

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)		



TÜVRheinland®
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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, stellited	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	20	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.
		-268 up to +93	34	
	Liquids	-268 up to +316	10	
		-268 up to +93	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	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.
		-29 up to +427	340	
	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.
Therefore the sizing should be checked by the manufacturer.

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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)

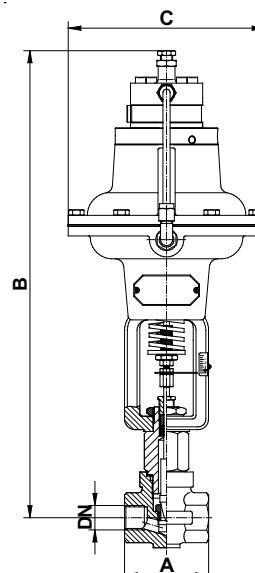
Kvs-value	max. working pressure [bar]	Supply air pressure [bar] at actual working pressure P1 [bar]				
		0 - 50	51 - 100	101 - 200	201 - 300	301 - Pmax
1,7 - 2,1	113	1,5	2	-	-	2
1,07	164	1,3	1,6	-	-	1,8
0,43 - 0,68	210	1,2	1,5	1,9	-	1,8
0,043 - 0,27	340	1,1	1,2	1,4	1,5	1,6
0,0026 - 0,026	340	1,05	1,05	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 - Pmax
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 cm²	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

with integrated positioner

Ordering Number System

7	0	4	1	/				V	Y													
Type					Size			1 - 11: Please quote all 11 sections 12: quote only if required														
								Symbol: "V": Valve "A": Actuator (valve without body) "R": Repair kit (sealings)														

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	1	stainless steel 1.4571	-	metal to metal 316 for Kvs ³ 0,0026	6	p/p-pos. Type 8047	1	0,2 - 1 bar	-	spring closes with positioner
		5	NPT-thread	2	stainless steel 316 SST	0	PTFE for Kvs ³ 0,043	7	i/p-pos. Type 8047	2	0,3 - 1,1 bar	1	spring opens with positioner *
						1	stellite / 316-stellited for Kvs ³ 0,000014	8	i/p-pos. with plug conn. Type 8047	3	0,4 - 1,2 bar		(only for spring pressure range 0,2 - 1 bar)
						2	stellite / 416 (for Kvs £ 0,0017)	9	i/p-pos. II 2 G Eex ib IIC T6, Type 8047	4	0,6 - 1,4 bar		
								C	digital pos. Type 8049 4 wire	5	0,8 - 1,6 bar		
								R	digital pos. Type 8049 2 wire	6	1,0 - 3,0 bar		
								T	digital pos. Type 8049 AS-i version	7	1,2 - 3,2 bar		
								W	digital pos. Type 8049 2 wire, ex-version				

* digital positioner 8049 only

[illegible]

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