



02 - 09.1
02.23.GB

CONTROL AND SHUT-OFF VALVES

300 line



300 line

RV / UV 320 (Ex)
RV / UV 330 (Ex)

single-seated,
control (shut-off) valve

RV 322 (Ex)
RV 332 (Ex)

single-seated,
control valve with
pressure-balanced plug

Control valves **RV / UV 300 line** are single seated designed for regulation and shut-off of process liquid flow. **In Ex proof version** meet the requirements II 1/2G IIC TX Ga/Gb acc. to ČSN EN ISO 80079-36 (9/2016) and ČSN EN 1127-1 (4/2020). Due to the wide range of actuators used, they are suitable for control at low and high pressure drops under the most diverse operating conditions. Flow characteristics, Kvs coefficients and leakage comply with international standards.

The maximal permissible operating pressures in behaviour with types of material and temperature are specified in the table on page 70 of this catalogue.

Control

hand wheel,
electro-mechanics actuators of producers
ZPA Nová Paka, Regada, ZPA Pečky, Schiebel, Auma
pneumatic actuators **Flowserve**

Application

RV / UV 3xx - heating, ventilation, power generation and chemical processing industries
RV / UV 3xx Ex - technical and fuel gases and inflammable liquids

Process media

RV / UV 3xx - flow and pressure of liquids, gases and vapours without abrasive particles e.g. water, steam, air and other media compatible with material of the valve body and inner parts
RV / UV 3xx Ex - technical and fuel gases and inflammable liquids

To ensure a reliable regulation, the producer recommends to pipe a strainer in front of the valve into pipeline or ensure in any other way that process medium does not contain abrasive particles or impurities.

Installation

The valve must be piped the way so that the direction of medium flow will coincide with the arrows on the valve body. The valve can be installed in any position except position when the actuator is under the valve body.

When medium temperature exceeds 150°C, it is necessary to protect the actuator against glowing heat from the pipeline e.g. by the means of proper insulating of the pipeline and valve or by tilting the valve away from the heat radiation.

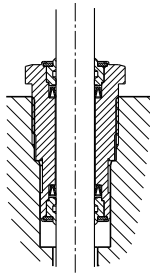
Detailed informations are given in the „Instruction for installation and service” sheets.

Packings

DRSpack® (PTFE)

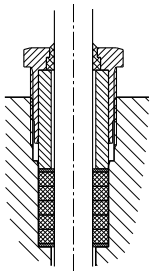
DRSpack® (Direct Radial Sealing Pack) is a packing with high tightness at both low and high operating pressure values.

It is the most used type of packing suitable for temperatures ranging from 0 °C to 260 °C. The pH range is from 0 to 14. The packing enables using of actuators with low linear force. The design enables an easy change of the whole packing. The average service life of DRSpack® is more than 500 000 cycles.



Graphite

This type of packing can be used for media with temperature up to 550 °C and pH range: 0 to 14. Packing can be "sealed up" either by screwing the packing screw in or adding another sealing ring. In regard of intensive frictional forces, graphite packing is suitable for actuators with a sufficient linear force.

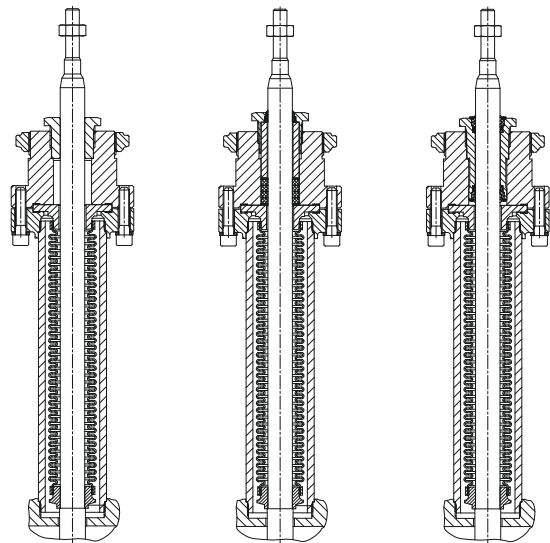


Principles for plug type selection

V-ported plugs should not be used in supercritical differential pressures with inlet pressure $p \geq 0,4$ MPa and for regulation of saturated steam. In these cases we recommend to use a perforated plug. The perforated plug should be also used always when cavitation may occur due to a high differential pressure value or valve ports erosion caused by high speed of process medium flow. If the parabolic plug is used (because of small Kvs) for supercritical differential pressures, it is necessary to close both plug and seat with a hard metal overlay, i.e. stellite trim.

Bellows

Bellows packing is suitable for low and high temperatures ranging from -50 °C to 550 °C. Bellows ensures absolute tightness to environment. Packing is equipped with safety PTFE packing as standard to prevent medium from leaking in case of damage to bellows. Intensive linear forces are not required.



Bellows
without safety packing

Bellows with safety
graphite packing

Bellows with safety
PTFE packing

Application of bellows packing

Bellows packing is suitable for applications with very aggressive, toxic or other dangerous media that require absolute tightness to environment.

In such case, it is necessary to check compatibility of used body material as well as the valve inner parts material with process medium. It is recommended to use bellows with safety packing preventing medium from leaking in case of damage to bellows when there is an extremely dangerous process medium used.

Bellows is also a great solution to use of process medium either with temperature below zero when ice accretions cause premature damage to packing or with high temperatures when bellows ensures medium cooling.

Rangeability

Rangeability is the ratio of the biggest value of flow coefficient to the smallest value. In fact it is the ratio (under the same conditions) of highest regulated flow rate value to its lowest value. The lowest or minimal regulated flow rate is always higher than 0.



RV / UV 3x0

Control
and shut-off valves

DN 15 to 400
PN 16 to 63

Technical data		
Series	RV / UV 320 (Ex)	RV / UV 330 (Ex)
Type of valve	Two-way, single-seated, control (shut-off) valve	
Nominal size range	DN 15 to 400	
Nominal pressure	PN 16 to 63	
Body material	Cast steel 1.0619 (GP240GH) 1.7357 (G17CrMo5-5)	Stainless steel 1.4581(GX5CrNiMoNb19-11-2)
Seat material: DN 15 - 50	1.4028 / 17 023.6	1.4571 / 17 348.4
DIN W.Nr./+ČSN DN 65 - 400	1.4027 / 42 2906.5	1.4571 / 17 348.4
Plug material: DN 15 - 65	1.4028 / 17 023.6	1.4581 / 42 2941.4
DIN W.Nr./+ČSN DN 80 - 150	1.4021 / 17 027.6	1.4581 / 42 2941.4
DN 200 - 400	1.4021 / 17 022.6	1.4581 / 42 2941.4
Operating temperature range	-10 to 550 °C	
Face to face dimensions	Section 1 for flanged version PN 16 to 40 acc. to ČSN EN 558 (9/2022), Section 2 for flanged version PN 63 acc. to ČSN EN 558 (9/2022), Section 73 for weld ends version acc. to ČSN EN 12982 (1/2011)	
Connection flanges	Acc. to ČSN EN 1092-1 (12/2019)	
Flange faces	Type B1 (raised-faced) or Type B2 (plain face) or Type F (female), or Type D (groove) acc. to ČSN EN 1092-1 (12/2019)	
Weld ends	Weld ends acc. to ČSN EN 12627-2 (9/2018)	
Type of plug	V-ported, contoured, perforated	
Flow characteristic	Linear, equal-percentage, LDMspline®, parabolic, on - off	
Kvs value	0.01 to 1600 m ³ /h	
Leakage rate	Class III. acc. to ČSN-EN 1349 (7/2010) (<0.1% Kvs) for c. valves with metal-metal seat sealing Class IV. acc. to ČSN-EN 1349 (7/2010) (<0.01% Kvs) for shut off valve Class IV. acc. to ČSN EN 1349 (7/2010) (<0.01% Kvs) pro uzavírací ventil	
Leakage rate for Ex version	RV 3xx class IV. acc. to ČSN EN 1349 (7/2010) (< 0.01% Kvs); UV 3xx step C acc. to ISO 5208 (6/2015)	
Rangeability r	50 : 1	
Packing	DRSpack® (PTFE) t _{max} = 260°C, Exp. graphite t _{max} = 550°C, Bellows (DN15-150) t _{max} = 550°C	

Kvs values and differential pressures Δp_{\max} [MPa] of valves DN 15 - 400 with countoured and V-ported plugs (flow direction below plug) with electro-mechanic actuators

Δp_{\max} value is the valve max. differential pressure when open - close function is always guaranteed. Differential pressure must not exceed 4,0 Mpa for valves PN 40. In regard of service life of seat and plug, it is recommended so that differential pressure would not exceed 1.6 MPa. Otherwise it is suitable to use perforated plug (Δp 4,0 MPa) or sealing surfaces of seat and plug with a hard metal overlay (Δp_{\max} up to 2,5 MPa).

For further information on actuating, see actuators' catalogue sheets			Actuating (actuating)										MIDI 660 ST 0 ST 0.1		Auma Schiebel EA... EZ...		Zepadyn 670 ST 1 Ex ST 0.1			
			Marking in valve specification No.										ENB EPK EPL		EA... EZ...		ENC EPJ EPL			
			Linear force										4 kN		5 kN		6,3 kN			
DN	H	Ds	Kvs [m ³ /h]										Δp_{\max}		Δp_{\max}		Δp_{\max}			
			1	2	3	4	5	6	7	8	9		packing graphite PTFE	packing graphite PTFE	packing graphite PTFE	packing graphite PTFE				
15	16	3	---	---	---	---	---	---	---	---	0.16 ³⁾	0.1...0.01 ³⁾		6.3	6.3	6.3	6.3	6.3	6.3	
		6	---	---	---	---	---	---	0.25 ¹⁾	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3		
		8	---	---	---	1.0 ¹⁾	0.63 ¹⁾	0.4 ¹⁾	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3		
		12	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3		
		15	4.0 ¹⁾	---	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3		
20	16	3	---	---	---	---	---	---	---	---	0.16...0.01 ³⁾		6.3	6.3	6.3	6.3	6.3	6.3		
		6	---	---	---	---	---	---	0.25 ¹⁾	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3		
		8	---	---	---	1.0 ¹⁾	0.63 ¹⁾	0.4 ¹⁾	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3		
		12	---	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3		
		15	---	4.0 ¹⁾	---	---	---	---	---	---	---	---	5.5	6.3	6.3	6.3	6.3	6.3		
25	16	20	6.3 ¹⁾	---	---	---	---	---	---	---	---	---	2.62	6.3	6.3	6.3	6.3	6.3		
		3	---	---	---	---	---	---	---	---	---	0.16...0.01 ³⁾		6.3	6.3	6.3	6.3	6.3	6.3	
		6	---	---	---	---	---	---	---	0.25 ¹⁾	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	
		8	---	---	---	1.0 ¹⁾	0.63 ¹⁾	0.4 ¹⁾	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3		
		12	---	---	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3		
		15	---	---	4.0 ¹⁾	---	---	---	---	---	---	---	5.5	6.3	6.3	6.3	6.3	6.3		
32	16	20	---	6.3 ²⁾	---	---	---	---	---	---	---	---	2.62	6.3	5.56	6.3	6.3	6.3		
		25	10.0	6.3 ⁴⁾	4.0 ⁴⁾	---	---	---	---	---	---	---	1.53	5.42	3.36	6.3	5.73	6.3		
		6	---	---	---	---	---	---	---	---	0.25 ¹⁾	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	---	---	1.0 ¹⁾	0.63 ¹⁾	0.4 ¹⁾	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	---	---	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	
		15	---	---	---	4.0 ¹⁾	---	---	---	---	---	---	5.5	6.3	6.3	6.3	6.3	6.3		
40	16	20	---	---	6.3 ²⁾	---	---	---	---	---	---	---	2.62	5.56	6.3	6.3	6.3	6.3		
		32	16	10	6.3 ⁴⁾	---	---	---	---	---	---	---	0.85	1.95	4.31	4.31	3.39	5.74		
		6	---	---	---	---	---	---	---	---	0.25 ¹⁾	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	---	---	1.0 ¹⁾	0.63 ¹⁾	0.4 ¹⁾	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	---	---	---	---	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	
		15	---	---	---	---	4.0 ²⁾	---	---	---	---	---	5.5	6.3	6.3	6.3	6.3	6.3		
40	16	20	---	---	---	6.3 ²⁾	---	---	---	---	---	---	2.62	6.3	5.56	6.3	6.3	6.3		
		40	25	16	10	6.3 ⁴⁾	4.0 ⁴⁾	---	---	---	---	---	0.49	2.0	1.2	2.71	2.12	3.64		
		6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		

the table continues on the next page

¹⁾ parabolic plug

²⁾ V-ported plug with linear characteristic, parabolic plug with equal-percentage and LDMspline®

³⁾ valve with micro-throttling trim. Execution with Kvs = 0,16; 0,1; 0,063; 0,04; 0,025; 0,016; 0,01

⁴⁾ V-ported plug with linear characteristic only

Max. differential pressures specified in table apply to PTFE and graphite packing.

Δp_{\max} for bellows must be consulted with the producer.

For further information on actuating, see actuators' catalogue sheets			Actuating (actuator)											Auma Schiebel ST 1		Auma Schiebel ST 1 Zepadyn 670 Modact MTR		Hand wheel		
			Marking in valve specification No.											EA... EZ... EPI		EA... EZ... EPI ENC EPD		Rxx		
			Linear force											7.5 kN		10 kN				
			Kvs [m³/h]											Δp_{max}		Δp_{max}		Δp_{max}		
DN	H	Ds	1	2	3	4	5	6	7	8	9		Δp_{max} packing graphite PTFE		Δp_{max} packing graphite PTFE		Δp_{max} packing graphite PTFE			
15			3	---	---	---	---	---	---	0.16 ³⁾	0.1...0.01 ³⁾		6.3	6.3	6.3	6.3	6.3	6.3		
			6	---	---	---	---	---	---	0.25 ³⁾	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	
			8	---	---	---	1.0 ¹⁾	0.63 ³⁾	0.4 ¹⁾	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
			12	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
			15	4.0 ¹⁾	---	---	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
20			3	---	---	---	---	---	---	---	0.16...0.01 ³⁾		6.3	6.3	6.3	6.3	6.3	6.3		
			6	---	---	---	---	---	---	0.25 ³⁾	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	
			8	---	---	---	1.0 ¹⁾	0.63 ³⁾	0.4 ¹⁾	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
			12	---	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
			15	---	4.0 ¹⁾	---	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
25	16		3	---	---	---	---	---	---	---	0.16...0.01 ³⁾		6.3	6.3	6.3	6.3	6.3	6.3		
			6	---	---	---	---	---	---	---	0.25 ³⁾	---	---	---	6.3	6.3	6.3	6.3	6.3	
			8	---	---	---	---	1.0 ¹⁾	0.63 ³⁾	0.4 ¹⁾	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
			12	---	---	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
			15	---	---	4.0 ¹⁾	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
			20	---	6.3 ²⁾	---	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
			25	10.0	6.3 ⁴⁾	4.0 ⁴⁾	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
32			6	---	---	---	---	---	---	---	---	0.25 ³⁾	---	---	---	---	---	---		
			8	---	---	---	---	---	1.0 ¹⁾	0.63 ³⁾	0.4 ¹⁾	---	---	---	6.3	6.3	6.3	6.3	6.3	
			12	---	---	---	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
			15	---	---	---	4.0 ¹⁾	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
			20	---	---	6.3 ²⁾	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
40			32	16	10	6.3 ⁴⁾	---	---	---	---	---	---	---	4.72	6.3	6.3	6.3	6.3		
			6	---	---	---	---	---	---	---	---	---	0.25 ³⁾	---	---	---	---	---	---	
			8	---	---	---	---	---	---	---	1.0 ¹⁾	0.63 ³⁾	0.4 ¹⁾	---	---	---	---	---	---	
			12	---	---	---	---	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
			15	---	---	---	---	4.0 ²⁾	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
			20	---	---	---	6.3 ²⁾	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
40	25	16	10	6.3 ⁴⁾	4.0 ⁴⁾	---	---	---	---	---	---	2.98	4.49	4.75	6.26	4.75	6.26			

the table continues on the next page

¹⁾ parabolic plug

²⁾ V-ported plug with linear characteristic, parabolic plug with equal-percentage and LDMspline*

³⁾ valve with micro-throttling trim. Execution with Kvs = 0,16; 0,1; 0,063; 0,04; 0,025; 0,016; 0,01

⁴⁾ V-ported plug with linear characteristic only

Max. differential pressures specified in table apply to PTFE and graphite packing.

Δp_{max} for bellows must be consulted with the producer.

For further information on actuating, see actuators catalogue sheets			Actuating (actuator)					MIDI 660 ST 0 ST 0.1	Auma Schiebel	Zepadyn 670 ST 1 Ex ST 0.1	Auma Schiebel ST 1	Auma Schiebel ST 1	Zepadyn 670 Modact MTR
			Marking in valve specification No.					ENB EPK EPL	EA... EZ...	ENC EPJ EPL	EA... EZ... EPI	EA... EZ... EPI	ENC EPD
			Linear force					4 kN	5 kN	6.3 kN	7.5 kN	10 kN	10 kN
			Kvs [m³ /h]					Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}
DN	H	Ds	1	2	3	4	5	packing	packing	packing	packing	packing	
								graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	
50	20	50	40	25	16	10	6.3 ⁴⁾	0.25 1.16	0.68 1.58	1.23 2.14	1.74 2.65	2.8 3.71	
65		65	63	40	25	16	10	0.11 0.67	0.37 0.93	0.71 1.27	1.02 1.58	1.67 2.23	
80	40	80	100	63	40	25	16	---	---	0.23 0.68	0.45 0.9	0.9 1.35	
100		100	160	100	63	40	25	---	---	0.13 0.42	0.27 0.56	0.56 0.85	
125		125	250	160	100	63	40	---	---	0.06 0.25	0.15 0.34	0.34 0.53	
150		150	360	250	160	100	63	---	---	---	0.1 0.23	0.23 0.36	

For further information on actuating, see actuators catalogue sheets *) max. DN 300			Actuating (actuator)					Modact Cont. Modact MTN Auma Schiebel	Modact MTR ST 2 Zepadyn 671*)	Auma Schiebel ST 2	Modact MTR Modact MTN Modact Cont. ST 2	Auma Schiebel	Hand wheel
			Marking in valve specification No.					EYA EYB EA... EZ...	EPD EPM ENE	EA... EZ... ENE EPM	EPD EYA EYB EPM	EA... EZ...	Rxx
			Linear force					15 kN	16 kN	20 kN	25 kN	32 kN	
			Kvs [m³ /h]					Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}
DN	H	Ds	1	2	3	4	5	packing	packing	packing	packing	packing	
								graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	
50	20	50	40	25	16	10	6.3 ⁴⁾	4.93 5.89	---	---	---	2.8 3.71	
65		65	63	40	25	16	10	2.97 3.53	---	---	---	1.67 2.23	
80	40	80	100	63	40	25	16	1.8 2.25	1.98 2.43	2.70 3.15	3.60 4.05	1.98 2.43	
100		100	160	100	63	40	25	1.14 1.43	1.26 1.55	1.73 2.02	2.31 2.60	1.26 1.55	
125		125	250	160	100	63	40	0.72 0.91	0.8 0.99	1.10 1.29	1.48 1.67	0.8 0.99	
150		150	360	250	160	100	63	0.49 0.63	0.55 0.68	0.76 0.89	1.02 1.16	0.55 0.68	
200	80	100	---	---	250	160	100	1.02 1.36	1.14 1.48	1.61 1.95	2.2 2.54	3.03 3.37	
		150	---	400	---	---	---	0.43 0.59	0.49 0.64	0.7 0.85	0.97 1.12	1.34 1.49	
		200	570	---	---	---	---	0.23 0.32	0.26 0.35	0.38 0.47	0.53 0.62	0.75 0.83	
250	80	150	---	---	400	250	160	0.34 0.51	0.39 0.57	0.61 0.78	0.88 1.05	1.26 1.43	
		200	---	630	---	---	---	0.17 0.27	0.21 0.30	0.33 0.43	0.48 0.58	0.69 0.79	
		230	800	---	---	---	---	0.13 0.20	0.15 0.22	0.24 0.32	0.36 0.43	0.52 0.60	
300	80	150	---	---	---	400	250	0.34 0.51	0.39 0.57	0.61 0.78	0.88 1.05	1.26 1.43	
		200	---	---	630	---	---	0.17 0.27	0.21 0.30	0.33 0.43	0.48 0.58	0.69 0.79	
		230	---	800	---	---	---	0.13 0.20	0.15 0.22	0.24 0.32	0.36 0.43	0.52 0.60	
		250	1000	---	---	---	---	0.10 0.17	0.12 0.19	0.20 0.26	0.30 0.36	0.44 0.50	
400	100	150	---	---	---	400	250	0.34 0.51	0.39 0.57	0.61 0.78	0.88 1.05	1.26 1.43	
		200	---	---	630	---	---	0.17 0.27	0.21 0.30	0.33 0.43	0.48 0.58	0.69 0.79	
		250	---	1000	---	---	---	0.10 0.17	0.12 0.19	0.20 0.26	0.30 0.36	0.44 0.50	
		330	1600	---	---	---	---	0.05 0.09	0.06 0.10	0.11 0.14	0.16 0.20	0.24 0.28	

1) parabolic plug
 2) V-ported plug with linear characteristic, parabolic plug with equal-percentage and LDMspline®
 3) valve with micro-throttling trim. Execution with Kvs = 0,16; 0,1; 0,063; 0,04; 0,025; 0,016; 0,01
 4) V-ported plug with linear characteristic only

Max. differential pressures specified in table apply to PTFE and graphite packing.
 Δp_{max} for bellows must be consulted with the producer.

Kvs values and differential pressures Δp_{\max} [MPa] of valves DN 15 - 400 with countoured and V-ported plugs (flow direction below plug) with pneumatic actuators

Δp_{\max} value is the valve max. differential pressure when open - close function is always guaranteed. Differential pressure must not exceed 4,0 Mpa for valves PN 40. In regard of service life of seat and plug, it is recommended so that differential pressure would not exceed 1.6 MPa. Otherwise it is suitable to use perforated plug (Δp 4,0 MPa) or sealing surfaces of seat and plug with a hard metal overlay (Δp_{\max} up to 2,5 Mpa).

Další informace o ovládání viz katalogové listy pohonů			Pneumatic actuators										Flowserve PA 253		A. Hock 2109								
			Specification No. of actuator										direct	indirect	direct	indirect							
			Actuator function										BDYxAA	BFYxZA	P2-0K-EL1	P2-0K-HL2							
			Spring range [bar]										1.0 - 2.4	2.0 - 4.8	0.2 - 1.0	1.5 - 3.8							
			Spring setting [bar]										1.0 - 2.12	2.56 - 4.8	0.2 - 0.84	1.96 - 3.8							
			Feeding pressure [bar]										4.8	5.8	3.0	4.6							
			Marking in valve specification No.										PFA		PHF								
			Linear force										6.4 kN	6.4 kN	6.3 kN	5.7kN							
DN	H	Ds	Kvs [m ³ /h]										Δp_{\max}		Δp_{\max}		Δp_{\max}		Δp_{\max}				
			1	2	3	4	5	6	7	8	9		packing	packing	packing	packing	packing	packing					
													graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE			
15			3	---	---	---	---	---	---	---	---	0.16 ³⁾	0.1...0.01 ³⁾		6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	
			6	---	---	---	---	---	---	---	0.25 ³⁾	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
			8	---	---	---	1.0 ¹⁾	0.63 ¹⁾	0.4 ¹⁾	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
			12	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
			15	4.0 ¹⁾	---	---	---	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
20			3	---	---	---	---	---	---	---	---	---	0.16...0.01 ³⁾		6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	
			6	---	---	---	---	---	---	---	0.25 ³⁾	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
			8	---	---	---	1.0 ¹⁾	0.63 ¹⁾	0.4 ¹⁾	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
			12	---	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
			15	---	4.0 ¹⁾	---	---	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
25	16		3	---	---	---	---	---	---	---	---	---	0.16...0.01 ³⁾		6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	
			6	---	---	---	---	---	---	---	0.25 ³⁾	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
			8	---	---	---	1.0 ¹⁾	0.63 ¹⁾	0.4 ¹⁾	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
			12	---	---	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
			15	---	---	4.0 ¹⁾	---	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
32			6	---	---	---	---	---	---	---	---	---	0.25 ¹⁾	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	
			8	---	---	---	---	---	---	1.0 ¹⁾	0.63 ¹⁾	0.4 ¹⁾	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	
			12	---	---	---	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	
			15	---	---	---	4.0 ¹⁾	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	
			20	---	---	6.3 ²⁾	---	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
40			32	16	10	6.3 ⁴⁾	---	---	---	---	---	---	---	---	3.5	5.86	3.5	5.86	3.39	5.74	2.73	5.08	
			6	---	---	---	---	---	---	---	---	---	---	0.25 ¹⁾	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	
			8	---	---	---	---	---	---	---	1.0 ¹⁾	0.63 ¹⁾	0.4 ¹⁾	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	
			12	---	---	---	---	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	
			15	---	---	---	---	---	4.0 ²⁾	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	
20	---	---	---	6.3 ²⁾	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3			
40	25	16	10	6.3 ⁴⁾	4.0 ⁴⁾	---	---	---	---	---	---	---	2.19	3.71	2.19	3.71	2.12	3.64	1.7	3.21			

¹⁾ parabolic plug

²⁾ V-ported plug with linear characteristic, parabolic plug with equal-percentage and LDMspline®

³⁾ valve with micro-throttling trim. Execution with Kvs = 0,16; 0,1; 0,063; 0,04; 0,025; 0,016; 0,01

⁴⁾ V-ported plug with linear characteristic only

Max. differential pressures specified in table apply to PTFE and graphite packing.

Δp_{\max} for bellows must be consulted with the producer.

For further information on actuating, see actuators catalogue sheets			Pneumatic actuators					Flowserve PA 253		Flowserve PB 503		A. Hock 2109		A. Hock 2112-30		
			Specification No. of actuator					direct	indirect	direct	indirect	direct	indirect	direct	indirect	
			Actuator function					BDYxAA	BFYxZA	BBLxAA	BFYxZA	P2-0K-BL1	P2-0K-HL2	P2-0K-BM1	P2-0K-WM2	
			Spring range [bar]					1.0 - 2.4	2.0 - 4.8	0.5 - 1.9	2.0 - 4.8	0.8 - 2.2	1.5 - 3.8	0.8 - 2.2	1.4 - 2.8	
			Spring setting [bar]					1.0 - 2.4	2.0 - 4.8	0.5 - 1.9	2.0 - 4.8	0.8 - 1.92	1.5 - 3.8	0.8 - 1.73	1.87 - 2.8	
			Feeding pressure [bar]					6.0	5.8	5.3	5.3	4.4	4.6	3.5	3.2	
			Marking in valve spec.					PFA		PFB		PHF		PHA		
			Linear force					8.5 kN	5 kN	10 kN	10 kN	6.4 kN	4.4kN	10 kN	10.5kN	
			Kvs [m³ /hod]					Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}
			DN	H	Ds	1	2	3	4	5	graphitePTFE	graphitePTFE	graphitePTFE	graphitePTFE	graphitePTFE	graphitePTFE
50	20	50	40	25	16	10	6.3 ⁴⁾	2.16 3.07	0.68 1.58	2.8 3.71	2.8 3.71	1.27 2.18	0.42 1.33	2.8 3.71	3.02 3.92	
65		65	63	40	25	16	10	1.28 1.84	0.37 0.93	1.67 2.23	1.67 2.23	0.74 1.29	0.22 0.77	1.67 2.23	1.8 2.36	

⁴⁾ válcová kuželka s výřezy pouze s lineární charakteristikou

For further information on actuating, see actuators catalogue sheets			Pneumatic actuators					Flowserve PB 503		Flowserve PB 701		A. Hock 2112-50		A. Hock 2112-50		
			Specification No. of actuator					direct	indirect	direct	indirect	direct	indirect	direct	indirect	
			Actuator function					BBLxAB	BFYxZB	BBLxAB	BFYxZB	P2-0K-DI1	P2-0K-XI2	P2-0K-DI1	P2-0K-SI2	
			Spring range [bar]					0.5 - 1.9	2.0 - 4.8	0.5 - 1.9	2.0 - 4.8	0.5 - 1.7	0.7 - 2.5	0.5 - 1.7	0.8 - 2.8	
			Spring setting [bar]					0.5 - 1.9	2.0 - 4.8	0.5 - 1.9	2.0 - 4.8	0.5 - 1.43	1.06 - 2.5	0.5 - 1.46	1.2 - 2.8	
			Feeding pressure [bar]					4.1	5.4	4.1	5.3	3.2	3.0	5.0	3.3	
			Marking in valve spec.					PFB		PFC		PHA		PHA		
			Linear force					10 kN	10 kN	14 kN	14 kN	10 kN	6 kN	20 kN	6.9 kN	
			Kvs [m³ /hod]					Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}
			DN	H	Ds	1	2	3	4	5	graphitePTFE	graphitePTFE	graphitePTFE	graphitePTFE	graphitePTFE	graphitePTFE
80	40	80	100	63	40	25	16	0.9 1.35	0.9 1.35	1.62 2.07	1.62 2.07	0.9 1.35	0.18 0.63	2.7 3.15	0.34 0.79	
100		100	160	100	63	40	25	0.56 0.85	0.56 0.85	1.03 1.32	1.03 1.32	0.56 0.85	0.09 0.38	1.73 2.02	0.2 0.49	
125		125	250	160	100	63	40	0.34 0.53	0.34 0.53	0.65 0.84	0.65 0.84	0.34 0.53	0.04 0.23	1.1 1.29	0.11 0.3	
150		150	360	250	160	100	63	0.23 0.36	0.23 0.36	0.44 0.57	0.44 0.57	0.23 0.36	0.02 0.15	0.76 0.89	0.06 0.2	

For further information on actuating, see actuators catalogue sheets			Pneumatic actuators					Flowserve PO 1502							
			Specification No. of actuator					direct	indirect	direct	indirect	direct	indirect	direct	indirect
			Actuator function					BGFxAD	BVCxZD	BGFxAD	BFSxZD	BGFxAD	BAJxZD		
			Spring range [bar]					0.4 - 2.0	1.5 - 2.7	0.4 - 2.0	2.0 - 3.5	0.4 - 2.0	2.6 - 4.2		
			Spring setting [bar]					0.4 - 2.0	1.5 - 2.7	0.4 - 2.0	2.0 - 3.5	0.4 - 2.0	2.6 - 4.2		
			Feeding pressure [bar]					3.5	3.1	4.0	3.9	4.6	4.6		
			Marking in valve spec.					PFD							
			Linear force					22.5 kN	22.5 kN	30 kN	30 kN	38 kN	38 kN		
			Kvs [m³ /hod]					Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}		
			DN	H	Ds	1	2	3	4	5	graphitePTFE	graphitePTFE	graphitePTFE	graphitePTFE	graphitePTFE
200	80	100	---	---	250	160	100	1.91 2.25	1.91 2.25	2.8 3.14	2.8 3.14	3.74 4.08	3.74 4.08		
		150	---	400	---	---	---	0.83 0.99	0.83 0.99	1.23 1.39	1.23 1.39	1.66 1.81	1.66 1.81		
		200	570	---	---	---	---	0.46 0.55	0.46 0.55	0.69 0.77	0.69 0.77	0.93 1.02	0.93 1.02		
250	80	150	---	---	400	250	160	0.74 0.92	0.74 0.92	1.15 1.32	1.15 1.32	1.58 1.76	1.58 1.76		
		200	---	630	---	---	---	0.40 0.50	0.40 0.50	0.63 0.73	0.63 0.73	0.88 0.98	0.88 0.98		
		230	800	---	---	---	---	0.30 0.37	0.30 0.37	0.47 0.55	0.47 0.55	0.66 0.73	0.66 0.73		
300	80	150	---	---	---	400	250	0.74 0.92	0.74 0.92	1.15 1.32	1.15 1.32	1.58 1.76	1.58 1.76		
		200	---	---	630	---	---	0.40 0.50	0.40 0.50	0.63 0.73	0.63 0.73	0.88 0.98	0.88 0.98		
		230	---	800	---	---	---	0.30 0.37	0.30 0.37	0.47 0.55	0.47 0.55	0.66 0.73	0.66 0.73		
		250	1000	---	---	---	---	0.25 0.31	0.25 0.31	0.40 0.46	0.40 0.46	0.55 0.62	0.55 0.62		

Max. differential pressures specified in table apply to PTFE and graphite packing.
 Δp_{max} for bellows must be consulted with the producer.

the table continues on the next page

For further information on actuating, see actuators catalogue sheets			Pneumatic actuators					A. Hock 2116-100	A. Hock 2116S-100	A. Hock 2116-100	A. Hock 2116S-100					
			Specification No. of actuator					direct	indirect	direct	indirect					
			Actuator function					P2-0K-BN1	P2-0K-YN2	P2-0K-BN1	P2-0K-ZN2					
			Spring range [bar]					0.8 - 2.2	1.3 - 3.0	0.8 - 2.2	1.5 - 3.5					
			Spring setting [bar]					0.8- 1.92	1.64 - 3.0	0.8- 1.92	1.9 - 3.5					
			Feeding pressure [bar]					3.6	4.0	5.1	4.5					
			Marking in valve spec.					PHC								
			Linear force					20 kN	19.6 kN	38 kN	22.8 kN					
			Kvs [m³/h]					Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}					
			DN	H	Ds	1	2	3	4	5	packing	packing	packing	packing		
			graphitePTFE	graphitePTFE	graphitePTFE	graphitePTFE										
200	80	100	---	---	250	160	100	1.61	1.95	1.56	1.9	3.74	4.08	1.94	2.28	
		150	---	400	---	---	---	---	0.7	0.85	0.68	0.83	1.66	1.81	0.85	1
		200	570	---	---	---	---	---	0.38	0.47	0.37	0.46	0.93	1.02	0.47	0.55
250	80	150	---	---	400	250	160	0.61	0.78	0.58	0.76	1.58	1.76	0.76	0.93	
		200	---	630	---	---	---	---	0.33	0.43	0.32	0.41	0.88	0.98	0.41	0.51
		230	800	---	---	---	---	---	0.24	0.32	0.23	0.31	0.66	0.73	0.31	0.38
300	80	150	---	---	---	400	250	0.61	0.78	0.58	0.76	1.58	1.76	0.76	0.93	
		200	---	---	630	---	---	---	0.33	0.43	0.32	0.41	0.88	0.98	0.41	0.51
		230	---	800	---	---	---	---	0.24	0.32	0.23	0.31	0.66	0.73	0.31	0.38
		250	1000	---	---	---	---	---	0.2	0.26	0.19	0.26	0.55	0.62	0.26	0.32

For further information on actuating, see actuators catalogue sheets			Pneumatic actuators					Flowserve PO 1502		Flowserve PO 3002						
			Specification No. of actuator					direct	indirect	direct	indirect					
			Actuator function					BGFxAD	BVCxZD	BGFxAD	BFSxZD					
			Spring range [bar]					0.9 - 1.9	2.0 - 4.3	0.9 - 1.9	1.2 - 2.6					
			Spring setting [bar]					0.9 - 1.9	2.0 - 4.3	0.9 - 1.9	1.2 - 2.6					
			Feeding pressure [bar]					4.0	5.2	4.5	3.2					
			Marking in valve spec.					PFD		PFE						
			Linear force					30 kN	30 kN	38 kN	36 kN					
			Kvs [m³/h]					Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}					
			DN	H	Ds	1	2	3	4	5	packing	packing	packing	packing		
			graphitePTFE	graphitePTFE	graphitePTFE	graphitePTFE										
400	100	150	---	---	---	400	250	1.15	1.32	1.15	1.32	1.58	1.76	1.47	1.65	
		200	---	---	630	---	---	---	0.63	0.73	0.63	0.73	0.88	0.98	0.82	0.92
		250	---	1000	---	---	---	---	0.40	0.46	0.40	0.46	0.55	0.62	0.52	0.58
		330	1600	---	---	---	---	---	0.22	0.26	0.22	0.26	0.31	0.35	0.29	0.33

For further information on actuating, see actuators catalogue sheets			Pneumatic actuators					A. Hock 2116-100	A. Hock 2116S-100	A. Hock 2116-100	A. Hock 2116S-100					
			Specification No. of actuator					direct	indirect	direct	indirect					
			Actuator function					P2-0K-BN1	P2-0K-YN2	P2-0K-BN1	P2-0K-ZN2					
			Spring range [bar]					0.8 - 2.2	1.3 - 3.0	0.8 - 2.2	1.5 - 3.5					
			Spring setting [bar]					0.8 - 2.2	1.3 - 3.0	0.8- 1.92	1.5 - 3.5					
			Feeding pressure [bar]					3.9	4.0	5.1	5.0					
			Marking in valve spec.					PHC								
			Linear force					20 kN	15.6 kN	38 kN	18 kN					
			Kvs [m³/h]					Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}					
			DN	H	Ds	1	2	3	4	5	packing	packing	packing	packing		
			graphitePTFE	graphitePTFE	graphitePTFE	graphitePTFE										
400	100	150	---	---	---	400	250	0.61	0.78	0.37	0.54	1.58	1.76	0.5	0.67	
		200	---	---	630	---	---	---	0.33	0.43	0.19	0.29	0.88	0.98	0.27	0.37
		250	---	1000	---	---	---	---	0.2	0.26	0.11	0.18	0.55	0.62	0.16	0.23
		330	1600	---	---	---	---	---	0.11	0.14	0.06	0.09	0.31	0.35	0.08	0.12

Max. differential pressures specified in table apply to PTFE and graphite packing. Δp_{max} for bellows must be consulted with the producer.

Kvs values and differential pressures Δp_{\max} [MPa] of valves DN 25 - 400 with perforated plugs (flow direction above plug) with electromechanic actuators

Δp_{\max} value is the valve max. differential pressure when open - close function is always guaranteed. Differential pressure must not exceed 4,0 MPa. In regard of service life of seat and plug, it is recommended so that differential pressure would not exceed 1.6 MPa. Otherwise it is suitable to use perforated plug (Δp 4,0 MPa)

For further information on actuating, see actuators' catalogue sheets			Actuating (actuator)		MIDI 660 ST 0 ST 0.1		Auma Schiebel		Zepadyn 670 ST 1 Ex ST 0.1		Auma Schiebel ST 1		Auma Schiebel ST 1		Zepadyn 670 Modact MTR				
			Marking in valve specification No.		ENB EPK EPL		EA... EZ...		ENC EPJ EPL		EA... EZ... EPI		EA... EZ... EPI		ENC EPD				
			Linear force		4 kN		5 kN		6.3 kN		7.5 kN		10 kN		10 kN				
			Kvs [m ³ /h]					Δp_{\max} packing		Δp_{\max} packing		Δp_{\max} packing		Δp_{\max} packing		Δp_{\max} packing			
DN	H	Ds	1	2	3	4	5	grafit	PTFE	grafit	PTFE	grafit	PTFE	grafit	PTFE	grafit	PTFE		
25	16	25	---	6.3	4.0	2.5 ⁵⁾	1.6 ⁵⁾	1.53	5.42	3.36	6.3	5.73	6.3	6.3	6.3	6.3	6.3	6.3	
32		32	---	10	6.3	4.0	2.5 ⁵⁾	0.85	3.2	1.95	4.31	3.39	5.74	4.72	6.3	6.3	6.3	6.3	
40		40	---	16	10	6.3	4.0	0.49	2.0	1.2	2.71	2.12	3.64	2.98	4.49	4.75	6.26	4.75	6.26
50	20	50	---	25	16	10	6.3	0.25	1.16	0.68	1.58	1.23	2.14	1.74	2.65	2.8	3.71	2.8	3.71
65		65	---	40	25	16	10	0.11	0.67	0.37	0.93	0.71	1.27	1.02	1.58	1.67	2.23	1.67	2.23
80		80	---	63	40	25	16	---	---	---	---	0.23	0.68	0.45	0.9	0.9	1.35	0.9	1.35
100	40	100	---	100	63	40	25	---	---	---	---	0.13	0.42	0.27	0.56	0.56	0.85	0.56	0.85
125		125	---	160	100	63	40	---	---	---	---	0.06	0.25	0.15	0.34	0.34	0.53	0.34	0.53
150		150	---	250	160	100	63	---	---	---	---	---	0.16	0.1	0.23	0.23	0.36	0.23	0.36

For further information on actuating, see actuators' catalogue sheets			Actuating (actuator)		Modact Cont. Modact MTN Auma Schiebel		Modact MTR ST 2 Zepadyn 671*		Auma Schiebel ST 2 Zepadyn 671*		Modact MTR Modact MTN ST 2 Modact Cont.		Auma Schiebel		Hand wheel				
*) max. DN 300			Marking in valve specification No.		EYA EYB EA... EZ...		EPD EPM ENE		EA... EZ... ENE EPM		EPD EYA EYB EPM		EA... EZ...		Rxx				
			Linear force		15 kN		16 kN		20 kN		25 kN		32 kN						
			Kvs [m ³ /h]					Δp_{\max} packing		Δp_{\max} packing		Δp_{\max} packing		Δp_{\max} packing		Δp_{\max} packing			
DN	H	Ds	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE		
25	16	25	---	6.3	4.0	2.5 ⁵⁾	1.6 ⁵⁾	---	---	---	---	---	---	---	---	---	6.3	6.3	
32		32	---	10	6.3	4.0	2.5 ⁵⁾	---	---	---	---	---	---	---	---	---	6.3	6.3	
40		40	---	16	10	6.3	4.0	---	---	---	---	---	---	---	---	---	4.75	6.26	
50	20	50	---	25	16	10	6.3	4.93	5.89	---	---	---	---	---	---	---	2.8	3.71	
65		65	---	40	25	16	10	2.97	3.53	---	---	---	---	---	---	---	1.67	2.23	
80		80	---	63	40	25	16	1.8	2.25	1.98	2.43	2.70	3.15	3.60	4.05	---	1.98	2.43	
100	40	100	---	100	63	40	25	1.14	1.43	1.26	1.55	1.73	2.02	2.31	2.60	---	1.26	1.55	
125		125	---	160	100	63	40	0.72	0.91	0.8	0.99	1.10	1.29	1.48	1.67	---	0.8	0.99	
150		150	---	250	160	100	63	0.49	0.63	0.55	0.68	0.76	0.89	1.02	1.16	---	0.55	0.68	
200	80	200	---	400	250	160	100	0.23	0.32	0.26	0.35	0.38	0.47	0.53	0.62	0.75	0.83	0.99	1.08
250		230	---	630	400	250	160	0.13	0.20	0.15	0.22	0.24	0.32	0.36	0.43	0.52	0.60	0.71	0.78
300		250	---	800	630	400	250	0.10	0.17	0.12	0.19	0.20	0.26	0.30	0.36	0.44	0.50	0.59	0.66
400		100	330	---	1000	630	400	250	0.05	0.09	0.06	0.10	0.11	0.14	0.16	0.20	0.24	0.28	0.33

⁵⁾ linear characteristic only

Max. differential pressures specified in table apply to PTFE and graphite packing.

Δp_{\max} for bellows must be consulted with the producer.

Kvs values and differential pressures Δp_{max} [MPa] of valves DN 25 - 200 with perforated plugs (flow direction above plug) with pneumatic actuators

Δp_{max} value is the valve max. differential pressure when open - close function is always guaranteed. Differential pressure must not exceed 4,0 Mpa. In regard of service life the permanent working pressure with perforated plugs is limited to 4,0 MPa.

For further information on actuating, see actuators catalogue sheets			Pneumatic actuators		Flowserve PA 253				Flowserve PB 503		A. Hock 2109						
			Spec. No. of actuator	direct	indirect	direct	indirect	direct	indirect	direct	indirect	direct	indirect				
			Actuator function		BVCxAA	BVCxZA	BVCxAA	BVCxZA	BVCxAA	BVCxZA	P2-0K-VL1	P2-0K-HL2					
			Spring range [bar]		1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.2 - 3.0	1.5 - 3.8					
			Spring setting [bar]		1.5 - 2.46	1.75 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.2 - 2.64	1.96 - 3.8					
			Feeding pressure [bar]		4.5	4.5	4.5	4.5	4.5	4.5	3.9	5.8					
			Marking in valve spec.		PFA				PFB		PHF						
			Linear force		4.3 kN	4.3 kN	3.7 kN	3.7 kN	7.5 kN	7.5 kN	3.5 kN	5.7kN					
			Kvs [m ³ /h]		Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}					
					packing	packing	packing	packing	packing	packing	packing	packing					
					graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE					
DN	H	Ds	1	2	3	4	5										
25		25	---	6.3	4.0	2.5 ⁵⁾	1.6 ⁵⁾	0.77	1.55	0.77	1.55	---	---	0.47	1.25	1.28	2.06
32	16	32	---	10	6.3	4.0	2.5 ⁵⁾	0.46	0.94	0.46	0.94	---	---	0.29	0.76	0.77	1.24
40		40	---	16	10	6.3	4.0	0.3	0.6	0.3	0.6	---	---	0.18	0.49	0.5	0.8
50	20	50	---	25	16	10	6.3	---	---	0.13	0.31	0.13	0.31	0.45	0.63	0.45	0.63
65		65	---	40	25	16	10	---	---	0.08	0.19	0.08	0.19	0.28	0.39	0.28	0.39

⁵⁾ linear characteristic only

For further information on actuating, see actuators catalogue sheets			Pneumatic actuators		A. Hock 2112-30						
			Spec. No. of actuator	direct	indirect	direct	indirect	direct	indirect	direct	indirect
			Actuator function		P2-0K-BM1	P2-0K-BM2	P2-0K-BM1	P2-0K-BM2	P2-0K-WM1	P2-0K-MM2	
			Spring range [bar]		0.8 - 2.2	0.8 - 2.2	0.8 - 2.2	0.8 - 2.2	1.4 - 2.8	1.6 - 3.2	
			Spring setting [bar]		0.8 - 1.55	1.45 - 2.2	0.8 - 1.73	1.27 - 2.2	1.4 - 2.33	2.13 - 3.2	
			Feeding pressure [bar]		2.4	3.7	2.6	3.5	3.8	5.4	
			Marking in valve spec.		PHA						
			Linear force		4.6 kN	8.3kN	4.6 kN	7.3kN	8 kN	12.2kN	
			Kvs [m ³ /h]		Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	
					packing	packing	packing	packing	packing	packing	
					graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	
DN	H	Ds	1	2	3	4	5				
25		25	---	6.3	4.0	2.5 ⁵⁾	1.6 ⁵⁾	0.88	1.66	2.23	3.01
32	16	32	---	10	6.3	4.0	2.5 ⁵⁾	0.53	1	1.35	1.82
40		40	---	16	10	6.3	4.0	0.34	0.64	0.87	1.17
50	20	50	---	25	16	10	6.3	---	---	0.2	0.39
65		65	---	40	25	16	10	---	---	0.12	0.24

⁵⁾ linear characteristic only

For further information on actuating, see actuators catalogue sheets			Pneumatic actuators		Flowserve PB 503		Flowserve PB 701		A. Hock 2112-50		A. Hock 2116-40										
			Spec. No. of actuator	direct	indirect	direct	indirect	direct	indirect	direct	indirect	direct	indirect								
			Actuator function		BVCxAB	BVCxZB	BVCxAB	BVCxZB	P2-0K-SI1	P2-0K-SI2	P2-0K-BN1	P2-0K-BN2									
			Spring range [bar]		1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	0.8 - 2.8	0.8 - 2.8	0.8 - 2.2	0.8 - 2.2									
			Spring setting [bar]		1.5 - 2.7	1.75 - 2.7	1.5 - 2.7	1.5 - 2.7	0.8 - 2.4	1.2 - 2.8	0.8 - 1.36	1.64 - 2.2									
			Feeding pressure [bar]		4.5	4.5	4.5	4.5	3.3	4.0	2.2	3.9									
			Marking in valve spec.		PFB		PFC		PHA		PHC										
			Linear force		7.5 kN	7.5 kN	10.5 kN	10.5 kN	4.6 kN	6.9 kN	9.6 kN	19.5 kN									
			Kvs [m ³ /h]		Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}									
					packing	packing	packing	packing	packing	packing	packing	packing									
					graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE									
DN	H	Ds	1	2	3	4	5														
80		80	---	63	40	25	16	0.18	0.27	0.18	0.27	0.28	0.37	0.07	0.16	0.15	0.24	0.25	0.34	0.61	0.7
100	40	100	---	100	63	40	25	0.11	0.17	0.11	0.17	0.18	0.24	0.05	0.11	0.1	0.16	0.16	0.22	0.39	0.45
125		125	---	160	100	63	40	0.07	0.11	0.07	0.11	0.12	0.16	0.03	0.07	0.07	0.1	0.11	0.14	0.26	0.29
150		150	---	250	160	100	63	0.05	0.08	0.05	0.08	0.08	0.11	0.02	0.05	0.05	0.07	0.07	0.1	0.18	0.21

Valves of serie RV 3x0 DN 250 - 400 with pneumatic actuators are not available with perforated plugs

Max. differential pressures specified in table apply to PTFE and graphite packing.

Δp_{max} for bellows must be consulted with the producer.

Dimensions and weights of valves RV / UV 3x0 (Ex) with flanged and welded connection, DN 15 - 400

DN	PN 10-16								PN 25-40								PN 63							
	L ₁ mm	ØD ₁ mm	ØD ₂ mm	ØD ₃ mm	a mm	d mm	n	[#] V ₂ mm	L ₁ mm	ØD ₁ mm	ØD ₂ mm	ØD ₃ mm	a mm	d mm	n	[#] V ₂ mm	L ₁ mm	ØD ₁ mm	ØD ₂ mm	ØD ₃ mm	a mm	d mm	n	[#] V ₂ mm
15	130	95	65	45	16	14		409	130	95	65	45	16	14		409	210	105	75	45	20	14		458
20	150	105	75	58	18	14		409	150	105	75	58	18	14		409	230	130	90	58	22	18		458
25	160	115	85	68	18	14		417	160	115	85	68	18	14		417	230	140	100	68	24	18		466
32	180	140	100	78	18	18		417	180	140	100	78	18	18		417	260	155	110	78	24	22		466
40	200	150	110	88	18	18		417	200	150	110	88	18	18		417	260	170	125	88	26	22		466
50	230	165	125	102	20	18		411	230	165	125	102	20	18		411	300	180	135	102	26	22		460
65	290	185	145	122	22	18	4 ¹⁾	411	290	185	145	122	22	18		411	340	205	160	122	26	22		460
80	310	200	160	138	24	18		526	310	200	160	138	24	18		526	380	215	170	138	28	22		619
100	350	220	180	162	24	18		526	350	235	190	162	24	22		526	430	250	200	162	30	26		619
125	400	250	210	188	26	18	8	530	400	270	220	188	26	26		530	500	295	240	188	34	30		622
150	480	285	240	212	28	22		530	480	300	250	218	28	26		530	550	345	280	218	36	33		622
200	---	---	---	---	---	---		---	---	---	---	---	---	---		---	650	415	345	285	42	36		---
250	---	---	---	---	---	---		---	---	---	---	---	---	---		---	775	470	400	345	46	36	12	---
300	---	---	---	---	---	---		---	---	---	---	---	---	---		---	900	530	460	410	52	36		---
400	---	---	---	---	---	---		---	---	---	---	---	---	---		---	1150	670	585	535	60	42	16	---

DN	H mm	V ₁ mm	V ₂ mm	V ₃ mm	ØD ₅ mm	M mm	PN 10-63							
							ØD ₆ mm	L ₂ mm	ØD ₄ mm	m ₁ kg	m ₂ kg	m ₃ kg	[#] m _v kg	
15		47	220				M10x1	203	22	5.5	7	4.5	4	
20		47	220					206	28	6.5	8.5	4.5	4	
25	16	52	230					210	35	8	10.5	5	4	
32		52	230					260	44	9.5	12.5	6.5	4	
40		52	230					251	50	11	15	7.5	4	
50	20	73	262	130	65	---		286	62	20	20	12	4	
65		73	262				311	77	25	25	15	4		
80		105	294				M16x1.5	337	91	36	36	24	6	
100	40	105	294					394	117	49	54	38	6	
125		133	313					500	144	82	92	70	7	
150		134	330					508	172	100	140	105	7	
200		203	422				M20x1.5	610	223	---	260	210	---	
250	80	253	506			150		752	278	---	485	370	---	
300		296	555	160	---			819	329	---	665	520	---	
400	100	382	672					1108	413	---	1305	1130	---	

¹⁾ - with regard to previously valid standards used possibility of choosing the number of connecting screws, offered by the ČSN EN 1092-1 standard

m₁ - weight of flanged connection PN 16 - 40

m₂ - weight of flanged connection PN 63

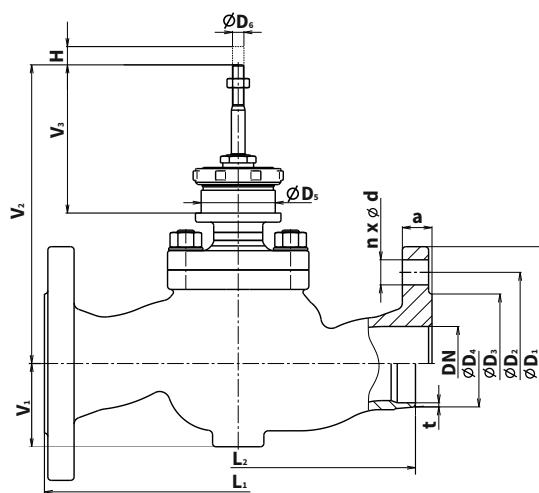
m₃ - weight of welded connection

t - wall thickness of weld ends:

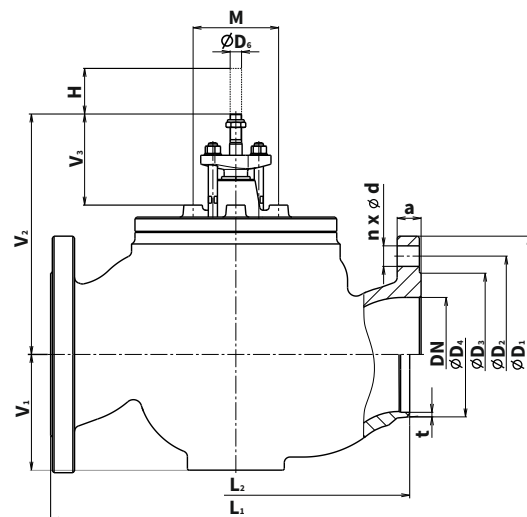
$$t = [D_4 - (D - 2 * t_1)] / 2$$

^{a)} - for valve with bellows packing

[#]**m_v** - weight to be added to weight of valve equipped with bellows packing



DN 15 - 150

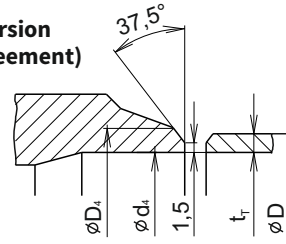


DN 200 - 400

**Dimension of weld ends for pipes
ISO 4200 line 1**

DN	$\varnothing D_4$	$\varnothing D$	t_r				$\varnothing D_{4 \max}$	$\varnothing d_{4 \min}$
15	22	21.3	2.0	2.6	3.2	3.6	25	14
20	28	26.9	2.0	2.6	3.2	3.6	32	18
25	35	33.7	2.3	2.6	3.2	3.6	39	23
32	44	42.4	2.6	2.9	3.6	4.0	48	28
40	50	48.3	2.6	2.9	3.6	4.0	54	37
50	62	60.3	2.9	3.2	4.0	4.5	66	48
65	77	76.1	2.9	3.2	3.6	5.0	82	62
80	91	88.9	3.2	3.6	4.0	5.6	96	74
100	117	114.3	3.6	4.0	5.0	6.3	122	98
125	144	139.7	4.5	5.0	6.3	7.1	154	118
150	172	168.3	4.5	5.0	7.1	8.0	177	144
200	223	219.1	6.3	8.0	8.8	10.0	235	193
250	278	273.0	7.1	8.0	10.0	14.2	278	229
300	329	323.9	8.0	10.0	12.5	17.5	329	281
400	413	406.4	11.0	12.5	14.2	20.0	426	345

(other version
after agreement)





RV 3x2

Pressure balanced
control valves

DN 25 to 400
PN 16 to 63

Technical data		
Series	RV 322 (Ex)	RV 332 (Ex)
Type of valve	Two-way, single-seated, control valve with pressure balanced plug	
Nominal size range	DN 25 to 400	
Nominal pressure	PN 16 to 63	
Body material	Cast steel 1.0619 (GP240GH) 1.7357 (G17CrMo5-5)	Stainless steel 1.4581(GX5CrNiMoNb19-11-2)
Seat material: DN 15 - 50	1.4028 / 17 023.6	1.4571 / 17 348.4
DIN W.Nr./+ČSN DN 65 - 400	1.4027 / 42 2906.5	1.4571 / 17 348.4
Plug material: DN 15 - 65	1.4028 / 17 023.6	1.4581 / 42 2941.4
DIN W.Nr./+ČSN DN 80 - 150	1.4021 / 17 027.6	1.4581 / 42 2941.4
DN 200 - 400	1.4021 / 17 022.6	1.4581 / 42 2941.4
Operating temperature range	-10 to 550 °C	
Face to face dimensions	Section 1 for flanged version PN 16 to 40 acc. to ČSN EN 558 (9/2022), Section 2 for flanged version PN 63 acc. to ČSN EN 558 (9/2022), Section 73 for weld ends version acc. to ČSN EN 12982 (1/2011)	
Connection flanges	Dle ČSN EN 1092-1 (12/2019)	
Flange faces	Type B1 (raised-faced) or Type B2 (plain face) or Type F (female), or Type D (groove) acc. to ČSN EN 1092-1 (12/2019)	
Weld ends	Weld ends acc. to ČSN EN 12627-2 (9/2018)	
Type of plug	V-ported, perforated	
Flow characteristic	Linear, equal-percentage, LDMspline, parabolic	
Kvs value	1.6 - 1600 m ³ /h	
Leakage rate	Class III. acc. to ČSN EN 1349 (7/2010) (<0.1% Kvs) for control valves with metal-metal seat sealing Class IV. acc. to ČSN EN 1349 (7/2010) (<0.01% Kvs) for control valves with metal - PTFE seat sealing	
Leakage rate for Ex version	RV 3xx class IV. acc. to ČSN EN <1349 (7/2010) (0.01% Kvs)	
Rangeability r	50 : 1	
Packing	DRSpack® (PTFE) t _{max} = 260°C, Expanded graphite t _{max} = 550°C, Bellows (DN15-150) t _{max} = 550°C	

Kvs values and differential pressures Δp_{max} [MPa] of valves DN 25 - 400 with pressure-balanced plug and with electromechanic actuators

Δp_{max} value is the valve max. differential pressure when open - close function is always guaranteed. Differential pressure must not exceed 4,0 MPa for valves PN 40. In regard of service life of seat and plug, it is recommended so that differential pressure would not exceed 1.6 MPa. Otherwise it is suitable to use perforated plug (Δp 4,0 MPa) or sealing surfaces of seat and plug with a hard metal overlay (Δp_{max} up to 2,5 MPa).

For further information on actuating, see actuators catalogue sheets			Actuating (actuator)					MIDI 660	ST 0	Auma Schiebel	Zepadyn 670 ST 1 Ex ST 0.1	ST 1	ST 1					
			Marking in valve specification No.					ENB	EPK	EA... EZ...	ENC EPJ EPL	EPI	EPI					
			Linear force					2 kN	2.5 kN	5 kN	6.3 kN	7.5 kN	10 kN					
			Kvs [m ³ /h]					Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}					
DN	H	Ds	1	2	3	4	5	packing	packing	packing	packing	packing	packing					
								graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE					
25	16	25	10	6.3 ⁵⁾	4.0 ⁵⁾	2.5 ⁵⁾	1.6 ⁵⁾	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	---	---
32		32	16	10	6.3 ⁵⁾	4.0 ⁵⁾	2.5 ⁵⁾	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	---	---
40		40	25	16	10	6.3 ⁵⁾	4.0 ⁵⁾	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	---	---
50	20	50	40	25	16	10	6.3 ⁵⁾	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
65		65	63	40	25	16	10	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
80	40	80	100	63	40	25	16	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3
100		100	160	100	63	40	25	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3
125		125	250	160	100	63	40	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3
150		150	360	250	160	100	63	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3

⁵⁾ linear characteristic only

For further information on actuating, see actuators catalogue sheets			Actuating (actuator)					Modact Cont. Modact MTN	Auma Schiebel	Modact MTR ST 2 Zepadyn 671*	Auma Schiebel Zepadyn 671*	Modact MTR Modact MTN Modact Cont. ST 2	Hand wheel	
			Marking in valve specification No.					EYA EYB	EA... EZ...	EPD EPM ENE	EA... EZ... ENE	EPD EYA EYB EPM	Rxx	
			Linear force					15 kN	15 kN	16 kN	20 kN	25 kN		
			Kvs [m ³ /h]					Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	
DN	H	Ds	1	2	3	4	5	packing	packing	packing	packing	packing	packing	
								graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	
25	16	25	10	6.3 ⁵⁾	4.0 ⁵⁾	2.5 ⁵⁾	1.6 ⁵⁾	---	---	---	---	---	6.3	6.3
32		32	16	10	6.3 ⁵⁾	4.0 ⁵⁾	2.5 ⁵⁾	---	---	---	---	---	6.3	6.3
40		40	25	16	10	6.3 ⁵⁾	4.0 ⁵⁾	---	---	---	---	---	6.3	6.3
50	20	50	40	25	16	10	6.3 ⁵⁾	---	---	---	---	---	6.3	6.3
65		65	63	40	25	16	10	---	---	---	---	---	6.3	6.3
80	40	80	100	63	40	25	16	6.3	6.3	---	---	---	6.3	6.3
100		100	160	100	63	40	25	6.3	6.3	---	---	---	6.3	6.3
125		125	250	160	100	63	40	6.3	6.3	---	---	---	6.3	6.3
150		150	360	250	160	100	63	6.3	6.3	---	---	---	6.3	6.3
200	80	200	570	400	250	160	100	6.3	6.3	6.3	6.3	---	6.3	6.3
250		230	800	630	400	250	160	---	---	6.3	6.3	6.3	6.3	6.3
300		250	1000	800	630	400	250	---	---	6.3	6.3	6.3	6.3	6.3
400	100	330	1600	1000	630	400	250	---	---	6.3	6.3	6.3	6.3	6.3

⁵⁾ linear characteristic only

Max. differential pressures specified in table apply to PTFE and graphite packing.

Perforated plug available only with Kvs values in shadowed frames with the following restrictions:

- perforated plug with Kvs value acc. to column No. 2 available with linear or parabolic characteristic only

Kvs values and differential pressures Δp_{\max} [MPa] of valves DN 25 - 400 with pressure-balanced plug and with pneumatic actuators

Δp_{\max} value is the valve max. differential pressure when open - close function is always guaranteed. Differential pressure must not exceed 4,0 MPa for valves PN 40. In regard of service life of seat and plug, it is recommended so that differential pressure would not exceed 1.6 MPa. Otherwise it is suitable to use perforated plug (Δp 4,0 MPa) or sealing surfaces of seat and plug with a hard metal overlay (Δp_{\max} up to 2,5 MPa).

For further information on actuating, see actuators catalogue sheets			Pneumatic actuators					Flowserve PA 253				A. Hock 2109									
			Spec. No. of actuator					direct	indirect	direct	indirect	direct	indirect	direct	indirect						
			Actuator function					BVCxAA	BVCxZA	BVCxAA	BVCxZA	P2-0K-VL1	P2-0K-HL2	P2-0K-VL1	P2-0K-HL2						
			Spring range [bar]					1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.2 - 3.0	1.5 - 3.8	1.2 - 3.0	1.5 - 3.8						
			Spring setting [bar]					1.5 - 2.46	1.75 - 2.7	1.5 - 2.7	1.5 - 2.7	1.2 - 2.64	1.96 - 3.8	1.2 - 3.0	1.5 - 3.8						
			Feeding pressure [bar]					4.5	4.5	4.5	4.5	3.9	5.8	4.2	5.3						
			Marking in valve spec.					PFA				PHF									
			Linear force					4.3 kN	4.3 kN	3.7 kN	3.7 kN	3.5 kN	5.7 kN	3.5 kN	4.4 kN						
			Kvs [m ³ /h]					packing	packing	packing	packing	packing	packing	packing	packing						
								Δp_{\max}	Δp_{\max}	Δp_{\max}	Δp_{\max}	Δp_{\max}	Δp_{\max}	Δp_{\max}	Δp_{\max}						
DN	H	Ds	1	2	3	4	5	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE						
25	16	25	10	6.3 ⁵⁾	4.0 ⁵⁾	2.5 ⁵⁾	1.6 ⁵⁾	6.3	6.3	6.3	6.3	---	---	6.3	6.3	6.3	6.3	---	---	---	---
32		32	16	10	6.3 ⁵⁾	4.0 ⁵⁾	2.5 ⁵⁾	6.3	6.3	6.3	6.3	---	---	6.3	6.3	6.3	6.3	---	---	---	---
40		40	25	16	10	6.3 ⁵⁾	4.0 ⁵⁾	6.3	6.3	6.3	6.3	---	---	6.3	6.3	6.3	6.3	---	---	---	---
50	20	50	40	25	16	10	6.3 ⁵⁾	---	---	---	---	6.3	6.3	6.3	6.3	---	---	6.3	6.3	6.3	6.3
65		65	63	40	25	16	10	---	---	---	---	6.3	6.3	6.3	6.3	---	---	6.3	6.3	6.3	6.3

For further information on actuating, see actuators catalogue sheets			Pneumatic actuators					A. Hock 2112-30							
			Spec. No. of actuator					direct	indirect	direct	indirect	direct	indirect		
			Actuator function					P2-0K-BM1	P2-0K-BM2	P2-0K-BM1	P2-0K-BM2	P2-0K-WM1	P2-0K-MM2		
			Spring range [bar]					0.8 - 2.2	0.8 - 2.2	0.8 - 2.2	0.8 - 2.2	1.4 - 2.8	1.6 - 3.2		
			Spring setting [bar]					0.8 - 1.55	1.45 - 2.2	0.8 - 1.73	1.27 - 2.2	1.4 - 2.33	2.13 - 3.2		
			Feeding pressure [bar]					2.4	3.7	2.6	3.5	3.8	5.4		
			Marking in valve spec.					PHA							
			Linear force					4.6 kN	8.3kN	4.6 kN	7.3kN	8 kN	12.2kN		
			Kvs [m ³ /h]					packing	packing	packing	packing	packing	packing		
								Δp_{\max}	Δp_{\max}	Δp_{\max}	Δp_{\max}	Δp_{\max}	Δp_{\max}		
DN	H	Ds	1	2	3	4	5	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE		
25	16	25	10	6.3 ⁵⁾	4.0 ⁵⁾	2.5 ⁵⁾	1.6 ⁵⁾	6.3	6.3	6.3	6.3	---	---	---	---
32		32	16	10	6.3 ⁵⁾	4.0 ⁵⁾	2.5 ⁵⁾	6.3	6.3	6.3	6.3	---	---	---	---
40		40	25	16	10	6.3 ⁵⁾	4.0 ⁵⁾	6.3	6.3	6.3	6.3	---	---	---	---
50	20	50	40	25	16	10	6.3 ⁵⁾	---	---	6.3	6.3	6.3	6.3	6.3	6.3
65		65	63	40	25	16	10	---	---	6.3	6.3	6.3	6.3	6.3	6.3

For further information on actuating, see actuators catalogue sheets			Pneumatic actuators					Flowserve PB 503				Flowserve PB 701				
			Spec. No. of actuator		direct		indirect		direct		indirect		direct		indirect	
			Actuator function		BVCxAA		BVCxZA		BVCxAB		BVCxZB		BVCxAB		BVCxZB	
			Spring range [bar]		1.5 - 2.7		1.5 - 2.7		1.5 - 2.7		1.5 - 2.7		1.5 - 2.7		1.5 - 2.7	
			Spring setting [bar]		1.5 - 2.7		1.5 - 2.7		1.5 - 2.7		1.5 - 2.7		1.5 - 2.7		1.5 - 2.7	
			Feeding pressure [bar]		4.5		4.5		4.5		4.5		4.5		4.5	
			Marking in valve spec.							PFB				PFC		
			Linear force		7.5 kN		7.5 kN		7.5 kN		7.5 kN		10.5 kN		10.5 kN	
			Kvs [m³/h]					Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		
			packing		packing		packing		packing		packing		packing			
DN	H	Ds	1	2	3	4	5	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE		
50	20	50	40	25	16	10	6.3 ⁵⁾	6.3	6.3	6.3	6.3	---	---	---	---	
65		65	63	40	25	16	10	6.3	6.3	6.3	6.3	---	---	---	---	
80	40	80	100	63	40	25	16	---	---	---	---	6.3	6.3	6.3	6.3	
100		100	160	100	63	40	25	---	---	---	---	6.3	6.3	6.3	6.3	
125		125	250	160	100	63	40	---	---	---	---	6.3	6.3	6.3	6.3	
150		150	360	250	160	100	63	---	---	---	---	6.3	6.3	6.3	6.3	

For further information on actuating, see actuators catalogue sheets			Pneumatic actuators					A. Hock 2112-50		A. Hock 2116-40			
			Spec. No. of actuator		direct		indirect		direct		indirect		
			Actuator function		P2-0K-SI1		P2-0K-SI2		P2-0K-BN1		P2-0K-BN2		
			Spring range [bar]		0.8 - 2.8		0.8 - 2.8		0.8 - 2.2		0.8 - 2.2		
			Spring setting [bar]		0.8 - 2.4		1.2 - 2.8		0.8 - 1.36		1.64 - 2.2		
			Feeding pressure [bar]		3.3		4.0		2.2		3.9		
			Marking in valve spec.							PHA		PHC	
			Linear force		4.6 kN		6.9 kN		9.6 kN		19.5 kN		
			Kvs [m³/h]					Δp_{max}		Δp_{max}			
			packing		packing		packing		packing				
DN	H	Ds	1	2	3	4	5	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE		
80	40	80	100	63	40	25	16	6.3	6.3	6.3	6.3		
100		100	160	100	63	40	25	6.3	6.3	6.3	6.3		
125		125	250	160	100	63	40	6.3	6.3	6.3	6.3		
150		150	360	250	160	100	63	6.3	6.3	6.3	6.3		

For further information on actuating, see actuators catalogue sheets			Pneumatic actuators					Flowserve PO 1502		Flowserve PO 1502		Flowserve PO 1502				
			Spec. No. of actuator		direct		indirect		direct		indirect		direct		indirect	
			Actuator function		BVCxAD		BVCxZD		BVCxAD		BVCxZD		BJIOAE		DJIOZE	
			Spring range [bar]		1.5 - 2.7		1.5 - 2.7		2.0 - 3.5		2.0 - 3.5		1.8 - 3.8		1.8 - 3.8	
			Spring setting [bar]		1.5 - 2.7		1.5 - 2.7		2.0 - 3.5		2.0 - 3.5		1.8 - 3.8		1.8 - 3.8	
			Feeding pressure [bar]		4.5		4.5		5.5		5.5		5.6		5.6	
			Marking in valve spec.							PFD		PFD		PFD		
			Linear force		22.5 kN		22.5 kN		30 kN		30 kN		27 kN		27 kN	
			Kvs [m³/h]					Δp_{max}		Δp_{max}		Δp_{max}				
			packing		packing		packing		packing		packing		packing			
DN	H	Ds	1	2	3	4	5	grafit PTFE	grafit PTFE	grafit PTFE	grafit PTFE	grafit PTFE	grafit PTFE			
200	80	200	570	400	250	160	100	6.3	6.3	6.3	6.3	6.3	6.3	---	---	
250		230	800	630	400	250	160	6.3	6.3	6.3	6.3	6.3	6.3	---	---	
300		250	1000	800	630	400	250	6.3	6.3	6.3	6.3	6.3	6.3	---	---	
400		330	1600	1000	630	400	250	---	---	---	---	---	---	6.3	6.3	

⁵⁾ linear characteristic only

Max. differential pressures specified in table apply to PTFE and graphite packing.

Perforated plug available only with Kvs values in shadowed frames with the following restrictions:

- perforated plug with Kvs value acc. to column No. 2 available with linear or parabolic characteristic only

For further information on actuating, see actuators catalogue sheets			Pneumatic actuators					A.Hock 2116S-100													
			Spec. No. of actuator		direct		indirect			direct		indirect		direct		indirect		direct		indirect	
			Actuator function		P2-0K-YN1		P2-0K-YN2			P2-0K-ZN1		P2-0K-ZN2		P2-0K-YN1		P2-0K-YN2		P2-0K-ZN1		P2-0K-ZN2	
			Spring range [bar]		1.3 - 3.0		1.3 - 3.0			1.5 - 3.5		1.5 - 3.5		1.3 - 3.0		1.3 - 3.0		1.5 - 3.5		1.5 - 3.5	
			Spring setting [bar]		1.3 - 2.66		1.64 - 3.0			1.5 - 3.1		1.9 - 3.5		1.3 - 3.0		1.3 - 3.0		1.5 - 3.5		1.5 - 3.5	
			Feeding pressure [bar]		4.0		4.8			4.6		5.4		4.4		4.4		5.0		5.0	
			Marking in valve spec.																		
			Linear force		16 kN		19.6 kN			18 kN		22.8 kN		16 kN		15.6 kN		18 kN		18 kN	
			Kvs [m³ /h]		Δp_{max}		Δp_{max}			Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}	
			DN	H	Ds	1	2	3	4	5	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
200		200	570	400	250	160	100	6.3 6.3	6.3 6.3	6.3 6.3	6.3 6.3	6.3 6.3	---	---	---	---	---	---			
250	80	230	800	630	400	250	160	6.3 6.3	6.3 6.3	6.3 6.3	6.3 6.3	6.3 6.3	---	---	---	---	---	---			
300		250	1000	800	630	400	250	6.3 6.3	6.3 6.3	6.3 6.3	6.3 6.3	6.3 6.3	---	---	---	---	---	---			
400	100	330	1600	1000	630	400	250	---	---	---	---	---	6.3 6.3	6.3 6.3	6.3 6.3	6.3 6.3	6.3 6.3				

⁹⁾ linear characteristic only

Max. differential pressures specified in table apply to PTFE and graphite packing.

Perforated plug available only with Kvs values in shadowed frames with the following restrictions:

- perforated plug with Kvs value acc. to column No. 2 available with linear or parabolic characteristic only

Dimensions and weights of valves RV 3x2 (Ex) with flanged and welded connection DN 25 - 400

DN	PN 10-16								PN 25-40								PN 63							
	L ₁ mm	ØD ₁ mm	ØD ₂ mm	ØD ₃ mm	a mm	d mm	n	[#] V ₂ mm	L ₁ mm	ØD ₁ mm	ØD ₂ mm	ØD ₃ mm	a mm	d mm	n	[#] V ₂ mm	L ₁ mm	ØD ₁ mm	ØD ₂ mm	ØD ₃ mm	a mm	d mm	n	[#] V ₂ mm
25	160	115	85	68	18	14	4	417	160	115	85	68	18	14	4	417	230	140	100	68	24	18	4	466
32	180	140	100	78	18	18	4	417	180	140	100	78	18	18	4	417	260	155	110	78	24	22	4	466
40	200	150	110	88	18	18	4	417	200	150	110	88	18	18	4	417	260	170	125	88	26	22	4	466
50	230	165	125	102	20	18	4	411	230	165	125	102	20	18	4	411	300	180	135	102	26	22	4	460
65	290	185	145	122	22	18	4 ¹⁾	411	290	185	145	122	22	18	4	411	340	205	160	122	26	22	4	460
80	310	200	160	138	24	18	8	526	310	200	160	138	24	18	8	526	380	215	170	138	28	22	8	619
100	350	220	180	162	24	18	8	526	350	235	190	162	24	22	8	526	430	250	200	162	30	26	8	619
125	400	250	210	188	26	18	8	530	400	270	220	188	26	26	8	530	500	295	240	188	34	30	8	622
150	480	285	240	212	28	22	8	530	480	300	250	218	28	26	8	530	550	345	280	218	36	33	8	622
200	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	650	415	345	285	42	36	12	---
250	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	775	470	400	345	46	36	12	---
300	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	900	530	460	410	52	36	16	---
400	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1150	670	585	535	60	42	16	---

DN	H mm	PN 10-63											
		V ₁ mm	V ₂ mm	V ₃ mm	ØD ₅ mm	M mm	ØD ₆ mm	L ₂ mm	ØD ₄ mm	m ₁ kg	m ₂ kg	m ₃ kg	[#] m _v kg
25	16	52	230	130	65	---	M10x1	210	35	8.5	11	5.5	4
32		52	230					260	44	10	13	7	4
40		52	230					251	50	11.5	15.5	8	4
50		73	262					286	62	21	21	13	4
65	20	73	262	150	---	M16x1.5	311	77	26	26	16	4	
80	40	105	294				337	91	38	38	26	6	
100		105	294				394	117	51	56	40	6	
125		133	313				500	144	84	94	72	7	
150		134	330	508	172	103	143	108	7				
200	80	203	422	160	---	M20x1.5	610	223	---	272	222	---	
250		253	506				752	278	---	500	385	---	
300		296	555				819	329	---	691	546	---	
400		382	672				1108	413	---	1348	1173	---	

¹⁾ - with regard to previously valid standards used possibility of choosing the number of connecting screws, offered by the ČSN EN 1092-1 standard

m₁ - weight of flanged connection PN 16 - 40

m₂ - weight of flanged connection PN 63

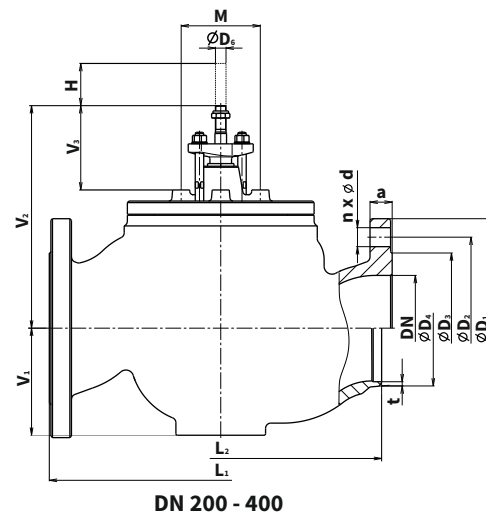
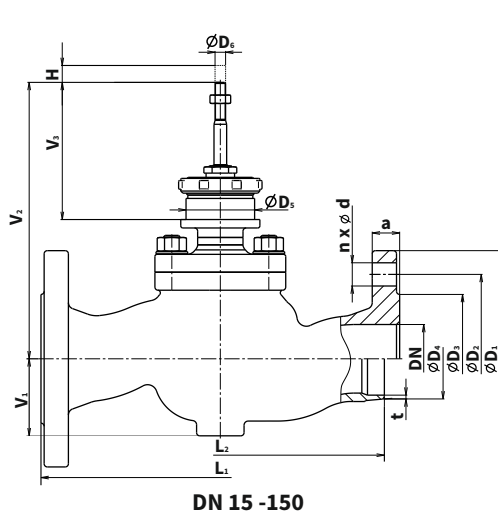
m₃ - weight of welded connection

t - wall thickness of weld ends:

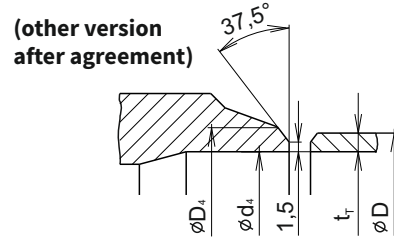
$$t = [D_4 - (D - 2 * t_1)] / 2$$

^{#)} - for valve with bellows packing

[#]**m_v** - weight to be added to weight of valve equipped with bellows packing



Dimension of weld ends for pipes ISO 4200 line 1								
DN	$\varnothing D_4$	$\varnothing D$	t_r				$\varnothing D_{4max}$	$\varnothing d_{4min}$
25	35	33.7	2.3	2.6	3.2	3.6	39	23
32	44	42.4	2.6	2.9	3.6	4.0	48	28
40	50	48.3	2.6	2.9	3.6	4.0	54	37
50	62	60.3	2.9	3.2	4.0	4.5	66	48
65	77	76.1	2.9	3.2	3.6	5.0	82	62
80	91	88.9	3.2	3.6	4.0	5.6	96	74
100	117	114.3	3.6	4.0	5.0	6.3	122	98
125	144	139.7	4.5	5.0	6.3	7.1	154	118
150	172	168.3	4.5	5.0	7.1	8.0	177	144
200	223	219.1	6.3	8.0	8.8	10.0	235	193
250	278	273.0	7.1	8.0	10.0	14.2	278	229
300	329	323.9	8.0	10.0	12.5	17.5	329	281
400	413	406.4	11.0	12.5	14.2	20.0	426	345



Valve complete specification No. for ordering RV/UV 3x0 (Ex), RV 3x2 (Ex)

		XX	XXX	XXX	XXXX	XX	XX	/	XXX	-	XXX	XX
1. Valve	Control valve	RV										
	Shut-off valve	UV										
2. Series	Valves made of steel		3 2									
	Valves made of stainless steel		3 3									
	Straight-throgh		0									
	Straight-throgh with pressure balanced plug		2									
3. Actuating	Electric actuator										EXX	
	Pneumatic actuator										PXX	
	Hand wheel										RXX	
4. Connecting	Raised flange (type B1)											1
	Femeale flange (type F)											2
	Flange with groove (type D)											3
	Plain flange (type B2)											4
	Weld ends											5
5. Body material	Cast steel 1.0619 (-10 to 450 °C)											1
	CrMo steel 1.7357 (-10 to 550 °C)											7
	Stainless steel 1.4581 (-10 to 500 °C)											8
	Other material on request											
6. Seat sealing ²⁾ DN 25 - 150; t _{max} = 260°C ³⁾ DN 80 - 400 ⁴⁾ DN 40 - 400	Metal - metal											1
	Soft sealing (metal - PTFE) ²⁾											2
	Hard metal overlay on sealilng surfaces											3
	Balanced by graphite, metal-metal ³⁾											5
	Balanced by graphit, hard metal overlay ⁴⁾											7
	Hard metal overlay on sealilng surfaces of RV 3x2, a plug with metal sealing cuff											8
7. Packing ¹⁾ DN 15 to 150 only	DRSpack® (PTFE)											3
	Expanded graphite											5
	Bellows ¹⁾											7
	Bellows with safety packing PTFE ¹⁾											8
	Bellows with safety packing Graphite ¹⁾											9
8. Flow characteristic	Linear											L
	Equal-percentage											R
	LDMspline®											S
	On-off											U
	Parabolic											P
	Linear - perforated plug											D
	Equal-percentage - perforated plug											Q
Parabolic - perforated plug											Z	
9. Kvs	Column No. acc. to Kvs value table											X
10. Nominal pressure	PN 16											16
	PN 25											25
	PN 40											40
	PN 63											63
11. Max. operating temp. °C	DRSpack® (PTFE)											260
	Expanded graphite											300
	Expanded graphite											315
	Expanded graphite											400
	Expanded graphite											450
	Expanded graphite											500
Expanded graphite											550	
12. Nominal size	DN											XXX
13. Execution	Normal											
	Non - explosive											Ex
	Oxygen											Ox
	Air tested											G

Ordering example of flanged execution:

RV320 ENC 1135 L1 63/400-065

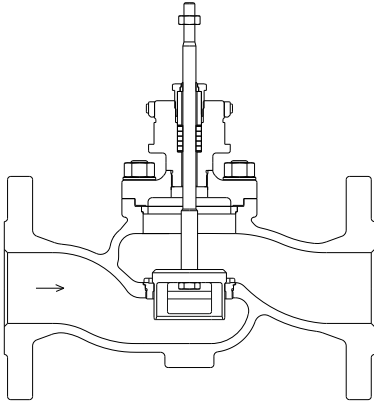
Ordering example of weld ends execution:

RV320 ENC 5135 L1 63/400-065, weld ends size Ø 77 x 5,5 acc. to ČSN EN 12627-2-DN65 for tube size Ø 76,1 x 5

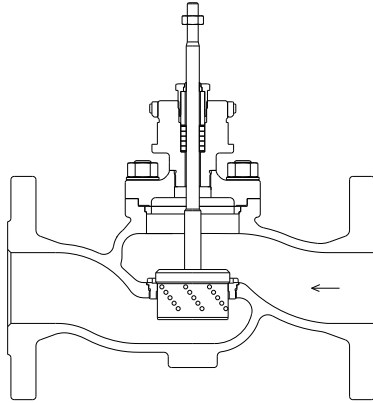
For marking of actuators in specification code, refer to table on page No. 81 of this catalogue

Ventily RV / UV 3x0 (Ex)

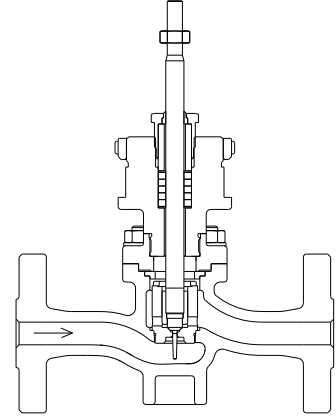
Section of valve with V-ported plug



Section of valve with perforated plug

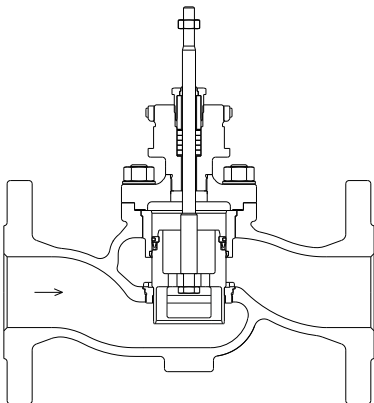


Section of valve with micro-throttling system

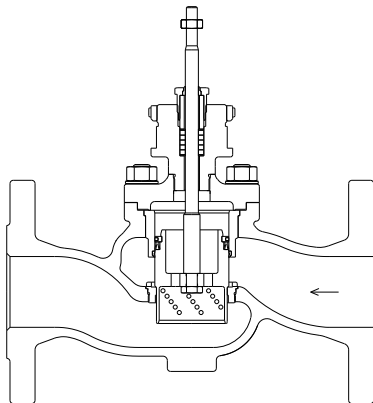


Valves RV 3x2 (Ex)

Section of pressure-balanced valve with V-ported plug



Section of pressure-balanced valve with perforated plug





Electric actuators

ZPA Nová Paka

MIDI 660

marking in type number:

ENB

Technical data	
Type	MIDI 660 XXX
Marking in valve specification No.	ENB
Voltage	230 V AC nebo 24 V AC
Frequency	50 Hz
Power consumption	max. 19
Control	3 - position control, 0 - 10 V, 0(4) - 20 mA
Nominal force	2000, 4000 N
Travel	16, 20 mm
Enclosure	IP 65
Process medium max. temperature	acc. to used valve
Ambient temperature range	-25 to 55 °C
Ambient humidity range	10 - 100 % with condensation
Weight	3,5 kg

→ **Note:** Specifications and technical data are for information only.

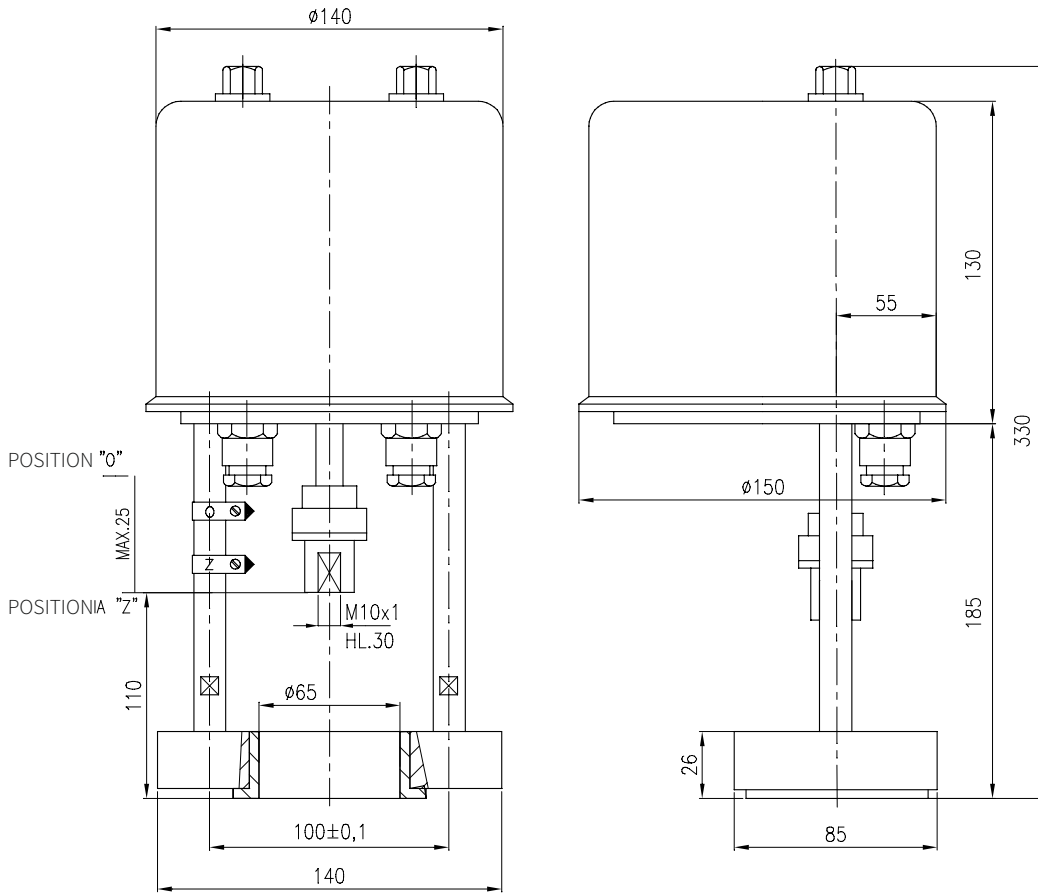
Detailed technical informations can be found in producer's data sheet or on the webside www.zpanp.cz

Specification of actuators MIDI 660		MIDI 660	X	X	X	/	XXX
Feeding voltage AC	230 V (50 Hz)	1					
	24 V (50 Hz)	2					
Linear force [kN]	2,0		1				
	4,0		4				
Resetting speed [mm/min]	10				1		
	16				2		
	25				3		
Accessories	Positioner 0-1 V, 0-10 V, 0(4)-20 mA						OP1
	Signalization switches SO and SZ						S1
	1 resistance transmitter 100W						R1
	2 resistance transmitters 100W - without OP1, I1 and C1						R2
	Converter 4 - 20 mA - without OP1, R2 and C1						I1
	Capacity transmitter CPT 1 - without R2 and I1						C1
	Manual operating outside the housing						
Connection flange for Č 65, coupling M10x1							P3

Basic version:

3-position control, manual operating, limit switches for Open and Closed positions, without transmitter and connection elements.

Dimensions of MIDI 660





Electric actuators

ZPA Nová Paka

Zepadyn 670

marking in type number:

ENC

Technical data	
Type	Zepadyn 670 XXX
Marking in valve spec. No.	ENC
Voltage	230 V AC or 24 V AC
Frequency	50 Hz
Power consumption	38,5 VA, heat resistor 15 W
Control	3 - position, 0 - 10 V, 0(4) - 20 mA
Nominal force	6300 and 10000 N
Travel	16, 25, 40 mm
Enclosure	IP 65
Process medium max. temp.	acc. to used valve
Ambient temperature range	-25 to 55 °C
Ambient humidity range	10 - 100 % with condensation
Weight	11 kg

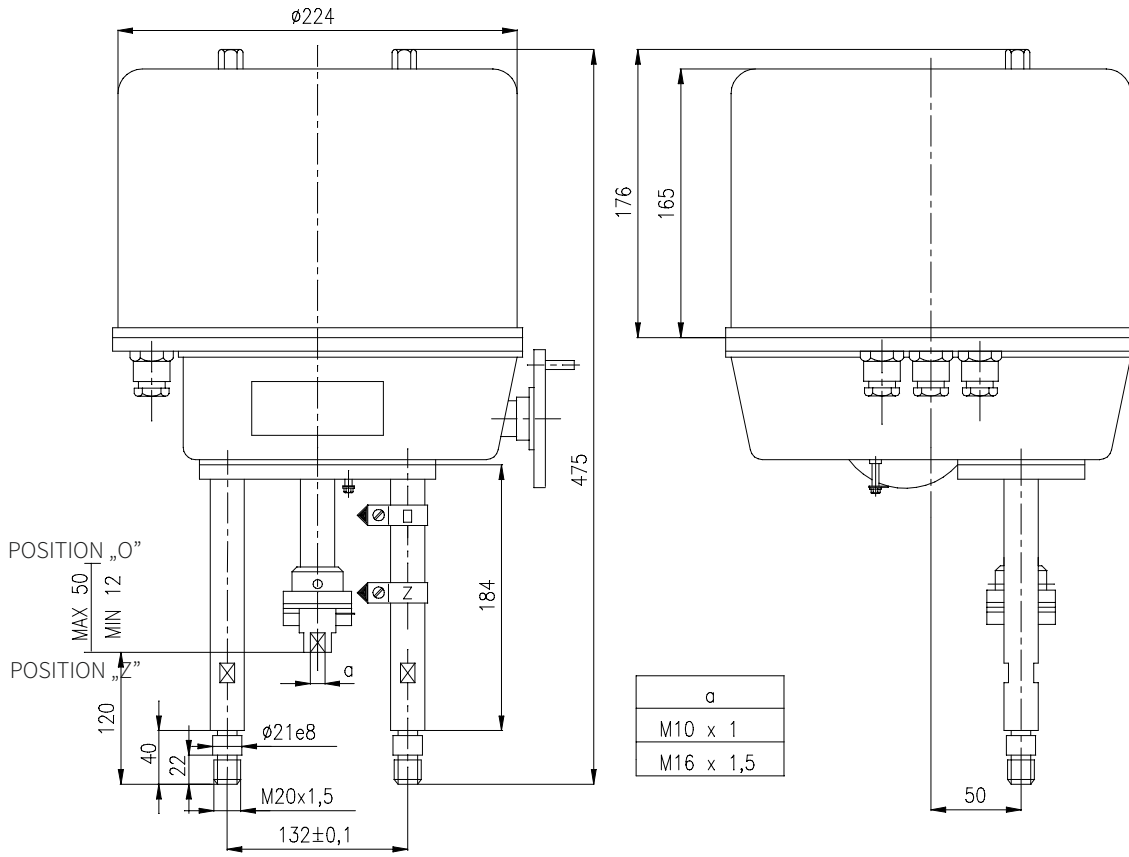
→ **Note:** Specifications and technical data are for information only.

Detailed technical informations can be found in producer's data sheet or on the website www.zpanp.cz

Specification of actuator Zepadyn 670		Zepadyn 670				X	X	X	/	XXXX
Feeding voltage AC	230 V (50 Hz)	1								
	24 V (50 Hz)	2								
Linear force [kN]	6,3		2							
	10		4							
Resetting speed [mm/min]	6,3			1						
	16			2						
	25			3						
	32 (ne u provedení s OP1)			4						
Accessories	Positioner 0-1 V, 0-10 V, 0(4)-20 mA - without R2								OP1	
	Signalization SO a SZ								S1	
	1 resistance transmitter 100W								R1	
	2 resistance transmitters 100W - without OP1, I1 and C1								R2	
	1 resistance transmitter 1000 Ω								R3	
	Converter 4 - 20 mA - without R2 and C1								I1	
	Capacity transmitter CPT1 - without R2 and I1								C1	
	Heater								T1	
	Connection - pitch 132, M20, coupling M10x1, M16x1,5								P3	
Adapter with setting program for actuators with OP1								ANP1		
Stroke for valve - xx = 16, 20, 40 mm								ZDxx		

Basic version: 3-position control, manual operating, limit switches for Open and Closed positions and end position switch without transmitter and connection elements

Dimensions of actuator Zepadyn 670





Electric actuators

ZPA Nová Paka

Zepadyn 671

marking in type number:

ENE

Technical data	
Type	Zepadyn 671 XXX
Marking in valve spec. No.	ENE
Voltage	230 V AC nebo 24 V AC
Frequency	50 Hz
Power consumption	max 120 VA, heat resistor 15 W
Control	3 - position, 0 - 10 V, 0(4) - 20 mA
Nominal force	16 000 and 20 000 N
Travel	40, 80 mm
Enclosure	IP 65
Process medium max. temp.	acc. to used valve
Ambient temperature range	-25 to 55 °C
Ambient humidity range	10 - 100 % with condensation
Weight	12,5 kg

→ **Note:** Specifications and technical data are for information only.

Detailed technical informations can be found in producer's data sheet or on the website www.zpanp.cz

Specification of actuator Zepadyn 671		Zepadyn 671			X	X	X	/	XXXX
Feeding voltage AC	230 V (50 Hz)	1							
	24 V (50 Hz)	2							
Linear force [kN]	16			1					
	20			2					
Resetting speed [mm/min]	16						1		
	25						2		
	32						3		
	50						4		
Accessories	Positioner 0-1 V, 0-10 V, 0(4)-20 mA - without R2 and I1								OP1
	Signalization SO a SZ								S1
	1 resistance transmitter 100W								R1
	2 resistance transmitters 100W - without OP1, I1 and C1								R2
	Converter 4 - 20 mA - without R2 and C1								I1
	Capacity transmitter CPT1 - without R2 and I1								C1
	Heater								T1
	Connection - pitch 150, M20, coupling M16x1,5								P3*
	Connection - pitch 150, 4 columns M20, coupling M20x1,5								P5*
	Adapter with setting program for actuators with OP1								ANP1
Stroke for valve - xx = 40, 80 mm								ZDxx	

Basic version: 3-position control, manual operating, limit switches for Open and Closed positions and end position switch without transmitter and connection elements.

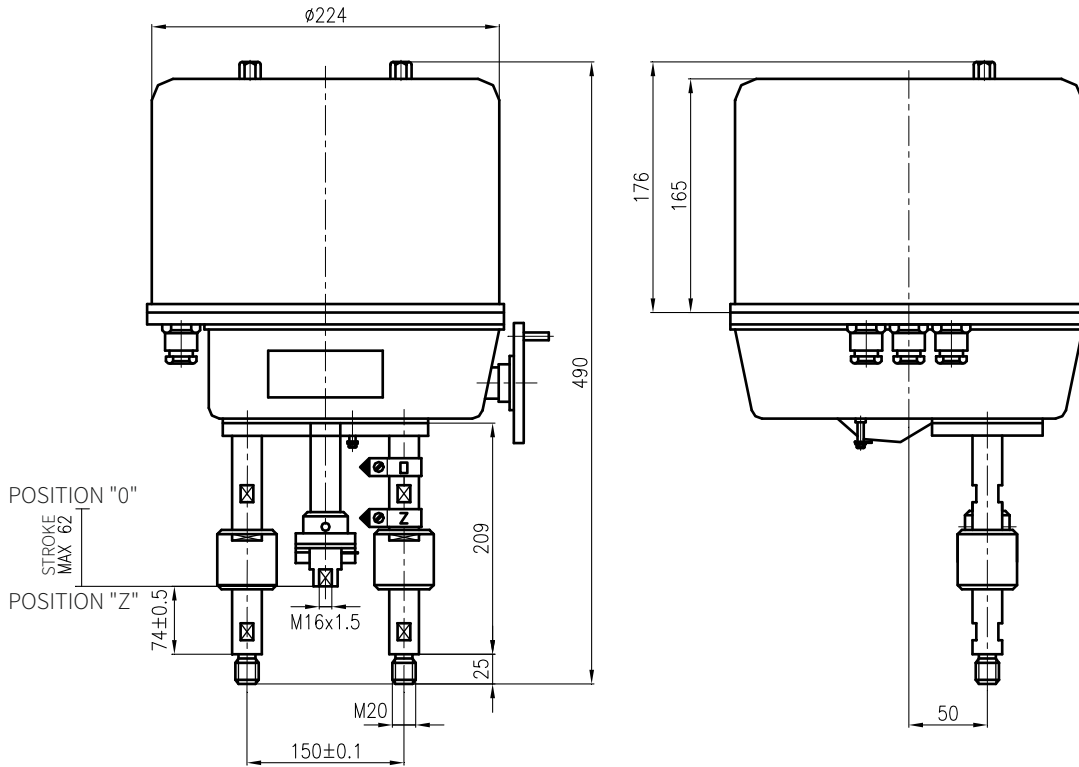
* Connections for LDM valves

P3 ... RV 3xx DN 80 - 150

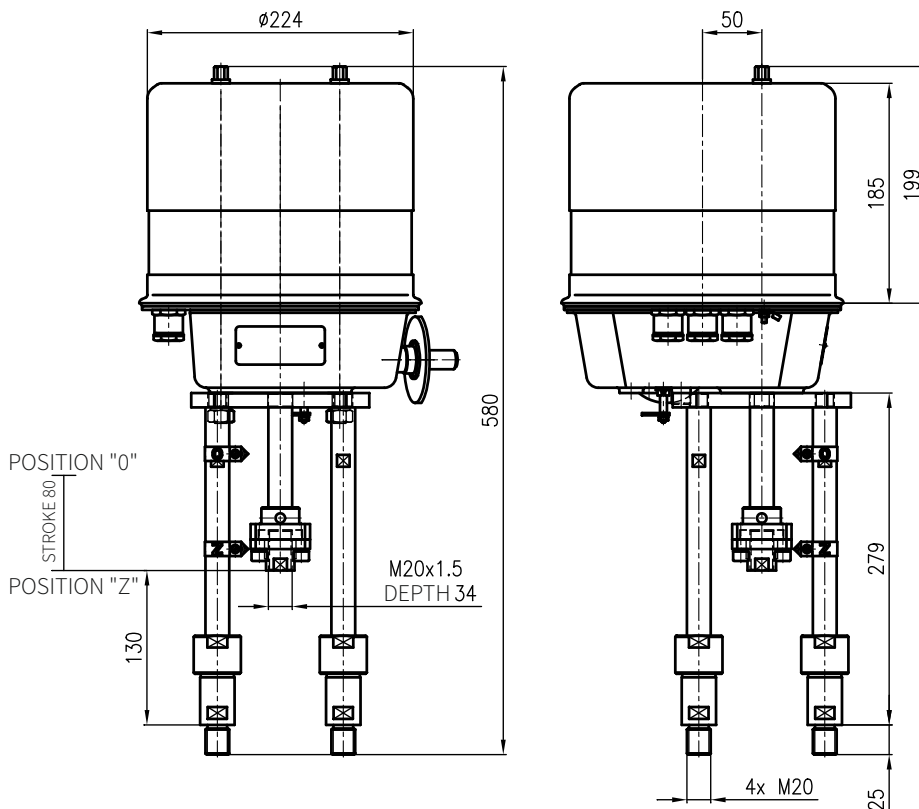
P5 ... RV 3xx DN 200 - 300

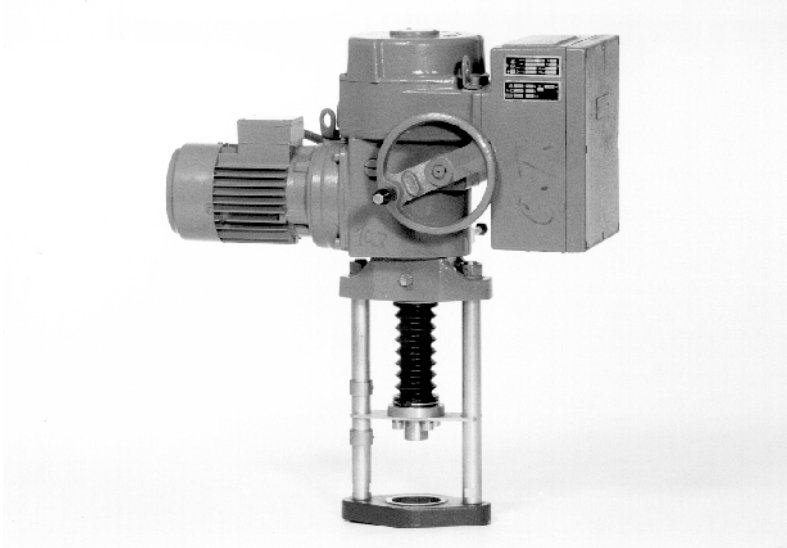
Dimensions of actuators Zepadyn 671

Connection P3 - pitch 150; 2 columns M20; clutch M16x1,5; stroke 12...62



Connection P5 - pitch 150; 4 columns M20; clutch M20x1,5; stroke 80





Electric actuators **ZPA Pečky**

Modact MTN
Modact MTP
Modact MTN Control
Modact MTP Control

type 52 442

marking in type number:

EYA, EYB

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			
Travel	10 to 100 mm			
Enclosure	IP 55		IP 67	
Process medium max. temp.	acc. to used valve			
Ambient temperature range	-40 to 70°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 producer'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	1 x position transmitter - resist 2x100 Ω or current
2 x limit switches PO, PZ	1 x heating element
2 x limit and signalisation switches SO, SZ	2 limit and signalisation switches SO, SZ

Basic technical parameters

Type	Power switch setting range [kN]	Direct power [kN]	Resetting speed [mm.min ⁻¹]	Travel [mm]	Power [W]	Electromotor			Weight Aluminium [kg]	Specification No.	
						rpm 1/min	In (400V) [A]	Iz / In		Basic	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

Version, electric connection

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

		Current transmitter CPT wo source	Current transmitter DCPT with source		
Position transmitter	current 4 - 20 mA	XXX0XM	XXXRXM		
	current 4 - 20 mA s BMO	XXX1XM	XXXSXM		
	resistance 2x 100 Ω	XXX2XM			
	resistance 2x 100 Ω s BMO	XXX3XM			
	without transmitter, with BMO	XXXPXM			
	without transmitter, without BMO	XXXZXM			
Additional electric equipment ¹⁾		Resist. transmitter 2x 100 Ω	Current transmitter CPT wo source	Current transmitter DCPT with source	
Control (with built-in contactor combination)	wo 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⁾	

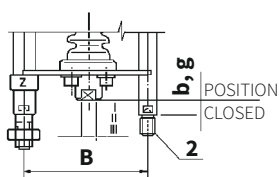
Notes:

¹⁾ When version with flasher is requested, specify this requirement in writing: **version with flasher**

²⁾ Design without force locking after reversion have at end position capital letter M (for example: 52442.6211NM)

³⁾ For actuators **MODACT MTN Control** s with position controllers **ZP2.RE5** specify number 5 on place 11 (e.g.: 52442.6M5FN5M)

Connection dimensions - details of additional specification No. 52 442

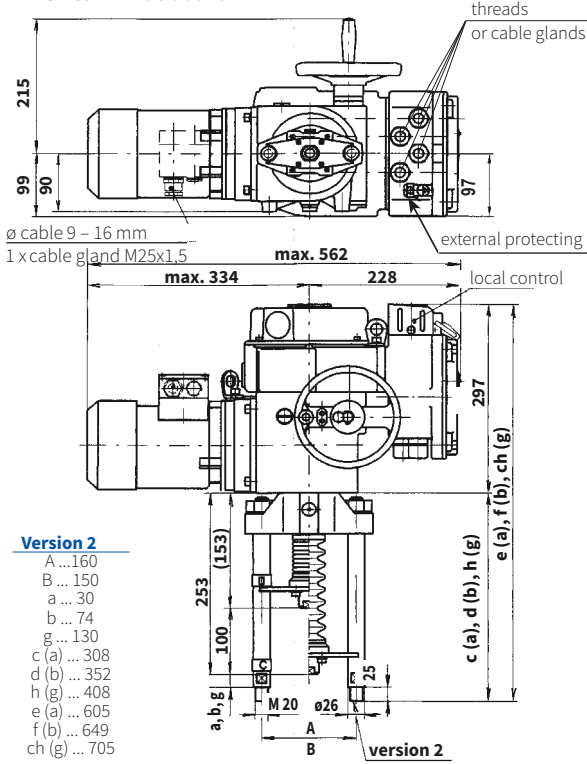


Columns pitch	B	150
Position "closed"	b	74
	g	130
Cluth thread	I	M 20x1,5
	II	M 16x1,5
	III	M 10x1

Version	Specification No.		For valves
	basic	additional	
Bb2I	52 442	XLXXXM	---
Bb2II	52 442	XMXXXM	RV 3xx DN 80 to 150
Bb2III	52 442	XPXXXM	RV 3xx DN 15 to 65
Bg2I	52 442	XRXXXM	RV 3xx DN 200 to 400

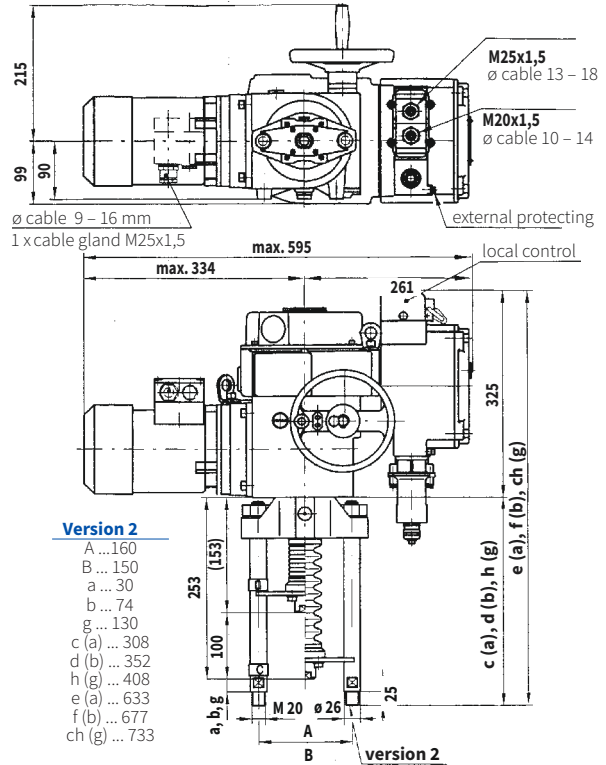
Dimensions of actuator Modact MTN, MTP

- with terminal board



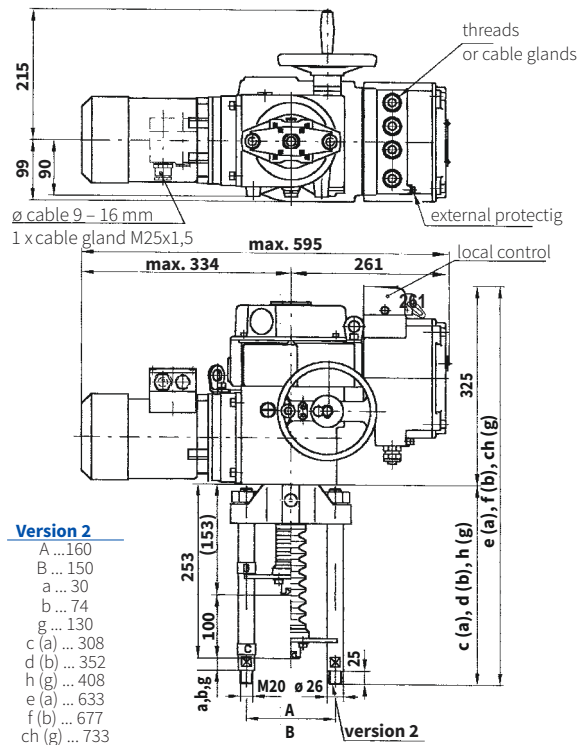
Dimensions of actuator MTN, MTP and Modact MTN, MTP Control

- with connector

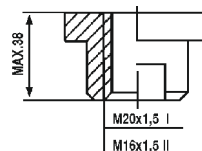


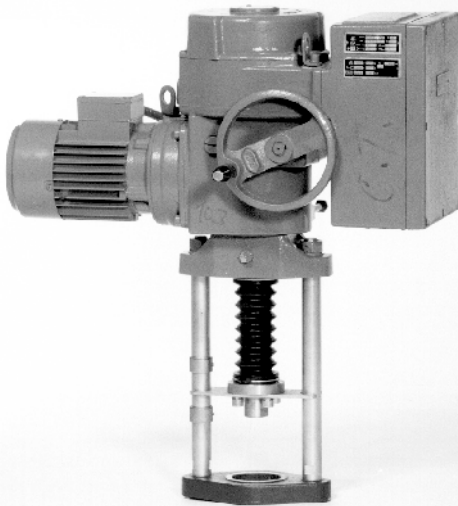
Dimensions of actuator Modact MTN, MTP Control

- with terminal board



Detail of coupling





Electric actuators **ZPA Pečky**

Modact MTNED
Modact MTPED

type 52 442

marking in type number:

EYA

Technical data		
Type	Modact MTNED	Modact MTPED
Marking in valve spec. No.	EYA	
Version	The actuator equipped 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	
Travel	10 to 100 mm	
Enclosure	IP 55	IP 67
Process medium max. temp.	acc. to used valve	
Ambient temperature range	-40 to 70 °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 producer's data sheet or on the website www.zpa-pecky.cz

Electric equipment

System DMS2 ED

The more simple 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 signaled by LED. The unit enables the heating resistor to be connected and controlled by the thermostat.
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 LED
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 (reversing relay) To the unit can be connected an electronic brake
Unit of display	Two-row display, 2 x 12 alpha-numeric characters
unit of push-buttons	Pus-buttons "otvírat", "zavírat", "stop", otočný přepínač "místní, dálkové, stop"
Recommended equipment	
Electronic brake	After switching-off the motor reduces running down and precises 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	Power switch setting range [kN]	Direct power [kN]	Resetting speed [mm.min ⁻¹]	Travel [mm]	Power [W]	Electromotor			Weight Aluminium [kg]	Specification No.	
						RPM [1/min]	In (400V) [A]	Iz In		Basic	Additional
MTNED 15 MTPED 15	11,5 - 15	17	50	10 - 100	180	850	0.74	2.3	33	52 442	XX4XXED
			80		180	850	0.74	2.3			XX5XXED
			125		250	1350	0.77	3.0			XX6XXED
			36		120	645	0.51	2.2			XX7XXED
			27		120	645	0.51	2.2			XX8XXED
MTNED 25 MTPED 25	15 - 25	32,5	50	10 - 100	180	835	0.74	2.3	33	52 442	XX4XXED
			80		180	835	0.74	2.3			XX5XXED
			125		250	1350	0.77	3.0			XX6XXED
			36		120	645	0.51	2.2			XX7XXED
			27		120	645	0.51	2.2			XX8XXED
Version Modact MTNED ... enclosure IP55											XXXNED
Version Modact MTPED ... enclosure IP67											XXXPED

Version, circuitry, electric equipment				
	Terminal board	Connector	Term. board, brake	Connector, brake
DMS2 ED electronics	EXXXXED	FXXXXED	HXXXXED	KXXXXED
DMS2, Profibus electronics	PXXOXED	TXXOXED	UXXOXED	YXXOXED
DMS2, 2-position or 3-position control *)	RXXOXED	VXXOXED	WXXOXED	1XXOXED

*) Producer will set in production 2- or 3- position control. If not specified in the order, the gearmotor is set to 3-position control (signal control 4-20 mA).

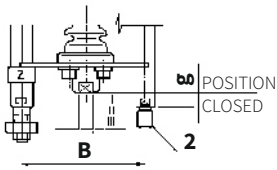
Equipment of DMS2 ED electronics		Character at the 9th place (52442 xxxXxED)																							
Equipment DMS2 ED		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	H	J	K	L	M	N	V	W
Local control			x		x		x		x		x		x		x		x		x		x		x		x
Display				x	x			x	x			x	x			x	x			x	x			x	x
Relay						x	x	x	x					x	x	x	x					x	x	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 (°C)	Type of actuator				Marking
	MTNED		MTPED		
	DMS2 ED	DMS2	DMS2 ED	DMS2	
-25 to +70	YES	YES	NO	NE	---
-40 to +60	YES	YES	YES	ANO	F1
-25 to +60	---	---	YES	ANO	---

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

Connection dimensions - details of additional specification No. 52 442



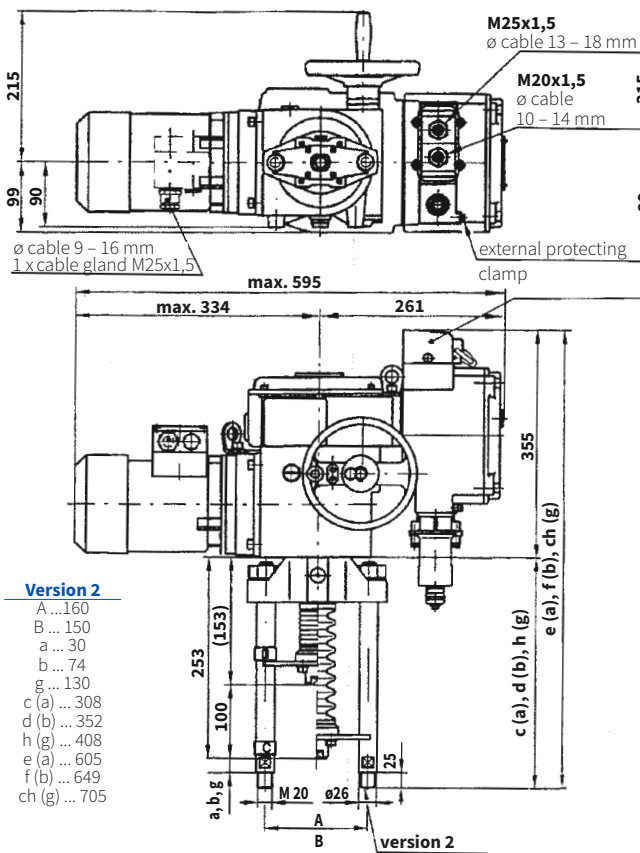
Columns pitch	B	150
Position "closed"	b	74
	g	130
Clutch thread	I	M 20x1,5
	II	M 16x1,5
	III	M 10x1

Version	Specification No.		For valves
	basic	additional	
Bb2I	52 442	XLXXXM	---
Bb2II	52 442	XMXXXM	DN 80 - 15
Bb2III	52 442	XPXXXM	DN 15 - 65
Bg2I	52 442	XRXXXM	DN 200 - 400

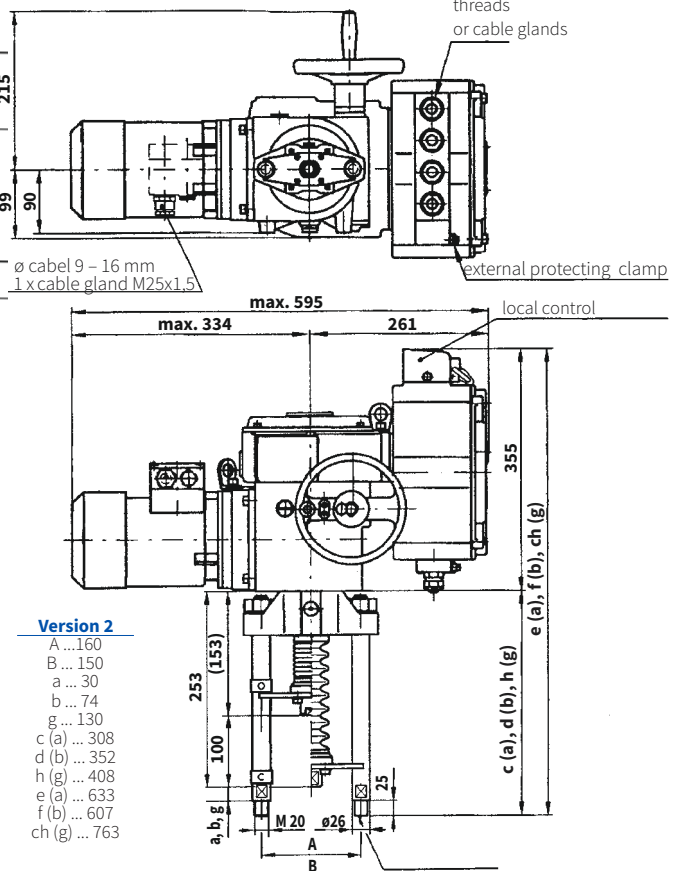
Dimensions of actuator Modact MTNED/MTPED

- with connector

- with terminal board

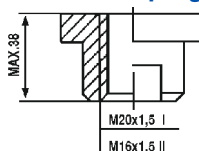


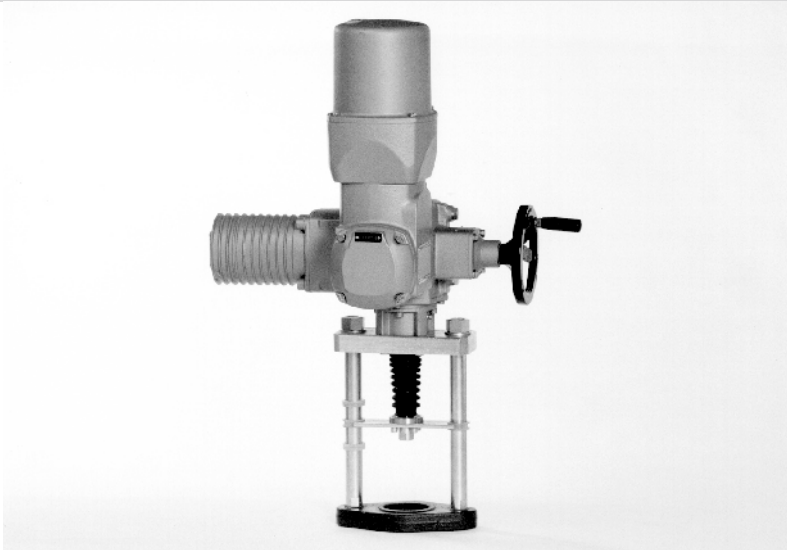
- Version 2**
- A ... 160
 - B ... 150
 - a ... 30
 - b ... 74
 - g ... 130
 - c (a) ... 308
 - d (b) ... 352
 - h (g) ... 408
 - e (a) ... 605
 - f (b) ... 649
 - ch (g) ... 705



- Version 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) ... 607
 - ch (g) ... 763

Detail of coupling





Electric actuators

Auma

**SA 07.2, SA Ex 07.2,
SAR 07.2, SAR Ex 07.2,
SA 07.6, SA Ex 07.6,
SAR 07.6, SAR Ex 07.6**

marking in type number:

**EAA, EAB, EAC, EAD
EAE, EAF, EAG, EAH**

Technical data								
Type	SA 07.2	SA Ex 07.2	SAR 07.2	SAR Ex 07.2	SA 07.6	SA Ex 07.6	SAR 07.6	SAR Ex 07.6
Marking in valve spec. No.	EAA	EAB	EAC	EAD	EAE	EAF	EAG	EAH
Voltage	1 ~ 230 V AC; 3 ~ 380 or 400 V AC							
Frequency	50 Hz							
Power consumption	see specification table							
Control	3 - position control or with signal 4 - 20 mA							
Nominal force	10 Nm~5 kN; 15 Nm~7,5 kN; 20 Nm~10 kN				30 Nm~15 kN; 40 Nm~20 kN			
Travel	acc. to used valve 16, 25, 40 mm				acc. to used valve 40, 80 mm			
Enclosure	IP 68							
Process medium max. temp.	acc. to used valve							
Ambient temperature 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
Ambient humidity range	100 %							
Weight	- single-phase	25 - 62 kg			25 - 62kg			
	- three-phase	20 - 33 kg			21 - 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.auma.com

Specification of Auma actuators											
							SA	X	XX	07.X	
Type							SA				
Duty	control ON - OFF							R			
Version	standard non-explosive								Ex		
Actuator size										07.2 07.6	
Output shaft type A (thread TR 16x4 LH, connection flange F07) ... for RV 3xx DN 15 to 150											
Output speed [ot/min]	Tripping torque	SA 07.2 SA Ex 07.2	SAR 07.2 SAREx 07.2	Motor power [kW]	SA 07.2 S2-15min	SA Ex 07.2 S2-15min	SAR 07.2 S4-25%	SAR Ex 07.2 S4-25%			
		4				0,02	0,02	0,02	0,02		
		5,6				0,02	0,02	0,02	0,02		
		8				0,04	0,04	0,04	0,04		
		11	10-30 Nm		15-30 Nm	0,04	0,04	0,04	0,04		
		16				0,06	0,06	0,06	0,06		
		22				0,06	0,06	0,06	0,06		
		32				0,10	0,10	0,10	0,10		
		45				0,10	0,10	0,10	0,10		
		Output shaft type A (thread TR 20x4 LH, flange F10) ... for RV 3xx DN 80 to 400									
Output speed [ot/min]	Tripping torque	SA 07.6 SA Ex 07.6	SAR 07.6 SAREx 07.6	Motor power [kW]	SA 07.6 S2-15min	SA Ex 07.6 S2-15min	SAR 07.6 S4-25%	SAR Ex 07.6 S4-25%			
		4				0,03	0,03	0,03	0,03		
		5,6				0,03	0,03	0,03	0,03		
		8				0,06	0,06	0,06	0,06		
		11	20-60 Nm		30-60 Nm	0,06	0,06	0,06	0,06		
		16				0,12	0,12	0,12	0,12		
		22				0,12	0,12	0,12	0,12		
		32				0,20	0,20	0,20	0,20		
		45				0,20	0,20	0,20	0,20		

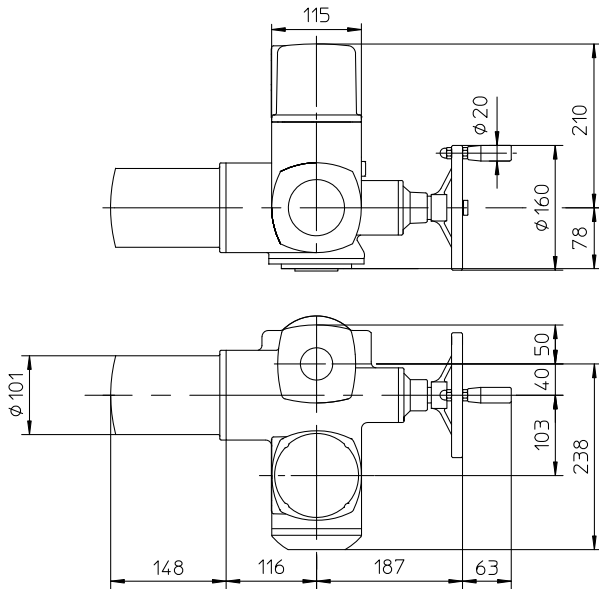
Accessories

- 2 TANDEM switches
- Gearing for signalisation 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 - or continuous control (specification of accessories acc. to catalogue of producer: IP 67; -25 to +70°C; ...), weight + 7 kg
- AUMATIC - or continuous control (specification of accessories acc. to catalogue of producer: IP 68; -25 to +70°C; ...), weight + 7kg

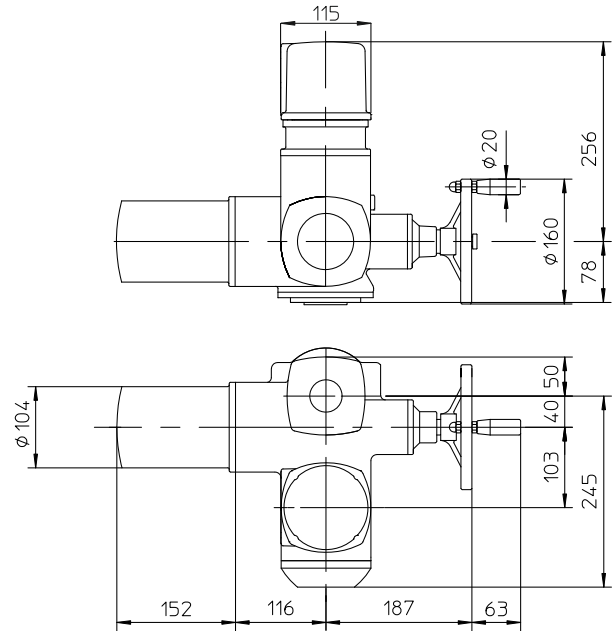
Other accessories acc. to catalogue of producer of actuators.

Dimensions of actuators Auma series 07.2 and 07.6

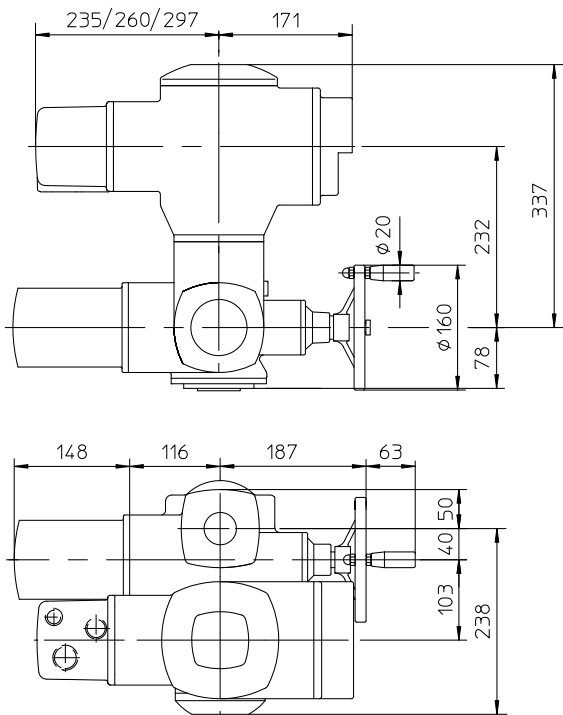
Normal version



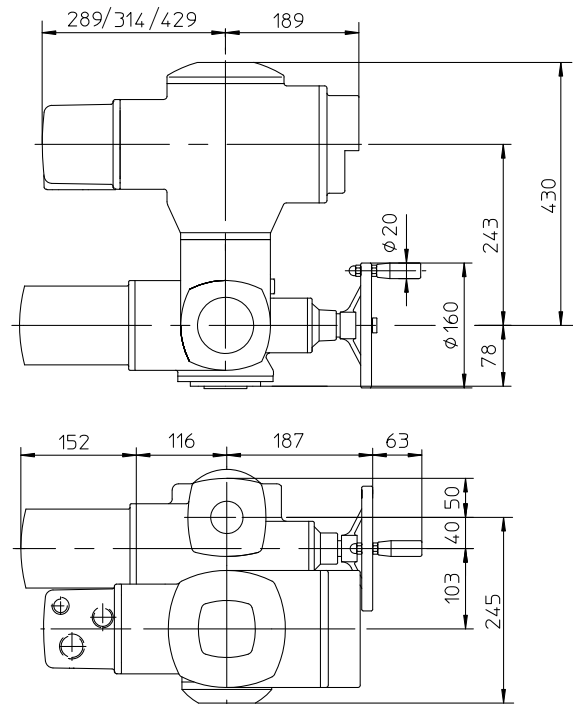
Version Ex norm



Version MATIC



Version Ex MATIC





Electric actuators **Auma**

**SA 10.2, SA Ex 10.2
SAR 10.2, SAR Ex 10.2**

marking in type number:
EAI, EAJ, EAK, EAL

Technical data				
Type	SA 10.2	SA Ex 10.2	SAR 10.2	SAR Ex 10.2
Marking in valve spec. No.	EAI	EAL	EAJ	EAK
Voltage	3-phase ~ 380 or 400 V AC (1-phase ~ 230 V AC not applicable - high weight)			
Frequency	50 Hz			
Power consumption	see specification table			
Control	3 - point or with signal 4 - 20 mA			
Nominal force	80 Nm ~ 21,6 kN; 100 Nm ~ 27 kN; 120 Nm ~ 32 kN			
Travel	80, 100 mm			
Enclosure	IP 68			
Process medium max. temp.	acc. to used valve			
Ambient temperature range	-40 to 80 °C	-20 to 60 °C	-40 to 60 °C	-20 to 60 °C
Ambient humidity range	100 %			
Weight	22 to 47 kg			
Vibration resistance acc. to EN 60068-2-6	AUMA NORM: 2g, 10-200Hz; AUMA MATIC: 1g, 10-200Hz; AUMATIC: 1g, 10-200Hz			

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

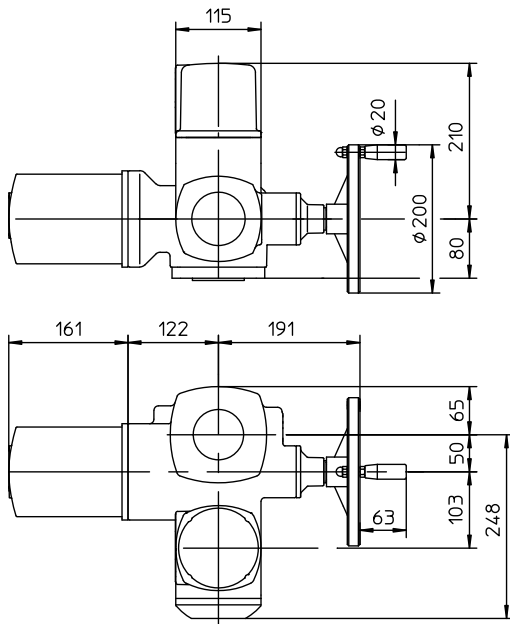
Specification of Auma actuators					SA	X	XX	10.2
Type					SA			
Duty	control ON - OFF					R		
Version	standard non-explosive						Ex	
Actuator size								10.2
Output drive shaft type A (thread TR 36x6 LH, flange F10) ... for RV 3xx DN 200 - 400								
Output speed [ot/min]	Tripping torque	SA 10.2	SAR 10.2	SA 10.2	SA Ex 10.2	SAR 10.2	SAR Ex 10.2	
		SA Ex 10.2	SAR Ex 10.2	S2-15min	S2-15min	S4-25%	S4-25%	
		4		0,06	0,09	0,09	0,09	
		5,6		0,06	0,09	0,09	0,09	
		8		0,12	0,18	0,18	0,18	
		11	40-120 Nm	0,12	0,18	0,18	0,18	
		16	60-120 Nm	0,25	0,37	0,37	0,37	
		22		0,25	0,37	0,37	0,37	
		32		0,40	0,75	0,75	0,75	
45		0,40	0,75	0,75	0,75			

Accessories

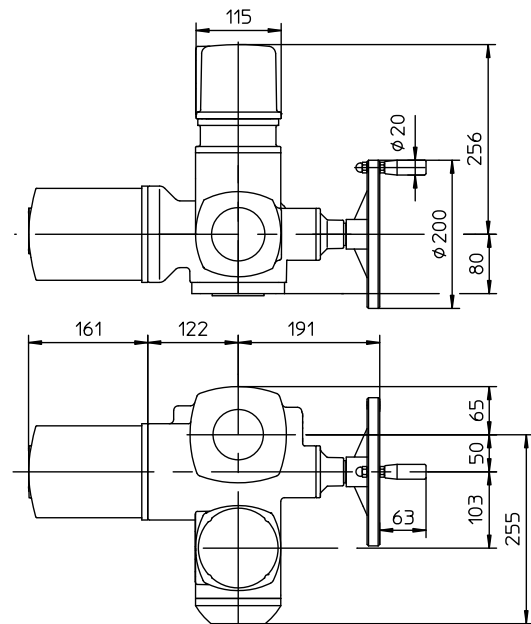
- 2 TANDEM switches
 - Gearing for signalisation of position
 - Mechanical position indicator
 - Potentiometer 1x200 Ω
 - MATIC - or continuous control (specification of accessories acc. to catalogue of producer: IP 67; -25 to +70°C; ...), weight + 7 kg
 - AUMATIC - or continuous control (specification of accessories acc. to catalogue of producer: IP 68; -25 to +70°C; ...), weight + 7kg
- Other accessories acc. to catalogue of producer of actuators.
- 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

Dimensions of actuators Auma series 10

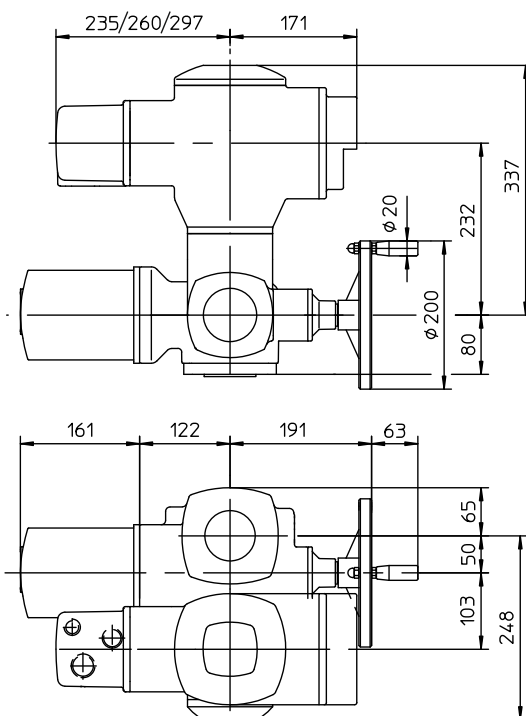
Normal version



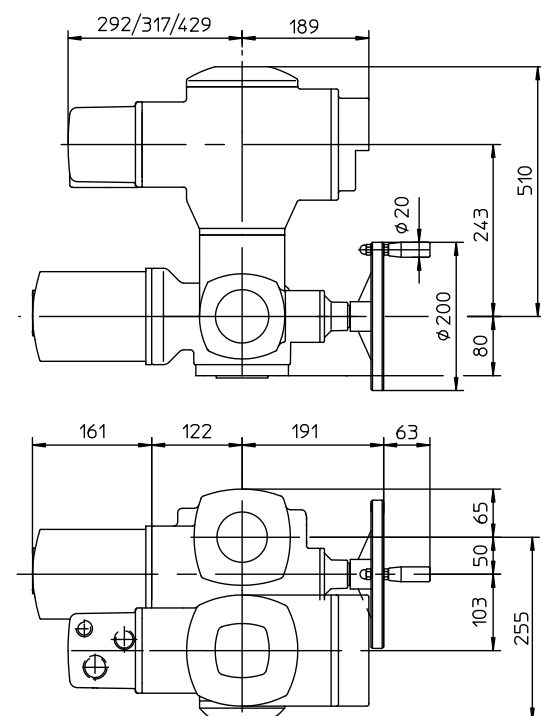
Ex norm version



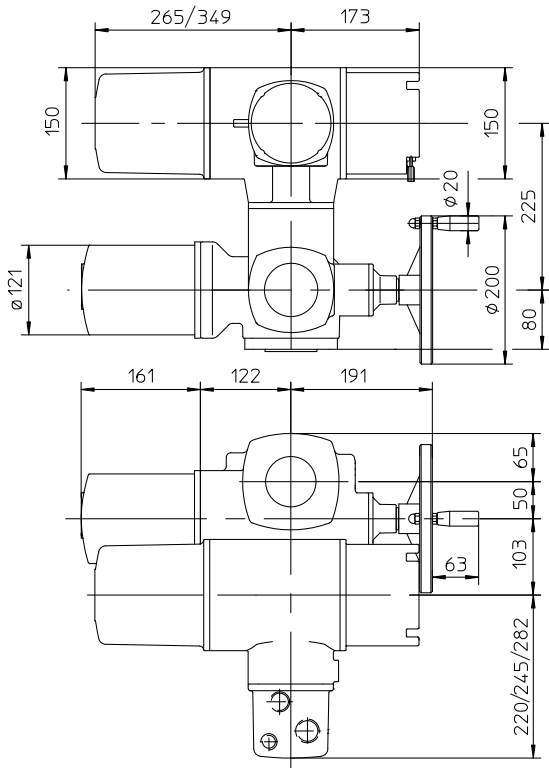
Version with MATIC



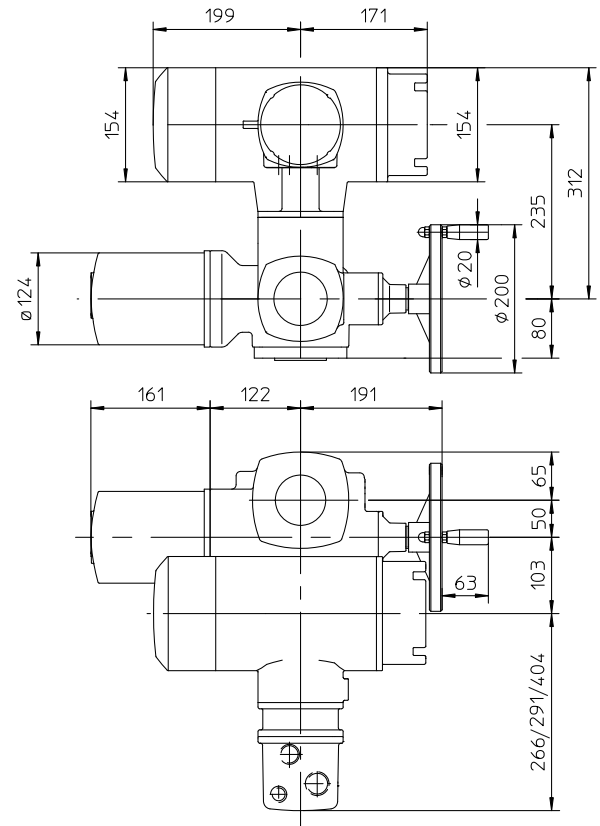
Version with Ex MATIC



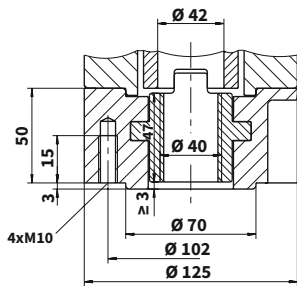
Version AUMATIC



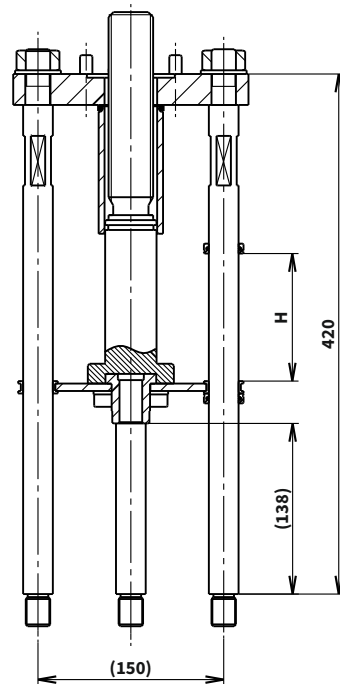
Version Ex AUMATIC

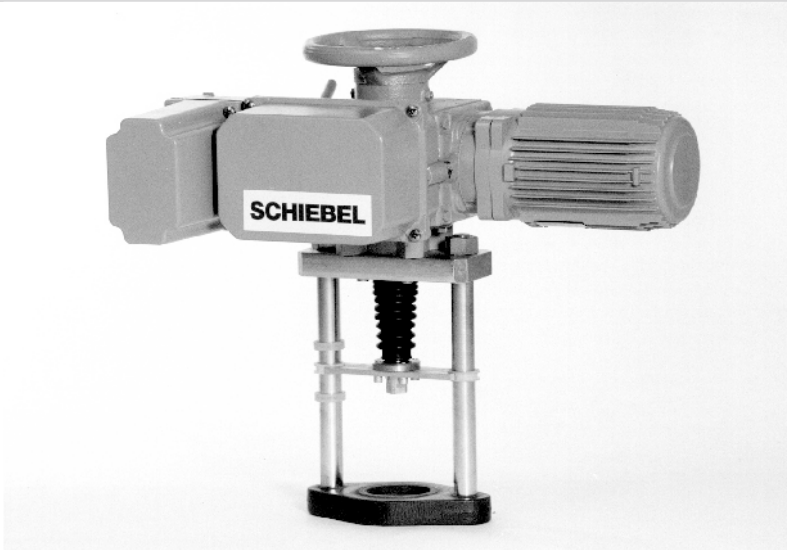


Output drive shaft A, F10



Attachment yoke DN 200 - 400
Connection A, F10, Tr36x6-LH





Elektric actuators **Schiebel**

AB3, AB5

marking in type number:

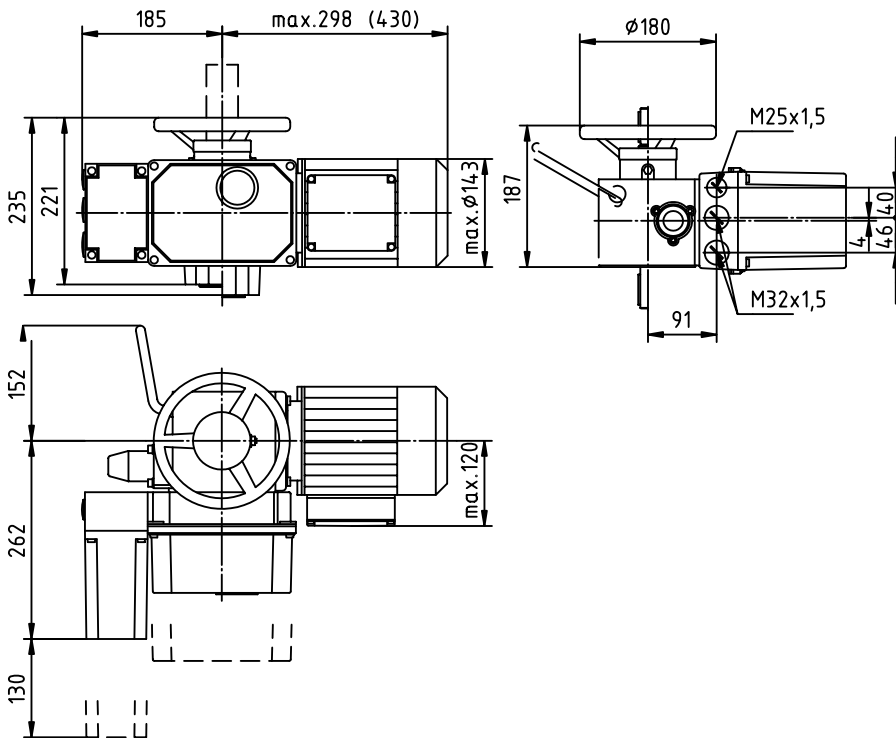
**EZA, EZB, EYC, EYD
EZE, EYF, EYG, EYH**

Technical data								
Type	AB3	AB5	exAB3	exAB5	rAB3	rAB5	exrAB3	exrAB5
Marking in valve spec. No.	EZA	EZE	EZB	EZF	EYC	EYG	EYD	EYH
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	10 Nm ~ 5 kN; 15 Nm ~ 7,5 kN; 20 Nm ~ 10 kN; 30 Nm ~ 15 kN; 40 Nm ~ 20 kN							
Travel	acc. to used valve 16, 25, 40, 80 mm							
Enclosure	IP 66		IP 65		IP 66		IP 65	
Process medium max. temp.	acc. to used valve							
Ambient temperature 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							

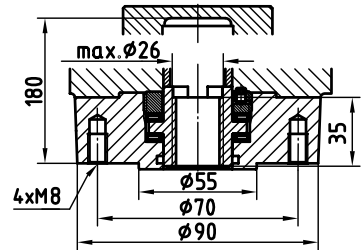
→ **Note:** Specifications and technical data are for information only.
Detailed technical informations can be found in producer's data sheet or on the website www.schiebel.com

Specification of actuators										XX	X	AB3	A	X	+	XXXXX	
Version		non-explosive standard								ex							
Function		control ON - OFF									r						
Actuator size												AB3					
Output shaft type A (thread TR 16x4 LH, connection flange F07 ... DN 15 to 65)												AB5					
Output speed [ot/min]	Tripping torque	AB3	rAB3	Motor power [kW]	AB3		rAB3		exAB3	exrAB3	2,5 5 7,5 10 15 20 30 40						
		exAB3	exrAB3		400/230V	230V	400/230V	230V	400/230V	400/230V							
		7 - 30 Nm	tripping 7 - 30 Nm		0,09	0,09	0,09	0,09	0,09	0,09		0,09	0,09				
					0,03	0,12	0,03	0,12	0,12	0,12							
					0,09	0,09	0,09	0,09	0,09	0,09							
					0,09	0,09	0,09	0,09	0,09	0,09							
					0,18	0,09	0,09	0,18	0,09	0,09							
					0,18	0,18	0,09	0,37	0,09	0,09							
					0,18	0,25	0,18	0,25	0,37	0,18							
0,18	0,25			0,18	0,55	0,37	0,18										
Output speed [ot/min]	Tripping torque	AB5	rAB5	Motor power [kW]	AB5		rAB5		exAB5	exrAB5	2,5 5 7,5 10 15 20 30 40						
		exAB5	exrAB5		400/230V	230V	400/230V	230V	400/230V	400/230V							
		7-60 Nm	tripping 7 - 60 Nm		0,09	0,09	0,09	0,09	0,09	0,09		0,09	0,09				
					0,06	0,12	0,06	0,12	0,12	0,12							
					0,09	0,09	0,09	0,18	0,09	0,09							
					0,09	0,18	0,09	0,37	0,09	0,09							
					0,18	0,18	0,18	0,37	0,18	0,18							
					0,18	0,55	0,18	0,75	0,18	0,18							
					0,37	0,55	0,37	1,10	0,37	0,37							
0,37	0,55			0,37	1,10	0,37	0,37										
Accessories																	
Potentiometer 1 x 1000 Ω																F	
Double potentiometer 2 x 1000 Ω																FF	
Electronic transmitter 4 - 20 mA, 2-wire																ESG-Z	
Electronic transmitter 4 - 20 mA, 2-wire, opto-electronic																ESM21	
SMARTCON control unit																CSC	
Additional torque switches																2DER 2DEL	
Additional signalisation switches																2WER 2WEL	

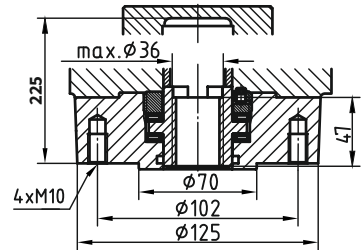
Dimensions of actuators ...AB5



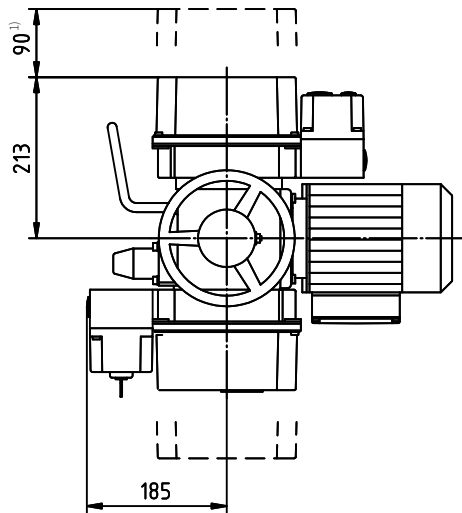
Output drive shaft A, flange F07



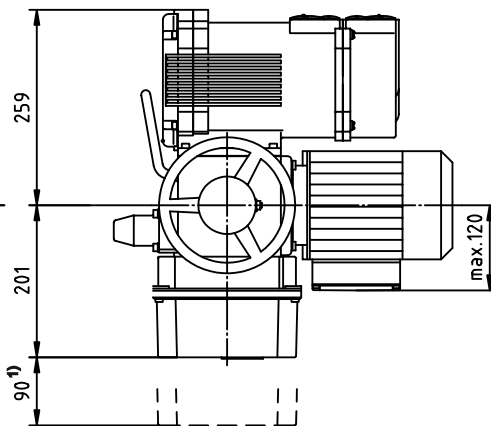
Connection acc. to ISO 5210, output drive shaft A, F10



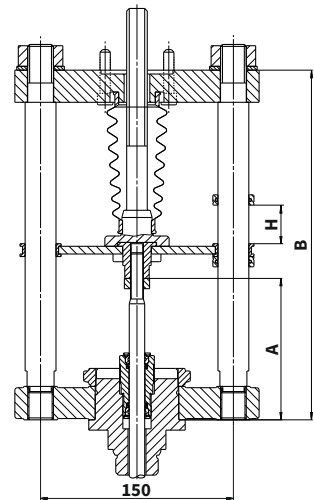
With ACTUMATIC R position regulator



With SMARTCON control unit



Attachment (2 or 4 columns)



For valves	Number of columns	A	B	H	Weight [kg]
DN 15 - 150	2	149	295	40	12
DN 200 - 400	4	141	295	80	12



Electric actuators **Schiebel**

AB8

marking in type number:

EZK, EZL

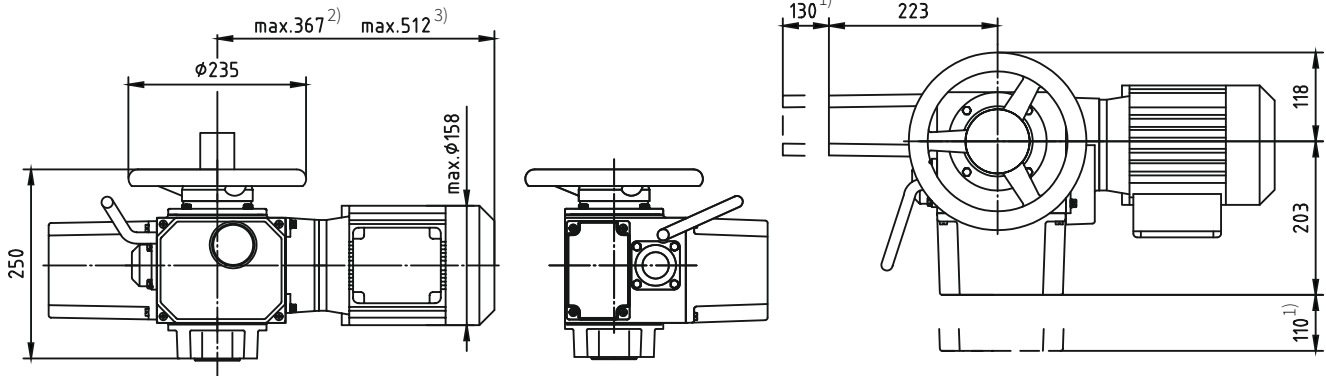
Technical data		
Type	rAB8	exrAB8
Marking in valve spec. No.	EZK	EZL
Voltage	400 / 230 V; 230 V	400 / 230 V
Frequency	50 Hz	
Power consumption	see specification table	
Control	3-position or with signal 4 - 20 mA	
Nominal force	(Tr 36x6 LH) 80 Nm ~ 21,6 kN; 100 Nm ~ 27 kN; 120 Nm ~ 32 kN	
Travel	80, 100 mm	
Enclosure	IP 66	IP 65
Process medium max. temp.	acc. to used valve	
Ambient temperature range	-25 to 60°C	-20 to 40°C
Ambient humidity range	90 % (tropical version: 100 % with condensation)	
Weight	24 - 35 kg	

→ **Note:** Specifications and technical data are for information only.

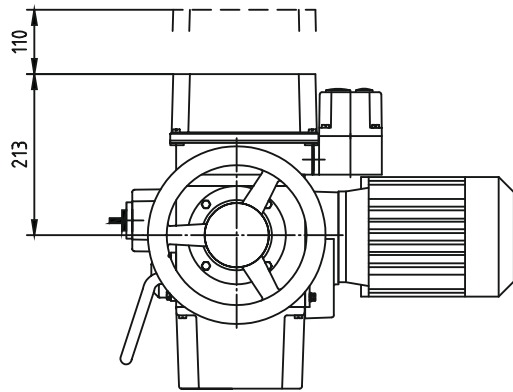
Detailed technical informations can be found in producer's data sheet or on the website www.schiebel.com

Specification of actuators				xx	x	XXX	X	X	+	XXXXX
Version	normal									
Function	control				r					
Actuator size						AB8				
Output drive shaft A	(thread TR 36x6 LH, flange F10)									A
Output speed [ot/min]	Tripping torque	rAB8		rAB8						
				400/230V	230V					
		2,5	vypínací 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	zatěžovací 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 Double potentiometer 2 x 1000 Ω Electronic transmitter 4 - 20 mA, 2-wire Electronic transmitter 4 - 20 mA, 2-wire, opto-electronic SMARTCON control unit Additional torque switches Additional signalisation switches									F FF ESM21 CMR CSC 2DER 2DEL 2WER 2WEL

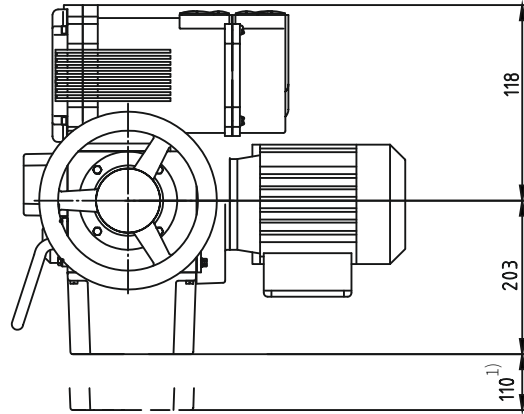
Dimensions of actuators ...AB8



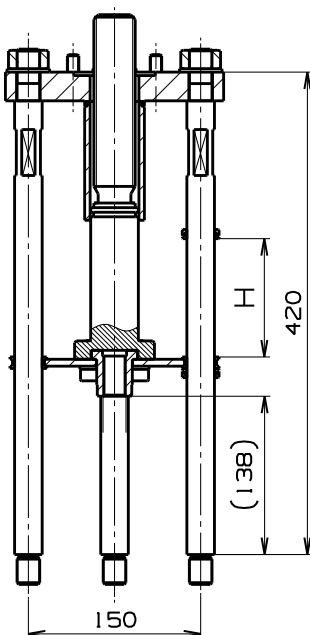
With ACTUMATIC R position regulator



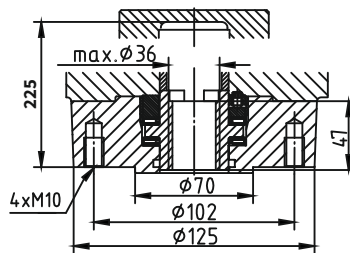
With SMARTCON control unit



Attachment yoke DN200-400 Connection A, F10, Tr36x6-LH



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





Electric actuator **Regada**

Modact MTR

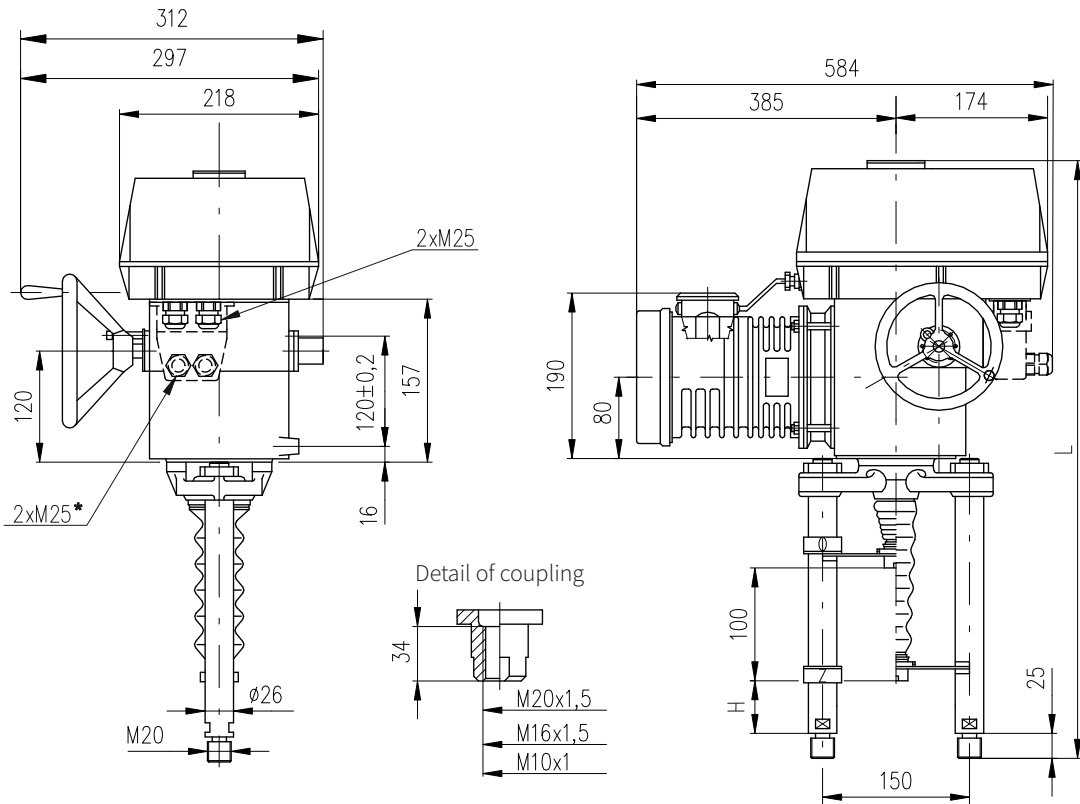
marking in type number:

EPD

Technical data	
Type	Modact MTR
Marking in valve spec. No.	EPD
Voltage	230 V AC
Frequency	50 Hz
Power consumption	16 nebo 25 W
Control	3-position (with regulator NOTREP)
Nominal force	6.3, 10, 16, 25 kN
Travel	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 website www.regada.sk

Dimensions of actuator Modact MTR



*only execution with connector

Columns version	with acme thread		Columns version	with ball bolt		For valves
	H	L		H	L	
P-1045b/B	74	622	P-1045b/E	74	646	DN 15 - 150
P-1045b/C	130	680	P-1045b/H	130	702	DN 200 - 400



Electric actuators **Regada**

ST 0
STR 0

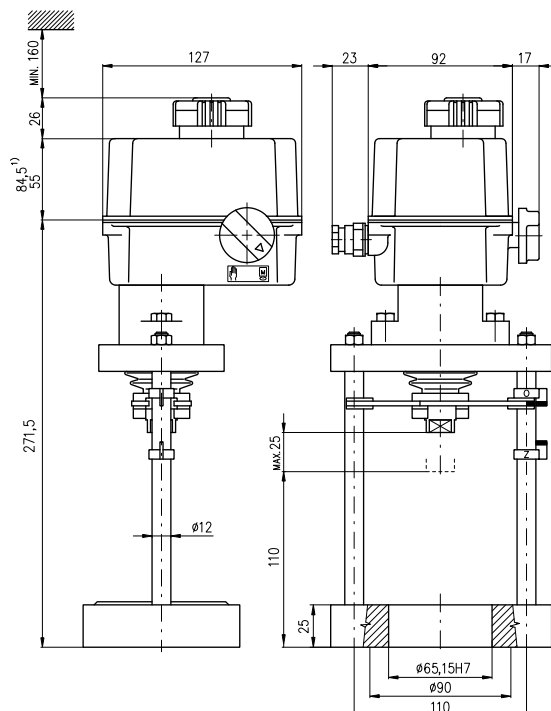
marking in type number:

EPK

Technical data	
Type	ST 0, STR 0
Marking in valve spec. No.	EPK
Voltage	230 V AC, 24 V AC
Frequency	50 Hz
Power consumption	1 W
Control	3-position (0 - 10 V, (0)4 - 20 mA)
Nominal force	2,9 kN a 4,5 kN
Travel	16, 25 mm
Enclosure	IP 54/ IP 67
Process medium max. temp.	daná použitou armaturou
Ambient temperature range	-25 to 55 °C
Ambient humidity range	5 - 100% s kondenzací
Weight	2,5 to 4,5 kg

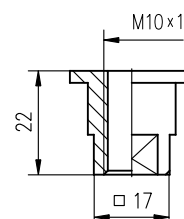
→ **Note:** Specifications and technical data are for information only. Detailed technical informations can be found in producer's data sheet or on the website www.regada.sk

Dimensions of actuator



¹⁾ applies for version with electronic transmitter

Detail of coupling





Electric actuators **Regada**

STR OPA

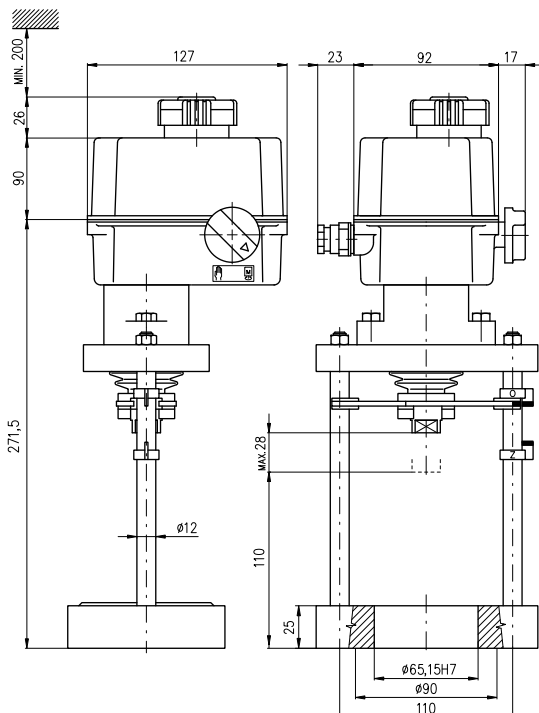
marking in type number:

EPK

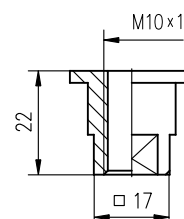
Technical data	
Type	STR OPA
Marking in valve spec. No.	EPK
Voltage	230 V AC, 24 V AC
Frequency	50 Hz
Power consumption	1 W
Control	3-position (0 - 10 V, (0)4 - 20 mA)
Nominal force	2,4 kN and 4,5 kN
Travel	10 to 28 mm
Enclosure	IP 67
Process medium max. temp.	acc. to used valve
Ambient temperature range	-25 to 55 °C
Ambient humidity range	5 - 100% with condensation
Weight	2,5 to 4,5 kg

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

Dimensions of actuator



Detail of coupling



Specifikace pohonu STR OPA

Electric servomotor STR OPA						430.	X	-	X	X	X	X	X	X	/	X	X						
Climatic resistance	Standard	-25°C to +55°C	IP 67			1																	
	Tropical	-25°C to +55°C	IP 67			6																	
Electric connection		To terminal board	Voltage		230 V AC																		
					24 V AC																		
Nominal force [N]	4500	Running speed	5 mm/min																				
	4000		10 mm/min																				
	2400		16 mm/min																				
Travel		10-28 mm																					
Control board	DMS3	Control	modulating	0/4 - 20 mA	ON - OFF and pulse	24 V DC	Output	4 - 20 mA passive															
				0/2 - 10 V																			
Mechanic connection - flange, connection height 110 mm, thread of stem M10x1																							
Accessories		Without accessories																					
		Setting the stroke position to the desired value																					
																0	1						

Electric servomotor ST 0, STR 0						490.	X	-	X	X	X	X	X	X	/	X	X		
Climatic resistance	Standard	-25°C to +55°C	IP 54		Without regulator (ST 0)	0													
	Standard	-25°C to +55°C	IP 67			1													
	Tropical	-25°C to +55°C	IP 67		6														
	Standard	-25°C to +55°C	IP 54		With regulator (STR 0) resistance feedback ¹⁶⁾	A													
Tropical	-25°C to +55°C	IP 67		G															
Electric connection		To terminal board	Voltage		230 V AC														
					24 V AC														
Nominal force [N]	2900	Running speed	4 mm/min		Motor power	1 W													
	4500		5 mm/min			2,75 W													
	4500 ³⁷⁾		10 mm/min			2,75 W													
	2900 ³⁷⁾		16 mm/min			2,75 W													
Tripping torque		One-torque		Travel		16 mm													
						20 mm													
																D	E		



Electric actuators **Regada**

ST 0.1
STR 0.1

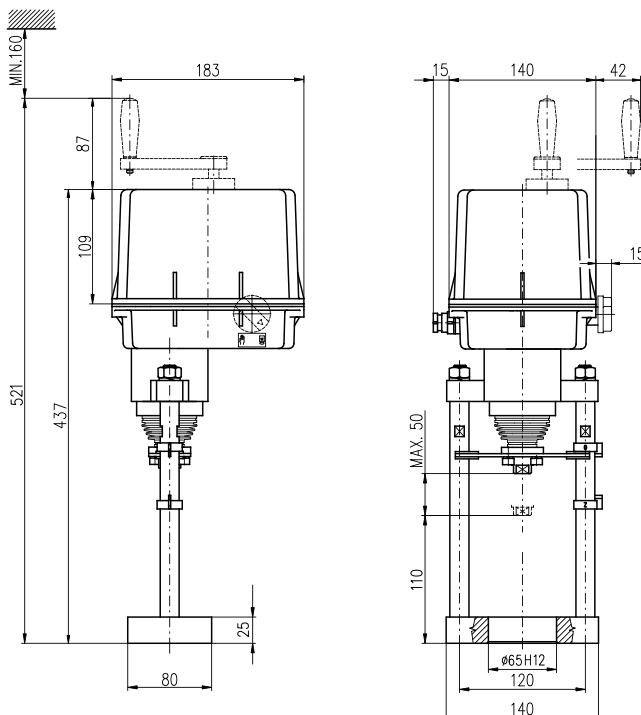
marking in type number:

EPL

Technical data	
Type	ST 0.1, STR 0.1
Marking in valve spec. No.	EPL
Voltage	230 V AC, 3 x 400 V AC, 3 x 380 V AC, 24 V AC, 24 V DC
Frequency	50 Hz
Power consumption	15W, 20W
Control	3-position (0 - 10 V, (0)4 - 20 mA)
Nominal force	4,6 and 7,2 kN
Travel	16, 25, 40 mm
Enclosure	IP 65 / IP 67
Process medium max. temp.	acc. to used valve
Ambient temperature range	-25 to 55 °C
Ambient humidity range	5 - 100% with condensation
Weight	5,4 to 8 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



Specification of actuator ST 0.1, STR 0.1

Electric servomotor ST 0.1, STR 0.1						498.	X	-	X	X	X	X	X	X	/	X	X			
Climatic resistance	Standard	-25°C to +55°C	IP 65	Without regulator (ST 0.1)		0														
			IP 67			1														
	Tropical	-25°C to +55°C	IP 67	With regulator (STR 0.1)		6														
	Standard	-25°C to +55°C	IP 65		Resistance feedback	A														
		IP 65	Resistance feedback		C															
	Tropicak	-25°C to +55°C	IP 67	Resistance feedback	G															
			IP 67	Resistance feedback	J															
Electric connection		To terminal board			Voltage	24 V DC	A													
		To connector				230 V AC		0												
						24 V AC	3													
						3x400 V AC ⁽⁶⁾	9													
						3x380 V AC ⁽⁶⁾	M													
						24 V DC	C													
						230 V AC	5													
						24 V AC	8													
						3x400 V AC ⁽⁶⁾	7													
						3x380 V AC ⁽⁶⁾	R													
Nominal force [N]	4600	Running speed	10 mm/min	Motor power	15 W (230; 3x400; 20 W (24V AC/DC); 3x380 V AC)															
			16 mm/min																	
25 mm/min																				
32 mm/min																				
40 mm/min																				
7200	10 mm/min		16 mm/min																	
	25 mm/min																			
	32 mm/min																			
	40 mm/min																			
	40 mm/min																			
Tripping		Doublemoment		Stroke		16 mm											D			
						20 mm												E		
						40 mm												H		
Remote position transmitter	Without transmitter																	A		
	Resistance	Sigle		---	Output	1 x 100 Ω													B	
		Double ⁽⁶⁾		---		1 x 2000 Ω													F	
	Electronic - current	without its source	Wiring	2-wire	Output	2 x 100 Ω														K
				2-wire ⁽⁶⁾		2 x 2000 Ω														P
		with its source		3-wire ⁽⁶⁾		4 - 20 mA														S
0 - 20 mA				4 - 20 mA		Q														
Capacity	wo its source	2-wire ⁽⁶⁾	2-wire	4 - 20 mA															T	
	with its source																		2-wire	4 - 20 mA
																		C		
Accessories	A 2 auxiliary position switches ⁽⁸⁾																		0	
	B Without space heater																		0	
	C Space heater without terminal switch																		0	
	D Manual control without permanent readiness																		0	

Permissible combinations of accessories and codes:

A+B=02, A+C=04, A+D=06, B+D=07, A+B+D=08, C+D=09, A+C+D=10

Notes:

⁽⁶⁾ applies for version without regulator

⁽⁸⁾ it is not possible to choose double transmitter for version with 2 auxiliary position switches



Electric actuators **Regada**

STR 0.1PA

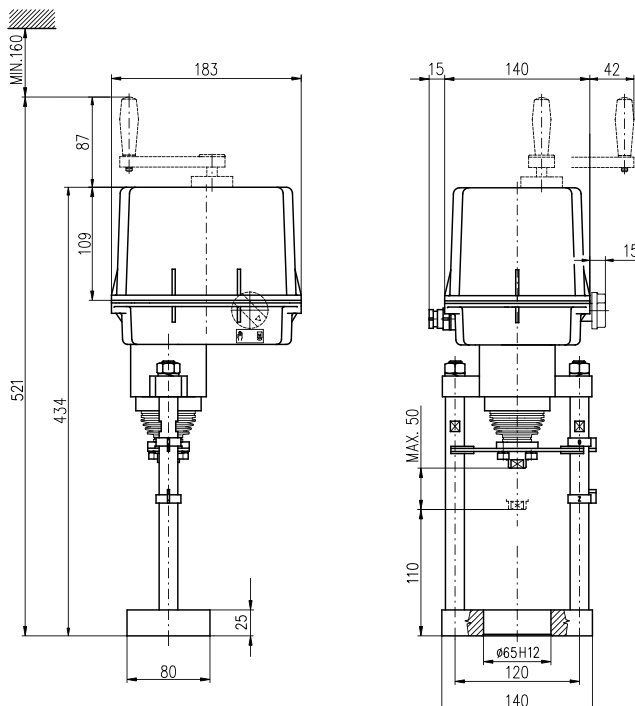
marking in type number:

EPL

Technical data	
Type	STR 0.1PA
Marking in valve spec. No.	EPL
Voltage	230 V AC, 24 V AC
Frequency	50 Hz
Power consumption	15 W
Control	3-position (0 - 10 V, (0)4 - 20 mA)
Nominal force	4,6 and 7,2 kN
Travel	16, 25, 40 mm
Enclosure	IP 67
Process medium max. temp.	acc. to used valve
Ambient temperature range	-25 to 55 °C
Ambient humidity range	5 - 100% with condensation
Weight	5,4 to 8 kg

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

Dimensions of actuators



Specification of actuator STR 0.1PA

Electric servomotor STR 0.1PA										438.		X	-	X	X	X	X	X	/	X	X						
Climatic resistance		Standard	-25°C to +55°C		IP 67						1																
		Tropical	-25°C to +55°C		IP 67						6																
Electric connection		To terminal board			Voltage		230 V AC						0														
							24 V AC						3														
							3x400 V AC								2												
							3x380 V AC								N												
Nominal force [N]		4600		Running speed		10 mm/min								G													
						16 mm/min								H													
						25 mm/min								I													
						32 mm/min								J													
		7200		Running speed		10 mm/min										K											
						16 mm/min								T													
						25 mm/min								U													
						32 mm/min								V													
						40 mm/min								W													
														Y													
														I													
Control board	DMS3	Control	Modulating	0/4 - 20 mA 0/2 - 10 V	ON - OFF and pulse	24 V DC	Output	4 - 20 mA pasive																			
Mechanical connection - flange, connection height 110 mm, thread on con. stem M10x1 or M16x1,5																											
Accessories		Without accessories																									
		A Setting the stroke position to the desired value																		0	1						
		B LED display (position indicator)																		0	4						
		D Auxiliary relay module (system DMS3 RE3)																		0	5						
		F Local control for actuators with system DMS3 and LCD																		0	7						

Permissible combinations of accessories and codes:

A+B=20, A+D=22, A+F=25, A+B+D=52, B+D=29, D+F=40



Electric actuators Regada

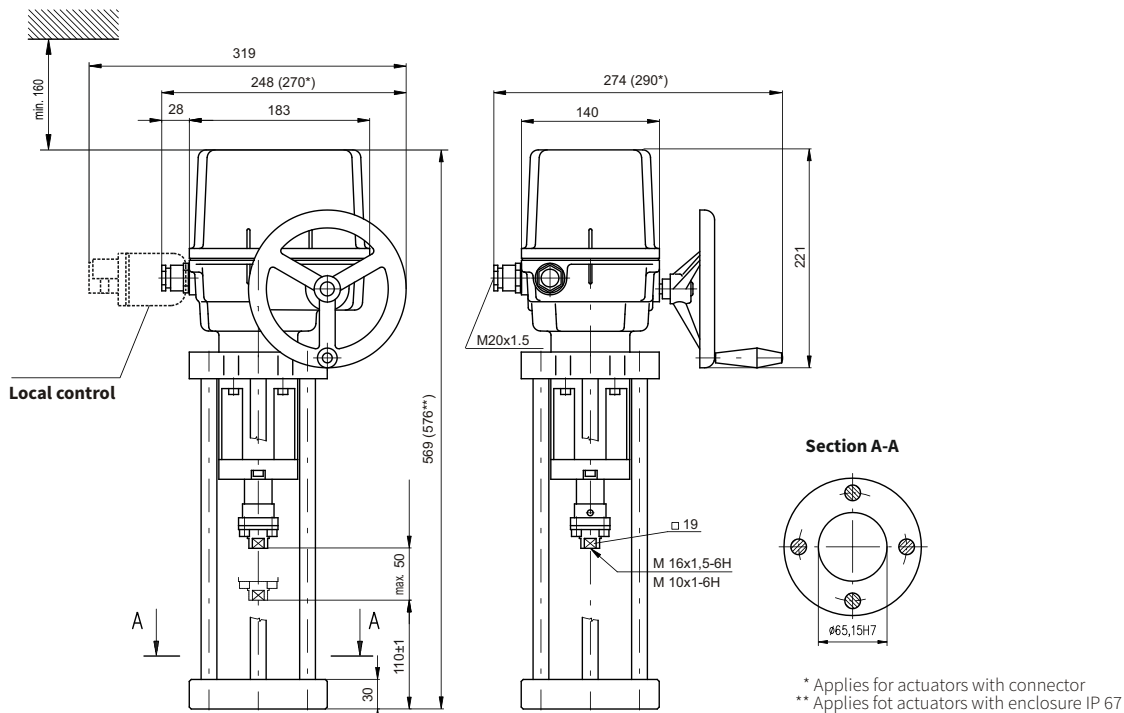
ST 1
STR 1

marking in type number:
EPI

Technical data	
Type	ST 1, STR 1
Marking in valve spec. No.	EPI
Voltage	230 V AC, 3 x 400 V AC, 3 x 380 V AC, 24 V AC, 24 V DC
Frequency	50 Hz
Power consumption	15 W, 20 W
Control	3-position (0 - 10 V, (0)4 - 20 mA)
Nominal force	7,5 and 10 kN
Travel	16 - 40 mm
Enclosure	IP 65 / IP 67
Process medium max. temp.	acc. to used valve
Ambient temperature range	-50 to 55 °C
Ambient humidity range	5 to 100% with condensation
Weight	8,5 to 10,9 kg

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

Dimensions of actuator



Specification of actuators ST 1, STR 1

Electric servomotor ST 1, STR 1						491.	X	-	X	X	X	X	X	/	X	X						
Climatic resistance	Standard	-25°C to +55°C	IP 65	Without regulator (ST 0.1)		0																
			IP 67			1																
	Tropical	-25°C to +55°C	IP 67			6																
	Universal	-50°C to +40°C	IP 67		8																	
	Standard	-25°C to +55°C	IP 65	With regulator (STR 0.1)	Resistance feedback	A																
			IP 65		Current feedback	C																
Tropical	-25°C to +55°C	IP 67	Resistance feedback		G																	
		IP 67	Current feedback	J																		
Electric connection	To terminal board				Voltage	24 V DC	A															
						230 V AC	0															
	24 V AC	3																				
	3x400 V AC ⁶⁾	9																				
	3x380 V AC ⁶⁾	M																				
	24 V DC	C																				
	230 V AC	5																				
	24 V AC	8																				
3x400 V AC ⁶⁾	7																					
3x380 V AC ⁶⁾	R																					
Nominal force [N]	10000	Running speed	8 mm/min	Motor power	15 W	0																
			10 mm/min		(230; 3x400; 3x380 V AC)	1																
			16 mm/min		20 W	2																
	32 mm/min		(24V AC/DC)		5																	
	20 mm/min				6																	
Stroke					16 mm									D								
					20 mm									E								
					40 mm									H								
Remote position transmitter	Without transmitter															A						
	Resistance	Single	---		1 x 100 Ω											B						
		Double ⁶⁾			1 x 2000 Ω								F									
	Electronic - current	without its source	2-wire	---	Output	2 x 100 Ω										K						
						2 x 2000 Ω								P								
		4 - 20 mA									S											
		0 - 20 mA									Q											
without its source	3-wire ⁶⁾	4 - 20 mA												T								
		4 - 20 mA												U								
Capacity	wo its source	2-wire ⁶⁾		4 - 20 mA										V								
	with its source	2-wire		4 - 20 mA										W								
Mechanical connection - flange, connection height 110 mm, thread on con. stem M10x1 or M16x1,5																						K
Accessories	A 2 auxiliary position switches ⁸⁾															0 0						
	E Space heater with terminal switch															0 2						
	C Local control															0 7						
	D Space heater															1 5						

Permissible combinations of accessories and codes:
 A+E=04, A+C=08, E+C=10, A+E+C=12, A+D=16, C+D=17, A+C+D=18

Notes:

⁶⁾ applies for version without regulator

⁸⁾ it is not possible to choose double transmitter for version with 2 auxiliary position switches



Electric actuators Regada

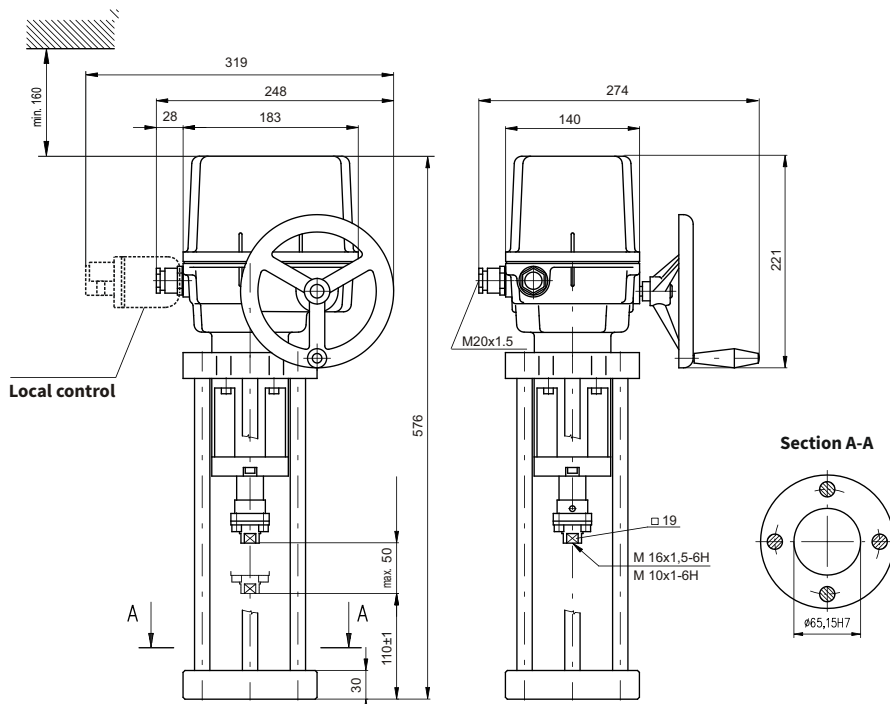
STR 1PA

marking in type number:
EPI

Technical data	
Type	STR 1PA
Marking in valve spec. No.	EPI
Voltage	230 V AC, 3 x 400 V AC, 3 x 380 V AC, 24 V AC, 24 V DC
Frequency	50 Hz
Power consumption	15 W, 20 W
Control	3-position (0 - 10 V, (0)4 - 20 mA)
Nominal force	7,5 and 10 kN
Travel	10 - 50 mm
Enclosure	IP 67
Process medium max. temp.	accorded to used valve
Ambient temperature range	-40 to 55 °C
Ambient humidity range	5 - 100% with condensation
Weight	8,5 to 10,9 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



Specification of actuators STR 1PA

Electric servomotor STR 1PA							431.	X	-	X	X	X	X	X	/	X	X	
Climatic resistance	Standard	-25°C to +55°C	IP 67				1											
	Cold	-25°C to +55°C	IP 67				3											
	Tropical	-25°C to +55°C	IP 67				6											
Electric connection	To terminal board			Voltage	230 V AC		0											
					24 V AC		3											
					3x400 V AC		2											
					3x380 V AC		N											
Nominal force [N]	10000	Running speed	8 mm/min				0											
			10 mm/min				5											
			16 mm/min				1											
	7500		32 mm/min			2												
			20 mm/min			6												
Stroke	10-50 mm																	
Control board	DMS3	Control	Modulating	0/4 - 20 mA	ON - OFF and pulse	24 V DC	Output	4 - 20 mA pasive										
	0/2 - 10 V																	
Mechanical connection - flange, connection height 110 mm, thread on con. stem M10x1 or M16x1,5																		
Accessories	Without accessories																	
	A	Setting the stroke position to the desired value															0 1	
	D	Auxiliary relay module R3, R4, R5 (module DMS3 RE3)															0 5	
	E	Auxiliary relay module R1, R2, R3, R4, R5, READY (module DMS3 RE6)															0 6	
	F	Local control for actuators with system DMS3 and LCD															0 7	

Permissible combinations of accessories and codes:
 A+D=22, A+E=23, A+F=24, D+F=40, E+F=44, A+D+F=63, A+E+F=67



Electric actuators Regada

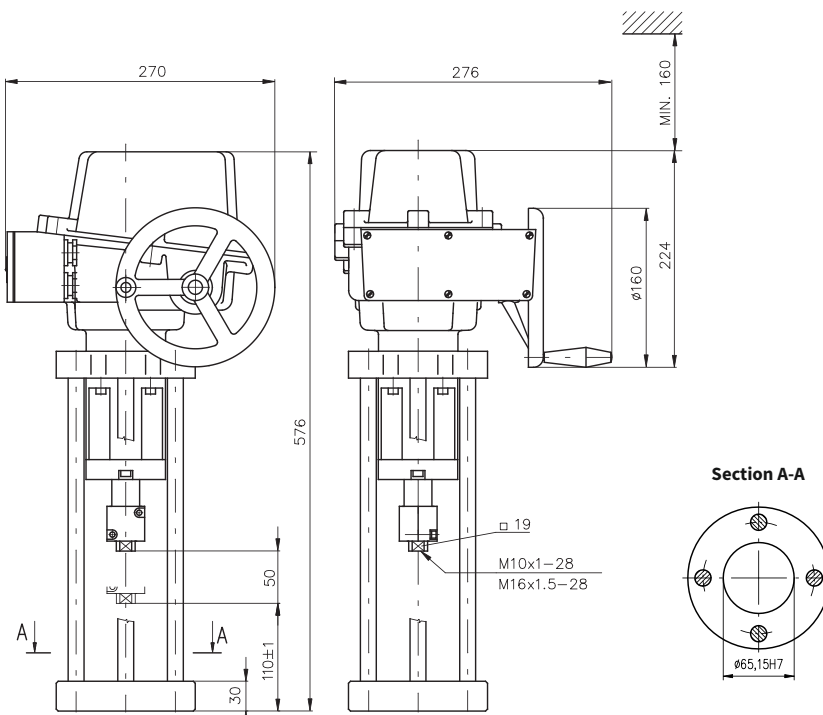
ST 1-Ex

marking in type number:
EPJ

Technical data	
Type	ST 1-Ex
Marking in valve spec. No.	EPJ
Voltage	230 V AC, 3 x 400 V AC, 3 x 380 V AC, 24 V AC, 24 V DC
Frequency	50 Hz
Power consumption	15 W, 20 W
Control	3-position, with regulator 0 - 10 V; (0) 4 - 20 mA
Nominal force	7,5 and 10 kN
Travel	16, 25, 40 mm
Enclosure	IP 67
Process medium max. temp.	acc. to used valve
Ambient temperature range	-50 to 55 °C
Ambient humidity range	5 - 100% with condensation
Weight	11 to 15 kg

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

Dimensions of actuator



Specification of actuators ST 1-Ex

Electric servomotor ST 1-Ex						411.	X	-	X	X	X	X	X									
Climatic resistance	Standard	-25°C to +55°C	Basic version (without regulator)			IP 67	1	8	B	D	K	M										
	Universal	-50°C to +40°C				With regulator									Resistance feedback	IP 67						
	Standard	-25°C to +55°C	Current feedback	IP 67																		
	Universal	-50°C to +40°C	Resistance feedback		IP 67																	
			Current feedback																			
Electric connection		To terminal board	Voltage			24 V DC							A									
						230 V AC							0									
						24 V AC							3									
						3x400 V AC ⁶⁾							9									
Nominal force [N]	10000 N		Running speed	8 mm/min	Motor power	15 W							0									
	7500 N			16 mm/min		(230; 3x400;							1									
	10000 N			32 mm/min		3x380 V AC)							2									
	8600 N			10 mm/min		20 W							5									
	8600 N			20 mm/min		(24V AC/DC)							6									
	5800 N			40 mm/min									7									
Maximal stroke (without transmitter) acc. to mechanical connection				50 mm	Stroke	16 mm							D									
For actuators without transmitter is possible to set up the stroke in between 0 to max.						20 mm							E									
						40 mm							H									
Remote position transmitter	Without transmitter												A									
	Resistance	Single	Wiring	---	Output	1 x 100 Ω								B								
		Dvojity ^{6) 58)}				1 x 2000 Ω								F								
	Electronic - current	Wo its source		2 - wire		2 x 100 Ω																K
				3 - wire ⁶⁾		2 x 2000 Ω																P
				4 - 20 mA		4 - 20 mA																S
		With its source ⁵⁹⁾		0 - 20 mA		4 - 20 mA																T
				4 - 20 mA		4 - 20 mA																V
				4 - 20 mA		4 - 20 mA																Q
	Capacity	Wo its source		2 - wire ⁶⁾		0 - 20 mA																U
Wi its source ⁵⁹⁾		4 - 20 mA				W																
Wi its source ⁵¹⁾		4 - 20 mA			I																	
Mechanical connection - D-shape flange, connection height 110 mm, thread on con. stem M10x1 or M16x1,5												J										
												J										
												K										

Notes:

- ⁶⁾ applies for version without regulator
- ⁵¹⁾ Only for version with regulator and current feedback, in this excution the output signal is not galvanically separated from the input signal
- ⁵⁸⁾ applied just for version without auxiliary position switches S5, S6 for 24 V DC
- ⁵⁹⁾ position transmitter with its source for feeding voltage 24 V DC after agreement with producer



Electric actuators Regada

ST 2
STR 2

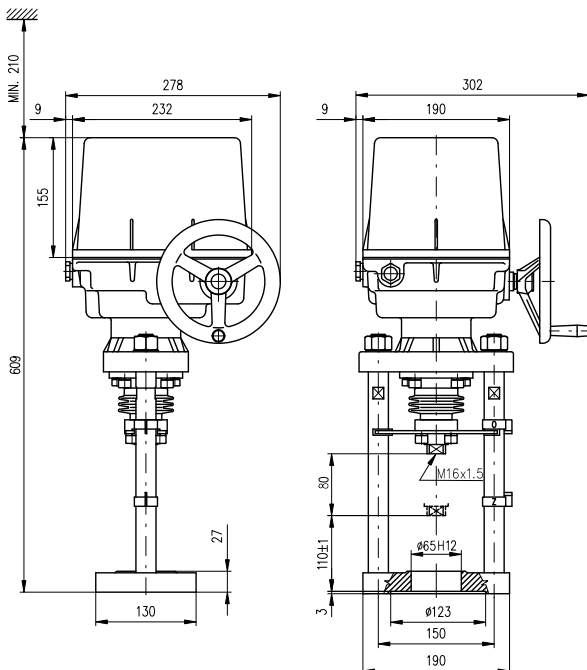
marking in type number:
EPM

Technical data	
Type	ST 2, STR 2
Marking in valve spec. No.	EPM
Voltage	230 V AC, 3x400 V AC, 3x380 V AC, 24 V AC, 24 V DC
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
Travel	40, 80 mm
Enclosure	IP 65 / IP 67
Process medium max. temp.	acc. to used valve
Ambient temperature range	-50 to 55 °C
Ambient humidity range	5 - 100% with condensation
Weight	17 to 21,5 kg

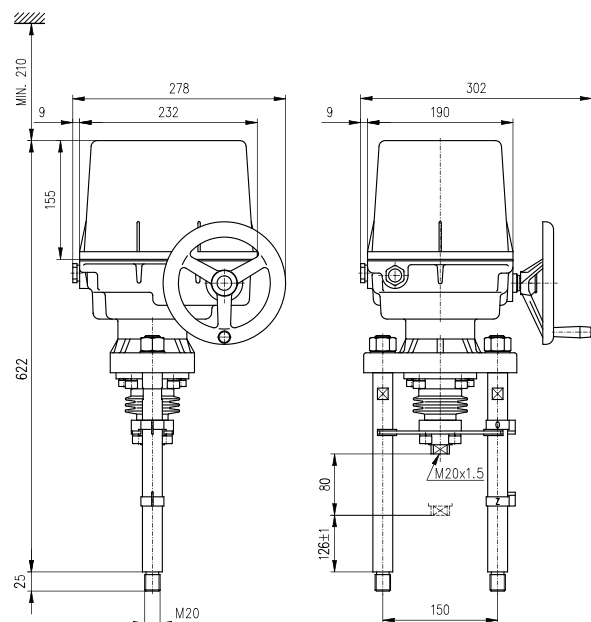
→ **Note:** Specifications and technical data are for information only. Detailed technical informations can be found in producer's data sheet or on the website www.regada.sk

Dimensions of actuator

DN 80 - 150 (connection D)



DN 200 - 300 (connection M)



Specification of actuator ST 2, STR 2

Electric servomotor ST 2, STR 2						492.	X	-	X	X	X	X	X	X	/	X	X				
Climatic resistance	Standard	-25°C to +55°C	IP 65	Without regulator (ST 2)		0															
			-25°C to +55°C		IP 67		1														
		Universal	-50°C to +40°C		IP 67		6														
	Standard	-25°C to +55°C	IP 67		With regulator (STR 2)	Resistance feedback	B														
			-25°C to +55°C			IP 67	Current feedback	D													
Tropical	-25°C to +55°C	IP 67	Resistance feedback	G																	
		-25°C to +55°C	IP 67	Current feedback		J															
Electric connection	To terminal board			Voltage		24 V DC	A														
					230 V AC	0															
					24 V AC	3															
					3x400 V AC ⁶⁾	9															
					3x400 V AC ²⁸⁾	2															
					3x380 V AC ⁶⁾	M															
					3x380 V AC ²⁸⁾	N															
	To connector ²¹⁾				24 V DC	C															
					230 V AC	5															
					24 V AC	8															
					3x400 V AC ⁶⁾	7															
					3x400 V AC ²⁸⁾	6															
					3x380 V AC ⁶⁾	R															
					3x380 V AC ²⁸⁾	S															
230 V AC, 24 V AC/DC - 65W		3x400 V AC																			
Nominal force [N]	20 W	Motor power	Nominal force [N]	Motor power	90 W	Running speed	25 000		A												
							20 000		H												
							16 000		J												
							25 000		B												
							20 000		K												
							16 000		L												
	25 000							M													
	20 000							N													
	16 000							P													
	25 000							C													
	20 000							Q													
	16 000							R													
	20 000							S													
	16 000							T													
	---							U													
	20 000							D													
	16 000							V													
	---							W													
16 000		E																			
---		Y																			
---		F																			
---		Z																			
Stroke	Max. (without transmitter) ⁴¹⁾ ... 100 mm		Wi transmitter	40 mm													H				
				80 mm													K				

Continued on next page

Remote position transmitter	Without transmitter		Wiring	Output	1 x 100 Ω	A				
	Resistance	single			1 x 2000 Ω					B
		double			2 x 100 Ω					
	Electronic - current				wo its source					2 x 2000 Ω
		with its source			4 - 20 mA					P
		wo its source			0 - 20 mA					
		with its source								4 - 20 mA
		wo its source			4 - 20 mA					
		with its source								4 - 20 mA
	Capacity	wo its source			2-wire ⁶⁾					
with its source ⁵¹⁾		2-wire	W							
Mechanical connection			Flange, connection height 110 mm, stem thread M16x1,5		D					
			Columns, connection height 126 mm, stem thread M20x1,5						M	
Accessories			A 2 auxiliary switches							
			E Space heater with terminal switch						0 0	
			C Local control						0 2	
			D Space heater						0 7	
			G Setting up the tripping torque on demanded position						1 5	
					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

Notes:

- ⁶⁾ applies for version without regulator
- ²¹⁾ version with connector only for -40°C
- ²⁸⁾ version with reverse contactors
- ⁴¹⁾ version without transmitter - it is possible to set up stroke 0 - 80 mm
- ⁵¹⁾ only for version with regulator and current feedback



Electric actuators Regada

STR 2PA

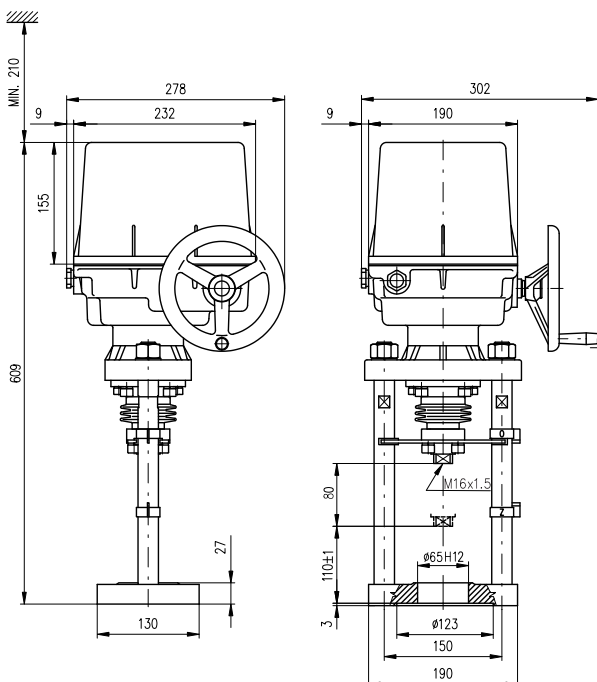
marking in type number:
EPM

Technical data	
Type	STR 2PA
Marking in valve spec. No.	EPM
Voltage	230 V AC, 3x400 V AC, 3x380 V AC, 24 V AC, 24 V DC
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
Travel	40, 80 mm
Enclosure	IP 67
Process medium max. temp.	acc. to used valve
Ambient temperature range	-40 to 55 °C
Ambient humidity range	5 - 100% with condensation
Weight	17 and 21,5 kg

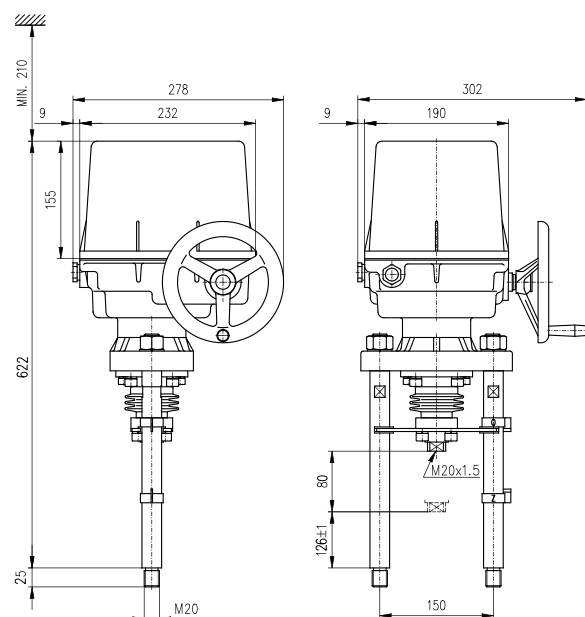
→ **Note:** Specifications and technical data are for information only. Detailed technical informations can be found in producer's data sheet or on the website www.regada.sk

Dimensions of actuator

DN 80 - 150 (connection D)



DN 200 - 300 (connection M)



Specification of actuator STR 2PA

Electric servomotor STR 2PA						432.	X	-	X	X	X	X	X	/	X	X		
Climatic resistance	Standard	-25°C to +55°C		IP 67		1												
	Cold	-40°C to +40°C		IP 67		3												
	Tropical	-25°C to +55°C		IP 67		6												
Electric connection to terminal board	Switching electromotor	Through optocouplers		Napájecí napětí	230 V AC													
		Through reverse contactors			3x400 V AC													
	Contactless switching		3x380 V AC															
			3x400 V AC															
		3x380 V AC																
Nominal force [N]	Running speed		230 V		3x400 V, 3x380 V													
25 000	10 mm/min		●		-													
	20 mm/min		●		●													
	32 mm/min		●		●													
	40 mm/min		●		●													
	50 mm/min		-		●													
	60 mm/min		-		●													
20 000	10 mm/min		●		-													
	20 mm/min		●		●													
	32 mm/min		●		●													
	40 mm/min		●		●													
	50 mm/min		●		-													
	50 mm/min		-		-													
	60 mm/min		●		●													
	60 mm/min		-		●													
16 000	10 mm/min		●		-													
	20 mm/min		●		●													
	32 mm/min		●		●													
	40 mm/min		●		●													
	50 mm/min		●		-													
	50 mm/min		-		●													
	60 mm/min		●		-													
	60 mm/min		-		●													
	80 mm/min		●		-													
	80 mm/min		-		●													
100 mm/min		-		●														
Stroke					20-80 mm													
Control board	DMS3	Control	Modulating	0/4 - 20 mA	ON - OFF and pulse	24 V DC	Output	4 - 20 mA pasive										
				0/2 - 10 V														
Mechanical connection		Flange, connection height 110 mm, stem thread M16x1,5																
		Columns, connection height 126 mm, stem thread M20x1,5																
Accessories		Without accessories																
		A Setting the stroke position to the desired value														0 1		
		D Auxiliary relay module R3, R4, R5 (module DMS3 RE3)														0 5		
		E Auxiliary relay module R1, R2, R3, R4, R5, READY (module DMS3 RE6)														0 6		
		F Local control for actuators with system DMS3 and LCD														0 7		

Permissible combinations of accessories and codes:

A+D=22, A+E=23, A+F=24, D+F=40, E+F=44, A+D+F=63, A+E+F=67



Pneumatic actuators

Flowserve

Series 253 - 701

marking in type number:
PFA, PFB, PFC

Technical data

Type	PA 253		PB 503		PB 701	
Marking in valve spec. No.	PFA		PFB		PFC	
Feeding pressure			6,0 bar max			
Function	direct	indirect	direct	indirect	direct	indirect
Control			pneumatic signal 0,2 - 1,0 bar pneumatic signal 0(4) - 20 mA			
Nominal force	according to table of nominal force values					
Travel	25 mm				40 mm	
Enclosure			IP 54			
Process medium max. temp.			acc. to used valves			
Ambient temperature 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 website www.flowserve.com

Accessories

Electropneumatic positioner type SRI 981	Device with electric input of 20 - 100 kPa to control the pneumatic actuators with pneumatic control signal
Electropneumatic positioner type SRI 986	Analog positioner with input signal 4(0) - 20 mA
Electropneumatic positioner (analog) type SRD 990	Device with electric input of 4 (0) - 20 mA and outlet of controlling air into actuator. It is adjusted by PC and special software
Electropneumatic positioner (intelligent) type SRD 991	Device with electric input of 4 (0) - 20 mA and outlet of controlling air into actuator. It is adjusted by PC and special software
Electropneumatic positioner (intelligent) type SRD 998	Device with electric input of 4 (0) - 20 mA and outlet of controlling air into actuator. Standard equipment: HART, LED display, setting using the multi selector
Electropneumatic positioner SIPART PS2	Digital positioner with input 4(0) - 20 mA
Electropneumatic positioner ABB TZIDC	Digital positioner with input 4(0) - 20 mA
Signalisation switches typ SGE985	Adjustable end position switches
Air set type G651 (-20 to 50°C)	Reduces the supply pressure to a value required
Air set type typ FRS 923 (-40 to 80°C)	Reduces the supply pressure to a value required
Solenoid valve standard type SC G551A005	Direct operated electromagnetic valve, version 3/2, function U (universal), G 1/4"
Solenoid valve standard type SC G327B001	Direct operated electromagnetic valve, version 3/2, function U (universal), G 1/4", with the increased safety/epoxy encapsulation operator
Solenoid valve inexplosive EEx em type EM G327B001	Direct operated electromagnetic valve, version 3/2, function U (universal), G 1/4", solid conclusion
Solenoid valve inexplosive EEx d type NF G327B001	Direct operated electromagnetic valve, version 3/2, function U (universal), G 1/4", solid conclusion
Solenoid valve 5/2-way type SCG551B417	Direct operated electromagnetic valve, version 5/2, function U (universal), G 1/4", (use 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 with resistance to vibrations and reached 10⁷ of cycles in operation. It is possible to deliver the actuator with both fail to open and fail to close function, possibly with a position blocking (air lock) upon feeding pressure air supply failure. Various accessories can be delivered together with the actuator.

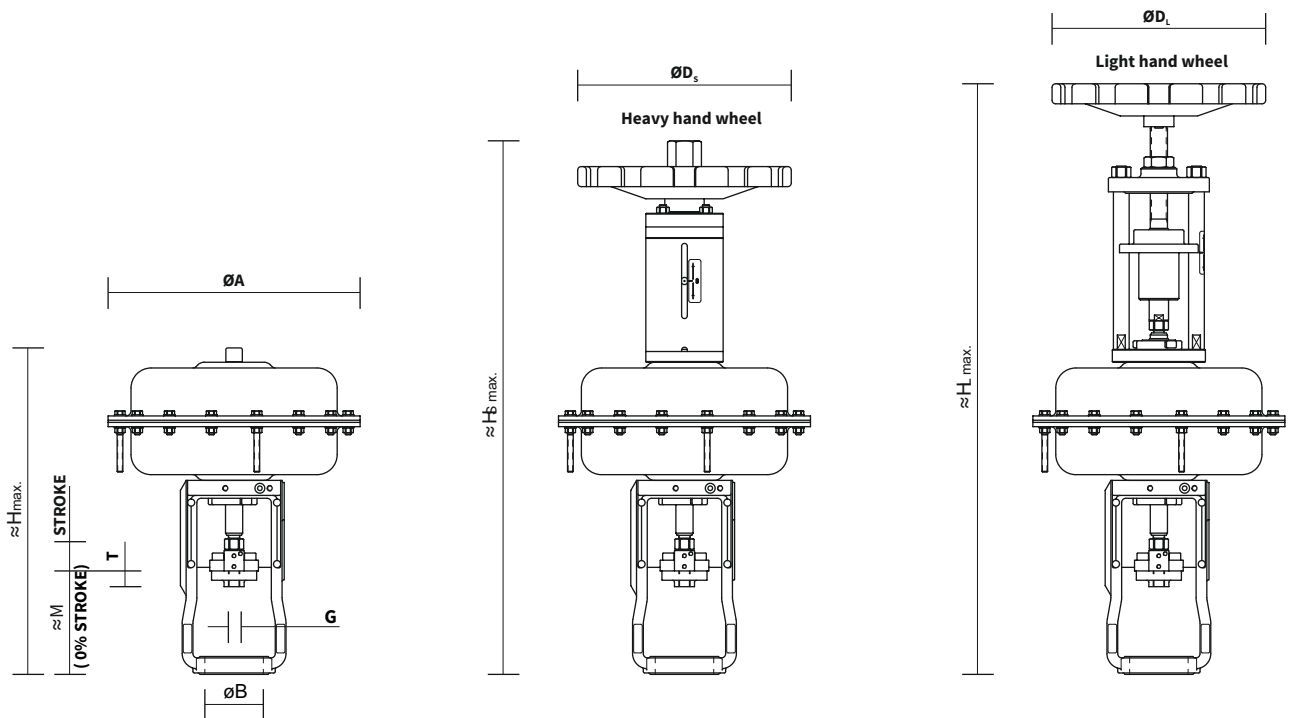
Direct and indirect functions

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).

Dimensions and weight of actuators Flowserve series 253 - 701

Type	Actuator											Weight		
	A [mm]	H [mm]	H _s [mm]	H _t [mm]	D _s [mm]	D _t [mm]	Stroke [mm]	B [mm]	M [mm]	G [mm]	T [mm]	[kg]	with RK _s [kg]	with RK _t [kg]
PA 253	260	335	600	620	200	200	20	65	105	M10x1	23	10	17	15
PB 503	355	460	845	795	250	300	40	82	140	M16x1,5	25	22	31	30
PB 701	390	500	875	---	350	---	40	82	140	M16x1,5	25	31	53	---



Specification No. of Flowserve actuators 253 - 701

Actuator type	250 cm ²	PX XXX	X	X	X	X	X	X
	500 cm ²	PA 253						
	700 cm ²	PB 503						
		PB 701						
Color	white	B						
Spring range [bar]	0,2 - 1,0	A	D					
	1,5 - 2,7	V	C					
	2,0 - 4,8	F	Y					
	1,0 - 2,4	D	Y					
	0,5 - 1,9	B	L					
Hand wheel	without wheel							O
	light wheel							L
	heavy wheel							H
Function	direct							A
	indirect							Z
Stroke	20							A
	40							B



Pneumatic actuators

Flowserve

PO 1502

marking in type number:

PFD

Technical data

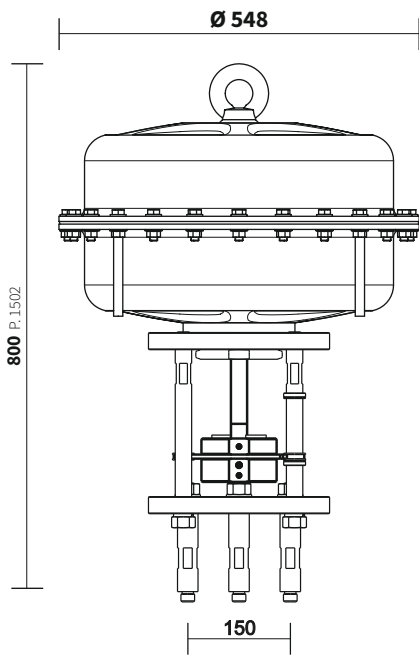
Type	PO 1502		
Marking in valve spec. No.	PFD		
Feeding pressure	6,0 bar max		
Function	direct	indirect	
Control	pneumatic signal 0,2 - 1,0 bar current signal 0(4) - 20 mA		
Nominal force	according to table of nominal force values		
Travel	80, 100 mm		
Enclosure	IP 54		
Process medium max. temp.	acc. to used valves		
Ambient temperature range	-40 to 80 °C		
Ambient humidity range	95 %		
Weight	124 kg - with hand wheel 174 kg		

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

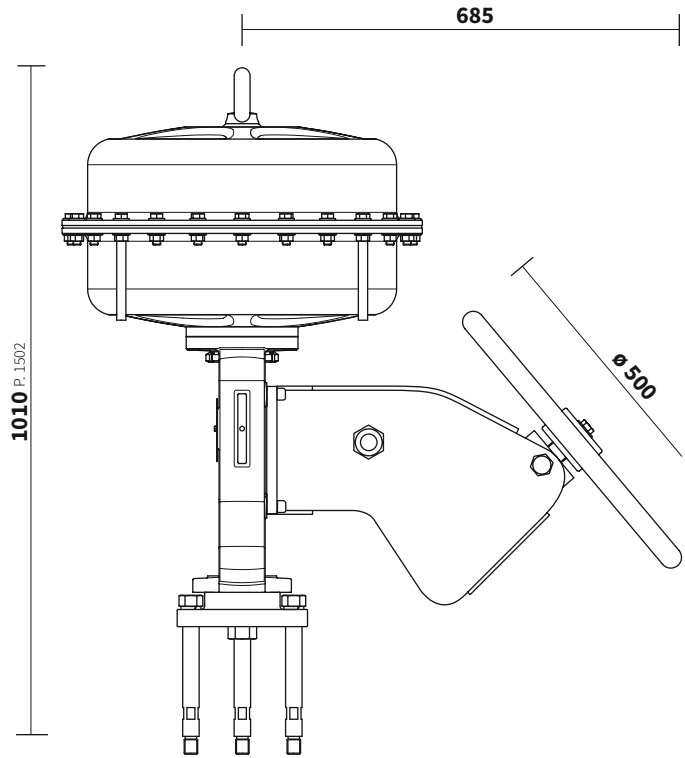
Accessories

Electropneumatic positioner type SRI 981	Device with electric input of 20 - 100 kPa to control the pneumatic actuators with pneumatic control signal
Electropneumatic positioner type SRI 986	Analog positioner with input signal 4(0) - 20 mA
Electropneumatic positioner (analog) type SRD 990	Device with electric input of 4 (0) - 20 mA and outlet of controlling air into actuator. It is adjusted by PC and special software
Electropneumatic positioner (intelligent) type SRD 991	Device with electric input of 4 (0) - 20 mA and outlet of controlling air into actuator. It is adjusted by PC and special software
Electropneumatic positioner (intelligent) type SRD 998	Device with electric input of 4 (0) - 20 mA and outlet of controlling air into actuator. Standard equipment: HART, LED display, setting using the multi selector
Electropneumatic positioner SIPART PS2	Digital positioner with input 4(0) - 20 mA
Electropneumatic positioner ABB TZIDC	Digital positioner with input 4(0) - 20 mA
Signalisation switches typ SGE985	Adjustable end position switches
Air set type G651 (-20 to 50°C)	Reduces the supply pressure to a value required
Air set type typ FRS 923 (-40 to 80°C)	Reduces the supply pressure to a value required
Solenoid valve standard type SC G551A005	Direct operated electromagnetic valve, version 3/2, function U (universal), G 1/4"
Solenoid valve standard type SC G327B001	Direct operated electromagnetic valve, version 3/2, function U (universal), G 1/4", with the increased safety/epoxy encapsulation operator
Solenoid valve inexplosive EEx em type EM G327B001	Direct operated electromagnetic valve, version 3/2, function U (universal), G 1/4", with the increased safety/epoxy encapsulation operator
Solenoid valve inexplosive EEx d type NF G327B001	Direct operated electromagnetic valve, version 3/2, function U (universal), G 1/4", solid conclusion
Solenoid valve 5/2-way type SCG551B417	Direct operated electromagnetic valve, version 5/2, function U (universal), G 1/4", (use 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

Dimensions of actuator Flowserve 1502



PO 1502



PB 1502

Specification No. of Flowserve actuators 1502

			PX XXXX	X	X	X	X	X
Type of actuator		1500 cm ²	PO 1502					
		1500 cm ²	PB 1502					
Color			white		B			
Spring range [bar]	PO 1502	H = 80 mm	0,4 - 2,0		G F			
			1,5 - 2,7		V C			
			2,0 - 3,5		F S			
			2,6 - 4,2		A J			
	PO 1502	H = 100 mm	0,9 - 1,9		HL			
			1,8 - 3,8		J I			
2,0 - 4,3				FL				
Hand wheel			without wheel				O	
			side light wheel				S	
Function			direct				A	
			indirect				Z	
Stroke H			80				D	



Pneumatic actuators **A. Hock**

**2109, 2112, 2112S
2112T, 2116, 2116S**

marking in type number:

PHF, PHA, PHB, PHC

A. Hock pneumatic actuators are suitable for applications in extreme conditions and have good shock resistance. Actuators can be supplied in direct, reverse and springless configuration. Broad range of accessories is available.

Technical data						
Type	2109	2112	2112S	2112T	2116	2116S
Marking in valve spec. No.	PHF	PHA		PHB	PHC	
Max. supply pressure	NO, NC	6 bar		acc. to springs	6 bar	
Function	double-acting	5,5 bar		3 bar	5,5 bar	
Control	direct (NO), reverse (NC), double-acting					
Nominal force	pneumatic signal 20-100 kPa electric signal 4-20 mA					
Stroke	according to springs					
Enclosure	16, 20	16, 20, 25, 40		25, 40	40, 80, 100	
Process medium max. temp.	according to used valve					
Ambient temperature range	standard -40 to 100 °C alternatively -60 to 80 °C					
Weight	see dimensions table					

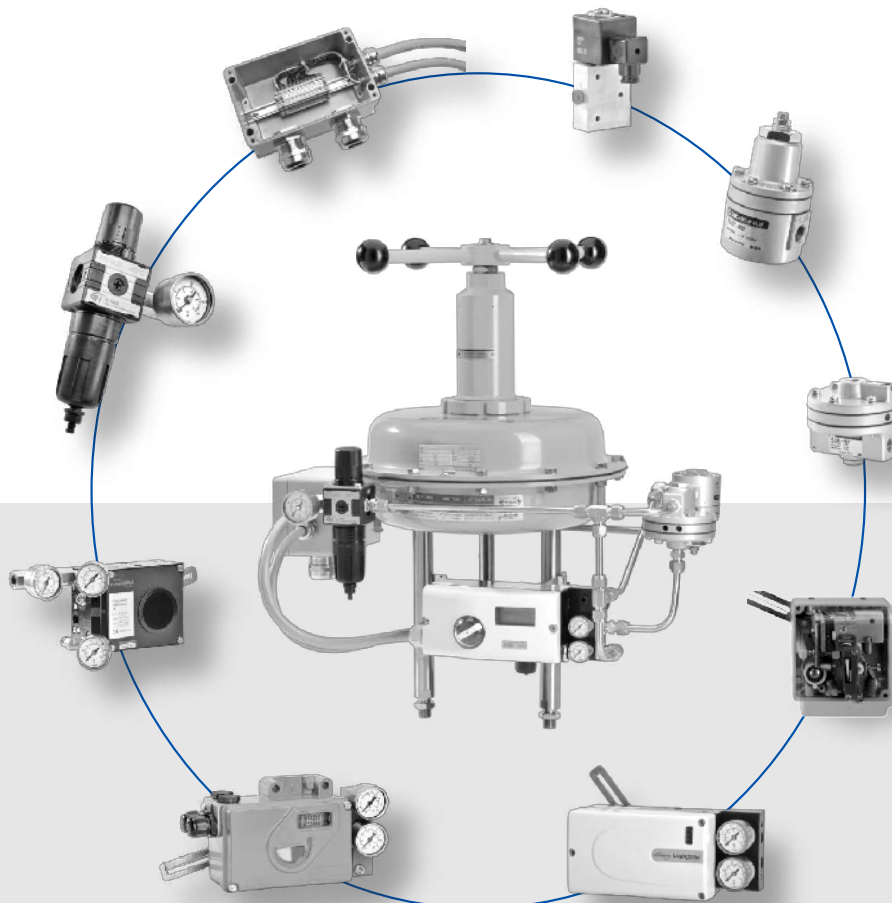
Direct and reverse functions

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

Reverse function ensures that actuator's stem extends upon control air supply failure (valve closes).

Accessories

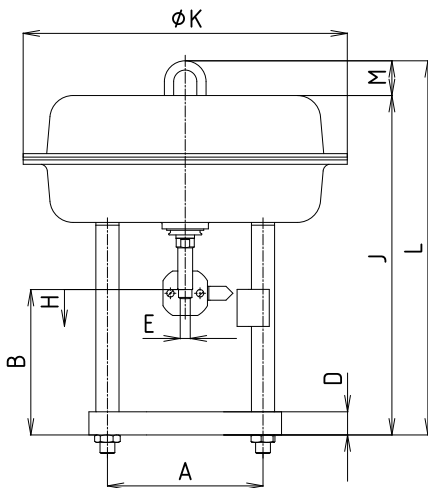
Pneumatic positioner type SRI 981	Device with pneumatic input of 20 - 100 kPa
Electropneumatic positioner type SRI 986	Analog positioner with input signal 4(0) - 20 mA
Electropneumatic positioner (analog) type SRD 990	Device with electric input of 4 (0) - 20 mA and direct pneumatic output into actuator. Adjusted by switches and potentiometers
Electropneumatic positioner (intelligent) type SRD 991	Device with electric input of 4 (0) - 20 mA and outlet of air into actuator. It is adjusted by PC and special software
Electropneumatic positioner (intelligent) type SRD 998	Device with electric input of 4 (0) - 20 mA and direct pneumatic output into actuator. Standard equipment: HART, LED display, adjustment by the multi selector
Electropneumatic positioner SIPART PS2	Digital positioner with input 4(0) - 20 mA
Electropneumatic positioner ABB TZIDC	
Limit switch type SGE985	Adjustable end limit switches
Air set type G651 (-20 to 50°C)	Reduces the supply air pressure to a required value
Air set type FRS 923 (-40 to 80°C)	
Solenoid valve standard type SC G551A005	Direct operated electromagnetic valve, version 3/2, function U (universal), G 1/4"
Solenoid valve standard type SC G327B001	
Solenoid valve EEx em b type EM G327B001, explosion-proof	Direct operated electromagnetic valve, version 3/2, function U (universal) G 1/4", with increased safety, encapsulated epoxy moulded
Solenoid valve EEx d type NF G327B001, explosion-proof	Direct operated electromagnetic valve, version 3/2, function U (universal), G 1/4", flameproof enclosure
Solenoid valve 5/2-way type SCG551B417	Direct operated electromagnetic valve, version 5/2, function U (universal), G 1/4", (use 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



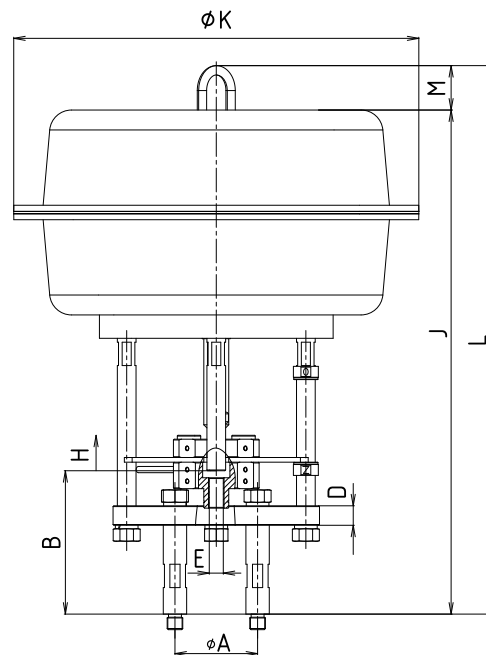
Dimensions and weight of actuators A. Hock series 2000

Typ	Connection version	Main dimensions of diaphragm actuators and manual control												Weight		Hand wheel	
		A [mm]	B [mm]	D [mm]	E [mm]	J [mm]	K [mm]	L [mm]	M [mm]	R [mm]	U [mm]	V [mm]	W [mm]	0,2-1,0 [kg]	> [kg]	side [kg]	upper [kg]
2109	A252	132	162	22	M10x1	349	268	387	38	297		265	210	10	10	7	6
2112-30 (NC)	A253	168	168	23	M10x1	400	352	438	38	316		350	265	20	20	7	8
2112T-30 (NC)	A253	168	168	23	M10x1	587	352	625	38			350	265	36	36		8
2112-30 (NO)	A255	168	157	25	M10x1	367	352	404	38	316		350	265	21	21	7	8
2112T-30 (NO)	A255	168	157	25	M10x1	555	352	593	38			350	265	38	38		8
2112-30 (NO)	A256	168	167	25	M10x1	377	352	414	38	316		350	265	21	21	7	8
2112T-30 (NO)	A256	168	167	25	M10x1	565	352	603	38			350	265	38	38		8
2112-50 (NC)	A254	168	177	25	M16x1,5	387	352	425	38	316		350	265	22	22	7	8
2112S-50 (NC)	A254	168	177	25	M16x1,5	387	352	425	38			350	265		23		8
2112T-50 (NC)	A254	168	177	25	M16x1,5	575	352	613	38			350	265	40	40		8
2112-50 (NO)	A257	168	177	25	M16x1,5	387	352	425	38	316		350	265	22	22	7	8
2112S-50 (NO)	A257	168	177	25	M16x1,5	387	352	425	38			350	264		23		8
2112T-50 (NO)	A257	168	177	25	M16x1,5	575	352	613	38			350	265	38	38		8
2116-40 (NO, NC)	A258	230	190	26	M16x1,5	597	520	654	57		500		670	105	110		48
2116-100 (NO,NC)	A302	150	184	25	M20x1,5	647	520	704	57		500		670	113	118		48
2116S-100 (NO,NC)	A302	150	184	25	M20x1,5	647	520	704	57		500		670		132		48

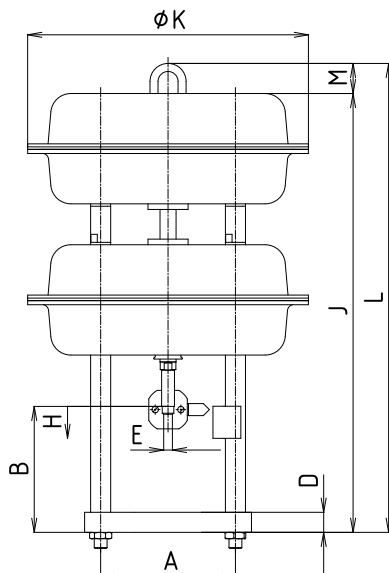
Standard actuator

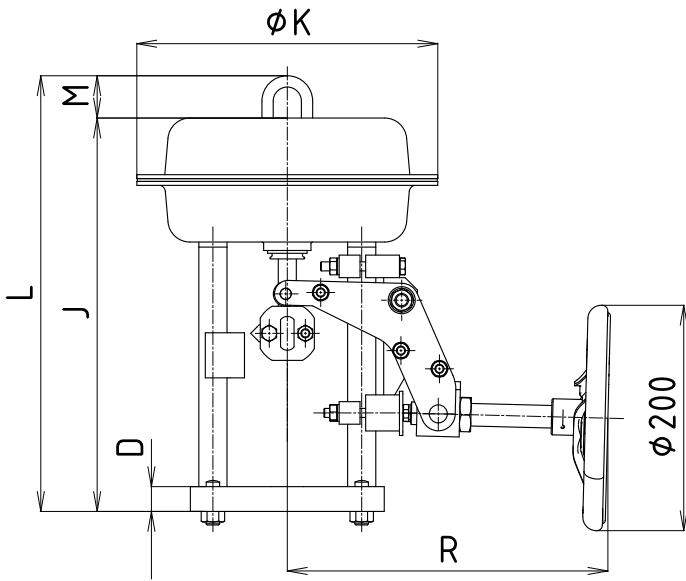


Standard actuator with linear unit 2116(S)

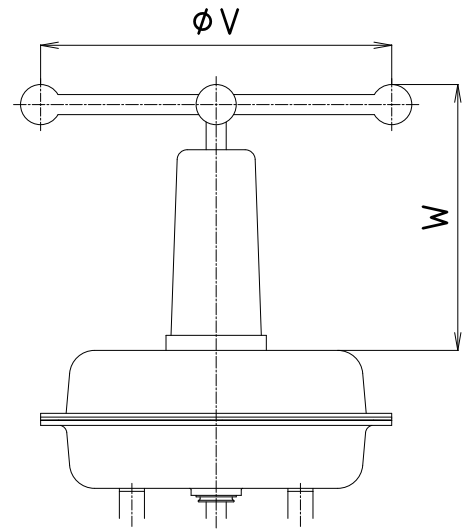


Tandem-type actuator 2112T

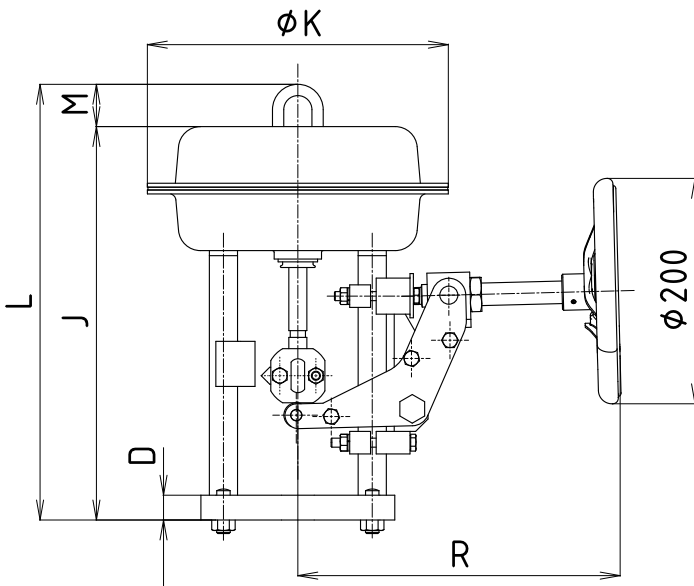




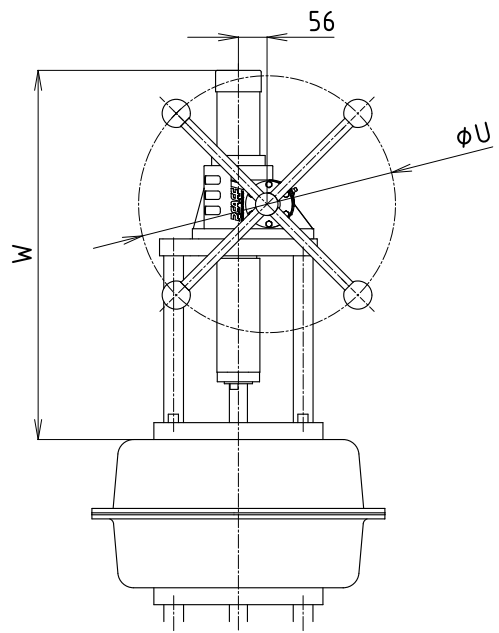
Standard actuator with side wheel (NO)



Upper wheel for actuators
2109, 2112, 2112S, 2112T



Standard actuator with side wheel (NC)



Upper wheel for actuators
2116(S)

Specification No. of actuators A. Hock series 2000

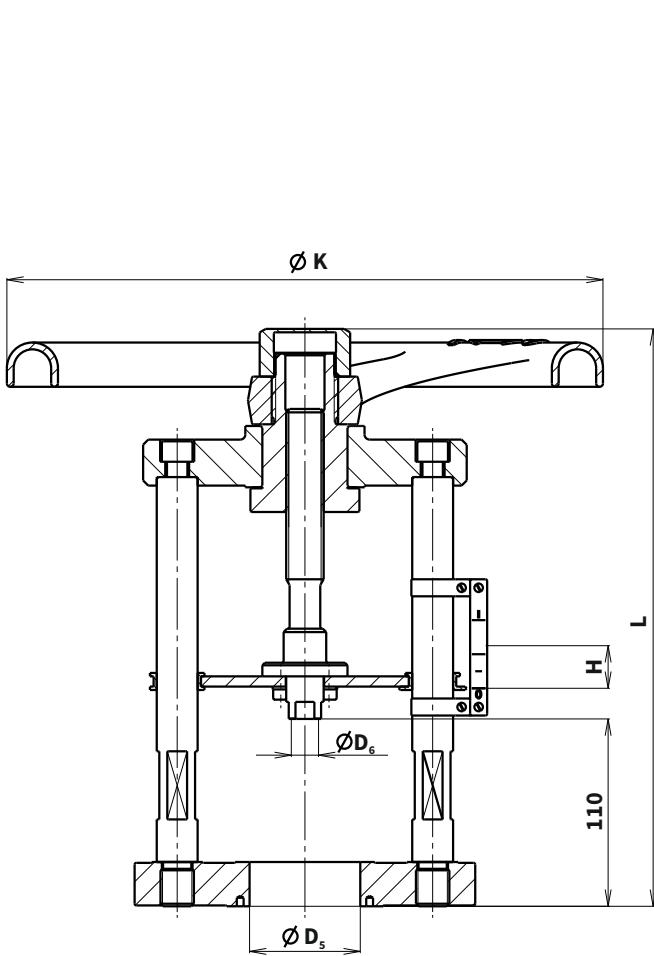
				P2-0K-	X	X	X	(AXXX)
Spring range [bar]	Without hand wheel	0,2 - 1,0	all actuators	A				
		0,8 - 2,2	all actuators, except 2112-50 / 2112T-50	B				
		1,2 - 3,0	2109	V				
		1,5 - 3,8	2109 (NC only)	H				
		1,6 - 3,2	2112-30 (NC only)	M				
		1,4 - 2,8	only 2112-30 / 2112T-30	W				
		1,5 - 3,0	2112T-30 (NC only)	R				
		0,5 - 1,7	2112-50 / 2112T-50	D				
		0,8 - 2,8	2112-50	S				
		0,7 - 2,5	only 2112-50	X				
		0,75 - 2,7	2112T-50 (NC only)	U				
		1,2 - 3,0	only 2112S-50	Y				
		1,4 - 3,4	only 2112S-50	Z				
		1,3 - 3,0	only 2116S-100	Y				
	1,5 - 3,5	only 2116S-100	Z					
	With upper wheel	0,2 - 1,0	all actuators	E				
		0,8 - 2,2	2109 / 2112-30 / 2112T-30	F				
		0,8 - 2,2	2116 / 2116T	F				
		1,2 - 3,0	2109 / 2112S-50	L				
		0,5 - 1,7	2112-50 / 2112T-50	G				
		0,7 - 2,5	2112-50 / 2112T-50	T				
1,4 - 2,8		2112-30	N					
With side wheel	0,2 - 1,0	except 2116 / 2116T	I					
	0,8 - 2,2	2109 / 2112-30	K					
	0,5 - 1,7	2112-50	P					
	0,7 - 2,5	2112-50 (NO only)	Q					
Without hand wheel	Double-acting version		C					
Actuator size / nominal travel	2109-20			L				
	2112-30			M				
	2112-50 / 2112S-50			I				
	2112T-30			P				
	2112T-50			T				
	2116-40, 2116-100, 2116S-100			N				
Function	Direct (NO)						1	
	Reverse (NC)						2	
	Double-acting						3	
Connection version	2109		RV 3XX, DN 15 - 65	A252				
	2112-30 (NC) / 2112T-30 (NC)		RV 3XX, DN 15 - 65	A253				
	2112-30 (NO)		RV 3XX, DN 15 - 40	A255				
	2112-30 (NO) / 2112T-30 (NO)		RV 3XX, DN 50 - 65	A256				
	2112-50 (NC) / 2112S-50 (NC) 2112T-50 (NC)		RV 3XX, DN 80 - 150	A254				
	2112-50 (NO) / 2112S-50 (NO) 2112T-50 (NO)		RV 3XX, DN 80 - 150	A257				
	2116-40 (only NC & NO)		RV 3XX, DN 80 - 150	A258				
	2116-100 / 2116S-100 (only NC & NO)		RV 3XX, DN 200 - 400	A302				

 Ordering number example: **P2-0K-BL2 (A252)**

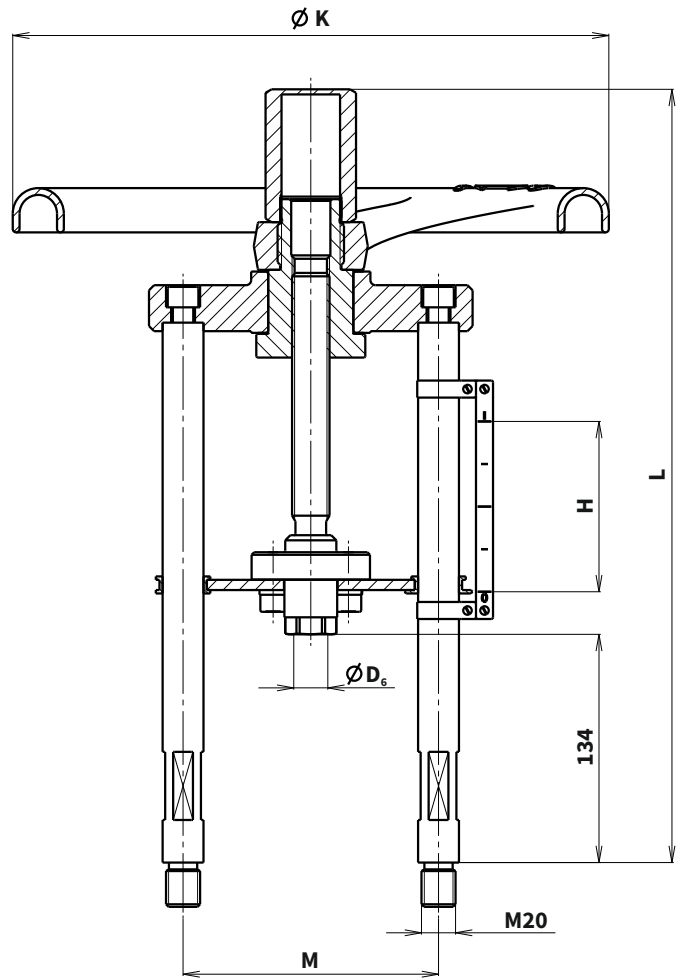
Specification No. of actuators A. Hock (stainless steel version) series 2000				P5-0K-	X	X	X	(AXXX)
Spring range [bar]	Without hand wheel	0,2 - 1,0	all actuators	A				
		0,8 - 2,2	all actuators, except 2112-50 / 2112T-50	B				
		1,6 - 3,2	2112-30 (NC only)	M				
		1,4 - 2,8	only 2112-30 / 2112T-30	W				
		1,5 - 3,0	2112T-30 (NC only)	R				
		0,5 - 1,7	2112-50 / 2112T-50	D				
		0,8 - 2,8	2112-50	S				
		0,7 - 2,5	only 2112-50	X				
		0,75 - 2,7	2112T-50 (NC only)	U				
		1,2 - 3,0	only 2112S-50	Y				
	1,4 - 3,4	only 2112S-50	Z					
	With upper wheel	0,8 - 2,2	2109 / 2112-30 / 2112T-30	F				
		1,2 - 3,0	2109 / 2112S-50	L				
		0,5 - 1,7	2112-50 / 2112T-50	G				
0,7 - 2,5		2112-50 / 2112T-50	T					
1,4 - 2,8		2112-30	N					
Without hand wheel	double -acting		C					
Actuator size / nominal travel	2109-20			L				
	2112-30			M				
	2112-50, 2112S-50			I				
	2112T-30			P				
	2112T-50			T				
Function	Direct (NO)						1	
	Indirect (NC)						2	
	Double-acting						3	
Connection version	2109	RV 3XX, DN 15 - 65					A252	
	2112-30 (NC) / 2112T-30 (NC)	RV 3XX, DN 15 - 65					A253	
	2112-30 (NO)	RV 3XX, DN 15 - 40					A255	
	2112-30 (NO) / 2112T-30 (NO)	RV 3XX, DN 50 - 65					A256	
	2112-50 (NC) / 2112S-50 (NC)	RV 3XX, DN 80 - 150					A254	
	2112T-50 (NC)	RV 3XX, DN 80 - 150					A254	
	2112-50 (NO) / 2112S-50 (NO)	RV 3XX, DN 80 - 150					A257	
2112T-50 (NO)	RV 3XX, DN 80 - 150					A257		

Ordering number example: **P5-0K-BL2 (A252)**

Hand wheels for RV / UV 3x0 and 3x2



Hand wheel actuating of valves DN 15 - 150



Hand wheel actuating of valves DN 200 - 400

Dimensions of hand wheels									
DN	Marking	H [mm]	L [mm]	ØK [mm]	M [mm]	D _s [mm]	D _e [mm]	m [kg]	Ordering No. (part list no.)
15	R16	16	247	160	---	65	M10x1	5	S900 0231
20									
25									
32									
40	R20	20	275	195	---	65	M16x1,5	11	S900 0115
50									
65	R28	40	317	280	---	65	M16x1,5	13	S900 0116
80									
100	R35	80	454	350	150	---	M20x1,5	15	S900 0141
125									
150									
200									
250									
300	R35	100	454	350	150	---	M20x1,5	15	S900 0235
400									

Max. permissible operating pressures acc. to ČSN EN 12516-1 + A1 (03/2019) [bar]

Material	PN	Temperature [°C]													
		RT ¹⁾	100	150	200	250	300	350	375	400	425	450	475	500	550
Cast steel 1.0619 (GP240GH)	40	40,0	37,4	35,5	33,6	30,7	27,8	25,9	25,0	24,0	20,8	14,7	---	---	---
	63	63,0	59,0	55,9	52,9	48,4	43,8	40,8	39,3	37,8	32,7	23,2	---	---	---
Chrommolybden 1.7357 (G17CrMo5-5)	40	40,0	40,0	40,0	40,0	40,0	40,0	37,3	35,9	34,1	32,7	31,5	29,5	25,0	11,7
	63	63,0	63,0	63,0	63,0	63,0	63,0	58,7	56,5	53,8	51,4	49,7	46,5	39,3	18,5
Stainless steel 1.4581 (GX5CrNiMoNb19-11-2)	40	40,0	40,0	38,6	35,8	34,2	32,5	30,8	30,0	29,1	28,6	28,0	27,4	26,3	---
	63	63,0	63,0	60,9	56,4	53,8	51,2	48,5	47,2	45,9	45,0	44,1	43,2	41,5	---

¹⁾ -10°C to 50°C

Marking of actuators in type no.

Electric actuator 660 MIDI	ENB	Electric actuator Schiebel AB3	EZA
Electric actuator Zepadyn 670	ENC	Electric actuator Schiebel exAB3	EZB
Electric actuator Zepadyn 671	ENE	Electric actuator Schiebel rAB3	EZC
Electric actuator Modact MTR	EPD	Electric actuator Schiebel exrAB3	EZD
Electric actuator ST 0	EPK	Electric actuator Schiebel AB5	EZE
Electric actuator ST 0.1	EPL	Electric actuator Schiebel exAB5	EZF
Electric actuator Isomact ST 1 Ex	EPJ	Electric actuator Schiebel rAB5	EZG
Electric actuator Isomact ST 2	EPM	Electric actuator Schiebel exrAB5	EZH
Electric actuator Modact MTN Control, MTP Control	EYA	Electric actuator Schiebel rAB8	EZK
Electric actuator Modact MTN, MTP	EYB	Electric actuator Schiebel exrAB8	EZL
Electric actuator Modact MTNED, MTPED	EYA	Pneumatic actuator Flowserve PA 253	PFA
Electric actuator Auma SA 07.1	EAA	Pneumatic actuator Flowserve PB 503	PFB
Electric actuator Auma SA Ex 07.1	EAB	Pneumatic actuator Flowserve PB 701	PFC
Electric actuator Auma SAR 07.1	EAC	Pneumatic actuator Flowserve PO 1502	PFD
Electric actuator Auma SAR Ex 07.1	EAD	Pneumatic actuator Flowserve PO 3002	PFE
Electric actuator Auma SA 07.5	EAE	Pneumatic actuator A.Hock 2109-20	PHF
Electric actuator Auma SA Ex 07.5	EAF	Pneumatic actuator A.Hock 2112-30, A.Hock 2112-50	PHA
Electric actuator Auma SAR 07.5	EAG	Pneumatic actuator A.Hock 2112T-30, A.Hock 2112T-50	PHB
Electric actuator Auma SAR Ex 07.5	EAH	Pneumatic actuator A.Hock 2116-40	PHC
Electric actuator Auma SA 10.1	EAI	Hand wheel for DN 15 - 40	R16
Electric actuator Auma SAR 10.1	EAJ	Hand wheel for DN 50 - 65	R20
Electric actuator Auma SAR Ex 10.1	EAK	Hand wheel for DN 80 - 100	R28
Electric actuator Auma SA Ex 10.1	EAL	Hand wheel for DN 125 - 400	R35



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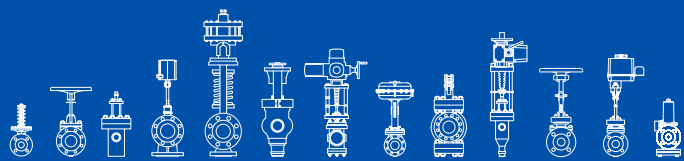
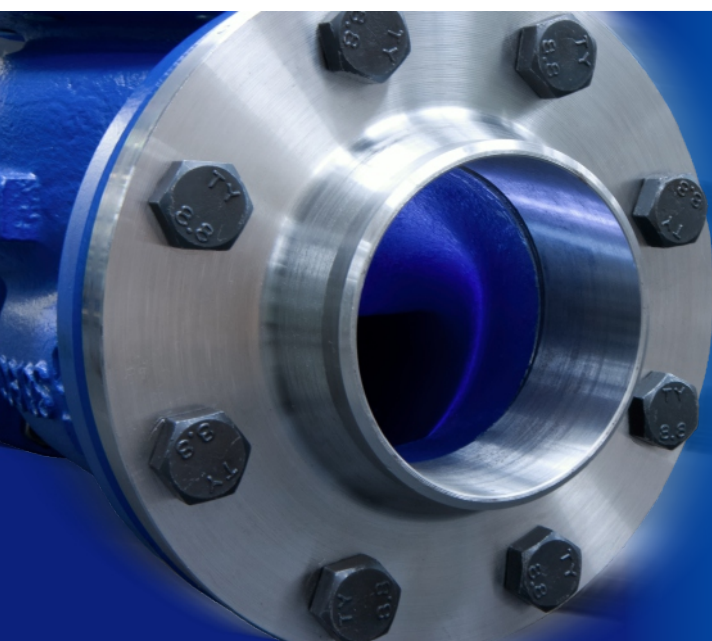
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