

SEMPELL

Sempell Control Valves for water and steam applications in Power Industry.

Features and Benefits

- Valve can be easily disassembled
- Exchangeable, screwed seat
- Low maintenance, gland (packing pure graphite) can be retightened
- Low friction by burnished valve stem
- Spacious body also for difficult operating conditions
- Universal connections by various design of welding ends and flanges as standard
- Various designs of welding ends in regard of dimension and material as well as designs with accessories according to TO 095.80xxxx DE or according to customers' request.

Use and application of Control Valves

Type 171C can be generally used in Globe Valve to control pressure, temperature, level and flow.

It is designed for a medium pressure range up to PN 63 and is suitable to control non-aggressive, liquid or gaseous medium.

The cast steel body with flanged bonnet seal is spaciouly designed and thus can also be used for flushing medium without difficulties.



Technical data

Size	: DN 65- DN 350
Pressure Class	: Up to PN 63
Connections	: Flanges up to PN40. Welding ends up to PN 63
Body Material	: GS-C25 (1.0619), special design GS-17CrMo55 (1.7357)
Material Internals	: Stem 1.4057, seat screwed 1.4057 special design: - seat welded 1.5415, hardfaced with 1.4115 - without seat ring, body hardfaced with 1.4115 guide bush 1.4559 or 1.8550 gas nitrited (at PTFE)
Steam sealing	: PTFE-collar (up to 250°C). Pure graphite
Disc design	: Perforated disc (single stage)
Guide	: two guides at stem and seat ring
Characteristic	: linear, square
Control ratio	: Steam 1:25 , Water 1:40
Sealing seat/disc	: Metallic
Leakage class	: Class IV DIN IEC 534 part 4
Flow medium	: Water, feedwater, condensate, steam

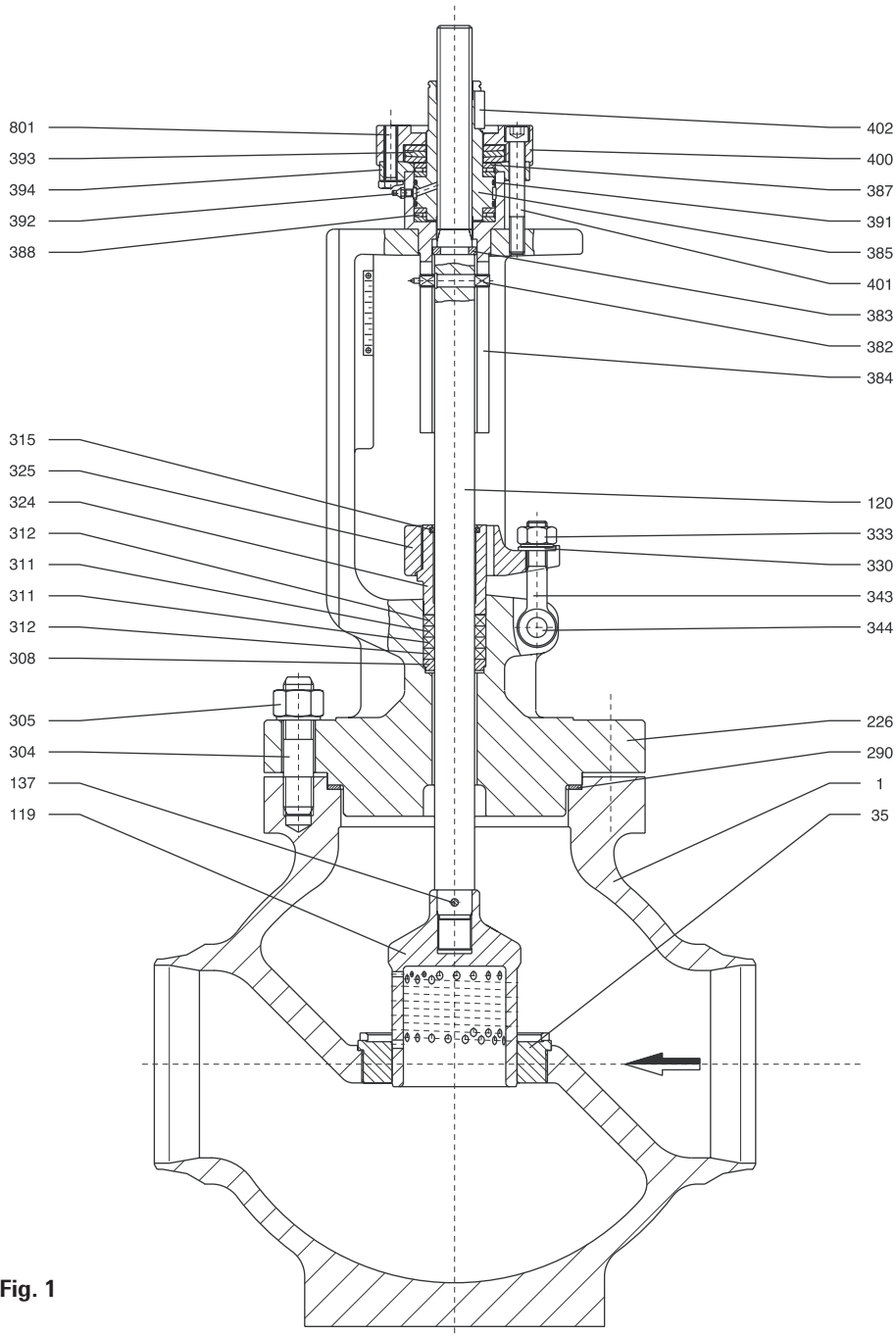
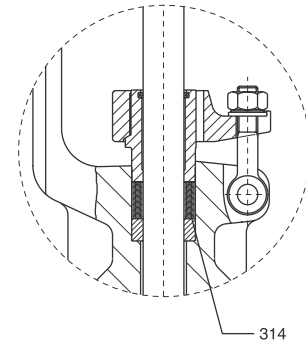


Fig. 1

Basic design

(prepared for connecting an electric rotary actuator)



Notes

- recommended spare parts
- * only on special request
- 1) design for accessory SN 185

Table 1 - Materials, material specification

Pos.	Name	DIN-Material 01	10 *	Pos.	Name	DIN-Material 01	10 *
Design with rotary actuator							
1	Body	1.0619	1.7357	333	Hexagonal nut	1.7258	
2	Pipe connection	1.5415 / 1.0460	1.7335	343	Eye bolt	1.7709	
20	Pipe connection	1.5415 / 1.0460	1.7335	344	Pin	1.7709	
35 •	Seat screwed	1.4057	1)	382	Pin	1.4057	
119 •	Plug	1.4057		383	Split ring	1.4057	
120 •	Stem	1.4057		384	Bush	1.8550	
137 •	Cylindrical pin	St		385 •	Threaded bush	2.0550	
226	Yoke	1.0619	1.7357	387 •	Travelling disc	1.3505	
290 •	Gasket	1.7335		388 •	Needle ring	1.3505	
304	Stud	1.7709		391 •	O-ring	NBR	
305	Hexagonal nut	1.7258		392	Lubrication nipple	5.8	
308	Guide bush	SINT-DOO	1.4021	393 •	Cup spring	1.8159	
311 •	Packing ring	Grafit		394	Clamp ring	1.0460	
312 •	Packing ring	Grafit / Aust.		400	Connection flange	1.0460	
(314) •	Packing V type	Teflon		401	Head cap screw	8.8	
315 •	Packing cord	RIVAC		402	Parallel key	1.0503	
324	Gland	1.4027		800	Actuator		
325	Gland flange	1.4317		801	Screw	8.8	
330	Washer	Ferrit					

Main dimensions

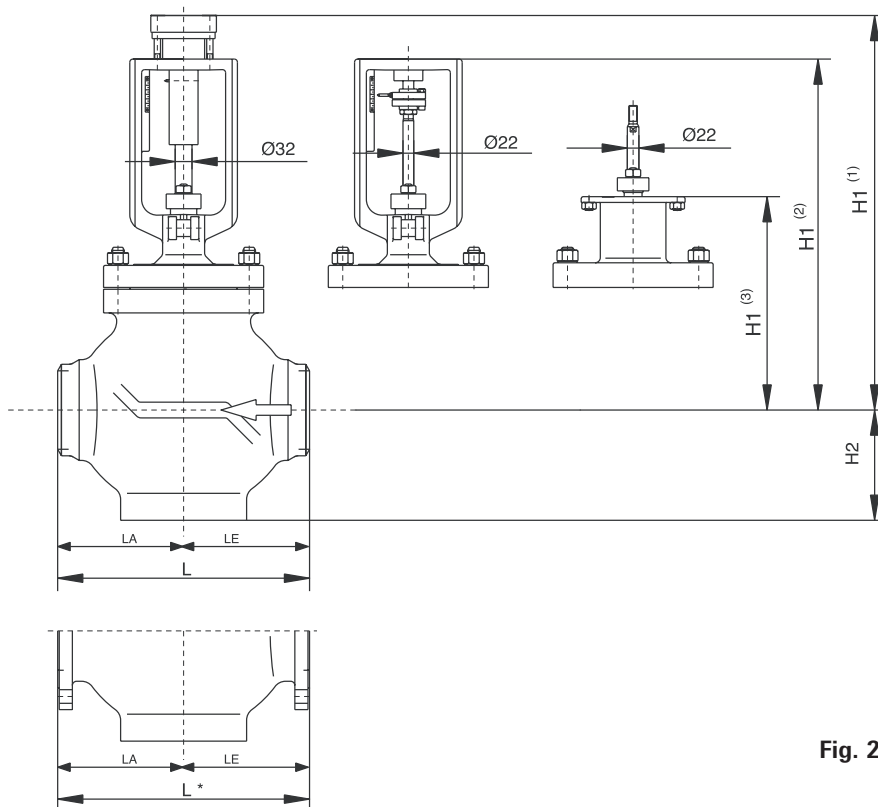


Fig. 2

Notes

H1⁽¹⁾ prepared for mounting rotary actuator

H1⁽²⁾ prepared for mounting linear actuator

H1⁽³⁾ prepared for mounting pneumatic actuator

* Flange PN 10 - 40 on request

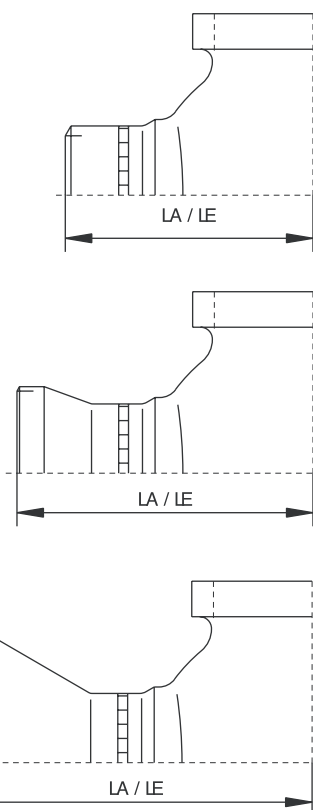


Fig. 3

Table 2 - Dimensions & weights

Dimensions [mm]				Weight without actuator					
PN	DN	L	L*	H2	H1 ⁽¹⁾	H1 ⁽²⁾	H1 ⁽³⁾	SE / kg	FI / kg
10 - 40 (flanges)	65	290	290	140	646	555	300	65	71
	80	310	310	150	646	555	300	71	78
	100	350	350	150	646	555	300	100	110
	125	400	400	190	769	678	385	165	180
63 (welding end)	150	480	480	210	769	678	385	210	227
	200	600	600	220	769	678	385	270	300
	250	730	730	320	889	798	505	365	415
	300	850	850	330	889	798	505	460	530
	350	850	850	330	889	798	505	460	530

Table 3 - Lengths LA/LE in mm

DN - body connection	Pipe connection DN										
	65	80	100	125	150	200	250	300	350	400	450
65	195	205	225								
80		205	225	275							
100			225	275	315						
125				275	315	375					
150					315	375	440				
200						375	440	500			
250							440	500	550		
300								500	550	600	
350									550	600	625

Table 4 - Possible welding connections at body or pipe connections

DN	SE	OD	2,9	3,2	3,6	4,0	4,5	5,0	5,6	6,3	7,1	8,0	8,8	10,0	11,0	12,5	14,2
65	76,1		•	•	•	•	•	•									
80	88,9			•	•	•	•	•	•								
100	114,3				•	•	•	•	•	•							
125	139,7					•	•	•	•	•	•						
150	168,3						•	•	•	•	•	•					
200	219,1									•	•	•	•	•			
250	273										•	•	•	•	•	•	
300	323,9											•	•	•	•	•	•
350	355,6												•	•	•	•	•

Table 5

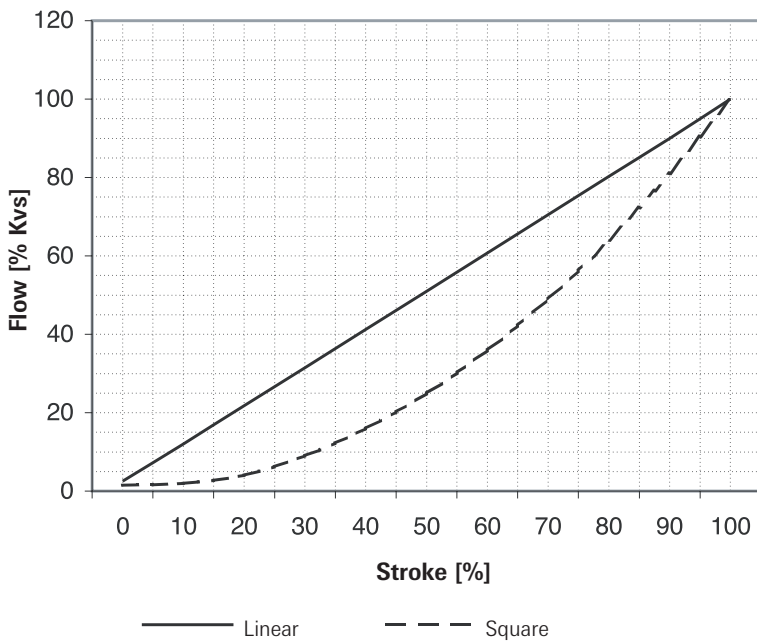
Seat- ϕ (mm)	30	35	40	50	60	70	80	90	100	130	160	170	200	250
Max. stroke (mm)	20	25	30	30	40	40	50	55	60	85	115	115	115	115
DN	max. Kvs (m ³ /h)													
65	11	16	25	40										
80		16	25	40	63	80								
100			25	40	63	80	100							
125					63	80	100	125	160					
150						80	100	125	160	300				
200								125	160	300	400	555		
250									160	300	400	555	722	
300										300	400	555	722	1210
350										300	400	555	722	1210

Cvs = 1.17 * Kvs

Kvs-Values of the Control Valves

- Max. seat diameter, max. valve lifts and the pertaining max. Kvs-values.
- The named Kvs-values are valid for linear characteristic curves. For designs with square and equal per cent characteristic curves the next lower value is the max. realisable Kvs value.
- Up to seat diameter 100 mm the valves are only manufactured with Kvs-values according to table.
- From seat diameter 130 mm the manufactured Kvs-values and the valve strokes are adjusted to the application. The seat diameters are not changed and only executed according to table.

Flow characteristics



Characteristic Curves

The control valves can be delivered with different flow characteristics (see graph). As standard characteristic curves, linear or square characteristic curves are provided depending on application or customer's request. Various equal per cent characteristic curves are also realizable.

Table 6 - Application limits subject to pressure and temperature

PN	Body material	DIN-Nr.	Design temperature [°C]														
			20	120	200	250	300	350	400	425	450	475	500	510	520	530	
16	GS-C25	1.0619	16	16	14	13	11	10	8								
25	GS-C25	1.0619	25	25	22	20	17	16	13								
	GS-17CrMo55	1.7357					25	24	23	22	21	20	18	15	12	9	
40	GS-C25	1.0619	40	40	35	32	28	24	21								
	GS-17CrMo55	1.7357					40	38	36	35	34	33	29	24	19	15	
63*	GS-C25	1.0619	63	63	50	45	40	36	32								
	GS-17CrMo55	1.7357					63	61	58	57	56	53	47	40	32	25	

Notes

- * Welding ends only
- Allowable working pressure [bar] test pressure acc. PED
- On consultation with our engineering department the valves can be used for higher design pressures in special cases.

Fig. 4 - Pressure Reducing Valve with AUMA-NORM and AUMA-MATIC actuator

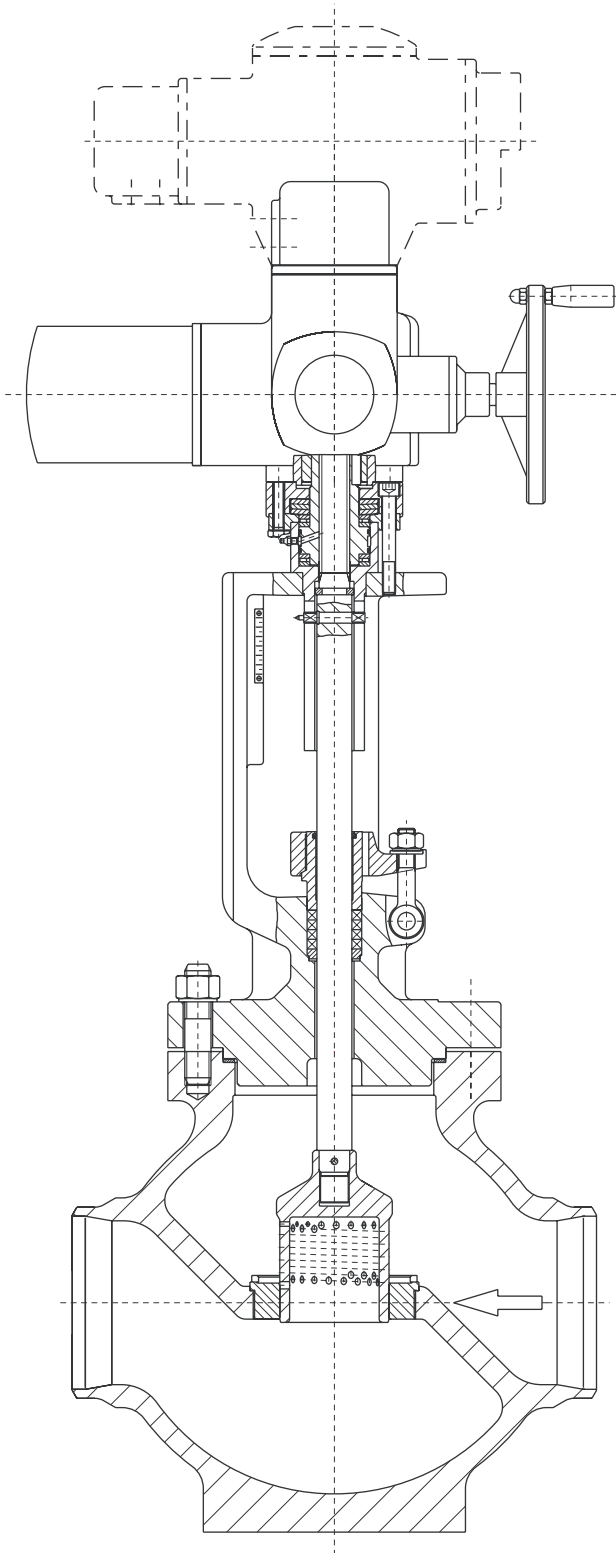


Fig. 5 - Pressure Reducing Valve with EMG actuator

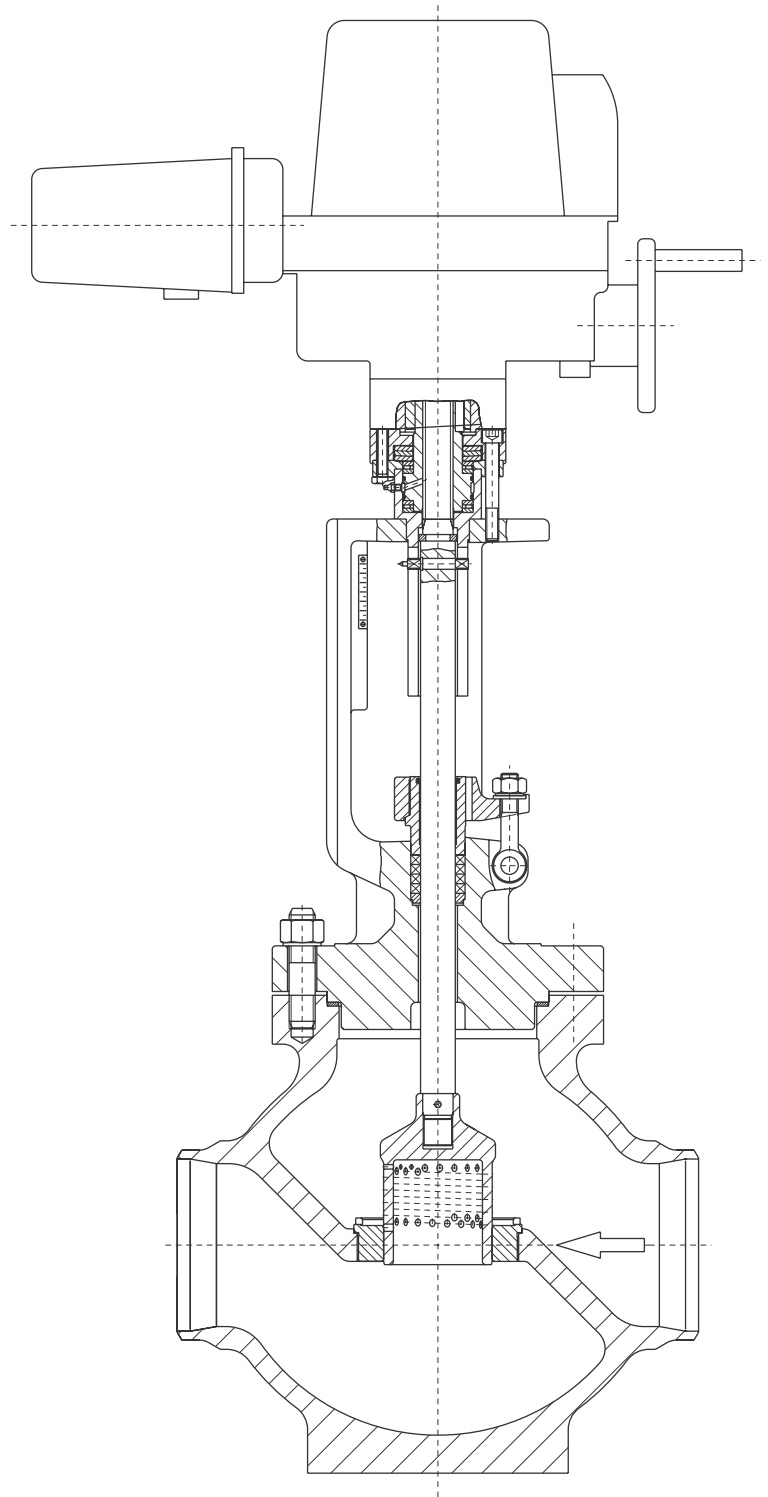


Table 7 - Selection of AUMA Actuator

Max. admissible difference pressures for per forated disc, flow direction tends to close																
DN		65				80					100					
Seat	mm	30	35	40	50	35	40	50	60	70	40	50	60	70	80	
Stroke	mm	20	25	30	30	25	30	30	40	40	30	30	40	40	50	
Kvs	m³/h	11	16	25	40	16	25	40	63	80	25	40	63	80	100	
Auma 7.5	bar close	63	63	63	63	63	63	63	63	63	63	63	63	63	63	
	open	63	63	63	63	63	63	63	56	38	63	63	56	38	28	
	control	63	63	38	17	63	38	17	10	7	38	17	10	7	5	
Auma 10.1	bar close			63	63		63	63	63	63		63	63	63	63	
	open			63	63		63	63	63	63		63	63	63	63	
	control			63	63		63	63	56	38		63	63	56	38	28
Auma 14.1	bar close								63	63				63	63	63
	open								63	63				63	63	63
	control								63	63				63	63	63

DN		125				150					200						
Seat	mm	60	70	80	90	100	70	80	90	100	130	80	90	100	130	160	170
Stroke	mm	40	40	50	55	60	40	50	55	60	85	50	55	60	85	100	115
Kvs	m³/h	63	80	100	125	160	80	100	125	160	300	100	125	160	300	400	555
Auma 7.5	bar close	125	125	89	73	58	104	89	73	58	31	63	63	58	31		
	open	56	38	28	21	17	38	28	21	17	10	28	21	17	10		
	control	10	7	5	4	3	7	5	4	3	1	5	4	3	1		
Auma 10.1	bar close	63	63	63	63	63	63	63	63	63	60	63	63	63	56	37	32
	open	63	63	63	57	45	63	63	57	45	26	63	57	45	26	17	15
	control	56	38	28	21	17	38	28	21	17	10	28	21	17	10	6	5
Auma 14.1	bar close	63	63	63	63	63	63	63	63	63	56	63	63	63	63	63	63
	open	63	63	63	63	63	63	63	63	63	61	63	63	63	61	40	35
	control	63	63	63	57	45	63	63	57	45	26	63	57	45	26	17	15

DN		250					300					350				
Seat	mm	100	130	160	170	200	130	160	170	200	250	130	160	170	200	250
Stroke	mm	60	85	100	115	115	85	100	115	115	115	85	100	115	115	115
Kvs	m³/h	160	300	400	555	722	300	400	555	722	1210	300	400	555	722	1210
Auma 7.5	bar close	58	31				31					31				
	open	17	10				10					10				
	control	3	1				1					1				
Auma 10.1	bar close	63	56	37	32	23	56	37	32	23	19	56	37	32	23	19
	open	45	26	17	15	10	26	17	15	10	6	26	17	15	10	6
	control	17	10	6	5	4	10	6	5	4	2	10	6	5	4	2
Auma 14.1	bar close	63	63	63	63	46	63	63	63	46	29	63	63	63	46	29
	open	63	61	40	35	25	61	40	35	25	16	61	40	35	25	16
	control	45	26	17	15	10	26	17	15	10	6	26	17	15	10	6

Table 8 - data of AUMA actuator

Technical data and dimensions AUMA modulating actuators											
Type	DIN EN ISO 5210	Tripping torque		Torque for modulating max. Nm	Hand-wheel Ø mm	Dimensions and weights					
		min Nm	max Nm			SAR			SARM		
		A mm	B mm	C mm	Gew. kg	C mm	Gew. kg				
AUMA 07.5	F10	30	60	30	160	265	249	273	21	418	28
AUMA 10.1	F10	60	120	60	200	282	254	275	25	420	36
AUMA 14.1	F14	120	250	120	315	384	329	335	51	507	66

Note

Operating time about 30 seconds.

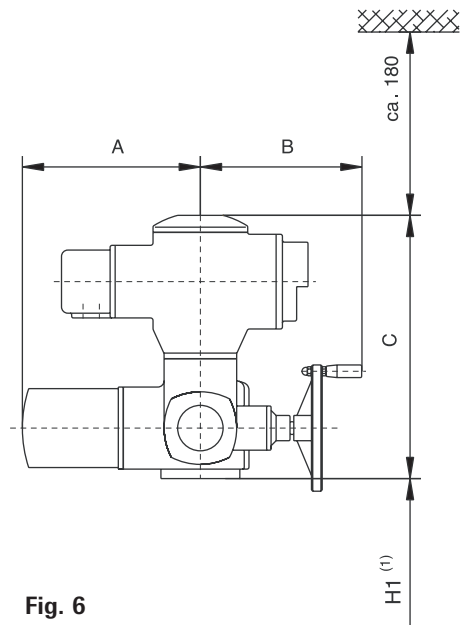


Fig. 6

Table 9 - Selection of EMG Actuator

Max. admissible difference pressures for per forated disc, flow direction tends to close																
DN		65					80					100				
Seat	mm	30	35	40	50	35	40	50	60	70	40	50	60	70	80	
Stroke	mm	20	25	30	30	25	30	30	40	40	30	30	40	40	50	
Kvs	m ³ /h	11	16	25	40	16	25	40	63	80	25	40	63	80	100	
DM C R 59 + 60	bar	close	63	63	63	63	63	63	63	63	63	63	63	63	63	
	open	63	63	63	63	63	63	63	56	38	63	63	56	38	28	
	control	63	63	38	17	63	38	17	10	7	38	17	10	7	5	
DM C R 120	bar	close			63	63			63	63	63	63	63	63	63	
	open				63	63			63	63	63	63	63	63	63	
	control				63	63			63	63	56	38	63	63	28	
DM C R 250	bar	close								63	63			63	63	
	open									63	63			63	63	
	control									63	63			63	63	

DN		125					150					200					
Seat	mm	60	70	80	90	100	70	80	90	100	130	80	90	100	130	160	170
Stroke	mm	40	40	50	55	60	40	50	55	60	85	50	55	60	85	100	115
Kvs	m ³ /h	63	80	100	125	160	80	100	125	160	300	100	125	160	300	400	555
DM C R 59 + 60	bar	close	125	125	89	73	58	104	89	73	58	31	63	63	58	31	
	open	56	38	28	21	17	38	28	21	17	10	28	21	17	10		
	control	10	7	5	4	3	7	5	4	3	1	5	4	3	1		
DM C R 120	bar	close	63	63	63	63	63	63	63	63	60	63	63	63	56	37	32
	open	63	63	63	57	45	63	63	57	45	26	63	57	45	26	17	15
	control	56	38	28	21	17	38	28	21	17	10	28	21	17	10	6	5
DM C R 250	bar	close	63	63	63	63	63	63	63	63	56	63	63	63	63	63	63
	open	63	63	63	63	63	63	63	63	63	61	63	63	63	61	40	35
	control	63	63	63	57	45	63	63	57	45	26	63	57	45	26	17	15

DN		250					300					350					
Seat	mm	100	130	160	170	200	130	160	170	200	250	130	160	170	200	250	
Stroke	mm	60	85	100	115	115	85	100	115	115	115	85	100	115	115	115	
Kvs	m ³ /h	160	300	400	555	722	300	400	555	722	1210	300	400	555	722	1210	
DM C R 59 + 60	bar	close	58	31			31					31					
	open	17	10				10					10					
	control	3	1				1					1					
DM C R 120	bar	close	63	56	37	32	23	56	37	32	23	19	56	37	32	23	19
	open	45	26	17	15	10	26	17	15	10	6	26	17	15	10	6	6
	control	17	10	6	5	4	10	6	5	4	2	10	6	5	4	2	2
DM C R 250	bar	close	63	63	63	63	46	63	63	63	46	29	63	63	63	46	29
	open	63	61	40	35	25	61	40	35	25	16	61	40	35	25	16	16
	control	45	26	17	15	10	26	17	15	10	6	26	17	15	10	6	6

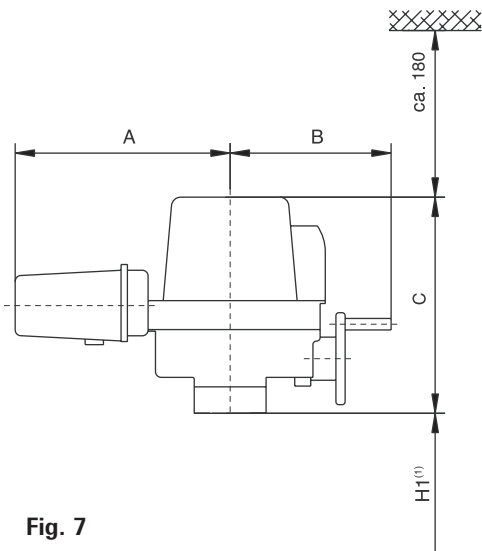


Fig. 7

Table 10 - data of EMG actuator

Technical data and dimensions AUMA modulating actuators									
Type	DIN EN ISO 5210	Tripping torque		Torque for modulating max. Nm	Hand-wheel Ø mm	Dimensions and weights			weight kg
		min Nm	max Nm			A mm	B mm	C mm	
DM C R 59	F10	30	60	30	160	252	281	284	25
DM C R 60	F10	30	60	30	160	262	324	417	29,5
DM C R 120	F10	60	120	60	200	262	324	417	33,5
DM C R 250	F14	120	250	120	250	285	364	722	69,5

Note
Operating time about 30 seconds.

Fig. 8 - Pressure Reducing Valve with STI actuator

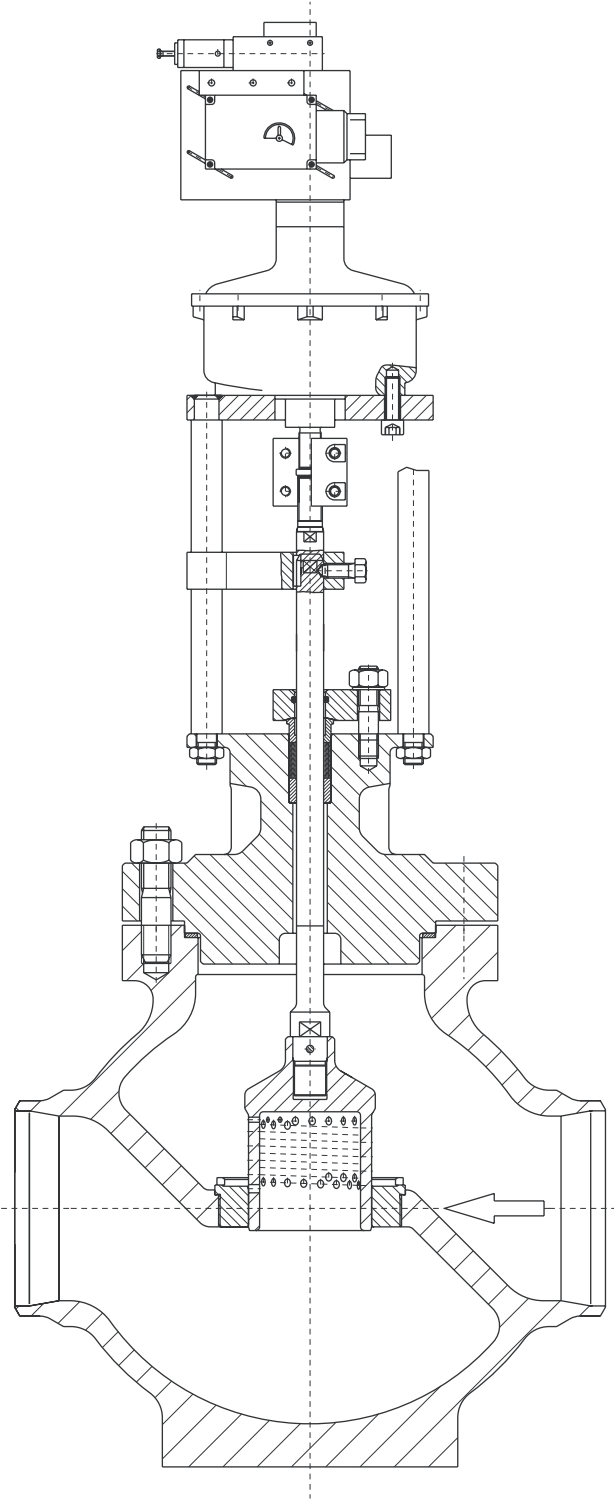
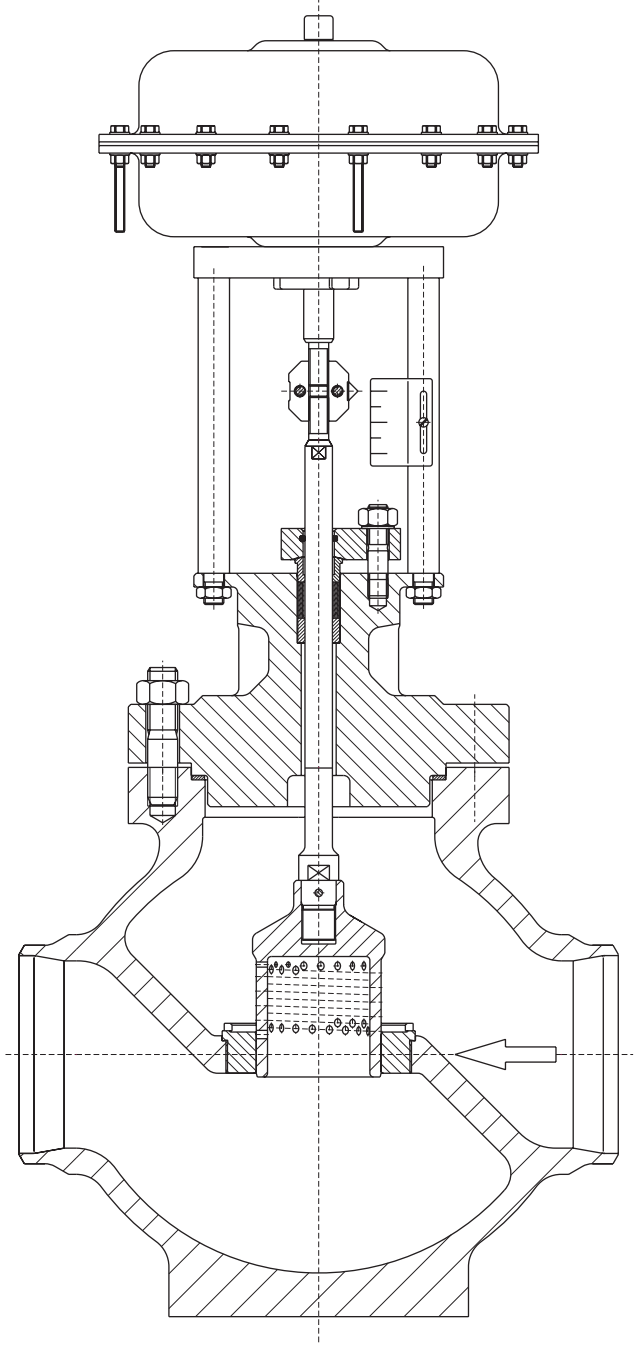


Fig. 9 - Pressure Reducing Valve with FlowAct actuator



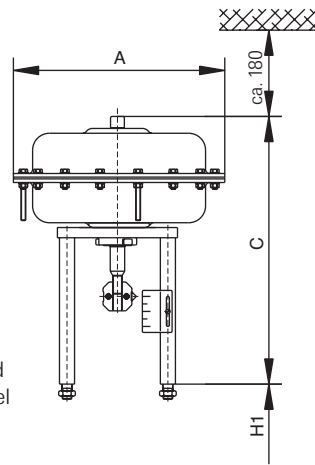


Fig. 12
Type 252/502/700 standard actuator without handwheel

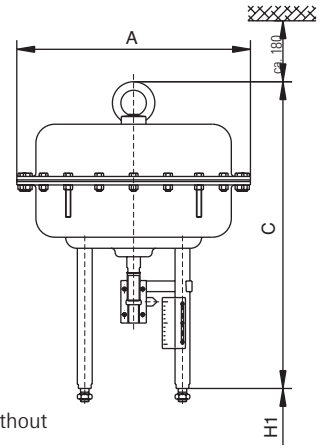


Fig. 13
Type 1500 standard actuator without handwheel

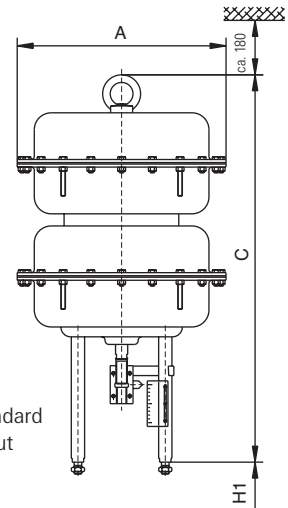


Fig. 14
Type 3000 standard actuator without handwheel

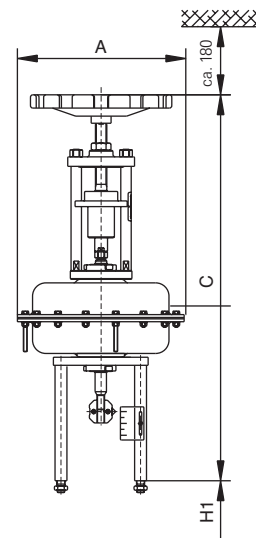


Fig. 15
Type 252/502/700 standard actuator with top mounted handwheel (light)

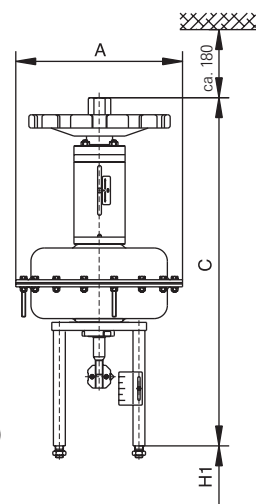


Fig. 16
Type 252/502/700 standard actuator with top mounted handwheel (heavy)

Table 13 - Selection of FlowAct actuator

Max. admissible difference pressures (bar) for perforated disc flow direction tends to close

Reverse acting actuators (Spring to close)

Actuator size	Supply pressure bar g	Seat diameter										
		30	35	40	50	60	70	80	90	100	130	160
V-type packing (max. 250 °C)												
252	5	49										
502	5	63	63	63	44	29	25					
700	5		63			63	45	36	27	21	17	
1500	5					63	63	60	47	37	17	11
3000	5							63	63	63	43	28
Graphite packing												
502	5	56	56	44	26	17	12					
700	5	63	63	63	47	33	24	18	14	11		
1500	5				63	63	63	50	43	35	15	10
3000	5							63	63	63	35	23

Direct acting actuators (Spring to open)

Actuator size	Supply pressure bar g	Seat diameter										
		30	35	40	50	60	70	80	90	100	130	160
V-type packing (max. 250 °C)												
252	5	39										
502	5	63	58	41	24	16	11					
700	5				63	59	35	23	16	9	7	6
1500	5			63	63	56	39	19	14	11	6	4
3000	5					63	63	48	37	29	17	11
Graphite packing												
502	5	45	28	19	11	7	5					
700	5	63	54	38	22	15	10	5	4	3		
1500	5	63	63	63	63	48	33	14	11	9	5	3
3000	5					63	59	44	34	27	15	10

Table 14 - Data of FlowAct actuator

Dimensions and weights

Actuator size	Dimensions (mm)		Weight handwheel (kg)		
	A	C	without	light	heavy
252	265	390	14		
252	265	650		19	
252	265	575			20
502	352	510	29		
502	352	795		36	
502	352	900			38
700	405	600	40		
700	405	817			58
1500	550	885	115		
3000	550	1190	145		

Complete Coding System

171C	100	1	01	0200	150	0200	D	S	XXX
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Valve type

171 C Internal fitting
(perforated disc)

Valve Code

100 Standard

Flow Direction

1 Flow tends to close
2 Flow tends to open

Material Specification

01 body 1.0619
10 body 1.7357

Inlet nominal size

65 = DN 65
80 = DN 80
100 = DN 100
125 = DN 125
150 = DN 150
200 = DN 200
250 = DN 250
300 = DN 300
350 = DN 350

Accessories

see TO.095.80.xxxx D E

Pipe Connection

S Welding end acc. to DIN
F Flange acc. to DIN
U Plain ends

Body type

D Straight through type

Outlet nominal size

65 = DN 65
80 = DN 80
100 = DN 100
125 = DN 125
150 = DN 150
200 = DN 200
250 = DN 250
300 = DN 300
350 = DN 350

Nominal size body

65 = DN 65
80 = DN 80
100 = DN 100
125 = DN 125
150 = DN 150
200 = DN 200
250 = DN 250
300 = DN 300
350 = DN 350