

Low Flow Valve 7041

with integrated positioner

Pneumatic Control Valve for low and lowest flows with integrated positioner

- pneumatic 0,2 - 1 bar
- electro-pneumatic (also Ex-protection)
- digital, microprocessor-control

Technical Information

Nominal sizes	1/4", 1/2", 3/4" (DN 8, 15, 20)		
Connection	NPT, BSP-thread, further connections on demande		
Nominal Pressure	DN 8 and DN 15: PN 340 DN 20 : PN 100		
Fluid temperature	-40°C up to +210°C Special versions -270°C up to +800°C		
Ambient temperature	analog positioner: -10°C up to +60°C digital positioner: -10°C up to +75°C		
Rangeability	Kvs	3,4 - 3,0 2,15 - 0,43 0,27-0,043 0,026 - 0,003 0,002 - 1,5E-6	lin 50:1 lin 40:1 lin 30:1 lin 25:1 lin 15:1
			equal% 60:1 equal% 50:1 equal% 40:1 -- --
Leakage rate (% of Kvs)	< 0,01 % for Kvs-value \geq 0,003 (ANSI Class IV) < 0,1 % for Kvs-value \geq 0,002 (ANSI Class III)		



Kvs-Values

DN 8, 1/4"

0,27	0,17	0,11	0,068	0,043	0,026	0,017
0,009	0,005	0,0026	1,7E-03	1,1E-03	8,5E-04	5,1E-04
3,4E-04	2,3E-04	1,5E-04	1,0E-04	6,8E-05	4,3E-05	3,1E-05
2,1E-05	1,4E-05	8,5E-06	5,1E-06	3,4E-06	2,3E-06	1,5E-06

DN 15, 1/2"

2,15/1,88*	1,71	1,07	0,68	0,43	0,27	0,17
0,11	0,068	0,043	0,026	0,017	0,009	0,005
0,0026	1,7E-03	1,1E-03	8,5E-04	5,1E-04	3,4E-04	2,3E-04
1,5E-04	1,0E-04	6,8E-05				

DN 20, 3/4"

3,42	2,99	2,15/1,88*	1,71	1,07	0,68	0,43
0,27	0,17	0,11	0,068	0,043	0,026	0,017
0,009	0,005	0,0026				

* The stroke/flow characteristic corresponds to the characteristic of a Kvs of 2,15 up to a stroke of 75%. The real Kv-value however is only 1,88.

Materials

Body and bonnet	Stainless steel 1.4571 or 316 SST			
Actuator	Aluminium, coated			
Packing, sealing	PTFE, graphite, bellows			
Trims	for Kvs \geq 0,0026	for Kvs \geq 0,000014	for Kvs \leq 0,0017	for Kvs \geq 0,043
Plug	Stainless steel 316	Stellite	Stellite	Stainless steel 316
Seat	Stainless steel 316	Stainless steel 316, stellite	Stainless steel 416	PTFE
	Special materials on request			

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Operating Limits

Material	Medium	Temperature °C	Dp in bar, max.	Remarks
Plug: 316 SST Seat: 316 SST	Gas	-268 up to +316 -268 up to +93	20 34	Trims of sizes "K" to "O" can be used for gases up to p=48 bar and t=93 °C if stellite is not possible.
	Liquids	-268 up to +316 -268 up to +93	10 20	
Plug: Stellite Seat: 316 SST, stellite	Gas	-268 up to +816	340	Damage due to wear or cavitation is possible.
	Liquids	-268 up to +482	206	
Plug: Stellite Seat: 416 SST (for Kvs £ 0,0017)	Gas	-268 up to +93 -29 up to +427	340 340	This standard material for the "P"-series trims is NOT recommend for hydrogen or other dry gases. In this cases a seat with a stellite inlay or a coated seat should be used.
	Liquids	-29 up to +93	68	

Selecting The Trim Guiding

Nominal Size	Trim (Order Code)	Guiding	Max. admissible pressure drop Dp in bar	
			Control operation	On/Off operation
DN 20, 3/4"	R - S	medium	25	40
DN 15, 1/2"	A - B	medium	35	100
DN 15, 1/2"	A - B	heavy duty	120	120
DN 15, 1/2"	C	medium	50	135
DN 15, 1/2"	C	heavy duty	200	200
DN 15, 1/2"	D - E	medium	60	275
DN 15, 1/2"	D - E	heavy duty	275	275
DN 15, 1/2"	F - J	medium	200	340
DN 15, 1/2"	F - J	heavy duty	340	340
DN 8, 1/4"	F - J	Standard	55	100
DN 8, 1/4"	F - J	medium	135	200
DN 8, 1/4"	K - O	standard	340	340
DN 8, 1/4" - DN 15, 1/2"	"P" (all)	standard	340	340

Use the table for selecting the appropriate trim guiding depending on the pressure drop for control and on/off applications. This table only refers to the guiding and does not comment any valve materials or materials of the inner parts.

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Admissible Differential Pressures (NC - spring closes)

Analog positioner
DN20, 3/4" (PN100)

Kvs-value	supply air pressure [bar]	max. working pressure [bar] for spring pressure range [bar]					
		0,2 - 1,0	0,4 - 1,2	0,6 - 1,4	0,8 - 1,6	1,0 - 3,0	1,2 - 3,2
3,0 - 3,4	4,0 ±0,2	1,1	11,5	23	34,5	45,9	57,6
1,7 - 2,1	4,0 ±0,2	2	20,5	41	61,4	81,9	100
1,07	3,0 ±0,2	3,6	36,4	72,8	100	100	-
0,43 - 0,68	3,0 ±0,2	4,6	46,1	92,1	100	100	-
0,043 - 0,27	3,0 ±0,2	11,9	100	100	100	100	-
0,0026 - 0,026	3,0 ±0,2	39,5	100	100	100	100	-

DN15, 1/2" (PN340)

Kvs-value	supply air pressure [bar]	max. working pressure [bar] for spring pressure range [bar]					
		0,2 - 1,0	0,4 - 1,2	0,6 - 1,4	0,8 - 1,6	1,0 - 3,0	1,2 - 3,2
1,7 - 2,1	4,0 ±0,2	2	20,5	41	61,4	81,9	102,7
1,07	4,0 ±0,2	3,6	36,4	72,8	109,2	145,6	-
0,43 - 0,68	4,0 ±0,2	4,6	46,1	92,1	138,2	184,2	-
0,043 - 0,27	3,0 ±0,2	11,9	118,7	237,4	340	340	-
0,0026 - 0,026	3,0 ±0,2	39,5	340	340	340	340	-
0,000068 - 0,0017	3,0 ±0,2	73	-	-	-	-	-

DN08, 1/4" (PN340)

Kvs-value	supply air pressure [bar]	max. working pressure [bar] for spring pressure range [bar]					
		0,2 - 1,0	0,4 - 1,2	0,6 - 1,4	0,8 - 1,6	-	-
0,043 - 0,27	2,5 ±0,2	7,6	38,2	76,4	152,8	-	-
0,0026 - 0,026	2,5 ±0,2	25,4	127	254,1	340	-	-
0,000068 - 0,0017	2,5 ±0,2	47	235	340	-	-	-
0,0000015 - 0,000043	2,5 ±0,2	104,4	340	340	-	-	-

For P2 > 0 the admissible differential pressure may decrease significantly.
Therefore the sizing should be checked by the manufacturer.

Digital positioner
DN20, 3/4" (PN100)

Kvs-value	supply air pressure [bar]	max. working pressure [bar] for spring pressure range [bar]					
		0,2 - 1,0	0,4 - 1,2	0,6 - 1,4	0,8 - 1,6	1,0 - 3,0	1,2 - 3,2
3,0 - 3,4	3,5 - 4	11,5	23	34,5	45,9	57,4	69,1
1,7 - 2,1	3,5 - 4	20,5	41	61,4	81,9	100	100
1,07	2,5 - 4	36,4	72,8	100	100	-	-
0,43 - 0,68	2,5 - 4	46,1	92,1	100	100	-	-
0,043 - 0,27	2,5 - 4	100	100	100	100	-	-
0,0026 - 0,026	2,5 - 4	100	100	100	100	-	-

DN15, 1/2" (PN340)

Kvs-value	supply air pressure [bar]	max. working pressure [bar] for spring pressure range [bar]					
		0,2 - 1,0	0,4 - 1,2	0,6 - 1,4	0,8 - 1,6	1,0 - 3,0	1,2 - 3,2
1,7 - 2,1	3,5 - 4	20,5	41	61,4	81,9	102,4	123,1
1,07	3,5 - 4	36,4	72,8	109,2	145,6	182	-
0,43 - 0,68	3,5 - 4	46,1	92,1	138,2	184,2	230,3	-
0,043 - 0,27	2,5 - 4	118,7	237,4	340	340	-	-
0,0026 - 0,026	2,5 - 4	340	340	340	340	-	-
0,000068 - 0,0017	2,5 - 4	340	-	-	-	-	-

DN08, 1/4" (PN340)

Kvs-value	supply air pressure [bar]	max. working pressure [bar] for spring pressure range [bar]					
		0,2 - 1,0	0,4 - 1,2	0,6 - 1,4	0,8 - 1,6	-	-
0,043 - 0,27	2 - 2,5	76,4	114,6	152,8	229,3	-	-
0,0026 - 0,026	2 - 2,5	254,1	340	340	340	-	-
0,000068 - 0,0017	2 - 2,5	340	340	340	-	-	-
0,0000015 - 0,000043	2 - 2,5	340	340	340	-	-	-

For P2 > 0 the admissible differential pressure may decrease significantly.
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Admissible Diff. Pressures (NO - spring opens)

DN20, 3/4" (PN100)

Kvs-value	max. working pressure [bar]	Supply air pressure [bar] at actual working			
		0 - 25	26 - 50	51 - 75	76 - Pmax
3,4	63	1,5	1,9	-	2
1,7 - 2,1	100	1,3	1,5	1,8	2
1,07	100	1,2	1,3	1,4	1,6
0,43 - 0,68	100	1,1	1,2	1,3	1,5
0,043 - 0,27	100	1,1	1,1	1,2	1,2
0,0026 - 0,026	100	1,05	1,05	1,05	1,1

DN15, 1/2" (PN340)

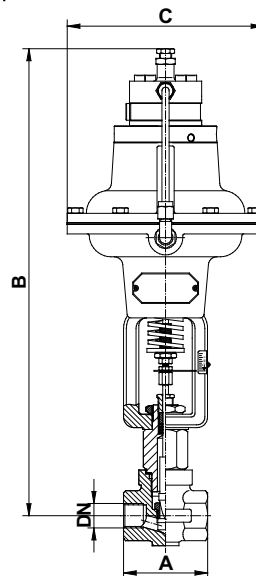
Kvs-value	max. working pressure [bar]	Supply air pressure [bar] at actual working pressure P1 [bar]				
		0 - 50	51 - 100	101 - 200	201 - 300	301 - P max
1,7 - 2,1	113	1,5	2	-	-	2
1,07	164	1,3	1,6	-	-	1,8
0,43 - 0,68	210	1,2	1,5	1,9	-	1,8
0,043 - 0,27	340	1,1	1,2	1,4	1,5	1,6
0,0026 - 0,026	340	1,05	1,05	1,1	1,2	1,2
0,000068 - 0,0017	340	1,05	1,05	1,05	1,1	1,1

DN08, 1/4" (PN340)

Kvs-value	max. working pressure [bar]	Supply air pressure [bar] at actual working pressure P1 [bar]				
		0 - 50	51 - 100	101 - 200	201 - 300	301 - P max
0,043 - 0,27	190	1,1	1,3	-	-	1,4
0,0026 - 0,026	340	1,05	1,1	1,2	1,25	1,3
0,000068 - 0,0017	340	1,05	1,05	1,1	1,2	1,2
0,0000015 - 0,000043	340	1,05	1,05	1,05	1,1	1,1

Pressure-Temperature Table (Body)

Temperature	DN 20 (3/4")	DN 15 (1/2")	DN 8 (1/4")
°C	Adm. Pressure (bar) for stainless steel body (316, 1.4571)		
20	100	340	340
100	99	320	320
200	82	269	292
300	73	242	267
400	48	226	249
500	-	190	159



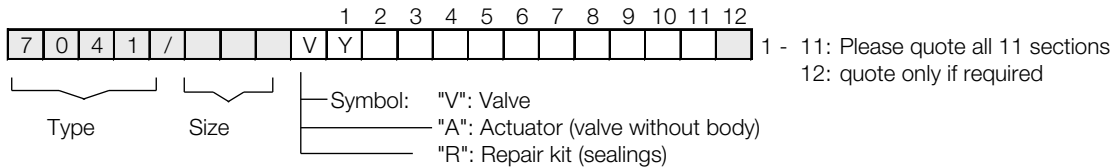
Dimensions

Nennweite		Antrieb cm ²	A	B pneumatischer Stellungsregler	B elektropneum. Stellungsregler	B digitaler Stellungsregler	C
DN 8	1/4"	47	54	338	354	386	130
DN 15	1/2"	73	70	401	417	449	163
DN 20	3/4"	73	86	429	444	476	163

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Ordering Number System



1. Design	2. Connection	3. Body material	4. Trim	5. Positioner	6. Springs	7. Function
Y low flow valve	0 pipe thread acc. DIN 2999 / ISO 228 5 NPT-thread	1 stainless steel 1.4571 2 stainless steel 316 SST	- metal to metal 316 for Kvs ³ 0,0026 0 PTFE for Kvs ³ 0,043 1 stellite / 316-stellited for Kvs ³ 0,000014 2 stellite / 416 (for Kvs £ 0,0017)	6 p/p-pos. Type 8047 7 i/p-pos. Type 8047 8 i/p-pos. with plug conn. Type 8047 9 i/p-pos. II 2 G Eex ib IIC T6, Type 8047 C digital pos. Type 8049 4 wire R digital pos. Type 8049 2 wire T digital pos. Type 8049 AS-i version W digital pos. Type 8049 2 wire, ex-version	1 0,2 - 1 bar 2 0,3 - 1,1 bar 3 0,4 - 1,2 bar 4 0,6 - 1,4 bar 5 0,8 - 1,6 bar 6 1,0 - 3,0 bar 7 1,2 - 3,2 bar	- spring closes with positioner 1 spring opens with positioner * (only for spring pressure range 0,2 - 1 bar)

* digital positioner 8049 only

8. Characteristic	9. Outer sealing	10. Trim guiding	11. Kvs-Value	12. Kvs-Value P-Trim (opt.)
- linear	- PTFE-Packing	- standard	S 3,4 R 3,0	- - no P-Trim
1 equal percentage	1 bellow 2 graphite-Packing 3 PTFE-Packing with cooling fins 4 PTFE-Packing with extended cooling fins	M medium H heavy duty	A 2,15/1,88 B 1,7 C 1,1 D 0,68 E 0,43 F 0,27 G 0,17 H 0,11 I 0,068 J 0,043 K 0,026 L 0,017 M 0,0085 N 0,0051 O 0,0026 P P-Trim	01 0,0017 02 0,0011 03 0,00085 04 0,00051 05 0,00034 06 0,00023 07 0,00015 08 0,00010 09 6,8E-05 10 4,3E-05 11 3,1E-05 12 2,1E-05 13 1,4E-05 14 8,5E-06 15 5,1E-06 16 3,4E-06 17 2,3E-06 18 1,50E-06

Ordering example: 7041/015VY02-R4---MD
 Low flow valve 7041, DN 15, Pipe thread acc. DIN 2999 / ISO 228, stainless steel body 316 SST, trim 316 / 316, digital positioner Type 8049 2 wire, spring pressure range 0,6 - 1,4 bar, spring closes, linear characteristics, PTFE-Packing, medium trim guiding, Kvs-value 0,68