Druckminderventil, federbelastet
Pressure-Reducing-Valve, springloaded

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

Typ 70

Discharge capacities
for saturated steam

for definition the size of Pressure-Reducing-Valve

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

a) To the defination of the right valve size according to the table, the downstreampressure 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.

To small pressure ratios applies:

$$\frac{\text{absolute reduced pressure } p \text{ [bar]}}{\text{absolute inlet pressure } p \text{ [bar]}}$$

- ≥ 0,7 => correction factor = 1,25
- ≥ 0,8 => correction factor = 1,60
- ≥ 0,9 => correction factor = 2,25

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

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 determinend in accordance with the table.
With smaller pressure ratios than 0.7 no correcton factor is used.

For superheated steam:

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

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

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

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

* see VDI Steam table

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