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CONTROL AND SHUT-OFF VALVES

300 line
dle ANSI/ASME



300 line

CV / SV 320 (Ex)
CV / SV 330 (Ex)

single-seated,
control (shut-off) valve

CV 322 (Ex)
CV 332 (Ex)

single-seated,
control valve with
pressure-balanced plug

Control valves (shut-off) **CV / SV 300 line** are single seated designed for regulation and shut-off of process liquid flow. **In Ex proof version** meet the requirements II 1/2G IIC TX Ga/Gb acc. to ČSN EN ISO 80079-36 (9/2016) and ČSN EN 1127-1 ed.2 (1/2012).

The selected materials correspond to the recommendations of **ASME B16.34-2013** or ČSN EN 12516-1 (1/2006).

Due to the wide range of actuators used, they are suitable for control at low and high pressure drops under the most diverse operating conditions. Flow characteristics, Kvs coefficients and leakage comply with international standards.

Control

hand wheel,
electro-mechanics actuators of producers
Regada, Schiebel, Auma, Rotork
pneumatic actuators **Flowserve, A. Hock**

Application

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

Process media

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

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

Installation

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

When medium **temperature** exceeds **150°C (300 °F)**, it is necessary to protect the actuator against glowing heat from the pipeline e.g. by the means of proper insulating of the pipeline and valve or by tilting the valve away from the heat radiation.

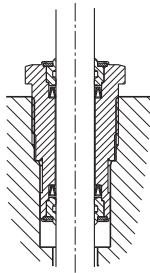
Detailed informations are given in the „Instruction for installation and service” sheets.

Packings

DRSpack® (PTFE)

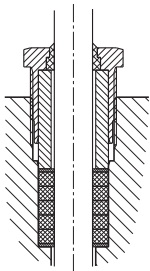
DRSpack® (Direct Radial Sealing Pack) is a packing with high tightness at both low and high operating pressure values.

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



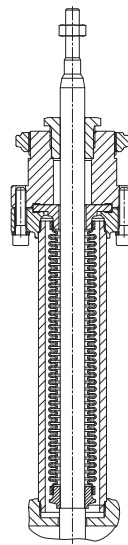
Graphite

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

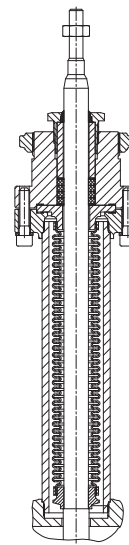


Bellows

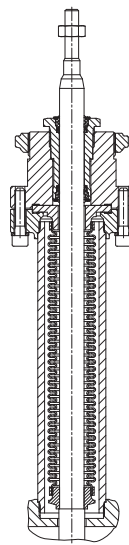
Bellows packing is suitable for low and high temperatures ranging from -50 °C to 550 °C. Bellows ensures absolute tightness to environment. Packing is equipped with safety PTFE packing as standard to prevent medium from leaking in case of damage to bellows. Intensive linear forces are not required.



Bellows
without safety packing



Bellows with safety
graphite packing



Bellows with safety
PTFE packing

Application of bellows packing

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

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

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

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 3x0

Control
and shut-off valves

**NPS 1/2" - 16",
Class 150, 300 and 600**

Technical data		
Series	CV / SV 320 (Ex)	CV / SV 330 (Ex)
Type of valve	Two-way, single-seated, control (shut-off) valve	
Nominal size range	NPS 1/2" - 16"	
Nominal pressure	Class 300 and 600 (Class 150, 300 and 600 (weld ended))	
Body material	Cast steel A216 WCB, A217 WC6	Stainless steel A351 CF8M
Seat material:	NPS 1/2" - 2" 1.4028	1.4571
DIN W.Nr./+ČSN	NPS 3" - 16" 1.4027	1.4581
Plug material:	NPS 1/2" - 2" 1.4021	1.4571
DIN W.Nr./+ČSN	NPS 3" - 16" 1.4027	1.4581
Stem material	1.4923	1.4980
Operating temperature range	-50 to 550 °C (-58 to 1020 °F) - (the negative temperature requirement must be specified in the order)	
Face to face dimensions	Acc. to ISA-75.08.01-2002 (R2007) for version with flanges	
	Acc. to ISA-75.08.03-2001 (R2007) for weld ends - version Socket Weld	
	Acc. to ISA - 75.08.05-2002 (R2007) for weld ends - version Butt Weld	
Connection flanges	Acc. to ČSN EN 1092-1+A1 (7/2013)	
Flange faces	Type B1 (raised-faced) or Type B2 (plain face) or Type F (female), or Type D (groove) acc. to ČSN EN 1092-1+A1 (7/2013)	
Weld ends	Weld ends acc. to ČSN EN 12627-2 (8/2000)	
Type of plug	V-ported, contoured, perforated	
Flow characteristic	Linear, equal-percentage, LDMspline®, parabolic, on - off	
Kvs value	0.01 to 1600 m ³ /h	
Leakage rate	Class III. acc. to 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 3xx class IV. acc. to ANSI/FCI 70-2-2013 (< 0.01% Kvs); SV 3xx step C acc. to ISO 5208:2008	
Rangeability r	50 : 1	
Packing	DRSpack® (PTFE) t _{max} = 260 °C (500°F), Expanded graphite t _{max} = 550 °C (1020°F), Bellows (DN15-150) t _{max} = 550°C (1020°F)	

Cv (Kvs) values and differential pressures $\Delta p_{\max}$ [MPa], [psi] of valves NPS ½' - 16" with countoured and V-ported plugs flow direction below plug) with electro-mechanic actuators

$\Delta p_{\max}$ value is the valve max. differential pressure when max open - close function is always guaranteed.

Differential pressure must not exceed 2,0 MPa (290 psi) for valves Class 150 and 5,0 MPa (750 psi) for valves Class 300. 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 4,0 MPa / 580 psi) or sealing surfaces of seat and plug with a hard metal overlay (Δp up to 2,5 MPa / 363 psi).

For further information on actuating, see actuators' catalogue sheets			Actuating (actuating)										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	
			Kvs [m³/h] Cv [US galon/min]										$\Delta p_{\max}$ ^[MPa] packing		$\Delta p_{\max}$ ^[MPa] packing		$\Delta p_{\max}$ ^[MPa] packing	
NPS	H[mm]	DS[mm]	1	2	3	4	5	6	7	8	9	graphite	PTFE	graphite	PTFE	graphite	PTFE	
½"		16	3	---	---	---	---	---	---	0.16 ³⁾ 0.18 ³⁾	0.1...0.01 ³⁾ 0.116...0.012 ³⁾	10 1450	10 1450	10 1450	10 1450	10 1450	10 1450	
			6	---	---	---	---	---	0.25 ¹⁾ 0.29 ¹⁾	---	---	---	10 1450	10 1450	10 1450	10 1450	10 1450	10 1450
			8	---	---	---	1.0 ¹⁾ 1.16	0.63 ¹⁾ 0.73	0.4 ¹⁾ 0.46	---	---	---	10 1450	10 1450	10 1450	10 1450	10 1450	10 1450
			12	---	2.5 ¹⁾ 2.89	1.6 ¹⁾ 1.85	---	---	---	---	---	---	6.42 905	10 1450	10 1450	10 1450	10 1450	10 1450
			15	4.0 ¹⁾ 4.62 ¹⁾	---	---	---	---	---	---	---	---	8.91 1293	10 1450	10 1450	10 1450	10 1450	10 1450
1"		16	3	---	---	---	---	---	---	---	0.16...0.01 ³⁾ 0.18...0.012 ³⁾	10 1450	10 1450	10 1450	10 1450	10 1450	10 1450	
			6	---	---	---	---	---	---	0.25 ¹⁾ 0.29 ¹⁾	---	---	---	10 1450	10 1450	10 1450	10 1450	10 1450
			8	---	---	---	---	1.0 ¹⁾ 1.16 ¹⁾	0.63 ¹⁾ 0.73 ¹⁾	0.4 ¹⁾ 0.46 ¹⁾	---	---	---	10 1450	10 1450	10 1450	10 1450	10 1450
			12	---	---	---	2.5 ¹⁾ 2.89 ¹⁾	1.6 ¹⁾ 1.85 ¹⁾	---	---	---	---	6.42 905	10 1450	10 1450	10 1450	10 1450	10 1450
			15	---	---	4.0 ¹⁾ 4.62 ¹⁾	---	---	---	---	---	---	8.91 1293	10 1450	10 1450	10 1450	10 1450	10 1450
			20	---	6.3 ²⁾ 7.28 ²⁾	---	---	---	---	---	---	---	4.33 628	10 1450	10 1450	10 1450	10 1450	10 1450
			25	10.0 11.6	6.3 ⁴⁾ 7.28 ⁴⁾	4.0 ⁴⁾ 4.62 ⁴⁾	---	---	---	---	---	---	2.59 376	6.48 940	7.16 1038	10 1450	10 1450	10 1450
1½"		16	6	---	---	---	---	---	---	---	0.25 ¹⁾ 0.29 ¹⁾	10 1450	10 1450	10 1450	10 1450	10 1450	10 1450	
			8	---	---	---	---	---	---	1.0 ¹⁾ 1.16 ¹⁾	0.63 ¹⁾ 0.73 ¹⁾	0.4 ¹⁾ 0.46 ¹⁾	---	10 1450	10 1450	10 1450	10 1450	10 1450
			12	---	---	---	---	---	2.5 ¹⁾ 2.89 ¹⁾	1.6 ¹⁾ 1.85 ¹⁾	---	---	---	6.42 905	10 1450	10 1450	10 1450	10 1450
			15	---	---	---	---	4.0 ¹⁾ 4.62 ¹⁾	---	---	---	---	---	8.91 1293	10 1450	10 1450	10 1450	10 1450
			20	---	---	---	---	6.3 ²⁾ 7.28 ²⁾	---	---	---	---	---	4.33 628	10 1450	10 1450	10 1450	10 1450
			40	25 28,9	16 18.5	10 11.6	6.3 ⁴⁾ 7.28 ⁴⁾	4.0 ⁴⁾ 4.62 ⁴⁾	---	---	---	---	0.90 131	2.42 350	2.68 388	4.19 608	4.45 646	5.97 866
2"	20	50	40 46.2	25 28.9	16 18.5	10 11.6	6.3 ⁴⁾ 7.28 ⁴⁾	---	---	---	---	0.50 72	1.40 240	1.56 226	2.47 358	2.63 381	3.53 512	

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¹⁾ parabolic plug ²⁾ V-ported plug with linear characteristic, parabolic plug with equal-percentage and LDMspline®

³⁾ valve with micro-throttling trim. Execution with Kvs = 0,16; 0,1; 0,063; 0,04; 0,025; 0,016; 0,01 (**Cv = 0,18; 0,11; 0,073; 0,046; 0,029; 0,018; 0,011**)

⁴⁾ V-ported plug with linear characteristic only

LDMspline® and parabolic characteristic from Kvs≥1,0. Equal-percentage characteristic from Kvs≥0,4.

For further information on actuating, see actuators' catalogue sheets

												Actuating (actuating)	Auma Schiebel ST 1 IQM 10	Auma Schiebel ST 1 Modact MTR IQM 10	Auma Schiebel IQM 10	Hand wheel
												Marking in valve specification No.	EA... EZ... EPI EQ...	EA... EZ... EPI EPD EQ...	EA... EZ... EQ...	Rxx
												Linear force	7.5 kN	10 kN	15 kN	
												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
NPS	H[mm]	Ds[mm]	1	2	3	4	5	6	7	8	9		graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
½"		16	3	---	---	---	---	---	---	0.16 ³⁾ 0.18 ³⁾	0.1...0.01 ³⁾ 0.12...0.012 ³⁾		10 10 1450 1450	10 10 1450 1450	---	10 10 1450 1450
			6	---	---	---	---	---	0.25 ¹⁾ 0.29 ¹⁾	---	---		10 10 1450 1450	10 10 1450 1450	---	10 10 1450 1450
			8	---	---	---	1.0 ¹⁾ 1.16	0.63 ¹⁾ 0.73	0.4 ¹⁾ 0.46	---	---		10 10 1450 1450	10 10 1450 1450	---	10 10 1450 1450
			12	---	2.5 ¹⁾ 2.89	1.6 ¹⁾ 1.85	---	---	---	---	---		10 10 1450 1450	10 10 1450 1450	---	10 10 1450 1450
			15	4.0 ¹⁾ 4.62 ¹⁾	---	---	---	---	---	---	---		10 10 1450 1450	10 10 1450 1450	---	10 10 1450 1450
1"		16	3	---	---	---	---	---	---	---	0.16...0.01 ³⁾ 0.18...0.012 ³⁾		10 10 1450 1450	10 10 1450 1450	---	10 10 1450 1450
			6	---	---	---	---	---	---	0.25 ¹⁾ 0.29 ¹⁾	---		10 10 1450 1450	10 10 1450 1450	---	10 10 1450 1450
			8	---	---	---	---	1.0 ¹⁾ 1.16	0.63 ¹⁾ 0.73	0.4 ¹⁾ 0.46 ¹⁾	---		10 10 1450 1450	10 10 1450 1450	---	10 10 1450 1450
			12	---	---	---	2.5 ¹⁾ 2.89 ¹⁾	1.6 ¹⁾ 1.85 ¹⁾	---	---	---		10 10 1450 1450	10 10 1450 1450	---	10 10 1450 1450
			15	---	---	4.0 ¹⁾ 4.62 ¹⁾	---	---	---	---	---		10 10 1450 1450	10 10 1450 1450	---	10 10 1450 1450
			20	---	6.3 ²⁾ 7.28 ²⁾	---	---	---	---	---	---		10 10 1450 1450	10 10 1450 1450	---	10 10 1450 1450
			25	10.0 11.6	6.3 ⁴⁾ 7.28 ⁴⁾	4.0 ⁴⁾ 4.62 ⁴⁾	---	---	---	---	---		7,16 10 1038 1450	10 10 1450 1450	---	10 10 1450 1450
1½"		16	6	---	---	---	---	---	---	---	0.25 ¹⁾ 0.29 ¹⁾		10 10 1450 1450	10 10 1450 1450	---	10 10 1450 1450
			8	---	---	---	---	---	1.0 ¹⁾ 1.16 ¹⁾	0.63 ¹⁾ 0.73 ¹⁾	0.4 ¹⁾ 0.46 ¹⁾		10 10 1450 1450	10 10 1450 1450	---	10 10 1450 1450
			12	---	---	---	---	2.5 ¹⁾ 2.89 ¹⁾	1.6 ¹⁾ 1.85 ¹⁾	---	---		10 10 1450 1450	10 10 1450 1450	---	10 10 1450 1450
			15	---	---	---	4.0 ¹⁾ 4.62 ¹⁾	---	---	---	---		10 10 1450 1450	10 10 1450 1450	---	10 10 1450 1450
			20	---	---	---	6.3 ²⁾ 7.28 ²⁾	---	---	---	---		10 10 1450 1450	10 10 1450 1450	---	10 10 1450 1450
			40	25 28.9	16 18.5	10 11.6	6.3 ⁴⁾ 7.28 ⁴⁾	4.0 ⁴⁾ 4.62 ⁴⁾	---	---	---		2.68 4.19 388 608	4.45 5.97 646 866	---	4.45 5.97 646 866
2"	20	50	40 46.2	25 28.9	16 18.5	10 11.6	6.3 ⁴⁾ 7.28 ⁴⁾	---	---	---	---		1.56 2.47 226 358	2.63 3.53 381 512	4.75 5.66 689 821	2.63 3.53 381 512

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¹⁾ parabolic plug ²⁾ V-ported plug with linear characteristic, parabolic plug with equal-percentage and LDMspline®

³⁾ valve with micro-throttling trim. Execution with Kvs = 0,16; 0,1; 0,063; 0,04; 0,025; 0,016; 0,01 (**Cv = 0,18; 0,11; 0,073; 0,046; 0,029; 0,018; 0,011**)

⁴⁾ V-ported plug with linear characteristic only

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

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

LDMspline® and parabolic characteristic from Kvs≥1,0. Equal-percentage characteristic from Kvs≥0,4.

For further information on actuating, see actuators' catalogue sheets			Actuating (actuating)					Auma Schiebel ST 1		Auma Schiebel ST 1 IQM 10		Modact MTR		Auma Schiebel IQM 10		Modact MTR ST 2 CVL-5000		Hand wheel	
			Marking in valve specification No.					EA... EZ... EPI		EA... EZ... EPI EQ...		EPD		EA... EZ... EQ...		EPD EPM EQL		Rxx	
			Linear force					7.5 kN		10 kN		10 kN		15 kN		16 kN			
			Kvs [m³/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]	
NPS	H[mm]	DS[mm]	1	2	3	4	5	packing graphite PTFE		packing graphite PTFE		packing graphite PTFE		packing graphite PTFE		packing graphite PTFE		packing graphite PTFE	
3"	40	80	100	63	40	25	16	0.28	0.73	0.73	1.18	0.73	1.18	1.63	2.08	1.81	2.26	1.81	2.26
			116	72.8	46.2	28.9	18.5	41	106	106	171	106	171	236	302	263	328	263	328
4"		100	160	100	63	40	25	0.16	0.45	0.45	0.74	0.45	0.74	1.03	1.32	1.15	1.44	1.15	1.44
			185	116	72.8	46.2	28.9	23	65	65	108	65	108	150	192	167	209	167	209
6"		150	360	250	160	100	63	0.05	0.18	0.18	0.31	0.18	0.31	0.44	0.58	0.50	0.63	0.50	0.63
			416	289	185	116	72.8	7	26	26	45	26	45	64	83	72	91	72	91

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

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

LDMspline® and parabolic characteristic from Kvs≥1,0. Equal-percentage characteristic from Kvs≥0,4.

For further information on actuating, see actuators' catalogue sheets *) max. NPS 12"			Actuating (actuating)					Auma Schiebel IQM 10		Modact MTR ST 2 CVL-5000		Auma Schiebel ST 2 CVL-5000 IQM12		Modact MTR ST 2		Auma Schiebel IQM 20		Ruční kolo	
			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] Cv [US galon/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	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
3"	40	80	100	63	40	25	16	1.63	2.08	1.81	2.26	2,53	2,98	3,43	3,88	---	---	1.81	2.26
			116	72.8	46.2	28.9	18.5	236	302	263	328	367	432	498	563	---	---	263	328
4"		100	160	100	63	40	25	1.03	1.32	1.15	1.44	1,62	1,91	2,20	2,49	---	---	1.15	1.44
			185	116	72.8	46.2	28.9	150	192	167	209	234	277	319	361	---	---	167	209
6"		150	360	250	160	100	63	0.44	0.58	0.50	0.63	0,71	0,84	0,97	1,11	---	---	0.50	0.63
			416	289	185	116	72.8	64	83	72	91	103	122	141	160	---	---	72	91
8"	80	100	---	---	250	160	100	0.85	1.19	0.97	1.31	1.44	1.79	2.04	2.38	2.87	3.21	3.81	4.15
					289	185	116	124	173	141	190	210	259	295	345	416	465	553	602
		150	---	400	462	---	---	---	0.36	0.51	0.41	0.56	0.62	0.78	0.89	1.05	1.27	1.42	1.69
								52	74	60	82	91	113	129	152	183	206	245	268
												</							

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

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

LDMspline® and parabolic characteristic from Kvs≥1,0 . Equal-percentage characteristic from Kvs≥0,4.

Cv (Kvs) values and differential pressures $\Delta p_{\max}$ [MPa], [psi] of valves NPS 1/2" - 16" with countoured and V-ported plugs (flow direction below plug) with pneumatic actuators

$\Delta p_{\max}$ value is the valve max. differential pressure when max open - close function is always guaranteed.

Differential pressure must not exceed 2,0 MPa (290 psi) for valves Class 150 and 5,0 MPa (750 psi) for valves Class 300. 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 4,0 MPa / 580 psi) or sealing surfaces of seat and plug with a hard metal overlay (Δp up to 2,5 MPa / 363 psi).

For further information on actuating, see actuators' catalogue sheets						Pneumatic actuators					Flowserve PA 253				A. Hock 2109				
						Actuator function					direct		indirect		direct		indirect		
						Specification No. of actuator					BDYxAA		BFYxZA		P2-0K-EL1		P2-0K-HL2		
						Spring range		[bar]			1.0 - 2.4		2.0 - 4.8		0.2 - 1.0		1.5 -3.8		
								[psi]			15 - 35		29 - 70		2.9 - 15		22 - 55		
						Spring setting		[bar]			1.0 - 2.12		2.56 - 4.8		0.2 - 0.84		1.96 - 3.8		
								[psi]			15 - 31		37 - 70		2.9 - 12		28 - 55		
						Feeding pressure		[bar]			4.8		5.8		3.0		4.6		
[psi]			70		84			44		67									
Marking in valve specification No.						PFA				PHF									
Linear force						6.4 kN				6.3 kN				5.7kN					
						Kvs [m³ /h]					Δp_{max} ^[MPa] ^[psi]		Δp_{max} ^[MPa] ^[psi]		Δp_{max} ^[MPa] ^[psi]		Δp_{max} ^[MPa] ^[psi]		
						Cv [US galon/min]					packing		packing		packing		packing		
NPS	H[mm]	bs[mm]	1	2	3	4	5	6	7	8	9	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
½”	16	3	---	---	---	---	---	---	---	0.16 ³⁾	0.1...0.01 ³⁾	10	10	10	10	10	10	10	10
		6	---	---	---	---	---	---	0.25 ¹⁾	---	---	---	10	10	10	10	10	10	10
		8	---	---	---	1.0 ¹⁾	0.63 ¹⁾	0.4 ¹⁾	---	---	---	---	10	10	10	10	10	10	10
		12	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	---	---	---	10	10	10	10	10	10	10
		15	4.0 ¹⁾	---	---	---	---	---	---	---	---	---	10	10	10	10	10	10	10
1”		3	---	---	---	---	---	---	---	---	---	0.16...0.01 ³⁾	10	10	10	10	10	10	10
		6	---	---	---	---	---	---	---	---	0.25 ¹⁾	---	---	10	10	10	10	10	10
		8	---	---	---	---	---	1.0 ¹⁾	0.63 ¹⁾	0.4 ¹⁾	---	---	---	10	10	10	10	10	10
		12	---	---	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	---	10	10	10	10	10	10	10
		15	---	---	4.0 ¹⁾	---	---	---	---	---	---	---	10	10	10	10	10	10	10
1½”	20	---	6.3 ²⁾	---	---	---	---	---	---	---	---	8.46	10	8.46	10	8,16	10	6,39	10
	25	10.0	6.3 ⁴⁾	4.0 ⁴⁾	---	---	---	---	---	---	---	5.15	9.04	5.15	9.04	4,97	8,86	3,87	7,76
	6	---	---	---	---	---	---	---	---	---	---	10	10	10	10	10	10	10	10
	8	---	---	---	---	---	---	---	1.0 ¹⁾	0.63 ¹⁾	0.4 ¹⁾	---	---	10	10	10	10	10	10
	12	---	---	---	---	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	---	10	10	10	10	10	10
1½”	15	---	---	---	---	4.0 ¹⁾	---	---	---	---	---	---	---	10	10	10	10	10	10
	20	---	---	---	---	6.3 ²⁾	---	---	---	---	---	---	---	8.46	10	8,16	10	6,39	10
	40	25	16	10	6.3 ⁴⁾	4.0 ⁴⁾	---	---	---	---	---	1,90	3,41	1,90	3,41	1,83	3,34	1,40	2,91
	28.9	18.5	11.6	7.28 ⁴⁾	4.62 ⁴⁾	---	---	---	---	---	---	275	495	275	495	265	484	203	422
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

the table continues on the next page

¹⁾ parabolic plug ²⁾ V-ported plug with linear characteristic, parabolic plug with equal-percentage and LDMspline® ³⁾ valve with micro-throttling trim. Execution with Kvs = 0,16; 0,1; 0,063; 0,04; 0,025; 0,016; 0,01 (Cv = 0,18; 0,11; 0,073; 0,046; 0,029; 0,018; 0,011) ⁴⁾ V-ported plug with linear characteristic only
 Max. differential pressures specified in table apply to PTFE and graphite packing. $\Delta p_{\max}$ for bellows must be consulted with the producer.
 LDMspline® and parabolic characteristic from Kvs≥1,0 . Equal-percentage characteristic from Kvs≥0,4.

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					Flowserve PA 253		Flowserve PB 503		A. Hock 2109		A. Hock 2112-30	
			Actuator function					direct	indirect	direct	indirect	direct	indirect	direct	indirect
			Specification No. of actuator					BDYxAA	BFYxZA	BBLxAA	BFYxZA	P2-0K-BL1	P2-0K-HL2	P2-0K-BM1	P2-0K-WM2
			Spring range		[bar]		1.0 - 2.4	2.0 - 4.8	0.5 - 0.9	2.0 - 4.8	0.8 - 2.2	1.5 - 3.8	0.8 - 2.2	1.4 - 2.8	
					[psi]		15 - 35	29 - 70	7 - 28	29 - 70	12 - 32	22 - 55	12 - 32	20 - 40	
			Spring setting		[bar]		1.0 - 2.4	2.0 - 4.8	0.5 - 1.9	2.0 - 4.8	0.8 - 1.92	1.5 - 3.8	0.8 - 1.73	1.87 - 2.8	
					[psi]		15 - 35	29 - 70	7 - 28	29 - 70	12 - 28	22 - 55	12 - 25	27 - 40	
			Feeding pressure		[bar]		6.0	5.8	5.3	5.3	4.4	4.6	3.5	3.2	
[psi]		87			84	77	77	64	67	50	46				
			Marking in valve spec. No.					PFA		PFB		PHF		PHA	
			Linear force					8.5 kN 5 kN		10 kN 10 kN		6.4 kN 4.4kN		10 kN 10.5kN	
			Kvs [m³/h] Cv [US galon/min]					$\Delta p_{\text{max}}^{\text{[MPa]}}$ packing [psi]		$\Delta p_{\text{max}}^{\text{[MPa]}}$ packing [psi]		$\Delta p_{\text{max}}^{\text{[MPa]}}$ packing [psi]		$\Delta p_{\text{max}}^{\text{[MPa]}}$ packing [psi]	
NPS	H [mm]	Ds [mm]	1	2	3	4	5	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
2"	20	50	40 46.2	25 28.9	16 18.5	10 11.6	6.3 ⁴⁾ 7.28 ⁴⁾	1.99 2.89 288 420	0.50 1.40 72 204	2.63 3.53 381 512	2.63 3.53 381 512	1.09 2.00 159 290	0.24 1.15 35 167	2.63 3.53 381 512	2.84 3.74 412 543

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					Flowserve PB 503		Flowserve PB 701		A. Hock 2112-50		A. Hock 2112-50			
			Actuator function					direct	indirect	direct	indirect	direct	indirect	direct	indirect		
			Specification No. of actuator					BBLxAB	BFYxZB	BBLxAB	BFYxZB	P2-0K-DI1	P2-0K-XI2	P2-0K-DI1	P2-0K-SI2		
			Spring range		[bar]			0.5 - 1.9	2.0 - 4.8	0.5 - 1.9	2.0 - 4.8	0.5 -1.7	0.7 - 2.5	0.5 - 1.7	0.8 - 2.8		
					[psi]			7 - 28	29 - 70	7 - 28	29 - 70	7 - 25	10 - 36	7 - 25	12 - 40		
			Spring setting		[bar]			0.5 - 1.9	2.0 - 4.8	0.5 - 1.9	2.0 - 4.8	0.5 - 1.43	1.06 - 2.5	0.5 - 1.46	1.2 - 2.8		
					[psi]			7 - 28	29 - 70	7 - 28	29 - 70	7 - 21	15 - 36	7 - 21	17 - 40		
			Feeding pressure		[bar]			4.1	5.4	4.1	5.3	3.2	3.0	5.0	3.3		
[psi]					59	78	59	77	46	44	73	48					
Marking in valve spec. 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]					$\Delta p_{\max}^{[MPa]}$	$\Delta p_{\max}^{[MPa]}$	$\Delta p_{\max}^{[MPa]}$	$\Delta p_{\max}^{[MPa]}$	$\Delta p_{\max}^{[MPa]}$	$\Delta p_{\max}^{[MPa]}$	$\Delta p_{\max}^{[MPa]}$	$\Delta p_{\max}^{[MPa]}$		
			Cv [US galon/min]					packing	packing	packing	packing	packing	packing	packing	packing		
NPS	H [mm]	DS [mm]	1	2	3	4	5	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE		
3"	40	80	100	63	40	25	16	0.73 1.18	0.73 1.18	1.45 1.90	1.45 1.90	0.73 1.18	---	0.46	2.53 2.98	---	0.62
			116	72.8	46.2	28.9	18.5	106 171	106 171	210 276	210 276	106 171	67	367 432	---	90	
100		160	100	63	40	25	0.45 0.74	0.45 0.74	0.92 1.21	0.92 1.21	0.45 0.74	---	0.27	1.62 1.91	---	0.38	
		185	116	72.8	46.2	28.9	65 108	65 108	133 175	133 175	65 108	40	234 277	---	55		
6"		150	360	250	160	100	63	0.18 0.31	0.18 0.31	0.39 0.52	0.39 0.52	0.18 0.31	---	0.10	0.71 0.84	---	0.15
			416	289	185	116	72.8	26 45	26 45	57 76	57 76	26 45	14	103 122	---	21	

the table continues on the next page

⁴⁾ V-ported plug with linear characteristic only

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

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					Flowserve PO 1502											
			Actuator function					direct		indirect		direct		indirect		direct		indirect	
			Specification No. of actuator					BGFxAD		BVCxZD		BGFxAD		BFSxZD		BGFxAD		BAJxZD	
			Spring range		[bar]			0.4 - 2.0		1.5 - 2.7		0.4 - 2.0		2.0 - 3.5		0.4 - 2.0		2.6 - 4.2	
					[psi]			6 - 29		22 - 39		6 - 29		29 - 51		6 - 29		38 - 61	
			Spring setting		[bar]			0.4 - 2.0		1.5 - 2.7		0.4 - 2.0		2.0 - 3.5		0.4 - 2.0		2.6 - 4.2	
					[psi]			6 - 29		22 - 39		6 - 29		29 - 51		6 - 29		38 - 61	
			Feeding pressure		[bar]			3.5		3.1		4.0		3.9		4.6		4.6	
					[psi]			51		45		58		57		67		67	
Marking in valve spec. No.			PFD																
Linear force							22,5 kN		22,5 kN		30 kN		30 kN		38 kN		38 kN		
			Kvs [m³/h]					$\Delta p_{max}^{[MPa]}$		$\Delta p_{max}^{[MPa]}$		$\Delta p_{max}^{[MPa]}$		$\Delta p_{max}^{[MPa]}$		$\Delta p_{max}^{[MPa]}$			
			Cv [US galon/min]					packing		packing		packing		packing		packing			
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE		
8"	80	100	---	---	250	160	100	1.74	2.08	1.74	2.08	2.63	2.97	2.63	2.97	3.58	3.92		
					289	185	116	252	302	252	302	381	431	381	431	519	568		
		150	---	400	---	---	---	0.76	0.91	0.76	0.91	1.16	1.31	2.63	1.31	1.59	1.74		
				462				110	132	110	132	168	190	168	190	230	252		
		200	570	---	---	---	---	0.42	0.50	0.42	0.50	0.64	0.73	0.64	0.73	0.89	0.97		
			678					60	73	60	73	93	106	93	106	129	141		
10"	80	150	---	---	400	250	160	0.62	0.79	0.62	0.79	1.02	1.20	1.02	1.20	1.46	1.63		
					462	289	185	90	115	90	115	149	174	149	174	211	237		
		200	---	630	---	---	---	0.33	0.43	0.33	0.43	0.56	0.66	0.56	0.66	0.81	0.91		
				728				49	63	49	63	82	96	82	96	117	132		
		230	800	---	---	---	---	0.25	0.32	0.25	0.32	0.42	0.50	0.42	0.50	0.61	0.68		
			925					36	47	36	47	61	72	61	72	88	99		
12"	80	150	---	---	---	400	250	0.62	0.79	0.62	0.79	1.02	1.20	1.02	1.20	1.46	1.63		
						462	289	90	115	90	115	149	174	149	174	211	237		
		200	---	---	630	---	---	0.33	0.43	0.33	0.43	0.56	0.66	0.56	0.66	0.81	0.91		
					728			49	63	49	63	82	96	82	96	117	132		
		230	---	800	---	---	---	0.25	0.32	0.25	0.32	0.42	0.50	0.42	0.50	0.61	0.68		
				925				36	47	36	47	61	72	61	72	88	99		
		250	1000	---	---	---	---	0.21	0.27	0.21	0.27	0.35	0.42	0.35	0.42	0.51	0.57		
			1160					30	39	30	39	51	60	51	60	74	83		

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					Flowserve PO 1502				Flowserve PO 3002			
			Actuator function					direct		indirect		direct		indirect	
			Specification No. of actuator					BGFxAD		BVCxZD		BGFxAD		BFSxZD	
			Spring range [bar] [psi]					0.9 - 1.9 13 - 28		2.0 - 4.3 29 - 62		0.9 - 1.9 13 - 28		1.2 - 2.6 17 - 38	
			Spring setting [bar] [psi]					0.9 - 1.9 13 - 28		2.0 - 4.3 29 - 62		0.9 - 1.9 13 - 28		1.2 - 2.6 17 - 38	
			Feeding pressure [bar] [psi]					4.0 58		5.2 75		4.5 65		3.2 46	
			Marking in valve spec. No.					PFD				PFE			
			Linear force					30 kN		30 kN		38 kN		36 kN	
			Kvs [m³ /h] Cv [US galon/min]					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	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
16"	100	150	---	---	---	400 462	250 289	1.02 149	1.20 174	1.02 149	1.20 174	1.46 211	1.63 237	1.35 196	1.52 221
		200	---	---	630 728	---	---	0.56 82	0.66 96	0.56 82	0.66 96	0.81 117	0.91 132	0.75 108	0.85 123
		250	---	1000 1160	---	---	---	0.35 51	0.42 60	0.35 51	0.42 60	0.51 74	0.57 83	0.47 68	0.53 78
		330	1600 1850	---	---	---	---	0.19 28	0.23 34	0.19 28	0.23 34	0.29 41	0.32 47	0.26 38	0.30 43

the table continues on the next page

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

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					A. Hock 2116-100	A. Hock 2116S-100	A. Hock 2116-100	A. Hock 2116S-100
			Actuator function					direct	indirect	direct	indirect
			Specification No. of actuator					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 spec. No.					PHC			
			Linear force					20 kN	19.6 kN	38 kN	22.8 kN
			Kvs [m³/h] Cv [US galon/min]					Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
8"	80	100	---	---	250 289	160 185	100 116	1.44 1.79 210 259	1.40 1.74 203 252	3.58 3.92 519 568	1.78 2.12 258 307
		150	---	400 462	---	---	---	0.62 0.78 91 113	0.60 0.76 87 110	1.59 1.74 230 252	0.77 0.93 112 135
		200	570 678	---	---	---	---	0.34 0.43 49 62	0.33 0.42 48 60	0.89 0.97 129 141	0.42 0.51 62 74
10"	80	150	---	---	400 462	250 289	160 185	0.48 0.66 70 96	0.46 0.64 67 92	1.46 1.63 211 237	0.63 0.81 92 118
		200	---	630 728	---	---	---	0.26 0.36 37 52	0.25 0.35 36 50	0.81 0.91 117 132	0.34 0.44 50 64
		230	800 925	---	---	---	---	0.19 0.26 27 38	0.18 0.25 26 37	0.61 0.68 88 99	0.25 0.33 37 48
12"	80	150	---	---	---	400 462	250 289	0.48 0.66 70 96	0.46 0.64 67 92	1.46 1.63 211 237	0.63 0.81 92 118
		200	---	---	630 728	---	---	0.26 0.36 37 52	0.25 0.35 36 50	0.81 0.91 117 132	0.34 0.44 50 64
		230	---	800 925	---	---	---	0.19 0.26 27 38	0.18 0.25 26 37	0.61 0.68 88 99	0.25 0.33 37 48
		250	1000 1160	---	---	---	---	0.16 0.22 23 32	0.15 0.21 22 31	0.51 0.57 74 83	0.21 0.28 31 40

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					A. Hock 2116-100	A. Hock 2116S-100	A. Hock 2116-100	A. Hock 2116S-100
			Actuator function					direct	indirect	přidirect	indirect
			Specification No. of actuator					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 - 2.2 12 - 32	1.3- 3.0 19 - 44	0.8 - 2.2 12 - 32	1.5 - 3.5 22 - 51
			Feeding pressure [bar] [psi]					3.9 71	3.0 58	5.4 93	4.5 65
			Marking in valve spec. No.					PHC			
			Linear force					20 kN	15.6 kN	38 kN	18 kN
			Kvs [m³/h] Cv [US galon/min]					Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
16"	100	150	---	---	---	400 462	250 289	0.48 0.66 70 96	0.25 0.42 36 61	1.46 1.63 211 237	0.38 0.55 54 80
		200	---	---	630 728	---	---	0.26 0.36 37 52	0.12 0.22 18 32	0.81 0.91 117 132	0.20 0.30 29 43
		250	---	1000 1160	---	---	---	0.16 0.22 23 32	0.07 0.13 10 19	0.51 0.57 74 83	0.12 0.18 17 26
		330	1600 1850	---	---	---	---	0.08 0.12 12 17	0.03 0.07 5 10	0.29 0.32 41 47	0.06 0.10 8 14

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

Cv (Kvs) values and differential pressures $\Delta p_{\max}$ [MPa], [psi] of valves NPS 1/2" - 16" with perforated plugs (flow direction above plug) for electro-mechanical actuators

$\Delta p_{\max}$ value is the valve max. differential pressure when max open - close function is always guaranteed. Differential pressure must not exceed 2,0 MPa (290 psi) for valves Class 150 and 5,0 MPa (750 psi) for valves Class 300. In regard of service life of seat and plug, it is recommended so that permanent differential pressure of the valves with perforated plug is limited to max. 4,0 MPa / 580 psi.

For further information on actuating, see actuators' catalogue sheets			Actuating (actuating)					ST 0 ST 0.1 CVL-1000		Auma Schiebel		ST 1 Ex ST 0.1 CVL-1500		Auma Schiebel ST 1 IQM 10		Auma Schiebel ST 1 IQM 10		Modact MTR IQM 10		Auma Schiebel IQM 10		Hand wheel	
			Marking in valve specification No.					EPK EPL EQL		EA... EZ...		EPJ EPL EQL		EA... EZ... EPI EQ...		EA... EZ... EPI EQ...		EPD EQ...		EA... EZ... EQ...		Rxx	
			Linear force					4 kN		5 kN		6.3 kN		7.5 kN		10 kN		10 kN		15 kN			
			Kvs [m³ /h] Cv [US gallon/min]					$\Delta p_{\max}$ ^[MPa] [psi]		$\Delta p_{\max}$ ^[MPa] [psi]		$\Delta p_{\max}$ ^[MPa] [psi]		$\Delta p_{\max}$ ^[MPa] [psi]		$\Delta p_{\max}$ ^[MPa] [psi]		$\Delta p_{\max}$ ^[MPa] [psi]		$\Delta p_{\max}$ ^[MPa] [psi]		$\Delta p_{\max}$ ^[MPa] [psi]	
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
1"	16	25	---	6.3 7.28	4.0 4.62	2.5 ⁵⁾ 2.89 ⁵⁾	1.6 ⁵⁾ 1.85 ⁵⁾	0.77 111	4.66 675	2.59 376	6.48 940	4.97 720	8.86 1285	7,16 1038	10,0 1450	10,0 1450	10,0 1450	10,0 1450	---	---	10 1450	10 1450	
1½"		40	---	16 18.5	10 11.6	6.3 7.28	4.0 4.62	0.19 28	1.70 247	0.90 131	2.42 350	1.83 265	3.34 484	2,68 388	4,19 608	4,45 646	5,97 866	4,45 646	5,97 866	---	---	4.45 646	5.97 866
2"	20	50	---	25 28.9	16 18.5	10 11.6	6.3 7.28	0.07 10	0.98 142	0.50 72	1.40 204	1.05 152	1.96 284	1.56 226	2.47 358	2.63 381	3.53 512	2.63 381	3.53 512	4.75 689	5.66 821	2.63 381	3.53 512
3"	40	80	---	63 72.8	40 46.2	25 28.9	16 18.5	---	---	---	---	---	---	0.28 41	0.73 106	0.73 106	1.18 171	0.73 106	1.18 171	1.63 236	2.08 302	1.81 263	2.26 328
4"		100	---	100 116	63 72.8	40 46.2	25 28.9	---	---	---	---	---	---	0.16 23	0.45 65	0.45 65	0.74 108	0.45 65	0.74 108	1.03 150	1.32 192	1.15 167	1.44 209
6"		150	---	250 289	160 185	100 116	63 72.8	---	---	---	---	---	---	---	0.05 7	0.18 26	0.18 26	0.31 45	0.18 26	0.31 45	0.44 64	0.58 83	0.50 72

the table continues on the next page

⁵⁾ linear characteristic only

For further information on actuating, see actuators' catalogue sheets			Actuating (actuating)					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.					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] Cv [US gallon/min]					$\Delta p_{\max}$ ^[MPa] _[psi] packing		$\Delta p_{\max}$ ^[MPa] _[psi] packing		$\Delta p_{\max}$ ^[MPa] _[psi] packing		$\Delta p_{\max}$ ^[MPa] _[psi] packing		$\Delta p_{\max}$ ^[MPa] _[psi] packing		$\Delta p_{\max}$ ^[MPa] _[psi] packing				
NPS	H [mm]	Ds [mm]	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
3"	40	80	---	63 72.8	40 46.2	25 28.9	16 18.5	1.63 236	2.08 302	1.81 263	2.26 328	2.53 367	2.98 432	3.43 498	3.88 563	---	---	1.81 263	2.26 328
4"		100	---	100 116	63 72.8	40 46.2	25 28.9	1.03 150	1.32 192	1.15 167	1.44 209	1.62 234	1.91 277	2.20 319	2.49 361	---	---	1.15 167	1.44 209
6"		150	---	250 289	160 185	100 116	63 72.8	0.44 64	0.58 83	0.50 72	0.63 91	0.71 103	0.84 122	0.97 141	1.11 160	---	---	0.50 72	0.63 91
8"	80	200	---	400 462	250 289	160 185	100 116	0.19 27	0.28 40	0.22 32	0.31 44	0.34 49	0.43 62	0.49 71	0.58 84	0.70 102	0.79 115	0.95 137	1.03 150
10"		230	---	630 728	400 462	250 289	160 185	0.07 11	0.15 21	0.10 14	0.17 25	0.19 27	0.26 38	0.30 44	0.38 55	0.47 68	0.54 79	0.65 95	0.73 106
12"		250	---	800 925	630 728	400 462	250 289	0.06 8	0.12 18	0.08 11	0.14 21	0.16 23	0.22 32	0.25 37	0.32 46	0.39 57	0.46 66	0.55 80	0.61 89
16"	100	330	---	1000 1160	630 728	400 462	250 289	0.02 4	0.06 9	0.04 5	0.07 11	0.08 12	0.12 17	0.14 20	0.17 25	0.22 32	0.25 37	0.31 45	0.35 50

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

Kvs values and differential pressures $\Delta p_{\max}$ [MPa], [psi] of valves NPS 1/2" - 8" with perforated plugs (flow direction above plug) with pneumatic actuators

$\Delta p_{\max}$ value is the valve max. differential pressure when max open - close function is always guaranteed.

Differential pressure must not exceed 2,0 MPa (290 psi) for valves Class 150 and 5,0 MPa (750 psi) for valves Class 300. Due to the service life, the permanent working pressure drop for valves with a perforated plug is limited up to 4,0 MPa / 580 psi).

For further information on actuating, see actuators' catalogue sheets				Pneumatic actuators				Foxboro PA 253				Foxboro PB 503		A. Hock 2109	
				Actuator function				direct	indirect	direct	indirect	direct	indirect	direct	indirect
				Specification No. of actuator				BVCxAA	BVCxZA	BVCxAA	BVCxZA	BVCxAA	BVCxZA	P2-0K-VL1	P2-0K-HL2
				Spring range [bar]				1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.2 - 3.0	1.5 - 3.8
				[psi]				22 - 39	22 - 39	22 - 39	22 - 39	22 - 39	22 - 39	17 - 44	22 - 55
				Spring setting [bar]				1.5 - 2.46	1.75 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.2 - 2.64	1.96 - 3.8
				[psi]				22 - 36	22 - 39	22 - 39	22 - 39	22 - 39	22 - 39	17 - 38	28 - 55
				Feeding pressure [bar]				4.5	4.5	4.5	4.5	4.5	4.5	3.9	5.8
				[psi]				65	65	65	65	65	65	57	84
				Marking in valve spec. 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	5.7 kN
				Kvs [m³/h]				$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]
				Cv [US galon/min]				packing	packing	packing	packing	packing	packing	packing	packing
NPS	H[mm]	DS[mm]	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
1"	16	25	---	6.3	4.0	2.5 ⁵⁾	1.6 ⁵⁾	0.77	1.55	0.77	1.55	---	---	0.47	1.25
				7.28	4.62	2.89 ⁵⁾	1.85 ⁵⁾	111	224	111	224	---	---	69	182
1 1/4"	16	40	---	16	10	6.3	4.0	0.30	0.60	0.30	0.60	---	---	0.18	0.49
				18.5	11.6	7.28	4.62	43	87	43	87	---	---	27	71
2"	20	50	---	25	16	10	6.3	0.18	0.36	0.18	0.36	0.13	0.31	0.45	0.63
				28.9	18.5	11.6	7.28	26	52	26	52	19	45	65	92

For further information on actuating, see actuators' catalogue sheets				Pneumatic actuators				A. Hock 2112-30					
				Actuator function				direct	indirect	direct	indirect	direct	indirect
				Specification No. of actuator				P2-0K-BM1	P2-0K-BM2	P2-0K-BM1	P2-0K-BM2	P2-0K-VM1	P2-0K-MM2
				Spring range [bar]				0.8 - 2.2	0.8 - 2.2	0.8 - 2.2	0.8 - 2.2	1.4 - 2.8	1.6 - 3.2
				[psi]				12 - 32	12 - 32	12 - 32	12 - 32	20 - 41	23 - 46
				Spring setting [bar]				0.8 - 1.55	1.45 - 2.2	0.8 - 1.73	1.27 - 2.2	1.4 - 2.33	2.13 - 3.2
				[psi]				12 - 22	21 - 32	12 - 25	18 - 32	20 - 34	31 - 46
				Feeding pressure [bar]				2.4	3.7	2.6	3.5	3.8	5.4
				[psi]				35	54	38	51	55	78
				Marking in valve spec. No.				PHA					
				Linear force				4.6 kN	8.3 kN	4.6 kN	7.3 kN	8.0 kN	12.2 kN
				Kvs [m³/h]				$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]
				Cv [US galon/min]				packing	packing	packing	packing	packing	packing
NPS	H[mm]	DS[mm]	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE
1"	16	25	---	6.3	4.0	2.5 ⁵⁾	1.6 ⁵⁾	0.88	1.66	2.23	3.01	---	---
				7.28	4.62	2.89 ⁵⁾	1.85 ⁵⁾	127	240	323	436	---	---
1 1/4"	16	40	---	16	10	6.3	4.0	0.34	0.64	0.87	1.17	---	---
				18.5	11.6	7.28	4.62	49	93	126	170	---	---
2"	20	50	---	25	16	10	6.3	---	---	0.20	0.39	0.43	0.62
				28.9	18.5	11.6	7.28	---	---	30	56	63	89

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⁵⁾ linear characteristic only

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

$\Delta p_{\max}$ for bellows must be consulted with the producer.

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					Foxboro PB 503		Foxboro PB 701		A. Hock 2112-50		A. Hock 2116-40	
			Actuator function					direct	indirect	direct	indirect	direct	indirect	direct	indirect
			Specification No. of actuator					BVCxAB	BVCxZB	BVCxAB	BVCxZB	P2-0K-SI1	P2-0K-SI2	P2-0K-BN1	P2-0K-BN2
			Spring range [bar]					1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	0.8 - 2.8	0.8 - 2.8	0.8 - 2.2	0.8 - 2.2
								22 - 39	22 - 39	22 - 39	22 - 39	12 - 41	12 - 41	12 - 32	12 - 32
			Spring setting [bar]					1.5 - 2.46	1.75 - 2.7	1.5 - 2.7	1.5 - 2.7	0.8 - 2.4	1.2 - 2.8	0.8 - 1.36	1.64 - 2.2
								22 - 36	25 - 39	22 - 39	22 - 39	12 - 35	17 - 41	12 - 20	24 - 32
			Feeding pressure [bar]					4.5	4.5	4.5	4.5	3.3	4.0	2.2	3.9
								65	65	65	65	48	58	32	57
			Marking in valve spec. No.					PFB		PFC		PHA		PHC	
			Linear force					7.5 kN	7.5 kN	10.5 kN	10.5 kN	4.6 kN	6.9 kN	9.6 kN	19.5 kN
			Kvs [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	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
3"	40	80	---	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 0.70
				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	---	100	63	40	25	0.11 0.17	0.11 0.17	0.31 0.24	0.18 0.24	0.05 0.11	0.10 0.16	0.16 0.22	0.39 0.45
				116	72.8	46.2	28.9	17 25	17 25	26 35	26 35	7 15	15 23	24 32	57 66
6"		150	---	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 0.10	0.18 0.21
				289	185	116	72.8	8 11	8 11	11 16	11 16	3 7	7 10	10 15	26 16

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

Valves Cv3x0 NPS 8" - 16" with perforated plugs and pneumatic actuators are not supplied.

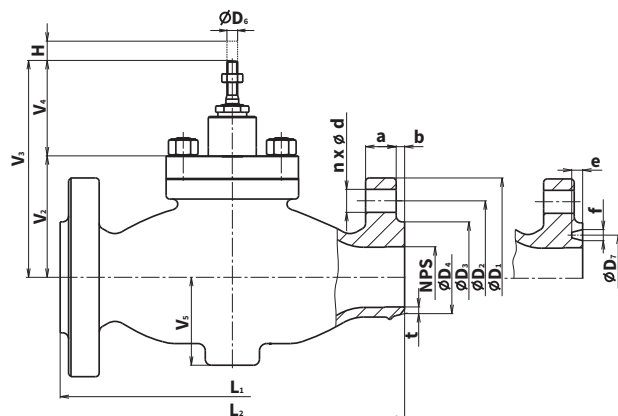
Dimensions and weights of valves CV/SV 320 (Ex) and CV/SV 330 (Ex) with flanges and weld ends, NPS ½" - 16"

NPS	H	V ₂	V ₂ [#]	V ₃	V ₃ [#]	V ₄	ØD ₅	M	ØD ₆	V ₅	m ₁	m ₂	m _v	Class 300			Class 600			Class 150-600
														L ₁			L ₁			L ₂
														RF	RTJ	LFF SFF LGF SGF	RF	RTJ	LFF SFF LGF SGF	BTW
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	kg	kg	kg	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
	[inch]	[inch]	[inch]	[inch]	[inch]	[inch]	[inch]	[inch]		[inch]				[inch]	[inch]	[inch]	[inch]	[inch]	[inch]	[inch]
½"	16	90	328	220	458					47	7	5	4	190	201	200	203	202	200	203
	0.63	3.543	12.913	8.661	18.031					1.85				7.5	7.91	7.87	8.0	7.95	7.87	8.0
1"	16	100	336	230	466					52	9	6	4	197	210	207	210	210	207	210
	0.63	3.937	13.228	9.055	18.346					2.047				7.75	8.25	8.15	8.25	8.25	8.15	8.25
1½"	16	100	336	230	466					52	15	8	4	235	248	245	251	251	248	251
	0.63	3.937	13.228	9.055	18.346					2.047				9.25	9.76	9.64	9.88	9.88	9.76	9.88
2"	20	132	330	262	460	130	65	---		73	20	13	4	267	283	277	286	289	283	286
	0.787	5.197	12.992	10.314	18.110	5.118	2.559			2.874				10.5	11.14	10.9	11.25	11.38	11.14	11.25
3"	40	164	489	294	619					105	41	28	6	318	332	328	337	340	334	337
	1.575	6.456	19.252	11.575	24.370					4.133				12.5	33.22	12.91	13.25	13.38	13.15	13.25
4"	40	164	489	294	619					105	67	37	6	368	384	378	394	397	391	394
	1.575	6.456	19.252	11.575	24.370					4.133				14.5	15.12	14.88	15.5	15.63	15.39	15.5
6"	40	200	492	330	622					134	160	105	7	473	489	483	508	511	505	508
	1.575	7.874	19.370	12.992	24.488					5.275				18.62	19.25	19.01	20.0	20.12	19.88	20.0
8"	80(63 ¹⁾ 3.15 (2.48) [#]	262	---	422	---					203	280	200	---	568	584	578	610	613	607	610
		10.314		16.614						7.992				22.38	22.99	22.75	24.0	24.13	60.72	24.0
10"	80	346	---	506	---	160	---	150		253	540	370	---	708	724	718	752	755	749	752
	3.15	13.622		19.921		6.299		5.905		9.961				27.88	28.5	28.27	29.62	29.72	29.49	29.62
12"	80	395	---	555	---					296	680	520	---	775	791	785	819	822	816	819
	3.15	15.551		21.85						11.654				30.5	31.14	30.91	32.25	32.36	32.13	32.25
16"	100	512	---	672	---					382	1380	1130	---	1057	1073	1067	1108	1111	1105	1108
	3.937	20.157		26.457						15.039				41.62	42.24	42.01	43.62	43.74	43.5	43.62

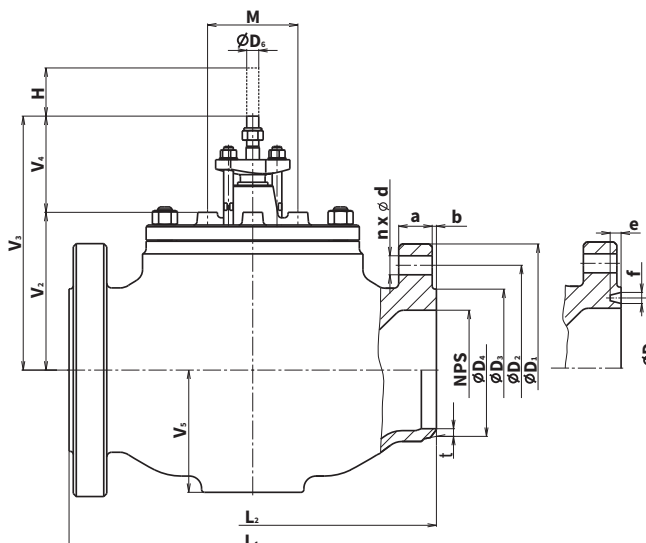
m₁ - weight of flanged version m₂ - weight of weld ends version 1) NPS 8" balanced by graphite - travel = 63 mm (2,48 inch)

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

NPS	RF Class 300							RF Class 600							RTJ Class 300 a 600			
	ØD ₁	ØD ₂	ØD ₃	d	n	a	b	ØD ₁	ØD ₂	ØD ₃	d	n	a	b	ØD ₇	e	f	Groove Number
	[mm]	[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	[mm]	[mm]	
	[inch]	[inch]	[inch]	[inch]		[inch]	[inch]	[inch]	[inch]	[inch]	[inch]		[inch]	[inch]	[inch]	[inch]	[inch]	
½"	95	66.7	34.9	15.9		12.7		95	66.7	34.9	15.9		14.3		34.14	5.54	7.14	R11
	3.75	2.62	1.38	5/8"		0.5		3.75	2.62	1.38	5/8"		0.56		1.344	0.219	0.281	
1"	125	88.9	50.8	19.1	4	15.9	0.62	125	88.9	50.8	19.1	4	17.5		50.8	6.35	8.74	R16
	4.88	3.5	2.0	¾"				4.88	3.5	2.0	¾"		0.69		2.0	0.25	0.344	
1½"	155	114.3	73	22.3		19.1		155	114.3	73	22.3		22.3		68.27	6.35	8.74	R20
	6.12	4.5	2.88	7/8"		0.75		6.12	4.5	2.88	7/8"		0.88		2.688	0.25	0.344	
2"	165	127	92.1	19.1		20.7	0.81	165	127	92.1	19.1		25.4		82.55	7.92	11.91	R23
	6.5	5.0	3.62	¾"				6.5	5.0	3.62	¾"		1.0		3.25	0.312	0.469	
3"	210	168.3	127	22.3	8	27	1.06	210	168.3	127	22.3	8	31.8		117.48	7.92	11.91	R30
	8.25	6.62	5.0	7/8"				8.25	6.62	5.0	7/8"		1.25		4.625	0.312	0.469	
4"	255	200	157.2	22.3		30.2	1.19	275	215.9	157.2	25.4		38.1		149.23	7.92	11.91	R37
	10	7.88	6.19	7/8"				10.75	8.5	6.19	1"		1.5		5.875	0.312	0.469	
6"	320	269.9	215.9	22.3		35		355	292.1	215.9	28.6		47.7		211.12	7.92	11.91	R45
	12.5	10.62	8.5	7/8"	12	1.38		14.0	11.5	8.5	1 1/8"	12	1.88		8.312	0.312	0.469	
8"	380	330.2	269.9	25.4		39.7		420	349.2	269.9	31.8		55.6		269.9	7.92	11.91	R49
	15	13.0	10.62	1"		1.56		16.5	13.75	10.62	1 1/4"		2.19		10.625	0.312	0.469	
10"	445	387.4	323.8	28.6		46.1		510	431.8	323.8	34.9	16	63.5		323.85	7.92	11.91	R53
	17.52	15.25	12.75	1 1/8"	16	1.82		20.08	17	12.75	1 3/8"	16	2.5		12.75	0.312	0.469	
12"	520	450.8	381	31.8		49.3		560	489	381	34.9	20	66.7		381	7.92	11.91	R57
	20.47	17.75	15	1 1/4"	16	1.94		22.05	19.25	15	1 3/8"	20	2.63		15	0.312	0.469	
16"	650	571.5	469.9	34.9		55.6		685	603.2	469.9	41.3	20	76.2		469.9	7.92	11.91	R65
	25.59	22.5	18.5	1 3/8"	20	2.19		26.97	23.75	18.5	1 5/8"	20	3		18.5	0.312	0.469	



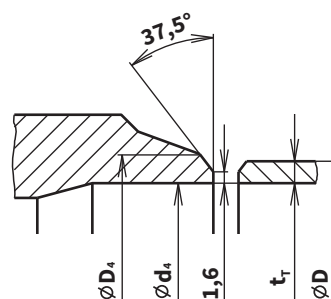
NPS 1/2" - 6"



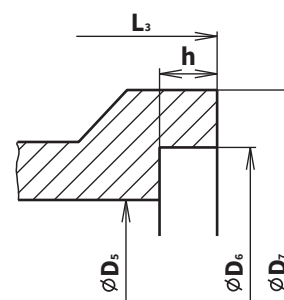
NPS 8" - 16"

t-wall thickness of weld ends: $t = [D_4 - (D - 2 * t_r)] / 2$

NPS	Dimensions of weld ends for pipes ASME B36.10M						
	ØD ₄	ØD	Sch. No. 40	Sch. No. 80	Sch. No. 100	ØD _{4 max}	ØD _{4 min}
1/2"	22	21.3	2.8	3.9	---	30	13
	0.866	0.839	0.109	0.154	---	1.181	0.512
1"	35	33.4	3.4	4.6	---	40	23
	1.378	1.315	0.133	0.179	---	1.575	0.906
1 1/2"	50	48.3	3.7	5.1	---	57	35
	1.969	1.66	0.14	0.191	---	2.244	1.378
2"	62	60.3	3.9	5.5	---	67	43
	2.44	2.375	0.154	0.218	---	2.638	1.693
3"	91	88.9	5.5	7.6	---	100	72
	3.583	3.5	0.216	0.3	---	3.937	2.835
4"	117	114.3	6.0	8.6	---	128	92
	4.606	4.5	0.237	0.337	---	5.039	3.622
6"	172	168.3	7.1	11.0	---	188	136
	6.772	6.625	0.28	0.432	---	7.402	5.354
8"	223	219.1	8.2	12.7	15.1	228	178
	8.78	8.625	0.322	0.5	0.594	8.976	7.008
10"	278	273.0	9.3	15.1	18.3	278	229
	10.945	10.748	0.366	0.594	0.72	10.945	9.016
12"	329	323.9	10.3	17.5	21.4	329	281
	12.953	12.752	0.406	0.689	0.843	12.953	11.063
16"	413	406.4	12.7	21.4	26.2	426	345
	16.26	16.0	0.5	0.843	1.031	16.772	13.583



NPS	Dimensions of weld ends for pipes ASME B16.11									
	SW Class 150 and 300					SW Class 600				
	ØD _s	ØD _e	ØD _r	L ₃	h	ØD _s	ØD _e	ØD _r	L ₃	h
1/2"	15	22	33	206	9.5	12	22	35	206	9.5
	0.59	0.87	1.3	8.11	0.37	0.47	0.87	1.38	8.11	0.37
1"	26	34.1	47	210	12.5	21	34.1	51	210	12.5
	1.02	1.34	1.85	8.27	0.49	0.83	1.34	2.01	8.27	0.49
1 1/2"	41	49	62	251	12.5	34	49	67	251	12.5
	1.61	1.93	2.44	9.88	0.49	1.34	1.93	2.64	9.88	0.49
2"	52	61.4	76	286	16	43	61.4	84	286	16
	2.05	2.42	2.99	11.26	0.63	1.69	2.42	3.31	11.26	0.63





CV 3x2

Control
and shut-off valves

**NPS 1/2" - 16",
Class 150, 300 and 600**

Technical data

Series	CV 322 (Ex)	CV 332 (Ex)
Type of valve	Two-way, single-seated, control (shut-off) valve with pressure balanced plug	
Nominal size range	NPS 1" - 16"	
Nominal pressure	Class 300 and 600 (Class 150, 300 and 600 (weld ended))	
Body material	Cast steel A216 WCB, A217 WC6	Stainless steel A351 CF8M
Seat material:	NPS 1/2" - 2"	1.4028
DIN W.Nr./+ČSN	NPS 3" - 16"	1.4027
Plug material:	NPS 1/2" - 2"	1.4021
DIN W.Nr./+ČSN	NPS 3" - 16"	1.4027
Stem material	1.4923	1.4980
Operating temperature range	-50 to 550 °C (-58 to 1020 °F) - (the negative temperature requirement must be specified in the order)	
Face to face dimensions	Acc. to ISA-75.08.01-2002 (R2007) for version with flanges Acc. to ISA-75.08.03-2001 (R2007) for weld ends - version Socket Weld Acc. to ISA - 75.08.05-2002 (R2007) for weld ends - version Butt Weld	
Connection flanges	Acc. to ASME B16.5-2013	
Flange faces	RF (Raised Face), RTJ (Ring Joint Face), LFF (Large Female Face), SFF (Small Female Face), LGF (Large Groove Face), SGF (Small Groove Face)	
Weld ends	Butt Weld 1/2" - 16" acc. to ASME B16.25-2012; Socket Weld 1/2" - 2" acc. to ASME B16.11-2011	
Type of plug	V-ported, contoured, perforated	
Flow characteristic	Linear, equal-percentage, LDMspline®, parabolic	
Kvs value	1,6 to 1600 m ³ /h (1,85 to 1850 US gallon/min)	
Leakage rate	Class III. acc. to ANSI/FCI 70-2-2013 (<0,1% Cv) for control valves with metal-metal seat sealing Class IV. acc. to ANSI/FCI 70-2-2013 (<0.01% Cv) for control valves with metal-PTFE sealing	
Leakage rate for Ex version	Class IV. acc. to ANSI/FCI 70-2-2013 (<0.01% Cv)	
Rangeability r	50 : 1	
Packing	DRSpack® (PTFE) t _{max} = 260 °C (500°F), Expanded graphite t _{max} = 550 °C (1020°F), Bellows (DN15-150) t _{max} = 550°C (1020°F)	

Cv (Kvs) values and differential pressures $\Delta p_{\max}$ [MPa], [psi] of pressure balanced valves NPS 1" - 16" with electro-mechanic actuators

$\Delta p_{\max}$ value is the valve max. differential pressure when max open - close function is always guaranteed.

Differential pressure must not exceed 2,0 MPa (290 psi) for valves Class 150 and 5,0 MPa (750 psi) for valves Class 300. 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 4,0 MPa / 580 psi) or sealing surfaces of seat and plug with a hard metal overlay (Δp up to 2,5 MPa / 363 psi).

For further information on actuating, see actuators' catalogue sheets			Actuating (actuating)					CVL-500	ST 0	CVL-1000	Auma Schiebel	ST 1 Ex ST 0.1 CVL-1500	ST 1 IQM 10	ST 1 IQM 10	Hand wheel
*) max. NPS 12"			Marking in valve specification No.					EQL	EPK	EQL	EA... EZ...	EPJ EPL EQL	EPI EQ...	EPI EQ...	Rxx
5) linear characteristic only			Linear force					2 kN	2.5 kN	4 kN	5 kN	6.3 kN	7.5 kN	10 kN	
			Kvs [m ³ /h] Cv [US gallon/min]					$\Delta p_{\max}$ [MPa] [psi] packing	$\Delta p_{\max}$ [MPa] [psi] packing	$\Delta p_{\max}$ [MPa] [psi] packing	$\Delta p_{\max}$ [MPa] [psi] packing	$\Delta p_{\max}$ [MPa] [psi] packing	$\Delta p_{\max}$ [MPa] [psi] packing	$\Delta p_{\max}$ [MPa] [psi] packing	$\Delta p_{\max}$ [MPa] [psi] packing
NPS	H [mm]	Ds [mm]	1	2	3	4	5	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
1"	25	16	10	6.3 ⁵⁾	4.0 ⁵⁾	2.5 ⁵⁾	1.6 ⁵⁾	10	10	10	10	10	10	10	10
			11.6	7.28 ⁵⁾	4.62 ⁵⁾	2.89 ⁵⁾	1.85 ⁵⁾	1450	1450	1450	1450	1450	1450	1450	1450
1 1/2"	40	40	25	16	10	6.3 ⁵⁾	4.0 ⁵⁾	10	10	10	10	10	10	10	10
			28.9	18.5	11.6	7.28 ⁵⁾	4.62 ⁵⁾	1450	1450	1450	1450	1450	1450	1450	1450
2"	50	20	40	25	16	10	6.3 ⁵⁾	10	10	10	10	10	10	10	10
			46.2	28.9	18.5	11.6	7.28 ⁵⁾	1450	1450	1450	1450	1450	1450	1450	1450
3"	80	40	100	63	40	25	16	---	---	---	10	10	10	10	10
			116	72.8	46.2	28.9	18.5	---	---	---	1450	1450	1450	1450	1450
4"	100	40	160	100	63	40	25	---	---	---	10	10	10	10	10
			185	116	72.8	46.2	28.9	---	---	---	1450	1450	1450	1450	1450
6"	150	150	360	250	160	100	63	---	---	---	10	10	10	10	10
			416	289	185	116	72.8	---	---	---	1450	1450	1450	1450	1450

For further information on actuating, see actuators' catalogue sheets			Actuating (actuating)					Auma Schiebel IQM 10	ModactMTR ST 2 CVL-5000	Auma Schiebel IQM 12	ModactMTR ST 2	Hand wheel
*) max. NPS 12"			Marking in valve specification No.					EA... EZ... EQ...	EPD EPM EQL	EA... EZ... EQ...	EPD EPM	Rxx
			Linear force					15 kN	16 kN	20 kN	25 kN	
			Kvs [m ³ /h] Cv [US gallon/min]					$\Delta p_{\max}$ [MPa] [psi] packing	$\Delta p_{\max}$ [MPa] [psi] packing	$\Delta p_{\max}$ [MPa] [psi] packing	$\Delta p_{\max}$ [MPa] [psi] packing	$\Delta p_{\max}$ [MPa] [psi] packing
NPS	H [mm]	Ds [mm]	1	2	3	4	5	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
3"	40	80	100	63	40	25	16	---	10	---	---	10
			116	72.8	46.2	28.9	18.5	---	1450	---	---	1450
4"	100	40	160	100	63	40	25	---	10	---	---	10
			185	116	72.8	46.2	28.9	---	1450	---	---	1450
6"	150	150	360	250	160	100	63	---	10	---	---	10
			416	289	185	116	72.8	---	1450	---	---	1450
8"	200	80	570	400	250	160	100	10	10	10	---	10
			659	462	289	185	116	1450	1450	1450	---	1450
10"	230	80	800	630	400	250	160	---	10	10	10	10
			925	728	462	289	185	---	1450	1450	1450	1450
12"	250	80	1000	800	630	400	250	---	10	10	10	10
			1160	925	728	462	289	---	1450	1450	1450	1450
16"	330	100	1600	1000	630	400	250	---	10	10	10	10
			1850	1160	728	462	289	---	1450	1450	1450	1450

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

Perforated plug available only with Cv (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

Cv (Kvs) values and differential pressures $\Delta p_{\max}$ [MPa], [psi] of pressure balanced valves NPS 1" - 16" with pneumatic actuators

$\Delta p_{\max}$ value is the valve max. differential pressure when max open - close function is always guaranteed.

Differential pressure must not exceed 2,0 MPa (290 psi) for valves Class 150 and 5,0 MPa (750 psi) for valves Class 300. 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 4,0 MPa / 580 psi) or sealing surfaces of seat and plug with a hard metal overlay (Δp up to 2,5 MPa / 363 psi).

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators		Flowserve PA 253				A. Hock 2109			
			Actuator function		direct	indirect	direct	indirect	direct	indirect	direct	indirect
			Specification No. of actuator		BVCxAA	BVCxZA	BVCxAA	BVCxZA	P2-0K-VL1	P2-0K-HL2	P2-0K-VL1	P2-0K-HL2
			Spring range		[bar]	[bar]	[bar]	[bar]	[bar]	[bar]	[bar]	[bar]
			Spring setting		[bar]	[bar]	[bar]	[bar]	[bar]	[bar]	[bar]	[bar]
			Feeding pressure		[bar]	[bar]	[bar]	[bar]	[bar]	[bar]	[bar]	[bar]
			Marking in valve spec. No.		PFA				PHF			
			Linear force		4.3 kN	4.3 kN	3.7 kN	3.7 kN	3.5 kN	5.7kN	3.5 kN	4.4kN
			Kvs [m ³ /h]		$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]
			Cv [US galon/min]		packing	packing	packing	packing	packing	packing	packing	packing
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
1"	16	50	10	6.3 ⁵⁾	4.0 ⁵⁾	2.5 ⁵⁾	1.6 ⁵⁾	10 10	10 10	---	---	---
			11.6	7.28 ⁵⁾	4.62 ⁵⁾	2.89 ⁵⁾	1.85 ⁵⁾	1450 1450	1450 1450	---	---	---
1 1/2"	16	80	25	16	10	6.3 ⁵⁾	4.0 ⁵⁾	10 10	10 10	---	---	---
			28.9	18.5	11.6	7.28 ⁵⁾	4.62 ⁵⁾	1450 1450	1450 1450	---	---	---
2"	20	50	40	25	16	10	6.3 ⁵⁾	---	---	10 10	10 10	10 10
			46.2	28.9	18.5	11.6	7.28 ⁵⁾	---	---	1450 1450	1450 1450	1450 1450

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators		A. Hock 2112-30					
			Actuator function		direct	indirect	direct	indirect	direct	indirect
			Specification No. of actuator		P2-0K-BM1	P2-0K-BM2	P2-0K-BM1	P2-0K-BM2	P2-0K-VM1	P2-0K-MM2
			Spring range		[bar]	[bar]	[bar]	[bar]	[bar]	[bar]
			Spring setting		[bar]	[bar]	[bar]	[bar]	[bar]	[bar]
			Feeding pressure		[bar]	[bar]	[bar]	[bar]	[bar]	[bar]
			Marking in valve spec. No.		PHA					
			Linear force		4.6 kN	8.3 kN	4.6 kN	7.3 kN	8.0 kN	12.2 kN
			Kvs [m ³ /h]		$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]	$\Delta p_{\max}$ [MPa]
			Cv [US galon/min]		packing	packing	packing	packing	packing	packing
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graphite PTFE	graphite PTFE	graphite PTFE
1"	16	25	---	6.3	4.0	2.5 ⁵⁾	1.6 ⁵⁾	10 10	10 10	---
			---	7.28	4.62	2.89 ⁵⁾	1.85 ⁵⁾	1450 1450	1450 1450	---
1 1/2"	16	40	---	16	10	6.3	4.0	10 10	10 10	---
			---	18.5	11.6	7.28	4.62	1450 1450	1450 1450	---
2"	20	50	---	25	16	10	6.3	---	---	10 10
			---	28.9	18.5	11.6	7.28	---	---	1450 1450

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⁵⁾ linear characteristic only

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

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

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

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					Flowserve PB 503				Flowserve PB 701	
			Actuator function					direct	indirect	direct	indirect	direct	indirect
			Specification No. of actuator					BVCxAA	BVCxZA	BVCxAB	BVCxZB	BVCxAB	BVCxZB
			Spring range [bar]					1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7
								22 - 39	22 - 39	22 - 39	22 - 39	22 - 39	22 - 39
			Spring setting [bar]					1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7
								22 - 39	22 - 39	22 - 39	22 - 39	22 - 39	22 - 39
			Feeding pressure [bar]					4.5	4.5	4.5	4.5	4.5	4.5
								65	65	65	65	65	65
			Marking in valve spec. No.					PFB				PFC	
			Linear force					7.5 kN	7.5 kN	7.5 kN	7.5 kN	10.5 kN	10.5 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	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
2"	20	50	40 46.2	25 28.9	16 18.5	10 11.6	6.3 ⁵⁾ 7.28⁵⁾	10 10 1450 1450	10 10 1450 1450	---	---	---	---
3"		80	100 116	63 72.8	40 46.2	25 28.9	16 18.5	---	---	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450
4"	40	100	160 185	100 116	63 72.8	40 46.2	25 28.9	---	---	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450
6"		150	360 416	250 289	160 185	100 116	63 72.8	---	---	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450

⁵⁾ linear characteristic only

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					A. Hock 2112-50		A. Hock 2116-40	
			Actuator function					direct	indirect	direct	indirect
			Specification No. of actuator					P2-0K-SI1	P2-0K-SI2	P2-0K-BN1	P2-0K-BN2
			Spring range [bar]					0.8 - 2.8	0.8 - 2.8	0.8 - 2.2	0.8 - 2.2
								12 - 41	12 - 41	12 - 32	12 - 32
			Spring setting [bar]					0.8 - 2.4	1.2 - 2.8	0.8 - 1.36	1.64 - 2.2
								12 - 35	17 - 41	12 - 20	24 - 32
			Feeding pressure [bar]					3.3	4.0	2.2	3.9
								48	58	32	57
			Marking in valve spec. No.					PHA		PHC	
			Linear force					4.6 kN	6.9 kN	9.6 kN	19.5 kN
			Kvs [m ³ /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	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
3"		80	100 116	63 72.8	40 46.2	25 28.9	16 18.5	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450
4"	40	100	160 185	100 116	63 72.8	40 46.2	25 28.9	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450
6"		150	360 416	250 289	160 185	100 116	63 72.8	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450

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

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

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

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					Flowserve PO 1502		Flowserve PO 1502		Flowserve PO 1502	
			Actuator function					direct	indirect	direct	indirect	direct	indirect
			Specification No. of actuator					BVCxAD	BVCxZD	BVCxAD	BVCxZD	BJIOAE	DJIOZE
			Spring range [bar]					1.5 - 2.7	1.5 - 2.7	2.0 - 3.5	2.0 - 3.5	1.8 - 3.8	1.8 - 3.8
								22 - 39	22 - 39	29 - 51	29 - 51	26 - 55	26 - 55
			Spring setting [bar]					1.5 - 2.7	1.5 - 2.7	2.0 - 3.5	2.0 - 3.5	1.8 - 3.8	1.8 - 3.8
								22 - 39	22 - 39	29 - 51	29 - 51	26 - 55	26 - 55
			Feeding pressure [bar]					4.5	4.5	5.5	5.5	5.6	5.6
								65	65	80	80	81	81
			Marking in valve spec. No.					PFD		PFD		PFD	
			Linear force					22.5 kN	22.5 kN	30 kN	30 kN	27 kN	27 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	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
8"	80	200	570 659	400 462	250 289	160 185	100 116	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	---	---
10"		230	800 925	630 728	400 462	250 289	160 185	---	---	10 10 1450 1450	10 10 1450 1450	---	---
12"		250	1000 1160	800 925	630 728	400 462	250 289	---	---	10 10 1450 1450	10 10 1450 1450	---	---
16"	100	330	1600 1850	1000 1160	630 728	400 462	250 289	---	---	---	---	10 10 1450 1450	10 10 1450 1450

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					A. Hock 2116S-100					
			Actuator function					direct	indirect	direct	indirect	direct	indirect
			Specification No. of actuator					P2-0K-YN1	P2-0K-YN2	P2-0K-ZN1	P2-0K-ZN2	P2-0K-ZN1	P2-0K-ZN2
			Spring range [bar]					1.3 - 3.0	1.3 - 3.0	1.5 - 3.5	1.5 - 3.5	1.5 - 3.5	1.5 - 3.5
								19 - 44	19 - 44	22 - 51	22 - 51	22 - 51	22 - 51
			Spring setting [bar]					1.3 - 2.66	1.64 - 3.0	1.5 - 3.1	1.9 - 3.5	1.5 - 3.5	1.5 - 3.5
								19 - 39	24 - 44	22 - 45	28 - 51	22 - 51	22 - 51
			Feeding pressure [bar]					4.0	4.0	4.6	5.4	5.0	5.0
								58	58	67	78	73	73
			Marking in valve spec. No.					PHC		PHC		PHC	
			Linear force					16 kN	19.6 kN	18 kN	22.8 kN	18 kN	18 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	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
8"	80	200	570 659	400 462	250 289	160 185	100 116	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	---	---
10"		230	800 925	630 728	400 462	250 289	160 185	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	---	---
12"		250	1000 1160	800 925	630 728	400 462	250 289	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	---	---
16"	100	330	1600 1850	1000 1160	630 728	400 462	250 289	---	---	---	---	10 10 1450 1450	10 10 1450 1450

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

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

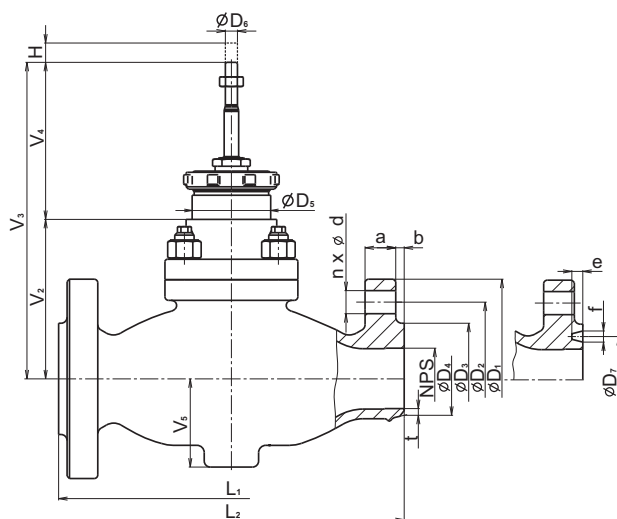
- perforated plug with Kvs value acc. to column No. 2 available with linear or parabolic characteristic only

Dimensions and weights of valves CV 322 (Ex) CV 332 (Ex) with flanged and welded connection, NPS 1" - 16"

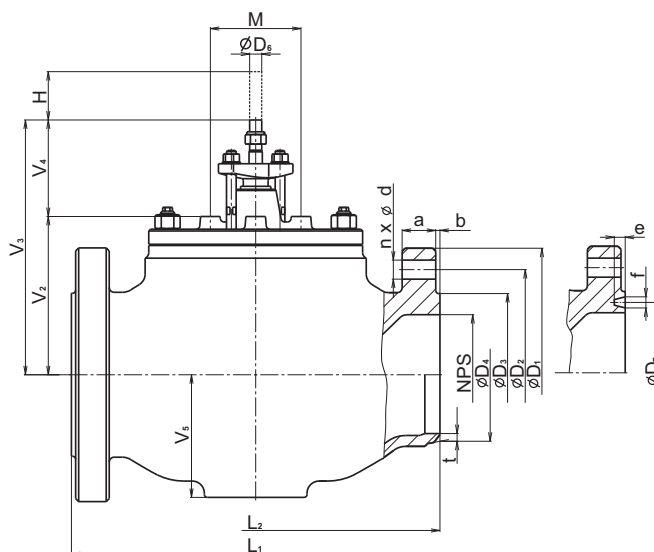
NPS														Class 300			Class 600			Class 150-600
	H	V ₂	*V ₂	V ₃	*V ₃	V ₄	ØD ₅	M	ØD ₆	V ₅	m ₁	m ₂	*m _v	L ₁			L ₁			L ₂
														RF	RTJ	LFF SFF LGF SGF	RF	RTJ	LFF SFF LGF SGF	BTW
	[mm] [inch]	[mm] [inch]	[mm] [inch]	[mm] [inch]	[mm] [inch]	[mm] [inch]	[mm] [inch]	[mm] [inch]	[mm] [inch]	[mm] [inch]	[mm] [inch]	kg [lb]	kg [lb]	kg [lb]	[mm] [inch]	[mm] [inch]	[mm] [inch]	[mm] [inch]	[mm] [inch]	[mm] [inch]
1"	16 0.63	100 3.937	336 13.228	230 9.055	466 18.346	130	65	---	M10x1	52 2.047	9.5	6.5	4	197 7.75	210 8.25	207 8.15	210 8.25	210 8.25	207 8.15	210 8.25
1½"	16 0.63	100 3.937	336 13.228	230 9.055	466 18.346					52 2.047	15.5	8.5	4	235 9.25	248 9.76	245 9.64	251 9.88	251 9.88	248 9.76	251 9.88
2"	20 0.787	132 5.197	330 12.992	262 10.314	460 18.110					73 2.874	21	14	4	267 10.5	283 11.14	277 10.9	286 11.25	289 11.38	283 11.14	286 11.25
3"	40 1.575	164 6.456	489 19.252	294 11.575	619 24.370				M16x1,5	105 4.133	43	31	6	318 12.5	332 13.22	328 12.91	337 13.25	340 13.38	334 13.15	337 13.25
4"	40 1.575	164 6.456	489 19.252	294 11.575	619 24.370					105 4.133	69	39	6	368 14.5	384 15.12	378 14.88	394 15.5	397 15.63	391 15.39	394 15.5
6"	40 1.575	200 7.874	492 19.370	330 12.992	622 24.488					134 5.275	163	108	7	473 18.62	489 19.25	483 19.01	508 20.0	511 20.12	505 19.88	508 20.0
8"	80 3.15	262 10.314	---	422 16.614	---	160	---	150	M20x1,5	203 7.992	292	212	---	568 22.38	584 22.99	578 22.75	610 24.0	613 24.13	607 24.0	610 24.0
10"	80 3.15	346 13.622	---	506 19.921	---					253 9.961	555	385	---	708 27.88	724 28.5	718 28.27	752 29.62	755 29.72	749 29.49	752 29.62
12"	80 3.15	395 15.551	---	555 21.85	---					296 11.654	706	546	---	775 30.5	791 31.14	785 30.91	819 32.25	822 32.36	816 32.13	819 32.25
16"	100 3.937	512 20.157	---	672 26.457	---					382 15.039	1423	1173	---	1057 41.62	1073 42.24	1067 42.01	1108 43.62	1111 43.74	1105 43.5	1108 43.62

m₁ - weight of flanged version m₂ - weight of weld ends version 1) NPS 8" balanced by graphite - travel = 63 mm (2,48 inch)
 *) - for valve with bellows packing *m_v - weight to be added to weight of valve equipped with bellows packing

NPS	RF Class 300							RF Class 600							RTJ Class 300 a 600			
	ØD ₁	ØD ₂	ØD ₃	d	n	a	b	ØD ₁	ØD ₂	ØD ₃	d	n	a	b	ØD ₇	e	f	Groove Number
	[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] [inch]	[mm] [inch]	
1"	125 4.88	88.9 3.5	50.8 2.0	19.1 ¾	4	15.9 0.62	0.06	125 4.88	88.9 3.5	50.8 2.0	19.1 ¾	4	17.5 0.69	0.25	50.8 2.0	6.35 0.25	8.74 0.344	R16
1½"	155 6.12	114.3 4.5	73 2.88	22.3 7/8"	4	19.1 0.75		155 6.12	114.3 4.5	73 2.88	22.3 7/8"	4	22.3 0.88		68.27 2.688	6.35 0.25	8.74 0.344	R20
2"	165 6.5	127 5.0	92.1 3.62	19.1 ¾	8	20.7 0.81		165 6.5	127 5.0	92.1 3.62	19.1 ¾	8	25.4 1.0		82.55 3.25	7.92 0.312	11.91 0.469	R23
3"	210 8.25	168.3 6.62	127 5.0	22.3 7/8"	8	27 1.06		210 8.25	168.3 6.62	127 5.0	22.3 7/8"	8	31.8 1.25		117.48 4.625	7.92 0.312	11.91 0.469	R30
4"	255 10	200 7.88	157.2 6.19	22.3 7/8"	8	30.2 1.19		275 10.75	215.9 8.5	157.2 6.19	25.4 1"	8	38.1 1.5		149.23 5.875	7.92 0.312	11.91 0.469	R37
6"	320 12.5	269.9 10.62	215.9 8.5	22.3 7/8"	12	35 1.38		355 14.0	292.1 11.5	215.9 8.5	28.6 1 1/8"	12	47.7 1.88		211.2 8.312	7.92 0.312	11.91 0.469	R45
8"	380 15	330.2 13.0	269.9 10.62	25.4 1"	12	39.7 1.56		420 16.5	349.2 13.75	269.9 10.62	31.8 1 1/4"	12	55.6 2.19		269.9 10.625	7.92 0.312	11.91 0.469	R49
10"	445 17.52	387.4 15.25	323.8 12.75	28.6 1 1/8"	16	46.1 1.82		510 20.08	431.8 17	323.8 12.75	34.9 1 3/8"	16	63.5 2.5		323.85 12.75	7.92 0.312	11.91 0.469	R53
12"	520 20.47	450.8 17.75	381 15	31.8 1 1/4"	16	49.3 1.94		560 22.05	489 19.25	381 15	34.9 1 3/8"	20	66.7 2.63		381 15	7.92 0.312	11.91 0.469	R57
16"	650 25.59	571.5 22.5	469.9 18.5	34.9 1 3/8"	20	55.6 2.19		685 26.97	603.2 23.75	469.9 18.5	41.3 1 5/8"	20	76.2 3		469.9 18.5	7.92 0.312	11.91 0.469	R65



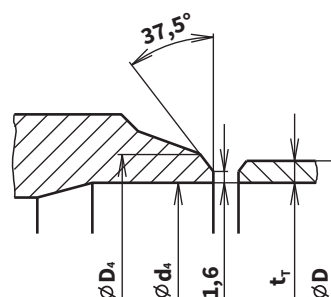
NPS 1" - 6"



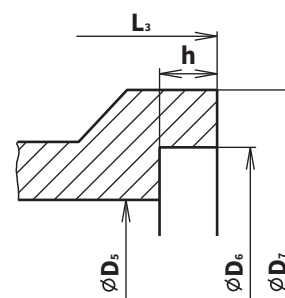
NPS 8" - 16"

NPS	Dimensions of weld ends for pipes ASME B36.10M				[mm] [inch]		
	ØD_4	ØD	Sch. No. 40	Sch. No. 80	Sch. No. 100	$\text{ØD}_{4\text{max}}$	$\text{ØD}_{4\text{min}}$
1"	35 1.378	33.4 1.315	3.4 0.133	4.6 0.179	---	40 1.575	23 0.906
1½"	50 1.969	48.3 1.66	3.7 0.14	5.1 0.191	---	57 2.244	35 1.378
2"	62 2.44	60.3 2.375	3.9 0.154	5.5 0.218	---	67 2.638	43 1.693
3"	91 3.583	88.9 3.5	5.5 0.216	7.6 0.3	---	100 3.937	72 2.835
4"	117 4.606	114.3 4.5	6.0 0.237	8.6 0.337	---	128 5.039	92 3.622
6"	172 6.772	168.3 6.625	7.1 0.28	11.0 0.432	---	188 7.402	136 5.354
8"	223 8.78	219.1 8.625	8.2 0.322	12.7 0.5	15.1 0.594	228 8.976	178 7.008
10"	278 10.945	273.0 10.748	9.3 0.366	15.1 0.594	18.3 0.72	278 10.945	229 9.016
12"	329 12.953	323.9 12.752	10.3 0.406	17.5 0.689	21.4 0.843	329 12.953	281 11.063
16"	413 16.26	406.4 16.0	12.7 0.5	21.4 0.843	26.2 1.031	426 16.772	345 13.583

t-wall thickness of weld ends: $t = [\text{D}_4 - (\text{D} - 2 \cdot t_r)] / 2$



NPS	Dimensions of weld ends for pipes ASME B16.11					[mm] [inch]				
	SW Class 150 a 300					SW Class 600				
	ØD_5	ØD_6	ØD_7	L_3	h	ØD_5	ØD_6	ØD_7	L_3	h
1"	26 1.02	34.1 1.34	47 1.85	210 8.27	12.5 0.49	21 0.83	34.1 1.34	51 2.01	210 8.27	12.5 0.49
1½"	41 1.61	49 1.93	62 2.44	251 9.88	12.5 0.49	34 1.34	49 1.93	67 2.64	251 9.88	12.5 0.49
2"	52 2.05	61.4 2.42	76 2.99	286 11.26	16 0.63	43 1.69	61.4 2.42	84 3.31	286 11.26	16 0.63



Valve complete specification No. for ordering CV/SV 3x0 (Ex), CV 3x2 (Ex)

		XX	XXX	XXX	XXXX	XX	XXX	/XXX	-XXX	XX
1. Valve	Control valve	CV								
	Shut-off valve	SV								
2. Series	Valves made of steel	3 2								
	Valves made of stainless steel	3 3								
	Straight-throgh	0								
	Straight-throgh with pressure balanced plug	2								
3. Actuating	Electric actuator		E X X							
	Pneumatic actuator		P X X							
	Hand wheel		R X X							
4. Connecting	Flange RF (Raised Face)				1					
	Flange RTJ (Ring Joint Face)				2					
	Flange LFF (Large Female Face)				3					
	Flange SFF (Small Female Face)				4					
	Flange LGF (Large Groove Face)				5					
	Flange SGF (Small Groove Face)				6					
	Weld ends BW (Butt Welding)				7					
	Weld ends SW (Socket Welding)				8					
5. Body material	Cast steel A216 WCB (-29 to 425°C); (-20 to 800°F) ⁵⁾				1					
	CrMo steel A217 WC6 (-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 ⁴⁾				7					
	Hard metal overlay on sealing surfaces of RV 3x2, a plug with metal sealing cuff				8					
7. Packing	DRSpack® (PTFE)				3					
	Expanded graphite				5					
	Bellows ¹⁾				7					
	Bellows with safety packing PTFE ¹⁾				8					
	Bellows with safety packing Graphite ¹⁾				9					
8. Flow characteristic	Linear					L				
	Equal-percentage					R				
	LDMspline®					S				
	On-off					U				
	Parabolic					P				
	Linear - perforated plug					D				
	Equal-percentage - perforated plug					Q				
	Parabolic - perforated plug					Z				
9. Cvs	Column No. acc. to Kvs value table					X				
10. Nominal pressure	Class 150 (weld ends only)						150			
	Class 300						300			
	Class 600						600			
11. Max. operating temperature^a °C (°F)	Acc. to version 260 - 550°C (500 - 1020°F)							XXX		
12. Nominal size	DN (NPS)								XXX	
13. Execution	Standard									
	Non-explosive									Ex

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

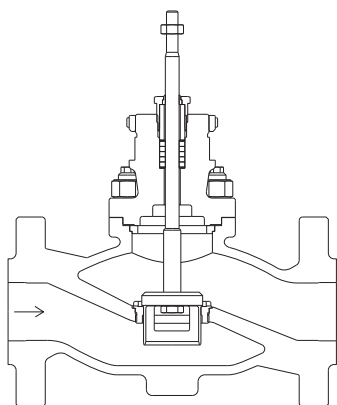
Ordering example of flanged execution:
CV320 ENC 2135 L1 300/400-080

Ordering example of weld ends execution:
CV320 ENC 7135 L1 300/400-080,
weld ends size Ø 88,9 x 5,5

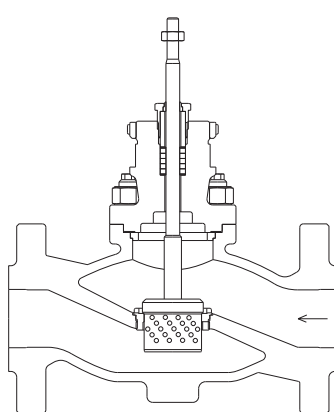
*) For marking of actuators in specification code, refer to table on page No. 74 of this catalogue

Valves CV / SV 3x0 (Ex)

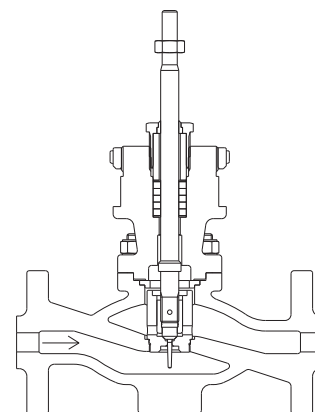
Section of valve with V-ported plug



Section of valve with perforated plug

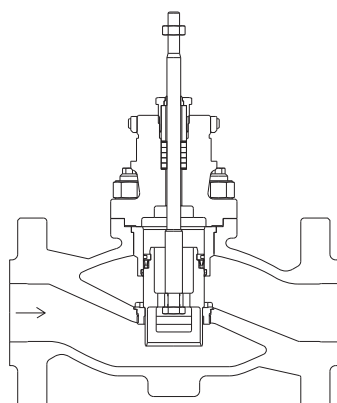


Section of valve with micro-throttling system

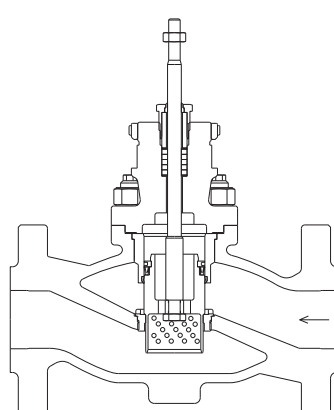


Valves CV 3x2 (Ex)

Section of pressure-balanced valve with V-ported plug



Section of pressure-balanced valve with perforated 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 temprature range	-40 to 80°C	-20 to 60°C	-40 to 60°C	-20 to 60°C	-40 to 80°C	-20 to 60°C	-40 to 60°C	-20 to 60°C
Ambient humidity range	100 %							
Weight	- single-phase	25 - 62 kg			25 - 62kg			
	- three-phase	20 - 33 kg			21 - 33 kg			

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

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

Specification of Auma actuators										
							SA	X	XX	07.X
Type							SA			
Duty		control ON - OFF						R		
Version		standard non-explosive							Ex	
Actuator size										07.2 07.6
Output shaft type A (thread TR 16x4 LH, connection flange F07) ... for CV 3xx NPS ½" - 6"										
Output speed [ot/min]		Tripping torque	SA 07.2 SA Ex 07.2	SAR 07.2 SAREx07.2	Motor power [kW]	SA 07.2 S2-15min	SA Ex 07.2 S2-15min	SAR 07.2 S4-25%	SAR Ex 07.2 S4-25%	
	4		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 CV 3xx DN 3" - 16"									
Output speed [ot/min]		Tripping torque	SA 07.6 SA Ex 07.6	SAR 07.6 SAREx07.6	Motor power [kW]	SA 07.6 S2-15min	SA Ex 07.6 S2-15min	SAR 07.6 S4-25%	SAR Ex 07.6 S4-25%	
	4		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	

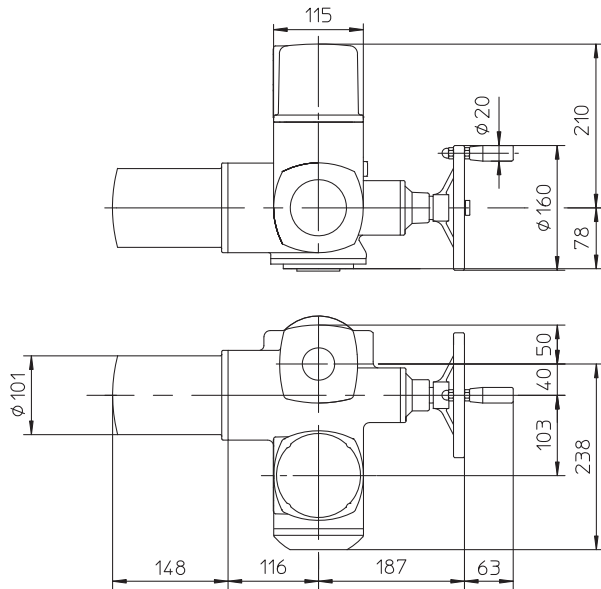
Accessories

- 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

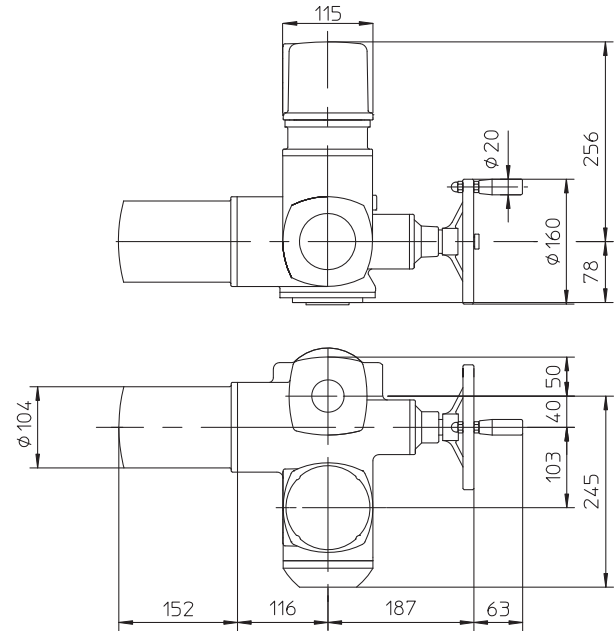
Other accessories acc. to catalogue of producer of actuators.

Dimensions of actuators Auma series 07.2 and 07.6

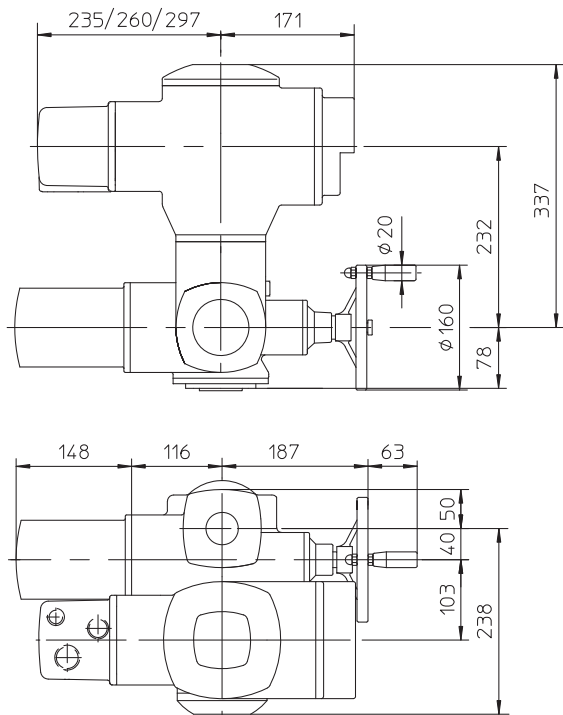
Normal version



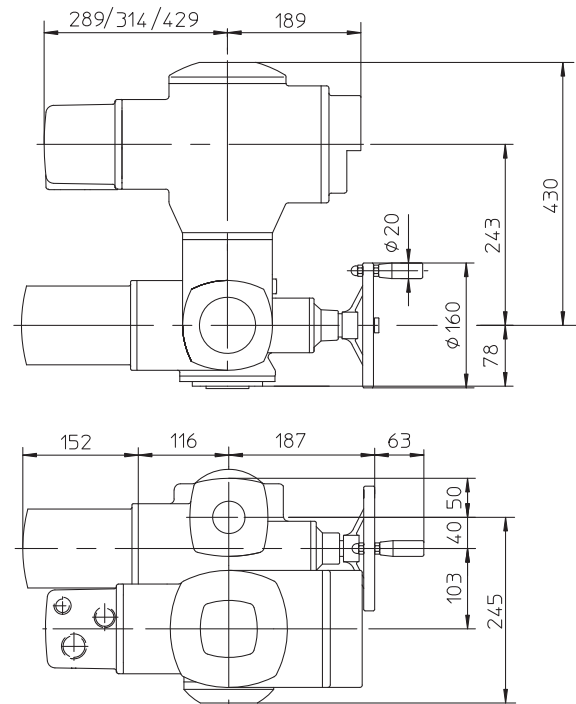
Version Ex norm



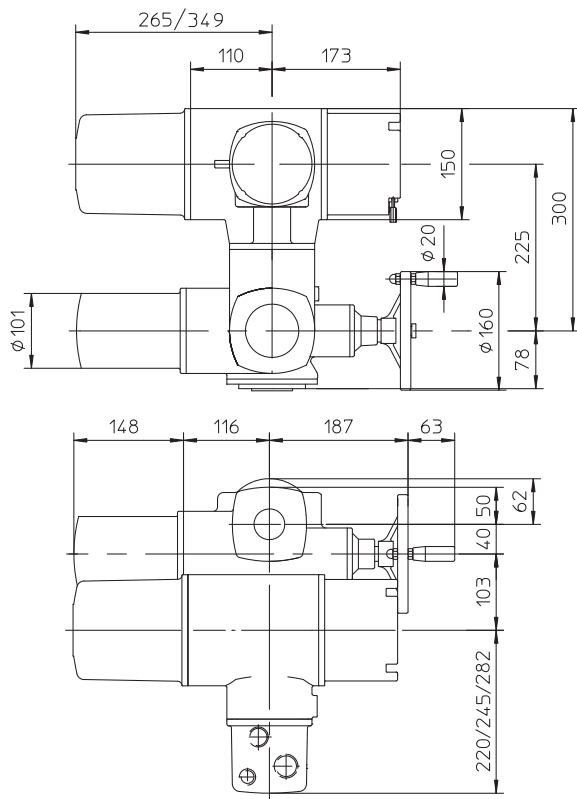
Version MATIC



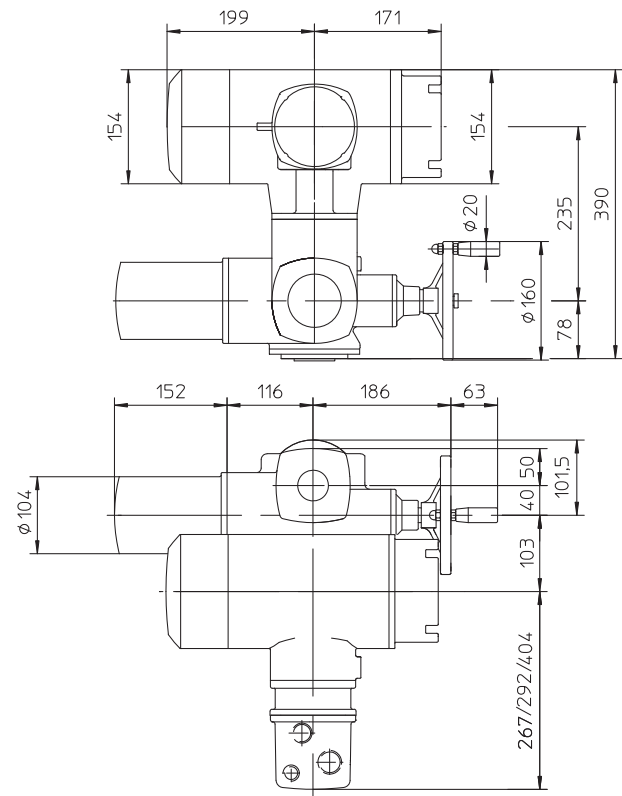
Version Ex MATIC



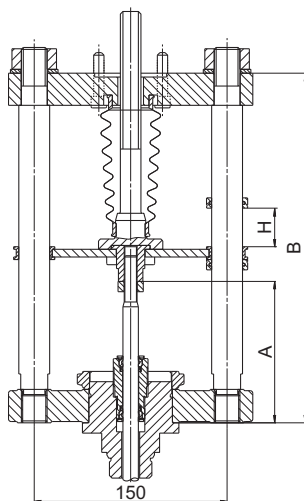
Version with AUMATIC



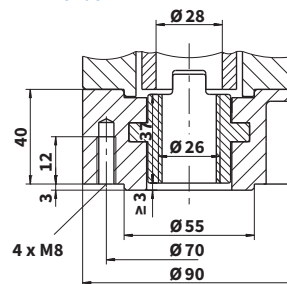
Version Ex AUMATIC



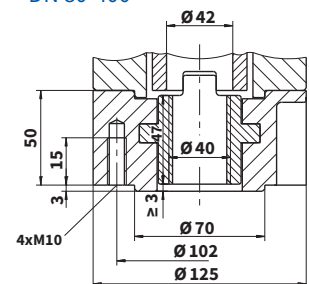
Attachment yoke (2 or 4 columns)



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 3xx NPS 1/2" - 6"	2	110	272	~ 8 kg
CV 3xx NPS 8" - 16"	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 CV 3xx NPS 8" - 16"										
Output speed [ot/min]		Tripping torque	SA 10.2 SA Ex 10.2	SAR 10.2 SAR Ex 10.2	Motor power [kW]	SA 10.2 S2-15min	SA Ex 10.2 S2-15min	SAR 10.2 S4-25%	SAR Ex 10.2 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					0,12	0,18	0,18	0,18	
	16		40-120 Nm	60-120 Nm		0,25	0,37	0,37	0,37	
	22					0,25	0,37	0,37	0,37	
	32					0,40	0,75	0,75	0,75	
	45					0,40	0,75	0,75	0,75	

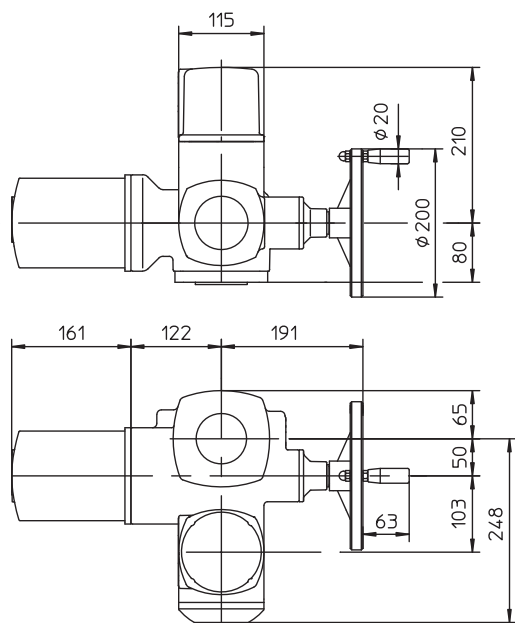
Accessories

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

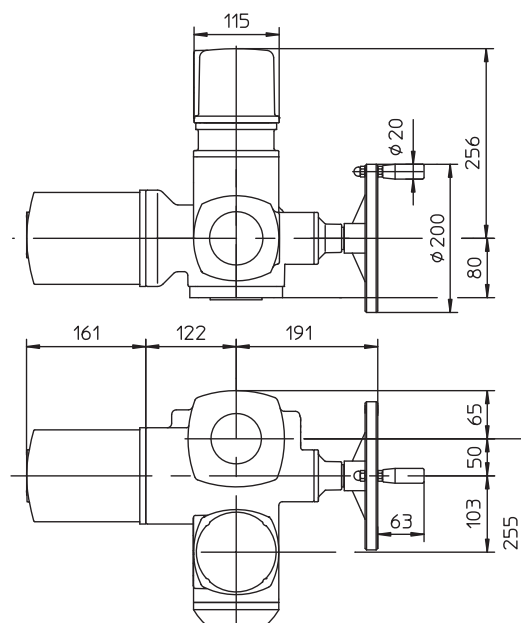
- Electronic position transmitter RWG (potentiometer included), 4 - 20 mA, 2-wire
- Electronic position transmitter RWG (potentiometer included), 4 - 20 mA, 3/4-wire
- Inductive position transmitter IWG, 4 - 20 mA

Dimensions of actuators Auma series 10

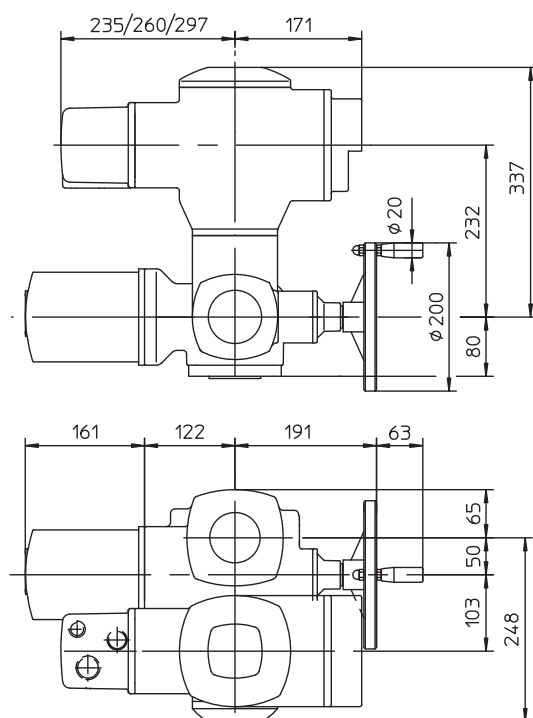
Normal version



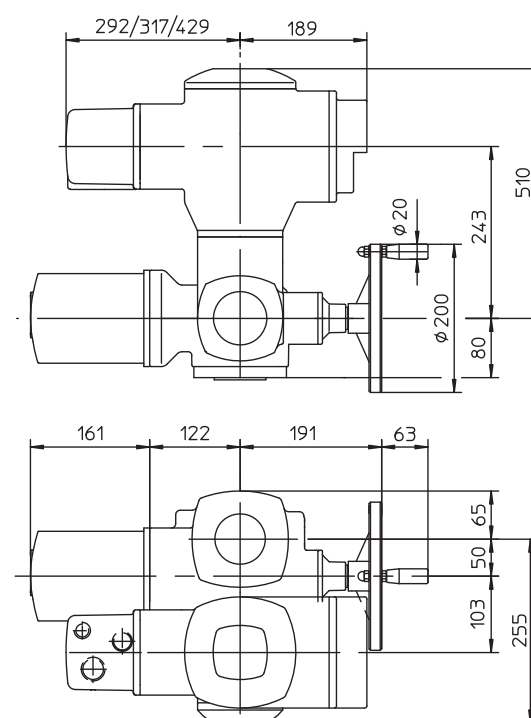
Ex norm version



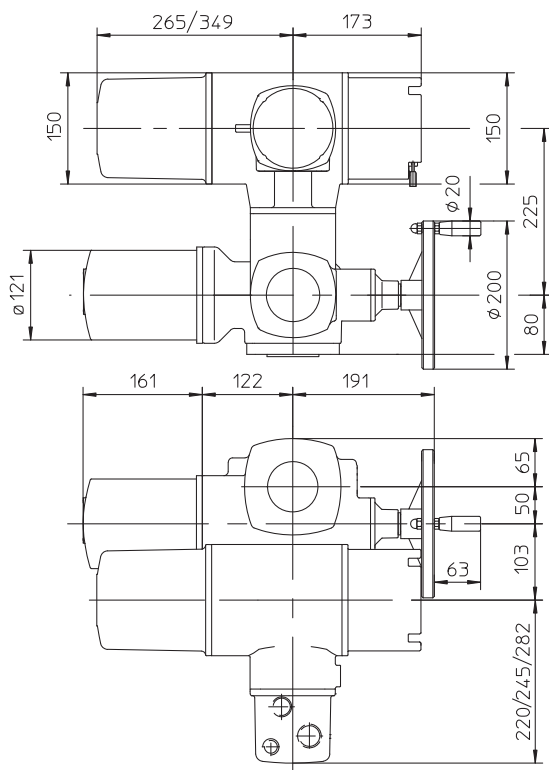
Version with MATIC



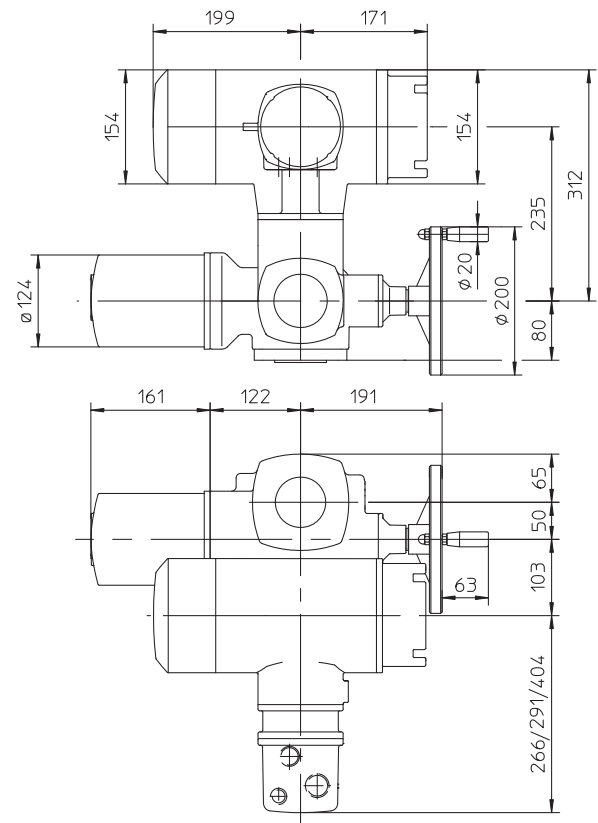
Version with Ex MATIC



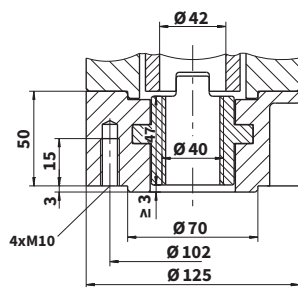
Version AUMATIC



Version Ex AUMATIC

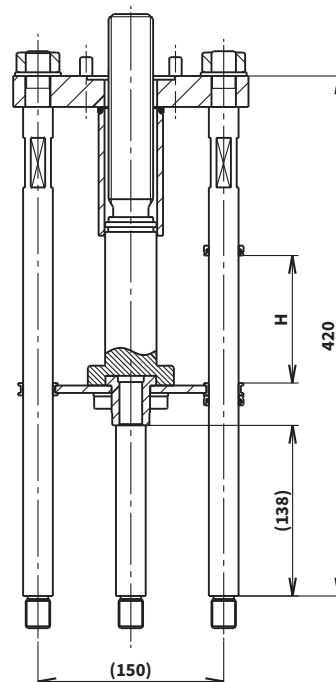


Output drive shaft A, F10



Attachment yoke NPS 8" - 16"

Connection A, F10, Tr36x6-LH





Elektric actuators **Schiebel**

AB3, AB5

marking in type number:

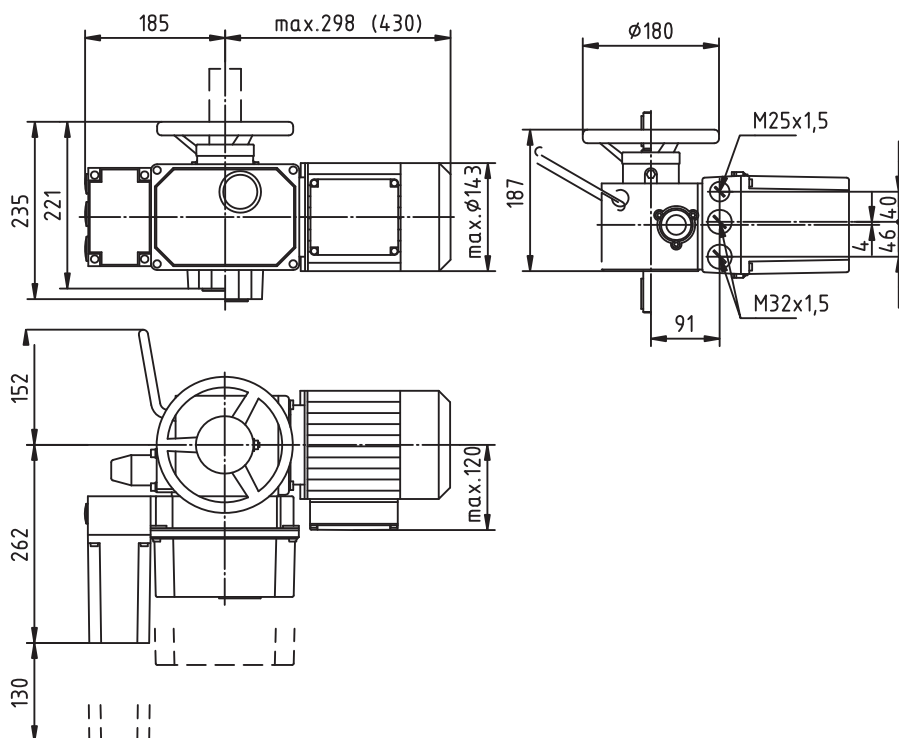
EZA, EZB, EZC, EZD
EZE, EZF, EZG, EZH

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 temprature range	-25 to 80 °C		-25 to 40 °C		-25 to 60 °C		-20 to 40 °C	
Ambient humidity range	90 % (tropical version: 100 % with condensation)							
Weight	16 - 20 kg							

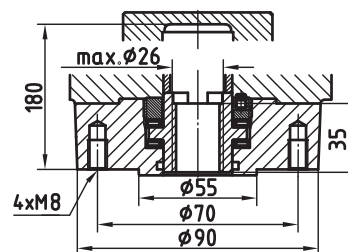
→ **Note:** Specifications and technical data are for information only.

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

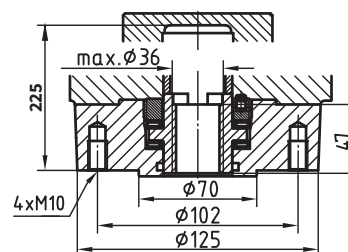
Dimensions of actuators ...AB5



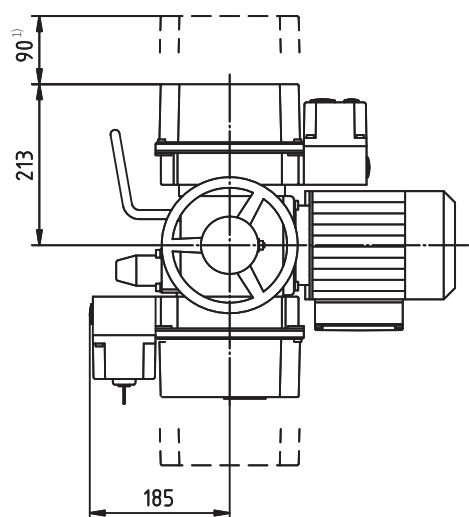
Output drive shaft A, flange F07



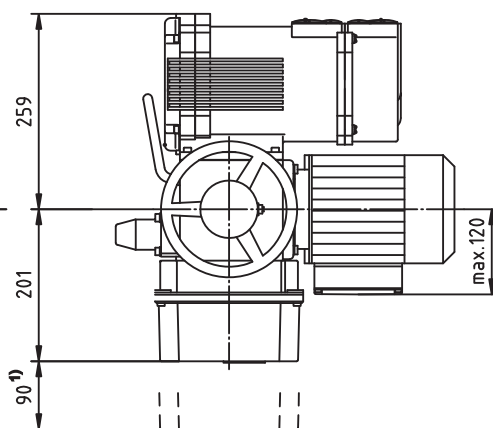
Connection acc. to ISO 5210, output drive shaft A, F10



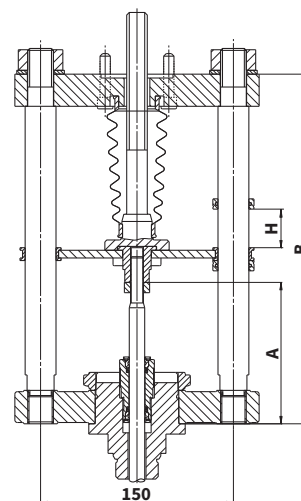
With ACTUMATIC R position regulator



With SMARTCON control unit



Attachment (2 or 4 columns)



For valves	Number of columns	A	B	H	Weight [kg]
CV 3xx NPS 1/2" - 6"	2	149	295	40	12
CV 3xx NPS 8" - 16"	4	141	295	80	12

Specification of actuators													
Version					non-explosive		XX	X	AB3	A	X	+	XXXXX
					standard		ex						
Function					control			r					
					ON - OFF								
Actuator size							AB3						
							AB5						
Output shaft type A (thread TR 16x4 LH, connection flange F07 ... NPS 1/2" to 2 1/2")										A			
Output speed [ot/min]		Tripping torque	AB3 exAB3	rAB3 exrAB3	Motor power [kW]	AB3		rAB3		exAB3	exrAB3		
	2,5												2,5
	5			tripping									5
	7,5			7 - 30									7,5
	10			Nm									10
	15												15
	20			loading									20
	30			7 - 15									30
	40			Nm									40
Output speed [ot/min]		Tripping torque	AB5 exAB5	rAB5 exrAB5	Motor power [kW]	AB5		rAB5		exAB5	exrAB5		
	2,5												2,5
	5			tripping									5
	7,5			7 - 60									7,5
	10			Nm									10
	15												15
	20			loading									20
	30			7 - 30									30
	40			Nm									40
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 2WE	



Electric actuators **Schiebel**

AB8

marking in type number:

EZK, EZL

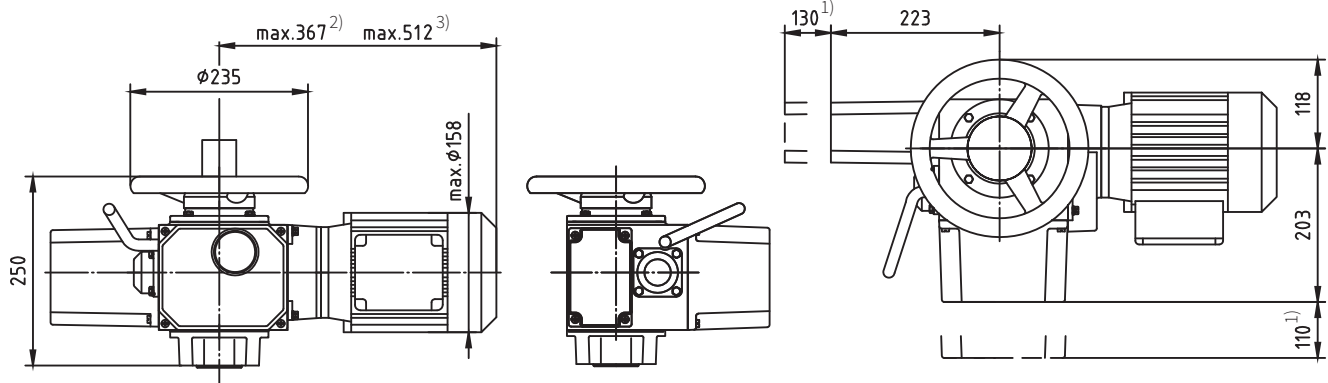
Technical data		
Type	rAB8	exrAB8
Marking in valve spec. No.	EZK	EZL
Voltage	400 / 230 V; 230 V	400 / 230 V
Frequency	50 Hz	
Power consumption	see specification table	
Control	3-position or with signal 4 - 20 mA	
Nominal force	(Tr 36x6 LH) 80 Nm ~ 21,6 kN; 100 Nm ~ 27 kN; 120 Nm ~ 32 kN	
Travel	80, 100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

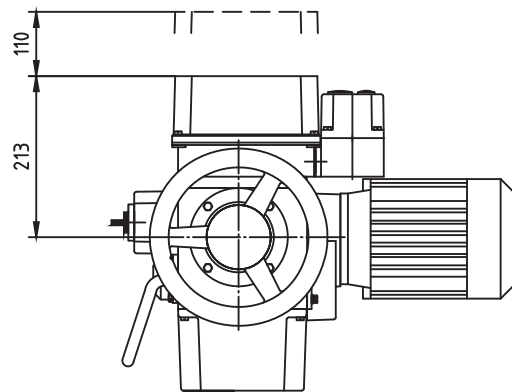
Detailed technical informations can be found in producer's data sheet or on the website www.schiebel.com

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	Motor power [kW]	rAB8					
			400/230V		230V					
	2,5		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		0,37		0,75	15				
	20		0,37		1,10	20				
	30		0,75		1,10	30				
	40		0,75		1,10	40				
Accessories				Potentiometer 1 x 1000 Ω						F
				Double potentiometer 2 x 1000 Ω						FF
				Electronic transmitter 4 - 20 mA, 2-wire						ESM21
				Electronic transmitter 4 - 20 mA, 2-wire, opto-electronic						CMR
				SMARTCON control unit						CSC
				Additional torque switches						2DER 2DE
				Additional signalisation switches						2WER 2WE

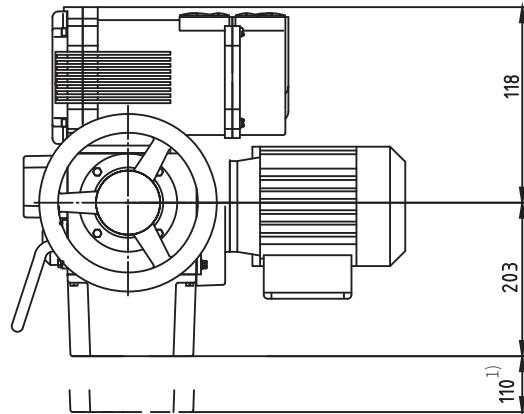
Dimensions of actuators ...AB8



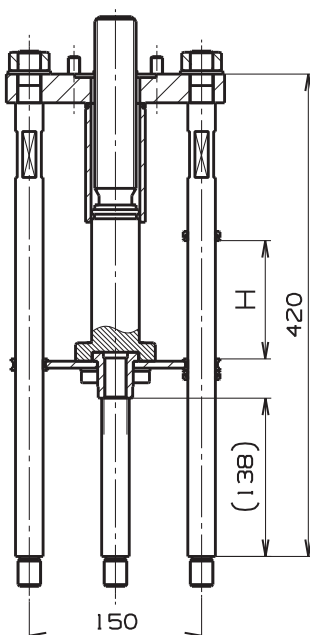
With ACTUMATIC R position regulator



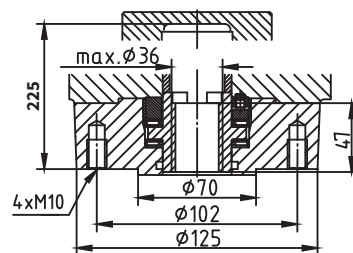
With SMARTCON control unit

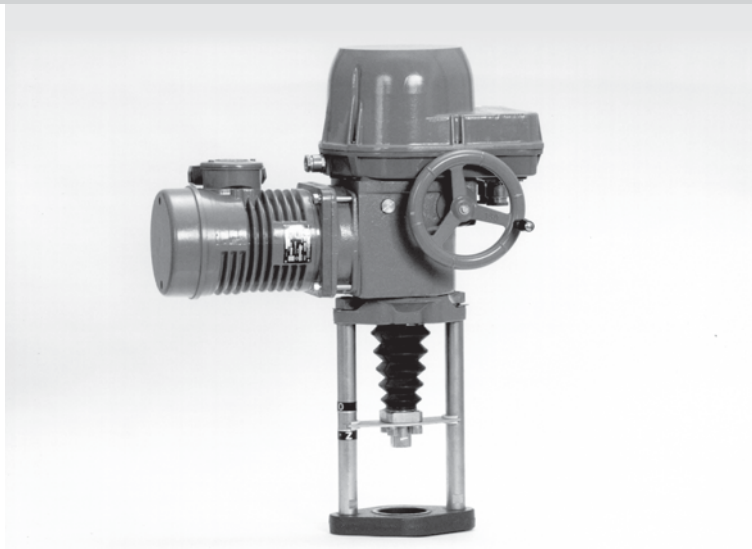


Attachment yoke DN200-400 Connection A, F10, Tr36x6-LH



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 webside www.regada.sk

[illegible]

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 3xx NPS ½" - 6"
P-1045b/C	130	680	P-1045b/H	130	702	CV 3xx NPS 8" - 16"

Specification of Modact MTR

Electric motor linear MTR								52 420.	X	-	X	X	X	X	X	/	X	X	
Climatic resistance		Standard		-25°C to +55°C		Enclosure IP 55		0											
		Tropical		-25°C to +55°C		Enclosure IP 67		1											
						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												
trapezoidal	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																
			25 mm (for stroke 20 mm)																
			40 mm																
			80 mm																
Transmitter			Connection	Output															
Without transmitter			—	—															
Resistive	Single	—	1x100 Ω																
	Double		2x100 Ω																
	Single		1x2000 Ω																
	Double		2x2000 Ω																
Resistive with current converter	Without power supply	2-wire	4 - 20 mA																
	With power supply																		
	Without power supply		0 - 20 mA																
	With power supply																		
	Without power supply	3-wire	4 - 20 mA																
	With power supply																		
	Without power supply		0 - 5 mA																
	With power supply																		
Capacitive CPT	Without power supply	2-wire	4 - 20 mA																
	With power supply																		
Mechanical connection	Connection height / stroke	Pillar spacing / Bore of flange	Thread of stem ³⁾	Dimensional drawing															
Columns	130	150/ —	M20x1.5	P-1045b/B; P-1045b/E											B				
			M16x1.5	P-1045b/C; P-1045b/H											C				
Additional equipment																			
	Without additional equipment; adjusted max. switching-off thrust from range																	0	1
A	2 additional position switches S5,S6																	0	2

Possible combinations and version: 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:

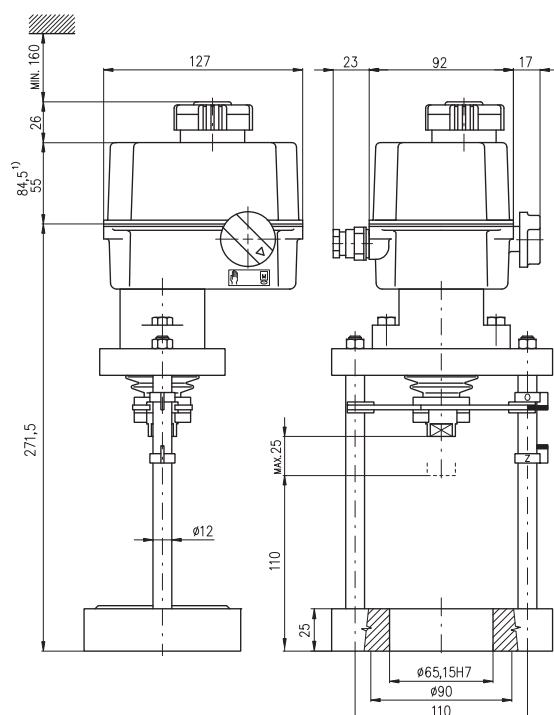
EPK

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 armatúrou
Ambient temperature range	-25 to 55 °C
Ambient humidity range	5 - 100% s kondenzací
Weight	2,5 to 4,5 kg

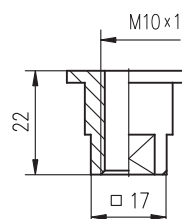
→ **Note:** Specifications and technical data are for information only. Detailed technical informations can be found in producer's data sheet or on the website www.regada.sk

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				
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		Wiring	Single	Output	1 x 100 Ω														B				
						1 x 2000 Ω													F					
				2-wire		4 - 20 mA													S					
				2-wire ⁶⁾															T					
Electronic - current (without generator)		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 0PA

marking in type number:

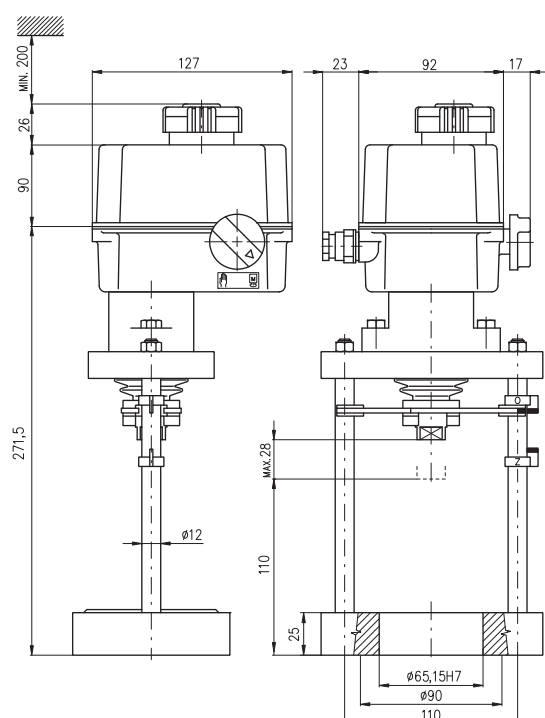
EPK

Technical data

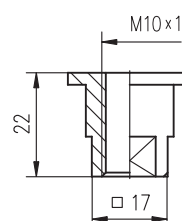
Type	STR 0PA
Marking in valve spec. No.	EPK
Voltage	230 V AC, 24 V AC
Frequency	50 Hz
Power consumption	1 W
Control	3-position (0 - 10 V, (0)4 - 20 mA)
Nominal force	2,4 kN and 4,5 kN
Travel	10 to 28 mm
Enclosure	IP 67
Process medium max. temp.	acc. to used valve
Ambient temperature range	-25 to 55 °C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

Dimensions of actuator



Detail of coupling



Specifikace pohonu STR OPA

Electric servomotor STR 0PA										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		0									
									24 V AC		3									
Nominal force [N]		4500	Running speed		5 mm/min										A					
		4000			10 mm/min										N					
		2400			16 mm/min										P					
Travel			10-28 mm												J					
Control board	DMS3	Con-trol	modulating	0/4 - 20 mA	ON - OFF and pulse	24 V DC	Output	4 - 20 mA								G				
				0/2 - 10 V				passive								H				
Mechanic connection - flange, connection height 110 mm, thread of stem M10x1																	L			
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:

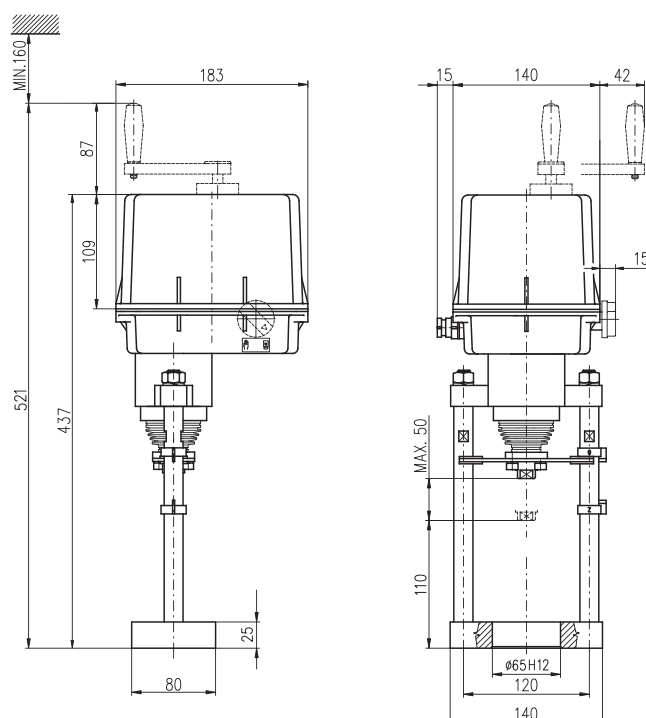
EPL

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																																																																																																																																																																																																																																																																																																													
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																																																																																																																																																																																																																																																																																																																							
	Standard	-25°C to +55°C	IP 65	With regulator (STR 0.1)						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																																																																																																																																																																																																																																																																																																																				
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									3x400 V AC ⁽⁶⁾			9																																																																																																																																																																																																																																																																																																																					
									3x380 V AC ⁽⁶⁾			M																																																																																																																																																																																																																																																																																																																					
			To connector						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)			G	H	I	J	K	T	U	V	W	Y																																																																																																																																																																																																																																																																																																											
			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	E																																																																																																																																																																																																																																																																																																																			
								20 mm																																																																																																																																																																																																																																																																																																																									
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Remote position transmitter	Without transmitter																				A																																																																																																																																																																																																																																																																																																												
	Resistance	Sigle	Wiring	---	Output	1 x 100 Ω																																																																																																																																																																																																																																																																																																																											

Permissible combinations of accessories and codes:

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

Notes:

⁽⁶⁾ applies for version without regulator

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



Electric actuators

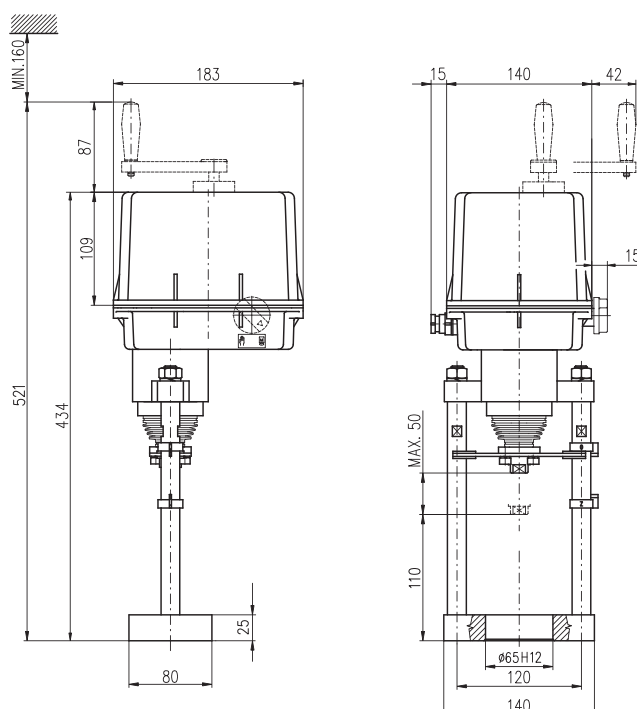
Regada**STR 0.1PA**

marking in type number:

EPL**Technical data**

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

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

Dimensions of actuators

Specification of actuator STR 0.1PA

Electric servomotor STR 0.1PA										438.		X	-	X	X	X	X	X	/	X	X	
Climatic resistance		Standard	-25°C to +55°C			IP 67			1													
		Tropical	-25°C to +55°C			IP 67			6													
Electric connection			To terminal board			Voltage		230 V AC				0										
								24 V AC				3										
								3x400 V AC				2										
								3x380 V AC				N										
Nominal force [N]	4600	Running speed	10 mm/min										G									
			16 mm/min										H									
			25 mm/min										I									
			32 mm/min										J									
			40 mm/min										K									
	7200		10 mm/min										T									
			16 mm/min										U									
			25 mm/min										V									
			32 mm/min										W									
			40 mm/min										Y									
Stroke			10-50 mm										I									
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																C						
		Without accessories																				
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:

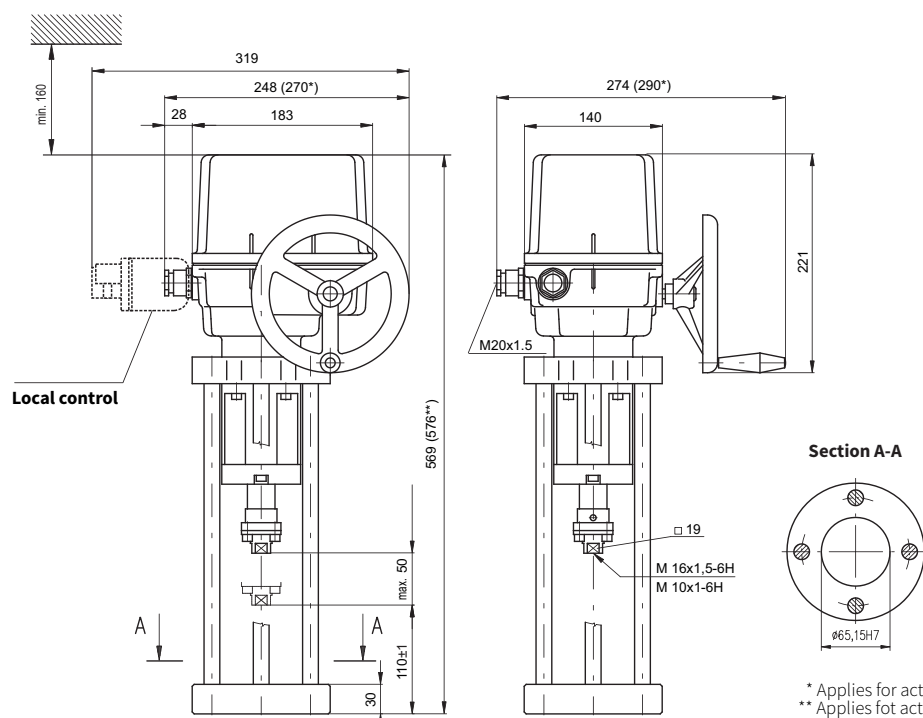
EPI

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 webside www.regada.sk

Dimensions of actuator



* Applies for actuators with connector
 ** Applies for actuators with enclosure IP 67

Specification of actuators ST 1, STR 1

Electric servomotor ST 1, STR 1										491.	X	-	X	X	X	X	X	/	X	X										
Climatic resistance	Standard	-25°C to +55°C		IP 65	Without regulator (ST 0.1)					0																				
				IP 67						1																				
	Tropical	-25°C to+55°C		IP 67						6																				
	Universal	-50°C to +40°C		IP 67						8																				
	Standard	-25°C to +55°C		IP 65	With regulator (STR 0.1)			Resistance feedback	A																					
				IP 65				Current feedback	C																					
	Tropical	-25°C to +55°C		IP 67				Resistance feedback	G																					
				IP 67				Current feedback	J																					
Electric connection				To terminal board				Voltage	24 V DC		A																			
									230 V AC		0																			
									24 V AC		3																			
									3x400 V AC ⁶⁾		9																			
									3x380 V AC ⁶⁾		M																			
				To connector					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)																							
				16 mm/min			20 W																							
	7500			32 mm/min	(24V AC/DC)		5																							
				20 mm/min	6																									
Stroke								16 mm				D																		
								20 mm				E																		
								40 mm				H																		
Remote position transmitter	Without transmitter														A															
	Resistance	Single	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	3-wire ⁶⁾	Output	4 - 20 mA																								
						0 - 20 mA																								
		without its source				4 - 20 mA																								
	Capacity	wo its source	2-wire ⁶⁾	2-wire		4 - 20 mA																								
with its source																														
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

Specification of actuators STR 1PA

Electric servomotor STR 1PA										431.	X	-	X	X	X	X	X	/	X	X			
Climatic resistance		Standard		-25°C to +55°C		IP 67		1															
		Cold		-25°C to +55°C		IP 67		3															
		Tropical		-25°C to +55°C		IP 67		6															
Electric connection		To terminal board				Voltage		230 V AC		0													
								24 V AC		3													
								3x400 V AC		2													
								3x380 V AC		N													
Nominal force [N]	10000		Running speed	8 mm/min								0											
				10 mm/min								5											
				16 mm/min								1											
	7500			32 mm/min						2													
				20 mm/min						6													
																							I
Stroke		10-50 mm																					
Control board	DMS3	Con-trol	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



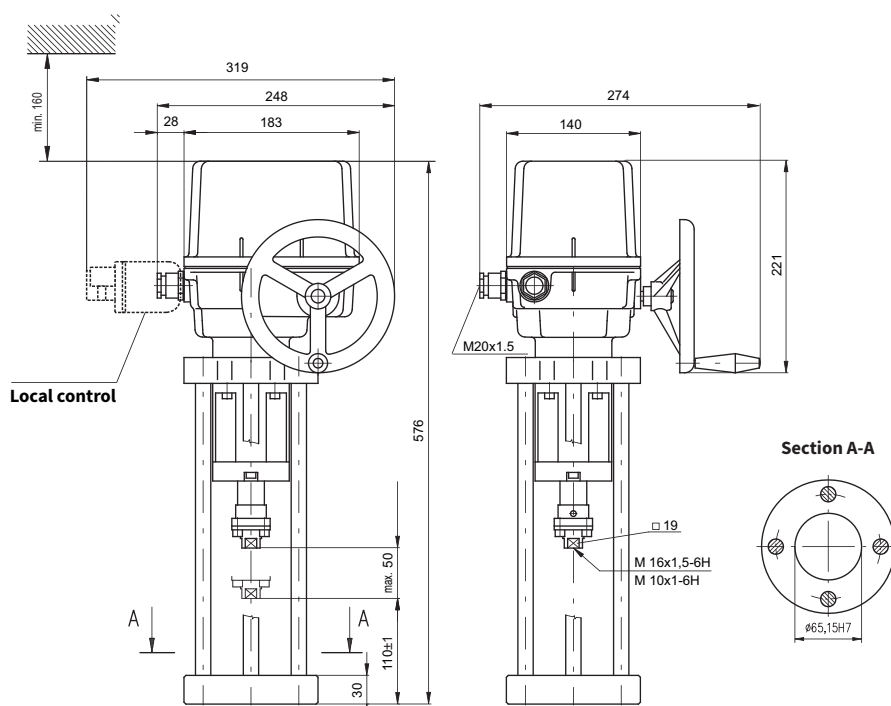
Regada

marking in type number:

EPI

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

Dimensions of actuator





Electric actuators

Regada

ST 1-Ex

marking in type number:

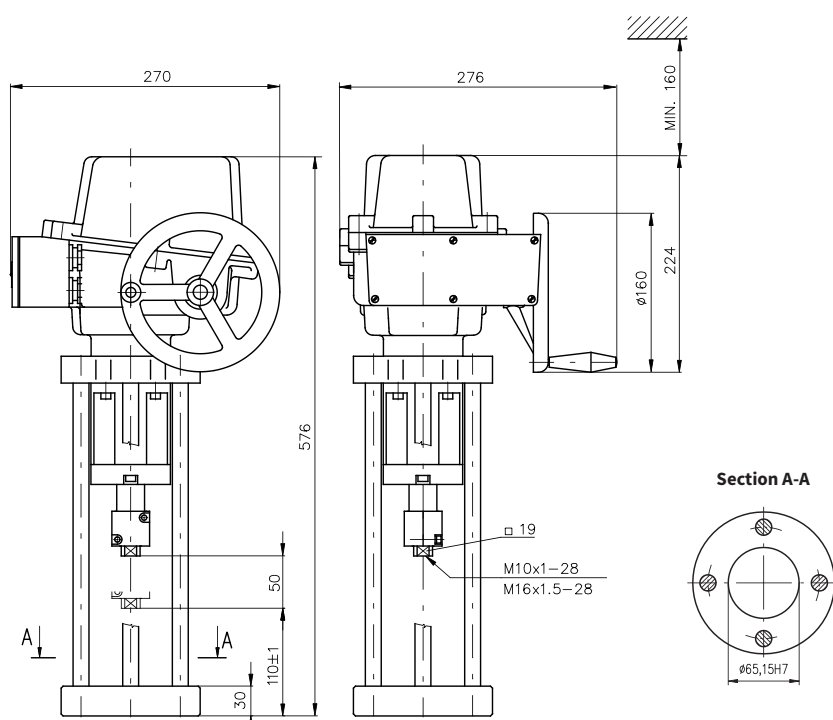
EPJ

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									
					Current feedback				D									
	Universal	-50°C to +40°C			Resistance feedback		IP 67		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					0						
				16 mm/min			(230; 3x400;					1						
	7500 N			32 mm/min			3x380 V AC)					2						
	10000 N			10 mm/min			20 W					5						
	8600 N			20 mm/min			(24V AC/DC)					6						
	5800 N			40 mm/min								7						
Maximal stroke (without transmitter) acc. to mechanical connection					50 mm	Stroke	16 mm									D		
For actuators without transmitter is possible to set up the stroke in between 0 to max.							20 mm									E		
							40 mm									H		
Remote position transmitter	Without transmitter																	A
	Resistance	Single	Wiring	---	Output	1 x 100 Ω										B		
		Dvojité ^{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		
				3 - wire ⁶⁾		0 - 20 mA										T		
		With its source ⁵⁹⁾		2 - wire		4 - 20 mA										V		
				3 - wire ⁶⁾		4 - 20 mA										Q		
				2 - wire ⁶⁾		0 - 20 mA										U		
				3 - wire ⁶⁾		4 - 20 mA										W		
	Capacity	Wo its source		4 - 20 mA											I			
Wi its source ⁵⁹⁾		4 - 20 mA											J					
Wi its source ⁵¹⁾		4 - 20 mA											J					
Mechanical connection - D-shape flange, connection height 110 mm, thread on con. stem M10x1 or M16x1,5																		K

Notes:

⁶⁾ applies for version without regulator

⁵¹⁾ Only for version with regulator and current feedback,

in this excution the output signal is not galvanically separated from the input signal

⁵⁸⁾ applied just for version without auxiliary position switches S5, S6 for 24 V DC

⁵⁹⁾ position transmitter with its source for feeding voltage 24 V DC after agreement with producer



Electric actuators

Regada

ST 2
STR 2

marking in type number:

EPM

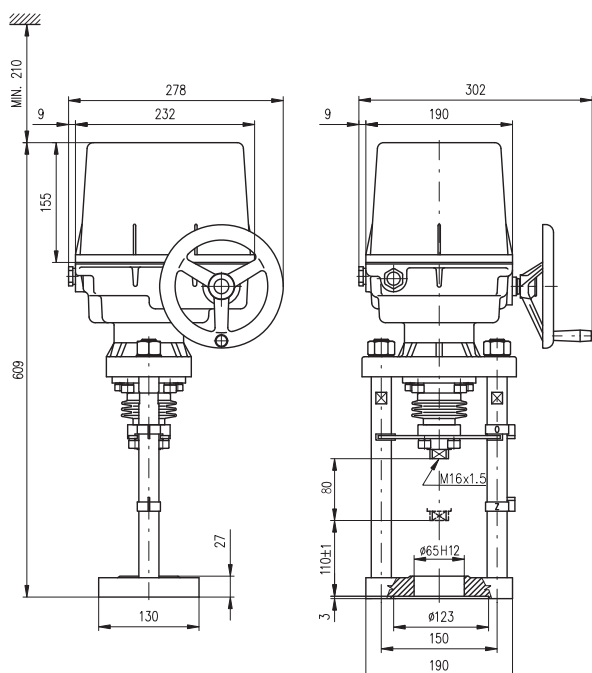
Technical data

Type	ST 2, STR 2
Marking in valve spec. No.	EPM
Voltage	230 V AC, 3x400 V AC, 3x380 V AC, 24 V AC, 24 V DC
Frequency	50 Hz
Power consumption	see specification table
Control	3-position, with regulator 0 - 10 V; (0) 4 - 20 mA
Nominal force	16 and 25 kN
Travel	40, 80 mm
Enclosure	IP 65 / IP 67
Process medium max. temp.	acc. to used valve
Ambient temperature range	-50 to 55 °C
Ambient humidity range	5 - 100% with condensation
Weight	17 to 21,5 kg

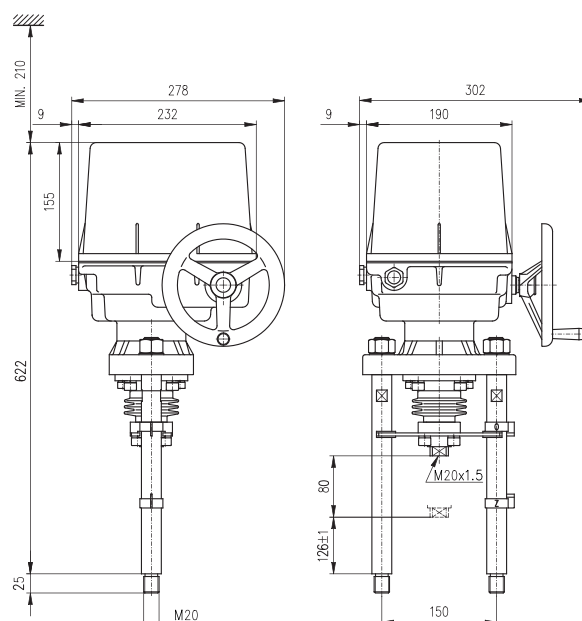
→ **Note:** Specifications and technical data are for information only. Detailed technical informations can be found in producer's data sheet or on the website www.regada.sk

Dimensions of actuator

DN 80 - 150 (connection D)



DN 200 - 300 (connection M)



Electric servomotor ST 2, STR 2							492.	X	-	X	X	X	X	X	/	X	X
Climatic resistance	Standard Tropical Universal	-25°C to +55°C	IP 65	Without regulator (ST 2)			0										
			IP 67				1										
			IP 67				6										
			IP 67				8										
	Standard Tropical	-25°C to +55°C	IP 67	With regulator (STR 2)		Resistance feedback	B										
						Current feedback	D										
						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										
		To connector ²¹⁾				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															
U																	
60 mm/min ⁶⁾		D															
		V															
	W																
	80 mm/min ⁶⁾	E															
		Y															
F																	
Z																	
Stroke		Max. (without transmitter) ⁴¹⁾ ... 100 mm			Wi transmitter	40 mm 80 mm			H K								

CV/SV 300 line ... **58**

Remote position transmitter	Without transmitter																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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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

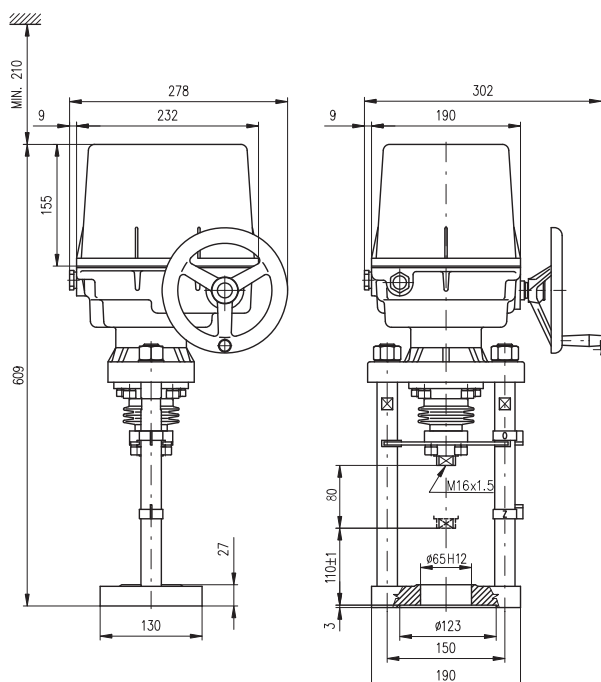
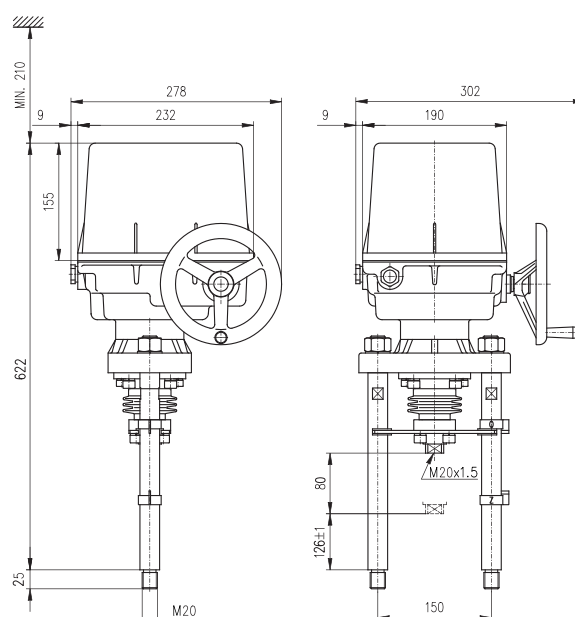
Regada**STR 2PA**

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	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				0									
			Through reverse contactors					3x400 V AC				2									
								3x380 V AC				N									
			Contactless switching					3x400 V AC				E									
								3x380 V AC				F									
Nominal force [N]		Running speed		230 V		3x400 V, 3x380 V															
25 000		10 mm/min		●		—						A									
		20 mm/min		●		●						J									
		32 mm/min		●		●						B									
		40 mm/min		●		●						L									
		50 mm/min		—		●						C									
		60 mm/min		—		●						R									
20 000		10 mm/min		●		—						D									
		20 mm/min		●		●						V									
		32 mm/min		●		●						W									
		40 mm/min		●		●						E									
		50 mm/min		●		—						Y									
		50 mm/min		—		—						Z									
		60 mm/min		●		●						C									
		60 mm/min		—		●						R									
16 000		80 mm/min		—		●						D									
		100 mm/min		—		●						V									
		10 mm/min		●		—						W									
		20 mm/min		●		●						E									
		32 mm/min		●		●						Y									
		40 mm/min		●		●						Z									
		50 mm/min		●		—						W									
		50 mm/min		—		●						E									
		60 mm/min		●		—						Y									
		60 mm/min		—		●						Z									
Stroke		80 mm/min		●		—						E									
		80 mm/min		—		●						Y									
		100 mm/min		—		●						Z									
		100 mm/min		—		●															
Stroke						20-80 mm						K									
Control board	DMS3	Con-trol	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, stem thread M16x1,5										D								
			Columns, connection height 126 mm, stem thread M20x1,5										M								
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	



Electric actuators

Rotork

CVL

marking in type number:

EQL

Technical data				
Type	CVL-500 (Ex)	CVL-1000 (Ex)	CVL-1500 (Ex)	CVL-5000 (Ex)
Marking in valve spec. No.	EQL			
Version	Electric actuator (optionally with safety function)			
Voltage	230V AC, 24V DC			
Frequency	50 Hz			
Power consumption	4 - 20 mA			
Control	4 - 20 mA			
Speed	6,35 mm/s	2,54 mm/s	2,54 mm/s	2,54 mm/s
Safety function resetting	max. 6 s	max. 20 s	max. 20 s	max. 45 s
Supercapacitor charge time	30 s	100 s	100 s	300 s
Safety function	Adjustable function direct (NO) / indirect (NC)			
Nominal force	2 kN	4 kN	6,3 kN	16 a 20 kN
Travel	16, 20 mm	16, 20 mm	16, 20, 40 mm	40, 80, 100 mm
Enclosure	IP 68			
Process medium max. temp.	acc. to used valve			
Ambient temperature range	-30 to 70°C (for low temperatures -40 to 60°C) version Ex -20 to 60°C (for low temperatures -40 to 60°C)			
Manual control	optional equipment			
Weight	16 kg	24 kg	24 kg	53 kg

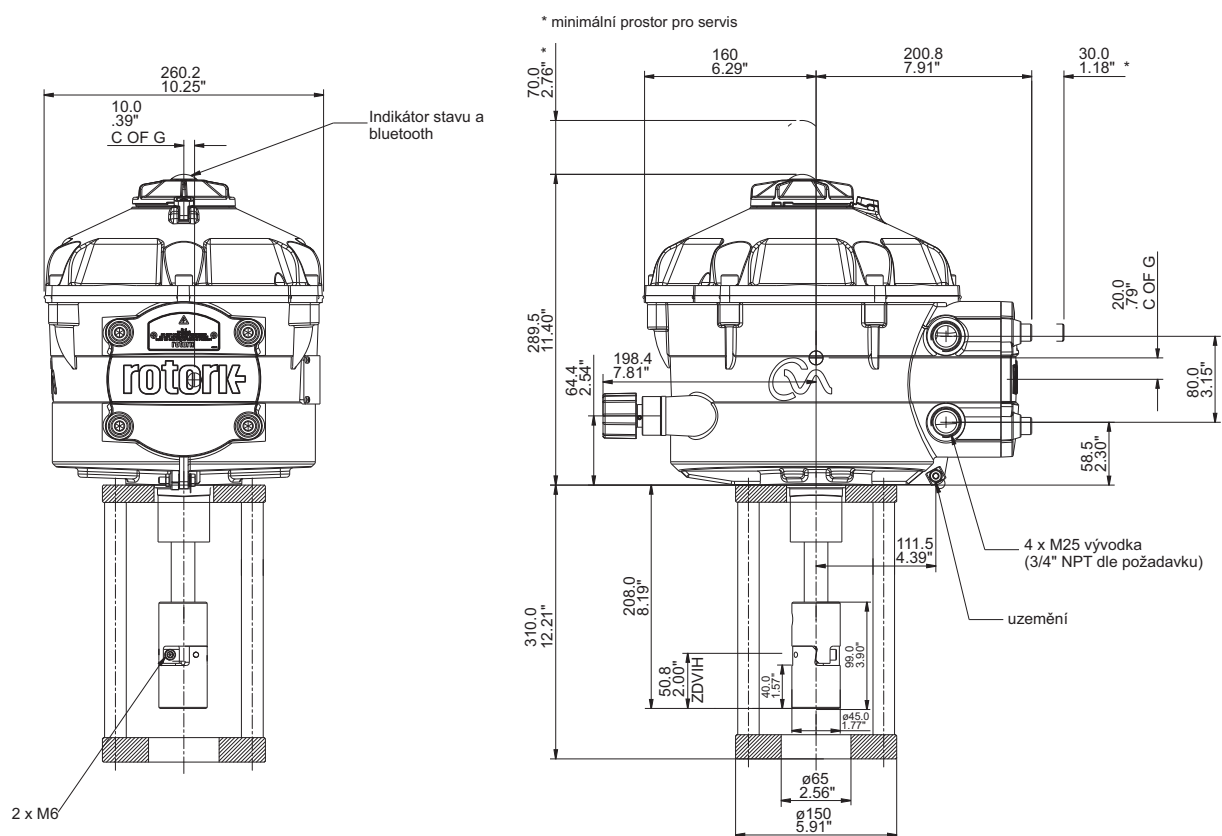
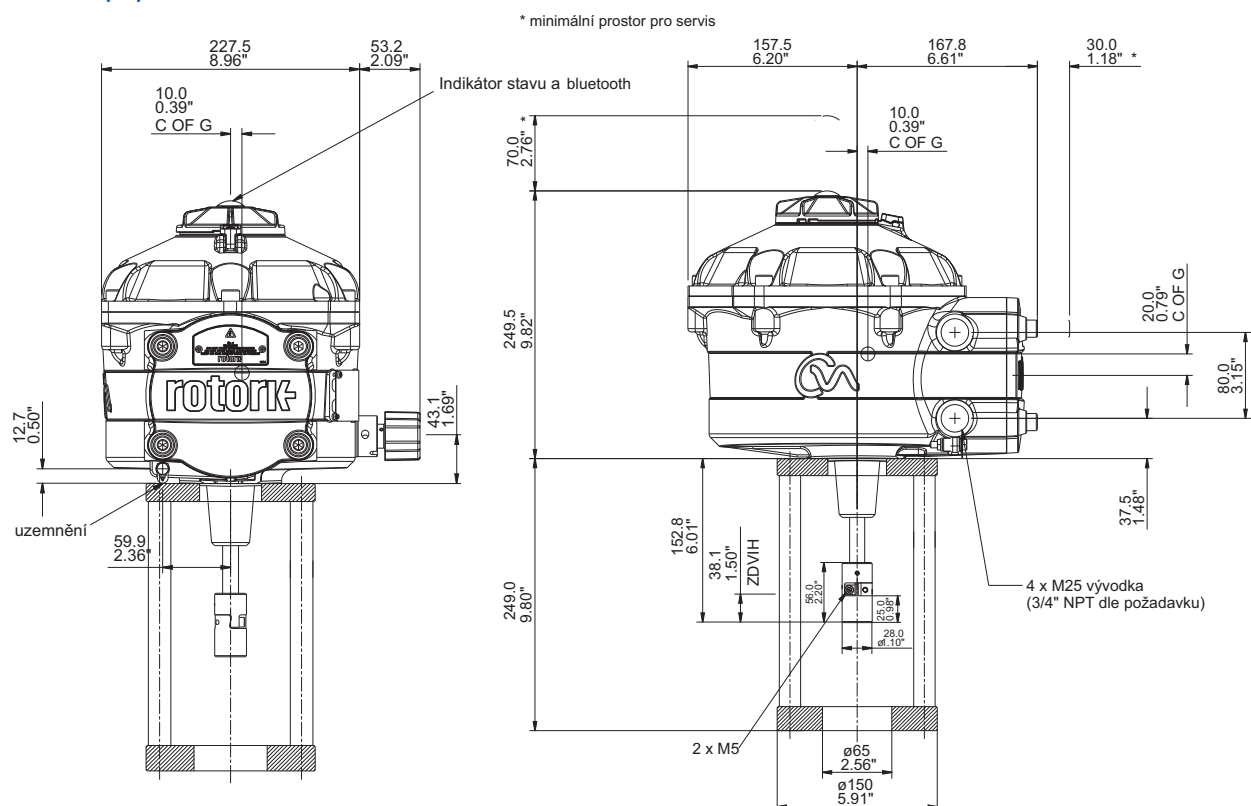
→ **Note:** Specifications and technical data are for information only. Detailed technical informations can be found in producer's data sheet or on the website www.rotork.com

Optional accessories	
Safety function	equipment equipped with supercapacitors, to ensure emergency adjustment
HART	communication protocol
Foundation Fieldbus	communication protocol
Profibus DP	communication protocol
Pakscan P3	2-wire system
Modbus	communication protocol
RIRO	communication protocol

I / O parameterization

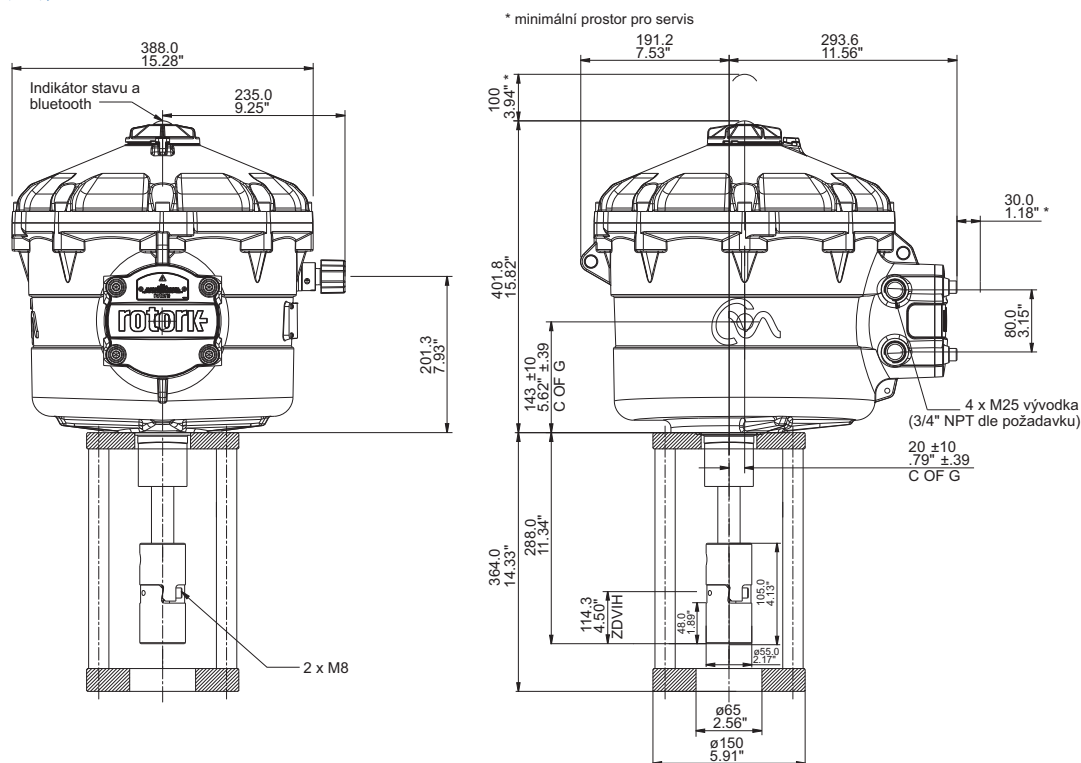
Possibility to set direct / indirect function of the drive, choice of action in case of signal loss.
Independent closing and opening settings forces in the range of 40-100%.

CVL-500 (Ex)

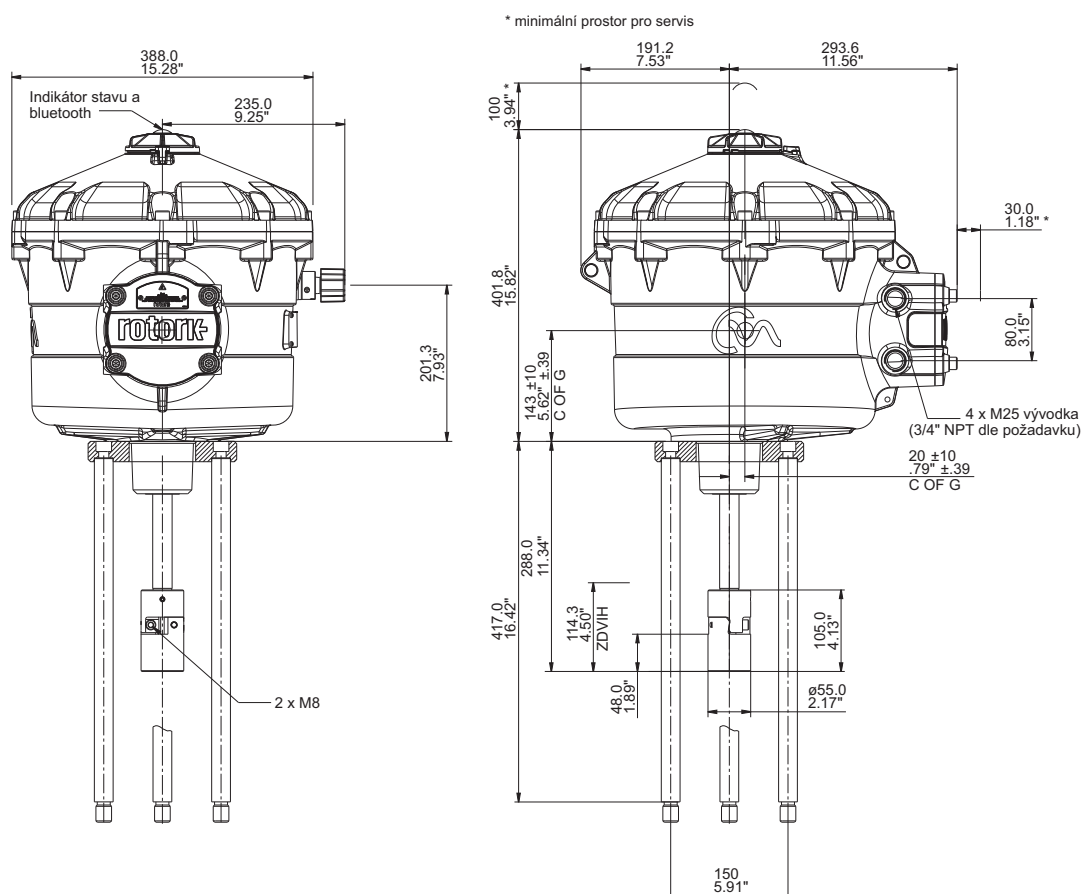


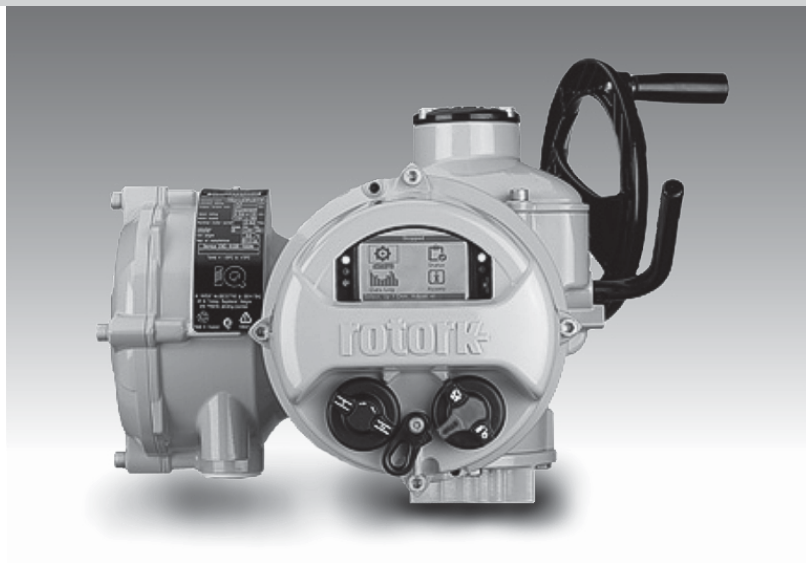
Dimensions of actuator

CVL-5000 (Ex), NPS 3" - 6"



CVL-5000 (Ex), NPS 8" - 16"





Electric actuators

Rotork**Ex IQM 10****Ex IQM 12**

marking in type number:

EQA, EQB**Technical data**

Type	IQM 10	IQM 12	Ex IQM 10	Ex IQM 12
Marking in valve spec. No.	EQA		EQB	
Version	Electric multi-turn actuator (3rd generation)			
Voltage	3-phase, 380 or 400V AC			
Frequency	50 Hz			
Control	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 valve travel 16, 20, 40 mm			
Enclosure	IP 68			
Process medium max. temp.	acc. to used valve			
Ambient temperatrure range	-30 to 70°C (optionally -40 to 70°C, -50 tož 40°C)		-20 to 70°C (optionally -40 to 70°C, -50 to 40°C)	
Weight	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.rotork.com

Optional accessories

Expanding 4 pcs of freely programmable potential-free contacts S5 - S8 for signaling drive states.

The supply voltage of the above contacts can be selected between 24 V DC and 120 V AC

Actuator control via Folomatic module 4-20mA

Position transmitter CPT 4-20 mA

Interrupter timer (intermittent opening/ closing actuator)

HART - communication protocol

Foundation Fieldbus - communication protocol

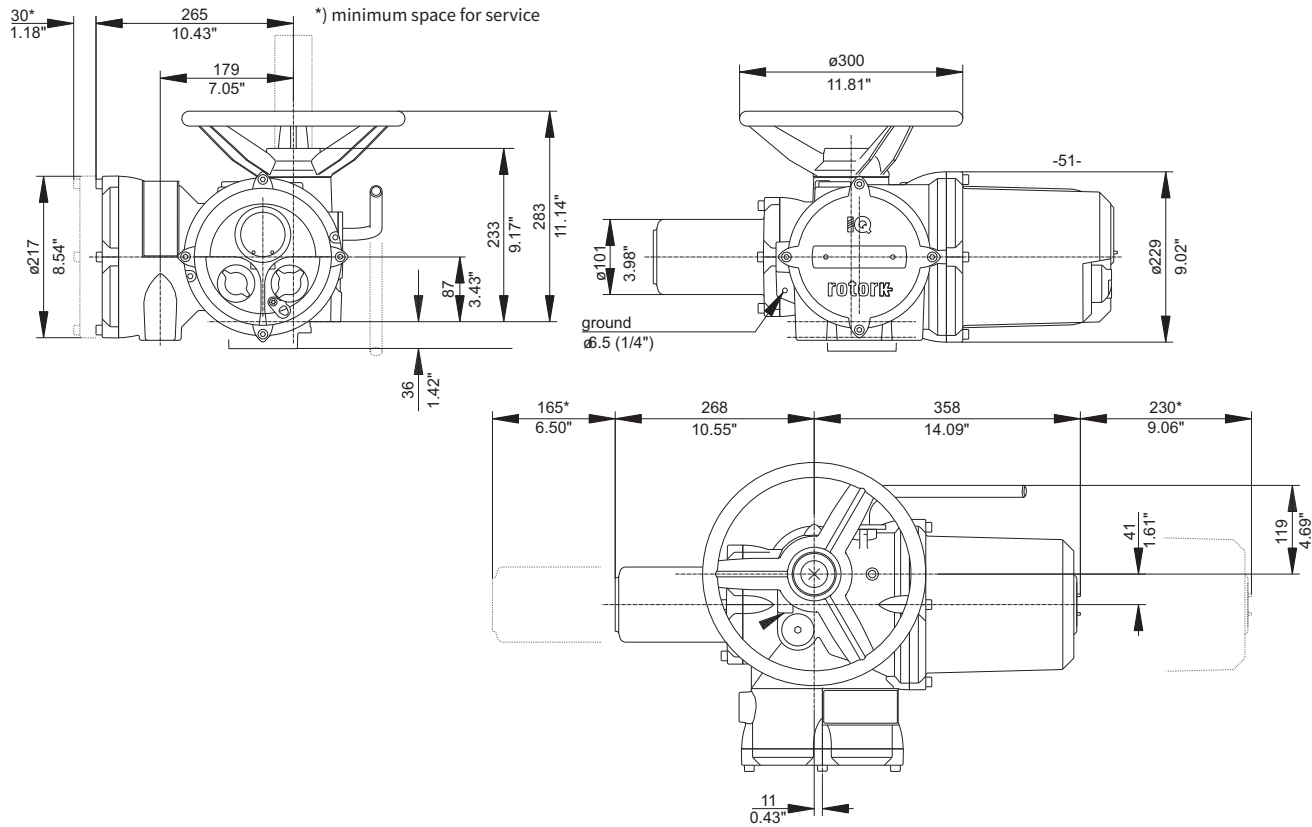
Profibus DP - communication protocol

Pakscan P3 - communication protocol / 2-wire system

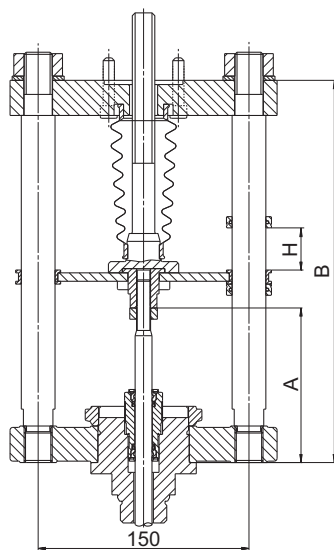
Modbus - communication protocol

Dimensions of actuator

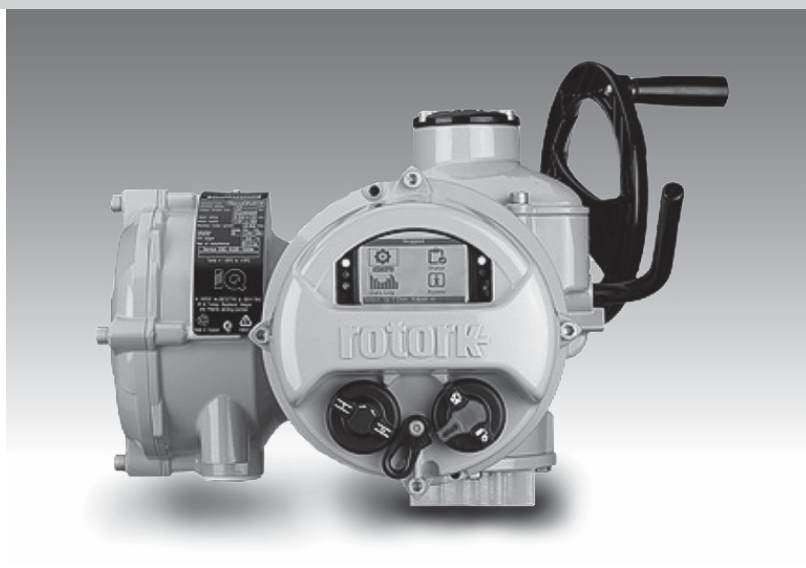
IQM 10, Ex IQM 12



Attachement yoke (2 or 4 columns)



For valves	No. of columns	A	B	Weight
CV 3xx NPS 1/2" - 6"	2	110	272	~ 8 kg
CV 3xx NPS 8" - 16"	4	140	420	~ 15 kg



Electric actuators

Rotork**IQM 20****Ex IQM 20**

marking in type number:

EQD, EQE

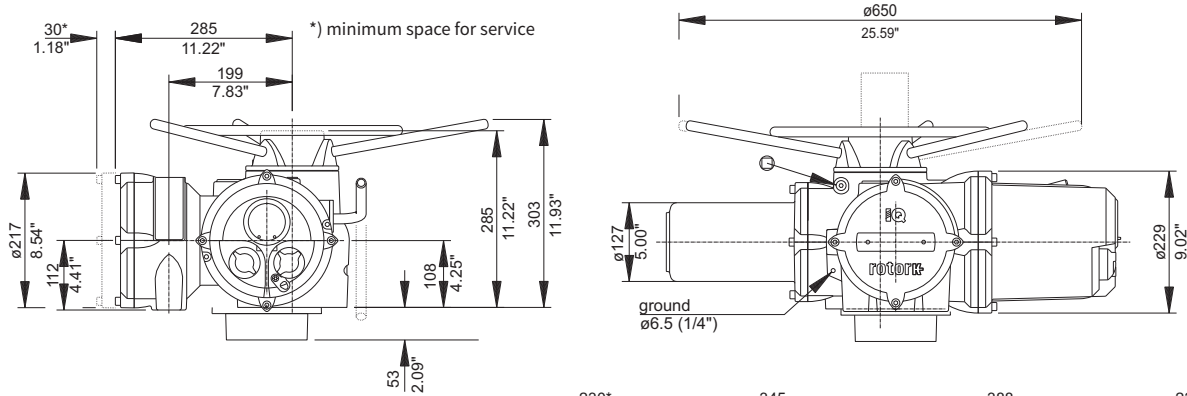
Technical data		
Type	IQM 20	Ex IQM 20
Marking in valve spec. No.	EQD	EQE
Version	Electric multi-turn actuator (3rd generation)	
Voltage	3-phase, 380 or 400V AC	
Frequency	50 Hz	
Control	4 - 20 mA	
Nominal force	80 Nm~21,6 kN, 100 Nm~27 kN, 120 Nm~32 kN	
Travel	acc. to valve stroke 80, 100 mm	
Enclosure	IP 68	
Process medium max. temp.	acc. to used valve	
Ambient temperature range	-30 to 70°C (volitelně -40 to 70°C, -50 to 40°C)	-20 to 70°C (volitelně -40 to 70°C, -50 to 40°C)
Weight	54 kg	

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

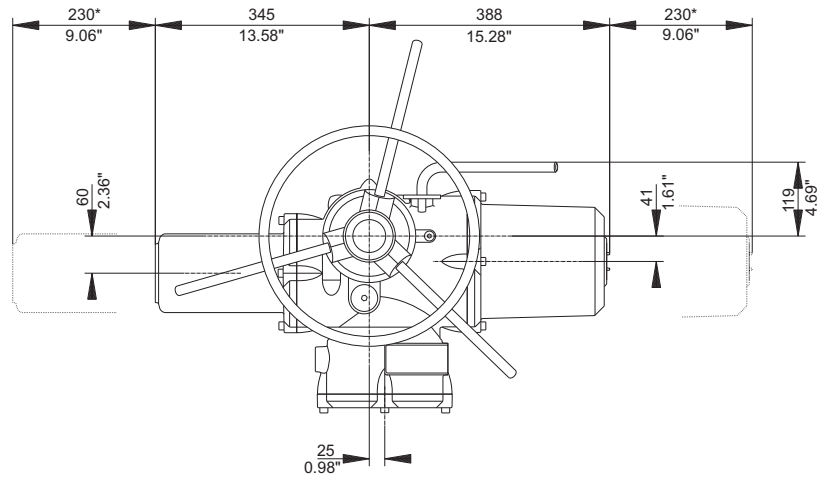
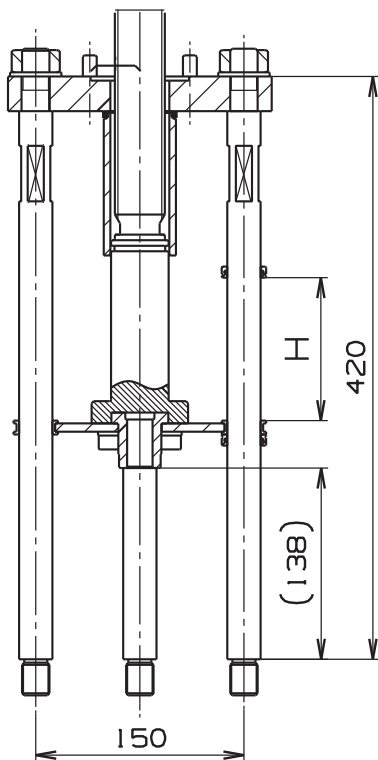
Optional accessories
Expanding 4 pcs of freely programmable potential-free contacts S5 - S8 for signaling drive states.
The supply voltage of the above contacts can be selected between 24 V DC and 120 V AC
Actuator control via Folomatic module 4-20mA
Position transmitter CPT 4-20 mA
Interrupter timer (intermittent opening/ closing actuator)
HART - communication protocol
Foundation Fieldbus - communication protocol
Profibus DP - communication protocol
Pakscan P3 - communication protocol / 2-wire system
Modbus - communication protocol

Dimensions of actuator

IQM 20, Ex IQM 20



Control NPS 8" - 16" Connection A, F10, Tr36x6-LH





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.	CV/SV 300 line ... 68		acc. to used valves			
Ambient temperatrure range	-40 to 80 °C					
Ambient humidity range	95 %					
Weight	see dimensions table					

→ **Note:** Specifications and technical data are for information only. Detailed technical informations can be found in producer's data sheet or on the 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
Signalisation switches typ SGE985	Adjustable end position switches
Air set type typ FRS 923 (-40 to 80°C)	Reduces the supply pressure to a value required
Solenoid valve standard type SC G327B001	Direct operated electromagnetic valve, version 3/2, function U (universal), G 1/4"
Solenoid valve inexplosive EEx em type EM G327B001	Direct operated electromagnetic valve, version 3/2, function U (universal) G 1/4", with the increased safety/epoxy encapsulation operator
Solenoid valve inexplosive EEx d type NF G327B001	Direct operated electromagnetic valve, version 3/2, function U (universal), G 1/4", solid conclusion
Air lock relay, type EIL 200	Retaining device for closing of air pipeline on a pressure drop

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.

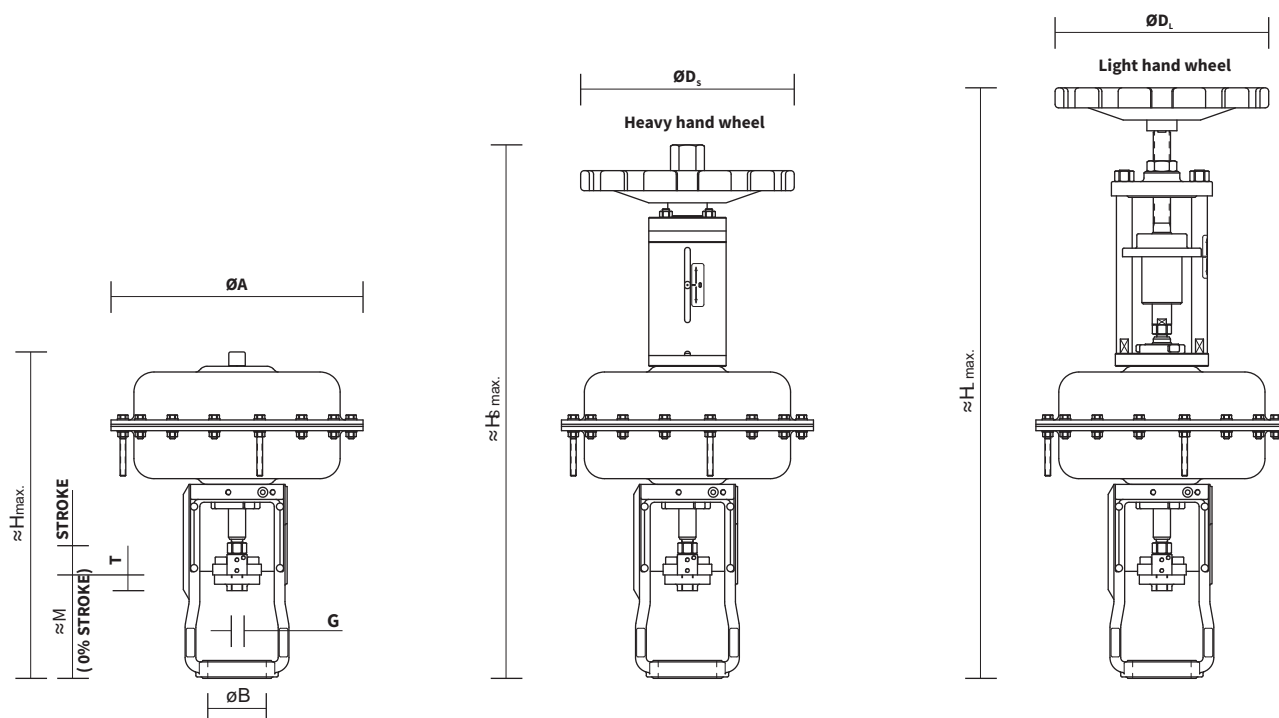
Direct and indirect functions

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 _L [mm]	D _s [mm]	D _L [mm]	Stroke [mm]	B [mm]	M [mm]	G [mm]	T [mm]	[kg]	with RK _s [kg]	with RK _L [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

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



Pneumatic actuators

Flowserve

PO(PB) 1502

PO(PB) 3002

marking in type number:

PFD

Technical data

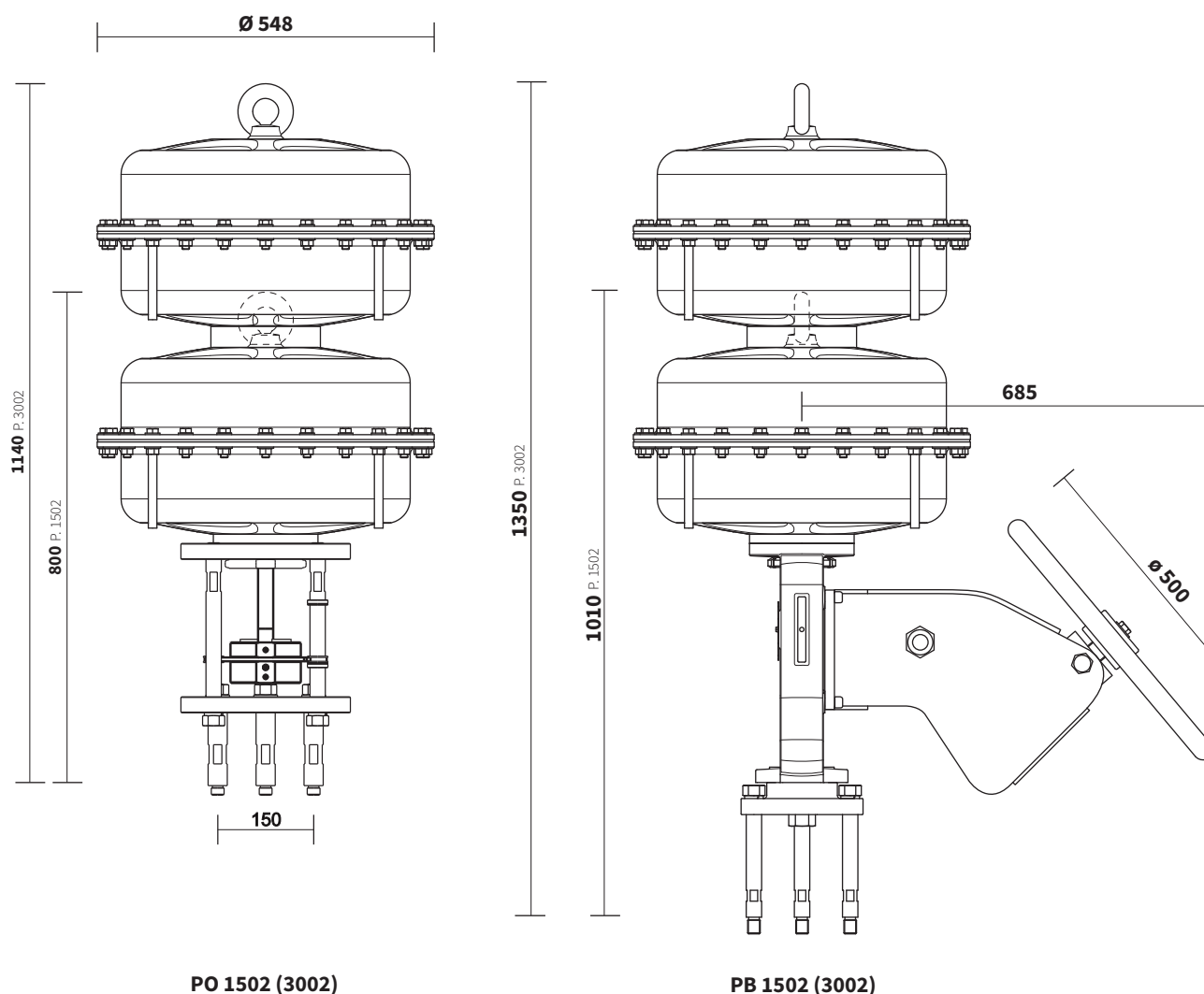
Type	PO(PB) 1502		PO(PB) 3002	
Marking in valve spec. No.	PFD		PFE	
Feeding pressure	6,0 bar max			
Function	direct	indirect	direct	indirect
Control	pneumatic signal 0,2 - 1,0 bar current signal 0(4) - 20 mA			
Nominal force	according to table of nominal force values			
Travel	80, 100 mm			
Enclosure	IP 54			
Process medium max. temp.	acc. to used valves			
Ambient temprature range	-40 to 80 °C			
Ambient humidity range	95 %			
Weight	124 kg - with hand wheel 174 kg		240 kg - with hand wheel 290 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 Elektropneumatic positioner ABB TZIDC	Digital positioner with input 4(0) - 20 mA
Signalisation switches typ SGE985	Adjustable end position switches
Air set type G651 (-20 to 50°C) Air set type typ FRS 923 (-40 to 80°C)	Reduces the supply pressure to a value required
Solenoid valve standard type SC G551A005 Solenoid valve standard type SC G327B001	Direct operated electromagnetic valve, version 3/2, function U (universal), G 1/4"
Solenoid valve inexplosive EEx em type EM G327B001	Direct operated electromagnetic valve, version 3/2, function U (universal), G 1/4", with the increased safety/epoxy encapsulation operator
Solenoid valve inexplosive EEx d type NF G327B001	Direct operated electromagnetic valve, version 3/2, function U (universal), G 1/4", solid conclusion
Solenoid valve 5/2-way type SCG551B417	Direct operated electromagnetic valve, version 5/2, function U (universal), G 1/4", (use for double-acting actuators)
Air lock relay, type EIL 200	Retaining device for closing of air pipeline on a pressure drop
Booster-valve type EIL 100	Airflow enhancer

Rozměry pohonů Flowserve 1502 a 3002



Specification No. of Flowserve actuators 1502 and 3002

				PX XXXX	X	XX	X	X	X
Type of actuator		1500 cm ²		PO 1502					
		1500 cm ²		PB 1502					
		3000 cm ²		PO 3002					
		3000 cm ²		PB 3002					
Colour			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			
		PO 3002	H = 100 mm	1,2 - 2,6		NA			
Hand wheel		without hand wheel						O	
		side light wheel						S	
Function		direct						A	
		indirect						Z	
Travel H		80						D	
		100						E	



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					

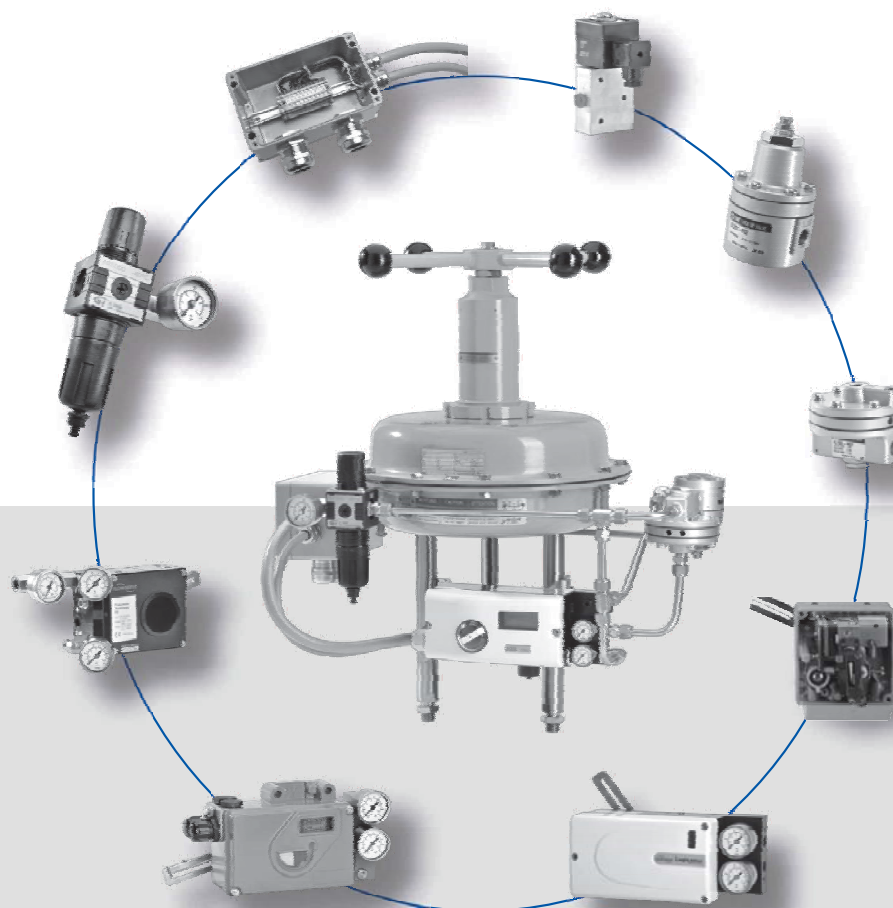
Direct and reverse functions

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

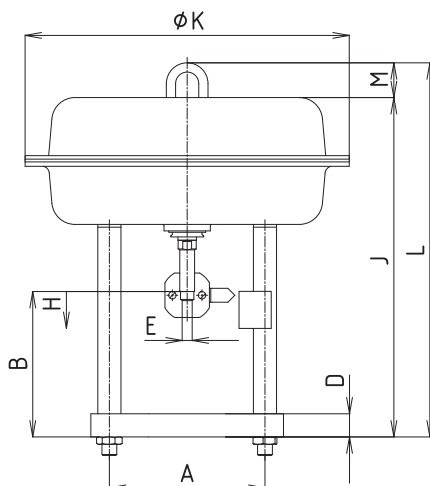
Pneumatic positioner type SRI 981	Device with pneumatic input of 20 - 100 kPa
Electropneumatic positioner type SRI 986	Analog positioner with input signal 4(0) - 20 mA
Electropneumatic positioner (analog) type SRD 990	Device with electric input of 4 (0) - 20 mA and direct pneumatic output into actuator.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



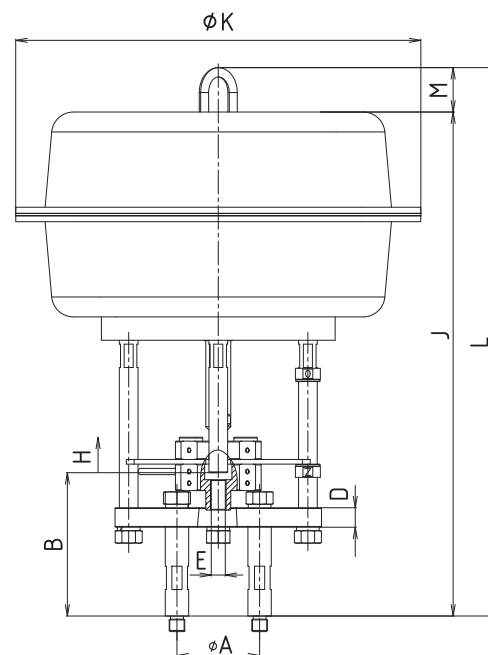
Dimensions and weight of actuators A. Hock series 2000

Typ	Connection version	Main dimensions of diaphragm actuators and manual control												Weight		Hand wheel	
		A	B	D	E	J	K	L	M	R	U	V	W	0,2-1,0	>	side	upper
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]		[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

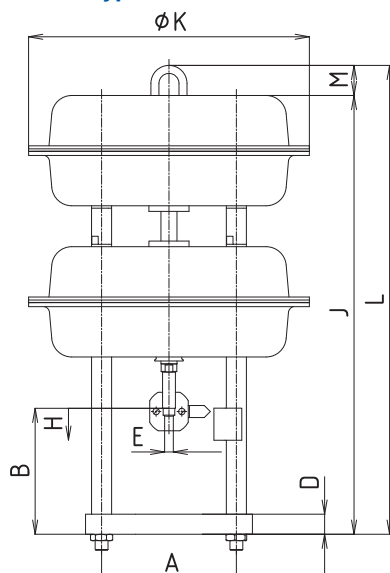
Standard actuator

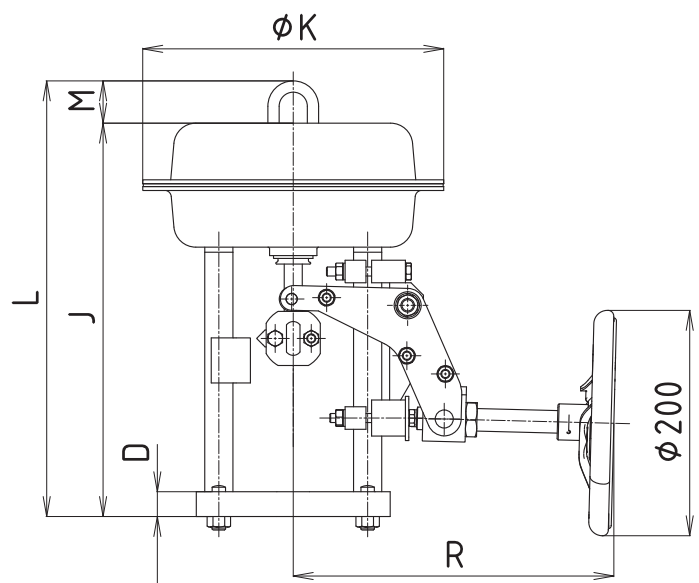


Standard actuator with linear unit 2116(S)

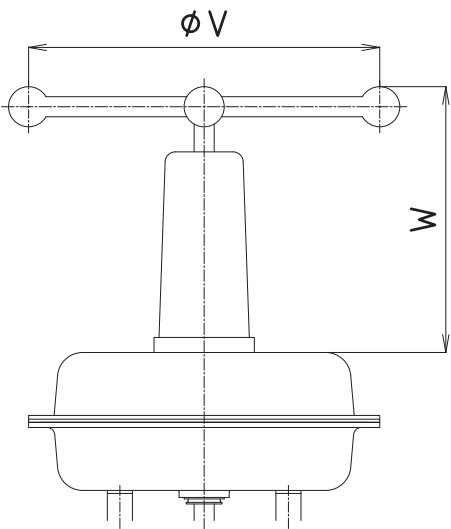


Tandem-type actuator 2112T

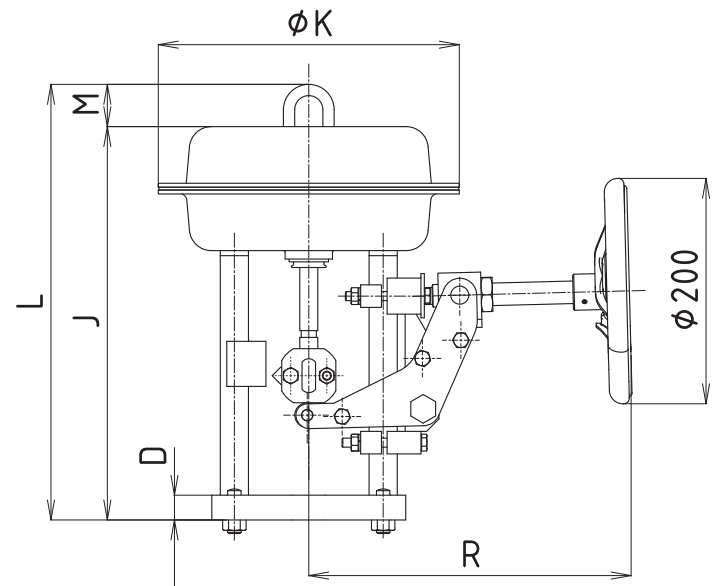




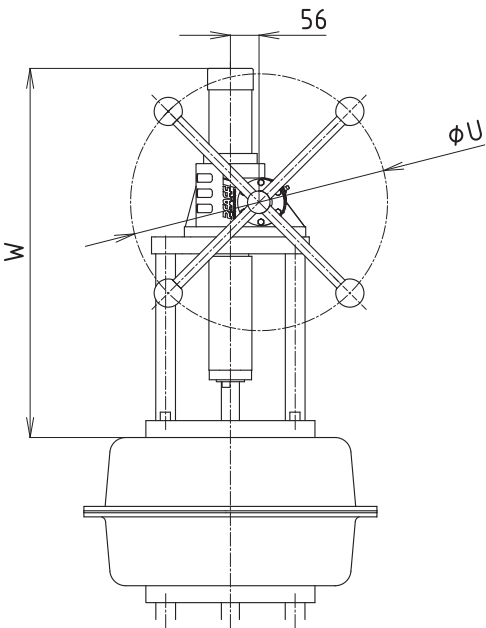
Standard actuator with side wheel (NO)



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

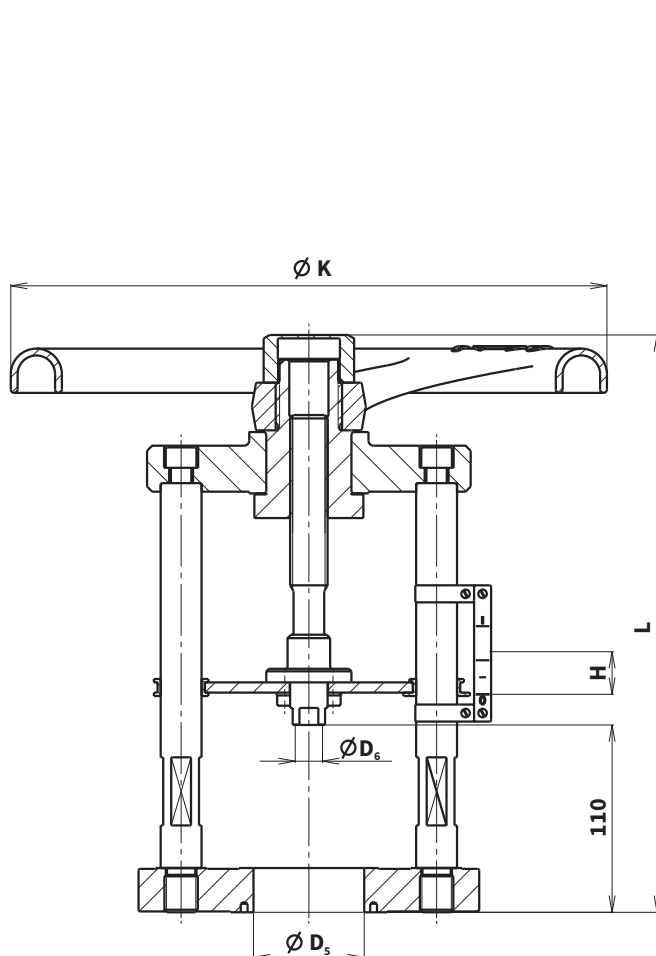
				P2-0K-	X	X	X	(AXXX)
Spring range [bar]	Without hand wheel	0,2 - 1,0	all actuators	A				
		0,8 - 2,2	all actuators, except 2112-50 / 2112T-50	B				
		1,2 - 3,0	2109	V				
		1,5 - 3,8	2109 (NC only)	H				
		1,6 - 3,2	2112-30 (NC only)	M				
		1,4 - 2,8	only 2112-30 / 2112T-30	W				
		1,5 - 3,0	2112T-30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

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

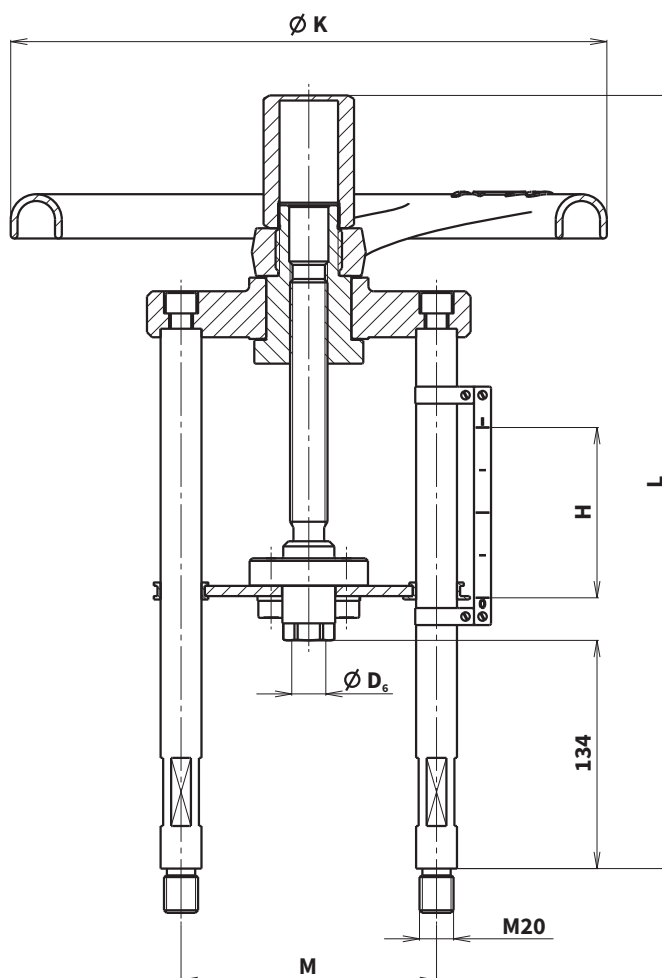
Specification No. of actuators A. Hock (stainless steel version) series 2000									
				P5-0K-	X	X	X	(AXXX)	
Spring range [bar]	Without hand wheel	0,2 - 1,0	all actuators		A				
		0,8 - 2,2	all actuators, except 2112-50 / 2112T-50		B				
		1,6 - 3,2	2112-30 (NC only)		M				
		1,4 - 2,8	only 2112-30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

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

Hand wheels for RV / UV 3x0 and 3x2



Hand wheel actuating of valves DN 15 - 150



Hand wheel actuating of valves DN 200 - 400

Dimensions of hand wheels

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

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

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

Actuator marking in valve specification No.

Electric actuator Regada Modact MTR	EPD	Electric actuator Schiebel AB5	EZE
Electric actuator Regada ST 0	EPK	Electric actuator Schiebel exAB5	EZF
Electric actuator Redgada ST 0.1	EPL	Electric actuator Schiebel rAB5	EZG
Electric actuator Regada Isomact ST 1 Ex	EPJ	Electric actuator Schiebel exrAB5	EZH
Electric actuator Regada Isomact ST 2	EPM	Electric actuator Schiebel rAB8	EZK
Electric actuator Auma SA 07.2	EEA	Electric actuator Schiebel exrAB8	EZL
Electric actuator Auma SA Ex 07.2	EAB	Electric actuator Rotork IQM10 and IQM12	EQA
Electric actuator Auma SAR 07.2	EAC	Electric actuator Rotork Ex IQM10 and Ex IQM12	EQB
Electric actuator Auma SAR Ex 07.2	EAD	Electric actuator Rotork IQM20	EQD
Electric actuator Auma SA 07.6	EAE	Electric actuator Rotork Ex IQM20	EQE
Electric actuator Auma SA Ex 07.6	EAF	Electric actuator Rotork CVL-500 to CVL-5000	EQL
Electric actuator Auma SAR 07.6	EAG	Pneumatic actuator Flowserve PA 253	PFA
Electric actuator Auma SAR Ex 07.6	EAH	Pneumatic actuator Flowserve PB 503	PFB
Electric actuator Auma SA 10.2	EAI	Pneumatic actuator Flowserve PB 701	PFC
Electric actuator Auma SAR 10.2	EAJ	Pneumatic actuator Flowserve PO 1502	PFD
Electric actuator Auma SAR Ex 10.2	EAK	Pneumatic actuator Flowserve PO 3002	PFE
Electric actuator Auma SA Ex 10.2	EAL	Pneumatic actuator A. Hock 2109-20	PHF
Electric actuator Schiebel AB3	EZA	Pneumatic actuator A. Hock 2112-30, A. Hock 2112-50	PHA
Electric actuator Schiebel exAB3	EZB	Pneumatic actuator A. Hock 2112T-30, A. Hock 2112T-50	PHB
Electric actuator Schiebel rAB3	EZC	Pneumatic actuator A. Hock 2116-40	PHC
Electric actuator Schiebel exrAB3	EZD	Hand wheel for NPS ½" - 1½"	R16
Electric actuator Schiebel AB5	EZE	Hand wheel for NPS 2"	R20
Electric actuator Schiebel exAB5	EZF	Hand wheel for NPS 3" - 4"	R28
		hand wheel for NPS 6" - 16"	R35

Maximal permissible operating pressures according 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	---	---	---	---	---
	300	5.11	5.01	4.66	4.51	4.38	4.19	3.98	3.87	3.76	3.64	3.47	2.88	---	---	---	---	---
	600	10.21	10.02	9.32	9.02	8.76	8.39	7.96	7.74	7.51	7.27	6.94	5.75	---	---	---	---	---
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
	300	5.17	5.17	5.15	4.97	4.80	4.63	4.29	4.14	4.03	3.89	3.65	3.52	3.37	3.17	2.57	1.49	1.27
	600	10.34	10.34	10.30	9.95	9.59	9.27	8.57	8.26	8.04	7.76	7.33	7.00	6.77	6.34	5.15	2.98	2.54
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
	300	4.96	4.81	4.22	3.85	3.57	3.34	3.16	3.09	3.03	2.99	2.94	2.91	2.88	2.87	2.82	2.52	2.50
	600	9.93	9.62	8.44	7.70	7.13	6.68	6.32	6.18	6.07	5.98	5.89	5.83	5.77	5.73	5.65	5.00	4.98

¹⁾ -29°C to 38°C

²⁾ Normalized annealed material only. The deliberate addition of any element which is not listed in ASTM A 217 is inadmissible, with the exception of Ca and Mg for deoxidation.

³⁾ With a temperature above 540°C (1004°F) use only when the carbon content is $\geq 0,04\%$.

Maximal permissible operating pressures according 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	---	---	---	---	---
	300	740	680	655	635	605	570	550	530	505	410	---	---	---	---	---
	600	1480	1360	1310	1265	1205	1135	1100	1060	1015	825	---	---	---	---	---
A217 WC6²⁾	150	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20
	300	750	750	720	695	665	605	590	570	530	510	485	450	320	215	145
	600	1500	1500	1445	1385	1330	1210	1175	1135	1065	1015	975	900	640	430	290
A351 CF8M³⁾	150	275	235	215	195	170	140	125	110	95	80	65	50	35	20	20
	300	720	620	560	515	480	450	440	435	425	420	420	415	385	365	360
	600	1440	1240	1120	1025	955	900	885	870	855	845	835	830	775	725	720

¹⁾ -20°F to 100°F

²⁾ Normalized annealed material only. The deliberate addition of any element which is not listed in ASTM A 217 is inadmissible, with the exception of Ca and Mg for deoxidation.

³⁾ With a temperature above 540°C (1004°F) use only when the carbon content is $\geq 0,04\%$.



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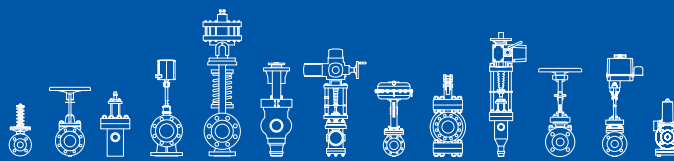
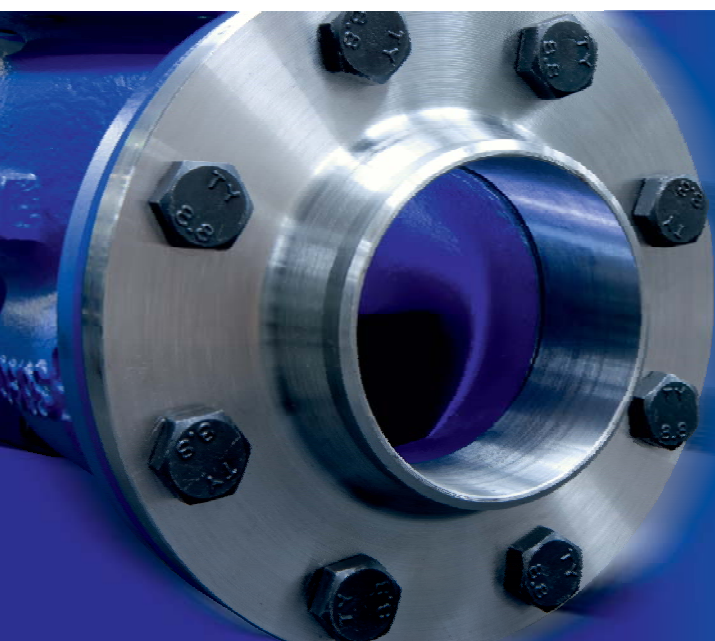
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