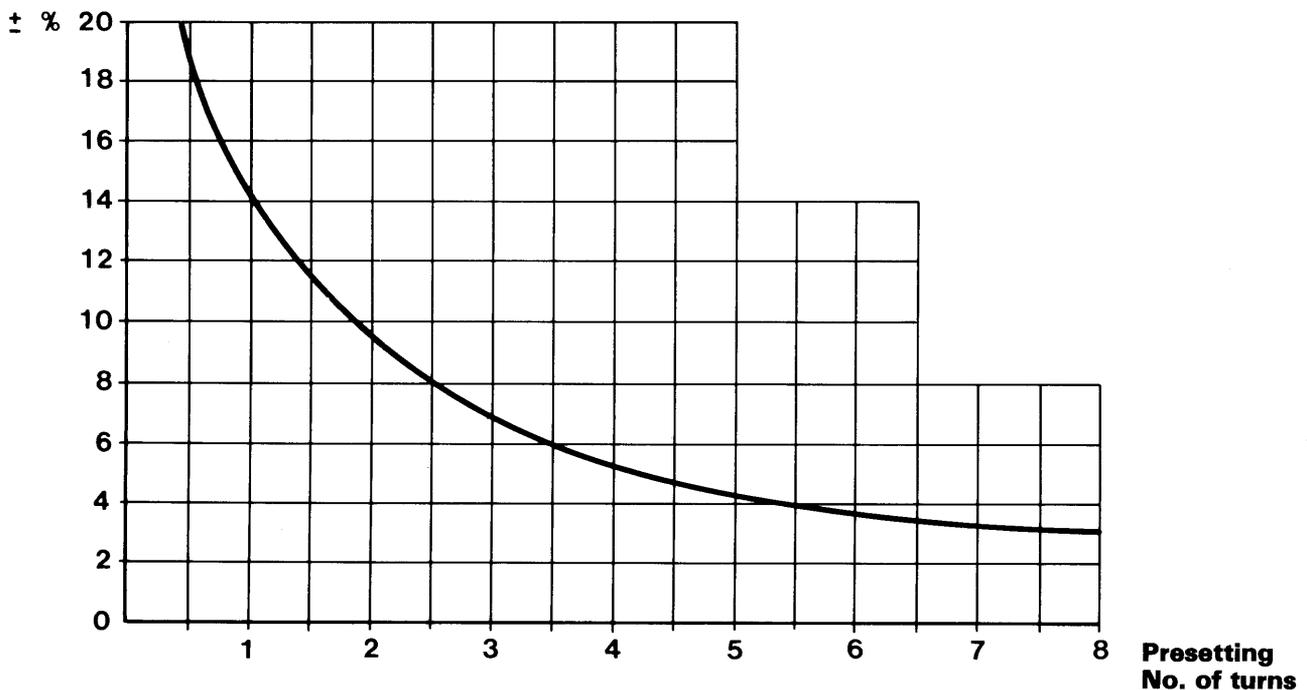
Coeff. \ Size	65	80	100	125	150
A	- 0.32111	- 0.83694	- 0.65892	- 1.56243	1.23530
B	8.95540	12.39297	17.27869	31.58340	4.35116
C	- 8.70432	- 9.88529	- 18.13964	- 28.16007	1.11762
D	4.06143	3.51840	8.34584	11.30264	5.25556
E	- 0.59125	- 0.38712	- 1.21898	- 1.49770	- 1.00980
F	0.02783	0.99945	0.05902	0.06713	0.05364

Measuring accuracy

A valve that operates with a high level of flow capacity naturally has a large cross-section area when fully open. TA works with high tolerance demands with respect to valve seat and cone diameters. The level of accuracy is highest when the valve is open. The smaller the opening at which the valve is set, the greater the part played by manufacturing tolerances since the variation in measurement is then considerably more from the viewpoint of percentage.

As a result of extensive measurements carried out in our laboratory, it has been possible to determine the following anticipated maximum deviation in any installation:

Deviation concerning flow with different presettings



Correction factors for different liquids

For liquids other than water at +20°C, the pressure drop concerned can be obtained from the TA diagram after correction of ΔP with a factor equal to the weight per unit volume in tons/m³.

In other words, increase the pressure drop read off in the diagram by 10 % if the weight per unit volume is 1.1 tons/m³.

The above-mentioned applies to liquids that have on the whole the same viscosity (≤ 20 cSt = 3°E = 100 S.U.) as water, that is to say most water/glycol mixtures and water/brine solutions.

PRESSURE DROP DIAGRAM, STA-F

This graph shows the pressure drop over the pressure test points of the valve.

Setting, number of turns

