Data Sheet

10/13-8.23 EN

Control Valve 23/06

Single-Seat Straight-Way Valve

- **Single seat straight-way valve**
  - Size DN 15 to DN 100 with pneumatic actuator
- **Various housing materials**
  - Grey cast iron, cast steel or stainless steel
- **Various internal trim options**
  - Parabolic or perforated cone
  - Seat ring with metallic or soft seal
  - Various Kvs values for every nominal size
  - Linear or equal-percentage characteristic
- **Several stem seal options**
  - Maintenance-free PTFE top sleeve
  - Graphite packing rings
  - Hermetic bellows seal
- **Attachment of the actuator according to the standard**
  - Lateral attachment to DIN/IEC 534
- **Optionally with manual adjustment**

Construction and mode of operation

Functional description

The single-seat straight-way valve 23/06 is a final control element for continuous control through variation of the media or energy flow in tubes. Actuation is through compressed air from a multi-spring diaphragm actuator.

Valve housings of different nominal sizes, pressure levels and materials are available to enable optimum adaptation to the operating data. Additionally, various internal trims and different Kvs values are possible for every nominal diameter. The appropriate type and size are defined using the operating data.

Usually, PTFE top sleeves are used as the stem seals. With operating temperatures > 220 °C graphite rings are used, whereas bellows seals are needed for critical media.

The multi-spring diaphragm actuator combines a compact design with a low height. The valve is actuated through compressed air of max. 6 bar, and returned by spring force. The controlling torque can be adapted to the application by using the appropriate actuator size (diameter) or return springs with the appropriate spring resistance.

Based on the valve actuation, two directions of action are possible, which can also be changed at a later time:

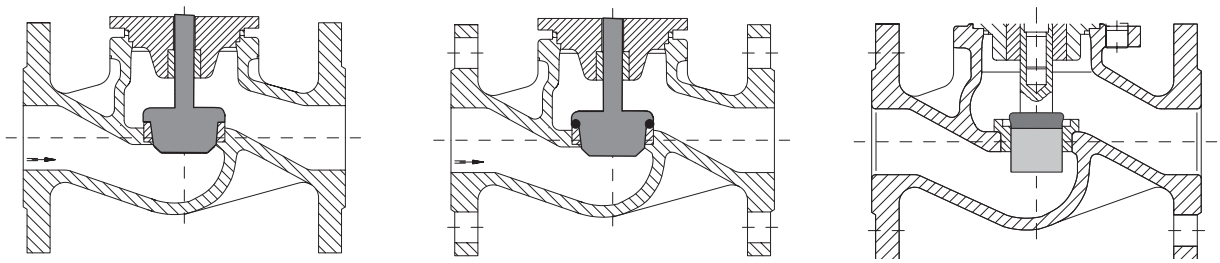
Air to open / spring force to close

or

Air to close / spring force to open

The valve and the actuator need to be fitted with a positioner for controlling the position between 0 ... 100 %. The actuators are designed for lateral attachment in accordance with DIN/IEC 534 (Namur). The positioner ensures rapid and precise control until reaching the set point. The controlled position is not affected by friction in the packed gland or the adaptation of the control torque to variations of the media pressure.

Internal trims



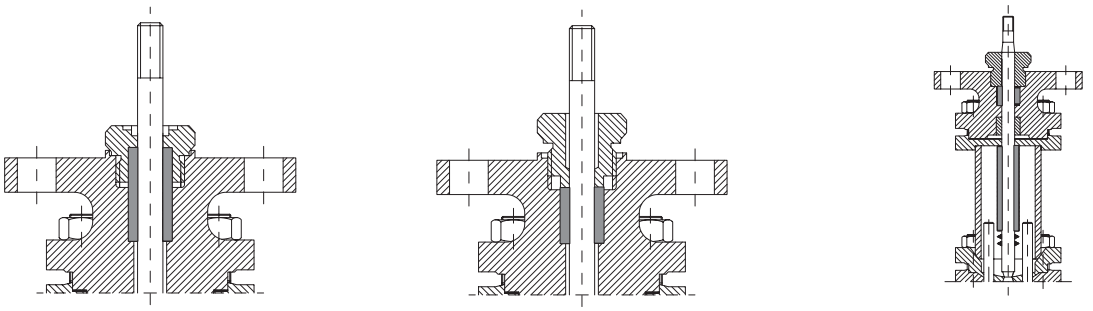
Parabolic cone

Parabolic cone with soft seal

Perforated cone

NG0041XA.EPS

Stem seals



Packed gland with top sleeves

Packed gland with graphite packing

Stem seal with bellows

NG0042XA.EPS

Technical Data

Valve

Housing

Size:	DN 15...100 according to table on page 4	
Flanges:	acc. to DIN PN 16 or 25 or 40	
Operating pressure:	according to DIN 2401 and considering the housing material and the table on page 4	
Material:	Grey cast iron	GG 25, 0.6025, PN 16, 0...300 °C
	Cast steel	GS-C 25, 1.0619, PN 40, -10...400 °C
	Stainless steel	1.4408, PN 40, -10...400 °C

Seat

Rolled, material 1.4021 (for grey cast iron or cast steel housing)
Turned, material 1.4408 (for stainless steel housing)

Cone

Parabolic,
Material 1.4021 (for grey cast iron or cast steel housing
Material 1.4571 (for stainless steel housing)
Linear or equal percentage valve characteristic

Kvs value

See table on page 4

Setting ratio

50 : 1

Leakage rate (relative to the Kvs value)

< 0.01 % with metallic seal
< 0.001 % for cone with soft seal

Valve stem

Press rolled,
Material 1.4021 (for housing GG 25 or GS-C 25)
Material 1.4571 (for stainless steel housing)

Stem seal

Packed gland with top sleeves
Spring-loaded, of PTFE, for -10...220 °C

Mounting

Flange connection according to DIN
Freely insertable in pipe (no mounting on actuator!!)
Actuator vertically upwards (normal position)

Dimensions & weights

See dimensional drawings and tables

Actuator

Actuator

Multi-spring diaphragm actuator of sheet-steel, varnished
Size Ø 250 or 300 or 405 mm, with roller diaphragm
Spring force acc. to table on page 4
Direction of action reversible
Air to open/spring force to close
Air to close/spring force to open
With stroke display
Max. operat. pressure 6 bar, (with Ø 405 mm max. 4.5 bar)
Temperature -40...+110 °C

Air connection

R 1/4” (with Ø 405 mm R 3/8”)

Correcting range

See data for positioner (extra data sheet)

Actuator stem

Press-rolled, material 1.4021
Guide shaft protected by bellows

Yoke (intermediate brackets)

Steel Ø 22 mm (Ø 30 mm for actuator Ø 405 mm)
Yellow-chromized surface

Special options

Seat and cone

Material 1.4571 (for housing GG 25 or GS-C 25)
Cone with PTFE soft seal for max. 200 °C
Cone as perforated cone (to reduce noise)
Sealing edges stellite-coated (only for housing GS-C 25)

Stem seal

with graphite packing	for -10...+400 °C *)
with stainless-steel bellows	for -10...+400 °C *)

*) Observe temperature limits of the housing material

Actuator

With attached positioner
With manual adjustment

Overview of DN · Kvs value · actuator size · differential pressure at cone

Size DN			15	25	32	40	50	65	80	100
Standard Kvs			4	10	16	25	40	63	100	160
Reduced Kvs			2.5 1.6 1.0	6.3 4.0 2.5	10	16	25	40	63	100
Seat (Ø mm)			21	27*	31	41	51	66	81	101
Stroke mm			20	20	20	20	20	30	30	30
Actuator size	Spring force **	Air press. (bar) ***	**Differential pressure at cone (bar) Direction of action: air to open/ spring force to close**							
Ø 250 mm 250 cm^2	0.4 ... 1.2	2	15.4	8.6	6.2	2.9	1.5	--	--	
	0.8 ... 2.4	3	40	25	18.6	10	6.2	--	--	--
	1.0 ... 2.0	3	--	--	--	--	--	4.7	2.8	1.6
	1.4 ... 2.4	3	--	--	25	20.7	13	--	--	--
Ø 300 mm 400 cm^2	0.4 ... 1.2	2	32	18.8	14	7.4	4.4	2.3	1.1	0.5
	0.8 ... 2.4	3	40	40	34.2	19	12	6.8	4.1	2.5
	1.4 ... 2.9	4.5	--	--	--	--	--	13.5	8.6	5.4
	1.7 ... 2.7	4.5	--	--	40	40	29	--	--	--
Ø 405 mm 800 cm^2	0.4 ... 1.2	2	--	--	--	--	--	6.9	4.2	2.5
	0.8 ... 2.4	3	--	--	--	--	--	16	10.3	6.4
	2.1 ... 3.0	4.5	--	--	--	--	--	40	30	19
Direction of action: air to close / spring force to open										
Ø 250 mm 250 cm^2	0.2 ... 1.0	2	40	33	25	13.6	8.5	4.7	2.8	1.6
		3	40	40	40	31.8	20	11.6	7.4	4.5
		4.5	40	40	40	40	35	22	14	9
Ø 300 mm 400 cm^2	0.2 ... 1.0	2	--	--	--	24.7	15.7	9	5.6	3.4
		3	--	--	--	40	34.6	20.3	13	8.3
		4.5	--	--	--	--	40	35	24	15.3
Ø 405 mm 800 cm^2	0.2 ... 1.0	2	--	--	--	--	--	20.6	13.3	8.4
		3	--	--	--	--	--	40	28.4	18
		4.5	--	--	--	--	--	40	40	32.8

*) Seat Ø 18 mm for Kvs 4 and Ø 12 mm for Kvs 2.5
**) Pressure range (bar) in the actuator for valve stroke 0...100 %, with valve unloaded (differential pressure at cone 0 bar)
***) Minimum supply air pressure needed for the positioner, max. permissible 6 bar or 4.5 for size Ø 405 mm

Odering information

	Catalog No.										Code		
Single-seat straight-way valve 23/06 as control valve	**V13818-**												
Housing material and size													
Housing grey cast iron 0.6025, Flanges according to DIN PN 16													
DN 15		1	1	0	0								
DN 25		1	2	0	0								
DN 32		1	3	0	0								
DN 40		1	4	0	0								
DN 50		1	5	0	0								
DN 65		1	6	0	0								
DN 80		1	7	0	0								
DN 100		1	8	0	0								
Housing cast steel 1.0619, Flanges according to DIN PN 40													
DN 15		2	0	1	0								
DN 25		2	0	2	0								
DN 32		2	0	3	0								
DN 40		2	0	4	0								
DN 50		2	0	5	0								
DN 65		2	0	6	0								
DN 80		2	0	7	0								
DN 100		2	0	8	0								
Housing stainless steel 1.4581, Flanges according to DIN PN 40													
DN 15		3	0	0	1								
DN 25		3	0	0	2								
DN 32		3	0	0	3								
DN 40		3	0	0	4								
DN 50		3	0	0	5								
DN 65		3	0	0	6								
DN 80		3	0	0	7								
DN 100		3	0	0	8								

Odering information

			Catalog No.							Code		
Single-seat straight-way valve 23/06 as control valve			**V13818-**									
Kvs value (observe dependence on nominal size)												
Kvs 1.0	(for DN 15)					A						
Kvs 1.6	(for DN 15)					B						
Kvs 2.5	(for DN 15)					C						
Kvs 4.0	(for DN 15)					D						
Kvs 2.5	(for DN 25 and cast iron housing)					1						
Kvs 4.0	(for DN 25 and cast iron housing)					2						
Kvs 2.5	(for DN 25 and cast steel housing)					3						
Kvs 4.0	(for DN 25 and cast steel housing)					4						
Kvs 2.5	(for DN 25 and stainless steel housing)					5						
Kvs 4.0	(for DN 25 and stainless steel housing)					6						
Kvs 6.3	(for DN 25)					E						
Kvs 10	(for DN 25 - 32)					F						
Kvs 16	(for DN 32 - 40)					G						
Kvs 25	(for DN 40 - 50)					H						
Kvs 40	(for DN 50 - 65)					I						
Kvs 63	(for DN 65 - 80)					J						
Kvs 100	(for DN 80 - 100)					K						
Kvs 160	(for DN 100)					L						
Other Kvs values on request												
Internal trim (material and characteristic)												
Seat and cone of stainless steel 1.4021	Linear characteristic						1					
	Equal percentage characteristic						4					
Multi-spring diaphragm actuator (version and direction of action)												
Multi-spring diaphragm actuator, size Ø 250 mm (for DN 15 - 100)												
Direction of action:	Air to open / spring force to close, spring force 0.4 - 1.2							1	0	0		
	Air to open / spring force to close, spring force 0.8 - 2.4							2	0	0		
	Air to open / spring force to close, spring force 1.0 - 2.0/1.4 - 2.4							3	0	0		
	Air to close / spring force to open, spring force 0.2 - 1.0							4	0	0		
Multi-spring diaphragm actuator, size Ø 300 mm (for DN 15 - 100)												
Direction of action:	Air to open / spring force to close, spring force 0.4 - 1.2							0	1	0		
	Air to open / spring force to close, spring force 0.8 - 2.4							0	2	0		
	Air to open / spring force to close, spring force 1.4 - 2.9/1.7 - 2.7							0	3	0		
	Air to close / spring force to open, spring force 0.2 - 1.0							0	4	0		
Multi-spring diaphragm actuator, size Ø 405 mm (for DN 65 - 100)												
Direction of action:	Air to open / spring force to close, spring force 0.4 - 1.2							0	0	1		
	Air to open / spring force to close, spring force 0.8 - 2.4							0	0	2		
	Air to open / spring force to close, spring force 2.1 - 3.0							0	0	3		
	Air to close / spring force to open, spring force 0.2 - 1.0							0	0	4		

Add supplementary Code Nos. to the Catalog No.

The control valve 23/06 with a multi-spring diaphragm actuator must be used together with a positioner.
The following mounting situations have to be considered
a) Mounting lateral, acc. to DIN/IEC 534 (Namur)
b) Outer tubing of plastic, copper or stainless steel

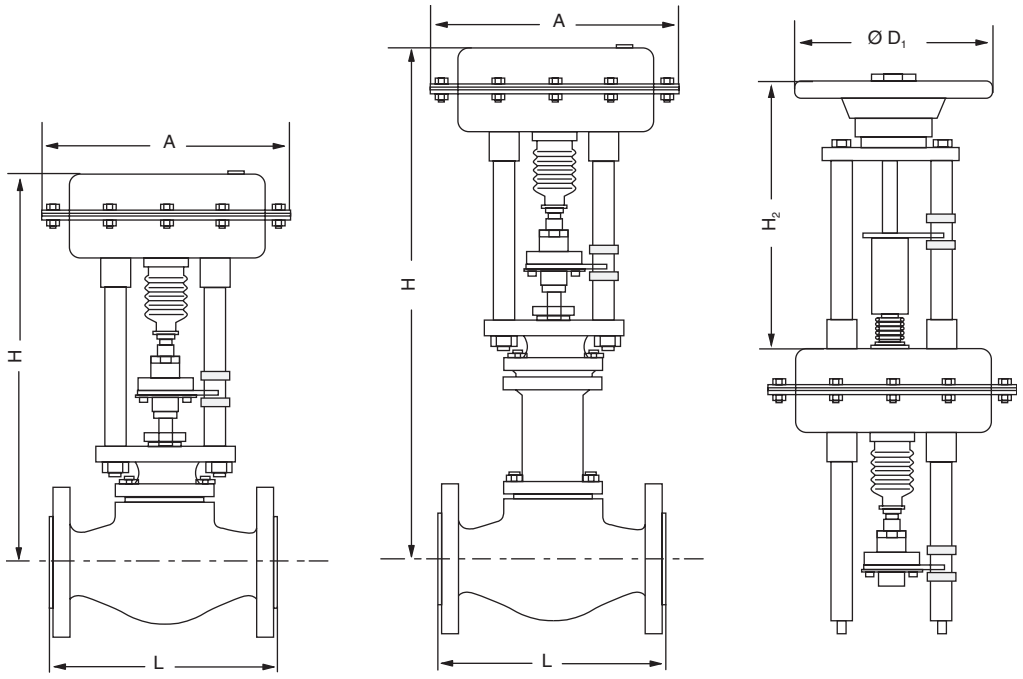
Special options

		Catalog No.	Code		
Additional ordering information		**V13818-**			
Seat and cone					
Material 1.4571		(for DN 15)	411		
(for grey cast iron or cast steel housing)		(for DN 25)	412		
		(for DN 32)	413		
		(for DN 40)	414		
		(for DN 50)	415		
		(for DN 65)	416		
		(for DN 80)	417		
		(for DN 100)	418		
Seal edges stellite-coated		(for DN 15 - 25)	421		
(for cast steel or stainless steel housing)		(for DN 32)	423		
		(for DN 40 - 50)	424		
		(for DN 65)	426		
		(for DN 80)	427		
		(for DN 100)	428		
Cone with soft seal of PTFE		(for DN 15 - 32)	431		
		(for DN 40)	434		
		(for DN 50)	435		
		(for DN 65)	436		
		(for DN 80)	437		
		(for DN 100)	438		
Cone as perforated cone	for grey cast iron housing	(for DN 32)	443		
		(for DN 40)	444		
		(for DN 50)	445		
		(for DN 65)	446		
		(for DN 80)	447		
		(for DN 100)	448		
	for cast steel housing	(for DN 32)	450		
		(for DN 40)	451		
		(for DN 50)	452		
		(for DN 65)	453		
		(for DN 80)	454		
		(for DN 100)	455		
Packed gland or stem seal					
with graphite packing		(for DN 15 - 100)	461		
with stainless steel bellows					
for grey cast iron or cast steel housing		(for DN 15)	465		
		(for DN 25 - 32)	466		
		(for DN 40 - 50)	467		
		(for DN 65)	468		
		(for DN 80)	469		
		(for DN 100)	470		
for stainless steel housing		(for DN 15)	471		
		(for DN 25 - 32)	472		
		(for DN 40 - 50)	474		
		(for DN 65)	476		
		(for DN 80)	477		
		(for DN 100)	478		
Actuator					
Manual adjustment		for actuator Ø 250 mm			
		for actuator Ø 300 mm			
		for actuator Ø 405 mm			

Dimensions and weights

DN	Actuator A (mm)	L (mm)	H (mm)	H_2 (mm)	D_1 (mm)	Weight (kg) Grey cast iron	Weight (kg) Cast steel Stainless steel
15	250 300	130 130	412 (618) 472 (658)	290 290	225 300	15 (17) 21 (23)	17 (19) 23 (25)
25	250 300	160 160	420 (626) 480 (666)	290 290	225 300	16 (18) 22 (24)	21 (23) 27 (29)
32	250 300	180 180	420 (626) 480 (666)	290 290	225 300	18 (20) 24 (26)	24 (26) 30 (32)
40	250 300	200 200	427 (617) 487 (682)	290 290	225 300	20 (23) 26 (29)	25 (32) 31 (38)
50	250 300	230 230	433 (682) 493 (684)	290 290	225 300	22 (25) 28 (31)	27 (34) 33 (40)
65	250 300 405	290 290 290	445 (700) 505 (765) 632 (888)	290 290 500	225 300 400	25 (28) 31 (34) 47 (52)	34 (41) 40 (47) 69 (65)
80	250 300 405	310 310 310	460 (713) 520 (778) 648 (901)	290 290 500	225 300 400	28 (31) 34 (37) 52 (55)	45 (51) 51 (57) 69 (75)
100	250 300 405	350 350 350	478 (727) 538 (792) 666 (916)	290 290 500	225 300 400	36 (41) 40 (47) 60 (65)	64 (68) 70 (74) 88 (95)

(The values in parentheses apply for a stem seal with bellows)



Stem seal with packed gland

Stem seal with bellows

Actuator with manual adjustment

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