SEGMENT VALVE, RA WAFER AND RB FLANGED

The segment valve in the R-series is primarily intended as a control valve, but it can also be used for shut-off service. The R-series segment valve is a good general control valve for most pulp and paper process applications. The valve can be fitted with an aerodynamic noise- and liquid cavitation-reducing (for example, steam and gas applications) Q-Trim™ segment. A low capacity segment is available for the DN25 valve.

FEATURES

Single-piece valve body

- Both wafer and flanged R-series valves have single-piece bodies, which prevents leaks caused by separate flanges or locking rings.

Durable metal seat

- The seat of the R-series segment valve is firm and uniquely durable. The seat is designed in such a way that its sealing surface is not located directly in the flow stream. This gives the seat an extended service life. The working principle is a pressure-aided seat which enables good sealing properties at a low pressure difference. The seat is located inside the valve, which prevents forces from the pipe system influencing the sealing effect.

PTFE seat

- The R-series segment valve is also available with a soft seat. This is primarily intended for applications where a hard chromium plated segment is unsuitable, e.g. for acids and acidic liquids. This structure contains a carbon filled PTFE seat, which is fitted in a body made of stainless steel.

Bearings

- The bearings are located in the valve body, away from the flow stream: the bearing surface is large, which offers a low bearing pressure and a long service life.

Smooth action

- Because of the double bearing, the pre-tightened spring-loaded gland packing and the low seat friction, the torque requirement of the R-series segment valve is low. For this reason the size of actuator required is small. As a consequence, the result is a control valve package which combines low overall costs with good control performance.

Q-Trim™

- Most pulp and paper mills have maximum noise levels for control valves. These limits are easily exceeded, especially for gas and steam applications, when using standard valves. High pressure drop rations, which occur during control of water and liquid flows, generate cavitation which may cause damage to the pipe system. The solution to these applications is the Q-Trim™ design. Impurities will not block the valve because of the self-cleaning design. The design can be used for media such as impure steam, black liquor, and even 3.5% pulp.

Low capacity

- Four different low capacity C_V trims are available for the DN25 valve. These enable high accuracy control of small flows. Typical applications are, for example, dyes and other additives on a paper machine.

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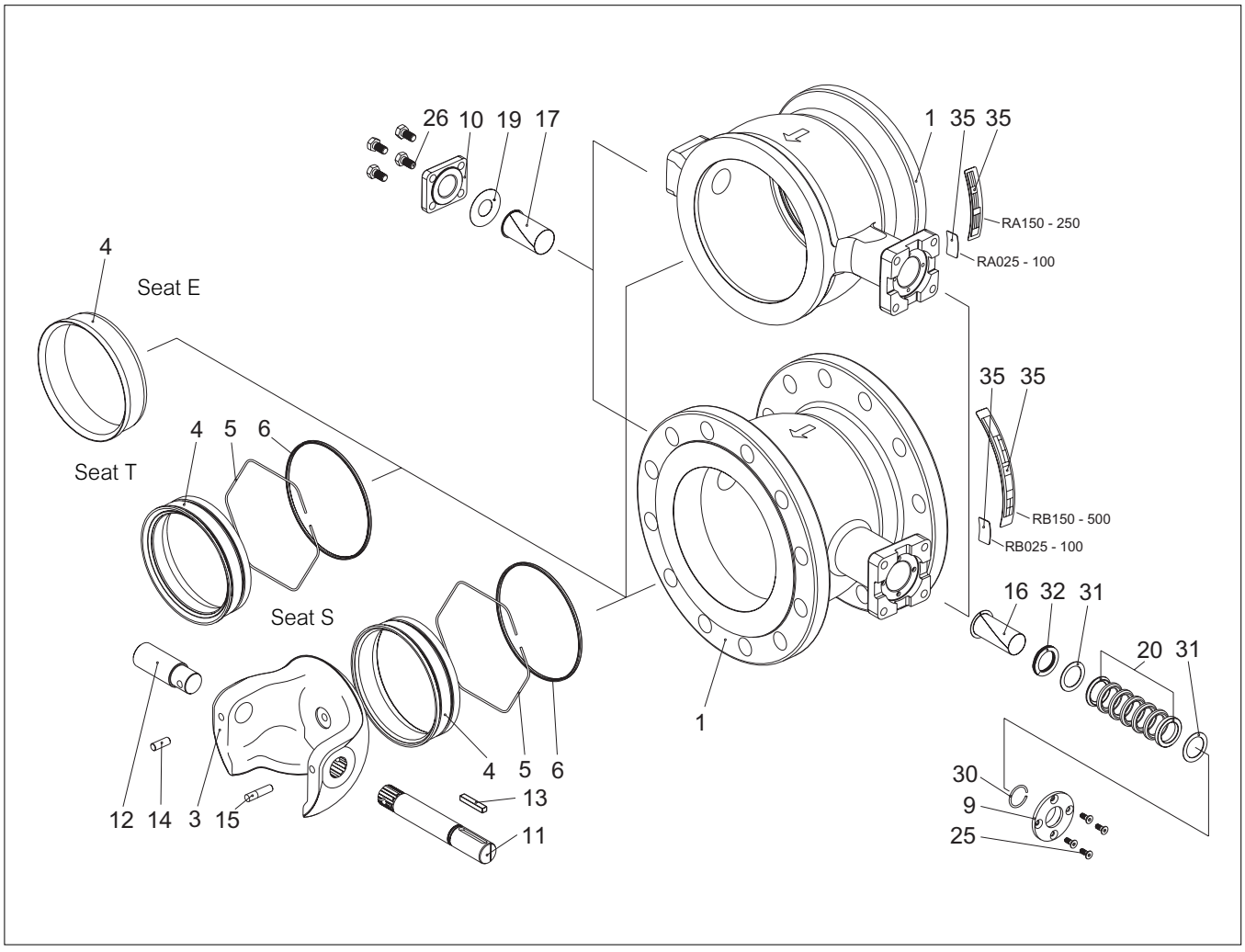
EXPLODED VIEW



PART LIST

Part	Description	Material
1	Body	Stainless steel CF8M (W.Nr. 1.4408)
3	Segment	Stainless steel Type 329 + hard chromium plating
4	Seat	Stainless steel + cobalt based hard plating
5	Locking spring	UNS N06625
6	Back seal	Stainless steel + PTFE
9	Gland follower	Stainless steel AISI 316
10	Blind flange	Stainless steel CF8M (W.Nr.1,4408)
11	Drive shaft	Stainless steel AISI 329
12	Shaft	Stainless steel AISI 329
13	Key	Stainless steel AISI 329
14	Cylindrical pin	Stainless steel AISI 329
15	Taper pin	Stainless steel AISI 329
16	Bearing	PTFE on stainless steel net
17	Bearing	PTFE on stainless steel net
19	Sealing plate	PTFE
20	Packing	PTFE
25	Socket head screw	A2 ISO 3506
26	Hexagon screw	A2 ISO 3506
30	Retainer	UNS N06625
31	Washer	Stainless steel AISI 316
32	Sheet ring	Stainless steel AISI 316
35	Identification plate	Stainless steel AISI 304

TECHNICAL SPECIFICATIONS

Type

Reduced-bore quarter-turn valve
– RA mounted between flanges
– RB flanged

Pressure ratings

Body
RA: ASME Class 300, ISO DIN 50, DIN PN40
RB: DIN PN10, 16, 25 ,40
Trim: See table below

Valve size metric / inch	Max. shut-off pressure differential at ambient temp.	Max. control pressure differential (R) at ambient temp.	Max. control pressure differential (Q-R) at ambient temp.
025 / 1”	50 bar	35 bar	35 bar
040 / 1 1/2”	50 bar	35 bar	35 bar
050 / 2”	50 bar	35 bar	35 bar
065 / 2 1/2”	50 bar	35 bar	35 bar
080 / 3”	50 bar	35 bar	35 bar
100 / 4”	40 bar	25 bar	18 bar
150 / 6”	40 bar	25 bar	18 bar
200 / 8”	35 bar	25 bar	15 bar
250 / 10”	35 bar	20 bar	10 bar
300 / 12”	30 bar	10 bar	8 bar
350 / 14”	30 bar	10 bar	8 bar
400 / 16”	30 bar	10 bar	8 bar
500 / 20”	30 bar	10 bar	8 bar

Size

RA: DN25, 40, 50, 65, 80, 100, 150, 200, 250

RB:
DN25, 40 ,50, 65, 80, 100, 150, 200, 250, 300, 350, 400, 500

Face-toface dimensions

RA According to Metso Automation internal standard
RB According to ISA S75.04 and IEC/DIN 534-3-2

Temperature range

-40... +250 °C.

Inherent flow characteristic

Equal percentage.

Tightness

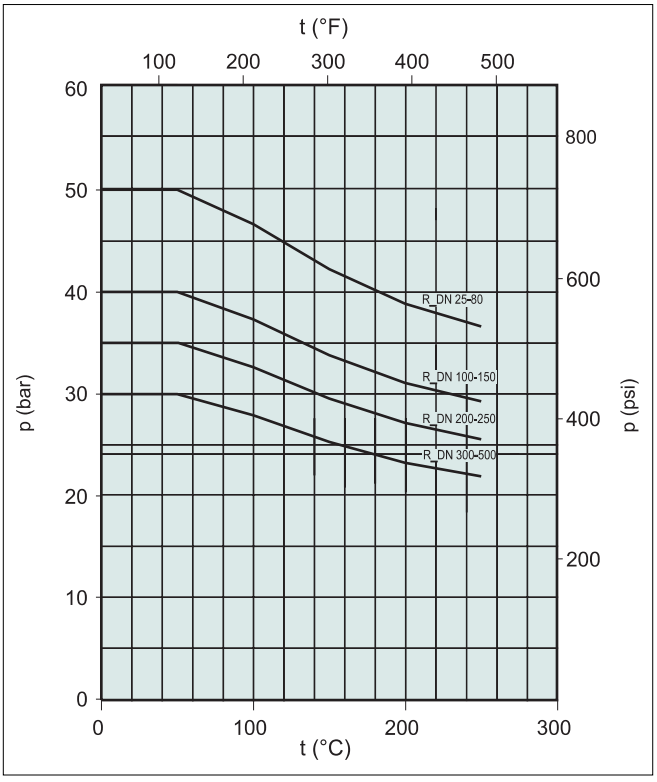
Tightness testing is done in the direction indicated by the arrow according to standard ISO 5208 (see page 4). The standard tightness of the metal-seated segment valve is 10 x ISO 5208 Rate D. The tightness corresponds to standard ANSI/FCI 70.2 Class IV x 1/100.

Pressure and tightness testing of the valve

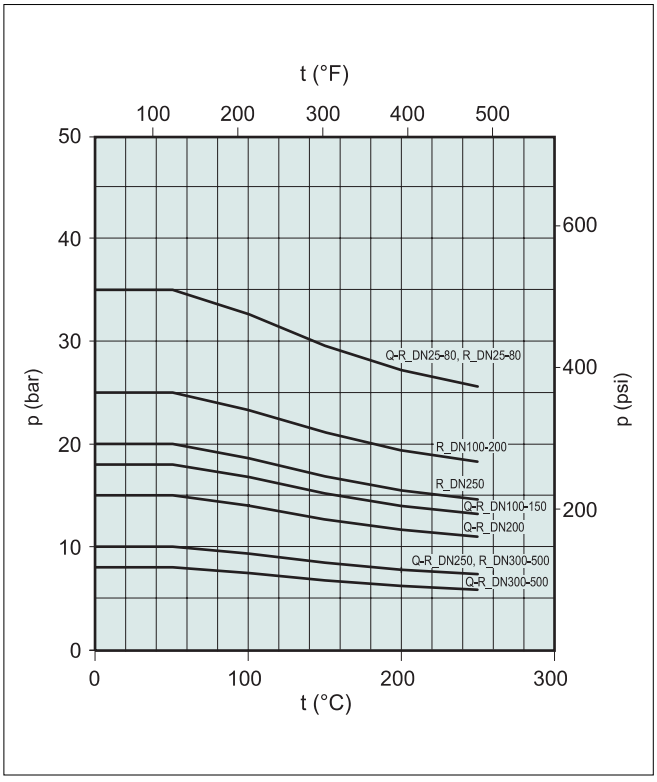
Every valve manufactured by Metso Automation is subjected to a body pressure test and a trim tightness test. The test pressure of an R-series body is 1.5 x the maximum operating pressure. The pressure of the tightness test is 1.1 x the maximum operating pressure. The testing medium is water.

Maximum allowable leakage		
Size DN / inch	Metal seat	Soft seat
25 / 1	1.50 ml/min	0.15 ml/min
40 / 1 1/2	2.40 ml/min	0.24 ml/min
50 / 2	3.00 ml/min	0.30 ml/min
65 / 2 1/2	3.90 ml/min	0.39 ml/min
80 / 3	4.80 ml/min	0.48 ml/min
100 / 4	6.00 ml/min	0.60 ml/min
150 / 6	9.00 ml/min	0.90 ml/min
200 / 8	12.00 ml/min	1.20 ml/min
250 / 10	15.00 ml/min	1.50 ml/min
300 / 12	18.00 ml/min	1.80 ml/min
350 / 14	21.00 ml/min	2.10 ml/min
400 / 16	24.00 ml/min	2.40 ml/min
500 / 20	30,00 ml/min	3,00 ml/min

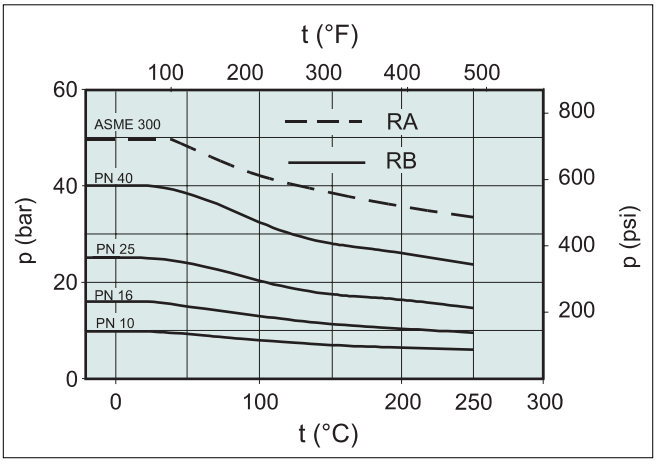
Maximum operating pressure differential in shut-off service



Maximum operating pressure differential in control service



Maximum body pressure for standard A 351 gr. CF8M material



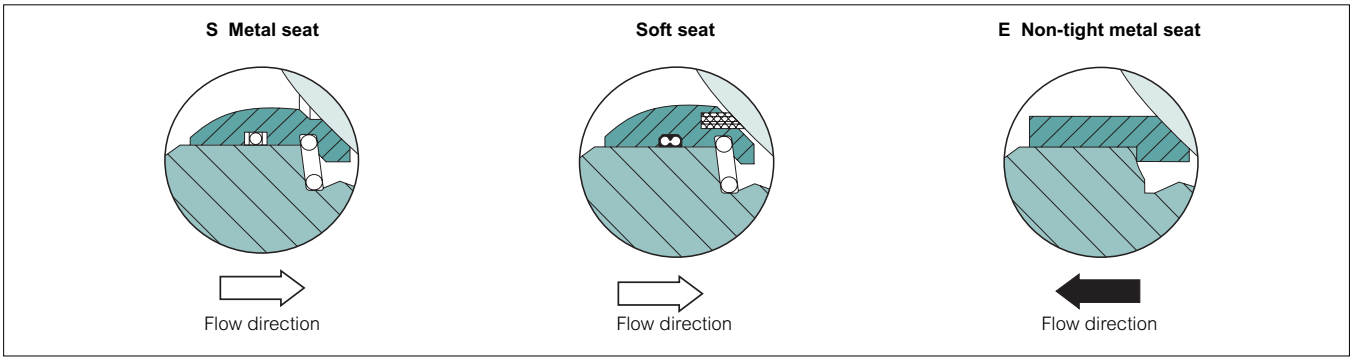
Note that max. throttling pressures are mechanical maximum differential pressures at ambient temperature.
In practice you must always check temperature, actuator, load factor, noise, cavitation intensity, velosity, etc. from Nelprof.

Maximum C_v and resistance coefficients for R-series valves

Valve size, DN	Valve size inches	Metal seated valve			Soft seated valve	
		Standard valve		Q-R valve	Standard valve	
		C_v 100%[1]	ξ 100%[1]	C_v 100%[2]	C_v 100%[1]	ξ 100%[1]
25	1	45	0.41	–	21	1.83
40	1 1/2	110	0.45	–	61	1.47
50	2	180	0.41	47	110	1.10
65	2 1/2	280	0.49	96	215	0.83
80	3	420	0.50	160	340	0.76
100	4	620	0.56	250	520	0.79
150	6	1260	0.68	540	1070	0.94
200	8	2030	0.83	880	1760	1.10
250	10	3210	0.81	1510	2830	1.04
300	12	4490	0.86	2140	4080	1.04
350	14	6440	0.77	3160	5750	0.97
400	16	8510	0.76	4180	7630	0.94
500	20	13020	0.79	6600	-	-

1) 100% corresponds to 95° turning angle
2) For Q-R valves 100% corresponds to 90° turning angle

SEATS DESIGN



ACTUATOR SELECTION, R-SERIES VALVE

Valve/actuator sizes have been pre-selected. You will find them on pages 7 - 16. The valve/actuator size must be checked with the Nelprof program for each control valve.

Maximum allowed stem torque

Valve size		Torque	
DN	Inches	Nm	ft-lb
25	1	30	22
40	1.5	30	22
50	2	65	48
65	2.5	65	48
80	3	160	118
100	4	160	118
150	6	490	362
200	8	675	498
250	10	1350	996
300	12	1900	1402
350	14	3000	2214
400	16	4200	3100
500	20	8500	6273

S seat

Seat	Stainless steel + cobalt based hard facing
Spring	Inconel 625
Seat seal	Filled PTFE lip seal/Elgiloy spring
Temperature range	-40 °C... +250 °C / - 40 °F ...+480 °F
Service	General service

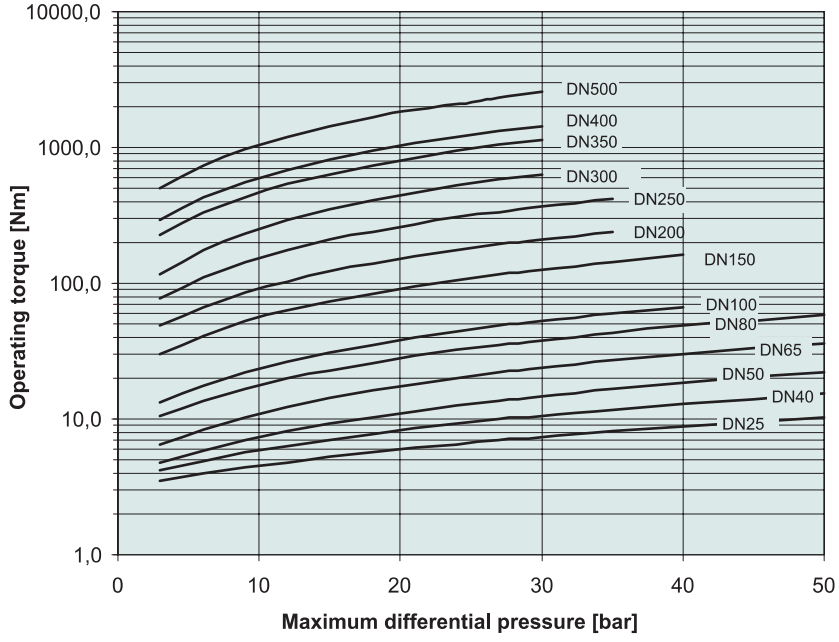
Soft seat (PTFE + C25%)

Code	Seat body	Spring	Seat seal	Back seal
T2	316 SS	Inconel 625	Filled PTFE	PTFE
Temperature range T2,		-40 °C... +250 °C / -40 °F ...+480 °F		

E Non-tight metal seat

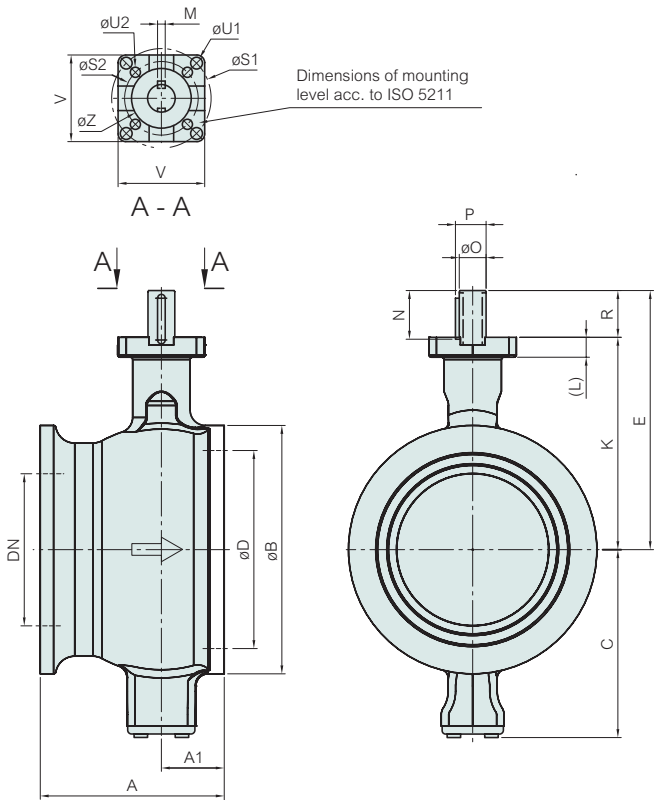
Seat	Cobalt based alloy
Temperature range	-40 °C... +250 °C / - 40 °F ...+480 °F
Service	Erosive applications, non-tight design.
Note!	Flow direction arrow is reversed.

TORQUE CHART



DIMENSIONS

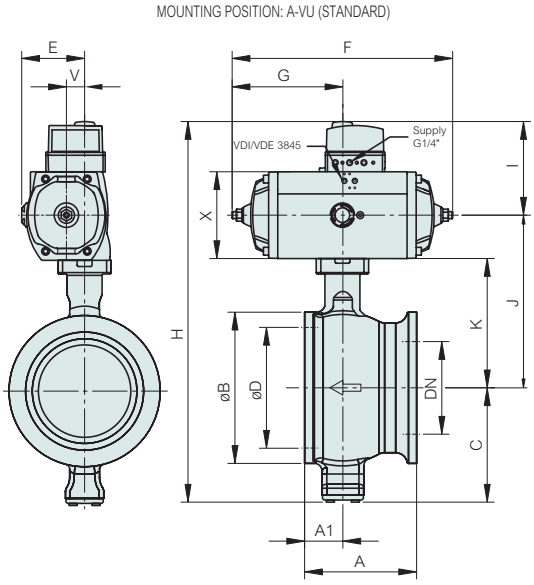
RA



Type	DN	ISO 5211	Dimensions, mm																		Kg
			A1	A	øB	C	øD	E	R	K	øO	M	P	N	øS1	øS2	øU1	øU2	øZ	L	V	
RA	25	F05	21	50	64	56	33/38*	127	25	102	15	5	17	30	-	50	-	6.6	35	15.5	52	1.3
	40	F05	21	60	82	65	49	133.5	25	108.5	15	5	17	30	-	50	-	6.6	35	15.5	52	2.4
	50	F05, F07	27	75	100	91	60	144.5	25	119.5	15	5	17	30	70	50	9	6.6	55	15.5	67	3.7
	65	F05, F07	40	100	118	97	75	151	25	126	15	5	17	30	70	50	9	6.6	55	15.5	67	5.3
	80	F07, F10	38	100	130	108	89	177	35	142	20	6	22.5	38	102	70	11	9	70	16	94	6.2
	100	F07, F10	41	115	158	120	115	186	35	151	20	6	22.5	38	102	70	11	9	70	16	94	9.6
	150	F10, F12	55	160	216	174	164	244	44	200	25	8	28	48	125	102	14	11	85	22	114	2 4
	200	F10, F12	70	200	268	201	205	285	50	235	30	8	33	53	125	102	14	11	85	22	114	42
	250	F12, F14	82	240	324	251	259	338	61	277	35	10	38	66	140	125	18	14	100	26	136	68

*) Low capacity segment: Max Cv 0.5, 1.5, 5 or 15

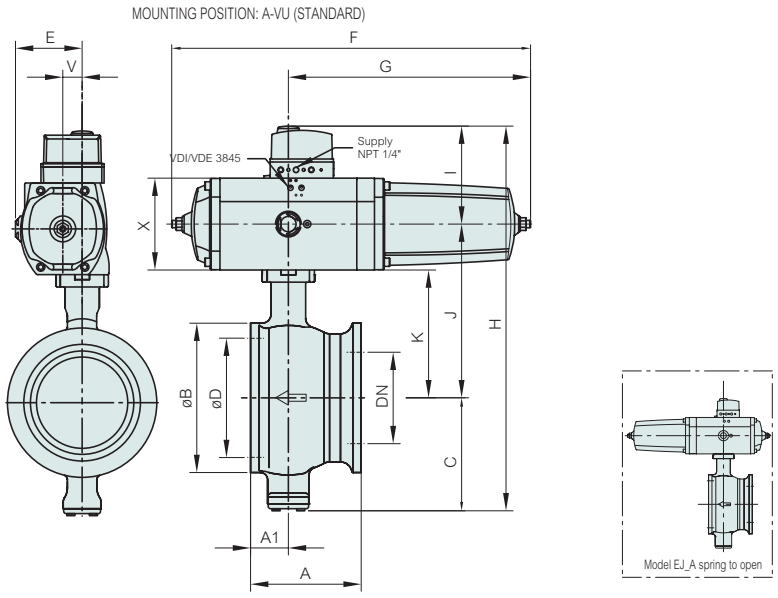
RA - EC



Type	Actuator mounting	DN	Dimensions, mm														VDI/ VDE 3845	Kg
			A1	A	øB	C	øD	E	F	G	H	I	J	K	V	X		
RA	EC05 / F05	25	21	50	64	56	33/38*	64	256	128	364	160	148	102	18	91	-	7
		40	21	60	82	65	49	64	256	128	380	160	155	109	18	91	-	8
		50	27	75	100	91	60	64	256	128	417	160	166	120	18	91	-	10
		65	40	100	118	97	75	64	256	128	429	160	172	126	18	91	-	11
	EC07 / F07	50	27	75	100	91	60	81	308	154	442	172	179	120	24	117	G1/4"	12
		65	40	100	118	97	75	81	308	154	454	172	185	126	24	117	G1/4"	14
		80	38	100	130	108	89	81	308	154	481	172	201	142	24	117	G1/4"	15
		100	41	115	158	120	115	81	308	154	502	172	210	151	24	117	G1/4"	18
	EC10 / F10	80	38	100	130	108	89	112	406	203	519	191	220	142	32	155	G1/4"	23
		100	41	115	158	120	115	112	406	203	540	191	229	151	32	155	G1/4"	26
		150	55	160	216	174	164	112	406	203	643	191	278	200	32	155	G1/4"	40
		200	70	200	268	201	205	112	406	203	705	191	313	235	32	155	G1/4"	58
	EC12 / F12	150	55	160	216	174	164	145	524	262	688	214	300	200	42	200	G1/4"	57
		200	70	200	268	201	205	145	524	262	750	214	335	235	42	200	G1/4"	75
		250	82	240	324	251	259	145	524	262	842	214	377	277	42	200	G1/4"	101
	EC14 / F14	250	82	240	324	251	259	196	696	348	901	243	407	277	56	259	G1/4"	140

*) Low capacity segment: Max Cv 0.5, 1.5, 5 or 15

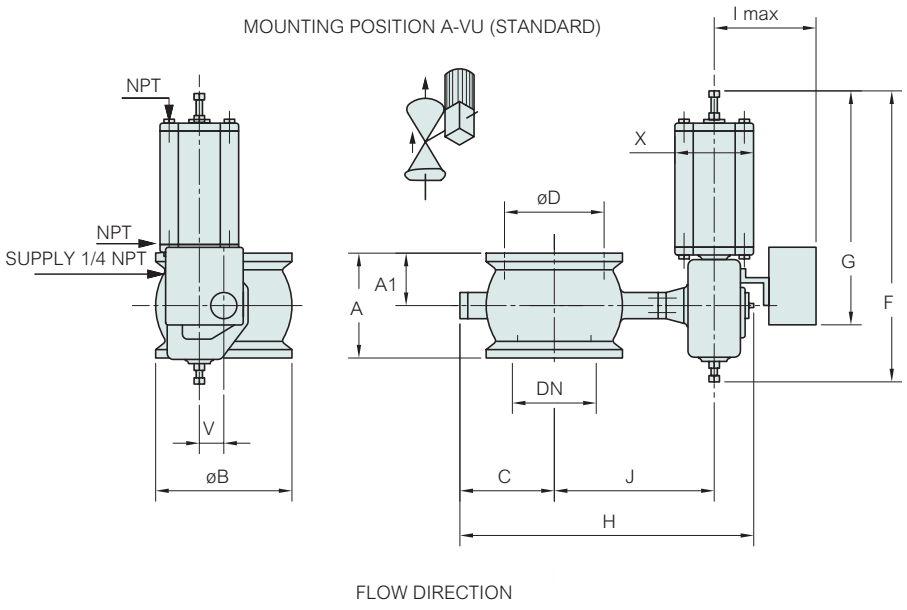
RA - EJ, EJA



Type	Actuator mounting	DN	Dimensions, mm														VDI/ VDE 3845	Kg
			A1	A	øB	C	øD	E	F	G	H	I	J	K	V	X		
RA	EJ05 / F05	25	21	50	64	56	33/38*	64	363	235	364	160	148	102	18	91	-	9
		40	21	60	82	65	49	64	363	235	380	160	155	109	18	91	-	10
		50	27	75	100	91	60	64	363	235	417	160	166	120	18	91	-	11
		65	40	100	118	97	75	64	363	235	429	160	172	126	18	91	-	12
	EJ07 / F07	50	27	75	100	91	60	81	454	300	442	172	179	120	24	117	G1/4"	15
		65	40	100	118	97	75	81	454	300	454	172	185	126	24	117	G1/4"	17
		80	38	100	130	108	89	81	454	300	481	172	201	142	24	117	G1/4"	18
		100	41	115	158	120	115	81	454	300	502	172	210	151	24	117	G1/4"	21
	EJ10 / F10	80	38	100	130	108	89	112	606	403	519	191	220	142	32	155	G1/4"	29
		100	41	115	158	120	115	112	606	403	540	191	229	151	32	155	G1/4"	32
		150	55	160	216	174	164	112	606	403	643	191	278	200	32	155	G1/4"	47
		200	70	200	268	201	205	112	606	403	705	191	313	235	32	155	G1/4"	65
		150	55	160	216	174	164	145	800	538	688	214	300	200	42	200	G1/4"	76
	EJ12 / F12	200	70	200	268	201	205	145	800	538	750	214	335	235	42	200	G1/4"	94
		250	82	240	324	251	259	145	800	538	842	214	377	277	42	200	G1/4"	120
	EJ14 / F14	250	82	240	324	251	259	196	1052	704	901	243	407	277	56	259	G1/4"	178

*) Low capacity segment: Max Cv 0.5, 1.5, 5 or 15

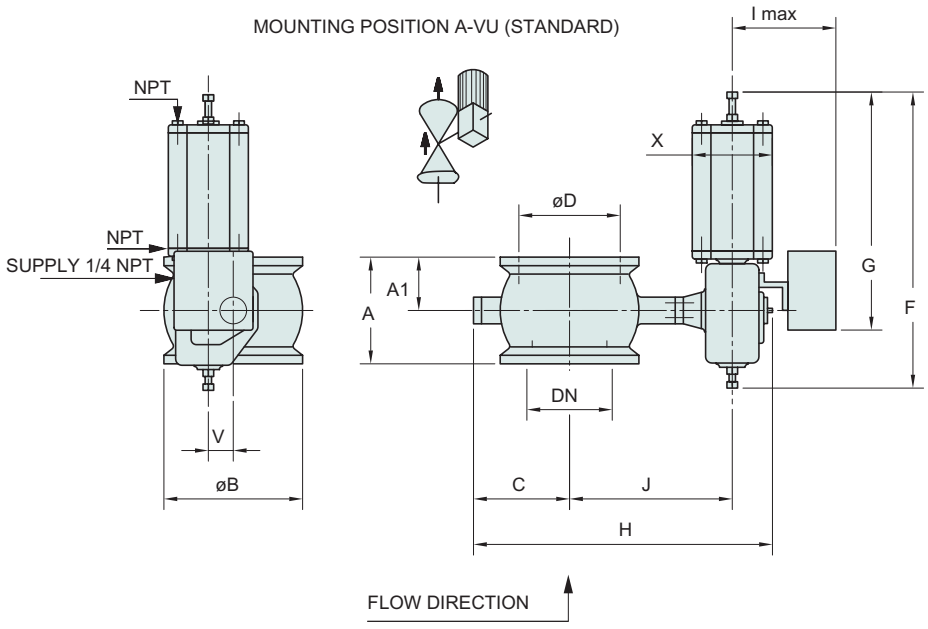
RA-B1C



Type	Max. Δp 1)	Dimensions, mm													NPT	Kg
		DN	A	A1	øB	C	øD	F	G	X	V	J	H	l max		
RA_ 025-B1C6	50	25	50	21	64	56	33/38 *	400	260	90	36	168	305	310	1/4	5.5
RA_ 040-B1C6	50	40	60	21	82	65	49	400	260	90	36	175	320	310	1/4	6.6
RA_ 050-B1C6	50	50	75	27	100	91	60	400	260	90	36	185	355	310	1/4	8.0
RA_ 065-B1C6	50	65	100	40	118	97	75	400	260	90	36	192	367	310	1/4	9.5
RA_ 080-B1C6	50	80	100	38	130	108	89	400	260	90	36	200	390	310	1/4	11
RA_100-B1C6	50	100	115	41	158	120	113	400	260	90	36	210	410	310	1/4	15
RA_150-B1C9	25							455	315	110	43	260	515	305	1/4	34
RA_150-B1C11	50							540	375	135	65	265	530	310	3/8	40
RA_200-B1C9	15	200	200	70	268	201	205	455	315	110	43	294	575	305	1/4	52
RA_200-B1C11	32							540	375	135	51	310	590	310	3/8	59
RA_250-B1C13	29	250	240	85	324	251	259	635	445	175	65	366	730	325	3/8	100
RA_250-B1C17	35							770	545	215	78	373	750	340	1/2	125

1) Max dp in on-off service with actuator load factor 0.6 and supply pressure 5 bar
*) 38 mm for low capasity segment e.g. C005 - RA

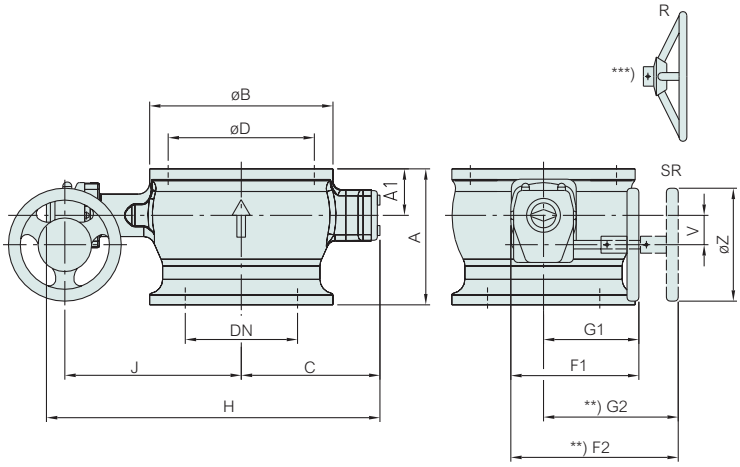
RA - B1J, B1JA



Type	Max. Δp 1)	Dimensions, mm													NPT	Kg
		DN	A	A1	øB	C	øD	F	G	X	V	J	H	l max		
RA_ 025-B1J8/B1JA8	50/50	25	50	21	64	56	33/38 *	560	420	135	43	168	293	305	3/8	19
RA_ 040-B1J8/B1JA8	50/50	40	60	21	82	65	49	560	420	135	43	175	308	305	3/8	20
RA_ 050-B1J8/B1JA8	50/50	50	75	27	100	91	60	560	420	135	43	185	345	305	3/8	21
RA_ 065-B1J8/B1JA8	50/50	65	100	40	118	97	75	560	420	135	43	195	360	305	3/8	23
RA_ 080-B1J8/B1JA8	50/50	80	100	38	130	108	89	560	420	135	43	200	376	305	3/8	24
RA_100-B1J8/B1JA8	50/50	100	115	41	158	120	113	560	420	135	43	210	400	305	3/8	27
RA_150-B1J8/B1JA8	10/25	150	160	55	216	174	164	560	420	135	43	258	500	305	3/8	41
RA_150-B1J10/B1JA10	50/50							650	490	175	51	275	530	225	3/8	55
RA_200-B1J10/B1JA10	15/25	200	200	70	268	201	205	650	490	175	51	310	590	310	3/8	75
RA_200-B1J12/B1JA12	32/35							800	620	215	65	324	635	235	1/2	100
RA_250-B1J16/B1JA16	35/35	250	240	85	324	251	259	990	760	265	78	373	760	340	1/2	170

1) Supply pressure BJ 4 bar / BJA 5 bar
*) 38mm for low capasity segment e.g. C005 - RA_

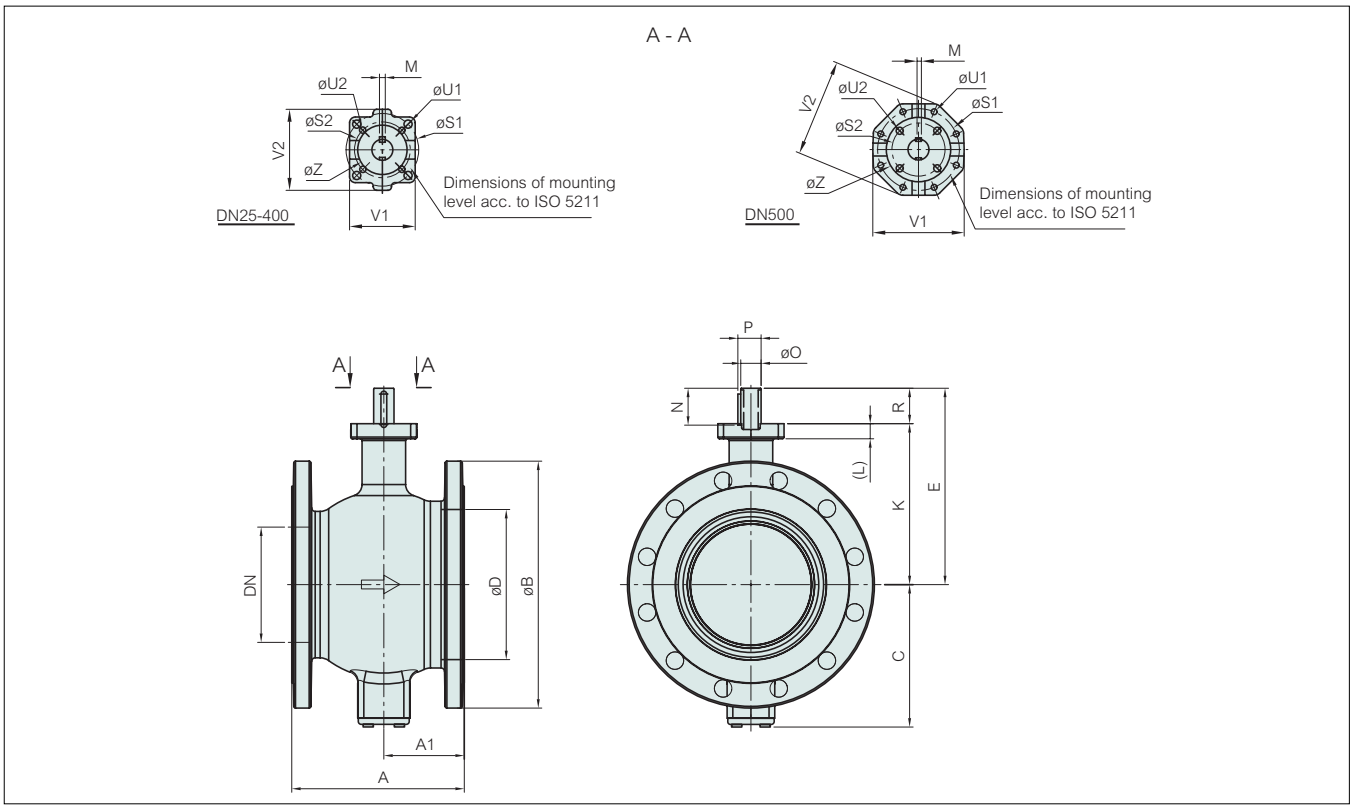
RA - M



Type	Actuator type	DN	Dimensions, mm													Kg
			øD	A	A1	øB	C	F1	G1	**) F2	**) G2	H	J	V	øZ	
RA	M07	25	33/38*	50	21	64	56	196	152	-	-	216	128.5	39	125	4.2
	M07	40	49	60	21	82	65	196	152	-	-	231.5	135	39	125	5.3
	M07	50	60	75	27	100	91	196	152	-	-	268.5	146	39	125	6.6
	M07	65	75	100	40	118	97	196	152	-	-	281	152.5	39	125	8.2
	M07	80	89	100	38	130	108	196	152	-	-	308	168.5	39	125	9.1
	M07	100	115	115	41	158	120	196	152	-	-	329	177.5	39	125	13
	M10	150	164	160	55	216	174	227	169	297	239	441	235	52	200	29
	M12	200	205	200	70	268	201	285	210	357	282	517	277	67	250	52
	M14	250	259	240	82	324	251	378	279	453	354	621.5	327	90	457	86

*) Low capacity segment: Max Cv 0.5, 1.5, 5 or 15
**) Actuators equipped with extended input shaft.
***) Actuators M07...M12 are equipped with handwheel type SR,
actuators M14...M16 are equipped with handwheel type R.

Series RB



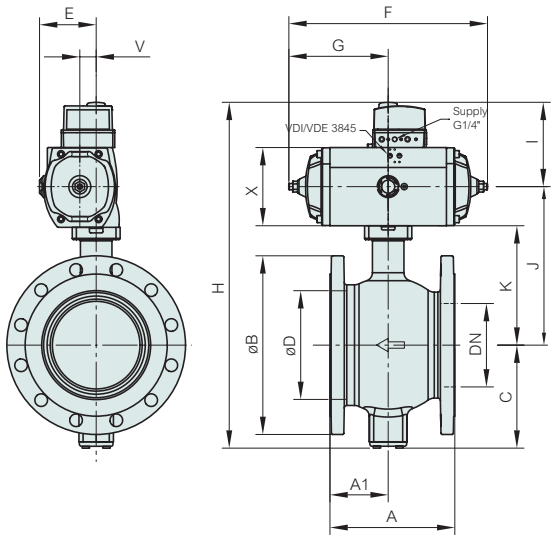
Type	DN	ISO 5211	Dimensions, mm																		
			A1	A	C	øD	E	R	K	øO	M	P	N	øS1	øS2	øU1	øU2	øZ	L	V1	V2
RB	25	F05	51	102	56	33/38*	127	25	102	15	5	17	30	-	50	-	6.6	35	15.5	52	90
	40	F05	57	114	65	49	133.5	25	108.5	15	5	17	30	-	50	-	6.6	35	15.5	52	90
	50	F05, F07	62	124	91	60	144.5	25	119.5	15	5	17	30	70	50	9	6.6	55	15.5	67	90
	65	F05, F07	72.5	145	97	75	151	25	126	15	5	17	30	70	50	9	6.6	55	15.5	67	90
	80	F07, F10	82.5	165	108	89	177	35	142	20	6	22.5	38	102	70	11	9	70	16	94	116
	100	F07, F10	97	194	120	113	186	35	151	20	6	22.5	38	102	70	11	9	70	16	94	116
	150	F10, F12	114.5	229	174	164	244	44	200	25	8	27.8	48	125	102	14	11	85	22	114	134
	200	F10, F12	111.5	243	201	205	285	50	235	30	8	33	53	125	102	14	11	85	22	114	154
	250	F12, F14	138.5	297	251	259	338	61	277	35	10	38	66	140	125	18	14	100	26	136	154
	300	F12, F14	154	338	269	300	397	72	325	40	12	43	74	140	125	18	14	100	26	136	192
	350	F14, F16	175	400	311	350	448	82	366	45	14	48.5	84	165	140	22	18	130	29	170	192
	400	F14, F16	160	400	353	400	508	95	413	50	14	53	95	165	140	22	18	130	29	170	200
	500	F16, F25	182	457	428	500	588	120	468	65	18	69	118	254	165	18	22	200	40	284	305

*) Low capacity segment: Max Cv 0.5, 1.5, 5 or 15

DN	Flange dimensions (B) and weights							
	PN 10		PN 16		PN 25		PN 40	
	øB	Kg	øB	Kg	øB	Kg	øB	Kg
25	115	4,6	115	4,6	115	4,6	115	4,6
40	150	6,2	150	6,2	150	6,2	150	6,2
50	165	8,8	165	8,8	165	8,8	165	8,8
80	200	16	200	16	200	16	200	16
100	220	18	220	18	235	21	235	21
150	285	37	285	37	300	42	300	42
200	340	56	340	60	360	64	375	71
250	405	85	405	84	425	101	450	125
300	460	124	460	123	485	148	520	182
350	505	178	520	183	555	223	580	266
400	565	234	580	239	620	290	660	346

RB - EC

MOUNTING POSITION: A-VU (STANDARD)

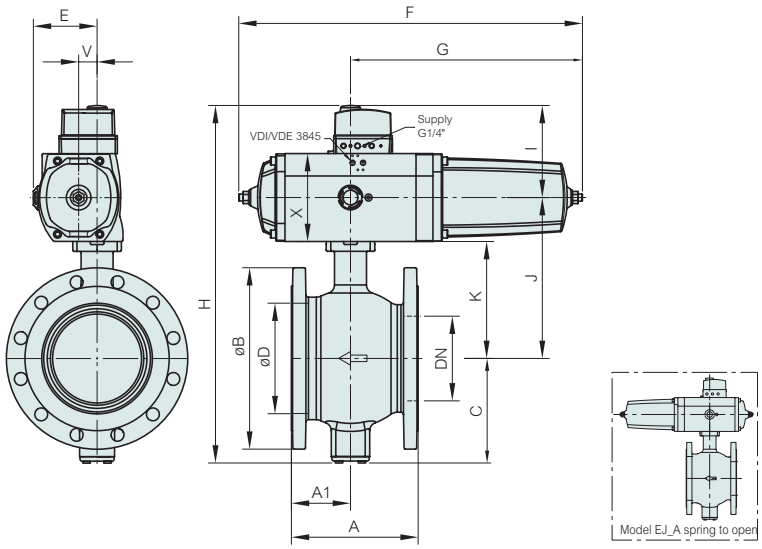


Type	Actuator mounting	DN	Dimensions, mm													VDI/ VDE 3845	Kg
			A1	A	C	øD	E	F	G	H	I	J	K	V	X		
RB	EC05 / F05	25	51	102	56	33/38*	64	256	128	364	160	148	102	18	91	-	10
		40	57	114	65	49	64	256	128	380	160	155	109	18	91	-	12
		50	62	124	91	60	64	256	128	417	160	166	120	18	91	-	14
		65	72.5	145	97	75	64	256	128	429	160	172	126	18	91	-	16
	EC07 / F07	50	62	124	91	60	81	308	154	442	172	179	120	24	117	G1/4"	17
		65	72.5	145	97	75	81	308	154	454	172	185	126	24	117	G1/4"	19
		80	82.5	165	108	89	81	308	154	481	172	201	142	24	117	G1/4"	24
		100	97	194	120	113	81	308	154	502	172	210	151	24	117	G1/4"	30
	EC10 / F10	80	82.5	165	108	89	112	406	203	519	191	220	142	32	155	G1/4"	31
		100	97	194	120	113	112	406	203	540	191	229	151	32	155	G1/4"	37
		150	114.5	229	174	164	112	406	203	643	191	278	200	32	155	G1/4"	59
		200	111.5	243	201	205	112	406	203	705	191	313	235	32	155	G1/4"	77
	EC12 / F12	150	114.5	229	174	164	145	524	262	688	214	300	200	42	200	G1/4"	76
		200	111.5	243	201	205	145	524	262	750	214	335	235	42	200	G1/4"	94
		250	138.5	297	251	259	145	524	262	842	214	377	277	42	200	G1/4"	130
		300	154	338	269	300	145	524	262	908	214	425	325	42	200	G1/4"	174
	EC14 / F14	250	138.5	297	251	259	196	696	348	901	243	407	277	56	259	G1/4"	169
		300	154	338	269	300	196	696	348	967	243	455	325	56	259	G1/4"	213
		350	175	400	311	350	196	696	348	1050	243	496	366	56	259	G1/4"	283
		400	160	400	353	400	196	696	348	1139	243	543	413	56	259	G1/4"	350

*) Low capacity segment: Max Cv 0.5, 1.5, 5 or 15

RB - EJ, EJA

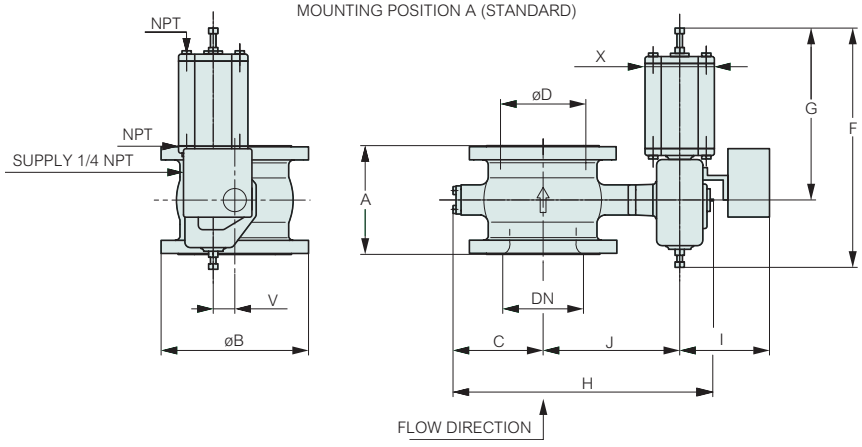
MOUNTING POSITION: A-VU (STANDARD)



Type	Actuaotr mounting	DN	Dimensions, mm													VDI/ VDE 3845	Kg
			A1	A	C	øD	E	F	G	H	I	J	K	V	X		
RB	EJ05 / F05	25	51	102	56	33/38*	64	363	235	364	160	148	102	18	91	-	12
		40	57	114	65	49	64	363	235	380	160	155	109	18	91	-	13
		50	62	124	91	60	64	363	235	417	160	166	120	18	91	-	16
		65	72.5	145	97	75	64	363	235	429	160	172	126	18	91	-	18
	EJ07 / F07	50	62	124	91	60	81	454	300	442	172	179	120	24	117	G1/4"	20
		65	72.5	145	97	75	81	454	300	454	172	185	126	24	117	G1/4"	22
		80	82.5	165	108	89	81	454	300	481	172	201	142	24	117	G1/4"	27
		100	97	194	120	113	81	454	300	502	172	210	151	24	117	G1/4"	33
	EJ10 / F10	80	82.5	165	108	89	112	606	403	519	191	220	142	32	155	G1/4"	38
		100	97	194	120	113	112	606	403	540	191	229	151	32	155	G1/4"	44
		150	114.5	229	174	164	112	606	403	643	191	278	200	32	155	G1/4"	66
		200	111.5	243	201	205	112	606	403	705	191	313	235	32	155	G1/4"	84
	EJ12 / F12	150	114.5	229	174	164	145	800	538	688	214	300	200	42	200	G1/4"	95
		200	111.5	243	201	205	145	800	538	750	214	335	235	42	200	G1/4"	113
		250	138.5	297	251	259	145	800	538	842	214	377	277	42	200	G1/4"	149
		300	154	338	269	300	145	800	538	908	214	425	325	42	200	G1/4"	193
	EJ14 / F14	250	138.5	297	251	259	196	1052	704	901	243	407	277	56	259	G1/4"	207
		300	154	338	269	300	196	1052	704	967	243	455	325	56	259	G1/4"	251
		350	175	400	311	350	196	1052	704	1050	243	496	366	56	259	G1/4"	321
		400	160	400	353	400	196	1052	704	1139	243	543	413	56	259	G1/4"	388

*) Low capacity segment: Max Cv 0.5, 1.5, 5 or 15

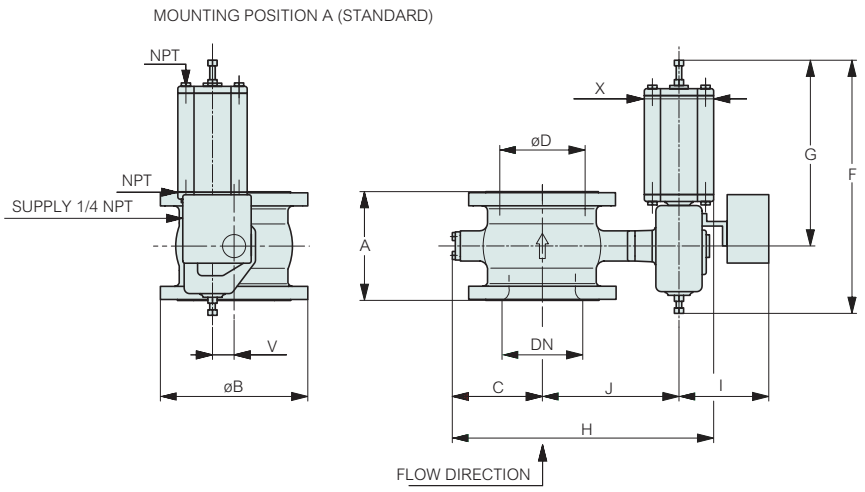
RB - B1C



Type	Max. Dp	Dimensions, mm											NPT	PN 10		PN 16		PN 25		PN 40	
		DN	A	C	øD	F	G	X	V	J	H	I max		øB	Kg	øB	Kg	øB	Kg	øB	Kg
RB_ 025-B1C6	40	25	102	56	33/38 *	400	260	90	36	168	305	310	1/4	115	9	115	9	115	9	115	9
RB_ 040-B1C6	40	40	114	65	49	400	260	90	36	175	320	310	1/4	150	11	150	11	150	11	150	11
RB_ 050-B1C6	40	50	124	91	60	400	260	90	36	185	355	310	1/4	165	13	165	13	165	13	165	13
RB_ 065-B1C6	40	65	145	97	75	400	260	90	36	192	367	310	1/4	185	14	185	14	185	15	185	15
RB_ 080-B1C6	40	80	165	108	89	400	260	90	36	200	390	310	1/4	200	20	200	20	200	20	200	20
RB_100-B1C6	40	100	194	120	113	400	260	90	36	210	410	310	1/4	220	22	220	22	235	26	235	26
RB_150-B1C9	25					455	315	110	43	260	515	305	1/4		48		48		53		53
RB_150-B1C11	40					540	375	135	65	265	530	310	3/8		54		54		60		60
RB_200-B1C9	15	200	243	201	205	455	315	110	43	294	575	305	1/4	340	64	340	64	360	73	375	80
RB_200-B1C11	32					540	375	135	51	310	590	310	3/8		71		71		78		84
RB_250-B1C13	29	250	297	251	259	635	445	175	65	366	730	325	3/8	405	115	405	115	425	122	450	130
RB_250-B1C17	35					770	545	215	78	373	750	340	1/2		137		137		153		160
RB_300-B1C13	19	300	338	269	300	635	445	175	65	406	763	325	3/8	460	150	460	150	485	175	520	215
RB_300-B1C17	30					770	545	215	78	421	798	340	1/2		173		173		195		240
RB_350-B1C17	21	350	400	311	350	770	545	215	78	462	880	340	1/2	505	230	520	230	555	270	580	320
RB_350-B1C20	27					840	575	215	97	481	900	355	1/2		250		250		290		340
RB_400-B1C17	15	400	400	353	400	770	545	215	78	509	990	340	1/2	565	285	580	285	620	335	660	400
RB_400-B1C20	21					840	575	215	97	528	1010	355	1/2		305		305		355		420
RB_400-B1C25	30					1040	710	265	121	551	1057	390	1/2		360		360		415		475
RB_500-B1C25	16	500	457	430	500	1040	710	265	121	610	1180	390	1/2	670	490	715	590	730	610	-	-

1) Max dp in on-off service with actuator load factor 0.6 and supply pressure 5 bar
*) 38 mm for low capasity segment e.g. C005 - RB

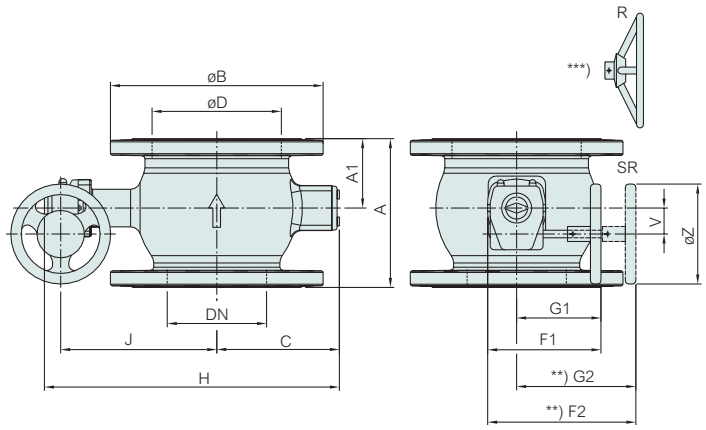
RB - B1J, B1JA



Type	Max. Δp 1)	Dimensions, mm											NPT	PN 10		PN 16		PN 25		PN 40	
		DN	A	C	øD	F	G	X	V	J	H	I max		øB	Kg	øB	Kg	øB	Kg	øB	Kg
RB_ 025-B1J8/B1JA8	40/40	25	102	56	33/38*	560	420	135	43	168	293	305	3/8	115	22	115	22	115	22	115	22
RB_ 040-B1J8/B1JA8	40/40	40	114	65	49	560	420	135	43	175	308	305	3/8	150	24	150	24	150	24	150	24
RB_ 050-B1J8/B1JA8	40/40	50	124	91	60	560	420	135	43	185	345	305	3/8	165	26	165	26	165	26	165	26
RB_ 065-B1J8/B1JA8	40/40	65	145	97	75	560	420	135	43	195	360	305	3/8	185	28	185	28	185	29	185	29
RB_ 080-B1J8/B1JA8	40/40	80	165	108	89	560	420	135	43	200	376	305	3/8	200	33	200	33	200	33	200	33
RB_100-B1J8/B1JA8	40/40	100	194	120	113	560	420	135	43	210	400	305	3/8	220	35	220	35	235	39	235	39
RB_150-B1J8/B1JA8	10/25	150	229	174	164	560	420	135	43	258	500	305	3/8	285	55	285	55	300	60	300	60
RB_150-B1J10/B1JA10	40/40					650	490	175	51	275	530	225	3/8		68		68		73		73
RB_200-B1J10/B1JA10	15/25	200	243	201	205	650	490	175	51	310	590	310	3/8	340	84	340	84	360	92	375	100
RB_200-B1J12/B1JA12	32/35					800	620	215	65	324	635	235	1/2		110		110		118		127
RB_250-B1J16/B1JA16	35/35	250	297	251	259	990	760	265	78	373	760	340	1/2	405	182	405	182	425	198	450	208
RB_300-B1J12/B1JA12	8/18	300	338	269	300	800	620	215	65	415	790	325	1/2	460	175	460	175	485	200	520	240
RB_300-B1J16/B1JA16	20/25					990	760	265	78	420	825	340	1/2		218		218		242		215
RB_300-B1J20/B1JA20	30/30					1200	935	395	97	440	910	270	3/4		295		295		320		357
RB_350-B1J16/B1JA16	11/22	350	400	311	350	990	760	265	78	465	905	340	1/2	505	275	520	275	555	315	580	365
RB_350-B1J20/B1JA20	30/30					1200	935	395	97	480	990	355	3/4		350		350		390		440
RB_400-B1J20/B1JA20	19/25	400	400	353	400	1200	935	395	97	530	1080	355	3/4	565	405	580	405	620	455	660	520
RB_400-B1J25/B1JA25	30/30					1530	1200	505	121	550	1160	390	3/4		580		580		630		695
RB_500-B1J25/B1JA25	25/25		457	430		1530	1200	505	121	610	1285	390	3/4		720		720		825	-	-

1) Supply pressure BJ 4 bar / BJA 5 bar
*) 38mm for low capasity segment e.g. C005 - RB_

RB - M



Type	DN	Actuator type	Dimensions, mm																			Kg
			øD	A1	A	øB							C	F1	G1	**)F2	**)G2	H	J	V	øZ	
						PN 10	PN 16	PN 25	PN 40	ANSI 150	JIS 10 K	JIS 16 K										
RB	25	M07	33/38*	51	102	115	115	115	115	108	125	125	56	196	152	-	-	216	129	39	125	8
	40	M07	49	57	114	150	150	150	150	127	140	140	65	196	152	-	-	231	135	39	125	11
	50	M07	60	62	124	165	165	165	165	152	155	155	91	196	152	-	-	268	146	39	125	14
	80	M07	89	83	165	200	200	200	200	191	185	200	108	196	152	-	-	308	169	39	125	21
	100	M07	113	97	194	220	220	235	235	229	210	225	120	196	152	-	-	329	178	39	125	28
	150	M10	164	115	229	285	285	300	300	279	280	305	174	227	169	297	239	441	235	52	200	57
	200	M12	205	112	243	340	340	360	375	343	330	350	201	285	210	357	282	517	277	67	250	87
	250	M14	259	139	297	405	405	425	-	406	405	425	251	378	279	453	354	622	327	90	457	135
	300	M14	300	154	338	460	460	485	-	483	445	485	269	378	279	453	354	688	375	90	457	180
	350	M14	350	175	400	505	520	555	-	534	490	540	311	378	279	453	354	771	416	90	457	245
	400	M15	400	160	450	565	580	620	-	597	560	605	353	457	331	532	406	872	463	123	457	350

*) Low capacity segment: Max Cv 0.5, 1.5, 5 or 15
**) Actuators equipped with extended input shaft.
***) Actuators M07...M12 are equipped with handwheel type SR,
actuators M14...M16 are equipped with handwheel type R.

HOW TO ORDER

SEGMENT VALVE, series RA

	RA	A	080	A	S
1.	2.	3.	4.	5.	6.

1.	Q-TRIM OR LOW-CAPACITY C_V
-	Standard capacity C_V or without a Q-trim.
Q	Q-trim to reduce noise and cavitation.
C005	Max. C_V = 0.5, DN25 valve.
C015	Max. C_V = 0.5, DN25 valve.
C05	Max. C_V = 5, DN25 valve.
C15	Max. C_V = 15, DN25 valve.

2.	PRODUCT SERIES
RA	Flangeless, reduced bore, Metso face to face length, Body ASME 300, ISO PN 50, DIN PN 40

3.	DESIGN
A	Standard drive shaft with keyway

4.	SIZE
	Size in millimeters: 025, 040, 050, 065, 080, 100, 150, 200, 250.

5.	BODY	SEGMENT	SCREWS	SHAFTS, PINS BEARINGS
A	CF8M	Type 329+ Hard chromium	A2-70	AISI 329/ PTFE
S	CF8M	Type 329	A2-70	AISI 329/PTFE

6.	SEAT
S	Cobalt based alloy, back seal PTFE lip seal.
T	PTFE+C25%, metal body, back seal PTFE lip seal.
E	Cobalt based alloy, erosion-resistant version non-tight.

SEGMENT VALVE, series RB

	RB	M	A	080	A	S
1.	2.	3.	4.	5.	6.	7.

1.	Q-trim or low-capacity C_V
-	Standard capacity C_V or without a Q-trim
Q	Q-trim to reduce noise and cavitation
C005	Max. C_V = 0.5, DN25 valve.
C015	Max. C_V = 0.5, DN25 valve.
C05	Max. C_V = 5, DN25 valve.
C15	Max. C_V = 15, DN25 valve.

2.	PRODUCT SERIES
RB	Flanged, reduced bore, face to face length ISA S 75.04 and DIN/IEC 534 Part 3-2.

3.	PRESSURE RATING
J	Body PN 10, see table below
K	Body PN 16, see table below
L	Body PN 25, see table below
M	Body PN 40, see table below

SIZE	DIN/ISO PN10	DIN/ISO PN 16	DIN/ISO PN 25	DIN/ISO PN 40
025*	same as PN 40	same as PN 40	same as PN 40	M
040*	same as PN 40	same as PN 40	same as PN 40	M
050*	same as PN 40	same as PN 40	same as PN 40	M
080*	same as PN 40	same as PN 40	same as PN 40	M
065	same as PN 16	K	same as PN 40	M
100*	same as PN 16	K	same as PN 40	M
150*	same as PN 16	K	same as PN 40	M
200	J	K	L	M
250	J	K	L	M
300	J	K	L	M
350	J	K	L	M
400	J	K	L	M
500	J	K	L	M

4.	DESIGN
A	Standard drives shaft with keyway.

5.	SIZE
	Size in millimeters: Pressure ratings DIN/ISO 025, 040, 050, 065, 080, 100, 150, 200, 250, 300, 350, 400, 500

6.	BODY	SEGMENT	SCREWS	SHAFTS, PINS/ BEARINGS
A	CF8M	Type 329+ Hard chromium	A2-70	AISI 329 / PTFE
S	CF8M	Type 329	A2-70	AISI 329 / PTFE

7.	SEAT
S	Cobalt based alloy, back seal PTFE lip seal.
T	PTFE+C25%, metal body, back seal PTFE lip seal.
E	Cobalt based alloy, erosion resistant version non-tight.

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