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**Control and shut-off valves
CV 300**



Kv / Cv coefficient calculation

Calculation itself is carried out with respect to conditions of regulating circuit and operating medium according to equations mentioned below. Control valve must be designed to be able to regulate maximal flow quantity at given operating conditions. At the same time it is necessary to check whether minimal flow quantity can be even regulated or not.

Condition is the following ratio $r > Kvs / Kv_{min}$

Because of eventual minus tolerance 10% of Kv_{100} against Kvs and requirement for possible regulation within range of maximal flow (decrement and increase of flow), producer recommends to select Kvs value higher than maximal operating Kv value:

$$Kvs = 1.1 \div 1.3 Kv$$

It is necessary to take into account to which extent Q_{max} involve "precautionary additions" that could result in valve oversizing. Flow coefficient Cv indicates the amount of US gallons per minute at a differential pressure 1 psi

$$Cv = Kvs \times 1,156$$

Relations of Kv calculation

		Pressure drop $p_2 > p_1 / 2$ $\Delta p < p_1 / 2$	Pressure drop $\Delta p \geq p_1 / 2$ $p_2 \leq p_1 / 2$
Kv =	Liquid	$\frac{Q}{100} \sqrt{\frac{p_1}{\Delta p}}$	$\frac{Q}{100} \sqrt{\frac{p_1}{\Delta p}}$
	Gas	$\frac{Q_n}{5141} \sqrt{\frac{\rho_n \cdot T_1}{\Delta p \cdot p_2}}$	$\frac{2 \cdot Q_n}{5141 \cdot p_1} \sqrt{\rho_n \cdot T_1}$
	Superh. steam	$\frac{Q_m}{100} \sqrt{\frac{v_2}{\Delta p}}$	$\frac{Q_m}{100} \sqrt{\frac{2v}{p_1}}$
	Sat. steam	$\frac{Q_m}{100} \sqrt{\frac{v_2 \cdot x}{\Delta p}}$	$\frac{Q_m}{100} \sqrt{\frac{2v \cdot x}{p_1}}$

Above critical flow of vapours and gases

When pressure ratio is above critical ($p_2 / p_1 < 0.54$), speed of flow reaches acoustic velocity at the narrowest section. This event can cause higher level of noisiness. Then it is convenient to use a throttling system ensuring low noisiness (multi-step pressure reduction, damping orifice plate at outlet).

Dimensions and units

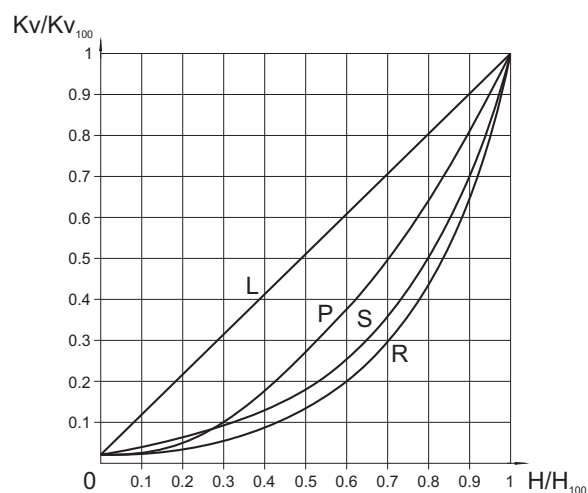
Marking	Unit	Name of dimension
Kv	$m^3 \cdot h^{-1}$	Flow coefficient under condition of units of flow
Kv_{100}	$m^3 \cdot h^{-1}$	Flow coefficient at nominal stroke
Kv_{min}	$m^3 \cdot h^{-1}$	Flow coefficient at minimal flow rate
Cv	US gallon.min ⁻¹	Flow coefficient at minimal flow rate
Q	$m^3 \cdot h^{-1}$	Flow rate in operating conditions (T_1, p_1)
\bar{Q}	$m^3 \cdot h^{-1}$	Flow rate in operating conditions (T_1, p_1)
Q_n	$Nm^3 \cdot h^{-1}$	Flow rate in normal conditions (0°C, 0.101 Mpa)
Q_m	$kg \cdot h^{-1}$	Flow rate in operating conditions (T_1, p_1)
p_1	MPa	Upstream absolute pressure
p_2	MPa	Downstream absolute pressure
p_s	MPa	Absolute pressure of saturated steam at given temperature (T_1)
Δp	MPa	Valve differential pressure ($\Delta p = p_1 - p_2$)
ρ_1	$kg \cdot m^{-3}$	Process medium density in operating conditions (T_1, p_1)
ρ_n	$kg \cdot Nm^{-3}$	Gas density in normal conditions (0°C, 0.101 Mpa)
v_2	$m^3 \cdot kg^{-1}$	Specific volume of steam when temperature T_1 and pressure p_2
v	$m^3 \cdot kg^{-1}$	Specific volume of steam when temperature T_1 and pressure $p_1 / 2$
T_1	K	Absolute temperature at valve inlet ($T_1 = 273 + t_1$)
x	1	Proportionate weight volume of saturated steam in wet steam
r	1	Rangeability

Flow characteristic selection in regard of valve stroke

To make right selection of valve flow characteristic, it is suitable to carry out checking of what stroke values will be reached in different operation states. We recommend to carry out such checking at least for minimal, nominal and maximal flow rates. The principle for flow characteristic selection is to avoid, if possible, 5÷10% of the beginning and end of the valve stroke range.

To calculate valve stroke at different operating conditions with different types of flow characteristics is possible with the advantage of using LDM's calculation programme VALVES. The programme serves for complete design of valve from Kv calculation to specification of a concrete valve with its actuator.

Valve flow characteristics



- L - linear characteristic
 $Kv/Kv_{100} = 0.0183 + 0.9817 \cdot (H/H_{100})$
- R - equal-percentage characteristic (4-percentage)
 $Kv/Kv_{100} = 0.0183 \cdot e^{4 \cdot (H/H_{100})}$
- P - parabolic characteristic
 $Kv/Kv_{100} = 0.0183 + 0.9817 \cdot (H/H_{100})^2$
- S - LDM spline[®] characteristic
 $Kv/Kv_{100} = 0.0183 + 0.269 \cdot (H/H_{100}) - 0.380 \cdot (H/H_{100})^2 + 1.096 \cdot (H/H_{100})^3 - 0.194 \cdot (H/H_{100})^4 - 0.265 \cdot (H/H_{100})^5 + 0.443 \cdot (H/H_{100})^6$

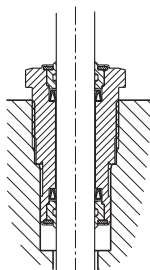
Principles for plug type selection

V-ported plugs should not be used in above-critical differential pressures with inlet pressure $p > 0,4$ Mpa (58 psi) 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 or Cv) for above-critical differential pressures, it is necessary to close both plug and seat with a hard metal overlay, i.e. stellite trim.

Packing - DRSpack® (PTFE)

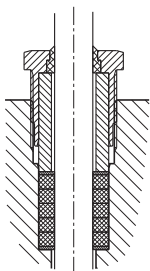
DRSpack® (Direct Radial Sealing Pack) is a packing with high tightness at both low and high operating pressure values.

It is the most used type of packing suitable for temperatures ranging from 0°C to 260°C (32-500 °F). 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.



Packing - Graphite

This type of packing can be used for media with temperature up to 550°C (1022 °F) and pH range: 0 to 14. Packing can be "sealed up" either by screwing the packing screw in or adding another sealing ring. In regard of intensive frictional forces, graphite packing is suitable for actuators with a sufficient linear



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.



Control and shut-off valves NPS 1/2- 16" Class 150, 300 and 600

Description

Control valves CV / SV 320 (Ex) and CV / SV 330 (Ex) [(further only CV / SV 3x0 (Ex))] are single-seated valves designed for regulation and shut-off of process medium flow. In regard of a great variety of used actuators, the valves are suitable for regulation at low as well as high differential pressures in a diversity of operating conditions. Flow characteristics, Kvs and Cv values and leakage rates correspond to international standards.

Valves CV / SV 3x0 (Ex) are equipped with hand wheel or are especially designed for electro-mechanic actuators of the following producers: ZPA Nová Paka, Regada, ZPA Pečky, Schiebel, Auma, Rotork or for pneumatic actuators SPA Praha, Flowserve and LDM.

Application

The valves series CV / SV 3x0 are designed for applications in heating, ventilation, power generation and chemical processing industries. The valves CV / SV 3x0 Ex meet the requirements II 1/2G IIB TX acc.to ČSN-EN 13463-1 (6/2009) and ČSN EN 1127-1 (5/2008), and in connection with suitable actuators, they are also designed for applications in gas and chemical industries. Valve body can be optionally made of cast steel or stainless steel.

The materials selected correspond to recommendations stipulated by ASME B16.34-2013 or ČSN-EN 12516-1 (1/2006). The maximal permissible operating pressures in behaviour with types of material and temperature are specified in the table on page 95 of this catalogue.

Process media

Valves series CV / SV 3x0 are designed for regulation (CV 3x0) and shut-off (SV 3x0) of 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. The valves series CV / SV 3x0 Ex are also designed for control and shut-off of the flow and pressure of 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.

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" to 16"	
Nominal pressure	Class 300 and 600 (Class 150, 300 and 600 weld ended)	
Body material	Cast steel A216 WCC, A217 WC9	Stainless steel A351 CFM8
Seat material : NPS 1/2" - 2"	1.4028 / 17 023.6	1.4571 / 17 348.4
DIN W.Nr./+ČSN NPS 3" - 16"	1.4027 / 42 2906.5	1.4571 / 17 348.4
Plug material : NPS 1/2" - 2"	1.4028 / 17 023.6	1.4581 / 42 2941.4
DIN W.Nr./+ČSN NPS 3" - 6"	1.4021 / 17 027.6	1.4581 / 42 2941.4
NPS 8" - 16"	1.4021 / 17 022.6	1.4581 / 42 2941.4
Operating temperature range	-10 to 550 °C (14 to 1020 °F)	-10 to 550 °C (14 až 1020 °F)
Face to face dimensions	acc. to ISA-75.08.01-2002 /R2007) for flange connection, acc. to ISA-75.08.05-2002 (R2007) for weld ended execution	
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), for NPS 10", 12" and 16" weld ended execution only	
Type of plug	V-ported, contoured, perforated	
Flow characteristic	Linear, equal-percentage, LDMspline®, parabolic, on - off	
Kvs value	0.01 to 1600 m ³ /hour (0,012 to 1850 US gallon/min)	
Leakage rate	Class III. dle ANSI/FCI 70-2-2013 (<0,1% Cv) for control valves with metal-metal seat sealing Class IV. dle ANSI/FCI 70-2-2013 (<0,01% Cv) for shut off valve	
Leakage rate for Ex version	Rate C acc. to ISO 5208:2008	
Rangeability r	50 : 1	
Packing	DRSpack® (PTFE) t _{max} = 260 °C (500 °F), Exp. graphite t _{max} = 550 °C (1020 °F)	

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

Δp_{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 (actuator)										MIDI 660 ST 0 ST 0.1 CVL-1000		Auma Schiebel		Zepadyn 670 ST 1 Ex ST 0.1 CVL-1500		
			Marking in valve specification No.										ENB EPK EPL EQL		EA... EZ...		ENC EPJ EPL EQL		
			Linear force										4 kN		5 kN		6,3 kN		
			Kvs [m ³ /hour]										Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]		
			Cv [US gallon/min]										packing		packing		packing		
NPS	H[mm]	Ds[mm]	1	2	3	4	5	6	7	8	9		graphite	PTFE	graphite	PTFE	graphite	PTFE	
1/2"	16	3	---	---	---	---	---	---	---	---	0.16 ³⁾	0.1...0.01 ³⁾		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⁾	---	---	---	---	---	---	---	---	6,42	10	6,42	10	10	10
		15	4.0 ¹⁾	---	---	---	---	---	---	---	---	---	---	3,05	10	8,91	10	10	10
1"	16	3	---	---	---	---	---	---	---	---	---	0.16...0.01 ³⁾		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⁾	---	---	---	---	---	---	6,24	10	6,42	10	10	10
		15	---	---	4.0 ¹⁾	---	---	---	---	---	---	---	---	3,05	10	8,91	10	10	10
		20	---	6.3 ²⁾	---	---	---	---	---	---	---	---	---	1,38	7,66	4,33	10	8,16	10
		25	10.0	6.3 ⁴⁾	4.0 ⁴⁾	---	---	---	---	---	---	---	---	0,77	4,66	2,59	6,48	4,97	8,86
1 1/2"	16	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⁾	---	---	---	---	6,24	10	6,42	10	10	10
		15	---	---	---	---	4.0 ¹⁾	---	---	---	---	---	---	3,05	10	8,91	10	10	10
		20	---	---	---	6.3 ²⁾	---	---	---	---	---	---	---	1,38	7,66	4,33	10	8,16	10
		40	25	16	10	6.3 ³⁾	4.0 ³⁾	---	---	---	---	---	---	0,19	1,70	0,90	2,42	1,83	3,34
2"	16	50	40	25	16	10	6.3 ⁴⁾	---	---	---	---	---	0,07	0,98	0,50	1,40	1,05	1,96	
		46.2	28,9	18,5	11,6	7.28 ⁴⁾	4.62 ⁴⁾	---	---	---	---	---	10	142	72	240	152	284	

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

Note: The table continues on the next page



For further information on actuating, see actuators' catalogue sheets

Actuating (actuator)

Auma Schiebel ST 1 IQM 10

Auma Schiebel ST 1 Zepadyn 670 Modact MTR IQM 10

Modact Cont. Modact MTN Auma Schiebel IQM 10

Hand wheel

Marking in valve specification No.

EA... EZ... EPI EQ...

EA... EZ... EPI ENC EPD EQ...

EYA EYB EA... EZ... EQ...

Rxx

Linear force

7.5 kN

10 kN

15 kN

Kvs [m³/hour]

Cv [US galon/min]

Δp_{max} [MPa] [psi]

Δp_{max} [MPa] [psi]

Δp_{max} [MPa] [psi]

Δp_{max} [MPa] [psi]

packing

packing

packing

packing

NPS	H[mm]	Ds[mm]	Kvs [m ³ /hour]									graphite PTFE		graphite PTFE		graphite PTFE		graphite PTFE	
			1	2	3	4	5	6	7	8	9	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]				
1/2"	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	10 10 1450 1450	
		6	---	---	---	---	---	---	0.25 ¹⁾ 0.29 ¹⁾	---	---	---	---	10 10 1450 1450	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	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	10 10 1450 1450
		15	4.0 ¹⁾ 4.62 ¹⁾	---	---	---	---	---	---	---	---	---	---	10 10 1450 1450	10 10 1450 1450	---	---	10 10 1450 1450	10 10 1450 1450
		3	---	---	---	---	---	---	---	---	---	---	0.16...0.01 ³⁾ 0.18...0.012 ³⁾	10 10 1450 1450	10 10 1450 1450	---	---	10 10 1450 1450	10 10 1450 1450
1"	16	6	---	---	---	---	---	---	---	---	0.25 ¹⁾ 0.29 ¹⁾	---	---	10 10 1450 1450	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	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	10 10 1450 1450	
		15	---	---	4.0 ¹⁾ 4.62 ¹⁾	---	---	---	---	---	---	---	10 10 1450 1450	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	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	10 10 1450 1450
1 1/2"	16	6	---	---	---	---	---	---	---	---	0.25 ¹⁾ 0.29 ¹⁾	---	---	10 10 1450 1450	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	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	10 10 1450 1450	
		15	---	---	---	---	4.0 ¹⁾ 4.62 ¹⁾	---	---	---	---	---	10 10 1450 1450	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	10 10 1450 1450	
		40	25 28,9	16 18.5	10 11.6	6.3 ³⁾ 7.28 ⁴⁾	4.0 ³⁾ 4.62 ⁴⁾	---	---	---	---	---	---	2,68 4,19 388 608	4,45 5,97 646 866	---	---	4,45 5,97 646 866	4,45 5,97 646 866
2"	16	50	40 46.2	25 28,9	16 18.5	10 11.6	6.3 ³⁾ 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			

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

Note: The table continues on the next page

For further information on actuating, see actuators' catalogue sheets			Actuating (actuator)					Auma Schiebel ST 1		Auma Schiebel ST 1 IQM 10		Zepadyn Modact MTR		Modact Cont. Modact MTN Auma Schiebel IQM 10		Modact MTR ST 2 Zepadyn CVL-5000		Ruční kolo	
			Marking in valve specification No.					EA... EZ... EPI		EA... EZ... EPI EQ...		ENC EPD		EYA EYB EA... EQ...		EPD EPM ENE EQL		Rxx	
			Linear force					7.5 kN		10 kN		10 kN		15 kN		16 kN			
			Kvs [m ³ /hour] 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		
3"		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"	40	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

For further information on actuating, see actuators' catalogue sheets			Actuating (actuator)					Modact Cont. Modact MTN Auma Schiebel IQM 10	Modact MTR ST 2 Zepadyn 671*) CVL-5000	Auma Schiebel Zepadyn 671*) ST 2 CVL-5000 IQM12	Modact MTR Modact MTN Modact Cont. ST 2	Auma Schiebel IQM 20	Ruční kolo	
*) max. NPS 12"			Marking in valve specification No.					EYA EYB EA... EZ... EQ...	EPD EPM ENE EQL	EA... EZ... ENE EPM EQL EQ...	EPD EYA EYB EPM	EA... EZ... EQ...	Rxx	
			Linear force					15 kN	16 kN	20 kN	25 kN	32 kN		
			Kvs [m ³ /hour]					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	
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
			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
4"	40	100	185	116	72.8	46.2	28.9	150 192	167 209	234 277	319 361	---	---	167 209
			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
6"	40	150	416	289	185	116	72.8	64 83	72 91	103 122	141 160	---	---	72 91
			---	---	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	
			---	400	---	---	---	0.36 0.51	0.41 0.56	0.62 0.78	0.89 1.05	1.27 1.42	1.69 1.85	
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	
			---	400	---	---	---	0.36 0.51	0.41 0.56	0.62 0.78	0.89 1.05	1.27 1.42	1.69 1.85	
			570	---	---	---	---	0.19 0.28	0.22 0.31	0,34 0,43	0,49 0,58	0,70 0,79	0,95 1,03	
10"	80	150	---	---	400	250	160	0.21 0.39	0.27 0.44	0.48 0.66	0.75 0.93	1.13 1.31	1.56 1.74	
			462	289	185	31 56	39 64	70 96	109 135	164 190	227 252			
			---	630	---	---	---	0.11 0.20	0.14 0.24	0,26 0,36	0,41 0,51	0,62 0,72	0,87 0,97	
12"	80	200	---	800	---	---	---	0.07 0.15	0.10 0.17	0.19 0.26	0.30 0.38	0.47 0.54	0.65 0.73	
			925	---	---	---	---	11 21	14 25	27 38	44 55	68 79	95 106	
			---	---	---	---	---	0.07 0.15	0.10 0.17	0.19 0.26	0.30 0.38	0.47 0.54	0.65 0.73	
14"	80	230	---	800	---	---	---	0.07 0.15	0.10 0.17	0.19 0.26	0.30 0.38	0.47 0.54	0.65 0.73	
			925	---	---	---	---	11 21	14 25	27 38	44 55	68 79	95 106	
			---	---	---	---	---	0.07 0.15	0.10 0.17	0.19 0.26	0.30 0.38	0.47 0.54	0.65 0.73	
16"	100	250	1000	---	---	---	---	0.06 0.12	0.08 0.14	0.16 0.22	0.25 0.32	0.39 0.46	0.55 0.61	
			1160	---	---	---	---	8 18	11 21	23 32	37 46	57 66	80 89	
			---	---	---	---	---	0.06 0.12	0.08 0.14	0.16 0.22	0.25 0.32	0.39 0.46	0.55 0.61	
18"	100	330	1600	---	---	---	---	0.02 0.06	0.04 0.07	0.08 0.12	0.14 0.17	0.22 0.25	0.31 0.35	
			1850	---	---	---	---	4 9	5 11	12 17	20 25	32 37	45 50	
			---	---	---	---	---	0.02 0.06	0.04 0.07	0.08 0.12	0.14 0.17	0.22 0.25	0.31 0.35	

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

Δp_{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 127		Flowserve PA 252														
			Failure of air action		NO	NC	NO	NC													
			Specification No. of actuator		BVCxAA	BFYxZA	BDYxAA	BFYxZA													
			Spring range [bar] [psi]		1.5 - 2.7 22 - 39	2.0 - 4.8 29 - 70	1.0 - 2.4 15 - 35	2.0 - 4.8 29 - 70													
			Spring setting [bar] [psi]		1.5 - 2.46 22 - 36	2.56 - 4.8 37 - 70	1.0 - 2.12 15 - 31	2.56 - 4.8 37 - 70													
			Feeding pressure [bar] [psi]		6.0 87	6.0 87	4.8 70	5.8 84													
			Marking in valve specification No.		PFF		PFA														
			Linear force		4.4 kN	3.2 kN	6.4 kN	6.4 kN													
			Kvs [m ³ /hour]							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	6	7	8	9	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE		
1/2"	16	3	---	---	---	---	---	---	---	0.16 ³⁾ 0.18³⁾	0.1...0.01 ³⁾ 0.116...0.012³⁾	10 10 1450 1450	---	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450		
		6	---	---	---	---	---	---	0.25 ¹⁾ 0.29¹⁾	---	---	10 10 1450 1450	---	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450		
		8	---	---	---	1.0 ¹⁾ 1.16¹⁾	0.63 ¹⁾ 0.73¹⁾	0.4 ¹⁾ 0.46¹⁾	---	---	---	---	10 10 1450 1450	---	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	
		12	---	2.5 ¹⁾ 2.09¹⁾	1.6 ¹⁾ 1.85¹⁾	---	---	---	---	---	---	---	10 10 1450 1450	---	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	
		15	4.0 ¹⁾ 4.62¹⁾	---	---	---	---	---	---	---	---	---	5.39 10 782 1450	---	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450
1"	16	3	---	---	---	---	---	---	---	---	0.16...0.01 ³⁾ 0.18...0.012³⁾	10 10 1450 1450	---	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	
		6	---	---	---	---	---	---	---	0.25 ¹⁾ 0.29¹⁾	---	10 10 1450 1450	---	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	
		8	---	---	---	---	1.0 ¹⁾ 1.16¹⁾	0.63 ¹⁾ 0.73¹⁾	0.4 ¹⁾ 0.46¹⁾	---	---	---	10 10 1450 1450	---	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	
		12	---	---	---	2.5 ¹⁾ 2.89¹⁾	1.6 ¹⁾ 1.85¹⁾	---	---	---	---	---	10 10 1450 1450	---	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450
		15	---	---	4.0 ¹⁾ 4.62¹⁾	---	---	---	---	---	---	---	5.39 10 782 1450	---	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450
		20	---	6.3 ²⁾ 7.28²⁾	---	---	---	---	---	---	---	---	2.56 8.84 371 1282	---	5.30 769	8.46 10 1226 1450	8.46 10 1226 1450	8.46 10 1226 1450	8.46 10 1226 1450	8.46 10 1226 1450	8.46 10 1226 1450
1 1/2"	16	25	10.0 11.6	6.3 ⁴⁾ 7.28⁴⁾	4.0 ⁴⁾ 4.62⁴⁾	---	---	---	---	---	---	1.50 5.39 217 781	---	3.20 463	5.15 9.04 747 1311	5.15 9.04 747 1311	5.15 9.04 747 1311	5.15 9.04 747 1311	5.15 9.04 747 1311		
		6	---	---	---	---	---	---	---	---	0.25 ¹⁾ 0.29¹⁾	10 10 1450 1450	---	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	
		8	---	---	---	---	---	1.0 ¹⁾ 1.16¹⁾	0.63 ¹⁾ 0.73¹⁾	0.4 ¹⁾ 0.46¹⁾	---	---	10 10 1450 1450	---	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	
		12	---	---	---	---	2.5 ¹⁾ 2.89¹⁾	1.6 ¹⁾ 1.85¹⁾	---	---	---	---	10 10 1450 1450	---	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	
		15	---	---	---	---	4.0 ¹⁾ 4.62¹⁾	---	---	---	---	---	5.39 10 782 1450	---	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	10 10 1450 1450	
		20	---	---	---	6.3 ²⁾ 7.28²⁾	---	---	---	---	---	---	2.56 8.84 371 1282	---	5.30 769	8.46 10 1226 1450	8.46 10 1226 1450	8.46 10 1226 1450	8.46 10 1226 1450	8.46 10 1226 1450	
1 1/2"	16	40	25 28.9	16 18.5	10 11.6	6.3 ⁴⁾ 7.28⁴⁾	4.0 ⁴⁾ 4.62⁴⁾	---	---	---	---	0.48 1.99 69 288	---	1.14 165	1.90 3.41 275 495	1.90 3.41 275 495	1.90 3.41 275 495	1.90 3.41 275 495	1.90 3.41 275 495		

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

Note: The table continues on the next page

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					Flowserve PA 252		Flowserve PB 502	
			Failure of air action					NO	NC	NO	NC
			Specification No. of actuator					BDYxAA	BFYxZA	BBLxAA	BFYxZA
			Spring range					[bar] 1.0 - 2.4 [psi] 15 - 35	2.0 - 4.8 29 - 70	0.5 - 0.9 7 - 28	2.0 - 4.8 29 - 70
			Spring setting					[bar] 1.0 - 2.4 [psi] 15 - 35	2.0 - 4.8 29 - 70	0.5 - 1.9 7 - 28	2.0 - 4.8 29 - 70
			Feeding pressure					[bar] 6.0 [psi] 87	5.8 84	5.3 77	5.3 77
			Marking in valve specification No.					PFA		PFB	
			Linear force					8.5 kN	5 kN	10 kN	10 kN
			Kvs [m ³ /hour] 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	graphite PTFE
2"	20	50	40 46.2	25 28.9	16 18.5	10 11.6	6.3 ⁴⁾ 7.28⁴⁾	1.99 2.89 288 420	0.50 1.40 72 204	2.63 3.53 381 512	2.63 3.53 381 512

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					Flowserve PB 502		Flowserve PB 700	
			Failure of air action					NO	NC	NO	NC
			Specification No. of actuator					BBLxAB	BFYxZB	BBLxAB	BFYxZB
			Spring range					[bar] 0.5 - 1.9 [psi] 7 - 28	2.0 - 4.8 29 - 70	0.5 - 1.9 7 - 28	2.0 - 4.8 29 - 70
			Spring setting					[bar] 0.5 - 1.9 [psi] 7 - 28	2.0 - 4.8 29 - 70	0.5 - 1.9 7 - 28	2.0 - 4.8 29 - 70
			Feeding pressure					[bar] 4.1 [psi] 59	5.4 78	4.1 59	5.3 77
			Marking in valve specification No.					PFA		PFB	
			Linear force					10 kN	10 kN	14 kN	14 kN
			Kvs [m ³ /hour] 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	graphite PTFE
3"	40	80	100 116	63 72.8	40 46.2	25 28.9	16 18.5	0.73 1.18 106 171	0.73 1.18 106 171	1.45 1.90 210 276	1.45 1.90 210 276
4"		100	160 185	100 116	63 72.8	40 46.2	25 28.9	0.45 0.74 65 108	0.45 0.74 65 108	0.92 1.21 133 175	0.92 1.21 133 175
6"		150	360 416	250 289	160 185	100 116	63 72.8	0.18 0.31 26 45	0.18 0.31 26 45	0.39 0.52 57 76	0.39 0.52 57 76

4) V-ported plug with linear characteristic only

Note: The table continues on the next page

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

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					Flowserve PO 1502				Flowserve PO 3002			
			Failure of air action					NO	NC	NO	NC	NO	NC	NO	NC
			Specification No. of actuator					BGFxAD	BVCxZD	BGFxAD	BFSxZD	BGFxAD	BFSxZD	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	0.9 - 1.9 13 - 28	1.2 - 2.6 17 - 38	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	0.9 - 1.9 13 - 28	1.2 - 2.6 17 - 38	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	4.5 65	3.2 46	4.5 65	3.2 46
			Marking in valve specification No.					PFD				PFE			
Linear force					30 kN		30 kN		38 kN		36 kN		36 kN		
Kvs [m ³ /hour] 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]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]		
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graphite PTFE packing	graphite PTFE packing	graphite PTFE packing	graphite PTFE packing	graphite PTFE packing	graphite PTFE packing	graphite PTFE packing	
16"	100	150	---	---	---	400 462	250 289	1.02 1.20 149 174	1.02 1.20 149 174	1.46 1.63 211 237	1.46 1.63 211 237	1.35 1.52 196 221	1.35 1.52 196 221		
		200	---	---	630 728	---	---	0.56 0.66 82 96	0.56 0.66 82 96	0.81 0.91 117 132	0.81 0.91 117 132	0.75 0.85 108 123	0.75 0.85 108 123		
		250	---	1000 1160	---	---	---	0.35 0.42 51 60	0.35 0.42 51 60	0.51 0.57 74 83	0.51 0.57 74 83	0.47 0.53 68 78	0.47 0.53 68 78		
		330	1600 1850	---	---	---	---	0.19 0.23 28 34	0.19 0.23 28 34	0.29 0.32 41 47	0.29 0.32 41 47	0.26 0.30 38 43	0.26 0.30 38 43		

Note: The table continues on the next page

For further information on actuating, see actuators' catalogue sheets

			Pneumatic actuators								SPA Praha 526 61		SPA Praha 5222							
			Failure of air action								NO	NC	NO	NC						
			Specification No. of actuator								52661.x11x	52661.x22x	5222x041...	5222x092...						
			Spring range								[bar] 0.2 - 1.0	[bar] 0.4 - 2.0	[bar] 0.8 - 1.55	[bar] 1.6 - 3.0						
			Spring setting								[bar] 3 - 15	[bar] 6 - 29	[bar] 12 - 22	[bar] 23 - 44						
			Feeding pressure								[bar] 0.6 - 1.4	[bar] 0.8 - 2.4	[bar] 0.8 - 1.55	[bar] 1.6 - 3.0						
			Marking in valve specification No.								[bar] 9 - 20	[bar] 12 - 35	[bar] 12 - 22	[bar] 23 - 44						
			Linear force								[bar] 3.2	[bar] 3,2	[bar] 3,2	[bar] 3,2						
											[psi] 46	[psi] 46	[psi] 46	[psi] 46						
											PFF		PFA							
											4.5 kN	2 kN	6.4 kN	6.4 kN						
											Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]						
											[psi]	[psi]	[psi]	[psi]						
											packing	packing	packing	packing						
											graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE		
NPS	H[mm]	Ds[mm]	Kvs [m ³ /hour]																	
			Cv [US gallon/min]																	
			1	2	3	4	5	6	7	8	9		graphite <th>PTFE <th>graphite <th>PTFE <th>graphite <th>PTFE <th>graphite <th>PTFE </th></th></th></th></th></th></th>	PTFE <th>graphite <th>PTFE <th>graphite <th>PTFE <th>graphite <th>PTFE </th></th></th></th></th></th>	graphite <th>PTFE <th>graphite <th>PTFE <th>graphite <th>PTFE </th></th></th></th></th>	PTFE <th>graphite <th>PTFE <th>graphite <th>PTFE </th></th></th></th>	graphite <th>PTFE <th>graphite <th>PTFE </th></th></th>	PTFE <th>graphite <th>PTFE </th></th>	graphite <th>PTFE </th>	PTFE
1/2"	16	3	---	---	---	---	---	---	---	0.16 ³⁾	0.1...0.01 ³⁾		10	10	---	10	10	10	10	
		6	---	---	---	---	---	---	0.25 ¹⁾	0.18 ³⁾	0.116...0.012 ³⁾		1450	1450	---	1450	1450	1450	1450	
		8	---	---	---	1.0 ¹⁾	0.63 ¹⁾	0.4 ¹⁾	---	---	---	---	---	---	---	---	---	---	---	---
		12	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	---	---	---	---	---	---	---	7.72	10	10	10
		15	4.0 ¹⁾	4.62 ¹⁾	---	---	---	---	---	---	---	---	---	5.98	10	---	3.81	10	10	10
1"	16	3	---	---	---	---	---	---	---	---	0.16...0.01 ³⁾		10	10	---	10	10	10	10	
		6	---	---	---	---	---	---	---	0.25 ¹⁾	0.18...0.012 ³⁾	0.116...0.012 ³⁾		1450	1450	---	1450	1450	1450	
		8	---	---	---	---	---	1.0 ¹⁾	0.63 ¹⁾	0.4 ¹⁾	---	---	---	---	---	---	---	---	---	---
		12	---	---	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	---	---	---	---	---	7.72	10	10	10
		15	---	---	4.0 ¹⁾	4.62 ¹⁾	---	---	---	---	---	---	---	5.98	10	---	3.81	10	10	10
		20	---	6.3 ²⁾	7.28 ²⁾	---	---	---	---	---	---	---	---	2.86	9.13	---	1.77	10	10	10
1 1/2"	16	25	10.0	6.3 ⁴⁾	4.0 ⁴⁾	---	---	---	---	---	---	---	1.68	5.57	---	1.0	5.15	9.04	5.15	9.04
		6	---	---	---	---	---	---	---	---	---	---	0.25 ¹⁾	10	10	---	10	10	10	
		8	---	---	---	---	---	---	---	1.0 ¹⁾	0.63 ¹⁾	0.4 ¹⁾	---	10	10	---	10	10	10	
		12	---	---	---	---	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	---	1450	1450	---	1450	1450	1450	
		15	---	---	---	---	4.0 ¹⁾	4.62 ¹⁾	---	---	---	---	---	5.98	10	---	3.81	10	10	10
		20	---	---	---	6.3 ²⁾	7.28 ²⁾	---	---	---	---	---	---	2.86	9.13	---	1.77	8.46	10	8.46
2"	16	40	28.9	18.5	11.6	7.28 ⁴⁾	4.62 ⁴⁾	---	---	---	---	---	0.55	2.06	---	0.28	1.90	3.41	1.90	3.41
		50	46.2	28.9	18.5	11.6	7.28 ⁴⁾	---	---	---	---	---	0.28	1.19	---	0.13	1.09	2.00	1.09	2.00

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

Note: The table continues on the next page

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					SPA Praha 5222							
			Failure of air action					NO	NC	NO	NC				
			Specification No. of actuator					5222x041...	5222x092...	5222x151...*)	5222x192...*)				
			Spring range		[bar]	0.8 - 1.55	1.6 - 3.0	1.0 - 2.0	1.6 - 3.0						
					[psi]	12 - 22	23 - 44	15 - 29	23 - 44						
			Spring setting		[bar]	0.8 - 1.55	1.6 - 3.0	1.0 - 2.0	1.6 - 3.0						
					[psi]	12 - 22	23 - 44	15 - 29	23 - 44						
			Feeding pressure		[bar]	3.2	3.2	3.2	3.2						
		[psi]	46	46	46	46									
Marking in valve specification No.					PFF		PFA								
Linear force					6.4 kN	6.4 kN	8.8 kN	12.5 kN							
Kvs [m ³ /hour]					Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]							
Cv [US gallon/min]					[psi]	[psi]	[psi]	[psi]							
					packing	packing	packing	packing							
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE				
3"	40	80	100	63	40	25	16	0.08	0.53	0.08	0.53	0.51	0.96	1.18	1.63
			116	72.8	46.2	28.9	18.5	12	77	12	77	75	140	171	236
4"		100	160	100	63	40	25	0.03	0.32	0.03	0.32	0.31	0.60	0.74	1.03
			185	116	72.8	46.2	28.9	4	47	4	47	45	87	108	150
6"		150	360	250	160	100	63	---	0.12	---	0.12	0.11	0.25	0.31	0.44
			416	289	185	116	72.8	---	17	---	17	17	36	45	64



For further information on actuating, see actuators' catalogue sheets

Pneumatic actuators	LDM PP 230		LDM PP 385	
Failure of air action	NO	NC	NO	NC
Specification No. of actuator	DA16 40-200	RA16 250-350	DA16 250-350	RA16 140-230
Spring range [bar] [psi]	0.4 - 2.0 6 - 29	2.5 - 3.5 36 - 51	0.4 - 2.0 6 - 29	1.4 - 2.3 20 - 33
Spring setting [bar] [psi]	0.4 - 2.0 6 - 29	2.5 - 3.5 36 - 51	0.4 - 2.0 6 - 29	1.4 - 2.3 20 - 33
Feeding pressure [bar] [psi]	4.0 58	4.0 58	4.0 58	4.0 58
Marking in valve specification No.	PVA		PVB	
Linear force	4.6 kN	5.75 kN	7.7 kN	5.39 kN

NPS	H[mm]	Ds[mm]	Kvs [m ³ /hour] Cv [US gallon/min]										Δp _{max} [MPa] [psi]		Δp _{max} [MPa] [psi]		Δp _{max} [MPa] [psi]		Δp _{max} [MPa] [psi]			
			1	2	3	4	5	6	7	8	9		packing	packing	packing	packing	packing	packing	packing	packing		
			graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE		
1/2"	16	3	---	---	---	---	---	---	---	0.16 ³⁾ 0.18³⁾	0.1...0.01 ³⁾ 0.116...0.012³⁾		10	10	10	10	10	10	10	10	10	10
		6	---	---	---	---	---	---	0.25 ¹⁾ 0.29¹⁾	---	---	---	---	10	10	10	10	10	10	10	10	
		8	---	---	---	1.0 ¹⁾ 1.16	0.63 ¹⁾ 0.73	0.4 ¹⁾ 0.42	---	---	---	---	10	10	10	10	10	10	10	10		
		12	---	2.5 ¹⁾ 2.89	1.6 ¹⁾ 1.85	---	---	---	---	---	---	---	10	10	10	10	10	10	10	10		
		15	4.0 ¹⁾ 4.62¹⁾	---	---	---	---	---	---	---	---	---	6.57	10	10	10	10	10	10	10		
1"	16	3	---	---	---	---	---	---	---	---	---	0.16...0.01 ³⁾ 0.18...0.012³⁾		10	10	10	10	10	10	10	10	
		6	---	---	---	---	---	---	---	0.25 ¹⁾ 0.29¹⁾	---	---	10	10	10	10	10	10	10	10		
		8	---	---	---	---	---	1.0 ¹⁾ 1.16¹⁾	0.63 ¹⁾ 0.73¹⁾	0.4 ¹⁾ 0.46¹⁾	---	---	---	10	10	10	10	10	10	10	10	
		12	---	---	---	2.5 ¹⁾ 2.89¹⁾	1.6 ¹⁾ 1.85¹⁾	---	---	---	---	---	10	10	10	10	10	10	10	10		
		15	---	---	4.0 ¹⁾ 4.62¹⁾	---	---	---	---	---	---	---	6.57	10	10	10	10	10	10	10		
		20	---	6.3 ²⁾ 7.28²⁾	---	---	---	---	---	---	---	---	3.15	9.43	6.54	10	10	10	5.48	10		
1 1/2"	16	25	10.0 11.6	6.3 ⁴⁾ 7.28⁴⁾	4.0 ⁴⁾ 4.62⁴⁾	---	---	---	---	---	---	1.86	5.75	3.96	7.85	7.52	10	3.30	7.20			
		6	---	---	---	---	---	---	---	---	---	0.25 ¹⁾ 0.29¹⁾	10	10	10	10	10	10	10	10		
		8	---	---	---	---	---	---	---	1.0 ¹⁾ 1.16¹⁾	0.63 ¹⁾ 0.73¹⁾	0.4 ¹⁾ 0.46¹⁾	---	---	---	10	10	10	10	10	10	
		12	---	---	---	---	---	2.5 ¹⁾ 2.89¹⁾	1.6 ¹⁾ 1.85¹⁾	---	---	---	---	10	10	10	10	10	10	10	10	
		15	---	---	---	---	4.0 ¹⁾ 4.62¹⁾	---	---	---	---	---	6.57	10	10	10	10	10	10	10		
		20	---	---	---	6.3 ²⁾ 7.28²⁾	---	---	---	---	---	---	3.15	9.43	6.54	10	10	10	5.48	10		
40	25 28.9	16 18.5	10 11.6	6.3 ⁴⁾ 7.28⁴⁾	4.0 ⁴⁾ 4.62⁴⁾	---	---	---	---	---	0.62	2.13	1.43	2.95	2.82	4.33	1.18	2.69				

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					LDM PP 230		LDM PP 385		LDM PP 700			
			Failure of air action					NO	NC	NO	NC	NO	NC		
			Specification No. of actuator					DA20 60-100	RA20 230-320	DA20 60-100	RA20 242-345	DA20 50-110	RA20 145-240		
			Spring range					[bar] 0.6 - 1.0 [psi] 9 - 15	[bar] 2.3 - 3.2 [psi] 33 - 46	[bar] 0.6 - 1.0 [psi] 9 - 15	[bar] 2.42-3.45 [psi] 35 - 50	[bar] 0.5 - 1.1 [psi] 7 - 16	[bar] 1.45 - 2.4 [psi] 21 - 35		
			Spring setting					[bar] 0.6 - 1.0 [psi] 9 - 15	[bar] 2.3 - 3.2 [psi] 33 - 46	[bar] 0.6 - 1.0 [psi] 9 - 15	[bar] 2.42-3.45 [psi] 35 - 50	[bar] 0.5 - 1.1 [psi] 7 - 16	[bar] 1.45 - 2.4 [psi] 21 - 35		
			Feeding pressure					[bar] 4.0 [psi] 58	[bar] 4.0 [psi] 58	[bar] 4.0 [psi] 58	[bar] 4.0 [psi] 58	[bar] 3.2 [psi] 46	[bar] 4.0 [psi] 58		
			Marking in valve specification No.					PVA			PVB		PVC		
			Linear force					6.9 kN		5.29 kN		11.55 kN		9.32 kN	
			Kvs [m ³ /hour] 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]	Δp_{max} [MPa] [psi]	
			NPS	H[mm]	Ds[mm]	1	2	3	4	5	graphite PTFE packing	graphite PTFE packing	graphite PTFE packing	graphite PTFE packing	graphite PTFE packing
2"	20	50	40 46.2	25 28.9	16 18.5	10 11.6	6.3 ⁴⁾ 7.28⁴⁾	1.31 2.21 189 321	0.62 1.53 90 222	3.28 4.19 476 608	2.33 3.24 339 470	4.63 5.53 671 802	2.69 3.60 390 521		

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					LDM PP 385		LDM PP 700					
			Failure of air action					NO	NC	NO	NC				
			Specification No. of actuator					DA40 50-150	RA40 142-250	DA40 50-100	RA40 225-325				
			Spring range					[bar] 0.5 - 1.5 [psi] 7 - 22	[bar] 1.42 - 2.5 [psi] 22 - 36	[bar] 0.5 - 1.0 [psi] 7 - 15	[bar] 2.25-3.25 [psi] 33 - 47				
			Spring setting					[bar] 0.5 - 1.5 [psi] 7 - 22	[bar] 1.42 - 2.5 [psi] 22 - 36	[bar] 0.5 - 1.0 [psi] 7 - 15	[bar] 2.25-3.25 [psi] 33 - 47				
			Feeding pressure					[bar] 4.0 [psi] 58	[bar] 4.0 [psi] 58	[bar] 4.0 [psi] 58	[bar] 4.0 [psi] 58				
			Marking in valve specification No.					PVB			PVC				
			Linear force					9.63 kN		5.47 kN		21 kN		15.75 kN	
			Kvs [m ³ /hour] 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]	Δp_{max} [MPa] [psi]	
			NPS	H[mm]	Ds[mm]	1	2	3	4	5	graphite PTFE packing	graphite PTFE packing	graphite PTFE packing	graphite PTFE packing	
3"	40	80	100 116	63 72.8	40 46.2	25 28.9	16 18.5	0.66 1.11 96 161	--- 0.36 53	2.71 3.16 393 458	1.77 2.22 256 321				
4"		100	160 185	100 116	63 72.8	40 46.2	25 28.9	0.41 0.70 59 108	--- 0.21 31	1.73 2.03 251 294	1.12 1.41 163 205				
6"		150	360 416	250 289	160 185	100 116	63 72.8	0.16 0.29 23 42	--- 0.07 10	0.76 0.89 110 130	0.48 0.62 70 89				

4) V-ported plug with linear characteristic only

Note: The table continues on the next page

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					LDM PP 1400								
			Failure of air action					NO	NC	NO	NC					
			Specification No. of actuator					DAXX 50-150	RAXX 150-310	DAXX 50-150	RAXX 220-350					
			Spring range		[bar]	[psi]	0.5 - 1.5	1.5 - 3.1	0.5 - 1.5	2.2 - 3.5						
					[bar]	[psi]	7 - 22	22 - 45	7 - 22	32 - 51						
			Spring setting		[bar]	[psi]	0.5 - 1.5	1.5 - 3.1	0.5 - 1.5	2.2 - 3.5						
					[bar]	[psi]	7 - 22	22 - 45	7 - 22	32 - 51						
			Feeding pressure		[bar]	[psi]	3.0	4.0	3.7	4.0						
					[bar]	[psi]	67	67	54	73						
			Marking in valve specification No.					PVD								
Linear force					21,0 kN	21,0 kN	30,8 kN	30,8 kN								
Kvs [m ³ /hour]					Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]								
Cv [US gallon/min]					[psi]	[psi]	[psi]	[psi]								
					packing	packing	packing	packing								
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	
8"	80	100	---	---	250	160	100	1.56	1.90	1.56	1.90	2.72	3.06	2.72	3.06	
					289	185	116	227	276	227	276	395	444	395	444	
		150	---	400	---	---	---	0.68	0.83	0.68	0.83	1.20	1.35	1.20	1.35	
				462				98	121	98	121	174	196	174	196	
		200	570	---	---	---	---	0.37	0.46	0.37	0.46	0.67	0.76	0.67	0.76	
			678					54	66	54	66	97	110	97	110	
10"	80	150	---	---	400	250	160	0.54	0.71	0.54	0.71	1.07	1.24	1.07	1.24	
					462	289	185	78	103	78	103	155	180	155	180	
		200	---	630	---	---	---	0.29	0.39	0.29	0.39	0.59	0.69	0.59	0.69	
				728				42	56	42	56	85	100	85	100	
		230	800	---	---	---	---	0.21	0.29	0.21	0.29	0.44	0.51	0.44	0.51	
			925					31	42	31	42	64	75	64	75	
12"	80	150	---	---	---	400	250	0.54	0.71	0.54	0.71	1.07	1.24	1.07	1.24	
						462	289	78	103	78	103	155	180	155	180	
		200	---	---	630	---	---	---	0.29	0.39	0.29	0.39	0.59	0.69	0.59	0.69
					728				42	56	42	56	85	100	85	100
		230	---	800	---	---	---	0.21	0.29	0.21	0.29	0.44	0.51	0.44	0.51	
			925					31	42	31	42	64	75	64	75	
		250	1000	---	---	---	---	0.18	0.24	0.18	0.24	0.37	0.43	0.37	0.43	
			1160					26	35	26	35	53	63	53	63	
16"	100	150	---	---	---	400	250	0.54	0.71	0.54	0.71	1.07	1.24	1.07	1.24	
						462	289	78	103	78	103	155	180	155	180	
		200	---	---	630	---	---	---	0.29	0.39	0.29	0.39	0.59	0.69	0.59	0.69
					728				42	56	42	56	85	100	85	100
		250	---	1000	---	---	---	0.18	0.24	0.18	0.24	0.37	0.43	0.37	0.43	
			1160					26	35	26	35	53	63	53	63	
		330	1600	---	---	---	---	0.09	0.13	0.09	0.13	0.20	0.24	0.20	0.24	
			1850					13	19	13	19	30	35	30	35	

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

Δp_{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 (actuator)					MIDI 660 ST 0 ST 0.1 CVL-1000	Auma Schiebel	Zepadyn 670 ST 1 Ex ST 0.1 CVL-1500	Auma Schiebel ST 1 IQM 10	Auma Schiebel ST 1 IQM 10	Zepadyn 670 Modact MTR IQM 10	Modact Cont. Modact MTN Auma Schiebel	Ruční kolo
Marking in valve specification No.								ENB EPK EPL EQL	EA... EZ...	ENC EPJ EPL EQL	EA... EZ... EPI EQ...	EA... EZ... EPI EQ...	ENC EPD EQ...	IQM 10 EYA EYB EA... EZ... EQ...	Rxx
Linear force			4 kN					5 kN	6.3 kN	7.5 kN	10 kN	10 kN	15 kN		
Kvs [m ³ /hour] Cv [US gallon/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]	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	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 4.66 111 675	2.59 6.48 376 940	4.97 8.86 720 1285	7,16 10,0 1038 1450	10,0 10,0 1450 1450	10,0 10,0 1450 1450	---	10 10 1450 1450
1½"		40	---	16 18.5	10 11.6	6.3 7.28	4.0 4.62	0.19 1.70 28 247	0.90 2.42 131 350	1.83 3.34 265 484	2,68 4,19 388 608	4,45 5,97 646 866	4,45 5,97 646 866	---	4.45 5.97 646 866
2"	20	50	---	25 28.9	16 18.5	10 11.6	6.3 7.28	0.07 0.98 10 142	0.50 1.40 72 204	1.05 1.96 152 284	1.56 2.47 226 358	2.63 3.53 381 512	2.63 3.53 381 512	4.75 5.66 689 821	2.63 3.53 381 512
3"		80	---	63 72.8	40 46.2	25 28.9	16 18.5	---	---	---	---	0.28 0.73 41 106	0.73 1.18 106 171	0.73 1.18 106 171	1.63 2.08 236 302
4"	40	100	---	100 116	63 72.8	40 46.2	25 28.9	---	---	---	0.16 0.45 23 65	0.45 0.74 65 108	0.45 0.74 65 108	1.03 1.32 150 192	1.15 1.44 167 209
6"		150	---	250 289	160 185	100 116	63 72.8	---	---	---	---	0.05 0.18 7 26	0.18 0.31 26 45	0.18 0.31 26 45	0.44 0.58 64 83

5) linear characteristic only

For further information on actuating, see actuators' catalogue sheets			Actuating (actuator)					Modact Cont. Modact MTN Auma Schiebel IQM 10	Modact MTR ST 2 Zepadyn 671* CVL-5000	Auma Schiebel ST 2 CVL-5000 IQM 12	Modact MTR Modact MTN Modact Cont. ST 2	Auma Schiebel IQM 20	Handwheel
Marking in valve specification No.								EYA EYB EA... EZ... EQ...	EPD EPM ENE EQL	EA... EZ... ENE EPM EQL EQ...	EPD EYA EYB EPM	EA... EZ... EQ...	Rxx
Linear force			15 kN					16 kN	20 kN	25 kN	32 kN		
Kvs [m ³ /hour] Cv [US gallon/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	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 2.08 236 302	1.81 2.26 263 328	2.53 2.98 367 432	3,43 3,88 498 563	---	1.81 2.26 263 328
4"		100	---	100 116	63 72.8	40 46.2	25 28.9	1.03 1.32 150 192	1.15 1.44 167 209	1,62 1,91 234 277	2,20 2,49 319 361	---	1.15 1.44 167 209
6"	80	150	---	250 289	160 185	100 116	63 72.8	0.44 0.58 64 83	0.50 0.63 72 91	0,71 0,84 103 122	0,97 1,11 141 160	---	0.50 0.63 72 91
8"		200	---	400 462	250 289	160 185	100 116	0.19 0.28 27 40	0.22 0.31 32 44	0.34 0.43 49 62	0.49 0.58 71 84	0.70 0.79 102 115	0.95 1.03 137 150
10"	100	230	---	630 728	400 462	250 289	160 185	0.07 0.15 11 21	0.10 0.17 14 25	0.19 0.26 27 38	0.30 0.38 44 55	0.47 0.54 68 79	0.65 0.73 95 106
12"		250	---	800 925	630 728	400 462	250 289	0.06 0.12 8 18	0.08 0.14 11 21	0.16 0.22 23 32	0.25 0.32 37 46	0.39 0.46 57 66	0.55 0.61 80 89
16"	330	---	1000 1160	630 728	400 462	250 289	0.02 0.06 4 9	0.04 0.07 5 11	0.08 0.12 12 17	0.14 0.17 20 25	0.22 0.25 32 37	0.31 0.35 45 50	

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

Δp_{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			Pneumatic actuators					Flowserve PA 252				Flowserve PB 502			
			Failure of air action					NO	NC	NO	NC	NO	NC	NO	NC
Specification No. of actuator			BVCxAA					BVCxZA				BVCxAA			
Spring range			[bar] [psi]					1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	
Spring setting			[bar] [psi]					1.5 - 2.46 22 - 36	1.75 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	
Feeding pressure			[bar] [psi]					4.5 65	4.5 65	4.5 65	4.5 65	4.5 65	4.5 65		
Marking in valve specification No.								PFA				PFB			
Linear force								4.3 kN	4.3 kN	3.7 kN	3.7 kN	7.5 kN	7.5 kN		
Kvs [m ³ /hour]								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		
NPS	H[mm]	Ds[mm]	1	2	3	4	5	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 1.11	1.55 2.24	0.77 1.11	1.55 2.24	---	---		
		40	---	16 18.5	10 11.6	6.3 7.28	4.0 4.62	0.30 0.43	0.60 0.87	0.30 0.43	0.60 0.87	---	---		
2"	20	50	---	25 28.9	16 18.5	10 11.6	6.3 7.28	0.18 0.26	0.36 0.52	0.18 0.26	0.36 0.52	0.13 0.19	0.31 0.45		

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					Flowserve PB 502		Flowserve PB 700	
			Failure of air action					NO	NC	NO	NC
Specification No. of actuator			BVCxAB					BVCxZB		BVCxAB	
Spring range			[bar] [psi]					1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39
Spring setting			[bar] [psi]					1.5 - 2.46 22 - 36	1.75 - 2.7 25 - 39	1.5 - 2.7 22 - 39	1.5 - 2.7 22 - 39
Feeding pressure			[bar] [psi]					4.5 65	4.5 65	4.5 65	4.5 65
Marking in valve specification No.								PFB		PFC	
Linear force								7.5 kN	7.5 kN	10.5 kN	10.5 kN
Kvs [m ³ /hour]								Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]
Cv [US gallon/min]								packing	packing	packing	packing
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
3"	40	80	---	63 72.8	40 46.2	25 28.9	16 18.5	0.18 0.26	0.27 0.39	0.18 0.26	0.27 0.39
		100	---	100 116	63 72.8	40 46.2	25 28.9	0.11 0.17	0.17 0.25	0.11 0.17	0.17 0.25
6"	150	---	250 289	160 185	100 116	63 72.8	0.05 0.08	0.08 0.11	0.05 0.08	0.08 0.11	0.08 0.11

5) linear characteristic only

Note: The table continues on the next page

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					Flowserve PO 1502				Flowserve PO 3002							
			Failure of air action					NO		NC		NO		NC		NO		NC	
			Specification No. of actuator					BVCxAD		BVCxZD		BFSxAD		BFSxZD		BEPxAD		BEPxZD	
			Spring range					[bar] 1.5 - 2.7		[bar] 1.5 - 2.7		[bar] 2.0 - 3.5		[bar] 2.0 - 3.5		[bar] 1.3 - 2.1		[bar] 1.3 - 2.1	
								[psi] 22 - 39		[psi] 22 - 39		[psi] 29 - 51		[psi] 29 - 51		[psi] 19 - 30		[psi] 19 - 30	
			Spring setting					[bar] 1.5 - 2.7		[bar] 1.5 - 2.7		[bar] 2.0 - 3.5		[bar] 2.0 - 3.5		[bar] 1.3 - 2.1		[bar] 1.3 - 2.1	
								[psi] 22 - 39		[psi] 22 - 39		[psi] 29 - 51		[psi] 29 - 51		[psi] 19 - 30		[psi] 19 - 30	
			Feeding pressure					[bar] 4.5		[bar] 4.5		[bar] 5.5		[bar] 5.5		[bar] 3.4		[bar] 3.4	
					[psi] 65		[psi] 65		[psi] 80		[psi] 80		[psi] 49		[psi] 49				
Marking in valve specification No.					PFD								PFE						
Linear force					22.5 kN		22.5 kN		30 kN		30 kN		39 kN		39 kN				
Kvs [m ³ /hour]					Δp_{max} [MPa]		Δp_{max} [MPa]		Δp_{max} [MPa]		Δp_{max} [MPa]		Δp_{max} [MPa]		Δp_{max} [MPa]				
					[psi]		[psi]		[psi]		[psi]		[psi]		[psi]				
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	graphite PTFE	graphite PTFE				
8"	80	200	---	400	250	160	100	0.12 0.14	0.12 0.14	0.16 0.18	0.16 0.18	0.22 0.24	0.22 0.24	0.22 0.24	0.22 0.24				
				462	289	185	116	17 20	17 20	24 26	24 26	32 35	32 35	32 35	32 35				

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					SPA Praha 5222							
			Failure of air action					NO		NC		NO		NC	
			Specification No. of actuator					5222x051...		5222x052...		5222x151...*)		5222x152...*)	
			Spring range					[bar] 1.0 - 2.0		[bar] 1.0 - 2.0		[bar] 1.0 - 2.0		[bar] 1.0 - 2.0	
								[psi] 15 - 29		[psi] 15 - 29		[psi] 15 - 29		[psi] 15 - 29	
			Spring setting					[bar] 1.0 - 2.0		[bar] 1.0 - 2.0		[bar] 1.0 - 2.0		[bar] 1.5 - 2.7	
								[psi] 15 - 29		[psi] 15 - 29		[psi] 15 - 29		[psi] 15 - 29	
			Feeding pressure					[bar] 3.2		[bar] 3.2		[bar] 3.2		[bar] 3.2	
					[psi] 46		[psi] 46		[psi] 46		[psi] 46				
Marking in valve specification No.					PJE										
Linear force					7.5 kN		7.5 kN		10.5 kN		10.5 kN				
Kvs [m ³ /hour]					Δp_{max} [MPa]		Δp_{max} [MPa]		Δp_{max} [MPa]		Δp_{max} [MPa]				
					[psi]		[psi]		[psi]		[psi]				
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	graphite PTFE	graphite PTFE		
1"	16	25	---	6.3	4.0	2.5 ⁵⁾	1.6 ⁵⁾	0.66 1.44	0.66 1.44	---	---	---	---		
		40	---	7.28	4.62	2.89⁵⁾	1.85⁵⁾	95 208	95 208	---	---	---	---		
1½"		40	---	16	10	6.3	4.0	0.26 0.56	0.26 0.56	---	---	---	---		
				18.5	11.6	7.28	4.62	37 81	37 81	---	---	---	---		
2"	20	50	---	25	16	10	6.3	0.15 0.33	0.15 0.33	---	---	---	---		
				28.9	18.5	11.6	7.28	22 49	22 49	---	---	---	---		
3"	40	80	---	63	40	25	16	0.05 0.14	0.05 0.14	0.19 0.28	0.19 0.28	---	---		
				72.8	46.2	28.9	18.5	7 20	7 20	28 41	28 41	---	---		
4"		100	---	100	63	40	25	---	0.09	---	0.13 0.18	0.13 0.18	---	---	
				116	72.8	46.2	28.9	---	13	---	18 26	18 26	---	---	
6"		150	---	250	160	100	63	---	---	0.06 0.08	0.06 0.08	---	---		
				289	185	116	72.8	---	---	8 12	8 12	---	---		

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					LDM PP 230		LDM PP 385					
			Failure of air action					NO		NC		NO		NC	
			Specification No. of actuator					DA16 140-230		RA16 140-230		DA16 140-230		RA16 140-230	
			Spring range					[bar] 1.4 - 2.3		[bar] 1.4 - 2.3		[bar] 1.4 - 2.3		[bar] 1.4 - 2.3	
								[psi] 20 - 33		[psi] 20 - 33		[psi] 20 - 33		[psi] 20 - 33	
			Spring setting					[bar] 1.4 - 2.3		[bar] 1.4 - 2.3		[bar] 1.4 - 2.3		[bar] 1.4 - 2.3	
								[psi] 20 - 33		[psi] 20 - 33		[psi] 20 - 33		[psi] 20 - 33	
			Feeding pressure					[bar] 4.0		[bar] 4.0		[bar] 4.0		[bar] 4.0	
					[psi] 58		[psi] 58		[psi] 58		[psi] 58				
Marking in valve specification No.					PVA				PVB						
Linear force					3.9 kN		3.2 kN		6.54 kN		5.39 kN				
Kvs [m ³ /hour]					Δp_{max} [MPa]		Δp_{max} [MPa]		Δp_{max} [MPa]		Δp_{max} [MPa]				
					[psi]		[psi]		[psi]		[psi]				
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	graphite PTFE			
1"	16	25	---	6.3	4.0	2.5 ⁵⁾	1.6 ⁵⁾	0.62 1.40	0.37 1.14	1.59 2.36	1.17 1.94	---			
				7.28	4.62	2.89⁵⁾	1.85⁵⁾	90 203	53 166	239 343	169 282	---			
1½"		40	---	16	10	6.3	4.0	0.24 0.54	0.14 0.44	0.62 0.92	0.46 0.76	---			
				18.5	11.6	7.28	4.62	35 79	21 65	89 133	66 110	---			

5) linear characteristic only

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					LDM PP 230		LDM PP 385		LDM PP 700	
			Failure of air action					NO	NC	NO	NC	NO	NC
			Specification No. of actuator					DA20 140-240	RA20 140-240	DA20 142-235	RA20 142-235	DA20 145-240	RA20 145-240
			Spring range					[bar] 1.4 - 2.4 [psi] 20 - 35	[bar] 1.4 - 2.4 [psi] 20 - 35	[bar] 1.42-2.35 [psi] 21 - 34	[bar] 1.42-2.35 [psi] 21 - 34	[bar] 1.45 - 2.4 [psi] 21 - 35	[bar] 1.45 - 2.4 [psi] 21 - 35
			Spring setting					[bar] 1.4 - 2.4 [psi] 20 - 35	[bar] 1.4 - 2.4 [psi] 20 - 35	[bar] 1.42-2.35 [psi] 21 - 34	[bar] 1.42-2.35 [psi] 21 - 34	[bar] 1.45 - 2.4 [psi] 21 - 35	[bar] 1.45 - 2.4 [psi] 21 - 35
			Feeding pressure					[bar] 4.0 [psi] 58	[bar] 4.0 [psi] 58	[bar] 4.0 [psi] 58	[bar] 4.0 [psi] 58	[bar] 4.0 [psi] 58	[bar] 4.0 [psi] 58
			Marking in valve specification No.					PVA		PVB		PVC	
			Linear force					3.68 kN	3.22 kN	6.35 kN	5.47 kN	11.2 kN	10.15 kN
			Kvs [m ³ /hour]					Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]
Cv [US 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		
2"	20	50	---	25 28.9	16 18.5	10 11.6	6.3 7.28	0.13 0.31 18 45	0.09 0.27 13 39	0.35 0.53 51 78	0.28 0.46 40 67	0.77 0.95 111 137	0.68 0.86 98 124

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					LDM PP 385		LDM PP 700	
			Failure of air action					NO	NC	NO	NC
			Specification No. of actuator					DA40 142-250	RA40 142-250	DA40 140-230	RA40 140-230
			Spring range					[bar] 1.42 - 2.5 [psi] 21 - 36	[bar] 1.42 - 2.5 [psi] 21 - 36	[bar] 1.4 - 2.3 [psi] 20 - 33	[bar] 1.4 - 2.3 [psi] 20 - 33
			Spring setting					[bar] 1.42 - 2.5 [psi] 21 - 36	[bar] 1.42 - 2.5 [psi] 21 - 36	[bar] 1.4 - 2.3 [psi] 20 - 33	[bar] 1.4 - 2.3 [psi] 20 - 33
			Feeding pressure					[bar] 4.0 [psi] 58	[bar] 4.0 [psi] 58	[bar] 4.0 [psi] 58	[bar] 4.0 [psi] 58
			Marking in valve specification No.					PVB		PVC	
			Linear force					5.77 kN	5.47 kN	11.9 kN	9.8 kN
			Kvs [m ³ /hour]					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]	Ds[mm]	1	2	3	4	5	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
3"	40	80	---	63 72.8	40 46.2	25 28.9	16 18.5	0.11 0.20 17 30	0.10 0.19 15 28	0.33 0.42 49 62	0.26 0.35 38 51
4"		100	---	100 116	63 72.8	40 46.2	25 28.9	0.07 0.13 11 13	0.07 0.13 10 18	0.22 0.28 31 40	0.17 0.23 24 33
6"		150	---	250 289	160 185	100 116	63 72.8	0.03 0.06 5 9	0.03 0.06 4 8	0.10 0.13 14 18	0.08 0.10 11 15

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					LDM PP 1400	
			Failure of air action					NO	NC
			Specification No. of actuator					DA80 150-310	RA80 150-310
			Spring range					[bar] 1.5 - 3.1 [psi] 22 - 45	[bar] 1.5 - 3.1 [psi] 22 - 45
			Spring setting					[bar] 1.5 - 3.1 [psi] 22 - 45	[bar] 1.5 - 3.1 [psi] 22 - 45
			Feeding pressure					[bar] 4.6 [psi] 67	[bar] 4.6 [psi] 67
			Marking in valve specification No.					PVD	
			Linear force					21.0 kN	21.0 kN
			Kvs [m ³ /hour]					Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]
Cv [US galon/min]					packing	packing			
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graphite PTFE	graphite PTFE
8"	80	200	---	400 462	250 289	160 185	100 116	0.11 0.13 16 18	0.11 0.13 16 18

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

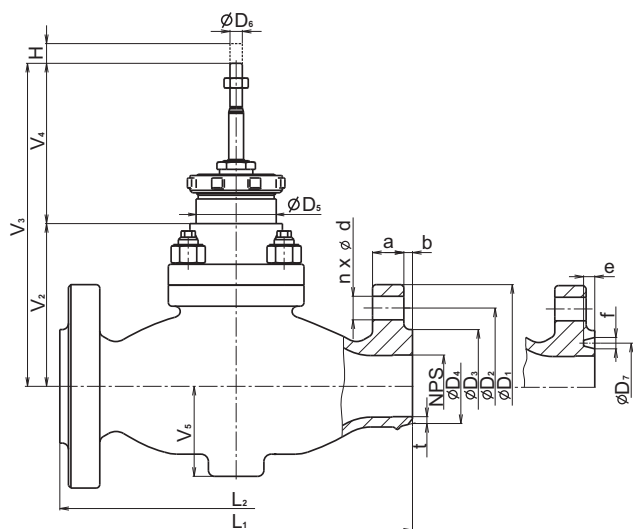
Dimensions and weights of valves CV / SV 320 (Ex) CV / SV 330 (Ex) with flanged and welded connection, NPS 1/2 - 16"

NPS	H	V ₂	V ₃	V ₄	ØD ₅	M	ØD ₆	V ₅	m ₁	m ₂	Class 300			Class 600			Class 150, 300 and 600		
											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]	kg	kg	[mm] [inch]	[mm] [inch]	[mm] [inch]	[mm] [inch]	[mm] [inch]	[mm] [inch]	[mm] [inch]			
1/2		90 3.543	220 8.661					47 1.85	7	5	190 7.5	201 7.91	200 7.87	203 8.0	202 7.95	200 7.87	203 8.0		
1"	16 0.63	100	230					52 2.047	9	6	197 7.75	210 8.25	207 8.15	210 8.25	210 8.25	207 8.15	210 8.25		
1 1/2"		3.937	9.055					52 2.047	15	8	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	262 10.314	130 5.118	65 2.559	---		73 2.874	20	13	267 10.5	283 11.14	277 10.9	286 11.25	289 11.38	283 11.14	286 11.25		
3"		164	294					105 4.133	43	30	318 12.5	332 33.22	328 12.91	337 13.25	340 13.38	334 13.15	337 13.25		
4"	40 1.575	6.456	11.575					105 4.133	70	40	368 14.5	384 15.12	378 14.88	394 15.5	397 15.63	391 15.39	394 15.5		
6"		200 7.874	330 12.992					134 5.275	160	105	473 18.62	489 19.25	483 19.01	508 20.0	511 20.12	505 19.88	508 20.0		
8"		262 10.314	422 16.614					203 7.992	290	210	568 22.38	584 22.99	578 22.75	610 24.0	613 24.13	607 60.72	610 24.0		
10"	80 3.15	346 13.622	506 19.921	160	---	150		253 9.961	---	370	---	---	---	---	---	---	752 29.62		
12"		395 15.551	555 21.85	6.299	---	5.905		296 11.654	---	520	---	---	---	---	---	---	819 32.35		
16"	100 3.937	512 20.157	672 26.457					382 15.039	---	1050	---	---	---	---	---	---	1108 43.62		

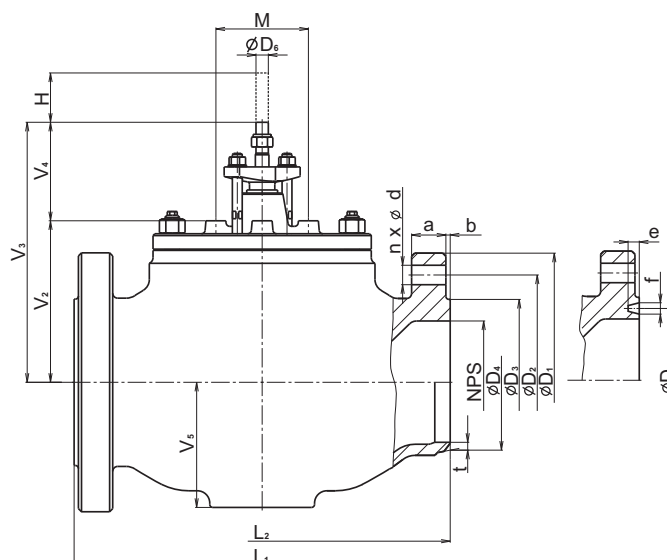
m₁ - weight of flanged connection

m₂ - weight of welded connection

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]	
1/2	95 3.75	66.7 2.62	34.9 1.38	15.9 5/8"		12.7 0.5		95 3.75	66.7 2.62	34.9 1.38	15.9 5/8"		14.3 0.56		34.14 1.344	5.54 0.219	7.14 0.281	
1"	125 4.88	88.9 3.5	50.8 2.0	19.1 3/4"	4	15.9 0.62		125 4.88	88.9 3.5	50.8 2.0	19.1 3/4"	4	17.5 0.69		50.8 2.0	6.35 0.25	8.74 0.344	R16
1 1/2"	155 6.12	114.3 4.5	73 2.88	22.3 7/8"		19.1 0.75		155 6.12	114.3 4.5	73 2.88	22.3 7/8"		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 3/4"		20.7 0.81	2	165 6.5	127 5.0	92.1 3.62	19.1 3/4"		25.4 1.0	7	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	0.06	210 8.25	168.3 6.62	127 5.0	22.3 7/8"	8	31.8 1.25	0.25	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"		30.2 1.19		275 10.75	215.9 8.5	157.2 6.19	25.4 1"		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		211.12 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"		39.7 1.56		420 16.5	349.2 13.75	269.9 10.62	31.8 1 1/4"		55.6 2.19		269.9 10.625	7.92 0.312	11.91 0.469	R49

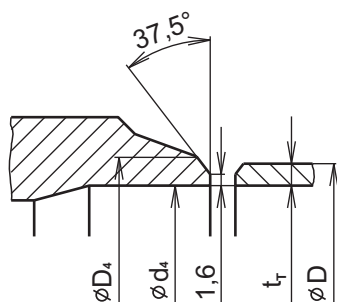


NPS 1/2 - 6"



NPS 8" - 16"

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



NPS	Dimensions of weld ends for pipes acc. to ASME B36.10M					[mm] [inch]	
	øD ₄	øD	t _r			øD _{4 max}	ød _{4 min}
			Sch. No. 40	Sch. No. 80	Sch. No. 100		
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



Pressure balanced control valves NPS 1" - 16" Class 150, 300 and 600

Description

Control valves CV 322 (Ex) and CV 332 (Ex) (further only CV 3x2 (Ex) are single-seated valves with pressure balanced plug designed for regulation of process medium flow. Due to pressure balanced plug, the valves are suitable for regulation at high differential pressures with low-linear-force actuators. Flow characteristics, Kvs and Cv values and leakage rates correspond to international standards.

Valves CV / SV 3x2 (Ex) are equipped with hand wheel or are especially designed for electro-mechanic actuators of the following producers: ZPA Nová Paka, Regada, ZPA Pečky, Schiebel, Auma, Rotork or for pneumatic actuators SPA Praha, Flowserve and LDM.

Application

The valves series CV 3x2 are designed for applications in heating, ventilation, power generation and chemical processing industries. The valves CV 3x2 Ex meet the requirements II 1/2G IIB TX acc.to ČSN-EN 13463-1 (6/2009) and ČSN EN 1127-1 (5/2008), and in connection with suitable actuators, they are also designed for applications in gas and chemical industries. Valve body can be optionally made of cast steel or stainless steel.

The materials selected correspond to recommendations stipulated by ASME B16.34-2013 or ČSN-EN 12516-1 (1/2006). The maximal permissible operating pressures in behaviour with types of material and temperature are specified in the table on page 95 of this catalogue.

Technical data

Series	CV 322 (Ex)	CV 332 (Ex)
Type of valve	Two-way, single-seated, control (shut-off) valve	
Nominal size range	NPS 1" to 16"	
Nominal pressure	Class 300 and 600 (Class 150, 300 and 600 weld ended)	
Body material	Cast steel A216 WCC, A217 WC9	Stainless steel A351 CF8M
Seat material : NPS 1/2" - 2"	1.4028 / 17 023.6	1.4571 / 17 348.4
DIN W.Nr./+ČSN NPS 3" - 16"	1.4027 / 42 2906.5	1.4571 / 17 348.4
Plug material : NPS 1/2" - 2"	1.4028 / 17 023.6	1.4581 / 42 2941.4
DIN W.Nr./+ČSN NPS 3" - 6"	1.4021 / 17 027.6	1.4581 / 42 2941.4
NPS 8" - 16"	1.4021 / 17 022.6	1.4581 / 42 2941.4
Operating temperature range	-10 to 550 °C (14 to 1020 °F)	
Face to face dimensions	acc. to ISA-75.08.01-2002 /R2007) for flange connection, acc. to ISA-75.08.05-2002 (R2007) for weld ended execution	
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), for NPS 10", 12" and 16" weld ended execution only	
Type of plug	V-ported, contoured, perforated	
Flow characteristic	Linear, equal-percentage, LDMspline®, parabolic, on - off	
Kvs (Cv) value	1,6 až 1600 m ³ /h (1,85 to 1850 US galon/min)	
Leakage rate	Class III. dle ANSI/FCI 70-2-2006 (<0.1% Cv) por control valves with metal-metal seat sealing	
Leakage rate for Ex version	Rate C dle ISO 5208:2008	
Rangeability r	50 : 1	
Packing	DRSpack® (PTFE) t _{max} = 260 °C (500 °F), Exp. graphite t _{max} = 550 °C (1020 °F)	

Process media

Valves series CV 3x2 are designed for regulation of 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. The valves series CV 3x2 Ex are also designed for control of the flow and pressure of 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. Reverse flow direction is not permissible.

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

Cv (Kvs) values and differential pressures Δp_{max} [MPa], [psi] for pressure-balanced valves NPS 1" - 16" with pneumatic actuators

Δp_{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 127		Flowserve PA 252													
			Failure of air action		NO	NC	NO	NC	NO	NC	NO	NC								
Specification No. of actuator			BVCxAA		BVCxZA		BVCxAA		BVCxZA		BVCxAA		BVCxZA							
Spring range			[bar] [psi]		1.5 - 2.7 22 - 39		1.5 - 2.7 22 - 39		1.5 - 2.7 22 - 39		1.5 - 2.7 22 - 39		1.5 - 2.7 22 - 39							
Spring setting			[bar] [psi]		1.5 - 2.46 22 - 36		1.75 - 2.7 25 - 39		1.5 - 2.46 22 - 36		1.75 - 2.7 25 - 39		1.5 - 2.7 22 - 39							
Feeding pressure			[bar] [psi]		4.5 65		4.5 65		4.5 65		4.5 65		4.5 65							
Marking in valve specification No.			PFF					PFA												
Linear force			2.18 kN					2.18 kN					4.3 kN		4.3 kN		3.7 kN		3.7 kN	
Kvs [m ³ /hod]			Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]			
Cv [US 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	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	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	---	---	---	---
1½"	16	80	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	---	---	---	---
2"	20	50	40	25	16	10	6.3 ⁵⁾	---	---	---	---	---	---	---	10	10	10	10		
			46.2	28.9	18.5	11.6	7.28 ⁵⁾	---	---	---	---	---	---	---	---	1450	1450	1450	1450	

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators		Flowserve PB 502				Flowserve PB 700								
			Failure of air action		NO	NC	NO	NC	NO	NC	NO	NC					
Specification No. of actuator			BVCxAA		BVCxZA		BVCxAB		BVCxZB		BVCxAB		BVCxZB				
Spring range			[bar] [psi]		1.5 - 2.7 22 - 39		1.5 - 2.7 22 - 39		1.5 - 2.7 22 - 39		1.5 - 2.7 22 - 39		1.5 - 2.7 22 - 39				
Spring setting			[bar] [psi]		1.5 - 2.7 22 - 39		1.5 - 2.7 22 - 39		1.5 - 2.7 22 - 39		1.5 - 2.7 22 - 39		1.5 - 2.7 22 - 39				
Feeding pressure			[bar] [psi]		4.5 65		4.5 65		4.5 65		4.5 65		4.5 65				
Marking in valve specification No.			PFB					PFC									
Linear force			7.5 kN					7.5 kN					10.5 kN		10.5 kN		
Kvs [m ³ /hour]			Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]		Δp_{max} [MPa] [psi]				
Cv [US 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	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
2"	20	50	40	25	16	10	6.3 ⁵⁾	10	10	10	10	---	---	---	---	---	---
			46.2	28.9	18.5	11.6	7.28 ⁵⁾	1450	1450	1450	1450	---	---	---	---	---	---
3"	40	80	100	63	40	25	16	---	---	10	10	10	10	10	10	10	10
			116	72.8	46.2	28.9	18.5	---	---	1450	1450	1450	1450	1450	1450	1450	1450
4"	40	100	160	100	63	40	25	---	---	10	10	10	10	10	10	10	10
			185	116	72.8	46.2	28.9	---	---	1450	1450	1450	1450	1450	1450	1450	1450
6"	150	150	360	250	160	100	63	---	---	10	10	10	10	10	10	10	10
			416	289	185	116	72.8	---	---	1450	1450	1450	1450	1450	1450	1450	1450

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

Note: The table continues on the next page

Cv (Kvs) values and differential pressures Δp_{max} [MPa], [psi] for pressure-balanced valves NPS 1" - 16" with electromechanic actuators

Δp_{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 (actuator)					MIDI 660 CVL-500	ST 0	CVL-1000	Auma Schiebel	Zepadyn 670 ST 1 Ex ST 0.1 CVL-1500	ST 1 IQM 10	ST 1 IQM 10	Ruční kolo				
			Marking in valve specification No.					ENB EQL	EPK	EQL	EA... EZ...	ENC EPJ EPL EQL	EPI EQ...	EPI EQ...	Rxx				
			Linear force					2 kN	2.5 kN	4 kN	5 kN	6.3 kN	7.5 kN	10 kN					
			Kvs [m ³ /hour]					Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]				
			Cv [US 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
1"	16	25	10	6.3 ⁵⁾	4.0 ⁵⁾	2.5 ⁵⁾	1.6 ⁵⁾	---	10	10	10	10	10	10	10	10	10	10	10
			11.6	7.28⁵⁾	4.62⁵⁾	2.89⁵⁾	1.85⁵⁾	---	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
1½"	16	40	25	16	10	6.3 ⁵⁾	4.0 ⁵⁾	---	10	10	10	10	10	10	10	10	10	10	10
			28.9	18.5	11.6	7.28⁵⁾	4.62⁵⁾	---	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
2"	20	50	40	25	16	10	6.3 ⁵⁾	---	10	10	10	10	10	10	10	10	10	10	10
			46.2	28.9	18.5	11.6	7.28⁵⁾	---	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
3"	40	80	100	63	40	25	16	---	---	---	---	---	---	---	---	---	---	---	---
			116	72.8	46.2	28.9	18.5	---	---	---	---	---	---	---	---	---	---	---	---
4"	40	100	160	100	63	40	25	---	---	---	---	---	---	---	---	---	---	---	---
			185	116	72.8	46.2	28.9	---	---	---	---	---	---	---	---	---	---	---	---
6"	150	150	360	250	160	100	63	---	---	---	---	---	---	---	---	---	---	---	---
			416	289	185	116	72.8	---	---	---	---	---	---	---	---	---	---	---	---

5) linear characteristic only

For further information on actuating, see actuators' catalogue sheets			Actuating (actuator)					Modact Cont. Modact MTN	Auma Schiebel	Modact MTR ST 2 Zepadyn 671*)	Auma Schiebel Zepadyn 671*)	Modact MTR Modact MTN Modact Cont. ST 2	Hand wheel				
			Marking in valve specification No.					EYA EYB	EA... EZ...	EPD EPM ENE	EA... EZ... ENE	EPD EYA EYB EPM	Rxx				
			Linear force					15 kN	15 kN	16 kN	20 kN	25 kN					
			Kvs [m ³ /hour]					Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]	Δp_{max} [MPa] [psi]				
			Cv [US galon/min]					packing	packing	packing	packing	ucpávka	packing				
NPS	H [mm]	Ds [mm]	1	2	3	4	5	grafit	PTFE	grafit	PTFE	grafit	PTFE	grafit	PTFE	grafit	PTFE
3"	40	80	100	63	40	25	16	10	10	---	---	10	10	---	---	---	---
			116	72.8	46.2	28.9	18.5	1450	1450	---	---	1450	1450	---	---	1450	1450
4"	40	100	160	100	63	40	25	10	10	---	---	10	10	---	---	---	---
			185	116	72.8	46.2	28.9	1450	1450	---	---	1450	1450	---	---	1450	1450
6"	150	150	360	250	160	100	63	10	10	---	---	10	10	---	---	---	---
			416	289	185	116	72.8	1450	1450	---	---	1450	1450	---	---	1450	1450
8"	80	200	570	400	250	160	100	10	10	10	10	10	10	---	---	---	---
			659	462	289	185	116	1450	1450	1450	1450	1450	1450	1450	1450	1450	1450
10"	80	230	800	630	400	250	160	---	---	---	---	10	10	10	10	10	10
			925	728	462	289	185	---	---	---	---	1450	1450	1450	1450	1450	1450
12"	250	250	1000	800	630	400	250	---	---	---	---	10	10	10	10	10	10
			1160	925	728	462	289	---	---	---	---	1450	1450	1450	1450	1450	1450
16"	100	330	1600	1000	630	400	250	---	---	---	---	10	10	10	10	10	10
			1850	1160	728	462	289	---	---	---	---	1450	1450	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

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					Flowserve PO 1502		Flowserve PO 1502		Flowserve PO 1502	
			Failure of air action					NO	NC	NO	NC	NO	NC
			Specification No. of actuator					BVCxAD	BVCxZD	BVCxAD	BVCxZD	BJIOAE	DJIOZE
			Spring range					[bar] 1.5 - 2.7 [psi] 22 - 39	[bar] 1.5 - 2.7 [psi] 22 - 39	[bar] 2.0 - 3.5 [psi] 29 - 51	[bar] 2.0 - 3.5 [psi] 29 - 51	[bar] 1.8 - 3.8 [psi] 26 - 55	[bar] 1.8 - 3.8 [psi] 26 - 55
			Spring setting					[bar] 1.5 - 2.7 [psi] 22 - 39	[bar] 1.5 - 2.7 [psi] 22 - 39	[bar] 2.0 - 3.5 [psi] 29 - 51	[bar] 2.0 - 3.5 [psi] 29 - 51	[bar] 1.8 - 3.8 [psi] 26 - 55	[bar] 1.8 - 3.8 [psi] 26 - 55
			Feeding pressure					[bar] 4.5 [psi] 65	[bar] 4.5 [psi] 65	[bar] 5.5 [psi] 80	[bar] 5.5 [psi] 80	[bar] 5.6 [psi] 81	[bar] 5.6 [psi] 81
			Marking in valve specification No.					PFD		PFD		PFD	
			Linear force					22.5 kN		30 kN		27 kN	
			Kvs [m ³ /hour] 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	graphite PTFE packing	graphite PTFE packing	graphite PTFE packing
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"	80	230	800 925	630 728	400 462	250 289	160 185	--- --- 1450 1450	--- --- 1450 1450	10 10 1450 1450	10 10 1450 1450		
12"		250	1000 1160	800 925	630 728	400 462	250 289	--- --- 1450 1450	--- --- 1450 1450	10 10 1450 1450	10 10 1450 1450		
16"	100	330	1600 1850	1000 1160	630 728	400 462	250 289	--- --- 1450 1450	--- --- 1450 1450	10 10 1450 1450	10 10 1450 1450		

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					SPA Praha 526 61		SPA Praha 5222	
			Failure of air action					NO	NC	NO	NC
			Specification No. of actuator					52661.x21x	52661.x22x	52661.x51...	52661.x52...
			Spring range					[bar] 0,4 - 2,0 [psi] 6 - 29	[bar] 0,4 - 2,0 [psi] 6 - 29	[bar] 1,2 - 2,0 [psi] 15 - 29	[bar] 1,2 - 2,0 [psi] 15 - 29
			Spring setting					[bar] 0,8 - 2,4 [psi] 12 - 35	[bar] 0,8 - 2,4 [psi] 12 - 35	[bar] 1,2 - 2,0 [psi] 15 - 29	[bar] 1,2 - 2,0 [psi] 15 - 29
			Feeding pressure					[bar] 3,2 [psi] 46	[bar] 3,2 [psi] 46	[bar] 3,2 [psi] 46	[bar] 3,2 [psi] 46
			Marking in valve specification No.					PJA		PJE	
			Linear force					2 kN		4 kN	
			Kvs [m ³ /hour] 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 packing
1"	16	50	10 11.6	6.3 ⁵⁾ 7.28⁵⁾	4.0 ⁵⁾ 4.62⁵⁾	2.5 ⁵⁾ 2.89⁵⁾	1.6 ⁵⁾ 1.85⁵⁾	--- 10 1450	--- 10 1450	10 10 1450 1450	10 10 1450 1450
1½"		80	25 28.9	16 18,5	10 11.6	6.3 ⁵⁾ 7.28⁵⁾	4.0 ⁵⁾ 4.62⁵⁾	--- 10 1450	--- 10 1450	10 10 1450 1450	10 10 1450 1450
2"	20	50	40 46.2	25 28.9	16 18.5	10 11.6	6.3 ⁵⁾ 7.28⁵⁾	--- 10 1450	--- 10 1450	10 10 1450 1450	10 10 1450 1450
3"	40	80	100 116	63 72.8	40 46.2	25 28.9	16 18.5	--- --- 1450 1450	--- --- 1450 1450	10 10 1450 1450	10 10 1450 1450
4"		100	160 185	100 116	63 72.8	40 46.2	25 28.9	--- --- 1450 1450	--- --- 1450 1450	10 10 1450 1450	10 10 1450 1450
6"		150	360 416	250 289	160 185	100 116	63 72.8	--- --- 1450 1450	--- --- 1450 1450	10 10 1450 1450	10 10 1450 1450

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

Note: The table continues on the next page

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					LDM PP 230		LDM PP 385	
			Failure of air action					NO	NC	NO	NC
			Specification No. of actuator					DA16 140-230	RA16 140-230	DA16 140-230	RA16 140-230
			Spring range					[bar] 1.4 - 2.3	[bar] 1.4 - 2.3	[bar] 1.4 - 2.3	[bar] 1.4 - 2.3
								[psi] 20 - 33	[psi] 20 - 33	[psi] 20 - 33	[psi] 20 - 33
			Spring setting					[bar] 1.4 - 2.3	[bar] 1.4 - 2.3	[bar] 1.4 - 2.3	[bar] 1.4 - 2.3
								[psi] 20 - 33	[psi] 20 - 33	[psi] 20 - 33	[psi] 20 - 33
			Feeding pressure					[bar] 4.0	[bar] 4.0	[bar] 4.0	[bar] 4.0
								[psi] 58	[psi] 58	[psi] 58	[psi] 58
			Marking in valve specification No.					PVA			PVB
Linear force					3.9 kN		3.2 kN		6.54 kN		5.39 kN
Kvs [m ³ /hour]					Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	
Cv [US galon/min]					packing	packing	packing	packing	packing		
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graphite	PTFE	graphite	PTFE
1"	16	25	10	6.3 ⁵⁾	4.0 ⁵⁾	2.5 ⁵⁾	1.6 ⁵⁾	10	10	10	10
			11.6	7.28⁵⁾	4.62⁵⁾	2.89⁵⁾	1.85⁵⁾	1450	1450	1450	1450
1½"	16	40	25	16	10	6.3 ⁵⁾	4.0 ⁵⁾	10	10	10	10
			28.9	18,5	11.6	7.28⁵⁾	4.62⁵⁾	1450	1450	1450	1450

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					LDM PP 230		LDM PP 385		LDM PP 700	
			Failure of air action					NO	NC	NO	NC	NO	NC
			Specification No. of actuator					DA20 140-240	RA20 140-240	DA20 142-235	RA20 142-235	DA20 145-240	RA20 145-240
			Spring range					[bar] 1.4 - 2.4	[bar] 1.4 - 2.4	[bar] 1.42-2.35	[bar] 1.42-2.35	[bar] 1.45 - 2.4	[bar] 1.45 - 2.4
								[psi] 20 - 35	[psi] 20 - 35	[psi] 21 - 34	[psi] 21 - 34	[psi] 21 - 35	[psi] 21 - 35
			Spring setting					[bar] 1.4 - 2.4	[bar] 1.4 - 2.4	[bar] 1.42-2.35	[bar] 1.42-2.35	[bar] 1.45 - 2.4	[bar] 1.45 - 2.4
								[psi] 20 - 35	[psi] 20 - 35	[psi] 21 - 34	[psi] 21 - 34	[psi] 21 - 35	[psi] 21 - 35
			Feeding pressure					[bar] 4.0	[bar] 4.0	[bar] 4.0	[bar] 4.0	[bar] 4.0	[bar] 4.0
								[psi] 58	[psi] 58	[psi] 58	[psi] 58	[psi] 58	[psi] 58
			Marking in valve specification No.					PVA			PVB		PVB
Linear force					3.68 kN		3.22 kN		6.35 kN		5.47 kN	11.2 kN	10.15 kN
Kvs [m ³ /hour]					Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]		
Cv [US galon/min]					packing	packing	packing	packing	packing	packing			
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE
2"	20	50	40	25	16	10	6.3 ⁵⁾	10	10	10	10	10	10
			46.2	28.9	18.5	11.6	7.28⁵⁾	1450	1450	1450	1450	1450	1450

5) linear characteristic only

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					LDM PP 385		LDM PP 700	
			Failure of air action					NO	NC	NO	NC
			Specification No. of actuator					DA40 142-250	RA40 142-250	DA40 140-230	RA40 140-230
			Spring range					[bar] 1.42 - 2.5	[bar] 1.42 - 2.5	[bar] 1.4 - 2.3	[bar] 1.4 - 2.3
								[psi] 21 - 36	[psi] 21 - 36	[psi] 20 - 33	[psi] 20 - 33
			Spring setting					[bar] 1.42 - 2.5	[bar] 1.42 - 2.5	[bar] 1.4 - 2.3	[bar] 1.4 - 2.3
								[psi] 21 - 36	[psi] 21 - 36	[psi] 20 - 33	[psi] 20 - 33
			Feeding pressure					[bar] 4.0	[bar] 4.0	[bar] 4.0	[bar] 4.0
								[psi] 58	[psi] 58	[psi] 58	[psi] 58
			Marking in valve specification No.					PVB			PVC
Linear force					5.77 kN		5.47 kN		11.9 kN		9.8 kN
Kvs [m ³ /hour]					Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	Δp_{max} [MPa]	
Cv [US galon/min]					packing	packing	packing	packing	packing		
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graphite	PTFE	graphite	PTFE
3"	40	80	100	63	40	25	16	10	10	10	10
			116	72.8	46.2	28.9	18.5	1450	1450	1450	1450
4"	40	100	160	100	63	40	25	10	10	10	10
			185	116	72.8	46.2	28.9	1450	1450	1450	1450
6"	40	150	360	250	160	100	63	10	10	10	10
			416	289	185	116	72.8	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

For further information on actuating, see actuators' catalogue sheets			Pneumatic actuators					LDM PP 1400			
			Failure of air action					NO		NC	
			Specification No. of actuator					DAXX 150-310		RAXX 150-310	
			Spring range					[bar] 1.5 - 3.1		[bar] 1.5 - 3.1	
								[psi] 22 - 45		[psi] 22 - 45	
			Spring setting					[bar] 1.5 - 3.1		[bar] 1.5 - 3.1	
								[psi] 22 - 45		[psi] 22 - 45	
			Feeding pressure					[bar] 4.6		[bar] 4.6	
								[psi] 67		[psi] 67	
			Marking in valve specification No.					PVD			
Linear force					21.0 kN		21.0 kN				
Kvs [m ³ /hour]					Δp_{max} [MPa]		Δp_{max} [MPa]				
Cv [US gallon/min]					[psi]		[psi]				
					packing		packing				
NPS	H[mm]	Ds[mm]	1	2	3	4	5	graphite	PTFE	graphite	PTFE
8"	80	200	570	400	250	160	100	10	10	10	10
			659	462	289	185	116	1450	1450	1450	1450
10"	80	230	800	630	400	250	160	10	10	10	10
			925	728	462	289	185	1450	1450	1450	1450
12"	80	250	1000	800	630	400	250	10	10	10	10
			1160	925	728	462	289	1450	1450	1450	1450
16"	100	330	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

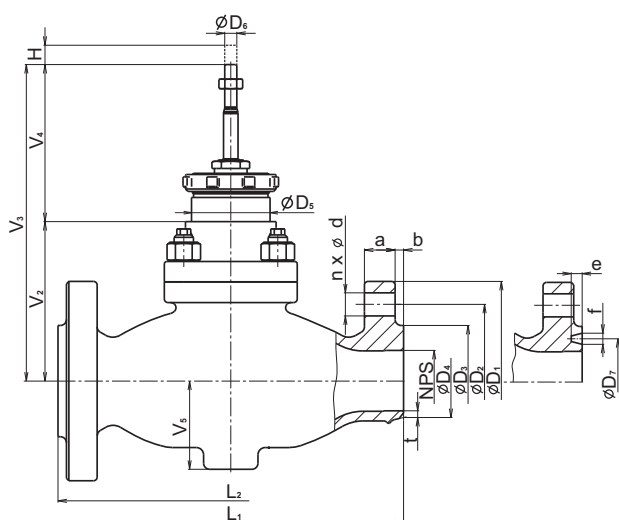
Dimensions and weights of valves CV 322 (Ex) CV 332 (Ex) with flanged and welded connection, NPS 1" - 16"

NPS	H	V ₂	V ₃	V ₄	ØD ₅	M	ØD ₆	V ₅	m ₁	m ₂	Class 300			Class 600			Class 150, 300 and 600					
											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]	kg	kg	[mm] [inch]	[mm] [inch]	[mm] [inch]	[mm] [inch]	[mm] [inch]	[mm] [inch]	[mm] [inch]					
1"	16	100	230					52	9	6	197	210	207	210	210	207	210	8.25				
	0.63	3.937	9.055					2.047			7.75	8.25	8.15	8.25	8.25	8.15		8.25				
1½"								52	15	8	235	248	245	251	251	248	251	9.88				
								2.047			9.25	9.76	9.64	9.88	9.88	9.76		9.88				
2"	20	132	262					73	20	13	267	283	277	286	289	283	286	11.25				
	0.787	5.197	10.314	130	65	---		2.874			10.5	11.14	10.9	11.25	11.38	11.14		11.25				
3"		164	294	5.118	2.559	---		105	43	30	318	332	328	337	340	334	337	13.25				
		6.456	11.575					4.133			12.5	33.22	12.91	13.25	13.38	13.15		13.25				
4"	40							105	70	40	368	384	378	394	397	391	394	15.5				
	1.575							4.133			14.5	15.12	14.88	15.5	15.63	15.39		15.5				
6"		200	330					134	160	105	473	489	483	508	511	505	508	20.0				
		7.874	12.992					5.275			18.62	19.25	19.01	20.0	20.12	19.88		20.0				
8"		262	422					203	290	210	568	584	578	610	613	607	610	24.0				
		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	---	370	---	---	---	---	---	---	752	29.62				
	3.15	13.622	19.921	6.299		5.905		9.961										29.62				
12"		395	555					296	---	520	---	---	---	---	---	---	819	32.35				
		15.551	21.85					11.654										32.35				
16"	100	512	672					382	---	1050	---	---	---	---	---	---	1108	43.62				
	3.937	20.157	26.457					15.039										43.62				

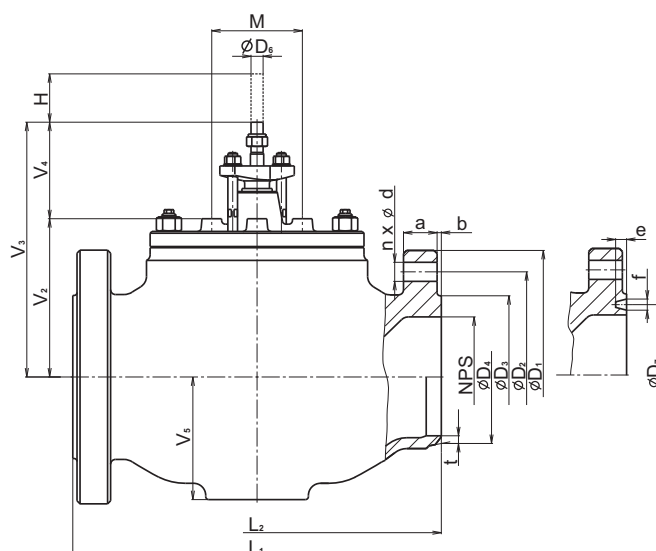
m₁ - weight of flanged connection

m₂ - weight of welded connection

NPS	RF Class 300						RF Class 600						RTJ Class 300 and 600						Groove Number
	ØD ₁	ØD ₂	ØD ₃	d	n	a	b	ØD ₁	ØD ₂	ØD ₃	d	n	a	b	ØD ₇	e	f		
	[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]	[mm] [inch]	
1"	125	88.9	50.8	19.1	4	15.9		125	88.9	50.8	19.1	4	17.5		50.8	6.35	8.74	R16	
	4.88	3.5	2.0	¾"		0.62		4.88	3.5	2.0	¾"		0.69		2.0	0.25	0.344		
1½"	155	114.3	73	22.3	4	19.1		155	114.3	73	22.3	4	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		165	127	92.1	19.1		25.4		82.55	7.92	11.91	R23	
	6.5	5.0	3.62	¾"		0.81		6.5	5.0	3.62	¾"		1.0		3.25	0.312	0.469		
3"	210	168.3	127	22.3	8	27	2	210	168.3	127	22.3	8	31.8	7	117.48	7.92	11.91	R30	
	8.25	6.62	5.0	7/8"		1.06	0.06	8.25	6.62	5.0	7/8"		1.25	0.25	4.625	0.312	0.469		
4"	255	200	157.2	22.3		30.2		275	215.9	157.2	25.4		38.1		149.23	7.92	11.91	R37	
	10	7.88	6.19	7/8"		1.19		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"		1.38		14.0	11.5	8.5	1 1/8"		1.88		8.312	0.312	0.469		
8"	380	330.2	269.9	25.4	12	39.7		420	349.2	269.9	31.8	12	55.6		269.9	7.92	11.91	R49	
	15	13.0	10.62	1"		1.56		16.5	13.75	10.62	1 ¼"		2.19		10.625	0.312	0.469		

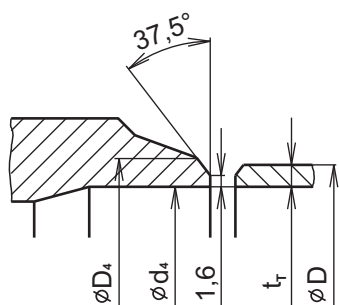


NPS 1" - 6"



NPS 8" - 16"

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



NPS	Dimensions of weld ends for pipes acc. to ASME B36.10M					[mm] [inch]	
	ϕD_4	ϕD	t_r			$\phi D_{4 \max}$	$\phi d_{4 \min}$
			Sch. No. 40	Sch. No. 80	Sch. No. 100		
1"	35	33.4	3.4	4.6	---	40	23
	1.378	1.315	0.133	0.179	---	1.575	0.906
1½"	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

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

		XX	XX X	XX X	XX X X	XX	-XX	/XXX	-XXX	XX
1. Valve	Control valve	CV								
	Shut-off valve	SV								
2. Series	Valves made of cast steel		3 2							
	Valves made of stainless steel		3 3							
	Straight-through		0							
	Straight-through 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					
	FlangeLFF (Large Female Face)				3					
	Flange SFF (Small Female Face)				4					
	Flange LGF (Large Groove Face)				5					
	Flange SGF (Large Groove Face)				6					
	Weld ends BW (Butt Welding)				7					
5. Body material <i>(Operating temperature ranges are specified in parentheses)</i>	Cast steel 1.0619 (-10 to 400°C)				1					
	CrMo steel 1.7357 (-10 to 550°C)				7					
	Stainless steel 1.4581 (-10 to 550°C)				8					
	Other material on request				9					
6. Seat sealing	Metal - metal				1					
	Hard metal overlay on sealing surfaces				3					
	Hard metal overlay on sealing surfaces of RV 3x2, a plug with metal sealing cuff				8					
7. Packing	DRSpack® (PTFE)				3					
	Exp. graphite				5					
8. Flow characteristic	Linear					L				
	Equal-percentage					R				
	LDMspline®					S				
	On-off					U				
	Parabolic					P				
	Linear - perforated plug					D				
	Equal-percentage - perforated plug					Q				
Parabolic - perforated plug					Z					
9. Kvs	Column No. acc. to Kvs value table					X				
10. Nominal pressure PN	PN 40 (welded ends only)						40			
	PN 63						63			
11. Max. operating temp. °C	DRSpack® (PTFE)							260		
	Exp. graphite							300		
	Exp. graphite							315		
	Exp. graphite							400		
	Exp. graphite							425		
	Exp. graphite							500		
Exp. graphite							550			
12. Nominal size DN	DN								XXX	
13. Execution	Normal									
	Non - explosive									Ex
	Oxygen									Ox

Ordering example of flanged execution:

CV320 ENC 2135 L1 300/400-080

Ordering example of weld ends execution:

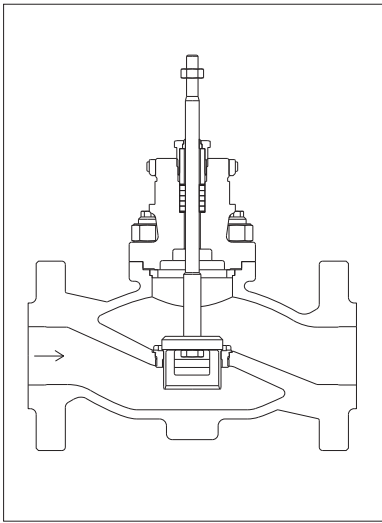
CV320 ENC 7135 L1 300/400-080, weld ends size Ø 88,9 x 5,5

For marking of actuators in specification code, refer to table on page No. 95 of this catalogue

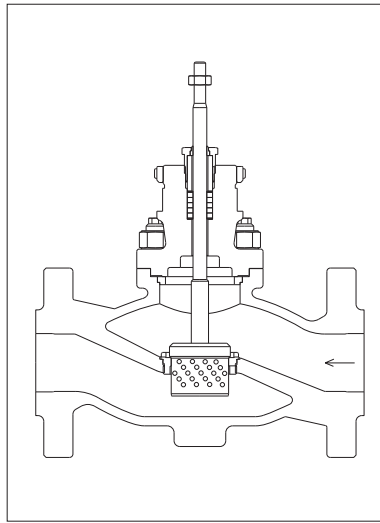
DN	NPS	Temp.	
		°C	°F
015	½"	260	500
025	1"	300	570
040	1½"	315	600
050	2"	400	750
080	3"	425	800
100	4"	500	930
150	6"	550	1020
200	8"		

Valves CV / SV 3x0 (Ex)

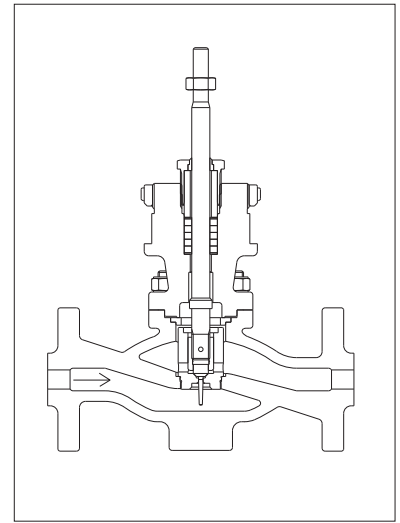
Section of valve with V-ported plug



Section of valve with perforated plug

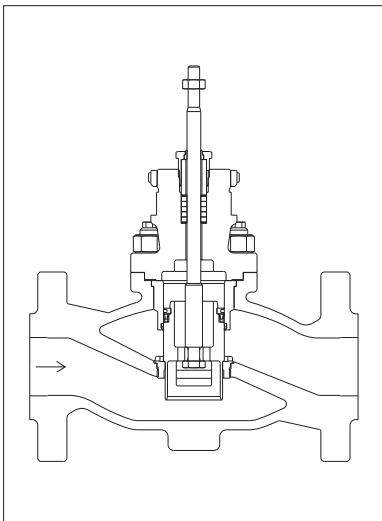


Section of valve with micro-throttling system

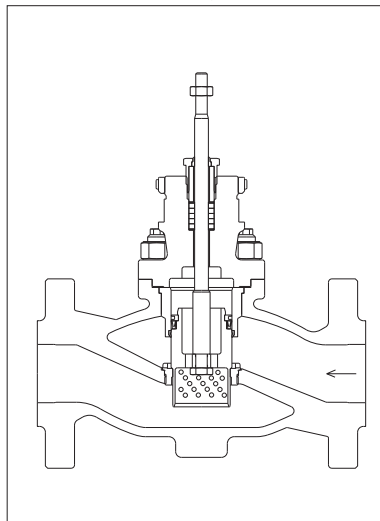


Valves CV 3x2 (Ex)

Section of pressure-balanced valve with V-ported plug



Section of pressure-balanced valve with perforated plug

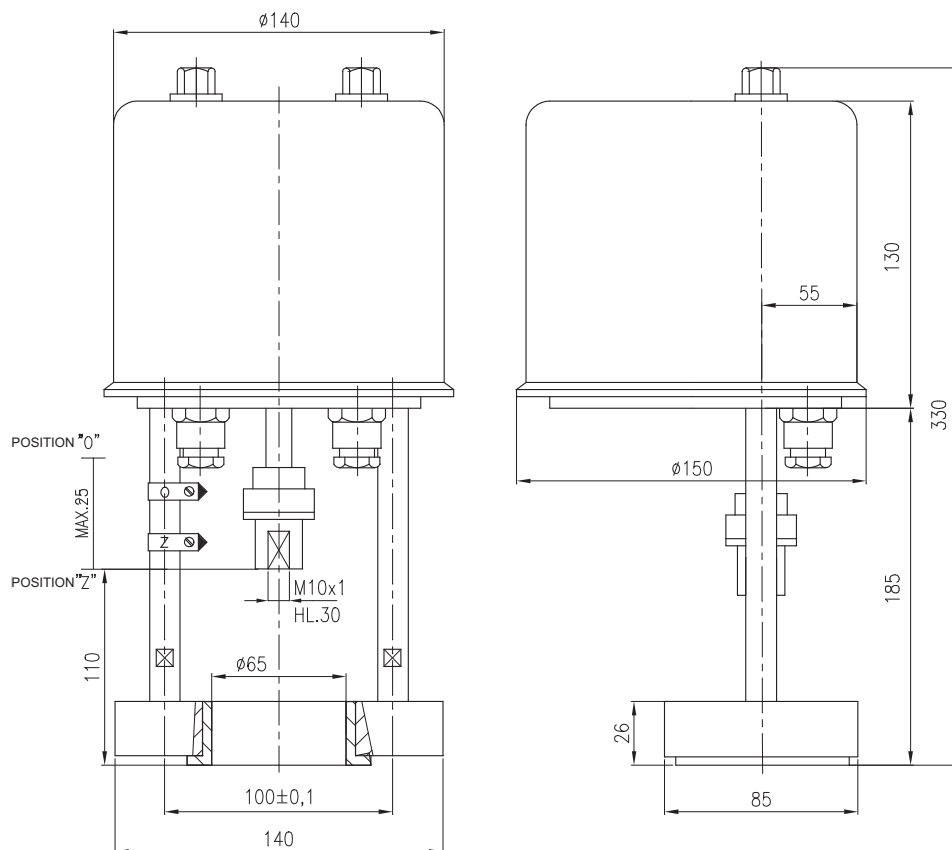



**Electric actuator MIDI 660
ZPA Nová Paka**
Technical data

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

Note: Specifications and technical data are for information only.

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

Dimensions of actuator MIDI 660




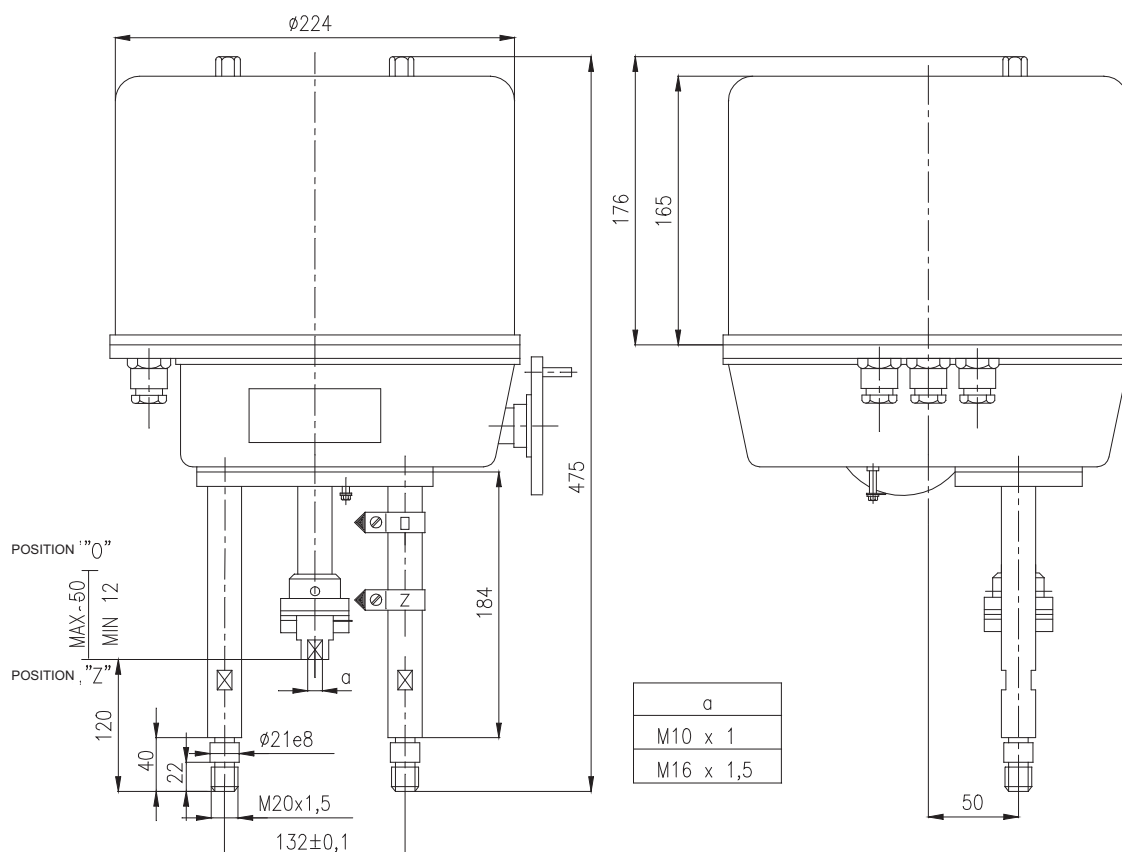
Electric actuator Zepadyn 670 ZPA Nová Paka

Technical data

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

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

Dimensions of actuator Zepadyn 670



Specification of actuator MIDI 660

		MIDI 660	X	X	X	/
Feeding voltage AC	230 V (50 Hz)		1			
	24 V (50 Hz)		2			
Linear force [kN]	2,0			1		
	4,0			4		
Resetting speed [mm/min]	10				1	
	16				2	
	25				3	
Accessories	Positioner 0-1 V, 0-10 V, 0(4)-20 mA					OP1
	Signalization switches SO and SZ					S1
	1 resistance transmitter 100Ω					R1
	2 resistance transmitters 100Ω - without OP1, I1 and C1					R2
	Converter 4 - 20 mA - without OP1, R2 and C1					I1
	Capacity transmitter CPT 1 - without R2 and I1					C1
	Manual operating outside the housing					RK1
Connection flange for Ø 65, coupling M10x1						P3

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

Specification of Zepadyn 670

		Zepadyn 670	X	X	X	/
Voltage AC	230 V (50 Hz)		1			
	24 V (50 Hz)		2			
Nominal force [kN]	6,3			2		
	10			4		
Resetting speed mm.min ⁻¹	6,3				1	
	16				2	
	25				3	
	32 (not on execution with OP1)				4	
Accessories	Positioner 0-1 V, 0-10 V, 0(4)-20 mA - without R2					OP1
	Signalization SO a SZ					S1
	1 resistance transmitter 100Ω					R1
	2 resistance transmitters 100Ω - without OP1, I1 and C1					R2
	Converter 4 - 20 mA - without R2 and C1					I1
	Capacity transmitter CPT1 - without R2 and I1					C1
	Heater					T1
	Connection - pitch 132, M20, coupling M10x1, M16x1,5					P3
Adapter with setting program for actuators with OP1					ANP1	
Stroke for valve - xx = 16, 20, 40 mm					ZDxx	

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



Electric actuator Zepadyn 671 ZPA Nová Paka

Technical data

Type	Zepadyn 671 XXX
Marking in valve specification No.	ENE
Voltage	230 V AC or 24 V AC
Frequency	50 Hz
Power consumption	max 120 VA, heat resistor 15 W
Control	3 - position control, 0 - 10 V, 0(4) - 20 mA
Nominal force	16000 and 20000 N
Travel	40, 80 mm
Enclosure	IP 65
Process medium max. temperature	Acc. to used valve
Ambient temperature range	-25 to 55°C
Ambient humidity range	10 - 100 % with condensation
Weight	12,5 kg

Note: Specifications and technical data are for information only.

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

Specification of Zepadyn 671

		Zepadyn 671	X	X	X	/
Voltage AC	230 V (50 Hz)		1			
	24 V (50 Hz)		2			
Nominal force [kN]	16			1		
	20			2		
Resetting speed mm.min ⁻¹	16				1	
	25				2	
	32				3	
	50				4	
Accessories	Positioner 0-1 V, 0-10 V, 0(4)-20 mA - without R2 and I1					OP1
	Signalization SO a SZ					S1
	1 resistance transmitter 100Ω					R1
	2 resistance transmitters 100Ω - without OP1, I1 and C1					R2
	Converter 4 - 20 mA - without R2 and C1					I1
	Capacity transmitter CPT1 - without R2 and I1					C1
	Heater					T1
	Connection - pitch 132, M20, coupling M10x1, M16x1,5					P3
	Connection - pitch 150, 4 columns M20, coupling M20x1,5					P5
	Adapter with setting program for actuators with OP1					ANP1
Stroke for valve - xx = 40, 80 mm					ZDxx	

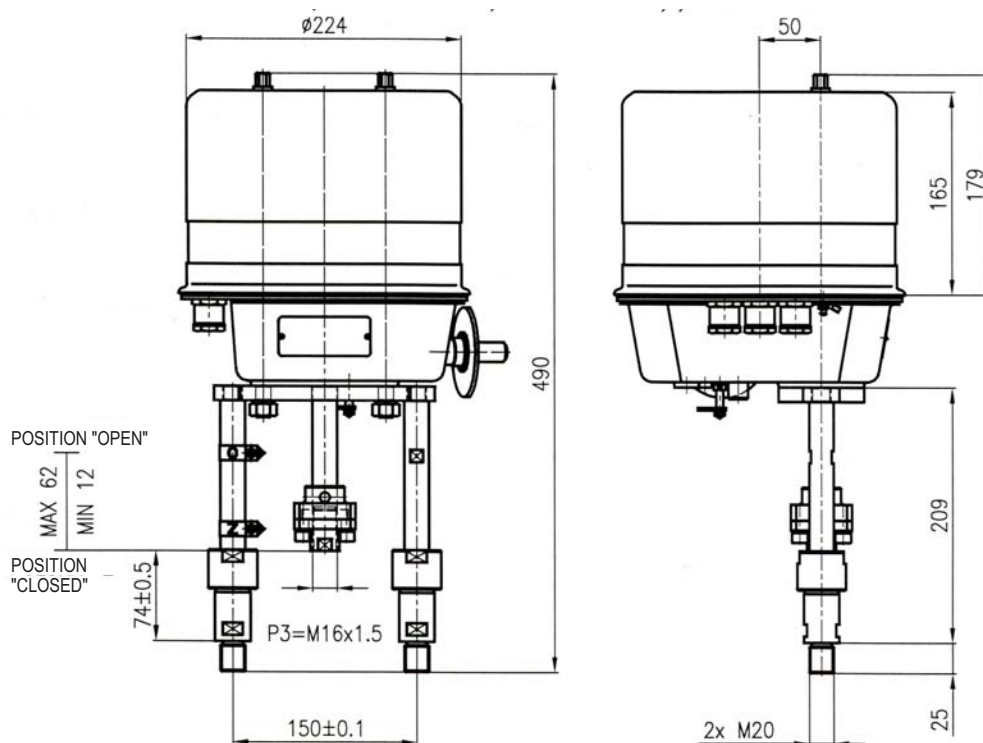
Basic execution: 3-position control, manual operating, limit switches for Open and Closed positions and end position switch without transmitter and connection elements.

* Connection for LDM valves

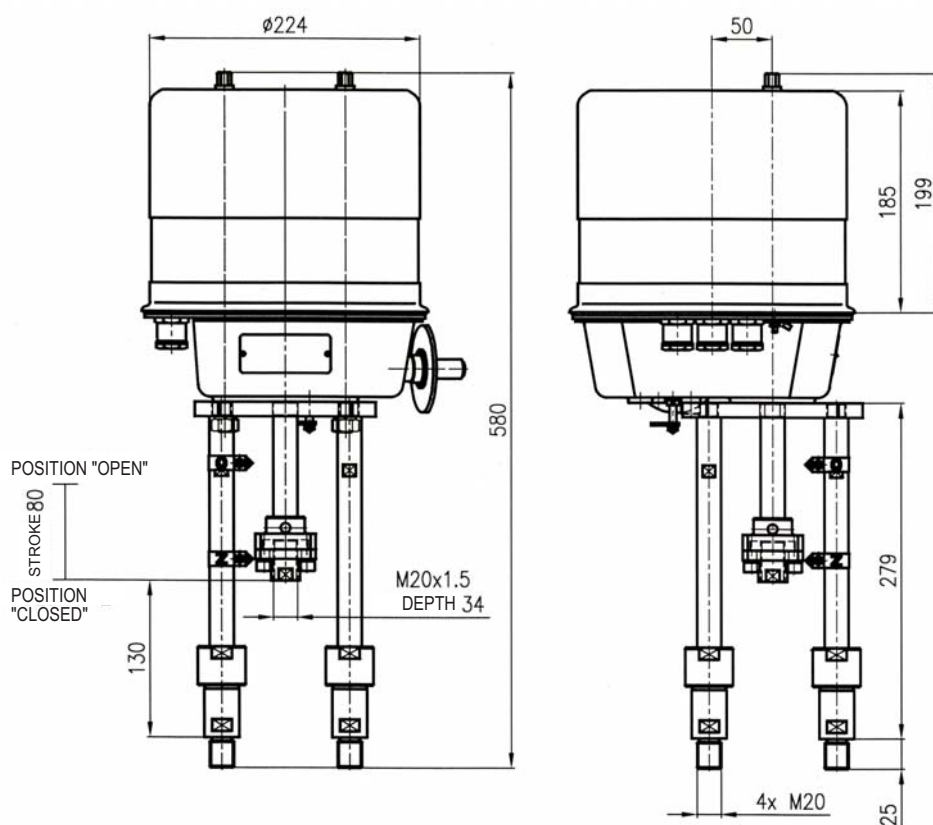
P3	RV 2xx DN 80 - 150
P5	RV 2xx DN 200 - 300

Diemensions of actuator Zepadyn 671

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



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





EYA
EYB

**Electric actuators Modact MTN, MTP
and Modact MTN, MTP Control, type 52 442
ZPA Pečky**

Technical data

Type	Modact MTN Control	Modact MTN	Modact MTP Control	Modact MTP
Marking in valve specification No.	EYA	EYB	EYA	EYB
Voltage	3 x 230 V / 400 V			
Frequency	50 Hz			
Motor power	See specification table			
Control	3 - position, with regulator ZP2.RE5			
Nominal force	11500 to 25000 N			
Travel	10 to 100 mm			
Enclosure	IP 55		IP 67	
Process medium max. temp.	Acc. to used valve			
Ambient temperature range	-40 to 70°C			
Ambient humidity range	5 - 100 % with condensation			
Weight	33 kg			

Wiring diagram of actuators

Note: Specifications and technical data are for information only.

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

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

Basic equipment	2 power switches MO, MZ 2 limit switches PO, PZ 2 limit and signalisation switches SO, SZ	1 position transmitter - resist. 2x100 Ω or current 2 limit switches PO, PZ 2 limit and signalisation switches SO, SZ
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Basic technical parameters

Type	Power switch setting range kN	Direct power kN	Resetting speed mm.min ⁻¹	Travel mm	Power W	Electromotor			Hmotnost Aluminium [kg]	Specification No.				
						RPM 1/min	In (400V) A	Iz In		Basic	Additional ²⁾			
MTN 15 MTP 15	11,5 - 15	17	50	10 - 100	180	850	0.74	2.3	33	52 442	XX0XXM			
			80		180						XX1XXM			
			125		250						1350	0.77	3.0	XX3XXM
			36		120						645	0.51	2.2	XX2XXM
			27		120						645	0.51	2.2	XXAXXM
MTN 25 MTP 25	15 - 25	32,5	50	10 - 100	180	835	0.74	2.3	33	52 442	XX4XXM			
			80		180						835	0.74	2.3	XX5XXM
			125		250						1350	0.77	3.0	XX6XXM
			36		120						645	0.51	2.2	XX7XXM
			27		120						645	0.51	2.2	XX8XXM

Execution, electric connection

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

		Current transmitter CPT without source	Current transmitter DCPT with source
		Position transmitter	current 4 - 20 mA
	current 4 - 20 mA with BMO	XXX1XM	XXXSXM
	resistance transmitter 2x 100 Ω	XXX2XM	
	resistance transmitter 2x 100 Ω s BMO	XXX3XM	
	without transmitter, with BMO	XXXPXM	
	without transmitter, without BMO	XXXZXM	

Additional electric equipment ¹⁾

Modact Control execution (with built-in contactor combination)			Resistance transmitter 2x 100 ohm	Current transmitter CPT without source	Current transmitter DCPT with source
			without BMO	Without brake BAM and positioner	XXX4XM
	With brake BAM, without positioner	XXX5XM	XXXBXM	XXXLXM	
	With brake BAM and with positioner		XXXCX5M ³⁾		
with BMO	Without brake BAM and positioner	XXX7XM	XXXDXM	XXXMXM	
	With brake BAM, without positioner	XXX8XM	XXXEXM	XXXNXM	
	With brake BAM and with positioner		XXXFX5M ³⁾		

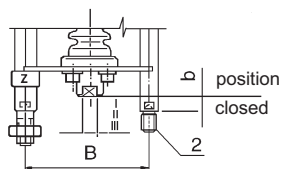
Notes:

¹⁾ When execution with flasher is requested, specify this requirement in writing: Execution with flasher

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

³⁾ For actuators MODACT MTN Control s with position controllers ZP2.RE5 specify number 5 on place 11

Connection dimensions - details of additional specification No. 52 442

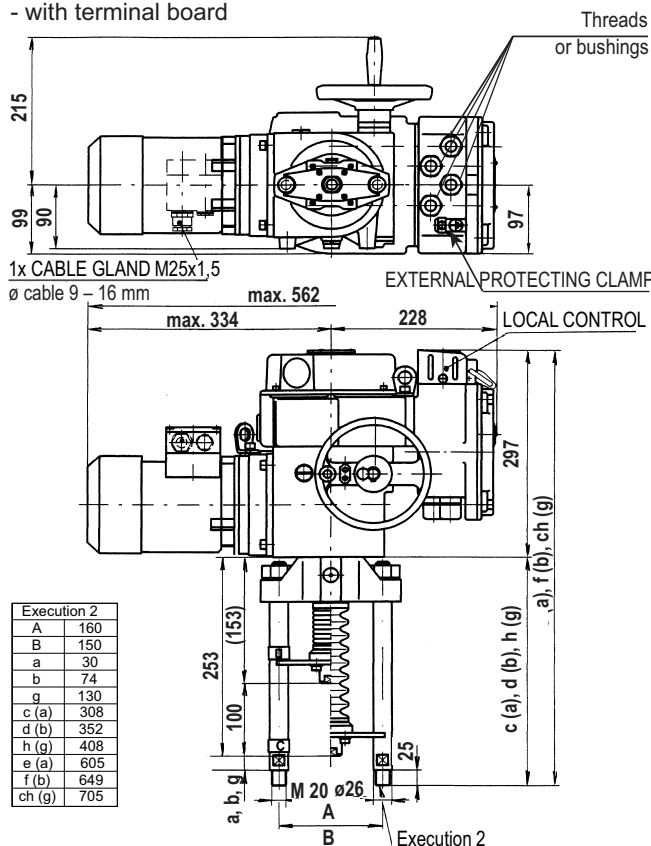


Pitch of columns	B	150
Position "closed"	b	74
	g	130
	I	M 20x1,5
Clutch thread	II	M 16x1,5
	III	M 10x1

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

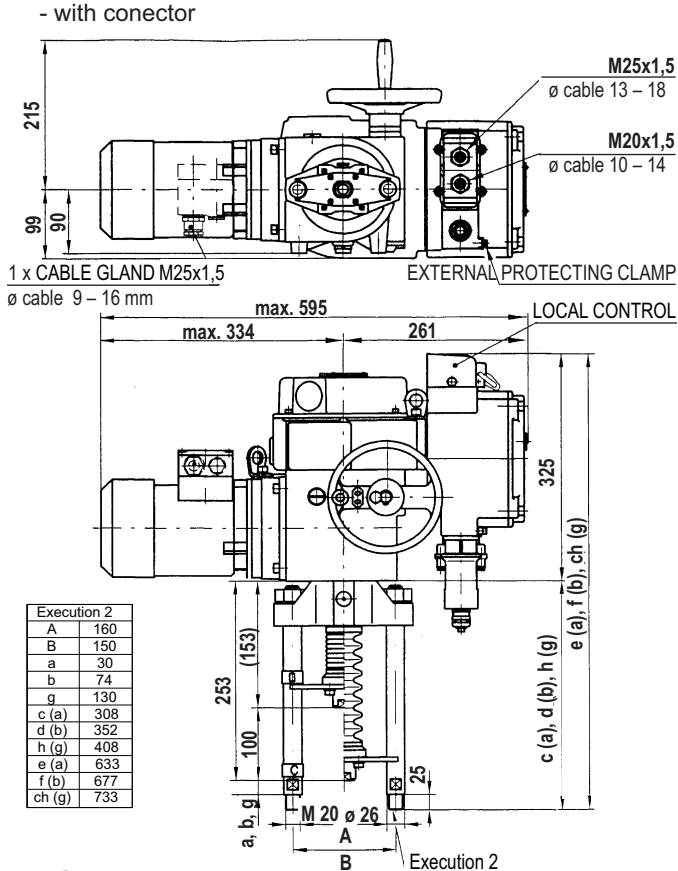
Dimensions of actuator Modact MTN, MTP

- with terminal board



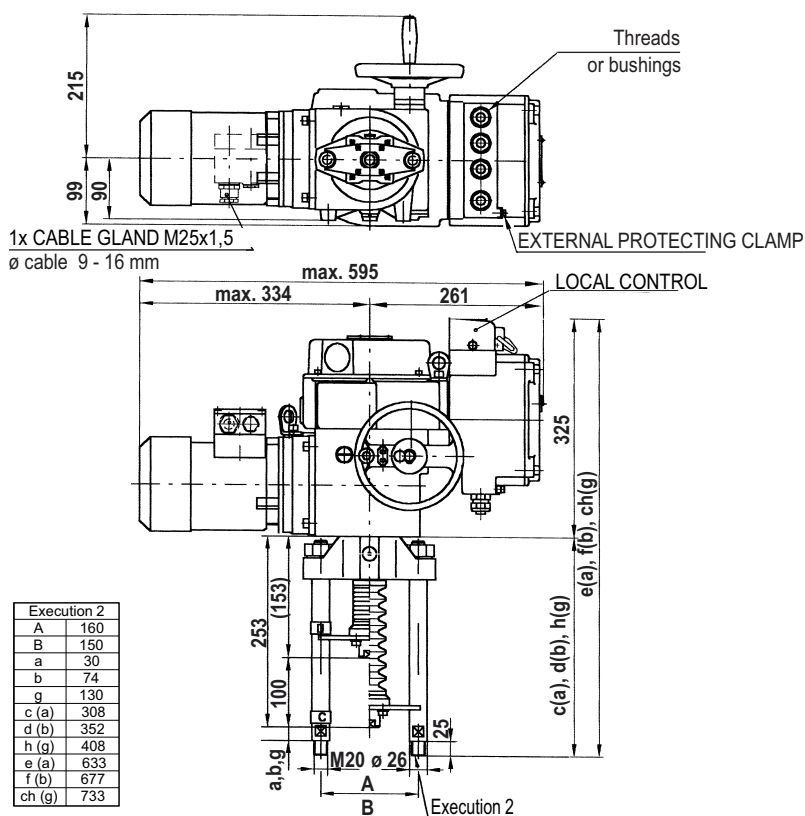
Dimensions of actuator Modact MTN, MTP and Modact MTN, MTP Control

- with conector

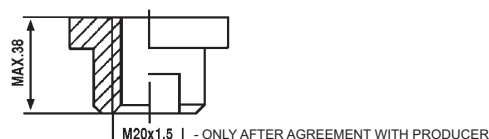


Dimensions of actuator Modact MTN, MTP Control

- with terminal board



Detail of coupling





Electric actuators Modact MTNED and Modact MTPED, typ 52 442 ZPA Pečky

Technical data

Type	Modact MTNED	Modact MTPED
Marking in valve specification No.	EYA	
Execution	The actuator equipped with electronic system DMS2 or DMS2 ED	
Voltage	3 x 230 V / 400 V	
Frequency	50 Hz	
Motor power	See specification table	
Control	3 - position, or continuous	
Nominal force	11500 to 25000 N	
Travel	10 to 100 mm	
Enclosure	IP 55	IP 65
Process medium max. temp.	Acc. to used valve	
Ambient temperature range	-40 to 70°C	
Ambient humidity range	5 - 100 % with condensation	
Weight	33 kg	

Wiring diagram of actuators *)

Note: Specifications and technical data are for information only.

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

Elektric equipment

System DMS2 ED

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

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

System DMS2

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

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

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

Specification of actuators Modact MTNED a MTPED

Basic technical parameters

Type	Power switch setting range kN	Direct power kN	Resetting speed mm.min ⁻¹	Travel mm	Power W	Electric Motor			Weight Aluminium [kg]	Specification No.	
						RPM 1/min	In (400V) A	$\frac{l_z}{l_n}$		Basic	Additional
MTNED 15 MTPED 15	11,5 - 15	17	50	10 - 100	180	850	0.74	2.3	33	52 442	XX0XXED
			80		180	850	0.74	2.3			XX1XXED
			125		250	1350	0.77	3.0			XX3XXED
			36		120	645	0.51	2.2			XX2XXED
			27		120	645	0.51	2.2			XXAXXED
MTNED 25 MTPED 25	15 - 25	32,5	50	10 - 100	180	835	0.74	2.3	33		XX4XXED
			80		180	835	0.74	2.3			XX5XXED
			125		250	1350	0.77	3.0			XX6XXED
			36		120	645	0.51	2.2			XX7XXED
			27		120	645	0.51	2.2			XX8XXED
Execution Modact MTNED ... enclosure IP55										XXXXNED	
Execution Modact MTPED ... enclosure IP67										XXXXPED	

Execution, circuitry, electronic equipment

	Terminal board	Conector	Terminal board, brake	Conector, brake
DMS2, ED electronics	EXXXXED	FXXXXED	HXXXXED	KXXXXED
DMS2, Profibus electronics	PXX0XED	TXX0XED	UXX0XED	YXX0XED
DMS2, 2-position or 3-position control *)	RXX0XED	VXX0XED	WXX0XED	1XX0XED

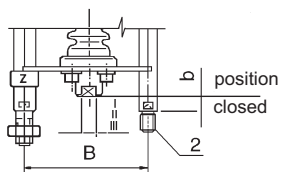
*) Producer will set in production 2- or 3- position control. If not specified in the order, the gearmotor is set to 3-position control (signal control 4-20 mA).

Equipment of DMS2ED electronics

Equipment	Character at the 9. position (52 442 xxxXxED)																							
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	H	J	K	L	M	N	P	R
Local control		x		x		x	x		x		x		x		x		x		x		x		x	
Display			x	x			x	x			x	x			x	x			x		x		x	
Relay					x	x	x	x					x	x	x	x					x	x	x	x
Analog module	Transmitter								x	x	x	x	x	x	x	x			x	x	x	x	x	x
	Regulator																	x	x	x	x	x	x	x

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

Connection dimensions - details of additional specification No. 52 442

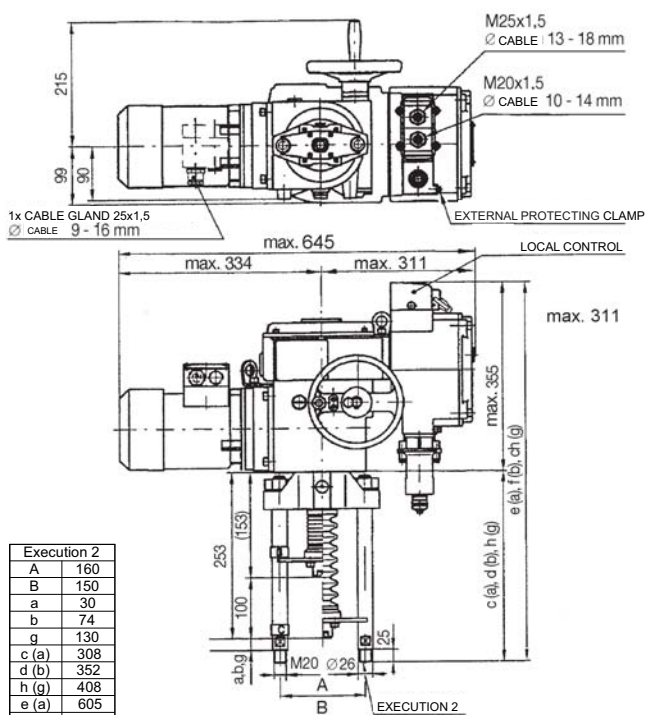


Pitch of columns	B	150
Position "closed"	b	74
	g	130
	I	M 20x1,5
Clutch thread	II	M 16x1,5
	III	M 10x1

Execution	Specification No.		For valves
	basic	additional	
Bb2I	52 442	XLXXXM	---
Bb2II	52 442	XMXXXM	RV 2xx DN 80 to 150
Bb2III	52 442	XPXXXM	RV 2xx DN 15 to 65
Bg2I	52 442	XRXXXM	RV 2xx DN 200 to 400

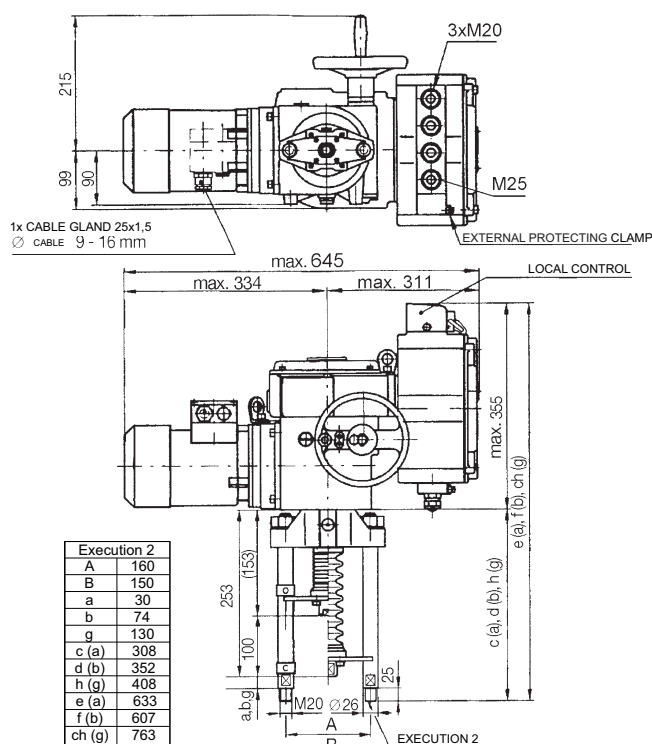
Dimensions of actuator Modact MTNED/MPED

- with conector



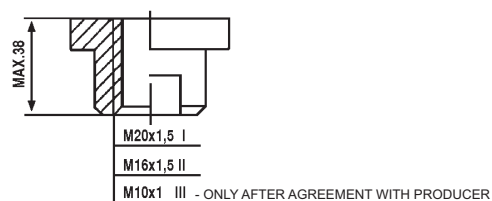
Execution 2	
A	160
B	150
a	30
b	74
g	130
c (a)	308
d (b)	352
h (g)	408
e (a)	605
f (b)	649
ch (g)	705

- with terminal board



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

Detail of coupling





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

Electric actuators
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
Auma

Technical data

Typ	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 specification No.	EAA	EAB	EAC	EAD	EAE	EAF	EAG	EAH
Voltage	1 ~ 230 V AC; 3 ~ 380 nebo 400 V AC							
Frequency	50 Hz							
Motor power	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 valve stroke 16, 25, 40 mm				Acc. to valve stroke 40, 80, 100 mm			
Enclosure	IP 68							
Process medium max. temperat.	Acc. to used valve							
Ambient temperature range	-40 to 80°C	-20 to 60°C	-40 to 60°C	-20 to 60°C	-40 to 80°C	-20 to 60°C	-40 to 60°C	-20 to 60°C
Ambient humidity limit	100 %							
Weight of 1-phase	25-62 kg				25-62kg			
Weight of 3-phase	20-33 kg				21-33kg			

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

Type		SA	X	XXX	07.X
Duty	Control				
	ON - OFF		R		
Execution	Standard				
	Non-explosive			ExC	
Actuator's size					07.1
					07.5

Output shaft type A (thread TR 16x4 LH, connection flange F07) ... for RV 3xx DN 15 to 65

Output speed (rpm)	Tripping torque	SA 07.2	SAR 07.2	Motor power [kW]	SA 07.2	SA Ex 07.2	SAR 07.2	SAR Ex 07.2
		SAEx07.2	SAREx07.2		S2-15min	S2-15min	S4-25%	S4-25%
4	10-30 Nm	15-30 Nm		0,02	0,02	0,02	0,02	
5,6				0,02	0,02	0,02	0,02	
8				0,04	0,04	0,04	0,04	
11				0,04	0,04	0,04	0,04	
16				0,06	0,06	0,06	0,06	
22				0,06	0,06	0,06	0,06	
32				0,10	0,10	0,10	0,10	
45				0,10	0,10	0,10	0,10	

Output shaft type A (thread TR 20x4 LH, connection flange F10) ... for RV 3xx DN 80 to 400

Output speed (rpm)	Tripping torque	SA 07.6	SAR 07.6	Motor power [kW]	SA 07.6	SA Ex 07.6	SAR 07.6	SAR Ex 07.6
		SAEx07.6	SAREx07.6		S2-15min	S2-15min	S4-25%	S4-25%
4	20-60 Nm	30-60 Nm		0,03	0,03	0,03	0,03	
5,6				0,03	0,03	0,03	0,03	
8				0,06	0,06	0,06	0,06	
11				0,06	0,06	0,06	0,06	
16				0,12	0,12	0,12	0,12	
22				0,12	0,12	0,12	0,12	
32				0,20	0,20	0,20	0,20	
45				0,20	0,20	0,20	0,20	

Accessories

2 TANDEM switches

Gearing for signalisation of position

Mechanical position indicator

Potentiometer 1x200 Ω

Electronic position transmitter RWG (potentiometer included), 4 - 20 mA, 2-wire

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

Inductive position transmitter IWG, 4 - 20 mA

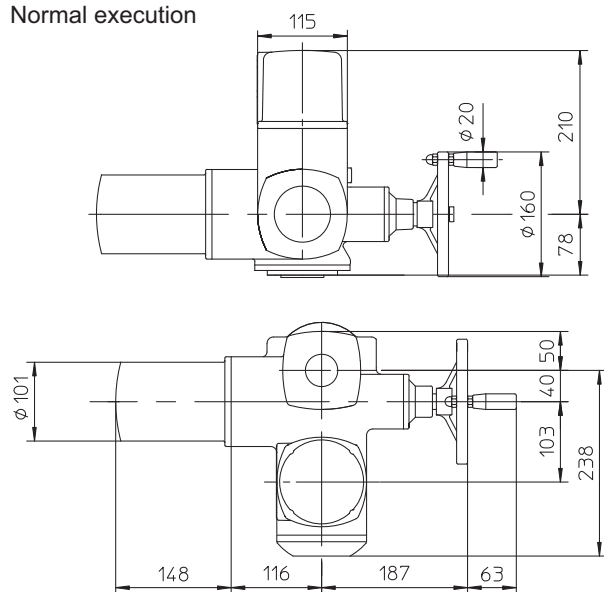
MATIC - for continuous control (specification of accessories acc. to catalogue of producer)

AUMATIC - for continuous control (specification of accessories acc. to catalogue of producer)

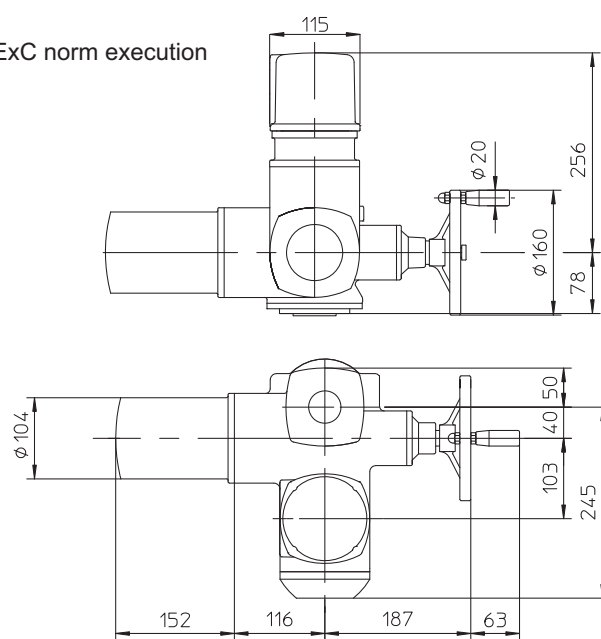
Other accessories acc. to catalogue of producer of actuators.

Dimension of Auma actuators 07.2 / 07.6

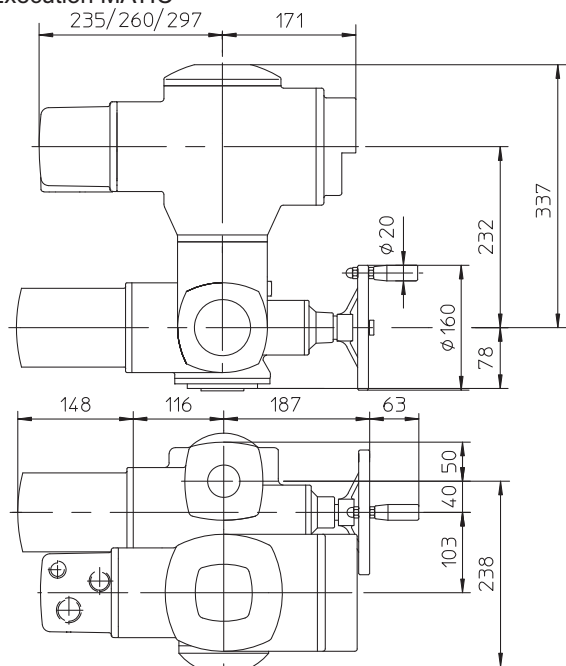
Normal execution



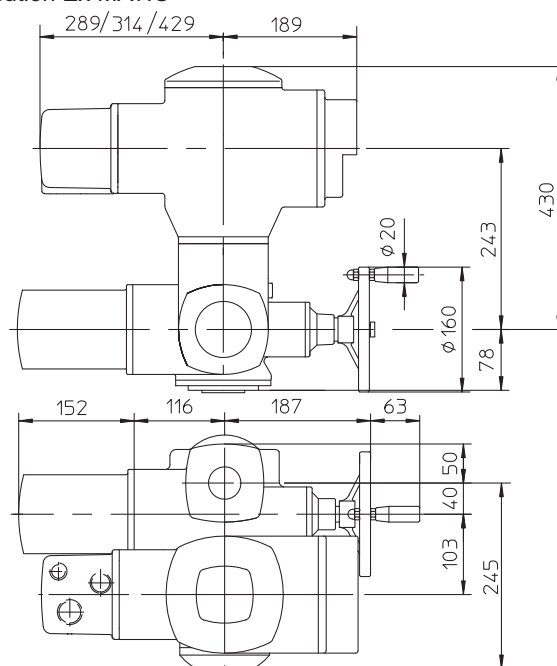
ExC norm execution



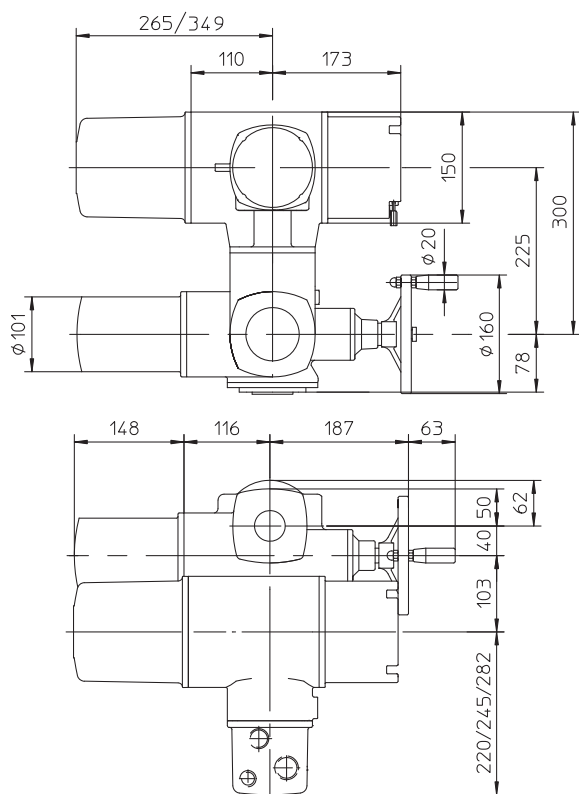
Execution MATIC



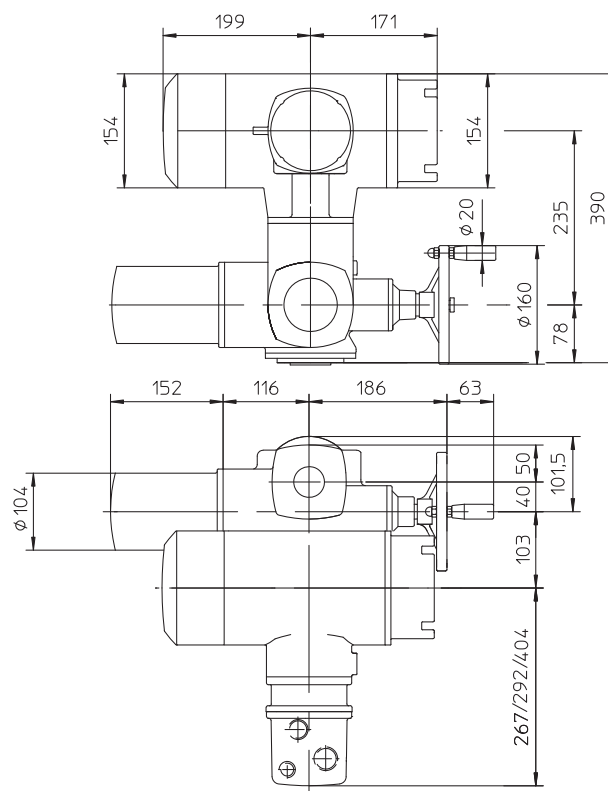
Execution Ex MATIC



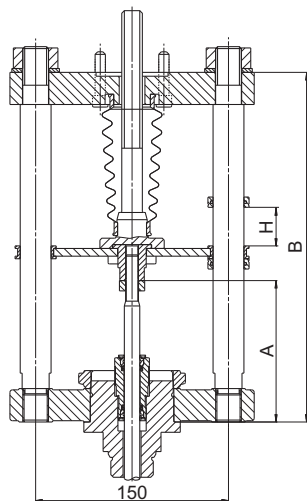
Execution AUMATIC



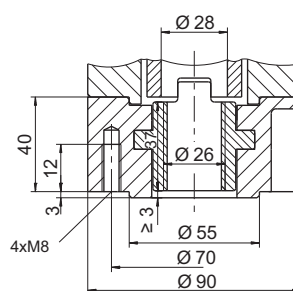
Execution Ex AUMATIC



Attachement yoke (2 or 4 columns)



Output drive A, F07



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



**EAI, EAJ
EAK, EAL**

**Electric actuators
SA 10.1, SA ExC 10.2
SAR 10.2, SAR ExC 10.2
Auma**

Technical data

Type	SA 10.2	SA Ex 10.2	SAR 10.2	SAR Ex 10.2
Marking in valve specification No.	EAI	EAL	EAJ	EAK
Voltage	1 ~ 230 V AC; 3 ~ 380 nebo 400 V AC			
Frequency	50 Hz			
Motor power	See specification table			
Control	3 - position control or with signal 4 - 20 mA			
Nominal force	80 Nm ~ 21,6 kN; 100 Nm ~ 27 kN; 120 Nm ~ 32 kN			
Travel	Acc. to vlave stroke 80, 100 mm			
Enclosure	IP 68			
Process medium max. temperat.	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 limit	100 %			
Weight of 1-phase	22 to 47 kg			
Weight of 3-phase	28 to 68 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

Type	SA	X	XXX	10.1
Duty	SA		R	
Execution	Standard			
Actuator's size	Non-explosive		ExC	10.1

Output shaft type A (thread TR 36x4 LH, connection flange F10) ... for RV 3xx DN 200 to 400

Output speed (rpm)	Tripping torque	SA 10.2	SAR 10.2	SA 10.2	SA Ex 10.2	SAR 10.2	SAR Ex 10.2	
		SAEx 10.2	SAREx 10.2					S2-15min
4	40-120 Nm 60-120 Nm			Motor power [kW]	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					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

Electronic position transmitter RWG (potentiometer included), 4 - 20 mA, 2-wire

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

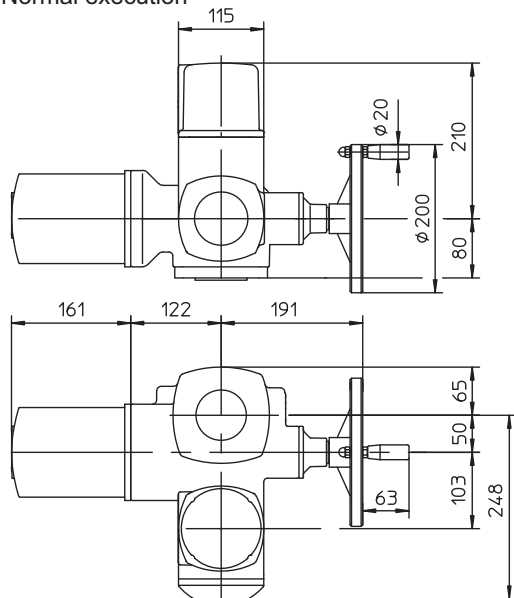
Inductive position transmitter IWG, 4 - 20 mA

AUMATIC - for continuous control (specification of accessories acc. to catalogue of producer)

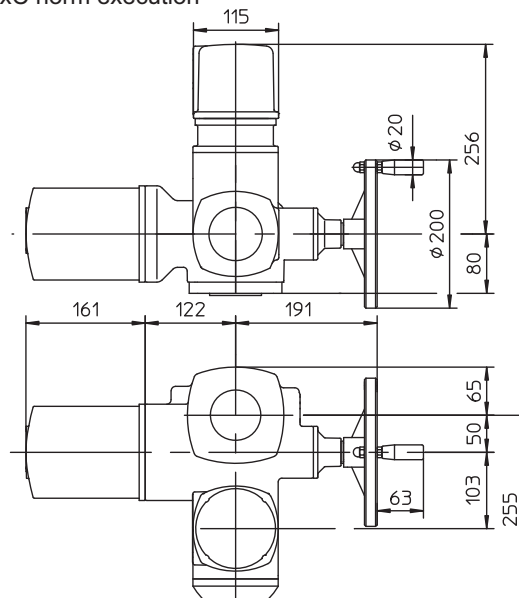
Other accessories acc. to catalogue of producer of actuators.

Dimension of Auma actuators 10.1

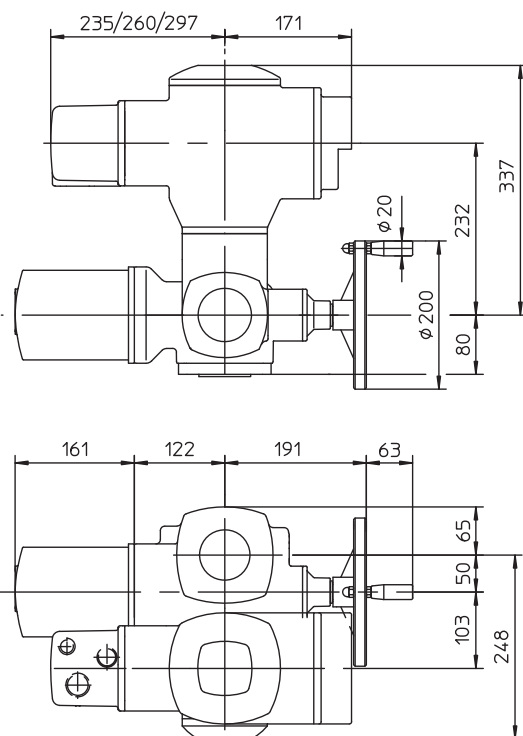
Normal execution



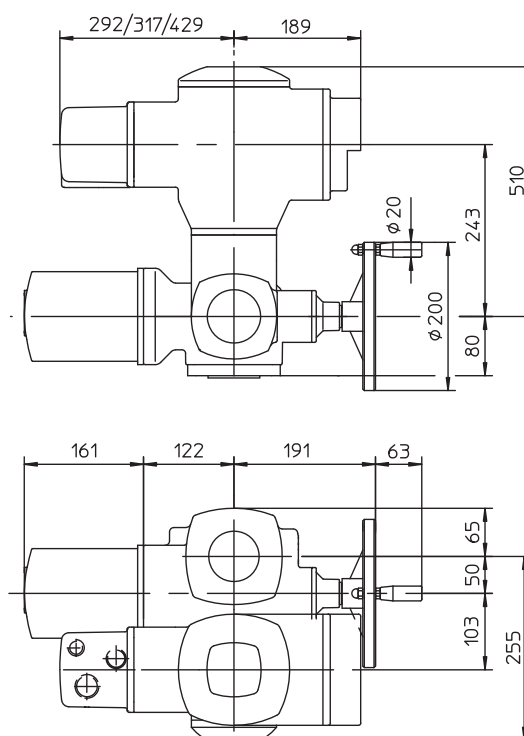
ExC norm execution



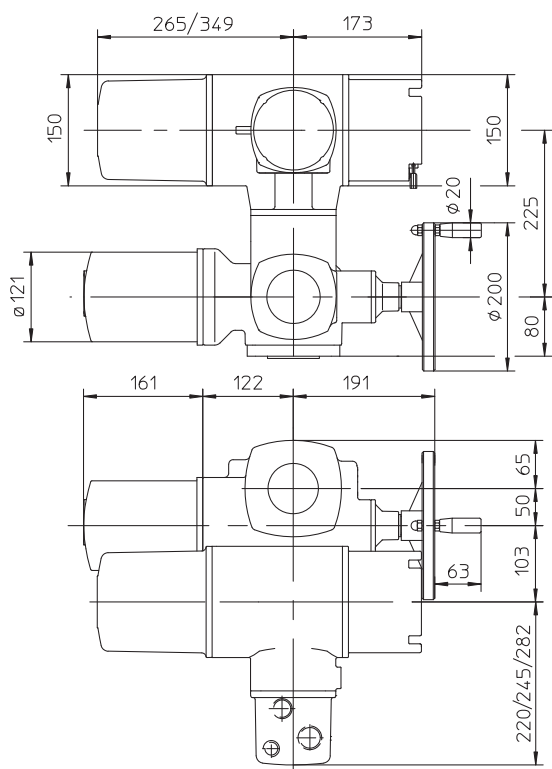
Version MATIC / AUMATIC



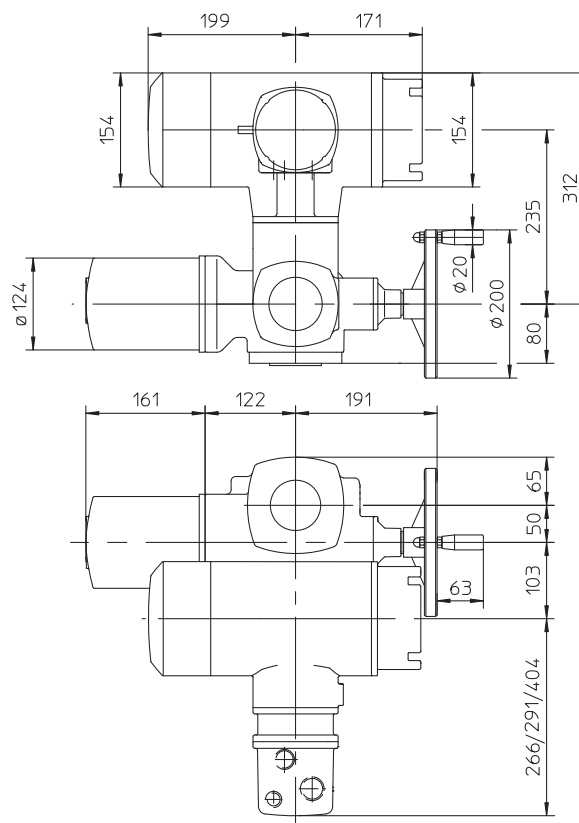
Execution Ex MATIC



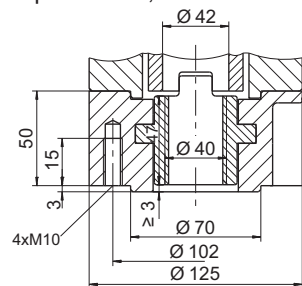
Execution AUMATIC



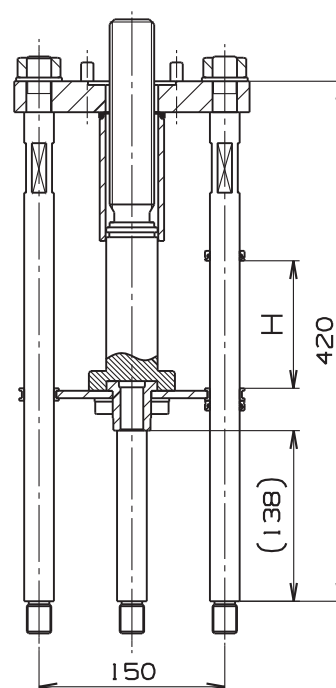
Execution Ex AUMATIC



Output drive A, F10



Control DN 200 - 400
Output A, F10, Tr36x6-LH





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

Electric actuators ...AB3, ...AB5 Schiebel

Technical data

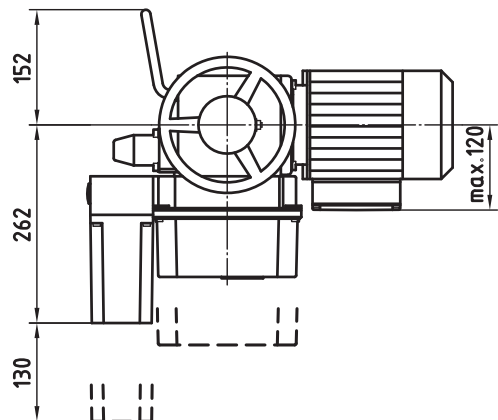
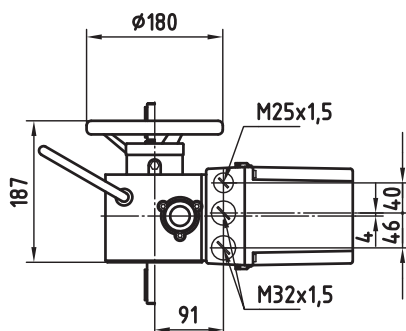
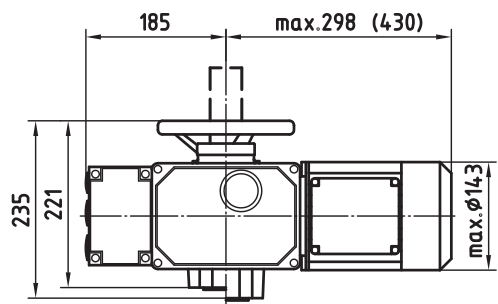
Type	AB3	AB5	exAB3	exAB5	rAB3	rAB5	exrAB3	exrAB5
Mark in valve's spec. No.	EZA	EZE	EZB	EZF	EZC	EZG	EZD	EZH
Voltage	400 / 230 V; 230 V		400 / 230 V		400 / 230 V; 230 V		400 / 230 V	
Frequency	50 Hz							
Motor power	See specification table							
Control	3 - position control of continuous 4 - 20 mA							
Nominal force	80 Nm ~ 32 kN							
Stroke	Acc. to the valve stroke 16, 20, 40, 80, 100 mm							
Enclosure	IP 66		IP 65		IP 66		IP 65	
Process medium max. t.	Acc. to used valve							
Ambient temp. range	-25 to 80°C		-20 to 40°C		-25 to 60°C		-20 to 40°C	
Ambient humidity limit	90 % (tropical version: 100 % with condensation)							
Weight	16 - 20 kg							

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

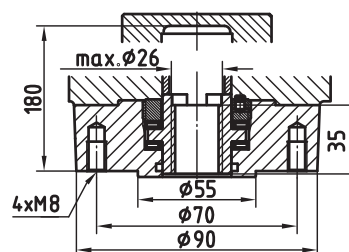
Specification of actuators

		XX	X	AB3	A	X	+	XXX				
Execution	Non-explosive	Ex										
	Standard											
Duty	Control		R									
	ON - OFF											
Actuator's torque				AB3								
				AB5								
Output shaft (thread TR 16x4 LH, flange F07 ... DN 15 to 150; thread TR 20x4 LH, flange F10 ... DN 80 to 400)					A							
Output speed (rpm)	Tripping torque	AB3	rAB3	AB3		rAB3	exAB3	exrAB3				
		exAB3	exrAB3	400/230V	230V	400/230V	230V	400/230V		400/230V		
		10-30 Nm	Tripping 7 - 30 Nm	Motor power [kW]	0,09	0,09	0,09	0,09		0,09	0,09	2,5
					0,03	0,12	0,03	0,12		0,12	0,12	5
					0,09	0,09	0,09	0,09		0,09	0,09	7,5
					0,09	0,09	0,09	0,09		0,09	0,09	10
					0,18	0,09	0,09	0,18		0,09	0,09	15
					0,18	0,18	0,09	0,37		0,09	0,09	20
					0,18	0,25	0,18	0,25		0,37	0,18	30
					0,18	0,25	0,18	0,55		0,37	0,18	40
Output speed (rpm)	Tripping torque	AB5	rAB5	AB5		rAB5	exAB5	exrAB5				
		exAB5	exrAB5	400/230V	230V	400/230V	230V	400/230V		400/230V		
		10-60 Nm	Tripping 30 - 60 Nm	Motor power [kW]	0,09	0,09	0,09	0,09		0,09	0,09	2,5
					0,06	0,12	0,06	0,12		0,12	0,12	5
					0,09	0,09	0,09	0,18		0,09	0,09	7,5
					0,09	0,18	0,09	0,37		0,09	0,09	10
					0,18	0,18	0,18	0,37		0,18	0,18	15
					0,18	0,55	0,18	0,75		0,18	0,18	20
					0,37	0,55	0,37	1,10		0,37	0,37	30
					0,37	0,55	0,37	1,10		0,37	0,37	40
Accessories		Potentiometer 1x1000 Ω						F				
		Double potentiometer						FF				
		Electronic transmitter 4 - 20 mA						ESM21				
		Positioner ACTUMATIC R						CMR				
		SMARTCON control unit						CSC				

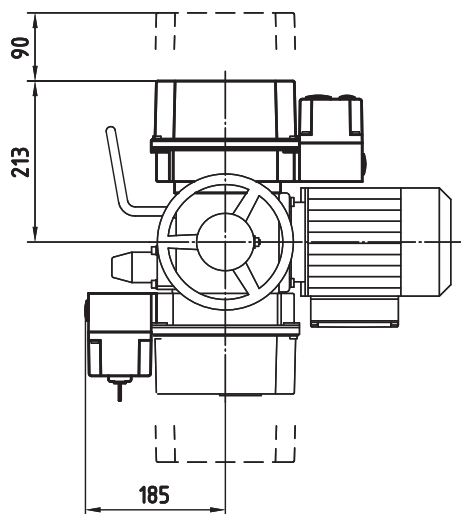
Dimensions of actuators ...AB3, ...AB5



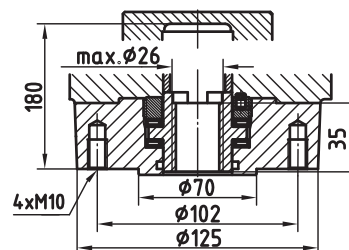
Output drive A, flange F07



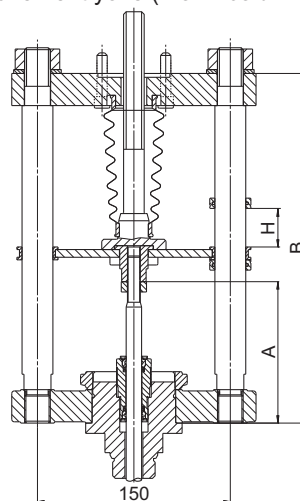
With ACTUMATIC R positioner



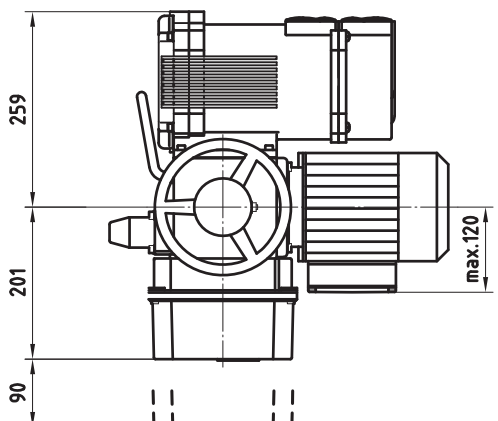
Output drive A, flange F10



Attachement yoke (2 or 4 columns)



With SMARTCON control unit



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



**EZK
EZL**

**Electric actuators ...AB8
Schiebel**

Technical data

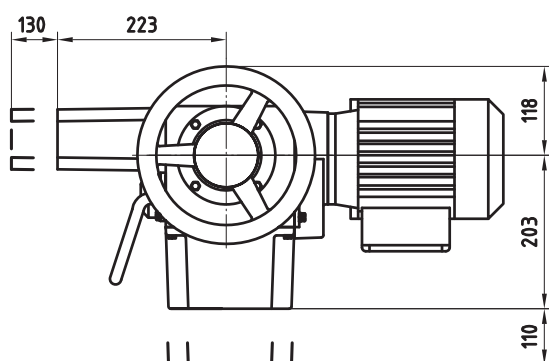
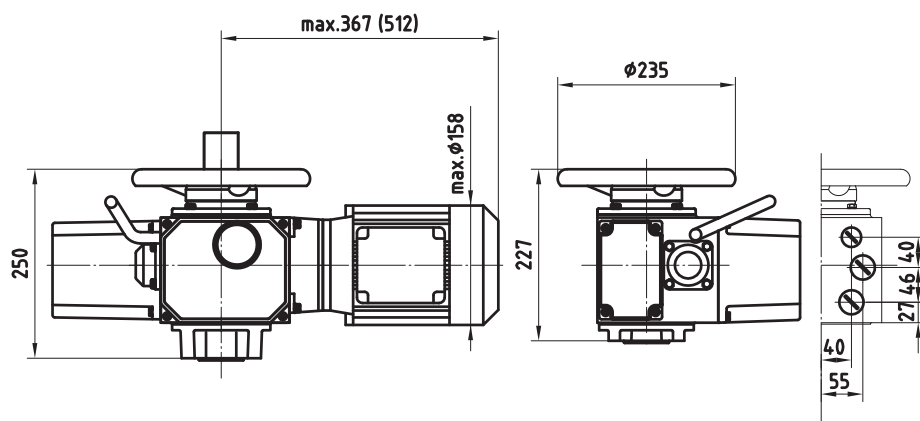
Type	rAB8	exrAB8
Marking in valve's specification No.	EZK	EZL
Voltage	400 / 230 V; 230 V	400 / 230 V; 230 V
Frequency	50 Hz	
Motor power	See specification table	
Control	3 - position or with signal of 4 - 20 mA	
Nominal force	(Tr 36x6 LH) 80 Nm ~ 21,6 kN; 100 Nm ~ 27 kN; 120 Nm ~ 32 kN	
Stroke	80, 100 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 temperature limit	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.cz

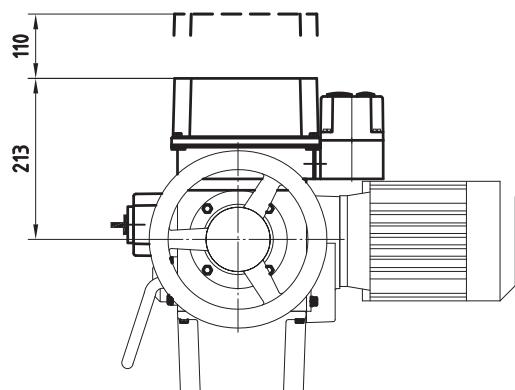
Specification of actuator

		XX	X	AB8	A	X	+	XXX		
Execution	Non-explosive Normal	ex								
Duty	Control		r							
Actuator size				AB8						
Output shaft type (connection flange size F10, thread 36x6 LH... for RV 3xx DN 200 to 400)					A					
Output speed [rpm]	Tripping torque	rAB8	Motor power [kW]	rAB8		exrAB8		30-80 Nm		
				400/230V	230V	400/230V				
				2,5	0,06	0,12	0,12			2,5
				5	0,12	0,25	0,12			5
				7,5	0,18	0,37	0,18			7,5
				10	0,18	0,75	0,18			10
				15	0,37	0,75	0,37			15
				20	0,37	1,10	0,37			20
				30	0,75	1,10	0,75			30
40	0,75	1,10	0,75	40						
Accessories	Potentiometer 1x1000 Ω							F		
	Double potentiometer							FF		
	Electronic transmitter 4 - 20 mA							ESM21		
	Positioner ACTUMATIC R							CMR		
	SMARTCON control unit							CSC		

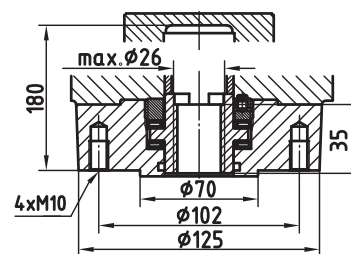
Dimensions of actuators ...AB8



With ACTUMATIC R positioner

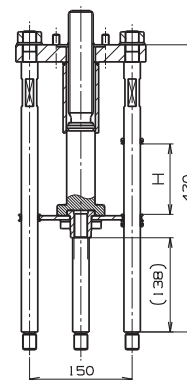
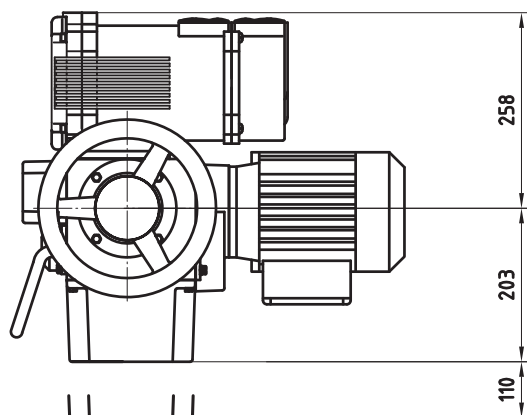


Output drive type A, connecting flange F10



Control DN 200
Connection A, F10, Tr36x6-LH

With SMARTCON control unit





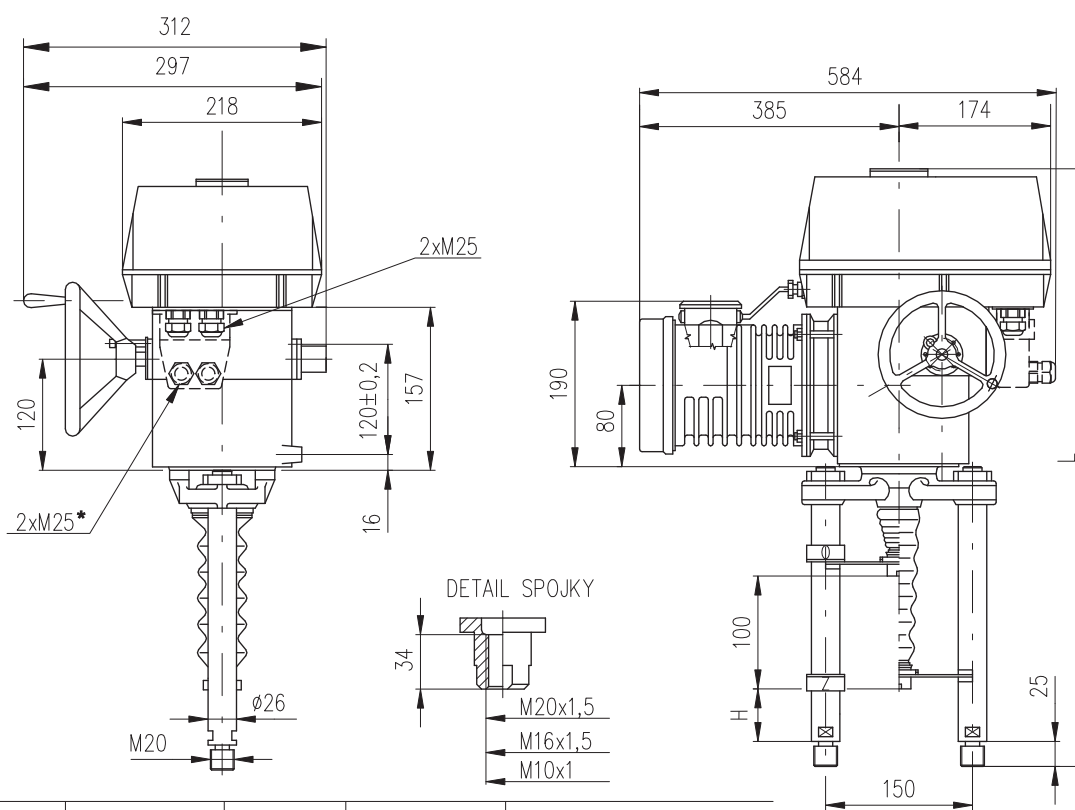
Electric actuator Modact MTR Regada

Technical data

Type	Modact MTR
Marking in valve specification No.	EPD
Voltage	230 V
Frequency	50 Hz
Motor power	16 or 25 W
Control	3 - pos. c. (in connection with NOTREP positioner - continuous)
Nominal force	6.3, 10, 16, 25 kN
Travel	12,5 to 100 mm
Enclosure	IP 55 / IP 67
Process medium max. temperature	Acc. to used valve
Ambient temperature range	-25 to 55°C
Ambient humidity limit	90 %
Weight	27 to 31 kg

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

Dimension of actuator Modact MTR



columns	with acme thread		columns	with ball bolt		for valves
version	A	B	verze	A	B	
P-1045b/B	74	622	P-1045a/E	74	646	CV 3xx NPS ½" - 6"
P-1045b/C	130	680	P-1045a/H	130	702	CV 3xx NPS 8" - 16"

*for execution with a connector only

Specification of Modact MTR

Electric actuator MTR, linear					52 420.			X	-	X	X	X	X	X	/	X	X										
Standard		-25°C to +55°C		Enclosure IP 55		0																					
Tropical		-25°C to +55°C		Enclosure IP 67		1																					
Electric connection		Voltage																									
To terminal board		230 V AC																									
To connector		8																									
Screw version	Vypínací síla ^{32) 33)}	Jmenovitá ovl. rychlost	Pracovní ovl. rychlost	Elektromotor																							
				Výkon	Otáčky	Proud																					
trapezoidal thread	6 300/32	4.0 - 6.3 kN	32 mm/min.	38 - 32 mm/min.	16 W	1 150	0.31 A										A										
	4 000/50	2.5 - 4.0 kN	50 mm/min.	60 - 50 mm/min.																B							
	10 000/32	6.3 - 10.0 kN	32 mm/min.	38 - 32 mm/min.	25 W	1 250	0.41 A										C										
	6 300/50	4.0 - 6.3 kN	50 mm/min.	60 - 50 mm/min.																D							
ball screw	16 000/32-G	10.0 - 16.0 kN	32 mm/min.	38 - 32 mm/min.	16 W	1 150	0.31 A											E									
	10 000/50-G	6.3 - 10.0 kN	50 mm/min.	60 - 50 mm/min.																F							
	25 000/32-G	10.0 - 25.0 kN	32 mm/min.	38 - 32 mm/min.	25 W	1 250	0.41 A											G									
	16 000/50-G	10.0 - 16.0 kN	50 mm/min.	60 - 50 mm/min.																H							
	10 000/63-G	6.3 - 10.0 kN	63 mm/min.	75 - 63 mm/min.																	J						
	6 300/100-G	4.0 - 6.3 kN	100 mm/min.	120 - 100 mm/min.																	K						
Control board version		Operating stroke																									
Electromechanical control board - without local control		16 mm																								B	
		25 mm (for stroke 20 mm)																									C
		40 mm																									E
		80 mm																									G
		100 mm																									H
Transmitter		Connection		Output																							
Without transmitter		—		—																							
Resistive	Single	—		1x100 Ω														A									
				1x2000 Ω														B									
	Double			2x100 Ω														F									
				2x2000 Ω														C									
Resistive with current converter	Without power supply	2-wire		4 - 20 mA														S									
		3-wire		0 - 20 mA														T									
		2-wire		4 - 20 mA														V									
	With power supply	2-wire		0 - 20 mA														Q									
		3-wire		0 - 20 mA														U									
		3-wire		4 - 20 mA														W									
Capacitive CPT	Without power supply	2-wire		4 - 20 mA														I									
	With power supply																	J									
Mechanical connection	Connecting height / stroke	Pillar spacing / Bore of flange	Thread of stem ⁶²⁾	Dimensional drawing																							
Columns	74/100	150/ —	M20x1,5, M16x1.5, M10x1	P-1045b/B; P-1045b/E														B									
	130/100			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

Notes:

32) 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.

33) 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

62) The thread in the coupling is to be specified in the order by words.



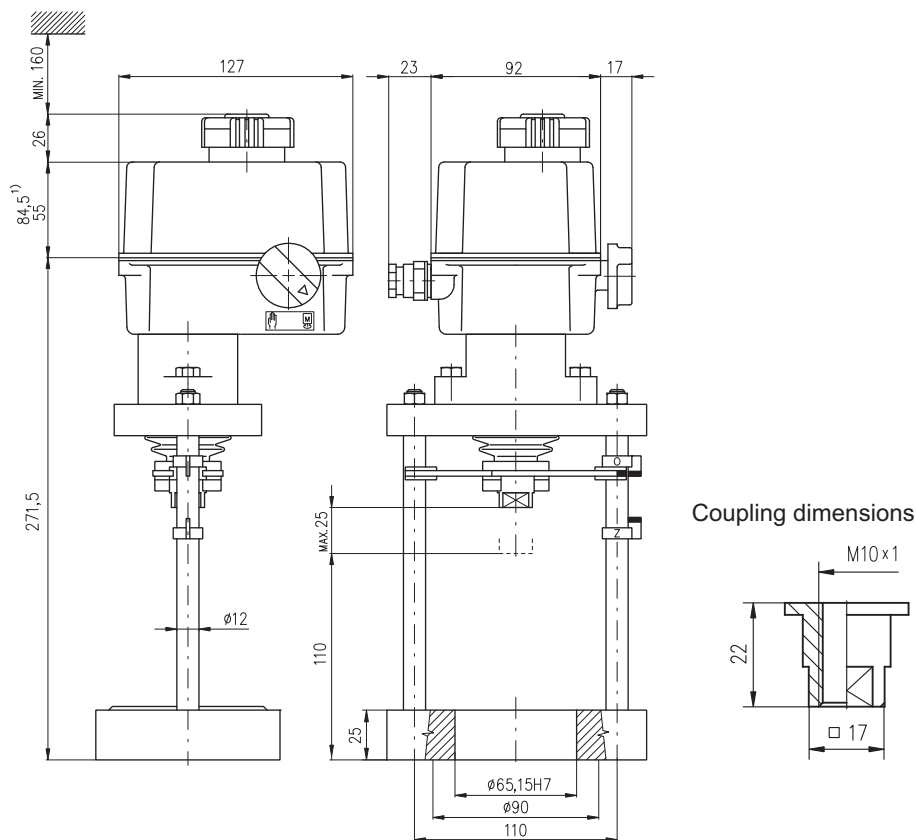
Electric actuators ST 0, STR 0 Regada

Technical data

Type	ST 0, STR 0
Marking in valve specification No.	EPK
Voltage	230 V AC, 24 V AC
Frequency	50 Hz
Motor power	1 W
Control	3 - position (0 - 10 V, (0)4 - 20 mA)
Nominal force	2,5 kN
Travel	16, 20 mm
Enclosure	IP 54 / IP 67
Proces medium max. temperature	acc. to used valve
Ambient temperature range	-25 to 55 °C
Ambient humidity range	5 - 100% with condensation
Weight	2,5 to 4,5 kg

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

Dimensions of actuators



¹⁾ Applies to execution with electronic transmitter

Specification of actuator ST 0, STR 0

Electric actuator Isomact ST 0, STR 0					490.	X	-	X	X	X	X	X	/	X	X			
Resistance to surroundings	Standard	-25°C to +55°C	IP 54	Without regulator (ST 0)	0													
			IP 67		1													
	Tropical	-25°C to +55°C	IP 67		6													
	Standard	-25°C to +55°C	IP 54		With regulator (STR 0) resistive feedback	A												
			IP 67			G												
Tropical	-25°C to +55°C	IP 67																
Electric connection		To terminal board		Voltage		230 V AC				0								
						24 V AC				3								
Nominal force [N]	2900	Running speed	4 mm/min	Motor power	1 W				0									
	4500		5 mm/min		2,75 W				A									
	4500 ³⁷⁾		10 mm/min		2,75 W				N									
	2900 ³⁷⁾		16 mm/min		2,75 W				P									
Tripping torque		One-torque		Travel	16 mm								D					
					20 mm								E					
Remote position transmitter	Without transmitter													A				
	Resistance		single	Feedback	1 x 100 Ω										B			
						1 x 2000 Ω										F		
	Electronic - current (without generator)		Wiring		2-wire	4 - 20 mA										S		
					2-wire ⁶⁾									Q				
					3-wire ⁶⁾		0 - 20 mA								T			
								4 - 20 mA							U			
															V			
													W					
Mechanical connection - flange, connecting height 110 mm, thread on con. stem M10x1													L					
Accessories		2 auxiliary position switches															0	0

6) Applies for the version without any positioner.

16) Feedback to the positioner is realised by resistive transmitter (without selection of the order code for transmitter).

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

76) The version with a positioner and with a lead-out transmitter cannot be specified also 2 additional position switches (S5, S6).



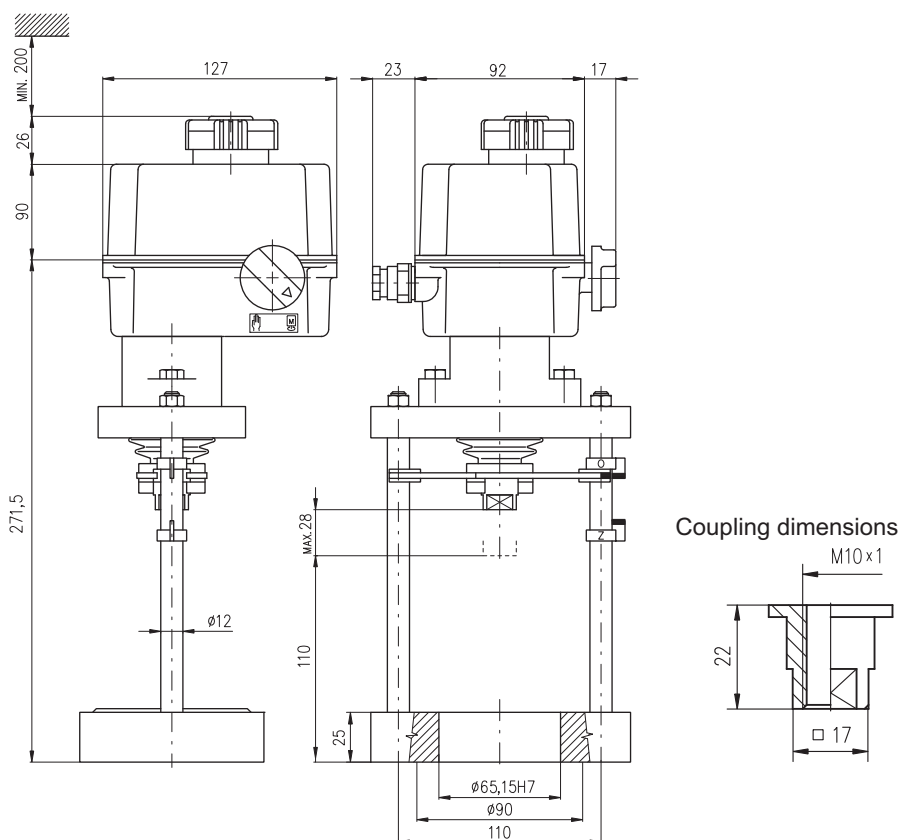
Electric actuators STR 0PA Regada

Technical data

Type	STR 0PA
Marking in valve specification No.	EPK
Voltage	230 V AC, 24 V AC
Frequency	50 Hz
Motor power	1 W
Control	3 - bodové (0 - 10 V, (0)4 - 20 mA)
Nominal force	2,4 kN a 4,5 kN
Travel	10 to 28 mm
Enclosure	IP 67
Proces medium max. temperature	acc. to used valve
Ambient temperature range	-25 to 55° C
Ambient humidity range	5 - 100% with condensation
Weight	2,5 to 4,5 kg

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

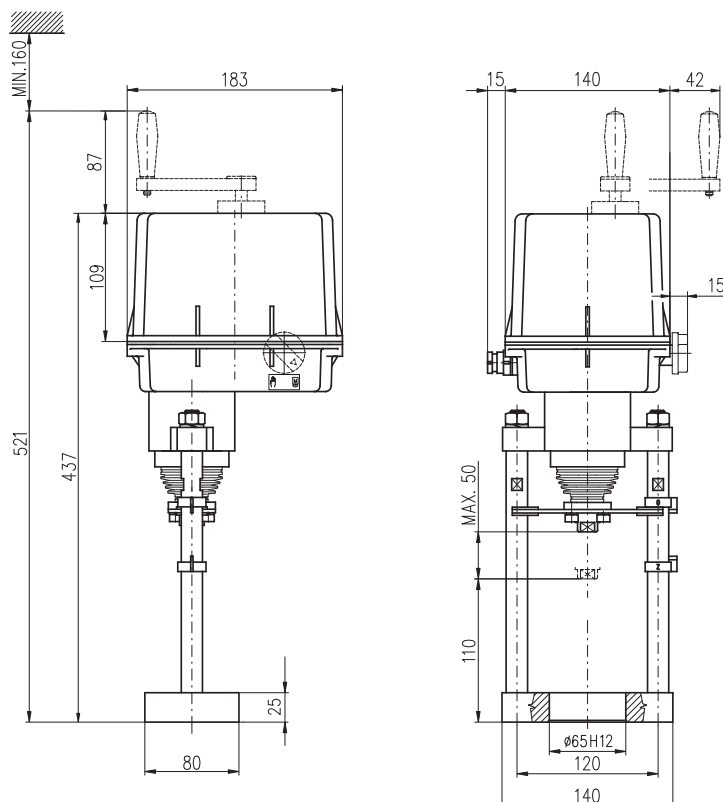
Dimensions of actuators




**Electric actuators
ST 0.1, STR 0.1
Regada**
Technical data

Type	ST 0.1, STR 0.1
Marking in valve specification No.	EPL
Voltage	230 V AC, 3 x 400 V AC, 24 V AC, 24 V DC
Frequency	50 Hz
Motor power	15W, 20W
Control	3 - position control (0 - 10 V, 4 - 20 mA)
Nominal force	4,6 a 7,2 kN
Travel	16, 20, 40 mm
Enclosure	IP 65 / IP 67
Proces medium max. temperature	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 0PA

Elektrický servomotor STR 0PA				430.	X	-	X	X	X	X	X	X	/	X	X								
Resistance to surroundings	Standard	-25°C to +55°C		IP 67	1																		
	Tropical	-25°C to +55°C		IP 67	6																		
Electric connection		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														
Tripping torque		10-28 mm							J														
Control board	DMS3	Control	ON - OFF and inching		24 V DC	Feedback	---						F										
			Modulating	0/4 - 20 mA	ON - OFF and inching		24 V DC	4 - 20 mA pasive						G									
				0/2 - 10 V										H									
Mechanical connection - flange, connecting height 110 mm, thread on con. stem M10x1																					L		
Accessories		None																			0	0	
		Adjustment of operating stroke to the required value																					

Specification of actuator ST 0.1, STR 0.1

Electric actuator ST 0.1, STR 0.1						498.	X	-	X	X	X	X	X	X	/	X	X						
Resistance to surroundings	Standard	-25°C to +55°C	IP 65	Without positioner (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 positioner (STR 0.1)		Resistive feedback		A											
IP 65	Current feedback			C																			
Tropical	-25°C to +55°C	IP 67	Resistive feedback		G																		
		IP 67	Current feedback		J																		
Electric connection		Terminal board		Voltage	24 V DC												A						
					230 V AC														0				
Electric connection		Na konektor		Voltage	24 V AC													3					
					3x400 V AC ⁶⁾														9				
Electric connection		Na konektor		Voltage	3x380 V AC ⁶⁾													M					
					24 V DC															C			
Electric connection		Na konektor		Voltage	230 V AC													5					
					24 V AC															8			
Electric connection		Na konektor		Voltage	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; 3x380 V AC)	20 W (24V AC/DC)											G					
			16 mm/min																		H		
			25 mm/min																			I	
			32 mm/min																				J
			40 mm/min																				K
	7200	Running speed	10 mm/min																			T	
			16 mm/min																			U	
			25 mm/min																				V
			32 mm/min																				W
			40 mm/min																				Y
Tripping torque		Two-torque		Travel		16 mm												D					
						20 mm													E				
						40 mm														H			
Remote position transmitter	Without transmitter																	A					
	Resistance	Single	---	Feedback	1 x 100 Ω													B					
		Double ⁶⁾			1 x 2000 Ω													F					
	Electronic - current	Wo. its source	2 - wire	2 - wire ⁶⁾	Feedback	2 x 100 Ω													K				
						2 x 2000 Ω														P			
		With its source	4 - 20 mA																	S			
			0 - 20 mA																	Q			
		With its source	4 - 20 mA																		T		
			4 - 20 mA																		U		
	Capacity	Wo. its source	2 - wire ⁶⁾	2 - wire	Feedback	4 - 20 mA													V				
With its source		4 - 20 mA																	W				
Mechanical connection - flange, connecting height 110 mm, thread on con. stem M10x1 or M16x1,5																		C					
Accessories		A 2 auxiliary position switches ⁸⁾																0 0					
		B Without space heater																	0 1				
		C Heater without thermal sensor																		0 3			
		D Manual control without permanent standby																		0 5			

Allowed combination 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

6) Applies for the version without any positioner.

8) For the EA version with additional position switches a double transmitter cannot be specified.



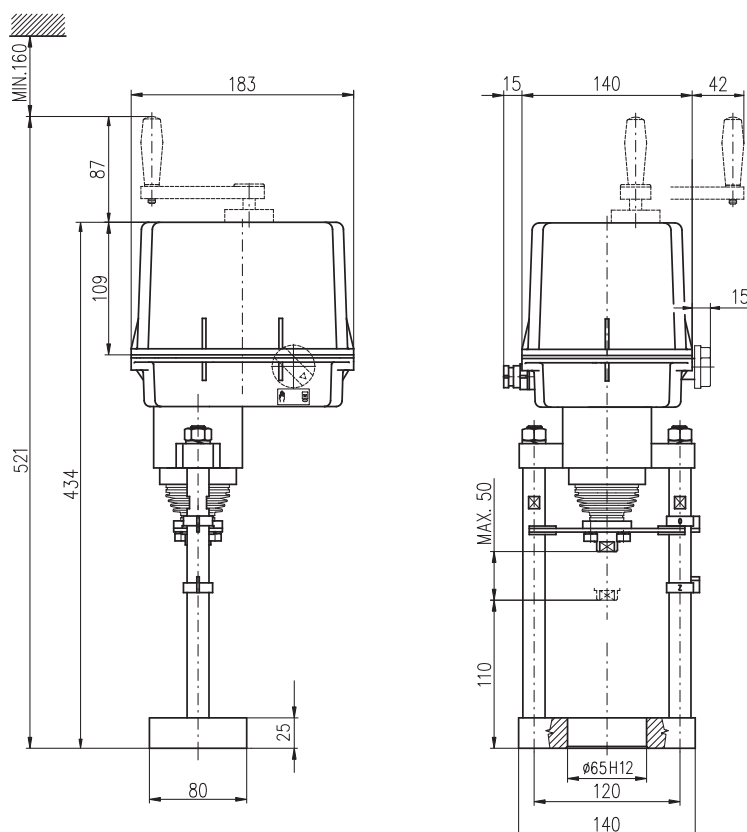
Electric actuators STR 0.1PA Regada

Technical data

Type	STR 0.1PA
Marking in valve specification No.	EPL
Voltage	230 V AC, 24 V AC
Frequency	50 Hz
Motor power	15W
Control	3 - position control (0 - 10 V, 4 - 20 mA)
Nominal force	4,6 a 7,2 kN
Travel	16, 20, 40 mm
Enclosure	IP 67
Proces medium max. temperature	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 actuator STR 0.1PA						438.	X	-	X	X	X	X	X	X	/	X	X					
Resistance to surroundings - standard		Standard	-25°C to +55°C		IP 67	1																
		Tropical	-25°C to +55°C		IP 67	6																
Elektrické připojení		Terminal board			Voltage	230 V AC																
						24 V AC																
						3x400 V AC																
						3x380 V AC																
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
Travel						10-50 mm													I			
Control board	DMS3	Control	ON - OFF and inching			24 V DC	Feedback	---												F		
			Modulating	0/4 - 20 mA	ON - OFF and inching	24 V DC		4 - 20 mA pasive														G
				0/2 - 10 V																		
Mechanical connection - flange, connecting height 110 mm, thread on con. stem M10x1 or M16x1,5																				C		
Accessories		None																				
		A Adjustment of operating stroke to the required value																			0 1	
		B LED display (position indicator)																				0 4
		D Additional relays R3, R4, R5 (module DMS3 RE3)																				0 5
F Local controls for actuator with DMS3 system and LCD display																					0 7	

Allowed combination of accessories and codes:

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



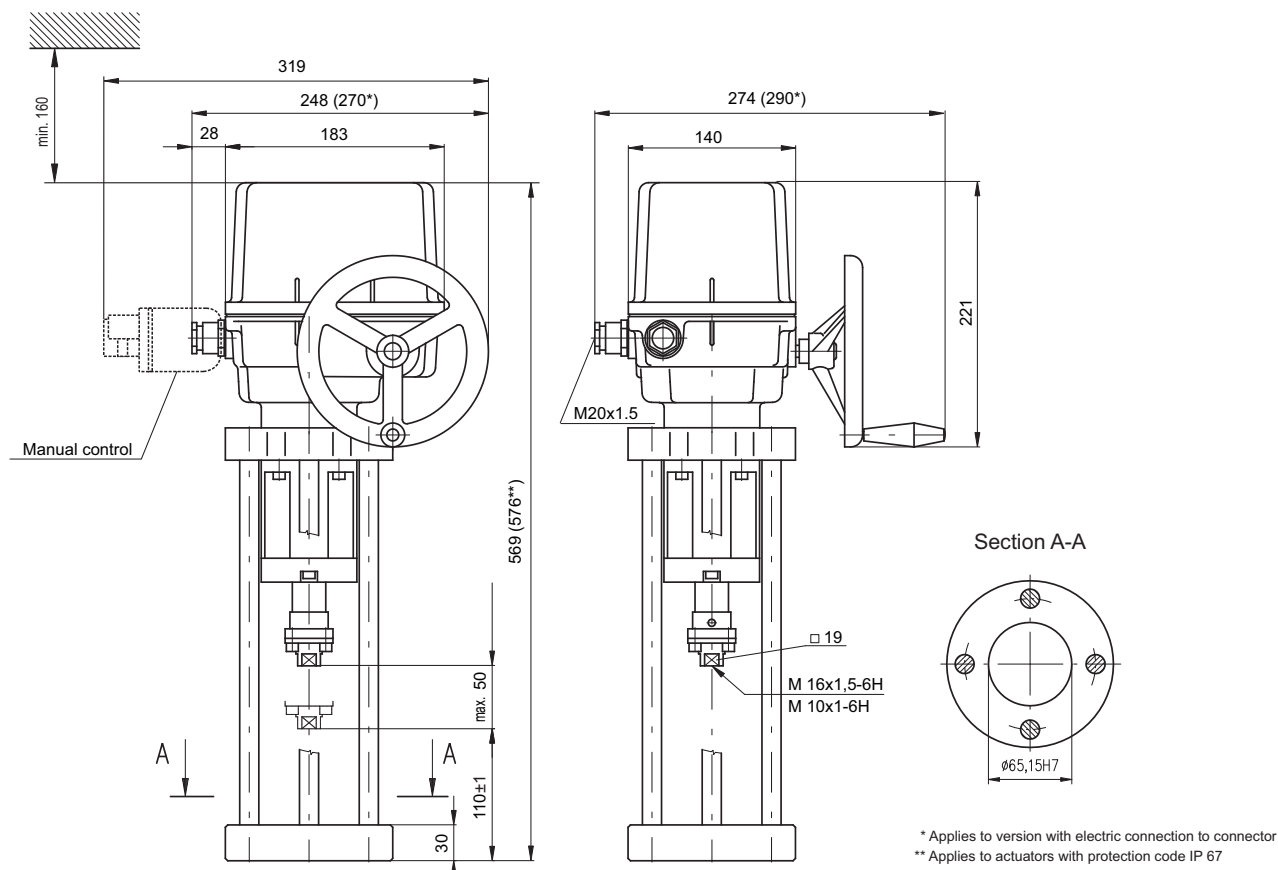
Electric actuators ST 1, STR 1 Regada

Technical data

Type	ST 1, STR 1
Marking in valve specification No.	EPI
Voltage	230 V AC, 3x400 V AC, 3x380 V AC, 24 V AC, 24 V DC
Frequency	50 Hz
Motor power	15W, 20W
Control	3 - position (0 - 10 V, 4 - 20 mA)
Nominal force	7,5 and 10 kN
Travel	16 - 40 mm
Enclosure	IP 65/IP 67
Proces medium max. temperature	Acc. to used valve
Ambient temperature range	-50 to 55°C
Ambient humidity range	5 - 100% with condensation
Weight	8,5 to 10,9 kg

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

Dimensions of actuators



Specification of actuator ST 1, STR 1

Electric actuator ST 1, STR 1				491.	X	-	X	X	X	X	X	X	/	X	X				
Resistance to surroundings	Standard	-25°C to +55°C	IP 65	Without positioner (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 positioner (STR 0.1)	Odporová zp. vazba	A												
			IP 65			Proudová zp. vazba	C												
Tropical	-25°C to +55°C	IP 67	Odporová zp. vazba	G															
		IP 67	Proudová zp. vazba	J															
Electric connection	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				
	Conector					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	Ovládací rychlost	8 mm/min		Výkon elektromotoru	15 W (230; 3x400; 3x380 V AC) 20 W (24V AC/DC)										0			
			10 mm/min															1	
			16 mm/min																2
	7500		32 mm/min																5
			20 mm/min																6
Tripping torque				16 mm												D			
				20 mm												E			
				40 mm												H			
Remote position transmitter	Without transmitter															A			
	Resistance	Single		---	Feedback	1 x 100 Ω										B			
		Double ⁶⁾		---		1 x 2000 Ω								F					
	Electronic - current	Wo. its source	Wiring	2-wire	Feedback	2 x 100 Ω										K			
						2 x 2000 Ω									P				
		With its source		3-wire ⁶⁾		4 - 20 mA										S			
						0 - 20 mA										Q			
	Capacity	Wo. its source	2-wire ⁶⁾	2-wire	Feedback	4 - 20 mA										T			
						4 - 20 mA										U			
	With its source	2-wire	2-wire	2-wire	Feedback	4 - 20 mA										V			
4 - 20 mA															W				
Mechanical connection - flange, connecting height 110 mm, thread on con. stem M10x1 or M16x1,5																K			
Accessories	A	2 auxiliary position switches														0	0		
	E	Heater with thermal sensor														0	2		
	C	Manual control														0	7		
	D	Space heater														1	5		

Allowed combination 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 to the version without any positioner

8) For the EA version with additional position switches and double transmitter a space heater cannot be specified.



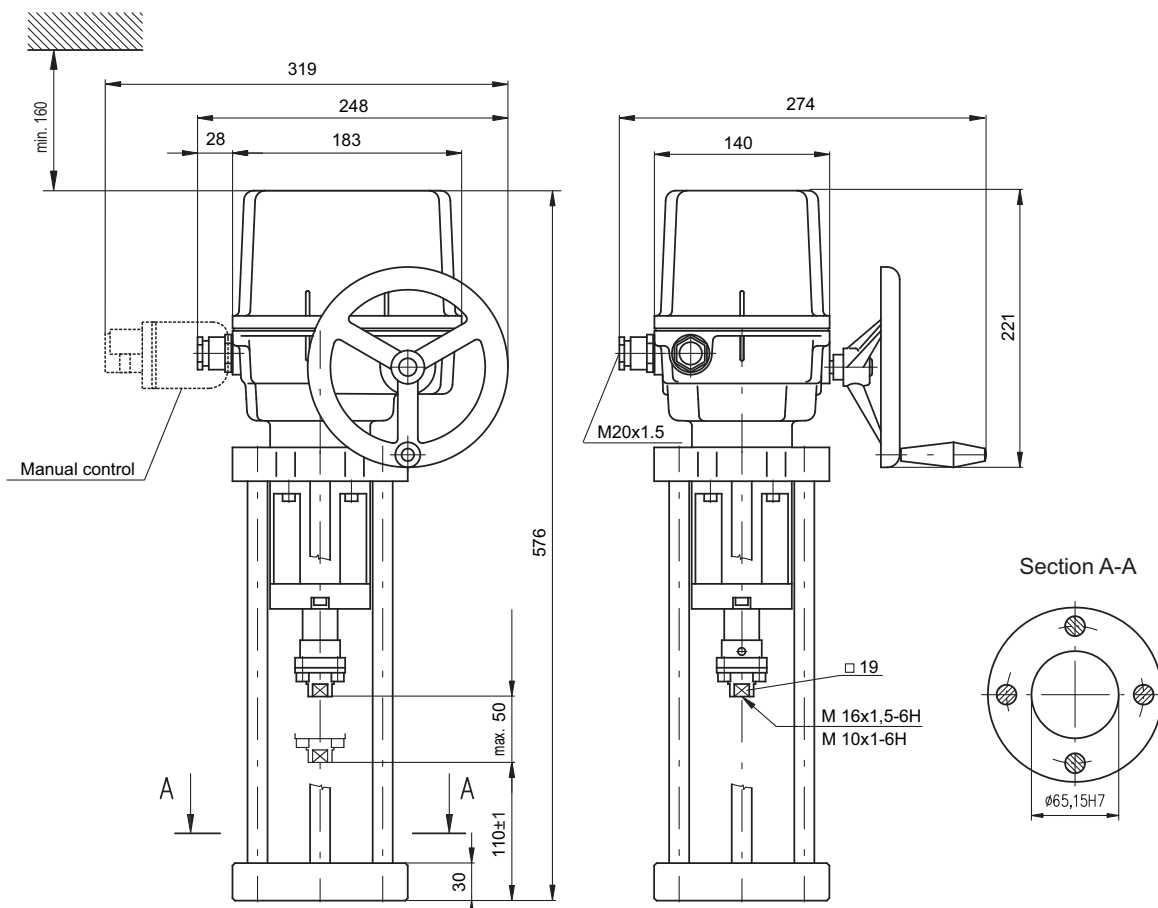
Electric actuators STR 1PA Regada

Technical data

Type	STR 1PA
Marking in valve specification No.	EPI
Voltage	230 V AC, 3x400 V AC, 3x380 V AC, 24 V AC, 24 V DC
Frequency	50 Hz
Motor power	15W
Control	3 - position (0 - 10 V, 4 - 20 mA)
Nominal force	7,5 and 10 kN
Travel	10 - 50 mm
Enclosure	IP 67
Proces medium max. temperature	Acc. to used valve
Ambient temperature range	-40 to 55 °C
Ambient humidity range	5 - 100% with condensation
Weight	8,5 to 9 kg

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

Dimensions of actuators





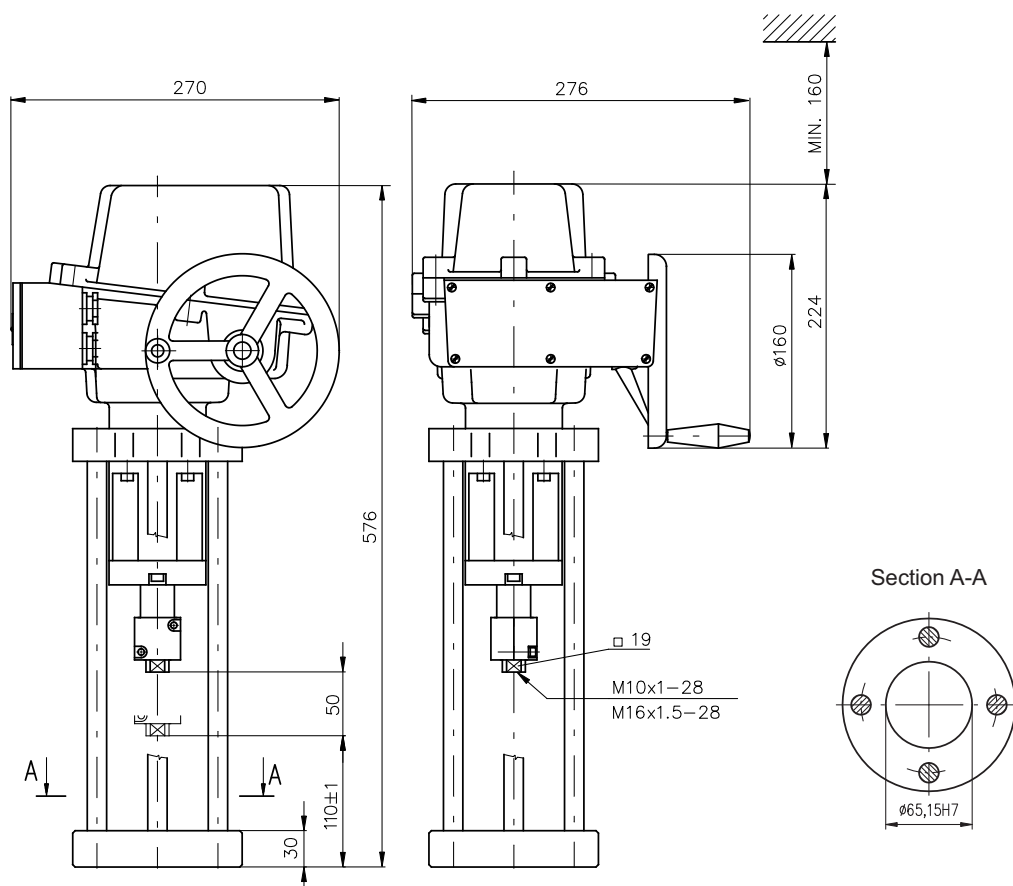
Electric actuators ST 1-Ex Regada

Technical data

Type	ST 1-Ex
Marking in valve specification No.	EPJ
Voltage	230 V AC, 3x400 V AC, 3x380 V AC, 24 V AC, 24 V DC
Frequency	50 Hz
Motor power	15 W, 20 W
Control	3 - position control, with positioner 0 - 10 V; (0) 4 - 20 mA
Nominal force	7,5 and 10 kN
Travel	16, 25, 40 mm
Enclosure	IP 67
Proces medium max. temperature	Acc. to used valve
Ambient temperature range	-50 to 55°C
Ambient humidity range	5 - 100 % with condensation
Weight	11 - 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 actuators



Specification of actuator STR 1PA

Electric actuator STR 1PA										431.	X	-	X	X	X	X	X	/	X	X																					
Resistance to surroundings		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		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																															
Travel		10-50 mm																																							
Control board	DMS3	Control	Modulating	0/4 - 20 mA		ON - OFF and inching	24 V DC	Feedback	4 - 20 mA pasive												G																				
				0/2 - 10 V																			H																		
Mechanical connection - flange, connecting height 110 mm, thread on con. stem M10x1 or M16x1,5																																								K	
None																																									
Accessories		A Adjustment of operating stroke to the required value																				0		1																	
		D The module of additional relay R3, R4, R5 (module DMS3 RE3)																				0		5																	
		E The module of additional relay R1, R2, R3, R4, R5, READY (module DMS3 RE6)																				0		6																	
		F Manual control for actuators with DMS3 a LCD system																				0		7																	

Allowed combination 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

Specification of actuator ST 1-Ex

Electric actuator ST 1-Ex						411.	X	-	X	X	X	X	X	
Resistance to surroundings	Standard	-25°C to +55°C	Normal execution (without positioner)			IP 67	1							
	Universal	-50°C to +40°C					8							
	Standard	-25°C to +55°C	With regulator	Resistive feedback transmitter		IP 67	B							
				Current feedback transmitter			D							
	Universal	-50°C to +40°C	Resistive feedback transmitter		IP 67	K								
		Current feedback transmitter		M										
Electric connection		Terminal board	Voltage			24 V DC					A			
						230 V AC					0			
						24 V AC					3			
						3x400 V AC ⁶⁾					9			
Nominal force [N]	10000 N		Running speed	8 mm/min		Motor power	15 W (230; 3x400; 3x380 V AC) 20 W (24V AC/DC)					0		
				16 mm/min							1			
	7500 N			32 mm/min									2	
	10000 N			10 mm/min									5	
	8600 N			20 mm/min									6	
	5800 N			40 mm/min									7	
Maximal stroke (without transmitter) acc. to mechanical connection [mm]. Stroke can be adjusted in range from 0 to max. stroke value in actuators without transmitter				50	Travel	16 mm						D		
						20 mm						E		
						40 mm						H		
Remote position transmitter	Without transmitter												A	
	Resistance	Single		---		1 x 100 Ω							B	
		Double ^{6) 58)}		---		1 x 2000 Ω						F		
	Electronic - current	Without its source	Wiring	Feedback	2 - wire		2 x 100 Ω							K
					3 - wire ⁶⁾		2 x 2000 Ω						P	
					4 - 20 mA		4 - 20 mA						S	
		0 - 20 mA			4 - 20 mA						T			
		4 - 20 mA			4 - 20 mA						V			
		4 - 20 mA			4 - 20 mA						Q			
	Kapacitní	With its source ⁵⁹⁾	Wiring	Feedback	0 - 20 mA		4 - 20 mA							U
					4 - 20 mA		4 - 20 mA						W	
					4 - 20 mA		4 - 20 mA						I	
With its source ⁵¹⁾	2 - wire ⁶⁾				4 - 20 mA									J
	2 - wire ⁶⁾				4 - 20 mA									
	2 - wire				4 - 20 mA									

Mechanical connection - flange, connecting height 110 mm, thread on con. stem M10x1 or M16x1,5

Notes:

6) Applies to version without positioner

51) For version with positioner with current feedback only. The output signal from the capacitive transmitter is not galvanically insulated from the input signal.

58) Valid only for 24 V DC and without additional position switches S5, S6.

59) Active position transmitter for version 24 V DC only after agreement with producer



Electric actuators ST 2, STR 2 Regada

Technical data

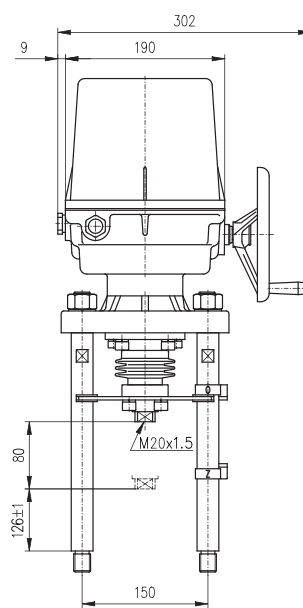
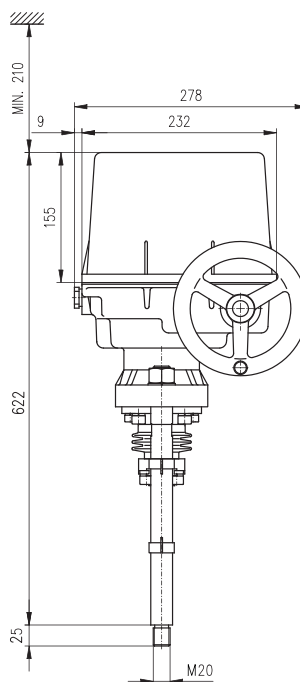
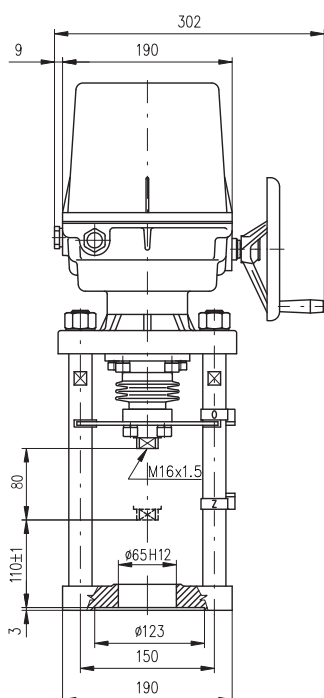
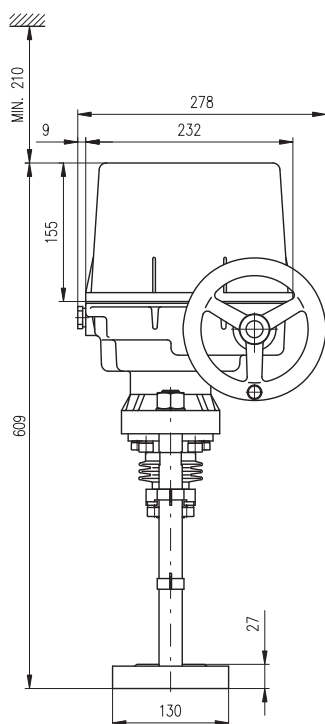
Type	ST 2, STR 2
Marking in valve specification No.	EPM
Voltage	230 V AC, 3x400 V AC, 3x380 V AC, 24 V AC, 24 V DC
Frequency	50 Hz
Motor power	see specification table
Control	3 - position control with positioner 0 - 10 V, (0) 4 - 20 mA
Nominal force	16 a 25 kN
Travel	40, 80, 100 mm
Enclosure	IP 65 / IP 67
Proces medium max. temperature	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 actuators

CV 3xx NPS 3" - 6" (connection D)

CV 3xx NPS 8" - 16" (connection M)



Specification of actuator ST 2, STR 2

Electric actuator ST 2, STR 2				492.	X	-	X	X	X	X	X	X	/	X	X				
Resistance to surroundings	Standard	-25°C to +55°C	IP 65 IP 67	Without positioner (ST 2)	0														
	Tropical	-25°C to +55°C	IP 67		1														
	Universal	-50°C to +40°C	IP 67		6														
	Standard	-25°C to +55°C	IP 67	With positioner (STR 2)	Resistive feedback		B												
					Current feedback		D												
		Tropical	-25°C to +55°C		IP 67	Resistive 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 cenector 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	25 000		10 mm/min						
20 000															H				
16 000															J				
25 000		25 000	20 mm/min													B			
20 000																K			
16 000																L			
25 000		25 000	32 mm/min										M						
20 000													N						
16 000													P						
25 000					25 000	40 mm/min									C				
20 000													Q						
16 000		25 000	50 mm/min ⁶⁾										R						
20 000													S						
16 000		20 000	60 mm/min ⁶⁾										T						
---													U						
20 000		25 000	80 mm/min ⁶⁾										D						
16 000													V						
---		16 000	100 mm/min ⁶⁾										W						
16 000													E						
---		20 000											Y						
---							F												
---		16 000						Z											
Operating stroke	Max. Without transmitter ⁴¹⁾				With transmitter	40 mm									H				
						80 mm							K						
						100 mm							L						

the table continuous on the next page

Specification of actuator ST 2, STR 2

Electric actuator ST 2, STR 2						492.	X	-	X	X	X	X	X	/	X	X			
Remote position transmitter	Without transmitter		Connection	Feedback	1 x 100 Ω								A						
	Resistance	Single			1 x 2000 Ω										B				
					Double	2 x 100 Ω										K			
		2 x 2000 Ω														P			
		Electronic - current			Without its source	2-wire	4 - 20 mA										S		
	0 - 20 mA															Q			
	3-wire ⁶⁾					0 - 20 mA											T		
					4 - 20 mA	0 - 20 mA											U		
			0 - 20 mA													V			
	Capacity		Without its source	2-wire ⁶⁾											W				
		2-wire													I				
	Mechanické připojení		Příruba, připojovací výška 110 mm, závit táhla M16x1,5												D				
			Sloupky, připojovací výška 126 mm, závit táhla M20x1,5												M				
	Příslušenství	A	2 přidavné polohové spínače													0	0		
E		Topný odpor s tepelným spínačem													0	2			
C		Místní ovládání													0	7			
D		Topný odpor													1	5			
G		Nastavení vypínací síly na požadovanou hodnotu													2	5			

Allowed combination 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

6) Applies to version without positioner

21) The version with connector not less in -40°C.

28) Version with reverse contacts

41) The version without any transmitter can have adjusted its stroke from 0 up to 80 mm

51) For a version with a positioner with current feedback only.



Electric actuators STR 2PA Regada

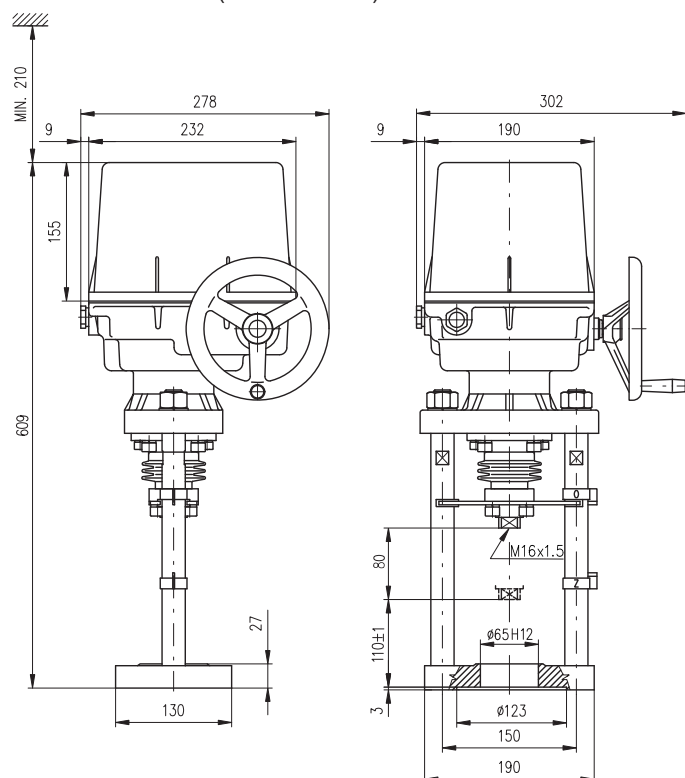
Technical data

Type	STR 2PA
Marking in valve specification No.	EPM
Voltage	230 V AC, 3 x 400 V AC, 3 x 380 V AC
Frequency	50 Hz
Motor power	see specification table
Control	3 - position control with positioner 0 - 10 V, (0) 4 - 20 mA
Nominal force	16 a 25 kN
Travel	40, 80, 100 mm
Enclosure	IP 67
Proces medium max. temperature	Acc. to used valve
Ambient temperature range	-40 to 55 °C
Ambient humidity range	5 - 100% with condensation
Weight	17 to 21 kg

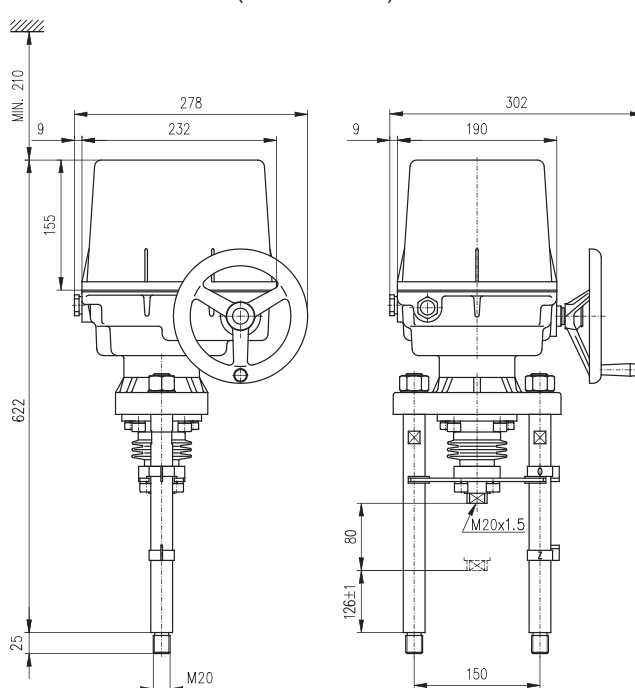
Note: Specifications and technical data are for information only. Detailed technical informations can be found in producer's data sheet or on the website www.regada.sk

Dimensions of actuators

CV 3xx NPS 3" - 6" (connection D)



CV 3xx NPS 8" - 16" (connection M)



Specification of actuator STR 2PA

Electric actuator STR 2PA						432.	X	-	X	X	X	X	X	X	/	X	X			
Resistance to surroundings	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	Spínání elektromotoru	Prostřednictvím optočlenů		Voltage	230 V AC					0										
		Prostřednictvím reverzních stykačů			3x400 V AC					2										
		Bezkontaktní spínání		3x380 V AC						N										
				3x400 V AC						E										
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			
			-	-													Z			
	60 mm/min		●	●													C			
			-	●													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			
			-	●													E			
60 mm/min		●	-														Y			
		-	●														Z			
80 mm/min		●	-														E			
		-	●														Y			
100 mm/min		-	●														Z			
Travel				20-80 mm													K			
				20-100 mm													L			
Control board	DMS3	Control	Modulating	0/4 - 20 mA 0/2 - 10 V	ON - OFF and inching	24 V DC	Feedback	4 - 20 mA pasive									G			
																	H			
Mechanical connection		Flange, connecting height 110 mm, thread on con. stem M16x1,5																D		
		Columns, connecting height 126 mm, thread on con. Stem M20x1,5																M		
		None																		
Accessories		A Adjustment of operating stroke to the required value																0	1	
		D Additional relays R3, R4, R5 (modul DMS3 RE3)																	0	5
		E Additional relays R1, R2, R3, R4, R5, READY (modul DMS3 RE6)																	0	6
		F Manual control for actuators with DMS3 a LCD system																	0	7

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


**Electric actuators
CVL
Rotork**
Technical data

Type	CVL-500 (Ex)	CVL-1000 (Ex)	CVL-1500 (Ex)	CVL-5000 (Ex)
Marking in valve specification No.	EQL			
Execution	Linear electric actuator (optionally with fail-safe function)			
Voltage	230V AC, 24V DC			
Frequency	50 Hz			
Control	4 - 20 mA			
Feedback	4 - 20 mA			
Running speed	6,35 mm/s	2,54 mm/s	2,54 mm/s	2,54 mm/s
Fail-safe action time	max. 6 s	max. 20 s	max. 20 s	max. 45 s
Charging time of the capacitors	30 s	100 s	100 s	300 s
Fail-safe function	Normally open (NO) or Normally closed (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			
Proces medium max. temp.	Acc. to used valve			
Ambient temperature range	-30 to 70°C (for low temperature -40 to 60°C)			
	Ex execution -20 to 60°C (for low temperature -40 to 60°C)			
Manual override	optionally			
Weight	16 kg	24 kg	24 kg	53 kg

Optional accessories

Failsafe	Super Capacitors for moving actuator to set position
HART	communication protocol
Foundation Fieldbus	network interface
Profibus DP	network interface
Pakscan P3	2-wire system
Modbus	network interface
RIRO	communication protocol

Note: Specifications and technical data are for information only.

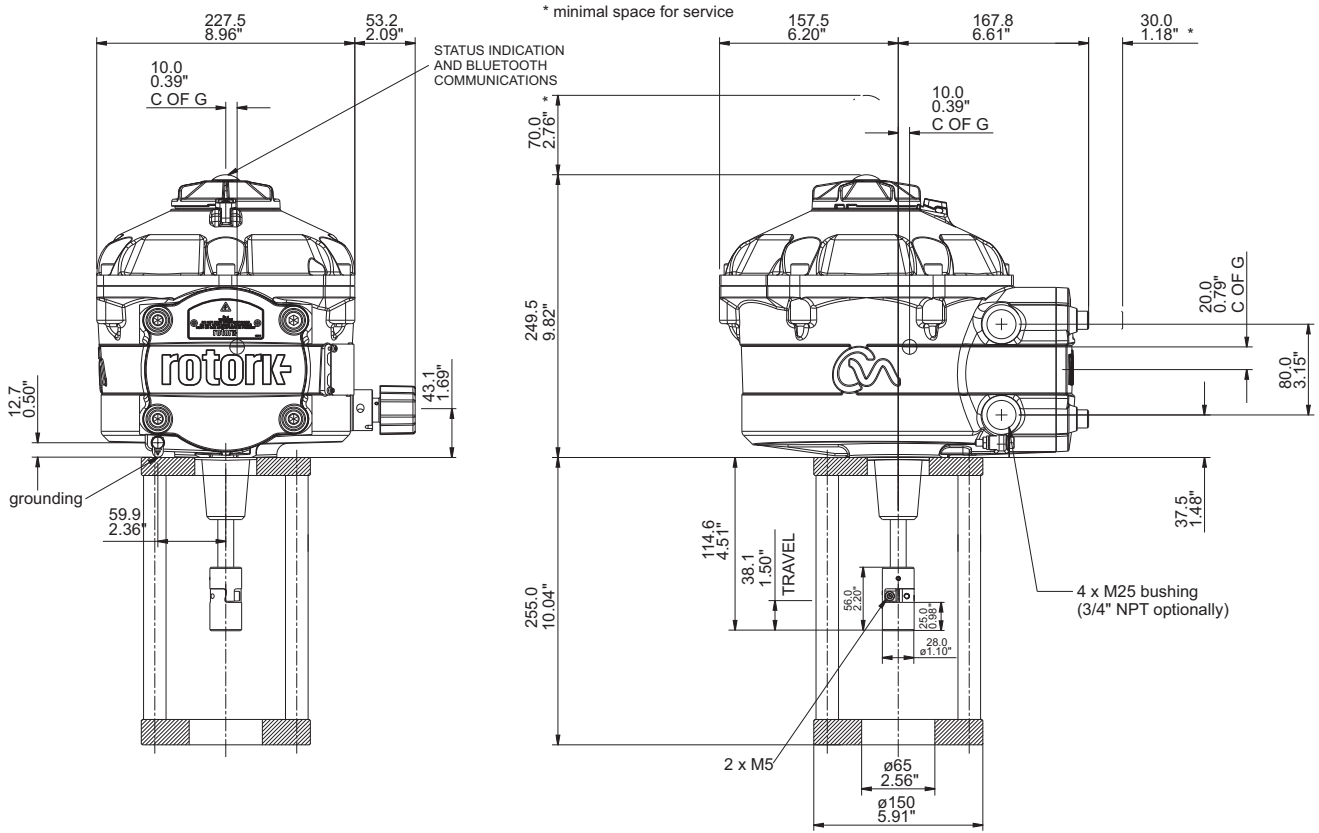
Detailed technical informations can be found in producer's data sheet or on the webside www.rotork.com

I/O parameterisation

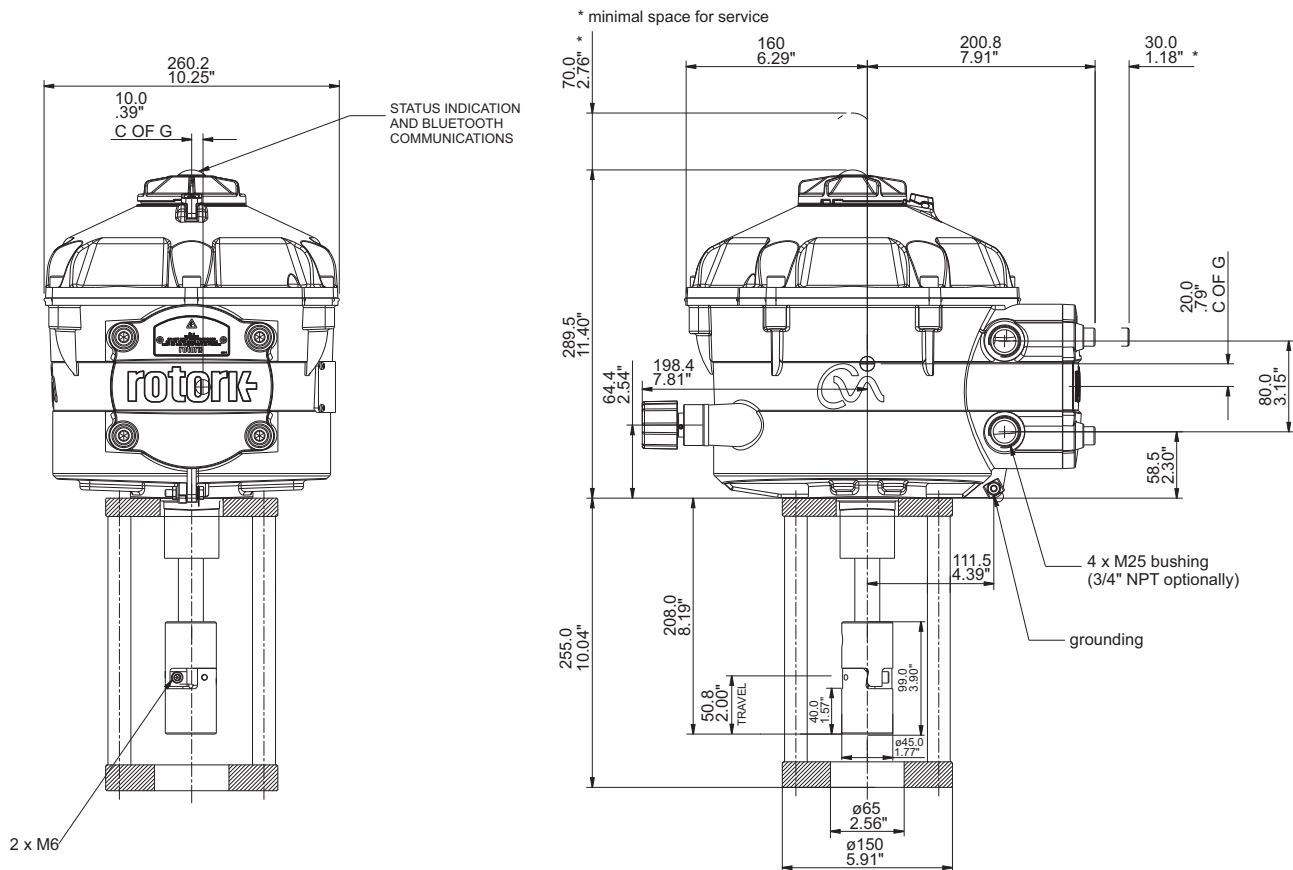
Possibility to set direction to open/close and action on loss of signal. Independent open/close settings for thrust force in range 40-100% is available.

Dimensions of actuators

CVL-500 (Ex)

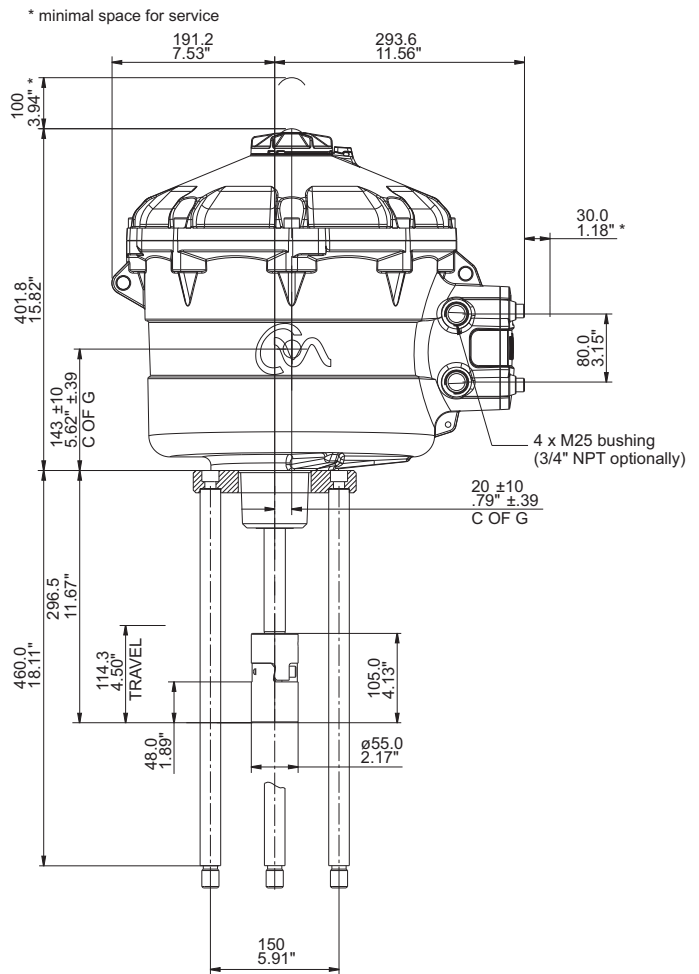
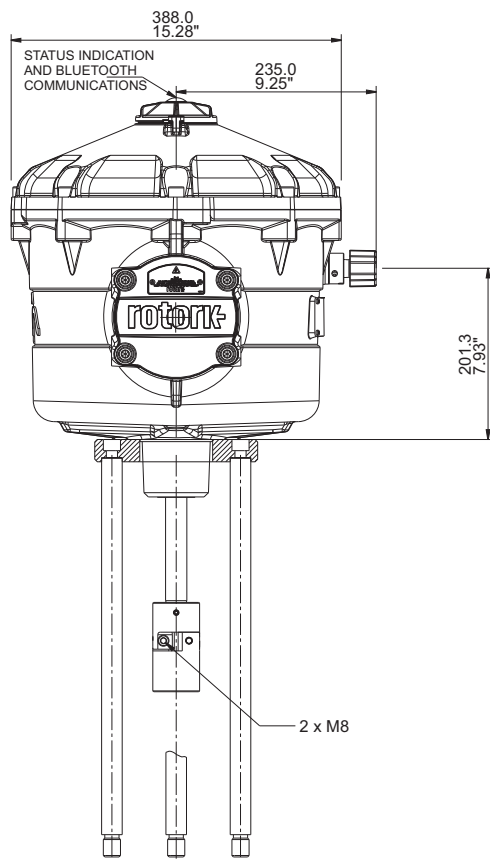


CVL-1000 (Ex), CVL-1500 (Ex)



Dimension of actuators

CVL-5000 (Ex)



EQA, EQB



Electric actuators IQM 10, IQM 12, Ex IQM 10, Ex IQM 12 Rotork

Technical data

Type	IQM 10	IQM 12	Ex IQM 10	Ex IQM 12
Marking in valve specification No.	EQA		EQB	
Execution	Multi-turn electric actuator (3. generation)			
Voltage	3 x 380 or 3 x 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's stroke 16, 20, 40 mm			
Enclosure	IP 68			
Proces medium max. temp.	Acc. to used valve			
Ambient temperature range	-30 to 70°C (optionally -40 to 70°C, -50 to 40°C)		-20 to 70°C (optionally -40 to 70°C, -50 to 40°C)	
Weight	31 kg			

Optional accessories

Extra relay contacts S5-S8 independently configurable.

Range 24VDC or 120VAC

Analogue control - Folomatic 4-20mA

Position transmitter CPT 4-20 mA

Interrupter timer (interrupted actuator opening/closing)

HART - communication protocol

Foundation Fieldbus - network interface

Profibus DP - network interface

Pakscan P3 - network interface / 2-wire system

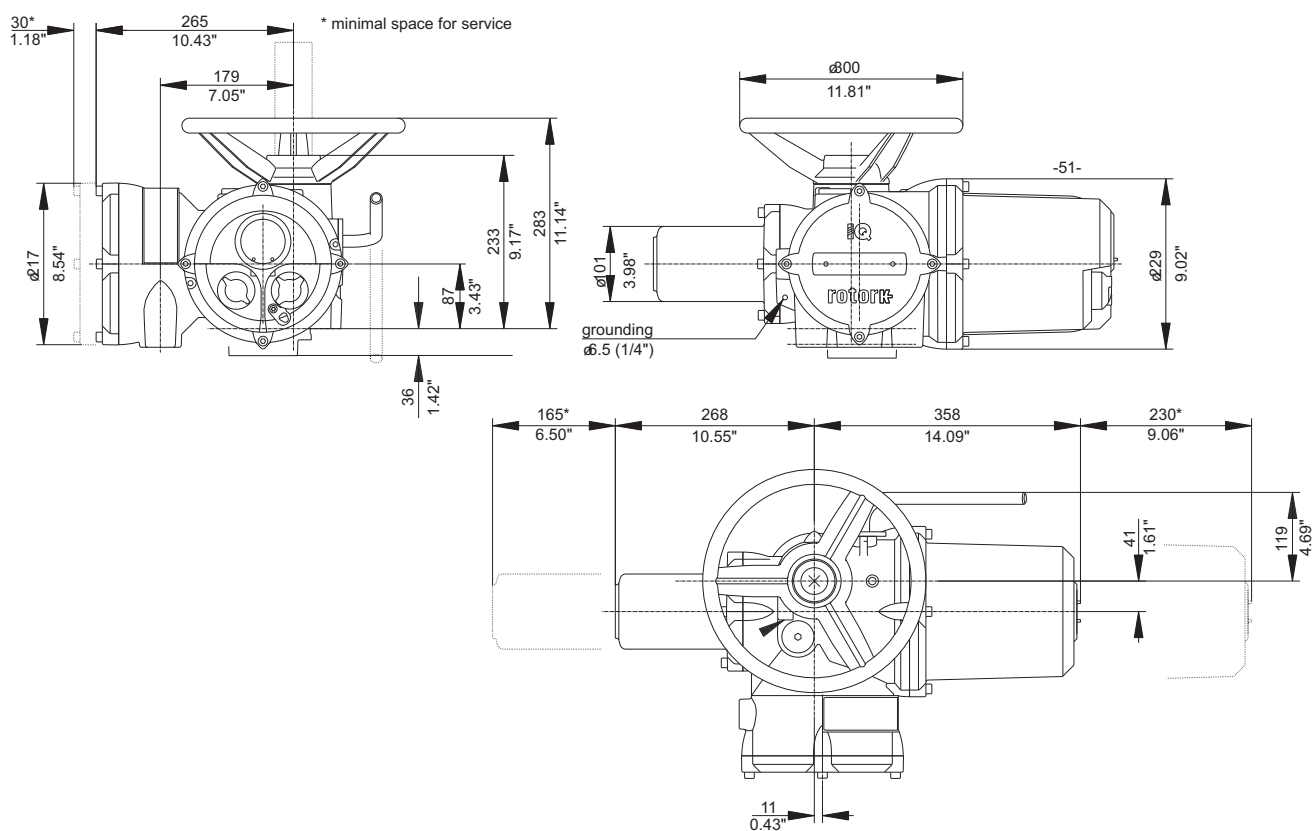
Modbus - network interface

Note: Specifications and technical data are for information only.

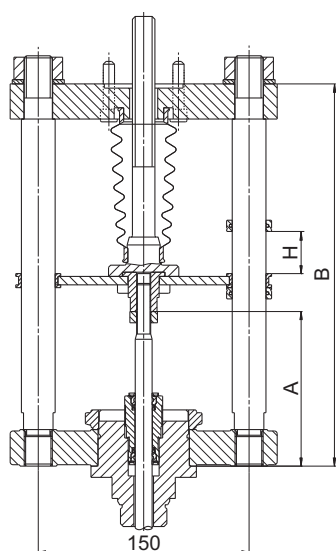
Detailed technical informations can be found in producer's data sheet or on the webside www.rotork.com

Dimensions of actuators

IQM 10, IQM 12, Ex 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

EQD, EQB



Electric actuators IQM 20, Ex IQM 20 Rotork

Technical data

Type	IQM 20	Ex IQM 20
Marking in valve specification No.	EQA	EQB
Execution	Multi-turn electric actuator (3. generation)	
Voltage	3 x 380 V or 3 x 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's stroke 80, 100 mm	
Enclosure	IP 68	
Proces medium max. temp.	Acc. to used valve	
Ambient temperature range	-30 to 70°C (optionally -40 to 70°C, -50 to 40°C)	-20 to 70°C (optionally -40 to 70°C, -50 to 40°C)
Weight	54 kg	

Optional accessories

Extra relay contacts S5-S8 independently configurable.

Range 24VDC or 120VAC

Analogue control - Folomatic 4-20mA

Position transmitter CPT 4-20 mA

Interrupter timer (interrupted actuator opening/closing)

HART - communication protocol

Foundation Fieldbus - network interface

Profibus DP - network interface

Pakscan P3 - network interface / 2-wire system

Modbus - network interface

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



**Pneumatic actuators
Flowserve series 127 to 700**

Technical data

Type	PA 252		PA 252		PB 502		PB 700	
Marking in valve specification No.	PFA		PFA		PFB		PFC	
Feeding pressure	Max. 0,6 Mpa							
Failure of air action	NO	NC	NO	NC	NO	NC	NO	NC
Control	Pneumatic signal of 20 - 100 kPa							
	Current signal of 0(4) - 20 mA							
Nominal force	According to table of nominal force values							
Stroke	20 mm				40 mm			
Enclosure	IP 54							
Process medium max. temperature	According to used valve							
Ambient temperature range	-40 to 80°C							
Ambient humidity limit	95 %							
Weight	See table of dimensions							

Accessories

Electropneumatic positioner (analogous) type SRI 990	Device with electric input of 4 (0) to 20 mA and outlet of controlling air into actuator. It is adjusted by switches and potentiometers.
Electropneumatic positioner (intelligent) type SRD 991	Device with electric input of 4 (0) to 20 mA and outlet of controlling air into actuator. It is adjusted by PC and special software.
Pneumatic positioner type SRP 981	Device with pneumatic input of 20 to 100 kPa to control the pneumatic actuators with pneumatic control signal
Signalisation switches type SGE 985	Adjustable end position switches
Air set type A 3420	Reduces the supply air pressure to a value required
Electropneumatic positioner type SRI 986	Analog positioner with input signal of 4 (0) - 20 mA
Air set type A 3420 (0 to 50°C)	Reduces the supply air pressure to a value required
Air set type FRS923 (-40 to 80°C)	Reduces the supply air pressure to a value required
Electropneumatic positioner SIPART PS2	Digital with input signal of 4(0) – 20 mA
Solenoid valve, standard type SC G327A001	Direct operated electromagnetic valve, execution 3/2, function U (universal), G 1/4"
Solenoid valve inexplosive, EEx em type EM G327A001	Direct operated electromagnetic valve, execution 3/2, function U (universal), G 1/4", secured execution 3/2, with the increased safety/epoxy encapsulation operator
Solenoid valve inexplosive, EEx d type NF G327A001	Direct operated electromagnetic valve, execution 3/2, function U (universal), G 1/4", flameproof enclosure
Air lock valve, type EIL 200	Retaining device for closing of air pipeline on a pressure drop

Operating conditions

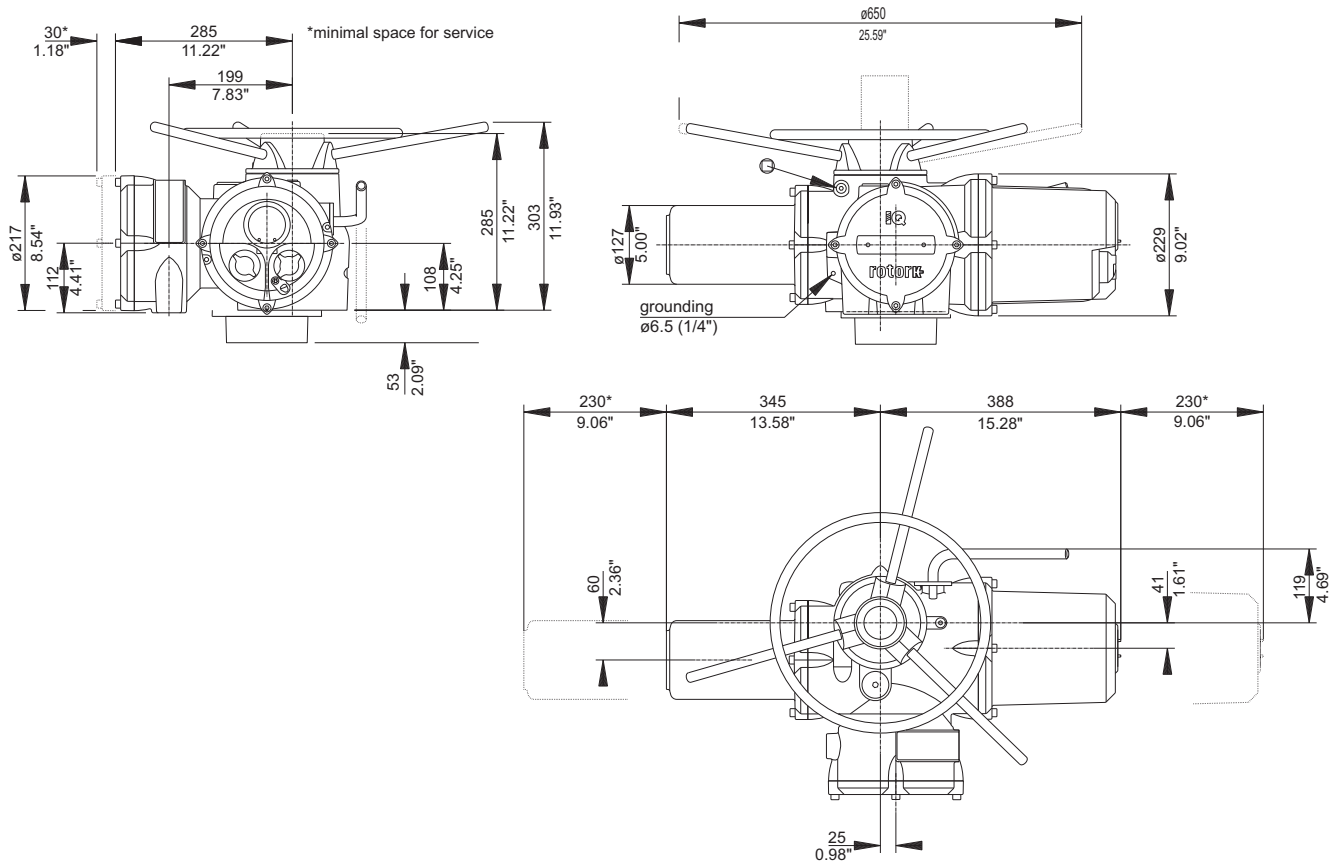
Pneumatic actuators Flowserve can operate with extremely high ambient temperatures with unique resistance to shock loads. They excel with resistance to vibrations and reached 10⁶ of cycles in operation. It is possible to deliver the actuator with both fail to open and fail to close function, possibly with a position blocking (air lock) upon feeding pressure air supply failure. Various accessories can be delivered together with the actuator.

Normally open (NO) and Normally closed (NC) functions

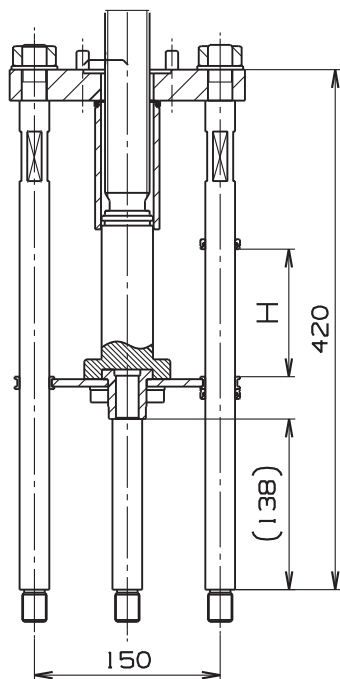
Normally open (NO) function ensures that actuator's stem retracts upon control air supply failure (valve opens).
Normally closed (NC) function ensures that actuator's stem extends upon control air supply failure (valve closes).

Dimensions of actuators

IQM 20, Ex IQM 20

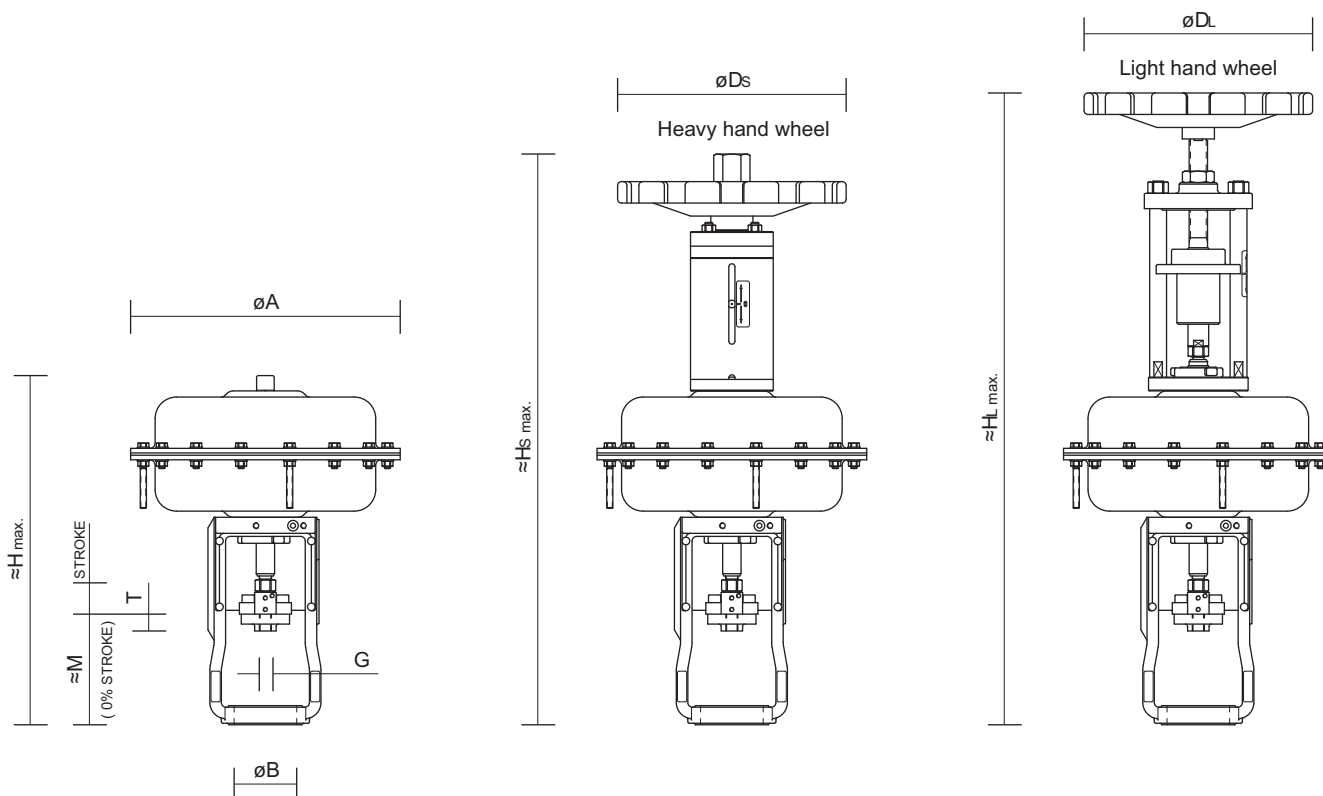


Control NPS 8" - 16"
Output drive shaft A, F10, Tr36x6-LH



Dimensions and weights of Flowserve actuators series 127 to 700

Type	Actuator											Weight [kg]		
	A	H	H _s	H _L	D _s	D _L	Stroke	B	M	G	T	Actuator	Actuator w. hw ^s	Actuator w. hw ^L
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[kg]	[kg]	[kg]
PA 127	198	320	515	590	160	200	16	65	105	M10x1	23	9	15	14
PA 252	265	335	520	595	200	200	26	65	105	M10x1	23	14	20	19
PB 502	352	460	745	870	250	300	20 a 40	82	140	M16x1,5	23 a 25	29	38	36
PB 700	405	550	875	---	350	---	40	82	140	M16x1,5	25	40	58	---



Valve specification No. of Flowserve actuators series 127 to 700

Actuator type	125 cm ²	PX XXX	X	X	X
	250 cm ²	PA 127			
	500 cm ²	PA 252			
	700 cm ²	PB 502			
Colour	white		B		
Spring range [bar]	0,2 - 1,0		A	D	
	1,5 - 2,7		V	C	
	2,0 - 4,8		F	Y	
Hand wheel	without wheel				O
	light wheel				L
	heavy wheel				H
Function	normally open (NO)				A
	normally closed (NC)				Z
Stroke [mm]	20				A
	40				B

PFD, PFE



Pneumatic actuators Flowserve series 1502 and 3002

Technical data

Type	PO 1502		PO 3002	
Marking in valve specification No.	PFD		PFE	
Feeding pressure	0,6 MPa max			
Failure of air action	NO	NC	NO	NC
Control	Pneumatic signal 20 - 100 kPa Current signal of 0(4) - 20 mA			
Nominal force	According to table of nominal force values			
Stroke	80, 100 mm			
Enclosure	IP 54			
Process medium max. temperature	According to used valve			
Ambient temperature range	-40 to 80°C			
Ambient humidity limit	95 %			
Weight	131 kg		247 kg	

Accessories

Electropneumatic positioner (analogous) type SRI 990	Device with electric input of 4 (0) to 20 mA and outlet of controlling air into actuator. It is adjusted by switches and potentiometers.
Electropneumatic positioner (intelligent) type SRD 991	Device with electric input of 4 (0) to 20 mA and outlet of controlling air into actuator. It is adjusted by PC and special software.
Pneumatic positioner type SRP 981	Device with pneumatic input of 20 to 100 kPa to control the pneumatic actuators with pneumatic control signal
Signalisation switches type SGE 985	Adjustable end position switches
Air set type A 3420	Reduces the supply air pressure to a value required
Electropneumatic positioner type SRI 986	Analog positioner with input signal of 4 (0) - 20 mA
Air set type A 3420 (0 to 50°C)	Reduces the supply air pressure to a value required
Air set type FRS923 (-40 to 80°C)	Reduces the supply air pressure to a value required
Electropneumatic positioner SIPART PS2	Digital with input signal of 4(0) – 20 mA
Solenoid valve, standard type SC G327A001	Direct operated electromagnetic valve, execution 3/2, function U (universal), G 1/4"
Solenoid valve inexplosive, EEx em type EM G327A001	Direct operated electromagnetic valve, execution 3/2, function U (universal), G 1/4", secured execution 3/2, with the increased safety/epoxy encapsulation operator
Solenoid valve inexplosive, EEx d type NF G327A001	Direct operated electromagnetic valve, execution 3/2, function U (universal), G 1/4", flameproof enclosure
Volume Booster-valve, type EIL 100	Flow air volume increaser
Air lock valve, type EIL 200	Retaining device for closing of air pipeline on a pressure drop

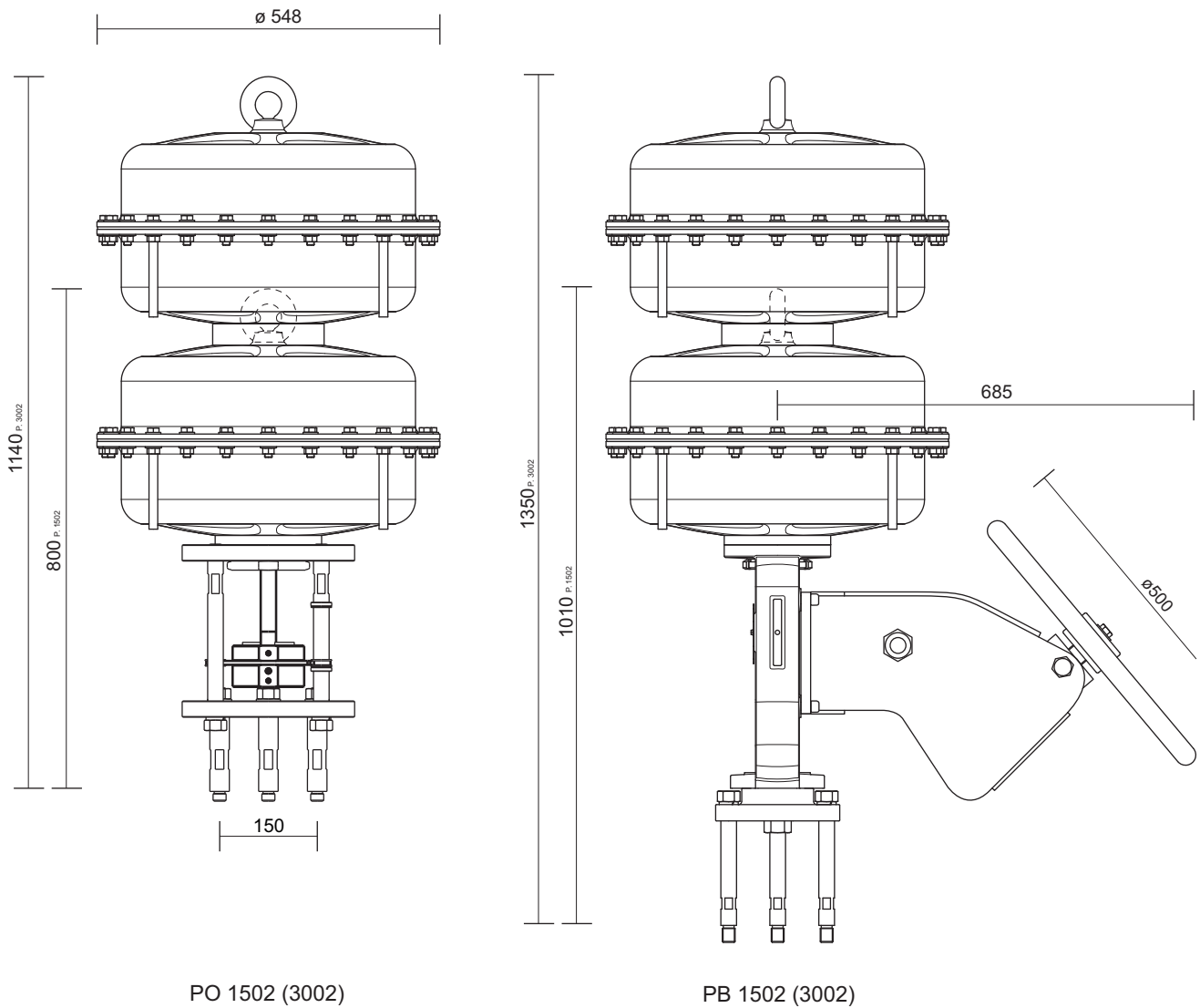
Operating conditions

Pneumatic actuators Flowserve can operate with extremely high ambient temperatures with unique resistance to shock loads. They excel with resistance to vibrations and reached 10⁶ 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.

Normally open (NO) and Normally closed (NC) functions

Normally open (NO) function ensures that actuator's stem retracts upon control air supply failure (valve opens).
Normally closed (NC) function ensures that actuator's stem extends upon control air supply failure (valve closes).

Dimensions and weights of Flowserve actuators 1502 a 3002 (execution without hand wheel)



PO 1502 (3002)

PB 1502 (3002)

Valve specification No. of Flowserve actuators series 1502 and 3002

			PO XXXX	X	XX	X	X	X
Actuator type	1500 cm ²		PO 1502					
	3000 cm ²		PO 3002					
Colour			white	B				
Spring range [bar]	PO 1502	H = 80 mm	0,4 - 2,0	GF				
			1,5 - 2,7	VC				
			2,0 - 3,5	FS				
			2,6 - 4,2	AJ				
	PO 3002	H = 80 mm	0,4 - 2,0	GF				
			1,3 - 2,1	EP				
			1,0 - 2,4	DY				
			2,0 - 4,8	FY				
Hand wheel			without wheel				O	
			side light wheel				S	
Function			normally open (NO)					A
			normally closed (NC)					Z
Stroke [mm]			80					D



Pneumatic actuators 526 61 SPA Praha

Technical data

Type	526 61	
Marking in valve specification No.	PJA (without corector)	
Feeding pressure	max. 320 kPa	
Failure of air action	NO	NC
Control	ON - OFF	
	Pneumatic signal 20 - 100 kPa	
	Current signal 4 - 20 mA	
Nominal force	Acc. to execution of actuator	
Travel	16, 20 mm	
Enclosure	IP 53	
Process medium max. temperature	Acc. to used valve	
Ambient temperature range	-35 to 70°C	
Ambient humidity range	5 - 100 %	
Weight	12 kg (without positioner)	

Operating conditions

Pneumatic actuators can be installed in open atmosphere. They can operate in explosive environment. If there is any additional electric equipment used in actuator, then its application in explosive environment is limited by this additional equipment. Further they can operate at vibration of max. 55 Hz; 15 mm.

Normally open (NO) and Normally closed (NC) functions

Normally open (NO) function ensures that actuator's stem retracts upon control air supply failure (valve opens).
Normally closed (NC) function ensures that actuator's stem extends upon control air supply failure (valve closes).

Notes

For version with corector, operating spring range can be altered by changing spring preloading for purpose to increase linear force in case of air supply failure. Changes are as follows:

- from 20 - 100 kPa to 60 - 140 kPa
- from 40 - 200 kPa to 80 - 240 kPa

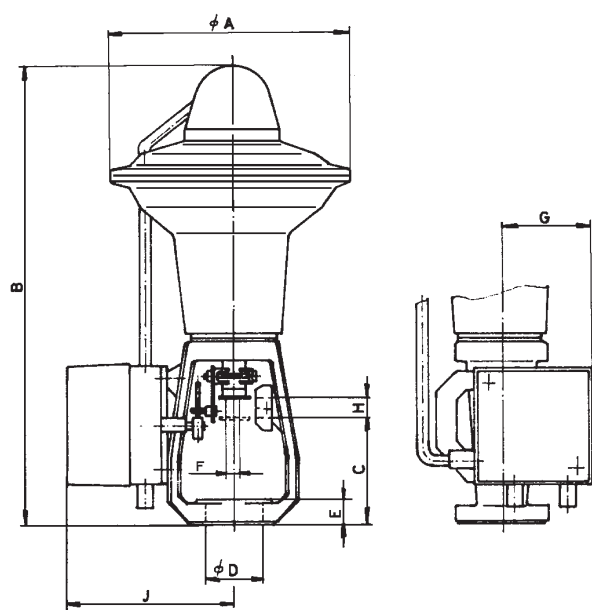
Feeding pressure must be increased proportionately to it. This pressure must not be higher than 320 kPa, otherwise an air set is required to be used.

Specification of actuators 526 61

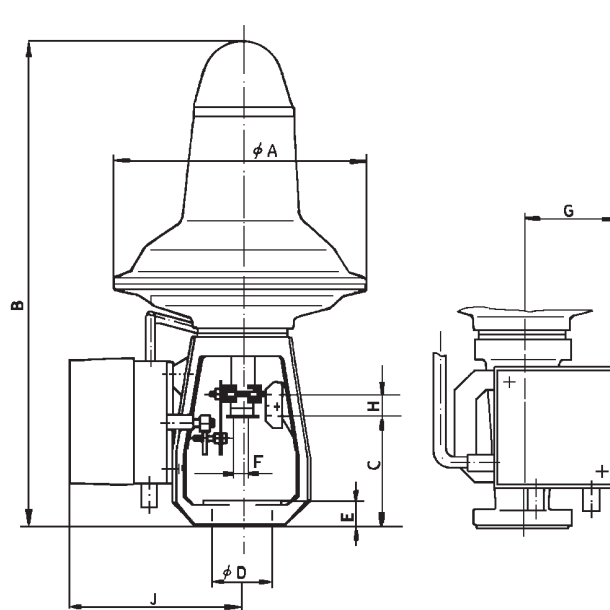
Pneumatic diaphragm servomotor, single acting, with clutch	526 6	X	X	X	X	X
Effective diaphragm area	250 cm ²	1				
Travel	16 mm (type 526 61)		1			
	20 mm (type 526 61 and 526 63)		2			
Operating spring range	20 - 100 kPa			1		
	40 - 200 kPa			2		
Failure of air action	Normally open (NO)				1	
	Normally closed (NC)				2	
Execution	Without positioner					1
	With positioner					2

Dimensions of actuators 526 61

Actuator with NO function



Actuator with NC function



	A	B	C	D	E	F	G	H	J
526 61	250	487	110	65	25	M 10x1	113	16, 25	172

Accessories

Pneumatic positioner (corrector) type 650 01	serves for adjusting of required stroke value with the aid of pneumatic signal 20 to 100kPa
Air set (type A3420)	reduces the supply air pressure to a required value
Electropneumatic positioner (type 6503)	device with electric input 4 (0) to 20 mA and direct output of control air into actuator (corrector is not required)
Signalisation switches	adjustable end position switches
Position transmitter	resistance output signal (0 to 1000 Ω) 2 - wire output 4 - 20 mA
Electropneumatic positioner (intelligent) type SRD 991	device with electric input of 4 (0) to 20 mA and direct output of controlling air into actuator. It is adjusted by PC and special software
Electropneumatic positioner type SRI 986	analog positioner with input signal of 4(0) - 20 mA
Electropneumatic positioner SIPART PS2	digital positioner with input signal 4-20mA. It can include end position switches and feedback 4-20 mA
Solenoid valve standard type SC G327A001	direct operated electromagnetic valve, execution 3/2, function U (universal), G1/4"
Solenoid valve inexplosive Eex em type EM G327A001	direct operated electromagnetic valve, execution 3/2, function U (universal), G1/4", secured execution with the increased safety/epoxy encapsulation operator
Solenoid valve inexplosive Eex d type NF G327A001	direct operated electromagnetic valve, execution 3/2, function U (universal), G 1/4", flameproof enclosure



Pneumatic actuators 5222 SPA Praha

Technical data

Type	5222
Marking in valve specification No.	PJE
Feeding pressure	max. 350 kPa
Failure of air action	NO and NC
Control	ON - OFF
	Pneumatic signal 20 - 100 kPa (with positioner 6503)
	Current signal 4 - 20 mA (with positioner 6503)
Nominal force	acc. to used actuator
Travel	16, 20, 40 mm
Enclosure	IP 53
Process medium max. temperature	Acc. to used valve
Ambient temperature range	-25 to 70°C
Ambient humidity range	5 - 100 %
Weight	31 kg (without positioner)

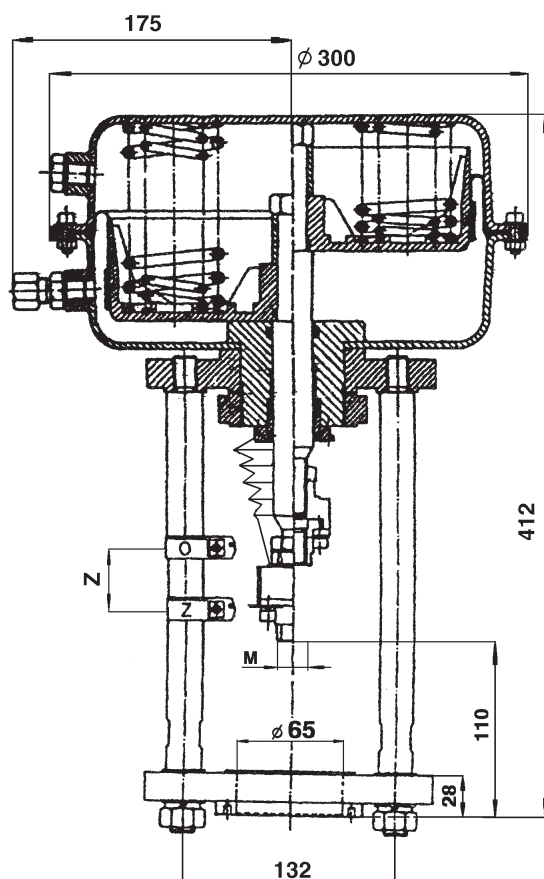
Accessories

Pneumatic positioner (corrector) (type 650 01)	serves for adjusting of required stroke value with the aid of pneumatic signal 20 to 100kPa
Position converter (type 650 11)	additional equipment for actuators without positioner or for actuators equipped with pneumatic positioner - adjustable end position signalization switches - resistance feedback of 1kΩ - two-wire current feedback 4 - 20mA of actuator position
Air set (type A3420)	reduces input pressure to 1,6 MPa to a free adjustable stabilized pressure ranging from 50 to 600 kPa
Electropneumatic positioner SIPART PS2	digital positioner with input signal 4-20mA. It can include end position switches and feedback 4-20 mA
Electropneumatic positioner (type 6503)	serves as a proportional positioner. Input control pressure 4 - 20 mA. It may have the same output signals as position converter (type 650 11)
Signalisation switches	adjustable end position switches
Position transmitter	resistance output signal (0 to 1000 Ω) 2 - wire output 4 - 20 mA
Solenoid valve	serves for direct control or to induce fail-safe action . If the chosen fail-safe action of actuator shall be preserved, it is necessary to choose a solenoid valve with NC fail-safe action
Manual operating	for fail to open (NO) or fail to close function (NC) of actuator
Solenoid valve standard type SC G327A001	direct operated electromagnetic valve, execution 3/2, function U (universal), G1/4"
Solenoid valve inexplusive Eex em type EM G327A001	direct operated electromagnetic valve, execution 3/2, function U (universal), G1/4", secured execution with the increased safety/epoxy encapsulation operator
Solenoid valve inexplusive Eex d type NF G327A001	direct operated electromagnetic valve, execution 3/2, function U (universal), G 1/4", flameproof enclosure
Electropneumatic positioner (intelligent) type SRD 991	device with electric input of 4 (0) to 20 mA and direct output of controlling air into actuator. It is adjusted by PC and special software
Electropneumatic positioner type SRI 986	analog positioner with input signal of 4(0) - 20 mA

Specification of actuators 5222

Pneumatic diaphragm servomotor, single acting, with clutch		5222	X	X	X	X	X	X
Travel	16 mm		1					
	20 mm		2					
	40 mm		4					
Operating spring range	20 - 100 kPa			0	1			
	80 - 155 kPa			0	4			
	100 - 200 kPa			0	5			
	160 - 300 kPa			0	9			
	100 - 200 kPa TANDEM			0	5			
	160 - 300 kPa TANDEM			0	9			
Failure of air action	Normally open (NO)			1	5			
	Normally closed (NC)			1	9			
Execution	Without corector					1		
	With corector					2		
Manual operating	Without manual operating						1	
	With manual operating						2	
Additional equipment	Without additional equipment							0
	With additional equipment to normal atmosphere							1
	With additional equipment to explosive surroundings of class SNV							3

Dimensions of actuator 5222



Operating conditions

Pneumatic actuators can be installed in open atmosphere. They can operate in explosive environment. If there is any additional electric equipment used in actuator, then its application is limited by this additional equipment.

Normally open (NO) and Normally closed (NC) functions

Normally open (NO) function ensures that actuator's stem retracts upon control air supply failure (valve opens).
Normally closed (NC) function ensures that actuator's stem extends upon control air supply failure (valve closes).



**PVA, PVB
PVC, PVD**

**Pneumatic actuators
LDM
Serie 230 to 1400**

Technical data

Type	PP 230	PP 385	PP 700	PP 1400
Marking in valve specification No.	PVA	PVB	PVC	PVD
Feeding pressure	0,4 (0,6) MPa max			
Failure of air action	NO / NC			
Control	Current signal 0(4) - 20 mA			
Nominal force	According to table of nominal force values			
Travel	16,20 mm	20, 40 mm	20, 40 mm	80, 100 mm
Enclosure	IP 54			
Process medium max. temperature	Acc. to used valve			
Ambient temperature range	-40 to 80 °C			
Ambient humidity range	95 %			
Weight	13 (18) kg	18 (24) kg	28,5 kg	75 (115) kg

Accessories

Air set (type A3420)	Reduces input pressure to 1,6 MPa to a free adjustable stabilized pressure ranging from 50 to 600 kPa
Electropneumatic positioner SIPART PS2	Digital with input signal of 4(0) – 20 mA
Solenoid valve, standard type SC G327A001	Direct operated electromagnetic valve, execution 3/2, function U (universal), G 1/4"
Solenoid valve inexplosive, EEx em type EM G327A001	Direct operated electromagnetic valve, execution 3/2, function U (universal), G 1/4", secured execution 3/2, with the increased safety/epoxy encapsulation operator
Solenoid valve inexplosive, EEx d type NF G327A001	Direct operated electromagnetic valve, execution 3/2, function U (universal), G 1/4", flameproof enclosure

Direct and indirect functions

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

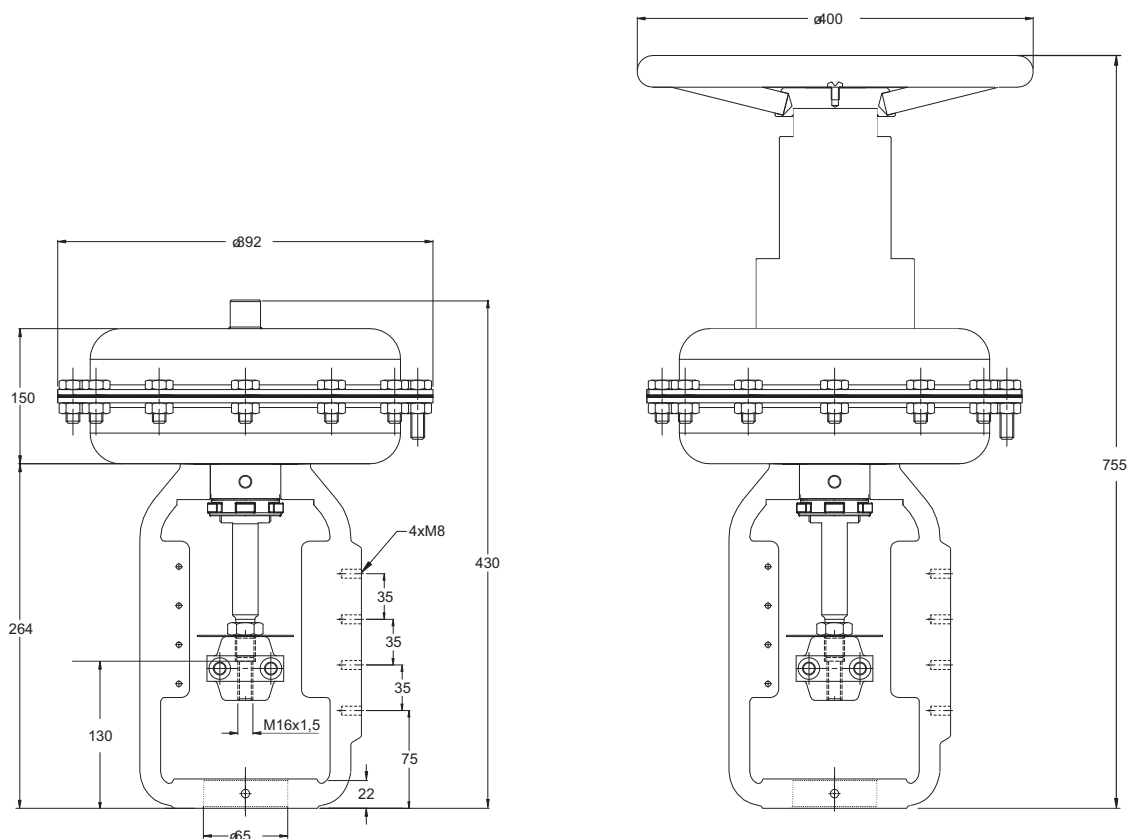
Indirect function ensures that actuator's stem extends upon control air supply failure (valve closes).

Specification of LDM actuators

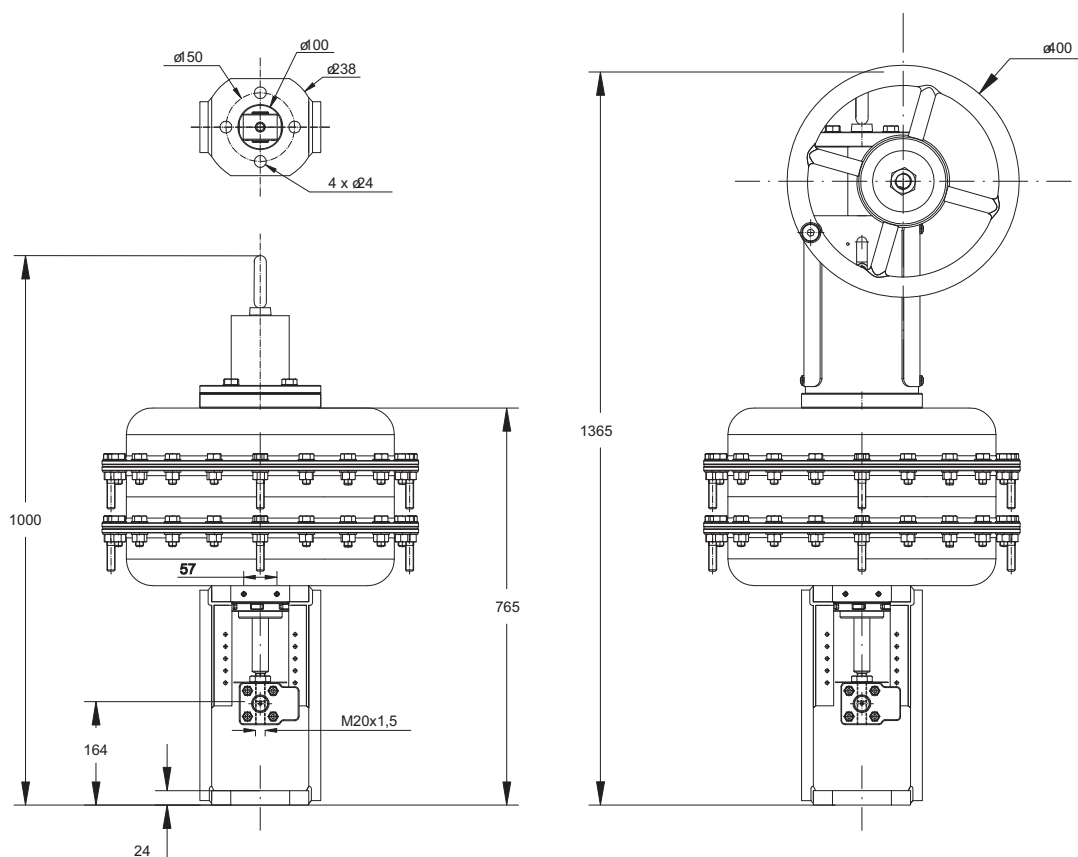
		PP XXX	XX	XX	XXX-XXX	X
Actuator type	230 cm ²	PP 230				
	385 cm ²	PP 385				
	700 cm ²	PP 700				
	1400 cm ²	PP 1400				
Function	Normally open (NO)		DA			
	Normally closed (NC)		RA			
Travel	16 mm			16		
	20 mm			20		
	40 mm			40		
	80 mm			80		
	100 mm			100		
Spring range	for example 40-200 kPa (acc. to the table of springs)				40-200	
Optional manual operation	without hand wheel					
	with hand wheel (PP 230 až PP 700)					T
	with side hand wheel (PP 1400)					S

Ordering No. example: **PP230 DA16 20-100T**

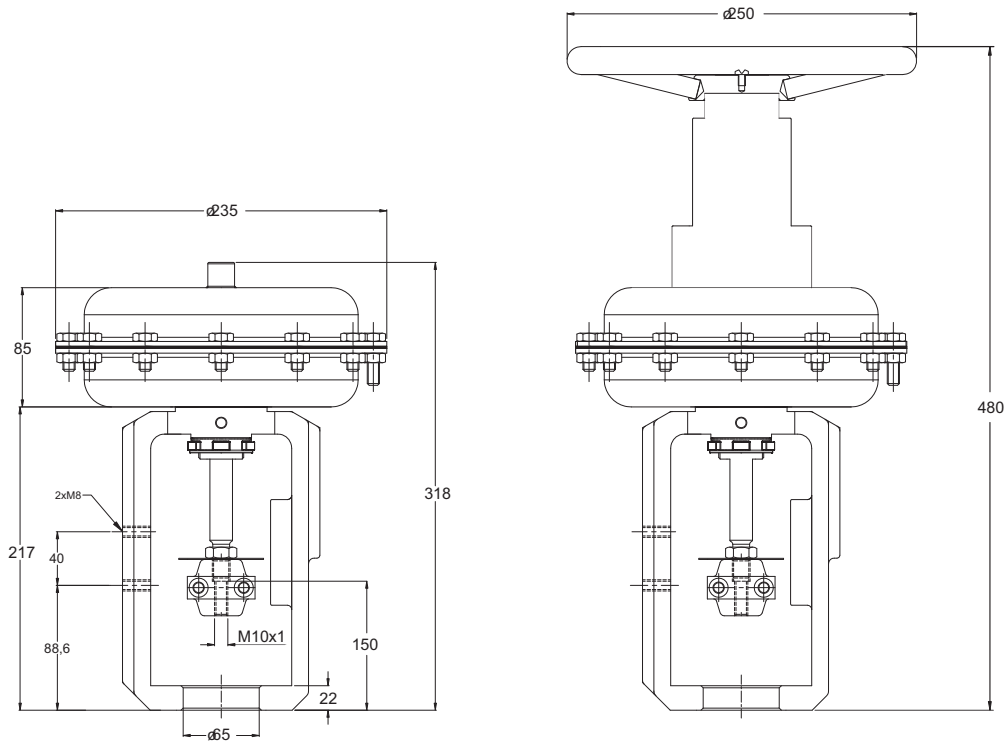
Dimensions of actuator PP700



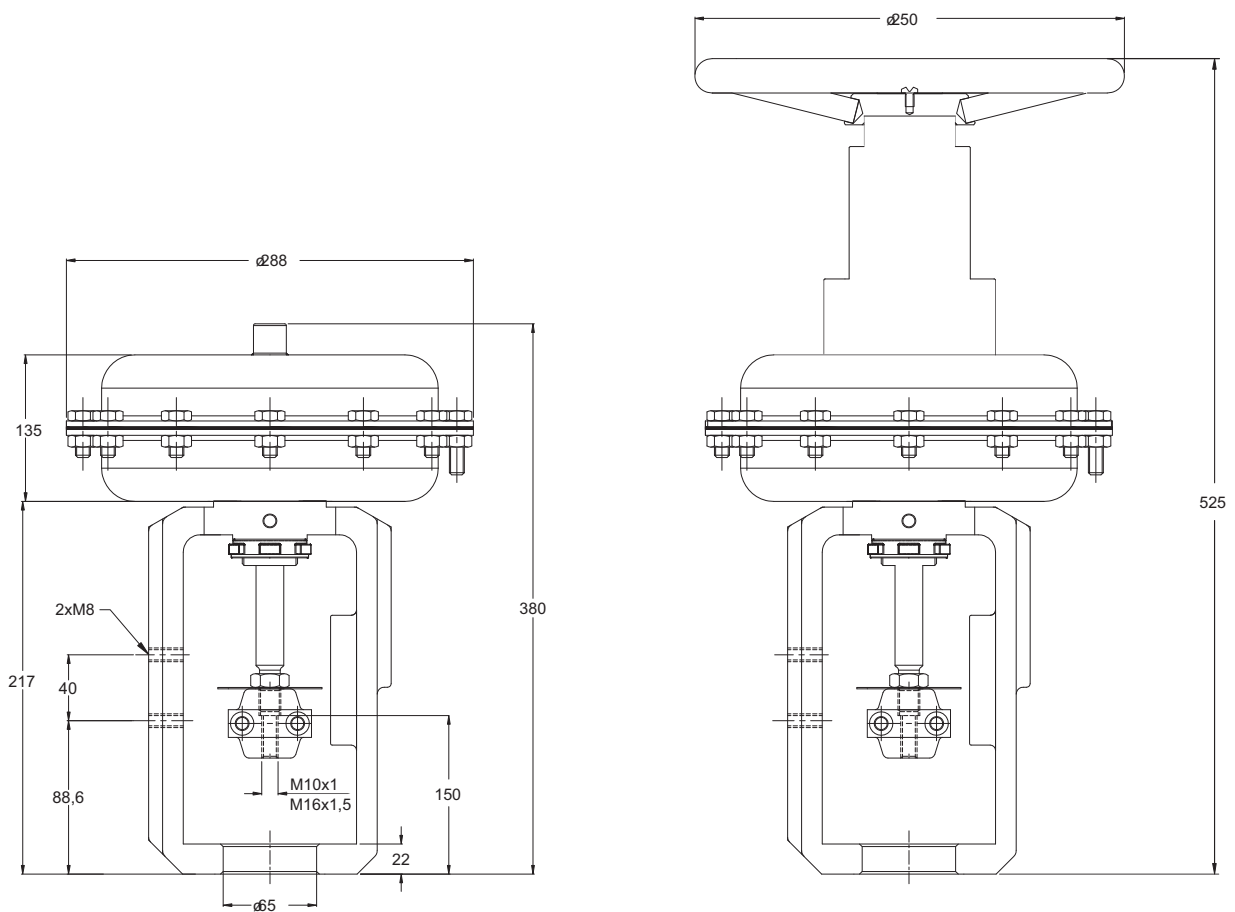
Dimensions of actuator PP1400



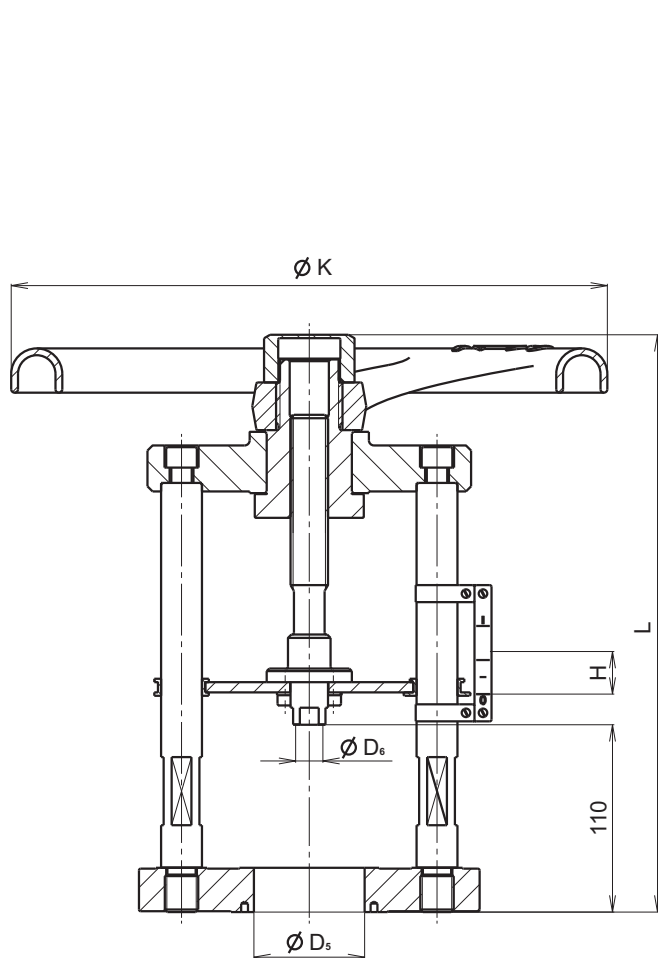
Dimensions of actuator PP230



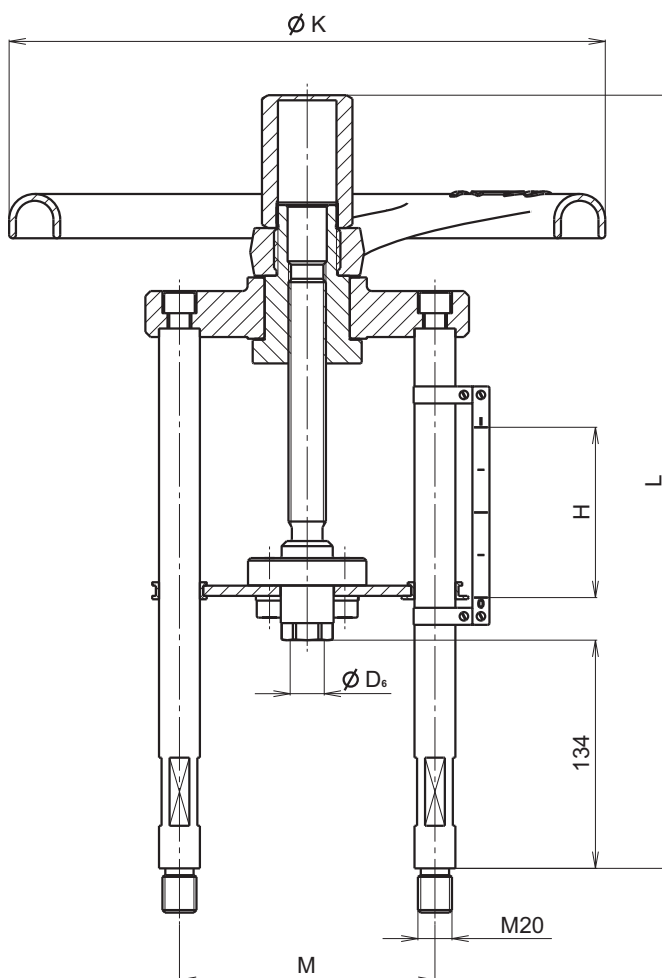
Dimensions of actuator PP385



Actuating of valves RV / UV 3x0 and RV 3x2 with hand wheel



Hand wheel actuating of valves DN 15 - 150



Hand wheel actuating of valves DN 200 to 400

Dimensions of hand wheel actuating:

DN	Marking	H mm	L mm	ØK mm	M mm	D _s mm	D ₆ mm	m kg	Ordering number (Part list number)
15	R16	16	247	160	---	65	M10x1	5	S900 0231
20									
25									
32									
40	R20	20	275	195	---	65	M16x1,5	11	S900 0115
50									
65									
80	R28	40	317	280	---	65	M16x1,5	13	S900 0116
100			339						
125	R35	80	454	350	150	---	M20x1,5	15	S900 0117
150									
200									
250									
300									
400	100								S900 0141
									S900 0235

Actuator marking in valve specification No.

Electric actuator 660 MIDI	E N B	Electric actuator Schiebel Ab5	E Z E
Electric actuator Zepadyn 670	E N C	Electric actuator Schiebel exAB5	E Z F
Electric actuator Zepadyn 671	E N E	Electric actuator Schiebel rAB5	E Z G
Electric actuator Modact MTR	E P D	Electric actuator Schiebel exrAB5	E Z H
Electric actuator ST 0	E P K	Electric actuator Schiebel rAB8	E Z K
Electric actuator ST 0.1	E P L	Electric actuator Schiebel exrAB8	E Z L
Electric actuator Isomact ST 1 Ex	E P J	Electric actuator Rotork IQM10 a IQM12	E Q A
Electric actuator Isomact ST 2	E P M	Electric actuator Rotork Ex IQM10 a Ex IQM12	E Q B
Electric actuator Modact MTN Control, MTP Control	E Y A	Electric actuator Rotork IQM20	E Q D
Electric actuator Modact MTN, MTP	E Y B	Electric actuator Rotork Ex IQM20	E Q E
Electric actuator Modact MTNED, MTPED	E Y A	Electric actuator Rotork CVL-500 až CVL-5000	E Q L
Electric actuator Auma SA 07.2	E A A	Pneumatic actuator Flowserve PA 127	P F F
Electric actuator Auma SA Ex 07.2	E A B	Pneumatic actuator Flowserve PA 252	P F A
Electric actuator Auma SAR 07.2	E A C	Pneumatic actuator Flowserve PB 502	P F B
Electric actuator Auma SAR Ex 07.2	E A D	Pneumatic actuator Flowserve PB 700	P F C
Electric actuator Auma SA 07.6	E A E	Pneumatic actuator Flowserve PO 1502	P F D
Electric actuator Auma SA Ex 07.6	E A F	Pneumatic actuator Flowserve PO 3002	P F E
Electric actuator Auma SAR 07.6	E A G	Pneumatic actuator SPA Praha 526 61.xxx1	P J A
Electric actuator Auma SAR Ex 07.6	E A H	Pneumatic actuator SPA Praha 5222xxxx1xx	P J E
Electric actuator Auma SA 10.2	E A I	Pneumatic actuator LDM PP 230	P V A
Electric actuator Auma SAR 10.2	E A J	Pneumatic actuator LDM PP 385	P V B
Electric actuator Auma SAR Ex 10.2	E A K	Pneumatic actuator LDM PP 700	P V C
Electric actuator Auma SA Ex 10.2	E A L	Pneumatic actuator LDM PP 1400	P V D
Electric actuator Schiebel Ab3	E Z A	Hand wheel for NPS ½" - 1½"	R 1 6
Electric actuator Schiebel exAB3	E Z B	Hand wheel for NPS 2"	R 2 0
Electric actuator Schiebel rAB3	E Z C	Hand wheel for NPS 3" - 4"	R 2 8
Electric actuator Schiebel exrAB3	E Z D	Hand wheel for NPS 6" - 16"	R 3 5

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 WCC	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	---	---	---	---	---
	300	5.17	5.17	5.15	5.02	4.86	4.63	4.29	4.14	4.00	3.78	3.47	2.88	---	---	---	---	---
	600	10.34	10.34	10.30	10.03	9.72	9.27	8.57	8.26	8.00	7.57	6.94	5.75	---	---	---	---	---
A217 WC9 ²⁾	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	5.03	4.86	4.63	4.29	4.14	4.03	3.89	3.65	3.52	3.37	3.17	2.82	1.84	1.56
	600	10.34	10.34	10.30	10.03	9.72	9.27	8.57	8.26	8.04	7.76	7.33	7.00	6.77	6.34	5.65	3.69	3.13
A351 C8M ³⁾	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 WCC	150	290	260	230	200	170	140	125	110	95	80	---	---	---	---	---
	300	750	750	730	705	665	605	590	555	505	410	---	---	---	---	---
	600	1500	1500	1455	1405	1330	1210	1175	1100	1015	825	---	---	---	---	---
A217 WC9 ²⁾	150	290	260	230	200	170	140	125	110	95	80	65	50	35	20	20
	300	750	750	730	705	665	605	590	570	530	510	485	450	385	265	175
	600	1500	1500	1455	1410	1330	1210	1175	1135	1065	1015	975	900	775	535	350
A351 C8M ³⁾	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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