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ISO 9001 · ISO 14001
ISO 45001

LDM®

01 - 02.1
12.22.GB

CONTROL AND SHUT-OFF VALVES

200 line

POWER THROUGH IDEAS
www.ldmvalves.com

200 line

RV / UV 210 (Ex)
RV / UV 220 (Ex)
RV / UV 230 (Ex)

two-way, single-seated, control (shut-off) valve

RV 212 (Ex)
RV 222 (Ex)
RV 232 (Ex)

two-way, single-seated, control valve with pressure-balanced plug

RV 214 (Ex)
RV 224 (Ex)
RV 234 (Ex)

three-way mixing or diverting control valves

Control valves **200 line** are designed for regulation and shut-off of process liquid flow. In **Ex proof version** meet the requirements II 1/2G IIC T6...T1 Ga/Gb according to ČSN EN ISO 80079-36 (9/2016) and ČSN EN 1127-1 ed.2 (1/2012). The selected materials correspond to recommendations stipulated by ČSN EN 12516-1 (8/2015) - steel and ČSN EN 1503-3 (1/2002) - cast. The maximal permissible operating pressures in behaviour with types of material and temperature are specified in the table on page 102 of this catalogue.

Control

hand wheel or electromechanical actuators of producers
ZPA Nová Paka, Regada, ZPA Pečky, Schiebel, Auma
pneumatic actuators of producers **Flowserve, A. Hock**

Application

RV / UV 2xx - heating, ventilation, power generation and chemical processing industries
RV / UV 2xx Ex - gas and chemical industries

Process media

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

The usage of the valve made of spheroidal cast iron (RV 210) for steam is limited by the following parameters. The steam must be superheated (its dryness at valve inlet $x_1 \geq 0{,}98$) and inlet pressure $p_1 \leq 0{,}4$ MPa when differential pressure is of above-critical value or $p_1 \leq 1{,}6$ MPa when differential pressure is of under critical value. In case these two conditions are not kept, it is necessary to use the valve body made of cast steel (RV 22x). To ensure a reliable regulation, the producers recommends to pipe a strainer in front of the valve into pipeline or ensure in any other way that process medium does not contain abrasive particles or impurities.

Installation

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

It is necessary to protect the actuator from excessive heat from the pipeline at medium temperatures above 150 °C, e.g. by appropriately insulating the pipeline and valve and tilting the actuator from the vertical axis.
When the valve is used as diverting, process medium flows through common valve port AB and split streams leave through valve ports A and B.).
Detailed informations are given in the instruction for installation and service.

Packings

O-ring EPDM

Packing is designed for non-aggressive media with temperature from 0°C to 140°C. Packing excels with its reliability and long time tightness. It has ability of sealing even if the valve stem is a bit damaged. Low frictional forces enables valve to be actuated with a low-linear-force actuator. Service life of sealing rings depends on operating conditions and it is more than 400 000 cycles on average.

DRSpack® (PTFE)

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

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

Graphite

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

Bellows

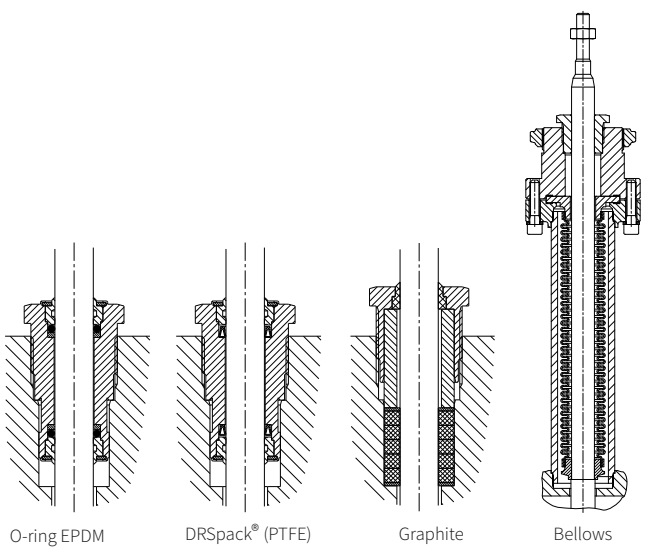
Bellows packing is suitable for low and high temperatures ranging from -50°C to 550°C. Bellows ensures absolute tightness to environment. Packing is equipped with safety PTFE packing as standard to prevent medium from leaking in case of damage to bellows. Intensive linear forces are not required.

Application of bellows packing

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

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

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



Service life of bellows packing

Bellows material	Temperature				
	200°C	300°C	400°C	500°C	550°C
1.4541	100 000	40 000	28 000	7 000	not apllicable
1.4571	90 000	34 000	22 000	13 000	8 000

Values specified in the table above show minimal guaranteed number of cycles with the valve full stroke when the bellows is fully lenghtened and pressed. In regulation, when the valve plug moves only in a portion of the stroke range at the inner centre of the valve, the service life of the bellows is many times longer then depending on concrete operating conditions.

Principles for plug type selection

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

Rangeability

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

RV / UV 2x0

Control and Shut-off valves

DN 15 - 400
PN 10 - 40

Control valves **RV / UV 210 (Ex), RV / UV 220 (Ex)** and **RV / UV 230 (Ex)** (further only RV / UV 2x0 (Ex) are single-seated valves designed for regulation and shut-off of process liquid flow.

Technical data

Series		RV / UV 210 (Ex)	RV / UV 220 (Ex)	RV / UV 230 (Ex)
Type of valve		**Two-way, single-seated, control (shut-off) valve**		
Nominal size range		DN 15 to 400	DN 15 to 400	
Nominal pressure		DN 15-150: PN16, 40; DN 200-400: PN16	PN 10, 16, 25, 40	
Body material		Spheroidal cast iron EN-JS 1025 (EN-GJS-400-18-LT)	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	1.4028 / 17 023.6	1.4571 / 17 348.4
DIN W.Nr./ČSN	DN 65 - 400	1.4027 / 42 2906.5	1.4027 / 42 2906.5	1.4581 / 42 2941.4
Plug material	DN 15 - 65	1.4021 / 17 027.6	1.4021 / 17 027.6	1.4571 / 17 348.4
DIN W.Nr./ČSN	DN 80 - 150	1.4027 / 42 2906.5	1.4027 / 42 2906.5	1.4581 / 42 2941.4
	DN 200 - 400	1.4021 / 17 022.6	1.4021 / 17 022.6	1.4581 / 42 2941.4
Stem material	DN 15 - 150	1.4305		1.4571
	DN 200 - 400	1.4923		1.4980
Operating temperature range		-10 to 300 °C	-50 to 500 °C - (request for negative temperature need to be specified in order)	
Face to face dimensions		Section 1 acc. to ČSN EN 558 (9/2017)		
Connection flanges		Acc. to ČSN-EN 1092-2 (1/1999)	Acc. to ČSN EN 1092-1 (11/2018)	
Flange faces		Typ B1 (raised-faced) acc. to ČSN-EN 1092-2 (1/1999)	Type B1 (raised-faced) or Type F (female) or Type D (groove) according to ČSN EN 1092-1 (11/2018)	
Type of plug		V-ported, contoured, perforated		
Flow characteristic		Linear, equal-percentage, LDMspline®, parabolic, on - off		
Kvs value		0.01 to 1600 m^3/h		
Leakage rate		Class III. acc. to ČSN EN 1349 (7/2010) (<0.1% Kvs) for c. valves with metal-metal seat sealing		
		Class IV. acc. to ČSN EN 1349 (7/2010) (<0.01% Kvs) for c. valves with metal-PTFE seat sealing		
		Class IV. acc. to ČSN-EN 1349 (7/2010) (<0.01% Kvs) for shut-off valve		
Leakage rate for Ex version		RV 2xx Class IV. acc. to ČSN EN 1349 (7/2010) (<0.01% Kvs); UV 2xx Rate C acc. to ISO 5208:2008		
Rangeability r		50 : 1		
Packing		O - ring EPDM t_{max}=140°C, DRSpack®(PTFE) t_{max}=260°C, Exp. graphite, bellows t_{max}=500°C		

Kvs values and differential pressures Δp_{max} [MPa] of valves DN 15 - 150 with V-ported plugs, contoured plugs (flow direction below plug) for electromechanical actuators

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

For further information on actuating, see actuators' catalogue sheets	Actuating (actuator)	PTN 2.20 MIDI 660	ST 0	PTN 2.32 MIDI 660	MIDI 660 ST 0 ST 0.1 PTN 2.40	AUMA Schiebel Rotork Sipos	Zepadyn ST 1 Ex ST 0.1 PTN 6
	Marking in valve specification No.	ERB ENB	EPK	ERC ENB	ENB EPK EPL ERC	EA..., EZ..., EQ..., ET...	ENC EPJ EPL ERD
	Linear force	2 kN	2,5 kN	3,2 kN	4,0 kN	5 kN	6,3 kN

		Kvs [m³/h]									Δp_{max} [Mpa]		Δp_{max} [Mpa]		Δp_{max} [Mpa]		Δp_{max} [Mpa]		Δp_{max} [Mpa]		Δp_{max} [Mpa]	
DN	H	1	2	3	4	5	6	7	8	9	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE
15	16	---	2.5 [1]	1.6 [1]	1.0 [1]	0.6 [1]	0.4 [1]	0.25 [1]	0.16 [3]	0.1 [3]	4.00	---	4.00	---	4.00	---	4.00	---	4.00	---	4.00	---
15		4.0 [1]	---	---	---	---	---	---	---	---	4.00	---	4.00	---	4.00	---	4.00	---	4.00	---	4.00	---
20		---	---	2.5 [1]	1.6 [1]	1.0 [1]	0.6 [1]	---	---	---	4.00	---	4.00	---	4.00	---	4.00	---	4.00	---	4.00	---
20		---	4.0 [1]	---	---	---	---	---	---	---	4.00	---	4.00	---	4.00	---	4.00	---	4.00	---	4.00	---
20		6.3 [1]	---	---	---	---	---	---	---	---	3.77	---	4.00	---	4.00	---	4.00	---	4.00	---	4.00	---
25		---	---	---	2.5 [1]	1.6 [1]	---	---	---	---	4.00	---	4.00	---	4.00	---	4.00	---	4.00	---	4.00	---
25		10.0	6.3 [2]	4.0 [2]	---	---	---	---	---	---	2.24	2.65	3.16	3.57	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
32		---	---	---	4.0 [1]	---	---	---	---	---	4.00	---	4.00	---	4.00	---	4.00	---	4.00	---	4.00	---
32		16.0	10.0	6.3 [2]	---	---	---	---	---	---	1.28	1.60	1.83	2.15	2.61	2.92	3.49	3.81	4.00	4.00	4.00	4.00
40		25.0	16.0	10.0	---	---	---	---	---	---	0.77	1.02	1.12	1.38	1.62	1.87	2.19	2.44	2.90	3.15	3.60	3.90
50	25	40.0	25.0	16.0	---	---	---	---	---	---	---	---	0.63	0.82	0.93	1.12	1.27	1.46	1.69	1.88	2.10	2.30
65		63.0	40.0	25.0	---	---	---	---	---	---	---	---	0.35	0.50	0.53	0.68	0.74	0.89	1.00	1.15	1.20	1.40
80	40	100.0	63.0	40.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.73	0.86
100		160.0	100.0	63.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.45	0.56
125		250.0	160.0	100.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.27	0.36
150		360.0	250.0	160.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.18	0.25

For further information on actuating, see actuators' catalogue sheets *) For DN 15 - 40 with hand wheel is Δp_{max} = 4.00 MPa.	Actuating (actuator)	AUMA Schiebel Rotork Sipos	AUMA Schiebel Rotork Sipos	Zepadyn Modact MTR PTN 6	Modact Cont. Modact MTN Auma Schiebel	Modact MTR ST 2 Zepadyn 671 PTN 7	Hand wheel *)
	Marking in valve specification No.	EA..., EZ..., EQ..., ET...	EA..., EZ..., EQ..., ET...	ENC EPD ERD	EYA EYB EA..., EZ...	EPD EPM ENE ERG	Rxx
	Linear force	7,5 kN	10 kN	10 kN	15 kN	16 kN	

		Kvs [m³/h]							Δp_{max} [Mpa]		Δp_{max} [Mpa]		Δp_{max} [Mpa]		Δp_{max} [Mpa]		Δp_{max} [Mpa]	
DN	H	1	2	3	4	5	6	7	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE
50	25	40.0	25.0	16.0	---	---	---	---	2.76	2.95	3.82	4.00	3.82	4.00	---	---	---	---	3.80	4.00
65		63.0	40.0	25.0	---	---	---	---	1.65	1.80	2.30	2.45	2.30	2.45	---	---	---	---	2.30	2.45
80	40	100.0	63.0	40.0	---	---	---	---	1.01	1.13	1.46	1.58	1.46	1.58	2.36	2.48	2.54	2.66	2.54	2.66
100		160.0	100.0	63.0	---	---	---	---	0.63	0.73	0.92	1.02	0.92	1.02	1.50	1.61	1.62	1.72	1.62	1.72
125		250.0	160.0	100.0	---	---	---	---	0.39	0.47	0.58	0.66	0.58	0.66	0.96	1.04	1.03	1.12	1.03	1.12
150		360.0	250.0	160.0	---	---	---	---	0.26	0.33	0.39	0.46	0.39	0.46	0.66	0.73	0.71	0.78	0.71	0.78

1) parabolic plug
2) V-ported plug with linear characteristic, parabolic plug with equal-percentage, LDMspline® or parabolic characteristic
3) valve with micro-throttling trim. Version with Kvs 0.01 to 0.063 m³/hour is possible after agreement with the producer.
LDMspline® or parabolic characteristic from Kvs ≥ 1.0, equal-percentage, from Kvs ≥ 1.4
Perforated plug available only with Kvs values in shadowed frames with the following restrictions:
- Kvs values 2.5 to 1.6 m³/hour available with linear characteristic only
- Perforated plug with Kvs value acc. to column No. 2 available with linear or parabolic characteristic only.

Max. differential pressure Δp for valves PN 16 must be 1.6 MPa
metal - version with metal - metal seat sealing
PTFE - version with metal - PTFE seat sealing (is not applicable to contoured plugs)

Max. differential pressures specified in table apply to PTFE and O-ring packing.
Δp_{max} for bellows must be consulted with the producer.
Values Δp_{max} are set for the most unfavourable pressure ratios on the valve PN 40, but in concrete cases the real Δp_{max} value can be higher than values specified in the table above.

Kvs values and differential pressures Δp_{max} [MPa] of valves DN 15 - 150 with V-ported plugs, contoured plugs (flow direction below plug) for pneumatic actuators

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

For further information on actuating, see actuators' catalogue sheets

Pneumatic actuator		Flowserve PA 253		Flowserve PB 503	
Specification No. of actuator		BADxAA	BVCxZA	BADxAB	BVCxZB
Actuator function		direct	indirect	direct	indirect
Spring range	[bar]	0,2 - 1,0	1,5 - 2,7	0,2 - 1,0	1,5 - 2,7
Spring setting	[bar]	0,2 - 0,84	1,75 - 2,7	0,2 - 0,7	1,95 - 2,7
Feeding pressure	[bar]	3,0	2,9	3,0	2,9
Marking in valve specific. No.		PFA		PFB	
Linear force		4,9 kN	4,35 kN	10,5 kN	9,75 kN

		Kvs [m³/h]									Δp_{max} [Mpa]		Δp_{max} [Mpa]		Δp_{max} [Mpa]		Δp_{max} [Mpa]	
DN	H	1	2	3	4	5	6	7	8	9	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE
15	16	---	2.5 [1]	1.6 [1]	1.0 [1]	0.6 [1]	0.4 [1]	0.25 [1]	0.16 [3]	0.1 [3]	4.00	---	4.00	---	---	---	---	---
15		4.0 [1]	---	---	---	---	---	---	---	---	4.00	---	4.00	---	---	---	---	---
20		---	---	2.5 [1]	1.6 [1]	1.0 [1]	0.6 [1]	---	---	---	4.00	---	4.00	---	---	---	---	---
20		---	4.0 [1]	---	---	---	---	---	---	---	4.00	---	4.00	---	---	---	---	---
20		6.3 [1]	---	---	---	---	---	---	---	---	4.00	---	4.00	---	---	---	---	---
25		---	---	---	2.5 [1]	1.6 [1]	---	---	---	---	4.00	---	4.00	---	---	---	---	---
25		10.0	6.3 [2]	4.0 [2]	---	---	---	---	---	---	4.00	4.00	4.00	4.00	---	---	---	---
32		---	---	---	4.0 [1]	---	---	---	---	---	4.00	---	4.00	---	---	---	---	---
32		16.0	10.0	6.3 [2]	---	---	---	---	---	---	4.00	4.00	3.88	4.00	---	---	---	---
40		25.0	16.0	10.0	---	---	---	---	---	---	2.83	3.08	2.44	2.69	---	---	---	---
50	25	40.0	25.0	16.0	---	---	---	---	---	---	---	---	---	---	4.00	4.00	3.71	3.91
65		63.0	40.0	25.0	---	---	---	---	---	---	---	---	---	---	2.43	2.58	2.23	2.38

For further information on actuating, see actuators' catalogue sheets

Pneumatic actuator		A. Hock 2109		A. Hock 2112-30	
Specification No. of actuator		P2-0K-AL1	P2-0K-VL2	P2-0K-AM1	P2-0K-BM2
Actuator function		direct	indirect	direct	indirect
Spring range	[bar]	0,2 - 1,0	1,2 - 3,0	0,2 - 1,0	0,8 - 2,2
Spring setting	[bar]	0,2 - 0,84	1,56 - 3,0	0,2 - 0,87	1,03 - 2,2
Feeding pressure	[bar]	2,4	3,2	2,2	2,4
Marking in valve specific. No.		PHF		PHA	
Linear force		4,6 kN	4,6 kN	7,6 kN	5,9 kN

		Kvs [m³/h]									Δp_{max} [Mpa]		Δp_{max} [Mpa]		Δp_{max} [Mpa]		Δp_{max} [Mpa]	
DN	H	1	2	3	4	5	6	7	8	9	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE
15	16	---	2.5 [1]	1.6 [1]	1.0 [1]	0.6 [1]	0.4 [1]	0.25 [1]	0.16 [3]	0.1 [3]	4.00	---	4.00	---	---	---	---	---
15		4.0 [1]	---	---	---	---	---	---	---	---	4.00	---	4.00	---	---	---	---	---
20		---	---	2.5 [1]	1.6 [1]	1.0 [1]	0.6 [1]	---	---	---	4.00	---	4.00	---	---	---	---	---
20		---	4.0 [1]	---	---	---	---	---	---	---	4.00	---	4.00	---	---	---	---	---
20		6.3 [1]	---	---	---	---	---	---	---	---	4.00	---	4.00	---	---	---	---	---
25		---	---	---	2.5 [1]	1.6 [1]	---	---	---	---	4.00	---	4.00	---	---	---	---	---
25		10.0	6.3 [2]	4.0 [2]	---	---	---	---	---	---	4.00	4.00	4.00	4.00	---	---	---	---
32		---	---	---	4.0 [1]	---	---	---	---	---	4.00	---	4.00	---	---	---	---	---
32		16.0	10.0	6.3 [2]	---	---	---	---	---	---	4.00	4.00	4.00	4.00	---	---	---	---
40		25.0	16.0	10.0	---	---	---	---	---	---	2.61	2.87	2.61	2.87	---	---	---	---
50	25	40.0	25.0	16.0	---	---	---	---	---	---	---	---	---	---	2.80	2.99	2.08	2.27
65		63.0	40.0	25.0	---	---	---	---	---	---	---	---	---	---	1.67	1.82	1.23	1.38

The table continues on next page

For further information on actuating, see actuators' catalogue sheets

Pneumatic actuator						Flowserve PB 503				Flowserve PB 701			
Specification No. of actuator						BADxAB		BVCxZB		BADxAB		BVCxZB	
Actuator function						direct		indirect		direct		indirect	
Spring range [bar]						0,2 - 1,0		1,5 - 2,7		0,2 - 1,0		1,5 - 2,7	
Spring setting [bar]						0,2 - 1,0		1,5 - 2,7		0,2 - 1,0		1,5 - 2,7	
Feeding pressure [bar]						3,0		2,9		3,2		2,9	
Marking in valve specific. No.						PFB				PFC			
Linear force						9,0 kN		7,5 kN		14 kN		10,5 kN	
		Kvs [m³/h]				Δp_{max} [Mpa]		Δp_{max} [Mpa]		Δp_{max} [Mpa]		Δp_{max} [Mpa]	
DN	H	1	2	3	4	5	6	7	8	9	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE
80	40	100.0	63.0	40.0	---	---	---	---	---	---	1.28	1.40	1.01	1.13	2.18	2.30	1.55	1.67
100		160.0	100.0	63.0	---	---	---	---	---	---	0.80	0.91	0.63	0.73	1.39	1.49	0.98	1.08
125		250.0	160.0	100.0	---	---	---	---	---	---	0.50	0.59	0.39	0.47	0.88	0.96	0.61	0.70
150		360.0	250.0	160.0	---	---	---	---	---	---	0.34	0.41	0.26	0.33	0.60	0.68	0.42	0.49

For further information on actuating, see actuators' catalogue sheets

Pneumatic actuator						A. Hock 2112-50				A. Hock 2112-50			
Specification No. of actuator						P2-0K-AI1		P2-0K-XI2		P2-0K-AI1		P2-0K-SI2	
Actuator function						direct		indirect		direct		indirect	
Spring range [bar]						0,2 - 1,0		0,7 - 2,5		0,2 - 1,0		0,8 - 2,8	
Spring setting [bar]						0,2 - 0,84		1,06 - 2,5		0,2 - 0,84		1,2 - 2,8	
Feeding pressure [bar]						2,6		2,8		3,6		3,1	
Marking in valve specific. No.						PHA				PHA			
Linear force						10 kN		6,0 kN		15,8 kN		6,9 kN	
		Kvs [m³/h]				Δp_{max} [Mpa]		Δp_{max} [Mpa]		Δp_{max} [Mpa]		Δp_{max} [Mpa]	
DN	H	1	2	3	4	5	6	7	8	9	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE
80	40	100.0	63.0	40.0	---	---	---	---	---	---	1.46	1.58	0.73	0.86	2.50	2.63	0.90	1.03
100		160.0	100.0	63.0	---	---	---	---	---	---	0.92	1.02	0.45	0.56	1.60	1.70	0.56	0.66
125		250.0	160.0	100.0	---	---	---	---	---	---	0.58	0.66	0.27	0.36	1.02	1.10	0.34	0.43
150		360.0	250.0	160.0	---	---	---	---	---	---	0.39	0.46	0.18	0.25	0.70	0.77	0.23	0.30

1) parabolic plug

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

3) valve with micro-throttling trim. Version with Kvs 0.01 to 0.063 m^3/hour is possible after agreement with the producer.

LDMspline® and parabolic characteristic from Kvs ≧ 1.0, equal-percentage, from Kvs ≧ 0.4

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

- Kvs values 2.5 to 1.6 m^3/hour available with linear characteristic only
- Perforated plug with Kvs value acc. to column No. 2 available with linear or parabolic characteristic only.

Max. differential pressure Δp for valves PN 16 must be 1.6 MPa

metal - version with metal - metal seat sealing

PTFE - version with metal - PTFE seat sealing (is not applicable to contoured plugs)

Max. differential pressures specified in table apply to PTFE and O-ring packing.

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

Values Δp_{max} are set for the most unfavourable pressure ratios on the valve PN 40, but in concrete cases the real Δp_{max} value can be higher than values specified in the table above.

Kvs values and differential pressures Δp_{max} [MPa] of valves DN 15 to 150 with perforated plugs (flow direction above plug) for pneumatic actuators

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

For further information on actuating, see actuators' catalogue sheets

								Pneumatic actuator				**Flowserve PA 253**				**Flowserve PB 503**			
								Specification No. of actuator				**BVCxAA**		**BVCxZA**		**BVCxAB**		**BVCxZB**	
								Actuator function				direct		indirect		direct		indirect	
								Spring range	**[bar]**			1,5 - 2,7		1,5 - 2,7		1,5 - 2,7		1,5 - 2,7	
								Spring setting	**[bar]**			1,5 - 2,46		1,75 - 2,7		1,5 - 2,25		1,95 - 2,7	
								Feeding pressure	**[bar]**			4,0		4,5		3,8		4,7	
								Marking in valve specific. No.				**PFA**				**PFB**			
								Linear force				3,7 kN		4,35 kN		7,5 kN		9,75 kN	
		Kvs [m³/h]										packing		packing		packing		packing	
DN	**H**	**1**	**2**	**3**	**4**	**5**	**6**					graph.	PTFE	graph.	PTFE	graph.	PTFE	graph.	PTFE
25	**16**	---	6.3	4	2.5	1.6	---					0.55	1.33	0.79	1.56	---	---	---	---
32		---	10	6.3	4.0	2.5	1.6					0.33	0.80	0.48	0.95	---	---	---	---
40		---	16	10	6.3	4.0	2.5					0.21	0.52	0.31	0.61	---	---	---	---
50	**25**	---	25	16	10	6.3	4.0					---	---	---	---	0.45	0.63	0.64	0.82
65		---	40	25	16	10	6.3					---	---	---	---	0.28	0.39	0.39	0.50

For further information on actuating, see actuators' catalogue sheets

							Pneumatic actuator				**Flowserve PB 503**				**Flowserve PB 701**			
							Specification No. of actuator				**BVCxAB**		**BVCxZB**		**BADxAB**		**BVCxZB**	
							Actuator function				direct		indirect		direct		indirect	
							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		1,5 - 2,7		1,5 - 2,7		1,5 - 2,7	
							Feeding pressure	**[bar]**			4,2		4,2		4,2		4,2	
							Marking in valve specific. No.				**PFB**				**PFC**			
							Linear force				7,5 kN		7,5 kN		10,5 kN		10,5 kN	
		Kvs [m³/h]									packing		packing		packing		packing	
DN	**H**	**1**	**2**	**3**	**4**	**5**	**6**				graph.	PTFE	graph.	PTFE	graph.	PTFE	graph.	PTFE
80	**40**	---	63	40	25	16	10				0.18	0.27	0.18	0.27	0.28	0.37	0.28	0.37
100		---	100	63	40	25	16				0.11	0.17	0.11	0.17	0.18	0.24	0.18	0.24
125		---	160	100	63	40	25				0.07	0.11	0.07	0.11	0.12	0.16	0.12	0.16
150		---	250	160	100	63	40				0.05	0.08	0.05	0.08	0.08	0.11	0.08	0.11

The table continues on next page

For further information on actuating, see actuators' catalogue sheets

								Pneumatic actuator				A. Hock 2109				A. Hock 2112-30			
								Specification No. of actuator				P2-0K-VL1		P2-0K-VL2		P2-0K-WM1		P2-0K-WM2	
								Actuator function				direct		indirect		direct		indirect	
								Spring range	[bar]			1,2 - 3,0		1,2 - 3,0		1,4 - 2,8		1,4 - 2,8	
								Spring setting	[bar]			1,2 - 2,64		1,56 - 3,0		1,4 - 2,57		1,63 - 2,8	
								Feeding pressure	[bar]			3,9		4,6		4,0		4,5	
								Marking in valve specific. No.				PHF				PHA			
								Linear force				3,5 kN		4,6 kN		8,0 kN		9,3 kN	
		Kvs [m³/h]										packing		packing		packing		packing	
DN	H	1	2	3	4	5	6					graph.	PTFE	graph.	PTFE	graph.	PTFE	graph.	PTFE
25	16	---	6.3	4	2.5	1.6	---					0.47	1.25	0.88	1.66	---	---	---	---
32		---	10	6.3	4.0	2.5	1.6					0.29	0.76	0.53	1.00	---	---	---	---
40		---	16	10	6.3	4.0	2.5					0.18	0.49	0.34	0.64	---	---	---	---
50	25	---	25	16	10	6.3	4.0					---	---	---	---	0.49	0.67	0.60	0.79
65		---	40	25	16	10	6.3					---	---	---	---	0.30	0.41	0.37	0.48

For further information on actuating, see actuators' catalogue sheets

								Pneumatic actuator				A. Hock 2112-50				A. Hock 2112T-50			
								Specification No. of actuator				P2-0K-SI1		P2-0K-SI2		P2-0K-DT1		P2-0K-UT2	
								Actuator function				direct		indirect		direct		indirect	
								Spring range	[bar]			0,8 - 2,8		0,8 - 2,8		0,5 - 1,7		0,75 - 2,7	
								Spring setting	[bar]			0,8 - 2,4		1,2 - 2,8		0,5 - 1,46		1,14 - 2,7	
								Feeding pressure	[bar]			3,3		4,0		2,0		3,9	
								Marking in valve specific. No.				PHA				PHB			
								Linear force				4,6 kN		6,9 kN		5,7 kN		13 kN	
		Kvs [m³/h]										packing		packing		packing		packing	
DN	H	1	2	3	4	5	6					graph.	PTFE	graph.	PTFE	graph.	PTFE	graph.	PTFE
80	40	---	63	40	25	16	10					0.07	0.16	0.15	0.24	0.11	0.20	0.37	0.46
100		---	100	63	40	25	16					0.05	0.11	0.10	0.16	0.07	0.13	0.24	0.30
125		---	160	100	63	40	25					0.03	0.07	0.07	0.10	0.05	0.08	0.16	0.20
150		---	250	160	100	63	40					0.02	0.05	0.05	0.07	0.03	0.06	0.11	0.14

Perforated plugs is possible to delivery with following limitations:

- Kvs values 2.5 and 1.6 m³/hod with linear characteristic only
- is possible to delivery perforated plug with linear or parabolic characteristic with Kvs value according to the column No.2

Max. differential pressure Δp for valves PN 16 must be 1,6 MPa.

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

Max. differential pressures are valid for metal-metal seat sealing and for hard metal overlay on sealing surfaces.

Kvs values and differential pressures Δp_{max} [MPa] of valves DN 200 - 400 with V-ported plugs (flow direction below plug) for electromechanical actuators

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

For further information on actuating, see actuators' catalogue sheets

*) max. DN 300
Ds - seat diameter

Max. differential pressures specified in table are valid for seat sealing metal-metal and hard metal overlay on sealing surf.

Max. differential pressure Δp for valves PN 16 (PN 25) must be 1,6 MPa (2,5 MPa).

								Actuating (actuator)	**AUMA Schiebel Rotork EMG Modact MTN Modact Cont.**		**Modact MTR ST 2 *) Zepadyn 671*) PTN 7 *)**		**AUMA Schiebel EMG Zepadyn 671*) PTN 7 *)**		**Modact MTR Modact MTN Modact Cont. ST 2 *)**		**AUMA Schiebel**		**Hand wheel**
								Marking in valve specification No.	**EA... EZ... EQ... ED... EYA EYB**		**EPD EPM ENE ERG**		**EA... EZ... ED... ENE ERG**		**EPD EYA EYB EPM**		**EA... EZ...**		**Rxx**	
								Linear force	15 kN		16 kN		20 kN		25 kN		32 kN			
			Kvs [m³/h]						packing		packing		packing		packing		packing		packing	
DN	**Ds**	**H**	**1**	**2**	**3**	**4**	**5**		graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
200	**100**	**80**	---	---	250	160	100		1.12	1.46	1.24	1.58	1.71	2.05	2.31	2.64	3.14	3.47	4.00	
	150		---	400	---	---	---		0.48	0.63	0.53	0.68	0.75	0.90	1.01	1.17	1.39	1.54	1.80	
	200		570	---	---	---	---		0.26	0.34	0.29	0.37	0.41	0.50	0.56	0.65	0.77	0.86	1.00	
250	**150**	**80**	---	---	400	250	160		0.41	0.59	0.47	0.64	0.68	0.86	0.95	1.13	1.33	1.50	1.80	
	200		---	630	---	---	---		0.22	0.32	0.25	0.35	0.37	0.47	0.52	0.62	0.74	0.84	1.00	
	230		800	---	---	---	---		0.16	0.23	0.18	0.26	0.27	0.35	0.39	0.46	0.55	0.63	0.75	
300	**150**	**80**	---	---	---	400	250		0.41	0.59	0.47	0.64	0.68	0.86	0.95	1.13	1.33	1.50	1.80	
	200		---	---	630	---	---		0.22	0.32	0.25	0.35	0.37	0.47	0.52	0.62	0.74	0.84	1.00	
	230		---	800	---	---	---		0.16	0.23	0.18	0.26	0.27	0.35	0.39	0.46	0.55	0.63	0.75	
	250		1000	---	---	---	---		0.13	0.19	0.15	0.21	0.23	0.29	0.33	0.39	0.46	0.53	0.60	
400	**150**	**100**	---	---	---	400	250		0.41	0.59	0.47	0.64	0.68	0.86	0.95	1.13	1.33	1.50	1.80	
	200		---	---	630	---	---		0.22	0.32	0.25	0.35	0.37	0.47	0.52	0.62	0.74	0.84	1.00	
	250		---	1000	---	---	---		0.13	0.19	0.15	0.21	0.23	0.29	0.33	0.39	0.46	0.53	0.60	
	330		1600	---	---	---	---		0.07	0.10	0.08	0.11	0.12	0.16	0.18	0.22	0.26	0.30	0.35	

Kvs values and differential pressures Δp_{max} [MPa] of valves DN 200 - 400 with perforated plugs (flow direction above plug) for electromechanical actuators

For further information on actuating, see actuators' catalogue sheets

*) max. DN 300 Ds - seat diameter

It is not possible to delivery perforated plugs for Kvs acc. to the column No.1, for Kvs acc. to the column No.2 it is possible only with linear or parabolic characteristic. For another columns without limitation.

Max. differential pressures speci-fied in table apply to PTFE and graphite packing.

Max. differential pressure Δp for valves PN 16 (PN 25) must be 1,6 MPa (2,5 MPa).

								Actuating (actuator)	**AUMA Schiebel EMG Modact MTN Modact Cont.**		**Modact MTR ST 2 *)**		**AUMA Schiebel EMG**		**Modact MTR Modact MTN Modact Cont. ST 2 *)**		**AUMA Schiebel**		**Hand wheel**	
								Marking in valve specification No.	**EA... EZ... ED... EYA EYB**		**EPD EPM**		**EA... EZ... ED...**		**EPD EYA EYB EPM**		**EA... EZ...**		**Rxx**	
								Linear force	15 kN		16 kN		20 kN		25 kN		32 kN			
			Kvs [m³/h]						packing		packing		packing		packing		packing		packing	
DN	**Ds**	**H**	**1**	**2**	**3**	**4**	**5**		graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
200	200	80	---	400	250	160	100		0.26	0.34	0.29	0.37	0.41	0.50	0.56	0.65	0.77	0.86	1.00	
250	230	80	---	630	400	250	160		0.16	0.23	0.18	0.26	0.27	0.35	0.39	0.46	0.55	0.63	0.75	
300	250	80	---	800	630	400	250		0.13	0.19	0.15	0.21	0.23	0.29	0.33	0.39	0.46	0.53	0.60	
400	330	100	---	1000	630	400	250		0.07	0.10	0.08	0.11	0.12	0.16	0.18	0.22	0.26	0.30	0.35	

Kvs values and differential pressures Δp_{max} [MPa] of valves DN 200 to 400 with V-ported, contoured plugs (flow direction below plug) for pneumatic actuators

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

For further information on actuating, see actuators' catalogue sheets

			Pneumatic actuator					**Flowserve PO 1502**										
			Specification No. of actuator					**BGFxAD**		**BVCxZD**		**BGFxAD**		**BFSxZD**		**BGFxAD**		**BAJxZD**	
			Actuator function					direct		indirect		direct		indirect		direct		indirect	
			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 specific. No.					**PFD**											
			Linear force					22,5 kN		22,5 kN		30 kN		30 kN		38 kN		38 kN	
			Kvs [m³/h]					packing		packing		packing		packing		packing		packing	
DN	**Ds**	**H**	**1**	**2**	**3**	**4**	**5**	graph.	PTFE	graph.	PTFE	graph.	PTFE	graph.	PTFE	graph.	PTFE	graph.	PTFE
	100		---	---	250	160	100	2.01	2.35	2.01	2.35	2.90	3.24	2.90	3.24	3.85	4.00	3.85	4.00
200	**150**	**80**	---	400	---	---	---	0.88	1.03	0.88	1.03	1.28	1.43	1.28	1.43	1.71	1.86	1.71	1.86
	200		570	---	---	---	---	0.48	0.57	0.48	0.57	0.71	0.80	0.71	0.80	0.96	1.04	0.96	1.04
	150		---	---	400	250	160	0.82	0.99	0.82	0.99	1.22	1.40	1.22	1.40	1.66	1.83	1.66	1.83
250	**200**	**80**	---	630	---	---	---	0.45	0.55	0.45	0.55	0.68	0.78	0.68	0.78	0.92	1.02	0.92	1.02
	230		800	---	---	---	---	0.33	0.41	0.33	0.41	0.51	0.58	0.51	0.58	0.69	0.77	0.69	0.77
	200		---	---	630	400	250	0.45	0.55	0.45	0.55	0.68	0.78	0.68	0.78	0.92	1.02	0.92	1.02
300	**230**	**80**	---	800	---	---	---	0.33	0.41	0.33	0.41	0.51	0.58	0.51	0.58	0.69	0.77	0.69	0.77
	250		1000	---	---	---	---	0.28	0.34	0.28	0.34	0.43	0.49	0.43	0.49	0.58	0.65	0.58	0.65

For further information on actuating, see actuators' catalogue sheets

			Pneumatic actuator					**A. Hock 2116-100**		**A. Hock 2116S-100**		**A. Hock 2116-100**		**A. Hock 2116S-100**				
			Specification No. of actuator					**P2-0K-BN1**		**P2-0K-YN2**		**P2-0K-BN1**		**P2-0K-ZN2**				
			Actuator function					direct		indirect		direct		indirect				
			Spring range [bar]					0,8 - 2,2		1,3 - 3,0		0,8 - 2,2		1,5 - 3,5				
			Spring setting [bar]					0,8 - 1,92		1,64 - 3,0		0,8 - 1,92		1,9 - 3,5				
			Feeding pressure [bar]					3,6		4,0		5,1		4,5				
			Marking in valve specific. No.					**PHC**				**PHC**						
			Linear force					20 kN		19,6 kN		38 kN		22,8 kN				
			Kvs [m³ /h]					packing		packing		packing		packing				
DN	**Ds**	**H**	**1**	**2**	**3**	**4**	**5**	graph.	PTFE	graph.	PTFE	graph.	PTFE	graph.	PTFE				
	100		---	---	250	160	100	1.71	2.06	1.67	2.01	3.85	4.00	2.05	2.39				
200	**150**	**80**	---	400	---	---	---	0.75	0.90	0.72	0.88	4.71	1.86	0.90	1.05				
	200		570	---	---	---	---	0.41	0.50	0.40	0.48	0.96	1.04	0.49	0.58				
	150		---	---	400	250	160	0.68	0.86	0.66	0.84	1.66	1.83	0.83	1.01				
250	**200**	**80**	---	630	---	---	---	0.37	0.47	0.34	0.46	0.92	1.02	0.46	0.56				
	230		800	---	---	---	---	0.27	0.35	0.27	0.34	0.69	0.77	0.34	0.41				
	200		---	---	630	400	250	0.37	0.47	0.36	0.46	0.92	1.02	0.46	0.56				
300	**230**	**80**	---	800	---	---	---	0.27	0.35	0.27	0.34	0.69	0.77	0.34	0.41				
	250		1000	---	---	---	---	0.23	0.29	0.22	0.28	0.58	0.65	0.28	0.35				

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For further information on actuating, see actuators' catalogue sheets

			Pneumatic actuator					**Flowserve PO 1502**						
			Specification No. of actuator					**BDYxAE**		**BFYxZE**		**BDYxAE**		
			Actuator function					direct		indirect		direct		
			Spring range [bar]					1,0 - 2,4		2,0 - 4,8		1,0 - 2,4		
			Spring setting [bar]					1,0 - 2,4		2,0 - 4,8		1,0 - 2,4		
			Feeding pressure [bar]					4,5		5,0		5,0		
			Marking in valve specific. No.					**PFD**						
			Linear force					30 kN		30 kN		38 kN		
			Kvs [m³/h]					packing		packing		packing		
DN	**Ds**	**H**	**1**	**2**	**3**	**4**	**5**	graph.	PTFE	graph.	PTFE	graph.	PTFE	
	200		---	---	630	400	250	0.68	0.78	0.68	0.78	0.92	1.02	
400	**250**	**100**	---	1000	---	---	---	0.43	0.49	0.43	0.49	0.58	0.65	
	330		1600	---	---	---	---	0.24	0.27	0.24	0.27	0.33	0.36	

For further information on actuating, see actuators' catalogue sheets

			Pneumatic actuator					**A. Hock 2116-100**		**A. Hock 2116S-100**		**A. Hock 2116-100**		**A. Hock 2116S-100**		
			Specification No. of actuator					**P2-0K-BN1**		**P2-0K-YN2**		**P2-0K-BN1**		**P2-0K-ZN2**		
			Actuator function					direct		indirect		direct		indirect		
			Spring range [bar]					0,8 - 2,2		1,3 - 3,0		0,8 - 2,2		1,5 - 3,5		
			Spring setting [bar]					0,8 - 2,2		1,3 - 3,0		0,8 - 2,2		1,5 - 3,5		
			Feeding pressure [bar]					3,9		4,0		5,4		5,4		
			Marking in valve specific. No.					**PHC**				**PHC**				
			Linear force					20 kN		15,6 kN		38 kN		18 kN		
			Kvs [m³/h]					packing		packing		packing		packing		
DN	**Ds**	**H**	**1**	**2**	**3**	**4**	**5**	graph.	PTFE	graph.	PTFE	graph.	PTFE	graph.	PTFE	
	200		---	---	630	400	250	0.37	0.47	0.24	0.34	0.92	1.02	0.31	0.41	
400	**250**	**100**	---	1000	---	---	---	0.23	0.29	0.14	0.21	0.58	0.65	0.19	0.25	
	330		1600	---	---	---	---	0.12	0.16	0.07	0.11	0.33	0.36	0.10	0.14	

Max. differential pressures specified in table are valid for seat sealing metal-metal and hard metal overlay on sealing surf.
Max. differential pressure Δp for valves PN 16 (PN 25) must be 1,6 MPa (2,5 MPa).

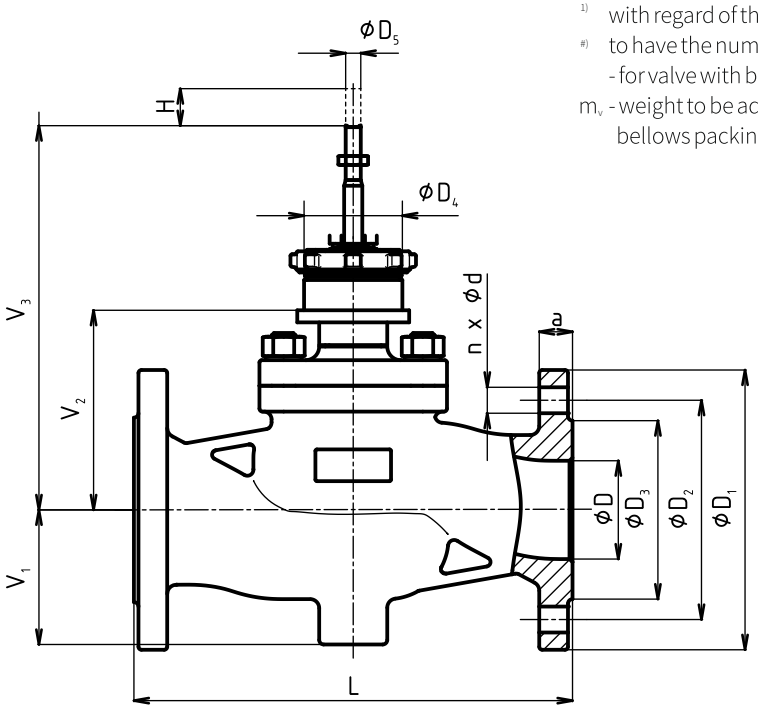
Valves RV 2x0 DN 200 to 400 in combination with perforated plugs and pneumatic actuators are not available.

Dimensions and weights of valves made of spheroidal cast iron for the type RV / UV 210 (Ex), DN 15 - 150

DN	PN 16					PN 40					PN 16, PN 40											
	D_1 mm	D_2 mm	D_3 mm	d mm	n	D_1 mm	D_2 mm	D_3 mm	d mm	n	D mm	D_4 mm	D_5 mm	L mm	V_1 mm	V_2 mm	$^{\#}V_2$ mm	V_3 mm	$^{\#}V_3$ mm	a mm	m kg	$^{\#}m_v$ kg
15	95	65	46	14	4	95	65	46	14	4	15	65	M10x1	130	51	90	257	220	387	14	4.5	3.5
20	105	75	56			105	75	56			20			150	54	90	257	220	387	16	5.5	3.5
25	115	85	65			115	85	65			25			160	58	100	267	230	397	16	6.5	3.5
32	140	100	76	19		140	100	76	19		32			180	70	100	267	230	397	18	8	3.5
40	150	110	84			150	110	84			40			200	75	100	267	230	397	19	9	3.5
50	165	125	99			165	125	99			50			230	85	132	339	262	469	19	14	4
65	185	145	118			185	145	118			65			290	93	132	339	262	469	19	18	4
80	200	160	132		8	200	160	132		8	80		M16x1,5	310	105	164	482	294	612	19	26	4.5
100	220	180	156			235	190	156	23		100			350	118	164	482	294	612	19	38	4.5
125	250	210	184			270	220	184	28		125			400	135	183	501	313	631	23.5	58	5
150	285	240	211	23		300	250	211			150			480	150	200	518	330	648	26	78	5

Dimensions and weights of valves made of cast steel and steinless steel RV / UV 220 (Ex), RV /UV 230 (Ex) DN 15 - 150

DN	PN 10-16					PN 25-40					PN 10-40											
	D_1 mm	D_2 mm	D_3 mm	d mm	n	D_1 mm	D_2 mm	D_3 mm	d mm	n	D mm	D_4 mm	D_5 mm	L mm	V_1 mm	V_2 mm	$^{\#}V_2$ mm	V_3 mm	$^{\#}V_3$ mm	a mm	m kg	$^{\#}m_v$ kg
15	95	65	45	14	4	95	65	45	14	4	15	65	M10x1	130	51	90	257	220	387	16	5.5	3.5
20	105	75	58			105	75	58			20			150	54	90	257	220	387	18	6.5	3.5
25	115	85	68			115	85	68			25			160	58	100	267	230	397	18	8	3.5
32	140	100	78	18		140	100	78	18		32			180	70	100	267	230	397	18	9.5	3.5
40	150	110	88			150	110	88			40			200	75	100	267	230	397	18	11	3.5
50	165	125	102			165	125	102			50			230	85	132	339	262	469	20	21	4
65	185	145	122		4 [1)]	185	145	122			65			290	93	132	339	262	469	22	27	4
80	200	160	138		8	200	160	138		8	80		M16x1,5	310	105	164	482	294	612	24	40	4.5
100	220	180	158			235	190	162	22		100			350	118	164	482	294	612	24	49	4.5
125	250	210	188			270	220	188	26		125			400	135	183	501	313	631	26	82	5
150	285	240	212	22		300	250	218			150			480	150	200	518	330	648	28	100	5



[1)] with regard of the standard previously in force, there is an option
[#)] to have the number of connection bolts as stipulated in ČSN-EN 1092-1 - for valve with bellows packing
m_v - weight to be added to weight of valve equipped with bellows packing

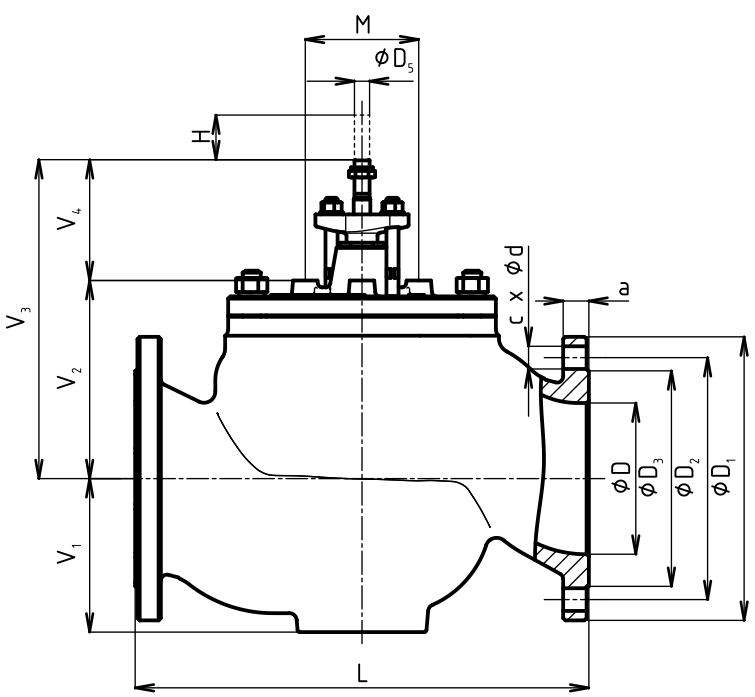
Dimensions and weights of valves made of spheroidal cast iron for the type RV / UV 210 (Ex), DN 200 - 400

DN	PN 16															
	D_1 mm	D_2 mm	D_3 mm	d mm	n	a mm	D mm	D_5 mm	M mm	L mm	V_1 mm	V_2 mm	V_3 mm	V_4 mm	H mm	m kg
200	340	295	266	23	12	20	200	M20x1.5	150	600	203	262	422	160	80	141
250	405	355	319	28		22	250			730	253	346	506			259
300	460	410	370	28		24.5	300			850	296	395	555			364
400	580	525	480	31	16	28	400			1100	382	512	672		100	747

Dimensions and weights of valves made of cast steel and stainless steel for the type RV/UV 2x0 (Ex), DN 200 - 400

DN	PN 10						PN 16						PN 25					
	D_1 mm	D_2 mm	D_3 mm	d mm	n	a mm	D_1 mm	D_2 mm	D_3 mm	d mm	n	a mm	D_1 mm	D_2 mm	D_3 mm	d mm	n	a mm
200	340	295	268	22	8	24	340	295	268	22	12	24	360	310	278	26	12	30
250	395	350	320		12	26	405	355	320	26		26	425	370	335	30		32
300	445	400	370		12	26	460	410	378	26		28	485	430	395	30	16	34
400	565	515	482	26	16	26	580	525	490	30	16	32	620	550	505	36		40

DN	PN 40						PN 10-40										
	D_1 mm	D_2 mm	D_3 mm	d mm	n	a mm	D mm	D_5 mm	M mm	L mm	V_1 mm	V_2 mm	V_3 mm	V_4 mm	H mm	m kg
200	375	320	285	30	12	34	200	M20x1.5	150	600	203	262	422	160	80	220
250	450	385	345	33	12	38	250			730	253	346	506			390
300	515	450	410	33	16	42	300			850	296	395	555			570
400	660	585	535	39	16	50	400			1100	382	512	672		100	1170



RV 2x2

Control valves

DN 25 - 600
PN 10 - 40

Control valves **RV 212 (Ex), RV 222 (Ex)** and **RV 232 (Ex)** [further only RV 2x2 (Ex)] are single-seated valves with pressure-balanced plug designed for regulation of process liquids flow.

Technical data

Series		RV 212 (Ex)	RV 222 (Ex)	RV 232 (Ex)
Type of valve		**Two-way, single-seated, control valve with pressure-balanced plug**		
Nominal size range		DN 25 to 400	DN 25 to 600	
Nominal pressure		DN 25-150: PN16, 40; DN 200-400: PN16	PN 10, 16, 25, 40	
Body material		Spheroidal cast iron	Cast steel	Stainless steel
		EN-JS 1025	1.0619 (GP240GH)	1.4581
		(EN-GJS-400-18-LT)	1.7357 (G17CrMo5-5)	(GX5CrNiMoNb19-11-2)
Seat material	DN 25 - 50	1.4028 / 17 023.6	1.4028 / 17 023.6	1.4571 / 17 347.4
DIN W.Nr./ČSN	DN 65 - 400	1.4027 / 42 2906.5	1.4027 / 42 2906.5	1.4581 / 42 2941.4
Plug material	DN 25 - 65	1.4021 / 17 027.6	1.4021 / 17 027.6	1.4571 / 17 347.4
DIN W.Nr./ČSN	DN 80 - 150	1.4027 / 42 2906.5	1.4027 / 42 2906.5	1.4581 / 42 2941.4
	DN 200 - 600	1.4021 / 17 022.6	1.4021 / 17 022.6	1.4581 / 42 2941.4
Stem material	DN 15 - 150	1.4305		1.4571
	DN 200 - 600	1.4923		1.4980
Operating temperature range		-10 to 300 °C	-50 to 500 °C - (negative temperature requirement must be stated in the order)	
Face to face dimensions		Section 1 acc. to ČSN EN 558 (9/2017)		
Connection flanges		Acc. to ČSN-EN 1092-2 (1/1999)	Acc. to ČSN EN 1092-1 (11/2018)	
Flange faces		Typ B1 (raised-faced) acc. to ČSN-EN 1092-2 (1/1999)	Type B1 (raised-faced) or Type F (female) or Type D (groove) acc. to ČSN EN 1092-1 (11/2018)	
Type of plug		V-ported, perforated		
Flow characteristic		Linear, equal-percentage, LDMspline®, parabolic		
Kvs value		4 to 4000 m^3/h		
Leakage rate		Class III. acc. to ČSN-EN 1349 (<0.1% Kvs) for c. valves with metal-metal seat sealing (7/2010)		
		Class IV. acc. to ČSN-EN 1349 (<0.01% Kvs) for c. valves with metal-PTFE seat sealing (7/2010)		
Leakage rate for Ex version		RV 2xx Class IV. acc. to ČSN EN 1349 (7/2010) (<0.01% Kv)		
Rangeability r		50 : 1		
Packing		O - ring EPDM t_{max} = 140 °C, DRSpack (PTFE) $t^{®}_{max}$ = 260 °C, Exp. graphite, bellows t_{max} = 500 °C		

Kvs values and differential pressures Δp_{max} [MPa] of valves DN 25 - 150 for electromechanical actuators

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

For further information on actuating,see actuators´ catalogue sheets		Actuating (actuator)					PTN 2.20 MIDI 660	ST 0	AUMA Schiebel Rotork Sipos	Zepadyn ST 1 Ex ST 0.1 PTN 6	Modact Cont. Modact MTN	Modact MTR ST 2 Zepadyn 671 PTN7	Hand wheel
		Marking in valve spec. No.					ERB ENB	EPK	EA..., EZ..., EQ..., ET...	ENC EPJ EPL ERD	EYA EYB	EPD EPM ENE ERG	Rxx
		Linear force					2 kN	2,5 kN	5 kN	6,3 kN	15 kN	16 kN	
		Kvs [m³/h]					Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}
DN	H	1	2	3	4	5							
25	16	10.0	6.3 [1]	4.0 [1]	2.5 [1]	1.6 [1]	4.00	4.00	---	4.00	---	---	4.00
32		16.0	10.0	6.3 [1]	4.0 [1]	2.5 [1]	4.00	4.00	---	4.00	---	---	4.00
40		25.0	16.0	10.0	6.3 [1]	4.0 [1]	4.00	4.00	---	4.00	---	---	4.00
50	25	40.0	25.0	16.0	10.0	6.3 [1]	---	4.00	4.00	4.00	---	---	4.00
65		63.0	40.0	25.0	16.0	10.0	---	4.00	4.00	4.00	---	---	4.00
80	40	100.0	63.0	40.0	25.0	16.0	---	---	4.00	4.00	4.00	4.00	4.00
100		160.0	100.0	63.0	40.0	25.0	---	---	4.00	4.00	4.00	4.00	4.00
125		250.0	160.0	100.0	63.0	40.0	---	---	4.00	4.00	4.00	4.00	4.00
150		360.0	250.0	160.0	100.0	63.0	---	---	4.00	4.00	4.00	4.00	4.00

1) linear characteristic only

Valves RV 2x2 can be optionally assembled with all the actuators specified in catalogue sheet RV / UV 2x0.Max. differential pressures specified in table apply to PTFE and O-ring packing. Δp_{max} for bellows must be consulted with theproducer.

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

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

Max. differential pressure p for valves PN 16 must be 1.6 MPa.

Kvs values and differential pressures Δp_{max} [MPa] of valves DN 200 - 600 for electromechanical actuators

For further information on actuating,see actuators´ catalogue sheets			Actuating (actuator)					AUMA Schiebel Sipos Modact MTN Modact Cont.	Modact MTR ST 2 Zepadyn 671 PTN 7	AUMA Schiebel Sipos Zepadyn 671*) PTN 7 *)	Modact MTR Modact MTN Modact Cont. ST 2 *)	AUMA Schiebel Sipos	Ruční kolo
*) max. DN 300 Ds - seat diameter			Marking in valve spec. No.					EA... EZ... ET... EYA EYB	EPD EPM ENE ERG	EA... EZ... ET... ENE ERG	EPD EYA EYB EPM	EA... EZ... ET...	Rxx
			Linear force					15 kN	16 kN	20 kN	25 kN	32 kN	
			Kvs [m³/h]					packing	packing	packing	packing	packing	packing
DN	Ds	H	1	2	3	4	5	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
200	200	80	570	400	250	160	100	4.00	4.00	---	---	---	4.00
250	230	80	800	630	400	250	160	---	---	4.00	4.00	---	4.00
300	250	80	1000	800	630	400	250	---	---	4.00	4.00	---	4.00
400	330	100	1600	1000	630	400	250	---	---	4.00	4.00	---	4.00
500	420	100	2800	2000	1600	1000	630	---	---	---	---	4.00	---
600	500	120	4000	2500	1600	1000	630	---	---	---	---	4.00	---

It is not possible to delivery perforated plugs for Kvs acc. to the column No.1, for Kvs acc. to the column No.2 it is possible only with linear or parabolic characteristic. For another columns without limitation.

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

Max. differential pressure p for valves PN 16 (PN 25) must be 1,6 MPa (2,5 MPa).

Kvs values and differential pressures Δp_{max} [MPa] of valves DN 25 to 150 for pneumatic actuators

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

For further information on actuating, see actuators' catalogue sheets

Pneumatic actuator		Flowserve PA 253		A. Hock 2109	
Specification No. of actuator		BVCxAA	BVCxZA	P2-0K-VL1	P2-0K-VL2
Actuator function		direct	indirect	direct	indirect
Spring range	[bar]	1,5 - 2,7	1,5 - 2,7	1,2 - 3,0	1,2 - 3,0
Spring setting	[bar]	1,5 - 2,46	1,75 - 2,7	1,2 - 2,64	1,56 - 3,0
Feeding pressure	[bar]	4,0	4,5	3,9	4,6
Marking in valve specific. No.		PFA		PHF	
Linear force		3,7 kN	4,35 kN	3,5 kN	4,6 kN

		Kvs [m³/h]					Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}	
DN	H	1	2	3	4	5	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE
25	16	10	6,3[1)]	4,0[1)]	2,5[1)]	1,6[1)]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
32		16	10	6,3[1)]	4,0[1)]	2,5[1)]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
40		25	16	10	6,3[1)]	4,0[1)]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00

For further information on actuating, see actuators' catalogue sheets

Pneumatic actuator		Flowserve PB 503		A. Hock 2112-30	
Specification No. of actuator		BVCxAB	BVCxZB	P2-0K-WM1	P2-0K-WM2
Actuator function		direct	indirect	direct	indirect
Spring range	[bar]	1,5 - 2,7	1,5 - 2,7	1,4 - 2,8	1,4 - 2,8
Spring setting	[bar]	1,5 - 2,25	1,95 - 2,7	1,4 - 2,57	1,63 - 2,8
Feeding pressure	[bar]	3,8	4,7	4,0	4,5
Marking in valve specific. No.		PFB		PHA	
Linear force		7,5 kN	9,75 kN	8,0 kN	9,3 kN

		Kvs [m³/h]					Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}	
DN	H	1	2	3	4	5	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE
50	25	40	25	16	10	6,3[1)]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
65	25	63	40	25	16	10	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00

For further information on actuating, see actuators' catalogue sheets

Pneumatic actuator		Flowserve PB 503		A. Hock 2112-50	
Specification No. of actuator		BVCxAB	BVCxZB	P2-0K-SI1	P2-0K-SI2
Actuator function		direct	indirect	direct	indirect
Spring range	[bar]	1,5 - 2,7	1,5 - 2,7	0,8 - 2,8	0,8 - 2,8
Spring setting	[bar]	1,5 - 2,7	1,75 - 2,7	0,8 - 2,4	1,2 - 2,8
Feeding pressure	[bar]	4,2	4,2	3,3	4,0
Marking in valve specific. No.		PFB		PHA	
Linear force		7,5 kN	7,5 kN	4,6 kN	6,9 kN

		Kvs [m³/h]					Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}	
DN	H	1	2	3	4	5	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE
80	40	100	63	40	25	16	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
100		160	100	63	40	25	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
125		250	160	100	63	40	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
150		360	250	160	100	63	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00

For further information on actuating, see actuators' catalogue sheets

Pneumatic actuator		Flowserve PB 701		A. Hock 2112T-50	
Specification No. of actuator		BADxAB	BVCxZB	P2-0K-DT1	P2-0K-UT2
Actuator function		direct	indirect	direct	indirect
Spring range	[bar]	1,5 - 2,7	1,5 - 2,7	0,5 - 1,7	0,75 - 2,7
Spring setting	[bar]	1,5 - 2,7	1,5 - 2,7	0,5 - 1,46	1,14 - 2,7
Feeding pressure	[bar]	4,2	4,2	2,0	3,9
Marking in valve specific. No.		PFC		PHB	
Linear force		10,5 kN	10,5 kN	5,7 kN	13 kN

		Kvs [m³/h]					Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}	
DN	H	1	2	3	4	5	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE
80	40	100	63	40	25	16	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
100		160	100	63	40	25	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
125		250	160	100	63	40	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
150		360	250	160	100	63	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00

Kvs values and differential pressures Δp_{max} [MPa] of valves DN 200 to 400 for pneumatic actuators

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

For further information on actuating, see actuators' catalogue sheets

			Pneumatic actuator					Flowserve PO 1502										
			Specification No. of actuator					BVCxAD		BVCxZD		BFSxAD		BFSxZD		BDYxAE		BFYxZE
			Actuator function					direct		indirect		direct		indirect		indirect		direct
			Spring range [bar]					1,5 - 2,7		1,5 - 2,7		2,0 - 3,5		2,0 - 3,5		1,0 - 2,4		2,0 - 4,8
			Spring setting [bar]					1,5 - 2,7		1,5 - 2,7		2,0 - 3,5		2,0 - 3,5		1,0 - 2,4		2,0 - 4,8
			Feeding pressure [bar]					4,2		4,2		5,5		5,5		4,5		5,8
			Marking in valve specific. No.					PFD										
			Linear force					22,5 kN		22,5 kN		30 kN		30 kN		30 kN		30 kN
			Kvs [m³/h]					packing		packing		packing		packing		packing		packing
DN	Ds	H	1	2	3	4	5	graph.	PTFE	graph.	PTFE	graph.	PTFE	graph.	PTFE	graph.	PTFE	graph.	PTFE
200	200	80	570	400	250	160	100	4.00	4.00	4.00	4.00	---	---	---	---	---	---	---	---
250	230	80	800	630	400	250	160	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	---	---	---	---
300	250	80	1000	800	630	400	250	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	---	---	---	---
400	330	100	1600	1000	630	400	250	---	---	---	---	---	----	---	---	4.00	4.00	4.00	4.00
500	420	100	2800	2000	1600	1000	630	---	---	---	---	---	----	---	---	4.00	4.00	4.00	4.00
600	500	120	4000	2500	1600	1000	630	---	---	---	---	---	----	---	---	---	---	---	---

For further information on actuating, see actuators' catalogue sheets

			Pneumatic actuator					A.Hock 2116S-100											
			Specification No. of actuator					P2-0K-YN1		P2-0K-YN2		P2-0K-ZN1		P2-0K-ZN2		P2-0K-YN1		P2-0K-ZN1	P2-0K-ZN2
			Actuator function					direct		indirect		direct		indirect		direct		direct	indirect
			Spring range [bar]					1,3 - 3,0		1,3 - 3,0		1,5 - 3,5		1,5 - 3,5		1,3 - 3,0		1,5 - 3,5	1,5 - 3,5
			Spring setting [bar]					1,3 - 2,66		1,64 - 3,0		1,5 - 3,1		1,9 - 3,5		1,3 - 3,0		1,5 - 3,5	1,5 - 3,5
			Feeding pressure [bar]					4,0		4,8		4,6		5,4		4,4		5,0	5,0
			Marking in valve specific. No.					PFC											
			Linear force					16 kN		19,6 kN		18 kN		22,8 kN		16 kN		18 kN	18 kN
			Kvs [m³/h]					packing		packing		packing		packing		packing		packing	packing
DN	Ds	H	1	2	3	4	5	grafit	PTFE	grafit	PTFE	grafit	PTFE	grafit	PTFE	grafit	PTFE	grafit	PTFE	grafit	PTFE	grafit	PTFE	grafit	PTFE
200	200		570	400	250	160	100	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	---	---	---	---	---	---	---	---
250	230	80	800	630	400	250	160	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	---	---	---	---	---	---	---	---
300	250		1000	800	630	400	250	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	---	---	---	---	---	---	---	---
400	330	100	1600	1000	630	400	250	---	---	---	---	---	----	---	---	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
500	420	100	2800	2000	1600	1000	630	---	---	---	---	---	----	---	---	---	---	---	---	4.00	4.00	4.00	4.00
600	500	120	4000	2500	1600	1000	630	---	---	---	---	---	----	---	---	---	---	---	---	---	----	---	---

[1)] linear characteristic only

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

- Perforated plug with Kvs value acc. to column No. 2 available with linear or parabolic characteristic only. For further columns without restrictions.

Max. differential pressures specified in table are valid for seat sealing metal-metal and hard metal overlay on sealing surf. Max. differential pressure Δp for valves PN 16 (PN 25) must be 1,6 MPa (2,5 MPa).

Dimensions and weights of valves made of spheroidal cast iron for the type RV 212 (Ex) DN 25 - 150

DN	PN 16					PN 40					PN 16, PN 40											
	D_1	D_2	D_3	d	n	D_1	D_2	D_3	d	n	D	D_4	D_5	L	V_1	V_2	$^{\#}V_2$	V_3	$^{\#}V_3$	a	m	$^{\#}m_v$
	mm	mm	mm	mm		mm	mm	mm	mm		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	kg
25	115	85	65			115	85	65			25			160	58	100	267	230	397	16	7	3.5
32	140	100	76			140	100	76		4	32			180	70	100	267	230	397	18	8.5	3.5
40	150	110	84		4	150	110	84	19		40		M10x1	200	75	100	267	230	397	19	8.5	3.5
50	165	125	99			165	125	99			50			230	85	132	339	262	469	19	14.5	4
65	185	145	118	19		185	145	118			65	65		290	93	132	339	262	469	19	18.5	4
80	200	160	132			200	160	132			80			310	105	164	482	294	612	19	27.5	4.5
100	220	180	156		8	235	190	156	23	8	100		M16x1,5	350	118	164	482	294	612	19	39	4.5
125	250	210	184			270	220	184	28		125			400	135	183	501	313	631	23.5	60	5
150	285	240	211	23		300	250	211	28		150			480	150	200	518	330	648	26	81	5

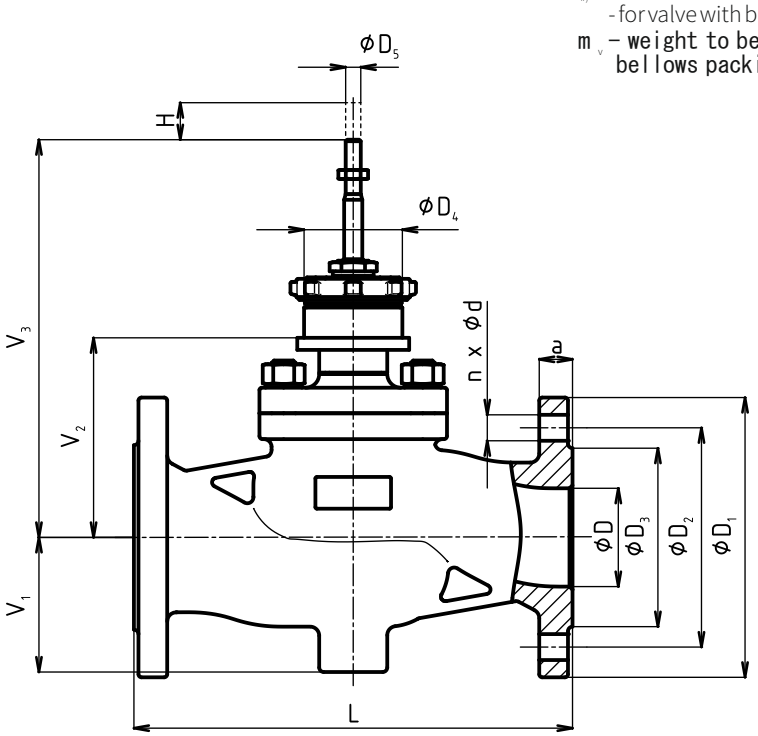
Dimensions and weights of valves made of cast steel and stainless steel for the type RV 222 (Ex), RV 232 (Ex) DN 25 - 150

DN	PN 10-16					PN 25-40					PN 10-40											
	D_1	D_2	D_3	d	n	D_1	D_2	D_3	d	n	D	D_4	D_5	L	V_1	V_2	$^{\#}V_2$	V_3	$^{\#}V_3$	a	m	$^{\#}m_v$
	mm	mm	mm	mm		mm	mm	mm	mm		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	kg
25	115	85	68			115	85	68			25			160	58	100	267	230	397	18	8.5	3.5
32	140	100	78		4	140	100	78		4	32		M10x1	180	70	100	267	230	397	18	10	3.5
40	150	110	88			150	110	88			40			200	75	100	267	230	397	18	10	3.5
50	165	125	102	18		165	125	102	18		50			230	85	132	339	262	469	20	21	4
65	185	145	122		4[1)]	185	145	122			65	65		290	93	132	339	262	469	22	27	4
80	200	160	138			200	160	138			80			310	105	164	482	294	612	24	42	4.5
100	220	180	158		8	235	190	162	22	8	100		M16x1,5	350	118	164	482	294	612	24	50	4.5
125	250	210	188			270	220	188	26		125			400	135	183	501	313	631	26	84	5
150	285	240	212	22		300	250	218			150			480	150	200	518	330	648	28	103	5

[1)] with regard of the standard previously in force, there is an option to have the number of connection bolts as stipulated in ČSN-EN 1092-1

[#)] - for valve with bellows packing

m_v – weight to be added to weight of valve equipped with bellows packing



Dimensions and weights of valves made of spheroidal cast iron for the type RV 212 (Ex), DN 200 - 400

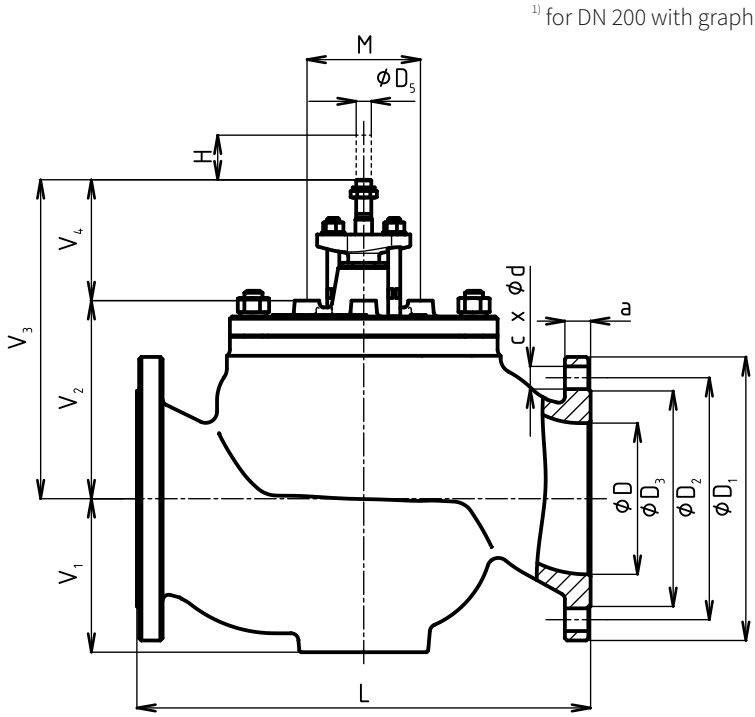
DN	PN 16															
	D_1 mm	D_2 mm	D_3 mm	d mm	n	a mm	D mm	D_5 mm	M mm	L mm	V_1 mm	V_2 mm	V_3 mm	V_4 mm	H mm	m kg
200	340	295	266	23	12	20	200	M20x1.5	150	600	203	262	422	160		153
250	405	355	319	28	12	22	250			730	253	346	506		80	264
300	460	410	370	28	12	24.5	300			850	296	395	555			390
400	580	525	480	31	16	28	400			1100	382	512	672		100	790

Dimensions and weights of valves made of cast steel and stainless steel for the type RV 222 (Ex), RV 232 (Ex), DN 200 - 600

DN	PN 10						PN 16						PN 25					
	D_1 mm	D_2 mm	D_3 mm	d mm	n	a mm	D_1 mm	D_2 mm	D_3 mm	d mm	n	a mm	D_1 mm	D_2 mm	D_3 mm	d mm	n	a mm
200	340	295	268	22	8	24	340	295	268	22	12	24	360	310	278	26	12	30
250	395	350	320	22	12	26	405	355	320	26	12	26	425	370	335	30	12	32
300	445	400	370	22	12	26	460	410	378	26	12	28	485	430	395	30	16	34
400	565	515	482	26	16	26	580	525	490	30	16	32	620	550	505	36	16	40
500	670	620	585	26	20	28	715	650	615	33	20	44	730	660	615	36	20	48
600	780	725	685	30	20	34	840	770	725	36	20	54	845	770	720	39	20	58

DN	PN 40						PN 10-40										
	D_1 mm	D_2 mm	D_3 mm	d mm	n	a mm	D mm	D_5 mm	M mm	L mm	V_1 mm	V_2 mm	V_3 mm	V_4 mm	H mm	m kg
200	375	320	285	30	12	34	200	M20x1.5	150	600	203	262	422	160	80(63)[1]	232
250	450	385	345	33	12	38	250			730	253	346	506	160	80	395
300	515	450	410	33	16	42	300			850	296	395	555	160	80	596
400	660	585	535	39	16	50	400			1100	382	512	672	160	100	1213
500	755	670	615	42	20	57	492	M30x2	300	1250	510	595	805	210	100	2200
600	890	795	735	48	20	72	580			1450	590	675	885	210	120	3500

[1] for DN 200 with graphite pressure-balanced version - stroke = 63 mm



RV 2x4

Control valves

DN 15 - 300
PN 10 - 40

Control valves **RV 214 (Ex), RV 224 (Ex)** and **RV 234 (Ex)** (further only RV 2x4 (Ex)) three-way valves with mixing or flow-diverting function.

Technical data

Series		RV 214	RV 224	RV 234
Type of valve		**Three-way control valve**		
Nominal size range		DN 15 to 300	DN 15 to 300	
Nominal pressure		DN 15-150: PN16, 40; DN 200-300: PN16	PN 10, 16, 25, 40	
Body material		Spheroidal cast iron EN-JS 1025 (EN-GJS-400-18-LT)	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	1.4028 / 17 023.6	1.4571 / 17 347.4
DIN W.Nr./ČSN	DN 65 - 300	1.4027 / 42 2906.5	1.4027 / 42 2906.5	1.4581 / 42 2941.4
Plug material	DN 15 - 65	1.4021 / 17 027.6	1.4021 / 17 027.6	1.4571 / 17 347.4
DIN W.Nr./ČSN	DN 80 - 300	1.4027 / 42 2906.5	1.4027 / 42 2906.5	1.4581 / 42 2941.4
Stem material	DN 15 - 150	1.4305		1.4571
	DN 200 - 300	1.4923		1.4980
Operating temperature range		-10 to 300 °C	-50 to 500 °C - (negative temperature requirement must be stated in the order)	
Face to face dimensions		Section 1 acc. to ČSN EN 558 (9/2017)		
Connection flanges		Acc. to ČSN-EN 1092-2 (1/1999)	Acc. to ČSN EN 1092-1 (11/2018)	
Flange faces		Type B1 (raised-faced) acc. to ČSN-EN 1092-2 (1/1999)	Type B1 (raised-faced) or Typ F (female) or Type D (groove) acc. to ČSN EN 1092-1 (11/2018)	
Type of plug		Spheroidal cast iron		
Flow characteristic		Linear, equal-percentage, in direct way		
Kvs value		1.6 to 1000 m^3/h		
Leakage rate		Třída III. acc. to ČSN-EN 1349 (7/2010) (<0.1% Kvs) for c. valves with metal-metal seat sealing Třída IV. acc. to ČSN-EN 1349 (7/2010) (<0.01% Kvs) for c. valves with metal-PTFE seat sealing		
Leakage rate for Ex version		RV 2xx class IV. acc.to ČSN EN 1349 (7/2010) (<0.01% Kv)		
Rangeability r		50 : 1		
Packing		O - ring EPDM t_{max} = 140 °C, DRSpack (PTFE) $t^{®}_{max}$ = 260 °C, Exp. graphite, bellows t_{max} = 500 °C		

Kvs values and differential pressures Δp_{max} [MPa]

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

For further information on actuating, see actuators' catalogue sheets	Actuating (actuator)	PTN 2.20 MIDI 660	ST 0	PTN 2.32 MIDI 660	MIDI 660 ST 0 ST 0.1 PTN 2.40	AUMA Schiebel Rotork Sipos	Zepadyn ST 1 EX ST 0.1 PTN 6	AUMA Schiebel Rotork Sipos	Hand wheel
	Marking in valve spec. No.	ERB ENB	EPK	ERC ENB	ENB EPK EPL ERC	EA..., EZ..., EQ..., ET...	ENC EPJ EPL ERD	EA... EZ... EQ... ET...	Rxx
	Linear force	2 kN	2,5 kN	3,2 kN	4,0 kN	5 kN	6,3 kN	7,5 kN	

		Kvs [m³/h]			Δp$_{max}$		Δp$_{max}$		Δp$_{max}$		Δp$_{max}$		Δp$_{max}$		Δp$_{max}$		Δp$_{max}$		Δp$_{max}$	
DN	H	1	2	3	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE
15	16	4.0 [1]	2.5 [1]	1.6 [1]	4.00	---	4.00	---	4.00	---	4.00	---	4.00	---	4.00	---	---	---	4.0	
20		6.3 [1]	4.0 [1]	2.5 [1]	3.77	---	4.00	---	4.00	---	4.00	---	4.00	---	4.00	---	---	---	4.0	
25		10.0	6.3 [2]	4.0 [2]	2.24	2.65	3.16	3.57	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	---	---	4.0	
32		16.0	10.0	6.3 [2]	1.28	1.60	1.83	2.15	2.61	2.92	3.49	3.81	4.00	4.00	4.00	4.00	---	---	4.0	
40		25.0	16.0	10.0	0.77	1.02	1.12	1.38	1.62	1.87	2.19	2.44	2.90	3.15	3.60	3.90	---	---	4.0	
50	25	40.0	25.0	16.0	---	---	0.63	0.82	0.93	1.12	1.27	1.46	1.69	1.88	2.10	2.30	2.76	2.95	3.8	4.0
65		63.0	40.0	25.0	---	---	0.35	0.50	0.53	0.68	0.74	0.89	1.00	1.15	1.20	1.40	1.65	1.80	2.3	2.45
80	40	100.0	63.0	40.0	---	---	---	---	---	---	---	---	---	---	0.73	0.86	1.01	1.13	2.54	2.66
100		160.0	100.0	63.0	---	---	---	---	---	---	---	---	---	---	0.45	0.56	0.63	0.73	1.62	1.72
125		250.0	160.0	100.0	---	---	---	---	---	---	---	---	---	---	0.27	0.36	0.39	0.47	1.03	1.12
150		360.0	250.0	160.0	---	---	---	---	---	---	---	---	---	---	0.18	0.25	0.26	0.33	0.71	0.78

For further information on actuating, see actuators' catalogue sheets	Actuating (actuator)	Zepadyn PTN 6	Auma Schiebel Rotork Sipos Modact MTR	Modact Cont. Modact MTN AUMA Schiebel Rotork Sipos	Modact MTR ST 2 Zepadyn 671 PTN 7	AUMA Schiebel Sipos Zepadyn 671 PTN 7	Modact Cont. Modact MTN Modact MTR ST 2	Auma Schiebel	Ruční kolo
	Marking in valve spec. No.	ENC ERD	EA... EZ... EQ... ET... EPD	EYA EYB EA... EZ... EQ... ET...	EPD EPM ENE ERG	EA... EZ... ET... ENE ERG	EYA EYB EPD EPM	EA... EZ...	Rxx
	Linear force	10 kN	10 kN	15 kN	16 kN	20 kN	25 kN	32 kN	

		Kvs [m³/h]			Δp$_{max}$		Δp$_{max}$		Δp$_{max}$		Δp$_{max}$		Δp$_{max}$		Δp$_{max}$		Δp$_{max}$		Δp$_{max}$	
DN	H	1	2	3	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE
50	25	40.0	25.0	16.0	3.82	4.00	3.82	4.00	---	---	---	---	---	---	---	---	---	---	---	
65		63.0	40.0	25.0	2.30	2.45	2.30	2.45	---	---	---	---	---	---	---	---	---	---	---	
80	40	100.0	63.0	40.0	1.46	1.58	1.46	1.58	2.36	2.48	2.54	2.66	---	---	---	---	---	---	---	
100		160.0	100.0	63.0	0.92	1.02	0.92	1.02	1.50	1.61	1.62	1.72	---	---	---	---	---	---	---	
125		250.0	160.0	100.0	0.58	0.66	0.58	0.66	0.96	1.04	1.03	1.12	---	---	---	---	---	---	---	
150		360.0	250.0	160.0	0.39	0.46	0.39	0.46	0.66	0.73	0.71	0.78	---	---	---	---	---	---	---	
200	80	570.0	400.0	250.0	---	---	0.19	---	0.34	---	0.37	---	0.50	---	0.65	---	0.86	---	1.0	
250		800.0	630.0	400.0	---	---	0.11	---	0.23	---	0.25	---	0.35	---	0.46	---	0.62	---	0.75	
300		1000.0	800.0	630.0	---	---	0.09	---	0.19	---	0.21	---	0.29	---	0.39	---	0.53	---	0.60	

1) parabolic plug in straight way, V-ported plug in angle way
2) V-ported plug in angle way, in straight way V-ported plug for linear characteristic and for equal-percentage characteristic parabolic plug

Bellows packing can be used for DN15 and 20.

Max. differential pressure Δp for valves PN 16 must be 1,6 MPa.

metal - version with metal - metal seat sealing

PTFE - version with metal - PTFE seat sealing (is not applicable to contoured plugs)

Max. differential pressures specified in table apply to PTFE and O-ring. Δp_{max} for bellows must be consulted with the producer. It applies to graphite packing as well especially when required p value is close tomax. values specified in table.

Kvs values and differential pressures Δp_{max} [MPa] of valves DN 15 to 150 for pneumatic valves - mixing function of the valve (flow direction below plug)

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

For further information on actuating, see actuators' catalogue sheets		**Pneumatic actuator**			**Flowserve PA 253**				**A. Hock 2109**			
		Spec. No. of actuator			**BVCxAA**		**BVCxZA**		**P2-0K-VL1**		**P2-0K-VL2**	
		Actuator function			direct		indirect		direct		indirect	
		Spring range		**[bar]**	1,5 - 2,7		1,5 - 2,7		1,2 - 3,0		1,2 - 3,0	
		Spring setting		**[bar]**	1,5 - 2,46		1,75 - 2,7		1,2 - 2,64		1,56 - 3,0	
		Feeding pressure		**[bar]**	4		4,5		3,9		4,6	
		Mark. in valve spec. No.			**PFA**				**PHF**			
		Linear force			3,7 kN		4,3 kN		3,5 kN		4,6 kN	
		Kvs [m^3/h]			Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}	
DN	**H**	**1**	**2**	**3**	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE
15	**16**	---	2.5 [1]	1.6 [1]	4.00	---	4.00	---	4.00	---	4.00	---
15		4.0 [1]	---	---	4.00	---	4.00	---	4.00	---	4.00	---
20		---	---	2.5 [1]	4.00	---	4.00	---	4.00	---	4.00	---
20		---	4.0 [1]	---	4.00	---	4.00	---	4.00	---	4.00	---
20		6.3 [1]	---	---	4.00	---	4.00	---	4.00	---	4.00	---
25		10	6.3 [2]	4.0 [2]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
32		16.0	10.0	6.3 [2]	3.16	3.48	3.82	4.00	2.94	3.26	4.00	4.00
40		25.0	16.0	10.0	1.97	2.23	2.40	2.66	1.83	2.09	2.61	2.87

For further information on actuating, see actuators' catalogue sheets		**Pneumatic actuator**			**Flowserve PB 503**								**Flowserve PB 701**			
		Spec. No. of actuator			**BVCxAB**		**BVCxZB**		**BVCxAB**		**BVCxZB**		**BVCxAB**		**BVCxZB**	
		Actuator function			direct		indirect		direct		indirect		direct		indirect	
		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 - 2,25		1,95 - 2,7		1,5 - 2,7		1,5 - 2,7		1,5 - 2,7		1,5 - 2,7	
		Feeding pressure		**[bar]**	3,8		4,7		4,2		4,2		4,2		4,2	
		Mark. in valve spec. No.			**PFB**								**PFC**			
		Linear force			7,5 kN		9,7 kN		7,5 kN		7,5 kN		10,5 kN		10,5 kN	
		Kvs [m^3/h]			Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}	
DN	**H**	**1**	**2**	**3**	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE	kov	PTFE
50	**25**	40	25	16	2.76	2.95	3.69	3.88	---	---	---	---	---	---	---	---
65		63	40	25	1.65	1.80	2.22	2.37	---	---	---	---	---	---	---	---
80	**40**	100	63	40	---	---	---	---	1.01	1.13	1.01	1.13	1.55	1.67	1.55	1.67
100		160	100	63	---	---	---	---	0.63	0.73	0.63	0.73	0.98	1.08	0.98	1.08
125		250	160	100	---	---	---	---	0.39	0.47	0.39	0.47	0.61	0.70	0.61	0.70
150		360	250	160	---	---	---	---	0.26	0.33	0.26	0.33	0.42	0.49	0.42	0.49

For further information on actuating, see actuators' catalogue sheets		**Pneumatic actuator**			**A. Hock 2112-30**				**A. Hock 2112-50**				**A. Hock 2112T-50**			
		Spec. No. of actuator			**P2-0K-WM1**		**P2-0K-WM2**		**P2-0K-SI1**		**P2-0K-SI2**		**P2-0K-DT1**		**P2-0K-UT2**	
		Actuator function			direct		indirect		direct		indirect		direct		indirect	
		Spring range		**[bar]**	1,4 - 2,8		1,4 - 2,8		0,8 - 2,8		0,8 - 2,8		0,5 - 1,7		0,75 - 2,7	
		Spring setting		**[bar]**	1,4 - 2,57		1,63 - 2,8		0,8 - 2,4		1,2 - 2,8		0,5 - 1,46		1,14 - 2,7	
		Feeding pressure		**[bar]**	4,0		4,5		3,3		4,0		2,0		3,9	
		Mark. in valve spec. No.			**PHA**				**PHA**				**PHB**			
		Linear force			8,0 kN		9,3 kN		4,6 kN		6,9 kN		5,7 kN		13 kN	
		Kvs [m^3/h]			Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}	
DN	**H**	**1**	**2**	**3**	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE
50	**25**	40	25	16	2.97	3.16	3.52	3.71	---	---	---	---	---	---	---	---
65		63	40	25	1.78	1.93	2.11	2.27	---	---	---	---	---	---	---	---
80	**40**	100	63	40	---	---	---	---	0.48	0.61	0.90	1.03	0.68	0.81	2.00	2.12
100		160	100	63	---	---	---	---	0.29	0.39	0.56	0.66	0.42	0.52	1.27	1.37
125		250	160	100	---	---	---	---	0.17	0.25	0.34	0.43	0.25	0.34	0.80	0.89
150		360	250	160	---	---	---	---	0.11	0.18	0.23	0.30	0.16	0.24	0.55	0.62

1) parabolic plug in straight way, V-ported plug in angle way
2) V-ported plug in angle way, in straight way V-ported plug for linear characteristic and for equal-percentage characteristic parabolic plug

Bellows packing can be used for DN15 and 20.
Max. differential pressure Δp for valves PN 16 must be 1,6 MPa.

metal - version with metal - metal seat sealing
PTFE - version with metal - PTFE seat sealing (is not applicable to contoured plugs)

Max. differential pressures specified in table apply to PTFE and O-ring. Δp_{max} for bellows must be consulted with the producer. It applies to graphite packing as well especially when required p value is close tomax. values specified in table.

Kvs values and differential pressures Δp_{max} [MPa] of valves DN 15 to 150 for pneumatic actuators - splitting function of valve (flow direction above plug)

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

For further information on actuating see actuators' catalogue sheets

		Pneumatic actuator			Flowserve PA 253				A. Hock 2109			
		Spec. No. of actuator			BVCxAA		BVCxZA		P2-0K-VL1		P2-0K-VL2	
		Actuator function			direct		indirect		direct		indirect	
		Spring range	[bar]		1,5 - 2,7		1,5 - 2,7		1,2 - 3,0		1,2 - 3,0	
		Spring setting	[bar]		1,5 - 2,46		1,75 - 2,7		1,2 - 2,64		1,56 - 3,0	
		Feeding pressure	[bar]		4		4,5		3,9		4,6	
		Mark. in valve spec. No.			PFA				PHF			
		Linear force			3,7 kN		4,35 kN		3,5 kN		4,6 kN	
		Kvs [m³/h]			packing		packing		packing		packing	
DN	H	1	2	3	graph.	PTFE	graph.	PTFE	graph.	PTFE	graph.	PTFE
15	16	---	2.5[1]	1.6[1]	1.76	4.00	2.52	4.00	1.53	4.00	2.82	4.00
15		4.0[1]	---	---	1.76	4.00	2.52	4.00	1.53	4.00	2.82	4.00
20		---	---	4.0[1]	0.88	2.14	1.27	2.52	0.77	2.02	1.41	2.67
20		---	4.0[1]	---	0.88	2.14	1.27	2.52	0.77	2.02	1.41	2.67
20		6.3[1]	---	---	0.88	2.14	1.27	2.52	0.77	2.02	1.41	2.67
25		10	6.3[2]	4.0[2]	0.55	1.33	0.79	1.56	0.47	1.25	0.88	1.66
32		16	10	6.3[2]	0.33	0.80	0.48	0.95	0.29	0.76	0.53	1.00
40		25	16	10	0.21	0.52	0.31	0.61	0.18	0.49	0.34	0.64

For further information on actuating see actuators' catalogue sheets

		Pneumatic actuator			Flowserve PB 503						Flowserve PB 701			
		Spec. No. of actuator			BVCxAB		BVCxZB		BVCxAB		BVCxZB		BVCxAB	BVCxZB
		Actuator function			direct		indirect		direct		indirect		direct	indirect
		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 - 2,25		1,95 - 2,7		1,5 - 2,7		1,5 - 2,7		1,5 - 2,7	1,5 - 2,7
		Feeding pressure	[bar]		3,8		4,7		4,2		4,2		4,2	4,2
		Mark. in valve spec. No.			PFB								PFC	
		Linear force			7,5 kN		9,75 kN		7.5 kN		7.5 kN		10.5 kN	10.5 kN
		Kvs [m³/h]			packing		packing		packing		packing		packing	packing
DN	H	1	2	3	graph.	PTFE	graph.	PTFE	graph.	PTFE	graph.	PTFE	graph. PTFE	graph. PTFE
50	25	40	25	16	0.45	0.63	0.64	0.82	---	---	---	---	--- ---	--- ---
65		63	40	25	0.28	0.39	0.39	0.50	---	---	---	---	--- ---	--- ---
80	40	100	63	40	---	---	---	---	0.18	0.27	0.18	0.27	0.28 0.37	0.28 0.37
100		160	100	63	---	---	---	---	0.11	0.17	0.11	0.17	0.18 0.24	0.18 0.24
125		250	160	100	---	---	---	---	0.07	0.11	0.07	0.11	0.12 0.16	0.12 0.16
150		360	250	160	---	---	---	---	0.05	0.08	0.05	0.08	0.08 0.11	0.08 0.11

The table continues on next page

For further information on actuating, see actuators' catalogue sheets		Pneumatic actuator			A. Hock 2112-30				A. Hock 2112-50				A. Hock 2112T-50			
		Spec. No. of actuator			P2-0K-WM1		P2-0K-WM2		P2-0K-SI1		P2-0K-SI2		P2-0K-DT1		P2-0K-UT2	
		Actuator function			direct		indirect		direct		indirect		direct		indirect	
		Spring range	[bar]		1,4 - 2,8		1,4 - 2,8		0,8 - 2,8		0,8 - 2,8		0,5 - 1,7		0,75 - 2,7	
		Spring setting	[bar]		1,4 - 2,57		1,63 - 2,8		0,8 - 2,4		1,2 - 2,8		0,5 - 1,46		1,14 - 2,7	
		Feeding pressure	[bar]		4,0		4,5		3,3		4,0		2,0		3,9	
		Mark. in valve spec. No.			PHA				PHA				PHB			
		Linear force			8,0 kN		9,3 kN		4,6 kN		6,9 kN		5,7 kN		13 kN	
		Kvs [m³/h]			Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}	
DN	**H**	**1**	**2**	**3**	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE
50	**25**	40	25	16	0.49	0.67	0.60	0.79	---	---	---	---	---	---	---	---
65		63	40	25	0.30	0.41	0.37	0.48	---	---	---	---	---	---	---	---
80	**40**	100	63	40	---	---	---	---	0.07	0.16	0.15	0.24	0.11	0.20	0.37	0.46
100		160	100	63	---	---	---	---	0.05	0.11	0.10	0.16	0.07	0.13	0.24	0.30
125		250	160	100	---	---	---	---	0.03	0.07	0.07	0.10	0.05	0.08	0.16	0.20
150		360	250	160	---	---	---	---	0.02	0.05	0.05	0.07	0.03	0.06	0.11	0.14

1) parabolic plug in straight way, V-ported plug in angle way
2) V-ported plug in angle way, in straight way for linear characteristic V-ported plug and for equal-percentage characteristic parabolic plug.

Bellows packing can be used for DN 15 and 20 and for DN above 200.

Max. differential pressure Dp for valves PN 16 must be 1.6 MPa.

metal - version with metal - metal seat sealing

PTFE - version with metal - PTFE seat sealing (is not applicable to contoured plugs)

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

Values are valid for all versions of seat sealings.

Kvs values and differential pressures Δp_{max} [MPa] of valves DN 200 to 300 with Flowserve actuators - mixing function of the valve (flow direction below plug)

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

For further information on actuating see actuators' catalogue sheets

			Pneumatic actuator					PO 1502						PO 3002	
			Spec. No. of actuator					BVCxAD		BVCxZD		BGFxAD	BFSxZD	BEPxAD	BEPxZD
			Actuator function					direct		indirect		direct	indirect	direct	indirect
			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]					4,2		4,2		5,5	5,5	3,4	3,4
			Mark. in valve spec. No.					PFD						PFE	
			Linear force					22,5 kN		22,5 kN		30 kN	30 kN	39 kN	39 kN
			Kvs [m³/h]					packing		packing		packing	packing	packing	packing
DN	Ds	H	1	2	3	4	5	graph.	PTFE	graph.	PTFE	graph. PTFE	graph. PTFE	graph. PTFE	graph. PTFE
200	200		570	400	250	160	100	0.48	0.57	0.48	0.57	0.71 0.80	0.71 0.80	0.99 1.07	0.99 1.07
250	230	80	800	630	400	250	160	0.33	0.41	0.33	0.41	0.51 0.58	0.51 0.58	0.72 0.79	0.72 0.79
300	250		1000	800	630	400	250	0.28	0.34	0.28	0.34	0.43 0.49	0.43 0.49	0.60 0.67	0.60 0.67

Max. differential pressures are valid for metal-metal seat sealing and for hardmetal overlay on sealing surfaces.

Kvs values and differential pressures Δp_{max} [MPa] of valves DN 200 to 300 with Flowserve actuators - splitting function of valve (flow direction above plug)

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

For further information on actuating see actuators' catalogue sheets

			Pneumatic actuator					PO 1502						PO 3002	
			Spec. No. of actuator					BVCxAD		BVCxZD		BGFxAD	BFSxZD	BEPxAD	BEPxZD
			Actuator function					direct		indirect		direct	indirect	direct	indirect
			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]					4,2		4,2		5,5	5,5	3,4	3,4
			Mark. in valve spec. No.					PFD						PFE	
			Linear force					22,5 kN		22,5 kN		30 kN	30 kN	39 kN	39 kN
			Kvs [m³/h]					packing		packing		packing	packing	packing	packing
DN	Ds	H	1	2	3	4	5	graph.	PTFE	graph.	PTFE	graph. PTFE	graph. PTFE	graph. PTFE	graph. PTFE
200	200		570	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 1.24
250	230	80	800	630	400	250	160	0.09	0.10	0.09	0.10	0.12 0.14	0.12 0.14	0.17 0.18	0.17 0.18
300	250		1000	800	630	400	250	0.08	0.09	0.08	0.09	0.10 0.12	0.10 0.12	0.14 0.15	0.14 0.15

Max. differential pressures are valid for metal-metal seat sealing and for hardmetal overlay on sealing surfaces.

Dimensions and weights of valves made of spheroidal cast iron for the types RV 214 (Ex), DN 15 - 150

DN	PN 16					PN 40					PN 16, PN 40											
	D_1	D_2	D_3	d	n	D_1	D_2	D_3	d	n	D	D_4	D_5	L	V_1	V_2	$^{\#}V_2$	V_3	$^{\#}V_3$	a	m	$^{\#}m_v$
	mm	mm	mm	mm		mm	mm	mm	mm		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	kg
15	95	65	46	14	4	95	65	46	14	4	15	65	M10x1	130	110	67	---	197	---	14	5.5	3.5
20	105	75	56			105	75	56			20			150	115	67	---	197	---	16	6.5	3.5
25	115	85	65			115	85	65			25			160	130	72	239	202	369	16	8.3	3.5
32	140	100	76	19		140	100	76	19		32			180	135	72	239	202	369	18	10.5	3.5
40	150	110	84			150	110	84			40			200	140	72	239	202	369	19	12	3.5
50	165	125	99			165	125	99			50			230	175	92	299	222	429	19	17	4
65	185	145	118			185	145	118		8	65			290	180	92	299	222	429	19	22	4
80	200	160	132		8	200	160	132			80		M16x1,5	310	220	123	441	253	571	19	31	4.5
100	220	180	156			235	190	156	23		100			350	230	123	441	253	571	19	44	4.5
125	250	210	184			270	220	184	28		125			400	260	151	469	281	599	23.5	65	5
150	285	240	211	23		300	250	211			150			480	290	151	469	281	599	26	94	5

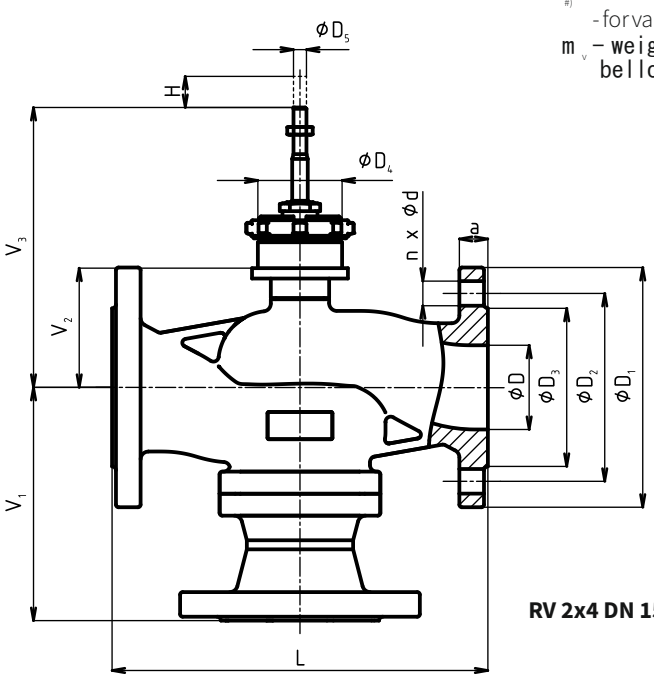
Dimensions and weights of valves made of cast steel and steinless steel for the types RV 224 (Ex), RV 234 (Ex) DN 15 - 150

DN	PN 10-16					PN 25-40					PN 10-40											
	D_1	D_2	D_3	d	n	D_1	D_2	D_3	d	n	D	D_4	D_5	L	V_1	V_2	$^{\#}V_2$	V_3	$^{\#}V_3$	a	m	$^{\#}m_v$
	mm	mm	mm	mm		mm	mm	mm	mm		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	kg
15	95	65	45	14	4	95	65	45	14	4	15	65	M10x1	130	110	67	---	197	---	16	6	3.5
20	105	75	58			105	75	58			20			150	115	67	---	197	---	18	7	3.5
25	115	85	68			115	85	68			25			160	130	72	239	202	369	18	9.5	3.5
32	140	100	78	18		140	100	78	18		32			180	135	72	239	202	369	18	12	3.5
40	150	110	88			150	110	88			40			200	140	72	239	202	369	18	13.5	3.5
50	165	125	102			165	125	102			50			230	175	92	299	222	429	20	24	4
65	185	145	122		4 [1)]	185	145	122			65			290	180	92	299	222	429	22	31	4
80	200	160	138		8	200	160	138		8	80		M16x1,5	310	220	123	441	253	571	24	43	4.5
100	220	180	158			235	190	162	22		100			350	230	123	441	253	571	24	55	4.5
125	250	210	188			270	220	188	26		125			400	260	151	469	281	599	26	90	5
150	285	240	212	22		300	250	218			150			480	290	151	469	281	599	28	120	5

[1)] with regard of the standard previously in force, there is an option to have the number of connection bolts as stipulated in ČSN-EN 1092-1

[#)] - for valve with bellows packing

m_v – weight to be added to weight of valve equipped with bellows packing



RV 2x4 DN 15 to 150

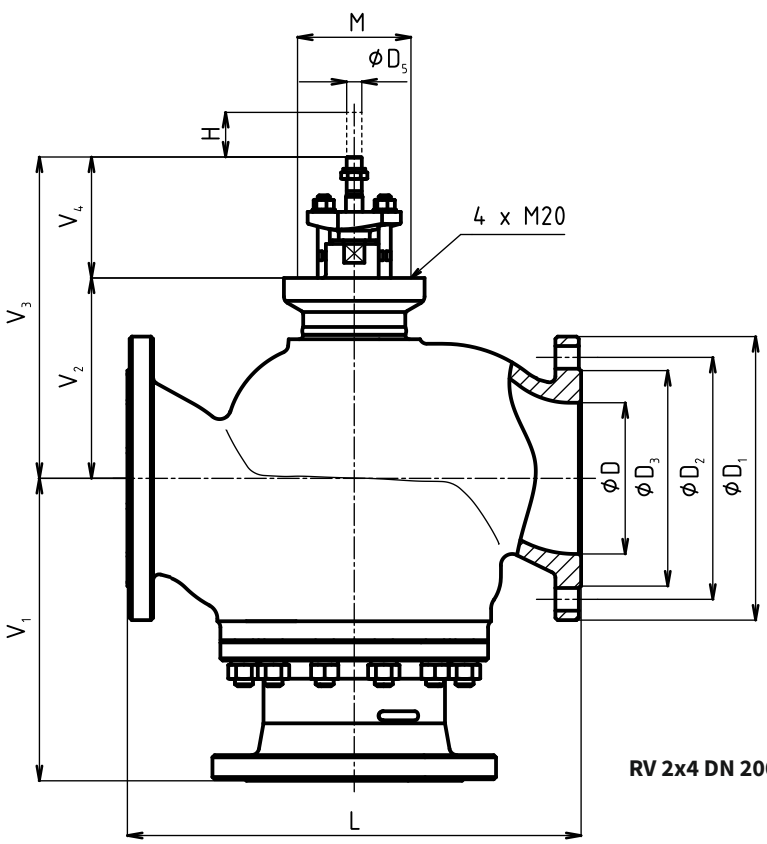
Dimens. and weights of valves made of spheroidal cast iron RV 214 (Ex), DN 200 - 300

DN	PN 16															
	D_1 mm	D_2 mm	D_3 mm	d mm	n	a mm	D mm	D_5 mm	M mm	L mm	V_1 mm	V_2 mm	V_3 mm	V_4 mm	H mm	m kg
200	340	295	266	23		20	200			600	400	265	425			162
250	405	355	319	28	12	22	250	M20x1.5	150	730	480	360	520	160	80	280
300	460	410	370	28		24.5	300			850	560	402	562			410

Dimensions and weights of valves made of cast steel and steinless steel RV 224, 234 (Ex), DN 200 - 300

DN	PN 10						PN 16						PN 25					
	D_1 mm	D_2 mm	D_3 mm	d mm	n	a mm	D_1 mm	D_2 mm	D_3 mm	d mm	n	a mm	D_1 mm	D_2 mm	D_3 mm	d mm	n	a mm
200	340	295	268		8	24	340	295	268	22		24	360	310	278	26	12	30
250	395	350	320	22	12	26	405	355	320	26	12	26	425	370	335	30	12	32
300	445	400	370		12	26	460	410	378	26		28	485	430	395	30	16	34

DN	PN 40						PN 10-40									
	D_1 mm	D_2 mm	D_3 mm	d mm	n	a mm	D mm	D_5 mm	M mm	L mm	V_1 mm	V_2 mm	V_3 mm	V_4 mm	H mm	m kg
200	375	320	285	30	12	34	200			600	400	265	425			250
250	450	385	345	33	12	38	250	M20x1.5	150	730	480	360	520	160	80	425
300	515	450	410	33	16	42	300			850	560	402	562			640



RV 2x4 DN 200 - 300

Valve complete specification No. for ordering RV / UV 2x0 (Ex), RV 2x2 (Ex), RV 2x4 (Ex)

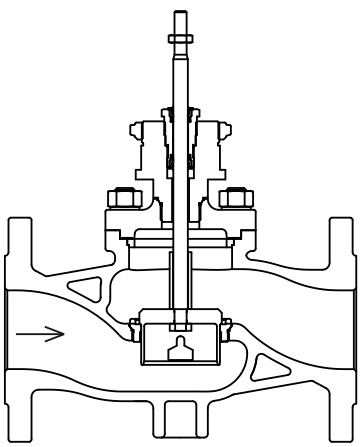
			XX	XXX	XXX	XXXX	XX	-	XX	/	XXX	-	XXX	XX
1. Valve	Control valve		**RV**											
	Shut-off valve		**UV**											
2. Series	Valves made of spher. cast iron EN-JS 1025 [2]			**2 1**										
[2] For DN 200 to 400 only PN 16	Valves made of cast steel 1.0619, 1.7357			**2 2**										
	Valves made of stainless steel 1.4581			**2 3**										
	Direct valve			**0**										
	Pressure -balanced valve			**2**										
	Mixing (diverting) valve			**4**										
3. Actuating	Electric actuator				**E X X**									
	Pneumatic actuator				**P X X**									
	Hand wheel				**R X X**									
4. Connection	Raised flange					**1**								
	Female flange					**2**								
	Flange with groove					**3**								
5. Body material	Cast steel 1.0619	(-10 to 400 °C)				**1**								
(Operating temp. ranges are specified in parentheses)	Sphr. cast iron EN-JS 1025	(-10 to 300 °C)				**4**								
	CrMo steel 1.7357	(-10 to 500 °C)				**7**								
	Stainless steel 1.4581	(-10 to 500 °C)				**8**								
	Other material on request					**9**								
6. Seat sealing	Metal - metal						**1**							
[1] DN 25 to 150; t_{max} = 260 °C	Soft sealing (metal - PTFE) [1]						**2**							
	Hard metal overlay on sealing surfaces						**3**							
	Balanced by graphite, metal - metal						**5**							
	Balanced by graphite, hard metal overlay						**7**							
	Balanced with metal sealing cuff, hard metal overlay						**8**							
7. Packing	O - ring EPDM [3]							**1**						
[3] Not appl. to Ex version	DRSpack® (PTFE)							**3**						
[6] DN 15 to 150 only	Exp. graphite [3]							**5**						
	Bellows [6]							**7**						
	Bellows with safety PTFE packing [6]							**8**						
	Bellows with safety Graphite packing [6]							**9**						
8. Flow characteristic	Linear								**L**					
[4] Only for UV 2x0	Equal-percentage in straight way								**R**					
[5] Not applicable for RV 2x4 (Ex)	LDMspline® [5]								**S**					
	On-off [4]								**U**					
	Parabolic [5]								**P**					
	Linear - perforated plug [5]								**D**					
	Equal-percentage - perforated plug [5]								**Q**					
	Parabolic - perforated plug [5]								**Z**					
9. Kvs	Column No. acc. to Kvs value table								**X**					
10. Nominal pressure PN	PN 10 [7]										**10**			
[7] DN 200 - 600	PN 16										**16**			
	PN 25 [7]										**25**			
	PN 40										**40**			
11. Max. operat. temp °C	Acc. to version 140 - 500°C											**XXX**		
12. Nominal size DN	DN												**XXX**	
13. Version	Normal													
	Non - explosive													**Ex**
	Oxygen													**Ox**
	Food industry version													**Px**

Ordering example: RV210 ENC 1423 L1 40/220-065

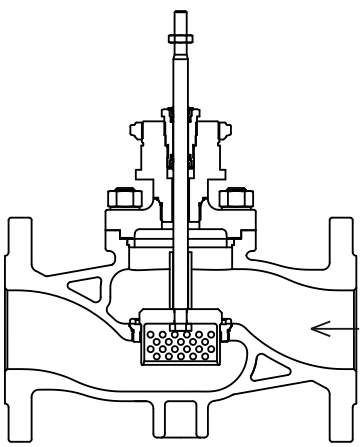
For marking of actuators in specification code, refer to table on page 103 of this catalogue

Valves RV / UV 2x0 (Ex)

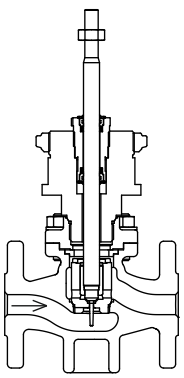
Section of valve
with V-ported plug



Section of valve
with perforated plug

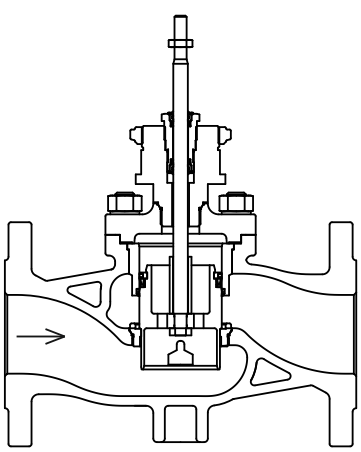


Section of valve
with micro-throttling system

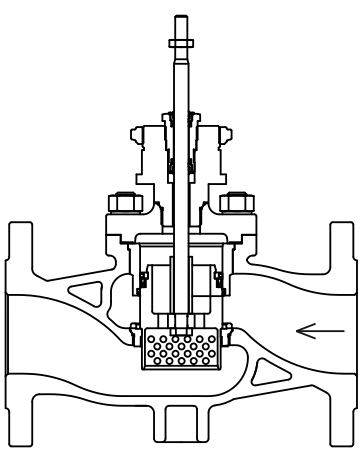


Valves RV 2x2 (Ex)

Section of pressure-balanced valve
with V-ported plug

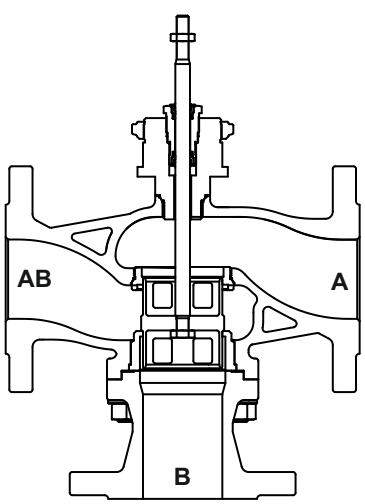


Section of pressure-balanced valve
with perforated plug



Valves RV 2x4 (Ex)

Section of three-way valve with
V-ported plug



Eectric actuators

ZPA Nová Paka

MIDI 660

marking in type number:
ENB

Technical data

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

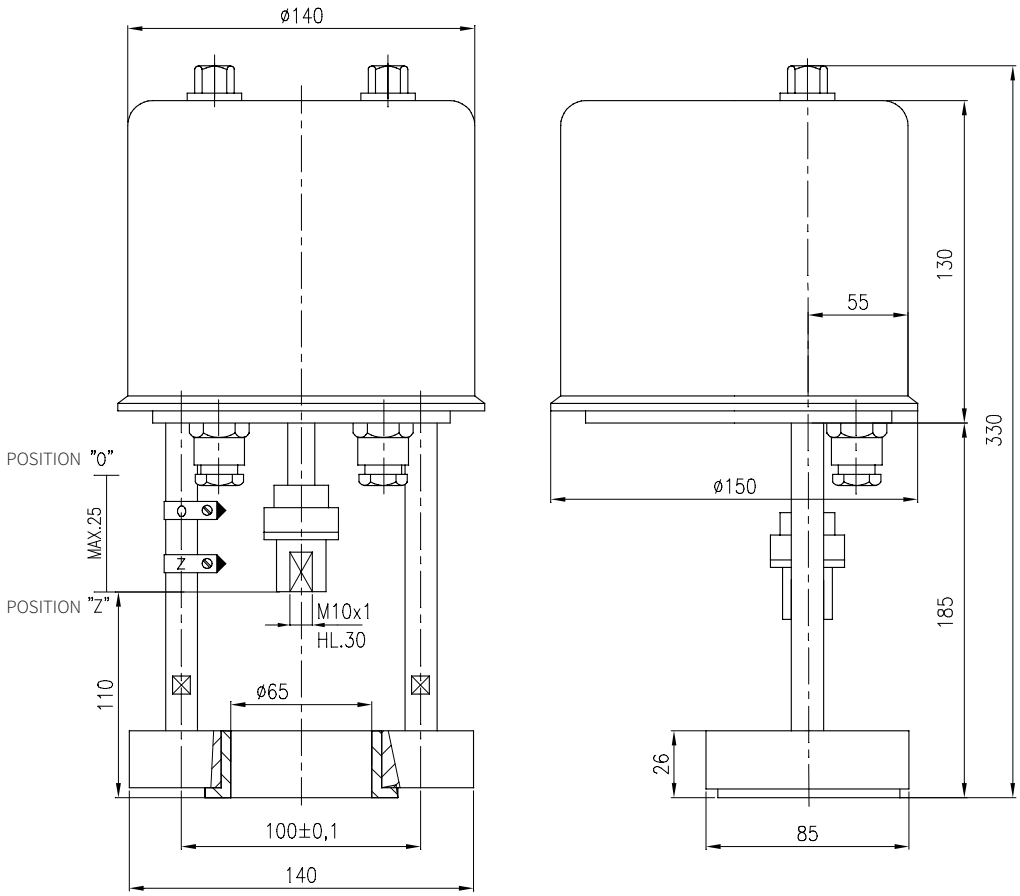
→ **Note:** Specifications and technical data are for information only.
Detailed technical informations can be found in producer's data sheet or on the webside **www.zpanp.cz**

Specification of actuators MIDI 660

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

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

Dimensions of actuator MIDI 660



Electric actuator

Ekorex

PTN 2

marking in type number:
ERB, ERC

Technical data

Type	PTN 2.20	PTN 2.32	PTN 2.40
Marking in valve spec. No.	**ERB**	**ERC**	**ERC**
Voltage	230 V + 6 %, -12 % or 24 V + 10 %, -15 % AC		
Frequency	50 Hz		
Power consumption	max. 19 VA		
Control	3 - position, (0) 4 - 20 mA, 0 - 10 V		
Nominal force	2000 N	3200 N	4000 N
Travel	max. 25 mm		
Enclosure	IP 65		
Process medium max. temp.	acc. to used valve		
Ambient temperatrure range	-20 to 60°C, -45 to 60°C (weather-resistant design)		
Ambient humidity range	5 to 100 % with condensation		
Weight	4 kg		

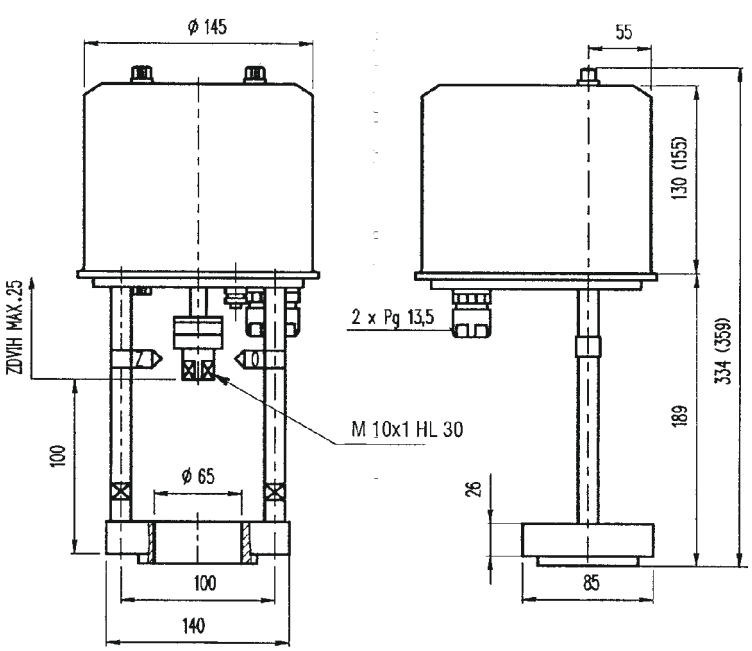
→ **Note:** Specifications and technical data are for information only.
Detailed technical informations can be found in producer's data sheet or on the webside **www.ekorex.cz**

Specification of actuator PTN 2

PTN 2	X	X	X	X	X	X	X	X	Nominal force [kN]	Resetting speed [mm.min^{-1}]
	2	**0**							2	10, 16, 25, 32
	3	**2**							3,2	10, 16, 25
	4	**0**							4	10, 16, 25
			0						230 V, 50 Hz	**Motor supply voltage (AC)**
			2						24 V, 50 Hz	
				1					10	**Resetting speed [mm.min^{-1}]**
				2					16	
				3					25	
				4					32	
					0				Without equipment	
					1				Output 0 - 10 V	**Independent feedingí 24 V**
					2				Output 0 - 20 mA	
					3				Output 4 - 20 mA	
					4				Output 4 - 20 mA	**2-wire connection**
					5				Output 0 - 100 Ω 1x	**Resistance output signal**
					6				Output 0 - 100 Ω 2x	
					7				Output 4 - 20 mA	**Capacity transmitter**
						1			Flange with columns, pitch 70 mm, clutch M 8x1	
						3			Flanges with columns, pitch 100 mm, clutch M 10x1	
							0		MO; MZ	**Number of microswitches**
							2		MO; MZ; SO; SZ	
							4		MO; MZ; KPO	
							6		MO; MZ; SO; SZ; KPO	
							9		Acc. to agreement	
								2	10	**Draw bar stroke [mm]**
								3	16	
								5	25	

Note:
Table applies to actuator with 3-position control. It is possible to supply actuator with control signal of 0 - 10 V, 0 - 20 mA (code /DMS 3), 4 - 20 mA s ručním ovládání vně skříně (/RO) nebo verzi se zvýšenou klimatickou odolností -45°C to 60°C (/KO)
Example of marking: ***PTN 2 - XX.XX.XX.XX / control signal 4 - 20 mA***

Dimensions of actuator PTN 2



Electric actuators

Ekorex

PTN 6

marking in type number:
ERD

Technical data

Type	**PTN 6 XX.XX.XX.XX**
Marking in valve spec. No.	**ERD**
Voltage	230 V + 6 %, -12 % nebo 24 V + 10 %, -15 % AC
Frequency	50 Hz
Power consumption	max. 39 VA
Control	3 - position, continuous with positioner
Nominal force	6300 nebo 10000 N
Travel	16, 25 a 40 mm
Enclosure	IP 65
Process medium max. temp.	acc. to used valve
Ambient temperatrure range	-20 to 60 °C
Ambient humidity range	5 to 100 % with condensation
Weight	7 kg
Hand wheel	as standard equipment of actuator

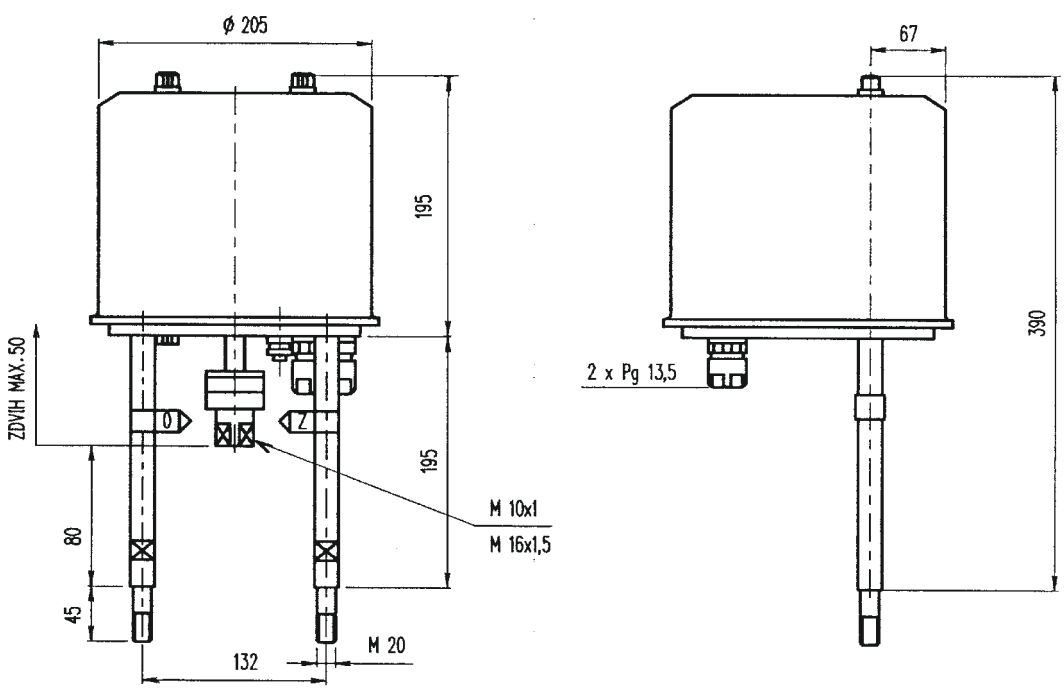
→ **Note:** Specifications and technical data are for information only.
Detailed technical informations can be found in producer's data sheet or on the webside **www.ekorex.cz**

Specification of actuator PTN 6

PTN 6										
	6	3							6,3	**Nominal force [kN]**
	1	0							10	
			0						230 V, 50 Hz	**Motor supply voltage (AC)**
			2						24 V, 50 Hz	
				1					10	**Resetting force [mm.min^{-1}]**
				2					16	
				3					20	
				4					25	
				5					32	
				6					50	
					0				Without equipment	
					1				Output 0 - 10 V	**Independent feeding 24 V**
					2				Output 0 - 20 mA	
					3				Output 4 - 20 mA	
					4				Output 4 - 20 mA	**2-wire connection**
					5				Output 0 - 100 Ω 1x	**Resistance output signal**
					6				Output 0 - 100 Ω 2x	
					7				Output 4 - 20 mA	**Capacity transmitter**
						1			Flange with columns M20, pitch 132 mm, clutch M 10x1	
						2			Flange with columns M20, pitch 132 mm, clutch M 16x1,5	
							0		MO; MZ; KPZ	**Number of microswitches**
							2		MO; MZ; KPO	
							5		MO; MZ; SO; SZ; KPZ	
							6		MO; MZ; SO; SZ; KPO	
								4	16	**Draw bar stroke [mm]**
								5	25	
								7	40	

Note:
Table applies to actuator with 3-position control.
It is possible to supply actuator with control signal of 0 - 10 V, 0 - 20 mA, 4 - 20 mA
Example of marking: ***PTN 6 - XX.XX.XX.XX / control signal 4 - 20 mA***

Dimensions of actuator PTN 6



Electric actuators

Ekorex

PTN 7

marking in type number:
ERG

Technical data

Type	**PTN 7 XX.XX.XX.XX**
Marking in valve spec. No.	**ERG**
Voltage	230 V AC or 24 V AC ± 10 %
Frequency	50 Hz
Power consumption	max. 120 VA, heat resistor max. 9 VA
Control	3 - position control, continuous with positioner
Nominal force	16000 or 20000 N
Travel	40, 80 mm
Enclosure	IP 65
Process medium max. temp.	acc. to used valve
Ambient temperatrure range	-20 to 60 °C
Ambient humidity range	10 to 100 % with condensation
Weight	10 kg
Hand wheel	as standard equipment of actuator

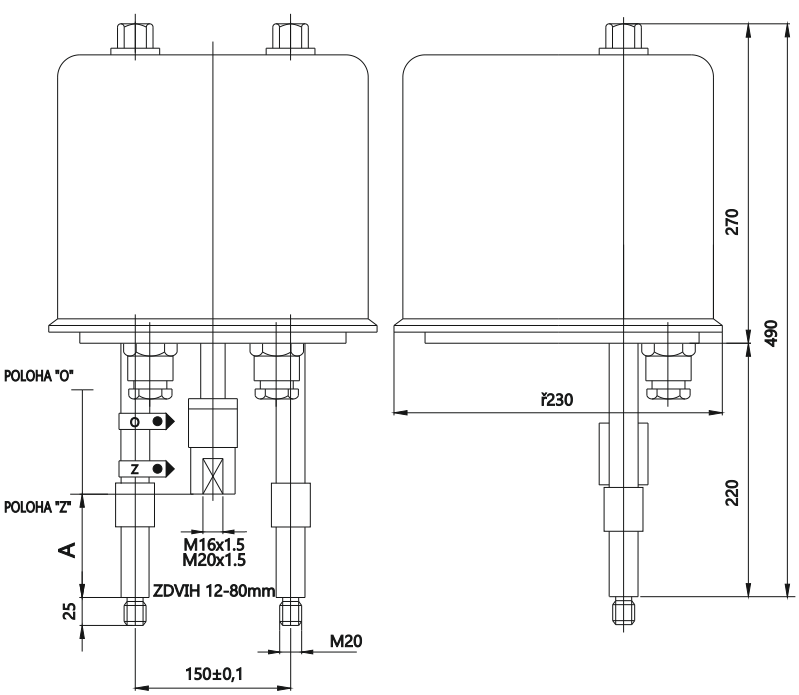
→ **Note:** Specifications and technical data are for information only.
Detailed technical informations can be found in producer's data sheet or on the webside **www.ekorex.cz**

Specification of actuator PTN 7

PTN 7	X	X	X	X	X	X	X	X		
	1								16	**Nominal force [kN]**
	2								20	
	9								Acc. to contract	
		1							20	**Resetting force [mm.min^{-1}]**
		2							25	
		3							32	
		4							50	
		5							80 (jen 16 kN)	
			0						230 V, 50 Hz, 60 Hz	**Motor supply voltage**
			2						24 V, 50 Hz, 60 Hz	**At 60 hz is the speed increased for 20%**
				2					MO; MZ; KPO	**Number of microswitches**
				6					MO; MZ; SO; SZ; KPO	
				9					Acc. to contract	
					0				Without equipment	
					1				Output 0 - 10 V	**Independent feeding 24 V AC**
					2				Output 0 - 20 mA	
					3				Output 4 - 20 mA	
					4				Output 4 - 20 mA	**2-wire connection**
					5				Output 0 - 100 Ω 1x	**Resistance output signal**
					6				Output 0 - 100 Ω 2x	
					7				Output 4 - 20 mA	**Capacity transmitter**
					9				Acc. to contract	
						2			40	**Draw bar stroke [mm]**
						6			80	
							1	**0**	Columns M20, clutch M16x1,5 (for valves DN 80 - 150, H = 40 mm)	
							3	**0**	Columns M20, clutch M20x1,5 (for valves DN 200 - 300, H = 80 mm)	

Note:
Table applies to actuator with 3-position control.
It is possible to supply actuator with control signal of 0 - 10 V, 0 - 20 mA, 4 - 20 mA and manual operation outside the cover
Example of marking: ***PTN 7 - XX.XX.XX.XX / control signal 4 - 20 mA / RO***

Dimensions of actuator PTN 7



Připojení	A
1	74
3	140

Electric actuators

ZPA Nová Paka

Zepadyn 670

marking in type number:
ENC

Technical data

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

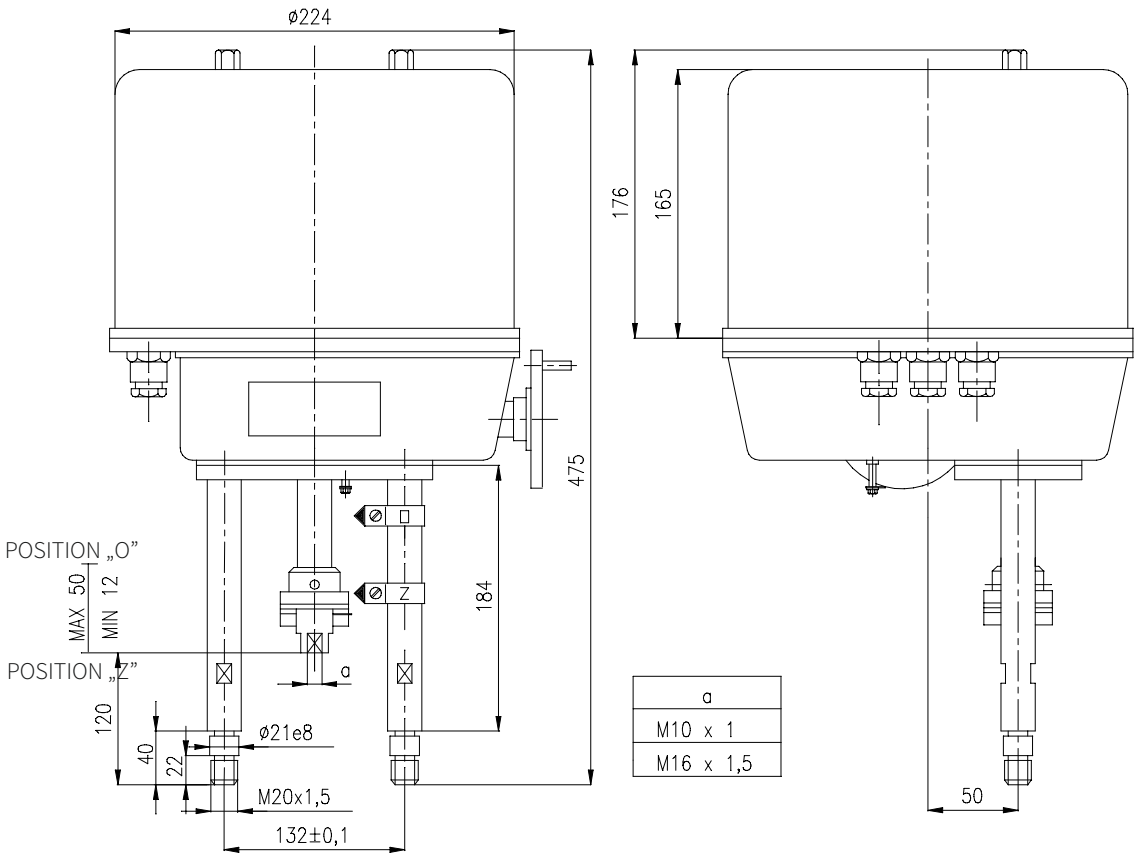
→ **Note:** Specifications and technical data are for information only.
Detailed technical informations can be found in producer's data sheet or on the webside **www.zpanp.cz**

Specification of actuator Zepadyn 670

		Zepadyn 670	X	X	X	/	XXXX
Feeding voltage AC	230 V (50 Hz)		**1**				
	24 V (50 Hz)		**2**				
Linear force [kN]	6,3			**2**			
	10			**4**			
Resetting speed [mm/min]	6,3				**1**		
	16				**2**		
	25				**3**		
	32 (ne u provedení s OP1)				**4**		
Accessories	Positioner 0-1 V, 0-10 V, 0(4)-20 mA - without R2						**OP1**
	Signalization SO a SZ						**S1**
	1 resistance transmitter 100W						**R1**
	2 resistance transmitters 100W - without OP1, I1 and C1						**R2**
	1 resistance transmitter 1000 Ω						**R3**
	Converter 4 - 20 mA - without R2 and C1						**I1**
	Capacity transmitter CPT1 - without R2 and I1						**C1**
	Heater						**T1**
	Connection - pitch 132, M20, coupling M10x1, M16x1,5						**P3**
	Adapter with setting program for actuators with OP1						**ANP1**
	Stroke for valve - xx = 16, 20, 25, 32, 40, 52 mm						**ZDxx**

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

Dimensions of actuator Zepadyn 670



a
M10 x 1
M16 x 1,5

Electric actuators

ZPA Nová Paka

Zepadyn 671

marking in type number:
ENE

Technical data

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

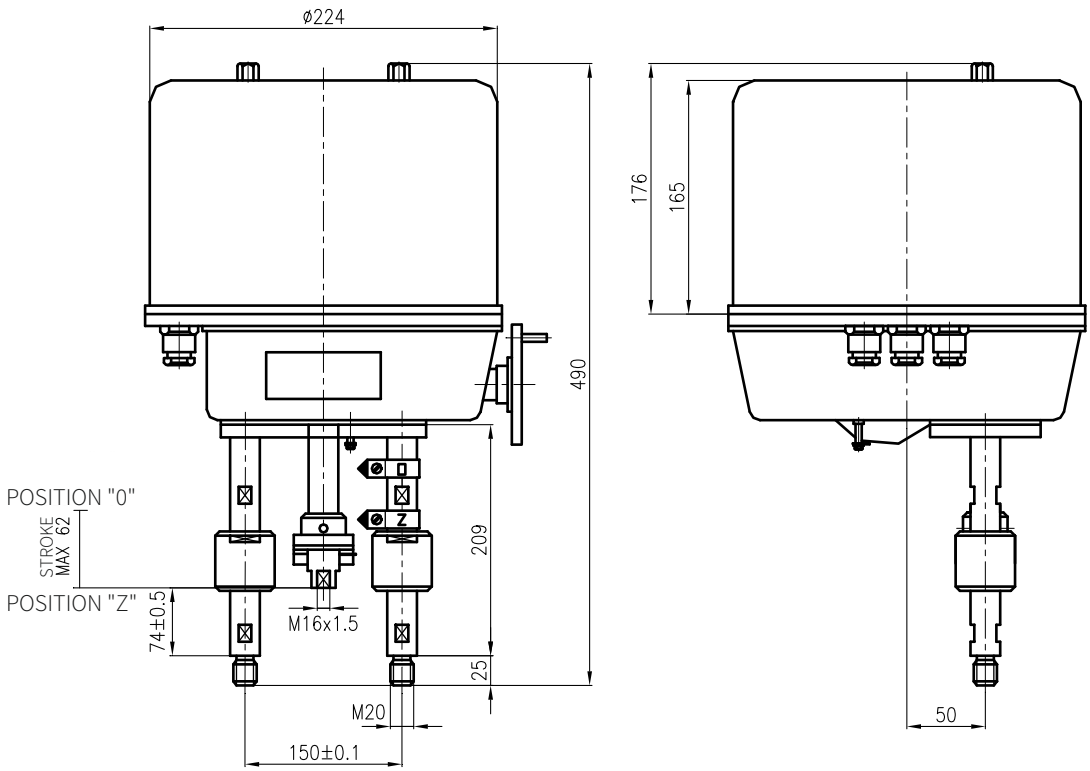
		Zepadyn 671	X	X	X	/	XXXX
Feeding voltage AC	230 V (50 Hz)		**1**				
	24 V (50 Hz)		**2**				
Linear force [kN]	16			**1**			
	20			**2**			
Resetting speed [mm/min]	16				**1**		
	25				**2**		
	32				**3**		
	50				**4**		
Accessories	Positioner 0-1 V, 0-10 V, 0(4)-20 mA - without R2 and I1						**OP1**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

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

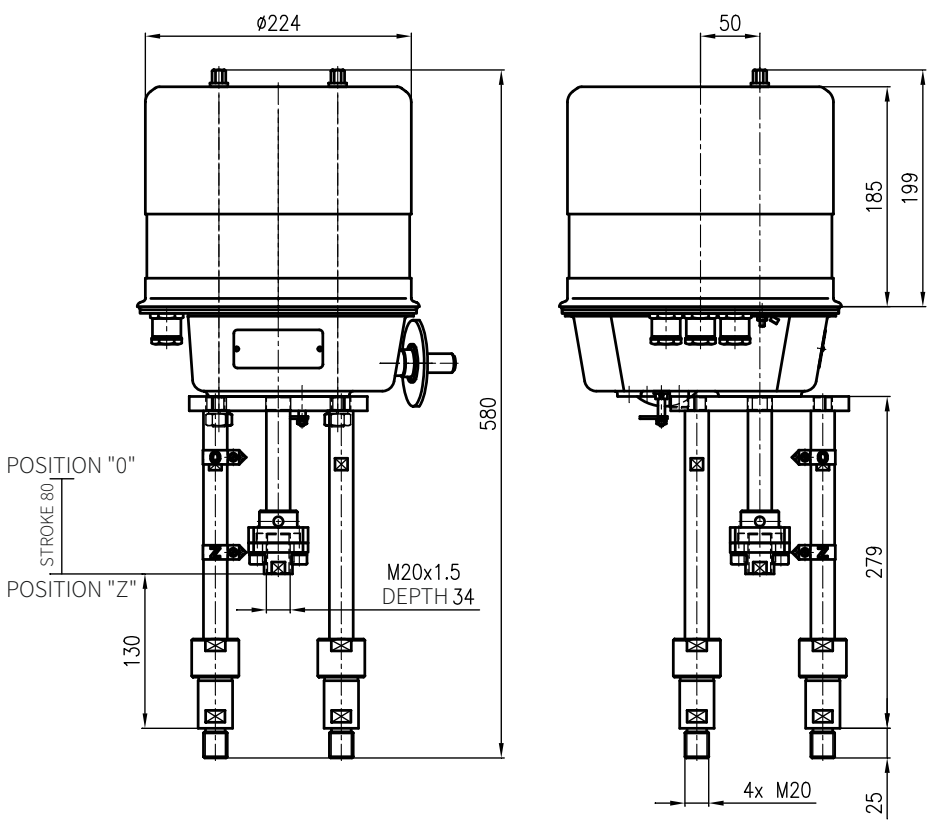
* Connections for LDM valves
P3 ... RV 2xx NPS 80 - 150
P5 ... RV 2xx NPS 200 - 300

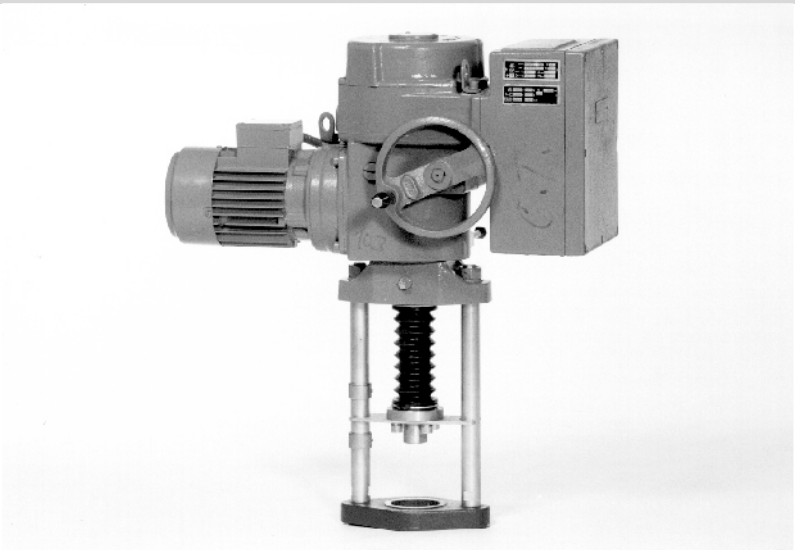
Dimensions of actuators Zepadyn 671

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



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





Electric actuators

ZPA Pečky

Modact MTN
Modact MTP
Modact MTN Control
Modact MTP Control

type 52 442

marking in type number:
EYA, EYB

Technical data

Type	Modact MTN Control	Modact MTN	Modact MTP Control	Modact MTP
Marking in valve spec. No.	**EYA**	**EYB**	**EYA**	**EYB**
Voltage	3 ~ 230 V AC / 400 V AC			
Frequency	50 Hz			
Power consumption	see specification table			
Control	3 - position; with regulator ZP2.RE5			
Nominal force	15 to 25 kN			
Travel	10 to 100 mm			
Enclosure	IP 55		IP 67	
Process medium max. temp.	acc. to used valve			
Ambient temperatrure range	-40 to 70°C			
Ambient humidity range	10 - 100 % with condensation			
Weight	33 to 45 kg			

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

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

Basic equipment

2 x power switches MO, MZ
2 x limit switches PO, PZ
2 x limit and signalisation switches SO, SZ
1 x position transmitter - resist 2x100 Ω or current
1 x heating element
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	Weight 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			XX4XXM
			80		180	835	0.74	2.3			XX5XXM
			125		250	1350	0.77	3.0			XX6XXM
			36		120	645	0.51	2.2			XX7XXM
			27		120	645	0.51	2.2			XX8XXM

Version, electric connection

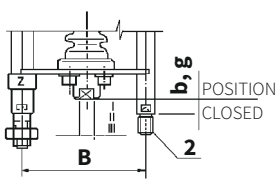
Via terminal board	**6XXXXM**
With connector HARTING	**7XXXXM**
Version Modact MTN; Modact MTN Control ... enclosure IP55	**XXXXNM**
Version Modact MTP; Modact MTP Control ... enclosure IP67	**XXXXPM**

		Current transmitter CPT wo source	Current trasmitter DCPT with source
Position transmitter	current 4 - 20 mA	**XXX0XM**	**XXXRXM**
	current 4 - 20 mA s BMO	**XXX1XM**	**XXXSXM**
	resistance 2x 100 Ω	**XXX2XM**	
	resistance 2x 100 Ω s BMO	**XXX3XM**	
	without transmitter, with BMO	**XXXPXM**	
	without transmitter, without BMO	**XXXZXM**	

Additional electric equipment [1]			Resist. transmitter 2x 100 Ω	Current transmitter CPT wo source	Current transmitter DCPT with source
Control (with built-in contactor combination)	wo BMO	without brake BAM and positioner	**XXX4XM**	**XXXAXM**	**XXXKXM**
		with brake BAM and without positioner	**XXX5XM**	**XXXBXM**	**XXXLXM**
		with brake BAM and with positioner		**XXXCX5M** [3]	
	with BMO	without brake BAM and positioner	**XXX7XM**	**XXXDXM**	**XXXMXM**
		with brake BAM and without positioner	**XXX8XM**	**XXXEXM**	**XXXNXM**
		with brake BAM and with positioner		**XXXFX5M** [3]	

Notes:
[1] When version with flasher is requested, specify this requirment in writing: **version 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 (e.g.: 52442.6M5FN5M)

Connection dimensions - details of additional specification No. 52 442

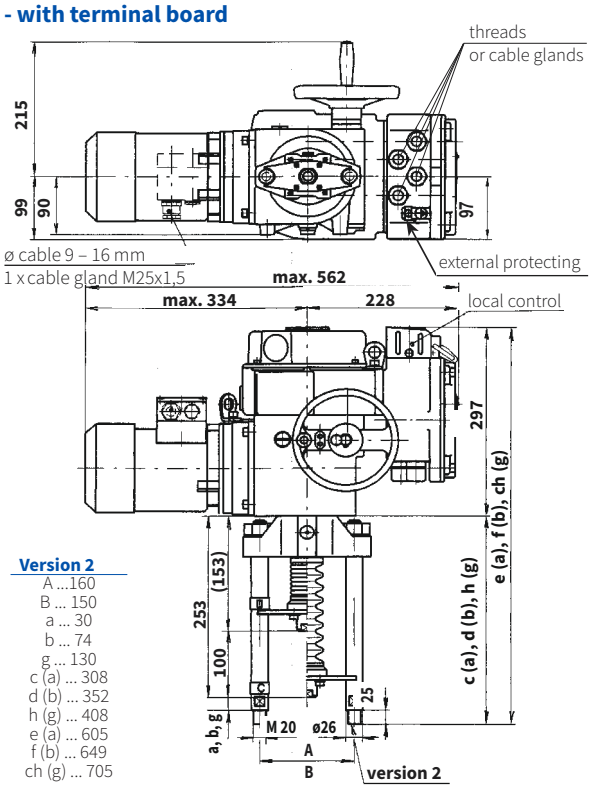


Columns pitch	**B**	150
Position "closed"	**b**	74
	g	130
Cluth thread	**I**	M 20x1,5
	II	M 16x1,5
	III	M 10x1

Version	Specification No. basic	Specification No. additional	For valves
Bb2I	52 442	**XLXXXM**	---
Bb2II	52 442	**XMXXXM**	DN80-150
Bb2III	52 442	**XPXXXM**	DN15-65
Bg2I	52 442	**XRXXXM**	DN200-400

Dimensions of actuator Modact MTN, MTP

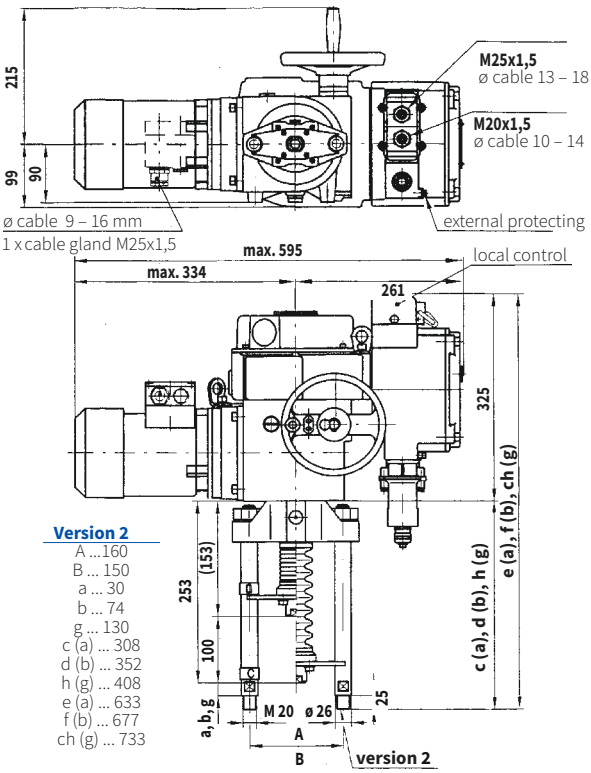
- with terminal board



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

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

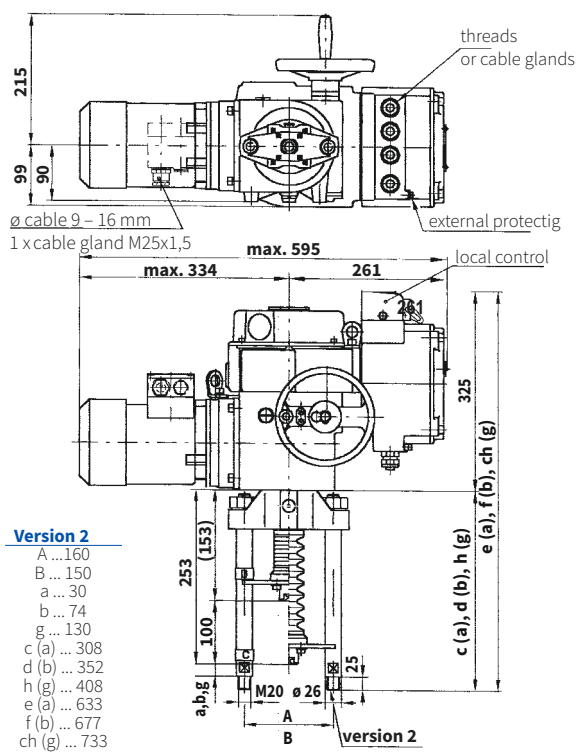
- with connector



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

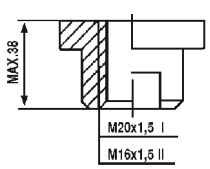
Dimensions of actuator Modact MTN, MTP Control

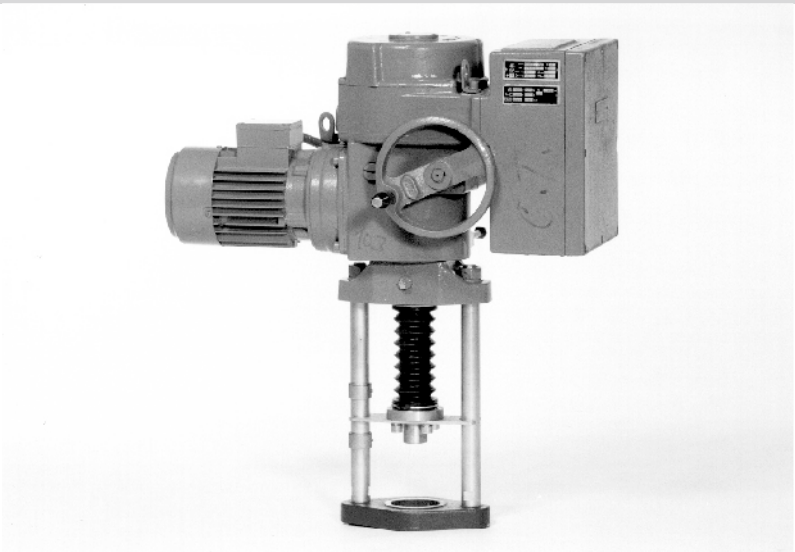
- with terminal board



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

Detail of coupling





Electric actuators

ZPA Pečky

Modact MTNED
Modact MTPED

type 52 442

marking in type number:
EYA

Technical data

Type	Modact MTNED	Modact MTPED
Marking in valve spec. No.	**EYA**	
Version	The actuator equiped with electronic system DMS2 or DMS2 ED	
Voltage	3 ~ 230 / 400 V AC	
Frequency	50 Hz	
Power consumption	see specification table	
Control	3-position, or continuous	
Nominal force	15 to 25 kN	
Travel	10 to 100 mm	
Enclosure	IP 55	IP 67
Process medium max. temp.	acc. to used valve	
Ambient temperatrure range	-40 to 70 °C	
Ambient humidity range	10 - 100 % with condensation	
Weight	33 to 45 kg	

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

Electric equipment

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

Basic equipment	
Control unit	It also contains the sensor of position of the output shaft, 4 push-buttons and 3 signal LEDs for setting and checking the actuator.
Torque-limit unit	
Source unit	Contacts of seven relays (MO, MZ, PO, PZ, SO, SZ, READY) are connected to the terminal board; state of each relay is 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
Torgue-limit	
Source unit	- 2 relays for electric motor control - Relay Ready with change-over contact connected to the terminal board - Signalling relays 1 - 4 with one pole of the switching contact connected to the terminal board Second poles of the switching contacts of relays 1 - 4 are interconnected and brought out to the terminal COM Heating resistor switched by a thermostat is connected to the unit The unit controls power switches of the electric motor (reversing relay) To the unit can be connected an electronic brake
Unit of display	Two-row display, 2 x 12 alpha-numeric characters
unit of push-buttons	Pus-buttons *"otvírat", "zavírat", "stop"*, otočný přepínač *"místní, dálkové, stop"*
Recommended equipment	
Electronic brake	After switching-off the motor reduces running down and precises the control
Optional equipment	
Unit of two- and three-position control	Control of the electric actuator by shifting to position Open and Close or by analog signal 0(4) - 20 mA
Unit of connection Profibus	Control of the electric actuator by industrial bus bar Profibus

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

Specification of actuators Modact MTNED and MTPED

Basic technical parameters

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

Version, circuity, electric equipment

	Terminal board	Connector	Term. board, brake	Connector, 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 DMS2 ED electronics

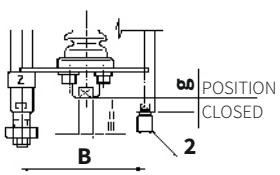
Equipment DMS2 ED		Character at the 9th place (52442 xxxXxED)																						
		0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**	**H**	**J**	**K**	**L**	**M**	**N**	**V**	**W**
Local control			x		x		x		x		x		x		x		x		x		x		x		x
Display				x	x			x	x			x	x			x	x			x	x			x	x
Relay						x	x	x	x					x	x	x	x					x	x	x	x
Analog module	Transmitter									x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Regulator																	x	x	x	x	x	x	x	x

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

Ambient temperature (°C)	Type of actuator MTNED DMS2 ED	MTNED DMS2	MTPED DMS2 ED	MTPED DMS2	Marking
-25 to +70	YES	YES	NO	NE	---
-40 to +60	YES	YES	YES	ANO	F1
-25 to +60	---	---	YES	ANO	---

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

Connection dimensions - details of additional specification No. 52 442

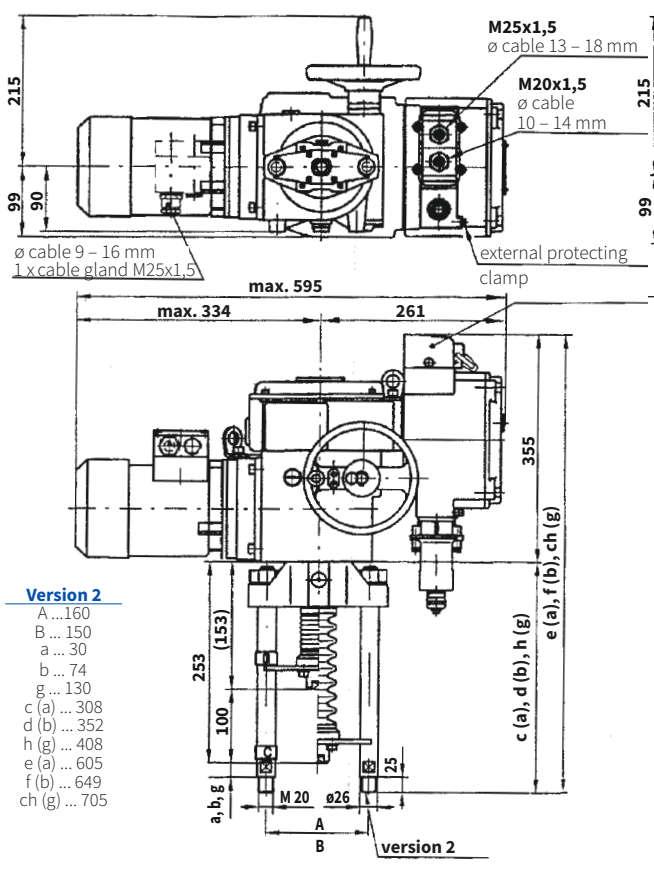


Columns pitch	B	150
Position "closed"	b	74
	g	130
Clutch thread	I	M 20x1,5
	II	M 16x1,5
	III	M 10x1

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

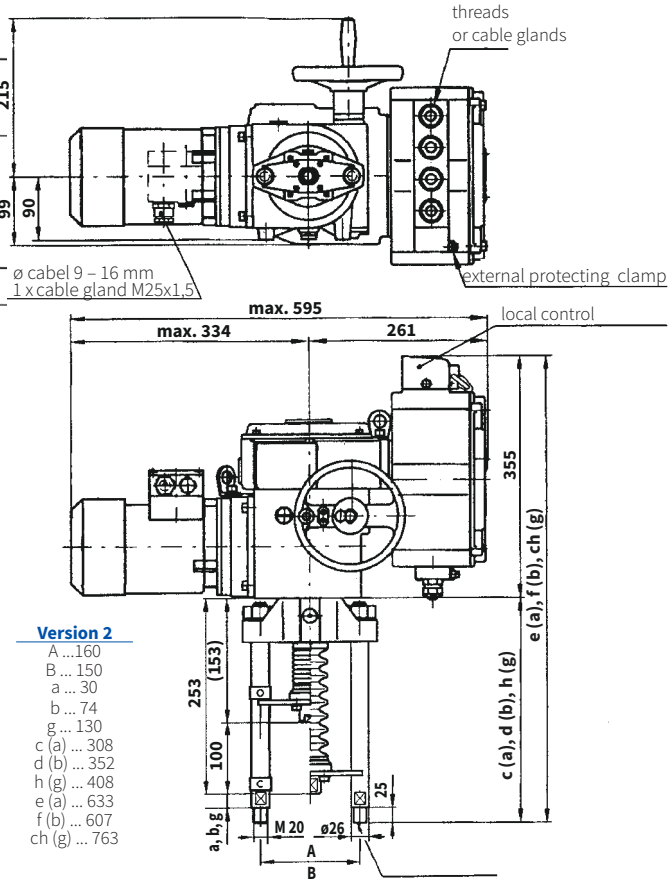
Dimensions of actuator Modact MTNED/MTPED

- with connector



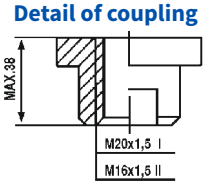
Version 2
A ...160
B ... 150
a ... 30
b ... 74
g ... 130
c (a) ... 308
d (b) ... 352
h (g) ... 408
e (a) ... 605
f (b) ... 649
ch (g) ... 705

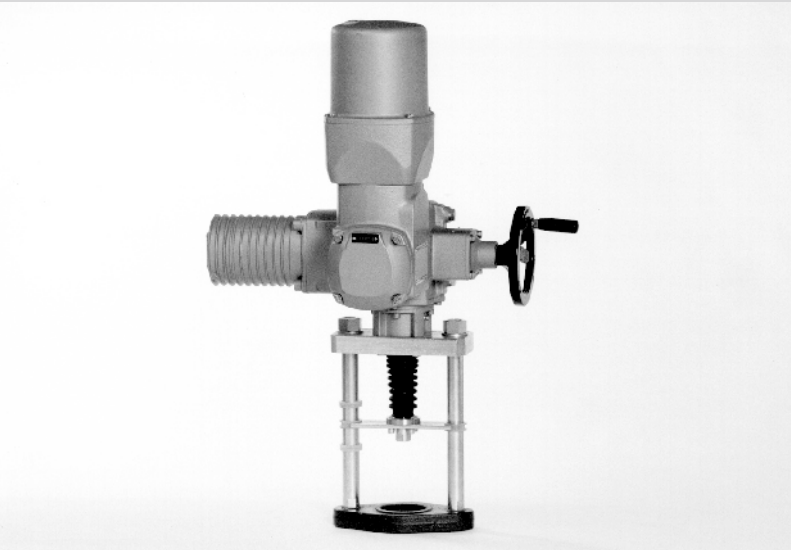
- with terminal board



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

Detail of coupling





Electric actuators

Auma

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

marking in type number:
EAA, EAB, EAC, EAD
EAE, EAF, EAG, EAH

Technical data

Type	SA 07.2	SA Ex 07.2	SAR 07.2	SAR Ex 07.2	SA 07.6	SA Ex 07.6	SAR 07.6	SAR Ex 07.6
Marking in valve spec. No.	**EAA**	**EAB**	**EAC**	**EAD**	**EAE**	**EAF**	**EAG**	**EAH**
Voltage	1 ~ 230 V AC; 3 ~ 380 or 400 V AC							
Frequency	50 Hz							
Power consumption	see specification table							
Control	3 - position control or with signal 4 - 20 mA							
Nominal force	10 Nm~5 kN; 15 Nm~7,5 kN; 20 Nm~10 kN				30 Nm~15 kN; 40 Nm~20 kN			
Travel	acc. to used valve 16, 25, 40 mm				acc. to used valve 40, 80 mm			
Enclosure	IP 68							
Process medium max. temp.	acc. to used valve							
Ambient temperatrure range	-40 to 80°C	-20 to 60°C	-40 to 60°C	-20 to 60°C	-40 to 80°C	-20 to 60°C	-40 to 60°C	-20 to 60°C
Ambient humidity range	100 %							
Weight - single-phase	25 - 62 kg				25 - 62kg			
- three-phase	20 - 33 kg				21 - 33 kg			

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

Specification of Auma actuators

		SA	X	XX	07.X
Type		**SA**			
Duty	control		**R**		
	ON - OFF				
Version	standard				
	non-explozive			**Ex**	
Actuator size					**07.2**
					07.6

Output shaft type A (thread TR 16x4 LH, connection flange F07) ... for RV 2xx DN 15 to 150

Output speed [ot/min]	Tripping torgue	SA 07.2 / SA Ex 07.2	SAR 07.2 / SAREx 07.2	Motor power [kW]	SA 07.2 S2-15min	SA Ex 07.2 S2-15min	SAR 07.2 S4-25%	SAR Ex 07.2 S4-25%
4					0,02	0,02	0,02	0,02
5,6					0,02	0,02	0,02	0,02
8					0,04	0,04	0,04	0,04
11		10-30 Nm	15-30 Nm		0,04	0,04	0,04	0,04
16					0,06	0,06	0,06	0,06
22					0,06	0,06	0,06	0,06
32					0,10	0,10	0,10	0,10
45					0,10	0,10	0,10	0,10

Output shaft type A (thread TR 20x4 LH, flange F10) ... for RV 2xx DN 80 to 400

Output speed [ot/min]	Tripping torgue	SA 07.6 / SA Ex 07.6	SAR 07.6 / SAREx 07.6	Motor power [kW]	SA 07.6 S2-15min	SA Ex 07.6 S2-15min	SAR 07.6 S4-25%	SAR Ex 07.6 S4-25%
4					0,03	0,03	0,03	0,03
5,6					0,03	0,03	0,03	0,03
8					0,06	0,06	0,06	0,06
11		20-60 Nm	30-60 Nm		0,06	0,06	0,06	0,06
16					0,12	0,12	0,12	0,12
22					0,12	0,12	0,12	0,12
32					0,20	0,20	0,20	0,20
45					0,20	0,20	0,20	0,20

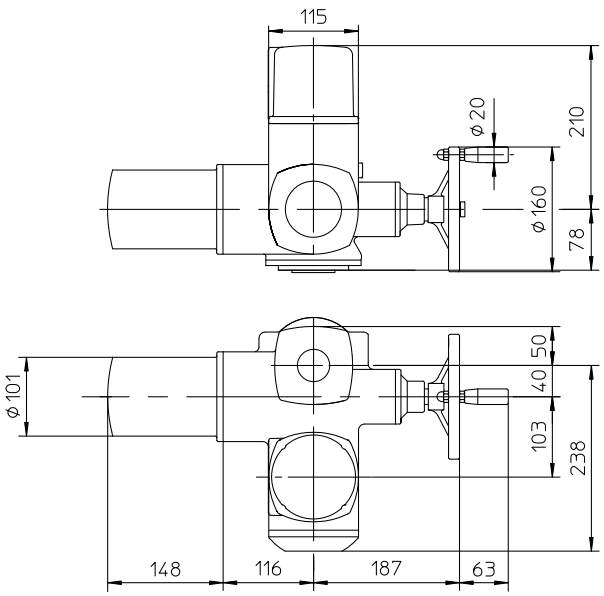
Accessories

→ 2 TANDEM switches
→ Gearing for signalisation of position
→ Mechanical position indicator
→ Potentiometer 1x200 Ω
→ Electronic position transmitter RWG (potentiometer included), 4 - 20 mA, 2-wire
→ Electronic position transmitter RWG (potentiometer included), 4 - 20 mA, 3/4-wire
→ Inductive position transmitter IWG, 4 - 20 mA
→ MATIC - or continuous control (specification of accessories acc. to catalogue of producer: IP 67; -25 to +70°C; ...), weight + 7 kg
→ AUMATIC - or continuous control (specification of accessories acc. to catalogue of producer: IP 68; -25 to +70°C; ...), weight + 7kg

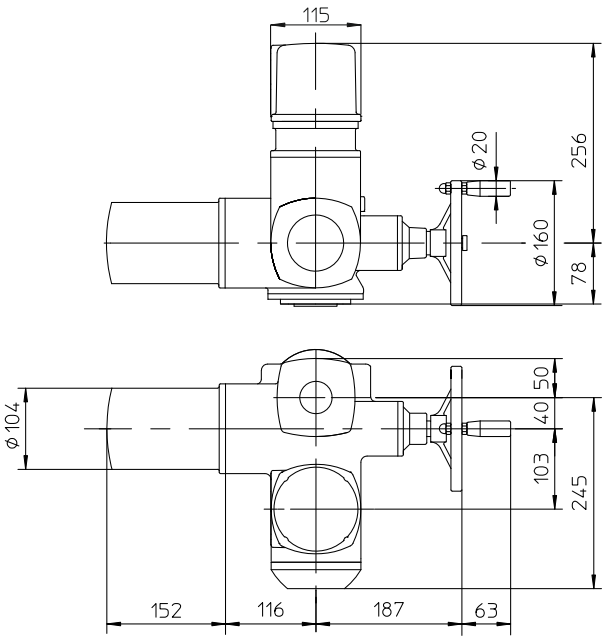
Other accessories acc. to catalogue of producer of actuators.

Dimensions of actuators Auma series 07.2 and 07.6

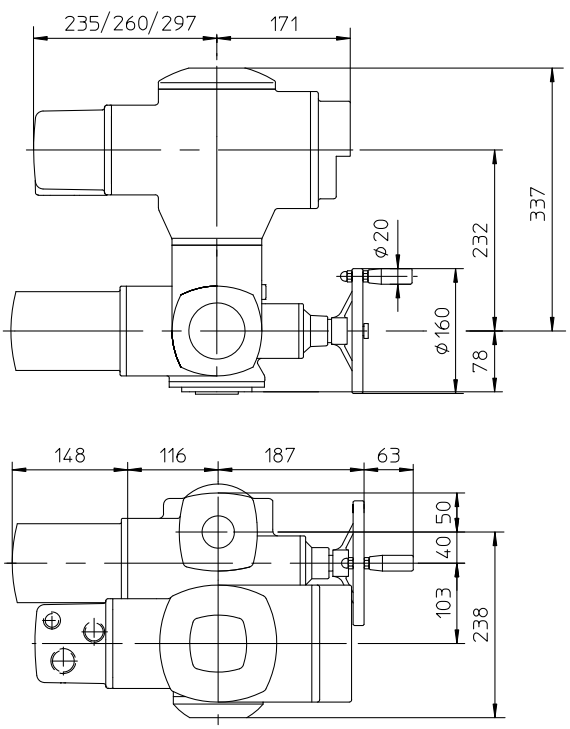
Normal version



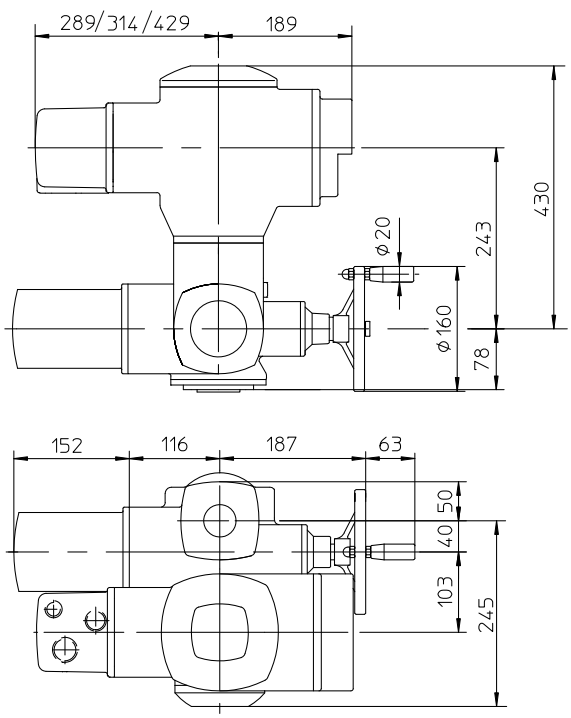
Version Ex norm



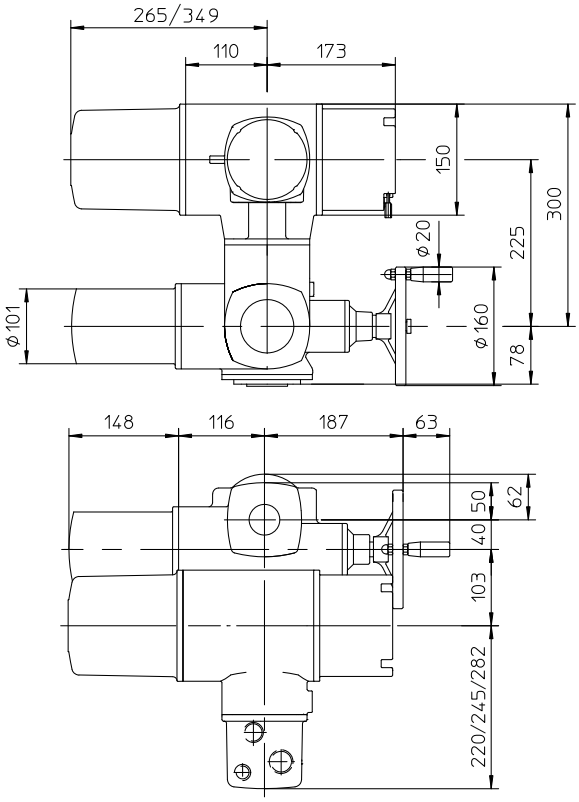
Version MATIC



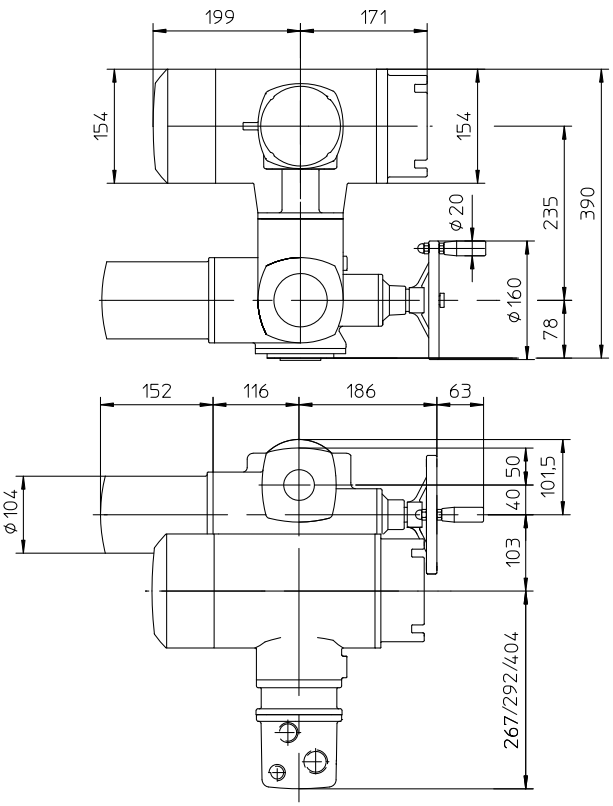
Version Ex MATIC



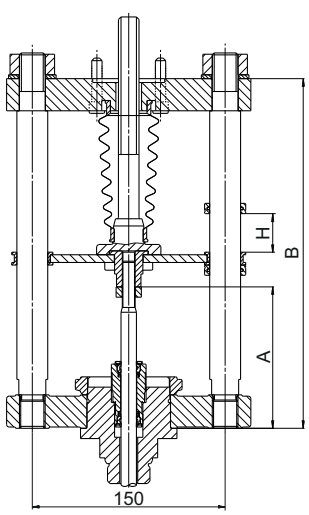
Version with AUMATIC



Version Ex AUMATIC

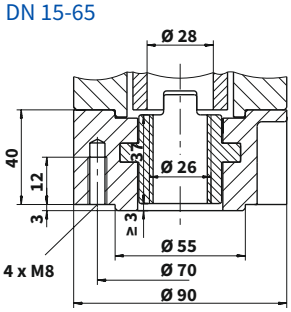


Attachment yoke (2 or 4 columns)



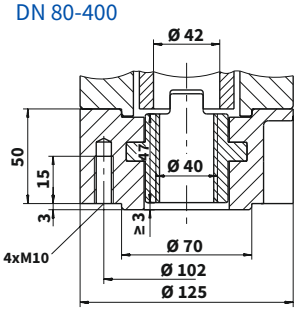
Output drive type A, F07

DN 15-65

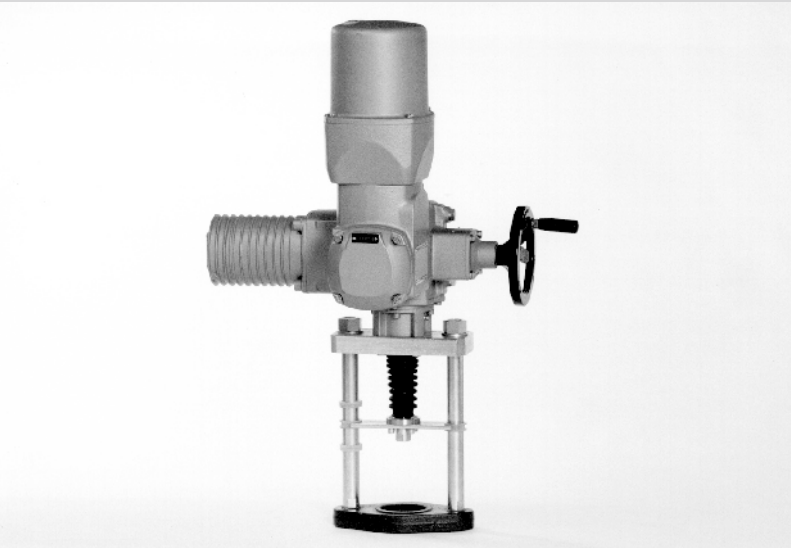


Output drive type A, F10

DN 80-400



For valves	Number of columns	A	B	Weight
DN 15 - 150	2	110	272	~ 8 kg
DN 200 - 400	4	140	420	~ 15 kg



Electric actuators
Auma

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

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

Technical data

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

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

Specification of Auma actuators

		SA	X	XX	10.2
Type		**SA**			
Duty	control		**R**		
	ON - OFF				
Version	standard				
	non-explosive			**Ex**	
Actuator size					**10.2**

Output drive shaft type A (thread TR 36x6 LH, flange F10) ... for RV 2xx DN 200 - 400

Output speed [ot/min]	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

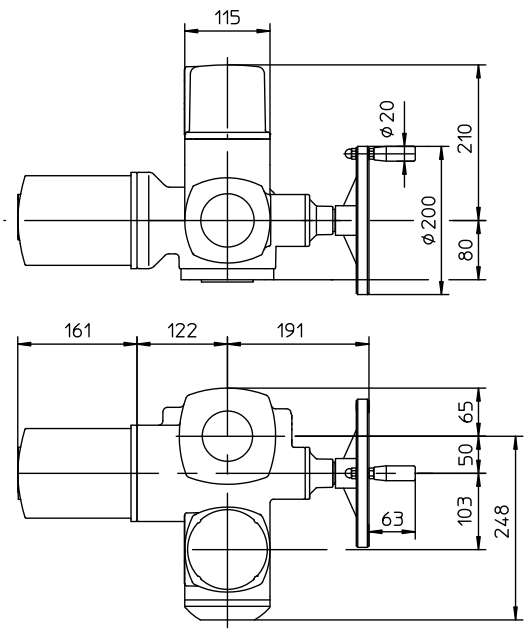
Accessories

- → 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
- → MATIC - or continuous control (specification of accessories acc. to catalogue of producer: IP 67; -25 to +70°C; ...), weight + 7 kg
- → AUMATIC - or continuous control (specification of accessories acc. to catalogue of producer: IP 68; -25 to +70°C; ...), weight + 7kg

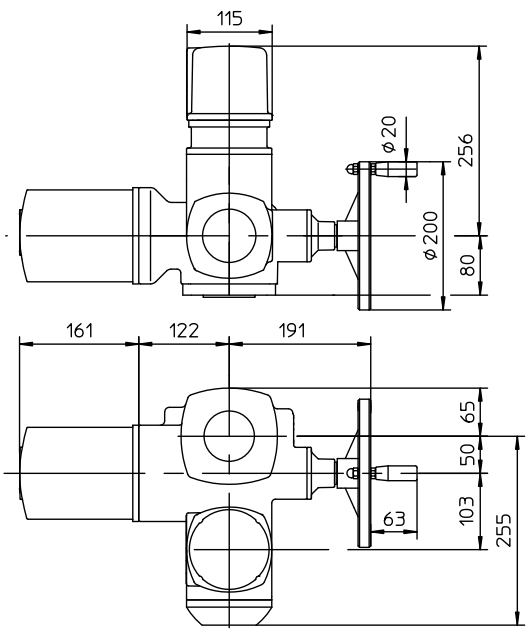
Other accessories acc. to catalogue of producer of actuators.

Dimensions of actuators Auma series 10

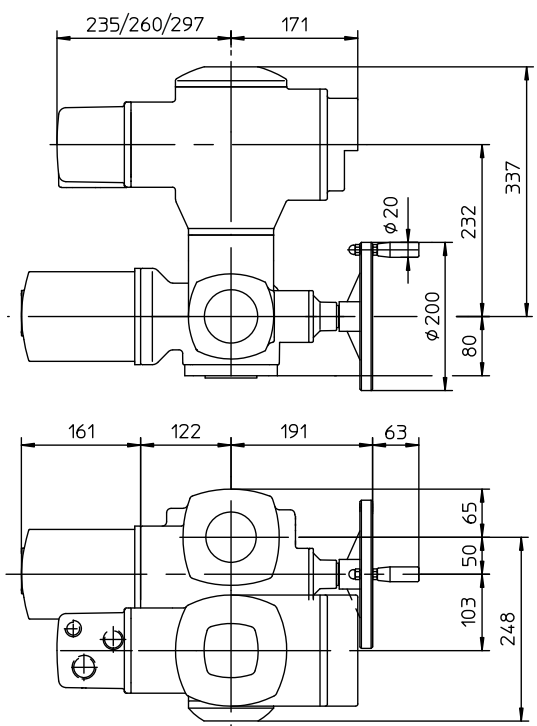
Normal version



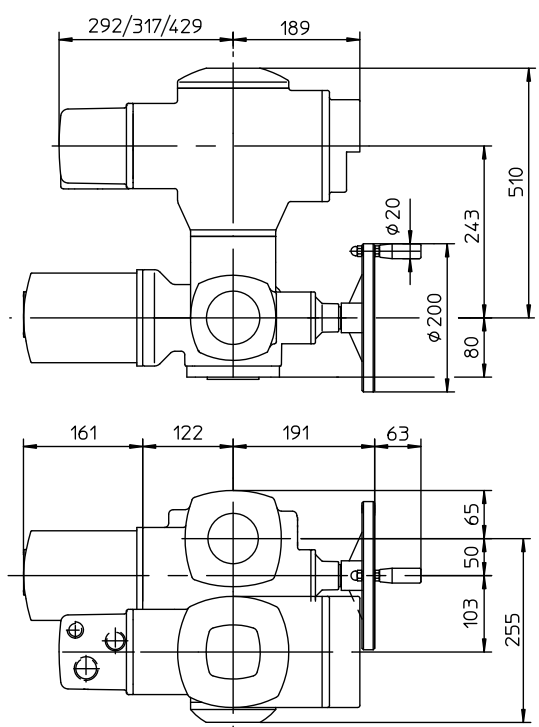
Ex norm version



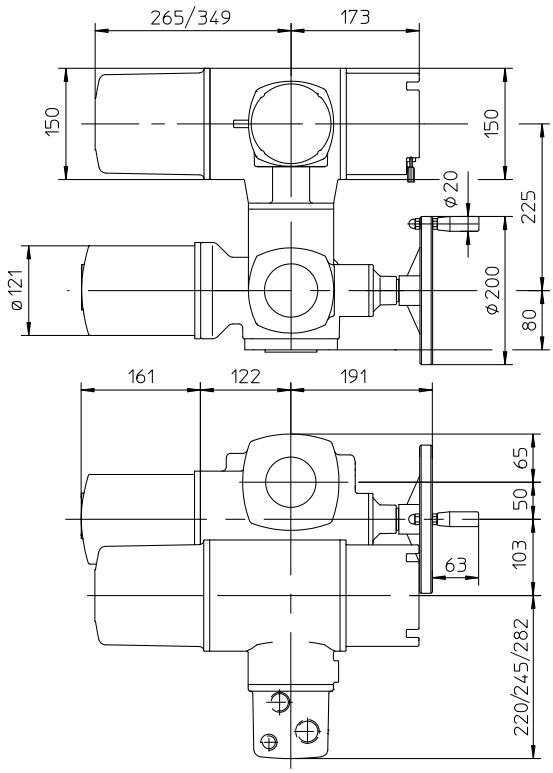
Version with MATIC



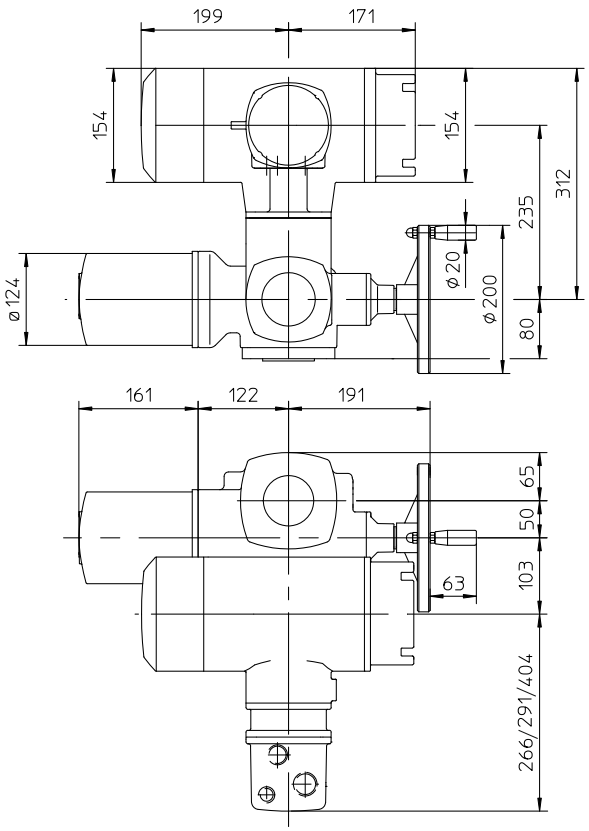
Version with Ex MATIC



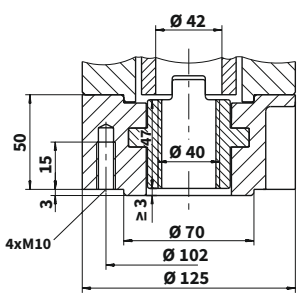
Version AUMATIC



Version Ex AUMATIC

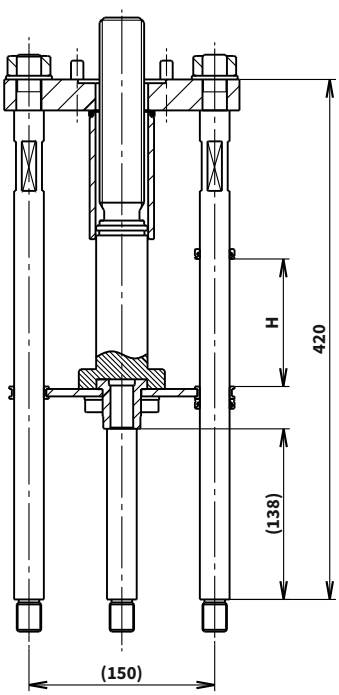


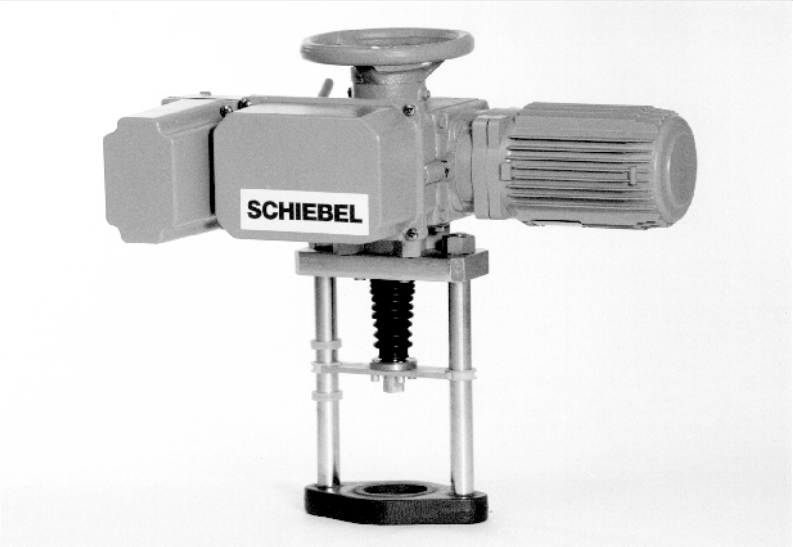
Output drive shaft A, F10



Attachment yoke DN 200 - 400

Connection A, F10, Tr36x6-LH





Elektric actuators

Schiebel

AB3, AB5

marking in type number:

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

Technical data

Type	AB3	AB5	exAB3	exAB5	rAB3	rAB5	exrAB3	exrAB5
Marking in valve spec. No.	**EZA**	**EZE**	**EZB**	**EZF**	**EZC**	**EZG**	**EZD**	**EZH**
Voltage	400 / 230 V; 230 V		400 / 230 V		400 / 230 V; 230 V		400 / 230 V	
Frequency	50 Hz							
Power consumption	see specification table							
Control	3-position or with signal 4 - 20 mA							
Nominal force	10 Nm ~ 5 kN; 15 Nm ~ 7,5 kN; 20 Nm ~ 10 kN; 30 Nm ~ 15 kN; 40 Nm ~ 20 kN							
Travel	acc. to used valve 16, 25, 40, 80 mm							
Enclosure	IP 66		IP 65		IP 66		IP 65	
Process medium max. temp.	acc. to used valve							
Ambient temperatrure range	-25 to 80 °C		-25 to 40 °C		-25 to 60 °C		-20 to 40 °C	
Ambient humidity range	90 % (tropical version: 100 % with condensation)							
Weight	16 - 20 kg							

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

Specification of actuators

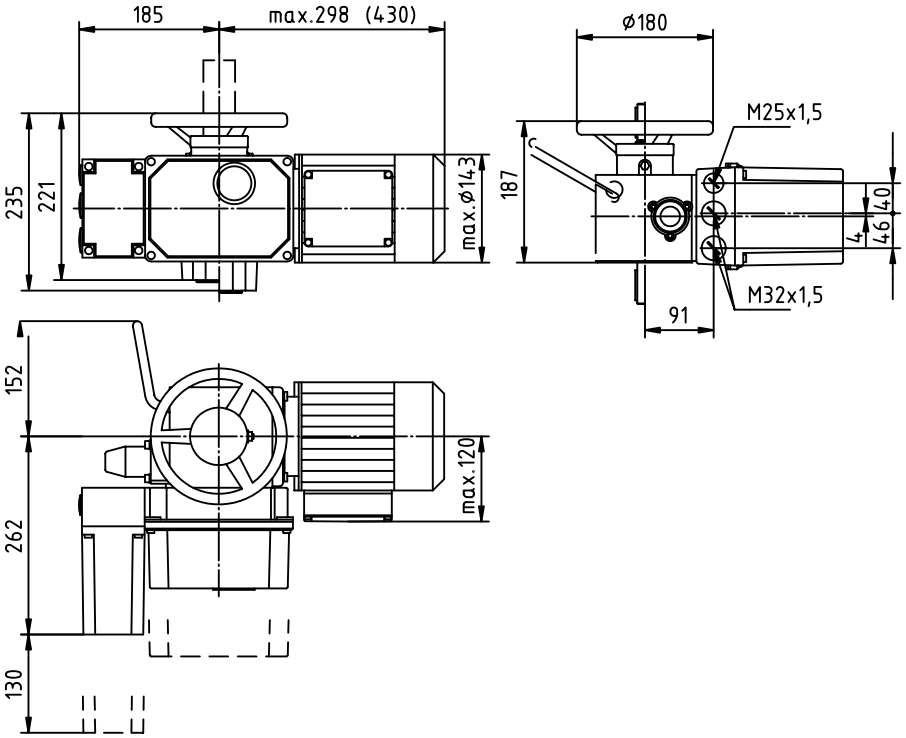
		XX	X	AB3	A	X	+	XXXXX
Version	non-explosive	**ex**						
	standard							
Function	control		**r**					
	ON - OFF							
Actuator size				**AB3**				
				AB5				
Output shaft type A (thread TR 16x4 LH, connection flange F07 ... DN 15 to 65)					**A**			

Output speed [ot/min]	Tripping torgue	AB3 exAB3	rAB3 exrAB3	Motor power [kW]	AB3 400/230V	AB3 230V	rAB3 400/230V	rAB3 230V	exAB3 400/230V	exrAB3 400/230V	X
2,5	7 - 30 Nm	7 - 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**

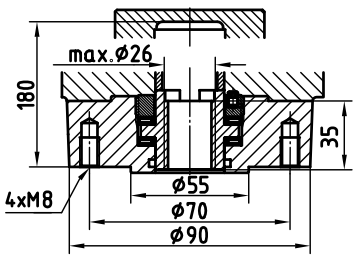
Output speed [ot/min]	Tripping torgue	AB5 exAB5	rAB5 exrAB5	Motor power [kW]	AB5 400/230V	AB5 230V	rAB5 400/230V	rAB5 230V	exAB5 400/230V	exrAB5 400/230V	X
2,5	7-60 Nm	7-60 Nm	tripping 7 - 60 Nm loading 7 - 30 Nm		0,09	0,09	0,09	0,09	0,09	0,09	**2,5**
5					0,06	0,12	0,06	0,12	0,12	0,12	**5**
7,5					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 1 x 1000 Ω	**F**
	Double potentiometer 2 x 1000 Ω	**FF**
	Electronic transmitter 4 - 20 mA, 2-wire	**ESG-Z**
	Electronic transmitter 4 - 20 mA, 2-wire, opto-electronic	**ESM21**
	SMARTCON control unit	**CSC**
	Additional torque switches	**2DER 2DEL**
	Additional signalisation switches	**2WER 2WEL**

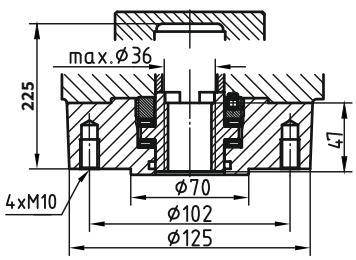
Dimensions of actuators ...AB5



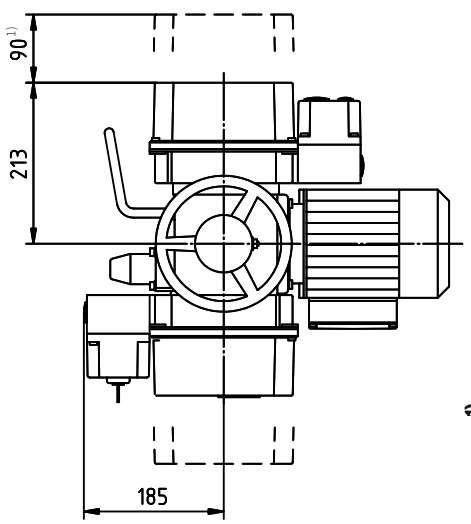
Output drive shaft A, flange F07



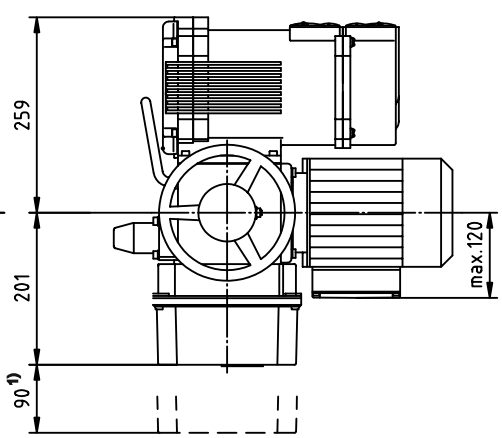
Connection acc. to ISO 5210, output drive shaft A, F10



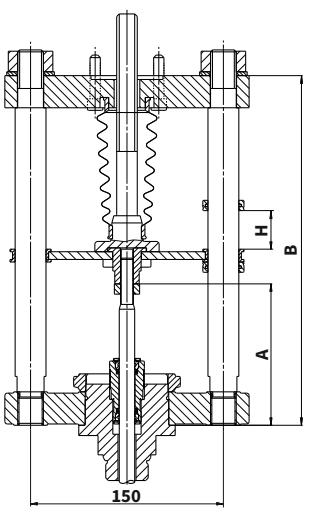
With ACTUMATIC R position regulator



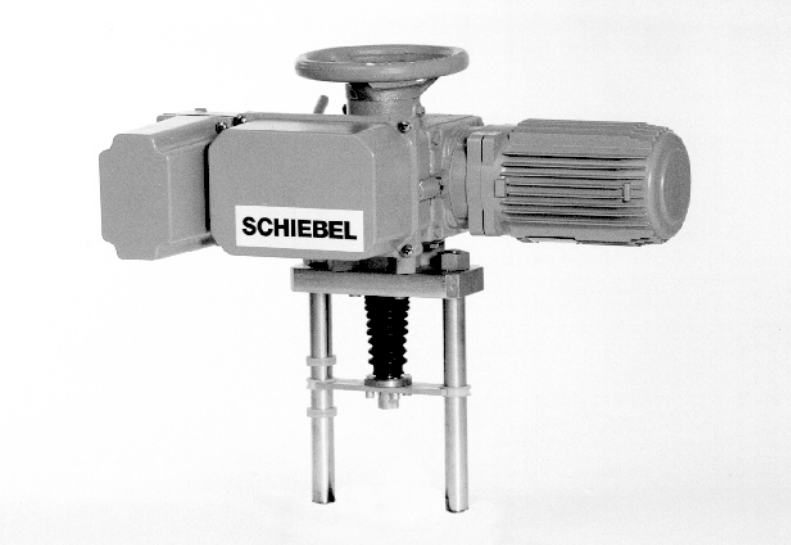
With SMARTCON control unit



Attachment (2 or 4 columns)



For valves	Number of columns	A	B	Weight
DN 15 - 150	2	110	272	~ 8 kg
DN 200 - 400	4	140	420	~ 15 kg



Electric actuators

Schiebel

AB8

marking in type number:

EZK, EZL

Technical data

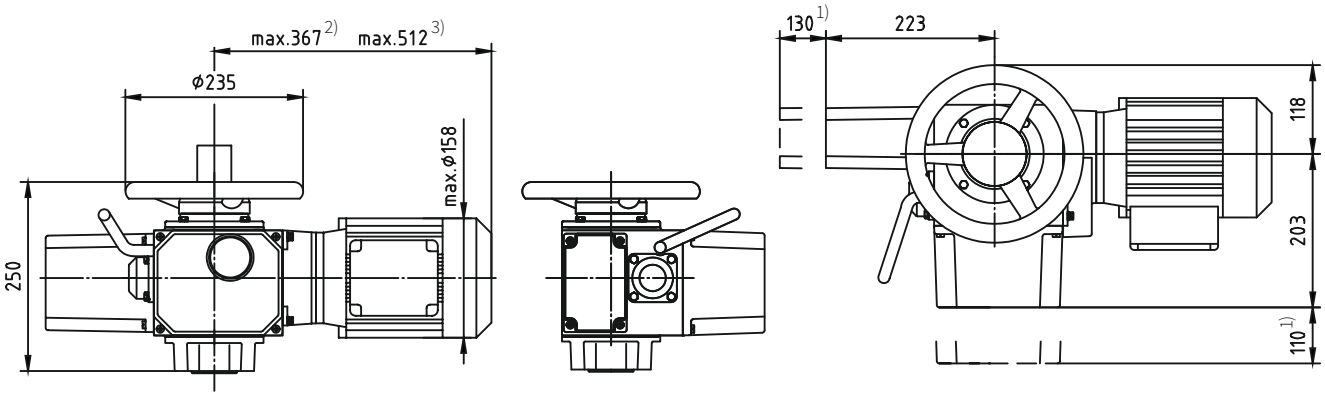
Type	rAB8	exrAB8
Marking in valve spec. No.	EZK	EZL
Voltage	400 / 230 V; 230 V	400 / 230 V
Frequency	50 Hz	
Power consumption	see specification table	
Control	3-position or with signal 4 - 20 mA	
Nominal force	(Tr 36x6 LH) 80 Nm ~ 21,6 kN; 100 Nm ~ 27 kN; 120 Nm ~ 32 kN	
Travel	80, 100 mm	
Enclosure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

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

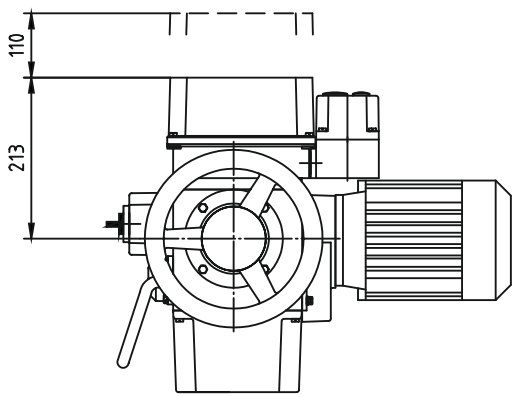
Specification of actuators

						xx	x	XXX	X	X	+	XXXXX
Version	normal											
Function	control						r					
Actuator size								AB8				
Output drive shaft A (thread TR 36x6 LH, flange F10)									A			
Output speed [ot/min]		**Tripping torgue**	**rAB8**	**Motor power [kW]**	**rAB8**							
					400/230V	**230V**						
	2,5		vypínací 50 - 120 Nm		0,06	0,12				**2,5**		
	5				0,12	0,25				**5**		
	7,5				0,18	0,37				**7,5**		
	10				0,18	0,75				**10**		
	15		zatěžovací 30 - 80 Nm		0,37	0,75				**15**		
	20				0,37	1,10				**20**		
	30				0,75	1,10				**30**		
	40				0,75	1,10				**40**		
Accessories				Potentiometer 1 x 1000 Ω								**F**
				Double potentiometer 2 x 1000 Ω								**FF**
				Electronic transmitter 4 - 20 mA, 2-wire								**ESM21**
				Electronic transmitter 4 - 20 mA, 2-wire, opto-electronic								**CMR**
				SMARTCON control unit								**CSC**
				Additional torque switches								**2DER 2DEL**
				Additional signalisation switches								**2WER 2WEL**

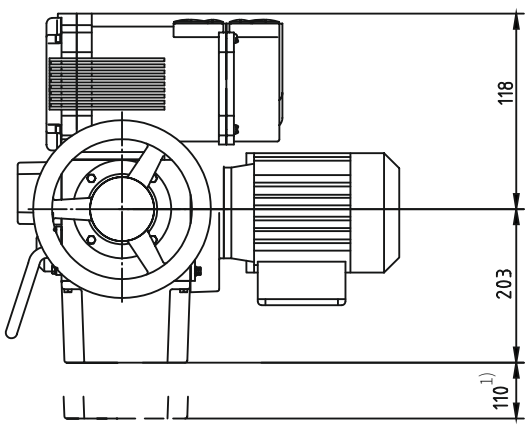
Dimensions of actuatros ...AB8



With ACTUMATIC R position regulator

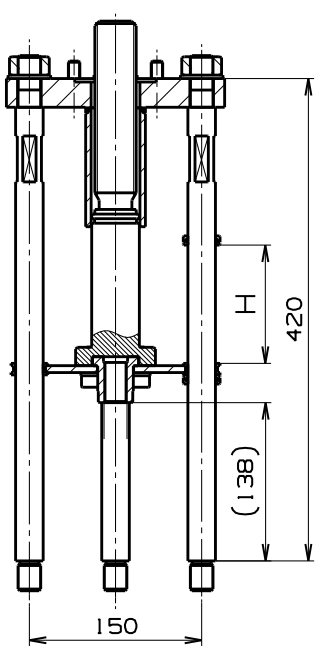


With SMARTCON control unit

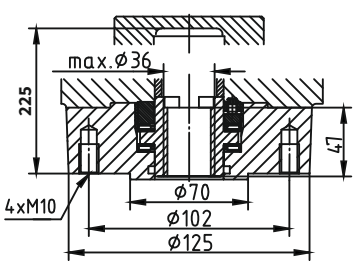


Attachment yoke DN200-400

Connection A, F10, Tr36x6-LH



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



Electric actuators
Rotork

CVL

marking in type number:
EQL

Technical data

Type	CVL-500 (Ex)	CVL-1000 (Ex)	CVL-1500 (Ex)	CVL-5000 (Ex)
Marking in valve spec. No.	EQL			
Voltage	Electric actuator (optionaly with safety function)			
Frequency	230V AC, 24V DC			
Power consumption	50 Hz			
Control	4 - 20 mA			
Nominal force	4 - 20 mA			
Travel	6,35 mm/s	2,54 mm/s	2,54 mm/s	2,54 mm/s
Enclosure	max. 6 s	max. 20 s	max. 20 s	max. 45 s
Process medium max. temp.	30 s	100 s	100 s	300 s
Ambient temperatrure range	Adjustable function direct (NO) / indirect (NC)			
Ambient humidity range	2 kN	4 kN	6,3 kN	16 and 20 kN
Stroke	16, 25 mm	16, 25 mm	16, 25, 40 mm	40, 80, 100 mm
Enclosure	IP 68			
Process medium max. temp.	acc. to used valve			
Ambient temperature range	-30 to 70°C (for low temperatures -40 to 60°C) version Ex -20 to 60°C (for low temperatures -40 to 60°C)			
Handle	optional accessories			
Weight	16 kg	24 kg	24 kg	53 kg

Optional accessories

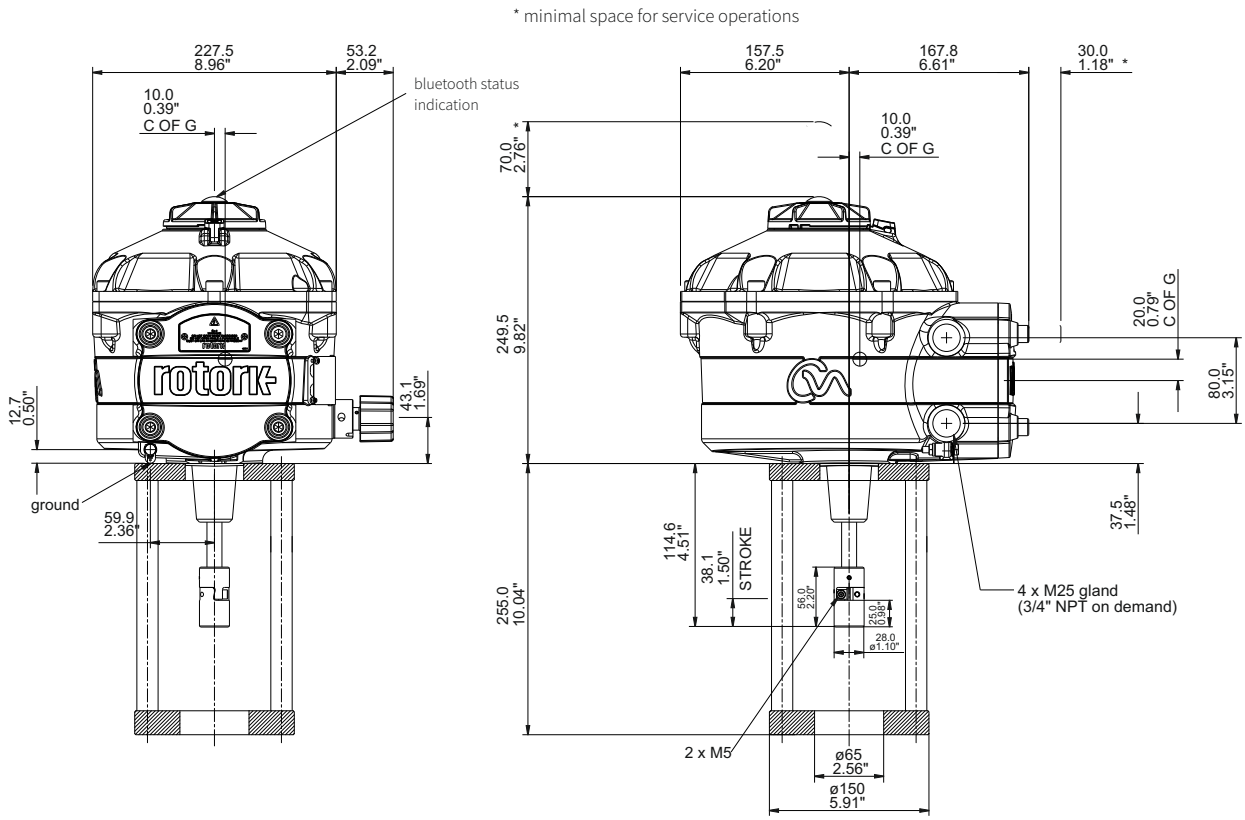
Safety function	configurable fail-to-position option using supercapacitor technology
HART	digital communication protocol
Foundation Fieldbus	digital communication options
Profibus DP	digital communication options
Pakscan P3	digital communication options / 2-wire system
Modbus	digital communication options
RIRO	digital communication options

I/O parametersation
CVA direction to open / close and action on loss signal can be user configured
independent open/close settings for thrust/torgue force applied and valves seating action are available

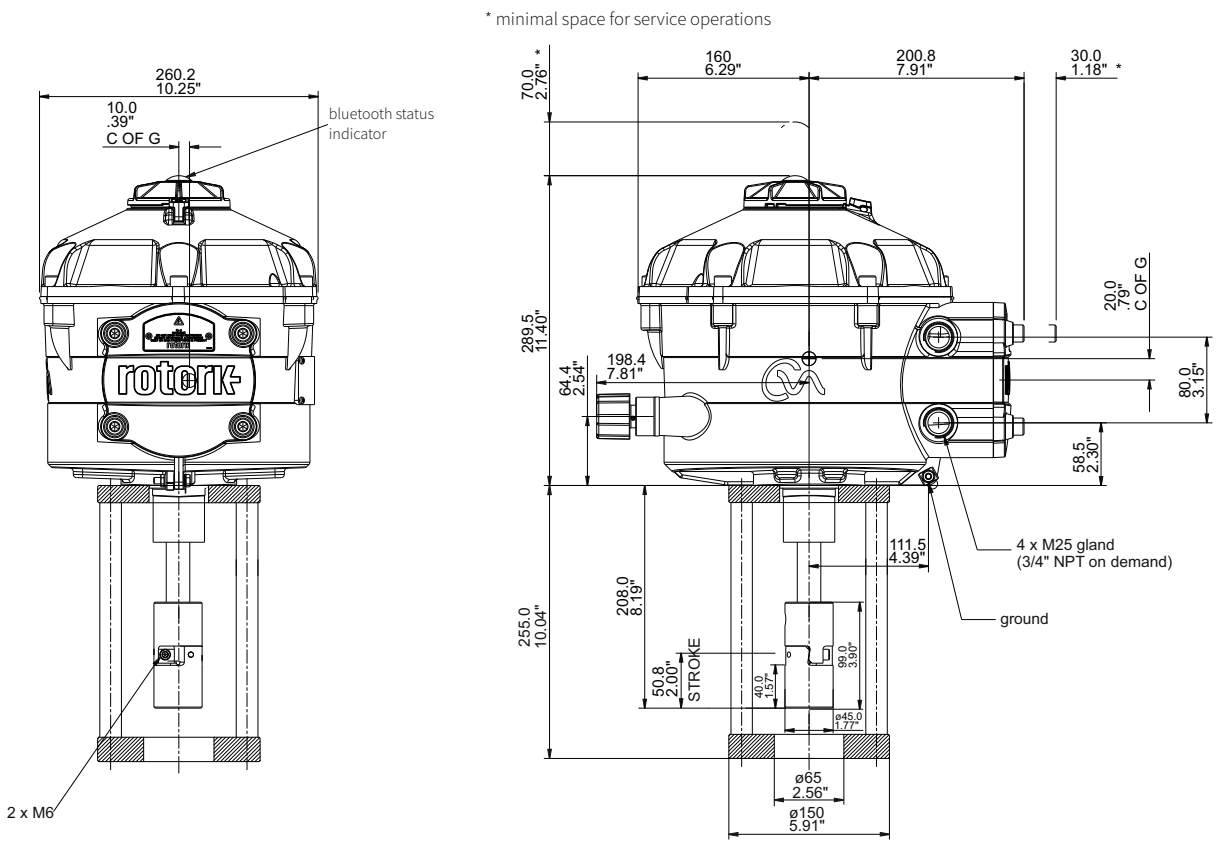
→ **Note:** Specifications and technical data are for information only.
Detailed technical informations can be found in producer's data sheet or on the webside **www.rotork.com**

Dimensions of actuators

CVL-500 (Ex)

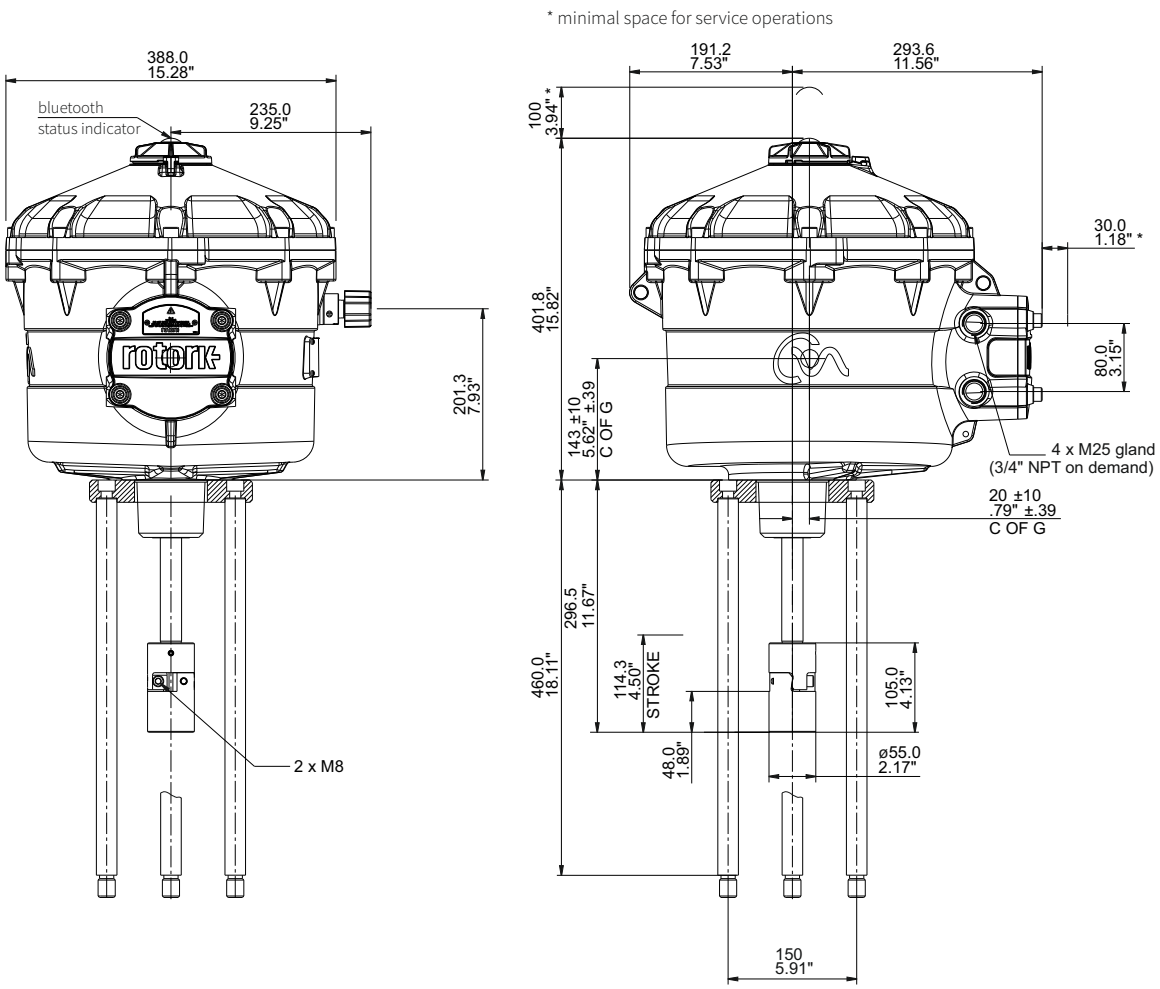


CVL-1000 (Ex), CVL-1500 (Ex)



Dimensions of actuator

CVL-5000 (Ex)



Electric actuators

Rotork

IQM 10
IQM 12
Ex IQM 10
Ex IQM 12

marking in type number:
EQA, EQB

Technical data

Type	IQM 10	IQM 12	Ex IQM 10	Ex IQM 12
Marking in valve spec. No.	**EQA**		**EQB**	
Voltage	Electric multi-turn actuator (3.d generation)			
Frequency	3-phase, 380 or 400V AC			
Power consumption	50 Hz			
Control	4 - 20 mA			
Nominal force	10 Nm~5 kN, 15 Nm~7.5 kN, 20 Nm~10 kN, 30 Nm~15 kN, 40 Nm~20 kN			
Travel	acc. to valve stroke 16, 25, 40 mm			
Enclosure	IP 68			
Process medium max. temp.	acc. to used valve			
Ambient temperatrure range **Ambient humidity range**	-30 to 70°C (optional -40 to 70°C, -50 to 40°C)		-20 to 70°C (optional -40 to70°C, -50 to 40°C)	
Weight	31 kg			

Optional accessories

4x configurable volt free latching contacts - S1 to S4.
Selectable volatage of these contatcts between 24 V DC and 120 V AC

Analogue control of Folomatic module 0 – 5 / 10 / 20 mA

Current position transmmitter CPT 4-20 mA

Interrupter timer (pulsed operation indep. adjustable on and of time periods in range 1 - 99 s (opening / closing valve stroke)

HART - digital communication protocol

Foundation Fieldbus - digital communication protocol

Profibus DP - digital communication protocol

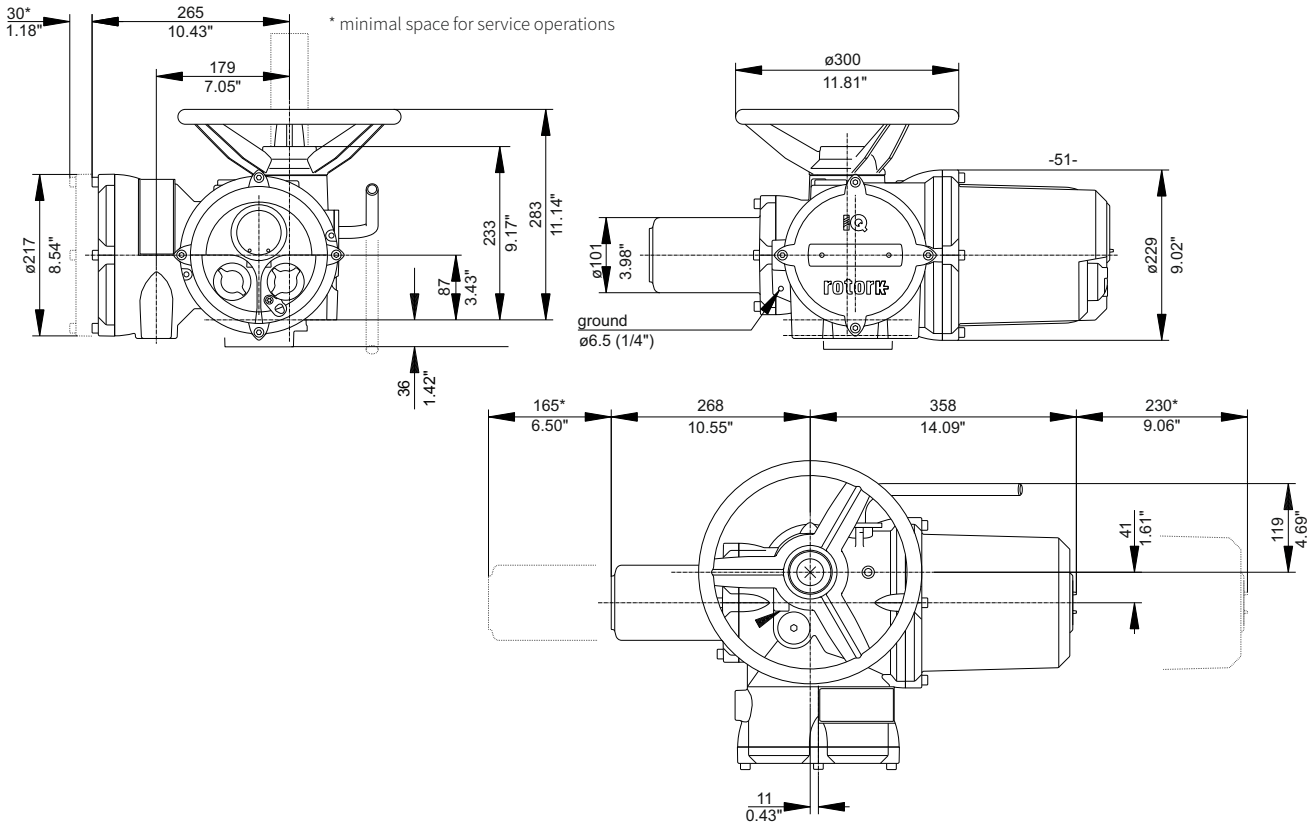
Pakscan P3 - digital communication protocol / 2-wire system

Modbus - digital communication protocol

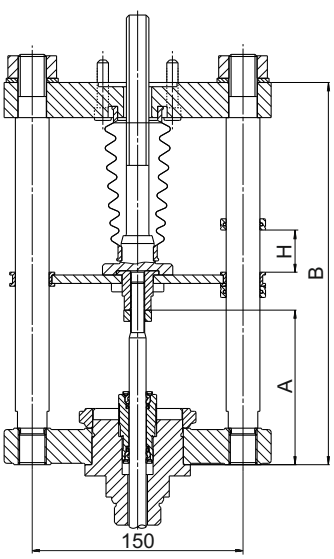
→ **Note:** Specifications and technical data are for information only.
Detailed technical informations can be found in producer's data sheet or on the webside **www.rotork.com**

Dimensions of actuator

IQM 10, IQM 12, Ex IQM 10, Ex IQM 12



Attachment yoke (2 or 4 columns)



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

Electric actuators

Rotork

IQM 20
Ex IQM 20

marking in type number:

EQD, EQE

Technical data

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

Optional accesorries

4x configurable volt free latching contacts - S1 to S4.
Selectable volatage of these contatcts between 24 V DC and 120 V AC

Analogue control of Folomatic module 0 – 5 / 10 / 20 mA

Current position transmmitter CPT 4-20 mA

Interrupter timer (pulsed operation indep. adjustable on and of time periods in range 1 - 99 s (opening / closing valve stroke)

HART - digital communication protocol

Foundation Fieldbus - digital communication protocol

Profibus DP - digital communication protocol

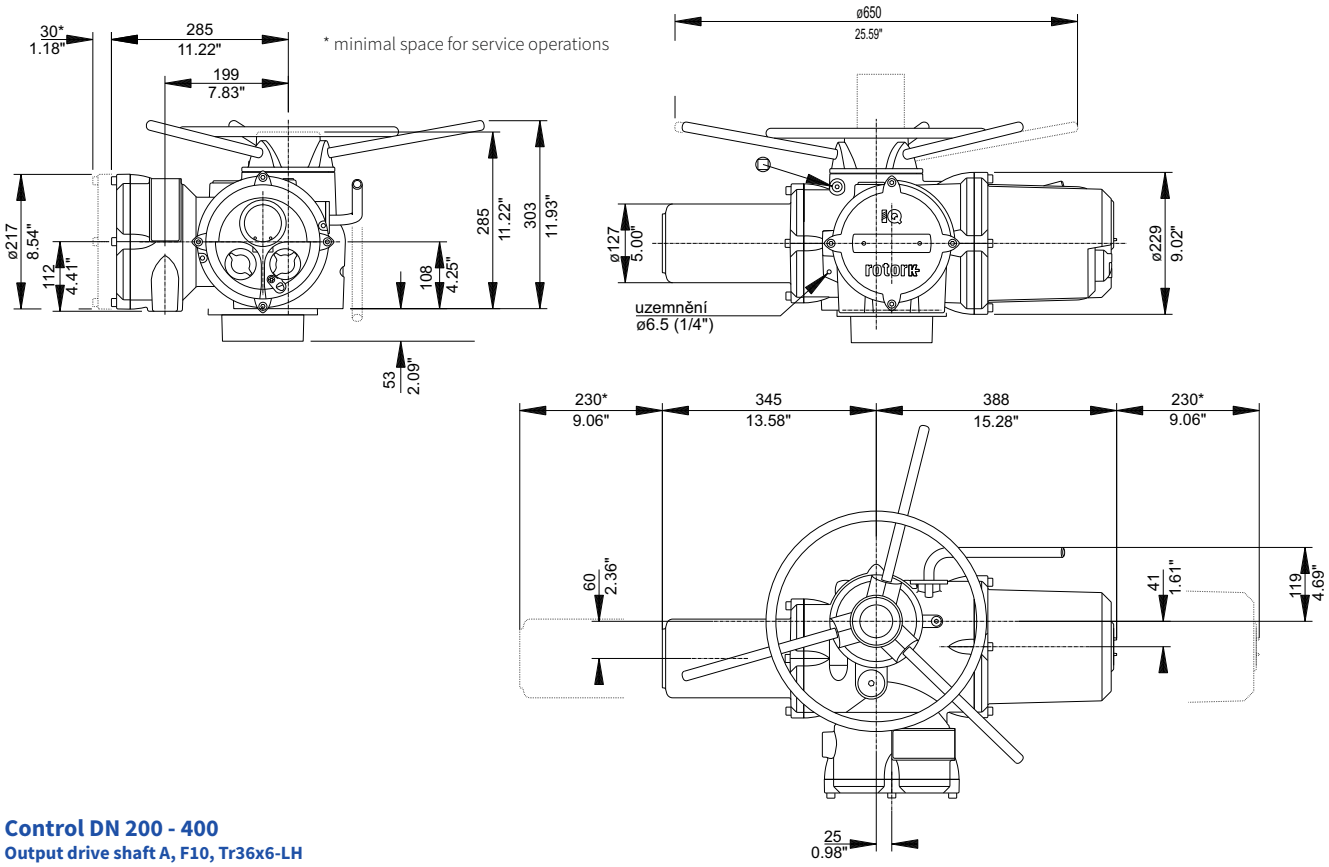
Pakscan P3 - digital communication protocol / 2-wire system

Modbus - digital communication protocol

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

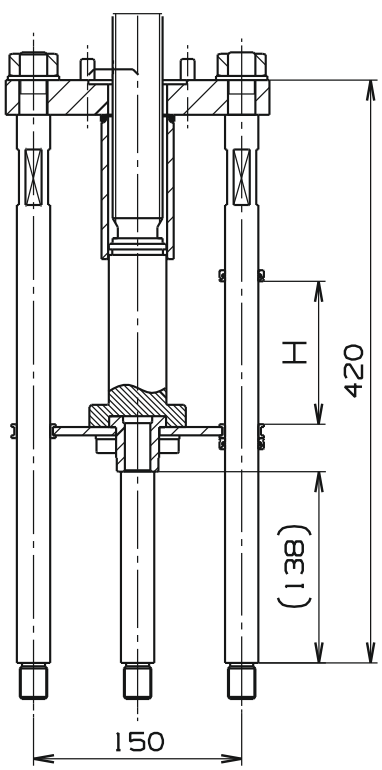
Dimensions of actuator

IQM 20, Ex IQM 20



Control DN 200 - 400

Output drive shaft A, F10, Tr36x6-LH



Electric actuator

Regada

Modact MTR

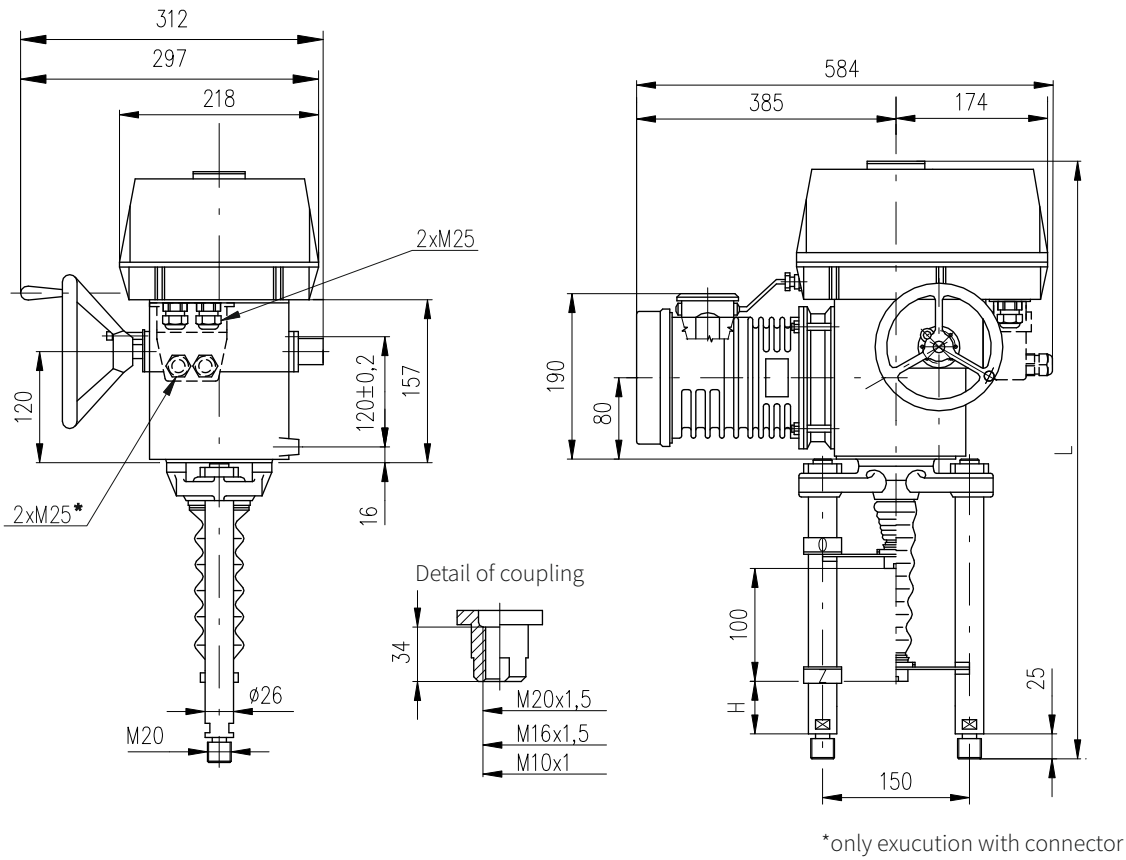
marking in type number:
EPD

Technical data

Type	**Modact MTR**
Marking in valve spec. No.	**EPD**
Voltage	230 V AC
Frequency	50 Hz
Power consumption	16 nebo 25 W
Control	3-position (with regulator NOTREP)
Nominal force	6.3, 10, 16, 25 kN
Travel	12,5 to 100 mm
Enclosure	IP 55 / IP 67
Process medium max. temp.	acc. to used valve
Ambient temperatrure range	-25 to 55 °C
Ambient humidity range	90 %
Weight	27 to 31 kg

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

Dimensions of actuator Modact MTR



*only exucution with connector

Columns	with acme thread		Columns	with ball bolt		For valves
version	H	L	version	H	L	
P-1045b/B	74	622	P-1045b/E	74	646	DN15-150
P-1045b/C	130	680	P-1045b/H	130	702	DN200-400

Specification of Modact MTR

Electric motor linear MTR				52 420.	X	-	X	X	X	X	X	/	X	X
Climatic resistance	Standard	-25°C to +55°C	Enclosure IP 55		0									
			Enclosure IP 67		1									
	Tropical	-25°C to +55°C	Enclosure IP 67		6									
Electric connection	**Voltage**													
To terminal board	230 V AC						9							
To connector							8							

	Screw version	Switching-off thrust [32) 33)]	Rated operating speed	Operating speed	Electric motor Power	Electric motor Speed	Electric motor Current	Code
trapézové	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	Code
Electromechanical control board - without local control	16 mm	B
	25 mm (for stroke 20 mm)	C
	40 mm	E
	80 mm	G

Transmitter		Connection	Output	Code
Without transmitter		—	—	A
Resistive	Single	—	1x100 Ω	B
	Double		2x100 Ω	C
	Single		1x2000 Ω	F
	Double		2x2000 Ω	P
Resistive with current converter	Without power supply	2-wire	4 - 20 mA	S
	With power supply			Q
	Without power supply		0 - 20 mA	T
	With power supply			U
	Without power supply	3-wire	4 - 20 mA	V
	With power supply			W
	Without power supply		0 - 5 mA	Y
	With power supply			Z
Capacitive CPT	Without power supply	2-wire	4 - 20 mA	I
	With power supply			J

Mechanical connection	Connection hight / stroke	Pillar spacing / Bore of flange	Thread of stem [3)]	Dimensional drawing	Code
Columns	130	150/ —	M20x1.5	P-1045b/B; P-1045b/E	B
			M16x1.5	P-1045b/C; P-1045b/H	C

	Additional equipment	Code
	Without additional equipment; adjusted max. switching-off thrust from range	0 1
A	2 additional position switches S5,S6	0 2

Possible combinations and version: A+B = 07

Notes:

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

Electric actuators

Regada

ST 0
STR 0

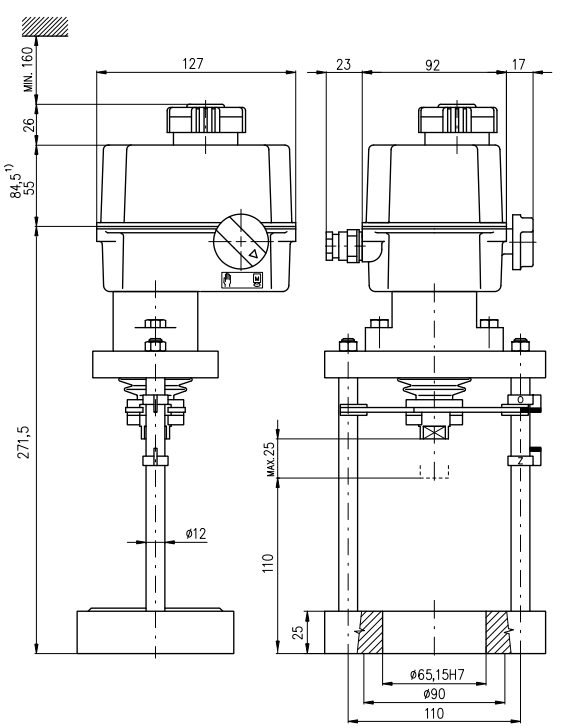
marking in type number:
EPK

Technical data

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

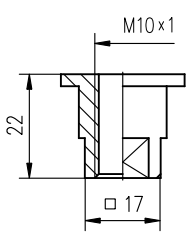
→ **Note:** Specifications and technical data are for information only. Detailed technical informations can be found in producer's data sheet or on the webside **www.regada.sk**

Dimensions of actuator



[1)] applies for version with electronic transmitter

Detail of coupling



Specification of actuator ST 0, STR 0

Electric servomotor ST 0, STR 0						490.	X	-	X	X	X	X	X	/	X	X
Climatic resistance	Standard	-25°C to +55°C	IP 54	Without regulator **(ST 0)**			0									
	Standard	-25°C to +55°C	IP 67				1									
	Tropical	-25°C to +55°C	IP 67				6									
	Standard	-25°C to +55°C	IP 54	With regulator **(STR 0)** resistance feedback [16]			A									
	Tropical	-25°C to +55°C	IP 67				G									
Electric connection		**To terminal board**	**Voltage**			230 V AC			0							
						24 V AC			3							
Nominal force [N]	2900	**Running speed**	4 mm/min	**Motor power**		1 W				0						
	4500		5 mm/min			2,75 W				A						
	4500 [37]		10 mm/min			2,75 W				N						
	2900 [37]		16 mm/min			2,75 W				P						
Tripping torque		One-torque		**Travel**		16 mm					D					
						20 mm					E					
Remote position transmitter	Without transmitter											A				
	Resistance	**Wiring**	Single	**Output**	1 x 100 Ω							B				
					1 x 2000 Ω							F				
	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				
Mechanic connection - flange, connection height 110 mm, thread on con. stem M10x1													L			
Accessories	2 auxiliary position switches [76]														0	0

Notes:

[6] applies for version without regulator

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

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

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

Electric actuators

Regada

STR 0PA

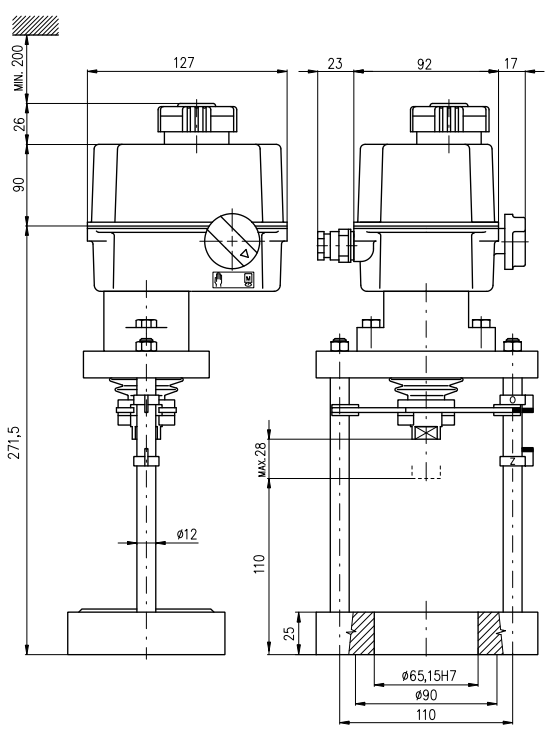
marking in type number:
EPK

Technical data

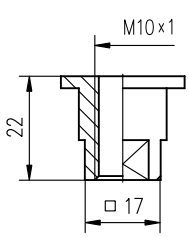
Type	**STR 0PA**
Marking in valve spec. No.	**EPK**
Voltage	230 V AC, 24 V AC
Frequency	50 Hz
Power consumption	1 W
Control	3-position (0 - 10 V, (0)4 - 20 mA)
Nominal force	2,4 kN and 4,5 kN
Travel	10 to 28 mm
Enclosure	IP 67
Process medium max. temp.	acc. to used valve
Ambient temperatrure range	-25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

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

Dimensions of actuator



Detail of coupling



Specifikace pohonu STR 0PA

Electric servomotor STR 0PA													430.	X	-	X	X	X	X	X	/	X	X
Climatic resistance	Standard	-25°C to +55°C	IP 67											1									
	Tropical	-25°C to +55°C	IP 67											6									
Electric connection			To terminal board	**Voltage**								230 V AC				0							
												24 V AC				3							
Nominal force [N]	4500		**Running speed**	5 mm/min													A						
	4000			10 mm/min													N						
	2400			16 mm/min													P						
Travel	10-28 mm																	J					
Control board	DMS3	**Con-trol**	modulating	0/4 - 20 mA	ON - OFF and pulse	24 V DC	**Output**	4 - 20 mA passive											G				
				0/2 - 10 V															H				
Mechanic connection - flange, connection height 110 mm, thread of stem M10x1																				L			
Accessories	Without accessories																						
	Setting the stroke position to the desired value																					0	1

Electric servomotor ST 0, STR 0													490.	X	-	X	X	X	X	X	/	X	X
Climatic resistance	Standard	-25°C to +55°C	IP 54	Without regulator **(ST 0)**										0									
	Standard	-25°C to +55°C	IP 67											1									
	Tropical	-25°C to +55°C	IP 67											6									
	Standard	-25°C to +55°C	IP 54	With regulator **(STR 0)** resistance feedback [16]										A									
	Tropical	-25°C to +55°C	IP 67											G									
Electric connection			**To terminal board**	**Voltage**								230 V AC				0							
												24 V AC				3							
Nominal force [N]	2900		**Running speed**	4 mm/min			**Motor power**					1 W					0						
	4500			5 mm/min								2,75 W					A						
	4500 [37]			10 mm/min								2,75 W					N						
	2900 [37]			16 mm/min								2,75 W					P						
Tripping torque			One-torque				**Travel**					16 mm						D					
												20 mm						E					

Electric actuators

Regada

ST 0.1
STR 0.1

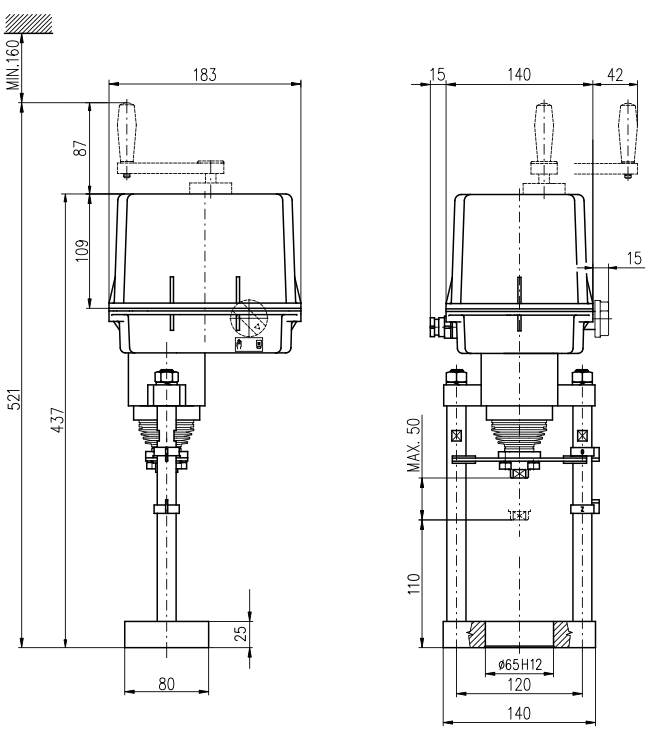
marking in type number:
EPL

Technical data

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

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

Dimensions of actuator



Specification of actuator ST 0.1, STR 0.1

Electric servomotor ST 0.1, STR 0.1									498.	X	-	X	X	X	X	X	/	X	X
Climatic resistance	Standard	-25°C to +55°C	IP 65	Without regulator (ST 0.1)						0									
			IP 67							1									
	Tropical	-25°C to +55°C	IP 67							6									
	Standard	-25°C to+55°C	IP 65	With regulator (STR 0.1)	Resistance feedback					A									
			IP 65		Resistance feedback					C									
	Tropicak	-25°C to +55°C	IP 67		Resistance feedback					G									
			IP 67		Resistance feedback					J									
Electric connection			To terminal board			Voltage	24 V DC				A								
							230 V AC				0								
							24 V AC				3								
							3x400 V AC[6]				9								
							3x380 V AC[6]				M								
			To connector				24 V DC				C								
							230 V AC				5								
							24 V AC				8								
							3x400 V AC[6]				7								
							3x380 V AC[6]				R								
Nominal force [N]	4600		Running speed	10 mm/min		Motor power	15 W (230; 3x400; 20 W (24V AC/DC); 3x380 V AC)					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		Doublemoment			Stroke		16 mm						D						
							20 mm						E						
							40 mm						H						
Remote position transmitter	Without transmitter													A					
	Resistance	Sigle		---		1 x 100 Ω								B					
						1 x 2000 Ω								F					
		Double[6]		---		2 x 100 Ω								K					
						2 x 2000 Ω								P					
	Electronic - current	without its source	Wiring	2-wire	Output	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, connection height 110 mm, thread on con. stem M10x1 or M16x1,5																C			
Accessories	A	2 auxiliary position switches[8]																0	0
	B	Without space heater																0	1
	C	Space heater without terminal switch																0	3
	D	Manual control without permanent readiness																0	5

Permissible combinations of accessories and codes:
A+B=02, A+C=04, A+D=06, B+D=07, A+B+D=08, C+D=09, A+C+D=10

Notes:
[6] applies for version without regulator
[8] it is not possible to choose double tranmitter for version with 2 auxiliary position switches

Electric asctuators

Regada

STR 0.1PA

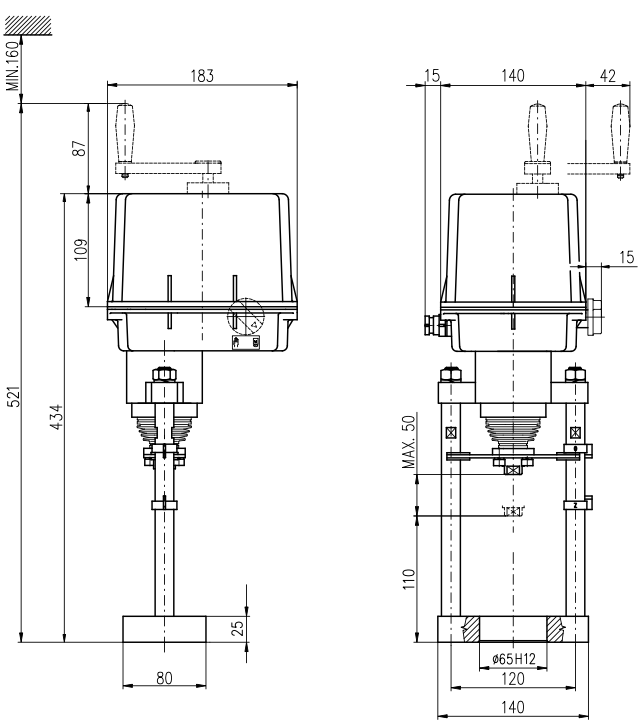
marking in type number:
EPL

Technical data

Type	**STR 0.1PA**
Marking in valve spec. No.	**EPL**
Voltage	230 V AC, 24 V AC
Frequency	50 Hz
Power consumption	15 W
Control	3-position (0 - 10 V, (0)4 - 20 mA)
Nominal force	4,6 and 7,2 kN
Travel	16, 25, 40 mm
Enclosure	IP 67
Process medium max. temp.	acc. to used valve
Ambient temperatrure 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 servomotor STR 0.1PA				438.	X	-	X	X	X	X	X	/	X	X
Climatic resistance	Standard	-25°C to +55°C	IP 67		1									
	Tropical	-25°C to +55°C	IP 67		6									
Electric connection	To terminal board	Voltage	230 V AC				0							
			24 V AC				3							
			3x400 V AC				2							
			3x380 V AC				N							
Nominal force [N]	4600	Running speed	10 mm/min					G						
			16 mm/min					H						
			25 mm/min					I						
			32 mm/min					J						
			40 mm/min					K						
	7200		10 mm/min					T						
			16 mm/min					U						
			25 mm/min					V						
			32 mm/min					W						
			40 mm/min					Y						
Stroke			10-50 mm						I					
Control board: DMS3	Control: Modulating	0/4 - 20 mA	ON - OFF and pulse; 24 V DC	Output: 4 - 20 mA pasive						G				
		0/2 - 10 V								H				
Mechanical connection - flange, connection height 110 mm, thread on con. stem M10x1 or M16x1,5											C			
Accessories		Without accessories												
	A	Setting the stroke position to the desired value											0	1
	B	LED display (position indicator)											0	4
	D	Auxiliary relay module (system DMS3 RE3)											0	5
	F	Local control for actuators with system DMS3 and LCD											0	7

Permissible combinations of accessories and codes:
A+B=20, A+D=22, A+F=25, A+B+D=52, B+D=29, D+F=40

Electric actuators
Regada

ST 1
STR 1

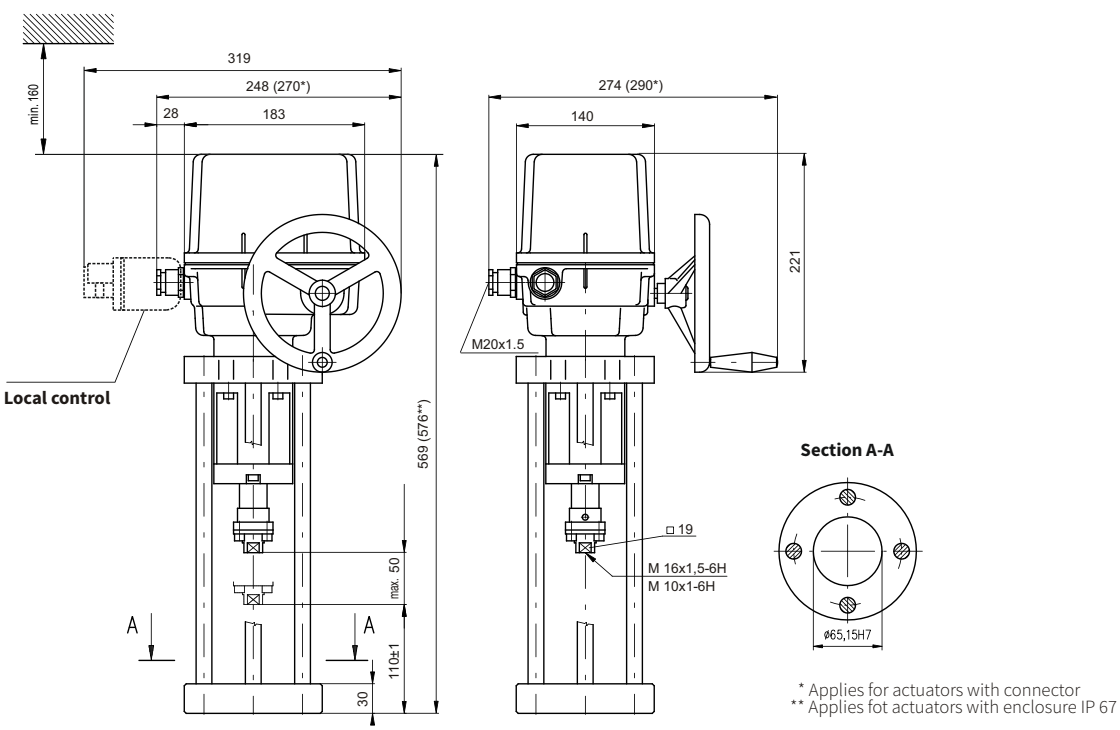
marking in type number:
EPI

Technical data

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

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

Dimensions of actuator



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

Specification of actuators ST 1, STR 1

Electric servomotor ST 1, STR 1					491.	X	-	X	X	X	X	X	/	X	X

Climatic resistance

Climatic resistance	Temperature	Protection	Regulator	Feedback	Code
Standard	-25°C to +55°C	IP 65	Without regulator **(ST 0.1)**		0
		IP 67			1
Tropical	-25°C to+55°C	IP 67			6
Universal	-50°C to +40°C	IP 67			8
Standard	-25°C to +55°C	IP 65	With regulator **(STR 0.1)**	Resistance feedback	A
		IP 65		Current feedback	C
Tropical	-25°C to +55°C	IP 67		Resistance feedback	G
		IP 67		Current feedback	J

Electric connection

Electric connection	Voltage	Code
To terminal board	24 V DC	A
	230 V AC	0
	24 V AC	3
	3x400 V AC [6]	9
	3x380 V AC [6]	M
To connector	24 V DC	C
	230 V AC	5
	24 V AC	8
	3x400 V AC [6]	7
	3x380 V AC [6]	R

Nominal force [N]	Running speed	Motor power	Code
10000	8 mm/min	15 W (230; 3x400; 3x380 V AC)	0
	10 mm/min		1
7500	16 mm/min	20 W (24V AC/DC)	2
	32 mm/min		5
	20 mm/min		6

Stroke	Code
16 mm	D
20 mm	E
40 mm	H

Remote position transmitter

Remote position transmitter		Wiring	Output	Code
Without transmitter				A
Resistance	Single	---	1 x 100 Ω	B
			1 x 2000 Ω	F
	Double [6]	---	2 x 100 Ω	K
			2 x 2000 Ω	P
Electronic - current	without its source	2-wire	4 - 20 mA	S
				Q
	without 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	Code
Mechanical connection - flange, connection height 110 mm, thread on con. stem M10x1 or M16x1,5	K

Accessories		Code
A	2 auxiliary position switches [8]	0 0
E	Space heater with terminal switch	0 2
C	Local control	0 7
D	Space heater	1 5

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

Notes:
[6] applies for version without regulator
[8] it is not possible to choose double tranmitter for version with 2 auxiliary position switches

Electric actuators

Regada

STR 1PA

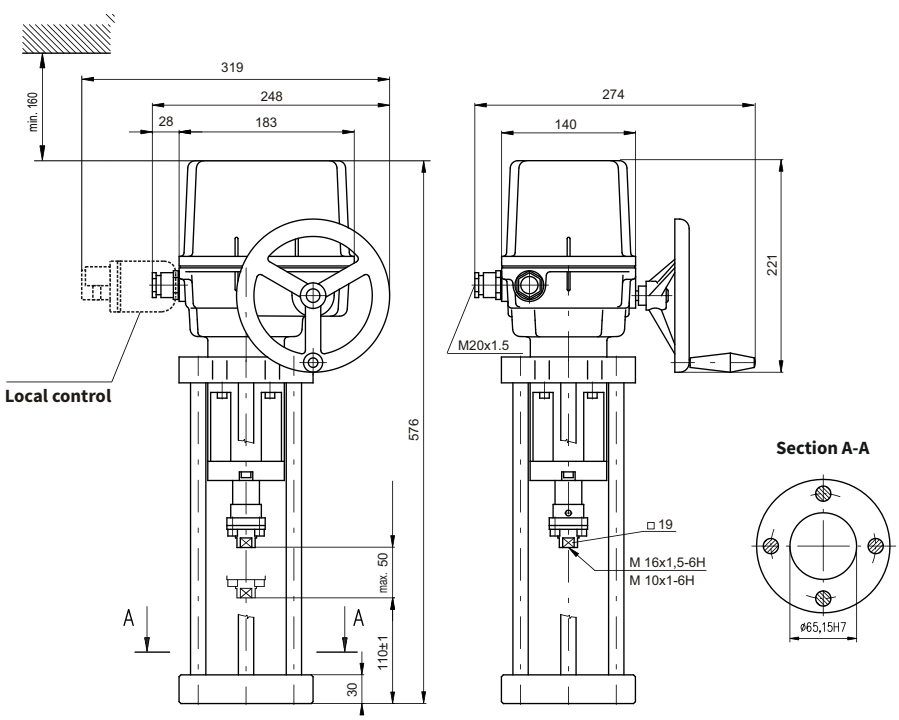
marking in type number:
EPI

Technical data

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

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

Dimensions of actuator



Specification of actuators STR 1PA

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

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

Electric actuators

Regada

ST 1-Ex

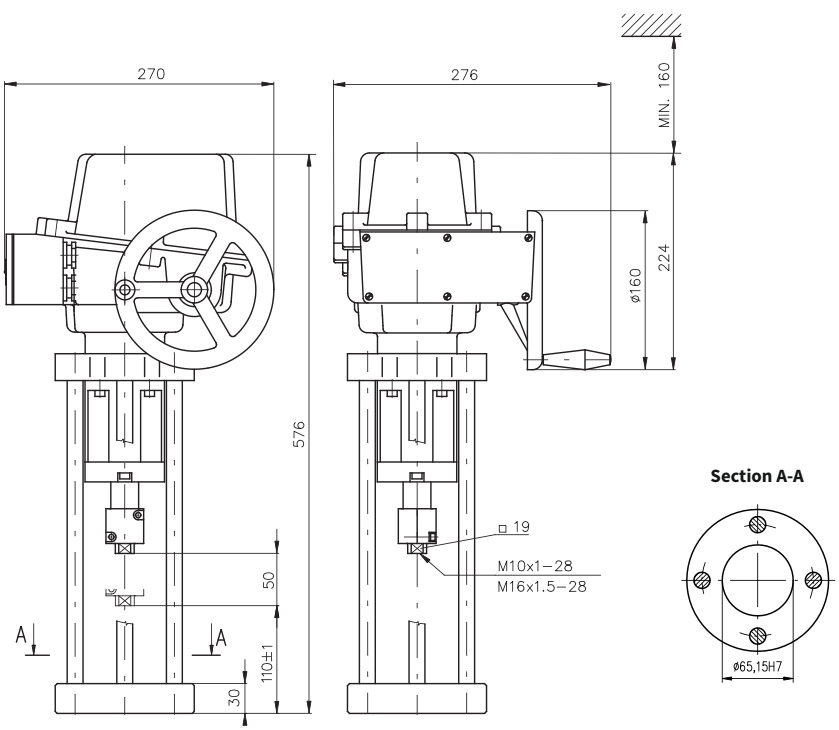
marking in type number:
EPJ

Technical data

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

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

Dimensions of actuator



Specification of actuators ST 1-Ex

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

Notes:

[6)] applies for version without regulator

[51)] Only for version with regulator and current feedback, in this excution the output signal is not galvanically separated from the input signal

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

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

Electric actuators

Regada

ST 2
STR 2

marking in type number:
EPM

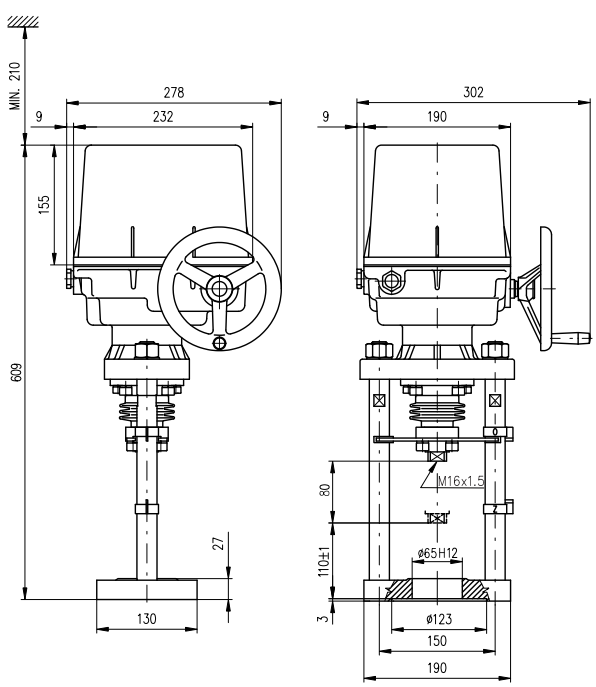
Technical data

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

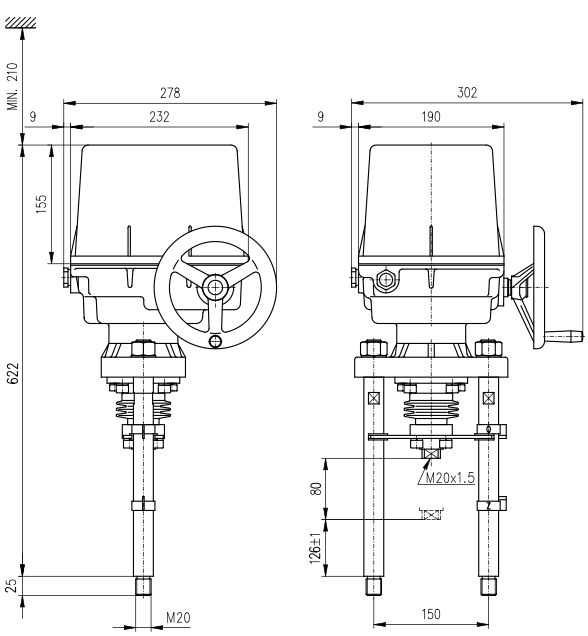
→ **Note:** Specifications and technical data are for information only. Detailed technical informations can be found in producer's data sheet or on the webside **www.regada.sk**

Dimensions of actuator

DN 80 - 150 (connection D)



DN 200 - 300 (connection M)



Specification of actuator ST 2, STR 2

Electric servomotor ST 2, STR 2							492.	X	-	X	X	X	X	X	/	X	X
Climatic resistance	Standard	-25°C to +55°C	IP 65	Without regulator **(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 regulator **(STR 2)**		Resistance feedback		B									
			IP 67			Current feedback		D									
	Tropical	-25°C to +55°C	IP 67			Resistance feedback		G									
			IP 67			Current feedback		J									
Electric connection		To terminal board			**Voltage**	24 V DC				A							
						230 V AC				0							
						24 V AC				3							
						3x400 V AC [6]				9							
						3x400 V AC [28]				2							
						3x380 V AC [6]				M							
						3x380 V AC [28]				N							
		To connector [21]				24 V DC				C							
						230 V AC				5							
						24 V AC				8							
						3x400 V AC [6]				7							
						3x400 V AC [28]				6							
						3x380 V AC [6]				R							
						3x380 V AC [28]				S							

230 V AC, 24 V AC/DC - 65W				3x400 V AC					
Nominal force [N]	**Motor power**	**Nominal force [N]**	**Motor power**	**Running speed**					
25 000	20 W	---	90 W	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	
Stroke	Max. (without transmitter) [41] ... 100 mm		Wi transmitter	40 mm					H
				80 mm					K

Continued on next page

Remote position transmitter	Without transmitter									A					
	Resistance	single	**Wiring**		**Output**	1 x 100 Ω				B					
						1 x 2000 Ω				F					
		double				2 x 100 Ω				K					
						2 x 2000 Ω				P					
	Electronic - current	wo its source		2-wire		4 - 20 mA				S					
		with its source								Q					
		wo its source		3-wire[6]		0 - 20 mA				T					
		with its source								U					
		wo its source				4 - 20 mA				V					
		with its source								W					
	Capacity	wo its source		2-wire[6]						I					
		with its source[51]		2-wire						J					
Mechanical connection						Flange, connection height 110 mm, stem thread M16x1,5					D				
						Columns, connection height 126 mm, stem thread M20x1,5					M				
Accessories							**A**	2 auxiliary switches					0	0	
							E	Space heater with terminal switch					0	2	
							C	Local control					0	7	
							D	Space heater					1	5	
							G	Setting up the tripping torgue on demanded position					2	5	

Permissible combinations of accessories and codes:
A+E=04, A+C=08, C+E=10, A+C+E=12, A+D=16, C+D=17, A+C+D=18, A+G=26, E+G=27, C+G=28, D+G=29, A+E+G=30, A+C+G=31, A+D+G=32, C+E+G=33,C+D+G=34, A+D+E+G=35, A+C+D+G=36

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

Electric actuators

Regada

STR 2PA

marking in type number:
EPM

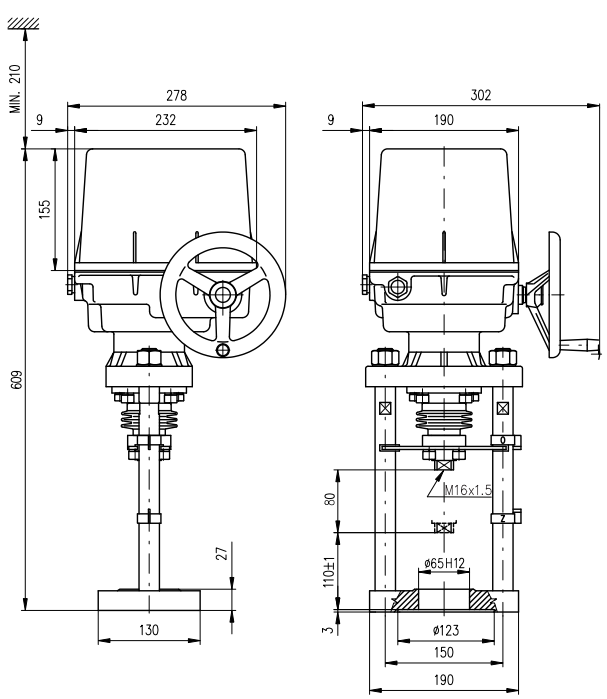
Technical data

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

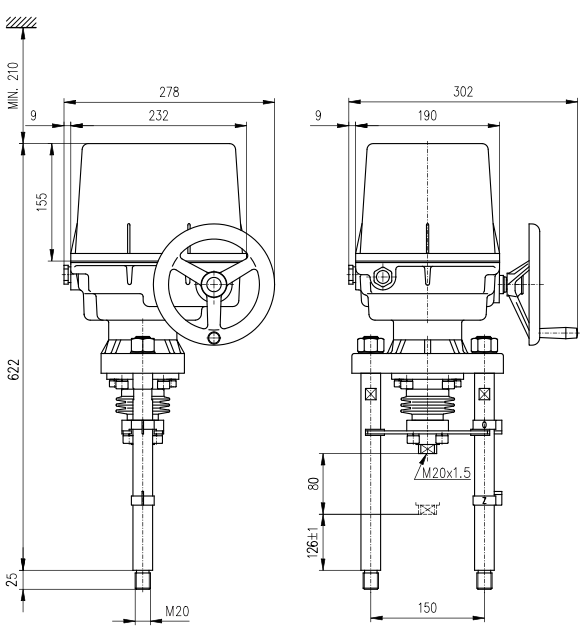
→ **Note:** Specifications and technical data are for information only. Detailed technical informations can be found in producer's data sheet or on the webside **www.regada.sk**

Dimensions of actuator

DN 80 - 150 (connection D)



DN 200 - 300 (connection M)



Specification of actuator STR 2PA

Electric servomotor STR 2PA				432.	X	-	X	X	X	X	X	/	X	X
Climatic resistance	Standard	-25°C to +55°C	IP 67		1									
	Cold	-40°C to +40°C	IP 67		3									
	Tropical	-25°C to +55°C	IP 67		6									

Electric connection to terminal board	Switching electromotor	Napájecí napětí	Code
	Through optocouplers	230 V AC	0
	Through reverse contactors	3x400 V AC	2
		3x380 V AC	N
	Contactless switching	3x400 V AC	E
		3x380 V AC	F

Nominal force [N]	**Running speed**	230 V	3x400 V, 3x380 V	Code
25 000	10 mm/min	●	–	A
	20 mm/min	●	●	J
	32 mm/min	●	●	B
	40 mm/min	●	●	L
	50 mm/min	–	●	C
	60 mm/min	–	●	R
20 000	10 mm/min	●	–	D
	20 mm/min	●	●	V
	32 mm/min	●	●	W
	40 mm/min	●	●	E
	50 mm/min	●	–	Y
	50 mm/min	–	–	Z
	60 mm/min	●	●	C
	60 mm/min	–	●	R
	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
	50 mm/min	–	●	E
	60 mm/min	●	–	Y
	60 mm/min	–	●	Z
	80 mm/min	●	–	E
	80 mm/min	–	●	Y
	100 mm/min	–	●	Z

Stroke		20-80 mm	K

Control board	Con-trol					Output		Code
DMS3	Modulating	0/4 - 20 mA	ON - OFF and pulse	24 V DC			4 - 20 mA pasive	G
		0/2 - 10 V						H

		Code
Mechanical connection	Flange, connection height 110 mm, stem thread M16x1,5	D
	Columns, connection height 126 mm, stem thread M20x1,5	M

			Code	
Accessories		Without accessories		
	A	Setting the stroke position to the desired value	0	1
	D	Auxiliary relay module R3, R4, R5 (module DMS3 RE3)	0	5
	E	Auxiliary relay module R1, R2, R3, R4, R5, READY (module DMS3 RE6)	0	6
	F	Local control for actuators with system DMS3 and LCD	0	7

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

Pneumatic actuators

Flowserve

Series 253 - 701

marking in type number:
PFA, PFB, PFC

Technical data

Type	PA 253		PB 503		PB 701	
Marking in valve spec. No.	**PFA**		**PFB**		**PFC**	
Feeding pressure			6,0 bar max			
Function	direct	indirect	direct	indirect	direct	indirect
Control	pneumatic signal 0,2 - 1,0 bar pneumatic signal 0(4) - 20 mA					
Nominal force	according to table of nominal force values					
Travel	25 mm			40 mm		
Enclosure	IP 54					
Process medium max. temp.	acc. to used valves					
Ambient temperatrure range	-40 to 80 °C					
Ambient humidity range	95 %					
Weight	see dimensions table					

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

Accessories

Elektropneumatic positioner type SRI 981	Device with electric input of 20 - 100 kPa to control the pneumatic actuators with pneumatic control signal
Elektropneumatic positioner type SRI 986	Analog positioner with input signal 4(0) - 20 mA
Electropneumatic positioner (analog) type SRD 990	Device with electric input of 4 (0) - 20 mA and outlet of contolling air into actuator. It is adjusted by PC and special software
Electropneumatic positioner (inteligent) type SRD 991	Device with electric input of 4 (0) - 20 mA and outlet of contolling air into actuator. It is adjusted by PC and special software
Electropneumatic positioner (inteligent) type SRD 998	Device with electric input of 4 (0) - 20 mA and outlet of contolling air into actuator. Standard equipment: HART, LED display, setting using the multi selector
Electropneumatic positioner SIPART PS2 Electropneumatic positioner ABB TZIDC	Digital positioner with input 4(0) – 20 mA
Signalisation switches typ SGE985	Adjustable end position switches
Air set type G651 (-20 to 50°C) Air set type typ FRS 923 (-40 to 80°C)	Reduces the supply pressure to a value requied
Solenoid valve standard type SC G551A005 Solenoid valve standard type SC G327B001	Direct operated electromagnetic valve, version 3/2, function U (universal), G 1/4“
Solenoid valve inexplosive EEx em type EM G327B001	Direct operated electromagnetic valve, eversion 3/2, function U (universal) G 1/4“, with the increased safety/epoxy encapsulation operator
Solenoid valve inexplosive EEx d type NF G327B001	Direct operated electromagnetic valve, version 3/2, function U (universal), G 1/4“, solid conclusion
Solenoid valve 5/2-way type SCG551B417	Direct operated electromagnetic valve, version 5/2, function U (universal), G 1/4“, (use for double-acting actuators)
Air lock relay, type EIL 200	Retaining device for closing of air pipeline on a pressure drop
Booster-valve type EIL 100	Airflow enhancer

Operating conditions

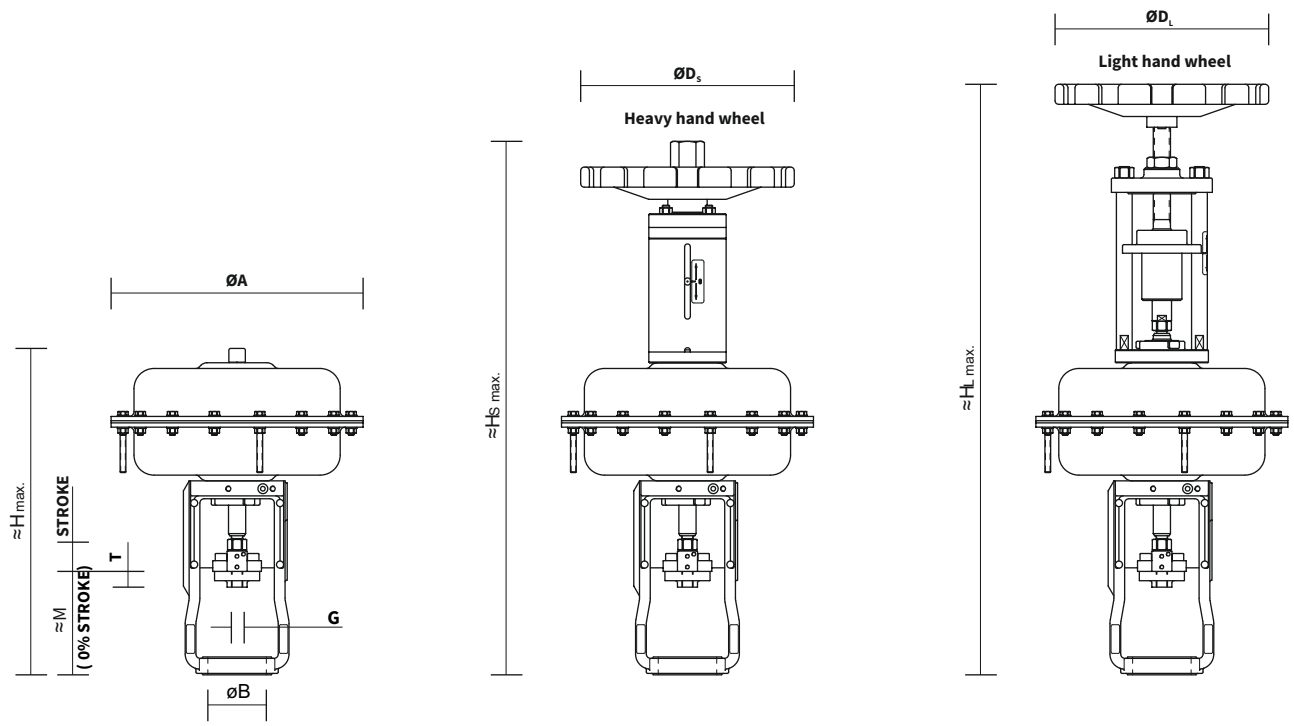
Pneumatic actuators Flowserve can operate with extremely high ambient temperatures with unique resistance to shock loads. They excel with resistance to vibrations and reached 10^6 of cycles in operation. It is possible to deliver the actuator with both fail to open and fail to close function, possibly with a position blocking (air lock) upon feeding pressure air supply failure. Various accessories can be delivered together with the actuator.

Direct and indirect functions

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

Dimensions and weight of actuators Flowserve series 253 - 701

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



Specification No. of Flowserve actuators 253 - 701

			PX XXX	X	X X	X	X	X
Actuator type	250 cm²		**PA 253**					
	500 cm²		**PB 503**					
	700 cm²		**PB 701**					
Color		white		**B**				
Spring range [bar]		0,2 - 1,0			**A D**			
		1,5 - 2,7			**V C**			
		2,0 - 4,8			**F Y**			
		1,0 - 2,4			**D Y**			
		0,5 - 1,9			**B L**			
Hand wheel		without wheel				**O**		
		light wheel				**L**		
		heavy wheel				**H**		
Function		direct					**A**	
		indirect					**Z**	
Stroke		20						**A**
		40						**B**

Pneumatic actuators

Flowserve

PO 1502

marking in type number:

PFD

Technical data

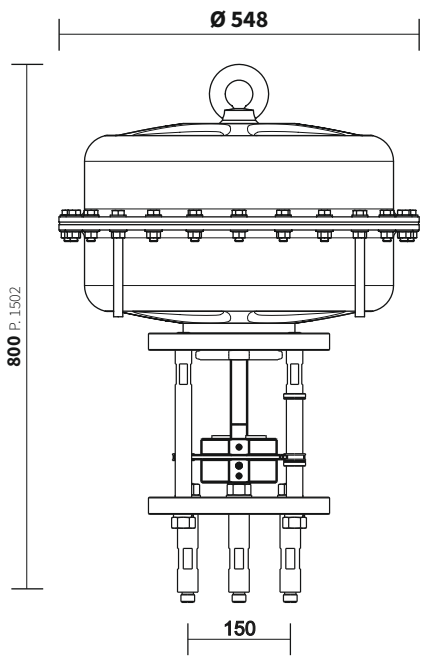
Type	**PO 1502**	
Marking in valve spec. No.	**PFD**	
Feeding pressure	6,0 bar max	
Function	direct	indirect
Control	pneumatic signal 0,2 - 1,0 bar current signal 0(4) - 20 mA	
Nominal force	according to table of nominal force values	
Travel	80, 100 mm	
Enclosure	IP 54	
Process medium max. temp.	acc.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

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

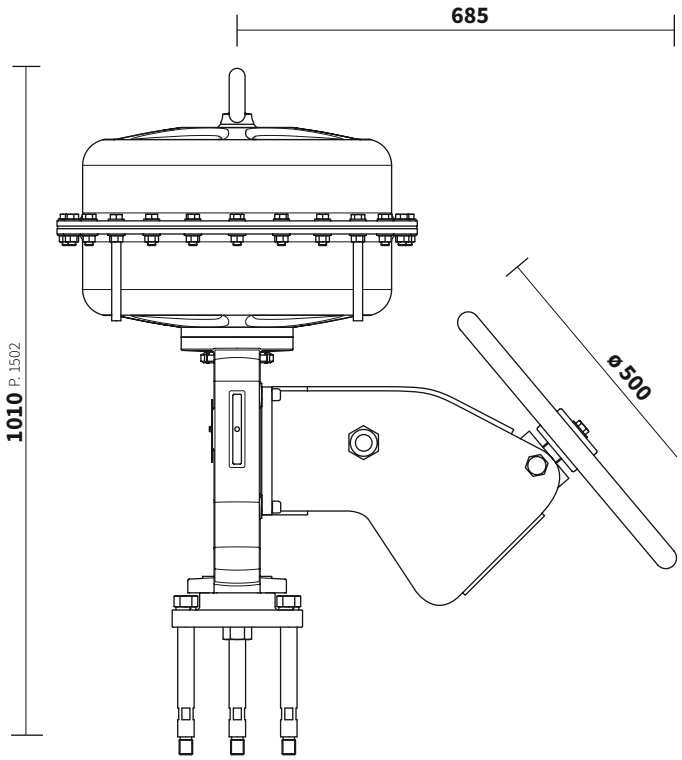
Accessories

Elektropneumatic positioner type SRI 981	Device with electric input of 20 - 100 kPa to control the pneumatic actuators with pneumatic control signal
Elektropneumatic positioner type SRI 986	Analog positioner with input signal 4(0) - 20 mA
Electropneumatic positioner (analog) type SRD 990	Device with electric input of 4 (0) - 20 mA and outlet of contolling air into actuator. It is adjusted by PC and special software
Electropneumatic positioner (inteligent) type SRD 991	Device with electric input of 4 (0) - 20 mA and outlet of contolling air into actuator. It is adjusted by PC and special software
Electropneumatic positioner (inteligent) type SRD 998	Device with electric input of 4 (0) - 20 mA and outlet of contolling air into actuator. Standard equipment: HART, LED display, setting using the multi selector
Electropneumatic positioner SIPART PS2 Electropneumatic positioner ABB TZIDC	Digital positioner with input 4(0) – 20 mA
Signalisation switches typ SGE985	Adjustable end position switches
Air set type G651 (-20 to 50°C) Air set type typ FRS 923 (-40 to 80°C)	Reduces the supply pressure to a value requied
Solenoid valve standard type SC G551A005 Solenoid valve standard type SC G327B001	Direct operated electromagnetic valve, version 3/2, function U (universal), G 1/4“
Solenoid valve inexplosive EEx em type EM G327B001	Direct operated electromagnetic valve, version 3/2, function U (universal) G 1/4“, with the increased safety/epoxy encapsulation operator
Solenoid valve inexplosive EEx d type NF G327B001	Direct operated electromagnetic valve, version 3/2, function U (universal), G 1/4“, solid conclusion
Solenoid valve 5/2-way type SCG551B417	Direct operated electromagnetic valve, version 5/2, function U (universal), G 1/4“, (use for double-acting actuators)
Air lock relay, type EIL 200	Retaining device for closing of air pipeline on a pressure drop
Booster-valve type EIL 100	Airflow enhancer

Dimensions of actuator Flowserve 1502



PO 1502

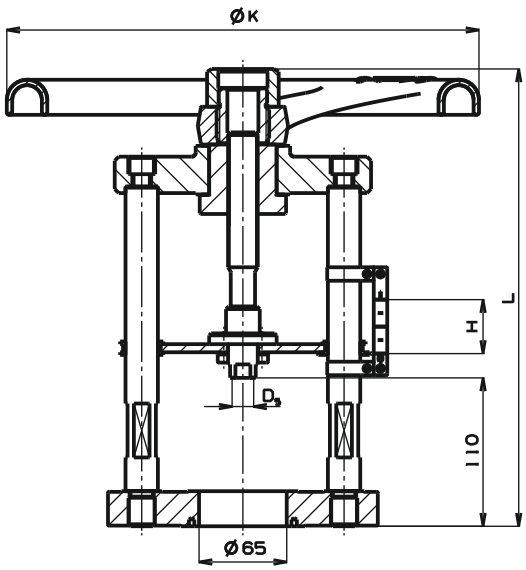


PB 1502

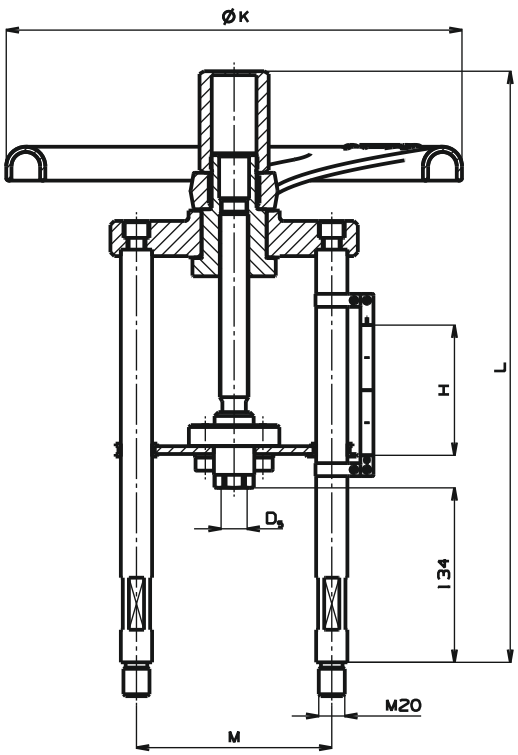
Specification No. of Flowserve actuators 1502

			PX XXXX	X	X X	X	X	X
Type of actuator		1500 cm²	**PO 1502**					
		1500 cm²	**PB 1502**					
Color			white	**B**				
Spring range [bar]	PO 1502	H = 80 mm	0,4 - 2,0		**G F**			
			1,5 - 2,7		**V C**			
			2,0 - 3,5		**F S**			
			2,6 - 4,2		**A J**			
	PO 1502	H = 100 mm	0,9 - 1,9		**H L**			
			1,8 - 3,8		**J I**			
			2,0 - 4,3		**F L**			
Hand wheel			without wheel			**O**		
			side light wheel			**S**		
Function			direct				**A**	
			indirect				**Z**	
Stroke H			80					**D**

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



Hand wheel for DN 15 - 150



Hand wheel for DN 200 - 400

Dimensions of manual control

DN	Marking	H [mm]	L [mm]	ØK [mm]	M [mm]	D_5 [mm]	D_6 [mm]	m [kg]	Ordering no. (BOM number)
15	R16	16	247	160	---	65	M10x1	5	S900 0231
20									
25									
32									
40									
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

Pneumatic actuators

A. Hock

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

marking in type number:
PHF, PHA, PHB, PHC

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

Technical data

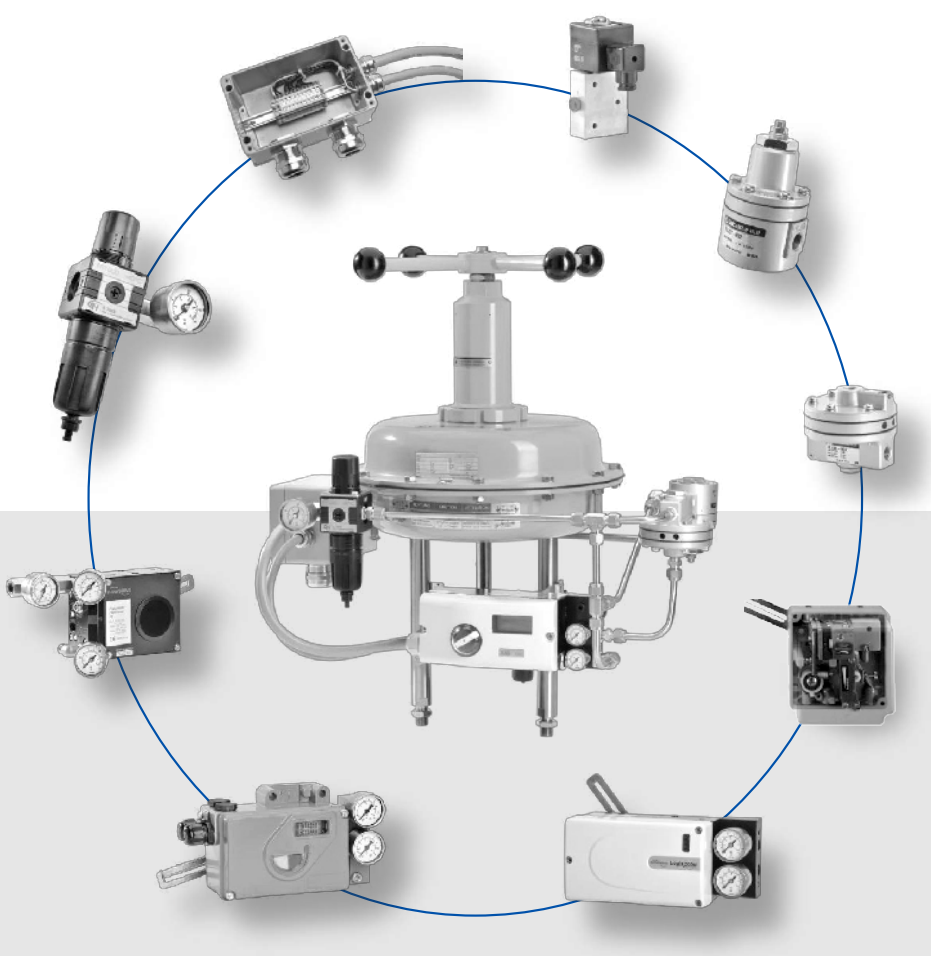
Type	**2109**	**2112**	**2112S**	**2112T**	**2116**	**2116S**
Marking in valve spec. No.	**PHF**	**PHA**		**PHB**	**PHC**	
Max. supply pressure NO, NC	6 bar			acc. to springs	6 bar	
Function double-acting	5,5 bar			3 bar	5,5 bar	
Control	direct (NO), reverse (NC), double-acting					
Nominal force	pneumatic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

Direct and reverse functions

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

Accessories

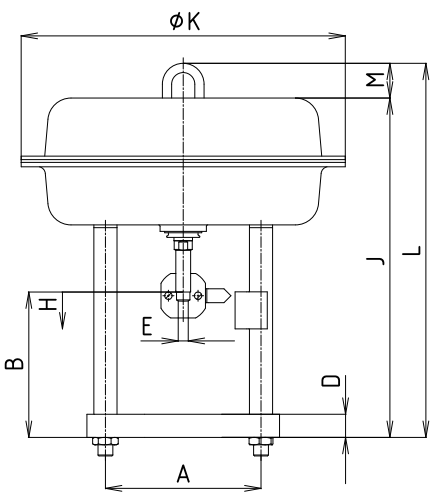
Pneumatic positioner type SRI 981	Device with pneumatic input of 20 - 100 kPa
Electropneumatic positioner type SRI 986	Analog positioner with input signal 4(0) - 20 mA
Electropneumatic positioner (analog) type SRD 990	Device with electric input of 4 (0) - 20 mA and direct pneumatic output into actuator. Adjusted by switches and potentiometers
Electropneumatic positioner (inteligent) type SRD 991	Device with electric input of 4 (0) - 20 mA and outlet of air into actuator. It is adjusted by PC and special software
Electropneumatic positioner (inteligent) type SRD 998	Device with electric input of 4 (0) - 20 mA and direct pneumatic output into actuator. Standard equipment: HART, LED display, adjustment by the multi selector
Electropneumatic positioner SIPART PS2 **Electropneumatic positioner ABB TZIDC**	Digital positioner with input 4(0) – 20 mA
Limit switch type SGE985	Adjustable end limit switches
Air set type G651 (-20 to 50°C) **Air set type FRS 923 (-40 to 80°C)**	Reduces the supply air pressure to a required value
Solenoid valve standard type SC G551A005 **Solenoid valve standard type SC G327B001**	Direct operated electromagnetic valve, version 3/2, function U (universal), G 1/4“
Solenoid valve EEx em b type EM G327B001, explosion-proof	Direct operated electromagnetic valve, eversion 3/2, function U (universal) G 1/4“, with increased safety, encapsulated epoxy moulded
Solenoid valve EEx d type NF G327B001, explosion-proof	Direct operated electromagnetic valve, version 3/2, function U (universal), G 1/4“, flameproof enclosure
Solenoid valve 5/2-way type SCG551B417	Direct operated electromagnetic valve, version 5/2, function U (universal), G 1/4“, (use for double-acting actuators)
Air lock relay, type EIL 200	Retaining device for closing of air pipeline on a pressure drop
Booster-valve type EIL 100	Airflow enhancer



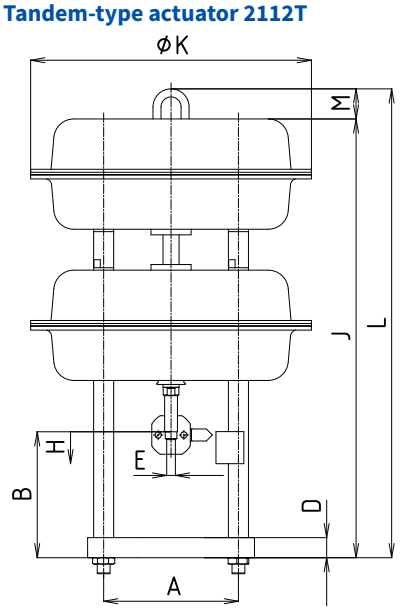
Dimensions and weight of actuators A. Hock series 2000

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

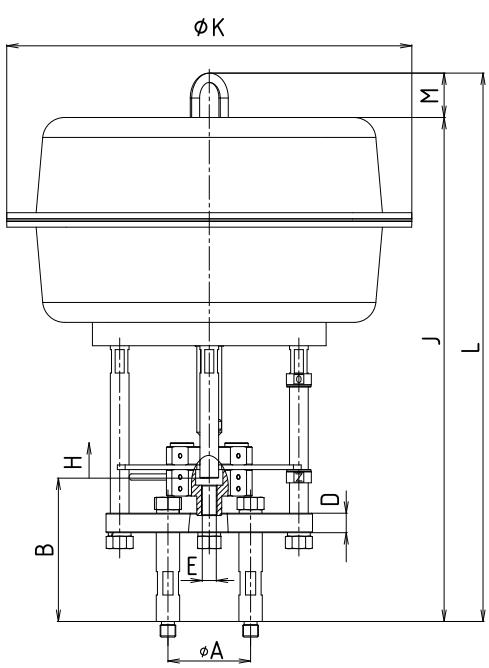
Standard actuator

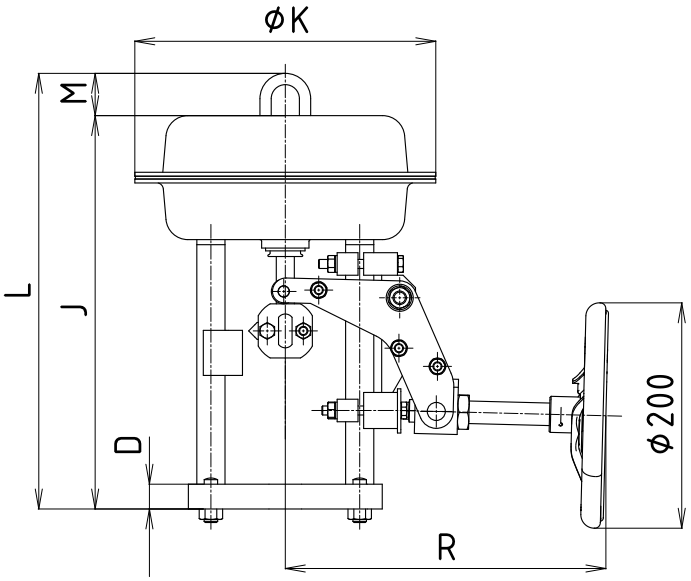


Tandem-type actuator 2112T

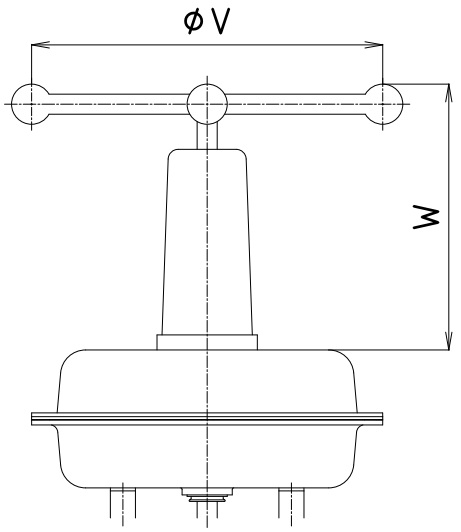


Standard actuator with linear unit 2116(S)

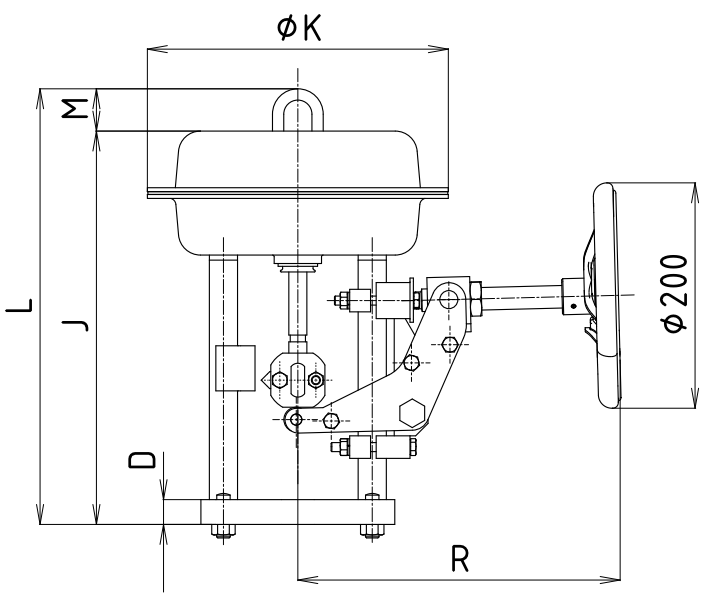




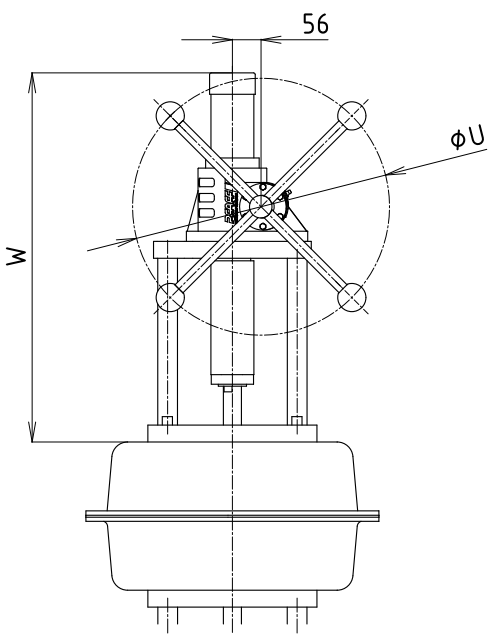
Standard actuator with side wheel (NO)



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



Standard actuator with side wheel (NC)



Upper wheel for actuators 2116(S)

Specification No. of actuators A. Hock series 2000

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

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

Specification No. of actuators A. Hock (stainless steel version) series 2000

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

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

Maximal permissible operating pressures ČSN EN 12516-1, resp. ČSN EN 1092-2 [bar]

Material	PN	Temperature [°C]															
		RT [1) 2)]	50	100	150	200	250	300	350	375	400	425	450	475	500	525	550
Spherodial cast iron EN-JS 1025	**10**	10.0	10.0	10.0	9.7	9.2	8.7	8.0	---	---	---	---	---	---	---	---	---
	16	16.0	16.0	16.0	15.5	14.7	13.9	12.8	---	---	---	---	---	---	---	---	---
	25	25.0	25.0	25.0	24.3	23.0	21.8	20.0	---	---	---	---	---	---	---	---	---
	40	40.0	40.0	40.0	38.8	36.8	34.8	32.0	---	---	---	---	---	---	---	---	---
Cast steel 1.0619	**10**	10.0	10.0	9.4	8.9	8.4	7.7	7.0	6.5	6.2	6.0	5.2	3.7	---	---	---	---
	16	16.0	16.0	15.0	14.2	13.4	12.3	11.1	10.4	10.0	9.6	8.3	5.9	---	---	---	---
	25	25.0	25.0	23.4	22.2	21.0	19.2	17.4	16.2	15.6	15.0	13.0	9.2	---	---	---	---
	40	40.0	40.0	37.4	35.5	33.6	30.7	27.8	25.9	25.0	24.0	20.8	14.7	---	---	---	---
Alloyed steel 1.7357	**10**	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.3	9.0	8.5	8.2	7.9	7.4	6.2	4.6	2.9
	16	16.0	16.0	16.0	16.0	16.0	16.0	16.0	14.9	14.4	13.57	13.1	12.6	11.8	10.0	7.3	4.7
	25	25.0	25.0	25.0	25.0	25.0	25.0	25.0	23.3	22.4	21.3	20.4	19.7	18.5	15.6	11.5	7.3
	40	40.0	40.0	40.0	40.0	40.0	40.0	40.0	37.3	35.9	34.1	32.7	31.5	29.5	25.0	18.3	11.7
Manganese steel 1.6220	**10**	10.0	10.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16	16.0	16.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	25	25.0	25.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	40	40.0	40.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Stainless steel 1.4581	**10**	10.0	10.0	10.0	9.7	9.0	8.5	8.1	7.7	7.5	7.3	7.1	7.0	6.9	6.6	---	---
	16	16.0	16.0	16.0	15.5	14.3	13.7	13.0	12.3	12.0	11.7	11.4	11.2	11.0	10.5	---	---
	25	25.0	25.0	25.0	24.2	22.4	21.4	20.3	19.3	18.7	18.2	17.9	17.5	17.2	16.5	---	---
	40	40.0	40.0	40.0	38.6	35.8	34.2	32.5	30.8	30.0	29.1	28.6	28.0	27.4	26.3	---	---
Stainless steel 1.4308	**10**	10.0	10.0	9.2	8.1	7.0	6.6	6.2	5.7	5.6	5.4	5.3	5.2	5.0	4.9	4.6	4.4
	16	16.0	16.0	14.8	13.0	11.2	10.5	9.9	9.1	8.9	8.7	8.5	8.2	8.1	7.9	7.3	7.1
	25	25.0	25.0	23.1	20.3	17.5	16.5	15.4	14.3	13.9	13.6	13.2	12.9	12.6	12.3	11.4	11.1
	40	40.0	40.0	37.0	32.5	28.0	26.3	24.6	22.8	22.3	21.7	21.2	20.6	20.2	19.7	18.2	17.7
Stainless steel 1.4309	**10**	10.0	10.0	9.2	8.3	7.3	6.7	6.2	5.6	---	---	---	---	---	---	---	
	16	16.0	16.0	14.8	13.2	11.7	10.8	9.9	9.0	---	---	---	---	---	---	---	
	25	25.0	25.0	23.1	20.7	18.2	16.8	15.4	14.0	---	---	---	---	---	---	---	
	40	40.0	40.0	37.0	33.0	29.1	26.2	24.6	22.4	---	---	---	---	---	---	---	

[1)] -10°C to 120°C - for EN-JS 1025
[2)] -10°C to 50°C - for the others

Marking of actuators in type no.

Electric actuator 660 MIDI	**ENB**	Electric actuator Schiebel AB3	**EZA**
Electric actuator Zepadyn 670	**ENC**	Electric actuator Schiebel exAB3	**EZB**
Electric actuator Zepadyn 671	**ENE**	Electric actuator Schiebel rAB3	**EZC**
Electric actuator PTN 2.20	**ERB**	Electric actuator Schiebel exrAB3	**EZD**
Electric actuator PTN 2.32 ; PTN 2.40	**ERC**	Electric actuator Schiebel AB5	**EZE**
Electric actuator PTN 6	**ERD**	Electric actuator Schiebel exAB5	**EZF**
Electric actuator PTN 7	**ERG**	Electric actuator Schiebel rAB5	**EZG**
Electric actuator Modact MTR	**EPD**	Electric actuator Schiebel exrAB5	**EZH**
Electric actuator ST 0, STR 0 PA	**EPK**	Electric actuator Schiebel rAB8	**EZK**
Electric actuator ST 0.1, STR 0.1 PA	**EPL**	Electric actuator Schiebel exrAB8	**EZL**
Electric actuator ST 1, STR 1 PA	**EPI**	Electric actuator Rotork IQM10 a IQM12	**EQA**
Electric actuator ST 1 Ex	**EPJ**	Electric actuator Rotork Ex IQM10 a Ex IQM12	**EQB**
Electric actuator ST 2, STR 2 PA	**EPM**	Electric actuator IQM20	**EQD**
Electric actuator Modact MTN Control, MTP Control	**EYA**	Electric actuator Ex IQM20	**EQE**
Electric actuator Modact MTN, MTP	**EYB**	Electric actuator Rotork CVL-500 to CVL-5000	**EQL**
Electric actuator Modact MTNED, MTPED	**EYA**	Pneumatic actuator Flowserve PA 253	**PFA**
Electric actuator Auma SA 07.2	**EAA**	Pneumatic actuator Flowserve PB 503	**PFB**
Electric actuator Auma SA Ex 07.2	**EAB**	Pneumatic actuator Flowserve PB 701	**PFC**
Electric actuator Auma SAR 07.2	**EAC**	Pneumatic actuator Flowserve PO 1502	**PFD**
Electric actuator Auma SAR Ex 07.2	**EAD**	Pneumatic actuator Flowserve PO 3002	**PFE**
Electric actuator Auma SA 07.6	**EAE**	Pneumatic actuator A.Hock 2109-20	**PHF**
Electric actuator Auma SA Ex 07.6	**EAF**	Pneumatic actuator A.Hock 2112-30, A.Hock 2112-50	**PHA**
Electric actuator Auma SAR 07.6	**EAG**	Pneumatic actuator A.Hock 2112T-30, A.Hock 2112T-50	**PHB**
Electric actuator Auma SAR Ex 07.6	**EAH**	Pneumatic actuator A.Hock 2116-40	**PHC**
Electric actuator Auma SA 10.2	**EAI**	Hand wheel pro DN 15 - 40	**R16**
Electric actuator Auma SAR 10.2	**EAJ**	Hand wheel pro DN 50 - 65	**R20**
Electric actuator Auma SAR Ex 10.2	**EAK**	Hand wheel pro DN 80 - 100	**R28**
Electric actuator Auma SA Ex 10.2	**EAL**	Hand wheel pro DN 125 - 400	**R35**

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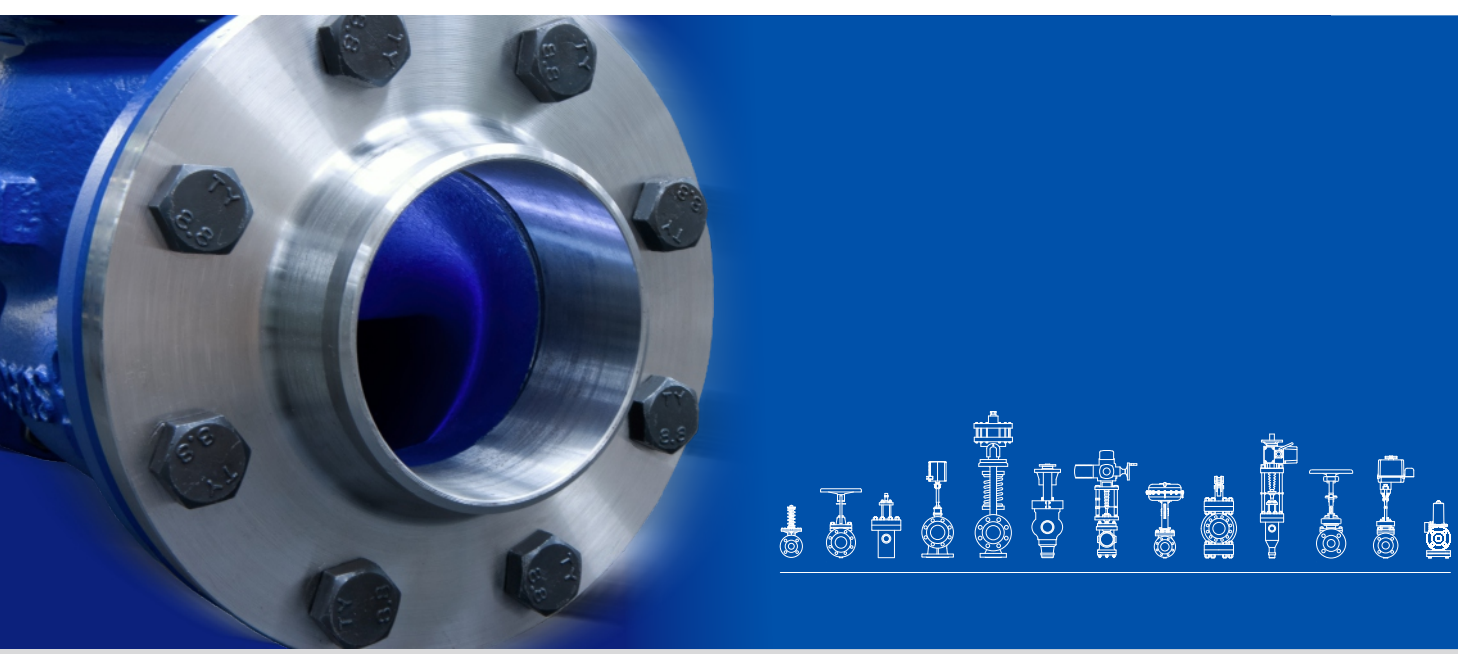

POWER THROUGH IDEAS