CERTIFIED
ISO 9001 · ISO 14001
ISO 45001

LDM®

02 - 09.2
03.20.GB

CONTROL AND SHUT-OFF VALVES IN SEISMIC VERSION

300 line



POWER THROUGH IDEAS
www.ldmvalves.com

300 line

RV / UV 320 SP (Ex)
RV / UV 330 SP (Ex)

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

RV 322 SP (Ex)
RV 332 SP (Ex)

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

Control valves **300 line** are designed for regulation and shut-off of process liquid flow, for which seismic resistance of the device is required. The valves meet the conditions of **seismic resistance** in the sense of maintaining mechanical integrity and functionality after a seismic event with a response spectrum of up to 30 $m.s^{-2}$ in all directions, in the band 0 to 33 Hz. Thus, they meet the requirements of **seismic classification 1b of fittings for nuclear energy according to OTT 87/91** and in non-nuclear applications meet the conditions for use in earthquake-prone areas with a maximum intensity of up to 9 degrees of the international scale EMS-98, or MSK-64 (9 bal).

Version Ex meets demands of II 1/2G IIC TX Ga/Gb dle ČSN EN ISO 80079-36 (9/2016) a ČSN EN 1127-1 ed. 2 (1/2012). Flow characteristics, Kvs coefficients and leakage comply with international standards. The maximal permissible operating pressures in behaviour with types of material and temperature are specified in the table on page 22 of this catalogue.

Control

hand wheel
electromechanical actuators **Auma**

Application

RV / UV 3xx SP (Ex) - heating, ventilation, power gen. and chemical process. industries
RV / UV 3xx SP (Ex) - gas and chemical industries

Process media

RV / UV 3xx SP (Ex) - 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 3xx SP (Ex) - technical and fuel gases and inflammable liquids

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

Installation

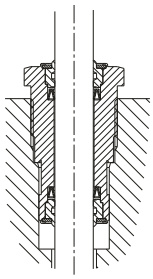
The valve can be installed in any position except position when the actuator is under the valve body. The valve is to be piped the way so that the direction of medium flow will coincide with the arrows on the body.

It is necessary to protect the actuator from excessive heat from the pipeline at medium temperatures above 150 °C, 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

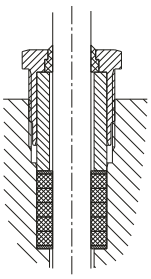
DRSpack® (PTFE)

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.



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 3x0 SP

Control and Shut-off valves in seismic version

DN 15 to 400
PN 16 to 63

Technical data

Series		RV / UV 320 SP (Ex)	RV / UV 330 SP (Ex)
Type of valve		**Two-way, single-seated, control (shut-off) valve**	
Nominal size range		DN 15 to 400	
Nominal pressure		PN 63 (PN 16 to 63 weld ended)	
Body material		Cast steel 1.0619 (GP240GH) 1.7357 (G17CrMo5-5)	Stainless steel 1.4581(GX5CrNiMoNb19-11-2)
Seat material:	DN 15 - 50	1.4028 / 17 023.6	1.4571 / 17 348.4
DIN W.Nr./+ČSN	DN 65 - 400	1.4027 / 42 2906.5	1.4571 / 17 348.4
Plug material:	DN 15 - 65	1.4028 / 17 023.6	1.4581 / 42 2941.4
DIN W.Nr./+ČSN	DN 80 - 150	1.4021 / 17 027.6	1.4581 / 42 2941.4
	DN 200 - 400	1.4021 / 17 022.6	1.4581 / 42 2941.4
Operating temperature range		-10 to 550 °C	-10 to 550 °C
Face to face dimensions		Section 2 for flanged version acc. to ČSN EN 558+A1 (5/2012), Section 73 for weld ends version acc. to ČSN EN 12982 (1/2011)	
Connection flanges		Acc. to ČSN EN 1092-1+A1 (7/2013)	
Flange faces		Type B1 (raised-faced) or Type B2 (plain face) or Type F (female), or Type D (groove) acc. to ČSN EN 1092-1+A1 (7/2013)	
Weld ends		Weld ends acc. to ČSN EN 12627-2 (8/2000)	
Type of plug		V-ported, contoured, perforated	
Flow characteristic		Linear, equal-percentage, LDMspline®, parabolic, on - off	
Kvs value		0.01 to 1600 m^3/h	
Leakage rate		Class III. acc. to ČSN-EN 1349 (7/2010) (<0.1% Kvs) for c. valves with metal-metal seat sealing	
		Class IV. acc. to ČSN-EN 1349 (7/2010) (<0.01% Kvs) for shut off valve	
		Class IV. acc. to ČSN EN 1349 (7/2010) (<0.01% Kvs) pro uzavírací ventil	
Leakage rate for Ex version		RV 3xx class IV. acc. to ČSN EN 1349 (7/2010) (< 0.01% Kvs); UV 3xx step C acc. to ISO 5208:2008	
Rangeability r		50 : 1	
Packing		DRSpack® (PTFE) t_{max} = 260°C, Exp. graphite t_{max} = 550°C, Bellows (DN15-150) t_{max} = 550°C	
Seismic resistance		až 33 Hz, 30 $m.s^{-2}$	

Kvs values and differential pressures Δp_{max} [MPa] of valves DN 15 - 200 with countoured and V-ported plugs (flow direction below plug) with electro-mechanic actuators

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

For further information on actuating, see actuators' catalogue sheets	Actuating (actuating)	Auma	Auma	Auma	Hand wheel
	Marking in valve specification No.	EA...	EA...	EA...	Rxx
	Linear force	5 kN	7.5 kN	10 kN	

			Kvs [m³/h]											Δp_{max} packing		Δp_{max} packing		Δp_{max} packing		Δp_{max} packing	
DN	**H**	**Ds**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**			graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
15	**16**	**3**	---	---	---	---	---	---	---	0.16[3]	0.1...0.01[3]			6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		6	---	---	---	---	---	---	0.25[1]	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	2.5[1]	1.6[1]	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		15	4.0[1]	---	---	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
20		**3**	---	---	---	---	---	---	---	---	0.16...0.01[3]			6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		6	---	---	---	---	---	---	---	0,25[1]	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	1.0[1]	0,63[1]	0,4[1]	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	---	2.5[1]	1.6[1]	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		15	---	4.0[1]	---	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		20	6.3[1]	---	---	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
25		**3**	---	---	---	---	---	---	---	---	---	0.16...0.01[3]		6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		6	---	---	---	---	---	---	---	---	0.25[1]	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	---	---	2.5[1]	1.6[1]	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		15	---	---	4.0[1]	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		20	---	6.3[2]	---	---	---	---	---	---	---	---	---	5.56	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		25	10.0	6.3[4]	4.0[4]	---	---	---	---	---	---	---	---	3.36	6.3	6.3	6.3	6.3	6.3	6.3	6.3
32		**6**	---	---	---	---	---	---	---	---	---	0.25[1]	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	---	---	---	2.5[1]	1.6[1]	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		15	---	---	---	4.0[1]	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		20	---	---	6.3[2]	---	---	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		32	16	10	6.3[4]	---	---	---	---	---	---	---	---	4.31	4.31	4.72	6.3	6.3	6.3	6.3	6.3
40		**6**	---	---	---	---	---	---	---	---	---	---	0.25[1]	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		8	---	---	---	---	---	---	---	1.0[1]	0.63[1]	0.4[1]	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		12	---	---	---	---	---	2.5[1]	1.6[1]	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		15	---	---	---	---	4.0[2]	---	---	---	---	---	---	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		20	---	---	---	6.3[2]	---	---	---	---	---	---	---	5.56	6.3	6.3	6.3	6.3	6.3	6.3	6.3
		40	25	16	10	6.3[4]	4.0[4]	---	---	---	---	---	---	1.2	2.71	2.98	4.49	4.75	6.26	4.75	6.26

the table continues on the next page

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

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

For further information on actuating, see actuators' catalogue sheets

*) max. DN 300

			Actuating (actuating)					Auma		Auma		Auma		Auma		Auma		Auma		Hand wheel	
			Marking in valve specification No.					EA...		EA...		EA...		EA...		EA...		EA...		Rxx	
			Linear force																		
			Kvs [m³/h]					Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}	
								packing		packing		packing		packing		packing		packing		packing	
DN	H	Ds	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
50	20	50	40	25	16	10	6.3[4]	0.68	1.58	1.74	2.65	2.8	3.71	4.93	5.89	---	---	---	---	2.8	3.71
65		65	63	40	25	16	10	0.37	0.93	1.02	1.58	1.67	2.23	3.53	2.97	---	---	---	---	1.67	2.23
80	40	80	100	63	40	25	16	---	---	0.45	0.9	0.9	1.35	1.8	2.25	2.70	3.15	---	---	1.98	2.43
100		100	160	100	63	40	25	---	---	0.27	0.56	0.56	0.85	1.14	1.43	1.73	2.02	---	---	1.26	1.55
125		125	250	160	100	63	40	---	---	0.15	0.34	0.34	0.53	0.72	0.91	1.10	1.29	---	---	0.8	0.99
150		150	360	250	160	100	63	---	---	0.1	0.23	0.23	0.36	0.49	0.63	0.76	0.89	---	---	0.55	0.68
200	80	100	---	---	250	160	100	---	---	---	---	---	---	1.02	1.36	1.61	1.95	3.03	3.37	3.98	4.32
		150	---	400	---	---	---	---	---	---	---	---	---	0.43	0.59	0.7	0.85	1.34	1.49	1.77	1.92
		200	570	---	---	---	---	---	---	---	---	---	---	0.23	0.32	0.38	0.47	0.75	0.83	0.99	1.08
250	80	150	---	---	400	250	160	---	---	---	---	---	---	0.34	0.51	0.61	0.78	1.26	1.43	1.69	1.86
		200	---	630	---	---	---	---	---	---	---	---	---	0.17	0.27	0.33	0.43	0.69	0.79	0.94	1.04
		230	800	---	---	---	---	---	---	---	---	---	---	0.13	0.20	0.24	0.32	0.52	0.60	0.71	0.78
300	80	150	---	---	---	400	250	---	---	---	---	---	---	0.34	0.51	0.61	0.78	1.26	1.43	1.69	1.86
		200	---	---	630	---	---	---	---	---	---	---	---	0.17	0.27	0.33	0.43	0.69	0.79	0.94	1.04
		230	---	800	---	---	---	---	---	---	---	---	---	0.13	0.20	0.24	0.32	0.52	0.60	0.71	0.78
		250	1000	---	---	---	---	---	---	---	---	---	---	0.10	0.17	0.20	0.26	0.44	0.50	0.59	0.66
400	100	150	---	---	---	400	250	---	---	---	---	---	---	0.34	0.51	0.61	0.78	1.26	1.43	1.69	1.86
		200	---	---	630	---	---	---	---	---	---	---	---	0.17	0.27	0.33	0.43	0.69	0.79	0.94	1.04
		250	---	1000	---	---	---	---	---	---	---	---	---	0.10	0.17	0.20	0.26	0.44	0.50	0.59	0.66
		330	1600	---	---	---	---	---	---	---	---	---	---	0.05	0.09	0.11	0.14	0.24	0.28	0.33	0.37

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

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

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

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

For further information on actuating, see actuators' catalogue sheets			Actuating (actuator)	Auma		Auma		Auma		Auma		Auma		Auma		Hand wheel	
			Marking in valve specification No.	EA...		EA...		EA...		EA...		EA...		EA...		Rxx	
			Linear force	5 kN		7.5 kN		10 kN		15 kN		20 kN		32 kN			
			Kvs [m³/h]						Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}	
									packing		packing		packing		packing		packing		packing	
DN	H	Ds	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
25	16	25	---	6.3	4.0	2.5[5]	1.6[5]	3.36	6.3	6.3	6.3	6.3	6.3	---	---	---	---	---	---	6.3	6.3
32		32	---	10	6.3	4.0	2.5[5]	1.95	4.31	4.72	6.3	6.3	6.3	---	---	---	---	---	---	6.3	6.3
40		40	---	16	10	---	---	1.2	2.71	2.98	4.49	4.75	6.26	---	---	---	---	---	---	4.75	6.26
50	20	50	---	25	16	---	---	0.68	1.58	1.74	2.65	2.8	3.71	4.93	5.89	---	---	---	---	2.8	3.71
65		65	---	40	25	---	---	0.37	0.93	1.02	1.58	1.67	2.23	3.53	2.97	---	---	---	---	1.67	2.23
80	40	80	---	63	40	---	---	---	---	0.45	0.9	0.9	1.35	1.8	2.25	2.70	3.15	---	---	1.98	2.43
100		100	---	100	63	---	---	---	---	0.27	0.56	0.56	0.85	1.14	1.43	1.73	2.02	---	---	1.26	1.55
125		125	---	160	100	---	---	---	---	0.15	0.34	0.34	0.53	0.72	0.91	1.10	1.29	---	---	0.8	0.99
150		150	---	250	160	---	---	---	---	0.1	0.23	0.23	0.36	0.49	0.63	0.76	0.89	---	---	0.55	0.68
200	80	200	---	400	250	160	100	---	---	---	---	---	---	0.23	0.32	0.38	0.47	0.75	0.83	0.99	1.08
250		230	---	630	400	250	160	---	---	---	---	---	---	0.13	0.20	0.24	0.32	0.52	0.60	0.71	0.78
300		250	---	800	630	400	250	---	---	---	---	---	---	0.10	0.17	0.20	0.26	0.44	0.50	0.59	0.66
400	100	330	---	1000	630	400	250	---	---	---	---	---	---	0.05	0.09	0.11	0.14	0.24	0.28	0.33	0.37

[5] linear characteristic only

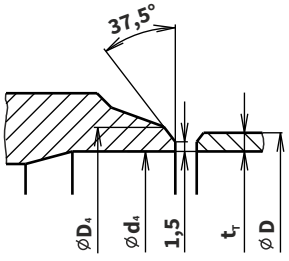
Dimensions and weights of valves RV / UV 3x0 (Ex) with flanged and welded connection, DN 15 - 400

DN	H mm	L_1 mm	V_1 mm	V_2 mm	V_3 mm	V_4 mm	$ØD_1$ mm	$ØD_2$ mm	$ØD_3$ mm	a mm	d mm	n	M mm	$ØD_6$ mm	L_2 mm	V_5 mm	$ØD_4$ mm	m_1 kg	m_2 kg
15	16	210	52.5	63	152	89	105	75	45	20	14	4	---	M10x1	203	47	22	7	4.5
20		230	65	63	152		130	90	58	22	18				206	47	28	8.5	4.5
25		230	70	73	162		140	100	68	24	18				210	52	35	10.5	5
32		260	77.5	73	162		155	110	78	24	22				260	49	44	12.5	6.5
40		260	85	73	162		170	125	88	26	22				251	52	50	15	7.5
50	20	300	90	104	193		180	135	102	26	22	8			286	73	62	20	12
65		340	102.5	104	193		205	160	122	26	22				311	73	77	25	15
80	40	380	107.5	139	245	106	215	170	138	28	22			M16x1.5	337	105	91	36	24
100		430	125	139	245	106	250	200	162	30	26				394	105	117	54	38
125		500	147.5	157	264	107	295	240	188	34	30				500	133	144	92	70
150		550	172.5	179	281	102	345	280	218	36	33				508	134	172	140	105
200	80	650	207.5	262	422	160	415	345	285	42	36	12	150	M20x1.5	610	203	223	260	210
250		775	235	346	506		470	400	345	46	36	12			752	253	278	455	370
300		900	265	395	555		530	460	410	52	36	16			819	296	329	635	520
400	100	1150	335	512	672		670	585	535	60	42	16			1108	382	413	1255	1050

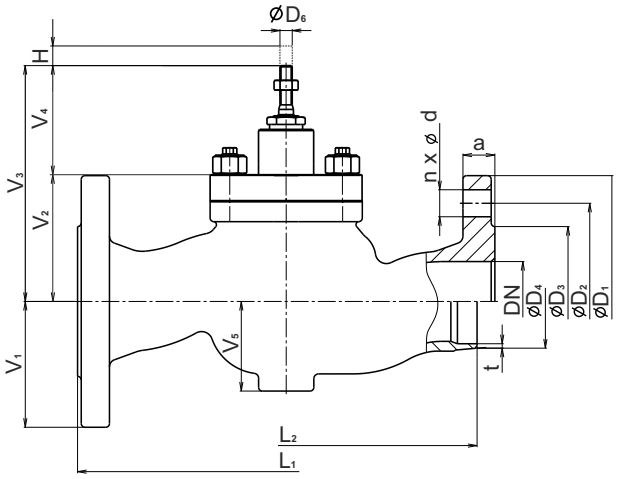
m_1 - weight of flanged connection
m_2 - weight of welded connection
t - wall thickness of weld ends: $t = [D_4 - (D - 2 * t_T)] / 2$

Dimensions of weld ends for pipes ISO 4200 line 1

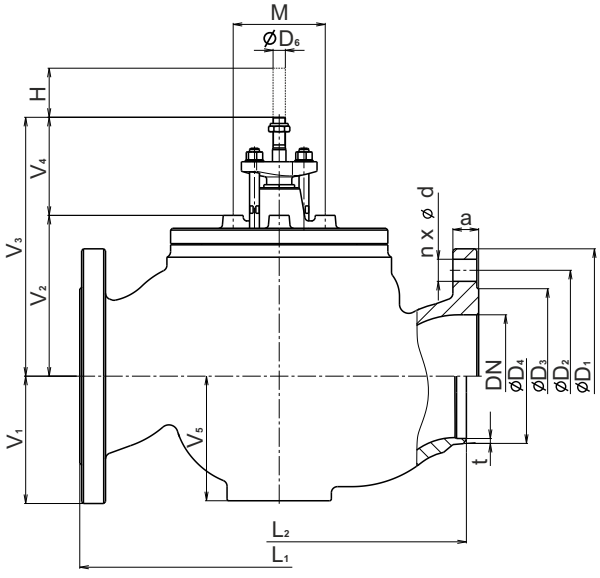
DN	$ØD_4$	ØD	t_T				$ØD_{4\,max}$	$Ød_{4\,min}$
15	22	21.3	2.0	2.6	3.2	3.6	25	14
20	28	26.9	2.0	2.6	3.2	3.6	32	18
25	35	33.7	2.3	2.6	3.2	3.6	39	23
32	44	42.4	2.6	2.9	3.6	4.0	48	28
40	50	48.3	2.6	2.9	3.6	4.0	54	37
50	62	60.3	2.9	3.2	4.0	4.5	66	48
65	77	76.1	2.9	3.2	3.6	5.0	82	62
80	91	88.9	3.2	3.6	4.0	5.6	96	74
100	117	114.3	3.6	4.0	5.0	6.3	122	98
125	144	139.7	4.5	5.0	6.3	7.1	154	118
150	172	168.3	4.5	5.0	7.1	8.0	177	144
200	223	219.1	6.3	8.0	8.8	10.0	235	193
250	278	273.0	7.1	8.0	10.0	14.2	278	229
300	329	323.9	8.0	10.0	12.5	17.5	329	281
400	413	406.4	11.0	12.5	14.2	20.0	426	345



(other version after agreement)



DN 15 -150



DN 200 - 400



RV 3x2 SP

Pressure balanced control valves in seismic version

DN 25 to 200
PN 40 to 63

Technical data

Series		RV 322 SP (Ex)	RV 332 SP (Ex)
Type of valve		**Two-way, single-seated, control valve with pressure balanced plug**	
Nominal size range		DN 25 to 400	
Nominal pressure		PN 63 (PN 16 to 63 weld ends version)	
Body material		Cast steel 1.0619 (GP240GH) 1.7357 (G17CrMo5-5)	Stainless steel 1.4581(GX5CrNiMoNb19-11-2)
Seat material:	DN 15 - 50	1.4028 / 17 023.6	1.4571 / 17 348.4
DIN W.Nr./+ČSN	DN 65 - 400	1.4027 / 42 2906.5	1.4571 / 17 348.4
Plug material:	DN 15 - 65	1.4028 / 17 023.6	1.4581 / 42 2941.4
DIN W.Nr./+ČSN	DN 80 - 150	1.4021 / 17 027.6	1.4581 / 42 2941.4
	DN 200 - 400	1.4021 / 17 022.6	1.4581 / 42 2941.4
Operating temperature range		-10 to 550 °C	
Face to face dimensions		Section 2 acc. to ČSN-EN 558 + A1 (5/2012) or serie 73 for welded connection acc. to ČSN EN 12982 (1/2011)	
Connection flanges		Acc. to ČSN EN 1092-1+A1 (7/2013)	
Flange faces		Type B1 (raised-faced) or Type B2 (plain face) or Type F (female), or Type D (groove) acc. to ČSN EN 1092-1+A1 (7/2013)	
Weld ends		Weld ends acc. to ČSN EN 12627-2 (8/2000)	
Type of plug		V-ported, perforated	
Flow characteristic		Linear, equal-percentage, LDMspline, parabolic	
Kvs value		1.6 - 1600 m^3/h	
Leakage rate		Class III. acc. to ČSN EN 1349 (7/2010) (<0.1% Kvs) for control valves with metal-metal seat sealing	
		Class IV. acc. to ČSN EN 1349 (7/2010) (<0.01% Kvs) for control valves with metal - PTFE seat sealing	
Leakage rate for Ex version		RV 3xx class IV. acc. to ČSN EN<1349 (7/2010) (0.01% Kvs)	
Rangeability r		50 : 1	
Packing		DRSpack® (PTFE) t_{max} = 260°C, Expanded graphite t_{max} = 550°C, Bellows (DN15-150) t_{max} = 550°C	
Seismic resistance		až 33 Hz, 30 $m.s^{-2}$	

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

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

For further information on actuating, see actuators catalogue sheets

***) max. DN 300**

			Actuating (actuator)					**Auma**		**Auma**		**Auma**		**Hand wheel**	
			Marking in valve specification No.					**EA...**		**EA...**		**EA...**		**Rxx**	
			Linear force					15 kN		15 kN		16 kN			
			Kvs [m³/h]					**Δp_{max}**		**Δp_{max}**		**Δp_{max}**		**Δp_{max}**	
								packing		packing		packing		packing	
DN	**H**	**Ds**	**1**	**2**	**3**	**4**	**5**	graphite	**PTFE**	graphite	**PTFE**	graphite	**PTFE**	graphite	**PTFE**
25	16	**25**	10	6.3[5)]	4.0[5)]	2.5[5)]	1.6[5)]	6.3	6.3	---	---	---	---	6.3	6.3
32		**32**	16	10	6.3[5)]	4.0[5)]	2.5[5)]	6.3	6.3	---	---	---	---	6.3	6.3
40		**40**	25	16	10	6.3[5)]	4.0[5)]	6.3	6.3	---	---	---	---	6.3	6.3
50	20	**50**	40	25	16	10	6.3[5)]	6.3	6.3	---	---	---	---	6.3	6.3
65		**65**	63	40	25	16	10	6.3	6.3	---	---	---	---	6.3	6.3
80	40	**80**	100	63	40	25	16	6.3	6.3	---	---	---	---	6.3	6.3
100		**100**	160	100	63	40	25	6.3	6.3	---	---	---	---	6.3	6.3
125		**125**	250	160	100	63	40	6.3	6.3	---	---	---	---	6.3	6.3
150		**150**	360	250	160	100	63	6.3	6.3	---	---	---	---	6.3	6.3
200	80	**200**	570	400	250	160	100	---	---	6.3	6.3	---	---	6.3	6.3
250		**230**	800	630	400	250	160	---	---	---	---	6.3	6.3	6.3	6.3
300		**250**	1000	800	630	400	250	---	---	---	---	6.3	6.3	6.3	6.3
400	100	**330**	1600	1000	630	400	250	---	---	---	---	6.3	6.3	6.3	6.3

[5)] linear characteristic only

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

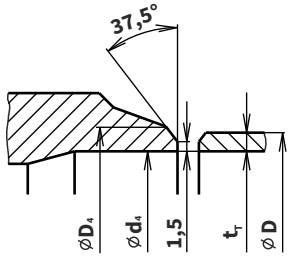
Dimensions and weights of valves RV 3x2 SP (Ex) with flanged and welded connection, DN 25 - 400

DN	H mm	L_1 mm	V_1 mm	V_2 mm	V_3 mm	V_4 mm	$ØD_1$ mm	$ØD_2$ mm	$ØD_3$ mm	a mm	d mm	n	M mm	$ØD_6$ mm	L_2 mm	V_5 mm	$ØD_4$ mm	m_1 kg	m_2 kg
25	16	230	70	73	162	89	155	110	78	24	22	4	---	M10x1	210	52	35	11	5.5
32		260	77.5	73	162		170	125	88	26	22				260	49	44	13	7.0
40		260	85	73	162		180	135	102	26	22				251	52	50	16	8.5
50	20	300	90	104	193		180	135	102	26	22	8			286	73	62	21	13
65		340	102.5	104	193		205	160	122	26	22				311	73	77	26	16
80	40	380	107.5	139	245	106	215	170	138	28	22			M16x1.5	337	105	91	38	26
100		430	125	139	245	106	250	200	162	30	26				394	105	117	56	40
125		500	147.5	157	264	107	295	240	188	34	30				500	133	144	64	73
150		550	172.5	179	281	102	345	280	218	36	33				508	134	172	143	108
200	80	650	207.5	262	422	160	415	345	285	42	36	12	150	M20x1.5	610	203	223	272	222
250		775	235	346	506		470	400	345	46	36	12			752	253	278	485	400
300		900	265	395	555		530	460	410	52	36	16			819	296	329	665	550
400	100	1150	335	512	672		670	585	535	60	42	16			1108	382	413	1305	1100

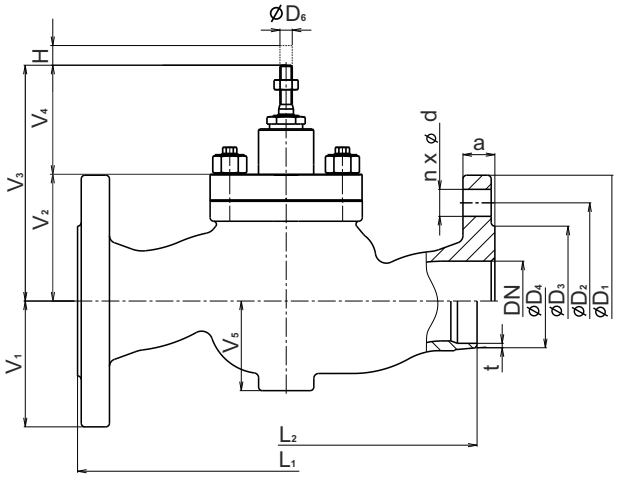
m_1 - weight of flanged connection
m_2 - weight of welded connection
t - wall thickness of weld ends: $t = [D_4 - (D - 2 * t_T)] / 2$

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

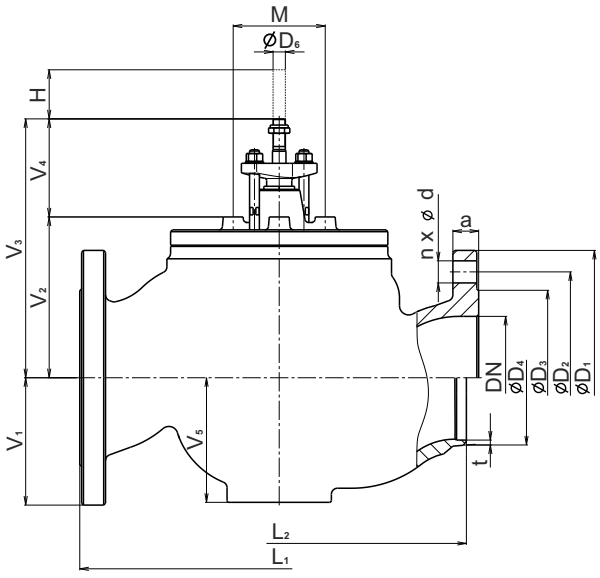
DN	$ØD_4$	ØD	t_T				$ØD_{4\,max}$	$Ød_{4\,min}$
25	35	33.7	2.3	2.6	3.2	3.6	39	23
32	44	42.4	2.6	2.9	3.6	4.0	48	28
40	50	48.3	2.6	2.9	3.6	4.0	54	37
50	62	60.3	2.9	3.2	4.0	4.5	66	48
65	77	76.1	2.9	3.2	3.6	5.0	82	62
80	91	88.9	3.2	3.6	4.0	5.6	96	74
100	117	114.3	3.6	4.0	5.0	6.3	122	98
125	144	139.7	4.5	5.0	6.3	7.1	154	118
150	172	168.3	4.5	5.0	7.1	8.0	177	144
200	223	219.1	6.3	8.0	8.8	10.0	235	193
250	278	273.0	7.1	8.0	10.0	14.2	278	229
300	329	323.9	8.0	10.0	12.5	17.5	329	281
400	413	406.4	11.0	12.5	14.2	20.0	426	345



(other version after agreement)



DN 25 -150



DN 200 - 400

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

			XX	XXX	XXX	XXXX	XX	XX	/	XXX	-	XXX	XXXX
1. Valve	Control valve		**RV**										
	Shut-off valve		**UV**										
2. Series	Valves made of steel			**3 2**									
	Valves made of stainless steel			**3 3**									
	Straight-throgh			**0**									
	Straight-throgh with pressure balanced plug			**2**									
3. Actuating	Electric actuator				**E X X**								
	Hand wheel				**R X X**								
4. Connecting	Raised flange	(type B1)				**1**							
	Femeale flange	(type F)				**2**							
	Flange with groove	(type D)				**3**							
	Plain flange	(type B2)				**4**							
	Weld ends					**5**							
5. Body material	Cast steel 1.0619	(-10 to 450 °C)				**1**							
	CrMo steel 1.7357	(-10 to 550 °C)				**7**							
	Stainless steel 1.4581	(-10 to 500 °C)				**8**							
	Other material on request												
6. Seat sealing	Metal - metal					**1**							
2) DN 25 - 150 ; t_{max} = 260°C	Soft sealing (metal - PTFE) [2]					**2**							
3) DN 80 - 400	Hard metal overlay on sealilng surfaces					**3**							
4) DN 40 - 400	Balanced by graphite, metal-metal [3]					**5**							
	Balanced by graphit, hard metal overlay [4]					**7**							
	Hard metal overlay on sealilng surfaces of RV 3x2, a plug with metal sealing cuff					**8**							
7. Packing	DRSpack® (PTFE)					**3**							
1) DN 15 to 150 only	Expanded graphite					**5**							
8. Flow characteristic	Linear						**L**						
	Equal-percentage						**R**						
	LDMspline®						**S**						
	On-off						**U**						
	Parabolic						**P**						
	Linear - perforated plug						**D**						
	Equal-percentage - perforated plug						**Q**						
	Parabolic - perforated plug						**Z**						
9. Kvs	Column No. acc. to Kvs value table							**X**					
10. Nominal pressure	PN 16 (weld ends only)							**16**					
	PN 25 (weld ends only)							**25**					
	PN 40 (weld ends only)							**40**					
	PN 63							**63**					
11. Max. operating temperature °C	DRSpack® (PTFE)									**260**			
	Expanded graphite									**300**			
	Expanded graphite									**315**			
	Expanded graphite									**400**			
	Expanded graphite									**500**			
	Expanded graphite									**550**			
12. Nominal size	DN											**XXX**	
13. Execution	Normal												**SP**
	Non - explosive												**SPEx**
	Oxygen												**SPOx**

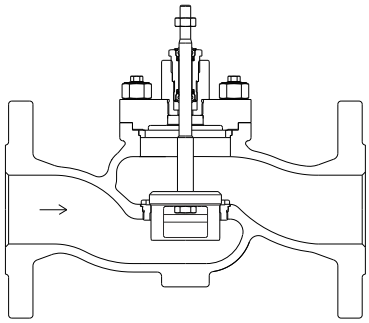
Ordering example of flanged execution:
Rv320 ENC 1135 L1 63/400-065SP

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

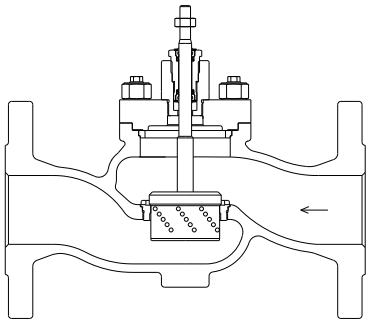
For marking of actuators in specification code, refer to table on page No. 22 of this catalogue

Ventily RV / UV 3x0 (Ex)

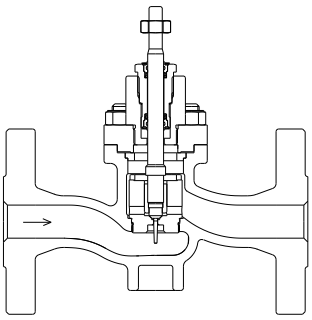
Section of valve with V-ported plug



Section of valve with perforated plug

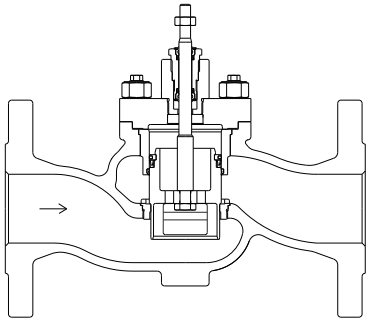


Section of valve with micro-throttling system

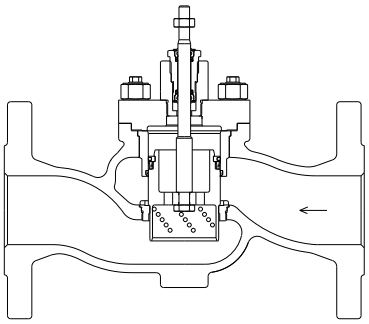


Valves RV 3x2 (Ex)

Section of pressure-balanced valve with V-ported plug



Section of pressure-balanced valve with perforated plug





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	3-phase ~ 380 or 400 V AC (1-phase ~ 230 V AC cannot be used - high weight)							
Frequency	50 Hz							
Power consumption	see specification table							
Control	3 - point 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 valve16, 20, 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 - one phase	25 - 62 kg				25 - 62 kg			
- three phase	20 - 33 kg				21 - 33 kg			
Vibration resistance dle 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	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 3xx 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 3xx 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

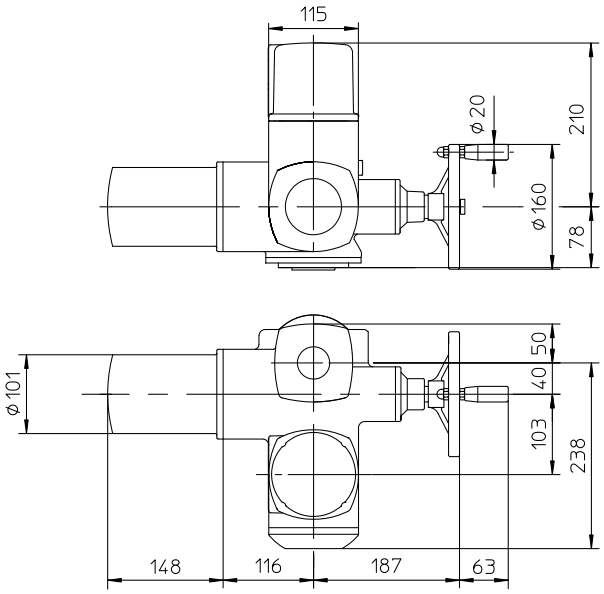
Accessories

→ 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

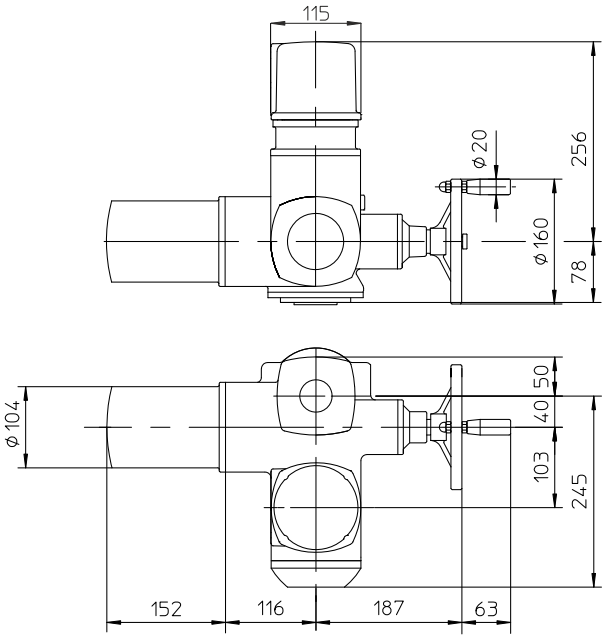
Other accessories acc. to catalogue of producer of actuators.

Dimensions of actuators Auma series 07.2 and 07.6

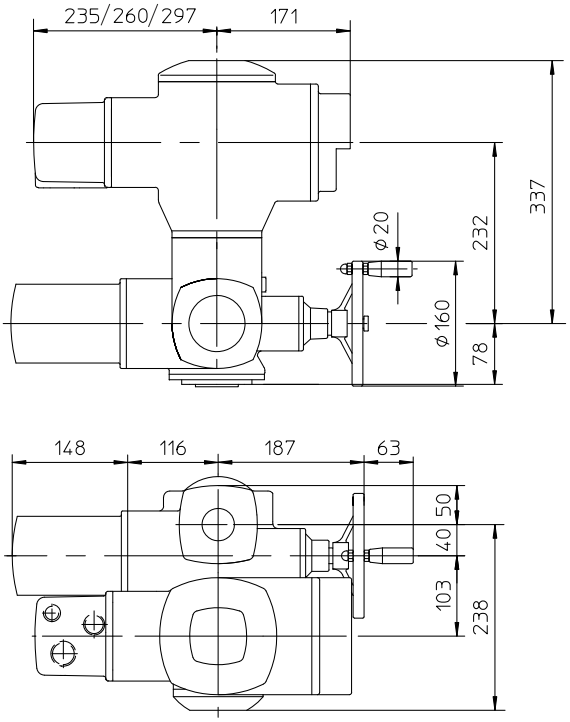
Normal version



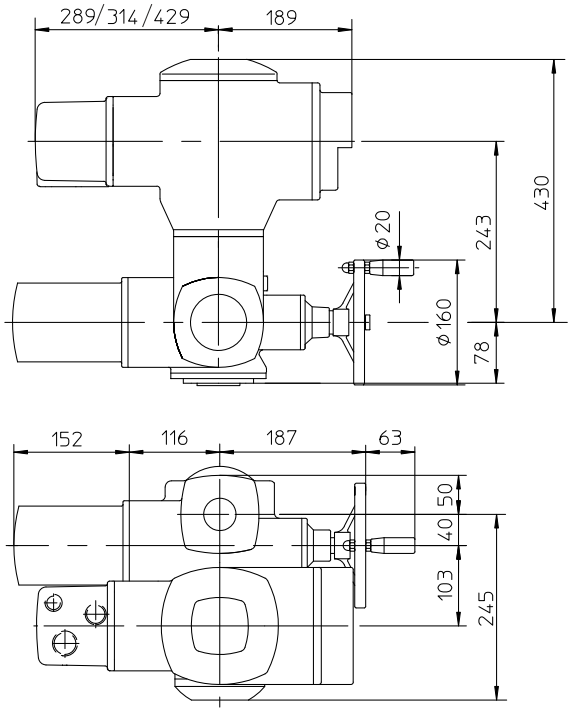
Version Ex norm



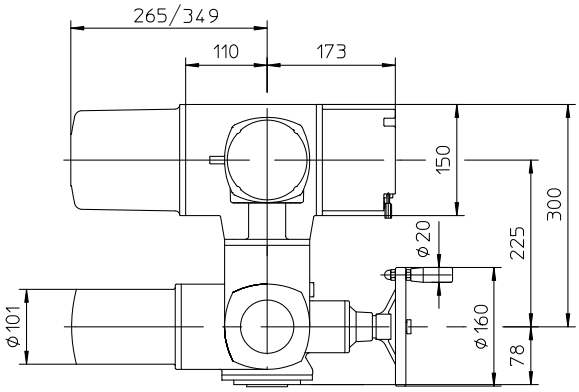
Version MATIC

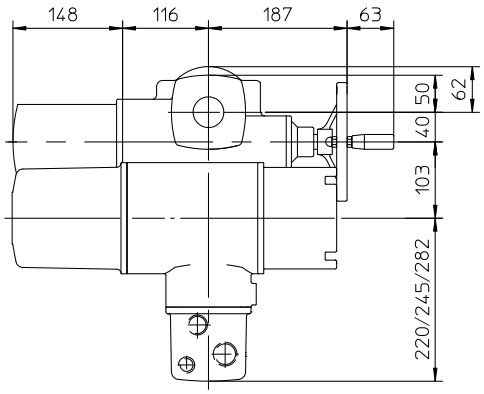


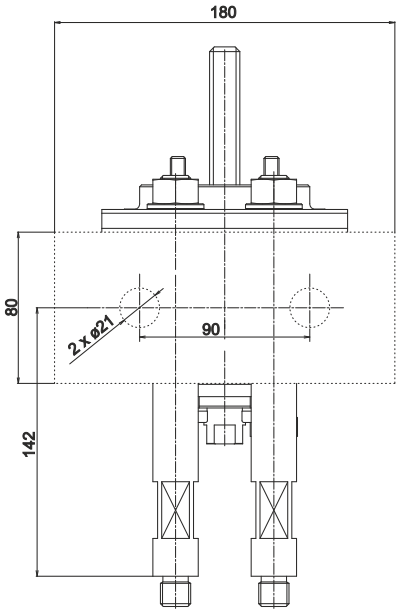
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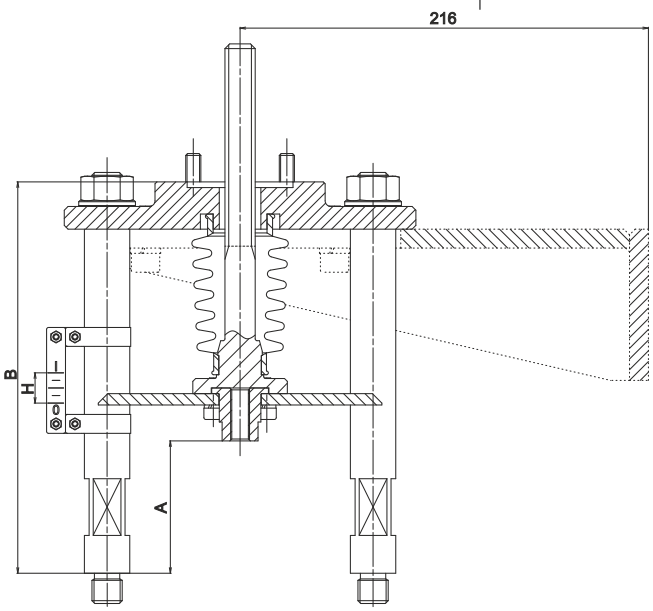


Version with AUMATIC

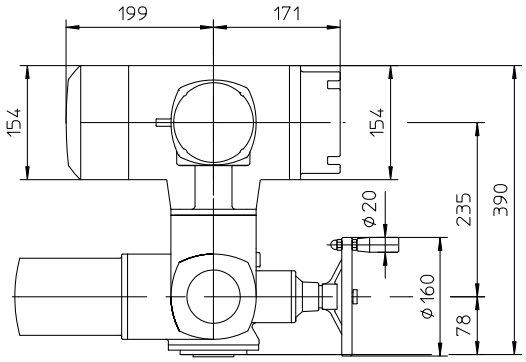


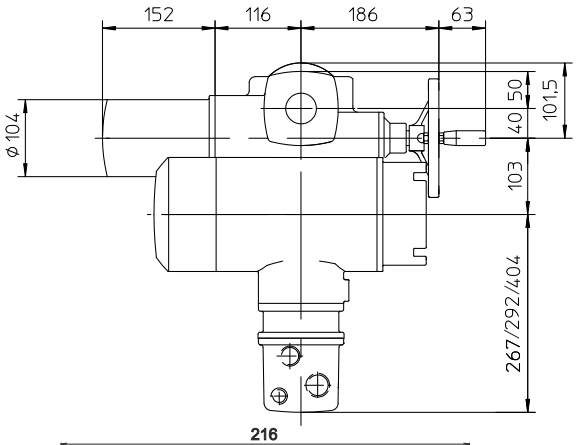






Version Ex AUMATIC

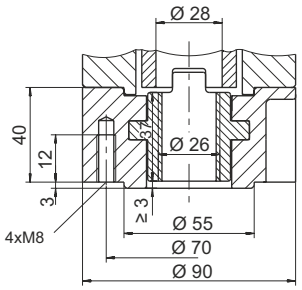




console required for DN15-32, all versions AUMA SAR 07.2 max. 33kg (Norm, Matic, Aumatic, Ex), with exception DN 20-25 AUMA SAR 07.2 Norm max. 24,3kg, DN 32 AUMA SAR 07.2 Norm, Matic, Aumatic max. 31kg (mimo Ex).

For valves	Number of columns	A	B	Weight
RV 3xx DN 15 to 65	4	70	207	~ 6 kg + ~ (6 kg console)
RV 3xx DN 80 to 150	4	80	245	~ 8 kg
RV 3xx DN 200 to 400	4	140	420	~ 15 kg

Output drive shaft A, F07





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 3xx DN 200 - 400

Output speed [ot/min]	Tripping torgue SA 10.2 SA Ex 10.2	Tripping torgue 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	40-120 Nm	60-120 Nm	0,06	0,09	0,09	0,09
5,6			0,06	0,09	0,09	0,09
8			0,12	0,18	0,18	0,18
11			0,12	0,18	0,18	0,18
16			0,25	0,37	0,37	0,37
22			0,25	0,37	0,37	0,37
32			0,40	0,75	0,75	0,75
45			0,40	0,75	0,75	0,75

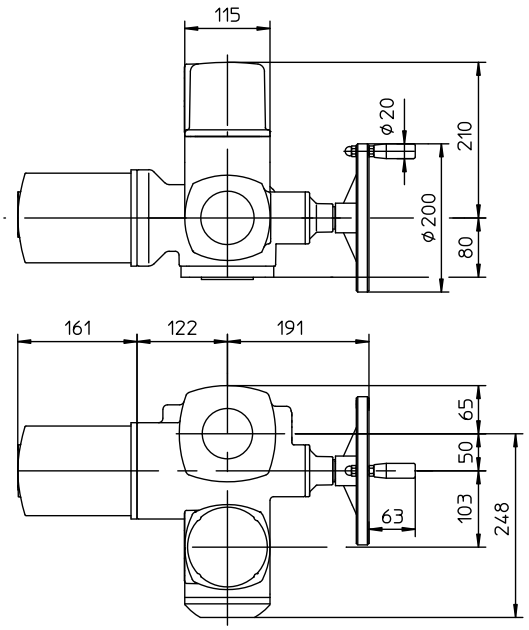
Accessories

- → 2 TANDEM switches
- → Gearing for signalisation of position
- → Mechanical position indicator
- → Potentiometer 1x200 Ω
- → Electronic position transmitter RWG (potentiometer included), 4 - 20 mA, 2-wire
- → Electronic position transmitter RWG (potentiometer included), 4 - 20 mA, 3/4-wire
- → Inductive position transmitter IWG, 4 - 20 mA
- → 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

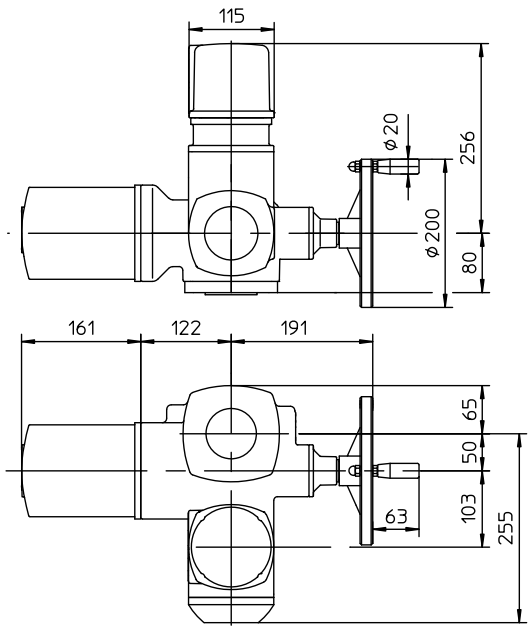
Other accessories acc. to catalogue of producer of actuators.

Dimensions of actuators Auma series 10

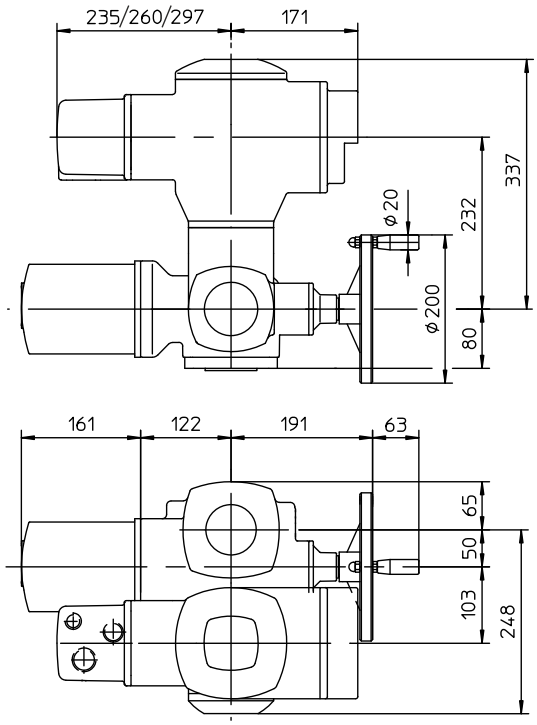
Normal version



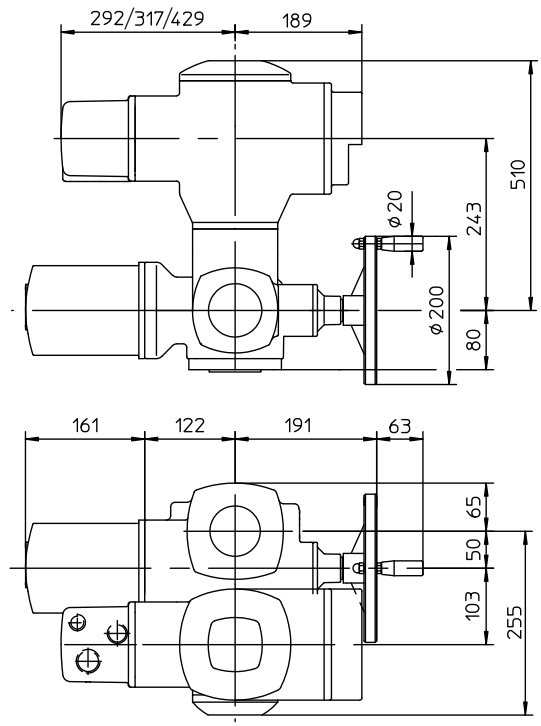
Ex norm version



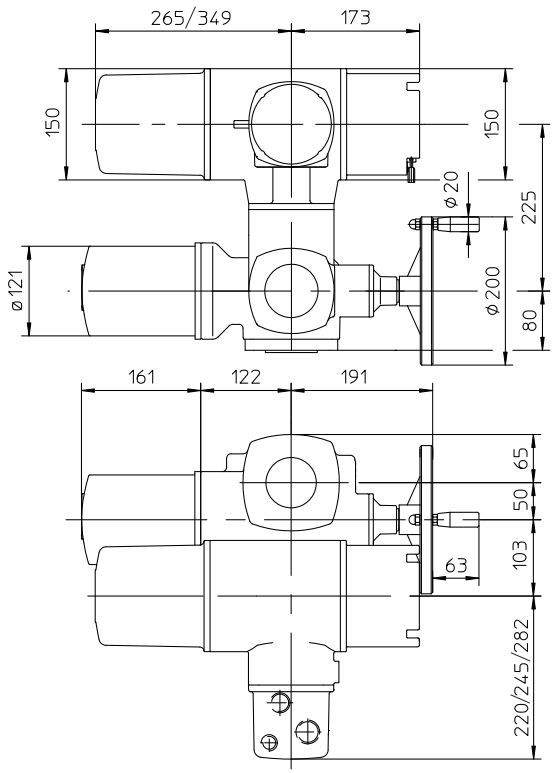
Version with MATIC



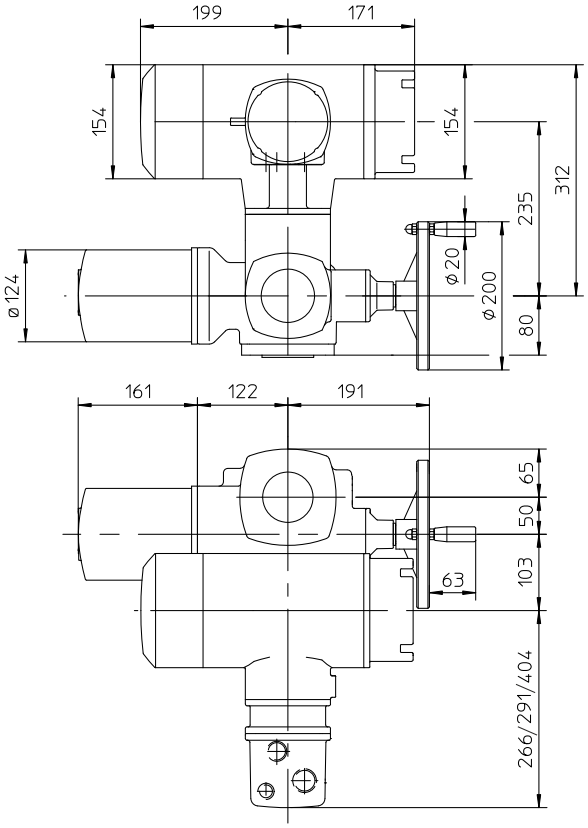
Version with Ex MATIC



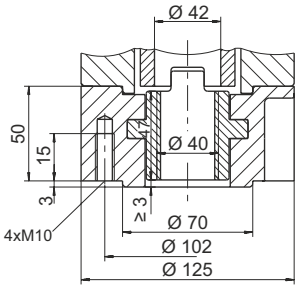
Version AUMATIC



Version Ex AUMATIC

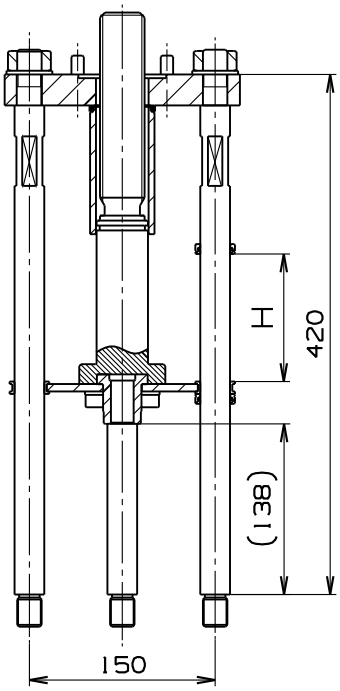


Output drive shaft A, F10

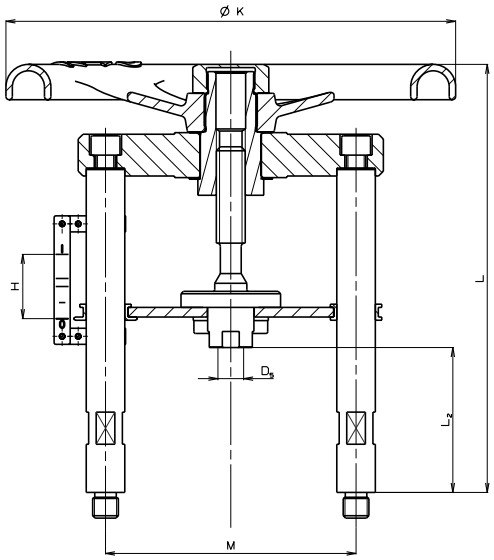


Control DN 200-400

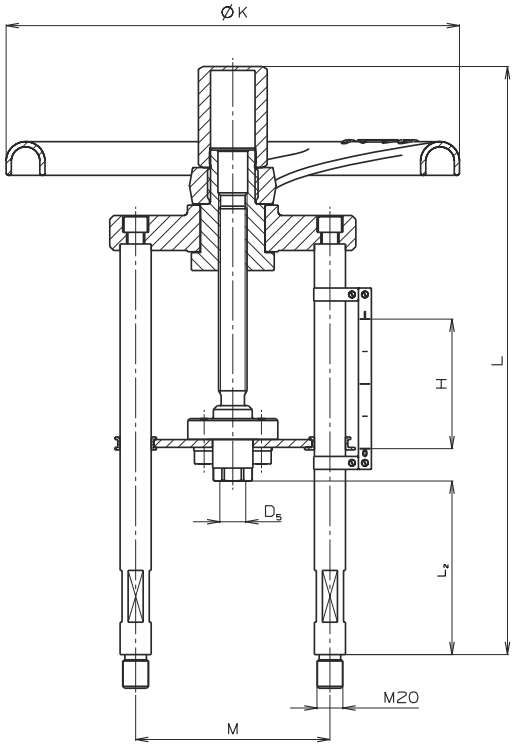
Connection A, F10, Tr36x6-LH



Hand wheels for RV / UV 3x0 SP and 3x2 SP



Hand wheel DN 15 - 150



Hand wheel DN 200 - 400

Dimensions of manual control

DN	Marking	H [mm]	L [mm]	L_2 [mm]	ØK [mm]	M [mm]	D_s [mm]	m [kg]	Ordering no. (BOM number)
15	R16	16	209	70	160	140	M10x1	7	S900 0256
20									
25									
32									
40									
50	R20	25	235		195			12	S900 0257
65									
80	R28	40	267	90	280	156	M16x1,5	14,5	S900 0258
100									
125	R35		323		350			15	S900 0259
150									
200		80	454	134		150	M20x1,5		S900 0141
250									
300									
400		100							S900 0235

Maximal permissible operating pressures ČSN EN 12516-1 (08/21015) [bar]

Material	PN	Temperature [°C]												
		RT [1]	100	150	200	250	300	350	375	400	425	450	475	500	550
Cast steel	**40**	40,0	37,4	35,5	33,6	30,7	27,8	25,9	25,0	24,0	20,8	14,7	---	---	---
1.0619 (GP240GH)	**63**	63,0	59,0	55,9	52,9	48,4	43,8	40,8	39,3	37,8	32,7	23,2	---	---	---
Alloy steel	**40**	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	11,7
1.7357 (G17CrMo5-5)	**63**	63,0	63,0	63,0	63,0	63,0	63,0	58,7	56,5	53,8	51,4	49,7	46,5	39,3	18,5
Stainless steel	**40**	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	---
1.4581 (GX5CrNiMoNb19-11-2)	**63**	63,0	63,0	60,9	56,4	53,8	51,2	48,5	47,2	45,9	45,0	44,1	43,2	41,5	---

[1] -10°C to 50°C

Marking of actuators in type no.

Electric actuator Auma SA 07.2	**EAA**	DN 15 - 65
Electric actuator Auma SA Ex 07.2	**EAB**	DN 15 - 65
Electric actuator Auma SAR 07.2	**EAC**	DN 15 - 65
Electric actuator Auma SAR Ex 07.2	**EAD**	DN 15 - 65
Electric actuator Auma SA 07.6	**EAE**	DN 80 - 150
Electric actuator Auma SA Ex 07.6	**EAF**	DN 80 - 150
Electric actuator Auma SAR 07.6	**EAG**	DN 80 - 150
Electric actuator Auma SAR Ex 07.6	**EAH**	DN 80 - 150
Electric actuator Auma SA 10.2	**EAI**	DN 200-400
Electric actuator Auma SAR 10.2	**EAJ**	DN 200-400
Electric actuator Auma SAR Ex 10.2	**EAK**	DN 200-400
Electric actuator Auma SA Ex 10.2	**EAL**	DN 200-400
Hand wheel for DN 15 - 40	**R16**	
Hand wheel for DN 50 - 65	**R20**	
Hand wheel for DN 80 - 100	**R28**	
hand wheel for DN 125 - 400	**R35**	

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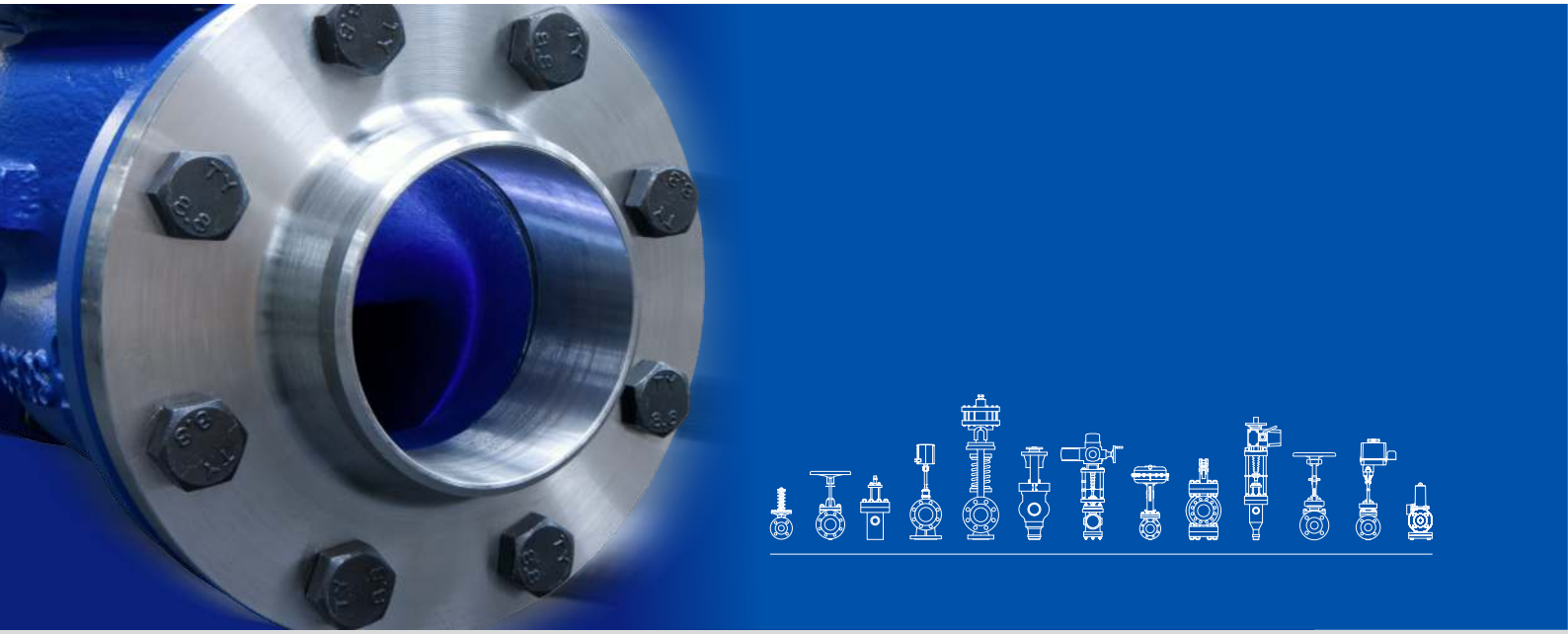
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