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Control valve with integrated positioner Series SG09

Design type	pneumatic control valve with diaphragm actuator with integrated positioner, Sandwich mounting version, NC
Connection	Flanges DN15...DN250 according to EN1092-1 Form B
Nominal pressure	PN10-40 for DN15...DN150 PN16 for DN200...DN250 PN100 for DN15...DN80 ANSI150 for DN15...DN250 ANSI300 for DN15...DN150 ANSI600 for DN15...DN80
Materials	Housing Galvanized steel or rather Stainless steel 1.4408, Intermediate tube and piston rod Stainless steel 1.4571, PTFE packing filled with carbon, Driver for sealing disc Stainless steel 1.4581, Diaphragm shells Aluminium coated, Actuator spring stainless steel 1.4310, Housing Positioner Anodized aluminium and Plastic
Sliding pair	Stainless steel/special carbon: Sealing washer fixed Stainless steel 1.4571 coated andSealing washer movable Special carbon Stainless steel/SFC: Sealing washer fixed Stainless steel 1.4571 coated andSealing washer movable SFC STN2: Sealing washer fixed andSealing washer movable STN2
Leakage rate (% of Kvs)	Stainless steel/special carbon < 0,0001 Stainless steel/SFC < 0,0005 STN2 < 0,001
Mounting type	Installation in rigid piping system
Mounting position	The positioner is adjusted at the factory for horizontal mounting position. When used in a different mounting position, the zero point and the end value must be readjusted.
Application range	gaseous and liquid media that do not attack the materials used
Medium temperature	Housing Galvanized steel: -10...+350°C Housing Stainless steel 1.4408: -60...+350°C (SFC -60...+300°C)
Ambient temperature	see positioner
Operating pressure	see tables
Supply pressure	max. 6bar

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Type code

		SG	09	-	100	-	W	WC	1253	-	1
Type			9								
Connection	DN15				15						
	DN20				20						
	DN25				25						
	DN32				32						
	DN40				40						
	DN50				50						
	DN65				65						
	DN80				80						
	DN100				100						
	DN125				125						
	DN150				150						
	DN200				200						
	DN250				250						
Housing material	Galvanized steel						U				
	Stainless steel 1.4581						W				
Sliding pair	Stainless steel/special carbon							WC			
	Stainless steel/SFC							WF			
	STN2							WN			
Actuator	Actuator 125, Spring assembly 3								1253		
	Actuator 125, Spring assembly 4								1254		
	Actuator 250, Spring assembly 3								2503		
	Actuator 250, Spring assembly 4								2504		
	Actuator 500, Spring assembly 6								5006		
	Actuator 500, Spring assembly 8								5008		
Special version	described in the item text										01,02,03....
	Kvs values reduced to										
	Characteristic curve linear/equal percentage										
	digital position controller type 8049, 4-wire										
	digital positioner type 8049, 2-wire										
	digital position controller type 8049, ASI version										
	digital position controller type 8049, 2-wire Ex version										
	P/P-Positioner Type 8047										
	I/P-Positioner Type 8047										
	I/P-Positioner Type 8047 EEx ib IIC T6 with plug connector M12x1										
	2 Inductive limit switch M12x1 10...30 VDC PNP										
	2Inductive limit switch M12x110...55 VDC PNP/NPN										
	additional metal bellows Stainless steel 1.4571 (max. pressure 33bar)										

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Positioner

analog position controller
8047

digital positioner
8049

analog position controller	
Control signal	pneumatic: 0,2...1bar electropneumatic: 0/4...20mA
Control pressure	3...6bar
Control medium	non-lubricated, dry compressed air or neutral gases,5µm filtered
Ambient temperature	-20...+60°C
Control ratio	30:1
Hysteresis	< ±1%
Self air consumption	400...600 Nl/h (depending on the supply pressure)
Pressure port	G1/8"
Degree of protection	IP54 according to EN 60529
digital positioner	
Supply voltage	4-wire connection 24VDC 2-wire connection none
Burden voltage	4-wire connection 3,5V at 20mA 2-wire connection 6,2V at 20mA
Control signal	4-wire connection: 0/4...20mA 2-wire connection: 4...20mA
Control pressure	4-wire connection: 4...6bar 2-wire connection: 4,5...6bar
Control medium	4-wire connection non-lubricated, dry compressed air or neutral gases,40µm filtered 2-wire connection non-lubricated, dry compressed air or neutral gases, 5µm filtered
Ambient temperature	4-wire connection: -20...+75°C 2-wire connection: -10...+75°C
Control ratio	Characteristic curve linear 40:1 Characteristic curve equal percentage 80:1
Self air consumption	none
Pressure port	G1/8"
Degree of protection	IP65 according to EN 60529
Accessories	Limit switch, visual position indicator, analog feedback module for digital controller

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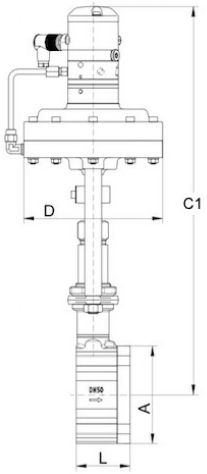
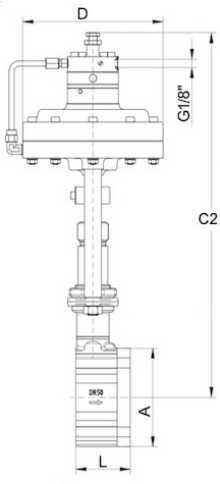
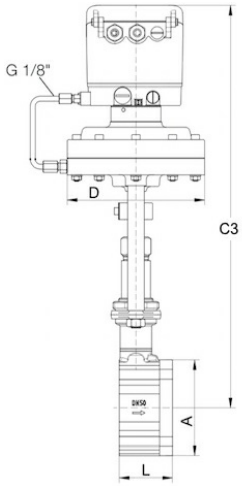
Dimensions





I/P positioner Type 8047 P/P positioner Type 8047



digital positioner Type 8049

DN [mm]	ØA	C1*	C2*	C3*	Actuator D		L	Stroke [mm]	Weight [approx. kg]		
					125	250/500			125	250	500
15	64	430	400	460	165	222	56	6	7,5	9,7	13,4
20	72	435	405	465	165	222	56	6	7,7	9,9	13,6
25	82	440	410	470	165	222	56	6	8,1	10,3	14
32	89	445	415	475	165	222	56	6	8,5	10,7	14,4
40	99	450	420	480	165	222	56	6	8,9	11,1	14,8
50	116	460	430	490	165	222	64	8	10,5	12,7	16,4
65	138	470	440	500	165	222	68	8	12,3	14,5	18,2
80	153	480	450	510	165	222	70	8	13,4	15,6	19,3
100	184	490	460	520	165	222	75	8,5	16,9	19,1	22,8
125	212	505	475	535	165	222	80	8,5	21,1	23,3	27
150	242	520	490	550	165	222	80	8,5	24,8	27	30,7
200	302	550	520	580	165	222	93	8,5	41,7	43,9	47,6
250	360	575	545	605	165	222	96	8,5	46,9	49,9	52,8

*With actuator D500 +47,5mm

Application limits PN40 - maximum permissible inlet pressures in bar

Nominal size DN [mm]	Stainless steel/special carbon - Stainless steel/SFC						STN2					
	100°C	150°C	200°C	250°C	300°C	350°C	100°C	150°C	200°C	250°C	300°C	350°C
15 - 32	40	40	40	40	40	40	40	40	40	40	40	40
40	40	40	40	40	40	40	40	40	40	40	40	37
50	40	40	40	40	40	40	40	40	40	40	40	40
65	40	40	40	40	40	40	40	40	40	40	37	32
80	40	40	40	40	40	40	36	34	33	26	22	19
100	33	33	33	33	33	33	32	31	30	24	20	17
125	23	23	23	23	23	23	21	21	19	16	13	11
150	16	16	16	16	16	16	15	15	14	11	9	8
200 (only PN 16)	16	15	14	13	12	11	8	7	6	5	4	3
250 (only PN 16)	10	9	9	8	7	6	-					

Limit for steel valves and Sliding pair SFC 300°C

Application limits PN100 - maximum permissible inlet pressures in bar

Nominal size DN [mm]	Stainless steel/special carbon - Stainless steel/SFC						STN2					
	100°C	150°C	200°C	250°C	300°C	350°C	100°C	150°C	200°C	250°C	300°C	350°C
15	100	100	100	93	84	79	100	100	100	93	84	79
20	100	100	89	81	73	68	100	100	89	81	73	68
25	88	81	70	63	57	54	88	81	70	63	57	54
32	100	93	80	73	65	62	100	93	80	73	65	60
40	88	81	70	63	57	54	72	69	65	53	43	37
50	100	100	100	100	100	94	77	73	70	56	46	40
65	80	80	80	79	71	67	62	59	56	45	37	32
80	48	48	48	48	48	44	36	34	33	26	22	19

Limit for steel valves and Sliding pair SFC 300°C

Application limits ANSI 150 - maximum permissible inlet pressures in bar

Nominal size DN [mm]	Stainless steel/special carbon - Stainless steel/SFC								STN2							
	38°C	50°C	100°C	150°C	200°C	250°C	300°C	350°C	38°C	50°C	100°C	150°C	200°C	250°C	300°C	350°C
15 - 125	19	18,4	16,2	14,8	13,7	12,1	10,2	8,4	19	18,4	16,2	14,8	13,7	12,1	10,2	8,4
150	16	16	16	14,8	13,7	12,1	10,2	8,4	16,2	16,2	16,2	14,8	13,7	11,8	9,7	8,4
200	16	16	16	14,8	13,7	12,1	10,2	8,4	10,5	10	8,3	7,6	6,9	5,5	4,5	3,9
250	10,4	10,4	10,4	9,9	9,4	8,4	7,4	6,8	-							

Limit for steel valves and Sliding pair SFC 300°C

Application limits ANSI 300 - maximum permissible inlet pressures in bar

Nominal size DN [mm]	Stainless steel/special carbon - Stainless steel/SFC								STN2							
	38°C	50°C	100°C	150°C	200°C	250°C	300°C	350°C	38°C	50°C	100°C	150°C	200°C	250°C	300°C	350°C
15 - 65	49,6	48,1	42,2	38,5	35,7	33,4	31,6	30,3	49,6	48,1	42,2	38,5	35,7	33,4	31,6	30,3
80	48	48	42,2	38,5	35,7	33,4	31,6	30,3	36,6	36,6	36,6	34,8	33	26,8	22	19
100	33	33	33	33	33	33	31,6	30,3	33	33	33	31,7	30,1	24,4	20,1	17,3
125	23	23	23	23	23	23	23	23	22	22	22	21	19,9	16,1	13,2	11,5
150	16	16	16	16	16	16	16	16	16	16	16	15,4	14,6	11,8	9,7	8,4
200	16	16	16	14,8	13,7	12,1	10,2	8,4	10,5	10	8,3	7,6	6,9	5,5	4,5	3,9

Limit for steel valves and Sliding pair SFC 300°C

Application limits ANSI 600 - maximum permissible inlet pressures in bar

Nominal size DN [mm]	Stainless steel/special carbon - Stainless steel/SFC								STN2							
	38°C	50°C	100°C	150°C	200°C	250°C	300°C	350°C	38°C	50°C	100°C	150°C	200°C	250°C	300°C	350°C
15 - 20	99,3	96,2	84,4	77	71,3	66,8	63,2	60,7	99,3	96,2	84,4	77	71,3	66,8	63,2	60,7
25	88	88	84,4	77	70,1	63,7	57,3	54,2	88	88	84,4	77	70,1	63,7	57,3	54,2
32	99,3	96,2	84,4	77	71,3	66,8	63,2	60,7	99,3	96,2	84,4	77	71,3	66,8	63,2	60,2
40	88	88	84,4	77	70,1	63,7	57,3	54,2	72,5	72,5	72,5	69	65,5	53,1	43,6	37,7
50	99,3	96,2	84,4	77	71,3	66,8	63,2	60,7	77,7	77,7	77,7	73,9	70,2	56,9	46,7	40,4
65	80	80	80	77	71,3	66,8	63,2	60,7	62,5	62,5	41,7	59,5	56,4	45,8	37,6	32,5
80	48	48	48	48	48	48	48	44,5	36,6	36,6	36,6	34,8	33	26,8	22	19

Limit for steel valves and Sliding pair SFC 300°C

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Permissible differential pressures - analog position controller 8047 (for temperatures up to 120°C)*
Sliding pair Stainless steel/special carbon and SFC

Nominal size DN [mm]	permissible differential pressure [bar]											
	Effective actuator area 125cm²				Effective actuator area 250cm²				Effective actuator area 500cm²			
	Spring assembly 3 (Standard)		Spring assembly 4		Spring assembly 3 (Standard)		Spring assembly 4		Spring assembly 6 (Standard)		Spring assembly 8	
	Supply pressure 4bar		Supply pressure 5bar		Supply pressure 3bar		Supply pressure 4bar		Supply pressure 3bar		Supply pressure 4,5bar	
	Control	Open/Close	Control	Open/Close	Control	Open/Close	Control	Open/Close	Control	Open/Close	Control	Open/Close
15	100	100	100	100	100	100	100	100	-	-	-	-
20	77	77	96	96	100	100	100	100	-	-	-	-
25	57	57	71	71	98	98	100	100	100	100	100	100
32	42	42	52	58	73	73	88	88	100	100	100	100
40	29	29	36	44	49	49	60	60	100	100	100	100
50	17	19	21	29	29	29	35	40	60	60	72	72
65	14	16	17	24	24	24	29	34	49	49	59	59
80	8	10	10	15	14	14	17	22	29	29	35	44
100	5	6	6	10	9	9	10	14	18	18	22	28
125	3	4	4	6	6	6	7	9	12	12	14	19
150	2	3	3	5	4	4	5	7	9	9	10	14
200	2	2	2	3	3	3	3	4	5	5	6	8
250	0,9	1,1	1,1	1,8	1,5	1,5	1,9	2,5	3,2	3,2	3,8	5,2

*For temperatures above 120°C observe application limits

Permissible differential pressures - analog position controller 8047 (for temperatures up to 120°C)*
Sliding pair STN2

Nominal size DN [mm]	permissible differential pressure [bar]											
	Effective actuator area 125cm²				Effective actuator area 250cm²				Effective actuator area 500cm²			
	Spring assembly 3 (Standard)		Spring assembly 4		Spring assembly 3 (Standard)		Spring assembly 4		Spring assembly 6 (Standard)		Spring assembly 8	
	Supply pressure 4bar		Supply pressure 5bar		Supply pressure 3bar		Supply pressure 4bar		Supply pressure 3bar		Supply pressure 4,5bar	
	Control	Open/Close	Control	Open/Close	Control	Open/Close	Control	Open/Close	Control	Open/Close	Control	Open/Close
15	55	55	68	70	95	95	100	100	100	100	100	100
20	37	37	46	53	64	64	78	78	100	100	100	100
25	25	26	31	40	43	43	53	55	89	89	100	100
32	17	19	22	30	30	30	36	40	62	62	75	80
40	11	13	14	20	19	19	24	27	40	40	48	58
50	6	8	8	12	11	11	13	17	23	23	27	35
65	5	6	6	10	9	9	11	14	18	18	22	28
80	3	4	4	6	5	5	6	8	11	11	13	17
100	2	2	2	3	3	3	4	5	6	6	8	10
125	-	-	2	2	2	2	3	4	4	4	5	7
150	-	-	1	2	2	2	2	3	3	3	4	5

*For temperatures above 120°C observe application limits

Permissible differential pressures - digital positioner 8049 (for temperatures up to 120°C)*
Sliding pair Stainless steel/special carbon and SFC

Nominal size DN [mm]	permissible differential pressure [bar]					
	Effective actuator area 125cm²		Effective actuator area 250cm²		Effective actuator area 500cm²	
	Spring assembly 3 (Standard)	Spring assembly 4	Spring assembly 3 (Standard)	Spring assembly 4	Spring assembly 6 (Standard)	Spring assembly 8
	Supply pressure 4,5bar	Supply pressure 5,5bar	Supply pressure 3bar	Supply pressure 4bar	Supply pressure 3bar	Supply pressure 4,5bar
15	102,1	102,1	102,1	102,1	-	-
20	102,1	102,1	102,1	102,1	-	-
25	88	88	88	88	-	-
32	88	102,1	102,1	102,1	-	-
40	67	83	88	88	-	-
50	44	54	75	91	102,1	102,1
65	37	45	63	76	80	80
80	23	29	40	48	48	48
100	15	16	25	31	33	33
125	10	11	17	21	23	23
150	7	8	13	15	15	16
200	4	5	7	9	16	16
250	2,7	3,4	4,6	5,6	9,5	10,5

*For temperatures above 120°C observe application limits

Permissible differential pressures - digital positioner 8049 (for temperatures up to 120°C)*
Sliding pair STN2

Nominal size DN [mm]	permissible differential pressure [bar]					
	Effective actuator area 125cm²		Effective actuator area 250cm²		Effective actuator area 500cm²	
	Spring assembly 3 (Standard)	Spring assembly 4	Spring assembly 3 (Standard)	Spring assembly 4	Spring assembly 6 (Standard)	Spring assembly 8
	Supply pressure 4,5bar	Supply pressure 5,5bar	Supply pressure 3bar	Supply pressure 4bar	Supply pressure 3bar	Supply pressure 4,5bar
15	100	100	100	100	-	-
20	81	100	100	100	-	-
25	60	75	100	100	100	100-
32	45	56	77	93	100	100
40	31	38	53	64	72	72
50	18	22	31	38	64	77
65	15	18	26	31	53	62
80	9	10	15	19	32	36
100	5	6	9	11	19	23
125	3	4	6	7	13	16
150	2	3	4	5	9	11

*For temperatures above 120°C observe application limits

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Kvs values

DN [mm]	Characteristic curve													
		100%	63%	40%	25%	20%	16%	12%	10%	6,3%	2,5%	2%	1%	0,4%
15	linear	4	2,6	1,7	1,4	-	0,71	0,49	0,44	0,26	0,14	0,08	0,04	0,018
	equal percentage	1,7	-	1,1	-	0,35	-	-	-	0,1	-	-	-	-
20	linear	6,4	-	-	-		1		-		-	0,13	-	-
	equal percentage	3	-	1,5	-	-	-	-	-	-	-	-	-	-
25	linear	11	6,4	4	-	-	1,6	-	0,93	0,62	0,26	-	0,14	0,04
	equal percentage	5	-	2,4	-	1,1	-	-	-	0,35	-	-	-	-
32	linear	16	10	-	-	-	-	-	-	-	-	-	-	-
	equal percentage	8	4,7	-	-	-	-	-	-	-	-	-	-	-
40	linear	26	16	11	7	-	-	-	-	-	-	-	-	-
	equal percentage	11	8,5	-	2,75	-	-	-	-	-	-	-	-	-
50	linear	45	28	20	12	10	-	-	-	-	-	-	-	-
	equal percentage	19	12	-	-	-	3	-	-	-	-	-	-	-
65	linear	52	35	-	15	-	-	-	-	-	-	-	-	-
	equal percentage	30	-	-	8	-	-	-	-	-	-	-	-	-
80	linear	92	58	40	-	-	-	-	-	-	-	-	-	-
	equal percentage	48	35	-	-	-	-	-	-	-	-	-	-	-
100	linear	154	95	62	-	-	-	-	-	-	-	-	-	-
	equal percentage	77	48	-	-	-	-	-	-	-	-	-	-	-
125	linear	237	-	95	-	-	-	-	-	-	-	-	-	-
	equal percentage	116	-	-	-	-	-	-	-	-	-	-	-	-
150	linear	338	212	-	-	-	-	-	-	-	-	-	-	-
	equal percentage	147	90	-	-	-	-	-	-	-	-	-	-	-
200	linear	560	352	-	-	-	-	-	-	-	-	-	-	-
	equal percentage	284	-	-	-	-	-	-	-	-	-	-	-	-
250	linear	910	575	-	-	-	-	-	-	-	-	-	-	-
	equal percentage	435	-	-	-	-	-	-	-	-	-	-	-	-

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