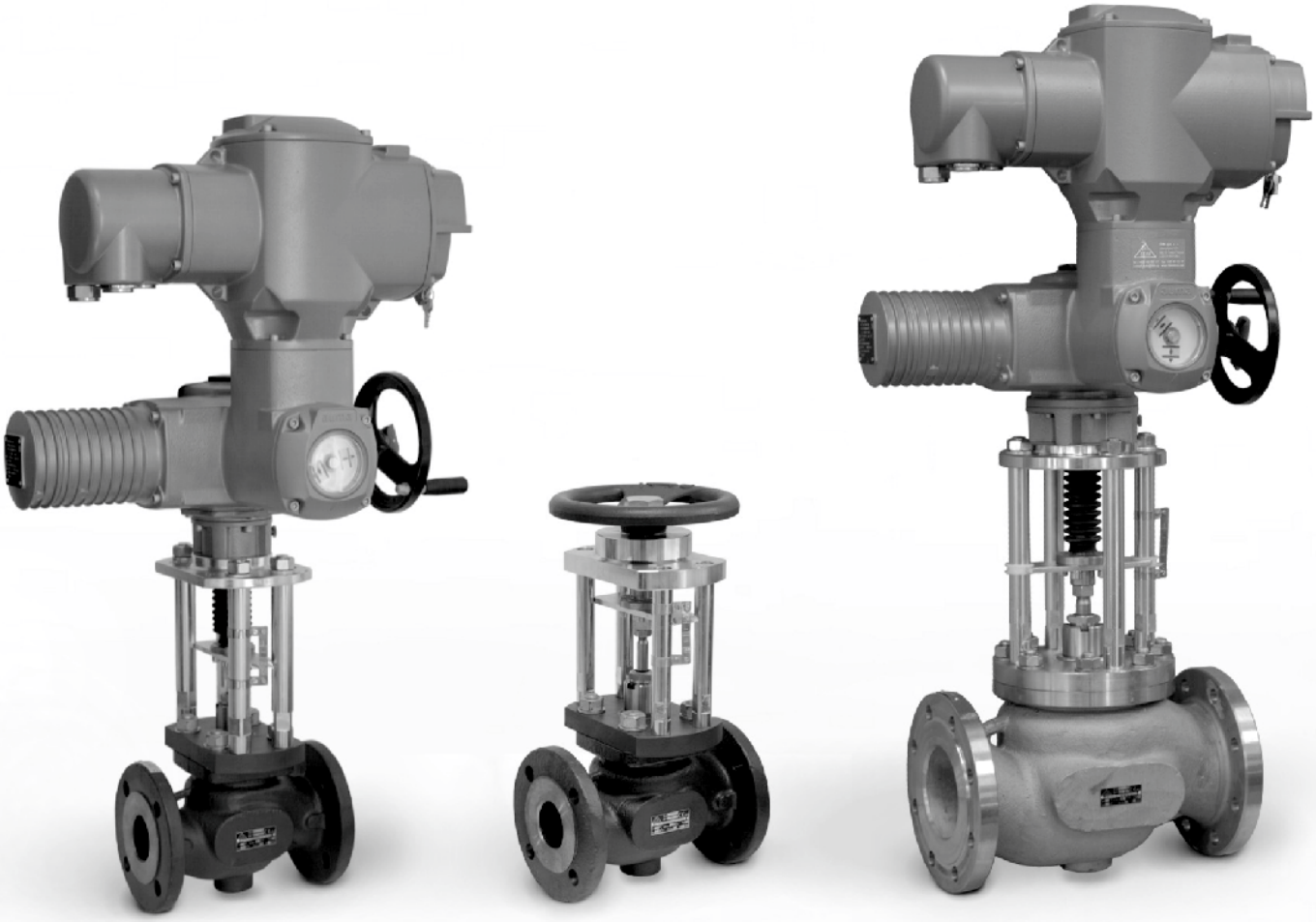
CERTIFIED
ISO 9001 · ISO 14001
ISO 45001

LDM®

01 - 02.2
04.20.GB

CONTROL AND SHUT-OFF VALVES IN SEISMIC VERSION

200 line



POWER THROUGH IDEAS
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200 line

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

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

RV 222 SP (Ex)
RV 232 SP (Ex)

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

Control valves **200 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 T6...T1 Ga/Gb acc. to ČSN EN ISO 80079-36 (9/2016) and 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 23 of this catalogue.

Control

hand wheel
electromechanical actuators **Auma**

Application

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

Process media

RV / UV 2xx SP - 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 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

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.

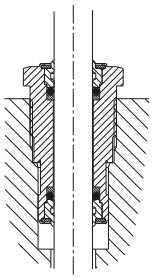
DRSpack® (PTFE)

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

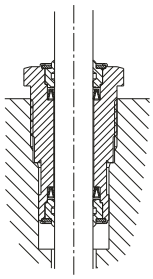
It is the most used type of packing suitable for temperatures ranging from 0 °C to 260 °C. The pH range is from 0 to 14. The packing enables using of actuators with low linear force. The design enables an easy change of the whole packing. The average service life of DRSpack® is more than 500 000 cycles.

Graphite

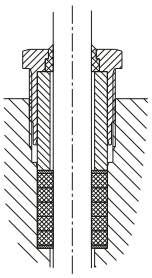
This type of packing can be used for media with temperature up to 550°C and pH range: 0 to 14. Packing can be "sealed up" either by screwing the packing screw in or adding another sealing ring. In regard of intensive frictional forces, graphite packing is suitable for actuators with a sufficient linear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



O-ring EPDM



DRSpack® (PTFE)



Graphite

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 SP

Control and Shut-off valves in seismic version

DN 15 to 400
PN 16, 25 and 40

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

Technical data

Series		RV / UV 220 SP (Ex)	RV / UV 230 SP (Ex)
Type of valve		**Two-way, single-seated, control (shut-off) valve**	
Nominal size range		DN 15 to 400	
Nominal pressure		PN 10, 16, 25, 40	
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	1.4581 / 42 2941.4
Plug material	DN 15 - 65	1.4021 / 17 027.6	1.4571 / 17 348.4
DIN W.Nr./ČSN	DN 80 - 150	1.4027 / 42 2906.5	1.4581 / 42 2941.4
	DN 200 - 400	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		-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 1092-1 (11/2018)	
Flange faces		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	
Seismic resistance		0 to 33 Hz, 30 $m.s^2$	

Kvs values and differential pressures Δp_{max} [MPa] of valves DN 15 - 150

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)**									**Auma**		**Hand wheel**	
		Marking in valve specification No.									**EA...**		**Rxx**	
		Linear force									5 kN			
		Kvs [m³/h]									**Δp_{max}** [MPa]		**Δp_{max}** [MPa]	
DN	**H**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	met	PTFE	met	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
15		4.0 [1]	---	---	---	---	---	---	---	---	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
20		---	4.0 [1]	---	---	---	---	---	---	---	4.00	---	4.00	4.00
20		6.3 [1]	---	---	---	---	---	---	---	---	4.00	---	4.00	4.00
25		---	---	---	2.5 [1]	1.6 [1]	---	---	---	---	4.00	---	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	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	---	---	---	---	---	---	2.90	3.15	4.00	4.00
50	**25**	40.0	25.0	16.0	---	---	---	---	---	---	1.69	1.88	3.80	4.00
65		63.0	40.0	25.0	---	---	---	---	---	---	1.00	1.15	2.30	2.45
80	**40**	100.0	63.0	40.0	---	---	---	---	---	---	---	---	2.54	2.66
100		160.0	100.0	63.0	---	---	---	---	---	---	---	---	1.62	1.72
125		250.0	160.0	100.0	---	---	---	---	---	---	---	---	1.03	1.12
150		360.0	250.0	160.0	---	---	---	---	---	---	---	---	0.71	0.78

For further information on actuating, see actuators' catalogue sheets		**Actuating (actuator)**							**Auma**		**Auma**		**Auma**	
		Marking in valve specification No.							**EA...**		**EA...**		**EA...**	
		Linear force							7,5 kN		10 kN		15 kN	
		Kvs [m³/h]							**Δp_{max}** [MPa]		**Δp_{max}** [MPa]		**Δp_{max}** [MPa]	
DN	**H**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	met	PTFE	met	PTFE	met	PTFE
50	**25**	40.0	25.0	16.0	---	---	---	---	2.76	2.95	3.82	4.00	---	---
65		63.0	40.0	25.0	---	---	---	---	1.65	1.80	2.30	2.45	---	---
80	**40**	100.0	63.0	40.0	---	---	---	---	1.01	1.13	1.46	1.58	2.36	2.48
100		160.0	100.0	63.0	---	---	---	---	0.63	0.73	0.92	1.02	1.50	1.61
125		250.0	160.0	100.0	---	---	---	---	0.39	0.47	0.58	0.66	0.96	1.04
150		360.0	250.0	160.0	---	---	---	---	0.26	0.33	0.39	0.46	0.66	0.73

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 ≧ 0.4
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 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		Auma		Auma		Hand wheel	
			Marking in valve specification No.					EA...		EA...		EA...		Rxx	
			Linear force					15 kN		20 kN		32 kN			
			Kvs [m³/h]					packing		packing		packing		packing	
DN	Ds	H	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite	PTFE
200	100	80	---	---	250	160	100	1.12	1.46	1.71	2.05	3.14	3.47	2.31	2.64
	150		---	400	---	---	---	0.48	0.63	0.75	0.90	1.39	1.54	1.01	1.17
	200		570	---	---	---	---	0.26	0.34	0.41	0.50	0.77	0.86	0.56	0.65
250	150	80	---	---	400	250	160	0.41	0.59	0.68	0.86	1.33	1.50	0.95	1.13
	200		---	630	---	---	---	0.22	0.32	0.37	0.47	0.74	0.84	0.52	0.62
	230		800	---	---	---	---	0.16	0.23	0.27	0.35	0.55	0.63	0.39	0.46
300	200	80	---	---	630	---	---	0.22	0.32	0.37	0.47	1.74	0.84	0.52	0.62
	230		---	800	---	---	---	0.16	0.23	0.27	0.35	0.55	0.63	0.39	0.46
	250		1000	---	---	---	---	0.13	0.19	0.23	0.29	0.46	0.53	0.33	0.39
400	200	100	---	---	630	---	---	0.22	0.32	0.37	0.47	0.74	0.84	0.52	0.62
	250		---	1000	---	---	---	0.13	0.19	0.23	0.29	0.46	0.53	0.33	0.39
	330		1600	---	---	---	---	0.07	0.10	0.12	0.16	0.26	0.30	0.18	0.22

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.

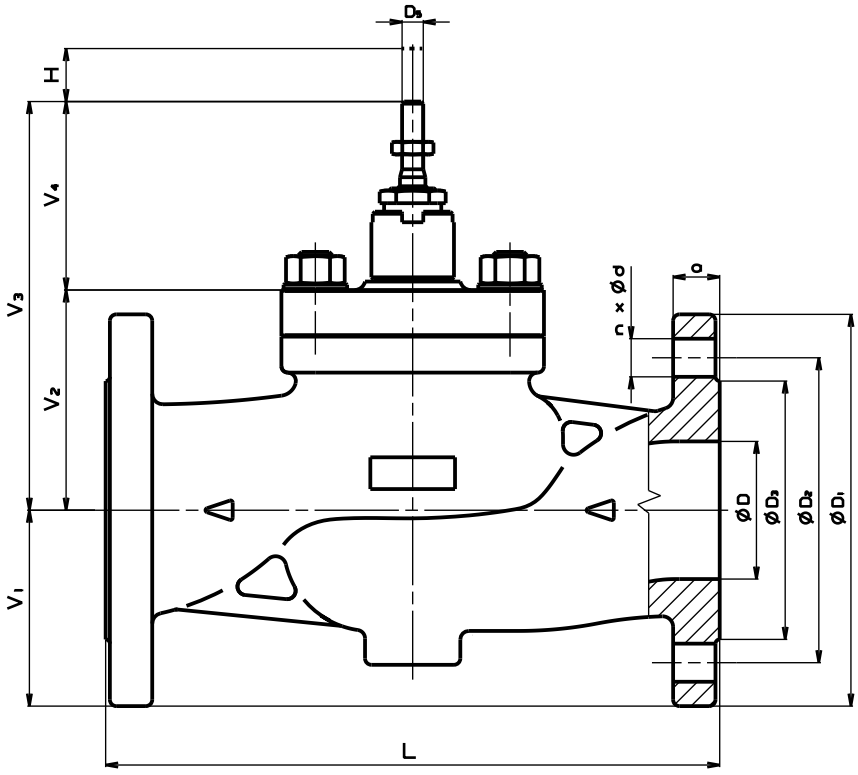
Max. differential pressure Δp for valves PN 16 (PN 25) must be 1,6 MPa (2,5 MPa).

			Actuating (actuator)					Auma		Auma		Auma		Hand wheel
			Marking in valve specification No.					EA...		EA...		EA...		Rxx
			Linear force					15 kN		20 kN		32 kN		
			Kvs [m³/h]					packing		packing		packing		packing
DN	Ds	H	1	2	3	4	5	graphite	PTFE	graphite	PTFE	graphite	PTFE	graphite PTFE
200	200	80	---	400	250	160	100	0.26	0.34	0.41	0.50	0.77	0.86	1.00
250	230	80	---	630	400	250	160	0.16	0.23	0.27	0.35	0.55	0.63	0.75
300	250	80	---	800	630	400	250	0.13	0.19	0.23	0.29	0.46	0.53	0.60
400	330	100	---	1000	630	400	250	0.07	0.10	0.12	0.16	0.26	0.30	0.35

Dimensions and weights of valves made of cast steel and steinless steel RV / UV 220 SP (Ex), RV / UV 230 SP (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_3 mm	V_4 mm	a mm	H mm	m kg
15	95	65	45	14	4	95	65	45	14	4	15	65	M10x1	130	51	63	152	89	16	16	5.5
20	105	75	58			105	75	58			20			150	54	63	152		18		6.5
25	115	85	68			115	85	68			25			160	58	73	162		18		8
32	140	100	78	18		140	100	78	18		32			180	70	73	162		18		9.5
40	150	110	88			150	110	88			40			200	75	73	162		18		11
50	165	125	102			165	125	102			50			230	85	104	193		20	25	21
65	185	145	122		4 [1)]	185	145	122		8	65			290	93	104	193		22		27
80	200	160	138		8	200	160	138	22		80		M16x1,5	310	105	138	245	107	24	40	40
100	220	180	158			235	190	162			100			350	118	138	245		24		49
125	250	210	188			270	220	188	26		125			400	135	157	264		26		82
150	285	240	212	22		300	250	218			150			480	150	174	281		28		100

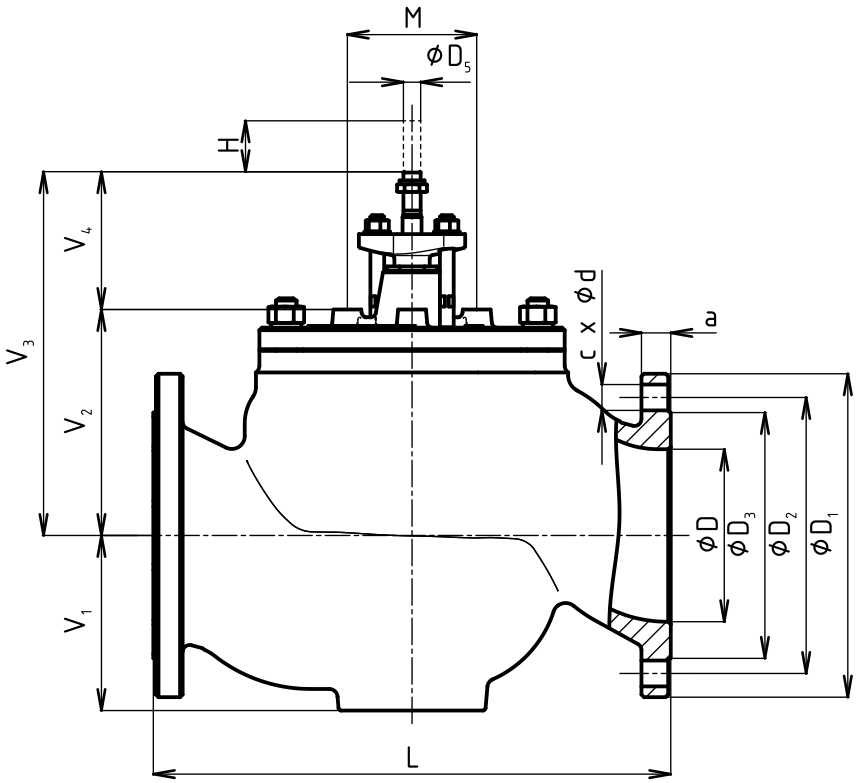
[1)] with regard of the standard previously in force, there is an option to have the number of connection bolts as stipulated in ČSN-EN 1092-1



Dimensions and weights of valves made of spheroidal cast iron for the type RV / UV 2x0 SP (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 SP

Control valves, pressure-balanced, in seismic version

DN 25 - 600
PN 16, 25 and 40

Control valves **RV 212 SP (Ex), RV 222 SP (Ex)** and **RV 232 SP (Ex)**, further only **RV 2x2 SP (Ex)** are single-seated valves with pressure-balanced plug designed for regulation of process liquids flow. This design of the valves allows control at high pressure drops, even at low forces of the used actuators.

Technical data

Series		RV 222 SP (Ex)	RV 232 SP (Ex)
Type of valve		**Two-way, single-seated, control valve with pressure-balanced plug**	
Nominal size range		DN 25 to 600	
Nominal pressure		PN 10, 16, 25, 40	
Body material		Cast steel 1.0619 (GP240GH) 1.7357 (G17CrMo5-5)	Stainless steel 1.4581 (GX5CrNiMoNb19-11-2)
Seat material	DN 25 - 50	1.4028 / 17 023.6	1.4571 / 17 347.4
DIN W.Nr./ČSN	DN 65 - 400	1.4027 / 42 2906.5	1.4581 / 42 2941.4
Plug material	DN 25 - 65	1.4021 / 17 027.6	1.4571 / 17 347.4
DIN W.Nr./ČSN	DN 80 - 150	1.4027 / 42 2906.5	1.4581 / 42 2941.4
	DN 200 - 600	1.4021 / 17 022.6	1.4581 / 42 2941.4
Stem material	DN 25 - 150	1.4305	1.4571
	DN 200 - 600	1.4923	1.4980
Operating temperature range		-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 1092-1 (11/2018)	
Flange faces		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 t_{max} = 500 °C	
Seismic resistance		0 to 33 Hz, 30 $m.s^2$	

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

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)	Auma	Hand wheel
	Marking in valve specification No.	EA...	Rxx
	Linear force	5 kN	

		Kvs [m³/h]					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
32		16.0	10.0	6.3 [1]	4.0 [1]	2.5 [1]	---	4.00
40		25.0	16.0	10.0	6.3 [1]	4.0 [1]	---	4.00
50	25	40.0	25.0	16.0	10.0	6.3 [1]	4.00	4.00
65		63.0	40.0	25.0	16.0	10.0	4.00	4.00
80	40	100.0	63.0	40.0	25.0	16.0	4.00	4.00
100		160.0	100.0	63.0	40.0	25.0	4.00	4.00
125		250.0	160.0	100.0	63.0	40.0	4.00	4.00
150		360.0	250.0	160.0	100.0	63.0	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 Δp for valves PN 16 must be 1.6 MPa.

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

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	Actuating (actuator)	Auma	Auma	Auma	Hand wheel
	Marking in valve specification No.	EA...	EA...	EA...	Rxx
	Linear force				

			Kvs [m³/h]					packing	packing	packing	packing
DN	Ds	H	1	2	3	4	5	graphite PTFE	graphite PTFE	graphite PTFE	graphite PTFE
200	200	80	570	400	250	160	100	4.00	---	---	4.00
250	230	80	800	630	400	250	160	---	4.00	---	4.00
300	250	80	1000	800	630	400	250	---	4.00	---	4.00
400	330	100	1600	1000	630	400	250	---	4.00	---	4.00
500	420	100	2800	2000	1600	1000	630	---	---	4.00	---
600	500	120	4000	2500	1600	1000	630	---	---	4.00	---

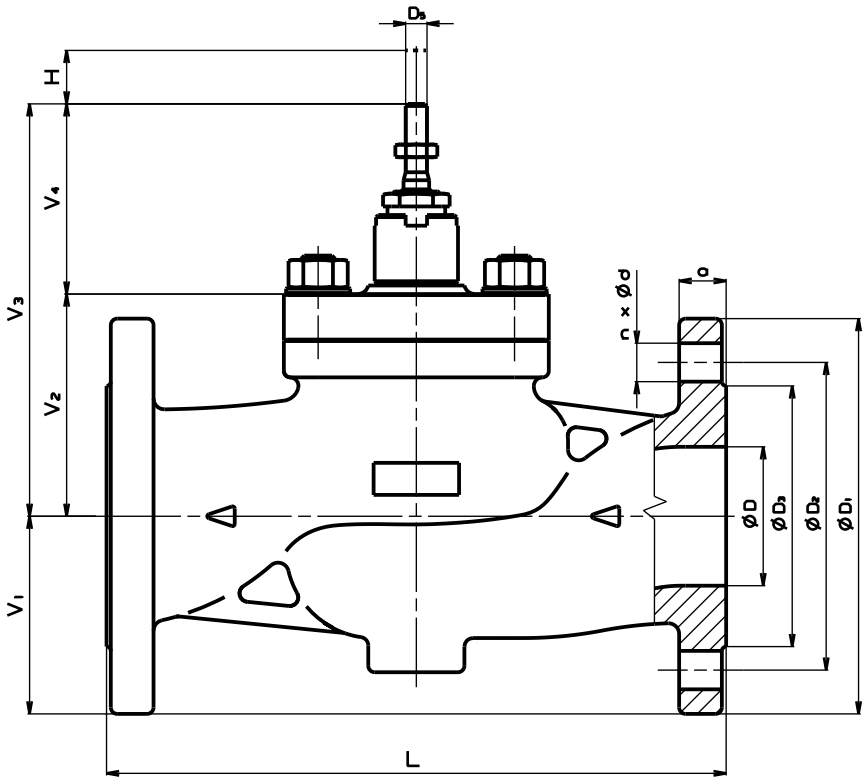
It is not possible to delivery perforated plugs for Kvs acc. to the column No.1, for Kvs acc. to the column No.2 it is possible only with linear or parabolic characteristic. For another columns without limitation.

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).

Dimensions and weights of valves made of cast steel and stainless steel for the type RV 222 SP (Ex), RV 232 SP (Ex) DN 25 - 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_3 mm	V_4 mm	a mm	H mm	m kg
25	115	85	68	18	4	115	85	68	18	4	25	65	M10x1	160	51	73	162	89	18	16	8.5
32	140	100	78			140	100	78			32			180	54	73	162		18		10
40	150	110	88			150	110	88			40			200	58	73	162		18		10
50	165	125	102			165	125	102			50			230	70	104	193		20	25	21
65	185	145	122		4[1)]	185	145	122		8	65			290	75	104	193		22		27
80	200	160	138		8	200	160	138			80		M16x1,5	310	85	138	245	107	24	40	42
100	220	180	158			235	190	162	22		100			350	93	138	245		24		50
125	250	210	188			270	220	188	26		125			400	105	157	264		26		84
150	285	240	212	22		300	250	218			150			480	118	174	281		28		103

[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

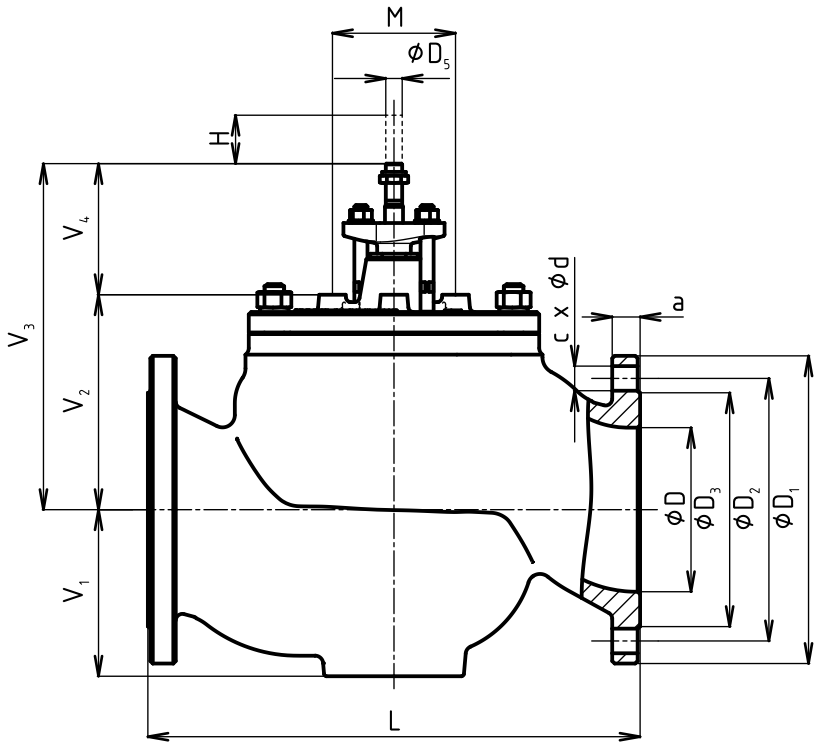


Dimensions and weights of valves made of cast steel and stainless steel for the type RV 222 SP (Ex), RV 232 SP (Ex), DN 200 - 600

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	400	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] DN 200 with graphite balancing - stroke = 63 mm



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

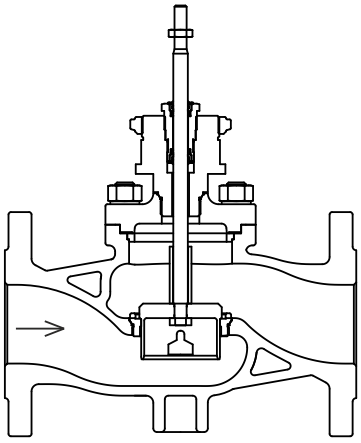
			XX	XXX	XXX	XXXX	XX	-	XX	/	XXX	-	XXX	XXXX
1. Valve	Control valve		**RV**											
	Shut-off valve		**UV**											
2. Series	Valves made of cast steel 1.0619, 1.7357			**22**										
	Valves made of stainless steel 1.4581			**23**										
	Direct valve			**0**										
	Pressure -balanced valve			**2**										
3. Actuating	Electric actuator				**EXX**									
	Hand wheel				**RXX**									
4. Connection	Raised flange					**1**								
	Female flange					**2**								
	Flange with groove					**3**								
5. Body material *(Operating temp. ranges are specified in parentheses)*	Sphr. cast iron EN-JS 1025	(-10 to 400 °C)				**1**								
	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 [1] *DN 25 to 150; t_{max} = 260 °C*	Metal - metal					**1**								
	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 [3] *Not appl. to Ex version*	O - ring EPDM [3]					**1**								
	DRSpack® (PTFE)					**3**								
	Exp. graphite					**5**								
8. Flow characteristic [4] *Only for UV 2x0*	Linear						**L**							
	Equal-percentage in straight way						**R**							
	LDMspline®						**S**							
	On-off [4]						**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 [7] *DN 200 - 600*	PN 10 [7]								**10**					
	PN 16								**16**					
	PN 25 [7]								**25**					
	PN 40								**40**					
11. Max. operating temp.	Acc. to version 140 - 500°C										**XXX**			
12. Nominal size DN	DN												**XXX**	
13. Version	Seismically resistant													**SP**
	Non - explosive, seismically resistant													**SPEx**
	Oxygen, seismically resistant													**SPOx**

Ordering example: **RV220 EAC 1113 L1 40/220-065SP**

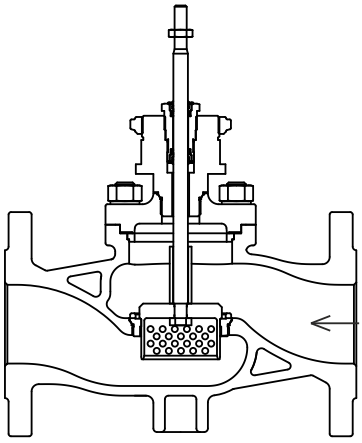
For marking of actuators in specification code, refer to table on page 23 of this catalogue

Valves RV / UV 2x0 SP (Ex)

Section of valve
with V-ported plug

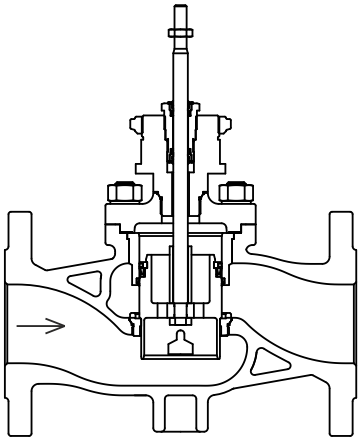


Section of valve
with perforated plug

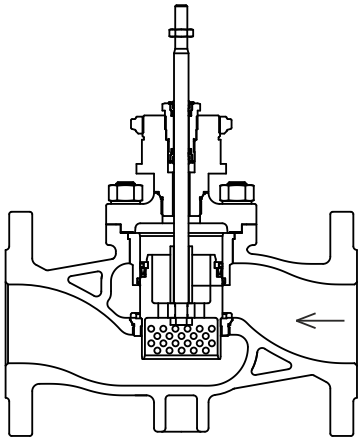


Valves RV 2x2 SP (Ex)

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	20 - 33 kg				21 - 33kg			
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 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

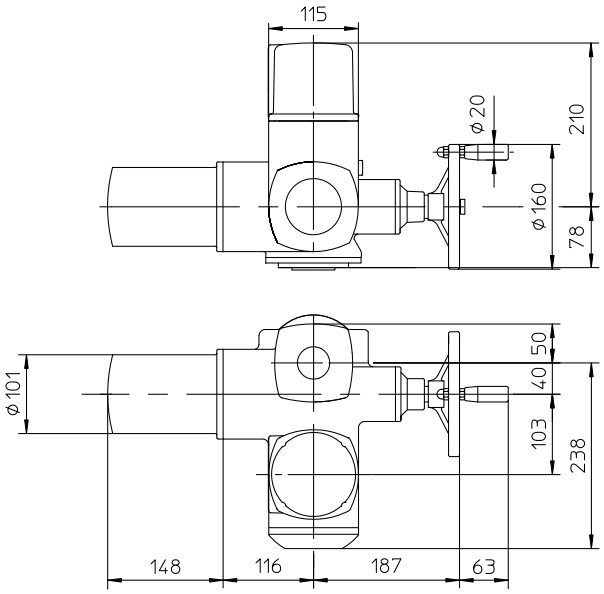
Accessories

→ 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

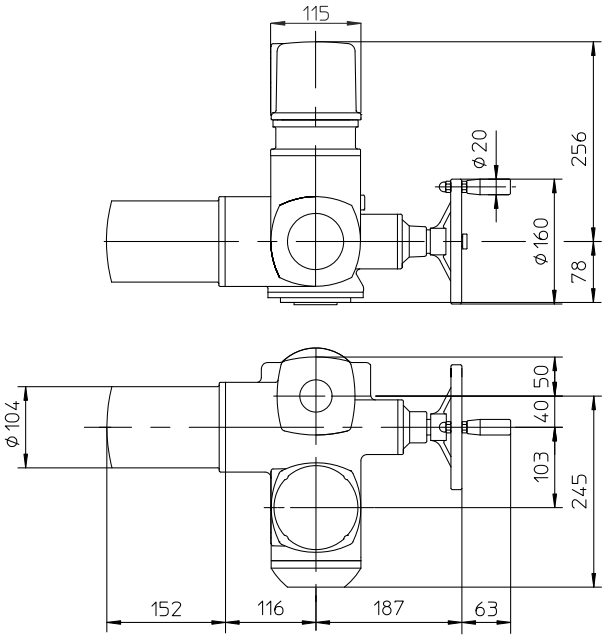
Other accessories acc. to catalogue of producer of actuators.

Dimensions of actuators Auma series 07.2 and 07.6

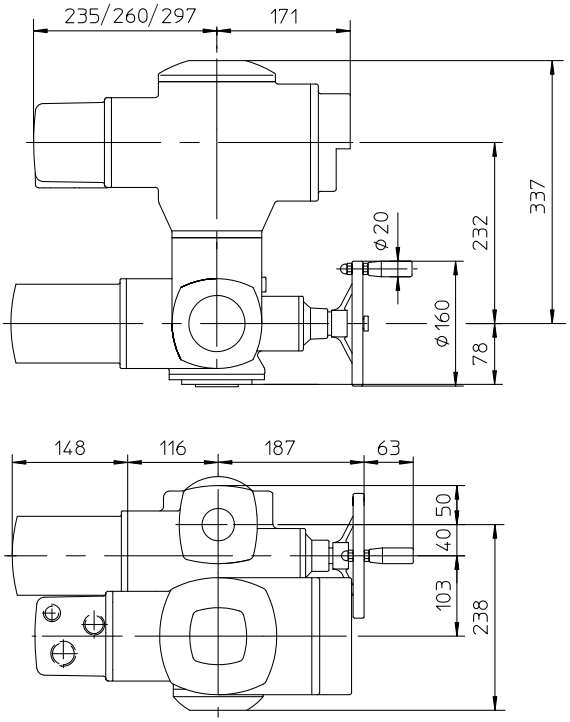
Normal version



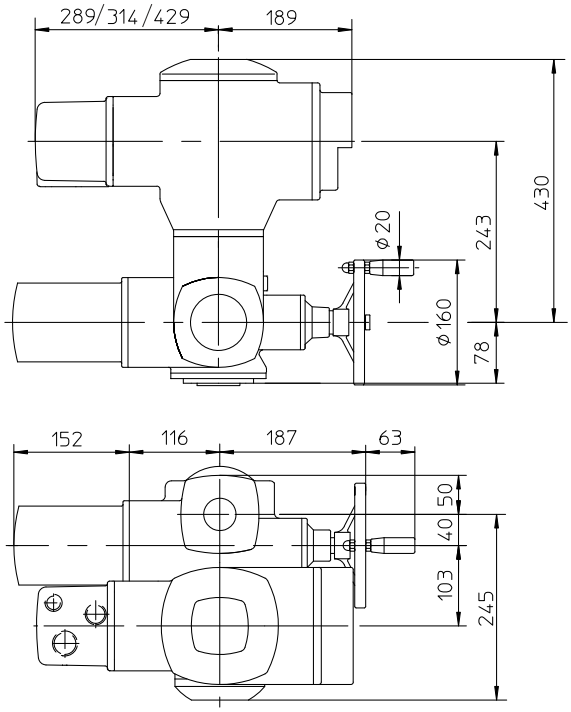
Version Ex norm



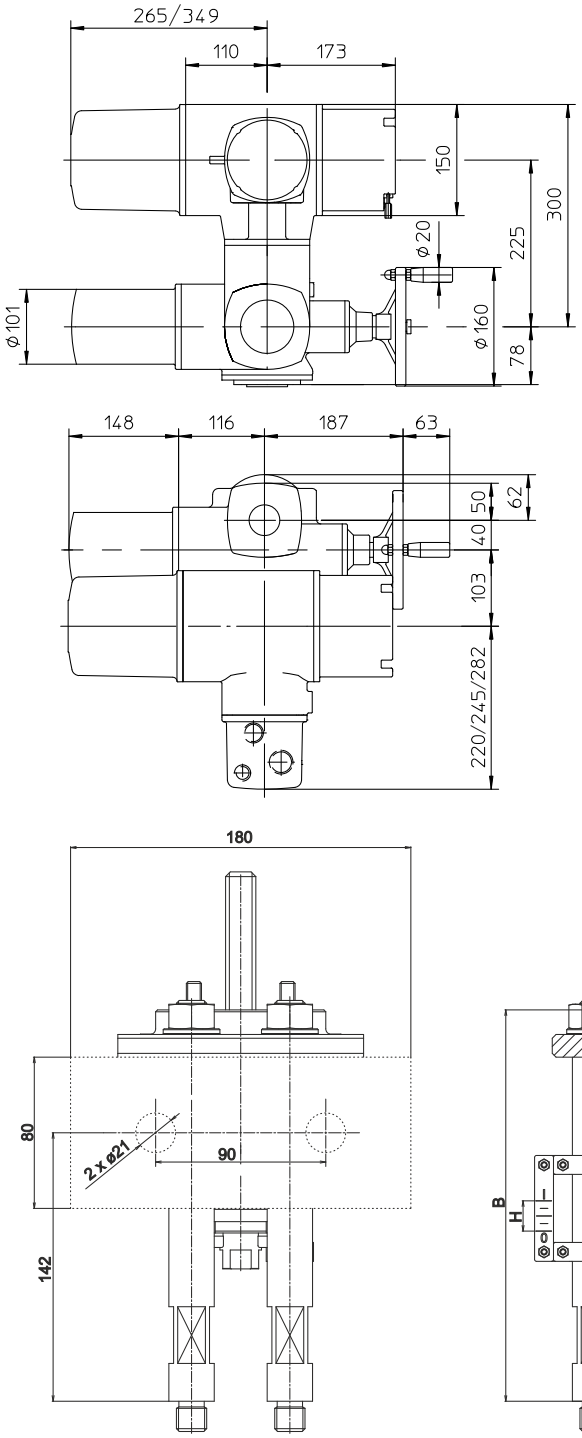
Version MATIC



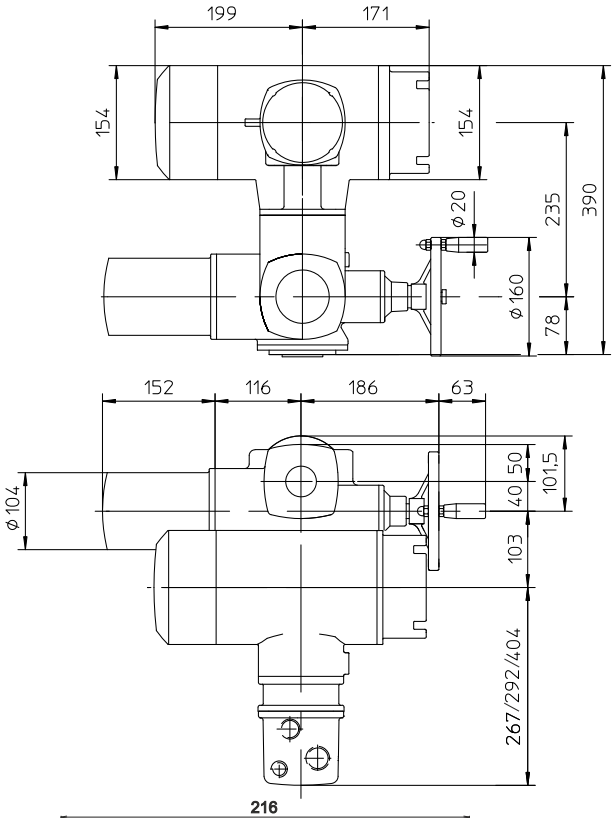
Version Ex MATIC



Version with AUMATIC



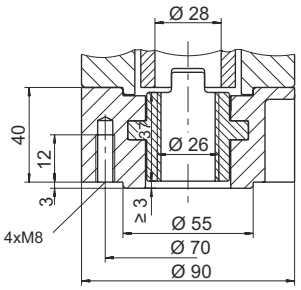
Version Ex AUMATIC



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 2xx DN 15 to 65	4	70	207	~ 6 kg + ~ (6 kg console)
RV 2xx DN 80 to 150	4	80	245	~ 8 kg
RV 2xx 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 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

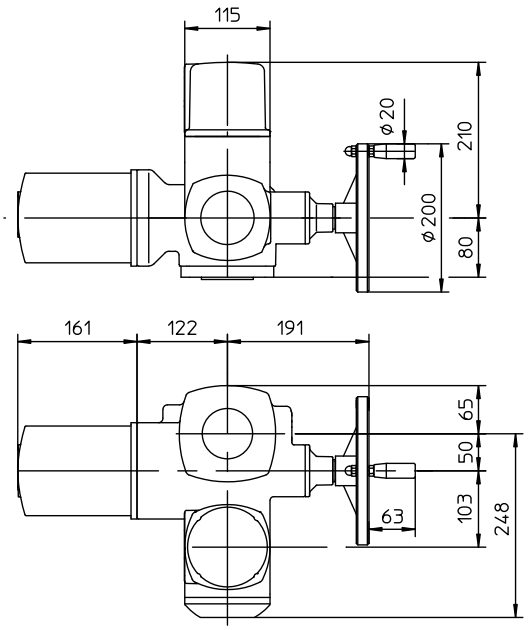
Accessories

- → 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

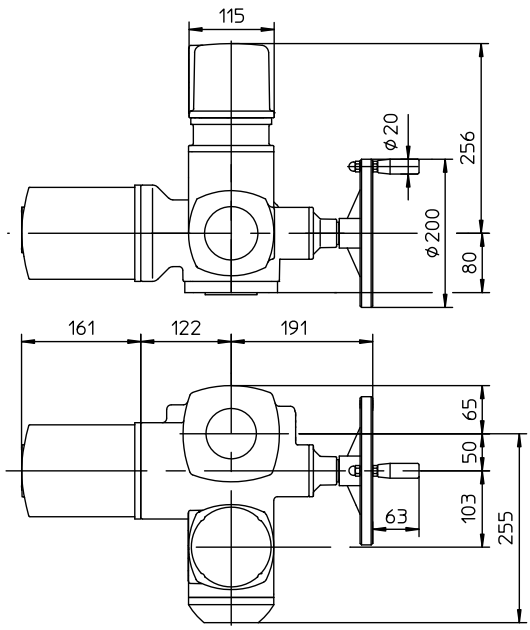
Other accessories acc. to catalogue of producer of actuators.

Dimensions of actuators Auma series 10

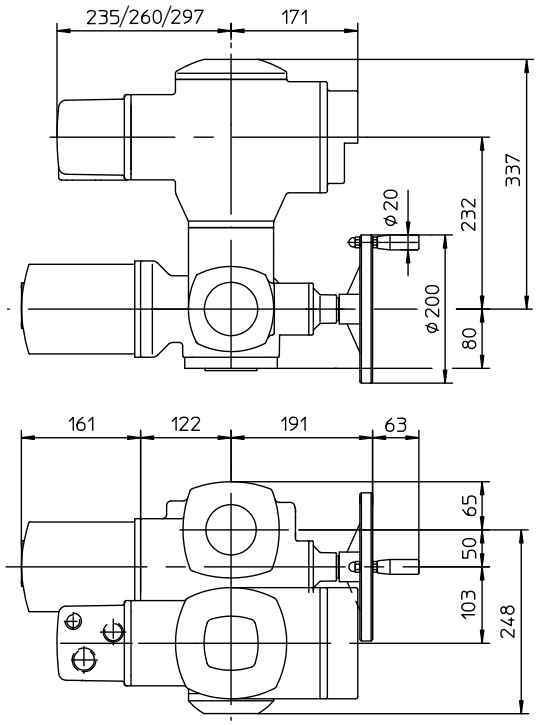
Normal version



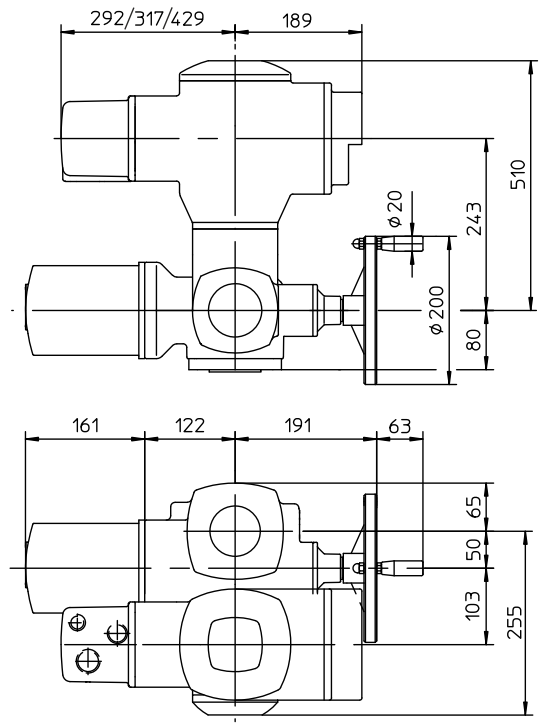
Ex norm version



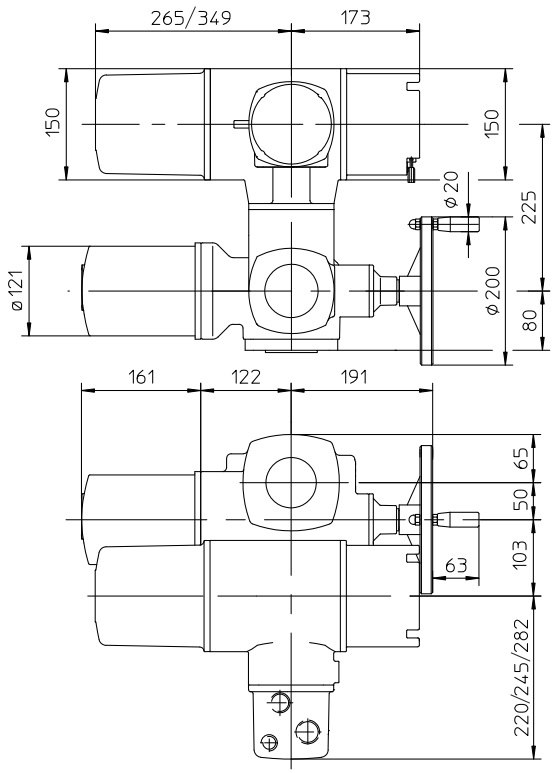
Version with MATIC



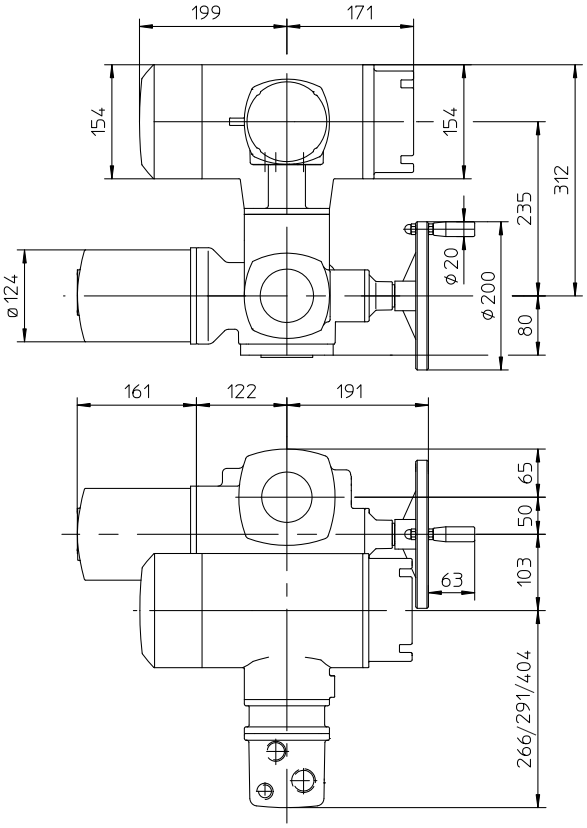
Version with Ex MATIC



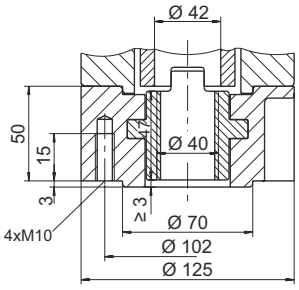
Version AUMATIC



Version Ex AUMATIC

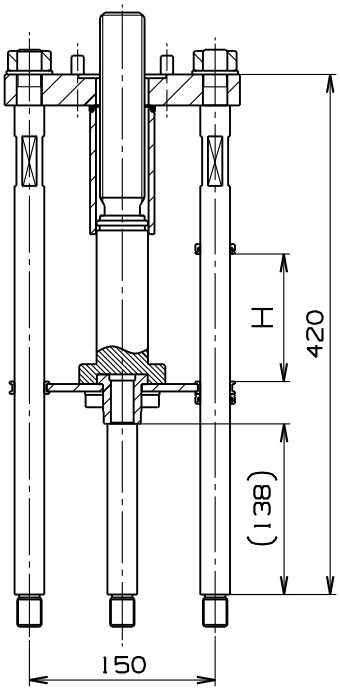


Output drive shaft A, F10



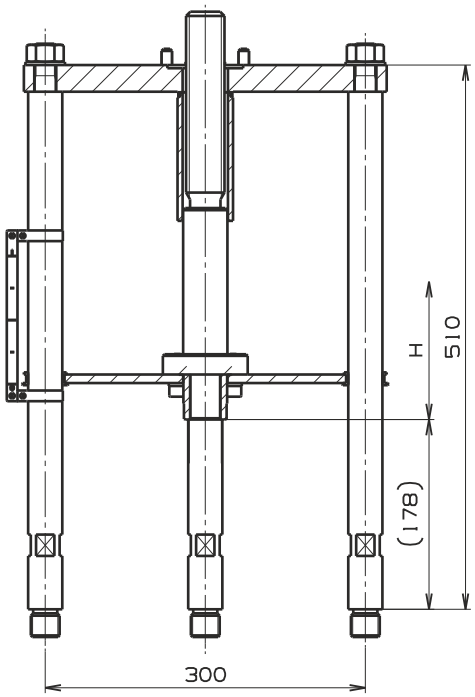
Control DN 200-400

Connection A, F10, Tr36x6-LH

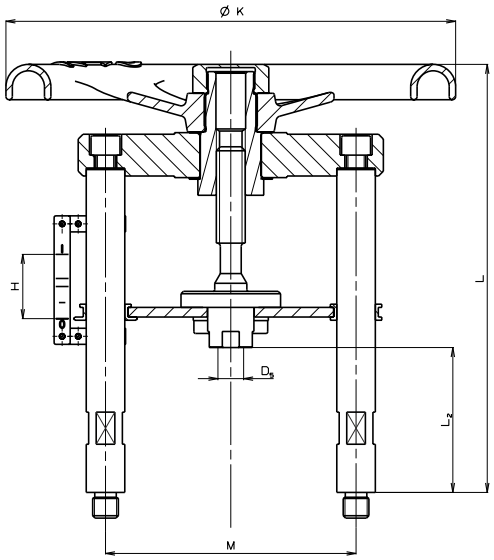


Control DN 600

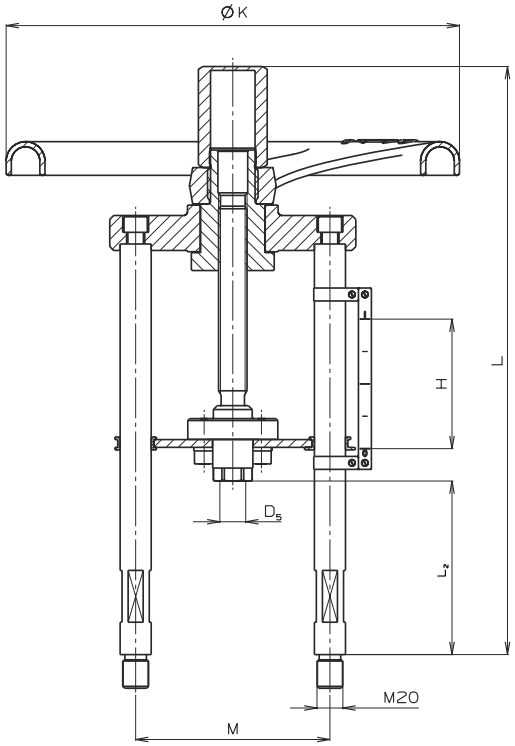
Connection A, F10, Tr36x6-LH



Hand wheels for RV / UV 2x0 SP, RV 2x2 SP



Hand wheel for DN 15 - 150



Hand wheel for 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, 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
	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 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 - 400
Electric actuator Auma SA Ex 07.6	**EAF**	DN 80 - 400
Electric actuator Auma SAR 07.6	**EAG**	DN 80 - 400
Electric actuator Auma SAR Ex 07.6	**EAH**	DN 80 - 400
Electric actuator Auma SA 10.2	**EAI**	DN 200 - 600
Electric actuator Auma SAR 10.2	**EAJ**	DN 200 - 600
Electric actuator Auma SAR Ex 10.2	**EAK**	DN 200 - 600
Electric actuator Auma SA Ex 10.2	**EAL**	DN 200 - 600
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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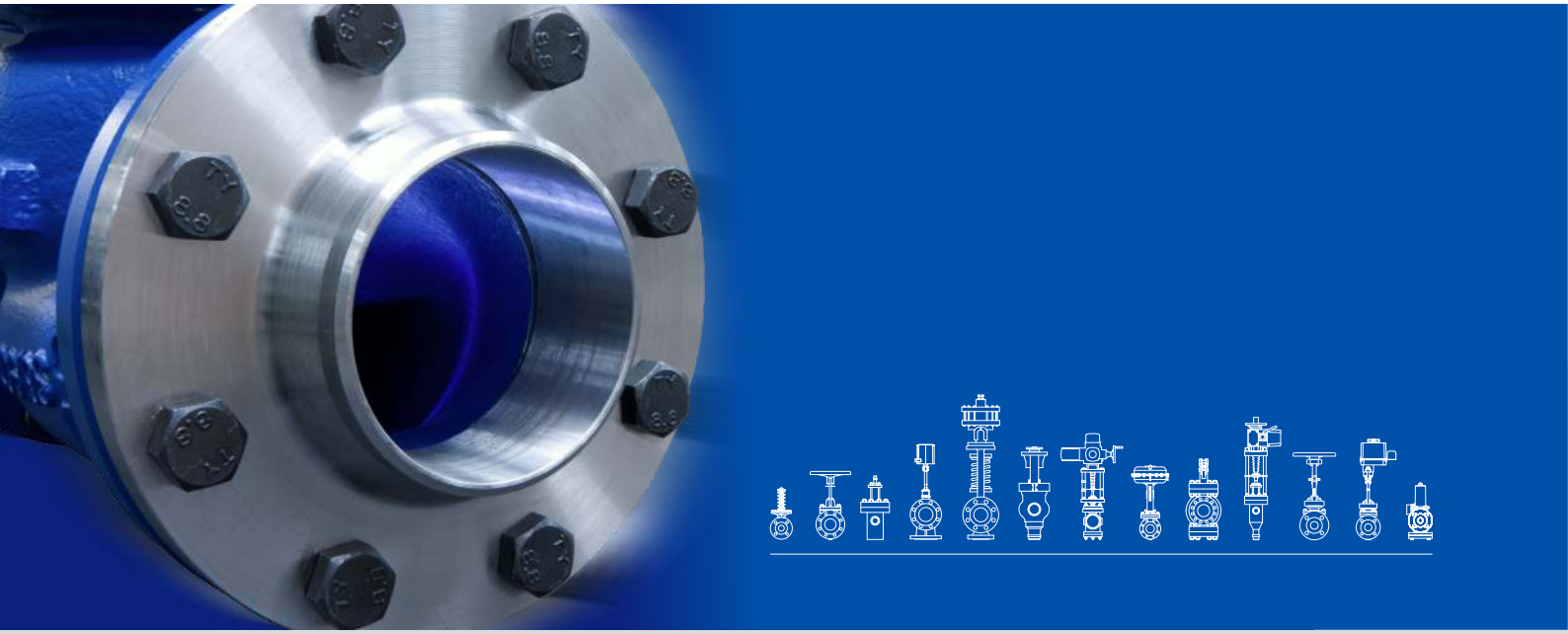

POWER THROUGH IDEAS