

Druckminderventil, federbelastet Pressure-Reducing-Valve, springloaded

für Dämpfe, Gase und Flüssigkeiten, großer Regelbereich
for steam, gases and liquids, expanded range of adjustment

Typ 71

Discharge capacities for saturated steam

for definition the size of Pressure-Reducing-Valve

Size		0	I		II		III		III B		IV		
Nominal pipe		10	15	20	25	32	40	50	50	65	65	80	100
		3/8	1/2	3/4	1	1¼	1½	2	2	2½	2½	3	4
Overpressure p_u [bar(g)]		kg/h											
$t_{max} 200\text{ }^\circ\text{C}$	0,15	4	10	17	27	40	83	120	120	180	180	260	420
	0,2	5	11	19	31	46	99	145	145	210	210	310	500
	0,3	6	13	23	35	55	112	160	160	240	240	360	560
	0,5	7	16	28	46	70	140	200	200	300	300	440	700
	0,75	9	20	35	57	85	175	250	250	370	370	560	870
	1	11	25	42	68	100	210	300	300	450	450	680	1040
	1,5	14	32	55	90	140	280	400	400	590	590	880	1400
	2	17	40	70	115	170	350	520	520	750	750	1120	1750
	2,5	21	47	84	135	200	400	600	600	880	880	1310	2100
	3	24	55	99	155	240	480	700	700	1020	1020	1540	2400
	4	31	70	123	195	300	600	890	890	1300	1300	1900	3000
	5	38	85	150	245	360	740	1080	1080	1600	1600	2400	3700
	6	46	104	185	300	450	900	1340	1340	1950	1950	2900	4700
	7	54	122	225	350	540	1100	1600	1600	2400	2400	3400	5500
	8	62	140	250	400	600	1250	1800	1800	2700	2700	4000	6200
	9	71	160	280	450	680	1380	2000	2000	2900	2900	4400	6900
	10	80	180	320	500	750	1500	2300	2300	3300	3300	5000	7800
	12	98	220	380	610	900	1850	2700	2700	4000	4000	6000	9200
	14	115	260	450	720	1050	2300	3100	3100	4700	4700	7000	11000

- a) To the definition of the right valve size according to the table, the downstream pressure is considerably. The usual piping speeds are appropriate for the table codes.
- b) The valve size determined under a) can be selected around a nominal size smaller, if it is noted that the pipe diameter at the valve outlet is increased around at least one nominal size.

Gaskets for steam:

- $P_1 < 4$ [bar(g)] (<150°C): Piston gasket PTFE
Gasket ring EPDM
- $P_1 < 15$ [bar(g)] (<200°C): Piston gasket PTFE
Gasket ring AF 100
- $P_1 > 15$ [bar(g)] (>200°C): on request

To small pressure ratios applies:

$$\frac{\text{absolute reduced pressure } p \text{ [bar]}}{\text{absolute inlet pressure } p \text{ [bar]}} \begin{cases} \geq 0,7 \Rightarrow \text{correction factor} = 1,25 \\ \geq 0,8 \Rightarrow \text{correction factor} = 1,60 \\ \geq 0,9 \Rightarrow \text{correction factor} = 2,25 \end{cases}$$

$$\dot{m}_D = \dot{m}_D^1 \cdot f$$

The found correction factor must be multiplied due to the smaller flow rate by the given mass flow. With the help of the calculated value now a valve can be determined in accordance with the table.
With smaller pressure ratios than 0.7 no correction factor is used.

For superheated steam:

$$\dot{m}_D = \frac{V_H}{V_S} \cdot \dot{m}_D^1 \cdot f$$

- * V_H : specific volume of the superheated steam
* V_S : specific volume of the saturated steam
 f : correction factor
 \dot{m}_D^1 : given mass flow
 \dot{m}_D : resulting value of the mass flow, with that the table can be used.
* see VDI Steam table

If the downstream pipe should be longer than 3 meters, then it is to be selected around one nominal size stage more largely.

Niezugodka GmbH

Bargkoppelweg 73
D-22145 Hamburg

Telefon: +49 40 679 469-0
Telefax: +49 40 679 469-59

www.niezugodka.de
e-mail: ni@niezugodka.de