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ISO 9001 · ISO 14001
ISO 45001

LDM®

02 - 01.2
12.20.GB

CONTROL VALVES AND STEAM-CONDITIONING STATIONS

700 line

POWER THROUGH IDEAS
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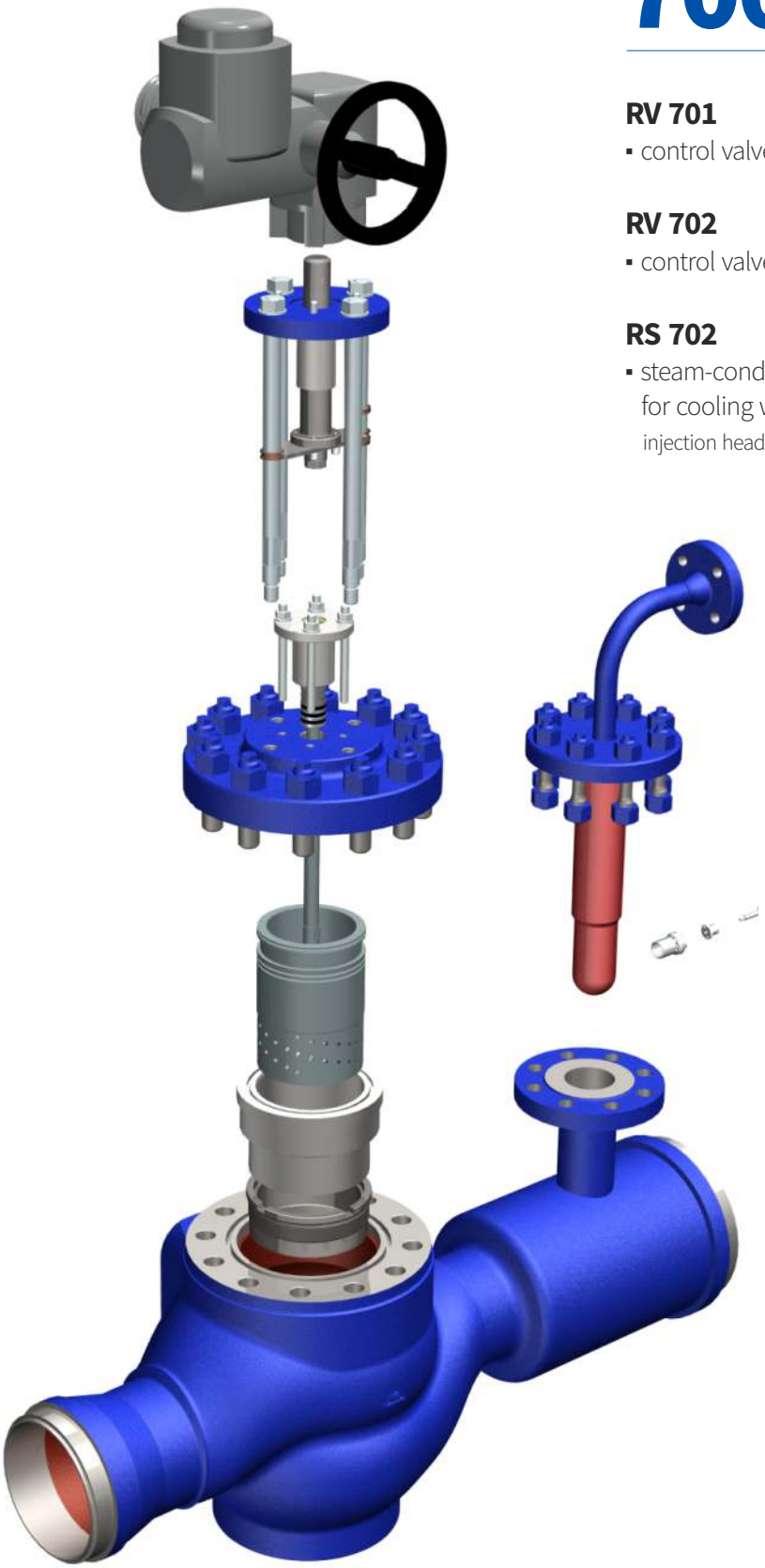
700 line



RV 701
- control valves for water and other liquids

RV 702
- control valves for steam and other gaseous media

RS 702
- steam-conditioning station with flange connection for cooling water

  injection head is specified in catalog 02-03.8

500 ⟶ 700

700 line valves of PN 16 - 160
replace our precedent 500 line valves

Description

- control valves designed in accordance with ČSN EN 1349
- single-seated modular design
- pressure-balanced, multi-step throttling system resistant to cavitation initiation, cavitation degradation effects and noisiness
- Live Loading stem packing
- weld-end and flange options with sealing surfaces according to customer requirements
- equipped with linear actuators; by default offered with actuators of the following manufacturers: ZPA Pečky, Regada Prešov, Auma, Schiebel and Flowserve

Process media

- water, steam and other media with no special demands on the used material of the valve
- technical and heating gases, flammable liquids (Ex version of valve)
  For more detailed information see document
  ***01-12.2** - Permissible media for specific valve lines*
- for media without mechanical impurities (it is recommended to place a strainer into pipeline in front of the valve)

Application

- industrial applications: e.g. plants, control of technological processes
- maximum permissible operating pressures are defined in EN 12 516-1+A1 (2019); see table on page **16** of this catalog
- **700 line Ex** valves comply to specification of II 1/2G IIC 85 - 600 °C Ga/Gb of standard ČSN EN ISO 80079-36 and ČSN EN 1127-1
- **700 line Sp** valves operated by handwheels and electric Auma and SIPOS actuators **fulfill requirements of seismic resistance** in terms of maintaining the mechanical integrity and functionality after the seismic event to the spectrum of the response up to 30 $m \cdot s^{-2}$ in all directions, in the range of 0-33 Hz. Therefore, they meet the conditions for use in areas with expected occurrence of earthquakes with a maximum intensity of 9 degrees EMS-98 or MSK-64 (9 bal)

Installation

- flow direction of medium must correspond to the arrows on the valve body
- the actuator may not be installed directly bellow the valve body
- when medium temperature exceeds 150°C it is necessary to protect the actuator against the excessive heat transfer from the valve, for example with suitable thermal insulation of pipe and valve body and through tilting the actuator body out of the vertical axis
- detailed instructions for installation are given in document: *Instruction for Installation and Maintenance (RV 701, RV 702 - PM 077; RS 702 - PM 084)*

Kvs coefficient calculation

This calculation is provided by the calculation software LDM Valves

Live Loading

Key feature of Live Loading packing is axial compression of graphite packing by preloaded springs. This design ensures permanent compression of graphite rings during operation.

LDM developed its own proper design of Live Loading utilizing set of disc springs. This set is integrated into cover which also serves as a dirt cover and a preload indicator.

Recommended maximal differential pressures

RV, RS 70x	Throttling steps	Medium	Δp (operational)
Perforated plug	max. 3	water	max. 4 Mpa *)
		steam	max. 5 Mpa *)
Shaped plug	max. 2	water	max. 2 Mpa *)
Labyrinth	max. 4	water, steam	max. 20 MPa

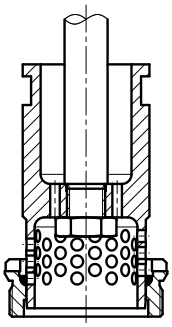
*) - value corresponds to one step of pressure reduction

Parameters of pressure balanced system

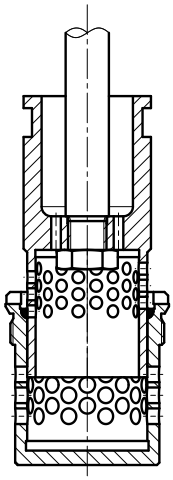
RV, RS 70x	leakage rate	medium	Δp (in closed position)
Pressure balanced - GRAPHITE	III, IV (Δp_{max} 4 Mpa)	water	max. 8 Mpa
		steam	max. 5 MPa
Pressure balanced - METAL	III, IV, V	water, steam	max. 25 MPa
Pressure unbalanced system	III, IV, V	water, steam	acc. to no. of steps of pressure reduction and plug type

Application of multi-step pressure reduction

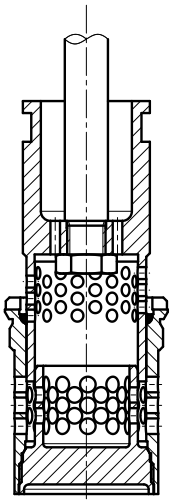
For the valves that are designed for operation under above-critical differential pressure or when the differential pressure across the value is higher than the recommended operational differential pressure, it is advisable to use two- step or higher-step throttling system to prevent the initialization of cavitation and to ensure both long service life of the valve inner parts and reduction of noise level.



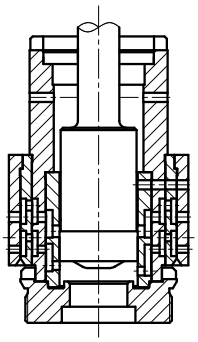
One-step throttling system



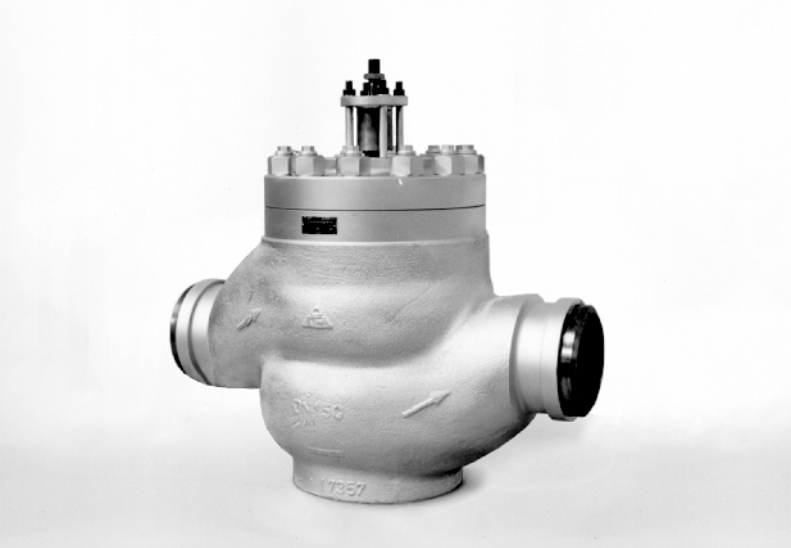
Two-step throttling system



Three-step throttling system



Labyrinth - four-step throttling system



RV 701

Control valve

DN 25 - 250
PN 16 - 400

Technical data

Series	**RV 701 (Ex)**				
Type of valve	**Control valve, single-seated, straight-through, with pressure-balanced plug**				
Nominal size range	DN 25 - 250				
Nominal pressure	PN 16, 25, 40, 63, 100, 160, 250, 320, 400 [1]				
Operating temp. range (from -10°C / +14°C to...) [2]	**400 °C**	**500 °C**	**550 °C**	**575 °C**	**600 °C**
Body material (including weld ends)	Cast steel 1.0619 [1]	.....			
	Alloy steel 1.7357	.....			
	Alloy steel 1.7379	.....			
	Stainless steel 1.4931				
	Stainless steel 1.4581 [1]	.....			
Seat material [3]	1.4006 + weld	1.4006 + weld	1.4903 + weld		
Plug material [3]	1.4028 + hardened	1.4006 + weld	1.4903 + weld		
Weld ends PN 16 - 400	According to ČSN 13 1075 (1991), ČSN EN 12 627 (2018)				
Flanges PN 16 - 400	According to ČSN EN 1092-1 (2018)				
Throttling system	One- up to four-step Plug: perforated, shaped, labyrinth [4] - seat (seat cage)				
Flow characteristic	Linear, equal-percentage				
Leakage rate	Acc. to ČSN EN 1349 (2010) Class III., version with higher tightness - Class IV., V.				
Packing	Graphite - Live Loading				

Range of Kvs values

DN	**25** [5]	**40** [6]	**50** [6]	**65** [6]	**80**	**100**	**125**	**150**	**200**	**250**
Multi-step pressure reduction	Kvs values [m³/h] - linear characteristic									
1	0.1 - 8.0	2.5 - 20	3.2 - 32	6.3 - 50	8 - 80	10 - 125	16 - 360 [7]	16 - 360 [7]	25 - 500	40 - 630
2	0.1 - 8.0	2.0 - 20	2.5 - 32	5.0 - 50	8 - 80	8.0 - 100	12.5 - 250	12.5 - 250	25 - 500	40 - 500
3	1.6 - 8.0	2.0 - 20	2.5 - 32	4.0 - 40	8 - 80	8.0 - 80	12.5 - 200	12.5 - 200	20 - 400	40 - 400
Multi-step pressure reduction	Kvs values [m³/h] - equal-percentage characteristic									
1	0.63 - 6.3	6.3 - 20	6.3 - 25	6.3 - 32	16 - 50	16 - 63	25 - 125	25 - 125	32 - 250	50 - 320
2	0.63 - 6.3	5.0 - 16	5.0 - 20	5.0 - 25	12.5 - 40	12.5 - 50	25 - 100	25 - 100	32- 160	50 - 200
3	1.6 - 5.0	4.0 - 12,5	4.0 - 16	4.0 - 20	10 - 32	10 - 40	20 - 80	20 - 80	25 - 100	50 - 160

Table is valid only for perforated and shaped plugs

Notes:

[1] material 1.0619 DN 80 - 250 - max. PN 320
material 1.4581 DN 50 - 250 - max. PN 320

[2] with lower temperature requirement contact the manufacturer

[3] material of weld - STELLIT 6

[4] demand of valve with labyrinth throttling system is necessary to consult with the manufacturer

[5] shaped plug is applicable for Kvs 0,1 - 1,6

[6] in case of reduced size seat the Kvs range is the same as with DN25

[7] only for PN 160 and 250; PN 320 and 400 : Kvs_{max} = 250 m³/hod

RV 702

Control valve

inlet DN 25 - 250
outlet DN 25 - 700
PN 16 - 400

Technical data

Series	**RV 702 (Ex)**				
Type of valve	**Control valve, single-seated, straight-through, with pressure balanced plug, with extended outlet and orifice plates in outlet**				
Nominal size range	Inlet DN 25 - 250; outlet DN 25 - 1000				
Nominal pressure	Inlet PN 16 - 400; outlet PN 16 - 400 [1]				
Operating temp. range (from -10°C to...) [2]	**400 °C**	**500 °C**	**550 °C**	**575 °C**	**600 °C**
Body material (including weld ends) **/ material of extensions**	1.0619 [1] / 1.0425	.....	.....	.....	.....
	.....	1.7357 / 1.7335	.....	.....	.....
	1.7379 / 1.7380, 1.7383				.....
	1.4931 / 1.4922, 1.4903				
	1.4581 [1] / 1.4571		.....	.....	.....
Seat material [3]	1.4006 + weld	1.4006 + weld	1.4903 + weld		
Plug material [3]	1.4028 + hardened	1.4006 + weld	1.4903 + weld		
Weld ends PN 16 - 400	According to ČSN 13 1075 (1991), ČSN EN 12 627 (2018)				
Flanges PN 16 - 400	According to ČSN EN 1092-1 (2018)				
Throttling system	One- up to four-step Plug: perforated, shaped, labyrinth [4] - seat (seat cage)				
Flow characteristic	Linear, equal-percentage				
Leakage rate	According to ČSN EN 1349 (2010) Class III., version with higher tightness Class IV., V.				
Packing	Graphite - Live Loading				

Range of Kvs values

DN	**25/XXX**	**40/XXX** [6]	**50/XXX** [6]	**65/XXX** [6]	**80/XXX**	**100/XXX**	**125/XXX**	**150/XXX**	**200/XXX**	**250/XXX**
Multi-step pressure reduction	Kvs values [m³/h] - linear characteristic									
1	0.4 - 8.0	2.5 - 20	2.5 - 32	6.3 - 50	8 - 80	10 - 125	12.5 - 360 [7]	12.5 - 360 [7]	25 - 500	40 - 630
2	0.25 - 8.0	2.0 - 20	2.5 - 32	5.0 - 40	8 - 80	10 - 100	12.5 - 250	12.5 - 250	25 - 500	40 - 500
Multi-step pressure reduction	Kvs values [m³/h] - equal-percentage characteristic									
1	1.0 - 6.3	6.3 - 20	6.3 - 25	6.3 - 32	16 - 50	16 - 63	25 - 125	25 - 125	32 - 250	50 - 320
2	0.4 - 4.0	5.0 - 16	5.0 - 20	5.0 - 25	16 - 40	16 - 50	25 - 80	25 - 80	32 - 160	50 - 160

Table is valid only for perforated and shaped plugs

Notes:

[1] material 1.0619 DN 80 - 250 - max. PN 320
material 1.4581 DN 50 - 250 - max. PN 320

[2] with lower temperature requirement contact the manufacturer

[3] material of weld - STELLIT 6

[4] demand of valve with labyrinth throttling system is necessary to consult with the manufacturer

[6] in case of reduced size seat the Kvs range is the same as with DN25

[7] only for PN 160 and 250; PN 320 and 400: $Kvs_{max} = 250\ m^3/h$

RS 702

Steam-conditioning station

inlet DN 25 - 250
outlet DN 150 - 700
PN 16 - 400

Technical data

Series	**RS 702 (Ex)**				
Type of valve	**Control valve, single-seated, straight-through, with pressure balanced plug, with extended outlet and orifice plates in outlet, with water injection into outlet pipe**				
Nominal size range	Inlet DN 25 - 250; outlet DN 150 - 1000				
Nominal pressure	Inlet PN 16 - 400; outlet PN 16 - 400 [1]				
Operating temp. range	**400 °C**	**500 °C**	**550 °C**	**575 °C**	**600 °C**
Body material (including weld ends) / material of extensions	1.0619 [1] / 1.0425				
		1.7357 / 1.7335			
	1.7379 / 1.7380, 1.7383				
	1.4931 / 1.4922, 1.4903				
	1.4581 [1] / 1.4571				
Seat material [3]	1.4006 + weld	1.4006 + weld	1.4903 + weld		
Plug material [3]	1.4028 + hardened	1.4006 + weld	1.4903 + weld		
Weld ends PN 16 - 400	According to ČSN 13 1075 (1991), ČSN EN 12 627 (2018)				
Flanges PN 16 - 400	According to ČSN EN 1092-1 (2018)				
Throttling system	One- up to four-step Plug: perforated, shaped, labyrinth [4] - seat (seat cage)				
Flow characteristic	Linear, equal-percentage				
Leakage rate	According to ČSN EN 1349 (2010) Class III., version with higher tightness Class IV., V.				
Packing	Graphite - Live Loading				

Range of Kvs values

DN	**25/XXX**	**40/XXX** [6]	**50/XXX** [6]	**65/XXX** [6]	**80/XXX**	**100/XXX**	**125/XXX**	**150/XXX**	**200/XXX**	**250/XXX**
Multi-step pressure reduction	Kvs values [m^3/h] - linear characteristic									
1	1.6 - 8.0	2.5 - 20	2.5 - 32	6.3 - 50	8 - 80	10 - 125	12.5 - 360 [7]	12.5 - 360 [7]	25 - 500	40 - 630
2	1.25 - 8.0	2.0 - 20	2.5 - 32	5.0 - 40	8 - 80	10 - 100	12.5 - 250	12.5 - 250	25 - 500	40 - 500
Multi-step pressure reduction	Kvs values [m^3/h] - equal-percentage characteristic									
1	2.0 - 6.3	6.3 - 20	6.3 - 25	6.3 - 32	16 - 50	16 - 63	25 - 125	25 - 125	32 - 250	50 - 320
2	1.6 - 4.0	5.0 - 16	5.0 - 20	5.0 - 25	16 - 40	16 - 50	25 - 80	25 - 80	32 - 160	50 - 160

Table is valid only for perforated and shaped plugs

Notes:

[1] material 1.0619 DN 80 - 250 - max. PN 320
material 1.4581 DN 50 - 250 - max. PN 320

[2] with lower temperature requirement contact the manufacturer

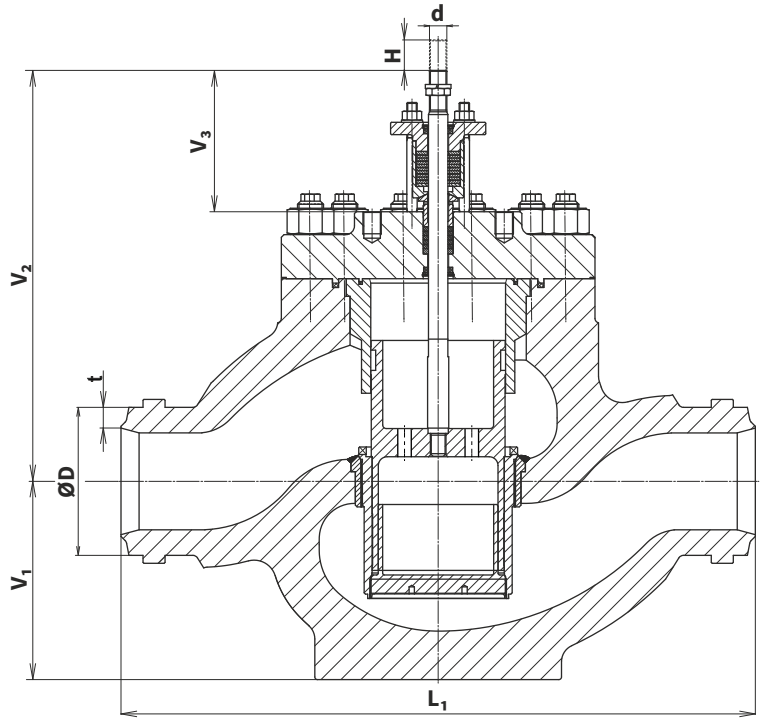
[3] material of weld - STELLIT 6

[4] demand of valve with labyrinth throttling system is necessary to consult with the manufacturer

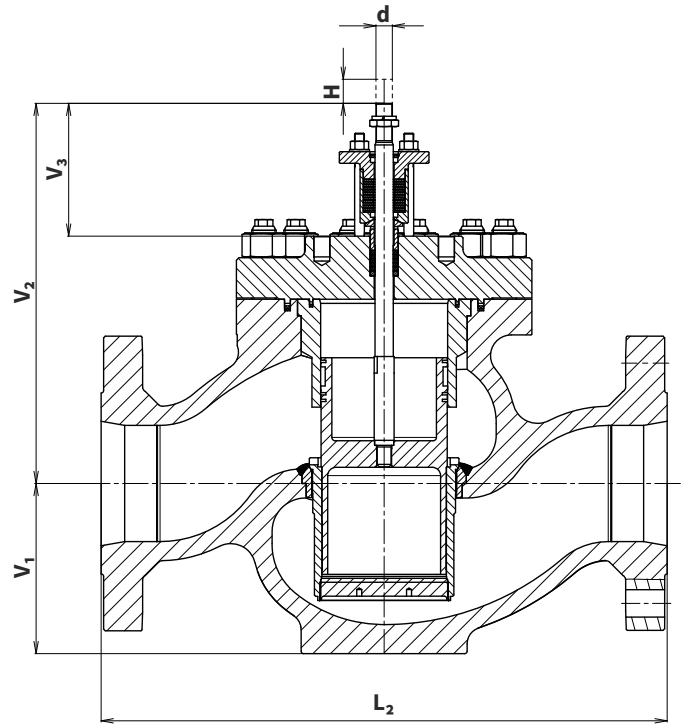
[6] in case of reduced size seat the Kvs range is the same as with DN25

[7] only for PN 160 and 250; PN 320 and 400 : Kvs_{max} = 250 m^3/hod

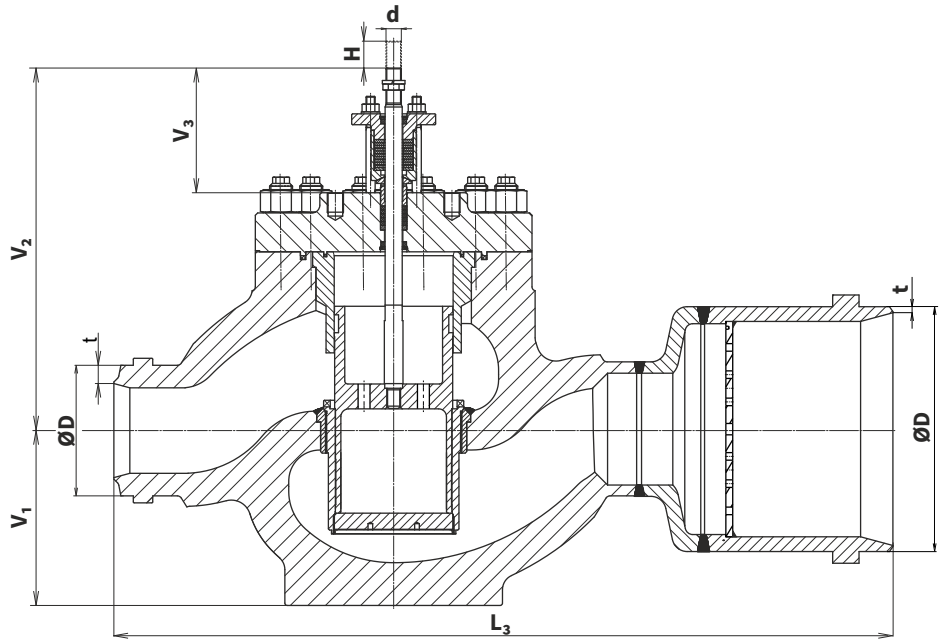
RV 701 with weld ends



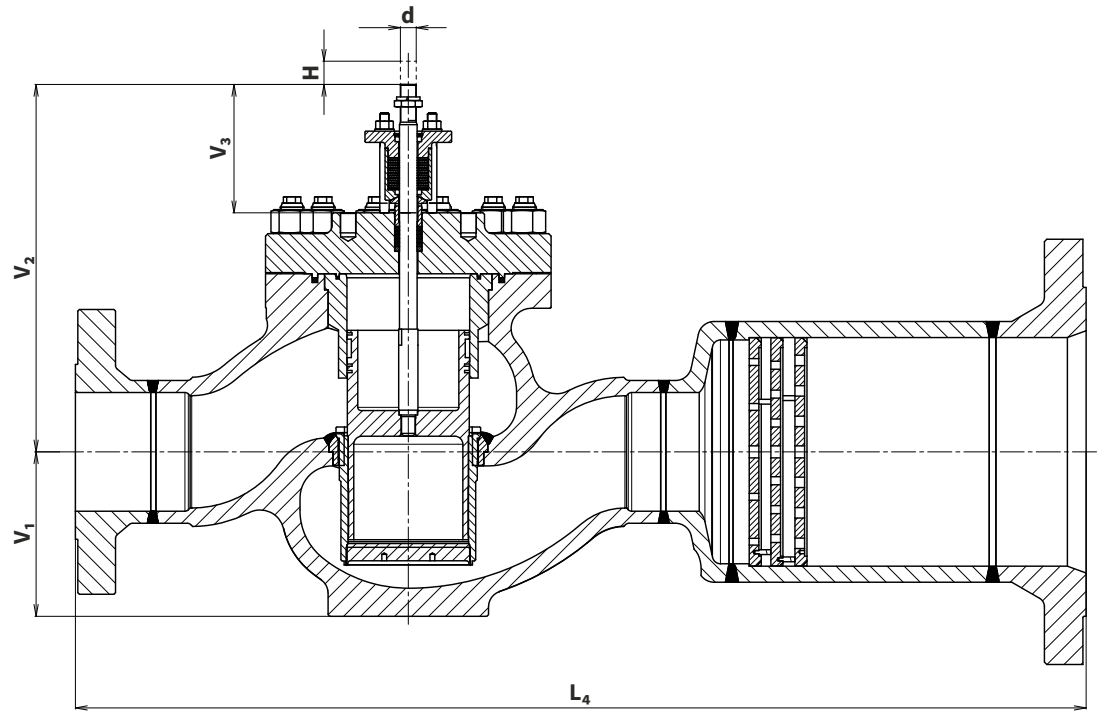
RV 701 with flanges



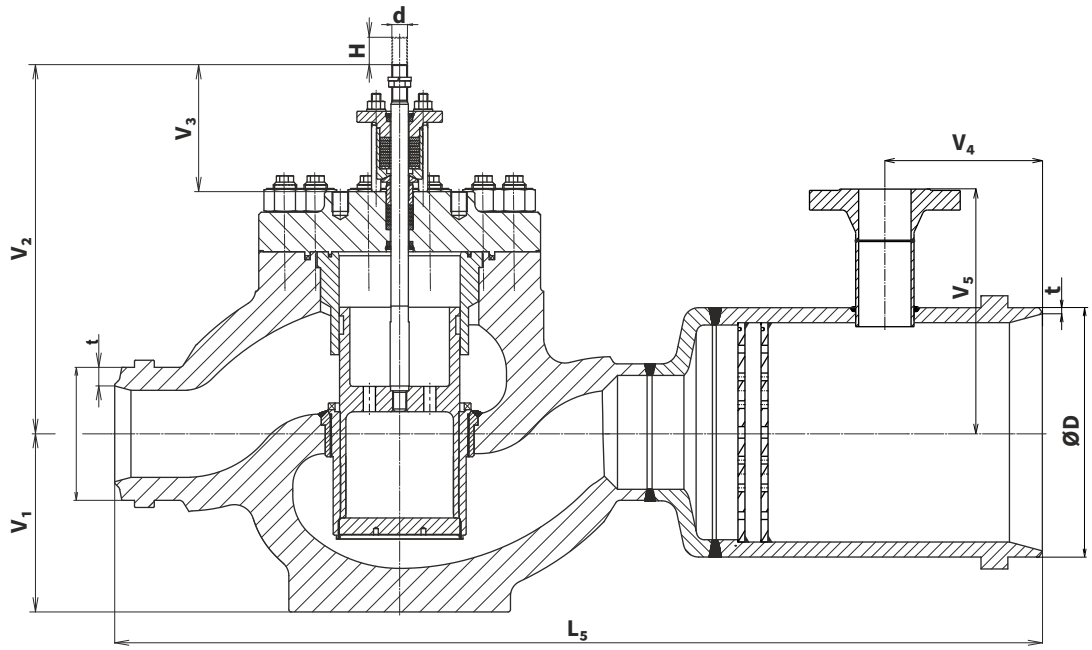
RV 702 with weld ends



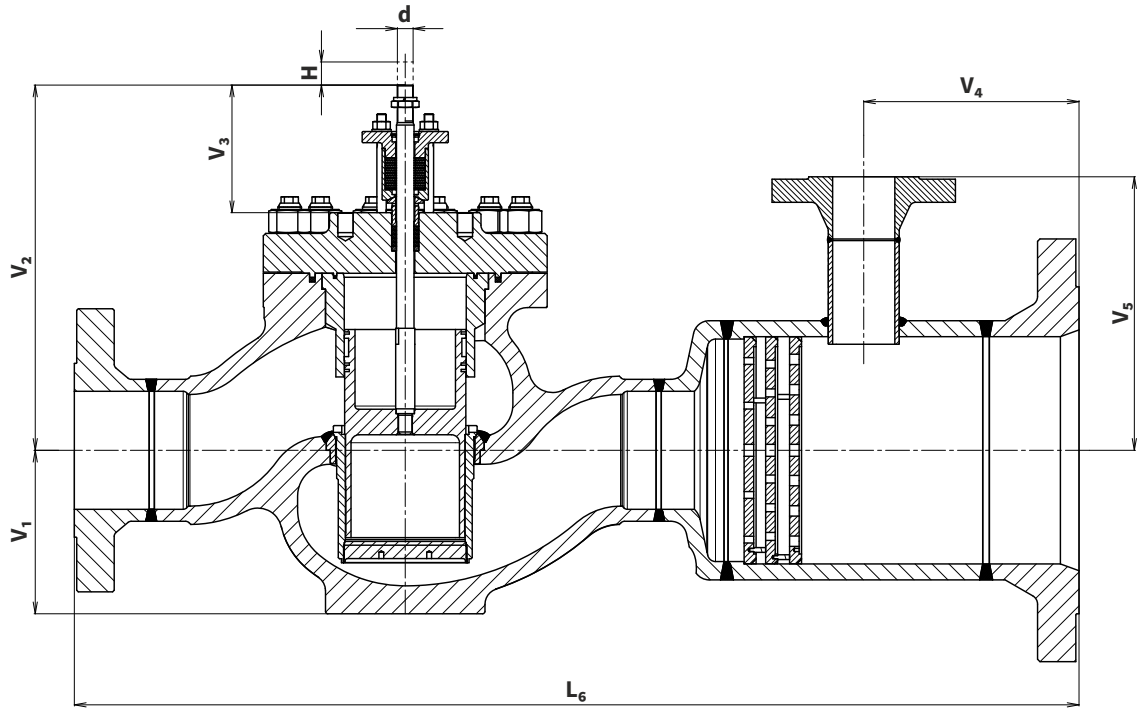
RV 702 with flanges



RS 702 with weld ends



RS 702 with flanges



Dimensions and weights for valves of series 700 (Ex)

DN	PN 16 - 160 V_1 [mm]	V_2 [mm]	V_3 [mm]	H [mm]	d [mm]	m (RV 701 weld ends) [kg]	m (RV 701 flanges) [kg]
25	72	280	160	16	M16x1,5	21	28
40	97	309		25		36	47
50	100	316		25		42	60
65	101	325		25		54	79
80	130	354		40		74	93
100	145	400		40	M20x1,5	110	144
125	205	458		63		245	311
150	205	458		63		245	311
200	254	582	210	80	M24x1,5	632	758

DN	PN 250 - 400 V_1 [mm]	V_2 [mm]	V_3 [mm]	H [mm]	d [mm]	m (RV 701 weld ends) [kg]	m (RV 701 flanges) [kg]
25	70	280	160	16	M16x1,5	28	33
40	103	313		25		56	
50	110	320		25		64	78
65	130	331		25		94	
80	145	360		40		110	142
100	170	404		40	M20x1,5	197	298
125	225	466		63		380	
150	225	466		63		383	
200	290	600	210	80	M24x1,5	908	
250	345	675		100		1515	

data missing in the table on demand by manufacturer

Face to face dimensions

▪ PN 16 - 160

Configuration with weld ends										
Standard	**PN acc. to standard**		**DN**							
			25	**40**	**50**	**65**	**80**	**100**	**125 | 150**	**200**
ČSN EN 12982 (2011) (series 75)	160	**L_1 [mm]**	279	330	375	375	460	530	768	832
(series 2)	63/100/160		230	-	300	340	380	-	-	-
ANSI/ISA-75.08.05 (2016)	160		279	330	375	375	460	530	768	832
LDM RV 501 / RV 701	16 - 160		270	300	390	450	480	580	720	820

Configuration with flanges										
Standard	**PN acc. to standard**		**DN**							
			25	**40**	**50**	**65**	**80**	**100**	**125 | 150**	**200**
EN 558 (2017) [1] (series 105)	160	**L_2 [mm]**	292	333	375	410	441	511	714	914
ANSI/ISA-75.08.05(2002) [1]	160		292	333	375	410	441	511	714	914
LDM RV 501 / RV 701 [1]	16 - 160		260	300	350	420	450	520	680	914

Nominal size **DN 125** is supplied in the same FTF dimensions as DN 150

[1] Flanges in accordance with ČSN EN 1092-1 (2018)

▪ PN 250 - 400 [2]

Configuration with weld ends												
Typ	**PN**		**DN**									
			25	**40** [3]	**50**	**65** [3]	**80**	**100**	**125**	**150**	**200**	**250**
RV 701	250 - 400	**L_1 [mm]**	270	384	390	508	480	580	720	720	820	990
Typ	**PN**		**DN**									
			25/40	**40/80**	**50/100**	**65/125**	**80/150**	**100/200**	**125/250**	**150/300**	**200/...**	**250/500**
RV 702	250 - 400	**L_3 [mm]**	360		635			880	996	1015		

[2] Only selected combinations of input and output nominal size DN are given in the table

[3] FTF dimensions in accordance with ČSN EN 12 982 (2011) (series 56)

Configuration with flanges											
Typ	**PN**		**DN**								
			25	**40**	**50**	**65**	**80**	**100**	**125**	**150**	**200**	**250**
RV 701	250 - 400	**L_2 [mm]**	390	480	500	610	680	750	970	1020	1210	1430
Typ	**PN**											
RV 702 RS 702	250 - 400	**L_4, L_6 [mm]**										

missing values and dimensions on demand

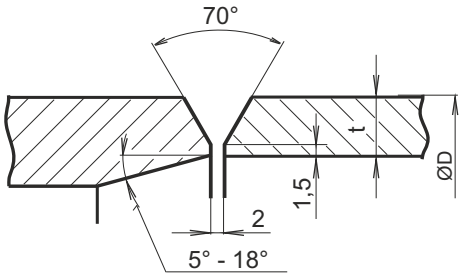
Dimensions of weld ends

- **according to ČSN 13 1075**

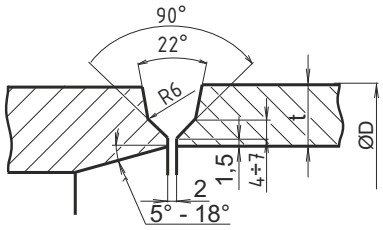
DN	PN							
	16 - 40 t [mm]	63 t [mm]	100 t [mm]	160 t [mm]	250 t [mm]	320 [2] t [mm]	400 [2] t [mm]	16-400 D [mm]
25	2.6	2.6	2.9	4	5	6	7.1	33.7
40	2.6	2.9	3.6	5	7	6.8	11	48.3
50	2.9	3.2	4.5	6.3	8	10	14.2	60.3
65	3.2	3.6	5	7	10	13	17.5	76.1
80	3.6	4	5.6	8	12.5	14.2	19	88.9
100	4	5	7	10	14	16	20	114.3
125	4.5	5.6	8	12.5	18	20	23	139.7
150	5	7	10	14	20	23	26	168.3
200	6.3	8	12.5	18	25	28	32	219,1
250	7	10	16	22	32	35	38	273
300	8	12.5	18	25	44	50	---	323.9
350	9	12.5	20	28	---	---	---	355.6
400	11	14	20	32	---	---	---	406.4
500	14	18	25	---	---	---	---	508
600[1]	18	23	---	---	---	---	---	610
700[1]	23	---	---	---	---	---	---	721
800[1]	26	---	---	---	---	---	---	825
900[1]	30	---	---	---	---	---	---	927
1000[1]	33	---	---	---	---	---	---	1029

[1] DN 600 -1000 dimensions of weld ends specified by LDM
[2] PN 320, 400 - dimensions of weld ends specified by LDM

t ≤ 12



t ≥ 12



- **according to ČSN EN 12627 (2018)**
- **according to customer demands**

Dimensions of flanges

- **according to ČSN EN 1092-1 (2018)**

Valve complete specification No. for orders RV 701 (Ex)

		XX	XXX	X X X	X X X X	X X	XXX	/	XXX	-	XXX	XX
1. Valve	Control valve	**RV**										
2. Series	Control valve, straight-through		**701**									
3. Type of actuator	Electric actuator			**E**								
	Pneumatic actuator			**P**								
	Electric actuator MTR [2]			**E P D**								
	Electric actuator Modact MTN Control [2]			**E Y A**								
	Electric actuator Modact MTP Control [2]			**E Y A**								
	Electric actuator Modact MTNED [2], MTPED [2]			**E Y A**								
	Electric actuator Modact MTN [2], MTP [2]			**E Y B**								
	Electric actuator ST 2 [2], STR 2 [2], STR 2PA [2]			**E P M**								
	Electric actuator Auma SA 07.6			**E A E**								
	Electric actuator Auma SA Ex 07.6			**E A F**								
	Electric actuator Auma SAR 07.6			**E A G**								
	Electric actuator Auma SAR Ex 07.6			**E A H**								
	Electric actuator Auma SA 10.2			**E A I**								
	Electric actuator Auma SA Ex 10.2			**E A L**								
	Electric actuator Auma SAR 10.2			**E A J**								
	Electric actuator Auma SAR Ex 10.2			**E A K**								
	Electric actuator Schiebel AB5			**E Z E**								
	Electric actuator Schiebel exAB5			**E Z F**								
	Electric actuator Schiebel rAB5			**E Z G**								
	Electric actuator Schiebel exrAB5			**E Z H**								
	Pneumatic actuator Flowserve PO 700 [1]			**P F G**								
	Pneumatic actuator Flowserve PO 1502 [1]			**P F D**								
4. Connection	Flange with raised face - Type B1				**1**							
	Flange with recess - Type F				**2**							
	Flange with raised face - Type B2				**3**							
	Butt-weld ends				**4**							
5. Body material *(operating temperature range in parentheses)*	Cast steel 1.0619 ... (-10 to 400 °C)				**1**							
	Stainless steel 1.4931 ... (-10 to 600 °C)				**5**							
	Alloy steel 1.7379 ... (-10 to 575 °C)				**6**							
	Alloy steel 1.7357 ... (-10 to 550 °C)				**7**							
	Stainless steel 1.4581 ... (-10 to 500 °C)				**8**							
	Other material after agreement				**9**							
6. Type of throttling system	Pressure unbalanced (perforated plug)					**1**						
	Pressure unbalanced (shaped plug)					**2**						
	Pressure unbalanced (labyrinth)					**3**						
	Pressure balanced - graphite gasket (perforated plug)					**5**						
	Pressure balanced - metal ring seal (labyrinth)					**7**						
	Pressure balanced - metal ring seal (perforated plug)					**8**						
7. No. of steps of pressure reduction	One-step throttling system					**1**						
	Two-step throttling system					**2**						
	Three-step throttling system					**3**						
	Four-step throttling system					**4**						
8. Flow characteristic	Linear - Leakage class III.						**L**					
	Linear - Leakage class IV.						**N**					
	Linear - Leakage class V.						**D**					
	Equal-percentage - Leakage class III.						**R**					
	Equal-percentage - Leakage class IV.						**E**					
	Equal-percentage - Leakage class V.						**Q**					
9. No. of orifice plates	Without orifice plate						**0**					
10. Nominal pressure PN	016, 025, 040, 063, 100, 160, 250, 320, 400								**XXX**			
11. Operating temp. °C	Acc. to process medium									**XXX**		
12. Nominal size DN	025 - 250										**XXX**	
13. Environmental versions	Normal											
	Explosion-proof											**Ex**
	Seismic-proof											**SP**
	Seismic-proof and explosion-proof											**SEx**

[1] Pneumatic actuators only up to DN 150
Larger DN after an agreement with manufacturer

[2] Application only up to DN 150
Other DN after an agreement with manufacturer

Other actuators on request

Ordering example: Two-way control valve DN 50, PN 160, with electric actuator Modact MTN Control, body material: cast steel, weld ends, pressure balanced with graphite gasket, two-step pressure reduction, linear flow characteristic is specified as follows: **RV701 EYA 4152 L0 160/400-050**

Valve complete specification No. for ordering valves RV 702 (Ex) and RS 702 (Ex)

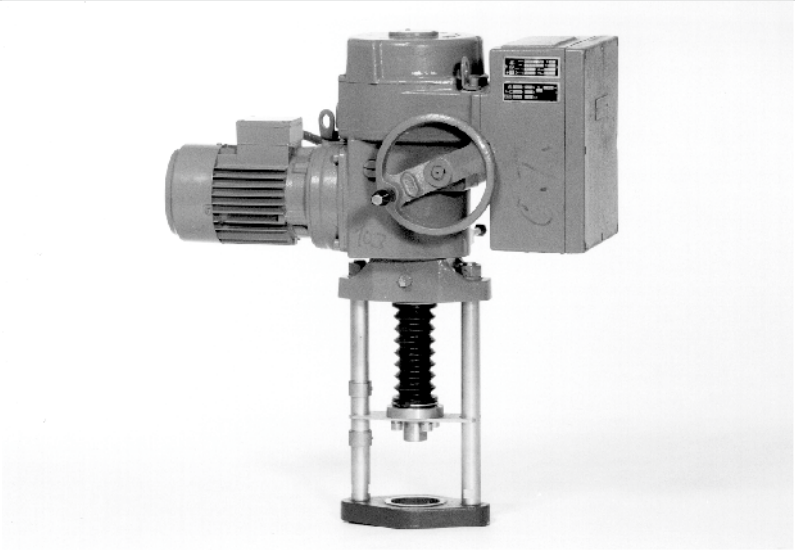
		XX	XXX	XXX	XXXX	XX	XXX	/	XXX	-	XXX	XX
1. Valve	Control valve	**RV**										
	Steam-conditioning station	**RS**										
2. Series	Control valve with extended outlet		**702**									
3. Type of actuating	Electric actuator			**E**								
	Pneumatic actuator			**P**								
[1] Pneumatic actuators only up to DN 150	Electric actuator MTR [2]			**EPD**								
Other DN on request	Electric actuator Modact MTN Control [2]			**EYA**								
	Electric actuator Modact MTP Control [2]			**EYA**								
	Electric actuator Modact MTNED [2], MTPED [2]			**EYA**								
	Electric actuator Modact MTN [2], MTP [2]			**EYB**								
[2] Application only up to DN 150	Electric actuator ST 2 [2], STR 2 [2], STR 2PA [2]			**EPM**								
Other DN on request	Electric actuator Auma SA 07.6			**EAE**								
	Electric actuator Auma SA Ex 07.6			**EAF**								
	Electric actuator Auma SAR 07.6			**EAG**								
Other actuators on request	Electric actuator Auma SAR Ex 07.6			**EAH**								
	Electric actuator Auma SA 10.2			**EAI**								
	Electric actuator Auma SA Ex 10.2			**EAL**								
	Electric actuator Auma SAR 10.2			**EAJ**								
	Electric actuator Auma SAR Ex 10.2			**EAK**								
	Electric actuator Schiebel AB5			**EZE**								
	Electric actuator Schiebel exAB5			**EZF**								
	Electric actuator Schiebel rAB5			**EZG**								
	Electric actuator Schiebel exrAB5			**EZH**								
	Pneumatic actuator Flowserve PO 700 [1]			**PFG**								
	Pneumatic actuator Flowserve PO 1502 [1]			**PFD**								
4. Connection	Flange with raised face - Type B1				**1**							
	Flange with recess - Type F				**2**							
	Flange with raised face - Type B2				**3**							
	Butt-weld ends				**4**							
5. Body material	Cast steel 1.0619 ... (-10 to 400 °C)				**1**							
	Stainless steel 1.4931 ... (-10 to 600 °C)				**5**							
(operating temperature range in parentheses)	Alloy steel 1.7379 ... (-10 to 575 °C)				**6**							
	Alloy steel 1.7357 ... (-10 to 550 °C)				**7**							
	Stainless steel 1.4581 ... (-10 to 500 °C)				**8**							
	Other material after agreement				**9**							
6. Type of throttling system	Pressure unbalanced (perforated plug)					**1**						
	Pressure unbalanced (shaped plug)					**2**						
	Pressure unbalanced (labyrinth)					**3**						
	Pressure balanced - graphite gasket (perforated plug)					**5**						
	Pressure balanced - metal ring seal (labyrinth)					**7**						
	Pressure balanced - metal ring seal (perforated plug)					**8**						
7. No. of steps of pressure reduction	One-step throttling system					**1**						
	Two-step throttling system					**2**						
	Three-step throttling system					**3**						
	Four-step throttling system - labyrinth					**4**						
8. Flow characteristic	Linear - Leakage class III.						**L**					
	Linear - Leakage class IV.						**N**					
	Linear - Leakage class V.						**D**					
	Equal-percentage - Leakage class III.						**R**					
	Equal-percentage - Leakage class IV.						**E**					
	Equal-percentage - Leakage class V.						**Q**					
9. No. of orifice plates *)	Max. 3						**X**					
10. Nominal pressure PN *)	016, 025, 040, 063, 100, 160, 250, 320, 400							**XXX**				
11. Operating temp. °C	Acc. to process medium								**XXX**			
12. Nominal size DN *)	025 - 250										**XXX**	
13. Environmental versions	Normal											
	Explosion-proof											**Ex**
	Seismic-proof											**SP**
	Seismic-proof andexplosion-proof											**SEx**

***)** PN a DN of output, number of pressure reduction steps and number of orifices is chosen after an agreement with manufacturer

Ordering example: Two-way control valve DN 50/100, PN 160/100, with electric actuator Modact MTN Control, body material: cast steel, weld ends, pressure balanced with graphite gasket, two-step pressure reduction, linear flow characteristic is specified as follows: **RV 702 EYA 4152 L1 160x100/400-050x100**

Maximal permissible pressures[MPa] acc. to EN 12 516-1+A1 (2019)

Material	PN	Teplota [°C]											
		100	150	200	250	300	350	400	450	500	550	575	600
Cast steel 1.0619	16	1.5	1.42	1.34	1.23	1.11	1.0	0.96	---	---	---	---	---
	25	2.34	2.22	2.1	1.92	1.74	1.62	1.5	---	---	---	---	---
	40	3.74	3.55	3.36	3.07	2.78	2.59	2.4	---	---	---	---	---
	63	5.9	5.59	5.29	4.84	4.38	4.08	3.78	---	---	---	---	---
	100	9.36	8.88	8.4	7.68	6.96	6.48	6.0	---	---	---	---	---
	160	14.98	14.2	13.45	12.29	11.14	10.37	9.6	---	---	---	---	---
	250	23.41	22.21	21.01	19.21	17.41	16.2	15.0	---	---	---	---	---
	320	29.97	28.43	26.89	24.59	22.28	20.75	19.21	---	---	---	---	---
	400	37.45	35.53	33.61	30.73	27.85	25.93	24.01	---	---	---	---	---
Alloy steel 1.7357	16	1.6	1.6	1.6	1.6	1.6	1.49	1.37	1.26	1.00	0.42	---	---
	25	2.5	2.5	2.5	2.5	2.5	2.33	2.13	1.97	1.56	0.65	---	---
	40	4.0	4.0	4.0	4.0	4.0	3.73	3.41	3.15	2.5	1.05	---	---
	63	6.3	6.3	6.3	6.3	6.3	5.87	5.38	4.97	3.93	1.65	---	---
	100	10.0	10.0	10.0	10.0	10.0	9.31	8.53	7.89	6.24	2.61	---	---
	160	16.0	16.0	16.0	16.0	16.0	14.91	13.66	12.62	9.99	4.18	---	---
	250	25.0	25.0	25.0	25.0	25.0	23.29	21.34	19.72	15.6	6.54	---	---
	320	32.0	32.0	32.0	32.0	32.0	29.81	27.32	25.25	19.98	8.37	---	---
	400	40.0	40.0	40.0	40.0	40.0	37.26	34.14	31.56	24.97	10.46	---	---
Alloy steel 1.7379 1.7380 1.7383	16	1.6	1.6	1.6	1.6	1.6	1.5	1.37	1.26	1.05	0.56	0.44	---
	25	2.5	2.5	2.5	2.5	2.5	2.35	2.13	1.97	1.65	0.88	0.68	---
	40	4.0	4.0	4.0	4.0	4.0	3.75	3.41	3.15	2.63	1.41	1.09	---
	63	6.3	6.3	6.3	6.3	6.3	5.91	5.38	4.97	4.15	2.22	1.71	---
	100	10.0	10.0	10.0	10.0	10.0	9.38	8.53	7.89	6.58	3.52	2.72	---
	160	16.0	16.0	16.0	16.0	16.0	15.02	13.66	12.62	10.53	5.63	4.35	---
	250	25.0	25.0	25.0	25.0	25.0	23.47	21.34	19.72	16.45	8.80	6.8	---
	320	32.0	32.0	32.0	32.0	32.0	30.04	27.32	25.25	21.07	11.27	8.71	---
	400	40.0	40.0	40.0	40.0	40.0	37.55	34.14	31.56	26.33	14.09	10.88	---
Stainless steel 1.4931	16	1.6	1.6	1.6	1.6	1.6	1.5	1.37	1.26	1.05	0.93	0.71	0.42
	25	2.5	2.5	2.5	2.5	2.5	2.35	2.13	1.97	1.65	1.46	1.11	0.65
	40	4.0	4.0	4.0	4.0	4.0	3.75	3.41	3.15	2.63	2.33	1.78	1.05
	63	6.3	6.3	6.3	6.3	6.3	5.91	5.38	4.97	4.15	3.67	2.81	1.65
	100	10.0	10.0	10.0	10.0	10.0	9.38	8.53	7.89	6.58	5.82	4.45	2.61
	160	16.0	16.0	16.0	16.0	16.0	15.02	13.66	12.62	10.53	9.32	7.13	4.18
	250	25.0	25.0	25.0	25.0	25.0	23.47	21.34	19.72	16.45	14.56	11.14	6.54
	320	32.0	32.0	32.0	32.0	32.0	30.04	27.32	25.25	21.07	18.64	14.26	8.37
	400	40.0	40.0	40.0	40.0	40.0	37.55	34.14	31.56	26.33	23.29	17.82	10.46
Stainless steel 1.4581	16	1.6	1.55	1.43	1.37	1.3	1.23	1.17	1.12	1.05	0.93	0.86	0.62
	25	2.5	2.42	2.24	2.14	2.03	1.93	1.82	1.75	1.65	1.46	1.35	0.97
	40	4.0	3.86	3.58	3.42	3.25	3.08	2.91	2.8	2.63	2.33	2.15	1.56
	63	6.3	6.09	5.64	5.38	5.12	4.85	4.59	4.41	4.15	3.67	3.39	2.45
	100	10.0	9.66	8.96	8.54	8.12	7.7	72.8	7.0	6.58	5.82	5.39	3.89
	160	16.0	15.46	14.34	13.67	13.0	12.33	11.65	11.21	10.53	9.32	8.62	6.23
	250	25.0	24.16	22.41	21.36	20.31	19.26	18.21	17.51	16.45	14.56	13.47	6.74
	320	32.0	30.93	28.68	37.34	26.0	24.65	23.31	22.41	21.07	18.64	17.25	12.46
	400	40.0	38.65	35.85	34.17	32.49	30.81	29.13	28.01	26.33	23.29	21.55	15.58



Electric actuators

ZPA Pečky

Modact MTN
Modact MTP
Modact MTN Control
Modact MTP Control

type 52 442

Technical data

Type	Modact MTN Control	Modact MTN	Modact MTP Control	Modact MTP
Marking in valve spec. No.	**EYA**	**EYB**	**EYA**	**EYB**
Voltage	3 ~ 230 V AC / 400 V AC			
Frequency	50 Hz			
Power consumption	see specification table			
Control	3 - position; with regulator ZP2.RE5			
Nominal force	15 to 25 kN			
Stroke	10 to 100 mm			
Enclosure	IP 55		IP 67	
Process medium max. temp.	acc. to used valve			
Ambient temperatrure range	-25 to 70°C		-25 to 60°C	
Ambient humidity range	10 - 100 % with condensation			
Weight	33 to 45 kg			

→ **Note:** Specifications and technical data are for information only.
Detailed technical informations can be found in manufacturer's data sheet or on the webside **www.zpa-pecky.cz**

Specification of actuators Modact MTN, MTP a Modact MTN, MTP Control

Basic equipment

2 x power switches MO, MZ
2 x limit switches PO, PZ
2 x limit and signalisation switches SO, SZ
1 x position transmitter - resist 2x100 Ω or current
1 x heating element
2 x limit and signalisation switches SO, SZ

Basic technical parameters

Type	Switching-off thrust [kN]	Max. load thrust [kN]	Operating speed [mm.min^{-1}]	Stroke [mm]	Power [W]	Electromotor RPM 1/min	Electromotor In (400V) [A]	Electromotor Iz/In	Weight [kg]	Specification No. Basic	Specification No. Additional [2]
MTN 15 MTP 15	11,5 - 15	17	50	10 - 100	180	850	0.74	2.3	33	52 442	XX0XXM
			80		180	850	0.74	2.3			XX1XXM
			125		250	1350	0.77	3.0			XX3XXM
			36		120	645	0.51	2.2			XX2XXM
			27		120	645	0.51	2.2			XXAXXM
MTN 25 MTP 25	15 - 25	32,5	50	10 - 100	180	835	0.74	2.3			XX4XXM
			80		180	835	0.74	2.3			XX5XXM
			125		250	1350	0.77	3.0			XX6XXM
			36		120	645	0.51	2.2			XX7XXM
			27		120	645	0.51	2.2			XX8XXM

Execution, electric connection

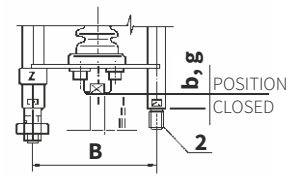
With terminal board	6XXXXM
With connector HARTING	7XXXXM
Execution Modact MTN; Modact MTN Control ... enclosure IP55	XXXXNM
Execution Modact MTP; Modact MTP Control ... enclosure IP67	XXXXPM

		Current transmitter CPT w/o source	Current trasmitter DCPT with source
Position transmitter	current 4 - 20 mA	XXX0XM	XXXRXM
	current 4 - 20 mA with BMO	XXX1XM	XXXSXM
	resistance 2x 100 Ω	XXX2XM	
	resistance 2x 100 Ω with BMO	XXX3XM	
	without transmitter, with BMO	XXXPXM	
	without transmitter, without BMO	XXXZXM	

Additional electric equipment [1]			Resist. transmitter 2x 100 Ω	Current transmitter CPT w/o source	Current transmitter DCPT with source
Control (with built-in contactor combination)	w/o BMO	without brake BAM and positioner	XXX4XM	XXXAXM	XXXKXM
		with brake BAM and without positioner	XXX5XM	XXXBXM	XXXLXM
		with brake BAM and with positioner		XXXCX5M [3]	
	with BMO	without brake BAM and positioner	XXX7XM	XXXDXM	XXXMXM
		with brake BAM and without positioner	XXX8XM	XXXEXM	XXXNXM
		with brake BAM and with positioner		XXXFX5M [3]	

Notes:
[1] When execution with flasher is requested, specify this requirment in writing: **Execution with flasher**
[2] Design without force locking after reversation have at the end position capital letter M (for example: 52442.6211NM)
[3] For actuators **MODACT MTN Control** with position controllers **ZP2.RE5** specify number 5 on place 11 (e.g.: 52442.6M5FN5M)

Connection dimensions - details of additional specification No. 52 442



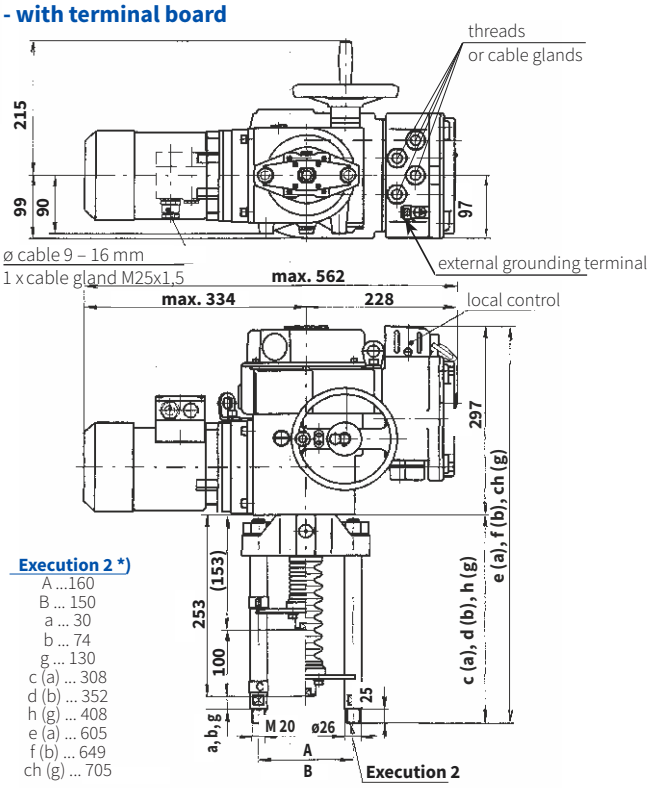
Columns pitch	B	150
Position "closed"	b	74
	g	130
Coupling thread	I	M 20x1,5
	II	M 16x1,5

Execution	Specification No. basic	Specification No. additional	For valves
Bg2II	52 442	XYXXXM	RV, RS 70x DN 25 - 80
Bg2I	52 442	XRXXXM	RV, RS 70x DN 100 - 150 *)

*) split coupling

Dimensions of actuator Modact MTN, MTP

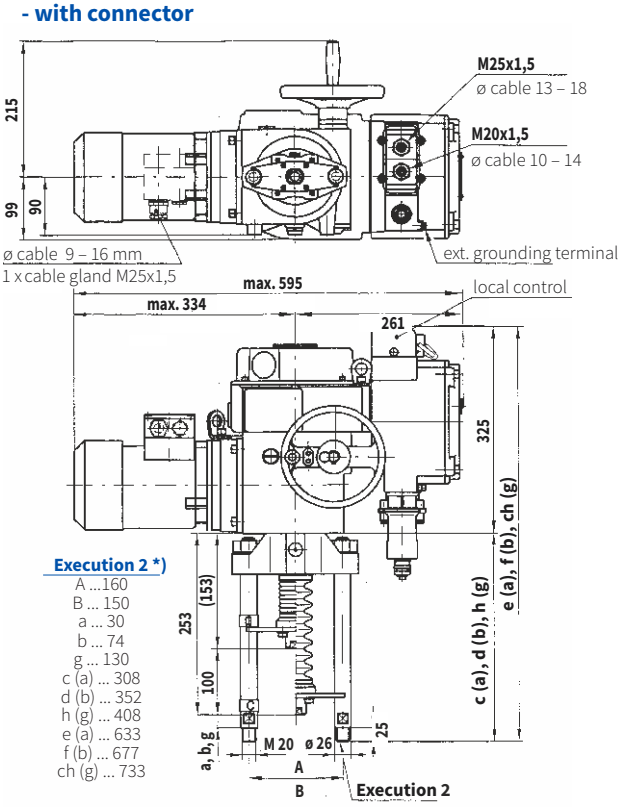
- with terminal board



Execution 2 *)
A ...160
B ... 150
a ... 30
b ... 74
g ... 130
c (a) ... 308
d (b) ... 352
h (g) ... 408
e (a) ... 605
f (b) ... 649
ch (g) ... 705

Dimensions of actuator MTN, MTP and Modact MTN, MTP Control

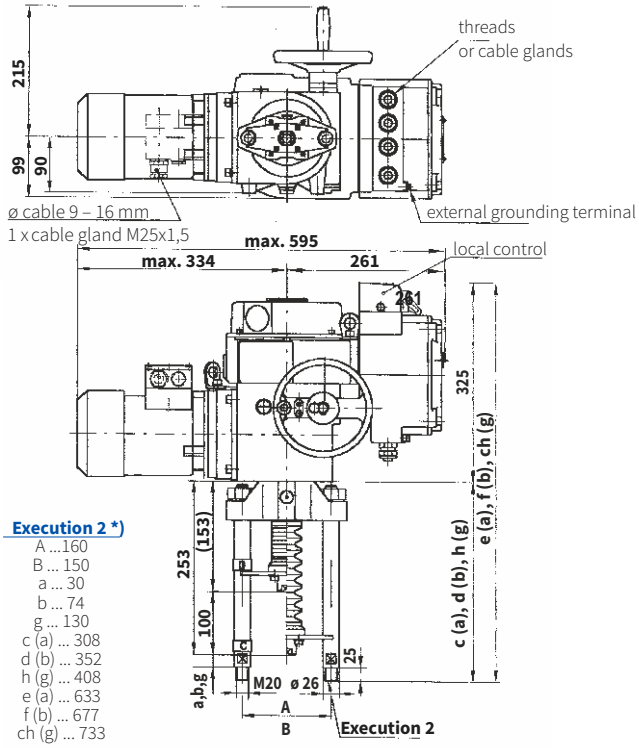
- with connector



Execution 2 *)
A ...160
B ... 150
a ... 30
b ... 74
g ... 130
c (a) ... 308
d (b) ... 352
h (g) ... 408
e (a) ... 633
f (b) ... 677
ch (g) ... 733

Dimensions of actuator Modact MTN, MTP Control

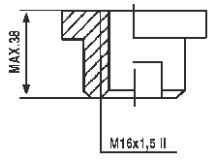
- with terminal board

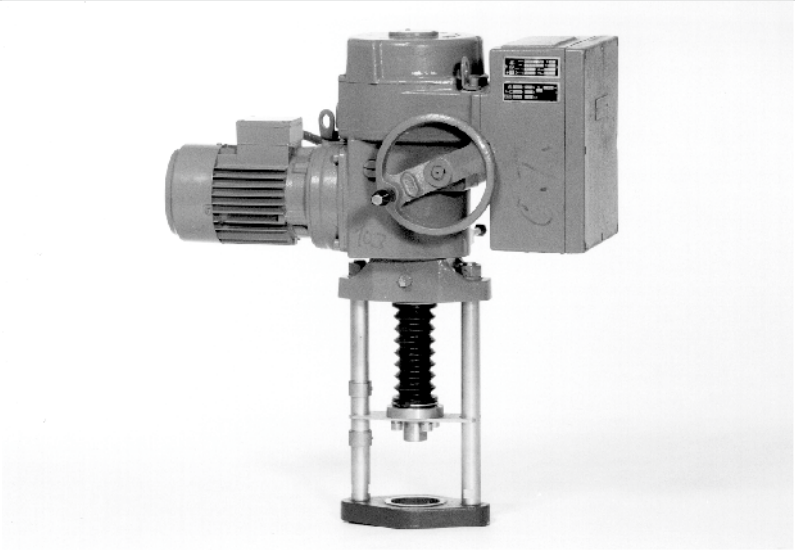


Execution 2 *)
A ...160
B ... 150
a ... 30
b ... 74
g ... 130
c (a) ... 308
d (b) ... 352
h (g) ... 408
e (a) ... 633
f (b) ... 677
ch (g) ... 733

***) values in parentheses are valid for DN 100, 150**

Detail of coupling (DN 25 - 80)





Electric actuators

ZPA Pečky

Modact MTNED
Modact MTPED

type 52 442

Technical data

Type	Modact MTNED	Modact MTPED
Marking in valve spec. No.	EYA	
Execution	The actuator equiped with electronic system DMS2 or DMS2 ED	
Voltage	3 ~ 230 / 400 V AC	
Frequency	50 Hz	
Power consumption	see specification table	
Control	3-position, or continuous	
Nominal force	15 to 25 kN	
Stroke	10 to 100 mm	
Enclosure	IP 55	IP 67
Process medium max. temp.	acc. to used valve	
Ambient temperatrure range	-25 to 70 °C	-25 to 60 °C
Ambient humidity range	10 - 100 % with condensation	
Weight	33 kg	

→ **Note:** Specifications and technical data are for information only.
Detailed technical informations can be found in producer's data sheet or on the webside **www.zpa-pecky.cz**

Electric equipment

System DMS2 ED
The simpler system DMS2 ED substitutes electromechanical parts and/or provides for controlling the electric actuator by input analog signal as in the version Control.

Basic equipment	
Control unit	It also contains the sensor of position of the output shaft, 4 push-buttons and 3 signal LEDs for setting and checking the actuator.
Torque-limit unit	
Source unit	Contacts of seven relays (MO, MZ, PO, PZ, SO, SZ, Ready) are connected to the terminal board; state of each relay is signalized by LED. The unit enables the heating resistor to be connected and controlled by the thermostat. 4 push-buttons and 3 LEDs for setting and checking the actuator.
Optional equipment	
Feedback signal	4-20 mA
Analog regulator	
Position Indicator	LED display
Relay control or contactless control unit	
Electronic brake	

System DMS2

The system DMS2 enables the electric actuator to be used for two-position and three-position regulation or to be connected to the industrial bus bar Profibus.

Basic equipment	
Control unit	It also includes a sensor of the output shaft position 2 signal LEDs
Torgue-limit	
Source unit	- 2 relays for electric motor control - Relay Ready with change-over contact connected to the terminal board - Signalling relays 1 - 4 with one pole of the switching contact connected to the terminal board Second poles of the switching contacts of relays 1 - 4 are interconnected and brought out to the terminal COM Heating resistor switched by a thermostat is connected to the unit The unit controls power switches of the electric motor (contactors or contactless switching) An electronic brake can be connected to the unit
Unit of display	Two-row display, 2 x 12 alpha-numeric characters
Unit of push-buttons	Push-buttons *"open", "close", "stop",* Selector switch *"Local, Remote, Stop"*
Recommended equipment	
Electronic brake	After switching-off the motor reduces running down and increases precision of the control
Optional equipment	
Unit of two- and three-position control	Control of the electric actuator by shifting to position Open and Close or by analog signal 0(4) - 20 mA
Unit of connection Profibus	Control of the electric actuator by industrial bus bar Profibus

Note: The electronic control DMS2 checks, within its function, sequence and fall-out of phases of supply voltage

Specification of actuators Modact MTNED and MTPED

Basic technical parameters

Type	Switching-off thrust range [kN]	Max. load thrust [kN]	Operating speed [mm.min^{-1}]	Stroke [mm]	Power [W]	Electromotor RPM [1/min]	Electromotor In (400V) [A]	Electromotor Iz/In	Weight (Aluminium) [kg]	Specification no. Basic	Specification no. Additional
MTNED 25 MTPED 25	15 - 25	32,5	50	10 - 100	180	875	0.85	2	33	**52 442**	**XX4XXED**
			80		180	875	0.85	2			**XX5XXED**
			125		250	1365	0.80	3			**XX6XXED**
			36		120	625	0.82	2			**XX7XXED**
			27		120	625	0.82	2			**XX8XXED**
Execution Modact MTNED ... enclosure IP55											**XXXXNED**
Execution Modact MTPED ... enclosure IP67											**XXXXPED**

Execution, electric connection, electric equipment

	Terminal board	Connector	Terminal board, brake	Connector, brake
Electronic DMS2 ED	**EXXXXED**	**FXXXXED**	**HXXXXED**	**KXXXXED**
Electronic DMS2 ED, contactless switches	**AXXXXED**	**BXXXXED**	**CXXXXED**	**DXXXXED**
Electronic DMS2, Profibus electronics	**PXX0XED**	**TXX0XED**	**UXX0XED**	**YXX0XED**
Electronic DMS2, Profibus electronics, contactless switches	**IXX0XED**	**JXX0XED**	**LXX0XED**	**MXX0XED**
Electronic DMS2, 2-position or 3-position control *)	**RXX0XED**	**VXX0XED**	**WXX0XED**	**1XX0XED**
Electronic DMS2, 2-position or 3-position control *), contactless switches	**NXX0XED**	**SXX0XED**	**2XX0XED**	**ZXX0XED**

*) Manufacturer of actuator presets 2- or 3- position control during production.
If not specified in the order, the actuator is set to 3-position control by default (control signal 4-20 mA).

Electronic equipment of DMS2 ED

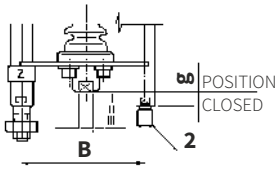
Equipment DMS2 ED		Character at the 9th place (52442 xxxXxED)																							
		0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**	**H**	**J**	**K**	**L**	**M**	**N**	**V**	**W**
Local control			x		x		x		x		x		x		x		x		x		x		x		x
Display				x	x			x	x			x	x			x	x			x	x			x	x
Relay						x	x	x	x					x	x	x	x					x	x	x	x
Analog module	Transmitter									x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Regulator																	x	x	x	x	x	x	x	x

Note: In the case of using an electronic DMS2 is the character at the 9. position 0

Ambient temperature	Type of actuator				Marking
	MTNED		MTPED		
(°C)	DMS2 ED	DMS2	DMS2 ED	DMS2	
-25 to +70	YES	YES	NO	NO	---
-40 to +60	YES	YES	YES	YES	F1
-25 to +60	---	---	YES	YES	---

Note: YES - supplied version | NE - not supplied
Relative humidity from 10 to 100% with condensation.

Connection dimensions - details of additional specification No. 52 442

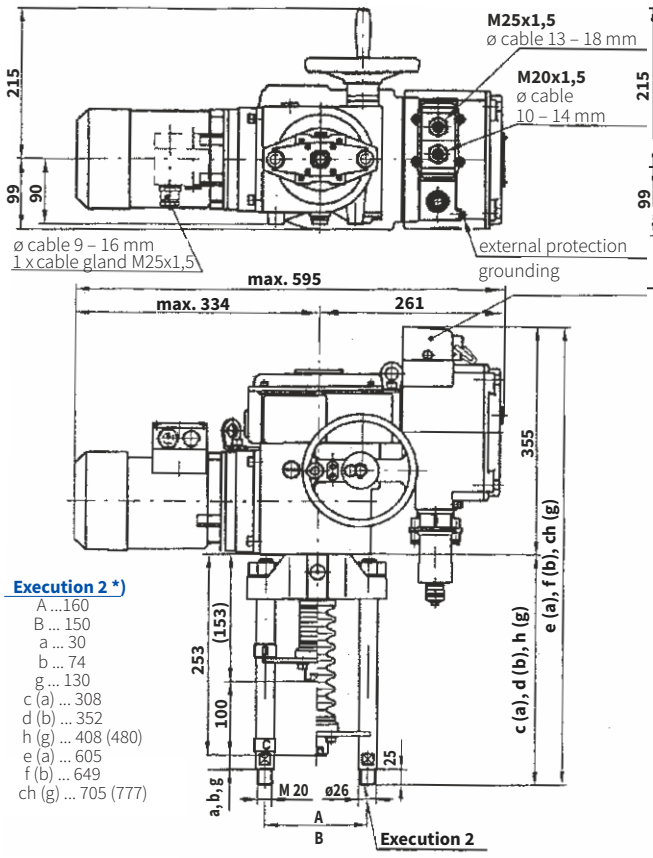


Columns pitch	B	150
Position „closed”	g	130
Coupling thread	I	M 20x1,5
	II	M 16x1,5

Execution	Specification No. basic	Specification No. additional	For valves
Bg2II	52 442	XYXXXED	RV, RS 70x DN 25 - 80
Bg2I	52 442	XRXXXED	RV, RS 70x DN 100 - 150

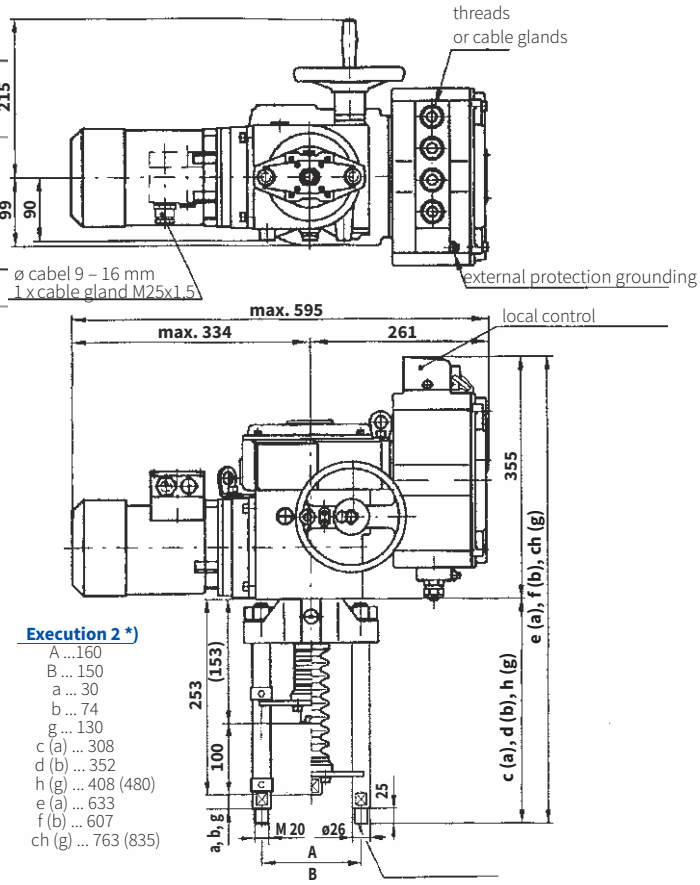
Dimensions of actuator Modact MTNED/MTPED

- with connector



Execution 2 *)
A ...160
B ... 150
a ... 30
b ... 74
g ... 130
c (a) ... 308
d (b) ... 352
h (g) ... 408 (480)
e (a) ... 605
f (b) ... 649
ch (g) ... 705 (777)

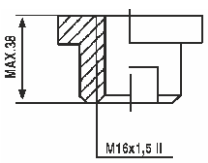
- with terminal board

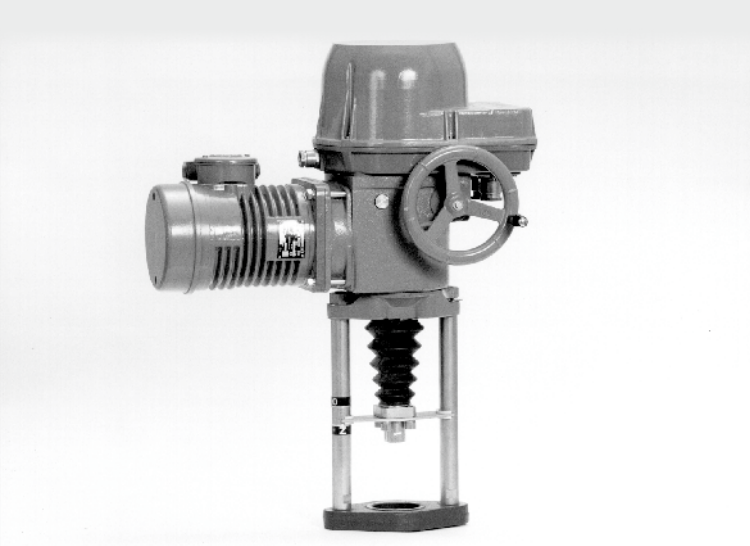


Execution 2 *)
A ...160
B ... 150
a ... 30
b ... 74
g ... 130
c (a) ... 308
d (b) ... 352
h (g) ... 408 (480)
e (a) ... 633
f (b) ... 607
ch (g) ... 763 (835)

***) values in parentheses are valid for DN 100, 150**

Detail of coupling (DN 25 - 80)





Electric actuator

Regada

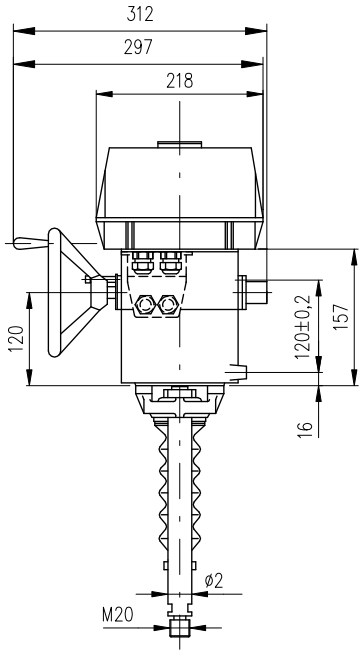
MTR

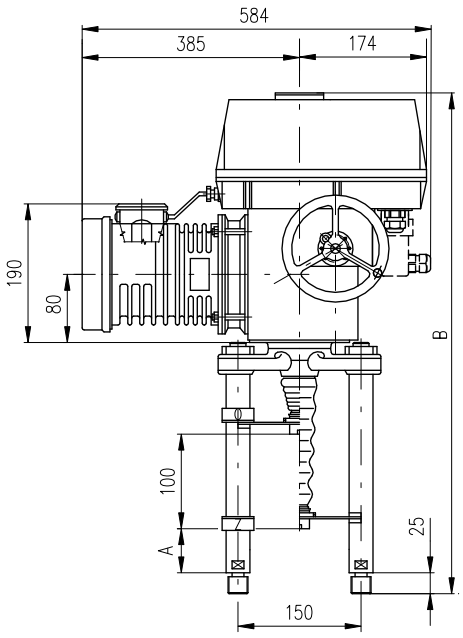
Technical data

Type	**MTR**
Marking in valve spec. No.	**EPD**
Voltage	230 V AC
Frequency	50 Hz
Power consumption	16 or 25 W
Control	3-position (or continuous with regulator NOTREP)
Nominal force	16, 25 kN
Stroke	12,5 to 100 mm
Enclosure	IP 55 / IP 67
Process medium max. temp.	acc. to used valve
Ambient temperature range	-25 to 55 °C
Ambient humidity range	90 %
Weight	27 to 31 kg

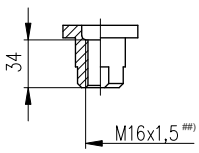
→ **Note:** Specifications and technical data are for information only.
Detailed technical informations can be found in producer's data sheet or on the webside **www.regada.sk**

Dimensions of actuator





Detail of coupling (DN 25 - 80)



columns	with ball screw	
version	A	B
P-1045b/H	130	702
for RV, RS 70x DN 25 - 80		
P-1045b/H	130	800
for RV, RS 70x DN 100, 150 (split coupling)		

Specification of actuators MTR

Electric actuator linear MTR									52 420.	X	-	X	X	X	X	X	/	X	X
Temperatures mild and hot (-25 °C to +50 °C)									Enclosure IP 55	0									
									Enclosure IP 67	1									
Electronic connection				**Voltage**															
To terminal board				230 V AC								9							
To connector												8							
Screw version		**Switching-off thrust** [1) 2)]	**Rated operating speed**	**Operating speed**	**Electromotor**														
					Power	**Speed**	**Current**												
ball screw	16 000/32-G	10.0 - 16.0 kN	32 mm/min.	38 - 32 mm/min.	16 W	1 150	0.31 A						E						
	25 000/32-G	10.0 - 25.0 kN	32 mm/min.	38 - 32 mm/min.	25 W	1 250	0.41 A						G						
	16 000/50-G	10.0 - 16.0 kN	50 mm/min.	60 - 50 mm/min.									H						
Control board version				**Operation stroke**															
Electromechanical control board - without local control				16 mm										B					
				25 mm										C					
				40 mm										E					
				63 mm										F					
Position transmitter			**Connection**	**Output**															
Without transmitter			—	—											A				
Resistive		Single	—	1x100 Ω											B				
		Double		2x100 Ω											C				
		Single		1x2000 Ω											F				
		Double		2x2000 Ω											P				
Current output		W/o source	2-wire	4 - 20 mA											S				
		With source													Q				
		W/o source		0 - 20 mA											T				
		With source													U				
		W/o source	3-wire	4 - 20 mA											V				
		With source													W				
		W/o source		0 - 5 mA											Y				
		With source													Z				
Capacitive CPT		W/o source	2-wire	4 - 20 mA											I				
		With source													J				
Mechanical connection		**Connection height**	**Columns pitch**	**Thread of stem** [3)]	**Dimensional drawing**														
Collumns		130	150	M20x1.5 M16x1.5	P-1045a/H											C			
Additional equipment																			
	Without additional equipment; adjusted max. switching-off thrust from range																	0	1
A	2 additional position switches S5,S6																	0	2
B	Setting the stroke position to the desired value																	0	3

Possible combinations and execution: A+B = 07

Notes:

1) State the switching-off thrust in your order by words. If not stated it will be adjusted to the maximum value of the corresponding range. Cannot be modified by customer.
2) The maximum load thrust equals the max. switching-off thrust multiplied by:
   - 0.8 for duty cycle S2-10 min., or S4-25%, 6 - 90 cycles per hour
   - 0.6 for duty cycle S4-25%, 90 - 1200 cycles per hour
3) The thread of the coupling is to be specified in the order by words.

Electric actuators

Regada

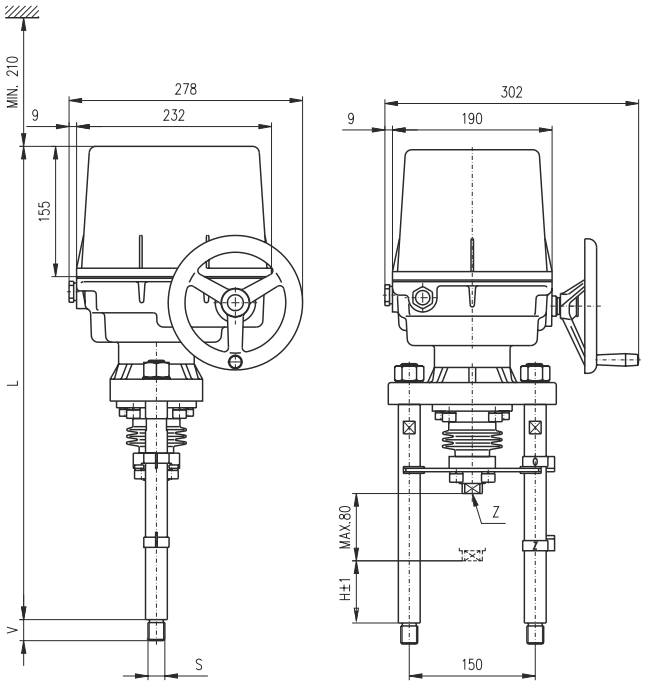
ST 2
STR 2
STR 2PA

Technical data

Type	**ST 2, STR 2, STR 2PA**
Marking in valve spec. No.	**EPM**
Voltage	1 ~ 230 V AC, 3 ~ 400 V AC
Frequency	50 Hz
Power consumption	see specification table
Control	3-position, with regulator 0 - 10 V; (0) 4 - 20 mA
Nominal force	16 and 25 kN
Stroke	16, 25, 40 and 64 mm
Enclosure	IP 65 / IP 67 (ST 2, STR 2), IP 67 (STR2PA)
Process medium max. temp.	acc. to used valve
Ambient temperatrure range	-25 to 55 °C
Ambient humidity range	5 - 100% with condensation
Weight	17 to 21,5 kg

→ **Note:** Specifications and technical data are for information only. Detailed technical informations can be found in producer's data sheet or on the webside **www.regada.sk**

Dimensions of actuator



Execution	H	L	S	V	Z
P-1247/D	126	622	M20	25	M16 x 1,5
for RV, RS 70x DN 25 - 80					
P-1247/D	130	760	M20	25	M20 x 1,5
for RV, RS 70x DN 100, 150 (split coupling)					

Specification of actuator ST 2 and STR 2

Electric servomotor ST 2, STR 2						492.	X	-	X	X	X	X	X	/	X	X
Climatic resistance	Standard	IP 65	Without regulator (ST 2)				0									
		IP 67					1									
	Tropical	IP 67					6									
	Standard	IP 65	With regulator (STR 2)			Resistance feedback	A									
		IP 65				Current feedback	C									
	Tropical	IP 67				Resistance feedback	G									
		IP 67				Current feedback	J									

Electric connection			Voltage		
	To terminal board			24 V DC	A
				230 V AC	0
				3x400 V AC [1]	2
				24 V AC	3
				3x400 V AC	9
	To connector			24 V DC	C
				230 V AC	5
				24 V AC	8
				3x400 V AC [1]	6
				3x400 V AC	7

230 V AC			3x400 V AC					
Nominal force [N]	Motor power	Nominal force [N]	Motor power	Operating speed				
25 000	20 W	---	90 W	10 mm/min	A			
16 000					J			
25 000	60 W	25 000		20 mm/min	B			
20 000		20 000			K			
16 000		16 000			L			
25 000		25 000		40 mm/min	C			
20 000		20 000			Q			
16 000		16 000			R			
---		25 000		60 mm/min [5]	D			
16 000		---			V			
---		16 000			W			
16 000		---		80 mm/min [5]	E			
---		16 000			Y			
		16 000		100 mm/min	Z			

Stroke	Max. (without transmitter) [2] ... 80 mm	With transmitter			
			16 mm	D	
			25 mm	F	
			40 mm	H	
			64 mm	J	

Remote position transmitter			Connection		Output		
Without transmitter						A	
Resistance	Single				1 x 100 Ω	B	
					1 x 2000 Ω	F	
	Double				2 x 100 Ω	K	
					2 x 2000 Ω	P	
Electronic - current	without its source		2-wire		4 - 20 mA	S	
			3-wire		0 - 20 mA	T	
					4 - 20 mA	V	
	with its source [3]		2-wire		4 - 20 mA	Q	
			3-wire		0 - 20 mA	U	
					4 - 20 mA	W	
Capacitive	w/o its source		2-wire		4 - 20 mA	I	
	with its source [3]					J	

Mechanic connection [4]	DN 25 - 80, coupling M16x1,5 | DN 100 - 150, coupling M20x1,5	M		
Accessories	**A**	2 auxiliary switches	0	0
	E	Heating resistor with thermal switch	0	2
	C	Local control	0	7
	D	Heating resistor	1	5
	G	Setting up the tripping torgue on demanded position	2	5

Permissible combinations of accessories and codes:
A+E=04, A+C=08, C+E=10, A+C+E=12, A+D=16, C+D=17, A+C+D=18, A+G=26, E+G=27, C+G=28,
D+G=29, A+E+G=30, A+C+G=31, A+D+G=32, C+E+G=33, C+D+G=34, A+D+E+G=35, A+C+D+G=36

1) version with reverse contactors; **2)** version without transmitter - it is possible to set up stroke 0 - 80 mm; **3)** position transmitter with its source for voltage 24 V DC only after agreement with the manufacturer; **4)** Thread of the coupling is to be stated by word in the order; **5)** applies for version without regulator

Specification of actuator STR 2PA

Electric servomotor STR 2PA			432.	X	-	X	X	X	X	X	/	X	X
Climatic resistance	IP 67			1									
Electric connection to terminal board	To terminal board	**Voltage**	230 V AC			0							
			3 ~ 400 V AC			2							

Nominal force [N] 230 V AC	Nominal force [N] 3 ~ 400 V AC	Operating speed	Code
25 000	---	10 mm/min	A
16 000	---	10 mm/min	J
25 000	25 000	20 mm/min	B
16 000	16 000	20 mm/min	L
25 000	25 000	40 mm/min	C
16 000	16 000	40 mm/min	R
---	25 000	60 mm/min	D
16 000	---	60 mm/min	V
---	16 000	60 mm/min	W
16 000	---	80 mm/min	E
---	16 000	80 mm/min	Y
---	16 000	100 mm/min	Z

	Code
Stroke: 20 - 80 mm	K

Control board	Control		Output	Code
DMS3 ED	ON - OFF controlled by voltage 230 V AC		4 - 20 mA passive	N
DMS3	ON - OFF and pulse	24 V DC	---	F
DMS3	Modulating 0/4 - 20 mA	ON - OFF and pulse 24 V DC	4 - 20 mA passive	G
DMS3	Modulating 0/2 - 10 V	ON - OFF and pulse 24 V DC	4 - 20 mA passive	H

		Code
Mechanical connection	DN 25 - 80, coupling M16x1,5 | DN 100 - 150, coupling M20x1,5	M

Accessories			Code
Accessories		Without accessories	
	A	Setting the operating stroke to the desired value	0 1
	B	Setting the switching-off force to the desired value	0 3
	D	Auxiliary relay module R3, R4, R5	0 5
	F	Local control for actuators with system DMS3 and LCD	0 7
	G	Local control for actuators with system DMS3 and ED	0 8

Electric actuators

Auma

SA (Ex) 07.6, SAR (Ex) 07.6
SA (Ex) 10.2, SAR (Ex) 10.2
SAR 14.2

Technical data

Type	SA 07.6	SA Ex 07.6	SAR 07.6	SAR Ex 07.6	SA 10.2	SA Ex 10.2	SAR 10.2	SAR Ex 10.2	SAR 14.2
Marking in valve spec. No.	**EAE**	**EAF**	**EAG**	**EAH**	**EAI**	**EAL**	**EAJ**	**EAK**	**EAM**
Voltage	1 ~ 230 V AC; 3 ~ 380 nebo 400 V AC								
Frequency	50 Hz								
Power consumption	see specification table								
Control	3-position control or with signal 4 - 20 mA								
Nominal torque	60 Nm ~ 30 kN; 30 Nm ~ 15 kN; 40 Nm ~ 20 kN					60 Nm ~ 16 kN; 80 Nm ~ 21 kN 100 Nm ~ 27 kN; 120 Nm ~ 32 kN			
Stroke	16, 25, 40, 63, 80, 100 mm								
Enclosure	IP 67								
Process medium max. temp.	acc. to used valve								
Ambient temperatrure range	-40 to 80°C	-20 to 60°C	-40 to 60°C	-20 to 60°C	-40 to 80°C	-20 to 60°C	-40 to 60°C	-20 to 60°C	-40 to 60°C
Ambient humidity range	100 %								
Weight	1-phase motor 45 kg; 3-phase motor 21 kg					1-phase motor 49 kg; 3-phase motor 25 kg			

→ **Note:** Specifications and technical data are for information only.
Detailed technical informations can be found in producer's data sheet or on the webside **www.auma.com**

Specification of actuators Auma

		SA	X	XX		XX.X
Type		**SA**				
Duty	control		**R**			
Execution	standard					
	non-explosive			**Ex**		
Actuator size	07.6					**07.6**
	10.2					**10.2**
	14.2					**14.2**

Output shaft type A (thread TR 36x6 LH, flange F10)

Output RPM	Switching-off torgue	SA (Ex) 10.2 SAR (Ex) 10.2	Motor power [kW]	SA 10.2, SA Ex 10.2, SAR 10.2, SAR Ex 10.2
4				0,06
5,6				0,06
8				0,12
11		60-120 Nm		0,12
16				0,25
22				0,25
32				0,4
45				0,4

Output shaft type A (thread TR 20x4 LH, flange F10)

Output RPM	Switching-off torgue	SA 07.6 SAR (Ex) 07.6	Motor power [kW]	SA 7.6, SA Ex 7.6, SAR 7.6, SAR Ex 7.6
4				0,03
5,6				0,03
8				0,06
11		30-60 Nm		0,06
16				0,12
22				0,12
32				0,2
45				0,2

Accessories

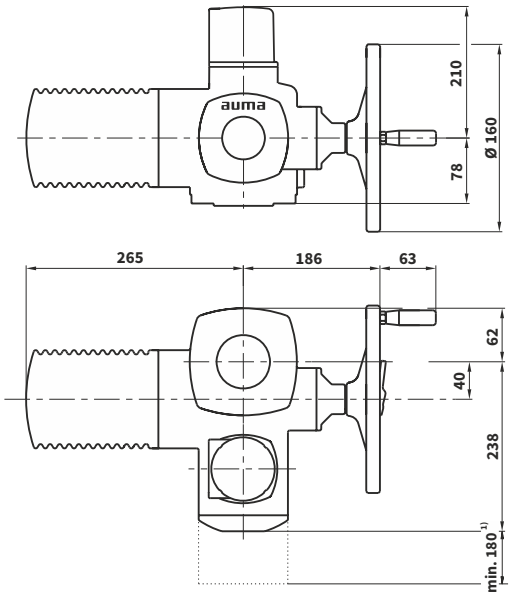
- → 2 TANDEM micro-switches
- → Gearbox for signalization of position
- → Mechanical position indicator
- → Potentiometer 1x200 Ω
- → Electronic position transmitter RWG (potentiometer included), 4 - 20 mA, 2-wire
- → Electronic position transmitter RWG (potentiometer included), 4 - 20 mA, 3/4-wire
- → Inductive position transmitter IWG, 4 - 20 mA
- → MATIC - for continuous control (specification of accessories acc. to manufacturer's catalog) : weight + 7 kg
- → AUMATIC - for continuous control (specification of accessories acc. to manufacturer's catalog) : weight + 7kg

Other accessories acc. to catalog of manufacturer of actuators.

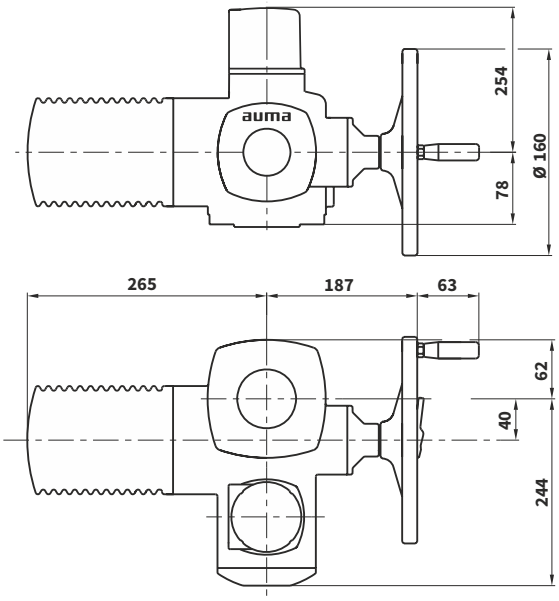
Dimensions of Auma actuators series 07.6

(only for 3-phase execution, dimension of 1-phase execution acc. to manufacturer's data sheets)

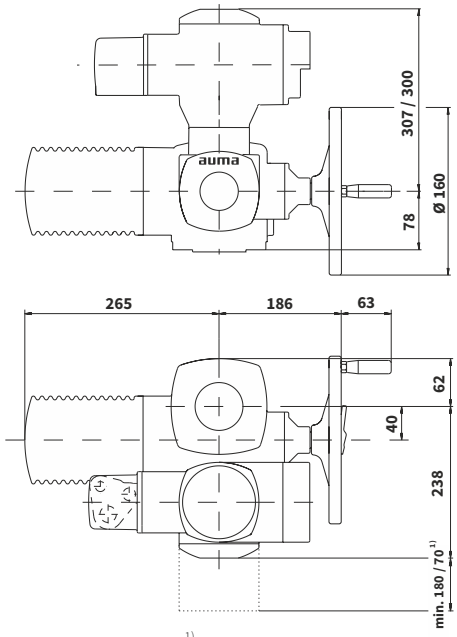
Normal version



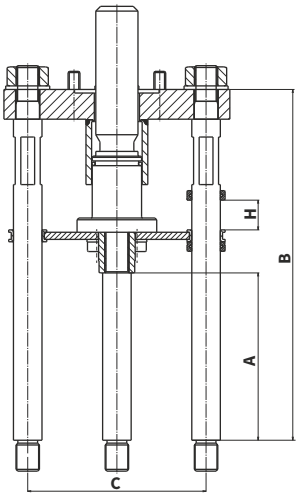
Ex version



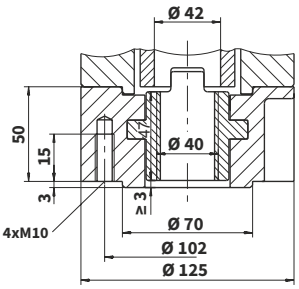
Version MATIC / AUMATIC



Connection acc. to ISO 5210
Output drive shaft A, F10, Tr36x6-LH



Output drive shaft A, F10

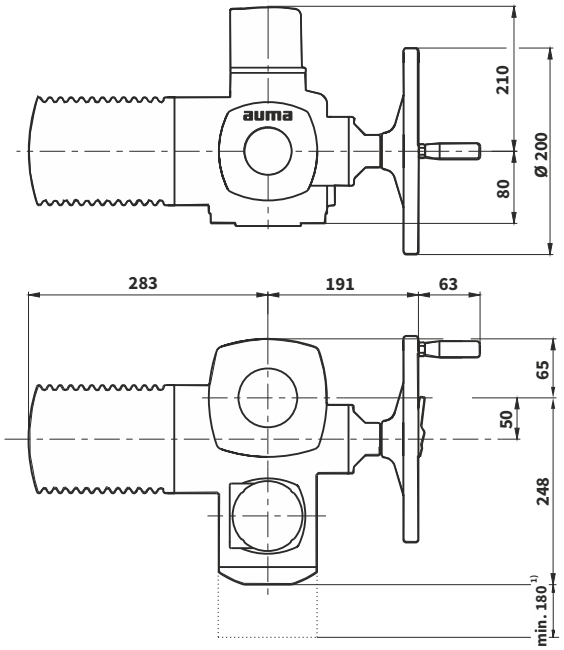


1) Space required for opening of the cover

For valves	No. of columns	A	B	H	C	Weight [kg]
RV, RS 70x DN 25	4	149	295	16	150	12
RV, RS 70x DN 40 - 65	4	141	295	25	150	12
RV, RS 70x DN 80	4	141	310	40	150	13

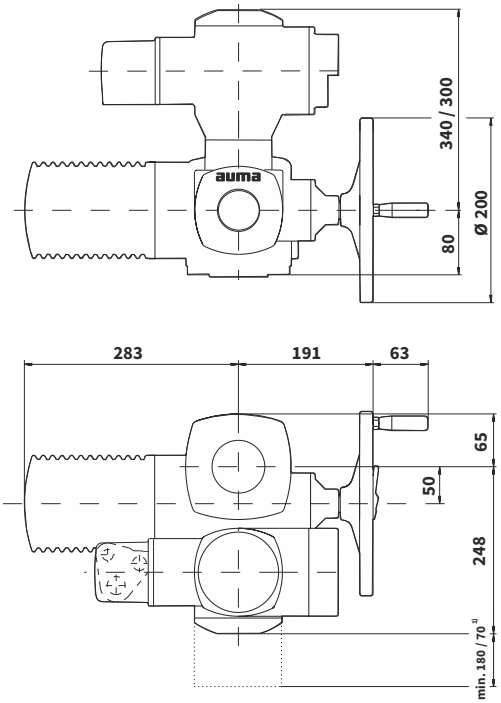
Dimensions of Auma actuators series 10.2

Normal version

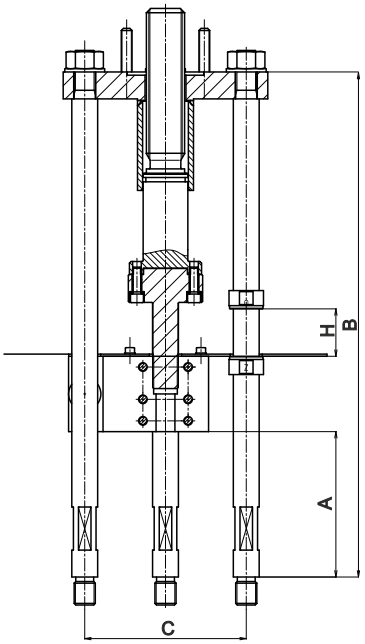


1) Space required to open the bonnet

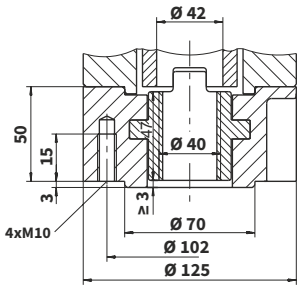
Version MATIC / AUMATIC



Connection acc. to ISO 5210
Output drive shaft A, F10, Tr36x6-LH
DN 100 - 250



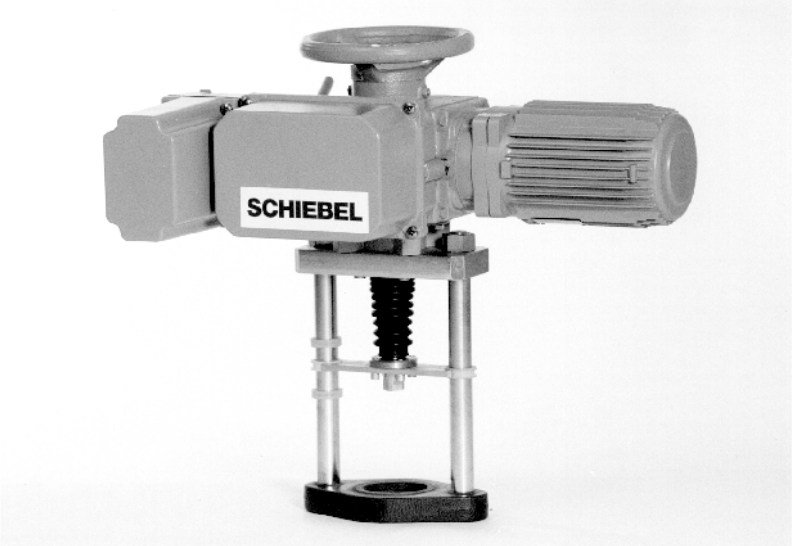
Output drive shaft A, F10



For valves	No. of columns	A	H	C	T≤400°C B	T≤400°C weight [kg]	T>400°C B	T>400°C weight [kg]
RV, RS 70x DN 100	4	135	40	150	365	18	420	20
RV, RS 70x DN 125, 150	4	135	63	150	420	19	469	21
RV, RS 70x DN 200	4	179	80	200	507	30	583	32
RV, RS 70x DN 250	4	182	100	200	530	31	603	33

Dimensions of Auma actuators series 14.2

including connection according to ISO 5210, output drive shaft A, F14 on request from manufacturer



Electric actuators

Schiebel

AB5

Technical data

Type	AB5	exAB5	rAB5	exrAB5
Marking in valve spec. No.	EZE	EZF	EZG	EZH
Voltage	400 / 230 V; 230 V	400 / 230 V	400 / 230 V; 230 V	400 / 230 V
Frequency	50 Hz			
Power consumption	see specification table			
Control	3 -position or with signal 4 - 20 mA			
Nominal force	30 Nm ~ 15 kN; 40 Nm ~ 20 kN; 60 Nm ~ 30 kN			
Stroke	acc. to stroke of the valve 16, 25, 40 mm			
Enclosure	IP 66	IP 65	IP 66	IP 65
Process medium max. temp.	acc. to used valve			
Ambient temperatrure range	-25 to 80 °C	-25 to 40 °C	-25 to 60 °C	-20 to 40 °C
Ambient humidity range	90 % (tropical version: 100 % with condensation)			
Weight	16 - 20 kg			

→ **Note:** Specifications and technical data are for information only. Detailed technical informations can be found in producer's data sheet or on the webside **www.schiebel.com**

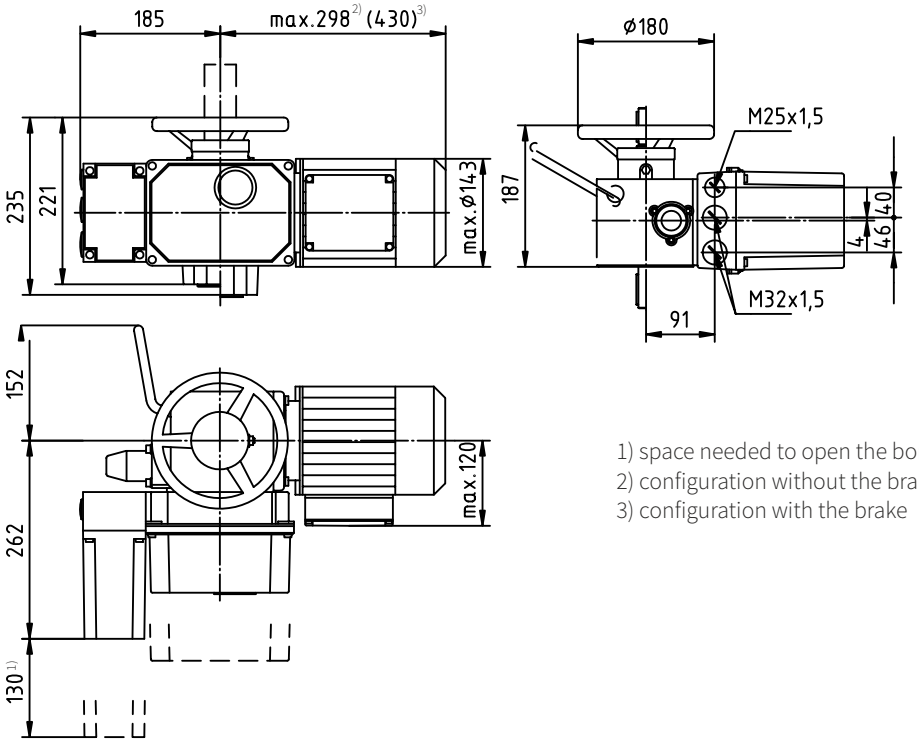
Specification of actuators

					xx	x	XXX	X	XX	+	XXXXX
Execution	non-explosive				**Ex**						
	normal										
Function	control					**r**					
	ON - OFF										
Actuator size							**AB5**				
Output shaft type A (thread TR 20x4 LH, flange F10 ... DN 25 to 80)								**A**			

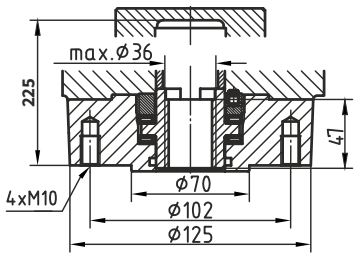
Output RPM	Torgue	AB5 exAB5	rAB5 exrAB5	Motor power [kW]	AB5 400/230V	AB5 230V	rAB5 400/230V	rAB5 230V	exAB5 400/230V	exrAB5 400/230V	XX
2,5					0,09	0,09	0,09	0,09	0,09	0,09	**2,5**
5					0,06	0,12	0,06	0,12	0,12	0,12	**5**
7,5					0,09	0,09	0,09	0,18	0,09	0,09	**7,5**
10					0,09	0,18	0,09	0,37	0,09	0,09	**10**
15					0,18	0,18	0,18	0,37	0,18	0,18	**15**
20					0,18	0,55	0,18	0,75	0,18	0,18	**20**
30					0,37	0,55	0,37	1,10	0,37	0,37	**30**
40					0,37	0,55	0,37	1,10	0,37	0,37	**40**
	Torgue	7-60 Nm	switching -off 7 - 60 Nm loading 7 - 30 Nm	**Motor power [kW]**							

Accessories	Potentiometer 1 x 1000 Ω		**F**
	Double potentiometer 2 x 1000 Ω		**FF**
	Electronic transmitter 4 - 20 mA		**ESM21**
	Position regulator ACTUMATIC R		**CMR**
	Control unit SMARTCON		**CSC**

Dimensions of actuator ...AB5

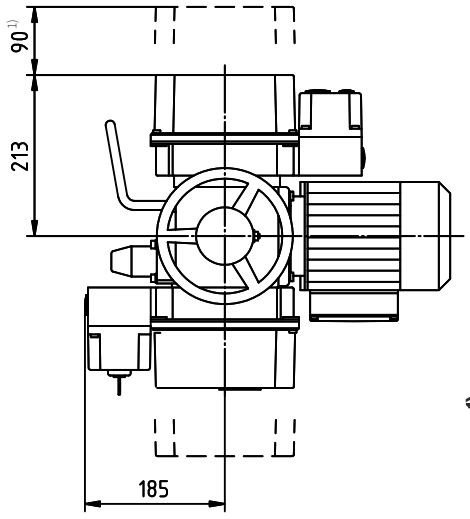


Connection acc. to ISO 5210, Output drive shaft A, F10

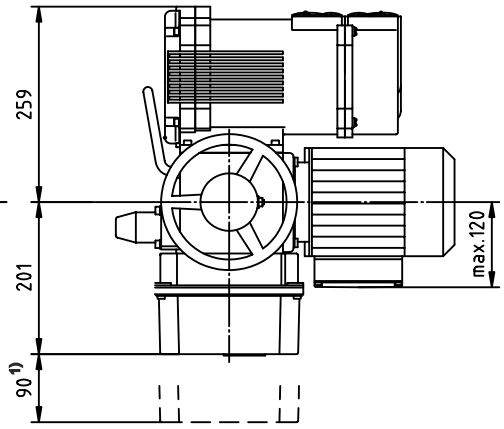


1) space needed to open the bonnet
2) configuration without the brake
3) configuration with the brake

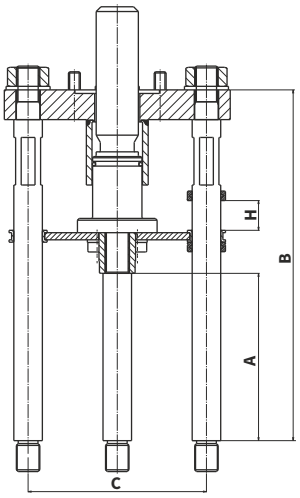
With position regulator ACTUMATIC R



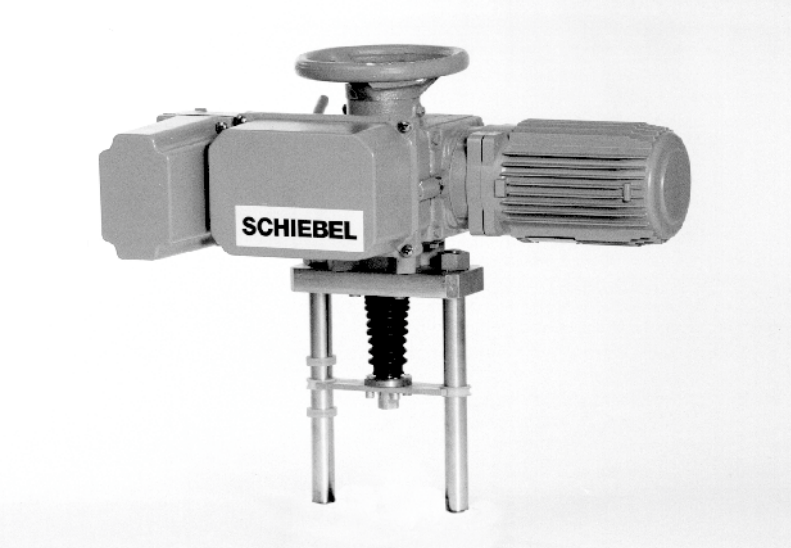
With SMARTCON control unit



Connection acc. to ISO 5210
Output drive shaft A, F10, Tr20x4-LH DN 25 - 80



For valves	No. of columns	A	B	H	C	Weight [kg]
RV, RS 70x DN 25	4	149	295	16	150	12
RV, RS 70x DN 40 - 65	4	141	295	25	150	12
RV, RS 70x DN 80	4	141	310	40	150	13



Electric actuators

Schiebel

rAB8

Technical data

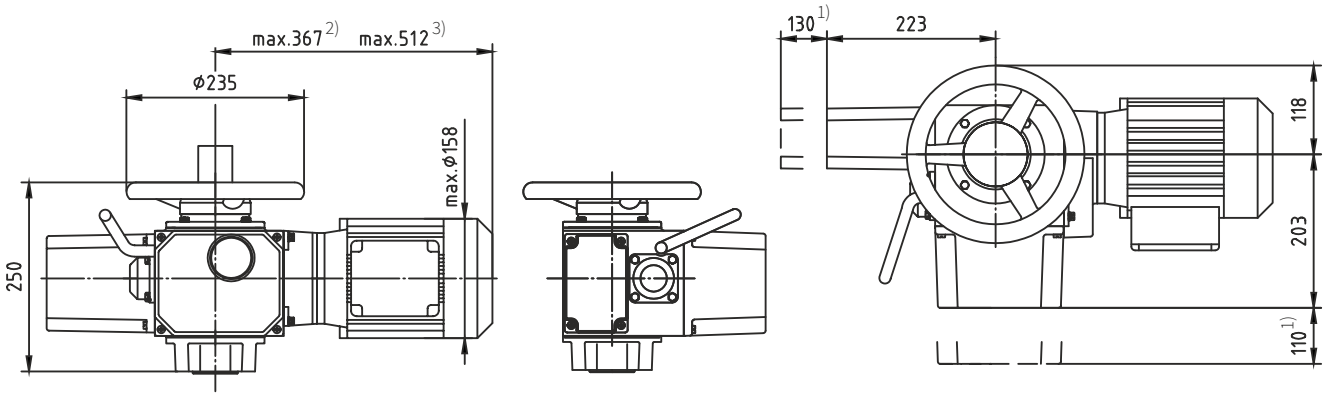
Type	**rAB8**
Marking in valve spec. No.	**EZK**
Voltage	400 / 230 V; 230 V
Frequency	50 Hz
Power consumption	see specification table
Control	3-position or with signal 4 - 20 mA
Nominal force	100 Nm ~ 27 kN; 120 Nm ~ 32 kN
Stroke	40, 63, 80, 100 mm
Enclosure	IP 66
Process medium max. temp.	acc. to used valve
Ambient temperatrure range	-25 to 60 °C
Ambient humidity range	90 % (tropical execution: 100 % with condensation)
Weight	24 - 35 kg

→ **Note:** Specifications and technical data are for information only.
Detailed technical informations can be found in producer's data sheet or on the webside **www.schiebel.com**

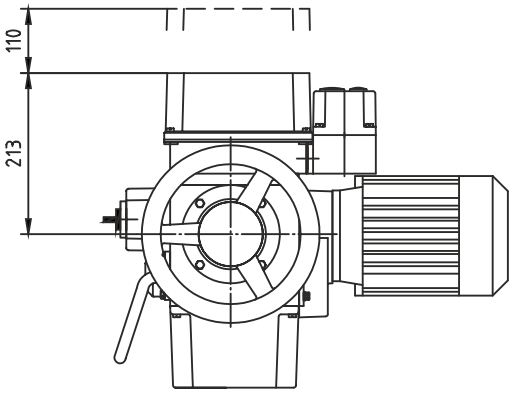
Specification of actuators

							xx	x	XXX	X	X	+	XXXXX
Execution			normal										
Function			control					**r**					
Actuator size									**AB8**				
Output shaft type A (thread TR 36x6 LH, flange F10)										**A**			
Output RPM		**Torgue**	**rAB8**	**Motor power [kW]**	**rAB8**								
					400/230V	**230V**							
	2,5		Switching-off 50 - 120 Nm		0,06	0,12					**2,5**		
	5				0,12	0,25					**5**		
	7,5				0,18	0,37					**7,5**		
	10				0,18	0,75					**10**		
	15		Modulating 30 - 80 Nm		0,37	0,75					**15**		
	20				0,37	1,10					**20**		
	30				0,75	1,10					**30**		
	40				0,75	1,10					**40**		
Accessories				Potentiometer 1 x 1000 Ω									**F**
				Double potentiometer 2 x 1000 Ω									**FF**
				Electronic transmitter 4 - 20 mA									**ESM21**
				Position regulator ACTUMATIC R									**CMR**
				Control unit SMARTCON									**CSC**

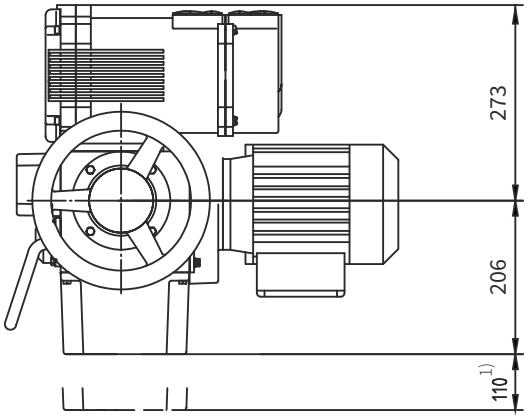
Dimensions of actuators ...AB8



With position regulator ACTUMATIC R

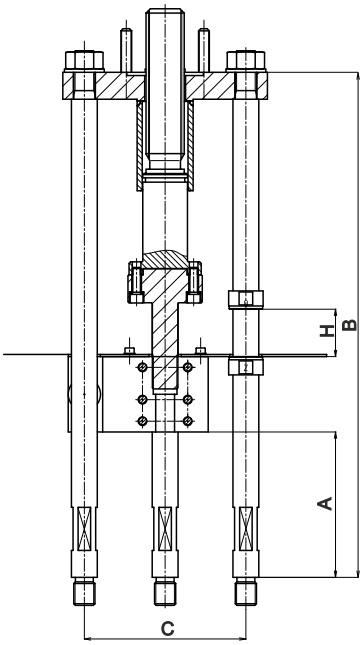


With SMARTCON control unit

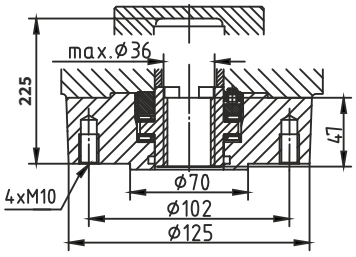


1) space needed to open the bonnet
2) version without the brake
3) version with the brake

Connection acc. to ISO 5210
Output drive shaft A , F10, Tr36x6-LH
DN 100 - 250



Connection acc. to ISO 5210,
Output drive shaft A, F10



For valves	No. of columns	A	H	C	T ≤ 400°C B	T ≤ 400°C weight [kg]	T > 400°C B	T > 400°C weight [kg]
RV, RS 70x DN 100	4	135	40	150	365	18	420	20
RV, RS 70x DN 125, 150	4	135	63	150	420	19	469	21
RV, RS 70x DN 200	4	179	80	200	507	30	583	32
RV, RS 70x DN 250	4	182	100	200	530	31	603	33

Dimensions of Schiebel actuators series AB 18

including connection according to ISO 5210, output drive shaft A, F14 on request from manufacturer

Pneumatic actuators

Flowserve

PO 701
PB 1502
PB 1502

Technical data

Type	PO 701		PO 1502 / PB 1502	
Marking in valve spec. No.	**PFG**		**PFD**	
Feeding pressure	p_{max} = 0,6 Mpa, p_{min} - see table			
Function	direct	indirect	direct	indirect
Control	pneumatic signal 20 - 100 kPa current signal 0(4) - 20 mA			
Nominal force	according to table of nominal forces			
Stroke	20, 40, 60 mm		60, 80 mm	
Enclosure	IP 54			
Process medium max. temp.	acc. to used valves			
Ambient temperatrure range	-40 to 80 °C			
Ambient humidity range	95 %			
Weight	see dimensions table			

→ **Note:** Specifications and technical data are for information only. Detailed technical informations can be found in producer's data sheet or on the webside **www.flowserve.com**

Accessories

Pneumatic positioner type SRP 981	Device with pneumatic input of 20 - 100 kPa for control with pneumatic control signal
Electropneumatic positioner type SRI 986	Analog positioner with input signal 4(0) - 20 mA
Electropneumatic positioner (analog) type SRI 990	Device with electric input of 4 (0) - 20 mA and direct output of controlling air into actuator. Adjusted by switches and potentiometers
Electropneumatic positioner (intelligent) type SRD 991	Device with electric input of 4 (0) - 20 mA and direct output of controlling air into actuator. Adjusted by PC and special software
Electropneumatic positioner (intelligent) type SRD 998	Device with electric input of 4 (0) - 20 mA and direct output of controlling air into actuator. Standard equipment: HART, LED display, setting using the multi selector
Electropneumatic positioner SIPART PS2 **Electropneumatic positioner ABB TZIDC**	Digital positioner with electric input of 4(0) – 20 mA
Signalisation switches type SGE985	Adjustable end position switches
Air set type G651 (-20 to 50°C) **Air set type typ FRS 923 (-40 to 80°C)**	Reduces the supply air pressure to required value
Solenoid valve standard type SC G551A005 **Solenoid valve standard type SC G327B001**	Direct operated electromagnetic valve, design 3/2, function U (universal), G 1/4“
Solenoid valve explosion-proof EEx em type EM G327B001	Direct operated electromagnetic valve, design 3/2, function U (universal), G 1/4“, modification with the increased safety/ epoxy encapsulation operator
Solenoid valve explosion-proof EEx d type NF G327B001	Direct operated electromagnetic valve, design 3/2, function U (universal), G 1/4“, flameproof enclosure
Solenoid valve 5/2-way type SC G551B417	Direct operated electromagnetic valve, execution 5/2, function U (universal), G 1/4“, (used for double-acting actuators)
Air lock relay, type EIL 200	Retaining device for closing of air pipeline on a pressure drop
Booster-valve type EIL 100	Airflow enhancer

Operating conditions

Pneumatic actuators Flowserve can operate with extremely high ambient temperatures with unique resistance to shock loads. They excel in resistance against vibrations and have reached 10^6 of cycles in operation. It is possible to deliver the actuator with both fail to open and fail to close function, eventually with a position blocking (air lock) upon failure of feeding pressure air supply. Various accessories can be delivered together with the actuator.

Direct and indirect functions

Direct function ensures that actuator's stem retracts upon control air supply failure (valve opens).
Indirect function ensures that actuator's stem extends upon control air supply failure (valve closes).

Specification No. of Flowserve actuators

	PX XXXX	X	XX	X	X	X
Type of actuator	**PO 701**					
	PO 1502					
	PB 1502					
Color	white	**B**				
Spring range [bar]	2,0 - 3,5		**FS**			
	1,8 - 2,7		**JC**			
	1,5 - 2,7		**VC**			
	1,5 - 3,8		**VI**			
Hand wheel	without wheel			**O**		
	heavy wheel[1]			**H**		
	side wheel [2]			**S**		
Function	direct				**A**	
	indirect				**Z**	
Stroke H [mm]	20					**A**
	40					**B**
	60					**C**
	80					**D**

[1] *only for actuator PO 701*
[2] *only for actuator PB 1502, spring 1,5-2,7 bar (max. 50 kN, stroke max. 80 mm)*

DN	Type of actuator	Function	Stroke actuator [mm]	Stroke valve [mm]	Spring range [bar]	Spring setting [bar]	Feeding pressure min. [bar]
25	PO 700 BJCxZA	closing NC	20	16	1,8 - 2,7	1,98 - 2,7	4,8
	PO 700 BJCxAA	opening NO	20	16	1,8 - 2,7	1,8 - 2,55	4,5
40, 50 65	PO 700 BVIxZB	closing NC	40	25	1,5 - 3,8	2,36 - 3,8	5,3
	PO 700 BVIxAB	opening NO	40	25	1,5 - 3,8	1,5 - 2,93	5,3
80	PO 1502 BVCxZB	closing NC	40	40	1,5 - 2,7	1,5 - 2,7	4,2
	PO 1502 BVCxAB	opening NO	40	40	1,5 - 2,7	1,5 - 2,7	4,2
100	PO 1502 BFSOZC	closing NC	60	40	2 - 3,5	2,5 - 3,5	5
	PB 1502 BVCSZC	closing NC	60	40	1,5 - 2,7	1,9 - 2,7	5
	PO 1502 BFSOAC	opening NO	60	40	2 - 3,5	2 - 3	5
	PB 1502 BVCSAC	opening NO	60	40	1,5 - 2,7	1,5 - 2,3	5
125 150	PO 1502 BFSOZD	closing NC	80	63	2 - 3,5	2,3 - 3,5	5
	PB 1502 BVCSZD	closing NC	80	63	1,5 - 2,7	1,75 - 2,7	5
	PO 1502 BFSOAD	opening NO	80	63	2 - 3,5	2 - 3,18	5
	PB 1502 BVCSAD	opening NO	80	63	1,5 - 2,7	1,5 - 2,45	5

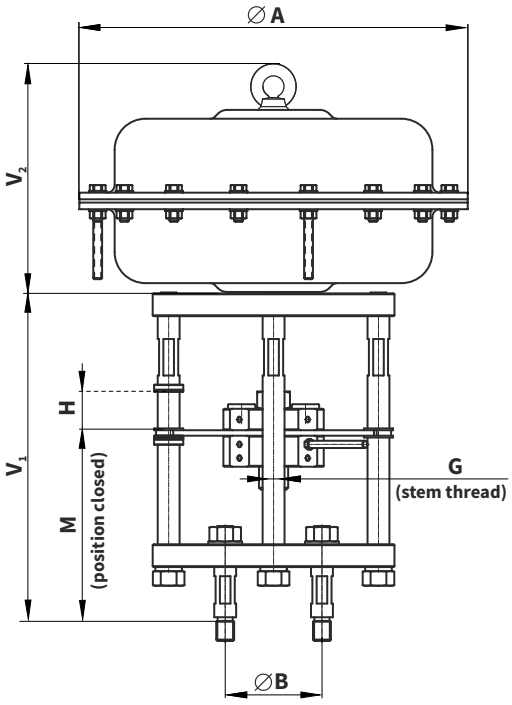
Note: → after "x" can be substituted: **O** - without hand wheel, **H** - with hand wheel, **S** - with side wheel
→ valves **DN 200** and **DN 250** with pneumatic actuators are available after consultation with the manufacturer

Dimensions of actuators Flowserve

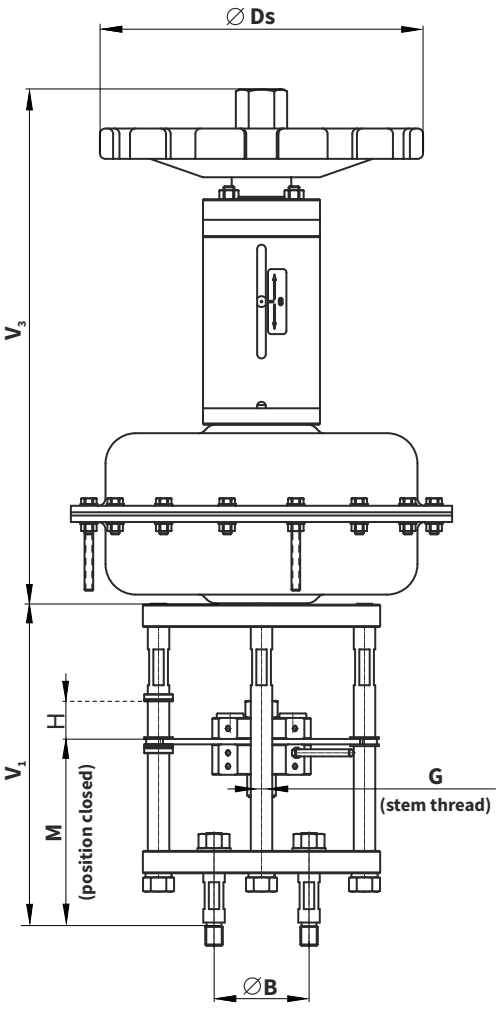
DN	Actuator	H (of valve)	A	B	G	M	V1	V2	V3	ØDs	m [kg]	m [kg] (with hw)
25	PO 701	16	390		M16x1,5		310	285	710	350	58 (58)	80 (80)
40,50,65	PO 701	25	390		M16x1,5		310	285	710	350	58 (58)	80 (80)
80	PO 1502	40	550	150	M16x1,5	160	326	409	---	---	128 (128)	183 (183)
100	PO 1502	40	550		M20x1,5		345 (545)	409	---	---	130 (132)	183 (183)
125,150	PO 1502	40	550		M20x1,5		345 (565)	409	---	---	130 (132)	183 (183)

Note: → length dimensions [mm]
→ values in brackets for valve control T>400°C

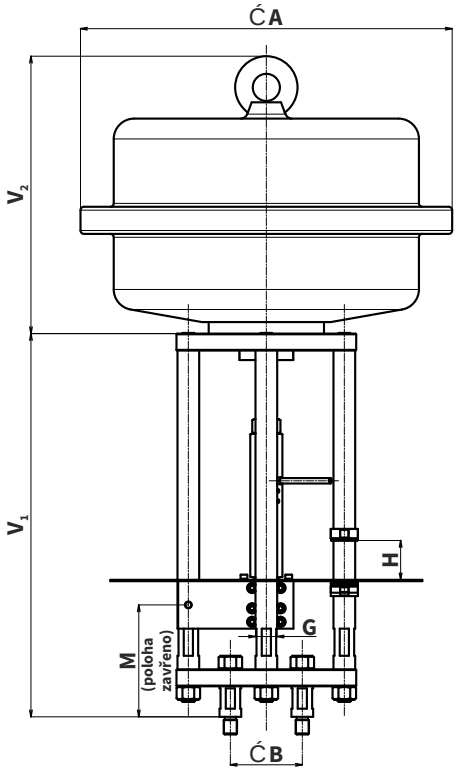
PO 701



PO 701 with hand wheel (heavy)

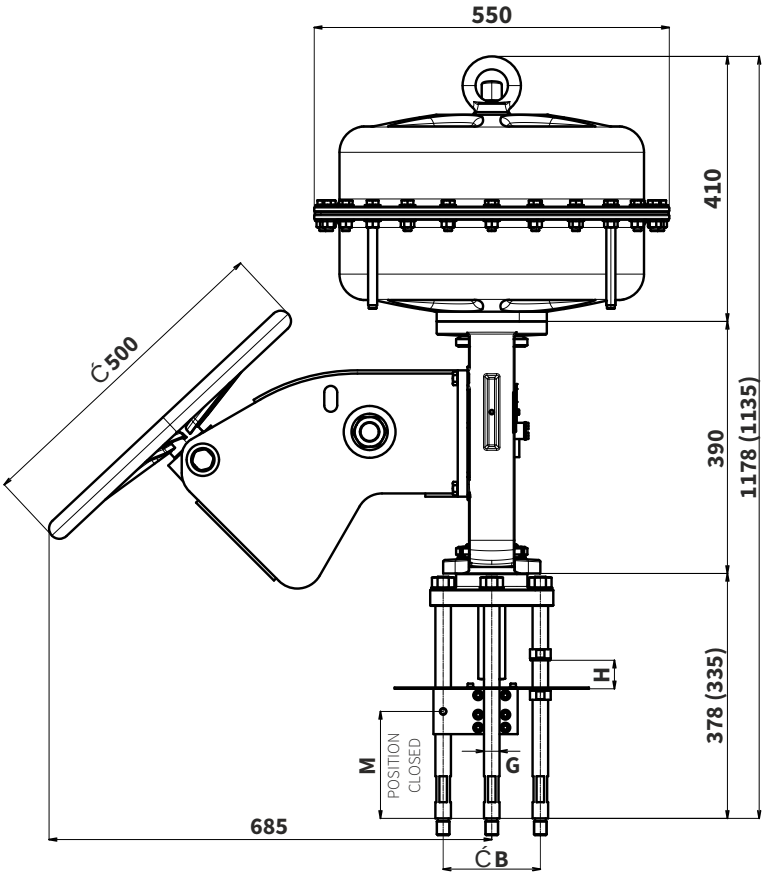


PO 1502



PB 1502 with hand wheel (side)

DN 80, 100, 125, 150



*) values in parentheses apply for DN 80

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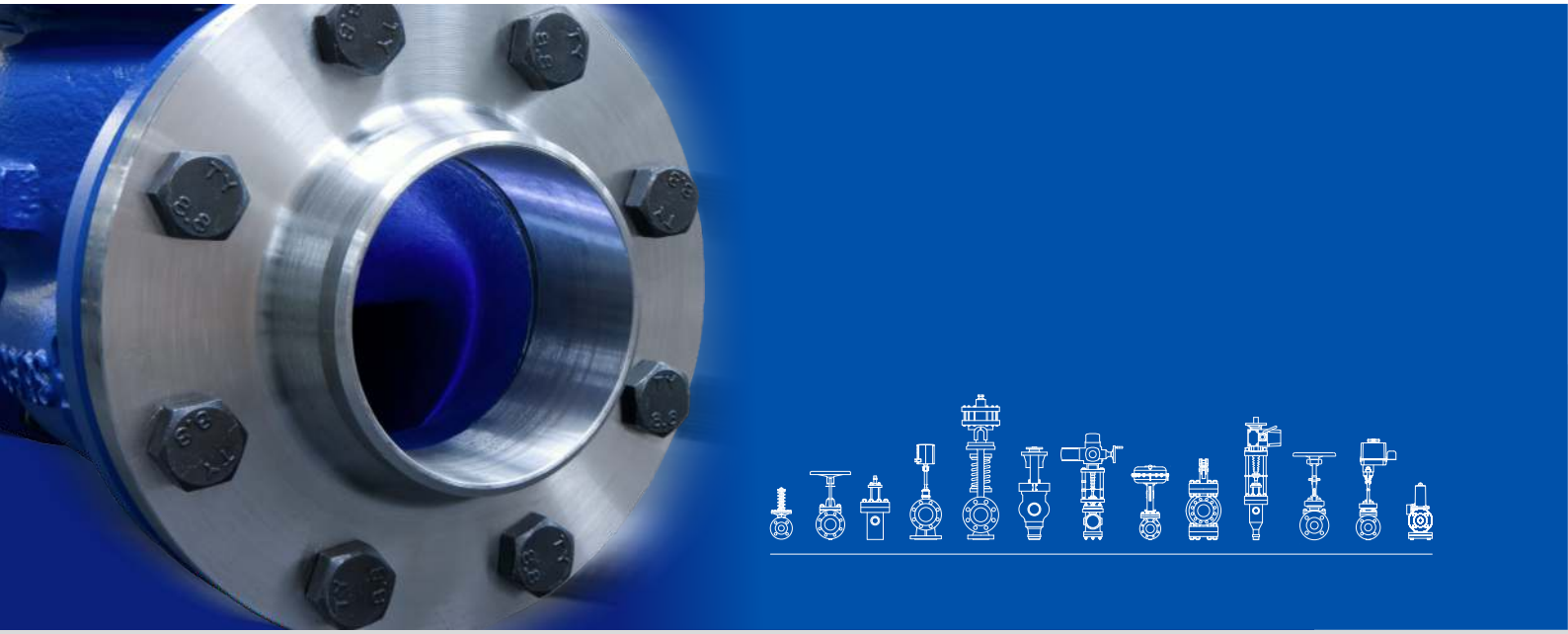

POWER THROUGH IDEAS