



01 - 10.1
12.22.GB

CONTROL AND
SHUT-OFF VALVES

200 line
acc. to ANSI/ASME



200 line

CV / SV 220 (Ex)
CV / SV 230 (Ex)

control or shut-off valve

CV 222 (Ex)
CV 232 (Ex)

control valve with
pressure-balanced plug

Control valves **CV (SV) 200 (Ex)** are designed for regulation and shut-off of process liquid flow. In Ex proof version meet the requirements II 1/2G IIC T6...T1 Ga/Gb acc. to ČSN EN ISO 80079-36 (9/2016) and ČSN EN 1127-1 section 2 (1/2012). The selected materials correspond to recommendations stipulated by ČSN EN 12516-1 (8/2015) - steel and ČSN EN 1503-3 (1/2002) - cast. The maximal permissible operating pressures in behaviour with types of material and temperature are specified in the table on page 67 of this catalogue.

Control

hand wheel or electromechanical actuators of producers
Regada, Schiebel, Auma, Rotork
pneumatic actuators of producers **Flowserve, A. Hock.**

Application

CV / SV 2xx - heating, ventilation, power generation and chemical processing industries
CV / SV 2xx Ex - gas and chemical industries

Process media

CV / SV 2xx - liquids, gases and vapours without abrasive particles
e.g. water, steam, air and other media compatible with material of the valve inner parts
CV / SV 2xx Ex - technical and fuel gases and inflammable liquids

To ensure a reliable regulation, the producers 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

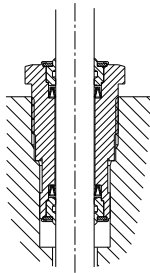
The valve can be installed in any position except position when the actuator is under the valve body. The valve is to be piped the way so that the direction of medium flow will coincide with the arrows on the body

It is necessary to protect the actuator from excessive heat from the pipeline at medium temperatures above **150°C (300°F)**, e.g. by appropriately insulating the pipeline and valve and tilting the actuator from the vertical axis. Detailed informations are given in the instruction for installation and service

Packings

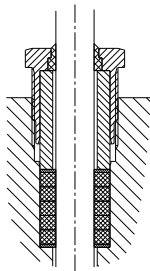
DRSpack® (PTFE)

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 (1020°F)** 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.

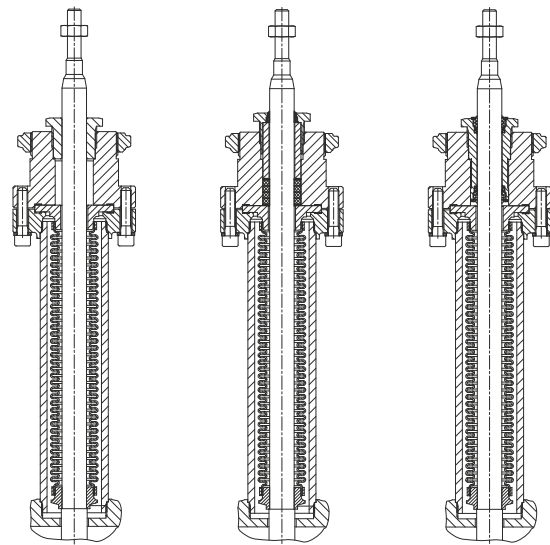


Bellows

Bellows packing is suitable for low and high temperatures ranging from **-50 to 550°C (-58 to 1020°F)**. 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 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.



Bellows without safety packing

Bellows with safety graphite packing

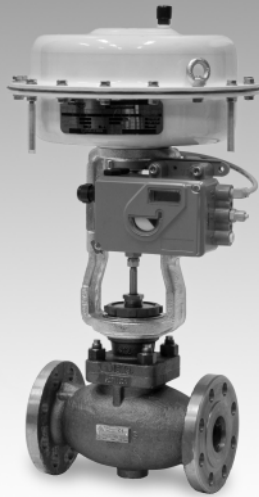
Bellows with safety PTFE packing

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.

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.



CV / SV 2x0

Control
and shut-off valves

NPS ½"- 10"
Class 150

Technical data		
Series	CV / SV 220 (Ex)	CV / SV 230 (Ex)
Type of valve	Two-way, single-seated, control (shut-off) valve	
Nominal pressure	NPS 1/2" to 10"	
Body material	Class 150	
Body material	Cast steel A216 WCB, A217 WC6	Stainless steel A351 CF8M
Seat material: NPS ½"-2"	1.4028	1.4571
NPS 2½"-10"	1.4027	1.4581
Plug material: NPS ½"-2½"	1.4021	1.4571
NPS 3"-10"	1.4027	1.4581
Stem material	1.4923	1.4980
Operating temperature range	-50 to 550 °C (-58 to 1020 °F)- (request for negative temperature need to be specified in order)	
Face to face dimensios	acc. to ISA-75.08.01-2002 /R2007) for version with flanges	
Connection flanges	Acc. to ASME B16.5-2013	
Flange faces	RF (Raised Face), LFF (Large Female Face), SFF (Small Female Face), LGF (Large Groove Face), SGF (Small Groove Face)	
Type of plug	V-ported, contoured, perforated	
Flow characteristic	Linear, equal-percentage, LDMspline®, parabolic, on - off	
Kvs value	0,01 to 800 m³/h (0,012 to 950 US gallon/min)	
Leakage rate	Class III. acc. to ANSI/FCI 70-2-2013 (<0,1% Cv) for c. valves with metal-metal seat sealing Class IV. acc. to ANSI/FCI 70-2-2013 (<0.01% Cv) for c. valves with metal-PTFE seat sealing Class IV. acc. to ANSI/FCI 70-2-2013 (<0.01% Cv) for shut-off valve	
Leakage rate for Ex version	CV 2xx Class IV. acc. to ANSI/FCI 70-2-2013 (<0.01% Cv); SV 2xx Rate C acc. to ISO 5208:2008	
Rangeability r	50 : 1	
Packing	DRSpack* (PTFE) t _{max} = 260°C (500°F), exp. graphite t _{max} = 550°C (1020°F), bellows (NPS ½"- 6") t _{max} = 550°C (1020°F)	

Kvs values and differential pressures Δp_{\max} [Mpa], [psi] of valves NPS ½" - 10" with V-ported plugs, contoured plugs (flow direction below plug) for electromechanical actuators

Δp_{\max} value is the valve max. differential pressure when open - close function is always guaranteed. In regard of service life of seat and plug, it is recommended so that permanent differential pressure would not exceed 1.6 MPa, 232 psi. Otherwise it is suitable to use perforated plug, or sealing surfaces of seat and plug with a hard metal overlay.

For further information on actuating, see actuators' catalogue sheets			Actuating (actuator)										ST 0	Auma	ST 1 Ex				
			Marking in valve specification No.										ST 0.1	Schiebel	ST 0.1				
			Linear force										CVL-1000	EA...	CVL-1500				
													EPK	EZ...	EPJ				
													EPL		EPL				
													EQL		EQL				
													4 kN	5 kN	6.3 kN				
NPS	H[mm]	Ds[mm]	Kvs [m ³ /h] Cv [US gallon/min]										Δp_{\max} [MPa]	Δp_{\max} [MPa]	Δp_{\max} [MPa]				
			1	2	3	4	5	6	7	8	9		packing	packing	packing				
													graph.PTFE	graph.PTFE	graph.PTFE				
½"	16	3	---	---	---	---	---	---	---	0.16 ³⁾	0.1...0.01 ³⁾		2	2	2	2	2	2	
			---	---	---	---	---	---	---	0.18 ³⁾	0.116...0.012 ³⁾		290	290	290	290	290	290	
			---	---	---	---	---	---	---	0.25 ³⁾	---	---	---	2	2	2	2	2	2
			---	---	---	---	---	---	---	0.29 ³⁾	---	---	---	290	290	290	290	290	290
			---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
¾"	16	3	---	---	---	---	---	---	---	---	0.16...0.01 ³⁾		2	2	2	2	2	2	
			---	---	---	---	---	---	---	---	0.18...0.012 ³⁾		290	290	290	290	290	290	
			---	---	---	---	---	---	---	0.25 ³⁾	---	---	---	2	2	2	2	2	2
			---	---	---	---	---	---	---	0.29 ³⁾	---	---	---	290	290	290	290	290	290
			---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1"	16	3	---	---	---	---	---	---	---	---	0.16...0.01 ³⁾		2	2	2	2	2	2	
			---	---	---	---	---	---	---	---	0.18...0.012 ³⁾		290	290	290	290	290	290	
			---	---	---	---	---	---	---	0.25 ³⁾	---	---	---	2	2	2	2	2	2
			---	---	---	---	---	---	---	0.29 ³⁾	---	---	---	290	290	290	290	290	290
			---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1"	16	6	---	---	---	---	---	---	---	---	0.16...0.01 ³⁾		2	2	2	2	2	2	
			---	---	---	---	---	---	---	---	0.18...0.012 ³⁾		290	290	290	290	290	290	
			---	---	---	---	---	---	---	0.25 ³⁾	---	---	---	2	2	2	2	2	2
			---	---	---	---	---	---	---	0.29 ³⁾	---	---	---	290	290	290	290	290	290
			---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1"	16	8	---	---	---	---	---	---	---	---	0.16...0.01 ³⁾		2	2	2	2	2	2	
			---	---	---	---	---	---	---	---	0.18...0.012 ³⁾		290	290	290	290	290	290	
			---	---	---	---	---	---	---	0.25 ³⁾	---	---	---	2	2	2	2	2	2
			---	---	---	---	---	---	---	0.29 ³⁾	---	---	---	290	290	290	290	290	290
			---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1"	16	12	---	---	---	---	---	---	---	---	0.16...0.01 ³⁾		2	2	2	2	2	2	
			---	---	---	---	---	---	---	---	0.18...0.012 ³⁾		290	290	290	290	290	290	
			---	---	---	---	---	---	---	0.25 ³⁾	---	---	---	2	2	2	2	2	2
			---	---	---	---	---	---	---	0.29 ³⁾	---	---	---	290	290	290	290	290	290
			---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1"	16	15	---	---	---	---	---	---	---	---	0.16...0.01 ³⁾		2	2	2	2	2	2	
			---	---	---	---	---	---	---	---	0.18...0.012 ³⁾		290	290	290	290	290	290	
			---	---	---	---	---	---	---	0.25 ³⁾	---	---	---	2	2	2	2	2	2
			---	---	---	---	---	---	---	0.29 ³⁾	---	---	---	290	290	290	290	290	290
			---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1"	16	20	---	---	---	---	---	---	---	---	0.16...0.01 ³⁾		2	2	2	2	2	2	
			---	---	---	---	---	---	---	---	0.18...0.012 ³⁾		290	290	290	290	290	290	
			---	---	---	---	---	---	---	0.25 ³⁾	---	---	---	2	2	2	2	2	2
			---	---	---	---	---	---	---	0.29 ³⁾	---	---	---	290	290	290	290	290	290
			---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
1"	16	25	10	6.3 ²⁾	4.0 ⁴⁾	---	---	---	---	---	0.16...0.01 ³⁾		2	2	2	2	2	2	
			11.6	7.28	4.62	---	---	---	---	---	---	0.18...0.012 ³⁾		290	290	290	290	290	290
			---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
			---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
			---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

the table continues on next page

1) shaped plug

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

3) valve with micro-throttling trim. Version 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 for bellows must be consulted with the producer LDMspline® or parabolic characteristic from Kvs \geq 1.0. Equal-percentage, from Kvs \geq 0.4

For further information on actuating, see actuators' catalogue sheets			Actuating (actuator)											Auma Schiebel ST 1 IQM 10		Auma Schiebel ST 1 Modact MTR IQM 10		Hand wheel	
			Marking in valve specification No.											EA... EZ... EPI EQ...		EA... EZ... EPI EPD EQ...		Rxx	
			Linear force											7.5 kN		10 kN			
NPS	H[mm]	Ds[mm]	Kvs [m ³ /h] Cv [US galon/min]											Δp_{max} [MPa] packing		Δp_{max} [MPa] packing		Δp_{max} [MPa] packing	
			1	2	3	4	5	6	7	8	9			graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE		
1/2"	16	3	---	---	---	---	---	---	---	0.16 ³⁾ 0.18 ³⁾	0.1...0.01 ³⁾ 0.116...0.012 ³⁾			2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290		
		6	---	---	---	---	---	---	0.25 ³⁾ 0.29 ¹⁾	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290			
		8	---	---	---	1.0 ¹⁾ 1.16	0.63 ³⁾ 0.73	0.4 ¹⁾ 0.46	---	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290			
		12	---	2.5 ¹⁾ 2.89	1.6 ¹⁾ 1.85	---	---	---	---	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290			
		15	4.0 ¹⁾ 4.62 ¹⁾	---	---	---	---	---	---	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290			
3/4"	16	3	---	---	---	---	---	---	---	---	0.16...0.01 ³⁾ 0.18...0.012 ³⁾			2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290		
		6	---	---	---	---	---	---	0.25 ³⁾ 0.29 ¹⁾	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290			
		8	---	---	---	---	1.0 ¹⁾ 1.16 ¹⁾	0.63 ³⁾ 0.73 ³⁾	0.4 ¹⁾ 0.46 ¹⁾	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290			
		12	---	---	2.5 ¹⁾ 2.89 ¹⁾	1.6 ¹⁾ 1.85 ¹⁾	---	---	---	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290			
		15	---	4.0 ¹⁾ 4.62 ¹⁾	---	---	---	---	---	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290			
		20	6.3 ²⁾ 7.28 ²⁾	---	---	---	---	---	---	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290			
1"	16	3	---	---	---	---	---	---	---	---	0.16...0.01 ³⁾ 0.18...0.012 ³⁾			2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290		
		6	---	---	---	---	---	---	0.25 ³⁾ 0.29 ¹⁾	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290			
		8	---	---	---	---	1.0 ¹⁾ 1.16 ¹⁾	0.63 ³⁾ 0.73 ³⁾	0.4 ¹⁾ 0.46 ¹⁾	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290			
		12	---	---	---	2.5 ¹⁾ 2.89 ¹⁾	1.6 ¹⁾ 1.85 ¹⁾	---	---	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290			
		15	---	---	4.0 ¹⁾ 4.62 ¹⁾	---	---	---	---	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290			
		20	---	6.3 ²⁾ 7.28 ²⁾	---	---	---	---	---	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290			
		25	10 11.6	6.3 ⁴⁾ 7.28	4.0 ⁴⁾ 4.62	---	---	---	---	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290			

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1) shaped plug
 2) V-ported plug with linear characteristic, parabolic plug with equal-percentage, LDMspline® or parabolic characteristic
 3) valve with micro-throttling trim. Version 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 for bellows must be consulted with the producer LDMspline® or parabolic characteristic from Kvs \geq 1.0. Equal-percentage, from Kvs \geq 0.4

For further information on actuating, see actuators' catalogue sheets			Actuating (actuator)										ST 0 ST 0.1 CVL-1000		Auma Schiebel		ST 1 Ex ST 0.1 CVL-1500		
			Marking in valve specification No.										EPK EPL EQL		EA... EZ...		EPJ EPL EQL		
			Linear force										4 kN		5 kN		6.3 kN		
NPS	H[mm]	Ds[mm]	Kvs [m³/h] Cv [US gallon/min]										Δp_{max} [MPa] packing		Δp_{max} [MPa] packing		Δp_{max} [MPa] packing		
			1	2	3	4	5	6	7	8	9		graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	
1¼"	16	6	---	---	---	---	---	---	---	---	---	0.25 ¹⁾	---	2	2	2	2	2	2
		8	---	---	---	---	---	---	1.0 ¹⁾	0.63 ³⁾	0.4 ¹⁾	---	---	2	2	2	2	2	2
		12	---	---	---	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	---	2	2	2	2	2	2
		15	---	---	---	4.0 ¹⁾	---	---	---	---	---	---	---	2	2	2	2	2	2
		20	---	---	6.3 ¹⁾	---	---	---	---	---	---	---	---	2	2	2	2	2	2
		32	16	10	6.3 ⁴⁾	---	---	---	---	---	---	---	---	1.39	2	2	2	2	2
1½"	16	6	---	---	---	---	---	---	---	---	---	0.25 ¹⁾	---	2	2	2	2	2	2
		8	---	---	---	---	---	---	1.0 ¹⁾	0.63 ³⁾	0.4 ¹⁾	---	---	2	2	2	2	2	2
		12	---	---	---	---	---	1.6 ¹⁾	1.6 ¹⁾	---	---	---	---	2	2	2	2	2	2
		15	---	---	---	---	4.0 ¹⁾	---	---	---	---	---	---	2	2	2	2	2	2
		20	---	---	---	6.3 ²⁾	---	---	---	---	---	---	---	2	2	2	2	2	2
		40	25	16	10	6.3 ²⁾	4.0 ⁴⁾	---	---	---	---	---	---	0.83	2	1.54	2	2	2
2"	20	50	40	25	16	10	6.3 ⁴⁾	---	---	---	---	---	0.46	1.36	0.88	1.79	1.44	2	
		65	63	40	25	16	10	---	---	---	---	---	0.24	0.79	0.5	1.05	0.84	1.39	
2½"		65	72.8	46.2	28.9	18.5	11.6	---	---	---	---	---	35	115	73	153	122	202	

the table continues on next page

1) shaped plug

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

3) valve with micro-throttling trim. Version 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 for bellows must be consulted with the producer LDMspline® or parabolic characteristic from Kvs ≥ 1.0. Equal-percentage, from Kvs Kvs ≥ 0.4

For further information on actuating, see actuators' catalogue sheets			Actuating (actuator)											Auma Schiebel ST 1 IQM 10		Auma Schiebel ST 1 Modact MTR IQM 10		Hand wheel		
			Marking in valve specification No.											EA... EZ... EPI EQ...		EA... EZ... EPI EPD EQ...		Rxx		
			Linear force											7.5 kN		10 kN				
NPS	H[mm]	Ds[mm]	Kvs [m ³ /h] Cv [US galon/min]											Δp_{max} [MPa] packing graph.PTFE		Δp_{max} [MPa] packing graph.PTFE		Δp_{max} [MPa] packing graph.PTFE		
			1	2	3	4	5	6	7	8	9									
1/2"	16	6	---	---	---	---	---	---	---	---	---	---	0.25 ¹⁾	---	2	2	2	2	2	2
		8	---	---	---	---	---	---	1.0 ¹⁾	0.63 ¹⁾	0.4 ¹⁾	---	---	---	2	2	2	2	2	2
		12	---	---	---	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	---	---	2	2	2	2	2	2
		15	---	---	---	4.0 ¹⁾	---	---	---	---	---	---	---	---	2	2	2	2	2	2
		20	---	---	6.3 ²⁾	---	---	---	---	---	---	---	---	---	2	2	2	2	2	2
		32	16	10	6.3 ⁴⁾	---	---	---	---	---	---	---	---	---	1.39	2	2	2	2	2
3/4"	16	6	---	---	---	---	---	---	---	---	---	---	0.25 ¹⁾	---	2	2	2	2	2	2
		8	---	---	---	---	---	---	---	0.1 ¹⁾	0.25 ¹⁾	0.25 ¹⁾	---	2	2	2	2	2	2	
		12	---	---	---	---	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	2	2	2	2	2	2	
		15	---	---	---	---	4.0 ¹⁾	---	---	---	---	---	---	2	2	2	2	2	2	
		20	---	---	---	6.3 ⁴⁾	---	---	---	---	---	---	---	2	2	2	2	2	2	
		40	25	16	10	6.3 ⁴⁾	4.0 ⁴⁾	---	---	---	---	---	---	---	2	2	2	2	2	2
2"	20	50	40	25	16	10	6.3 ⁴⁾	---	---	---	---	---	---	1.95	2	2	2	2	2	
2 1/2"		65	63	40	25	16	10	---	---	---	---	---	---	1.15	1.7	1.8	2	1.8	2	
3"	40	80	100	63	40	25	16	---	---	---	---	---	---	0.65	1.1	1.1	1.55	2	2	
4"		100	160	100	63	40	25	---	---	---	---	---	---	0.4	0.69	0.69	0.98	1.39	168	
5"		125	250	160	100	63	40	---	---	---	---	---	---	0.24	0.43	0.43	0.62	0.88	1.07	
6"		150	360	250	160	100	63	---	---	---	---	---	---	0.15	0.29	0.29	0.42	0.6	0.74	

the table continues on next page

1) shaped plug
 2) V-ported plug with linear characteristic, parabolic plug with equal-percentage, LDMspline® or parabolic characteristic
 3) valve with micro-throttling trim. Version 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 for bellows must be consulted with the producer LDMspline® or parabolic characteristic from Kvs \geq 1.0. Equal-percentage, from Kvs \geq 0.4

For further information on actuating, see actuators' catalogue sheets			Actuating (actuator)					Auma Schiebel		Modact MTR ST 2 CVL-5000		Auma Schiebel ST 2 CVL-5000 IQM 12		Modact MTR ST 2		Auma Schiebel IQM 20		Hand wheel	
			Marking in valve specification No.					EA... EZ... EQ...		EPD EPM EQL		EA... EZ... EPM EQL EQ...		EPD EPM		EA... EZ... EQ...		Rxx	
			Linear force					15 kN		16 kN		20 kN		25 kN		32 kN			
			Kvs [m³/h]					Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]	
			Cv [US gallon/min]					packing graph.PTFE		packing graph.PTFE		packing graph.PTFE		packing graph.PTFE		packing graph.PTFE		packing graph.PTFE	
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graph.PTFE		graph.PTFE		graph.PTFE		graph.PTFE		graph.PTFE		graph.PTFE	
3"	40	80	100	63	40	25	16	2	2	2	2	2	2	2	2	2	2	2	2
			116	72.8	46.2	28.9	18.5	290	290	290	290	290	290	290	290	290	290	290	290
		100	160	100	63	40	25	1.27	1.56	1.39	1.68	1.85	2	2	2	2	2	2	2
185	116		72.8	46.2	28.9	184	227	201	244	269	290	290	290	290	290	290	290	290	
4"	40	125	250	160	100	63	40	0.8	0.99	0.88	1.07	1.18	1.37	1.56	1.75	2	2	2	2
			289	185	116	72.8	46.2	117	144	128	155	172	199	226	254	290	290	290	290
5"	40	150	360	250	160	100	63	0.55	0.68	0.6	0.74	0.82	0.95	1.08	1.21	1.45	1.58	0.6	0.74
			416	289	185	116	72.8	80	99	88	107	118	138	157	176	211	230	88	107
6"	40	150	570	---	---	---	---	0.28	0.37	0.31	0.4	0.43	0.52	0.58	0.67	0.8	0.88	1.04	1.13
			659	---	---	---	---	41	53	45	58	63	75	85	97	116	128	151	163
			---	---	400	250	160	100	0.48	0.66	0.53	0.71	0.75	0.93	1.02	1.2	1.4	1.57	1.83
8"	80	150	---	---	400	250	160	0.48	0.66	0.53	0.71	0.75	0.93	1.02	1.2	1.4	1.57	1.83	2
			462	---	---	---	---	70	95	77	103	109	134	148	175	203	228	266	290
			---	---	---	---	---	0.26	0.36	0.29	0.39	0.41	0.51	0.56	0.66	0.78	0.87	1.02	1.12
10"	80	200	---	---	400	250	160	0.48	0.66	0.53	0.71	0.75	0.93	1.02	1.2	1.4	1.57	1.83	2
			462	---	---	---	---	70	95	77	103	109	134	148	175	203	228	266	290
			---	---	---	---	---	0.26	0.36	0.29	0.39	0.41	0.51	0.56	0.66	0.78	0.87	1.02	1.12
10"	80	230	800	---	---	---	---	0.19	0.26	0.21	0.29	0.3	0.38	0.42	0.49	0.58	0.66	0.77	0.84
			925	---	---	---	---	27	38	30	41	44	55	61	72	84	95	111	122

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

Kvs values and differential pressures Δp_{max} [Mpa], [psi] of valves NPS 1/2" - 10" V-ported plugs, contoured plugs (flow direction below plug) for pneumatic actuators

Δp_{max} value is the valve max. differential pressure when open - close function is always guaranteed. In regard of service life of seat and plug, it is recommended so that permanent differential pressure would not exceed 1.6 MPa, 232 psi. Otherwise it is suitable to use perforated plug, or sealing surfaces of seat and plug with a hard metal overlay.

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuator		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] [psi]		1.0 - 2.4 15 - 35	2.0 - 4.8 29 - 70	0.2 - 1.0 2.9 - 15	1.5 - 3.8 22 - 55											
			Spring setting [bar] [psi]		1.0 - 2.12 15 - 31	2.56 - 4.8 37 - 70	0.2 - 0.84 2.9 - 12	1.96 - 3.8 28 - 55											
			Feeding pressure [bar] [psi]		4.8 70	5.8 84	3.0 44	4.6 67											
			Marking in valve specific. No.		PFA		PHF												
			Linear force		6.4 kN	6.4 kN	6.3 kN	5.7kN											
NPS	H[mm]	Ds[mm]	Kvs [m ³ /h] Cv [US galon/min]									Δp_{max} [MPa] [psi] packing		Δp_{max} [MPa] [psi] packing		Δp_{max} [MPa] [psi] packing		Δp_{max} [MPa] [psi] packing	
			1	2	3	4	5	6	7	8	9	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE		
1/2"	16	3	---	---	---	---	---	---	0.16 ³⁾ 0.18	0.1 - 0.01 ³⁾ 0.116 - 0.012	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290			
		6	---	---	---	---	---	0.25 ³⁾ 0.29	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290			
		8	---	---	---	1 ¹⁾ 1.16	0.63 ³⁾ 0.73	0.4 ¹⁾ 0.46	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290			
		12	---	2.5 ¹⁾ 2.89	1.6 ¹⁾ 1.85	---	---	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290			
		15	4 ¹⁾ 4.62	---	---	---	---	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290			
3/4"	16	3	---	---	---	---	---	---	0.1 - 0.01 ³⁾ 0.18 - 0.012	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290				
		6	---	---	---	---	---	0.25 ³⁾ 0.29	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290				
		8	---	---	---	1 ¹⁾ 1.16	0.63 ³⁾ 0.73	0.4 ¹⁾ 0.46	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290				
		12	---	---	2.5 ¹⁾ 2.89	1.6 ¹⁾ 1.85	---	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290				
		15	---	4.0 ¹⁾ 4.62	---	---	---	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290				
		20	6.3 ¹⁾ 7.28	---	---	---	---	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290				
1"	16	3	---	---	---	---	---	---	0.16 - 0.01 ³⁾ 0.18 - 0.012	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290					
		6	---	---	---	---	---	0.25 ³⁾ 0.29	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290					
		8	---	---	---	1 ¹⁾ 1.16	0.63 ³⁾ 0.73	0.4 ¹⁾ 0.46	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290					
		12	---	---	2.5 ¹⁾ 2.89	1.6 ¹⁾ 1.85	---	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290					
		15	---	---	4.0 ¹⁾ 4.62	---	---	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290					
		20	---	6.3 ¹⁾ 7.28	---	---	---	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290					
		25	10 11.6	6.3 ⁴⁾ 7.28	4.0 ⁴⁾ 4.62	---	---	---	---	---	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290					

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1) shaped plg 2) V-ported plug with linear characteristic, parabolic plug with equal-percentage, LDMspline®
 3) valve with micro-throttling trim. Version 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 for bellows must be consulted with the producer
 LDMspline® or parabolic characteristic from Kvs ≥ 1.0. Equal-percentage, from Kvs ≥ 0.4

NPS			Kvs [m ³ /h]										Flowserve PA 253		A. Hock 2109							
			Cv [US galon/min]										Δp_{max} [MPa]	Δp_{max} [psi]	Δp_{max} [MPa]	Δp_{max} [psi]						
H[mm]	1	2	3	4	5	6	7	8	9		graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE								
1 1/4"	16	6	---	---	---	---	---	---	---	---	0.25 ¹⁾	---	2	2	2	2	2	2	2	2		
		8	---	---	---	---	---	---	1.0 ¹⁾	0.63 ³⁾	0.4 ¹⁾	---	---	2	2	2	2	2	2	2	2	
		12	---	---	---	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	---	2	2	2	2	2	2	2	2	
		15	---	---	---	4.0 ¹⁾	---	---	---	---	---	---	---	2	2	2	2	2	2	2	2	
		20	---	---	6.3 ²⁾	7.28 ³⁾	---	---	---	---	---	---	---	2	2	2	2	2	2	2	2	2
		32	16	10	6.3 ⁴⁾	---	---	---	---	---	---	---	---	2	2	2	2	2	2	2	2	2
1 1/2"	16	6	---	---	---	---	---	---	---	---	0.25 ¹⁾	---	2	2	2	2	2	2	2	2		
		8	---	---	---	---	---	---	1.0 ¹⁾	0.63 ³⁾	0.4 ¹⁾	---	---	2	2	2	2	2	2	2	2	
		12	---	---	---	---	---	1.6 ¹⁾	1.6 ¹⁾	---	---	---	---	2	2	2	2	2	2	2	2	
		15	---	---	---	4.0 ¹⁾	---	---	---	---	---	---	---	2	2	2	2	2	2	2	2	
		20	---	---	6.3 ²⁾	7.28 ³⁾	---	---	---	---	---	---	---	2	2	2	2	2	2	2	2	2
		40	25	16	10	6.3 ²⁾	4.0 ⁴⁾	---	---	---	---	---	---	2	2	2	2	2	2	2	2	2

NPS			Kvs [m ³ /h]					Flowserve PA 253		Flowserve PB 503		A. Hock 2109		A. Hock 2112-30									
			Cv [US galon/min]					Δp_{max} [MPa]	Δp_{max} [psi]	Δp_{max} [MPa]	Δp_{max} [psi]	Δp_{max} [MPa]	Δp_{max} [psi]	Δp_{max} [MPa]	Δp_{max} [psi]								
H[mm]	1	2	3	4	5	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE									
2"	20	50	40	25	16	10	6.3 ⁴⁾	2	2	0.88	1.79	2	2	2	2	1.48	2	0.63	1.53	2	2	2	2
		65	63	40	25	16	10	1.41	1.96	0.5	1.05	1.8	2	1.8	2	0.86	1.42	0.34	0.90	1.8	2	1.93	2
2 1/2"																							

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1) tvarovaná kuželka 2) tvarovaná kuželka pro charakteristiku rovno procentní, parabolickou a LDMspline®

3) provedení s mikroškrťicím systémem. K dispozici v hodnotách Kvs = 0.16; 0.1; 0.063; 0.04; 0.025; 0.016; 0.01 4) válcová kuželka s výřezy pouze s lineární charakteristikou

Maximální diferenční tlaky uvedené v tabulce jsou určeny pro ucpávku grafit nebo PTFE. Pro vlnovcové provedení ucpávky je nutné Δp konzultovat s výrobcem.LDMspline® a parabolická charakteristika od Kvs \geq 1.0. Rovno procentní charakteristika od Kvs \geq 0.4.

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuator					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					BDYxAA	BFYxZA	BDYxAA	BFYxZA	P2-0K-DI1	P2-0K-XI2	P2-0K-DI1	P2-0K-SI2
			Spring range [bar][psi]					0.5 - 1.9 7 - 28	2.0 - 4.8 29 - 70	0.5 - 1.9 7 - 28	2.0 - 4.8 29 - 70	0.5 - 1.7 7 - 25	0.7 - 2.5 10 - 36	0.5 - 1.7 7 - 25	0.8 - 2.8 12 - 40
			Spring setting [bar][psi]					0.5 - 1.9 7 - 28	2.0 - 4.8 29 - 70	0.5 - 1.9 7 - 28	2.0 - 4.8 29 - 70	0.5 - 1.43 7 - 21	1.06 - 2.5 15 - 36	0.5 - 1.46 7 - 21	1.2 - 2.8 17 - 40
			Feeding pressure [bar][psi]					4.1 59	5.4 78	4.1 59	5.3 77	3.2 46	3.0 44	5.0 73	3.3 48
			Marking in valve specific. No.					PFA		PFB		PHA		PHA	
Linear force					10 kN	10 kN	14 kN	14 kN	10 kN	6 kN	20 kN	6.9 kN			
			Kvs [m³/h]					Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	
			Cv [US galon/min]					packing	packing	packing	packing	packing	packing	packing	
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE
3"	40	80	100	63	40	25	16	1.1 1.55	1.1 1.55	1.82 2	1.82 2	1.1 1.55	0.38 0.83	2 2	1.82 2
			116	72.8	46.2	28.9	18.5	159 224	159 224	264 290	264 290	159 224	55 120	290 290	264 290
4"	40	100	160	100	63	40	25	0.69 0.98	0.69 0.98	1.15 1.45	1.15 1.45	0.69 0.98	0.22 0.51	1.85 2	1.15 1.45
			185	116	72.8	46.2	28.9	100 142	100 142	167 210	167 210	100 142	32 74	269 290	167 210
5"	40	125	250	160	100	63	40	0.43 0.62	0.43 0.62	0.73 0.92	0.73 0.92	0.43 0.62	0.12 0.31	1.18 1.37	0.73 0.92
			289	185	116	72.8	46.2	62 89	62 89	106 133	106 133	62 89	18 45	172 199	106 133
6"	40	150	360	250	160	100	63	0.29 0.42	0.29 0.42	0.5 0.63	0.5 0.63	0.29 0.42	0.07 0.21	0.82 0.95	0.5 0.63
			416	289	185	116	72.8	41 61	41 61	72 91	72 91	41 61	11 30	118 138	72 91

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuator					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][psi]					0.4 - 2.0 6 - 29	1.5 - 2.7 22 - 39	0.4 - 2.0 6 - 29	2.0 - 3.5 29 - 51	0.4 - 2.0 6 - 29	2.6 - 4.2 38 - 61		
			Spring setting [bar][psi]					0.4 - 2.0 6 - 29	1.5 - 2.7 22 - 39	0.4 - 2.0 6 - 29	2.0 - 3.5 29 - 51	0.4 - 2.0 6 - 29	2.6 - 4.2 38 - 61		
			Feeding pressure [bar][psi]					3.5 51	3.1 45	4.0 58	3.9 57	4.6 67	4.6 67		
			Marking in valve specific. No.					PFD							
Linear force					22.5 kN	22.5 kN	30 kN	30 kN	38 kN	38 kN					
			Kvs [m³/h]					Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]		
			Cv [US galon/min]					packing	packing	packing	packing	packing			
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE		
8"	80	100	---	---	250	160	100	2 2	2 2	2 2	2 2	2 2	2 2		
			289	185	116	290 290	290 290	290 290	290 290	290 290	290 290	290 290			
			---	400	---	---	---	0.92 1.07	0.92 1.07	1.32 1.47	1.32 1.47	1.75 1.9	1.75 1.9		
10"	80	150	---	---	400	250	160	0.88 1.06	0.88 1.06	1.29 1.47	1.29 1.47	1.72 1.9	1.72 1.9		
			462	289	185	128 154	128 154	187 213	187 213	250 275	250 275				
			---	630	---	---	---	0.49 0.58	0.49 0.58	0.71 0.81	0.71 0.81	0.96 1.06	0.96 1.06		
10"	80	200	---	---	---	---	---	0.36 0.44	0.36 0.44	0.53 0.61	0.53 0.61	0.72 0.8	0.72 0.8		
			728	925	63	52 63	52 63	78 89	78 89	104 115	104 115				

the table continues on next page

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

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuator					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][psi]					0.8 - 2.2 12 - 32		1.3 - 3.0 19 - 44		0.8 - 2.2 12 - 32		1.5 - 3.5 22 - 51			
			Spring setting [bar][psi]					0.8- 1.92 12 - 28		1.64 - 3.0 24 - 44		0.8- 1.92 12 - 28		1.9 - 3.5 28 - 51			
			Feeding pressure [bar][psi]					3.6 52		4.0 58		5.1 74		4.5 65			
			Marking in valve specific. No.					PHC									
			Linear force					20 kN		19.6 kN		38 kN		22.8 kN			
			Kvs [m³/h]					Δp_{max} [MPa]		Δp_{max} [MPa]		Δp_{max} [MPa]		Δp_{max} [MPa]			
			Cv [US gallon/min]					packing		packing		packing		packing			
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE						
8"	80	100	---	---	250 289	160 185	100 116	1.8 2 262 290	1.76 2 255 290	2 2 290 290	2 2 290 290						
		150	---	400 462	---	---	---	0.79 0.94 114 136	0.77 0.92 111 133	1.75 1.9 253 276	0.94 1.09 136 158						
		200	570 659	---	---	---	---	0.43 0.52 63 75	0.42 0.51 61 74	0.98 1.07 142 155	0.52 0.6 75 88						
10"	80	150	---	---	400 462	250 289	160 185	0.75 0.93 109 134	0.73 0.9 106 131	1.72 1.9 250 275	0.9 1.08 131 156						
		200	---	630 728	---	---	---	0.41 0.51 59 74	0.40 0.5 57 72	0.96 1.06 139 153	0.49 0.59 72 86						
		230	800 925	---	---	---	---	0.30 0.38 44 55	0.29 0.37 43 54	0.72 0.8 104 115	0.37 0.44 53 64						

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

Kvs values and differential pressures Δp_{max} [MPa], [psi] of valves NPS 1/2" - 10" with perforated plugs (flow direction above plug) for electromechanic actuators

Δp_{max} value is the valve max. differential pressure when open - close function is always guaranteed.

For further information on actuating, see actuators' catalogue sheets			Actuating (actuator)					ST 0	Auma	ST 1 Ex	Auma	Modact MTR	Hand	
								ST 0.1	Schiebel	ST 0.1	Schiebel	Auma	wheel	
								CVL-1000		CVL-1500	ST 1	Schiebel		
											IQM 10	Auma		
			Marking in valve specification No.					EPK	EA...	EPJ	EA...	EPD	Rxx	
								EPL	EZ...	EPL	EZ...	EA...		
								EQL		EQL	EPI	EZ...		
								EQ...			EQ...			
			Linear force					4 kN	5 kN	6.3 kN	7.5 kN	10 kN		
			Kvs [m ³ /h]					Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	
			Cv [US galon/min]					packing	packing	packing	packing	packing	packing	
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	
1"	16	25	---	6.3	4	2.5 ⁵⁾	1.6 ⁵⁾	2 2	2 2	2 2	2 2	2 2	2 2	
			7.28	4.62	2.89	1.85	290	290	290	290	290	290	290	
1 1/4"		32	---	10	6.3	4	2.5 ⁵⁾	1.39 2	2 2	2 2	2 2	2 2	2 2	
			11.6	7.28	4.62	28.9	201	290	290	290	290	290	290	
1 1/2"	20	40	---	16	10	6.3	4	0.83 2	1.54 2	2 2	2 2	2 2	2 2	
				18.5	11.6	7.28	4.62	121	290	224	290	290	290	290
2"	40	50	---	25	16	10	6.3	0.46 1.36	0.88 1.79	1.44 2	1.95 2	2 2	2 2	
				28.9	18.5	11.6	7.28	66	198	128	259	208	290	290
2 1/2"		65	---	40	25	16	10	1.24 0.79	0.5 1.05	0.84 1.39	1.15 1.7	1.8 2	1.8 2	
			46.2	28.9	18.5	11.6	35	115	73	153	122	202	167	247
3"	40	80	---	63	40	25	16	---	---	---	0.65 1.1	1.1 1.55	2 2	
				72.8	28.9	46.2	18.5				94	159	159	224
4"		100	---	100	63	40	25	---	---	---	0.4 0.69	0.69 0.98	1.04 168	
				116	72.8	28.9	46.2				85	100	100	142
5"	40	125	---	160	100	63	40	---	---	---	0.24 0.43	0.43 0.62	0.88 1.07	
				185	116	72.8	46.2				34	62	62	89
6"	150	---	250	160	100	63	---	---	---	0.15 0.29	0.29 0.42	0.6 0.74		
			289	185	116	72.8				22	41	41	61	

5) only with linear characteristic

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

For further information on actuating, see actuators' catalogue sheets			Actuating (actuator)					Auma Schiebel IQM 10		Modact MTR ST 2 CVL-5000		Auma Schiebel ST 2 CVL-5000 IQM 12		Modact MTR ST 2		Auma Schiebel IQM 20		Hand wheel		
			Marking in valve specification No.																	
			Linear force					EA... EZ... EQ...		EPD EPM EQL		EA... EZ... EPM EQL EQ...		EPD EPM		EA... EZ... EQ...		Rxx		
								15 kN		16 kN		20 kN		25 kN		32 kN				
			Kvs [m³/h] Cv [US gallon/min]					Δp_{max} [MPa] [psi] packing		Δp_{max} [MPa] [psi] packing		Δp_{max} [MPa] [psi] packing		Δp_{max} [MPa] [psi] packing		Δp_{max} [MPa] [psi] packing		Δp_{max} [MPa] [psi] packing		
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graph.PTFE		graph.PTFE		graph.PTFE		graph.PTFE		graph.PTFE		graph.PTFE		
3"	40	80	---	63	40	25	16	2	2	2	2	2	2	2	2	2	2	2	2	
				72.8	46.2	28.9	18.5	290	290	290	290	290	290	290	290	290	290	290	290	290
4"			100	---	100	63	40	25	1.27	1.56	1.39	1.68	1.85	2	2	2	2	1.39	1.68	
				116	72.8	46.2	28.9	184	227	201	244	269	290	290	290	290	290	290	201	244
5"				125	---	160	100	63	40	0.8	0.99	0.88	1.07	1.18	1.37	1.56	2	2	0.88	1.07
		185	116		72.8	46.2	117	144	128	155	172	199	226	254	290	290	128	155		
6"		150	---	250	160	100	63	0.55	0.68	0.6	0.74	0.82	0.95	1.08	1.21	1.45	1.58	0.6	0.74	
			289	185	116	72.8	80	99	88	107	118	138	157	176	211	230	88	107		
8"	80	200	---	400	250	160	100	0.28	0.37	0.31	0.4	0.43	0.52	0.58	0.67	0.8	0.88	1.04	1.13	
				462	289	185	116	41	53	45	58	63	202	85	97	290	128	151	163	
10"		230	---	630	400	250	160	0.19	0.26	0.21	0.29	0.3	0.38	0.42	0.49	0.58	0.66	0.77	0.84	
			728	462	289	185	27	38	30	41	44	55	61	72	84	95	111	122		

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

Kvs values and differential pressures Δp_{max} [MPa], [psi] of valves NPS 1" - 8" with perforated plugs (flow direction above plug) for pneumatic actuators

Δp_{max} value is the valve max. differential pressure when open - close function is always guaranteed.

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuator		Flowserve PA 253				Flowserve PB 503		A. Hock 2109				
			Specification No. of actuator		direct	indirect	direct	indirect	direct	indirect	direct	indirect			
NPS	H[mm]	Ds[mm]	Actuator function					BVCxAA	BVCxZA	BVCxAA	BVCxZA	BVCxAA	BVCxZA	P2-0K-VL1	P2-0K-HL2
			1	2	3	4	5								
			Spring range [bar] [psi]					1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.2 - 3.0 17 - 44	1.5 - 3.8 22 - 55
			Spring setting [bar] [psi]					1.5 - 2.46 22 - 36	1.75 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.2 - 2.64 17 - 38	1.96 - 3.8 28 - 55
			Feeding pressure [bar] [psi]					4.5 65	4.5 65	4.5 65	4.5 65	4.5 65	4.5 65	3.9 57	5.8 84
			Marking in valve specific. No.					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 [m³/h]					Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]
			Cv [US gallon/min]					packing	packing	packing	packing	packing	packing	packing	packing
			graph.PTFE					graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE
1"	16	25	---	6.3 7.28	4 4.62	2.5 ⁵⁾ 2.89	1.6 ⁵⁾ 1.85	0.77 1.55 111 224	0.77 1.55 111 224	---	---	---	---	0.47 1.25 69 182	1.28 2 185 290
1¼"		32	---	10 11.6	6.3 7.28	4 4.62	2.5 ⁵⁾ 28.9	0.46 0.94 67 136	0.46 0.94 67 136	---	---	---	---	0.29 0.76 42 110	0.77 1.24 112 180
1½"	20	40	---	16 18.5	10 11.6	6.3 7.28	4 4.62	0.3 0.6 43 87	0.3 0.6 43 87	---	---	---	---	0.18 0.49 27 71	0.5 0.8 72 116
2"		50	---	25 28.9	16 18.5	10 11.6	6.3 7.28	0.18 0.36 26 52	0.18 0.36 26 52	0.13 0.31 19 45	0.13 0.31 19 45	0.45 0.63 65 92	0.45 0.63 65 92	---	---
2½"	65	---	40 46.2	25 28.9	16 18.5	10 11.6	0.11 0.22 16 32	0.11 0.22 16 32	0.08 0.19 11 27	0.08 0.19 11 27	0.28 0.39 40 56	0.28 0.39 40 56	---	---	

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuator		A. Hock 2112-30								
			Specification No. of actuator		direct	indirect	direct	indirect	direct	indirect	direct	indirect	
NPS	H[mm]	Ds[mm]	Actuator function					P2-0K-BM1	P2-0K-BM2	P2-0K-BM1	P2-0K-BM2	P2-0K-WM1	P2-0K-MM2
			1	2	3	4	5						
			Spring range [bar] [psi]					0.8 - 2.2 12 - 32	0.8 - 2.2 12 - 32	0.8 - 2.2 12 - 32	0.8 - 2.2 12 - 32	1.4 - 2.8 20 - 41	1.6 - 3.2 23 - 46
			Spring setting [bar] [psi]					0.8 - 1.55 12 - 22	1.45 - 2.2 21 - 32	0.8 - 1.73 12 - 25	1.27 - 2.2 18 - 32	1.4 - 2.33 20 - 34	2.13 - 3.2 31 - 46
			Feeding pressure [bar] [psi]					2.4 35	3.7 54	2.6 38	3.5 51	3.8 55	5.4 78
			Marking in valve specific. No.					PHA		PHA		PHA	
			Linear force					4.6 kN	8.3kN	4.6 kN	7.3kN	8 kN	12.2kN
			Kvs [m³/h]					Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]
			Cv [US gallon/min]					packing	packing	packing	packing	packing	packing
			graph.PTFE					graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE
1"	16	25	---	6.3 7.28	4 4.62	2.5 ⁵⁾ 2.89	1.6 ⁵⁾ 1.85	0.88 1.66 127 240	2 2 290 290	---	---	---	---
1¼"		32	---	10 11.6	6.3 7.28	4 4.62	2.5 ⁵⁾ 28.9	0.53 1 77 145	1.35 1.82 196 264	---	---	---	---
1½"	20	40	---	16 18.5	10 11.6	6.3 7.28	4 4.62	0.34 0.64 49 93	0.87 1.17 126 170	---	---	---	---
2"		50	---	25 28.9	16 18.5	10 11.6	6.3 7.28	---	---	0.20 0.39 30 56	0.43 0.62 63 89	0.49 0.3 72 44	0.83 1.02 121 147
2½"	65	---	40 46.2	25 28.9	16 18.5	10 11.6	---	---	0.12 0.24 18 34	0.27 0.38 38 55	0.3 0.41 44 60	0.51 0.62 74 90	

the table continues on next page

5) only with linear characteristic

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

For further information on actuating, see actuators' catalogue sheets

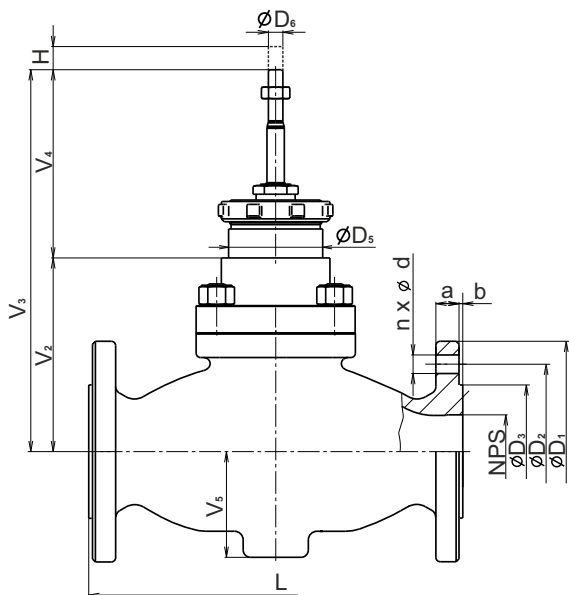
			Pneumatic actuator					Flowserve PB 503		Flowserve PB 701		A. Hock 2112-50		A. Hock 2116-40									
			Specification No. of actuator					direct	indirect	direct	indirect	direct	indirect	direct	indirect								
			Actuator function					BVCxAA	BVCxZA	BVCxAA	BVCxZA	P2-0K-SI1	P2-0K-SI2	P2-0K-BN1	P2-0K-BN2								
			Spring range [bar] [psi]					1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	0.8 - 2.8 12 - 41	0.8 - 2.8 12 - 41	0.8 - 2.2 12 - 32	0.8 - 2.2 12 - 32								
			Spring setting [bar] [psi]					1.5 - 2.46 22 - 36	1.75 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	0.8 - 2.4 12 - 35	1.2 - 2.8 17 - 41	0.8 - 1.36 12 - 20	1.64 - 2.2 24 - 32								
			Feeding pressure [bar] [psi]					4.5 65	4.5 65	4.5 65	4.5 65	3.3 48	4.0 58	2.2 32	3.9 57								
			Marking in valve specific. No.					PFB		PFC		PHA		PHC									
			Linear force					7.5 kN	4.3 kN	3.7 kN	3.7 kN	4.6 kN	6.9 kN	9.6 kN	19.5 kN								
			Kvs [m³/h]					Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]								
			Cv [US gallon/min]					packing	packing	packing	packing	packing	packing	packing	packing								
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE								
3"	40	80	100	63	40	25	16	0.18	0.27	0.18	0.27	0.28	0.37	0.28	0.37	0.07	0.16	0.15	0.24	0.25	0.34	0.61	0.7
			116	72.8	46.2	28.9	18.5	26	39	26	39	41	54	41	54	10	24	22	36	37	50	88	101
4"		100	160	100	63	40	25	0.11	0.17	0.11	0.17	0.18	0.24	0.18	0.24	0.05	0.11	0.1	0.16	0.16	0.22	0.39	0.45
			185	116	72.8	46.2	28.9	17	25	17	25	27	35	27	35	7	15	15	23	24	32	57	66
5"		125	250	160	100	63	40	0.07	0.11	0.07	0.11	0.12	0.16	0.12	0.16	0.03	0.07	0.07	0.1	0.11	0.14	0.26	0.29
			289	185	116	72.8	46.2	11	16	11	16	17	23	17	23	4	10	9	15	15	21	37	43
6"		150	360	250	160	100	63	0.05	0.08	0.05	0.08	0.08	0.11	0.08	0.11	0.02	0.05	0.05	0.07	0.07	0.1	0.18	0.21
			416	289	185	116	72.8	8	11	8	11	12	16	12	16	3	7	7	10	11	15	26	30

The valves CV 2x0 NPS 8"- 10" with perforated plugs and pneumatic actuators are not supplied

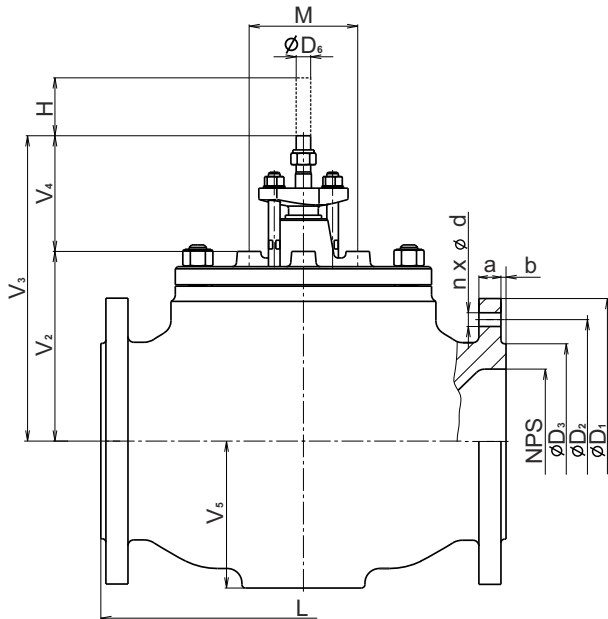
Max. differential pressures specified in table apply to PTFE and graphite packing.
 Δp for bellows must be consulted with the producer.

CV / SV 220 (Ex) a CV / SV 230 (Ex) NPS ½" - 10"																					
NPS	H	V ₂	[#] V ₂	V ₃	[#] V ₃	V ₄	V ₅	ØD ₁	ØD ₂	ØD ₃	ØD ₅	ØD ₆	M	d	n	a	b	m	[#] m _v	L ₁	L ₂
	mm	mm inch	mm inch	mm inch	mm inch	mm inch	mm inch	mm inch	mm inch	mm inch	mm inch	mm inch	mm inch	mm inch	mm	mm inch	mm	kg	kg	mm inch	mm inch
½"		90	279	220	409		47	90	60.3	34.9						9.6		5.5		184	194
		3.543	10.984	8.661	16.1		1.85	3.54	2.37	1.38						0.38		7.24		7.64	
¾"		90	279	220	409		47	100	69.9	42.9						11.2		6		184	194
		3.543	10.984	8.661	16.102		1.85	3.94	2.75	1.69						0.44		7.24		7.64	
1"	16	100	287	230	417		52	110	79.4	50.8				15.9 5/8"		12.7		7		184	194
		3.937	11.299	9.055	16.417		2.047	4.33	3.13	2						0.5		7.24		7.64	
1¼"		100	287	230	417		49	115	88.9	63.5			M 10x1			14.3		8.5		200	210
		3.937	11.299	9.055	16.417		1.929	4.53	3.5	2.5						0.56		7.87		8.27	
1½"		100	297	230	417		52	125	98.4	73					4	15.9		10		222	232
		3.937	1.299	9.055	16.417		2.047	4.92	3.87	2.88						0.62		8.74		9.13	
2"	20	132	281	262	411	130	73	150	120.7	92.1	65					17.5		16		254	264
		5.197	11.063	10.314	16.181		5.118	2.874	5.91	4.75						3.62		2.559		0.69	10
2½"	20	132	281	262	411		73	180	139.7	104.8						20.7		21	3	276	286
		5.197	11.063	10.314	16.181		2.874	7.09	5.5	4.13						0.81		10.87		11.26	
3"		164	396	294	526		105	190	152.4	127						22.3		33		298	308
		6.456	15.591	11.575	20.709		4.133	7.48	6	5						0.88		11.73		12.13	
4"	40	164	396	294	526		105	230	190.5	157.2			M 16x1.5			22.3		46		352	362
		6.456	15.591	11.575	20.709		4.133	9.06	7.5	6.19						0.88		13.86		14.25	
5"		183	400	313	526		133	255	215.9	185.7						22.3		70		403	413
		7.205	15.748	12.323	20.866		5.236	10.04	8.5	7.31						0.88		15.87		16.26	
6"		200	400	330	530		134	280	241.3	215.9						23.9		105		451	461
		7.874	15.748	12.992	20.866		5.275	11.02	9.5	8.5						0.94		17.76		18.15	
8"	80	262	---	422	---	160	203	354	298.5	269.9			M 20x1.5	150		23.9		200		543	553
		10.314	---	16.614	---		7.992	13.58	11.75	10.62						0.94		21.38		21.77	
10"		346	---	506	---		253	405	362	323.8						25.4		350		673	683
		13.622	---	19.921	---		9.961	15.94	14.25	12.75						1.13		26.5		26.89	

[#] - applied for version with bellows packing
[#]m_v - weight of bellows packing
L₁ - RF
L₂ - LFF, SFF, LGF, SGF



NPS ½" - 6"



NPS 8" - 10"



CV 2x2

Control valve with
pressure-balanced
plug

NPS 1"- 10"
Class 150

Technical data

Series	CV 222 (Ex)	CV 232 (Ex)
Type of valve	Two-way, single-seated, control valve with pressure balanced plug	
Nominal size range	NPS 1" to 10"	
Nominal pressure	Class 150	
Body material	Cast steel A216 WCB, A217 WC6	Stainless steel A351 CF8M
Seat material: NPS ½"-2"	1.4028	1.4571
NPS 2½"-10"	1.4027	1.4581
Plug material: NPS 3"-10"	1.4021	1.4571
	1.4027	1.4581
Stem material	1.4923	1.4980
Operating temperature range	-50 to 550 °C (-58 to 1020 °F)- (request for negative temperature need to be specified in order)	
Face to face dimensios	Acc. to ISA-75.08.01-2002 /R2007) for version with flanges	
Connection flanges	Acc. to ASME B16.5-2013	
Flange faces	RF (Raised Face), LFF (Large Female Face), SFF (Small Female Face), LGF (Large Groove Face), SGF (Small Groove Face)	
Type of plug	V-ported, contoured, perforated	
Flow characteristic	Linear, equal-percentage, LDMspline®, parabolic, on - off	
Kvs value	1,6 to 800 m ³ /h (1,85 to 950 US gallon/min)	
Leakage rate	Class III. acc. to ANSI/FCI 70-2-2013 (<0,1% Cv) for c. valves with metal-metal seat sealing Class IV. acc. to ANSI/FCI 70-2-2013 (<0.01% Cv) for c. valves with metal-PTFE seat sealing	
Leakage rate for Ex version	Class IV. dle ANSI/FCI 70-2-2013 (<0.01% Cv)	
Rangeability r	50 : 1	
Packing	DRSpack® (PTFE) t _{max} = 260°C (500°F), exp. graphite t _{max} = 550°C (1020°F), bellows (NPS ½"- 6") t _{max} = 550°C (1020°F)	

Kvs values and differential pressures Δp_{max} [MPa], [psi] of valves with pressure balanced plugs NPS 1" - 10" with electromechanic actuators

Δp_{max} value is the valve max. differential pressure when open - close function is always guaranteed. In regard of service life of seat and plug, it is recommended so that permanent differential pressure would not exceed 1.6 MPa, 232 psi. Otherwise it is suitable to use perforated plug, (Δp up to 2,0 MPa, 290 psi) or sealing surfaces of seat and plug with a hard metal overlay (Δp up to 2,0 MPa, 290 psi).

For further information on actuating, see actuators' catalogue sheets			Actuating (actuator)					CVL-500	ST 0	CVL-1000	Auma Schiebel	ST 1 Ex ST 0.1 CVL-1500	Hand wheel			
Marking in valve specification No.								EQL	EPK	EQL	EA... EZ...	EPJ EPL EQL	Rxx			
Linear force								2 kN	2.5 kN	4 kN	5 kN	6.3 kN				
NPS	H[mm]	Ds[mm]	Kvs [m ³ /h] Cv [US galon/min]					Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]			
			1	2	3	4	5	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE			
1"	16	25	10	6.3 ⁵⁾	4 ⁵⁾	2.5 ⁵⁾	1.6 ⁵⁾	---	2	2	2	2	2	2	2	2
			11.6	7.28	4.62	2.89	1.85	---	290	290	290	290	290	290	290	290
1¼"	16	32	16	10	6.3 ⁵⁾	4 ⁵⁾	2.5 ⁵⁾	---	2	2	2	2	2	2	2	2
			18.5	11.6	7.28	4.62	2.89	---	290	290	290	290	290	290	290	290
1½"		40	25	16	10	6.3 ⁵⁾	4 ⁵⁾	---	2	2	2	2	2	2	2	2
			28.9	18.5	11.6	7.28	4.62	---	290	290	290	290	290	290	290	290
2"	20	50	40	25	16	10	6.3 ⁵⁾	---	2	2	2	2	2	2	2	2
			46.2	28.9	18.5	11.6	7.28	---	290	290	290	290	290	290	290	290
2½"	20	65	63	40	25	16	10	---	2	2	2	2	2	2	2	2
			72.8	46.2	28.9	18.5	11.6	---	290	290	290	290	290	290	290	290
3"		80	100	63	40	25	16	---	---	---	2	2	2	2	2	2
			116	72.8	46.2	28.9	18.5	---	---	---	290	290	290	290	290	290
4"	40	100	160	100	63	40	25	---	---	---	2	2	2	2	2	2
			185	116	72.8	46.2	28.9	---	---	---	290	290	290	290	290	290
5"	40	125	250	160	100	63	40	---	---	---	2	2	2	2	2	2
			289	185	116	72.8	46.2	---	---	---	290	290	290	290	290	290
6"	40	150	360	250	160	100	63	---	---	---	2	2	2	2	2	2
			416	289	185	116	72.8	---	---	---	290	290	290	290	290	290
8"	80	200	630	400	250	160	100	---	---	---	---	---	---	---	2	2
			728	462	289	185	116	---	---	---	---	---	---	---	290	290
10"	80	230	800	630	400	250	160	---	---	---	---	---	---	---	2	2
			925	728	462	289	185	---	---	---	---	---	---	---	290	290

the table continues on next page

5) linear characteristic only

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

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)					ST 1 IQM 10	ST 1 IQM 10	Auma Schiebel IQM 10	Modact MTR ST 2 CVL-5000	Auma Schiebel IQM 12	Modact MTR ST 2
			Marking in valve specification No.					EPI EQ...	EPI EQ...	EA... EZ... EQ...	EPD EPM EQL	EA... EZ... EQ...	EPD EPM
			Linear force					7.5 kN	10 kN	15 kN	16 kN	20 kN	25 kN
			Kvs [m³/h] Cv [US gallon/min]					Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]
NPS	H[mm]	Ds[mm]	1	2	3	4	5	packing	packing	packing	packing	packing	
								graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	
1"	16	25	10 11.6	6.3 ⁵⁾ 7.28	4 ⁵⁾ 4.62	2.5 ⁵⁾ 2.89	1.6 ⁵⁾ 1.85	2 2 290 290	2 2 290 290	---	---	---	
1¼"		32	16 18.5	10 11.6	6.3 ⁵⁾ 7.28	4 ⁵⁾ 4.62	2.5 ⁵⁾ 2.89	2 2 290 290	2 2 290 290	---	---	---	
1½"		40	25 28.9	16 18.5	10 11.6	6.3 ⁵⁾ 7.28	4 ⁵⁾ 4.62	2 2 290 290	2 2 290 290	---	---	---	
2"	20	50	40 46.2	25 28.9	16 18.5	10 11.6	6.3 ⁵⁾ 7.28	2 2 290 290	2 2 290 290	---	---	---	
2½"		65	63 72.8	40 46.2	25 28.9	16 18.5	10 11.6	2 2 290 290	2 2 290 290	---	---	---	
3"	40	80	100 116	63 72.8	40 46.2	25 28.9	16 18.5	2 2 290 290	2 2 290 290	2 2 290 290	---	---	
4"		100	160 185	100 116	63 72.8	40 46.2	25 28.9	2 2 290 290	2 2 290 290	2 2 290 290	---	---	
5"		125	250 289	160 185	100 116	63 72.8	40 46.2	2 2 290 290	2 2 290 290	2 2 290 290	---	---	
6"		150	360 416	250 289	160 185	100 116	63 72.8	2 2 290 290	2 2 290 290	2 2 290 290	---	---	
8"		80	200	630 728	400 462	250 289	160 185	100 116	---	---	2 2 290 290	2 2 290 290	---
10"	230		800 925	630 728	400 462	250 289	160 185	---	---	---	2 2 290 290	2 2 290 290	

5) linear characteristic only

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
 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], [psi] of valves with pressure balanced plugs NPS 1" - 10" with pneumatic actuators

Δp_{max} value is the valve max. differential pressure when open - close function is always guaranteed. In regard of service life of seat and plug, it is recommended so that permanent differential pressure would not exceed 1.6 MPa, 232 psi. Otherwise it is suitable to use perforated plug, (Δp up to 2,0 MPa, 290 psi) or sealing surfaces of seat and plug with a hard metal overlay (Δp up to 2,0 MPa, 290 psi).

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuator		Flowserve PA 253				A. Hock 2109						
			Specification 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] [psi]		1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.2 - 3.0 17 - 44	1.5 - 3.8 22 - 55	1.2 - 3.0 17 - 44	1.5 - 3.8 22 - 55			
			Spring setting [bar] [psi]		1.5 - 2.46 22 - 36	1.75 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.2 - 2.64 17 - 38	1.96 - 3.8 28 - 55	1.2 - 3.0 17 - 44	1.5 - 3.8 22 - 55			
			Feeding pressure [bar] [psi]		4.5 65	4.5 65	4.5 65	4.5 65	3.9 57	5.8 84	4.2 61	5.3 77			
			Marking in valve specific. No.		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] Cv [US gallon/min]		Δp_{max} [MPa] packing	Δp_{max} [MPa] packing	Δp_{max} [MPa] packing	Δp_{max} [MPa] packing	Δp_{max} [MPa] packing	Δp_{max} [MPa] packing	Δp_{max} [MPa] packing	Δp_{max} [MPa] packing			
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE		
1"	16	25	---	6.3 ⁵⁾ 7.28	4 ⁵⁾ 4.62	2.5 ⁵⁾ 2.89	1.6 ⁵⁾ 1.85	2 2 290 290	2 2 290 290	---	---	2 2 290 290	2 2 290 290	---	---
1 1/4"		32	---	10 11.6	6.3 ⁵⁾ 7.28	4 ⁵⁾ 4.62	2.5 ⁵⁾ 2.89	2 2 290 290	2 2 290 290	---	---	2 2 290 290	2 2 290 290	---	---
1 1/2"	20	40	---	16 18.5	10 11.6	6.3 ³⁾ 7.28	4 ⁵⁾ 4.62	2 2 290 290	2 2 290 290	---	---	2 2 290 290	2 2 290 290	---	---
2"		50	---	25 28.9	16 18.5	10 11.6	6.3 ³⁾ 7.28	---	---	2 2 290 290	2 2 290 290	---	---	2 2 290 290	2 2 290 290
2 1/2"	65	---	40 46.2	25 28.9	16 18.5	10 11.6	---	---	2 2 290 290	2 2 290 290	---	---	2 2 290 290	2 2 290 290	

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuator		A. Hock 2112-30						
			Specification 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] [psi]		0.8 - 2.2 12 - 32	0.8 - 2.2 12 - 32	0.8 - 2.2 12 - 32	0.8 - 2.2 12 - 32	1.4 - 2.8 20 - 41	1.6 - 3.2 23 - 46	
			Spring setting [bar] [psi]		0.8 - 1.55 12 - 22	1.45 - 2.2 21 - 32	0.8 - 1.73 12 - 25	1.27 - 2.2 18 - 32	1.4 - 2.33 20 - 34	2.13 - 3.2 31 - 46	
			Feeding pressure [bar] [psi]		2.4 35	3.7 54	2.6 38	3.5 51	3.8 55	5.4 78	
			Marking in valve specific. No.		PHA		PHA		PHA		
			Linear force		4.6 kN	8.3kN	4.6 kN	7.3kN	8 kN	12.2kN	
			Kvs [m ³ /h] Cv [US gallon/min]		Δp_{max} [MPa] packing	Δp_{max} [MPa] packing	Δp_{max} [MPa] packing	Δp_{max} [MPa] packing	Δp_{max} [MPa] packing	Δp_{max} [MPa] packing	
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE
1"	16	25	---	6.3 ⁵⁾ 7.28	4 ⁵⁾ 4.62	2.5 ⁵⁾ 2.89	1.6 ⁵⁾ 1.85	2 2 290 290	2 2 290 290	---	---
1 1/4"		32	---	10 11.6	6.3 ⁵⁾ 7.28	4 ⁵⁾ 4.62	2.5 ⁵⁾ 2.89	2 2 290 290	2 2 290 290	---	---
1 1/2"	20	40	---	16 18.5	10 11.6	6.3 ⁵⁾ 7.28	4 ⁵⁾ 4.62	2 2 290 290	2 2 290 290	---	---
2"		50	---	25 28.9	16 18.5	10 11.6	6.3 ³⁾ 7.28	---	---	2 2 290 290	2 2 290 290
2 1/2"	65	---	40 46.2	25 28.9	16 18.5	10 11.6	---	---	2 2 290 290	2 2 290 290	2 2 290 290

the table continues on next page

5) linear characteristic only

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

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 actuator					Flowserve PA 503				Flowserve PB 701	
			Specification No. of actuator					direct	indirect	direct	indirect	direct	indirect
			Actuator function					BVCxAA	BVCxZA	BVCxAB	BVCxZB	BVCxAB	BVCxZB
			Spring range [bar] [psi]					1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39
			Spring setting [bar] [psi]					1.5 - 2.46 22 - 36	1.75 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39
			Feeding pressure [bar] [psi]					4.5 65	4.5 65	4.5 65	4.5 65	4.5 65	4.5 65
			Marking in valve specific. No.					PFB				PFC	
			Linear force					7.5 kN	7.5 kN	7.5 kN	7.5 kN	10.5 kN	10.5 kN
			Kvs [m³/hod]					Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]
			Cv [US galon/min]					packing	packing	packing	packing	packing	packing
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE
2"	20	50	40	25	16	10	6.3 ⁵⁾	2 2	2 2	---	---	---	---
2½"			65	63	40	25	16	10	2 2	2 2	---	---	---
3"	40	80		100	63	40	25	16	---	---	2 2	2 2	2 2
4"			100	116	72.8	46.2	28.9	18.5	---	---	290 290	290 290	290 290
5"		125		160	100	63	40	25	---	---	2 2	2 2	2 2
6"			150	250	160	100	63	40	---	---	290 290	290 290	290 290
			360	250	160	100	63	---	---	2 2	2 2	2 2	2 2
			416	289	185	116	72.8	---	---	290 290	290 290	290 290	290 290

5) linear characteristic only

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuator					A. Hock 2112-50		A. Hock 2116-40	
			Specification No. of actuator					direct	indirect	direct	indirect
			Actuator function					P2-0K-SI1	P2-0K-SI2	P2-0K-BN1	P2-0K-BN2
			Spring range [bar] [psi]					0.8 - 2.8 12 - 41	0.8 - 2.8 12 - 41	0.8 - 2.2 12 - 32	0.8 - 2.2 12 - 32
			Spring setting [bar] [psi]					0.8 - 2.4 12 - 35	1.2 - 2.8 17 - 41	0.8 - 1.36 12 - 20	1.64 - 2.2 24 - 32
			Feeding pressure [bar] [psi]					3.3 48	4.0 58	2.2 32	3.9 57
			Marking in valve specific. No.					PHA		PHC	
			Linear force					4.6 kN	6.9 kN	9.6 kN	19.5 kN
			Kvs [m³/h]					Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]
			Cv [US galon/min]					packing	packing	packing	packing
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE
3"	40	80	100	63	40	25	16	2 2	2 2	2 2	2 2
4"			100	116	72.8	46.2	28.9	18.5	290 290	290 290	290 290
5"		125		160	100	63	40	25	2 2	2 2	2 2
6"			150	250	160	100	63	40	2 2	2 2	2 2
			360	250	160	100	63	2 2	2 2	2 2	2 2
			416	289	185	116	72.8	290 290	290 290	290 290	290 290

5) linear characteristic only

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
 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 actuator		Flowserve PO 1502						
			Specification No. of actuator		direct	indirect	direct	indirect			
			Actuator function		BVCxAD	BVCxZD	BFSxAD	BFSxZD			
			Spring range [bar] [psi]		1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 29 - 51	2.0 - 3.5 29 - 51			
			Spring setting [bar] [psi]		1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 29 - 51	2.0 - 3.5 29 - 51			
			Feeding pressure [bar] [psi]		4.5 65	4.5 65	5.5 80	5.5 80			
			Marking in valve specific. No.		PFD						
			Linear force		22.5 kN	22.5 kN	30 kN	30 kN			
			Kvs [m³/h]		Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]		
			Cv [US galon/min]		packing	packing	packing	packing			
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE
8"	80	200	630 728	400 462	250 289	160 185	100 116	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290
10"		230	800 925	630 728	400 462	250 289	160 185	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuator		A.Hock 2116S-100						
			Specification No. of actuator		direct	indirect	direct	indirect			
			Actuator function		P2-0K-YN1	P2-0K-YN2	P2-0K-ZN1	P2-0K-ZN2			
			Spring range [bar] [psi]		1.3 - 3.0 19 - 44	1.3 - 3.0 19 - 44	1.5 - 3.5 22 - 51	1.5 - 3.5 22 - 51			
			Spring setting [bar] [psi]		1.3 - 2.66 19 - 39	1.64 - 3.0 24 - 44	1.5 - 3.1 22 - 45	1.9 - 3.5 28 - 51			
			Feeding pressure [bar] [psi]		4.0 58	4.8 70	4.6 67	5.4 78			
			Marking in valve specific. No.		PFC						
			Linear force		16 kN	19.6 kN	18 kN	22.8 kN			
			Kvs [m³/h]		Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]		
			Cv [US galon/min]		packing	packing	packing	packing			
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graph.PTFE	graph.PTFE	graph.PTFE	graph.PTFE
8"	80	200	630 728	400 462	250 289	160 185	100 116	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290
10"		230	800 925	630 728	400 462	250 289	160 185	2 2 290 290	2 2 290 290	2 2 290 290	2 2 290 290

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

Dimensions and weights of valves CV / SV 222 (Ex) CV / SV 232 (Ex) NPS 1" - 10"

NPS	H	V ₂	[#] V ₂	V ₃	[#] V ₃	V ₄	V ₅	ØD ₁	ØD ₂	ØD ₃	ØD ₅	ØD ₆	M	d	n	a	b	m	[#] m _v	L ₁	L ₂
	mm	mm inch	mm inch	mm inch	mm inch	mm inch	mm inch	mm inch	mm inch	mm inch	mm inch	mm inch	mm inch	mm inch	mm	mm inch	mm	kg	kg	mm inch	mm inch
1"		100 3.937	287 11.299	230 9.055	417 16.417		52 2.047	110 4.33	79.4 3.13	50.8 2						12.7 0.5		7.5	184 7.24	194 7.64	
1¼"	16	100 3.937	287 11.299	230 9.055	417 16.417		49 1.929	115 4.53	88.9 3.5	63.5 2.5				15.9 5/8"		14.3 0.56		9	200 7.87	210 8.27	
1½"		100 3.937	297 1.299	230 9.055	417 16.417		52 2.047	125 4.92	98.4 3.87	73 2.88						15.9 0.62		11	222 8.74	232 9.13	
2"		132 5.197	281 11.063	262 10.314	411 16.181		73 2.874	150 5.91	120.7 4.75	92.1 3.62					4	17.5 0.69		17	254 10	264 10.39	
2½"	20	132 5.197	281 11.063	262 10.314	411 16.181	130	73 2.874	180 7.09	139.7 5.5	104.8 4.13	65		---	19.1 3/4"		20.7 0.81		22	276 10.87	286 11.26	
3"		164 6.456	396 15.591	294 11.575	526 20.709		105 4.133	190 7.48	152.4 6	127 5						22.3 0.88		35	298 11.73	308 12.13	
4"		164 6.456	396 15.591	294 11.575	526 20.709		105 4.133	230 9.06	190.5 7.5	157.2 6.19						22.3 0.88		48	352 13.86	362 14.25	
5"	40	183 7.205	400 15.748	313 12.323	526 20.866		133 5.236	255 10.04	215.9 8.5	185.7 7.31					8	22.3 0.88		73	403 15.87	413 16.26	
6"		200 7.874	400 15.748	330 12.992	530 20.866		134 5.275	280 11.02	241.3 9.5	215.9 8.5				22.3 7/8"		23.9 0.94		108	451 17.76	461 18.15	
8"	80 (63) ¹⁾	262 10.314	---	422 16.614	---	160	203 7.992	354 13.58	298.5 11.75	269.9 10.62			150			23.9 0.94		205	543 21.38	553 21.77	
10"	80	346 13.622	---	506 19.921	---	6.299	253 9.961	405 15.94	362 14.25	323.8 12.75			5.905	25.4 1"	12	28.6 1.13		355	673 26.5	683 26.89	

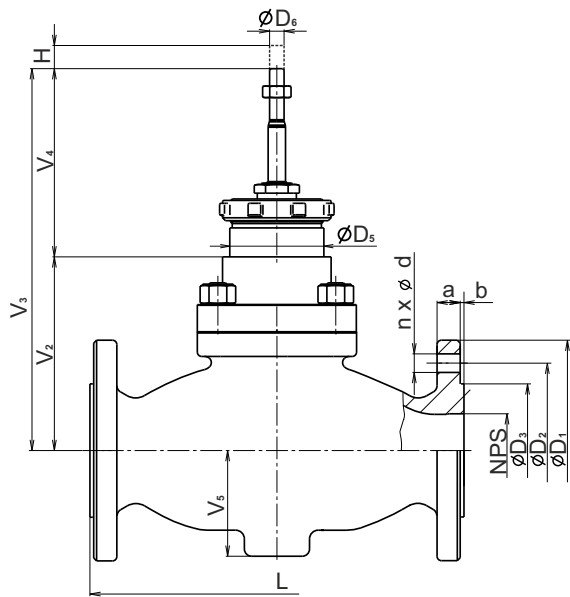
¹⁾ DN 200 with graphite pressure balancing - stroke = 63 mm

[#] - for valves with bellows packing

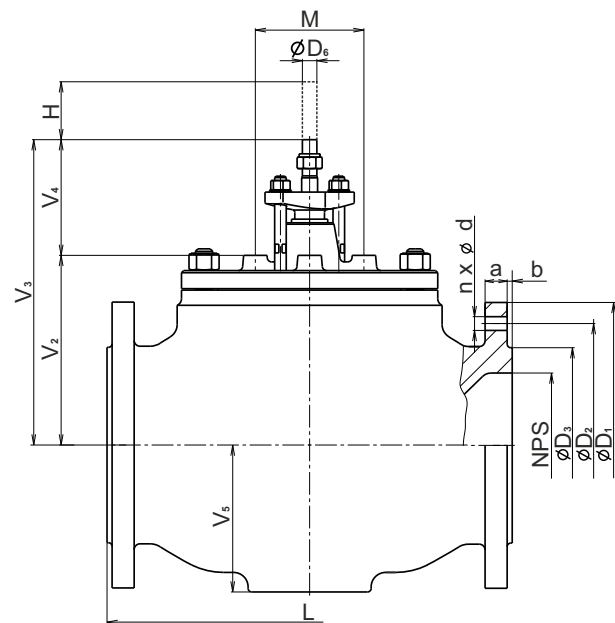
[#]m_v - weight of bellows packing

L₁ - RF

L₂ - LFF, SFF, LGF, SGF



NPS 1" - 6"



NPS 8" - 10"

Valve complete specification No. for ordering CV / SV 2x0 (Ex) and CV 2x2 (Ex)

		XX	XXX	XXX	XXXX	XX	XXX	/	XXX	-	XXX	XX
1. Valve	Control valve	CV										
	Shut-off valve	SV										
2. Series	Valves made of cast steel		2 2									
	Valves made of stainless steel		2 3									
	Direct valve		0									
	Pressure-balanced valve		2									
3. Actuating *)	Electric actuator			E X X								
	Pneumatic actuator			P X X								
	Hand wheel			R X X								
4. Connection	Flange RF (raised face)											1
	Flange LFF (large female face)											3
	Flange SFF (small female face)											4
	Flange LGF (large groove face)											5
	Flange SGF (small groove face)											6
5. Body material	Cast steel A216 WCB (-29 to 425 °C); (-20 to 800 °F) ⁵⁾											1
	CrMo steel A217 WCG (-29 to 550 °C); (-20 to 1020 °F) ⁵⁾											7
	Stainless steel A351 CF8M (-50 to 550 °C); (-58 to 1020 °F) ⁵⁾											8
	Other material on request											9
6. Seat sealing	Metal - metal											1
	Soft sealing (metal - PTFE) ²⁾											2
	Hard metal overlay on sealing surfaces											3
	Balanced by graphite, metal - metal ³⁾											5
	Balanced by graphite, hard metal overlay ³⁾											7
	Hard metal overlay for CV 2x2, plug with metal seal ⁴⁾											8
7. Packing	DRSpack® (PTFE)											3
	Exp. graphite											5
	Bellows ¹⁾											7
	Bellows with safety PTFE packing ¹⁾											8
	Bellows with safety Graphite packing ¹⁾											9
8. Flow characteristic	Linear											L
	Equal-percentage in straight way											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	Class 150											150
11. Max. operat. temp.	Acc. to version 260 - 550°C (500 - 1020°F)											XXX
12. Nominal size DN	DN (NPS)											XXX
13. Version	Standard											
	Non - explosive											Ex
	Food industry version											Ox

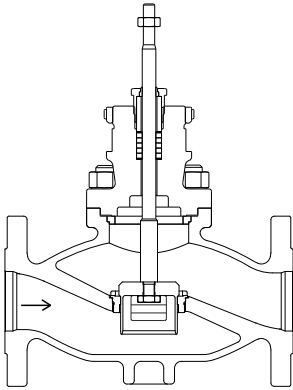
DN	NPS	DN	NPS	Temp. °C	°F
015	½"	065	2½"	260	500
020	¾"	080	3"	300	570
025	1"	100	4"	315	600
032	1¼"	125	5"	400	750
040	1½"	150	6"	425	800
050	2"	200	8"	500	930
		250	10"	550	1020

Ordering example of version with flanges: **CV220 ENC 1135 L1 150/400-080**

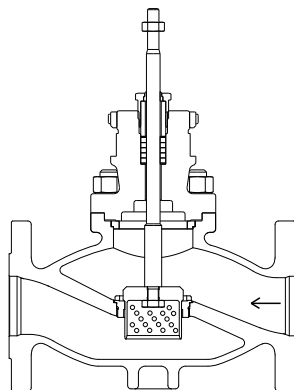
*) For marking of actuators in specification code, refer to table on page 67 of this catalogue

Valves CV / SV 2x0 (Ex)

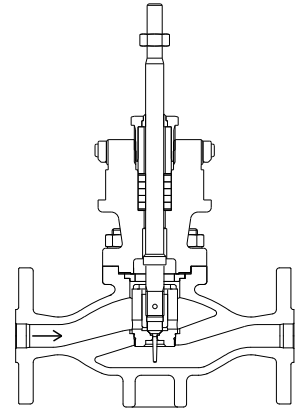
Section of valve with V-ported plug



Section of valve with perforated plug

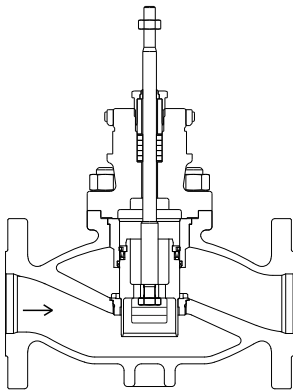


Section of valve with micro-throttling system

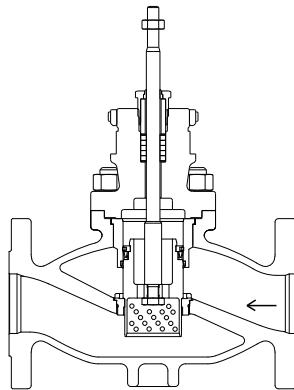


Valves CV 2x2 (Ex)

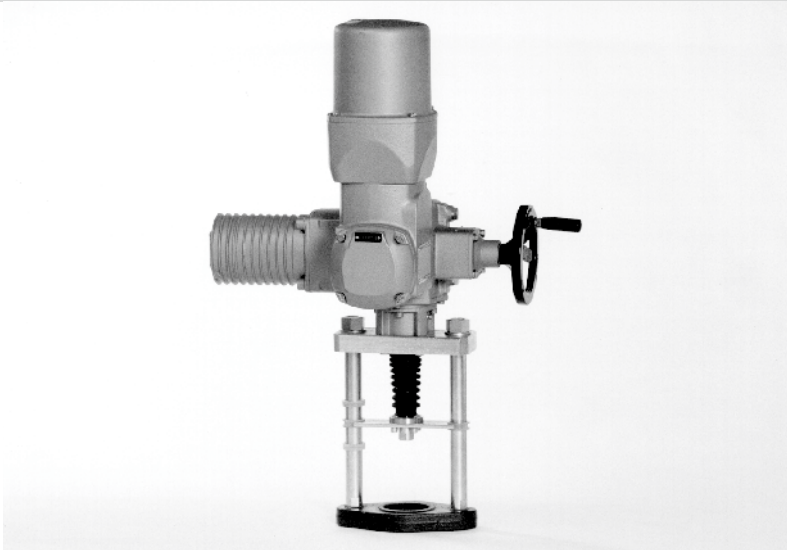
Section of pressure-balanced valve with V-ported plug



Section of pressure-balanced valve with perforated plug



Section of three-way valve with V-ported plug



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 website www.auma.com

Specification of Auma actuators					SA	X	XX	07.X
Type					SA			
Duty					SA	R		
Version							Ex	
Actuator size								07.2 07.6
Output shaft type A (thread TR 16x4 LH, connection flange F07) ... for RV 2xx DN 15 to 150								
Output speed [ot/min]	Tripping torque	SA 07.2	SAR 07.2	Motor power [kW]	SA 07.2	SA Ex 07.2	SAR 07.2	SAR Ex 07.2
		SA Ex 07.2	SAREx 07.2		S2-15min	S2-15min	S4-25%	S4-25%
4		10-30 Nm	15-30 Nm		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				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 2xx DN 80 to 400								
Output speed [ot/min]	Tripping torque	SA 07.6	SAR 07.6	Motor power [kW]	SA 07.6	SA Ex 07.6	SAR 07.6	SAR Ex 07.6
		SA Ex 07.6	SAREx 07.6		S2-15min	S2-15min	S4-25%	S4-25%
4		20-60 Nm	30-60 Nm		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				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	

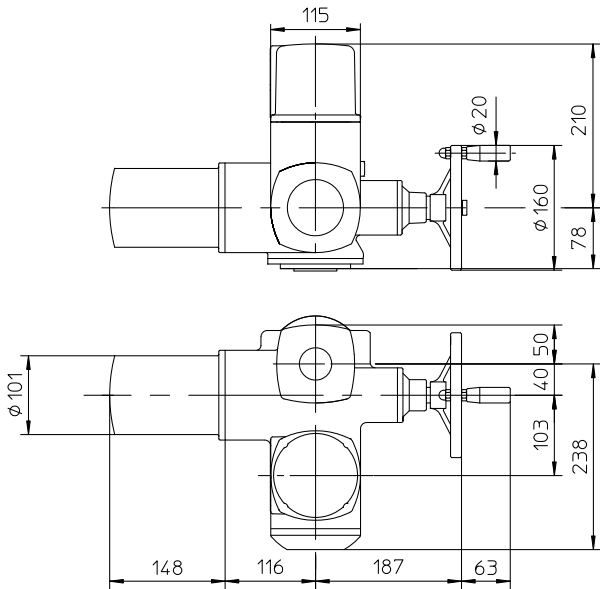
Accessories

- 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

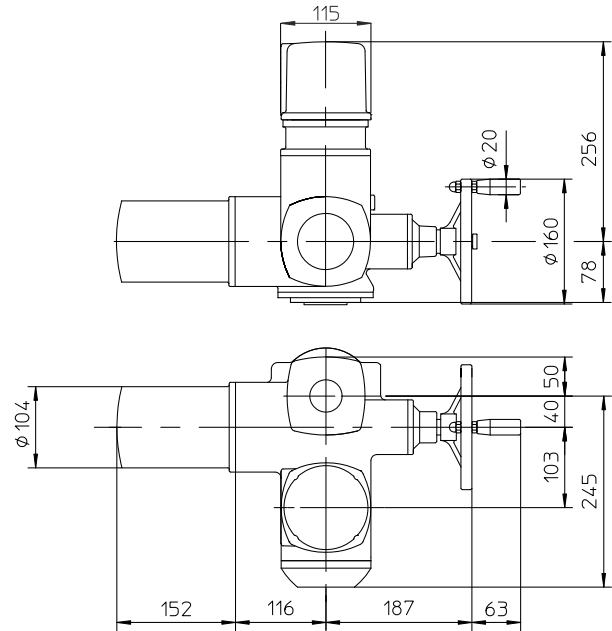
Other accessories acc. to catalogue of producer of actuators.

Dimensions of actuators Auma series 07.2 and 07.6

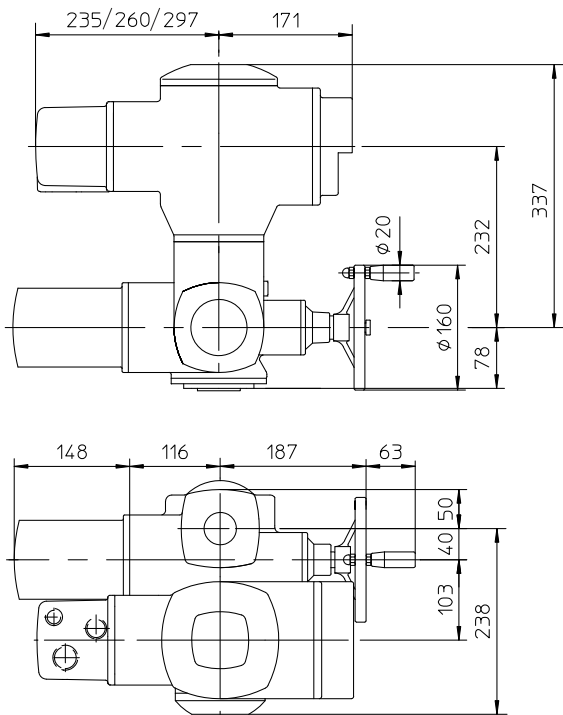
Normal version



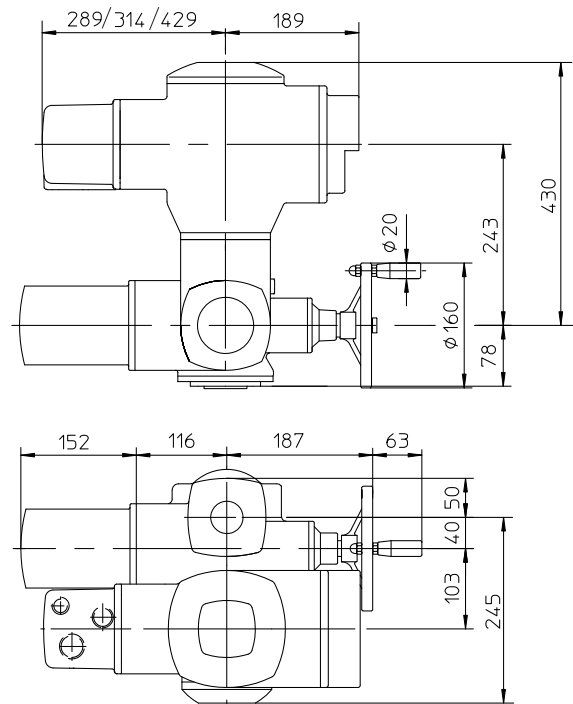
Version Ex norm



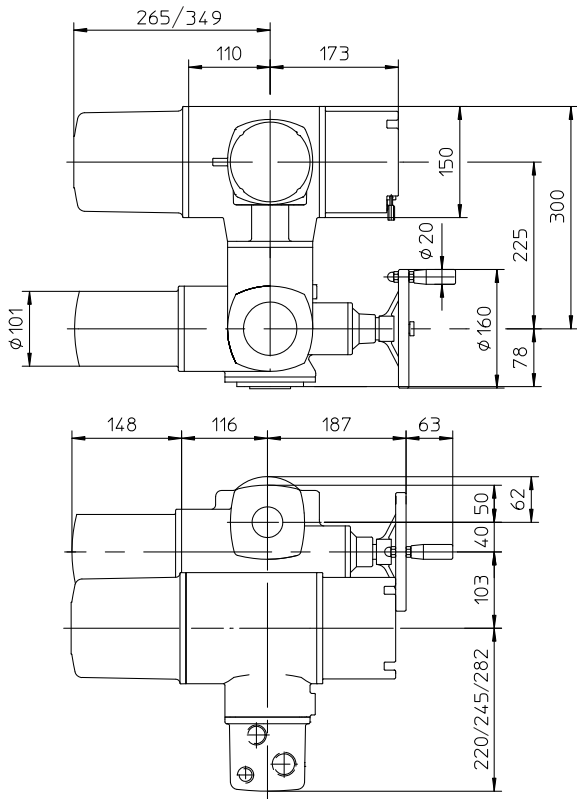
Version MATIC



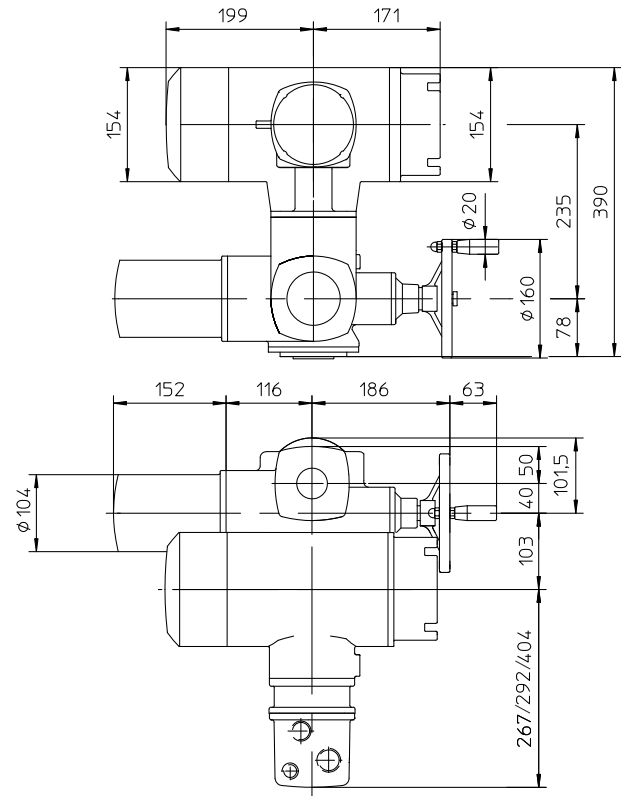
Version Ex MATIC



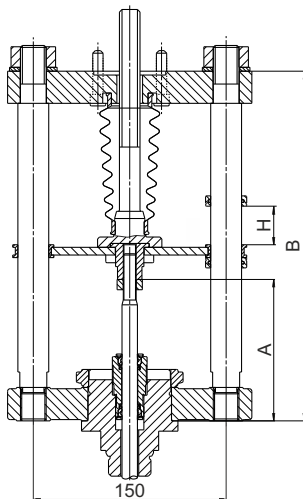
Version with AUMATIC



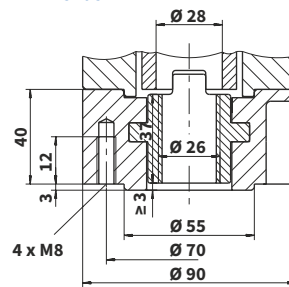
Version Ex AUMATIC



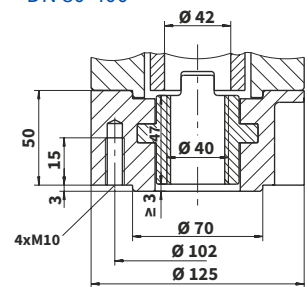
Attachment yoke (2 or 4 columns)



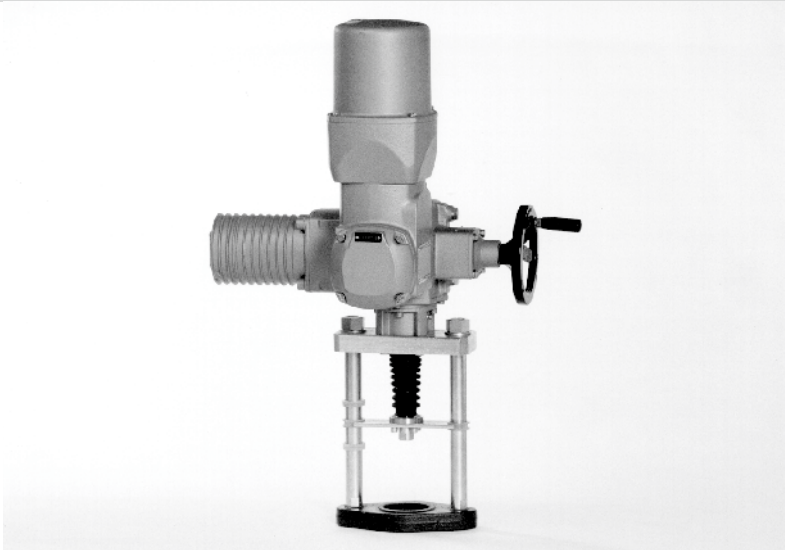
**Output drive type A, F07
DN 15-65**



**Output drive type A, F10
DN 80-400**



For valves	Number of columns	A	B	Weight
CV 2xx NPS 1/2" - 6"	2	110	272	~ 8 kg
CV 2xx NPS 8" - 10"	4	140	420	~ 15 kg



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

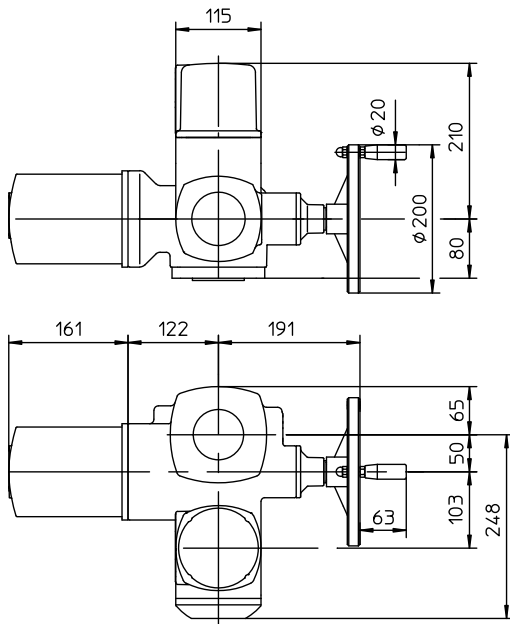
Specification of Auma actuators					SA	X	XX	10.2	
Type					SA				
Duty	control ON - OFF					R			
Version	standard non-explosive						Ex		
Actuator size								10.2	
Output drive shaft type A (thread TR 36x6 LH, flange F10) ... for RV 2xx DN 200 (NPS 8") - DN 400 (NPS 16")									
Voutput speed [ot/min]	Vtripping torqgue	SA 10.2	SAR 10.2	Motor power [kW]	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		60-120	0,12	0,18	0,18	0,18
		16	Nm		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

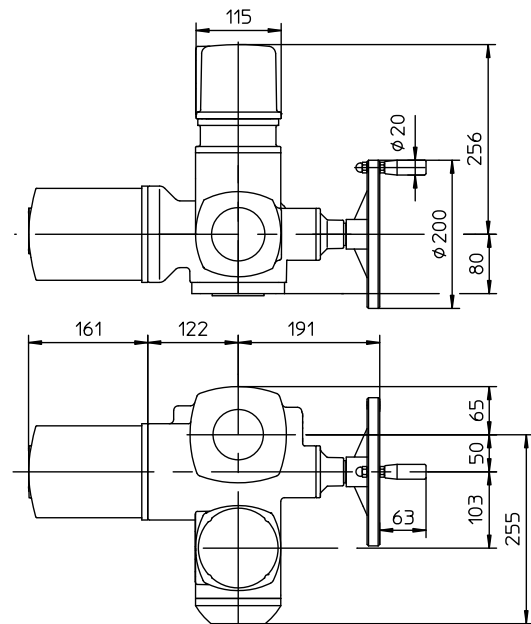
- 2 TANDEM switches
 - Gearing for signalisation of position
 - Mechanical position indicator
 - Potentiometer 1x200 Ω
 - MATIC - or continuous control (specification of accessories acc. to catalogue of producer: IP 67; -25 to +70°C; ...), weight + 7 kg
 - AUMATIC - or continuous control (specification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

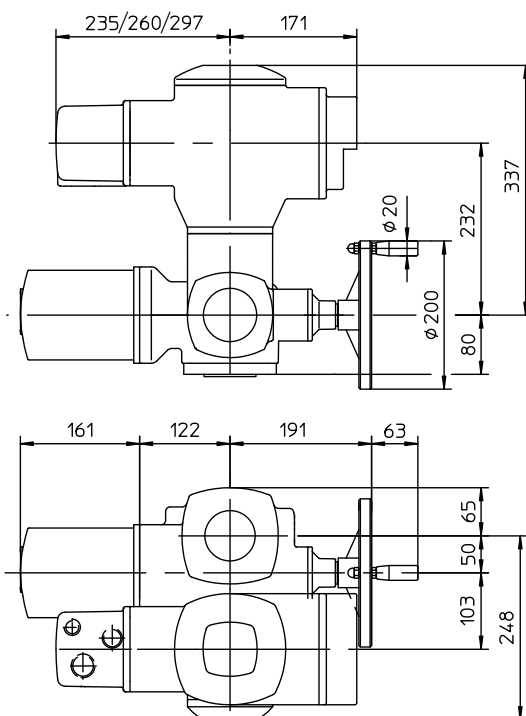
Normal version



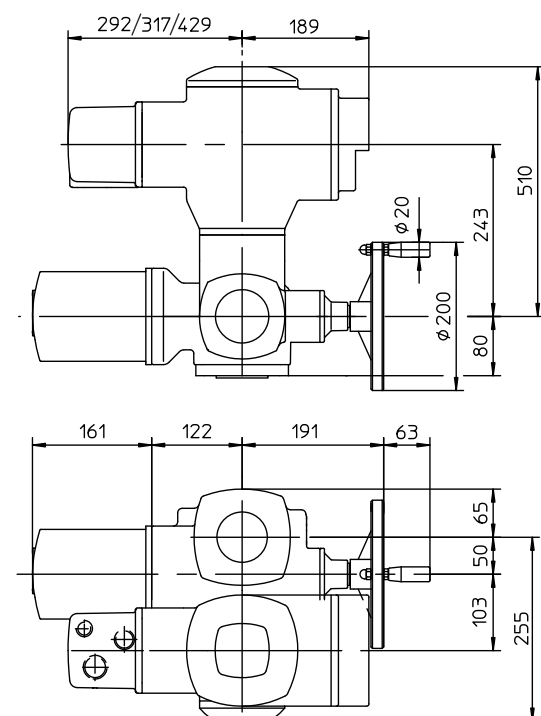
Ex normal version



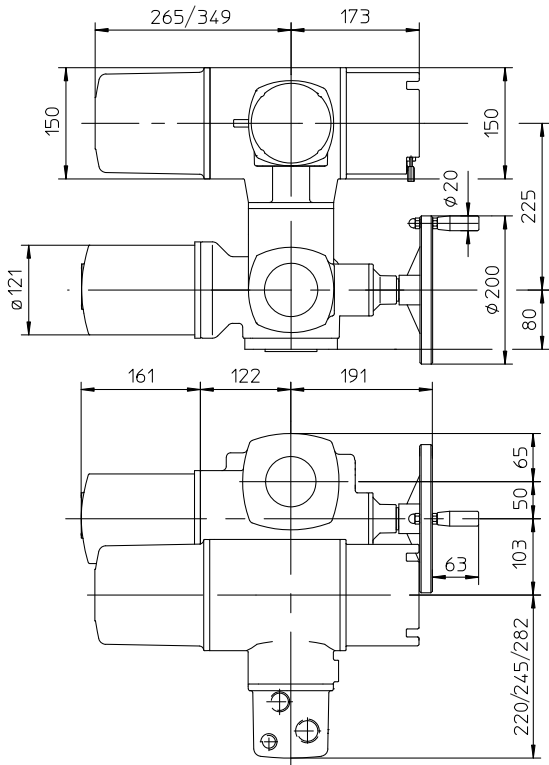
Version with MATIC



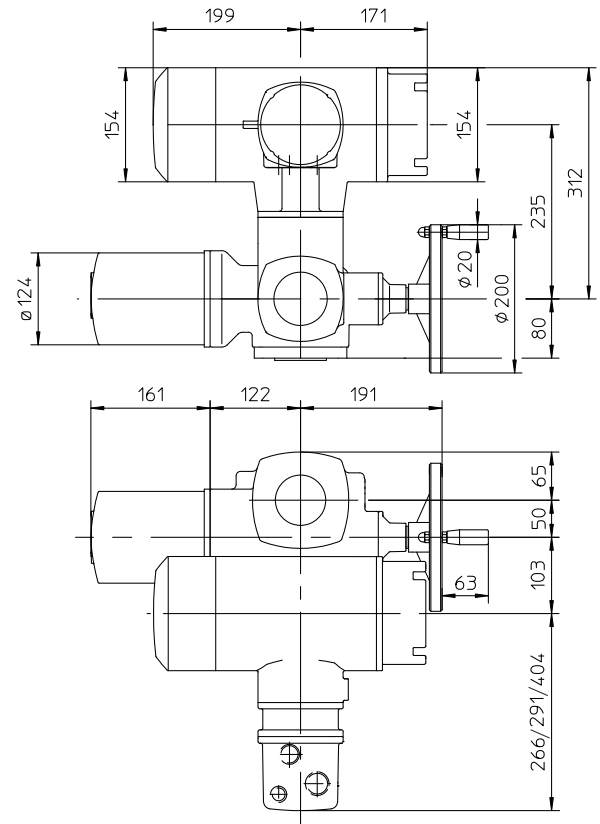
Version with Ex MATIC



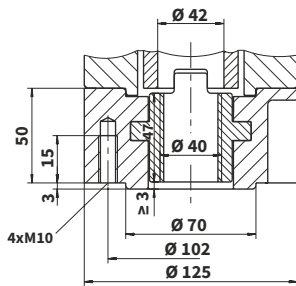
Version AUMATIC



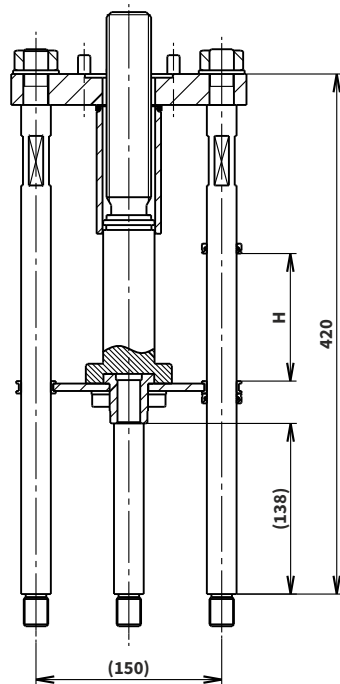
Version Ex AUMATIC

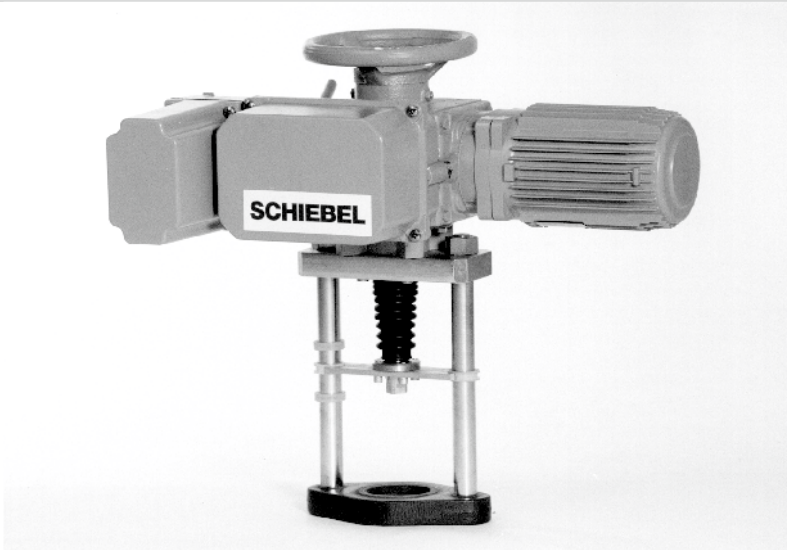


Output drive shaft A, F10



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





Elektric actuators **Schiebel**

AB3, AB5

marking in type number:

**EZA, EZB, EZC, EZD
EZE, EZF, EZG, EZH**

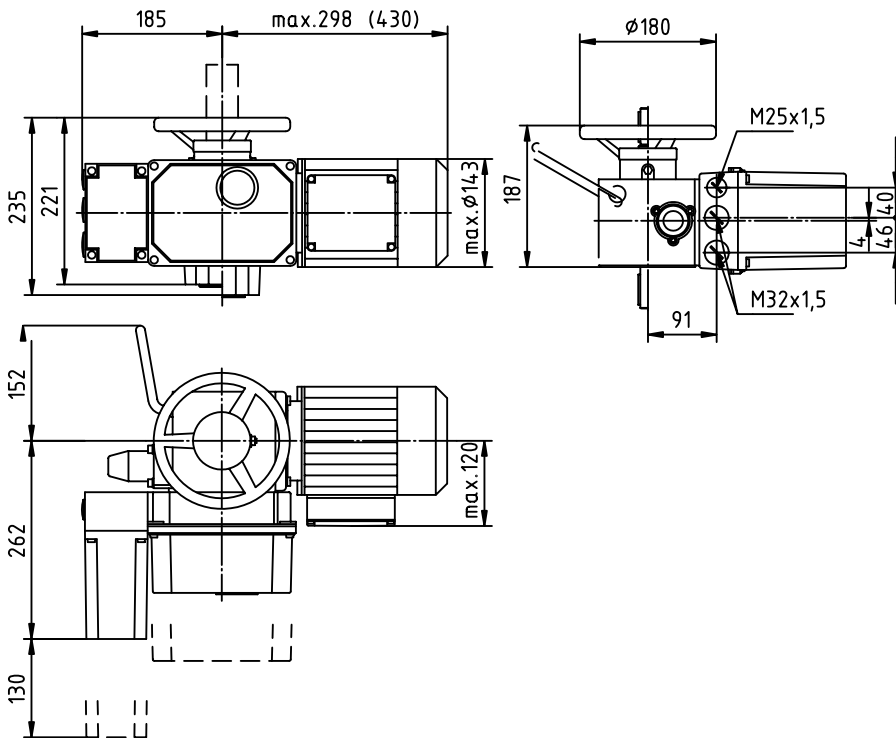
Technical data								
Type	AB3	AB5	exAB3	exAB5	rAB3	rAB5	exrAB3	exrAB5
Marking in valve spec. No.	EZA	EZE	EZB	EZF	EZC	EZG	EZD	EZH
Voltage	400 / 230 V; 230 V		400 / 230 V		400 / 230 V; 230 V		400 / 230 V	
Frequency	50 Hz							
Power consumption	see specification table							
Control	3-position or with signal 4 - 20 mA							
Nominal force	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.

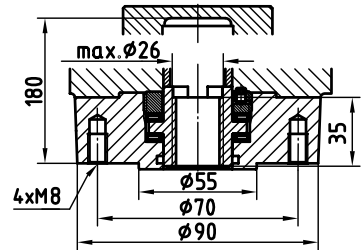
Detailed technical informations can be found in producer's data sheet or on the website www.schiebel.com

Specification of actuators											XX	X	AB3	A	X	+	XXXXX
Version		non-explosive standard									ex						
Function		control ON - OFF										r					
Actuator size											AB3		AB5				
Output shaft type A (thread TR 16x4 LH, connection flange F07 ... DN 15 to 65)															A		
Output speed [ot/min]	Tripping torque	AB3	rAB3	Motor power [kW]	AB3		rAB3		exAB3	exrAB3	2,5						
		exAB3	exrAB3		400/230V	230V	400/230V	230V	400/230V	400/230V		5					
		7 - 30 Nm			vypínací 7 - 30 Nm	0,09	0,09	0,09	0,09	0,09		0,09	0,09	7,5			
		zatěžovací 7 - 15 Nm			7 - 15 Nm	0,09	0,09	0,09	0,09	0,09		0,09	0,09	10			
						0,18	0,09	0,09	0,18	0,09		0,09	0,09	15			
						0,18	0,18	0,09	0,37	0,09		0,09	0,09	20			
						0,18	0,25	0,18	0,25	0,37		0,18	0,18	30			
						0,18	0,25	0,18	0,55	0,37		0,37	0,18	40			
Output speed [ot/min]	Tripping torque	AB5	rAB5	Motor power [kW]	AB5		rAB5		exAB5	exrAB5	2,5						
		exAB5	exrAB5		400/230V	230V	400/230V	230V	400/230V	400/230V		5					
		7 - 60 Nm			tripping 7 - 60 Nm	0,09	0,09	0,09	0,09	0,09		0,09	0,09	7,5			
						0,06	0,12	0,06	0,12	0,12		0,12	0,12	10			
						0,09	0,09	0,09	0,18	0,09		0,09	0,09	15			
						0,09	0,18	0,09	0,37	0,09		0,09	0,09	20			
						0,18	0,18	0,18	0,37	0,18		0,18	0,18	30			
						0,18	0,55	0,18	0,75	0,18		0,18	0,18	40			
						0,37	0,55	0,37	1,10	0,37		0,37	0,37				
			0,37	0,55	0,37	1,10	0,37	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				

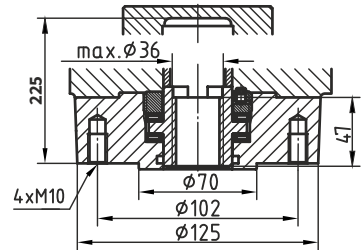
Dimensions of actuators ...AB3 and AB5



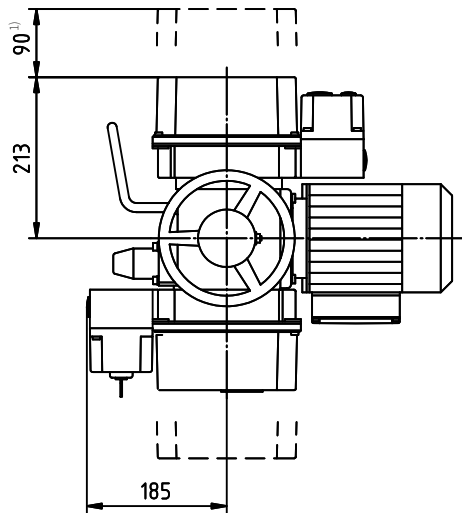
Output drive shaft A, flange F07



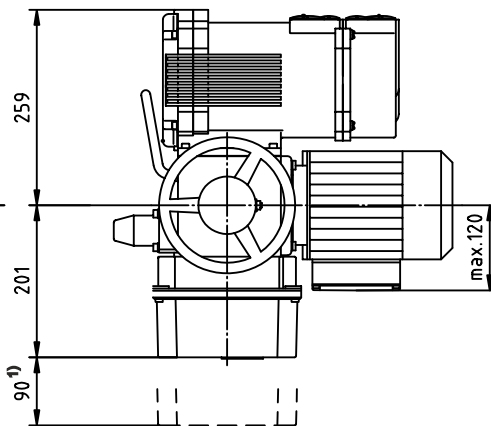
Connection acc. to ISO 5210, output drive shaft A, F10



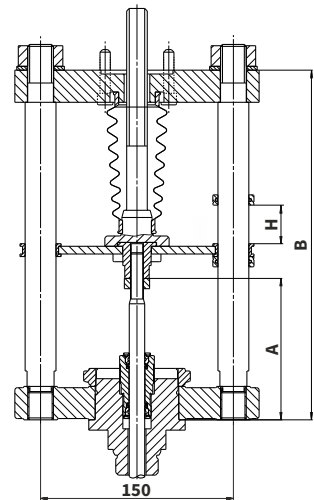
With ACTUMATIC R position regulator



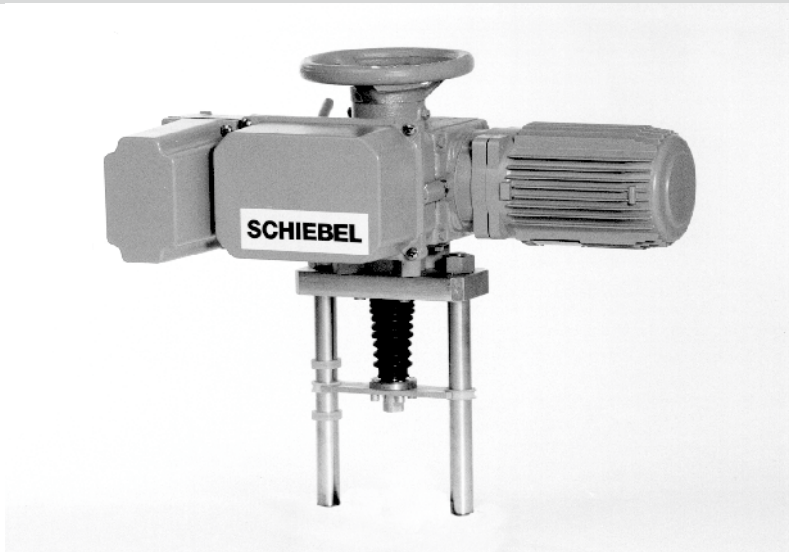
With SMARTCON control unit



Attachment (2 or 4 columns)



For valves	Number of columns	A	B	H	Weight [kg]
CV 2xx NPS 1/2" - 6"	2	149	295	40	12
CV 2xx NPS 8" - 10"	4	141	295	80	12



Electric actuators

Schiebel

AB8

marking in type number:

EZK, EZL

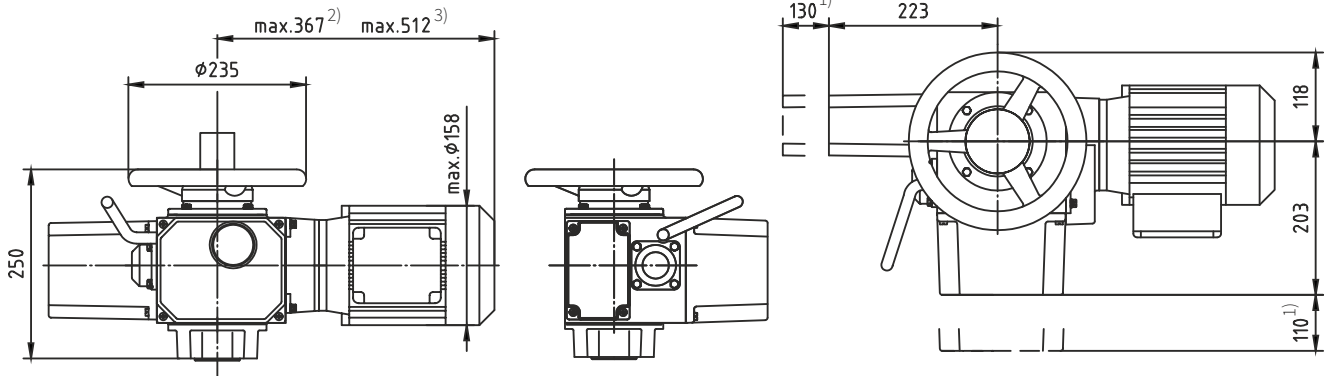
Technical data		
Type	rAB8	exrAB8
Marking in valve spec. No.	EZK	EZL
Voltage	400 / 230 V; 230 V	400 / 230 V
Frequency	50 Hz	
Power consumption	see specification table	
Control	3-position or with signal 4 - 20 mA	
Nominal force	(Tr 36x6 LH) 80 Nm ~ 21,6 kN; 100 Nm ~ 27 kN; 120 Nm ~ 32 kN	
Travel	80, 100 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.

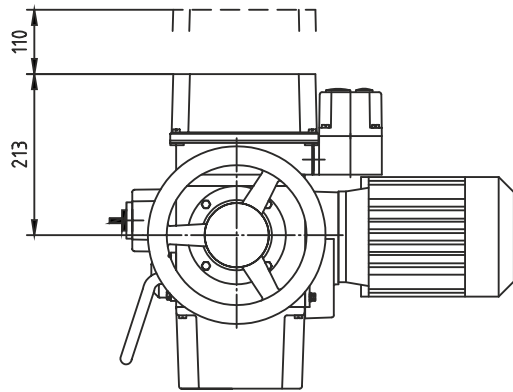
Detailed technical informations can be found in producer's data sheet or on the website www.schiebel.com

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		Motor power [kW]				
				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

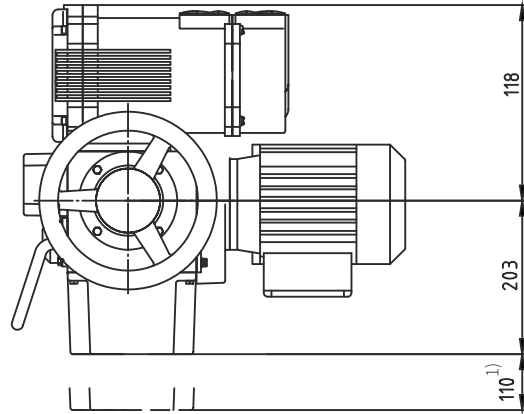
Dimensions of actuators ...AB8



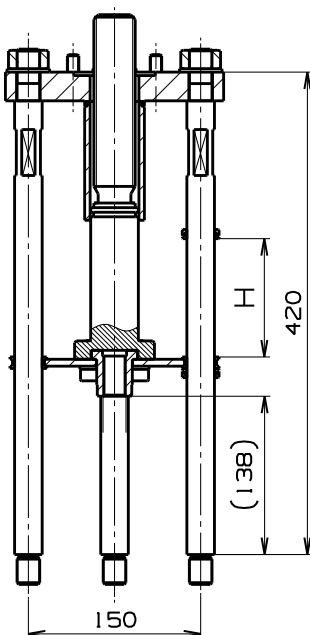
With ACTUMATIC R position regulator



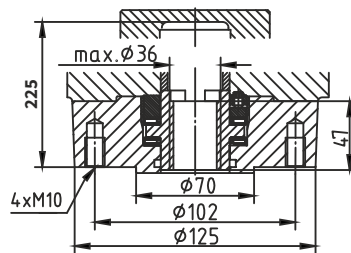
With SMARTCON control unit

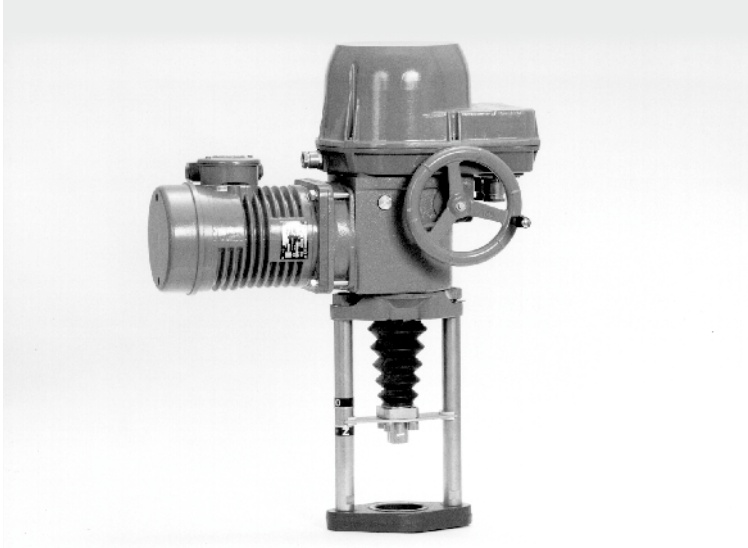


Attachment yoke DN200-400 Connection A, F10, Tr36x6-LH



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





Electric actuator **Regada**

Modact MTR

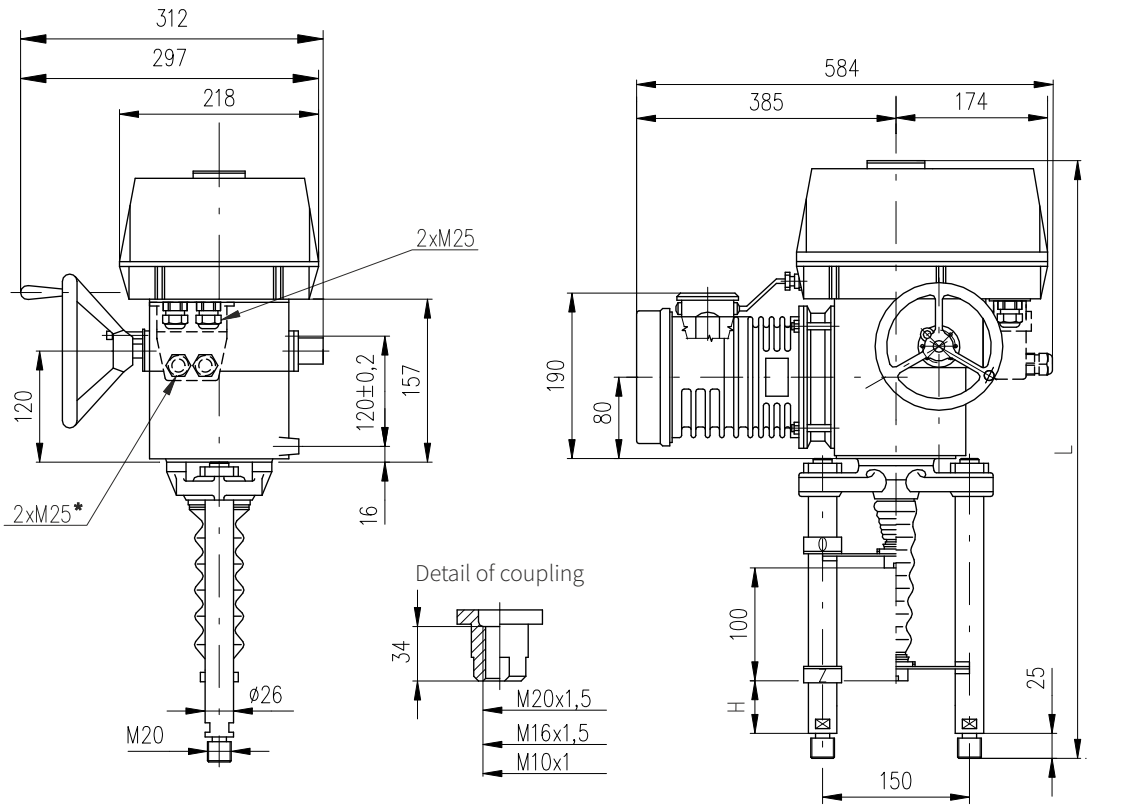
marking in type number:

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	CV 2xx NPS 1/2" - 6"
P-1045b/C	130	680	P-1045b/H	130	702	CV 2xx NPS 8" - 10"

Specification of Modact MTR

Electric motor linear MTR				52 420.			X	-	X	X	X	X	X	X	/	X	X								
Climatic resistance	Standard	-25°C to +55°C	Enclosure IP 55	0																					
			Enclosure IP 67	1																					
	Tropical	-25°C to +55°C	Enclosure IP 67	6																					
Electric connection				Voltage																					
To terminal board				230 V AC														9							
To connector																		8							
Screw version	Switching-off thrust ³²⁾³³⁾	Rated operating speed	Operating speed	Electric motor																					
				Power	Speed	Current																			
trapeze	6 300/32	4.0 - 6.3 kN	32 mm/min.	38 - 32 mm/min.	16 W	1 150	0.31 A											A							
	4 000/50	2.5 - 4.0 kN	50 mm/min.	60 - 50 mm/min.																B					
	10 000/32	6.3 - 10.0 kN	32 mm/min.	38 - 32 mm/min.	25 W	1 250	0.41 A											C							
	6 300/50	4.0 - 6.3 kN	50 mm/min.	60 - 50 mm/min.																D					
ball screw	16 000/32-G	10.0 - 16.0 kN	32 mm/min.	38 - 32 mm/min.	16 W	1 150	0.31 A											E							
	10 000/50-G	6.3 - 10.0 kN	50 mm/min.	60 - 50 mm/min.																F					
	25 000/32-G	10.0 - 25.0 kN	32 mm/min.	38 - 32 mm/min.	25 W	1 250	0.41 A											G							
	16 000/50-G	10.0 - 16.0 kN	50 mm/min.	60 - 50 mm/min.																H					
	10 000/63-G	6.3 - 10.0 kN	63 mm/min.	75 - 63 mm/min.																	J				
	6 300/100-G	4.0 - 6.3 kN	100 mm/min.	120 - 100 mm/min.																	K				
Control board version				Operating stroke																					
Electromechanical control board - without local control				16 mm															B						
				25 mm (for stroke 20 mm)																	C				
				40 mm																	E				
				80 mm																	G				
Transmitter				Connection		Output																			
Without transmitter				—		—												A							
Resistive	Single	—	—	—	—	—	1x100 Ω											B							
	Double						2x100 Ω														C				
	Single						1x2000 Ω															F			
	Double						2x2000 Ω															P			
Resistive with current converter	Without power supply	2-wire	—	—	—	—	4 - 20 mA											S							
	With power supply						0 - 20 mA													Q					
	Without power supply						3-wire	—	—	—	—	4 - 20 mA											T		
	With power supply											0 - 5 mA													
	Without power supply	3-wire	—	—	—	—	—	4 - 20 mA											V						
	With power supply							0 - 5 mA															W		
	Without power supply							2-wire	—	—	—	—	—	4 - 20 mA											Y
	With power supply													4 - 20 mA											
Capacitive CPT	Without power supply	2-wire	—	—	—	—	—	4 - 20 mA											I						
	With power supply							4 - 20 mA															J		
Mechanical connection		Connection height / stroke		Pillar spacing / Bore of flange		Thread of stem³⁾		Dimensional drawing																	
Columns		130		150 / —		M20x1.5 M16x1.5		P-1045b/B; P-1045b/E P-1045b/C; P-1045b/H											B						
																			C						
Additional equipment																									
Without additional equipment; adjusted max. switching-off thrust from range																0	1								
A	2 additional position switches S5,S6																0	2							

Possible combinations and execution: A+B = 07

Notes:

- 1) State the switching-off thrust in your order by words. If not stated it is adjusted to the maximum rate of the corresponding range. The load torque equals minimally the maximum switching-off thrust of the choosing range multiplied by 1.3.
- 2) The maximum load thrust equals the max. Switching-off thrust multiplied by:
 - 0.8 for duty cycle S2-10 min., or S4-25%, 6 - 90 cycles per hour
 - 0.6 for duty cycle S4-25%, 90 - 1200 cycles per hour
- 3) The thread in the coupling is to be specified in the order by words.



Electric actuators **Regada**

ST 0
STR 0

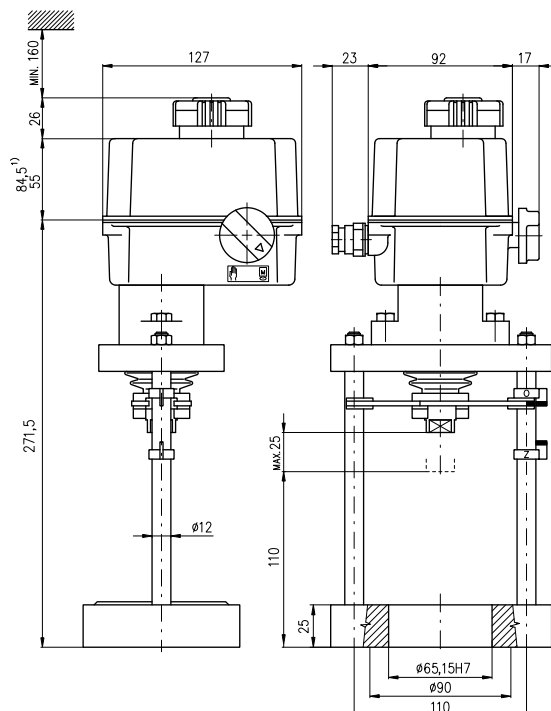
marking in type number:

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

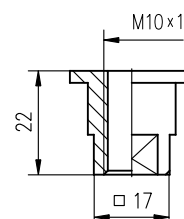
→ **Note:** Specifications and technical data are for information only. Detailed technical informations can be found in producer's data sheet or on the website www.regada.sk

Dimensions of actuator



¹⁾ applies for version with electronic transmitter

Detail of coupling



Specification of actuator ST 0, STR 0

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	0										
					24 V AC	3										
Nominal force [N]	2900	Running speed	4 mm/min	Motor power	1 W	0										
	4500		5 mm/min		2,75 W	A										
	4500 ³⁷⁾		10 mm/min		2,75 W	N										
	2900 ³⁷⁾		16 mm/min		2,75 W	P										
Tripping torque		One-torque		Travel	16 mm							D				
					20 mm							E				
Remote position transmitter	Without transmitter											A				
	Resistance		Single		1 x 100 Ω							B				
					1 x 2000 Ω						F					
	Electronic - current (without generator)	Wiring	2-wire	2-wire ⁶⁾		4 - 20 mA							S			
						0 - 20 mA						T				
			3-wire ⁶⁾			0 - 20 mA								U		
4 - 20 mA												V				
											W					
Mechanic connection - flange, connection height 110 mm, thread on con. stem M10x1												L				
Accessories		2 auxiliary position switches ⁷⁶⁾											0	0		

Notes:

⁶⁾ applies for version without regulator

¹⁶⁾ the feedback to the regulator is realized by a resistance transmitter (without specifying a code when selecting a transmitter)

³⁷⁾ applies for temperature range -15 to +55°C and voltage Un -5% to Un +10%

⁷⁶⁾ it is not possible to specify 2 auxiliary position switches (S5, S6) in the version with regulator and transmitter



Electric actuators **Regada**

STR OPA

marking in type number:

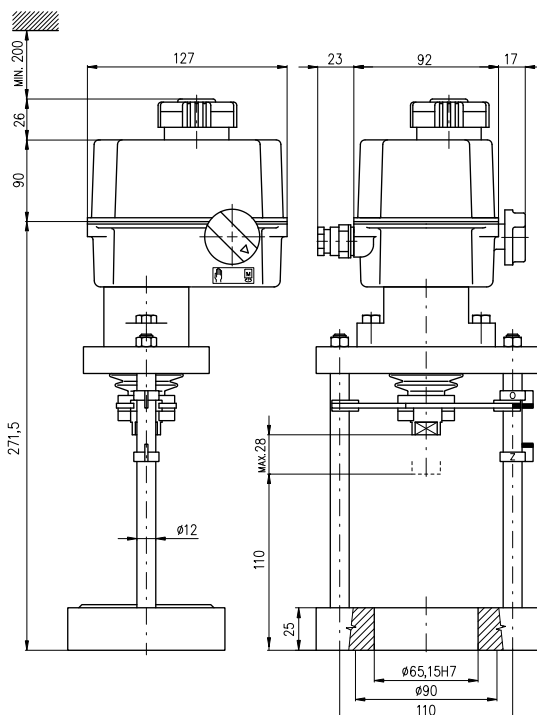
EPK

Technical data

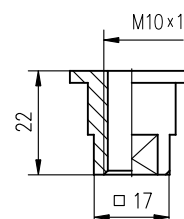
Type	STR OPA
Marking in valve spec. No.	EPK
Voltage	230 V AC, 24 V AC
Frequency	50 Hz
Power consumption	1 W
Control	3-position (0 - 10 V, (0)4 - 20 mA)
Nominal force	2,4 kN and 4,5 kN
Travel	10 to 28 mm
Enclosure	IP 67
Process medium max. temp.	acc. to used valve
Ambient temperature range	-25 to 55 °C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

ST 0.1
STR 0.1

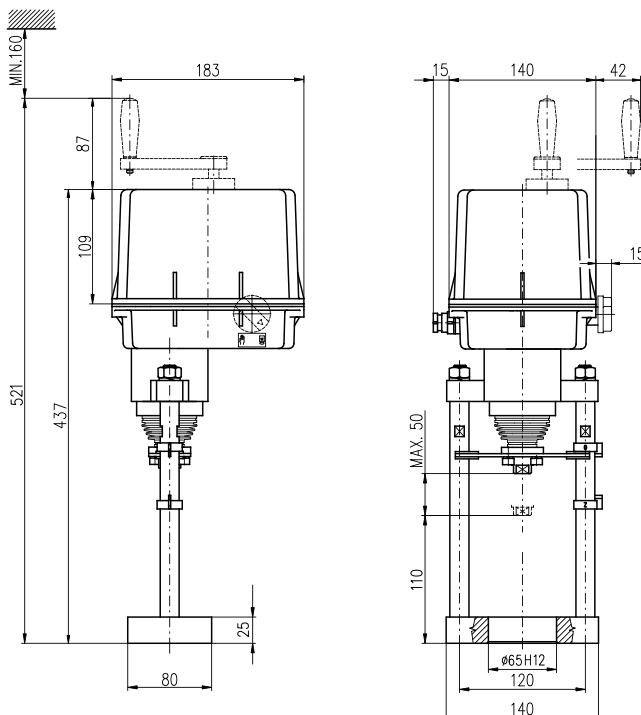
marking in type number:

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 website 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																
Tripping	Doublemoment			Stroke	16 mm												D		
					20 mm													E	
					40 mm													H	
Remote position transmitter	Without transmitter																	A	
	Resistance	Sigle		---	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	0 - 20 mA														S
4 - 20 mA			4 - 20 mA															T	
Capacity	wo its source	2-wire ⁽⁶⁾	2-wire	4 - 20 mA														V	
	with its source			4 - 20 mA															W
Mechanical connection - flange, connection height 110 mm, thread on con. stem M10x1 or M16x1,5																		C	
Accessories	A 2 auxiliary position switches ⁽⁸⁾																	0	0
	B Without space heater																	0	1
	C Space heater without terminal switch																	0	3
	D Manual control without permanent readiness																	0	5

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:

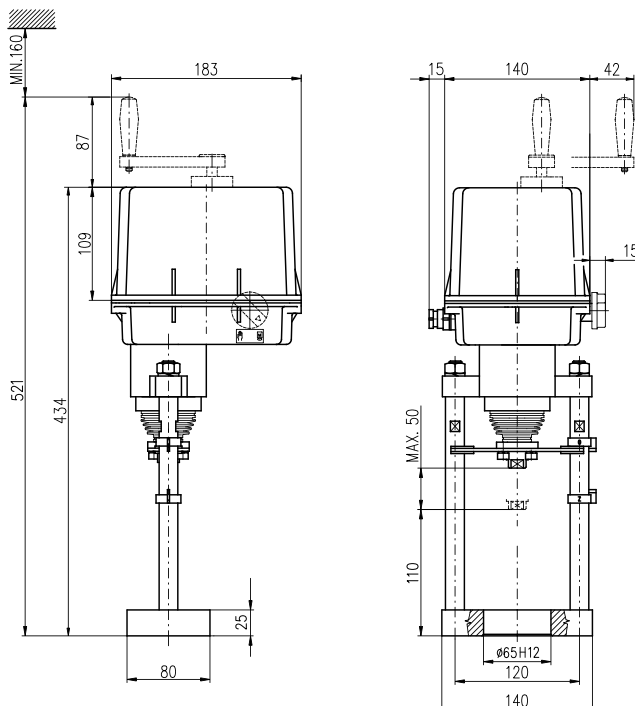
EPL

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	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		10 mm/min										K						
			16 mm/min										T						
			25 mm/min										U						
			32 mm/min										V						
										W									
										Y									
												I							
Stroke			10-50 mm																
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					G H						
Mechanical connection - flange, connection height 110 mm, thread on con. stem M10x1 or M16x1,5																C			
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

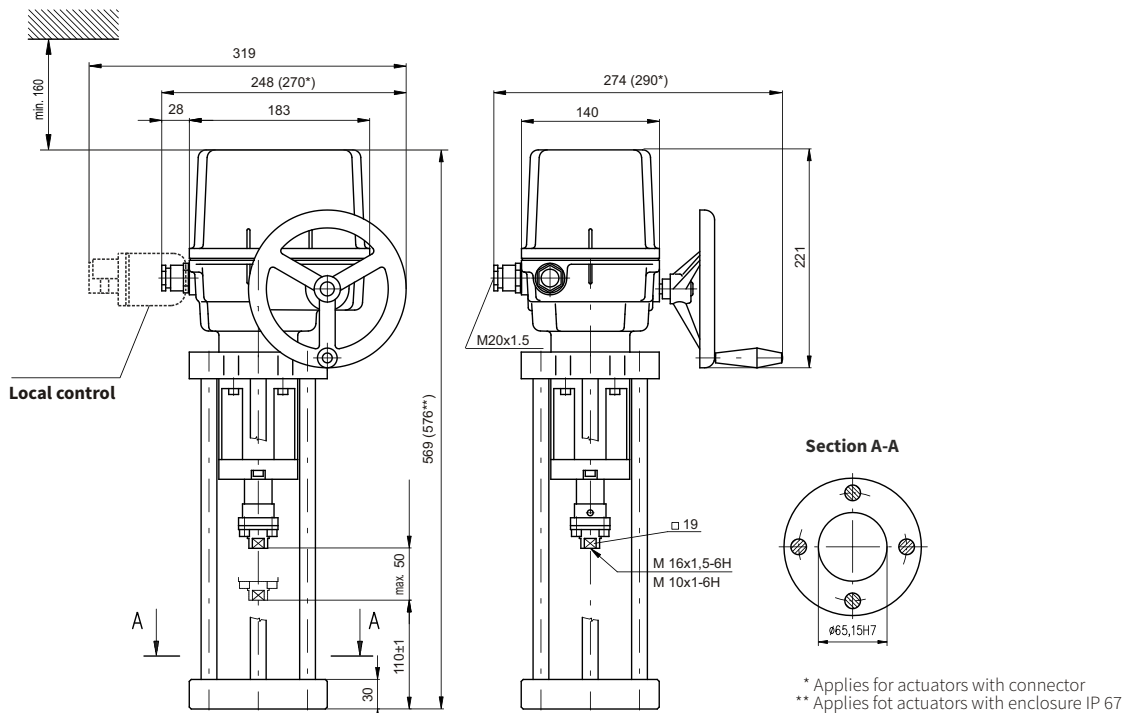
ST 1
STR 1

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

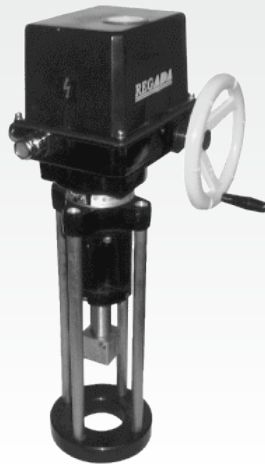
Electric servomotor ST 1, STR 1						491.	X	-	X	X	X	X	X	X	/	X	X		
Climatic resistance	Standard	-25°C to +55°C	IP 65	Without regulator (ST 0.1)		0													
			IP 67				1												
	Tropical	-25°C to +55°C	IP 67				6												
	Universal	-50°C to +40°C	IP 67			8													
	Standard	-25°C to +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													
		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]	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														
					20 mm														
					40 mm														
Remote position transmitter	Without transmitter																		
	Resistance	Single	Wiring	Output	1 x 100 Ω														
					1 x 2000 Ω														
	Double ⁶⁾				2 x 100 Ω														
					2 x 2000 Ω														
	Electronic - current	without its source	2-wire	4 - 20 mA															
		without its source	3-wire ⁶⁾	0 - 20 mA															
4 - 20 mA																			
Capacity	wo its source	2-wire ⁶⁾		4 - 20 mA															
	with its source	2-wire																	
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

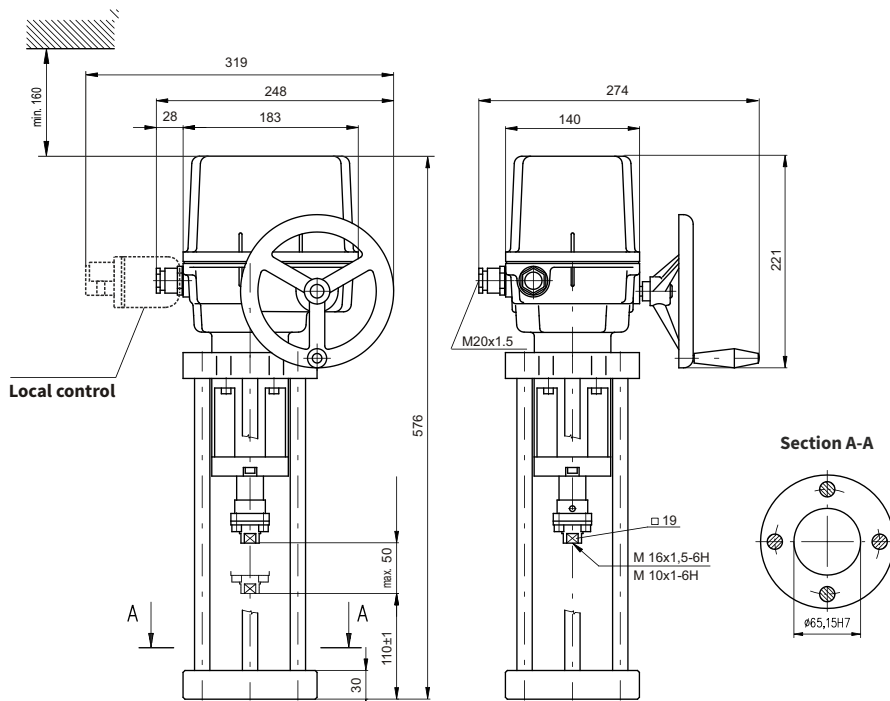
STR 1PA

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 website 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	Running speed	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										G				
				0/2 - 10 V																			H		
Mechanical connection											- flange, connection height 110 mm, thread on con. stem M10x1 or M16x1,5										K				
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

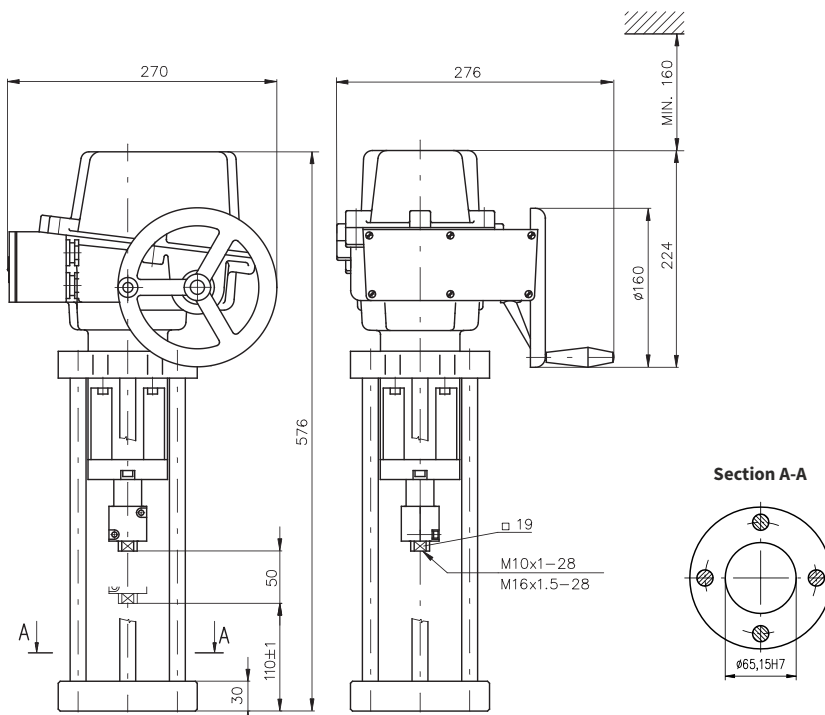
ST 1-Ex

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							
	Universal	-50°C to +40°C					8							
	Standard	-25°C to +55°C	With regulator			Resistance feedback	IP 67	B						
	Universal	-50°C to +40°C				Current feedback	IP 67	D						
						Resistance feedback		K						
						Current feedback		M						
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 (230; 3x400; 3x380 V AC) 20 W (24V AC/DC)					0			
	7500 N			16 mm/min				1						
	10000 N			32 mm/min				2						
	8600 N			10 mm/min				5						
	8600 N			20 mm/min				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	
				2 - wire		4 - 20 mA							S	
		With its source ⁵⁹⁾		3 - wire ⁶⁾		0 - 20 mA								T
				2 - wire		4 - 20 mA								V
				3 - wire ⁶⁾		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		

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

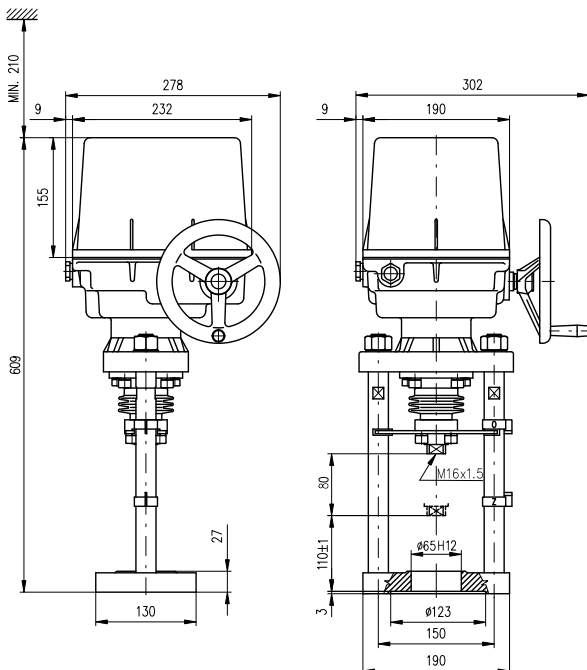
marking in type number:
EPM

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

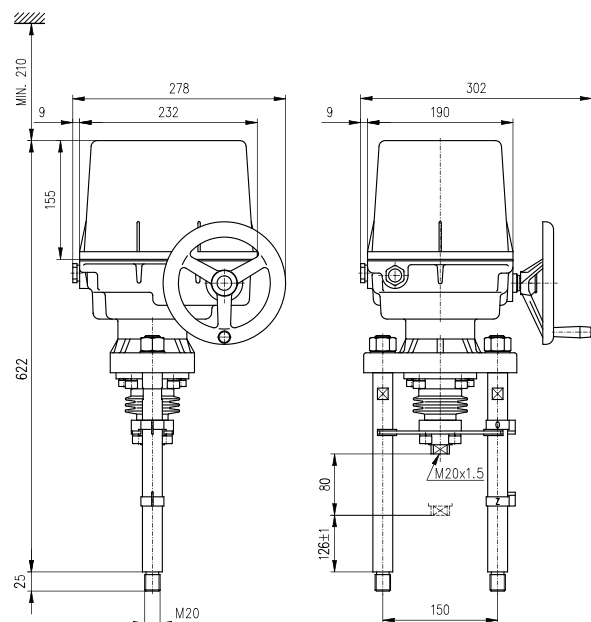
→ **Note:** Specifications and technical data are for information only. Detailed technical informations can be found in producer's data sheet or on the website www.regada.sk

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														
		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 67		IP 67	With regulator (STR 2)	Resistance feedback	B												
Current feedback				D																
Tropical	-25°C to +55°C	IP 67	IP 67	Resistance feedback	G															
				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													
	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]	Motor power	20 W	Nominal force [N]	Motor power	90 W	Running speed	10 mm/min	A												
								H												
								J												
								20 mm/min	B											
									K											
		L																		
		32 mm/min							M											
									N											
								P												
								40 mm/min	C											
	Q																			
	R																			
	50 mm/min ⁶⁾	S																		
		T																		
		60 mm/min ⁶⁾					U													
							D													
							V													
	80 mm/min ⁶⁾						W													
							E													
		100 mm/min ⁶⁾					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				Output	1 x 100 Ω	A					
	Resistance	single	Wiring	2-wire		1 x 2000 Ω					B	
		double				2 x 100 Ω					F	
	Electronic - current					wo its source					3-wire ⁶⁾	2 x 2000 Ω
		with its source				4 - 20 mA						P
	Capacity	wo its source		2-wire ⁶⁾		4 - 20 mA					0 - 20 mA	S
		with its source ⁵¹⁾									2-wire	4 - 20 mA
												T
												U
											V	
					W							
				I								
				J								
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							0 0			
		E Space heater with terminal switch							0 2			
		C Local control							0 7			
		D Space heater							1 5			
		G Setting up the tripping torque on demanded position							2 5			

Permissible combinations of accessories and codes:

A+E=04, A+C=08, C+E=10, A+C+E=12, A+D=16, C+D=17, A+C+D=18, A+G=26, E+G=27, C+G=28, D+G=29, A+E+G=30, A+C+G=31, A+D+G=32, C+E+G=33, C+D+G=34, A+D+E+G=35, A+C+D+G=36

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

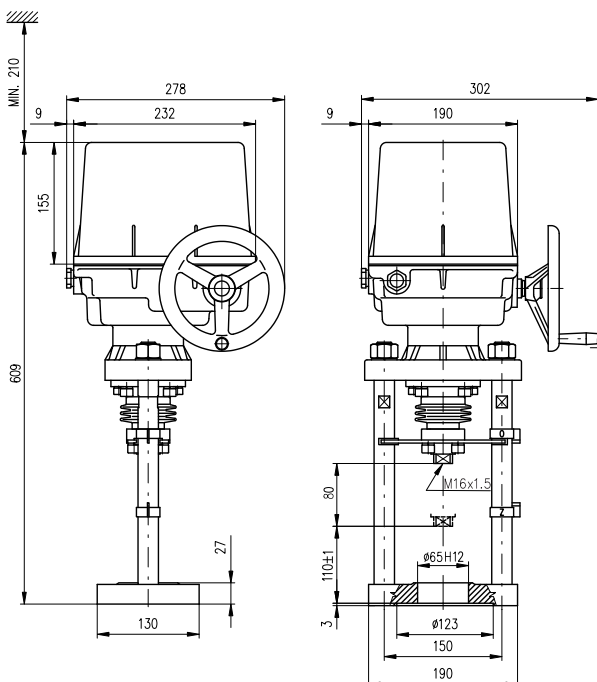
marking in type number:
EPM

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

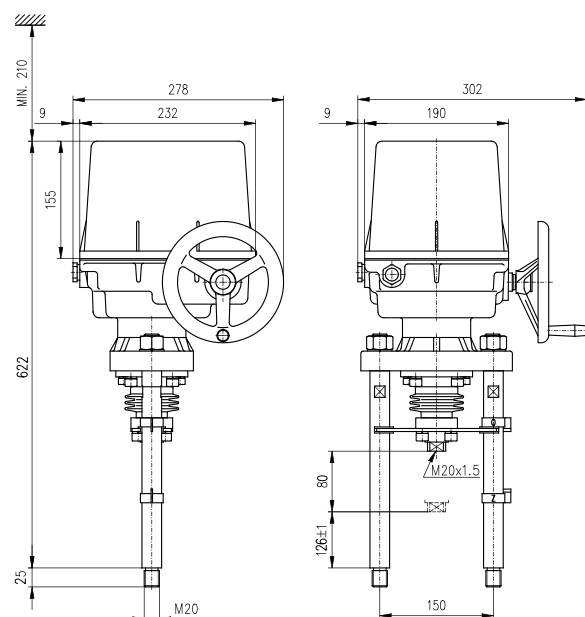
→ **Note:** Specifications and technical data are for information only. Detailed technical informations can be found in producer's data sheet or on the website www.regada.sk

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	80 mm/min	—	—	●	●											
	100 mm/min	—	—	●	●											
	10 mm/min	●	●	●	—											
	20 mm/min	●	●	●	●											
	32 mm/min	●	●	●	●											
	40 mm/min	●	●	●	●											
	50 mm/min	●	●	●	—											
	50 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 se vstupem 4(0) - 20 mA
Electropneumatic positioner ABB TZIDC	Digital positioner se vstupem 4(0) - 20 mA
Signalisation switches type 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.

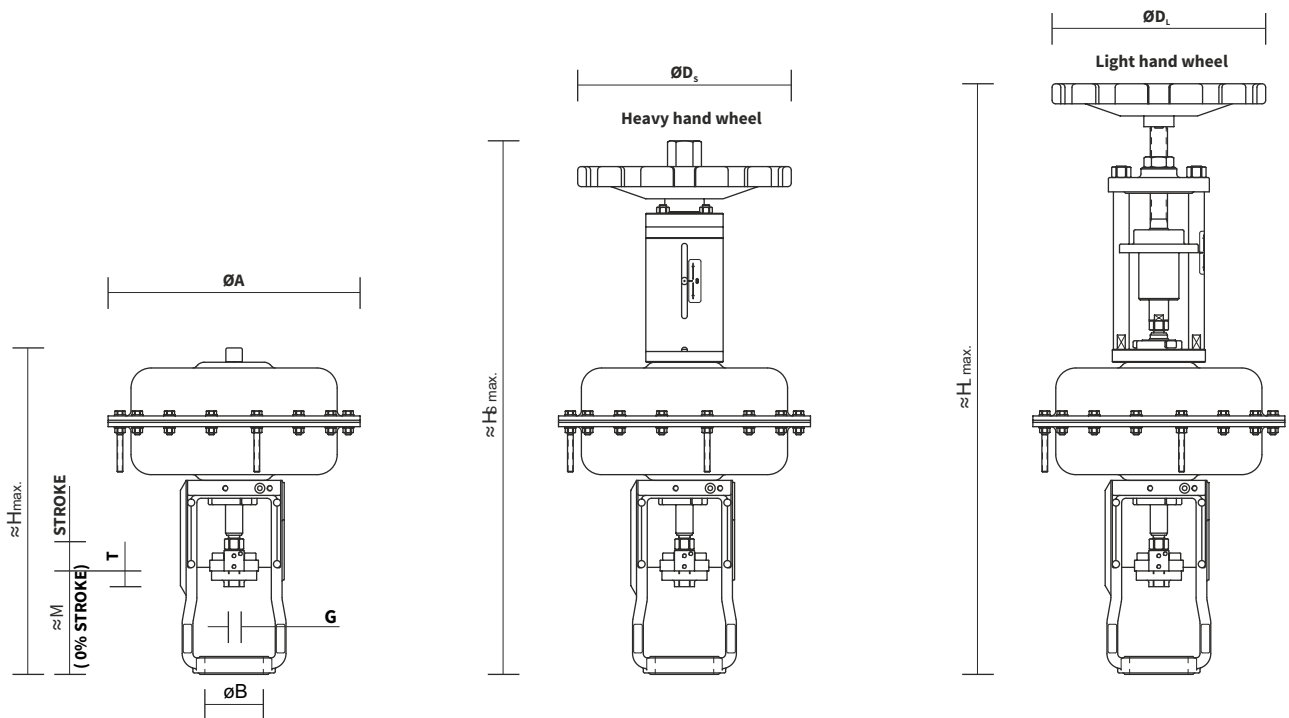
Direct and indirect functions

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



Pneumatic actuators

Flowserve

PO 1502

marking in type number:

PFD

Technical data

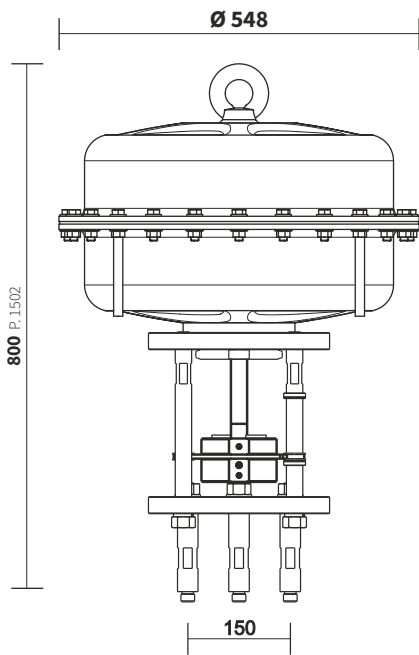
Type	PO 1502		
Marking in valve spec. No.	PFD		
Feeding pressure	6,0 bar max		
Function	direct	indirect	
Control	pneumatic signal 0,2 - 1,0 bar current signal 0(4) - 20 mA		
Nominal force	according to table of nominal force values		
Travel	80, 100 mm		
Enclosure	IP 54		
Process medium max. temp.	acc. 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

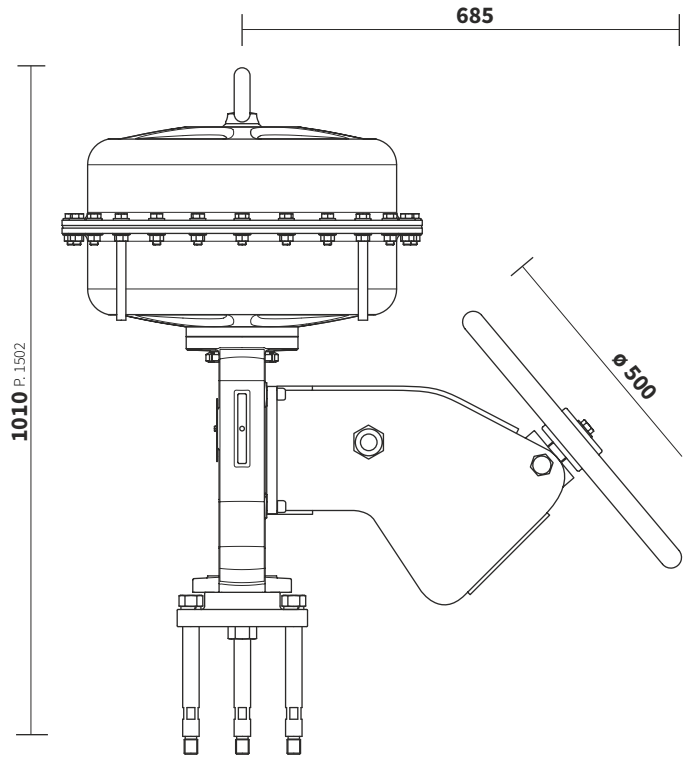
Accessories

Elektropneumatic positioner type SRI 981	Device with electric input of 20 - 100 kPa to control the pneumatic actuators with pneumatic control signal
Elektropneumatic positioner type SRI 986	Analog positioner with input signal 4(0) - 20 mA
Elektropneumatic 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
Elektropneumatic 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
Elektropneumatic 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
Elektropneumatic positioner SIPART PS2	Digital positioner se vstupem 4(0) - 20 mA
Elektropneumatic positioner ABB TZIDC	Digital positioner se vstupem 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

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					

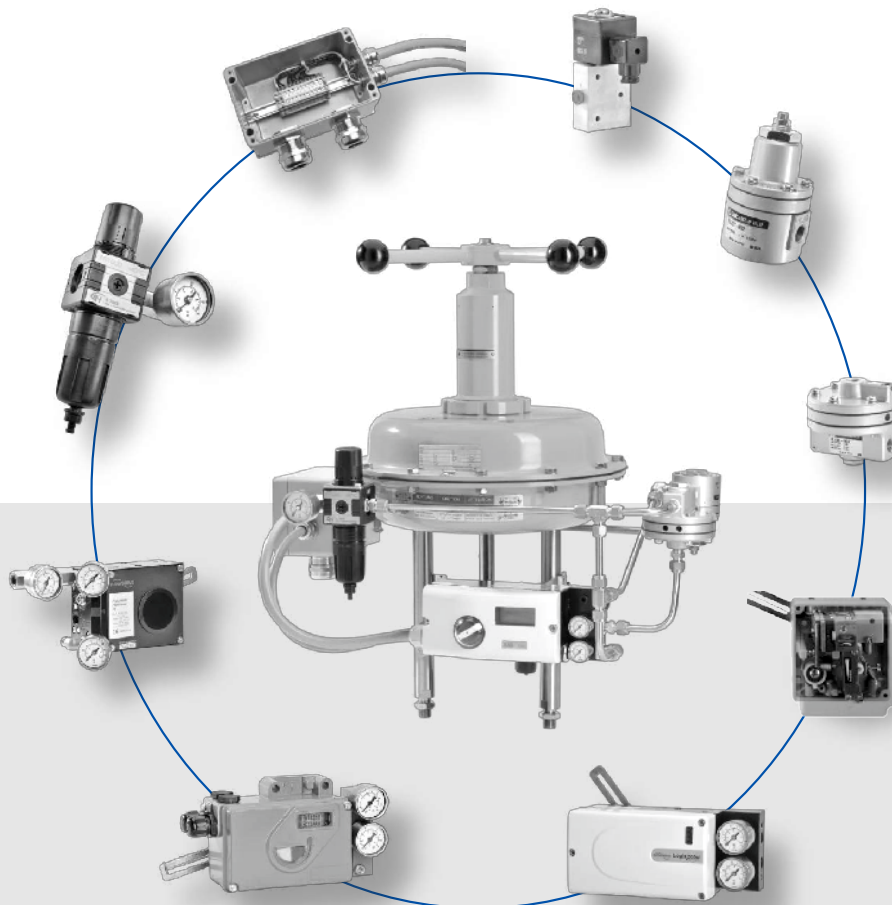
Direct and reverse functions

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

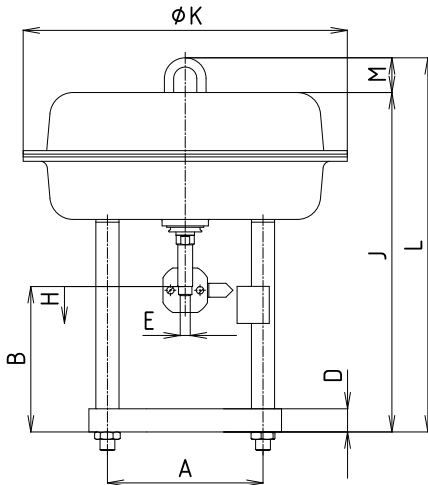
Pneumatic positioner type SRI 981	Device with pneumatic input of 20 - 100 kPa
Electropneumatic positioner type SRI 986	Analog positioner with input signal 4(0) - 20 mA
Electropneumatic positioner (analog) type SRD 990	Device with electric input of 4 (0) - 20 mA and direct pneumatic output into actuator. 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



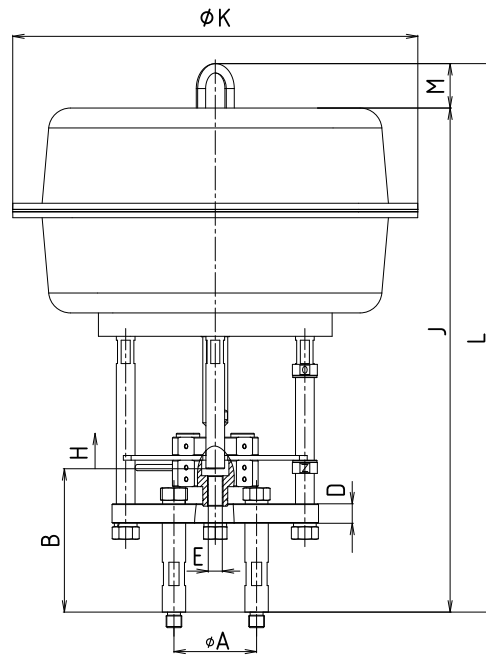
Dimensions and weight of actuators A. Hock series 2000

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

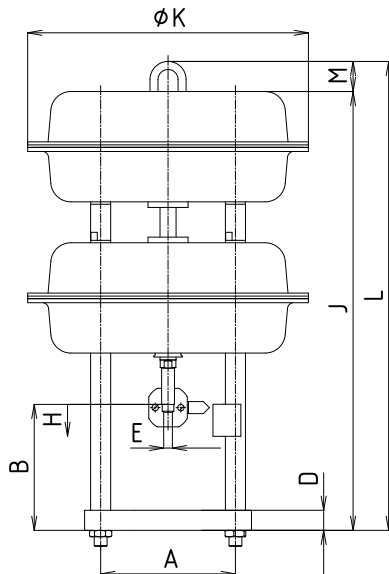
Standard actuator

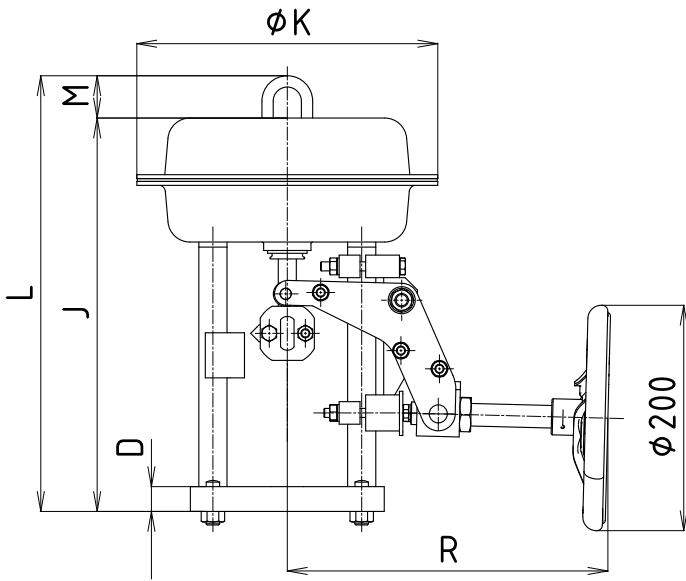


Standard actuator with linear unit 2116(S)

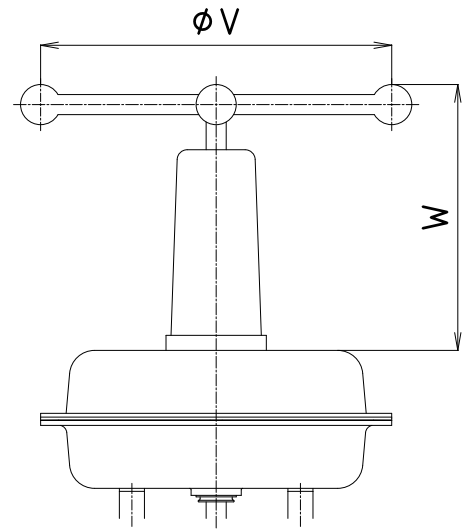


Tandem-type actuator 2112T

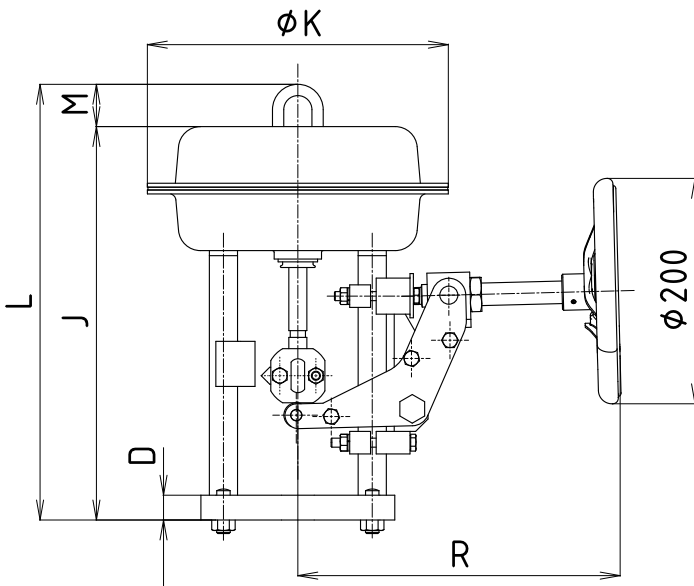




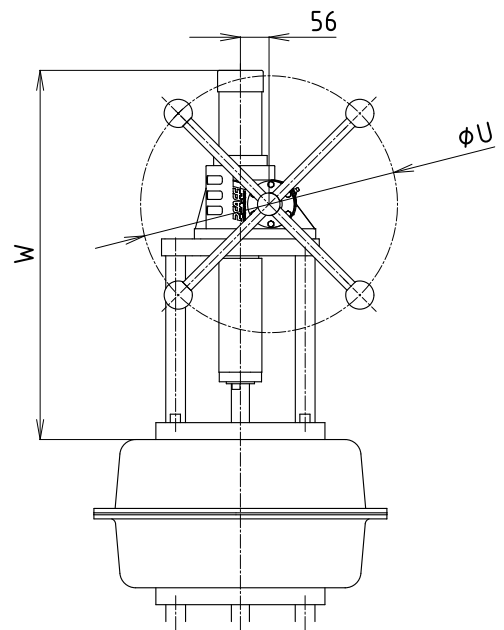
Standard actuator with side wheel (NO)



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

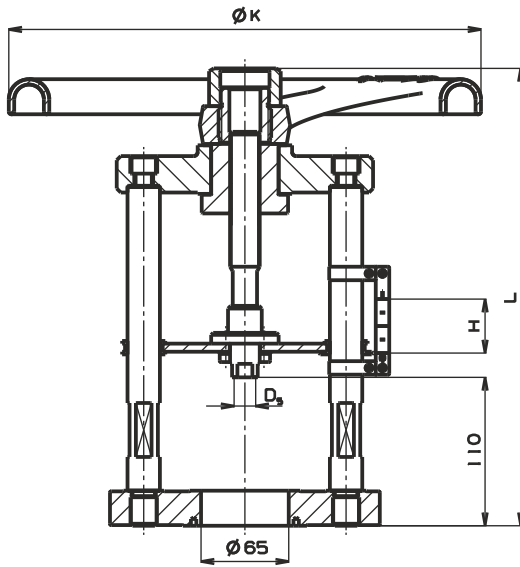
			P2-0K-	X	X	X	(AXXX)
Spring range [bar]	Without hand wheel	0,2 - 1,0	all actuators		A		
		0,8 - 2,2	all actuators, except 2112-50 / 2112T-50		B		
		1,2 - 3,0	2109		V		
		1,5 - 3,8	2109 (NC only)		H		
		1,6 - 3,2	2112-30 (NC only)		M		
		1,4 - 2,8	only 2112-30 / 2112T-30		W		
		1,5 - 3,0	2112T-30 (NC only)		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		CV 2XX, NPS ½" - 2½"	A252			
	2112-30 (NC) / 2112T-30 (NC)		CV 2XX, NPS ½" - 2½"	A253			
	2112-30 (NO)		CV 2XX, NPS ½" - 1½"	A255			
	2112-30 (NO) / 2112T-30 (NO)		CV 2XX, NPS 2" - 2½"	A256			
	2112-50 (NC) / 2112S-50 (NC) 2112T-50 (NC)		CV 2XX, NPS 3" - 6"	A254			
	2112-50 (NO) / 2112S-50 (NO) 2112T-50 (NO)		CV 2XX, NPS 3" - 6"	A257			
	2116-40 (only NC & NO)		CV 2XX, NPS 3" - 6"	A258			
	2116-100 / 2116S-100 (only NC & NO)		CV 2XX, NPS 8" - 16"	A302			

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

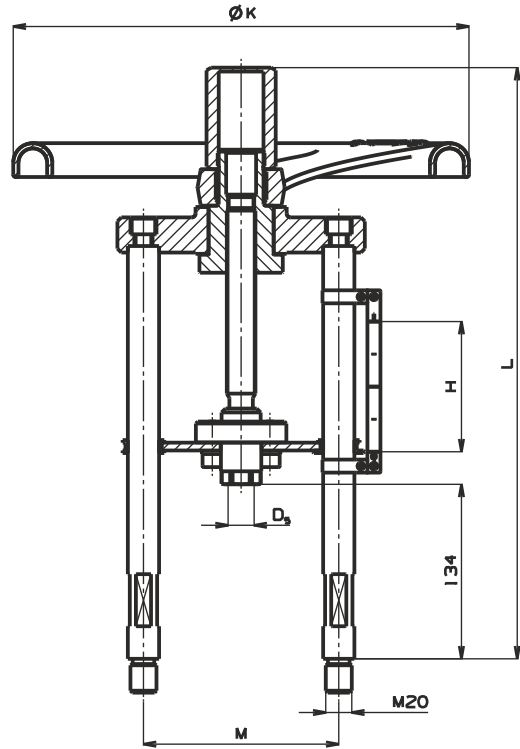
Specification No. of actuators A. Hock (stainless steel version) series 2000				P5-0K-	X	X	X	(AXXX)
Spring range [bar]	Without hand wheel	0,2 - 1,0	all actuators	A				
		0,8 - 2,2	all actuators, except 2112-50 / 2112T-50	B				
		1,6 - 3,2	2112-30 (NC only)	M				
		1,4 - 2,8	only 2112-30 / 2112T-30	W				
		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		CV 2XX, NPS ½" - 2½"				A252	
	2112-30 (NC) / 2112T-30 (NC)		CV 2XX, NPS ½" - 2½"				A253	
	2112-30 (NO)		CV 2XX, NPS ½" - 1½"				A255	
	2112-30 (NO) / 2112T-30 (NO)		CV 2XX, NPS 2" - 2½"				A256	
	2112-50 (NC) / 2112S-50 (NC)		CV 2XX, NPS 3" - 6"				A254	
	2112T-50 (NC)							
	2112-50 (NO) / 2112S-50 (NO)		CV 2XX, NPS 3" - 6"				A257	
2112T-50 (NO)								

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

Hand wheels RV / UV 2x0, 2x2 and 2x4



Hand wheel for DN 15 - 150



Hand wheel for DN 200 - 400

Dimensions of manual control

DN	Marking	H [mm]	L [mm]	ØK [mm]	M [mm]	D ₅ [mm]	D ₆ [mm]	m [kg]	Ordering no. (BOM number)
15	R16	16	247	160	---	65	M10x1	5	S900 0231
20									
25									
32									
40	R20	20	275	195	---	65	M10x1	11	S900 0115
50									
65									
80	R28	40	317	280	---	65	M16x1,5	13	S900 0116
100			339	350					
125	R35	80	454	350	150	---	M20x1,5	15	S900 0141
150									
200									
250									
300	R35	100	454	350	150	---	M20x1,5	15	S900 0235
400									

Marking of actuators in type no.

Electric actuator 660 MIDl	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 PTN 2.20	ERB	Electric actuator Schiebel exrAB3	EZD
Electric actuator PTN 2.32 ; PTN 2.40	ERC	Electric actuator Schiebel AB5	EZE
Electric actuator PTN 6	ERD	Electric actuator Schiebel exAB5	EZF
Electric actuator PTN 7	ERG	Electric actuator Schiebel rAB5	EZG
Electric actuator Modact MTR	EPD	Electric actuator Schiebel exrAB5	EZH
Electric actuator ST 0, STR 0 PA	EPK	Electric actuator Schiebel rAB8	EZK
Electric actuator ST 0.1, STR 0.1 PA	EPL	Electric actuator Schiebel exrAB8	EZL
Electric actuator ST 1, STR 1 PA	EPI	Electric actuator Rotork IQM10 a IQM12	EQA
Electric actuator ST 1 Ex	EPJ	Electric actuator Rotork Ex IQM10 a Ex IQM12	EQB
Electric actuator ST 2, STR 2 PA	EPM	Electric actuator IQM20	EQD
Electric actuator Modact MTN Control, MTP Control	EYA	Electric actuator Ex IQM20	EQE
Electric actuator Modact MTN, MTP	EYB	Electric actuator Rotork CVL-500 to CVL-5000	EQL
Electric actuator Modact MTNED, MTPED	EYA	Pneumatic actuator Flowserve PA 253	PFA
Electric actuator Auma SA 07.2	EAA	Pneumatic actuator Flowserve PB 503	PFB
Electric actuator Auma SA Ex 07.2	EAB	Pneumatic actuator Flowserve PB 701	PFC
Electric actuator Auma SAR 07.2	EAC	Pneumatic actuator Flowserve PO 1502	PFD
Electric actuator Auma SAR Ex 07.2	EAD	Pneumatic actuator Flowserve PO 3002	PFE
Electric actuator Auma SA 07.6	EAE	Pneumatic actuator A.Hock 2109-20	PHF
Electric actuator Auma SA Ex 07.6	EAF	Pneumatic actuator A.Hock 2112-30, A.Hock 2112-50	PHA
Electric actuator Auma SAR 07.6	EAG	Pneumatic actuator A.Hock 2112T-30, A.Hock 2112T-50	PHB
Electric actuator Auma SAR Ex 07.6	EAH	Pneumatic actuator A.Hock 2116-40	PHC
Electric actuator Auma SA 10.2	EAI	Hand wheel pro DN 15 - 40	R16
Electric actuator Auma SAR 10.2	EAJ	Hand wheel pro DN 50 - 65	R20
Electric actuator Auma SAR Ex 10.2	EAK	Hand wheel pro DN 80 - 100	R28
Electric actuator Auma SA Ex 10.2	EAL	Hand wheel pro DN 125 - 400	R35

Maximal permissible operating pressures acc. to ASME B16.34-2013 [MPa]

Material	Class	Temperature [°C]																
		RT ¹⁾	50	100	150	200	250	300	325	350	375	400	425	450	475	500	538	550
A216 WCB	150	1.96	1.92	1.77	1.58	1.38	1.21	1.02	0.93	0.84	0.74	0.65	0.55	---	---	---	---	---
A217 WC 6²⁾	150	1.98	1.95	1.77	1.58	1.38	1.21	1.02	0.93	0.84	0.74	0.65	0.55	0.46	0.37	0.28	0.14	0.14
A351 CF8M³⁾	150	1.90	1.84	1.62	1.48	1.37	1.21	1.02	0.93	0.84	0.74	0.65	0.55	0.46	0.37	0.28	0.14	0.14

¹⁾ -29°C to 38°C

²⁾ Material only normalized annealed.

The intentional addition of any element not listed in ASTM A 217 is not permitted except for Ca and Mg for deoxidation

³⁾ Use at temperatures above 540 °C only when the carbon content is 0.04% or higher

Maximal permissible operating pressures acc. to ASME B16.34-2013 [psig]

Material	Class	Temperature [°F]														
		RT ¹⁾	200	300	400	500	600	650	700	750	800	850	900	950	1000	1050
A216 WCB	150	285	260	230	200	170	140	125	110	95	80	---	---	---	---	---
A217 WC 6²⁾	150	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20
A351 CF8M³⁾	150	275	235	215	195	170	140	125	110	95	80	65	50	35	20	20

¹⁾ -20 °F to 100 °F

²⁾ Material only normalized annealed.

The intentional addition of any element not listed in ASTM A 217 is not permitted except for Ca and Mg for deoxidation

³⁾ Use at temperatures above 1000 °F only when the carbon content is 0.04% or higher



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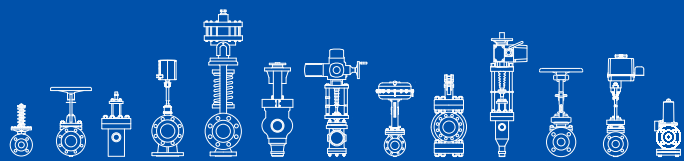
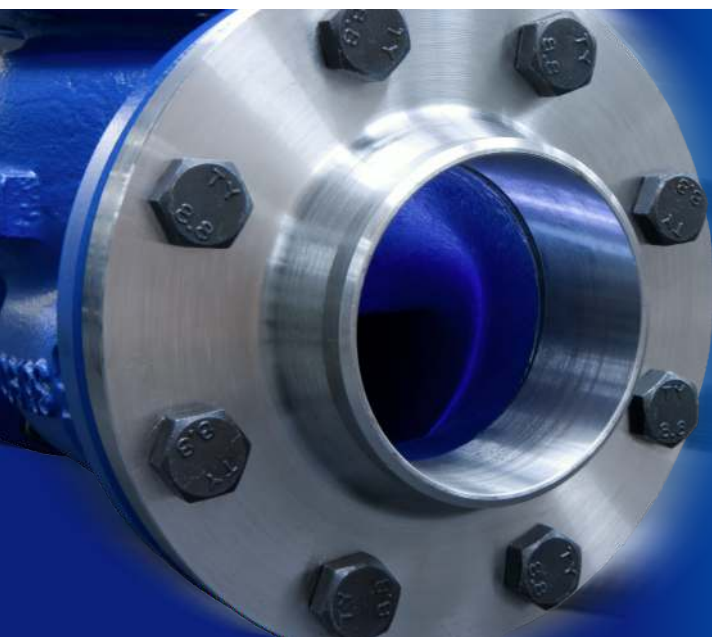
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