Schmidt Armaturen
FLOWSERVE

PRESSURE REDUCING VALVE

TYPE 5801

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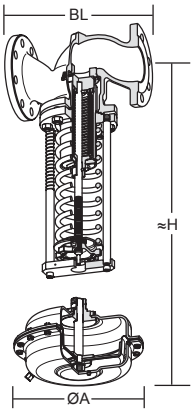


Application

Self-actuating Pressure Reducing Valve are used to provide a constant pressure downstream of its built-in position. Suitable for steam, non inflammable vapours and gases and neutral liquids.

Product Features

- Body shape gives optimum flow characteristic
- Long service life and operational reliability
- Replaceable trim
- Wide range of application
- Quick delivery

Quality assurance system certificated acc. EN ISO 9001:2000 including product development. Schmidt minimal Valve Standards acc. to the Pressure Equipment Directive 97/23/EC Modul H

Dimensions

Designations		ØA	Nominal Size DN 15	20	25	32	40	50	65	80	100	125	150	200
	BL Face to Face Dimensions in mm		130	150	160	180	200	230	290	310	350	400	480	600
≈ Height in mm	H with Actuator B11	150	490	490	490	510	525	600	605					
	H with Actuator B2	160									700			
	H with Actuator A11	150	490	490	490	510	525	600	605	690		805	825	860
	H with Actuator A2	160								690	690	805	825	860
	H with Actuator A3	195						600	605	690	690	805	825	860
	H with Actuator A4	270	510	510	510	530	545	620	625	710	710	825	845	880
	H with Actuator A51	355								775	775	890	910	945
	H with Actuator A6	510										925	945	980
≈ Weight in kg	Weight with Actuator B11		10	11	12	15	17	22	30					
	Weight with Actuator B2										60			
	Weight with Actuator A11		10	11	12	15	17	22	30	43		85	118	179
	Weight with Actuator A2									45	59	87	120	181
	Weight with Actuator A3							25	33	46	60	88	121	182
	Weight with Actuator A4		12	13	14	17	19	24	32	45	59	87	120	181
	Weight with Actuator A51									58	72	100	133	194
	Weight with Actuator A6											110	143	204
	Flanges Drilled and Dimensioned acc. to		EN 1092-1, Form B1											

Ordering code

Example:
pressure reducing valve
Flanged ends, cast steel,
PN 40, DN 65, actuator A11
control range 2.4 - 10

	CODE
Pressure reducing valve	5801
Flange F	F
3 : 1.0619, 1.4581 6 : 0.7043	3
Nominal pressure 16 016 Nominal pressure 25 025 Nominal pressure 40 040	040
Nominal Size DN 15 - 200 mm	65
Actuators : A11, A2, A3, A4, A51, A6, B11, B2	A11

Materials

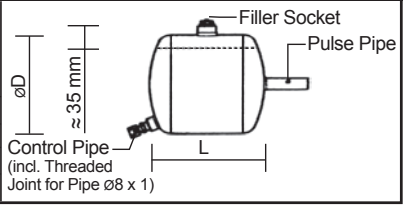
Part	Materials		
Type	5801 F 6016	5801 F 3025	5801 F 3040
Nominal Pressure	PN 16 / PN 25	PN 40	
Body	0.7043 (GGG 40.3)	0.7043 (GGG 40.3)	1.0619 (GS-C25)
Screwed Seat	1.4571		
Plug/Bellows Unit	1.4571		
Stem	1.4021		
Gasket	Pure Graphite on Support Plate from 1.4571		
Compression Spring	1.7103, chromatized		
Actuator	1.0332, powder coated		
Diaphragm	NBR		

Pressure Temperature Ratings

PN	Body Material	Service Temperature in °C	-10	0	120	200	250	300	350	400
16	0.7043	Working Pressure in bar	16	16	15	13	12	11	10	
	1.0619		16	16	16	14	13	11	10	8
	1.4581		16	16	13	12	11	10	10	9
25	0.7043	Working Pressure in bar	25	25	24	20	19	17	16	
	1.0619		25	25	25	22	20	17	16	13
	1.4581		25	25	21	18	17	16	15	14
40	1.0619	Working Pressure in bar	40	40	40	35	32	28	24	21
	1.4581		40	40	34	29	28	26	24	23

Seal Tank

Designation	Dimensions		
	G1 for DN 15-65	**G2** for DN 80-100	**G3** for DN125-200
L Length in mm	206	172	250
ØD	88,9	152.4	152.4
Pulse Pipe	Ø17.2 x 2.6		
≈ Weight in kg	1.7	3.5	4.9



*last updated 03/16

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Rangeability

Standard Rangeability:	Rangeability 1 : 10

Disk Plug Characteristic : linear

Kvs (m³/h)	Port Size (mm)	Stroke (mm)	Material/Design 1.4571 standard	Incorporrable seat diameter depends on nominal size DN											
				15	20	25	32	40	50	65	80	100	125	150	200
1,8	12	4	•	•	•	•									
3,0	20	5	•	•											
5,0	20	5	•		•										
8,0	20	5	•			•									
10	20	6	•				•								
15	25	6	•					•							
25	32	8	•						•						
38	40	9	•							•					
59	50	11	•								•				
87	65	12	•									•			
150	86	16	•										•		
204	105	17	•											•	
255	120	18	•												•

Actuator Selection

Adjustment Range (bar g)	Nominal Size DN											
	15	20	25	32	40	50	65	80	100	125	150	200
8 - 20	B11							A11	B2			
8 - 16.5										A11		
3.2 - 10								A2				
2.4 - 10						A11						
1.1 - 10			A11									
1.8 - 4.5										A3		
1.2 - 4.0								A3				
0.8 - 3.0						A3						
0.8 - 2.2										A4		
0.4 - 1.5								A4				
0.4 - 1.1										A51		
0.1 - 1.4			A4									
0.1 - 1.0						A4						
0.1 - 0.6								A51		A6		

Valve Sizing

Sizing is generally according to the K_v value method. The K_v value is calculated according to the formulae in Table 1, increased by 10% and the next equal or greater Kvs value selected from Table 2. With pipes up to DN 50 it is advisable to select a regulator of the pipe size. With large pipe sizes it is more economical to select optimally smaller nominal valve diameters.

Kv value Calculation

	Pressure differential	Liquid	Gas
Kv	$\Delta p < \frac{p_1}{2}$	$= \frac{Q}{31.6}\sqrt{\frac{\varrho_1}{\Delta p}}$	$= \frac{Q_N}{514}\sqrt{\frac{\varrho_N \cdot T_1}{\Delta p \cdot p_2}}$
	$\Delta p > \frac{p_1}{2}$		$= \frac{Q_N}{257\ p_1}\sqrt{\varrho_N \cdot T_1}$

	Pressure differential	Steam	Saturated steam
Kv	$\Delta p < \frac{p_1}{2}$	$= \frac{G}{1000}\sqrt{\frac{v^*}{\Delta p}}$	$= \frac{Gs}{22.4\ \sqrt{\Delta p \cdot p_2}}$
	$\Delta p > \frac{p_1}{2}$	$= \frac{G}{1000}\sqrt{\frac{2v^*}{\Delta p_1}}$	$= \frac{2Gs}{22.4\ p_1}$

Units

K_v [m³/h]	Flow rate coefficient of the valve
Q [m³/h]	Volume flow rate of liquids
Q_N [Nm³/h]	Volume flow rate of gases in nominal condition (760 torr; 0°C)
G [kg/h]	Weight flow rate of steam
Gs [kg/h]	Weight flow rate of saturated steam
p_1 [bar]	Absolute inlet pressure
p_2 [bar]	Absolute outlet pressure
Δp [bar]	Pressure drop (p_1-p_2)
ϱ_1 [kg/m³]	Density in operating condition at T_1 and p_2
ϱ_N [kg/m³]	Density of gases in nominal comdition
v* [m³/kp]	Specific steam flow at p_2 and t_1 or, if $\Delta p > \frac{p_1}{2}$ at $\frac{p_1}{2}$
T, [K]	Absolute temperature (T=273+t°C)
C_v [US Galls/min]	Flow rate coefficient of the valve in American measurement system (C_v = 1.17 k_v)

Example of saturated steam

Inlet pressure p 1 (gauge)	11.5 bar
Outlet pressure p 2 (gauge)	8.5 bar
Pressure drop Δp	3 bar
Flow of steam Gs	15,000 kg/h

Pressure differential Δp 3 bar is smaller than $\frac{p_1}{2}$

hence formula

$$Kv = \frac{Gs}{22.4\sqrt{\Delta p \cdot p2}} = \frac{15000}{22.4\sqrt{3 \cdot 9.5}} = 125.4+10\%=138$$

the next K_{vs} value = 180,corresponding DN 125

*last updated 03/16