02 - 09.1

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Control and shut-off valves
RV 300

Kv 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.

Relations of Kv calculation

		Pressure drop $p_2 > p_1/2$ $\Delta p < p_1/2$	Pressure drop $\Delta p \geqq p_1/2$ $p_2 \leqq p_1/2$
Kv =	Liquid	$\frac{Q}{100}\sqrt{\frac{\rho_1}{\Delta p}}$	
	Gas	$\frac{Q_n}{5141}\sqrt{\frac{\rho_n . T_1}{\Delta p . p_2}}$	$\frac{2.Q_n}{5141.p_1}\sqrt{\rho_n . T_1}$
	Superh. steam	$\frac{Q_m}{100}\sqrt{\frac{v_2}{\Delta p}}$	$\frac{Q_m}{100}\sqrt{\frac{2v}{p_1}}$
	Sat. steam	$\frac{Q_m}{100}\sqrt{\frac{v_2 . x}{\Delta p}}$	$\frac{Q_m}{100}\sqrt{\frac{2v.x}{p_1}}$

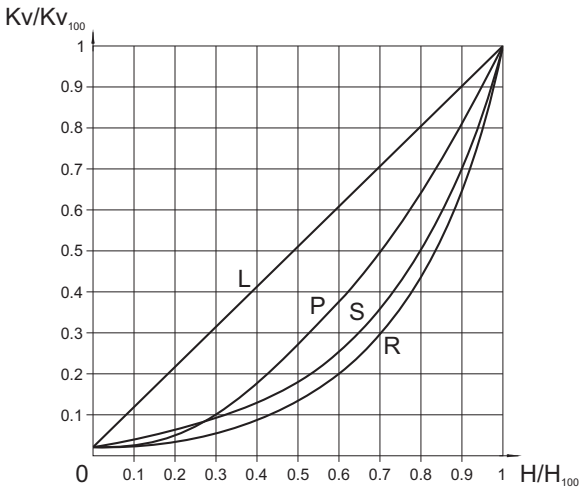
Above critical flow of vapours and gases

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).

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
$Kv/Kv_{100} = 0.0183 + 0.9817 . (H/H_{100})$

R - equal-percentage characteristic (4-percentage)
$Kv/Kv_{100} = 0.0183 . e^{(4 . H/H_{100})}$

P - parabolic characteristic
$Kv/Kv_{100} = 0.0183 + 0.9817 . (H/H_{100})^2$

S - LDM spline® characteristic
$Kv/Kv_{100} = 0.0183 + 0.269 . (H/H_{100}) - 0.380 . (H/H_{100})^2 + 1.096 . (H/H_{100})^3 - 0.194 . (H/H_{100})^4 - 0.265 . (H/H_{100})^5 + 0.443 . (H/H_{100})^6$

Dimensions and units

Marking	Unit	Name of dimension
Kv	$m^3.h^{-1}$	Flow coefficient under condition of units of flow
Kv_{100}	$m^3.h^{-1}$	Flow coefficient at nominal stroke
Kv_{min}	$m^3.h^{-1}$	Flow coefficient at minimal flow rate
Kvs	$m^3.h^{-1}$	Valve nominal flow coefficient
Q	$m^3.h^{-1}$	Flow rate in operating conditions (T_1, p_1)
Q_n	$Nm^3.h^{-1}$	Flow rate in normal conditions (0°C, 0.101 Mpa)
Q_m	$kg.h^{-1}$	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	$kg.m^{-3}$	Process medium density in operating conditions (T_1, p_1)
ρ_n	$kg.Nm^{-3}$	Gas density in normal conditions (0°C, 0.101 Mpa)
v_2	$m^3.kg^{-1}$	Specific volume of steam when temperature T_1 and pressure p_2
v	$m^3.kg^{-1}$	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

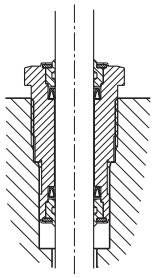
Principles for plug type selection

V-ported plugs should not to be used in above - critical differential pressures with inlet pressure $p_1 \geq 0{,}4$ MPa and for regulation of saturated steam. In these cases we recommend to use a perforated plug. The perforated plug should be also used always when cavitation may occur due to a high differential pressure value or valve ports erosion caused by high speed of process medium flow. If the parabolic plug is used (because of small Kvs) for above-critical differential pressures, it is necessary to close both plug and seat with a hard metal overlay, i.e. stellited trim.

Packing - DRSpack® (PTFE)

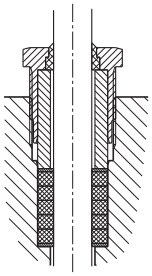
DRSpack® (Direct Radial Sealing Pack) is a packing with high tightness at both low and high operating pressure values.

It is the most used type of packing suitable for temperatures ranging from 0°C to 260°C. 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 and pH range: 0 to 14. Packing can be "sealed up" either by screwing the packing screw in or adding another sealing ring. In regard of intensive frictional forces, graphite packing is suitable for actuators with a sufficient linear force.



Rangeability

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

RV / UV 3x0

Control and shutt-off valves DN 15 - 400, PN 40 a 63

Description

Control valves RV / UV 320 (Ex) and RV / UV 330 (Ex) [(further only RV / UV 2x0 (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 values and leakage rates correspond to international standards.
Valves RV / UV 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 or for pneumatic actuators SPA Praha, Flowserve and LDM.

Application

The valves series RV / UV 3x0 are designed for applications in heating, ventilation, power generation and chemical processing industries. The valves RV / UV 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 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 81 of this catalogue.

Process media

Valves series RV (UV) 3x0 are designed for regulation (RV 3x0) and shut-off (UV 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 RV /UV 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 recomends to pipe a strainer in front of the valve into pipeline or ensure in any other way that process medium does not contain abrasive particles or impurities.

Installation

The valve must be piped the way so that the direction of medium flow will coincide with the arrows on the valve body.
The valve can be installed in any position except position when the actuator is under the valve body. When medium temperature exceeds 150°C, it is necessary to protect the actuator against glowing heat from the pipeline e.g. by the means of proper insulating of the pipeline and valve or by tilting the valve away from the heat radiation.
Detailed informations are given in the instruction for installation and service.

Technical data

Series	RV / UV 320 (Ex)	RV / UV 330 (Ex)
Type of valve	Two-way, single-seated, control (shut-off) valve	
Nominal size range	DN 15 to 400	
Nominal pressure	PN 63 (PN 40, 63 weld ended)	
Body material	Cast steel 1.0619 (GP240GH) 1.7357 (G17CrMo5-5)	Stainless steel 1.4581(GX5CrNiMoNb19-11-2)
Seat material : DN 15 - 50	1.4028 / 17 023.6	1.4571 / 17 348.4
DIN W.Nr./+ČSN DN 65 - 400	1.4027 / 42 2906.5	1.4571 / 17 348.4
Plug material : DN 15 - 65	1.4028 / 17 023.6	1.4581 / 42 2941.4
DIN W.Nr./+ČSN DN 80 - 150	1.4021 / 17 027.6	1.4581 / 42 2941.4
DN 200 - 400	1.4021 / 17 022.6	1.4581 / 42 2941.4
Operating temperature range	-10 to 550 °C	-10 to 550 °C
Face to face dimensions	Section 2 acc. to ČSN-EN 558, or serie 73 for welded connection acc. to ČSN EN 12982	
Connection flanges	Acc. to ČSN-EN 1092-1 (3/2008)	
Flange faces	Type B1 (raised-faced) or Type B2 (plain face) or Type F (female), or Type D (groove) acc. to ČSN EN 1092-1 (3/2008) For DN 15 to 200 (DN 250 to 400) 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	
Leakage rate	Class III. acc. to ČSN-EN 1349 (7/2010) (<0.1% Kvs) for c. valves with metal-metal seat sealing	
	Class IV. acc. to ČSN-EN 1349 (7/2010) (<0.01% Kvs) for shut off valve	
Leakage rate for Ex version	Leakage rate 6 acc. to ČSN 13 3060 (6/1979) - section 2	
Rangeability r	50 : 1	
Packing	DRSpack® (PTFE) t_{max} = 260 °C, Exp. graphite t_{max} = 550 °C	

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

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

For further information on actuating, see actuators´ catalogue sheets			Actuating (actuator)											MIDI 660 ST 0 ST 0.1		Auma Schiebel		Zepadyn 670 ST 1 Ex ST 0.1	
			Marking in valve specification No.											ENB EPK EPL		EA... EZ...		ENC EPJ EPL	
			Linear force											4 kN		5 kN		6,3 kN	
			Kvs [m³/h]											Δp_{max} packing		Δp_{max} packing		Δp_{max} packing	
DN	H	Ds	1	2	3	4	5	6	7	8	9			grafit	PTFE	grafit	PTFE	grafit	PTFE
15	16	3	---	---	---	---	---	---	---	0.16[3]	0.1...0.01[3]			6.3	6.3	6.3	6.3	6.3	6.3
		6	---	---	---	---	---	---	0.25[1]	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	2.5[1]	1.6[1]	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		15	4.0[1]	---	---	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
20		3	---	---	---	---	---	---	---	---	0.16...0.01[3]			6.3	6.3	6.3	6.3	6.3	6.3
		6	---	---	---	---	---	---	---	0,25[1]	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	1.0[1]	0,63[1]	0,4[1]	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	---	2.5[1]	1.6[1]	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		15	---	4.0[1]	---	---	---	---	---	---	---	---	---	5.5	6.3	6.3	6.3	6.3	6.3
		20	6.3[1]	---	---	---	---	---	---	---	---	---	---	2.62	6.3	6.3	6.3	6.3	6.3
25		3	---	---	---	---	---	---	---	---	---	0.16...0.01[3]		6.3	6.3	6.3	6.3	6.3	6.3
		6	---	---	---	---	---	---	---	---	0.25[1]	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	---	---	2.5[1]	1.6[1]	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		15	---	---	4.0[1]	---	---	---	---	---	---	---	---	5.5	6.3	6.3	6.3	6.3	6.3
		20	---	6.3[2]	---	---	---	---	---	---	---	---	---	2.62	6.3	5.56	6.3	6.3	6.3
		25	10.0	6.3[4]	4.0[4]	---	---	---	---	---	---	---	---	1.53	5.42	3.36	6.3	5.73	6.3
32		6	---	---	---	---	---	---	---	---	---	0.25[1]	---	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	---	---	---	2.5[1]	1.6[1]	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		15	---	---	---	4.0[1]	---	---	---	---	---	---	---	5.5	6.3	6.3	6.3	6.3	6.3
		20	---	---	6.3[2]	---	---	---	---	---	---	---	---	2.62	5.56	6.3	6.3	6.3	6.3
		32	16	10	6.3[4]	---	---	---	---	---	---	---	---	0.85	1.95	4.31	4.31	3.39	5.74
40		6	---	---	---	---	---	---	---	---	---	---	0.25[1]	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	---	---	---	---	2.5[1]	1.6[1]	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		15	---	---	---	---	4.0[2]	---	---	---	---	---	---	5.5	6.3	6.3	6.3	6.3	6.3
		20	---	---	---	6.3[2]	---	---	---	---	---	---	---	2.62	6.3	5.56	6.3	6.3	6.3
		40	25	16	10	6.3[4]	4.0[4]	---	---	---	---	---	---	0.49	2.0	1.2	2.71	2.12	3.64

1) parabolic plug
2) V-ported plug with linear characteristic, parabolic plug with equal-percentage and LDMspline®
3) valve with micro-throttling trim. Execution with Kvs = 0,16; 0,1; 0,063; 0,04; 0,025; 0,016; 0,01
4) V-ported plug with linear characterictic 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 Zepadyn 670 Modact MTR	Hand Wheel
			Marking in valve specification No.	EA... EZ... EPI	EA... EZ... EPI ENC EPD	Rxx
			Linear force	7.5 kN	10 kN	

			Kvs [m³/hour]											Δp_{max} packing		Δp_{max} packing		Δp_{max} packing	
DN	H	Ds	1	2	3	4	5	6	7	8	9			graphite	PTFE	graphite	PTFE	graphite	PTFE
15	16	3	---	---	---	---	---	---	---	0.16[3]	0.1...0.01[3]			6.3	6.3	6.3	6.3	6.3	6.3
		6	---	---	---	---	---	---	0.25[1]	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	2.5[1]	1.6[1]	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		15	4.0[1]	---	---	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
20		3	---	---	---	---	---	---	---	---	0.16...0.01[3]			6.3	6.3	6.3	6.3	6.3	6.3
		6	---	---	---	---	---	---	---	0,25[1]	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	1.0[1]	0,63[1]	0,4[1]	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	---	2.5[1]	1.6[1]	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		15	---	4.0[1]	---	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		20	6.3[1]	---	---	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
25		3	---	---	---	---	---	---	---	---	---	0.16...0.01[3]		6.3	6.3	6.3	6.3	6.3	6.3
		6	---	---	---	---	---	---	---	---	0.25[1]	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	---	---	2.5[1]	1.6[1]	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		15	---	---	4.0[1]	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		20	---	6.3[2]	---	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		25	10.0	6.3[4]	4.0[4]	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
32		6	---	---	---	---	---	---	---	---	---	0.25[1]	---	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	---	---	---	2.5[1]	1.6[1]	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		15	---	---	---	4.0[1]	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		20	---	---	6.3[2]	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		32	16	10	6.3[4]	---	---	---	---	---	---	---	---	4.72	6.3	6.3	6.3	6.3	6.3
40		6	---	---	---	---	---	---	---	---	---	---	0.25[1]	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	---	---	---	---	2.5[1]	1.6[1]	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		15	---	---	---	---	4.0[2]	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		20	---	---	---	6.3[2]	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		40	25	16	10	6.3[4]	4.0[4]	---	---	---	---	---	---	2.98	4.49	4.75	6.26	4.75	6.26

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

Note: The table continues on the next page

For further information on actuating, see actuators catalogue sheets			Actuating (actuator)					MIDI 660 ST 0 ST 0.1		Auma Schiebel ST 1 Ex ST 0.1 PTN 6		Auma Schiebel ST 1		Auma Schiebel ST 1		Zepadyn 670 Modact MTR	
			Marking in valve specification No.					ENB EPK EPL		EA... EZ...		ENC EPJ EPL		EA... EZ... EPI		EA... EZ... EPI		ENC EPD	
			Linear force					4 kN		5 kN		6.3 kN		7.5 kN		10 kN		10 kN	
			Kvs [m³ /hour]					Δp_{max} packing		Δp_{max} packing		Δp_{max} packing		Δp_{max} packing		Δp_{max} packing		Δp_{max} packing	
DN	H	Ds	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
50	20	50	40	25	16	10	6.3[4]	0.25	1.16	0.68	1.58	1.23	2.14	1.74	2.65	2.8	3.71	2.8	3.71
65		65	63	40	25	16	10	0.11	0.67	0.37	0.93	0.71	1.27	1.02	1.58	1.67	2.23	1.67	2.23
80	40	80	100	63	40	25	16	---	---	---	---	0.23	0.68	0.45	0.9	0.9	1.35	0.9	1.35
100		100	160	100	63	40	25	---	---	---	---	0.13	0.42	0.27	0.56	0.56	0.85	0.56	0.85
125		125	250	160	100	63	40	---	---	---	---	0.06	0.25	0.15	0.34	0.34	0.53	0.34	0.53
150		150	360	250	160	100	63	---	---	---	---	---	0.16	0.1	0.23	0.23	0.36	0.23	0.36

For further information on actuating, see actuators catalogue sheets *) max. DN 300			Actuating (actuator)					Modact Cont. Modact MTN Auma Schiebel		Modact MTR ST 2 Zepadyn 671*)		Auma Schiebel Zepadyn 671*) ST 2		Modact MTR Modact MTN Modact Cont. ST 2		Auma Schiebel		Hand Wheel	
			Marking in valve specification No.					EYA EYB EA... EZ...		EPD EPM ENE		EA... EZ... ERG		EPD EYA EYB EPM		EA... EZ...		Rxx	
			Linear force					15 kN		16 kN		20 kN		25 kN		32 kN			
			Kvs [m³ /hour]					Δp_{max} packing		Δp_{max} packing		Δp_{max} packing		Δp_{max} packing		Δp_{max} packing		Δp_{max} packing	
DN	H	Ds	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
50	20	50	40	25	16	10	6.3[4]	4.93	5.89	---	---	---	---	---	---	---	---	2.8	3.71
65		65	63	40	25	16	10	3.53	2.97	---	---	---	---	---	---	---	---	1.67	2.23
80	40	80	100	63	40	25	16	1.8	2.25	1.98	2.43	2.70	3.15	3.60	4.05	---	---	1.98	2.43
100		100	160	100	63	40	25	1.14	1.43	1.26	1.55	1.73	2.02	2.31	2.60	---	---	1.26	1.55
125		125	250	160	100	63	40	0.72	0.91	0.8	0.99	1.10	1.29	1.48	1.67	---	---	0.8	0.99
150		150	360	250	160	100	63	0.49	0.63	0.55	0.68	0.76	0.89	1.02	1.16	---	---	0.55	0.68
200	80	100	---	---	250	160	100	1.02	1.36	1.14	1.48	1.61	1.95	2.2	2.54	3.03	3.37	3.98	4.32
		150	---	400	---	---	---	0.43	0.59	0.49	0.64	0.7	0.85	0.97	1.12	1.34	1.49	1.77	1.92
		200	570	---	---	---	---	0.23	0.32	0.26	0.35	0.38	0.47	0.53	0.62	0.75	0.83	0.99	1.08
250	80	150	---	---	400	250	160	0.34	0.51	0.39	0.57	0.61	0.78	0.88	1.05	1.26	1.43	1.69	1.86
		200	---	630	---	---	---	0.17	0.27	0.21	0.30	0.33	0.43	0.48	0.58	0.69	0.79	0.94	1.04
		230	800	---	---	---	---	0.13	0.20	0.15	0.22	0.24	0.32	0.36	0.43	0.52	0.60	0.71	0.78
300	80	150	---	---	---	400	250	0.34	0.51	0.39	0.57	0.61	0.78	0.88	1.05	1.26	1.43	1.69	1.86
		200	---	---	630	---	---	0.17	0.27	0.21	0.30	0.33	0.43	0.48	0.58	0.69	0.79	0.94	1.04
		230	---	800	---	---	---	0.13	0.20	0.15	0.22	0.24	0.32	0.36	0.43	0.52	0.60	0.71	0.78
		250	1000	---	---	---	---	0.10	0.17	0.12	0.19	0.20	0.26	0.30	0.36	0.44	0.50	0.59	0.66
400	100	150	---	---	---	400	250	0.34	0.51	0.39	0.57	0.61	0.78	0.88	1.05	1.26	1.43	1.69	1.86
		200	---	---	630	---	---	0.17	0.27	0.21	0.30	0.33	0.43	0.48	0.58	0.69	0.79	0.94	1.04
		250	---	1000	---	---	---	0.10	0.17	0.12	0.19	0.20	0.26	0.30	0.36	0.44	0.50	0.59	0.66
		330	1600	---	---	---	---	0.05	0.09	0.06	0.10	0.11	0.14	0.16	0.20	0.24	0.28	0.33	0.37

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

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

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

For further information on actuating, see actuators´ catalogue sheets

			Pneumatic actuators											Flowserve PA 127				Flowserve PA 252		
			Specification No. of actuator											direct		indirect		direct		indirect
			Actuator function											BVCxAA		BFYxZA		BDYxAA		BFYxZA
			Spring range [bar]											1.5 - 2.7		2.0 - 4.8		1.0 - 2.4		2.0 - 4.8
			Spring setting [bar]											1.5 - 2.46		2.56 - 4.8		1.0 - 2.12		2.56 - 4.8
			Feeding pressure [bar]											6.0		6.0		4.8		5.8
			Marking in valve specification No.											PFF				PFA		
			Linear force											4.4 kN		3.2 kN		6.4 kN		6.4 kN
			Kvs [m³ /hour]											Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}
														packing		packing		packing		packing
DN	H	Ds	1	2	3	4	5	6	7	8	9			graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
15	16	3	---	---	---	---	---	---	---	0.16[3]	0.1...0.01[3]			6.3	6.3	1.9	6.3	6.3	6.3	6.3	6.3
		6	---	---	---	---	---	---	0.25[1]	---	---	---	---	6.3	6.3	1.9	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	---	---	---	---	6.3	6.3	1.9	6.3	6.3	6.3	6.3	6.3
		12	---	2.5[1]	1.6[1]	---	---	---	---	---	---	---	---	6.3	6.3	1.9	6.3	6.3	6.3	6.3	6.3
		15	4.0[1]	---	---	---	---	---	---	---	---	---	---	6.3	6.3	0.81	6.3	6.3	6.3	6.3	6.3
20		3	---	---	---	---	---	---	---	---	0.16...0.01[3]			6.3	6.3	1.9	6.3	6.3	6.3	6.3	6.3
		6	---	---	---	---	---	---	---	0,25[1]	---	---	---	6.3	6.3	1.9	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	1.0[1]	0,63[1]	0,4[1]	---	---	---	---	6.3	6.3	1.9	6.3	6.3	6.3	6.3	6.3
		12	---	---	2.5[1]	1.6[1]	---	---	---	---	---	---	---	6.3	6.3	1.9	6.3	6.3	6.3	6.3	6.3
		15	---	4.0[1]	---	---	---	---	---	---	---	---	---	6.3	6.3	0.81	6.3	6.3	6.3	6.3	6.3
		20	6.3[1]	---	---	---	---	---	---	---	---	---	---	3.79	6.3	0.26	6.3	6.3	6.3	6.3	6.3
25		3	---	---	---	---	---	---	---	---	---	0.16...0.01[3]		6.3	6.3	1.9	6.3	6.3	6.3	6.3	6.3
		6	---	---	---	---	---	---	---	---	0.25[1]	---	---	6.3	6.3	1.9	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	---	---	6.3	6.3	1.9	6.3	6.3	6.3	6.3	6.3
		12	---	---	---	2.5[1]	1.6[1]	---	---	---	---	---	---	6.3	6.3	1.9	6.3	6.3	6.3	6.3	6.3
		15	---	---	4.0[1]	---	---	---	---	---	---	---	---	6.3	6.3	0.81	6.3	6.3	6.3	6.3	6.3
		20	---	6.3[2]	---	---	---	---	---	---	---	---	---	3.79	6.3	0.26	6.3	6.3	6.3	6.3	6.3
		25	10.0	6.3[4]	4.0[4]	---	---	---	---	---	---	---	---	2.26	6.15	0.07	3.96	5.91	6.3	5.91	6.3
32		6	---	---	---	---	---	---	---	---	---	0.25[1]	---	6.3	6.3	1.9	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	---	6.3	6.3	1.9	6.3	6.3	6.3	6.3	6.3
		12	---	---	---	---	2.5[1]	1.6[1]	---	---	---	---	---	6.3	6.3	1.9	6.3	6.3	6.3	6.3	6.3
		15	---	---	---	4.0[1]	---	---	---	---	---	---	---	6.3	6.3	0.81	6.3	6.3	6.3	6.3	6.3
		20	---	---	6.3[2]	---	---	---	---	---	---	---	---	3.79	6.3	0.26	6.3	6.3	6.3	6.3	6.3
		32	16	10	6.3[4]	---	---	---	---	---	---	---	---	1.29	3.64	---	2.32	3.5	5.86	3.5	5.86
40		6	---	---	---	---	---	---	---	---	---	---	0.25[1]	6.3	6.3	1.9	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	6.3	6.3	1.9	6.3	6.3	6.3	6.3	6.3
		12	---	---	---	---	---	2.5[1]	1.6[1]	---	---	---	---	6.3	6.3	1.9	6.3	6.3	6.3	6.3	6.3
		15	---	---	---	---	4.0[2]	---	---	---	---	---	---	5.5	6.3	0.81	6.3	6.3	6.3	6.3	6.3
		20	---	---	---	6.3[2]	---	---	---	---	---	---	---	3.79	6.3	0.26	6.3	6.3	6.3	6.3	6.3
		40	25	16	10	6.3[4]	4.0[4]	---	---	---	---	---	---	0.77	2.29	---	1.43	2.19	3.71	2.19	3.71

1) parabolic plug
2) V-ported plug with linear characteristic, parabolic plug with equal-percentage and LDMspline®
3) valve with micro-throttling trim. Execution with Kvs = 0,16; 0,1; 0,063; 0,04; 0,025; 0,016; 0,01
4) V-ported plug with linear characterictic 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				Flowserve PB 502				Flowserve PB 700			
			Specification No. of actuator					direct		indirect		direct		indirect		direct		indirect		direct		indirect	
			Actuator function					BDYxAA		BFYxZA		BBLxAA		BFYxZA		BBLxAB		BFYxZB		BBLxAB		BFYxZB	
			Spring range [bar]					1.0 - 2.4		2.0 - 4.8		0.5 - 1.9		2.0 - 4.8		0.5 - 1.9		2.0 - 4.8		0.5 - 1.9		2.0 - 4.8	
			Spring setting [bar]					1.0 - 2.4		2.0 - 4.8		0.5 - 1.9		2.0 - 4.8		0.5 - 1.9		2.0 - 4.8		0.5 - 1.9		2.0 - 4.8	
			Feeding pressure [bar]					6.0		5.8		5.3		5.3		4.1		5.4		4.1		5.3	
			Marking in valve spec.					PFA				PFB				PFB				PFC			
			Linear force					8.5 kN		5 kN		10 kN		10 kN		10 kN		10 kN		14 kN		14 kN	
			Kvs [m³ /hour]					Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}	
								packing		packing		packing		packing		packing		packing		packing		packing	
DN	H	Ds	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
50	20	50	40	25	16	10	6.3[4]	2.16	3.07	0.68	1.58	2.8	3.71	2.8	3.71	---	---	---	---	---	---	---	---
65		65	63	40	25	16	10	1.28	1.84	0.37	0.93	1.67	2.23	1.67	2.23	---	---	---	---	---	---	---	---
80	40	80	100	63	40	25	16	---	---	---	---	---	---	---	---	0.9	1.35	0.9	1.35	1.62	2.07	1.62	2.07
100		100	160	100	63	40	25	---	---	---	---	---	---	---	---	0.56	0.85	0.56	0.85	1.03	1.32	1.03	1.32
125		125	250	160	100	63	40	---	---	---	---	---	---	---	---	0.34	0.53	0.34	0.53	0.65	0.84	0.65	0.84
150		150	360	250	160	100	63	---	---	---	---	---	---	---	---	0.23	0.36	0.23	0.36	0.44	0.57	0.44	0.57

4) V-ported plug with linear characterictic only

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

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

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	
Specification No. of actuator		direct	indirect	direct	indirect
Actuator function		52661.x11x	52661.x22x	5222x041...	5222x092...
Spring range	[bar]	0.2 - 1.0	0.4 - 2.0	0.8 - 1.55	1.6 - 3.0
Spring setting	[bar]	0.6 - 1.4	0.8 - 2.4	0.8 - 1.55	1.6 - 3.0
Feeding pressure	[bar]	3.2	3.2	3.2	3.2
Marking in valve spec.		PJA		PJE	
Linear force		4.5 kN	2 kN	6.4 kN	6.4 kN
		Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}
		packing	packing	packing	packing

DN	H	Ds	Kvs [m³ /hour] 1	2	3	4	5	6	7	8	9			graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
15	16	3	---	---	---	---	---	---	---	0.16[3]	0.1...0.01[3]			6.3	6.3	---	6.3	6.3	6.3	6.3	6.3
		6	---	---	---	---	---	---	0.25[1]	---	---	---	---	6.3	6.3	---	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	---	---	---	---	6.3	6.3	---	6.3	6.3	6.3	6.3	6.3
		12	---	2.5[1]	1.6[1]	---	---	---	---	---	---	---	---	6.3	6.3	---	6.3	6.3	6.3	6.3	6.3
		15	4.0[1]	---	---	---	---	---	---	---	---	---	---	6.3	6.3	---	6.26	6.3	6.3	6.3	6.3
20		3	---	---	---	---	---	---	---	---	0.16...0.01[3]			6.3	6.3	---	6.3	6.3	6.3	6.3	6.3
		6	---	---	---	---	---	---	---	0,25[1]	---	---	---	6.3	6.3	---	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	1.0[1]	0,63[1]	0,4[1]	---	---	---	---	6.3	6.3	---	6.3	6.3	6.3	6.3	6.3
		12	---	---	2.5[1]	1.6[1]	---	---	---	---	---	---	---	6.3	6.3	---	6.3	6.3	6.3	6.3	6.3
		15	---	4.0[1]	---	---	---	---	---	---	---	---	---	6.3	6.3	---	6.26	6.3	6.3	6.3	6.3
		20	6.3[1]	---	---	---	---	---	---	---	---	---	---	4.09	6.3	---	3.0	6.3	6.3	6.3	6.3
25		3	---	---	---	---	---	---	---	---	---	0.16...0.01[3]		6.3	6.3	---	6.3	6.3	6.3	6.3	6.3
		6	---	---	---	---	---	---	---	---	0.25[1]	---	---	6.3	6.3	---	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	---	---	6.3	6.3	---	6.3	6.3	6.3	6.3	6.3
		12	---	---	---	2.5[1]	1.6[1]	---	---	---	---	---	---	6.3	6.3	---	6.3	6.3	6.3	6.3	6.3
		15	---	---	4.0[1]	---	---	---	---	---	---	---	---	6.3	6.3	---	6.26	6.3	6.3	6.3	6.3
		20	---	6.3[2]	---	---	---	---	---	---	---	---	---	4.09	6.3	---	3.0	6.3	6.3	6.3	6.3
		25	10.0	6.3[4]	4.0[4]	---	---	---	---	---	---	---	---	2.44	4.51	---	1.77	5.91	6.3	6.3	6.3
32		6	---	---	---	---	---	---	---	---	---	0.25[1]	---	6.3	6.3	---	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	---	6.3	6.3	---	6.3	6.3	6.3	6.3	6.3
		12	---	---	---	---	2.5[1]	1.6[1]	---	---	---	---	---	6.3	6.3	---	6.3	6.3	6.3	6.3	6.3
		15	---	---	---	4.0[1]	---	---	---	---	---	---	---	6.3	6.3	---	6.26	6.3	6.3	6.3	6.3
		20	---	---	6.3[2]	---	---	---	---	---	---	---	---	4.09	6.3	---	3.0	6.3	6.3	6.3	6.3
		32	16	10	6.3[4]	---	---	---	---	---	---	---	---	1.40	2.65	---	0.99	3.5	5.86	3.5	5.86
40		6	---	---	---	---	---	---	---	---	---	---	0.25[1]	6.3	6.3	---	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	6.3	6.3	---	6.3	6.3	6.3	6.3	6.3
		12	---	---	---	---	---	2.5[1]	1.6[1]	---	---	---	---	6.3	6.3	---	6.3	6.3	6.3	6.3	6.3
		15	---	---	---	---	4.0[2]	---	---	---	---	---	---	6.3	6.3	---	6.26	6.3	6.3	6.3	6.3
		20	---	---	---	6.3[2]	---	---	---	---	---	---	---	4.09	6.3	---	3.0	6.3	6.3	6.3	6.3
		40	25	16	10	6.3[4]	4.0[4]	---	---	---	---	---	---	0.84	1.65	---	0.58	2.19	3.71	2.19	3.71
50	20	50	40	25	16	10	6.3[4]	---	---	---	---	---	---	0.46	0.94	---	0.31	1.27	2.18	1.27	2.18
65		65	63	40	25	16	10	---	---	---	---	---	---	0.24	0.54	---	0.15	0.74	1.29	0.74	1.29

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

For further information on actuating, see actuators catalogue sheets

*) TANDEM execution

Pneumatic actuators		SPA Praha 5222			
Specification No. of actuator		direct	indirect	direct	indirect
Actuator function		5222x041...	5222x092...	5222x151...*)	5222x192...*)
Spring range	[bar]	0.8 - 1.55	1.6 - 3.0	1.0 - 2.0	1.6 - 3.0
Spring setting	[bar]	0.8 - 1.55	1.6 - 3.0	1.0 - 2.0	1.6 - 3.0
Feeding pressure	[bar]	3.2	3.2	3.2	3.2
Marking in valve spec.		PJE			
Linear force		6.4 kN	6.4 kN	8.8 kN	12.5 kN
		Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}
		packing	packing	packing	packing

DN	H	Ds	Kvs [m³ /hour] 1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
80	40	80	100	63	40	25	16	0.25	0.7	0.25	0.7	0.68	1.13	1.35	1.8
100		100	160	100	63	40	25	0.14	0.43	0.14	0.43	0.42	0.71	0.85	1.14
125		125	250	160	100	63	40	0.07	0.26	0.07	0.26	0.25	0.44	0.53	0.72
150		150	360	250	160	100	63	---	0.17	---	0.17	0.16	0.3	0.36	0.49

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	
Specification No. of actuator		direct	indirect	direct	indirect
Actuator function		DA16 40-200	RA16 250-350	DA16 250-350	RA16 140-230
Spring range	[bar]	0.4 - 2.0	2.5 - 3.5	0.4 - 2.0	1.4 - 2.3
Spring setting	[bar]	0.4 - 2.0	2.5 - 3.5	0.4 - 2.0	1.4 - 2.3
Feeding pressure	[bar]	4.0	4.0	4.0	4.0
Marking in valve spec.		PVA		PVB	
Linear force		4.6 kN	5.75 kN	7.7 kN	5.39 kN
Kvs [m³ /hour]		Δp_{max} packing	Δp_{max} packing	Δp_{max} packing	Δp_{max} packing

DN	H	Ds	1	2	3	4	5	6	7	8	9	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
15	16	3	---	---	---	---	---	---	---	0.16[3]	0.1...0.01[3]	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		6	---	---	---	---	---	---	0.25[1]	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	2.5[1]	1.6[1]	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		15	4.0[1]	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
20		3	---	---	---	---	---	---	---	---	0.16...0.01[3]	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		6	---	---	---	---	---	---	---	0,25[1]	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	1.0[1]	0,63[1]	0,4[1]	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	---	2.5[1]	1.6[1]	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		15	---	4.0[1]	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		20	6.3[1]	---	---	---	---	---	---	---	---	4.38	6.3	6.3	6.3	6.3	6.3	6.3	6.3
25		3	---	---	---	---	---	---	---	---	---	0.16...0.01[3]	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		6	---	---	---	---	---	---	---	---	0.25[1]	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	---	---	2.5[1]	1.6[1]	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		15	---	---	4.0[1]	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3
		20	---	6.3[2]	---	---	---	---	---	---	---	---	---	4.38	6.3	6.3	6.3	6.3	6.3
		25	10.0	6.3[4]	4.0[4]	---	---	---	---	---	---	---	---	2.63	6.3	4.73	6.3	6.3	6.3	4.07	6.3
32		6	---	---	---	---	---	---	---	---	---	0.25[1]	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	---	---	---	2.5[1]	1.6[1]	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		15	---	---	---	4.0[1]	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		20	---	---	6.3[2]	---	---	---	---	---	---	---	---	4.38	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		32	16	10	6.3[4]	---	---	---	---	---	---	---	---	1.51	3.87	2.78	5.14	4.94	6.3	2.38	4.74
40		6	---	---	---	---	---	---	---	---	---	---	0.25[1]	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	---	---	---	---	2.5[1]	1.6[1]	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		15	---	---	---	---	4.0[2]	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		20	---	---	---	6.3[2]	---	---	---	---	---	---	---	4.38	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		40	25	16	10	6.3[4]	4.0[4]	---	---	---	---	---	---	0.91	2.43	1.73	3.25	3.12	4.63	1.48	2.99

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

For further information on actuating, see actuators catalogue sheets

Pneumatic actuators		LDM PP 230		LDM PP 385		LDM PP 700	
Specification No. of actuator		direct	indirect	direct	indirect	direct	indirect
Actuator function		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	2.3 - 3.2	0.6 - 1.0	2.42-3.45	0.5 - 1.1	1.45 - 2.4
Spring setting	[bar]	0.6 - 1.0	2.3 - 3.2	0.6 - 1.0	2.42-3.45	0.5 - 1.1	1.45 - 2.4
Feeding pressure	[bar]	4.0	4.0	4.0	4.0	3.2	4.0
Marking in valve spec.		PVA		PVB		PVC	
Linear force		6.9 kN	5.29 kN	11.55 kN	9.32 kN	14.7 kN	10.15 kN
Kvs [m³ /hour]		Δp_{max} packing	Δp_{max} packing	Δp_{max} packing	Δp_{max} packing	Δp_{max} packing	Δp_{max} packing

DN	H	Ds	1	2	3	4		graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE				
50	20	50	40	25	16	10	6.3[4]	1.48	2.39	0.80	1.71	3.46	4.37	2.51	3.42	4.80	5.75	2.87	3.77
65		65	63	40	25	16	10	0.87	1.42	0.45	1.00	2.08	2.63	1.50	2.05	2.90	3.45	1.71	2.27

4) válcová kuželka s výřezy pouze s lineární charakteristikou

Note: The table continues on the next page

For further information on actuating, see actuators catalogue sheets

Pneumatic actuators			LDM PP 385		LDM PP 700	
Specification No. of actuator			direct	indirect	direct	indirect
Actuator function			DA40 50-150	RA40 142-250	DA40 50-100	RA40 225-325
Spring range	[bar]		0.5 - 1.5	1.42 - 2.5	0.5 - 1.0	2.25-3.25
Spring setting	[bar]		0.5 - 1.5	1.42 - 2.5	0.5 - 1.0	2.25-3.25
Feeding pressure	[bar]		4.0	4.0	4.0	4.0
Marking in valve spec.			PVB		PVC	
Linear force			9.63 kN	5.47 kN	21 kN	15.75 kN
Kvs [m³ /hour]			Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}
			packing	packing	packing	packing

DN	H	Ds	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
80	40	80	100	63	40	25	16	0.83	1.28	---	0.53	2.88	3.33	1.93	2.38
100		100	160	100	63	40	25	0.52	0.81	---	0.32	1.84	2.13	1.23	1.52
125		125	250	160	100	63	40	0.32	0.50	---	0.19	1.18	1.36	0.78	0.97
150		150	360	250	160	100	63	0.21	0.34	---	0.12	0.81	0.94	0.53	0.67

For further information on actuating, see actuators catalogue sheets

Pneumatic actuators			LDM PP 1400			
Specification No. of actuator			direct	indirect	direct	indirect
Actuator function			DAXX 50-150	RAXX 150-310	DAXX 50-150	RAXX 220-350
Spring range	[bar]		0.5 - 1.5	1.5 - 3.1	0.5 - 1.5	2.2 - 3.5
Spring setting	[bar]		0.5 - 1.5	1.5 - 3.1	0.5 - 1.5	2.2 - 3.5
Feeding pressure	[bar]		3.0	4.0	3.7	4.0
Marking in valve spec.			PVD			
Linear force			21,0 kN	21,0 kN	30,8 kN	30,8 kN
Kvs [m³ /hour]			Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}
			packing	packing	packing	packing

DN	H	Ds	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
200	80	100	---	---	250	160	100	1.73	2.07	1.73	2.07	2.89	3.23	2.89	3.23
		150	---	400	---	---	---	0.75	0.91	0.75	0.91	1.28	1.43	1.28	1.43
		200	570	---	---	---	---	0.41	0.50	0.41	0.50	0.71	0.80	0.71	0.80
250	80	150	---	---	400	250	160	0.66	0.84	0.66	0.84	1.19	1.37	1.19	1.37
		200	---	630	---	---	---	0.36	0.46	0.36	0.46	0.66	0.76	0.66	0.76
		230	800	---	---	---	---	0.26	0.34	0.26	0.34	0.49	0.57	0.49	0.57
300	80	150	---	---	---	400	250	0.66	0.84	0.66	0.84	1.19	1.37	1.19	1.37
		200	---	---	630	---	---	0.36	0.46	0.36	0.46	0.66	0.76	0.66	0.76
		230	---	800	---	---	---	0.26	0.34	0.26	0.34	0.49	0.57	0.49	0.57
		250	1000	---	---	---	---	0.22	0.28	0.22	0.28	0.41	0.48	0.41	0.48
400	100	150	---	---	---	400	250	0.66	0.84	0.66	0.84	1.19	1.37	1.19	1.37
		200	---	---	630	---	---	0.36	0.46	0.36	0.46	0.66	0.76	0.66	0.76
		250	---	1000	---	---	---	0.22	0.28	0.22	0.28	0.41	0.48	0.41	0.48
		330	1600	---	---	---	---	0.12	0.16	0.12	0.16	0.23	0.27	0.23	0.27

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

Δp_{max} value is the valve max. differential pressure when open - close function is always guaranteed. Differential pressure must not exceed 4,0 Mpa for valves PN 40.

In regard of service life of seat and plug, permanent differential pressure of the valves with perforated plug is limited to max. 4,0 MPa.

For further information on actuating, see actuators catalogue sheets			Actuator (actuating)	MIDI 660 ST 0 ST 0.1		Auma Schiebel		Zepadyn 670 ST 1 Ex ST 0.1		Auma Schiebel ST 1		Auma Schiebel ST 1		Zepadyn 670 Modact MTR	
			Marking in valve specification No.	ENB EPK EPL		EA... EZ...		ENC EPJ EPL		EA... EZ... EPI		EA... EZ... EPI		ENC EPD	
			Linear force	4 kN		5 kN		6.3 kN		7.5 kN		10 kN		10 kN	
			Kvs [m³ /hour]					Δp_{max} packing		Δp_{max} packing		Δp_{max} packing		Δp_{max} packing	
DN	H	Ds	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
25	16	25	---	6.3	4.0	2.5[5]	1.6[5]	1.53	5.42	3.36	6.3	5.73	6.3	---	---	---	---	---	---
32		32	---	10	6.3	4.0	2.5[5]	0.85	3.2	1.95	4.31	3.39	5.74	---	---	---	---	---	---
40		40	---	16	10	---	---	0.49	2.0	1.2	2.71	2.12	3.64	---	---	---	---	---	---
50	20	50	---	25	16	---	---	0.25	1.16	0.68	1.58	1.23	2.14	1.74	2.65	2.8	3.71	2.8	3.71
65		65	---	40	25	---	---	0.11	0.67	0.37	0.93	0.71	1.27	1.02	1.58	1.67	2.23	1.67	2.23
80	40	80	---	63	40	---	---	---	---	---	---	0.23	0.68	0.45	0.9	0.9	1.35	0.9	1.35
100		100	---	100	63	---	---	---	---	---	---	0.13	0.42	0.27	0.56	0.56	0.85	0.56	0.85
125		125	---	160	100	---	---	---	---	---	---	0.06	0.25	0.15	0.34	0.34	0.53	0.34	0.53
150		150	---	250	160	---	---	---	---	---	---	---	0.16	0.1	0.23	0.23	0.36	0.23	0.36

For further information on actuating, see actuators catalogue sheets *) max. DN 300			Ovládání (pohon)	Modact Cont. Modact MTN Auma Schiebel		Modact MTR ST 2 Zepadyn 671*)		Auma Schiebel Zepadyn 671*) ST 2		Modact MTR Modact MTN Modact Cont. ST 2		Auma Schiebel		Ruční kolo	
			Marking in valve specification No.	EYA EYB EA... EZ...		EPD EPM ENE		EA... EZ... ENE EPM		EPD EYA EYB EPM		EA... EZ...		Rxx	
			Linear force	15 kN		16 kN		20 kN		25 kN		32 kN			
			Kvs [m³ /hour]					Δp_{max} packing		Δp_{max} packing		Δp_{max} packing		Δp_{max} packing	
DN	H	Ds	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
25	16	25	---	6.3	4.0	2.5[5]	1.6[5]	---	---	---	---	---	---	---	---	---	---	6.3	6.3
32		32	---	10	6.3	4.0	2.5[5]	---	---	---	---	---	---	---	---	---	---	6.3	6.3
40		40	---	16	10	6.3	4.0	---	---	---	---	---	---	---	---	---	---	4.75	6.26
50	20	50	---	25	16	10	6.3	4.93	5.89	---	---	---	---	---	---	---	---	2.8	3.71
65		65	---	40	25	16	10	3.53	2.97	---	---	---	---	---	---	---	---	1.67	2.23
80	40	80	---	63	40	25	16	1.8	2.25	1.98	2.43	2.70	3.15	3.60	4.05	---	---	1.98	2.43
100		100	---	100	63	40	25	1.14	1.43	1.26	1.55	1.73	2.02	2.31	2.60	---	---	1.26	1.55
125		125	---	160	100	63	40	0.72	0.91	0.8	0.99	1.10	1.29	1.48	1.67	---	---	0.8	0.99
150		150	---	250	160	100	63	0.49	0.63	0.55	0.68	0.76	0.89	1.02	1.16	---	---	0.55	0.68
200	80	200	---	400	250	160	100	0.23	0.32	0.26	0.35	0.38	0.47	0.53	0.62	0.75	0.83	0.99	1.08
250		230	---	630	400	250	160	0.13	0.20	0.15	0.22	0.24	0.32	0.36	0.43	0.52	0.60	0.71	0.78
300		250	---	800	630	400	250	0.10	0.17	0.12	0.19	0.20	0.26	0.30	0.36	0.44	0.50	0.59	0.66
400	100	330	---	1000	630	400	250	0.05	0.09	0.06	0.10	0.11	0.14	0.16	0.20	0.24	0.28	0.33	0.37

5) linear characteristic only

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

Δp_{max} value is the valve max. differential pressure when open - close function is always guaranteed. Differential pressure must not exceed 4,0 Mpa for valves PN 40.

In regard of service life of seat and plug, permanent differential pressure of the valves with perforated plug is limited to max. 4,0 MPa.

For further information on actuating, see actuators catalogue sheets								Pneumatic actuators	Flowserve PA 252				Flowserve PB 502	
								Spec. No. of actuator	direct	indirect	direct	indirect	direct	indirect
								Actuator function	BVCxAA	BVCxZA	BVCxAA	BVCxZA	BVCxAA	BVCxZA
								Spring range [bar]	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7
								Spring setting [bar]	1.5 - 2.46	1.75 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7
								Feeding pressure [bar]	4.5	4.5	4.5	4.5	4.5	4.5
								Marking in valve spec.	PFA				PFB	
								Linear force	4.3 kN	4.3 kN	3.7 kN	3.7 kN	7.5 kN	7.5 kN
			Kvs [m³ /hour]						Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}
									packing	packing	packing	packing	packing	packing
DN	H	Ds	1	2	3	4	5		graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
25	16	25	---	6.3[5]	4.0[5]	2.5[5]	1.6[5]		0.77 1.55	0.77 1.55	--- ---	--- ---	--- ---	--- ---
32		32	---	10	6.3[5]	4.0[5]	2.5[5]		0.46 0.94	0.46 0.94	--- ---	--- ---	--- ---	--- ---
40		40	---	16	10	6.3[5]	4.0[5]		0.3 0.6	0.3 0.6	--- ---	--- ---	--- ---	--- ---
50	20	50	---	25	16	10	6.3[5]		--- ---	--- ---	0.13 0.31	0.13 0.31	0.45 0.63	0.45 0.63
65		65	---	40	25	16	10		--- ---	--- ---	0.08 0.19	0.08 0.19	0.28 0.39	0.28 0.39

5) linear characteristic only

For further information on actuating, see actuators catalogue sheets								Pneumatic actuators	Flowserve PB 502		Flowserve PB 700	
								Spec. No. of actuator	direct	indirect	direct	indirect
								Actuator function	BVCxAB	BVCxZB	BVCxAB	BVCxZB
								Spring range [bar]	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7	1.5 - 2.7
								Spring setting [bar]	1.5 - 2.7	1.75 - 2.7	1.5 - 2.7	1.5 - 2.7
								Feeding pressure [bar]	4.5	4.5	4.5	4.5
								Marking in valve spec.	PFB		PFC	
								Linear force	7.5 kN	7.5 kN	10.5 kN	10.5 kN
			Kvs [m³ /hour]						Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}
									packing	packing	packing	packing
DN	H	Ds	1	2	3	4	5		graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
80	40	80	---	63	40	25	16		0.18 0.27	0.18 0.27	0.28 0.37	0.28 0.37
100		100	---	100	63	40	25		0.11 0.17	0.11 0.17	0.18 0.24	0.18 0.24
125		125	---	160	100	63	40		0.07 0.11	0.07 0.11	0.12 0.16	0.12 0.16
150		150	---	250	160	100	63		0.05 0.08	0.05 0.08	0.08 0.11	0.08 0.11

For further information on actuating, see actuators catalogue sheets								Pneumatic actuators	Flowserve PO 1502				Flowserve PO 3002	
								Spec. No. of actuator	direct	indirect	direct	indirect	direct	indirect
								Actuator function	BVCxAD	BVCxZD	BFSxAD	BFSxZD	BEPxAD	BEPxZD
								Spring range [bar]	1.5 - 2.7	1.5 - 2.7	2.0 - 3.5	2.0 - 3.5	1.3 - 2.1	1.3 - 2.1
								Spring setting [bar]	1.5 - 2.7	1.5 - 2.7	2.0 - 3.5	2.0 - 3.5	1.3 - 2.1	1.3 - 2.1
								Feeding pressure [bar]	4.5	4.5	5.5	5.5	3.4	3.4
								Marking in valve spec.	PFD				PFE	
								Linear force	22.5 kN	22.5 kN	30 kN	30 kN	39 kN	39 kN
			Kvs [m³ /h]						Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}
									packing	packing	packing	packing	packing	packing
DN	H	Ds	1	2	3	4	5		graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
200	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

Note: The table continues on the next page

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

For further information on actuating, see actuators catalogue sheets

*) TANDEM execution

								Pneumatic actuators	SPA Praha 5222			
								Spec. No. of actuator	direct	indirect	direct	indirect
								Actuator function	5222x051...	5222x052...	5222x151...*)	5222x152...*)
								Spring range [bar]	1.0 - 2.0	1.0 - 2.0	1.0 - 2.0	1.0 - 2.0
								Spring setting [bar]	1.0 - 2.0	1.0 - 2.0	1.0 - 2.0	1.0 - 2.0
								Feeding pressure [bar]	3.2	3.2	3.2	3.2
								Marking in valve spec.	PJE			
								Linear force	4 kN	4 kN	8 kN	8 kN
			Kvs [m³ /hour]					Δp_{max} packing	Δp_{max} packing		Δp_{max} packing	Δp_{max} packing
DN	H	Ds	1	2	3	4	5	graphite PTFE	graphite PTFE		graphite PTFE	graphite PTFE
25	16	25	---	6.3[5]	4.0[5]	2.5[5]	1.6[5]	0.66 1.44	0.66 1.44		2.12 2.90	2.12 2.90
32		32	---	10	6.3[5]	4.0[5]	2.5[5]	0.4 0.87	0.4 0.87		1.28 1.75	1.28 1.75
40		40	---	16	10	6.3[5]	4.0[5]	0.26 0.56	0.26 0.56		0.82 1.13	0.82 1.13
50	20	50	---	25	16	10	6.3[5]	0.15 0.33	0.15 0.33		0.49 0.67	0.49 0.67
65		65	---	40	25	16	10	0.09 0.2	0.09 0.2		0.30 0.41	0.30 0.41
80	40	80	---	63	40	25	16	0.05 0.14	0.05 0.14		0.19 0.28	0.19 0.28
100		100	---	100	63	40	25	--- 0.09	--- 0.09		0.13 0.18	0.13 0.18
125		125	---	160	100	63	40	--- 0.06	--- 0.06		0.08 0.12	0.08 0.12
150		150	---	250	160	100	63	--- ---	--- ---		0.06 0.08	0.06 0.08

5) linear characteristic only

For further information on actuating, see actuators catalogue sheets

*) TANDEM execution

								Pneumatic actuators	LDM PP 230		LDM PP 385	
								Spec. No. of actuator	direct	indirect	direct	indirect
								Actuator function	DA16 140-230	RA16 140-230	DA16 140-230	RA16 140-230
								Spring range [bar]	1.4 - 2.3	1.4 - 2.3	1.4 - 2.3	1.4 - 2.3
								Spring setting [bar]	1.4 - 2.3	1.4 - 2.3	1.4 - 2.3	1.4 - 2.3
								Feeding pressure [bar]	4.0	4.0	4.0	4.0
								Marking in valve spec.	PVA		PVB	
								Linear force	3.9 kN	3.2 kN	6.54 kN	5.39 kN
			Kvs [m³ /hour]					Δp_{max} packing	Δp_{max} packing		Δp_{max} packing	Δp_{max} packing
DN	H	Ds	1	2	3	4	5	graphite PTFE	graphite PTFE		graphite PTFE	graphite PTFE
25	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
32		32	---	10	6.3	4.0	2.5[5]	0.38 0.85	0.22 0.69		0.96 1.43	0.71 1.18
40		40	---	16	10	6.3	4.0	0.24 0.54	0.14 0.44		0.62 0.92	0.45 0.76

5) pouze s lineární charakteristikou

For further information on actuating, see actuators catalogue sheets

								Pneumatic actuators	LDM PP 230		LDM PP 385		LDM PP 700	
								Spec. No. of actuator	direct	indirect	direct	indirect	direct	indirect
								Actuator function	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	1.4 - 2.4	1.42-2.35	1.42-2.35	1.45 - 2.4	1.45 - 2.4
								Spring setting [bar]	1.4 - 2.4	1.4 - 2.4	1.42-2.35	1.42-2.35	1.45 - 2.4	1.45 - 2.4
								Feeding pressure [bar]	4.0	4.0	4.0	4.0	4.0	4.0
								Marking in valve spec.	PVA		PVB		PVC	
								Linear force	3.68 kN	3.22 kN	6.35 kN	5.47 kN	11.2 kN	10.15 kN
			Kvs [m³ /hour]					Δp_{max} packing	Δp_{max} packing		Δp_{max} packing	Δp_{max} packing	Δp_{max} packing	Δp_{max} packing
DN	H	Ds	1	2	3	4	5	graphite PTFE	graphite PTFE		graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
50	20	50	---	25	16	10	6.3	0.13 0.31	0.09 0.27		0.35 0.53	0.28 0.46	0.77 0.95	0.68 0.86
65		65	---	40	25	16	10	0.08 0.19	0.05 0.16		0.22 0.33	0.17 0.28	0.47 0.58	0.41 0.52

For further information on actuating, see actuators catalogue sheets

*) TANDEM execution

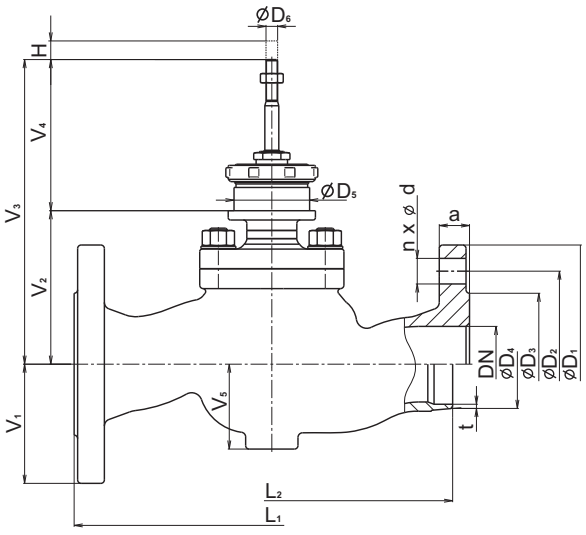
								Pneumatic actuators	LDM PP 385		LDM PP 700		LDM PP 1400	
								Spec. No. of actuator	direct	indirect	direct	indirect	direct	indirect
								Actuator function	DA40 142-250	RA40 142-250	DA40 140-230	RA40 140-230	DA80 150-310	RA80 150-310
								Spring range [bar]	1.42 - 2.5	1.42 - 2.5	1.4 - 2.3	1.4 - 2.3	1.5 - 3.1	1.5 - 3.1
								Spring setting [bar]	1.42 - 2.5	1.42 - 2.5	1.4 - 2.3	1.4 - 2.3	1.5 - 3.1	1.5 - 3.1
								Feeding pressure [bar]	4.0	4.0	4.0	4.0	4.6	4.6
								Marking in valve spec.	PVB		PVC		PVD	
								Linear force	5.77 kN	5.47 kN	11.9 kN	9.8 kN	21.0 kN	21.0 kN
			Kvs [m³ /h]						Δp_{max}		Δp_{max}		Δp_{max}	
									packing		packing		packing	
DN	H	Ds	1	2	3	4	5		graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
80	40	80	---	63	40	25	16		0.11	0.23	0.10	0.19	0.33	0.42	0.26	0.35	---	---	---	---
100		100	---	100	63	40	25		0.07	0.13	0.07	0.13	0.22	0.28	0.17	0.23	---	---	---	---
125		125	---	160	100	63	40		0.05	0.09	0.04	0.08	0.14	0.18	0.11	0.15	---	---	---	---
150		150	---	250	160	100	63		0.03	0.06	0.03	0.06	0.10	0.13	0.08	0.10	---	---	---	---
200	80	200	---	400	250	160	100		---	---	---	---	---	---	---	---	0.11	0.13	0.11	0.13

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

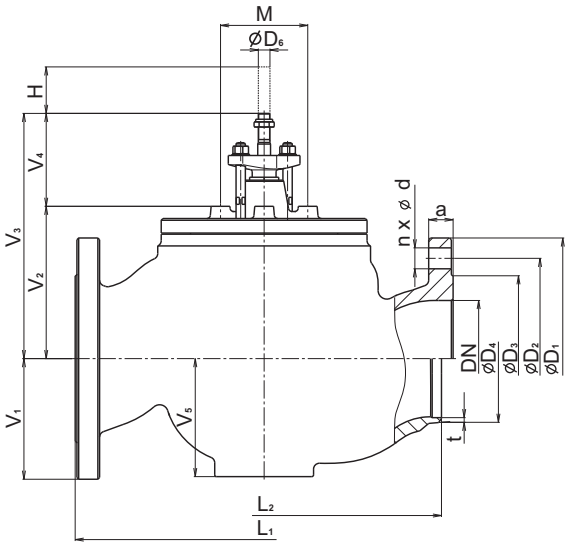
Dimensions and weights of valves RV / UV 3x0 (Ex) with flanged and welded connection, DN 15 - 400

DN	H	L_1	V_1	V_2	V_3	V_4	$ØD_1$	$ØD_2$	$ØD_3$	a	d	n	$ØD_5$	M	$ØD_6$	L_2	V_5	$ØD_4$	m_1	m_2
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm	mm	mm	mm	mm	mm	kg	kg
15	16	210	52.5	90	220	130	105	75	45	20	14	4	65	---	M10x1	203	47	22	7	4.5
20		230	65				130	90	58	22	18					206		28	8.5	4.5
25		230	70	100	230		140	100	68	24						210	52	35	10.5	5
32		260	77.5				155	110	78	24	22					260	49	44	12.5	6.5
40		260	85				170	125	88	26						251	52	50	15	7.5
50	20	300	90	132	262		180	135	102	26						286	73	62	20	12
65		340	102.5				205	160	122	26		8				311		77	25	15
80	40	380	107.5	164	294		215	170	138	28					M16x1.5	337	105	91	36	24
100		430	125				250	200	162	30	26					394		117	54	38
125		500	147.5	183	313		295	240	188	34	30					500	133	144	92	70
150		550	172.5	200	330		345	280	218	36	33					508	134	172	140	105
200	80	650	207.5	262	422	160	415	345	285	42	36	12	---	150	M20x1.5	610	203	223	260	210
250	80	---	---	346	506		---	---	---	---	---	---				752	253	278	---	370
300		---	---	395	555		---	---	---	---	---	---				819	296	329	---	520
400	100	---	---	512	672		---	---	---	---	---	---				1108	382	413	---	1050

m_1 - weight of flanged connection
m_2 - weight of welded connection
t - wall thickness of weld ends: $t = [D_4 - (D - 2 * t_T)] / 2$



DN 15 -150

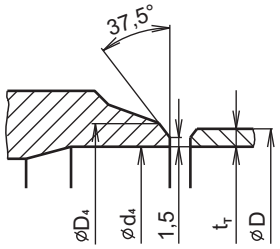


DN 200 - 400

Dimensions of weld ends for pipes acc. to ISO 4200 line 1

DN	$ØD_4$	ø D	t_T				$ØD_{4\,max}$	$ød_{4\,min}$
15	22	21.3	2.0	2.6	3.2	3.6	25	14
20	28	26.9	2.0	2.6	3.2	3.6	32	18
25	35	33.7	2.3	2.6	3.2	3.6	39	23
32	44	42.4	2.6	2.9	3.6	4.0	48	28
40	50	48.3	2.6	2.9	3.6	4.0	54	37
50	62	60.3	2.9	3.2	4.0	4.5	66	48
65	77	76.1	2.9	3.2	3.6	5.0	82	62

DN	$ØD_4$	ø D	t_T				$ØD_{4\,max}$	$ød_{4\,min}$
80	91	88.9	3.2	3.6	4.0	5.6	96	74
100	117	114.3	3.6	4.0	5.0	6.3	122	98
125	144	139.7	4.5	5.0	6.3	7.1	154	118
150	172	168.3	4.5	5.0	7.1	8.0	177	144
200	223	219.1	6.3	8.0	8.8	10.0	235	193
250	278	273.0	7.1	8.0	10.0	14.2	278	229
300	329	323.9	8.0	10.0	12.5	17.5	329	281
400	413	406.4	11.0	12.5	14.2	20.0	426	345



(other execution on request)

RV 3x2

Pressure balanced control valves DN 25 - 400, PN 40 a 63

Description

Control valves RV 322 (Ex) and RV 332 (Ex) [(further only RV 3x2 (Ex)] are single-seated valves with pressure-balanced plug designed for regulation of process medium flow. In regard of used actuators, the valves are suitable for regulation at high differential pressures with low-linear-force actuators. Flow characteristics, Kvs values and leakage rates correspond to international standards.
Valves RV 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 or for pneumatic actuators SPA Praha, Flowserve and LDM.

Application

The valves series RV 3x2 are designed for applications in heating, ventilation, power generation and chemical processing industries. The valves RV 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 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 81 of this catalogue.

Process media

Valves series RV 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 RV 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 recomends 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. Reversed flow direction is not admissible.
The valve can be installed in any position except position when the actuator is under the valve body. When medium temperature exceeds 150°C, it is necessary to protect the actuator against glowing heat from the pipeline e.g. by the means of proper insulating of the pipeline and valve or by tilting the valve away from the heat radiation.
Detailed informations are given in the instruction for installation and service.

Technical data

Series	RV / UV 322 (Ex)	RV / UV 332 (Ex)
Type of valve	Two-way, single-seated, control (shut-off) valve with pressure balanced plug	
Nominal size range	DN 25 to 200	
Nominal pressure	PN 63 (PN 40, 63 weld ended)	
Body material	Cast steel 1.0619 (GP240GH) 1.7357 (G17CrMo5-5)	Stainless steel 1.4581(GX5CrNiMoNb19-11-2)
Seat material : DN 15 - 50	1.4028 / 17 023.6	1.4571 / 17 348.4
DIN W.Nr./+ČSN DN 65 - 400	1.4027 / 42 2906.5	1.4571 / 17 348.4
Plug material : DN 15 - 65	1.4028 / 17 023.6	1.4581 / 42 2941.4
DIN W.Nr./+ČSN DN 80 - 150	1.4021 / 17 027.6	1.4581 / 42 2941.4
DN 400	1.4021 / 17 022.6	1.4581 / 42 2941.4
Operating temperature range	-10 to 550 °C	
Face to face dimensions	Section 2 acc. to ČSN-EN 558, or serie 73 for welded connection acc. to ČSN EN 12982	
Connection flanges	Acc. to ČSN-EN 1092-1 (3/2008)	
Flange faces	Type B1 (raised-faced) or Type B2 (plain face) or Type F (female), or Type D (groove) acc. to ČSN EN 1092-1 (3/2008) For DN 15 to 200 (DN 250 to 400) weld ended execution only	
Type of plug	V-ported, perforated	
Flow charakteristic	Linear, equal-percentage, LDMspline®, parabolic	
Kvs value	1 to 1600 m^3/hour	
Leakage rate	Class III. acc. to ČSN-EN 1349 (7/2010) (<0.1% Kvs) for c. valves with metal-metal seat sealing	
	Class IV. acc. to ČSN-EN 1349 (7/2010) (<0.01% Kvs) for shut off valve	
Leakage rate for Ex version	Leakage rate 6 acc. to ČSN 13 3060 (6/1979) - section 2	
Rangeability r	50 : 1	
Packing	DRSpack® (PTFE) t_{max} = 260 °C, Exp. graphite t_{max} = 550 °C	

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

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

For further information on actuating, see actuators catalogue sheets			Actuating (actuator)					MIDI 660		ST 0		Auma Schiebel		Zepadyn 670 ST 1 Ex ST 0.1		ST 1		ST 1	
			Marking in valve specification No.					ENB		EPK		EA... EZ...		ENC EPJ EPL		EPI		EPI	
			Linear force					2 kN		2.5 kN		5 kN		6.3 kN		7.5 kN		10 kN	
			Kvs [m³ /hour]					Δp_{max} packing		Δp_{max} packing		Δp_{max} packing		Δp_{max} packing		Δp_{max} packing		Δp_{max} packing	
DN	H	Ds	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
25	16	25	10	6.3[5]	4.0[5]	2.5[5]	1.6[5]	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	---	---
32		32	16	10	6.3[5]	4.0[5]	2.5[5]	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	---	---
40		40	25	16	10	6.3[5]	4.0[5]	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	---	---
50	20	50	40	25	16	10	6.3[5]	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
65		65	63	40	25	16	10	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
80	40	80	100	63	40	25	16	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
100		100	160	100	63	40	25	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
125		125	250	160	100	63	40	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
150		150	360	250	160	100	63	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3

5) linear characteristic only

For further information on actuating, see actuators catalogue sheets *) max. DN 300			Actuating (actuator)					Modact Cont. Modact MTN		Auma Schiebel		Modact MTR ST 2 Zepadyn 671*)		Auma Schiebel 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 [m³ /hour]					Δp_{max} packing		Δp_{max} packing		Δp_{max} packing		Δp_{max} packing		Δp_{max} packing		Δp_{max} packing	
DN	H	Ds	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
25	16	25	10	6.3[5]	4.0[5]	2.5[5]	1.6[5]	---	---	---	---	---	---	---	---	---	---	6.3	6.3
32		32	16	10	6.3[5]	4.0[5]	2.5[5]	---	---	---	---	---	---	---	---	---	---	6.3	6.3
40		40	25	16	10	6.3[5]	4.0[5]	---	---	---	---	---	---	---	---	---	---	6.3	6.3
50	20	50	40	25	16	10	6.3[5]	---	---	---	---	---	---	---	---	---	---	6.3	6.3
65		65	63	40	25	16	10	---	---	---	---	---	---	---	---	---	---	6.3	6.3
80	40	80	100	63	40	25	16	6.3	6.3	---	---	6.3	6.3	---	---	---	---	6.3	6.3
100		100	160	100	63	40	25	6.3	6.3	---	---	6.3	6.3	---	---	---	---	6.3	6.3
125		125	250	160	100	63	40	6.3	6.3	---	---	6.3	6.3	---	---	---	---	6.3	6.3
150		150	360	250	160	100	63	6.3	6.3	---	---	6.3	6.3	---	---	---	---	6.3	6.3
200	80	200	570	400	250	160	100	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	---	---	6.3	6.3
250		230	800	630	400	250	160	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
300		250	1000	800	630	400	250	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
400	100	330	1600	1000	630	400	250	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3

5) linear characteristic only

Max. differential pressures specified in table apply to PTFE and graphite packing.
Perforated plug available only with Kvs values in shadowed frames with the following restrictions:
- perforated plug with Kvs value acc. to column No. 2 available with linear or parabolic characteristic only

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

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

For further information on actuating, see actuators catalogue sheets			Pneumatic actuators					Flowserve PA 127				Flowserve PA 252					
			Spec. No. of actuator					direct		indirect		direct		indirect		direct	indirect
			Actuator function					BVCxAA		BVCxZA		BVCxAA		BVCxZA		BVCxAA	BVCxZA
			Spring range				[bar]	1.5 - 2.7		1.5 - 2.7		1.5 - 2.7		1.5 - 2.7		1.5 - 2.7	1.5 - 2.7
			Spring setting				[bar]	1.5 - 2.46		1.75 - 2.7		1.5 - 2.46		1.75 - 2.7		1.5 - 2.7	1.5 - 2.7
			Feeding pressure				[bar]	4.5		4.5		4.5		4.5		4.5	4.5
			Marking in valve spec.					PFF				PFA					
			Linear force					2.18 kN		2.18 kN		4.3 kN		4.3 kN		3.7 kN	3.7 kN
		Kvs [m³ /hour]						packing		packing		packing		packing		packing	packing
								Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}	Δp_{max}
DN	H	Ds	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite PTFE	graphite PTFE
25	16	25	10	6.3[5]	4.0[5]	2.5[5]	1.6[5]	---	6.3	---	6.3	6.3	6.3	6.3	6.3	--- ---	--- ---
32		32	16	10	6.3[5]	4.0[5]	2.5[5]	---	6.3	---	6.3	6.3	6.3	6.3	6.3	--- ---	--- ---
40		40	25	16	10	6.3[5]	4.0[5]	---	6.3	---	6.3	6.3	6.3	6.3	6.3	--- ---	--- ---
50	20	50	40	25	16	10	6.3[5]	---	---	---	---	---	---	---	---	6.3 6.3	6.3 6.3
65		65	63	40	25	16	10	---	---	---	---	---	---	---	---	6.3 6.3	6.3 6.3

5) linear characteristic only

For further information on actuating, see actuators catalogue sheets			Pneumatic actuators					Flowserve PB 502								Flowserve PB 700	
			Spec. No. of actuator					direct		indirect		direct		indirect		direct	indirect
			Actuator function					BVCxAA		BVCxZA		BVCxAB		BVCxZB		BVCxAB	BVCxZB
			Spring range				[bar]	1.5 - 2.7		1.5 - 2.7		1.5 - 2.7		1.5 - 2.7		1.5 - 2.7	1.5 - 2.7
			Spring setting				[bar]	1.5 - 2.7		1.5 - 2.7		1.5 - 2.7		1.5 - 2.7		1.5 - 2.7	1.5 - 2.7
			Feeding pressure				[bar]	4.5		4.5		4.5		4.5		4.5	4.5
			Marking in valve spec.					PFB								PFC	
			Linear force					7.5 kN		7.5 kN		7.5 kN		7.5 kN		10.5 kN	10.5 kN
		Kvs [m³ /hour]						Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}	Δp_{max}
								packing		packing		packing		packing		packing	packing
DN	H	Ds	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite PTFE	graphite PTFE
50	20	50	40	25	16	10	6.3[5]	6.3	6.3	6.3	6.3	---	---	---	---	--- ---	--- ---
65		65	63	40	25	16	10	6.3	6.3	6.3	6.3	---	---	---	---	--- ---	--- ---
80	40	80	100	63	40	25	16	---	---	---	---	6.3	6.3	6.3	6.3	6.3 6.3	6.3 6.3
100		100	160	100	63	40	25	---	---	---	---	6.3	6.3	6.3	6.3	6.3 6.3	6.3 6.3
125		125	250	160	100	63	40	---	---	---	---	6.3	6.3	6.3	6.3	6.3 6.3	6.3 6.3
150		150	360	250	160	100	63	---	---	---	---	6.3	6.3	6.3	6.3	6.3 6.3	6.3 6.3

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 1502		Flowserve PO 1502	
Spec. No. of actuator			direct	indirect	direct	indirect	direct	indirect
Actuator function			BVCxAD	BVCxZD	BVCxAD	BVCxZD	BJIOAE	DJIOZE
Spring range	[bar]		1.5 - 2.7	1.5 - 2.7	2.0 - 3.5	2.0 - 3.5	1.8 - 3.8	1.8 - 3.8
Spring setting	[bar]		1.5 - 2.7	1.5 - 2.7	2.0 - 3.5	2.0 - 3.5	1.8 - 3.8	1.8 - 3.8
Feeding pressure	[bar]		4.5	4.5	5.5	5.5	5.6	5.6
Marking in valve spec.			PFD		PFD		PFD	
Linear force			22.5 kN	22.5 kN	30 kN	30 kN	27 kN	27 kN
Kvs [m³ /hour]			Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}
			packing	packing	packing	packing	packing	packing

DN	H	Ds	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
200	80	200	570	400	250	160	100	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	---	---	---	---
250		230	800	630	400	250	160	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	---	---	---	---
300		250	1000	800	630	400	250	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	---	---	---	---
400	100	330	1600	1000	630	400	250	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3

For further information on actuating, see actuators catalogue sheets

Pneumatic actuators			SPA Praha 526 61		SPA Praha 5222	
Spec. No. of actuator			direct	indirect	direct	indirect
Actuator function			52661.x21x	52661.x22x	5222x051...	5222x052...
Spring range	[bar]		0.4 - 2.0	0.4 - 2.0	1.0 - 2.0	1.0 - 2.0
Spring setting	[bar]		0.8 - 2.4	0.8 - 2.4	1.0 - 2.0	1.0 - 2.0
Feeding pressure	[bar]		3.2	3.2	3.2	3.2
Marking in valve spec.			PJA		PJE	
Linear force			2 kN	2 kN	4 kN	4 kN
Kvs [m³ /hour]			Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}
			packing	packing	packing	packing

DN	H	Ds	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
25	16	25	10	6.3[5)]	4.0[5)]	2.5[5)]	1.6[5)]	---	6.3	---	6.3	6.3	6.3	6.3	6.3
32		32	16	10	6.3[5)]	4.0[5)]	2.5[5)]	---	6.3	---	6.3	6.3	6.3	6.3	6.3
40		40	25	16	10	6.3[5)]	4.0[5)]	---	6.3	---	6.3	6.3	6.3	6.3	6.3
50	20	50	40	25	16	10	6.3[5)]	---	6.3	---	6.3	6.3	6.3	6.3	6.3
65		65	63	40	25	16	10	---	6.3	---	6.3	6.3	6.3	6.3	6.3
80	40	80	100	63	40	25	16	---	---	---	---	6.3	6.3	6.3	6.3
100		100	160	100	63	40	25	---	---	---	---	6.3	6.3	6.3	6.3
125		125	250	160	100	63	40	---	---	---	---	6.3	6.3	6.3	6.3
150		150	360	250	160	100	63	---	---	---	---	6.3	6.3	6.3	6.3

5) linear characteristic only

For further information on actuating, see actuators catalogue sheets

Pneumatic actuators			LDM PP 230		LDM PP 385	
Spec. No. of actuator			direct	indirect	direct	indirect
Actuator function			DA16 140-230	RA16 140-230	DA16 140-230	RA16 140-230
Spring range	[bar]		1.4 - 2.3	1.4 - 2.3	1.4 - 2.3	1.4 - 2.3
Spring setting	[bar]		1.4 - 2.3	1.4 - 2.3	1.4 - 2.3	1.4 - 2.3
Feeding pressure	[bar]		4.0	4.0	4.0	4.0
Marking in valve spec.			PVA		PVB	
Linear force			3.9 kN	3.2 kN	6.54 kN	5.39 kN
Kvs [m³ /hour]			Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}
			packing	packing	packing	packing

DN	H	Ds	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
25	16	25	10	6.3[5)]	4.0[5)]	2.5[5)]	1.6[5)]	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
32		32	16	10	6.3[5)]	4.0[5)]	2.5[5)]	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
40		40	25	16	10	6.3[5)]	4.0[5)]	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3

5) linear characteristic only

Max. differential pressures specified in table apply to PTFE and graphite packing.
Perforated plug available only with Kvs values in shadowed frames with the following restrictions:
- perforated plug with Kvs value acc. to column No. 2 available with linear or parabolic characteristic only

For further information on actuating, see actuators catalogue sheets			Pneumatic actuators					LDM PP 230				LDM PP 385				LDM PP 700			
			Spec. No. of actuator					direct		indirect		direct		indirect		direct		indirect	
			Actuator function					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		1.4 - 2.4		1.42-2.35		1.42-2.35		1.45 - 2.4		1.45 - 2.4	
			Spring setting [bar]					1.4 - 2.4		1.4 - 2.4		1.42-2.35		1.42-2.35		1.45 - 2.4		1.45 - 2.4	
			Feeding pressure [bar]					4.0		4.0		4.0		4.0		4.0		4.0	
			Marking in valve spec.					PVA				PVB				PVB			
			Linear force					3.68 kN		3.22 kN		6.35 kN		5.47 kN		11.2 kN		10.15 kN	
			Kvs [m³ /hour]					Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}	
								packing		packing		packing		packing		packing		packing	
DN	H	Ds	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
50	20	50	40	25	16	10	6.3[5)]	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
65		65	63	40	25	16	10	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3

5) pouze s lineární charakteristikou

For further information on actuating, see actuators catalogue sheets			Pneumatic actuators					LDM PP 385				LDM PP 700			
			Spec. No. of actuator					direct		indirect		direct		indirect	
			Actuator function					DA40 142-250		RA40 142-250		DA40 140-230		RA40 140-230	
			Spring range [bar]					1.42 - 2.5		1.42 - 2.5		1.4 - 2.3		1.4 - 2.3	
			Spring setting [bar]					1.42 - 2.5		1.42 - 2.5		1.4 - 2.3		1.4 - 2.3	
			Feeding pressure [bar]					4.0		4.0		4.0		4.0	
			Marking in valve spec.					PVB				PVC			
			Linear force					5.77 kN		5.47 kN		11.9 kN		9.8 kN	
			Kvs [m³ /hour]					Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}	
								packing		packing		packing		packing	
DN	H	Ds	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
80	40	80	100	63	40	25	16	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
100		100	160	100	63	40	25	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
125		125	250	160	100	63	40	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
150		150	360	250	160	100	63	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3

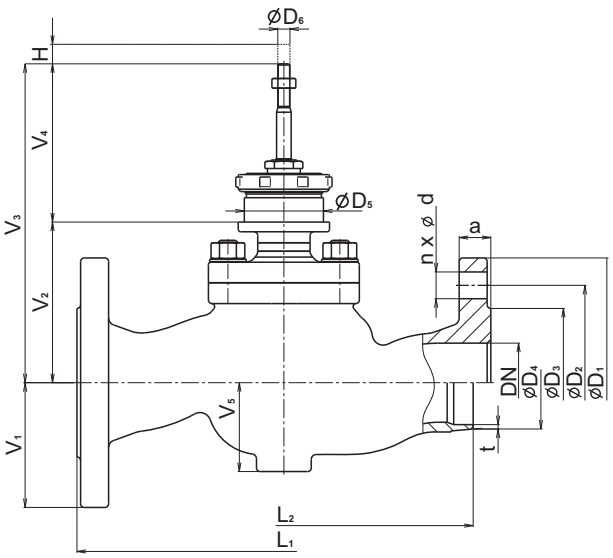
For further information on actuating, see actuators catalogue sheets			Pneumatic actuators					LDM PP 1400		
			Spec. No. of actuator					direct		indirect
			Actuator function					DAXX 150-310		RAXX 150-310
			Spring range [bar]					1.5 - 3.1		1.5 - 3.1
			Spring setting [bar]					1.5 - 3.1		1.5 - 3.1
			Feeding pressure [bar]					4.6		4.6
			Marking in valve spec.					PVD		
			Linear force					21.0 kN		21.0 kN
			Kvs [m³ /hour]					Δp_{max}		Δp_{max}
								packing		packing
DN	H	Ds	1	2	3	4	5	graphite	PTFE	graphite	PTFE
200	80	200	570	400	250	160	100	6.3	6.3	6.3	6.3
250		230	800	630	400	250	160	6.3	6.3	6.3	6.3
300		250	1000	800	630	400	250	6.3	6.3	6.3	6.3
400	100	330	1600	1000	630	400	250	6.3	6.3	6.3	6.3

Max. differential pressures specified in table apply to PTFE and graphite packing.
Perforated plug available only with Kvs values in shadowed frames with the following restrictions:
- perforated plug with Kvs value acc. to column No. 2 available with linear or parabolic characteristic only

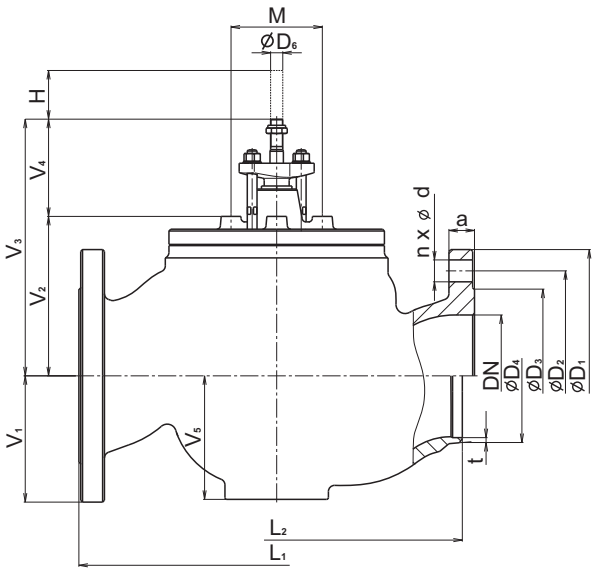
Dimensions and weights of valves RV 3x2 (Ex) with flanged and welded connection DN 25 - 400

DN	H	L_1	V_1	V_2	V_3	V_4	$ØD_1$	$ØD_2$	$ØD_3$	a	d	n	$ØD_5$	M	$ØD_6$	L_2	V_5	$ØD_4$	m_1	m_2
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm	mm	mm	mm	mm	mm	kg	kg
25	16	230	70	100	230	130	140	100	68	24	18	4	65	---	M10x1	210	52	35	11	5.5
32		260	77.5				155	110	78	24	22					260	49	44	13	7.0
40		260	85				170	125	88	26						251	52	50	16	8.5
50	20	300	90	132	262		180	135	102	26						286	73	62	21	13
65		340	102.5				205	160	122	26		8				311		77	26	16
80	40	380	107.5	164	294		215	170	138	28					M16x1.5	337	105	91	38	26
100		430	125				250	200	162	30	26					394		117	56	40
125		500	147.5	183	313		295	240	188	34	30					500	133	144	64	73
150		550	172.5	200	330		345	280	218	36	33					508	134	172	143	108
200	80	650	207.5	262	422	160	415	345	285	42	36	12	---	150	M20x1.5	610	203	223	272	222
250		---	---	346	506		---	---	---	---	---	---				752	253	278	---	370
300		---	---	395	555		---	---	---	---	---	---				819	296	329	---	520
400	100	---	---	512	672		---	---	---	---	---	---				1108	382	413	---	1050

m_1 - weight of flanged connection
m_2 - weight of welded connection
t - wall thickness of weld ends: $t = [D_4 - (D - 2 * t_T)] / 2$



DN 25 -150

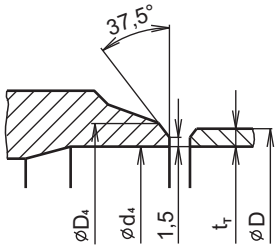


DN 200 - 400

Dimensions of weld ends for pipes acc. to ISO 4200 line 1

DN	$ØD_4$	ØD	t_T				$ØD_{4\,max}$	$Ød_{4\,min}$
25	35	33.7	2.3	2.6	3.2	3.6	39	23
32	44	42.4	2.6	2.9	3.6	4.0	48	28
40	50	48.3	2.6	2.9	3.6	4.0	54	37
50	62	60.3	2.9	3.2	4.0	4.5	66	48
65	77	76.1	2.9	3.2	3.6	5.0	82	62
80	91	88.9	3.2	3.6	4.0	5.6	96	74
100	117	114.3	3.6	4.0	5.0	6.3	122	98

DN	$ØD_4$	ØD	t_T				$ØD_{4\,max}$	$Ød_{4\,min}$
125	144	139.7	4.5	5.0	6.3	7.1	154	118
150	172	168.3	4.5	5.0	7.1	8.0	177	144
200	223	219.1	6.3	8.0	8.8	10.0	235	193
250	278	273.0	7.1	8.0	10.0	14.2	278	229
300	329	323.9	8.0	10.0	12.5	17.5	329	281
400	413	406.4	11.0	12.5	14.2	20.0	426	345



(other execution on request)

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

		XX	X X X	X X X	X X X X	X X	-	XX	/	XXX	-	XXX	XX
1. Valve	Control valve	RV											
	Shut-off valve	UV											
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	Raised flange (typ B1)				1								
	Female flange (typ F)				2								
	Flange with groove (typ D)				3								
	Plain flange (typ B2)				4								
	Weld ends				5								
5. Body material *(Operating temperature ranges are specified in parentheses*	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 sealilng 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									500			
	Exp. graphite									550			
12. Nominal size DN	DN											XXX	
13. Execution	Normal												
	Non - explosive												Ex
	Oxygen												Ox

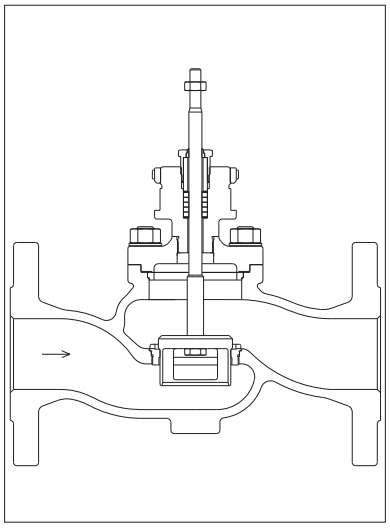
Ordering example of flanged execution:
RV320 ENC 1135 L1 63/400-065

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

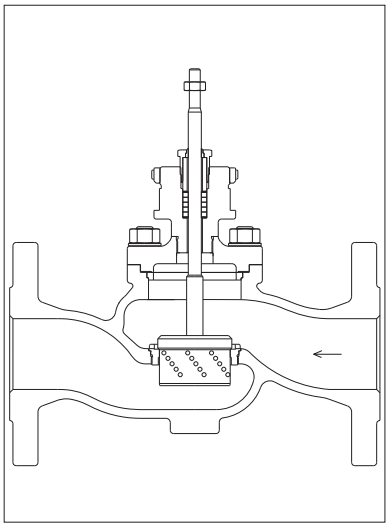
For marking of actuators in specification code, refer to table on page No. 74 of this catalogue

Valves RV / UV 3x0 (Ex)

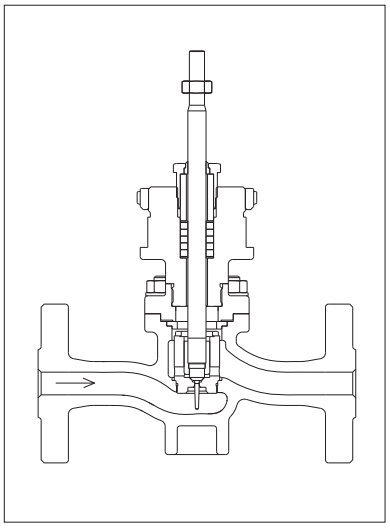
Section of valve with V-ported plug



Section of valve with perforated plug

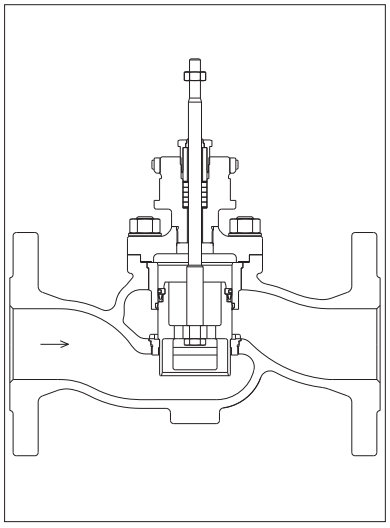


Section of valve with micro-throttling system

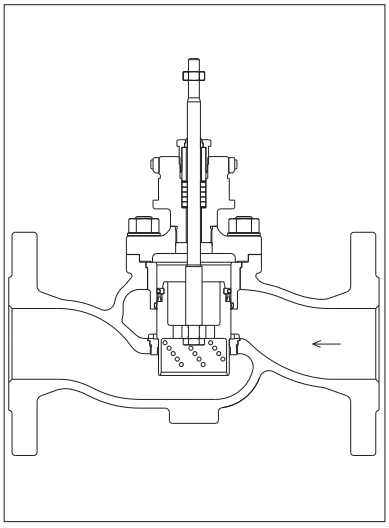


Valves RV 3x2 (Ex)

Section of pressure-balanced valve with V-ported plug



Section of pressure-balanced valve with perforated plug



ENB

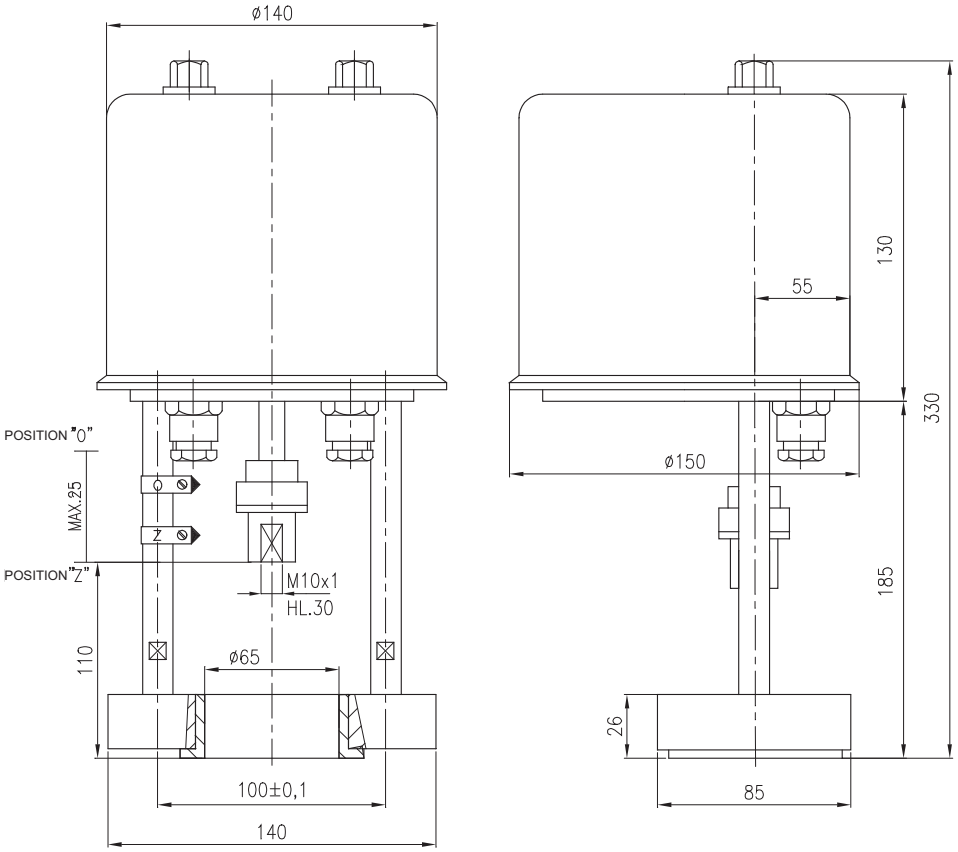
Electric actuator MIDI 660
ZPA Nová Paka

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 temperatrure range	-25 to 55℃
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



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 ∅ 65, coupling M10x1						P3

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

ENC

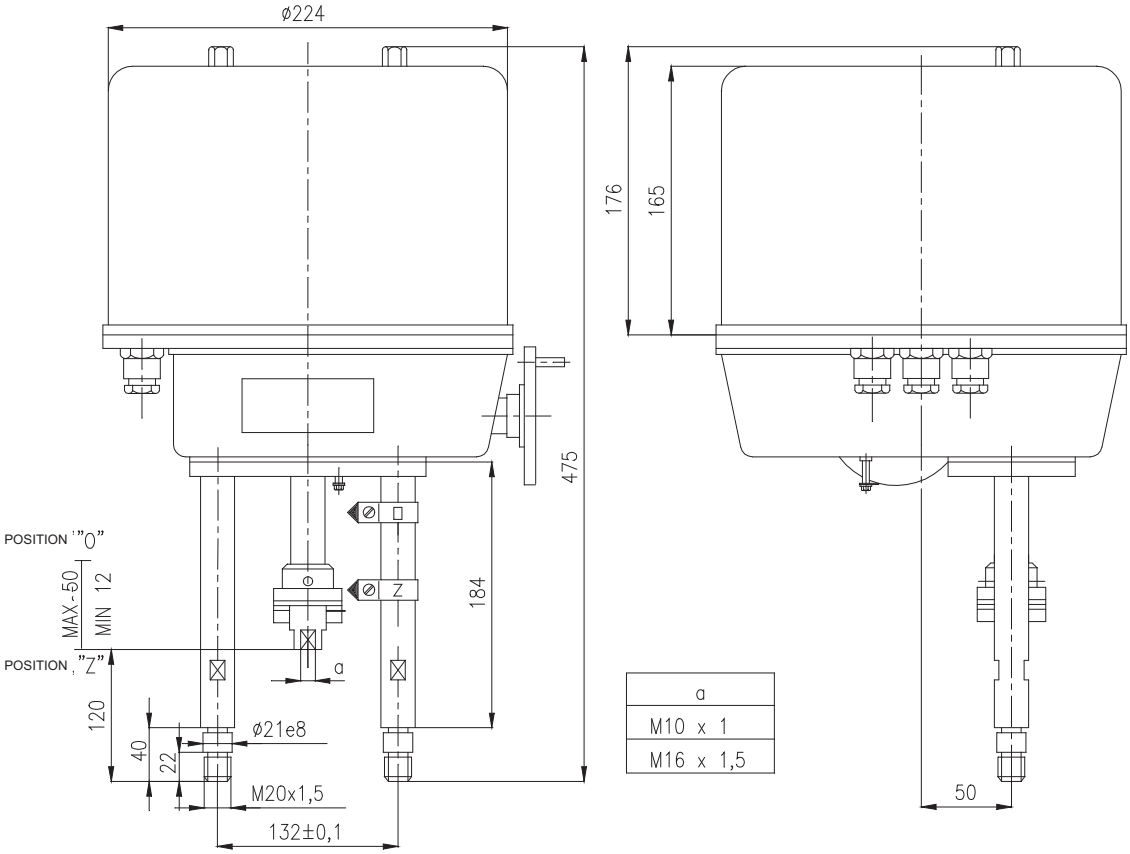
Electric actuator Zepadyn 670
ZPA Nová Paka

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℃
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 webside **www.zpanp.cz**

Dimensions of actuator Zepadyn 670



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.

ENE

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℃
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

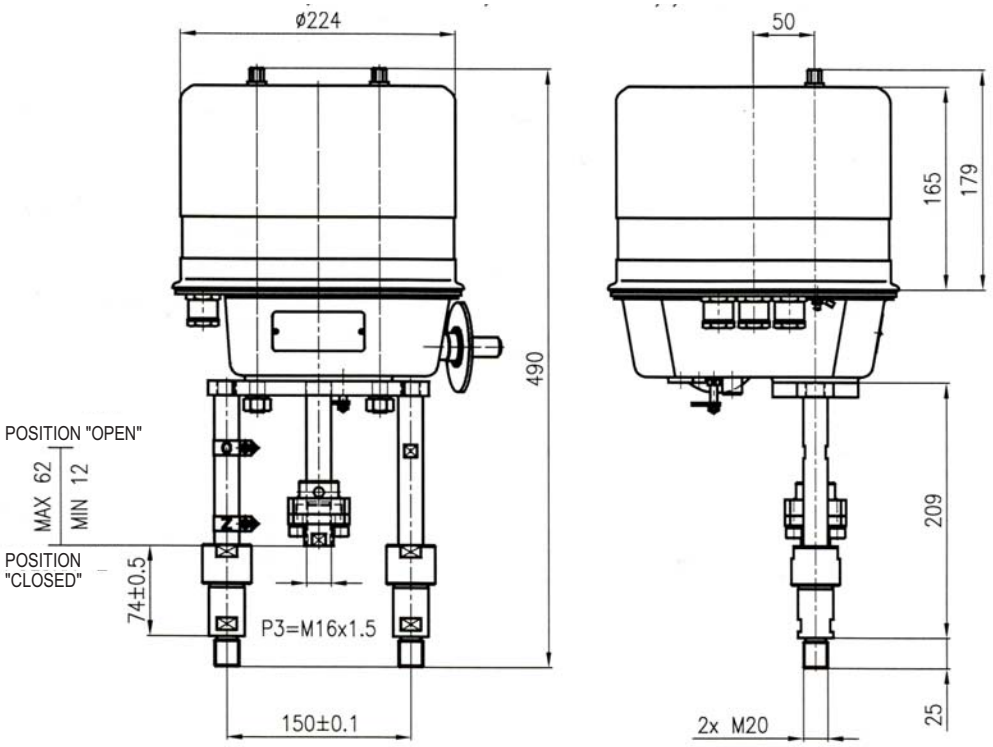
		Zepadyn 671	X	X	X	/	
Voltage AC	230 V (50 Hz)		1				
	24 V (50 Hz)		2				
Nominal force [kN]	16			1			
	20			2			
Resetting speed mm.min^{-1}	16				1		
	25				2		
	32				3		
	50				4		
Accessories	Positioner 0-1 V, 0-10 V, 0(4)-20 mA - without R2 and I1						OP1
	Signalization SO a SZ						S1
	1 resistance 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.

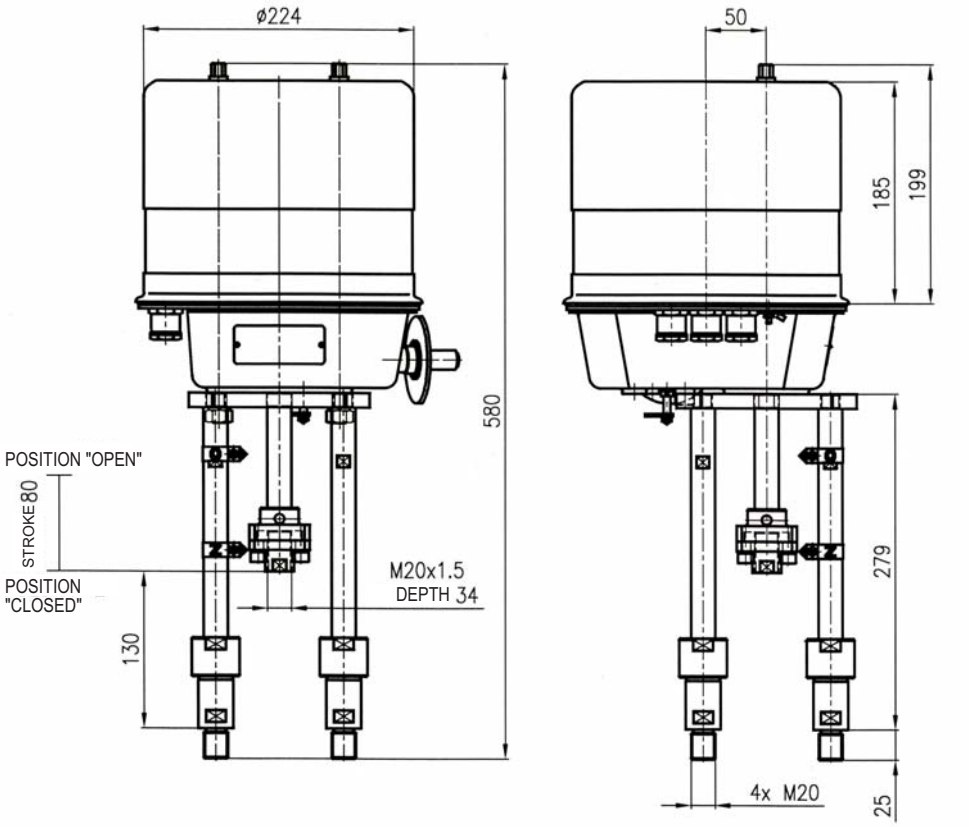
* Connection for LDM valves	
P3	RV 2xx DN 80 - 150
P5	RV 2xx DN 200 - 300

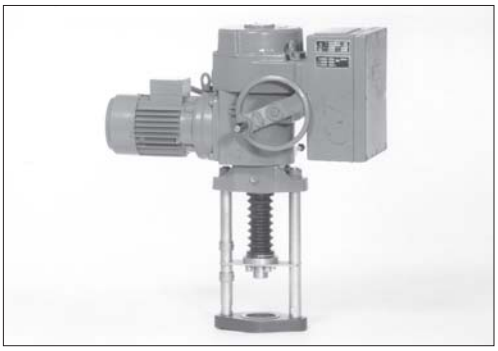
Diemensions of actuator Zepadyn 671

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	1 position transmitter - resist. 2x100 Ω or current
	2 limit switches PO, PZ	2 limit switches PO, PZ
	2 limit and signalisation switches SO, SZ	2 limit and signalisation switches SO, SZ

Basic technical parameters

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

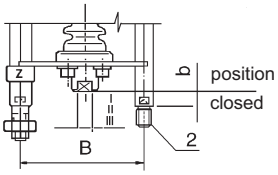
Execution, electric connection	
Via terminal board	6XXXXM
With conector HARTING	7XXXXM
Execution Modact MTN; Modact MTN Control ... enclosure IP55	XXXXNM
Execution Modact MTP; Modact MTP Control ... enclosure IP67	XXXXPM

		Current transmitter CPT without source	Current transmitter DCPT with source
Position transmitter	current 4 - 20 mA	XXX0XM	XXXRXM
	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]			Resistance transmitter 2x 100 ohm	Current transmitter CPT without source	Current transmitter DCPT with source
Modact Control execution (with built-in contactor combination)	without BMO	Without brake BAM and positioner	XXX4XM	XXXAXM	XXXKXM
		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 requirment in writing: Execution with flasher
[2] Design without force locking after reversation 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

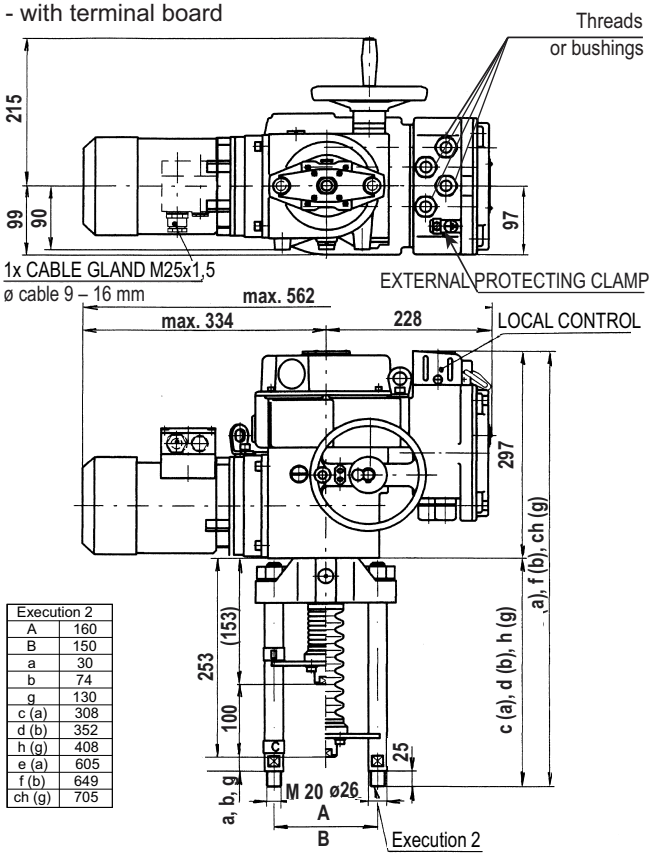


Pitch of columns	B	150
Position "closed"	b	74
	g	130
Clutch thread	I	M 20x1,5
	II	M 16x1,5
	III	M 10x1

Execution	Specification No. basic	Specification No. additional	For valves
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

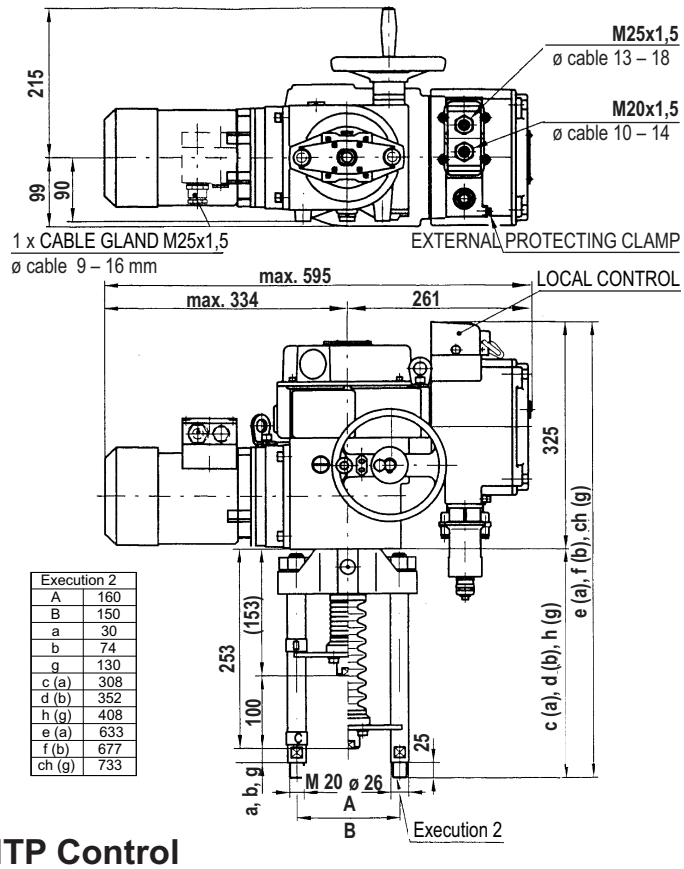
- with terminal board



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

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

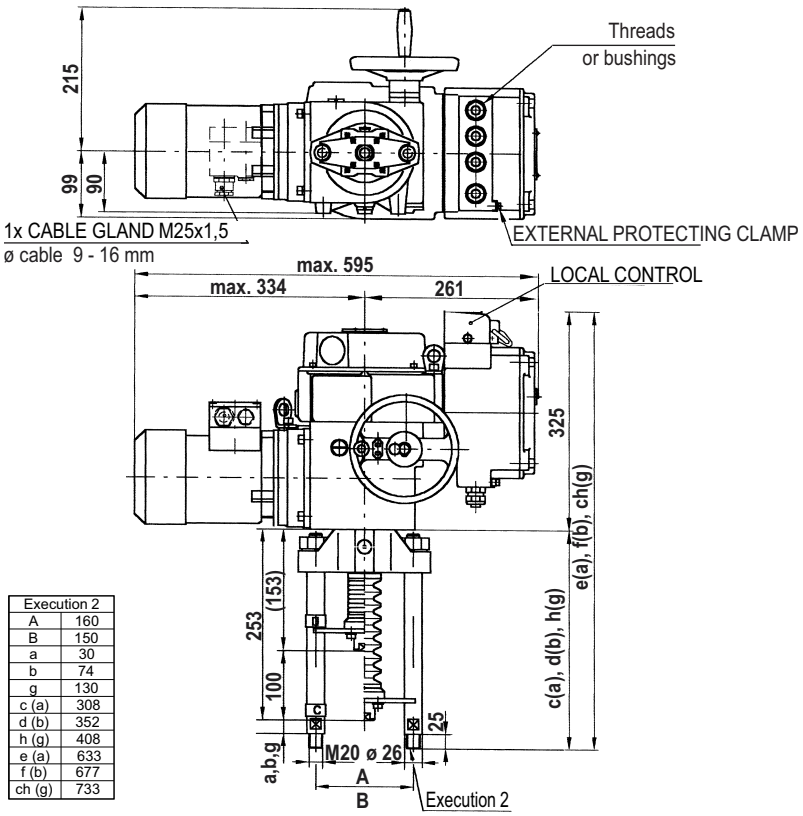
- with conector



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

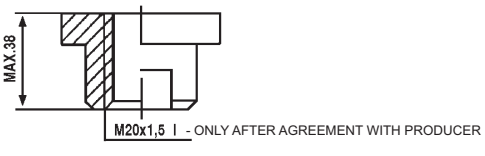
Dimensions of actuator Modact MTN, MTP Control

- with terminal board

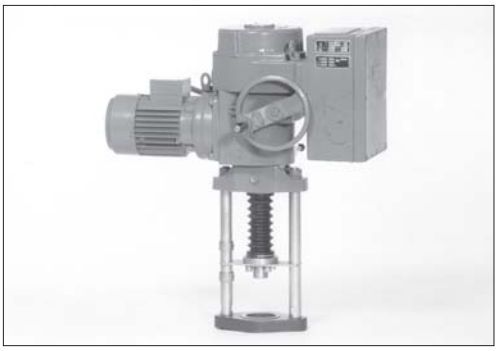


Execution 2	
A	160
B	150
a	30
b	74
g	130
c (a)	308
d (b)	352
h (g)	408
e (a)	633
f (b)	677
ch (g)	733

Detail of coupling



EYA



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 equiped 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 *Ready* with change-over contact connected to the terminal board - Signalling relays 1 - 4 with one pole of the switching contact connected to the terminal board Second poles of the switching contacts of relays 1 - 4 are interconnected and brought out to the terminal COM Heating resistor switched by a thermostat is connected to the unit The unit controls power switches of the electric motor (reversing relay) To the unit can be connected an electronic brake
Unit of display	Two-row display, 2 x 12 alpha-numeric characters
Unit of push-buttons	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 *(the electric actuator must be fitted with one of these units)*	
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	Specification No.	
						RPM 1/min	In (400V) A	Iz / In	Aluminium [kg]	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, circuity, 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

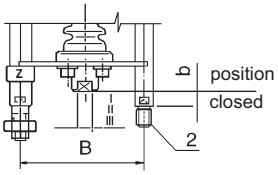
*) Producer will set in production 2- or 3- position control. If not specified in the order, the gearmotor is set to 3-position control (signal control 4-20 mA).

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	x
Relay						x	x	x	x					x	x	x	x					x	x	x	x
Analog module	Transmitter									x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Regulator																	x	x	x	x	x	x	x	x

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

Connection dimensions - details of additional specification No. 52 442

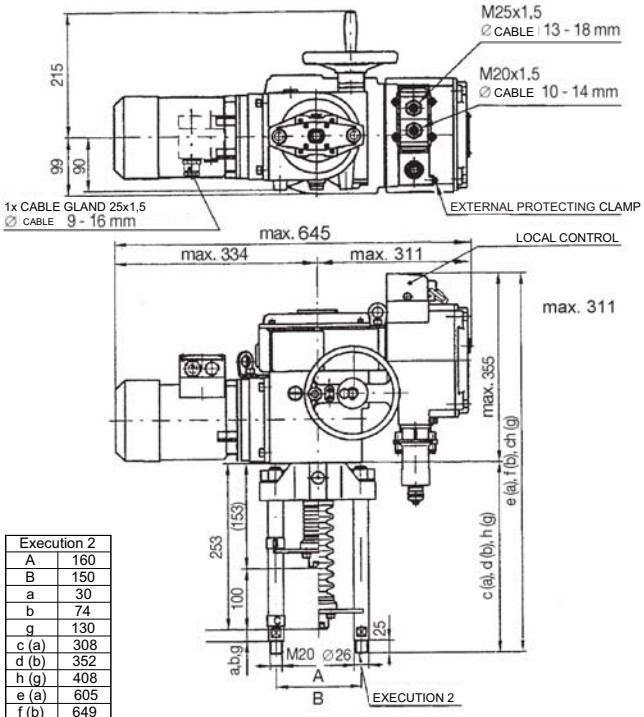


Pitch of columns	B	150
Position "closed"	b	74
	g	130
Clutch thread	I	M 20x1,5
	II	M 16x1,5
	III	M 10x1

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

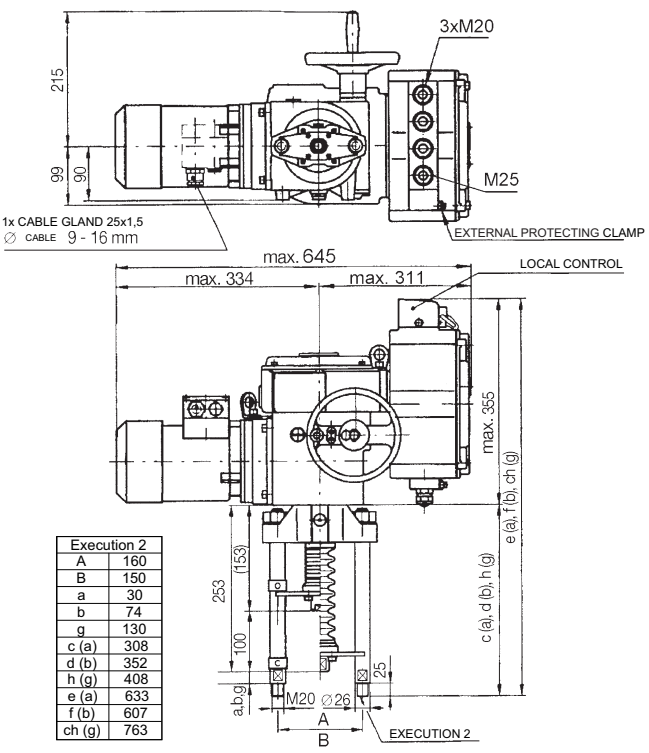
Dimensions of actuator Modact MTNED/MTPED

- with conector



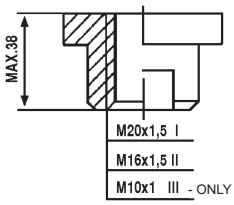
Execution 2	
A	160
B	150
a	30
b	74
g	130
c (a)	308
d (b)	352
h (g)	408
e (a)	605
f (b)	649
ch (g)	705

- 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



- ONLY AFTER AGREEMENT WITH PRODUCER

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

		SA	X	XXX		07.X
Type		SA				
Duty	Control		R			
	ON - OFF					
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 torgue	SA 07.2 SA Ex 07.2	SAR 07.2 SAR Ex 07.2	Motor power [kW]	SA 07.2 S2-15min	SA Ex 07.2 S2-15min	SAR 07.2 S4-25%	SAR Ex 07.2 S4-25%
	4					0,02	0,02	0,02	0,02
	5,6					0,02	0,02	0,02	0,02
	8					0,04	0,04	0,04	0,04
	11					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
			10-30 Nm	15-30 Nm					

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

Output speed (rpm)		Tripping torgue	SA 07.6 SA Ex 07.6	SAR 07.6 SAR Ex 07.6	Motor power [kW]	SA 07.6 S2-15min	SA Ex 07.6 S2-15min	SAR 07.6 S4-25%	SAR Ex 07.6 S4-25%
	4					0,03	0,03	0,03	0,03
	5,6					0,03	0,03	0,03	0,03
	8					0,06	0,06	0,06	0,06
	11					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
			20-60 Nm	30-60 Nm					

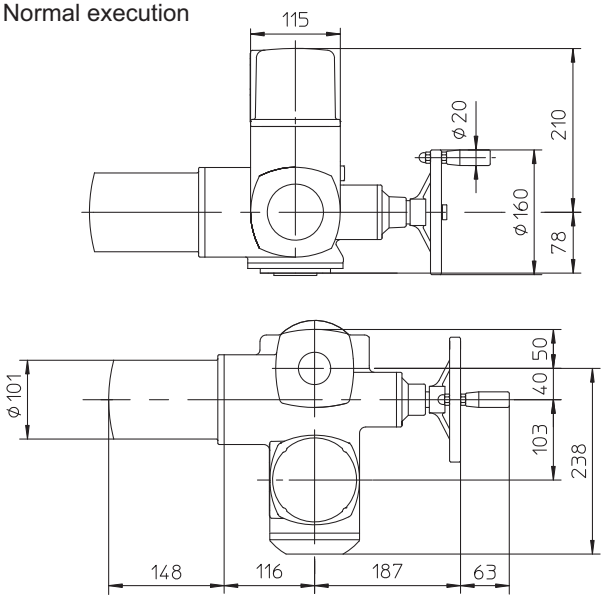
Accessories

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)

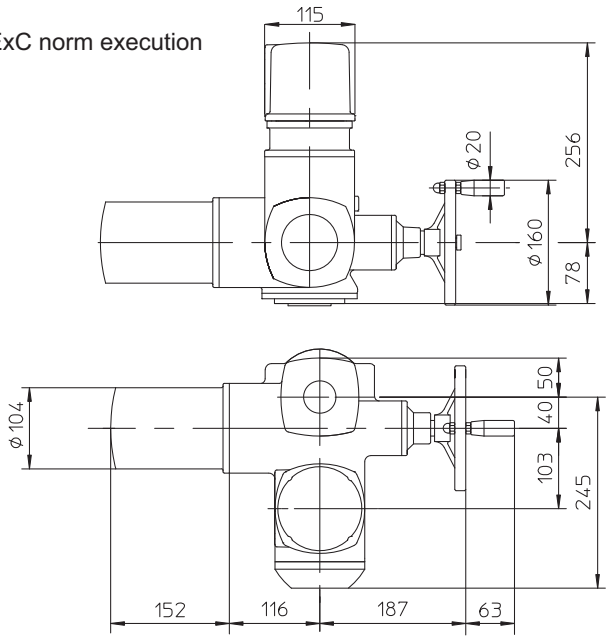
Other accessories acc. to catalogue of producer of actuators.

Dimension of Auma actuators 07.2 / 07.6

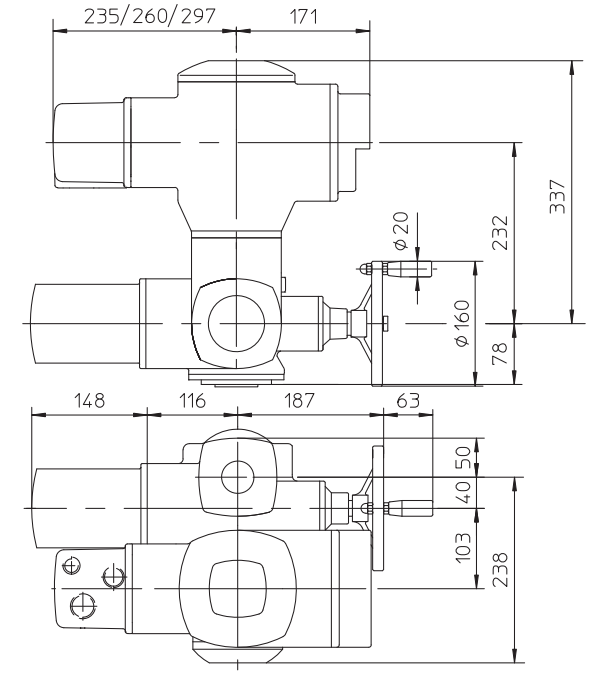
Normal execution



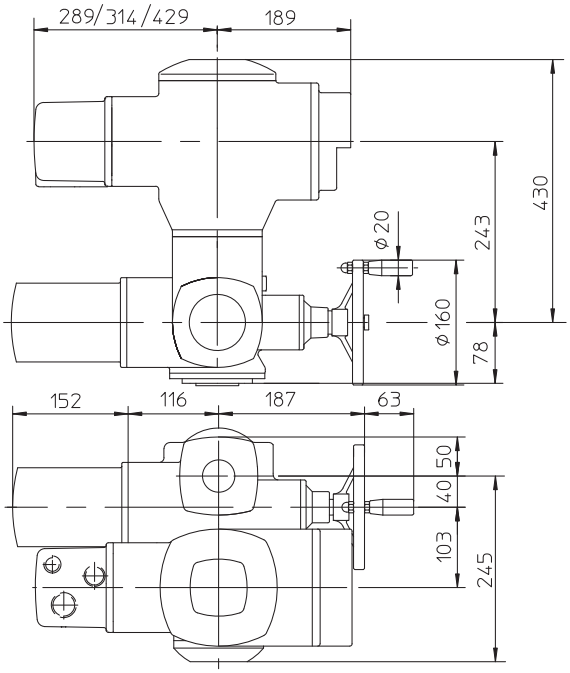
ExC norm execution



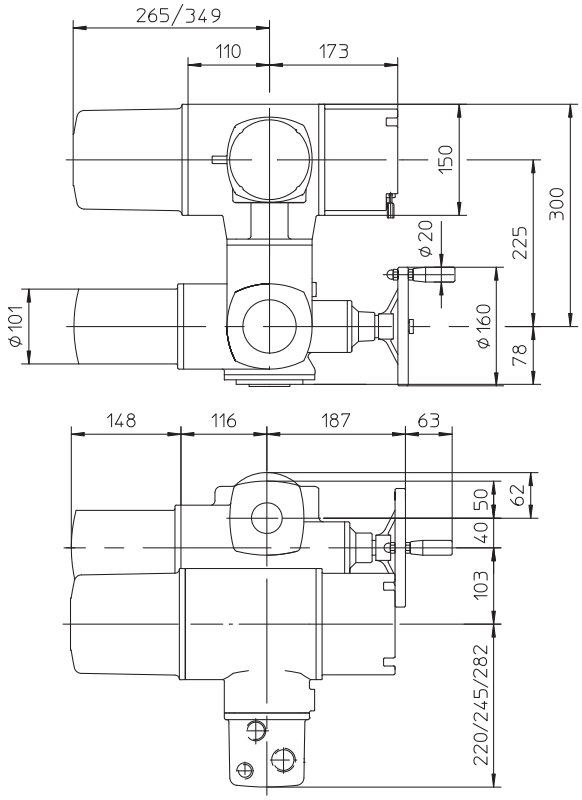
Execution MATIC



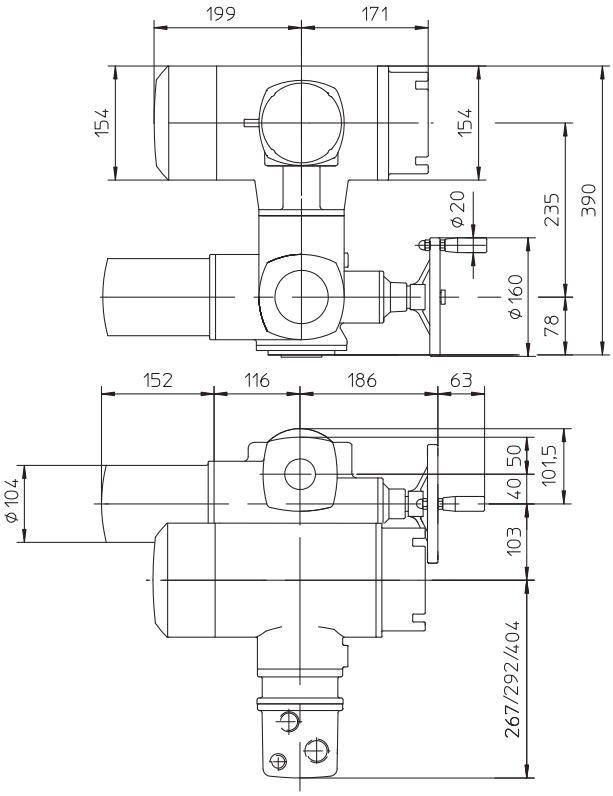
Execution Ex MATIC



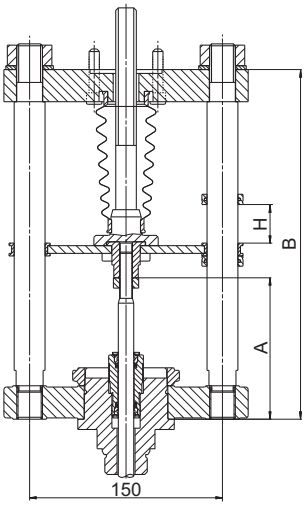
Execution AUMATIC



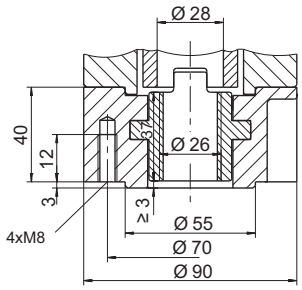
Execution Ex AUMATIC



Attachement yoke (2 or 4 columns)



Output drive A, F07



For valves	Number of columns	A	B	Weight
RV 3xx DN 15 to 150	2	110	272	~ 8 kg
RV 3xx DN 200 to 400	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

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

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

Output speed (rpm)		Tripping torgue	SA 10.2 SA Ex 10.2	SAR 10.2 SAR Ex 10.2	Motor power [kW]	SA 10.2 S2-15min	SA Ex 10.2 S2-15min	SAR 10.2 S4-25%	SAR Ex 10.2 S4-25%
	4					0,06	0,09	0,09	0,09
	5,6					0,06	0,09	0,09	0,09
	8					0,12	0,18	0,18	0,18
	11		40-120 Nm	60-120 Nm		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

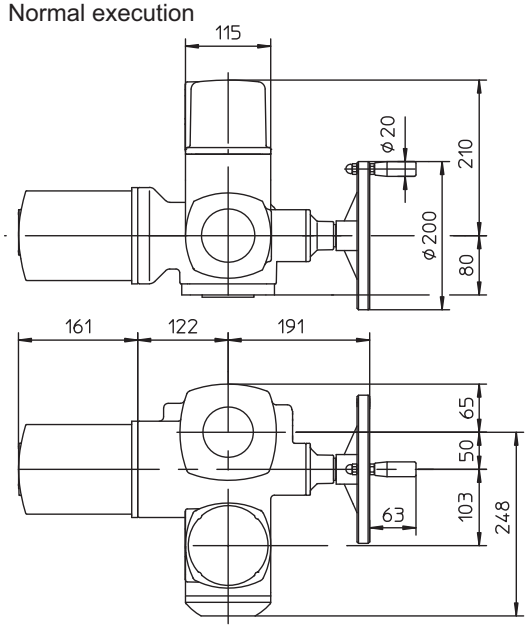
Accessories

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)

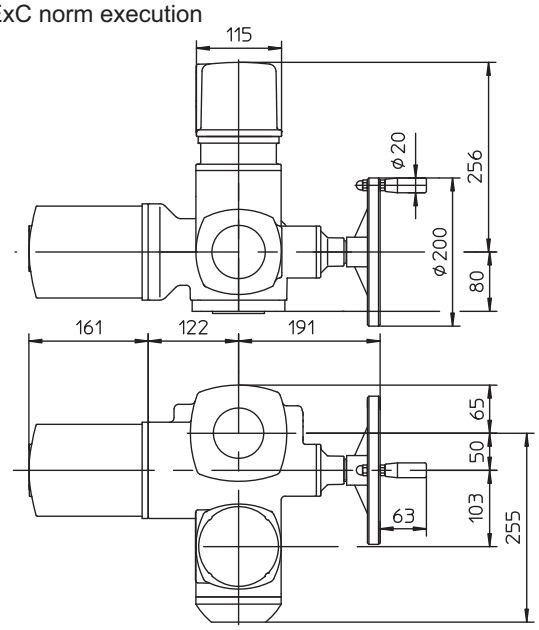
Other accessories acc. to catalogue of producer of actuators.

Dimension of Auma actuators 10.1

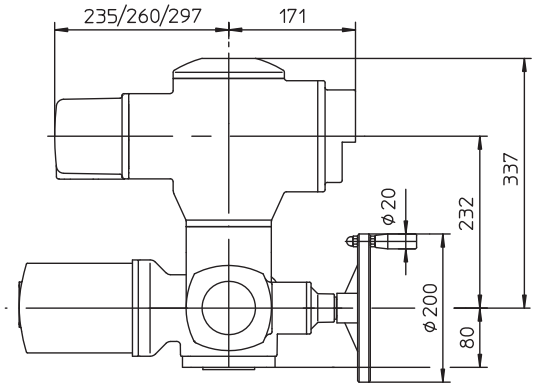
Normal execution

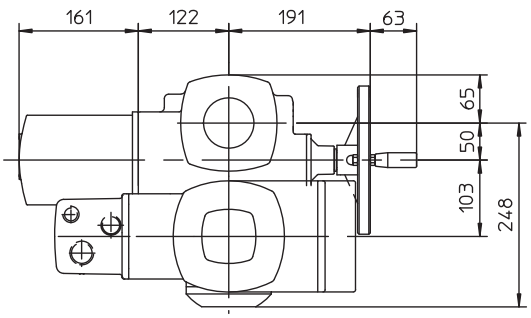


ExC norm execution

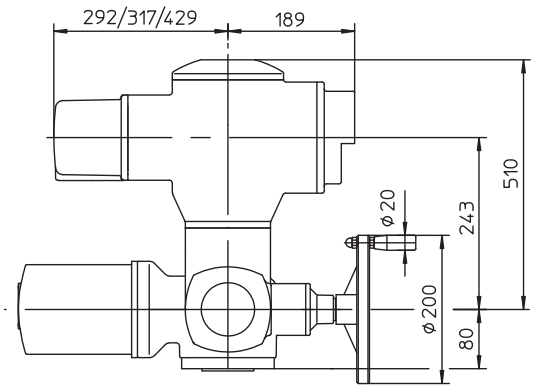


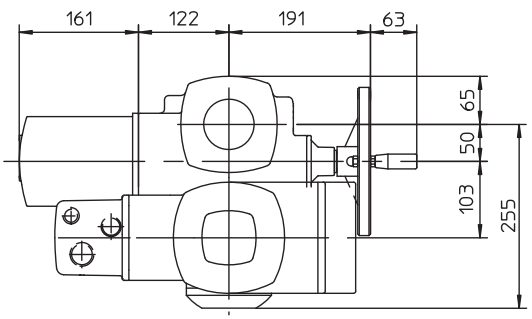
Version MATIC / AUMATIC



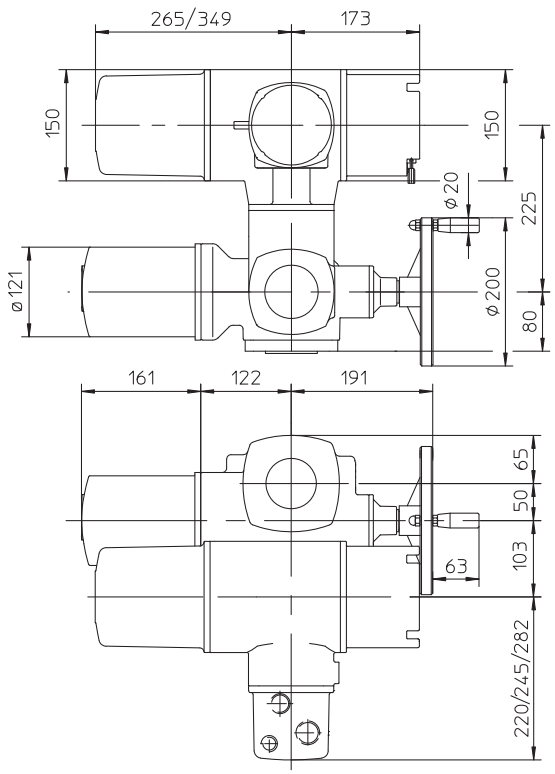


Execution Ex MATIC

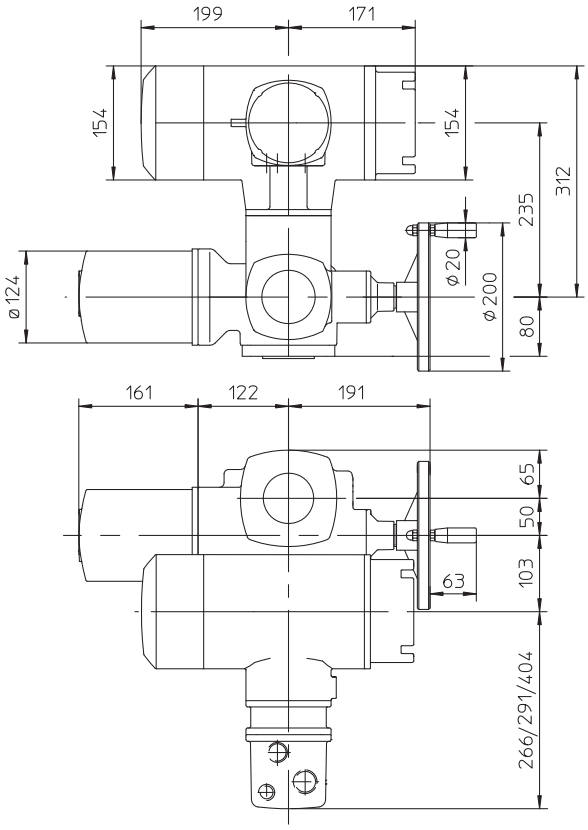




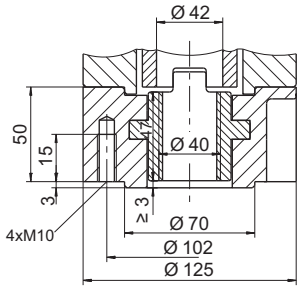
Execution AUMATIC



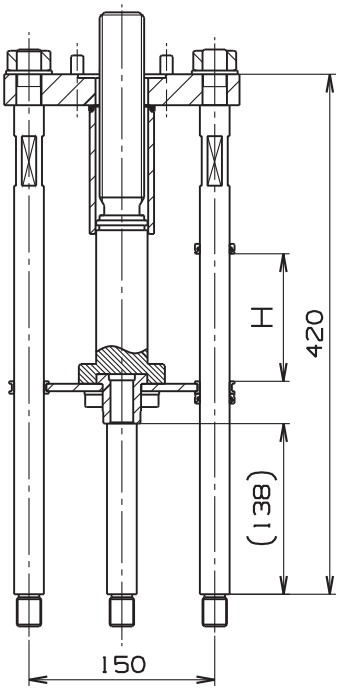
Execution Ex AUMATIC



Output drive A, F10



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



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

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

Technical data

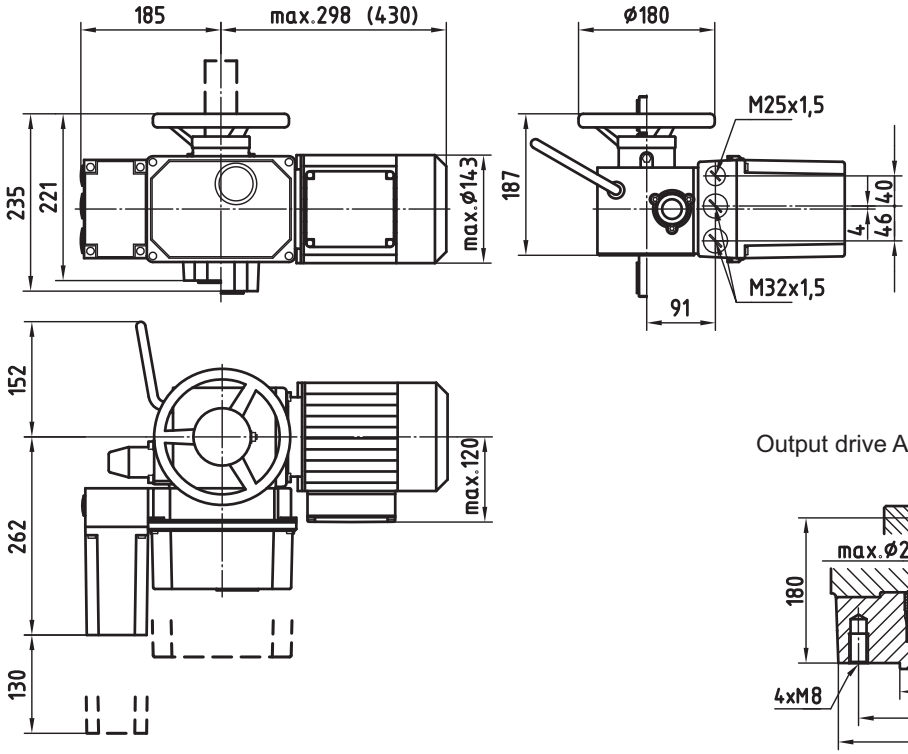
Type	AB3	AB5	exAB3	exAB5	rAB3	rAB5	exrAB3	exrAB5
Mark in valve´s spec. No.	EZA	EZE	EZB	EZF	EZC	EZG	EZD	EZH
Voltage	400 / 230 V; 230 V		400 / 230 V		400 / 230 V; 230 V		400 / 230 V	
Frequency	50 Hz							
Motor power	See specification table							
Control	3 - position control of continuous 4 - 20 mA							
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 webside **www.schiebel.cz**

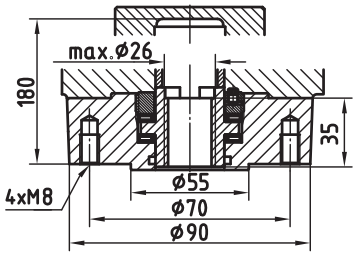
Specification of actuators

												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 torgue	AB3 exAB3	rAB3 exrAB3	Motor power [kW]	AB3		rAB3		exAB3	exrAB3							
						400/230V	230V	400/230V	230V	400/230V	400/230V							
	2,5		10-30 Nm	Tripping 7 - 30 Nm Loading 7 - 15 Nm		0,09	0,09	0,09	0,09	0,09	0,09					2,5		
	5					0,03	0,12	0,03	0,12	0,12	0,12					5		
	7,5					0,09	0,09	0,09	0,09	0,09	0,09					7,5		
	10					0,09	0,09	0,09	0,09	0,09	0,09					10		
	15					0,18	0,09	0,09	0,18	0,09	0,09					15		
	20					0,18	0,18	0,09	0,37	0,09	0,09					20		
	30					0,18	0,25	0,18	0,25	0,37	0,18					30		
	40					0,18	0,25	0,18	0,55	0,37	0,18					40		
Output speed (rpm)		Tripping torgue	AB5 exAB5	rAB5 exrAB5	Motor power [kW]	AB5		rAB5		exAB5	exrAB5							
						400/230V	230V	400/230V	230V	400/230V	400/230V							
	2,5		10-60 Nm	Tripping 30 - 60 Nm Loading 15 - 30 Nm		0,09	0,09	0,09	0,09	0,09	0,09					2,5		
	5					0,06	0,12	0,06	0,12	0,12	0,12					5		
	7,5					0,09	0,09	0,09	0,18	0,09	0,09					7,5		
	10					0,09	0,18	0,09	0,37	0,09	0,09					10		
	15					0,18	0,18	0,18	0,37	0,18	0,18					15		
	20					0,18	0,55	0,18	0,75	0,18	0,18					20		
	30					0,37	0,55	0,37	1,10	0,37	0,37					30		
	40					0,37	0,55	0,37	1,10	0,37	0,37					40		
Accessories						Potentiometer 1x1000 Ω												F
						Double potentiometer												FF
						Electronic transmitter 4 - 20 mA												ESM21
						Positioner ACTUMATIC R												CMR
						SMARTCON control unit												CSC

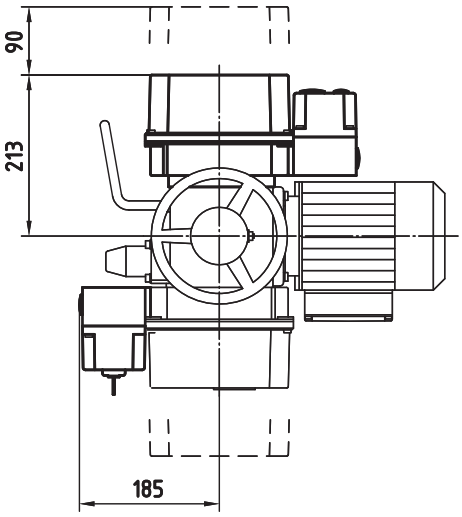
Dimensions of actuators ...AB3, ...AB5



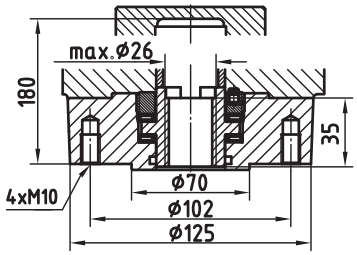
Output drive A, flange F07



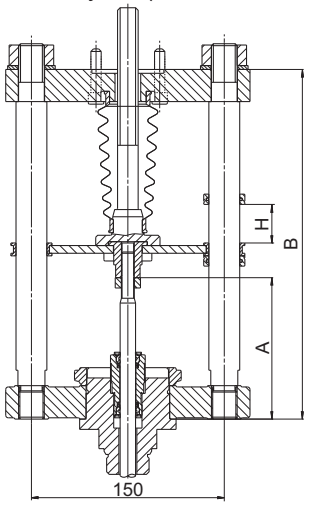
With ACTUMATIC R positioner



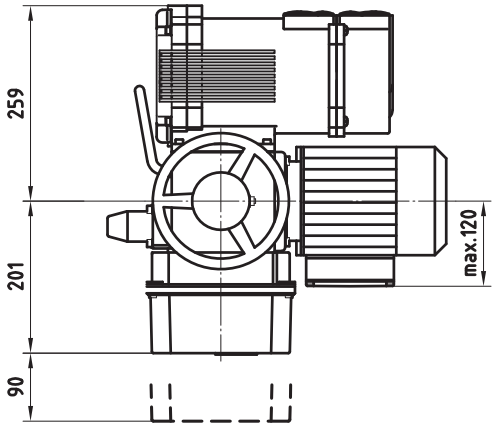
Output drive A, flange F10



Attachement yoke (2 or 4 columns)



With SMARTCON control unit



For valves	No. of columns	A	B	Weight
RV 3xx DN 15 to 150	2	110	272	~ 8 kg
RV 3xx DN 200 to 400	4	140	420	~ 15 kg

EZK
EZL

Electric actuators ...AB8
Schiebel

Technical data

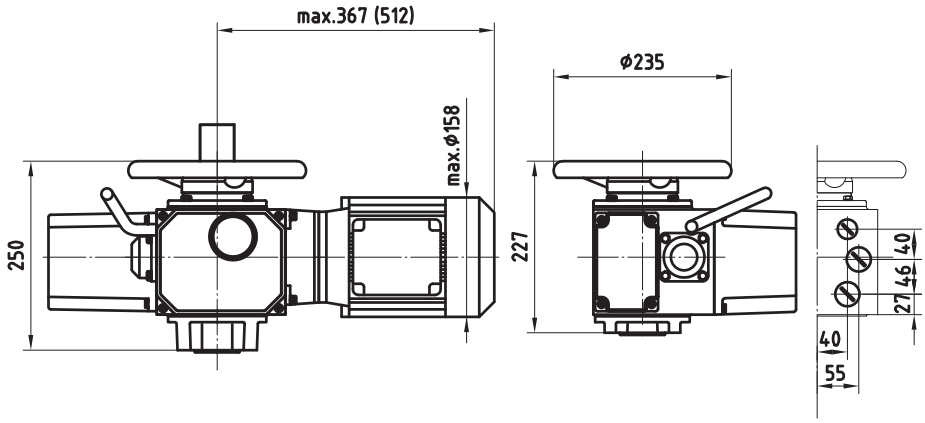
Type	rAB8	exrAB8
Marking in valve´s specification No.	EZK	EZL
Voltage	400 / 230 V; 230 V	400 / 230 V; 230 V
Frequency	50 Hz	
Motor power	See specification table	
Control	3 - position or with signal of 4 - 20 mA	
Nominal force	(Tr 36x6 LH) 80 Nm ~ 21,6 kN; 100 Nm ~ 27 kN; 120 Nm ~ 32 kN	
Stroke	80, 100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

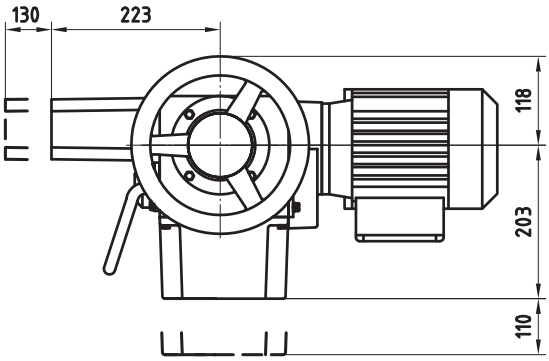
Note: Specifications and technical data are for information only. Detailed technical informations can be found in producer's data sheet or on the webside **www.schiebel.cz**

Specification of actuator

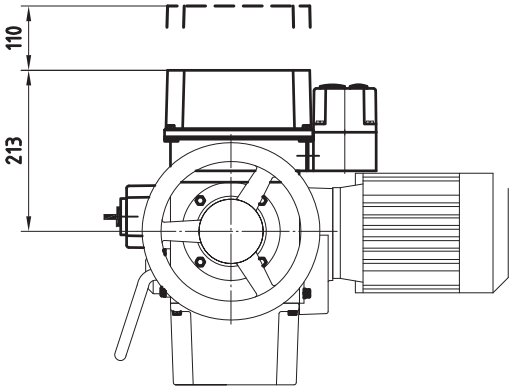
							XX	X	AB8	A	X	+	XXX
Execution			Non-explosive Normal				ex						
Duty			Control					r					
Actuator size									AB8				
Output shaft type (connection flange size F10, thread 36x6 LH... for RV 3xx DN 200 to 400)										A			
Output speed }rpm]		Tripping torque	rAB8	Motor power[kW]	rAB8 400/230V	rAB8 230V	exrAB8 400/230V						
	2,5		30-80 Nm		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

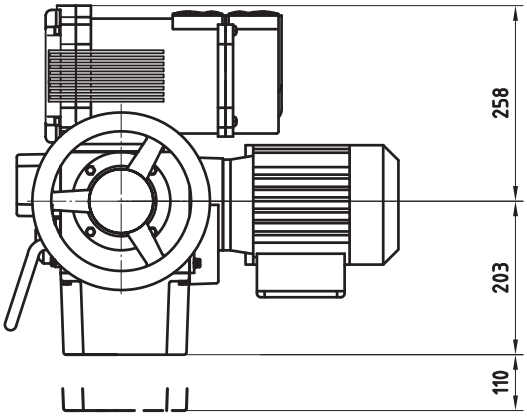




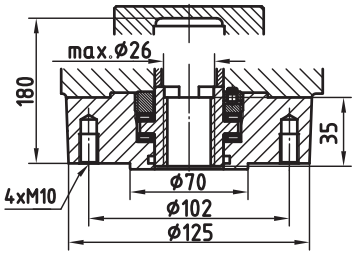
With ACTUMATIC R positioner



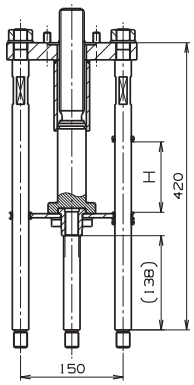
With SMARTCON contol unit



Output drive type A, connecting flange F10



ControlDN 200
Connection A, F10, Tr36x6-LH



EPD

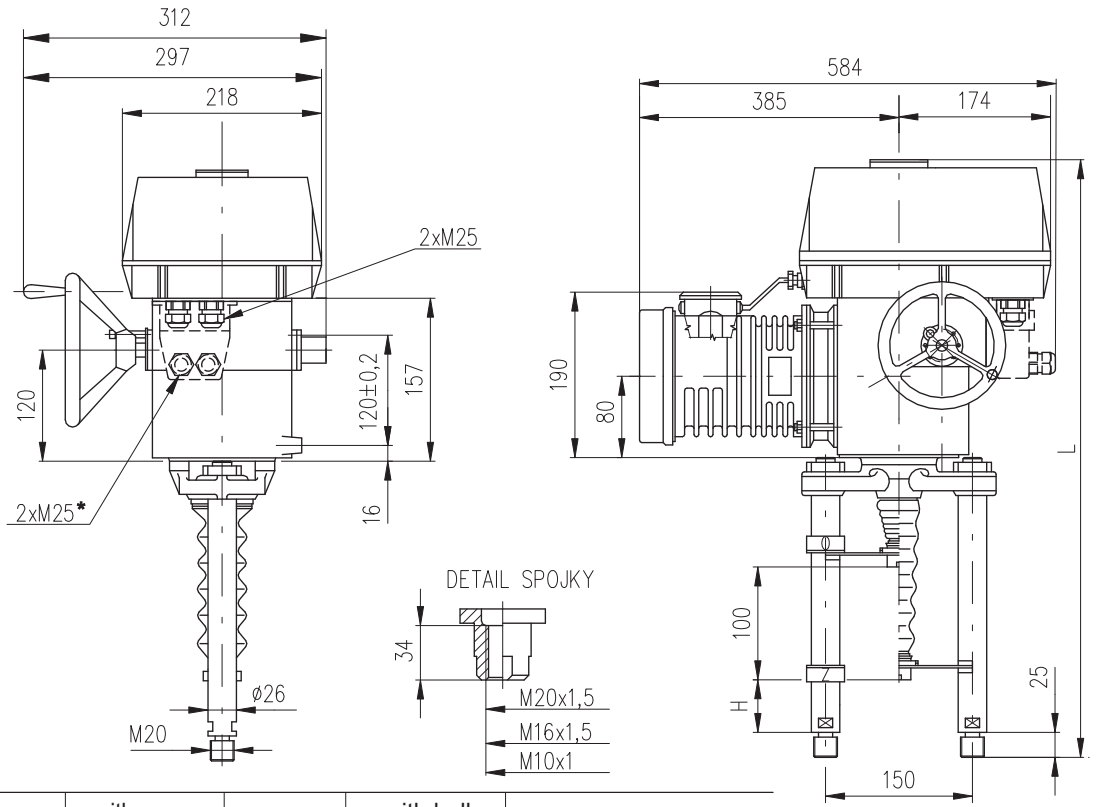
Electric actuator Modact MTR Regada

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 webside **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	RV 3xx DN 15 to 150
P-1045b/C	130	680	P-1045a/H	130	702	RV 3xx DN 200

*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									
		Enclosure IP 67		1									
Tropical	-25°C to +55°C	Enclosure IP 67		6									
Electric conection	Voltage												
To terminal board	230 V AC					9							
To connector						8							

	Screw version	Vypínací síla 32) 33)	Jmenovitá ovl. rychlost	Pracovní ovl. rychlost	Elektromotor Výkon	Otáčky	Proud	X	-	X	X	X	X	X	/	X	X
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	X	-	X	X	X	X	X	/	X	X
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		X	-	X	X	X	X	X	/	X	X
Without transmitter		—	—							A				
Resistive	Single	—	1x100 Ω							B				
			1x2000 Ω							F				
	Double		2x100 Ω							C				
			2x2000 Ω							P				
Resistive with current converter	Without power supply	2-wire	4 - 20 mA							S				
		3-wire	0 - 20 mA							T				
			4 - 20 mA							V				
	With power supply	2-wire								Q				
		3-wire	0 - 20 mA							U				
			4 - 20 mA							W				
Capacitive CPT	Without power supply	2-wire	4 - 20 mA							I				
	With power supply									J				

Mechanical connection	Connecting hight / stroke	Pillar spacing / Bore of flange	Thread of stem 62)	Dimensional drawing	X	-	X	X	X	X	X	/	X	X
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		X	-	X	X	X	X	X	/	X	X
	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 torgue 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.

EPK

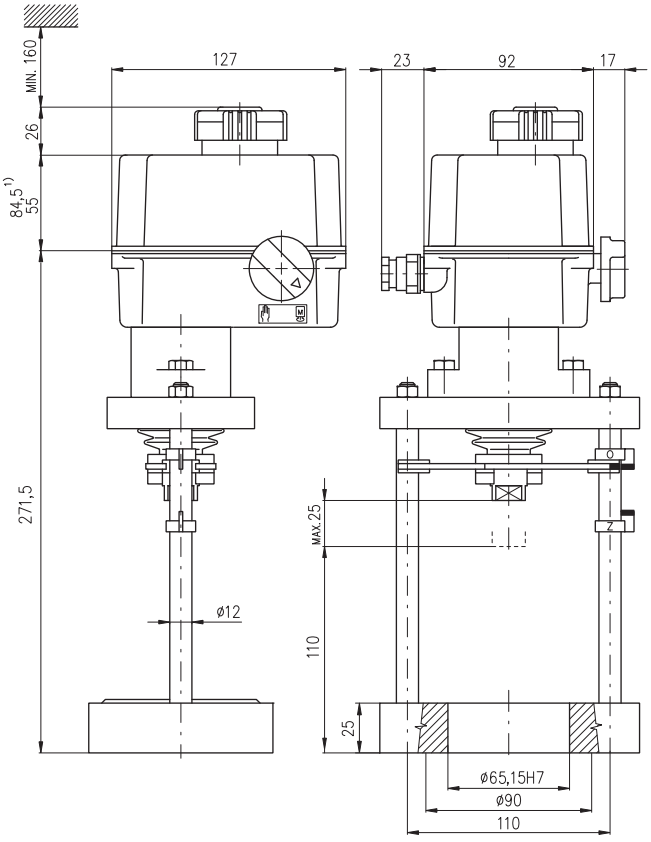
Electric actuators ST 0, STR 0 Regada

Technical data

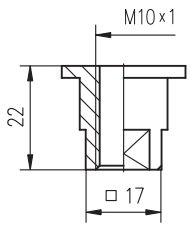
Type	ST 0, STR 0
Marking in valve specification No.	EPK
Voltage	230 V AC, 24 V AC
Frequency	50 Hz
Motor power	1 W
Control	3 - position (0 - 10 V, (0)4 - 20 mA)
Nominal force	2,5 kN
Travel	16, 20 mm
Enclosure	IP 54 / IP 67
Proces medium max. temperature	acc. to used valve
Ambient temperature range	-25 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 webside **www.regada.sk**

Dimensions of actuators



Coupling dimensions



[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									
	Tropical	-25°C to +55°C	IP 67			G									
Electric connection	To terminal board	Voltage			230 V AC			0							
					24 V AC			3							
Nominal force [N]	2900	Running speed	4 mm/min	Motor power	1 W				0						
	4500		5 mm/min		2,75 W				A						
	4500 [37)]		10 mm/min		2,75 W				N						
	2900 [37)]		16 mm/min		2,75 W				P						
Tripping torque	One-torque			Travel	16 mm					D					
					20 mm					E					
Remote position transmitter	Without transmitter										A				
	Resistance	Wiring	single	Feedback	1 x 100 Ω						B				
					1 x 2000 Ω						F				
	Electronic - current (without generator)		2-wire		4 - 20 mA						S				
			2-wire [6)]								Q				
			3-wire [6)]		0 - 20 mA						T				
											U				
					4 - 20 mA						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 speciffied also 2 additional position switches (S5, S6).

EPK

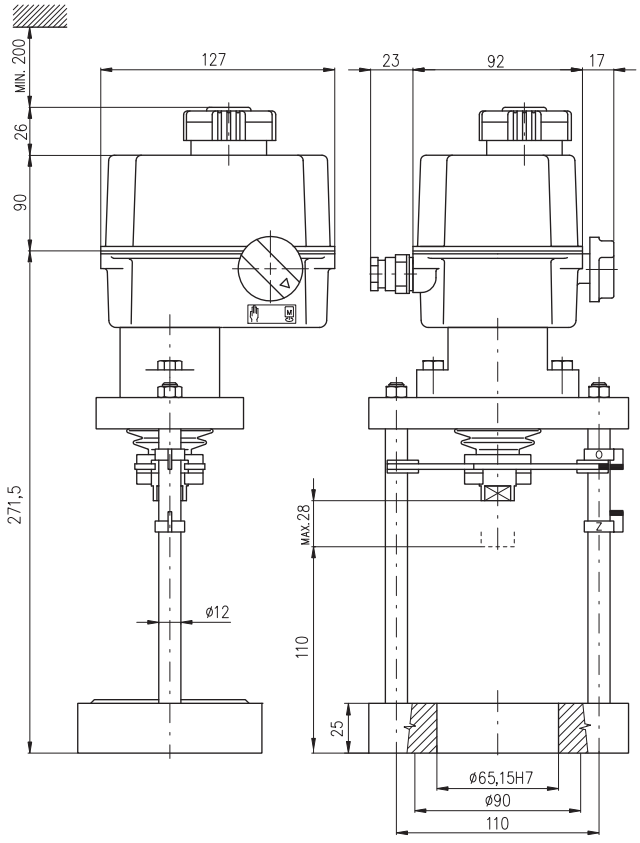
Electric actuators
STR 0PA
Regada

Technické parametry

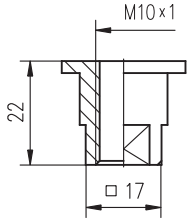
Type	STR 0PA
Marking in valve specification No.	EPK
Voltage	230 V AC, 24 V AC
Frequency	50 Hz
Motor power	1 W
Control	3 - bodové (0 - 10 V, (0)4 - 20 mA)
Nominal force	2,4 kN a 4,5 kN
Travel	10 to 28 mm
Enclosure	IP 67
Proces medium max. temperature	acc. to used valve
Ambient temperature range	-25 to 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 webside **www.regada.sk**

Dimensions of actuators



Coupling dimensions



Specification of actuator STR 0PA

Elektrický servomotor STR 0PA										430.	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																0	1

EPL

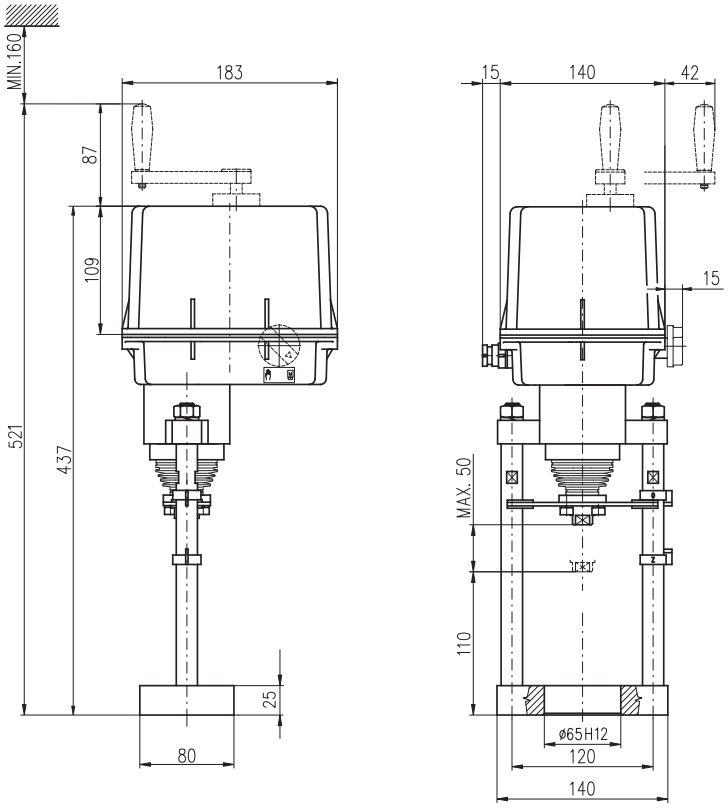
Electric actuators ST 0.1, STR 0.1 Regada

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 webside **www.regada.sk**

Dimensions of actuators



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
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							
							24 V AC					3							
							3x400 V AC[6]					9							
							3x380 V AC[6]					M							
			Na konektor				24 V DC					C							
							230 V AC					5							
							24 V AC					8							
							3x400 V AC[6]					7							
							3x380 V AC[6]					R							
Nominal force [N]	4600		Running speed	10 mm/min		Motor power	15 W (230; 3x400; 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			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	Wiring	---	Feedback	1 x 100 Ω									B				
						1 x 2000 Ω									F				
		Double[6]		---		2 x 100 Ω									K				
						2 x 2000 Ω									P				
	Electronic - current	Wo. its source		2 - wire		4 - 20 mA									S				
				2 - wire[6]											Q				
		With its source		3 - wire[6]		0 - 20 mA									T				
															U				
						4 - 20 mA									V				
															W				
	Capacity	Wo. its source		2 - wire[6]		4 - 20 mA									I				
		With its source		2 - wire											J				
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 pernament 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.

EPL

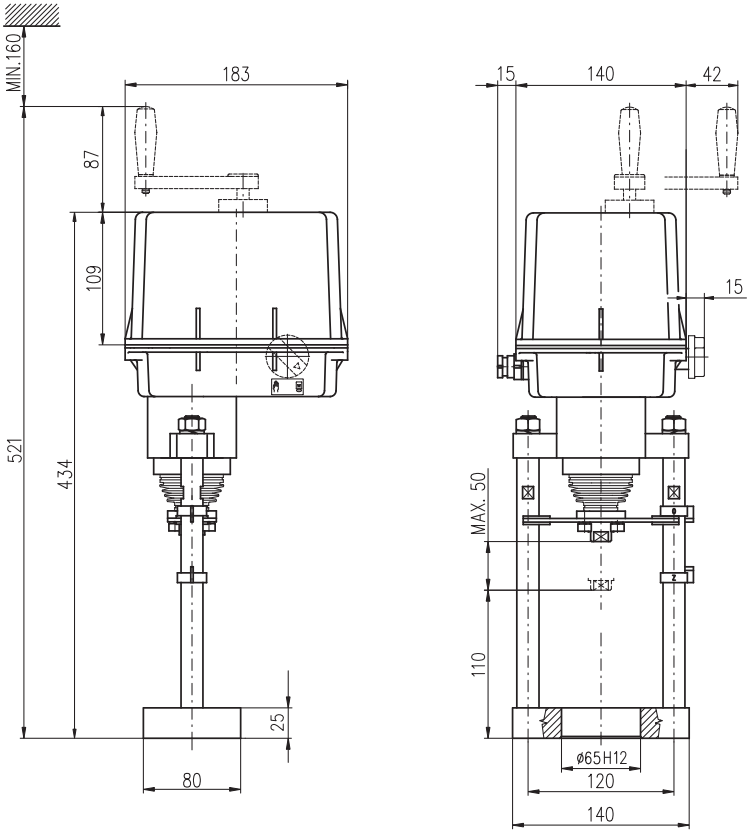
Electric actuators
STR 0.1PA
Regada

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 webside **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
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				0							
			24 V AC				3							
			3x400 V AC				2							
			3x380 V AC				N							
Nominal force [N]	4600	Running speed	10 mm/min					G						
			16 mm/min					H						
			25 mm/min					I						
			32 mm/min					J						
			40 mm/min					K						
	7200		10 mm/min					T						
			16 mm/min					U						
			25 mm/min					V						
			32 mm/min					W						
			40 mm/min					Y						
Travel				10-50 mm					I					
Control board DMS3	Control: ON - OFF and inching		24 V DC	Feedback: ---						F				
	Control: Modulating 0/4 - 20 mA	ON - OFF and inching	24 V DC	Feedback: 4 - 20 mA pasive						G				
	Control: Modulating 0/2 - 10 V	ON - OFF and inching	24 V DC	Feedback: 4 - 20 mA pasive						H				
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 requied 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

EPI

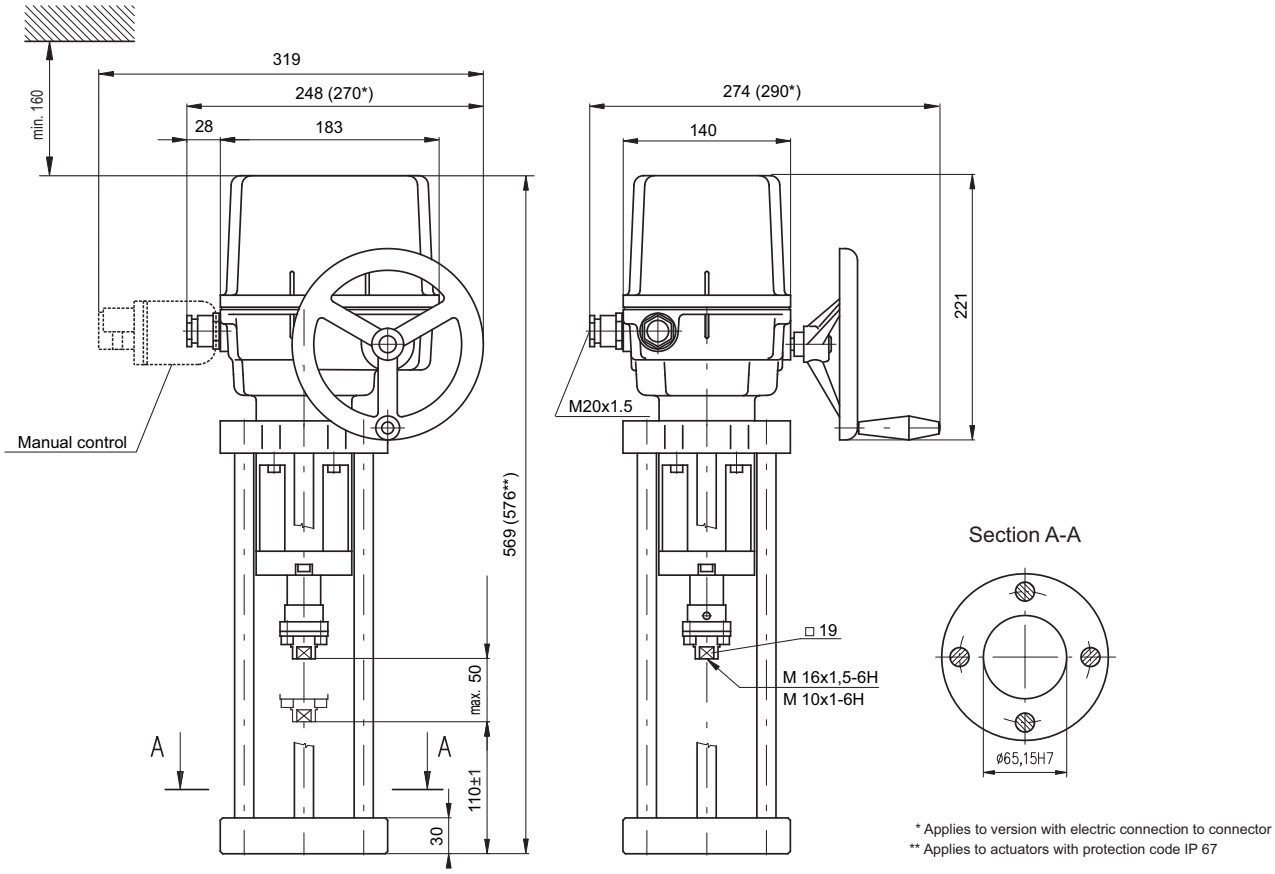
Electric actuators
ST 1, STR 1
Regada

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 webside **www.regada.sk**

Dimensions of actuators



* Applies to version with electric connection to connector
** Applies to actuators with protection code IP 67

Specification of actuator ST 1, STR 1

Electric actuator ST 1, STR 1					491.	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	Wiring: ---	Feedback: 1 x 100 Ω							B				
				1 x 2000 Ω							F				
		Double[6)]	---	2 x 100 Ω							K				
				2 x 2000 Ω							P				
	Electronic - current	Wo. its source	2-wire	4 - 20 mA							S				
											Q				
		With its source	3-wire[6)]	0 - 20 mA							T				
											U				
				4 - 20 mA							V				
											W				
	Capacity	Wo. its source	2-wire[6)]	4 - 20 mA							I				
		With its source	2-wire								J				
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.

EPI

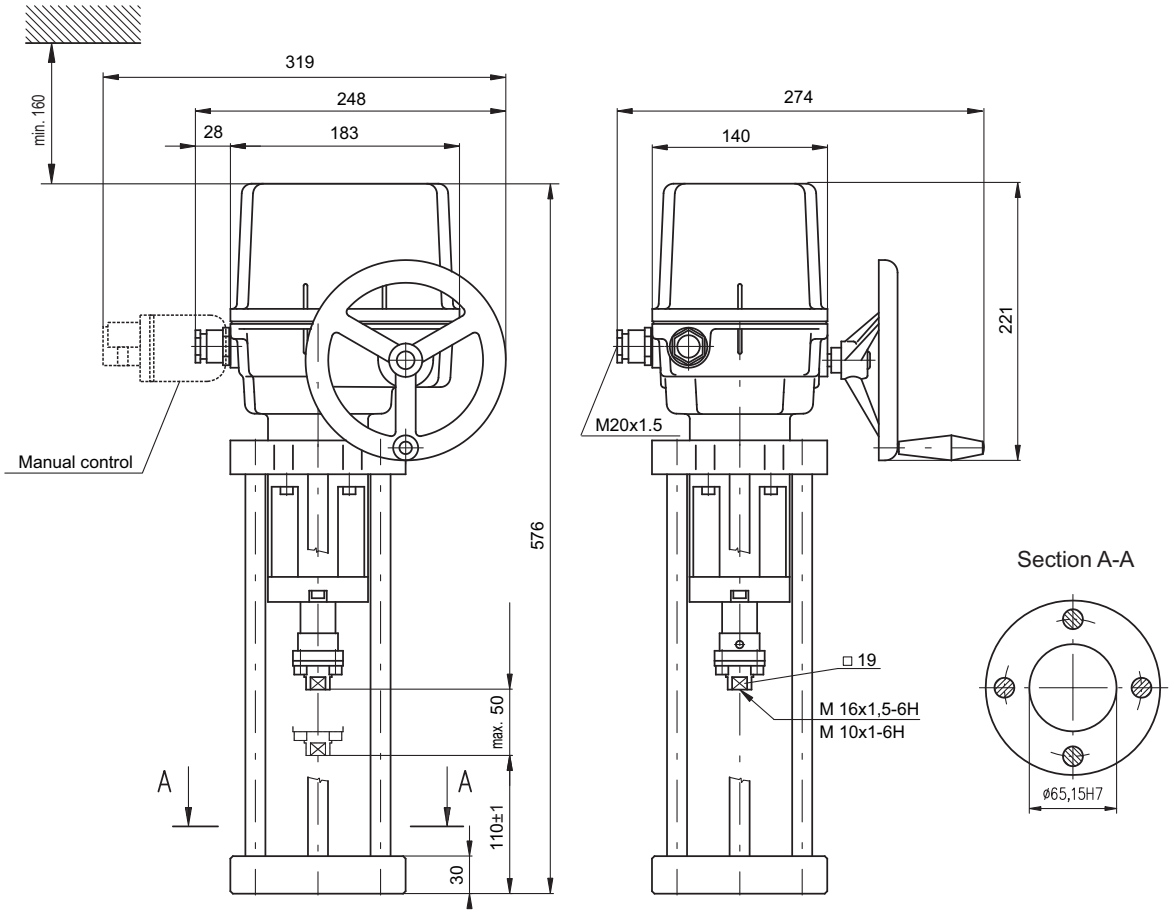
Electric actuators
STR 1PA
Regada

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 ℃
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 webside **www.regada.sk**

Dimensions of actuators



Specification of actuator STR 1PA

Parameter	Option	Value	Value	Value	Code									
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									
Resistance to surroundings	Cold	-25°C to +55°C	IP 67		3									
Resistance to surroundings	Tropical	-25°C to +55°C	IP 67		6									
Electric connection	Terminal board	Voltage	230 V AC				0							
Electric connection	Terminal board	Voltage	24 V AC				3							
Electric connection	Terminal board	Voltage	3x400 V AC				2							
Electric connection	Terminal board	Voltage	3x380 V AC				N							
Nominal force [N]	10000	Running speed	8 mm/min					0						
Nominal force [N]	10000	Running speed	10 mm/min					5						
Nominal force [N]	10000	Running speed	16 mm/min					1						
Nominal force [N]	7500	Running speed	32 mm/min					2						
Nominal force [N]	7500	Running speed	20 mm/min					6						
Travel	10-50 mm								I					
Control board DMS3	Control: Modulating	0/4 - 20 mA	ON - OFF and inching	24 V DC, Feedback 4 - 20 mA pasive						G				
Control board DMS3	Control: Modulating	0/2 - 10 V	ON - OFF and inching	24 V DC, Feedback 4 - 20 mA pasive						H				
Mechanical connection - flange, connecting height 110 mm, thread on con. stem M10x1 or M16x1,5											K			
Accessories		None												
Accessories	A	Adjustment of operating stroke to the required value											0	1
Accessories	D	The module of additional relay R3, R4, R5 (module DMS3 RE3)											0	5
Accessories	E	The module of additional relay R1, R2, R3, R4, R5, READY (module DMS3 RE6)											0	6
Accessories	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

EPJ

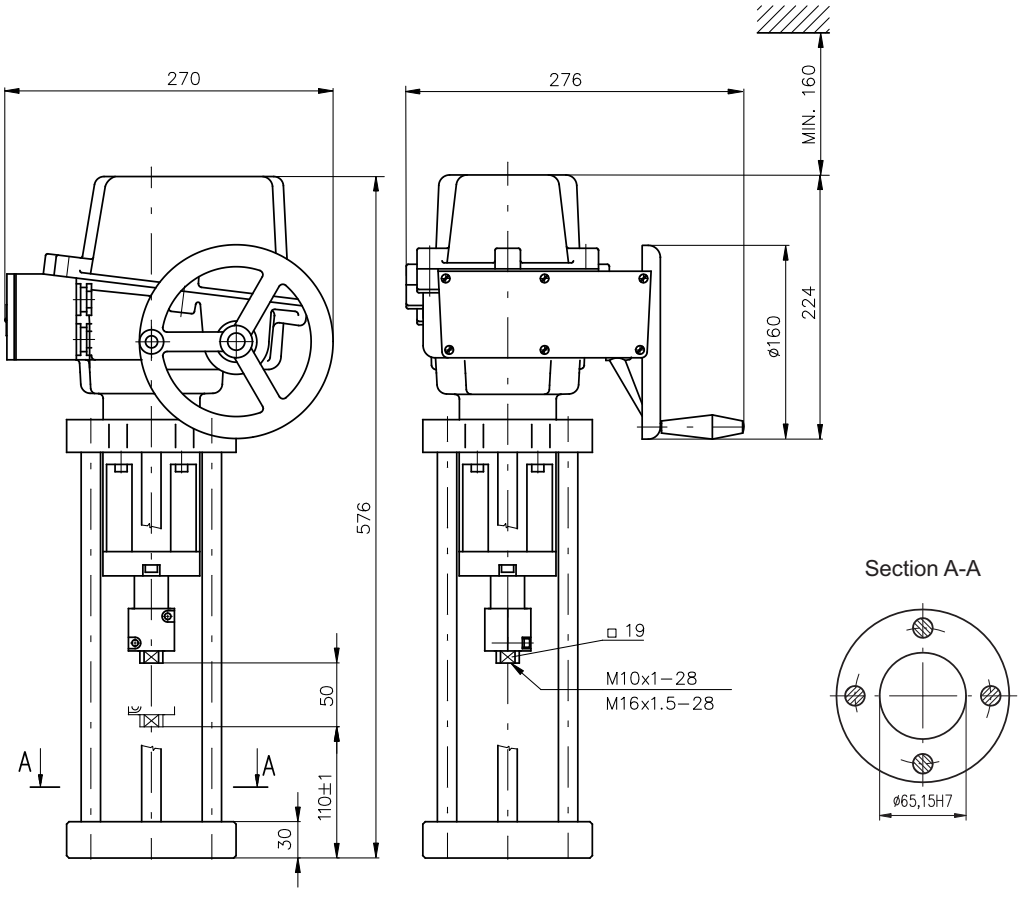
Electric actuators
ST 1-Ex
Regada

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 webside **www.regada.sk**

Dimensions of actuators



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	Wiring	---	Feedback	1 x 100 Ω													B
						1 x 2000 Ω													F
		Double [6) 58)]		---		2 x 100 Ω													K
						2 x 2000 Ω													P
	Electronic - current	Without its source		2 -wire		4 - 20 mA													S
				3 - wire [6]		0 - 20 mA													T
						4 - 20 mA													V
		With its source [59)]		2 - wire		4 - 20 mA													Q
				3 - wire [6]		0 - 20 mA													U
						4 - 20 mA													W
	Kapacitní	Without its source		2 - wire [6]		4 - 20 mA													I
		With its source [59)]				4 - 20 mA													J
		With its source [51)]		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

EPM

Electric actuators ST 2, STR 2 Regada

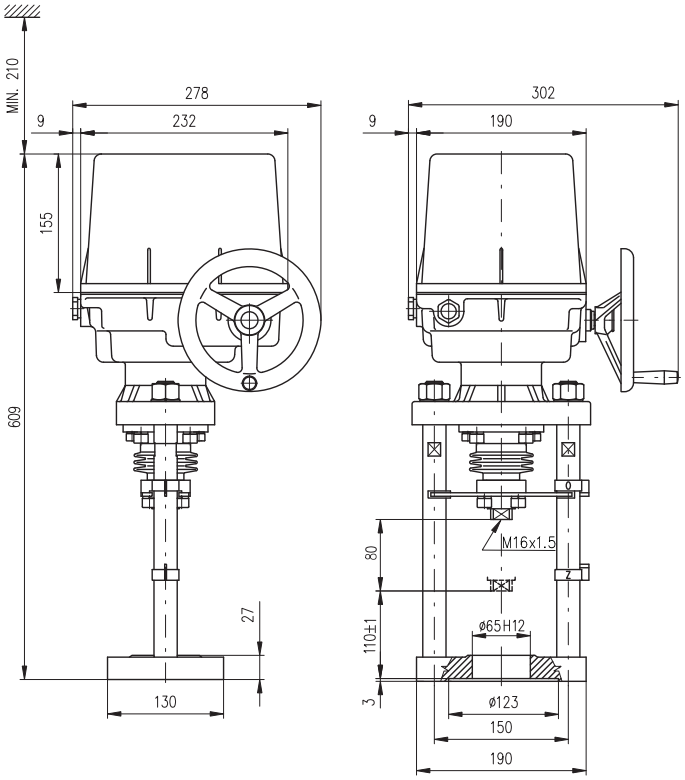
Technical data

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

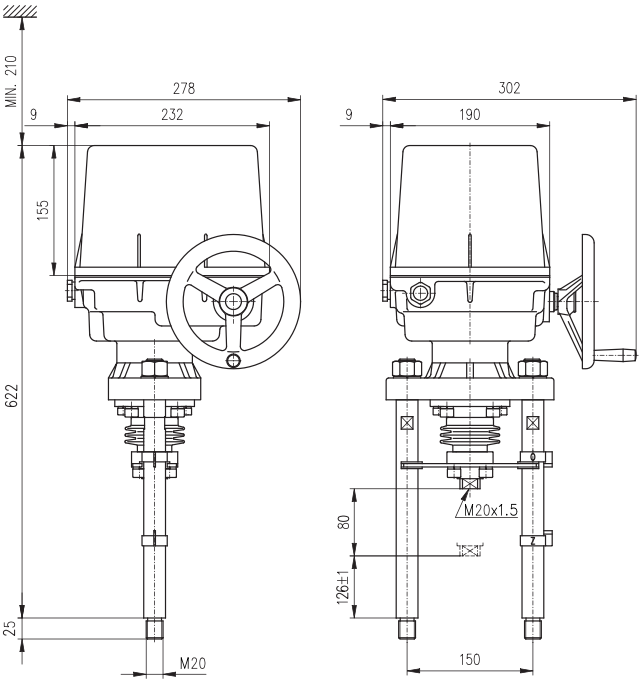
Note: Specifications and technical data are for information only. Detailed technical informations can be found in producer's data sheet or on the webside **www.regada.sk**

Dimensions of actuators

RV 3xx DN 80 to 150 (connection D)



RV 3xx DN 200 to 400 (connection M)



Specification of actuator ST 2, STR 2

Electric actuator ST 2, STR 2							492.	X	-	X	X	X	X	X	/	X	X
Resistance to surroundings	Standard	-25°C to +55°C	IP 65	Without positioner (ST 2)				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 67	With positioner (STR 2)		Resistive feedback		B									
			IP 67			Current feedback		D									
	Tropical	-25°C to +55°C	IP 67			Resistive feedback		G									
			IP 67			Current feedback		J									
Electric connection				To terminal board	Voltage	24 V DC				A							
						230 V AC				0							
						24 V AC				3							
						3x400 V AC[6)]				9							
						3x400 V AC[28)]				2							
						3x380 V AC[6)]				M							
						3x380 V AC[28)]				N							
				To cenector[21)]		24 V DC				C							
						230 V AC				5							
						24 V AC				8							
						3x400 V AC[6)]				7							
						3x400 V AC[28)]				6							
						3x380 V AC[6)]				R							
						3x380 V AC[28)]				S							
230 V AC, 24 V AC/DC - 65W				3x400 V AC													
Nominal force[N]	25 000	Motor power	20 W	Nominal force[N]	---	Motor power	90 W	Running speed	10 mm/min				A				
	20 000												H				
	16 000												J				
	25 000		60 W		25 000				20 mm/min				B				
	20 000				20 000								K				
	16 000				16 000								L				
	25 000				25 000				32 mm/min				M				
	20 000				20 000								N				
	16 000				16 000								P				
	25 000				25 000				40 mm/min				C				
	20 000				20 000								Q				
	16 000				16 000								R				
	20 000				25 000				50 mm/min[6)]				S				
	16 000				20 000								T				
	---				16 000								U				
	20 000				25 000				60 mm/min[6)]				D				
	16 000				20 000								V				
	---				16 000								W				
	16 000				20 000				80 mm/min[6)]				E				
	---				16 000								Y				
	---				20 000				100 mm/min[6)]				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												A				
	Resistance	Single	Connection		Feedback		1 x 100 Ω						B				
							1 x 2000 Ω						F				
		Double					2 x 100 Ω						K				
							2 x 2000 Ω						P				
	Electronic - current	Without its source		2-wire			4 - 20 mA						S				
		With its source											Q				
		Without its source		3-wire[6]			0 - 20 mA						T				
		With its source											U				
		Without its source					4 - 20 mA						V				
		With its source											W				
	Capacity	Without its source		2-wire[6]									I				
		With its source[51]		2-wire									J				
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 přídavné 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.

EPM

Electric actuators
STR 2PA
Regada

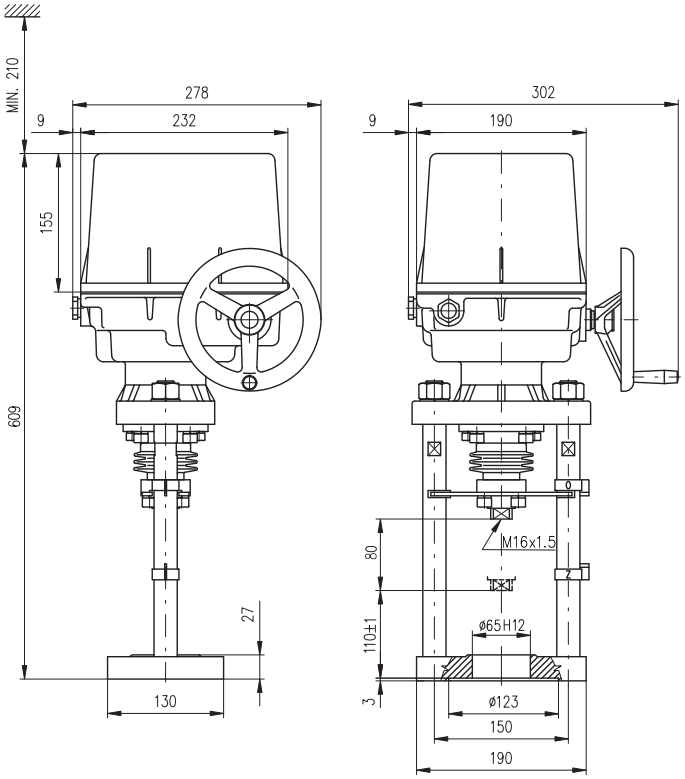
Technical data

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 ℃
Ambient humidity range	5 - 100% with condensation
Weight	17 to 21 kg

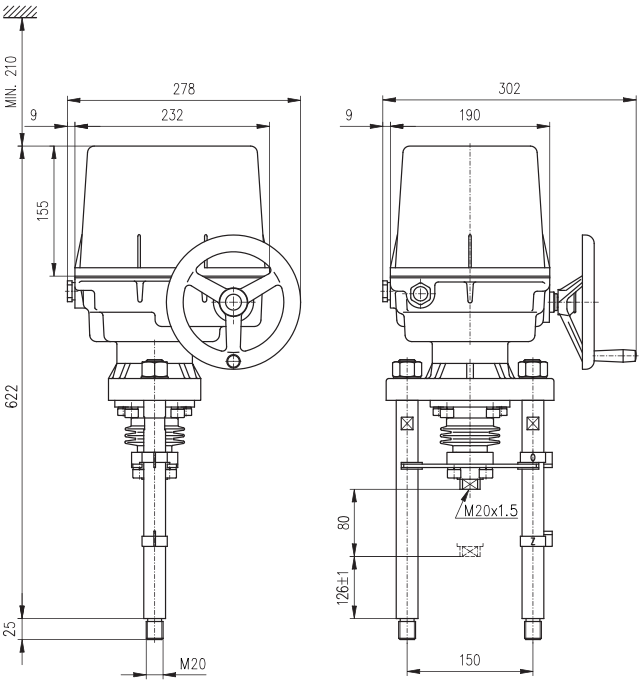
Note: Specifications and technical data are for information only. Detailed technical informations can be found in producer's data sheet or on the webside **www.regada.sk**

Dimensions of actuators

RV 3xx DN 80 to 150 (connection D)



RV 3xx DN 200 to 400 (connection M)



Specification of actuator STR 2PA

Electric actuator STR 2PA					432. 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
				3x380 V AC	N
		Bezkontaktní spínání		3x400 V AC	E
				3x380 V AC	F
Nominal force [N]		Running speed	230 V	3x400 V, 3x380 V	
25 000		10 mm/min	●	–	A
		20 mm/min	●	●	J
		32 mm/min	●	●	B
		40 mm/min	●	●	L
		50 mm/min	–	●	C
		60 mm/min	–	●	R
20 000		10 mm/min	●	–	D
		20 mm/min	●	●	V
		32 mm/min	●	●	W
		40 mm/min	●	●	E
		50 mm/min	●	–	Y
			–	–	Z
		60 mm/min	●	●	C
			–	●	R
		80 mm/min	–	●	D
		100 mm/min	–	●	V
16 000		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	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 M16x1,5				D
	Columns, connecting height 126 mm, thread on con. Stem M20x1,5				M
Accessories		None			
	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

PFA, PFB
PFF, PFC

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							
Function	direct	indirect	direct	indirect	direct	indirect	direct	indirect
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 controllling air into actuator. It is adjusted by switches and potentiometers.
Electropneumatic positioner (inteligent) type SRD 991	Device with electric input of 4 (0) to 20 mA and outlet of controllling 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 requied
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 requied
Air set type FRS923 (-40 to 80°C)	Reduces the supply air pressure to a value requied
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

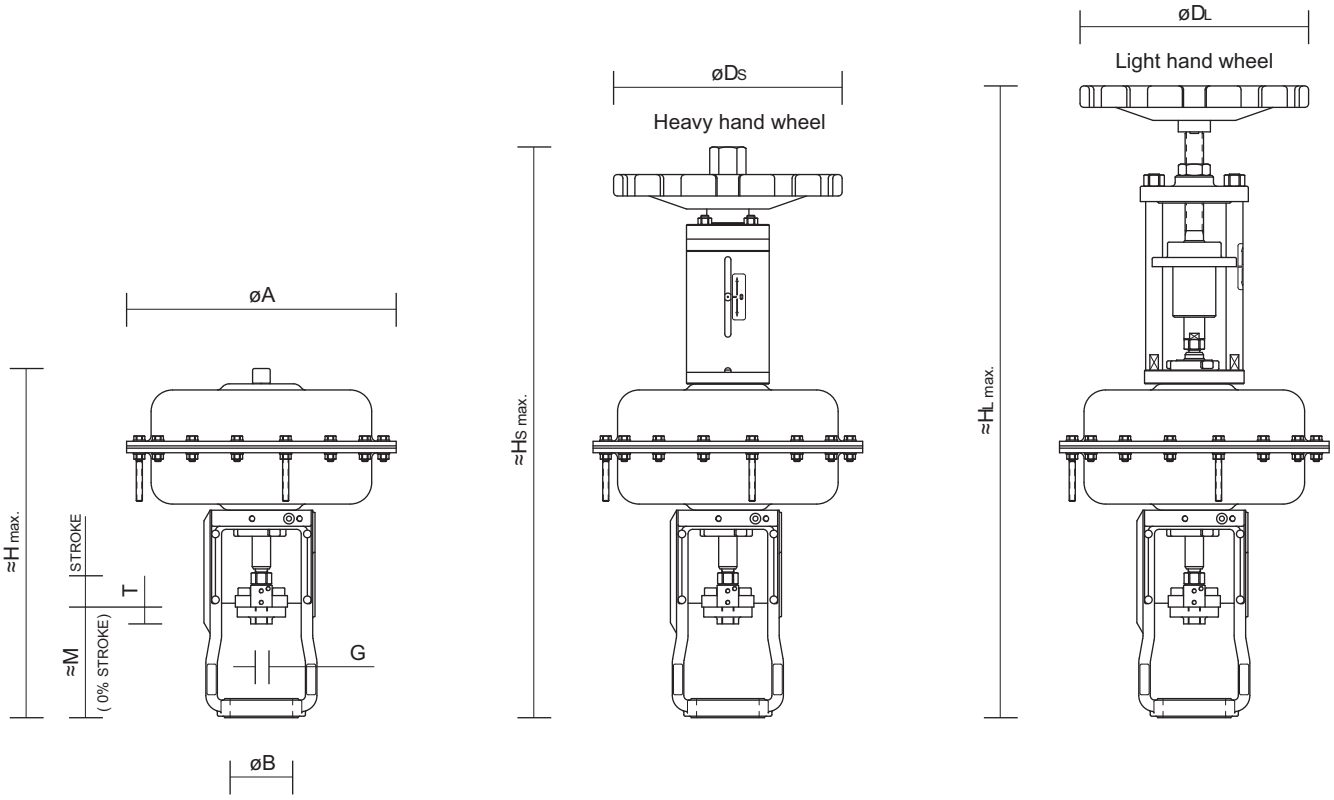
Pneumatic actuators Flowserve can operate with extremely high ambient temperatures with unique resistance to shock loads. They excel with resistance to vibrations and reached 10^6 of cycles in operation. It is possible to deliver the actuator with both fail to open and fail to close function, possibly 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 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

		PX XXX	X	X			X
Actuator type	125 cm²	PA 127					
	250 cm²	PA 252					
	500 cm²	PB 502					
	700 cm²	PB 700					
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 a 3002

Technical data

Type	PO 1502		PO 3002	
Marking in valve specification No.	PFD		PFE	
Feeding pressure	0,6 MPa max			
Function	direct	indirect	direct	indirect
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 (inteligent) 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 requied
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 requied
Air set type FRS923 (-40 to 80°C)	Reduces the supply air pressure to a value requied
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

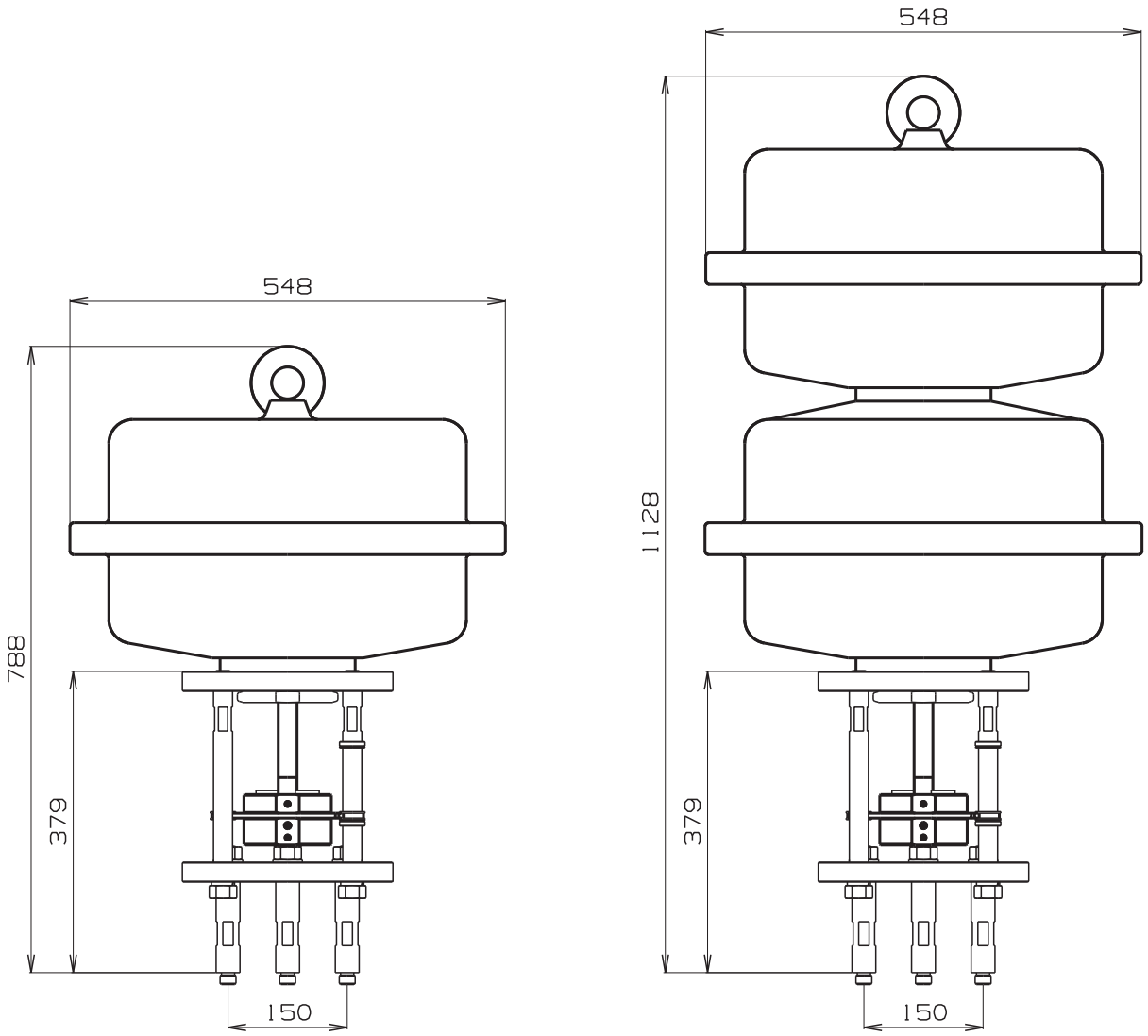
Pneumatic actuators Flowserve can operate with extremely high ambient temperatures with unique resistance to shock loads. They excel with resistance to vibrations and reached 10^6 of cycles in operation. It is possible to deliver the actuator with both fail to open and fail to close function, possibly 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)



Valve specification No. of Flowserve actuators series 1502 and 3002

			PO XXXX	X	XX	X	X	X
Actuator type		1500 cm²	PO 1502					
		3000 cm²	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

PJA

Pneumatic actuators 526 61
SPA Praha

Technical data

Type	526 61	
Marking in valve specification No.	PJA (without corector)	
Feeding pressure	max. 320 kPa	
Fail-safe 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

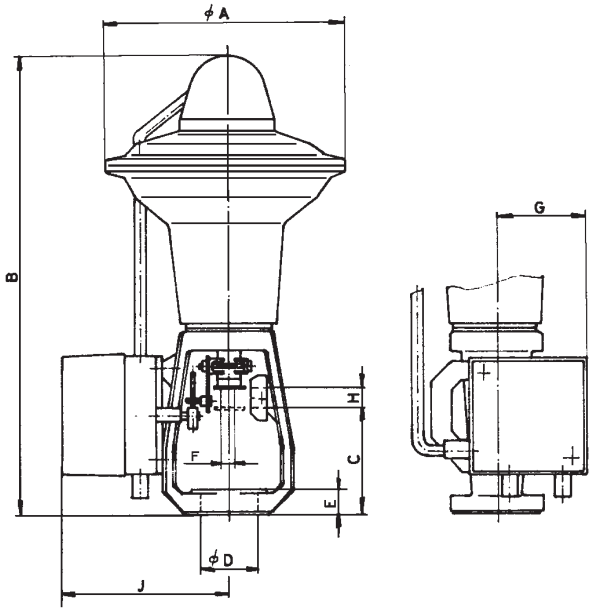
Feeding pressure must be increased proportionately to it. This pressure must not be higher than 320 kPa, otherwise an air set is required to be used.

Specification of actuators 526 61

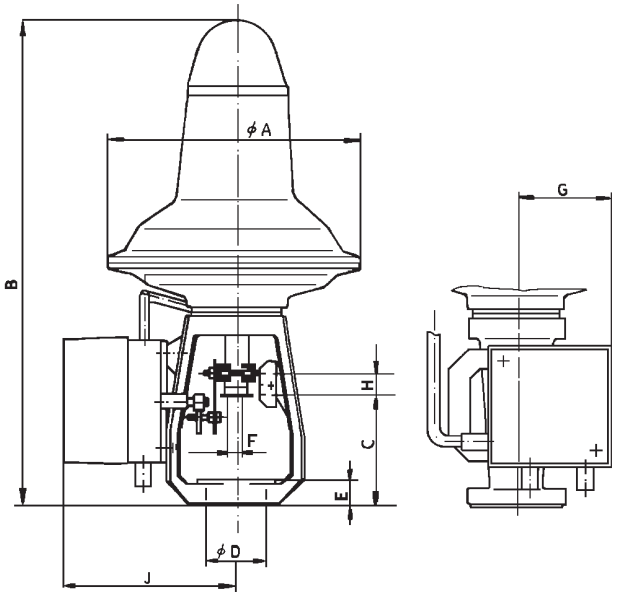
Pneumatic diaphragm servomotor, single acting, with clutch		526 6	X	.	X	X	X	X
Effective diaphragm area	250 cm^2		1					
Travel	16 mm (type 562 61)				1			
	20 mm (type 526 61 and 526 63)				2			
Operating spring range	20 - 100 kPa					1		
	40 - 200 kPa					2		
Fail-safe action	Normally open (NO)						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 (corector) 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 actautor (corector 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
Selenoid valve standard type SC G327A001	direct operated electromagnetic valve, execution 3/2, function U (universal), G1/4"
Selenoid 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
Selenoid valve inexplosive Eex d type NF G327A001	direct operated electromagnetic valve, execution 3/2, function U (universal), G 1/4“, flameproof enclosure

PJE

Pneumatic actuators 5222 SPA Praha

Technical data

Type	5222
Marking in valve specification No.	PJE
Feeding pressure	max. 350 kPa
Fail-safe 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)

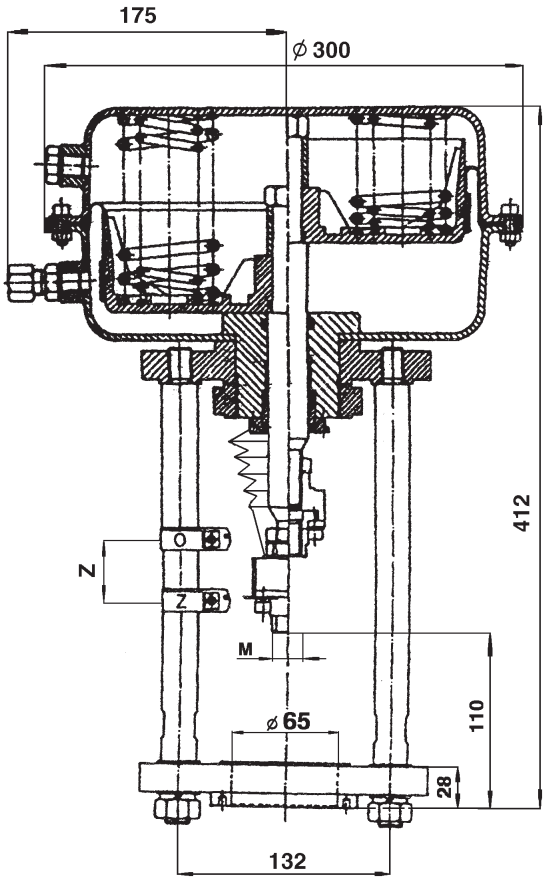
Accessories

Pneumatic positioner (corector) (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
Selenoid 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 selenoid valve with NC fail-safe action
Manual operating	for fail to open (NO) or fail to close function (NC) of actuator
Selenoid valve standard type SC G327A001	direct operated electromagnetic valve, execution 3/2, function U (universal), G1/4"
Selenoid 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
Selenoid valve inexplosive 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 diaphgram 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			
Fail-safe action	Direct NO			1	5			
	Indirect 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
Series 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).

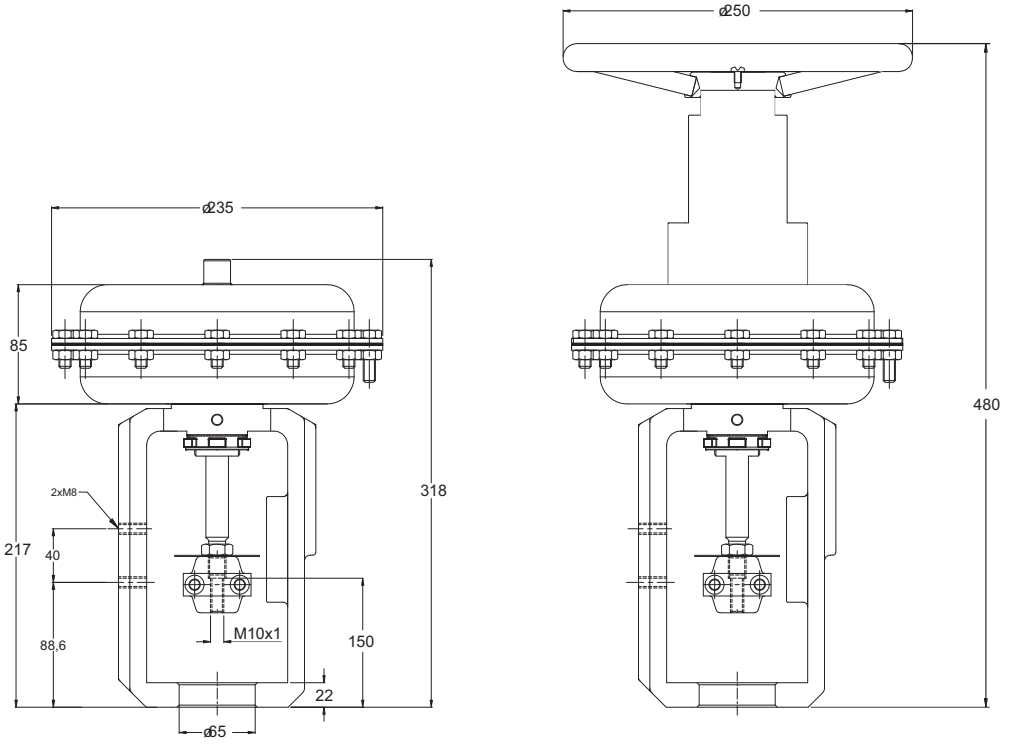
Indirect function ensures that actuator´s stem extends upon control air supply failure (valve closes).

Specification of LDM actuators

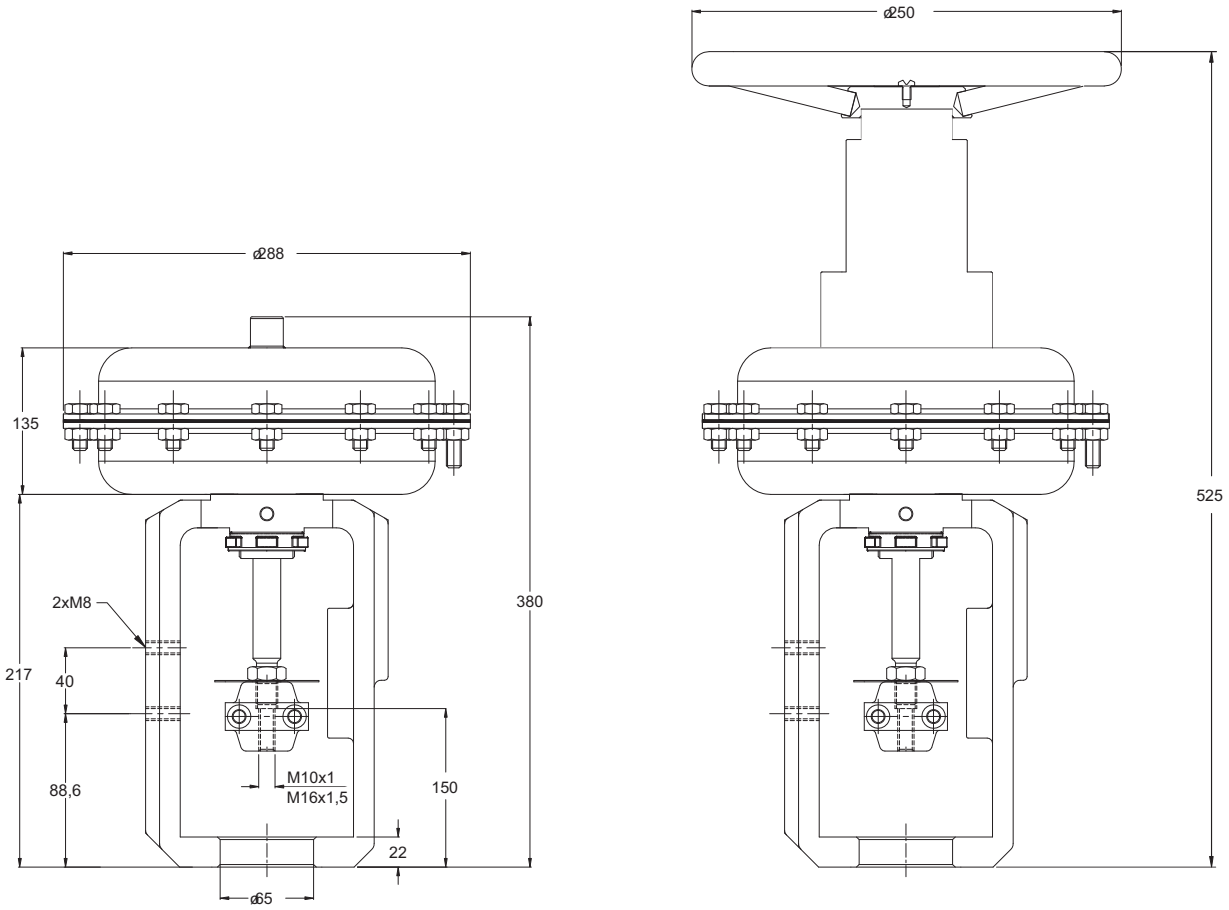
		PP XXX	XX	XX		XXX-XXX	X
Actuator type	230 cm²	PP 230					
	385 cm²	PP 385					
	700 cm²	PP 700					
	1400 cm²	PP 1400					
Function	Normally open (NO)		DA				
	Normally closed (NC)		RA				
Travel	16 mm			16			
	20 mm			20			
	40 mm			40			
	80 mm			80			
	100 mm			100			
Spring range	for example 40-200 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**

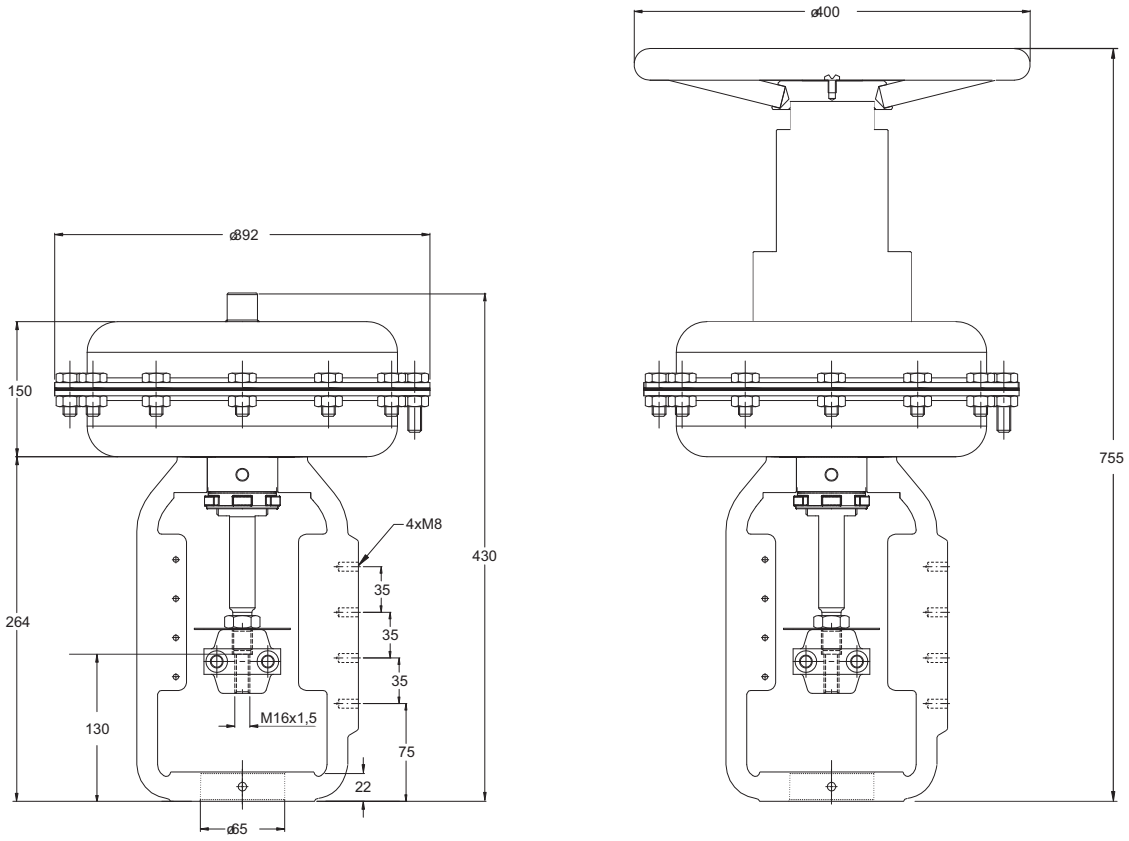
Dimensions of actuator PP230



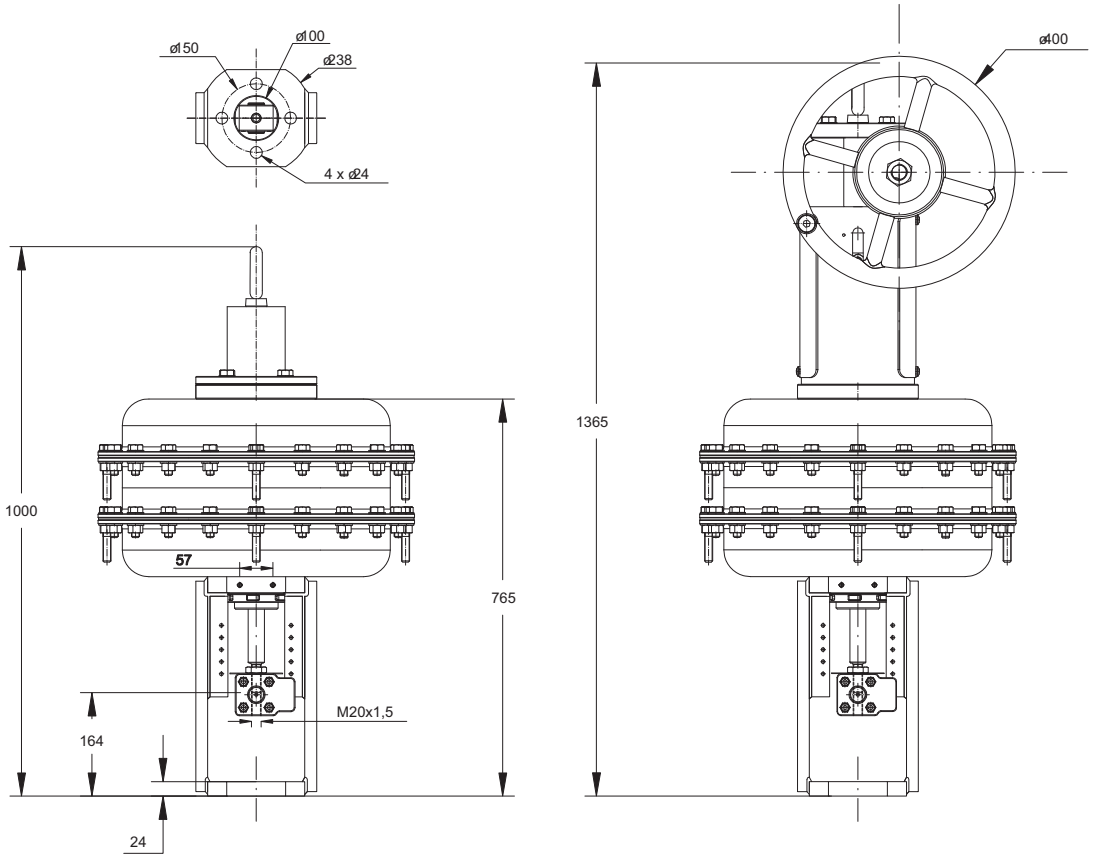
Dimensions of actuator PP385



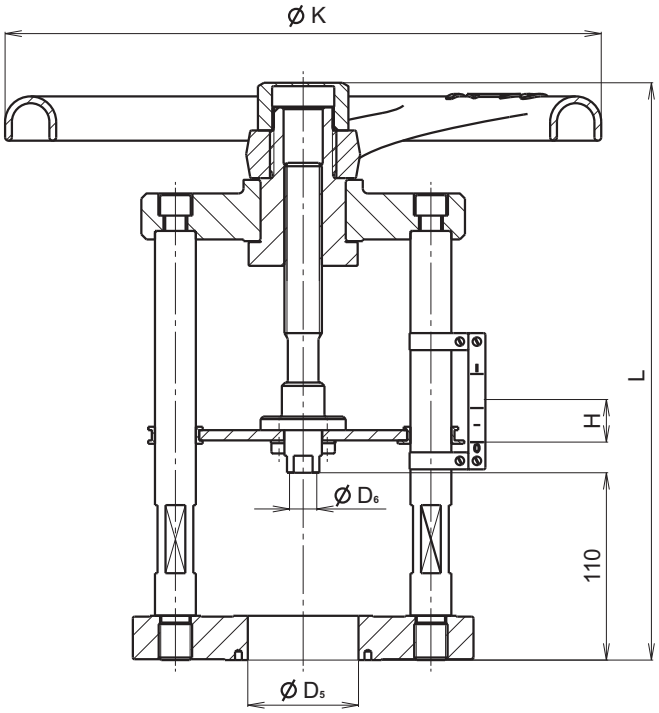
Dimensions of actuator PP700



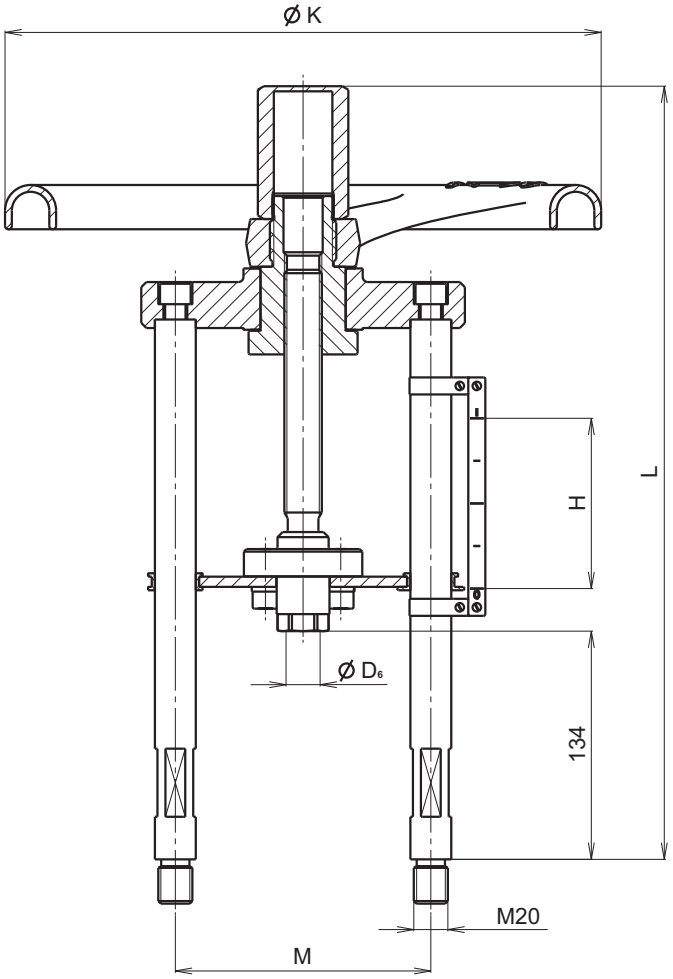
Dimensions of actuator PP1400



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	L	ØK	M	D_5	D_6	m	Ordering number (Part list number)
		mm	mm	mm	mm	mm	mm	kg	
15	R16	16	247	160	---	65	M10x1	5	S900 0231
20									
25									
32									
40									
50	R20	20	275	195				11	S900 0115
65									
80	R28	40	317	280			M16x1,5	13	S900 0116
100									
125	R35		339	350				15	S900 0117
150									
200		80	454		150	---	M20x1,5		S900 0141
250									
300									
400		100							S900 0235

Maximal permissible operating pressures according to ČSN EN 12516-1, or ČSN EN 1092-2 [MPa]

Material	PN	Temperature [°C]												
		RT [1]	100	150	200	250	300	350	375	400	425	450	475	500
Cast steel	40	3,90	3,41	3,17	2,84	2,60	2,35	2,19	2,16	2,11	---	---	---	---
1.0619 (GP240GH)	63	6,14	5,37	4,99	4,48	4,09	3,71	3,45	3,4	3,33	---	---	---	---
Chrommolybden	40	4,08	4,07	3,96	3,74	3,57	3,33	3,09	3,00	2,89	2,77	2,67	2,50	2,23
1.7357 (G17CrMo5-5)	63	6,43	6,41	6,24	5,88	5,63	5,24	4,89	4,73	4,55	4,36	4,2	3,94	3,51
Stainless steel	40	3,98	3,60	3,33	3,13	2,94	2,75	2,65	2,61	2,56	2,54	2,52	2,50	2,23
1.4581 (GX5CrNiMoNb19-11-2)	63	6,27	5,67	5,25	4,92	4,63	4,33	4,18	4,12	4,03	4,0	3,97	3,94	3,51

[1] -10°C to 50°C

Actuator marking in valve specification No.

Electric actuator 660 MIDI	E N B
Electric actuator Zepadyn 670	E N C
Eelectric actuator Zepadyn 671	E N E
Electric actuator Modact MTR	E P D
Electric actuator ST 0	E P K
Electric actuator ST 0.1	E P L
Electric actuator Isomact ST 1 Ex	E P J
Electric actuator Isomact ST 2	E P M
Electric actuator Modact MTN Control, MTP Control	E Y A
Electric actuator Modact MTN, MTP	E Y B
Electric actuator Modact MTNED, MTPED	E Y A
Electric actuator Auma SA 07.1	E A A
Electric actuator Auma SA Ex 07.1	E A B
Electric actuator Auma SAR 07.1	E A C
Electric actuator Auma SAR Ex 07.1	E A D
Electric actuator Auma SA 07.5	E A E
Electric actuator Auma SA Ex 07.5	E A F
Electric actuator Auma SAR 07.5	E A G
Electric actuator Auma SAR Ex 07.5	E A H
Electric actuator Auma SA 10.1	E A I
Electric actuator Auma SAR 10.1	E A J
Electric actuator Auma SAR Ex 10.1	E A K
Electric actuator Auma SA Ex 10.1	E A L

Electric actuator Schiebel AB3	E Z A
Electric actuator Schiebel exAB3	E Z B
Electric actuator Schiebel rAB3	E Z C
Electric actuator Schiebel exrAB3	E Z D
Electric actuator Schiebel AB5	E Z E
Electric actuator Schiebel exAB5	E Z F
Electric actuator Schiebel rAB5	E Z G
Electric actuator Schiebel exrAB5	E Z H
Electric actuator Schiebel rAB8	E Z K
Electric actuator Schiebel exrAB8	E Z L
Pneumatic actuator Flowserve PA 127	P F F
Pneumatic actuator FlowservePA 252	P F A
Pneumatic actuator FlowservePB 502	P F B
Pneumatic actuator FlowservePB 700	P F C
Pneumatic actuator FlowservePO 1502	P F D
Pneumatic actuator FlowservePO 3002	P F E
Pneumatic actuator SPA Praha 526 61.xxx1	P J A
Pneumatic actuator SPA Praha 5222xxxx1xx	P J E
Pneumatický pohon LDM PP 230	P V A
Pneumatický pohon LDM PP 385	P V B
Pneumatický pohon LDM PP 700	P V C
Pneumatický pohon LDM PP 1400	P V D
Hand wheel for DN 15 - 40	R 1 6
Hand wheel for DN 50 - 65	R 2 0
Hand wheel for DN 80 - 100	R 2 8
Hand wheel for DN 125 - 200	R 3 5

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