

Control Valve 8021

with integrated positioner

GS 3 series - DN 15 up to DN 250

Pneumatic control valve for the control of neutral and aggressive fluids with integrated positioner

- Space saving wafer type construction
- Lowest possible weight
- Quiet operation
- Fast response time
- Control of high differential pressures with small actuators
- Greatly reduced energy consumption rates due to short strokes and low actuating forces on the throttle element
- High Kvs-values

Technical Information

Design	wafer-type design further versions see data sheet 8021-GS1		
Nominal Sizes	DN 15 - 250, 1/2" - 12"		
Nominal pressure acc. DIN 2401 for flanges with facing type B	PN 40 (fits also to PN 10-25)	DN 15 - DN 150	
	PN 100	DN 15 - DN 80	
	PN 16	DN 200 - DN 250	
Nominal pressure acc. ANSI for flanges acc. ASME B16.5 RF	ANSI 150	DN15 - DN 250	
	ANSI 300	DN 15 - DN 150	
	ANSI 600	DN 15 - DN 80	
Nominal pressure acc. JIS for "raiced face" flanges	10K	DN 15 - DN 50	
	20K	DN 15 - DN 40	
Fluid Temperature	carbon steel body	-10°C up to +300°C (option +350°C)	
	stainless steel body	-60°C up to +350°C	
Ambient temperature**	-30°C up to +100°C		
Rangeability / Characteristic analog positioner	30 : 1		
digital positioner	40 : 1 linear / 80 : 1 equal percentage		
Leakage	Disc pair	Disc pair	Disc pair
	Carbon-stainless steel	SFC	STN 2
% of Kvs	< 0,0001	< 0,0005	< 0,001
IEC 60534-4	IV-S1	IV-S1	IV
EN 12266-1	D	E	E

* Please consider the limitation of use of the positioner!

Kvs- and Cv-values see data sheet 8001.

Materials

Valve body*	stainless steel 1.4571 /1.4581 or 1.4404 / 1.4408	carbon steel 1.0570 /1.0619
Bodycover*	stainless steel 1.4571 or 1.4404	
Diaphragm casing	aluminium, KTL-coated	
Actuator springs	stainless steel 1.4310	
Packing	carbon-filled PTFE (spring 1.4310)	
Valve stem	stainless steel 1.4571, roller burnished	
Fixed disc	stainless steel coated	
Sliding disc	special carbon material	SFC-disc (max. +300°C)
		STN2-disc

* Further Materials such as Hastelloy or Inconel on request

Positioner

For technical information of our positioners please refer to the corresponding data sheets.



Packing tested according to TA-Luft as defined in DIN EN ISO 15848-1 and VDI 2440

Options

- Stainless steel bellow
- External i/p-converter
- Positioner (Ex ia IIC T4 Gb)

Control Valve 8021-GS3



with integrated p/p and i/p - positioner, Type 8047

Admissible differential pressures
(For temperatures of up to 120°C with PN-rating
up to 38°C with ANSI-rating)

**For temperatures of 120°C (PN)
or 38°C (ANSI) and above:
obey application limits !**

**Disc pair: carbon - stainless steel coated
SFC - stainless steel coated**

Actuator size (cm ²)	125 cm ²				250 cm ²				500 cm ²			
	1,5 up to 3,0		1,8 up to 3,8		1,2 up to 2,2		1,5 up to 2,7		1,2 up to 2,2		1,5 up to 2,7	
Spring range (bar)	1,5 up to 3,0		1,8 up to 3,8		1,2 up to 2,2		1,5 up to 2,7		1,2 up to 2,2		1,5 up to 2,7	
Supply air (bar)	4		5		3		4		3		4,5	
max. admissible differential pressure (bar)												
DN	Control	On-Off	Control	On-Off	Control	On-Off	Control	On-Off	Control	On-Off	Control	On-Off
15	102	102	102	102	102	102	102	102	-	-	-	-
20	77	77	96	96	102	102	102	102	-	-	-	-
25	57	57	71	71	88 (98)*	88 (98)*	88 (102,1)*	88 (102,1)*	88 (102,1)*	88 (102,1)*	88 (102,1)*	88 (102,1)*
32	42	42	52	58	73	73	88	88	102	102	102	102
40	29	29	36	44	49	49	60	60	88 (102,1)*	88 (102,1)*	88 (102,1)*	88 (102,1)*
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
Spring Configuration	Code 3 (Standard)		Code 4		Code 3 (Standard)		Code 4		Code 3 (Standard)		Code 4	

Standard

*: figures in brackets for
bodies made of carbon steel

	Upper limits for admissible pressures in bar					
	PN16	PN40	PN100	ANSI150	ANSI 300	ANSI 600
P max. carbon steel	16	40	100	19,6	51,1	102,1
P max. stainless steel				19,0	49,6	99,3

Disc pair: STN2

Actuator Size	125 cm ²				250 cm ²				500 cm ²			
	1,5 to 3,0		1,8 to 3,8		1,2 to 2,2		1,5 to 2,7		1,2 to 2,2		1,5 to 2,7	
Spring Range (bar)	1,5 to 3,0		1,8 to 3,8		1,2 to 2,2		1,5 to 2,7		1,2 to 2,2		1,5 to 2,7	
Supply air (bar)	4		5		3		4		3		4,5	
max. admissible differential pressure (bar)												
DN	Control	On-Off	Control	On-Off	Control	On-Off	Control	On-Off	Control	On-Off	Control	On-Off
15	55	55	68	70	95	95	102,1	102,1	102,1	102,1	102,1	102,1
20	37	37	46	53	64	64	78	78	102,1	102,1	102,1	102,1
25	25	26	31	40	43	43	53	55	88 (89)*	88 (89)*	88 (102,1)*	88 (102,1)*
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
200	-	-	-	-	-	-	-	-	-	-	-	-
Spring Configuration	Code 3 (Standard)		Code 4		Code 3 (Standard)		Code 4		Code 6 (Standard)		Code 6	

Standard

*: figures in brackets for
bodies made of carbon steel

	Upper limits for admissible pressures in bar					
	PN16	PN40	PN100	ANSI150	ANSI 300	ANSI 600
P max. carbon steel	16	40	100	19,6	51,1	102,1
P max. stainless steel				19,0	49,6	99,3

Control Valve 8021-GS3

with integrated digital positioner, Type 8049

(also on-off valves and valves with other side-mounted positioner)



Admissible differential pressures
 (For temperatures of up to 120°C with PN-rating
 up to 38°C with ANSI-rating)

**For temperatures of 120°C (PN)
 or 38°C (ANSI) and above:
 obey application limits !**

Disc pair: carbon - stainless steel coated
SFC - stainless steel coated

Actuator Size	125 cm ²		250 cm ²		500 cm ²	
	4,5	5,5	3,0	4,0	3,0	4,5
Supply air (bar)						
DN	max. admissible differential pressure (bar)					
15	102,1	102,1	102,1	102,1	-	-
20	102,1	102,1	102,1	102,1	-	-
25	88 (102,1)*	88 (102,1)*	88 (102,1)*	88 (102,1)*	-	-
32	88	102,1	102,1	102,1	-	-
40	67	83	88 (102,1)*	88 (102,1)*	-	-
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	16	16
200	4	5	7	9	15	16
250	2,7	3,4	4,6	5,6	9,5	10,5
Spring Configuration	Code 3 (Standard)	Code 4	Code 3 (Standard)	Code 4	Code 6 (Standard)	Code 8

Standard

*: figures in brackets for
 bodys made of carbon steel

	Upper limits for admissible pressures in bar					
	PN16	PN40	PN100	ANSI150	ANSI 300	ANSI 600
P max. carbon steel	16	40	100	19,6	51,1	102,1
P max. stainless steel				19,0	49,6	99,3

Disc pair: STN2

Actuator size (cm ²)	125 cm ²		250 cm ²		500 cm ²	
	4,5	5,5	3,0	4,0	3,0	4,5
Supply air (bar)						
DN	max. admissible differential pressure (bar)					
15	102,1	102,1	102,1	102,1	-	-
20	81	102,1	102,1	102,1	-	-
25	60	75	88 (102,1)*	88 (102,1)*	88 (102,1)*	88 (102,1)*
32	45	56	77	93	102,1	102,1
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
200	-	-	-	-	-	-
Spring Configuration	Code 3 (Standard)	Code 4	Code 3 (Standard)	Code 4	Code 6 (Standard)	Code 8

Standard

*:figures in brackets for
 bodys made of carbon steel

	Upper limits for admissible pressures in bar					
	PN16	PN40	PN100	ANSI150	ANSI 300	ANSI 600
P max. carbon steel	16	40	100	19,6	51,1	102,1
P max. stainless steel				19,0	49,6	99,3

Control Valve 8021-GS3



with integrated positioner

Application limitations for GS3 valves in stainless steel

These pressure must not be exceeded for GS-valves from the GS3-series made of stainless steel, even though the actuator power might allow it.

PN40

DN	Sliding unit: carbon/SFC - stainless steel, coated max. admissible pressures for GS3-valves						Sliding unit: STN2 max. admissible pressures for GS3-valves					
	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	37	32	32
80	40	40	40	40	40	40	40	40	40	36	34	33
100	33	33	33	33	33	33	33	33	33	32	31	30
125	23	23	23	23	23	23	23	23	23	21	21	19
150	16	16	16	16	16	16	16	16	16	15	15	14
200 (only PN16)	16	16	15	13	12	11	-	-	-	-	-	-
250 (only PN16)	10	9	9	8	7	6	-	-	-	-	-	-

Limitation for SFC-sliding discs: 300°C

PN100

DN	Sliding unit: carbon/SFC - stainless steel, coated max. admissible pressures for GS3-valves						Sliding unit: STN2 max. admissible pressures for GS3-valves					
	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

Limitation for SFC-sliding discs: 300°C

ANSI150

DN	Sliding unit: carbon/SFC - stainless steel, coated max. admissible pressures for GS3-valves								Sliding unit: STN2 max. admissible pressures for GS3-valves							
	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	19,0	18,4	16,2	14,8	13,7	12,1	10,2	8,4	19,0	18,4	16,2	14,8	13,7	12,1	10,2	8,4
150	16,0	16,0	16,0	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	16,0	16,0	16,0	14,8	13,7	12,1	10,2	8,4	-	-	-	-	-	-	-	-
250	10,4	10,4	10,4	9,9	9,4	8,4	7,4	6,8	-	-	-	-	-	-	-	-

Limitation for SFC-sliding discs: 300°C

ANSI300

DN	Sliding unit: carbon/SFC - stainless steel, coated max. admissible pressures for GS3-valves								Sliding unit: STN2 max. admissible pressures for GS3-valves							
	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	48,0	48,0	42,2	38,5	35,7	33,4	31,6	30,3	36,6	36,6	36,6	34,8	33,0	26,8	22,0	19,0
100	33,0	33,0	33,0	33,0	33,0	33,0	31,6	30,3	33,0	33,0	33,0	31,7	30,1	24,4	20,1	17,3
125	23,0	23,0	23,0	23,0	23,0	23,0	23,0	23,0	22,0	22,0	22,0	21,0	19,9	16,1	13,2	11,5
150	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0	15,4	14,6	11,8	9,7	8,4

Limitation for SFC-sliding discs: 300°C

ANSI600

DN	Sliding unit: carbon/SFC - stainless steel, coated max. admissible pressures for GS3-valves								Sliding unit: STN2 max. admissible pressures for GS3-valves							
	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	77,0	71,3	66,8	63,2	60,7	99,3	96,2	84,4	77,0	71,3	66,8	63,2	60,7
25	88,0	88,0	84,4	77,0	70,1	63,7	57,3	54,2	88,0	88,0	84,4	77,0	70,1	63,7	57,3	54,2
32	99,3	96,2	84,4	77,0	71,3	66,8	63,2	60,7	99,3	96,2	84,4	77,0	71,3	66,8	63,2	60,2
40	88,0	88,0	84,4	77,0	70,1	63,7	57,3	54,2	72,5	72,5	72,5	69,0	65,5	53,1	43,6	37,7
50	99,3	96,2	84,4	77,0	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	80,0	80,0	80,0	77,0	71,3	66,8	63,2	60,7	62,5	62,5	62,5	59,5	56,4	45,8	37,6	32,5
80	48,0	48,0	48,0	48,0	48,0	48,0	48,0	44,5	36,6	36,6	36,6	34,8	33,0	26,8	22,0	19,0

Limitation for SFC-sliding discs: 300°C

with integrated positioner

Application limitations for GS3 valves in carbon steel

These pressure must not be exceeded for GS-valves from the GS3-series made of carbon steel, even though the actuator power might allow it.

PN40

DN	Sliding unit: carbon/SFC - stainless steel, coated max. admissible pressures for GS3-valves					Sliding unit: STN2 max. admissible pressures for GS3-valves				
	100°C	150°C	200°C	250°C	300°C	100°C	150°C	200°C	250°C	300°C
15-50	40	40	40	40	40	40	40	40	40	40
65	40	40	40	40	40	40	40	40	40	37
80	40	40	40	40	40	36	34	33	26	22
100	33	33	33	33	33	33	31	30	24	20
125	23	23	23	23	23	22	21	19	16	13
150	16	16	16	16	16	16	15	14	11	9
200 (nur PN 16)	16	16	15	13	12	-	-	-	-	-
250 (nur PN 16)	10	9	9	8	7	-	-	-	-	-

Limitation for SFC-sliding discs: 300°C

PN100

DN	Sliding unit: carbon/SFC - stainless steel, coated max. admissible pressures for GS3-valves					Sliding unit: STN2 max. admissible pressures for GS3-valves				
	100°C	150°C	200°C	250°C	300°C	100°C	150°C	200°C	250°C	300°C
15 - 20	100	100	100	100	100	100	100	100	100	100
25	100	100	100	100	94	100	100	100	100	94
32	100	100	100	100	100	100	100	100	84	69
40	100	100	100	100	94	72	69	65	53	43
50	100	100	100	100	100	77	73	70	56	46
65	80	80	80	80	80	62	59	56	45	37
80	48	48	48	48	48	36	34	33	26	22

Limitation for SFC-sliding discs: 300°C

ANSI150

DN	Sliding unit: carbon/SFC - stainless steel, coated max. admissible pressures for GS3-valves							Sliding unit: STN2 max. admissible pressures for GS3-valves						
	38°C	50°C	100°C	150°C	200°C	250°C	300°C	38°C	50°C	100°C	150°C	200°C	250°C	300°C
15-125	19,6	19,2	17,7	15,8	13,8	12,1	10,2	19,6	19,2	17,7	15,8	13,8	12,1	10,2
150	16,0	16,0	16,0	15,8	13,8	12,1	10,2	16,2	16,2	16,2	15,4	13,8	11,8	9,7
200	16,0	16,0	16,0	15,8	13,8	12,1	10,2	-	-	-	-	-	-	-
250	10,5	10,5	10,5	9,9	9,4	8,4	7,4	-	-	-	-	-	-	-

Limitation for SFC-sliding discs: 300°C

ANSI300

DN	Sliding unit: carbon/SFC - stainless steel, coated max. admissible pressures for GS3-valves							Sliding unit: STN2 max. admissible pressures for GS3-valves						
	38°C	50°C	100°C	150°C	200°C	250°C	300°C	38°C	50°C	100°C	150°C	200°C	250°C	300°C
15-50	51,1	50,1	46,6	45,1	43,8	41,9	19,8	51,1	50,1	46,6	45,1	43,8	41,9	19,8
65	51,1	50,1	46,6	45,1	43,8	41,9	19,8	41,7	41,7	41,7	39,7	37,6	33,5	19,8
80	48,0	48,0	46,6	45,1	43,8	41,9	19,8	36,6	36,6	36,6	34,8	33,0	26,8	19,8
100	33,0	33,0	33,0	33,0	33,0	33,0	19,8	33,0	33,0	33,0	31,7	30,1	24,4	19,8
125	23,0	23,0	23,0	23,0	23,0	23,0	19,8	22,1	22,1	22,1	21,0	19,9	16,1	13,2
150	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0	15,4	14,6	11,8	9,7

Limitation for SFC-sliding discs: 300°C

ANSI600

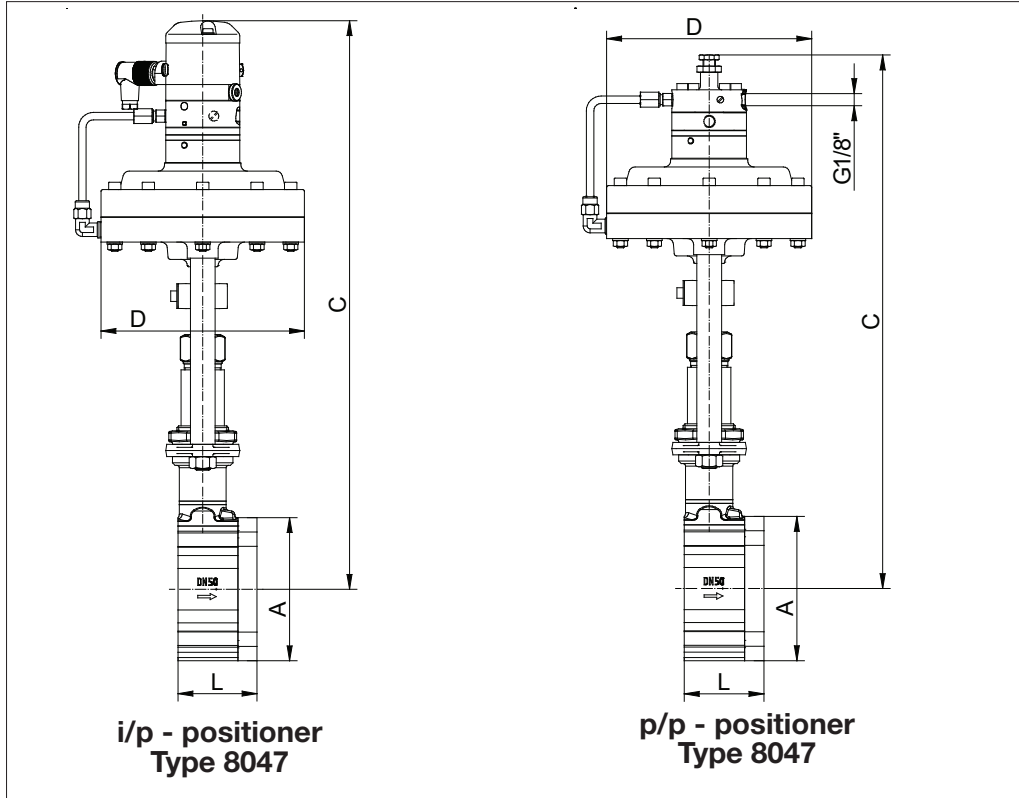
DN	Sliding unit: carbon/SFC - stainless steel, coated max. admissible pressures for GS3-valves							Sliding unit: STN2 max. admissible pressures for GS3-valves						
	38°C	50°C	100°C	150°C	200°C	250°C	300°C	38°C	50°C	100°C	150°C	200°C	250°C	300°C
15-25	102,1	100,2	93,2	90,2	87,6	83,9	79,6	102,1	100,2	93,2	90,2	87,6	83,9	79,6
32	102,1	100,2	93,2	90,2	87,6	83,9	79,6	102,1	100,2	93,2	90,2	87,6	83,9	69,6
40	100,0	100,0	93,2	90,2	87,6	83,9	79,6	72,5	72,5	72,5	69,0	65,5	53,1	43,6
50	100,0	100,0	93,2	90,2	87,6	83,9	79,6	77,7	77,7	77,7	73,9	70,2	56,9	46,7
65	80,0	80,0	80,0	80,0	80,0	80,0	79,6	62,5	62,5	62,5	59,5	56,4	45,8	37,6
80	48,0	48,0	48,0	48,0	48,0	48,0	48,0	36,6	36,6	36,6	36,8	33,0	26,8	22,0

Limitation for SFC-sliding discs: 300°C

Control Valve 8021-GS3

with integrated i/p and p/p - positioner, Type 8047

Dimensions and Weights



DN	Ø A	C1*	C2*	Ø D for actuator			L	Stroke	Weight (kg) for actuator		
				D 125	D250	D 500			D 125	D 250	D500
15	64	430	400	165	222	222	56	6	7,5	9,7	13,4
20	72	435	405	165	222	222	56	6	7,7	9,9	13,6
25	82	440	410	165	222	222	56	6	8,1	10,3	14,0
32	89	445	415	165	222	222	56	6	8,5	10,7	14,4
40	99	450	420	165	222	222	56	6	8,9	11,1	14,8
50	116	460	430	165	222	222	64	8	10,5	12,7	16,4
65	138	470	440	165	222	222	68	8	12,3	14,5	18,2
80	153	480	450	165	222	222	70	8	13,4	15,6	19,3
100	184	490	460	165	222	222	75	8,5	16,9	19,1	22,8
125	212	505	475	165	222	222	80	8,5	21,1	23,3	27,0
150	242	520	490	165	222	222	80	8,5	24,8	27,0	30,7
200	302	550	520	165	222	222	93	8,5	41,7	43,9	47,6
250	360	575	545	165	222	222	96	8,9	46,9	49,9	52,8

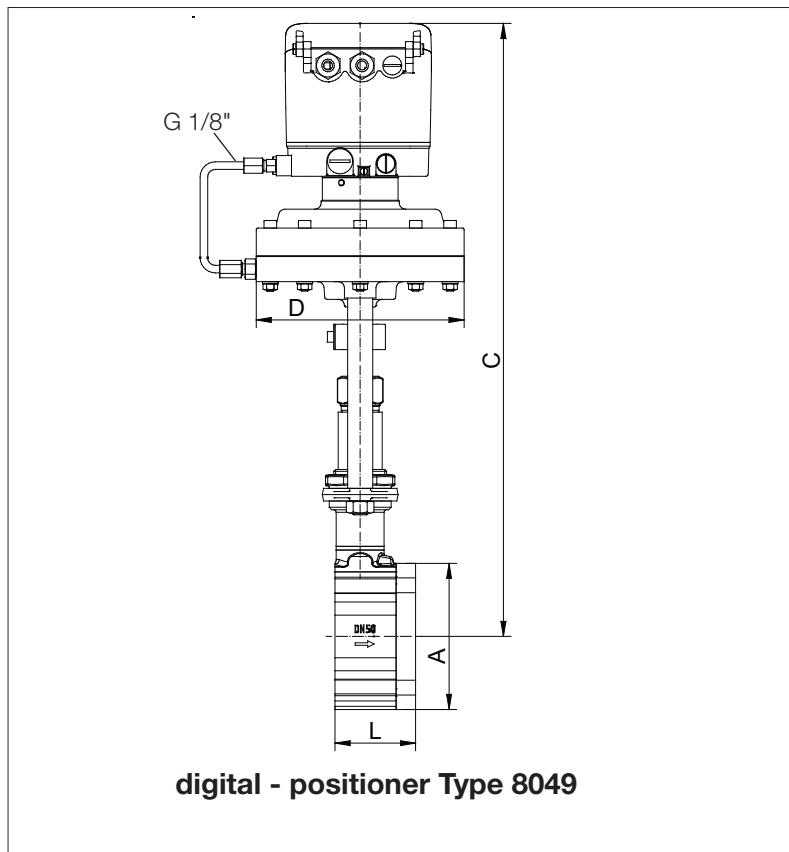
* for actuator D500 +47,5mm

Dimensions in mm

Control Valve 8021-GS3

with integrated digital positioner, Type 8049

Dimensions and Weights



DN	Ø A	C*	Ø D for actuator			L	Stroke	Weight (kg) for actuator		
			D 125	D250	D 500			D 125	D 250	D500
15	64	460	165	222	222	56	6	7,5	9,7	13,4
20	72	465	165	222	222	56	6	7,7	9,9	13,6
25	82	470	165	222	222	56	6	8,1	10,3	14,0
32	89	475	165	222	222	56	6	8,5	10,7	14,4
40	99	480	165	222	222	56	6	8,9	11,1	14,8
50	116	490	165	222	222	64	8	10,5	12,7	16,4
65	138	500	165	222	222	68	8	12,3	14,5	18,2
80	153	510	165	222	222	70	8	13,4	15,6	19,3
100	184	520	165	222	222	75	8,5	16,9	19,1	22,8
125	212	535	165	222	222	80	8,5	21,1	23,3	27,0
150	242	550	165	222	222	80	8,5	24,8	27,0	30,7
200	302	580	165	222	222	93	8,5	41,7	43,9	47,6
250	360	605	165	222	222	96	8,5	46,9	49,1	52,8

* for actuator D500 +47,5mm

Dimensions in mm