

PRODUCT DATA SHEET

Ramén Ball Sector Valve type KSC



Ramén Valves

We know the flow

Electric | Pneumatic

Kvs 0.025-3940 | DN 25 - 300 | Wafer/Flanged | PN 40/25/16 | Stainless steel | Soft or metal seat



Pneumatic KSC



Electric KSC

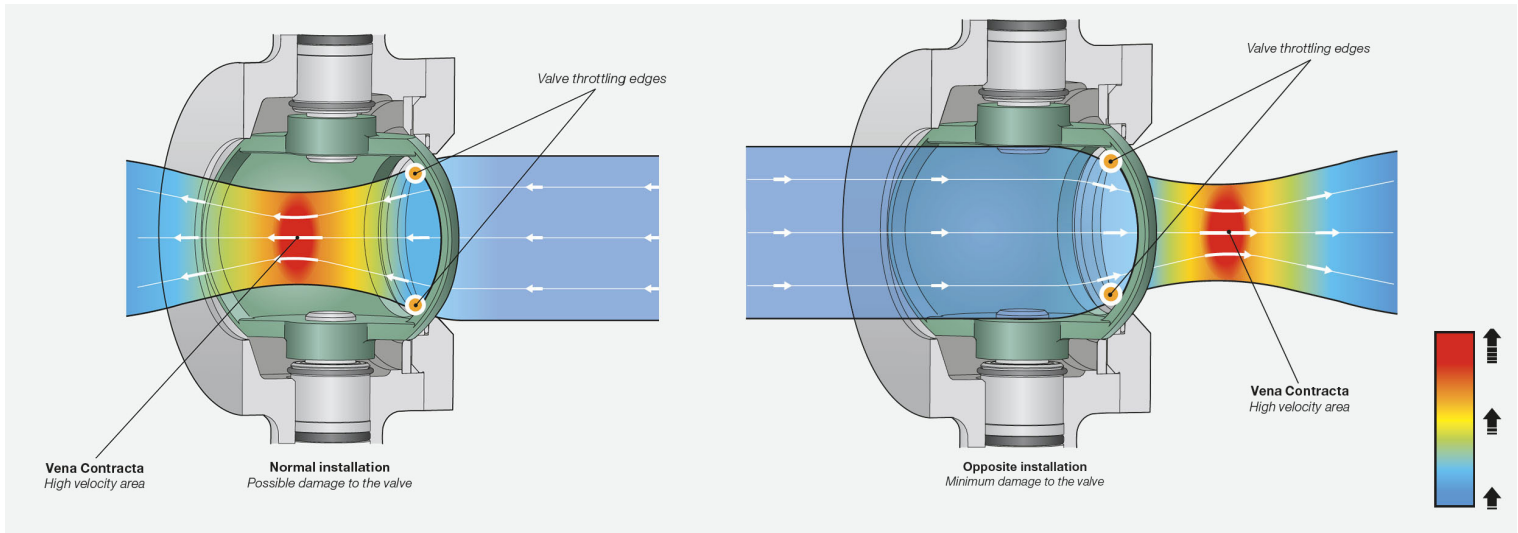
The Ramén KSC control valve series is a new innovative solution that offers the highest performance for controlling and isolating gases, fluids and slurries. With a broad range of flow capacities and flangeless (wafer) design, it is the most compact solution on the market in any installation. The KSC comes in two shapes, electrical or pneumatic with highest rangeability and lowest hysteresis in any configuration. Soft or metal seated designs makes it possible to optimize life cycle cost for any application.

Typical applications: Industrial water and wastewater recycling / pH Control / Steam / Lubricating systems / Burners, furnaces / Anti-Surge Control / Vacuum systems / Fibre suspensions / sand pumping / iron ore slurries

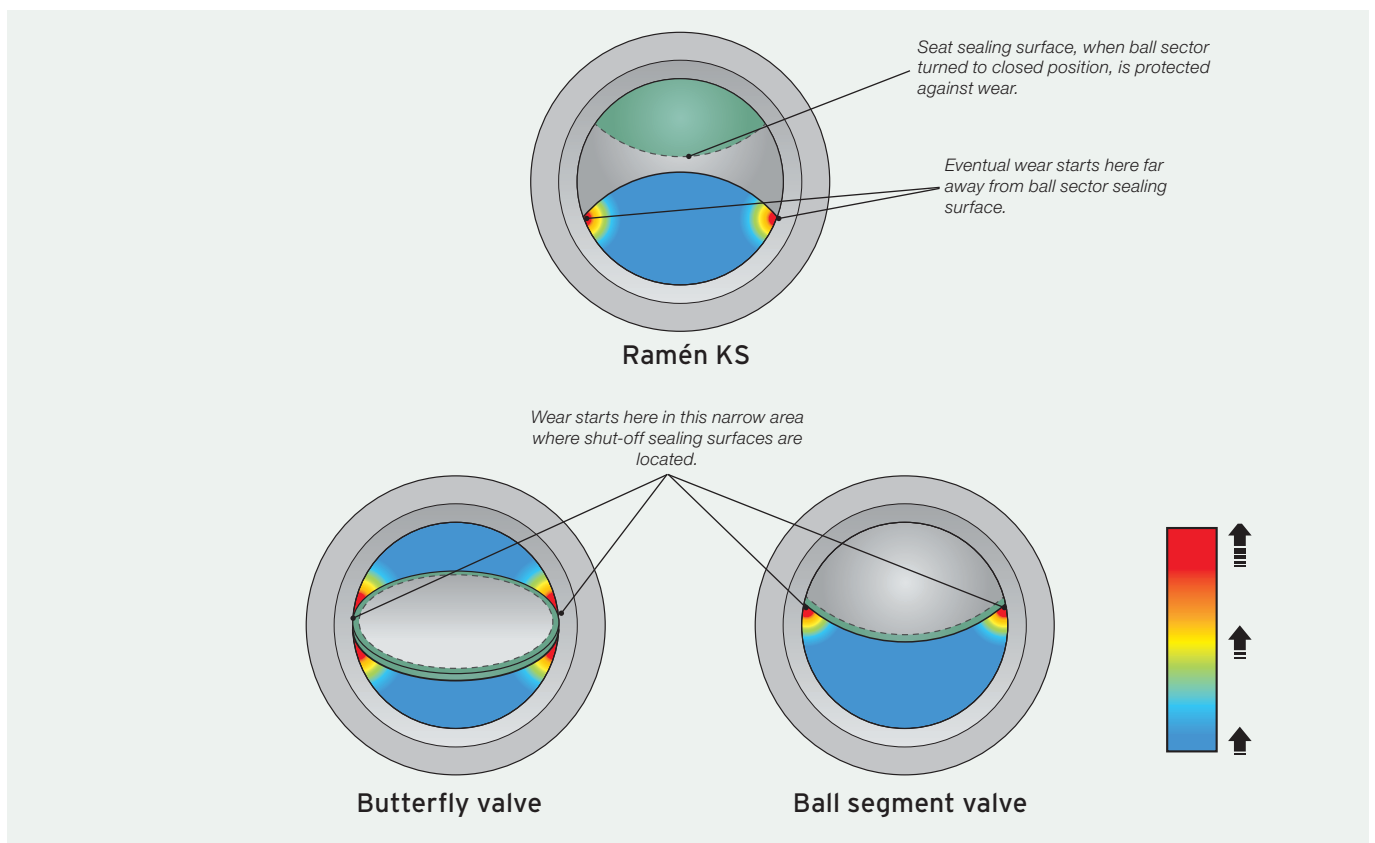
Benefits of the KSC construction

- **Control and rangeability:** control from 0-100% opening with up to 300:1 rangeability.
- **Controllability:** inherent equal percentage characteristic to manage any process independent of varying delta p.
- **Compact design:** Minimized build length, wafer design (DN25-DN250) and low weight gives easy installation and limiting the stress on piping.

- **Self-draining and centric design with no hidden cavities:** No fluid entrapment making sure not to get unnecessary thermal expansion problems. It also avoids wear and tear to seat and sealing.
- **No hysteresis:** as the valve is trunnion mounted and is provided with a zero-backlash coupling, the valve has no hysteresis and offer an excellent repeatability.
- **No leakage:** class VI tight shut off, offering the solution to use the valve as an on/off valve and control valve.
- **Bi-directional design:** Ramén KSC is normally installed with the throttling ball sector edge on the inlet side of the valve. Thanks to its bidirectional design, it is more appropriate to mount the valve body in the opposite direction when controlling abrasive media. With the throttling orifice placed on the outlet side of the valve, velocity and thereby abrasion in the valve body is reduced to a minimum or more often to zero.



- **Easy maintenance:** Designed for service, all essential parts are easily replaced for optimal performance and life cycle cost.
- **Suitable for slurry applications:** The Ramén KSC valve seat is fully protected by the ball sector in the open position and fully supported from 0° to 90°, whereas in other valve types such as segmented ball valves the seat is fully exposed to media and there is no segment support in the open position. The ball sector design in a Ramén KSC offers increased wear-and-tear resistance for abrasive media and a secured tight shut-off with any media.



Technical specifications Ball Sector Valve (For all KSC configurations)		
Design	Flangeless, wafertype (DN 300 flanged)	
Nominal sizes	DN 25 - DN 300, 1"-12"	
Material	Body Shafts Ball Sector Seat Seat holding ring O-rings Bearing	Soft seat EN 1.4409, AISI 316L EN 1.4460, AISI 329 EN 1.4409, AISI 316L PTFE (Carbon/graphite reinforced) EN 1.4409, AISI 316L FKM Rulon® Metal seat EN 1.4409, AISI 316L EN 1.4460, AISI 329 EN 1.4409, AISI 316L+Expanite Stellite EN 1.4409, AISI 316L FKM Rulon®
Nominal pressure	DN 25 - DN 50 DN 80 - DN 100 DN 150 - DN 250 DN 300	PN 40 (for flange PN 10/40 and ANSI 150/300/600) PN 25 (for flange PN 10/25 and ANSI 150/300) PN 16 (for flange PN 10/16 and ANSI 150) PN 16 (Flanged PN 16 or ANSI 150)
Operating temperature	-40°C - 170°C. -40°F - 338°F	
Seat leakage class according to EN60534-4	IV (Metal seat) VI (Soft seat)	
Shell test according to EN12266-1	No leakage detectable	
Characteristic	Equal percentage	
Rangeability	Up to 300:1	
Options	Other materials and higher operating temperature on request.	

Technical specifications Pneumatic modulating KSC	
Pneumatic actuator	
Type for modulating KSC	Double acting or spring return
Rotation angle	0° to 90°
Operating pressure	2 - 10 bar
Housing	Anodized aluminum
Operating temperature	-30°C to +80°C
Drive medium	Air (Dry or lubricated), or inert gases (Non-dangerous fluids)
Protection class	IP67
Intelligent positioner	
Input signal	4-20 mA, two wires system
Output signal	4-20mA feedback (as option)
Supply air pressure	1.4 - 6 bar
Communication protocol	HART 7
Housing	Aluminum coated
Protection class	IP66 and NEMA 4X
Operating temperature	-40°C to +85°C
1/4 NPT	1/4 NPT
Electrical connection	M20x1.5
Filter regulator with pressure gauge	
Material	Aluminum
Set pressure	0.5 to 7 bar
Max. supply pressure	10 bar
Operating temperature	-5°C to +60°C
Filter element	5 µm
Pneumatic connection	1/4 NPT

Technical specifications Electric modulating KSC

Electrical actuator

Rotation angle	0° to 90°
Standard voltage	1-phase AC current 100 - 240 V / 50 - 60 Hz
Positioner	4-20 mA input/output or 0-10V
Operating temperature	-30°C to +70°C
ON/OFF duty	Classes A and B according to EN 15714-2, short-time duty S2 - 15 min.
Local controls	With push buttons (Under cover)
Protection class	IP68
Insulation class	F tropicalized
Bluetooth	Integrated Bluetooth interface for configuring the actuator
Operating time	From 4 to 320s. Continuous
Handwheel	Yes

Electrical actuator DN 300

Rotation angle	0° to 90°
Standard voltage	3-phase AC current 220-500V / 50- 60 Hz
Positioner for modulating KSC	4-20 mA input/output or 24VDC OPEN-STOP-CLOSE
Operating temperature	-30°C to +70°C
Modulating duty	Class C according to EN 15714-2, intermittent duty S4 - 25%
Local controls	With push buttons (Under cover)
Protection class	IP68
Insulation class	F tropicalized
Bluetooth	Integrated Bluetooth interface for configuring the actuator
Operating time	From 12 to 125s. Continuous
Handwheel	Yes

Technical specifications Pneumatic ON/OFF KSC

Pneumatic actuator

Type for modulating KSC	Spring return
Rotation angle	0° to 90°
Operating pressure	2 - 10 bar
Housing	Anodized aluminum
Operating temperature	-30°C to +80°C
Drive medium	Air (Dry or lubricated), or inert gases (Non-dangerous fluids)
Protection class	IP67
Operating time	From 4 to 320s. Continuous
Handwheel	Yes

Solenoid	
Material	Anodized aluminum
Mounting	NAMUR
Min/Max. supply pressure	1.5 / 8 bar
Operating temperature	-10°C to +50°C
Protection class	IP65
Insulation class	F
Voltage	230 VAC, 24 VAC, 24 VDC, 12 VDC
Connection	1/4"
Limit switch	
Type	Mechanical
Enclosure	IP67
Material	Aluminum, Polyester coated
Ambient temperature	-20°C to +80°C

Technical specifications electric ON/OFF KSC	
Electrical actuator	
Rotation angle	0° to 90°
Standard voltage	1-phase AC current 100 - 240 V / 50 - 60 Hz
Operating temperature	-30°C to +70°C
ON/OFF duty	Classes A and B according to EN 15714-2, short-time duty S2 - 15 min.
Local controls	With push buttons (Under cover)
Protection class	IP68
Insulation class	F tropicalized
Bluetooth	Integrated Bluetooth interface for configuring the actuator
Operating time	From 4 to 320s. Continuous
Handwheel	Yes
Electrical actuator DN 300	
Rotation angle	0° to 90°
Standard voltage	3-phase AC current 220-500V / 50- 60 Hz
Operating temperature	-30°C to +70°C
Modulating duty	Class C according to EN 15714-2, intermittent duty S4 - 25%
Local controls	With push buttons (Under cover)
Protection class	IP68
Insulation class	F tropicalized
Bluetooth	Integrated Bluetooth interface for configuring the actuator
Operating time	From 12 to 125s. Continuous
Handwheel	Yes

Certificates and approvals

- CE marked acc. To PED 2014/68/EU, Category II, Module D1
- ATEX according to directive 2014/34/EU
- Fugitive emission standards acc. To ISO 15848-1 and VDI 2440 (TA Luft)
- Fullfills EC declaration 2023/2006 and 1935/2004 for articles intended to come in contact with food.

Kvs / Cv Ranges

KSC control valves present a broad range of Kvs (Cv) values. The higher Cv value for the same size valve, compared to other valve types, gives ball sector valves an extended control range. This makes them an excellent choice for higher flow capacities with higher turn-down ratios (max flow / min flow) in the process.

KSC in DN25 offers 9 different trims for versatile solutions, controlling very low flowrates within various applications fields. To enable high accuracy and rangeability with zero hysteresis the KSC-25 trims are engineered with individual geometries enabling an outstanding performance in low flow control of liquids and gases.

Size	25/0,03	25/0,3	25/0,7	25/1,3	25/2,5	25/5	25/10	25/15	25/20	40	50	80	100	150	200	250	300
K_{vs} [m³/h]	0,025	0,25	0,6	1,1	2,1	5	7,5	12,5	21	34-64	94	255	390	810	1365	2200	3840
C_v [gpm]	0,03	0,3	0,7	1,3	2,5	5,8	9	15	25	40-75	110	300	460	950	1600	2600	4500



Ball Sector DN40-300



Trim KSC25/20



Trim KSC25/5



Trim KSC25/0,3

Sizing

Kv Values

Valve opening (%)										
Size	10	20	30	40	50	60	70	80	90	100
DN25/0,03	0,0007	0,0018	0,0036	0,0062	0,0093	0,0127	0,0162	0,0195	0,0225	0,025
DN25/0,3	0,007	0,018	0,036	0,062	0,093	0,127	0,162	0,195	0,225	0,25
DN25/0,7	0,016	0,042	0,088	0,149	0,223	0,304	0,388	0,468	0,54	0,6
DN25/1,3	0,03	0,078	0,161	0,273	0,409	0,558	0,711	0,858	0,989	1,1
DN25/2,5	0,06	0,138	0,243	0,656	0,419	0,718	0,976	1,3	1,682	2,1
DN25/5	0,14	0,33	0,58	0,87	1,24	1,71	2,32	3,09	4,01	5
DN25/10	0,22	0,49	0,87	1,31	1,85	2,56	3,49	4,64	6,01	7,5
DN25/15	0,27	0,65	1,17	1,76	2,44	3,32	4,54	6,32	8,92	12,65
DN25/20	0,44	1,09	1,97	2,95	4	5,57	7,63	10,62	14,98	21,24
DN40/25	0,84	1,31	2,63	4,73	7,21	9,65	12,04	15,18	21,13	33,59
DN40/32	1,6	2,47	4,96	8,91	13,51	18,17	22,66	28,57	39,77	63,23
DN50	2,35	3,63	7,28	13,08	19,94	26,68	33,28	41,97	58,41	92,87
DN80	2,57	6,06	15,46	30,37	48,81	68,99	91,39	120,85	168,65	254,62
DN100	3,92	9,26	23,65	46,45	74,65	105,51	139,77	184,83	257,94	389,42
DN150	7,02	19,24	49,12	96,48	155,05	219,15	290,30	383,88	535,73	810
DN200	11,84	32,42	82,78	162,48	261,28	369,30	489,21	646,91	902,80	1365
DN250	19,25	52,72	134,63	264,42	424,94	600,62	795,64	1052,12	1468,29	2220
DN300	33,30	91,19	232,87	457,38	735,04	1038,91	1376,24	1819,88	2539,74	3840

Cv Values

Valve opening (%)										
Size	10	20	30	40	50	60	70	80	90	100
DN25/0,03	0,0007	0,0021	0,0044	0,0074	0,0111	0,0152	0,0194	0,0233	0,0286	0,03
DN25/0,3	0,007	0,02	0,042	0,071	0,108	0,147	0,1788	0,226	0,261	0,3
DN25/0,7	0,016	0,03	0,102	0,174	0,26	0,355	0,453	0,546	0,63	0,7
DN25/1,3	0,03	0,091	0,19	0,323	0,483	0,66	0,841	1,014	1,169	1,3
DN25/2,5	0,06	0,158	0,277	0,148	0,594	0,821	1,116	1,486	1,923	2,4
DN25/5	0,14	0,38	0,67	1,01	4,43	1,98	2,7	3,59	4,65	5,8
DN25/10	0,22	0,57	1	1,52	2,15	2,98	4,04	5,39	6,97	8,7
DN25/15	0,27	0,76	1,34	2,04	2,83	3,85	5,27	7,33	10,34	14,67
DN25/20	0,44	1,25	2,25	3,37	4,69	6,37	8,72	12,13	17,12	24,28
DN40/25	0,84	1,51	3,02	5,43	8,27	11,07	13,81	17,41	24,23	38,52
DN40/32	1,6	2,86	5,73	10,3	15,69	21	26,2	33,04	45,98	73,11
DN50	2,35	4,21	8,44	15,17	23,12	30,94	38,59	48,67	67,73	107,69
DN80	2,57	7,03	17,95	35,26	56,66	80,08	106,09	140,28	195,77	295,56
DN100	3,92	10,73	27,41	53,84	86,52	122,29	161,99	214,21	298,95	451,32
DN150	8,15	22,32	57,01	111,96	179,93	254,32	336,89	445,49	621,71	950
DN200	13,73	37,60	96,00	188,55	303,01	428,28	567,34	750,23	1046,98	1600
DN250	22,33	61,15	156,16	306,71	492,90	696,66	922,87	1220,36	1703,08	2600
DN300	38,59	105,68	269,87	530,04	851,80	1203,95	1594,86	2108,97	2943,19	4500

How to size

Calculation of the flow coefficient Kv

Kv for liquids

Volumetric flow:

$$Kv = \frac{q \times \sqrt{\left(\frac{\rho}{1000}\right)}}{\sqrt{(P_u - P_d)}}$$

Mass flow:

$$Kv = \frac{m}{\sqrt{(\rho/1000)(P_u - P_d)}}$$

Kv for gases

If $P_d > P_u / 2$

$$Kv = \frac{0,0019 \times q \times \sqrt{(\rho_g \times T_u)}}{\sqrt{P_d(P_u - P_d)}}$$

Where:

q = volume flow (m³/h)

p = fluid density (kg/m³)

p_g = density of gas at 0°C and 1013 mbar (kg/m³)

P_u = Pressure upstream the valve (bar abs)

P_d = Pressure downstream the valve (bar abs)

T_u = upstream temperature (K)

m = mass flow (t/h)

Note: Cv = Kv x 1,16

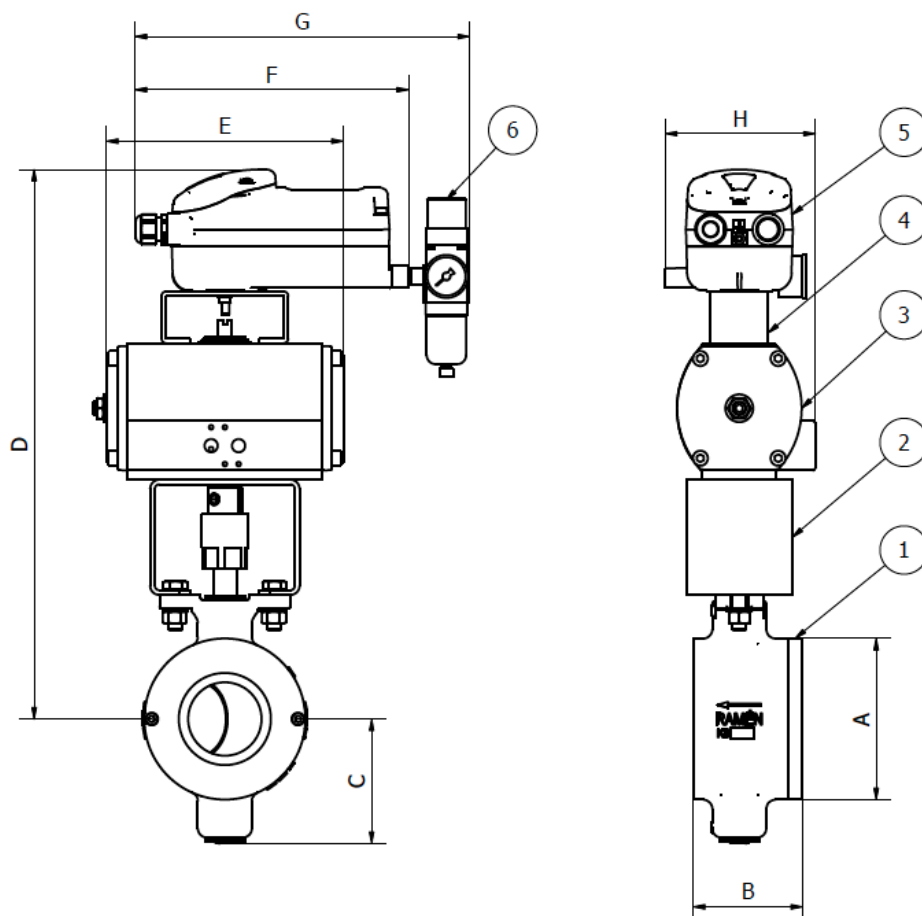
For other process conditions or in case you need any help for sizing according to your process conditions, please contact Ramón Valves.

Air consumption at 5.5 bar

WM DA size	Air consumption in cm3
4	236
8	430
12	636
20	994
70	3700
100	5900

WM SR size	Air consumption in cm3
8	408
12	636
20	994
35	1900
70	3700
150	9600

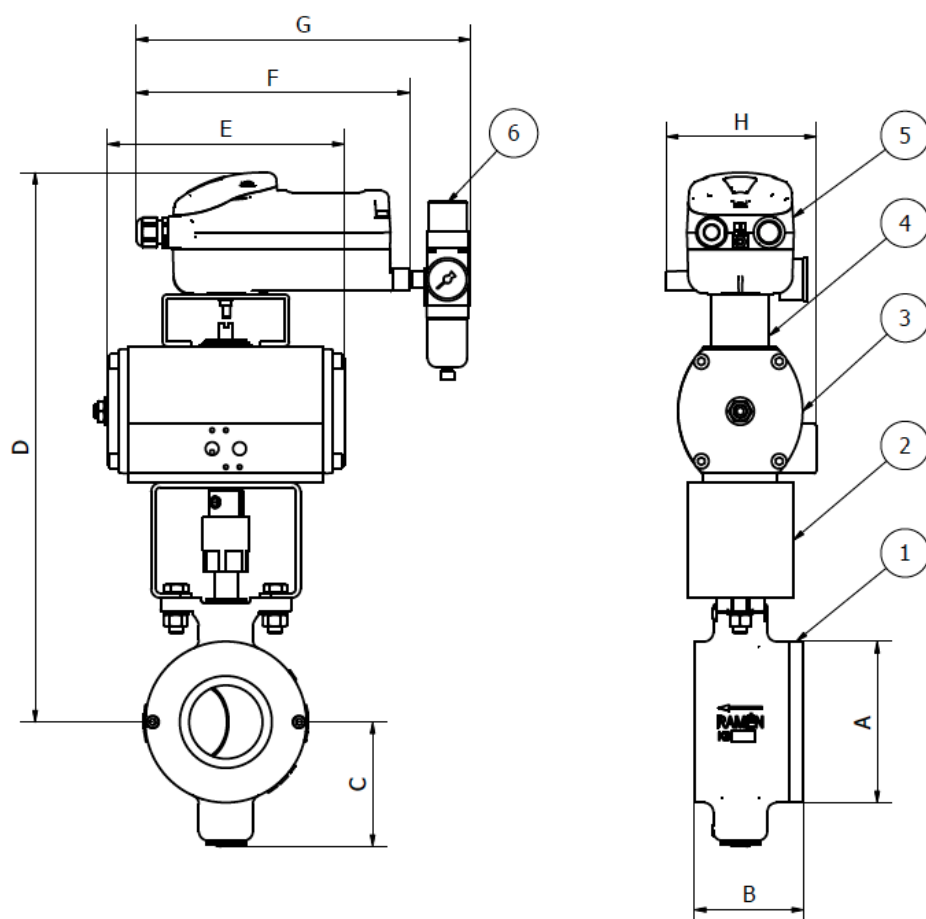
Dimensions KSC pneumatic control double acting actuator



Dimensions									
DN	25	40	50	80	100	150	200	250	300
A [mm]	70	94	94	140	160	220	274	330	460
B [mm]	50	71	71	95	112	170	210	269	368
C [mm]	35	95	95	108	120	168	196	234	307
D [mm]	400	415	415	478	489	579	607	766	864
E [mm]	175	175	175	206	206	224	224	358	366
F [mm]	238	238	238	238	238	238	238	238	238
G [mm]	310	310	310	310	310	310	310	310	310
H [mm]	105	105	105	120	120	137	137	197	228
WM DA size	8	8	8	12	12	20	20	70	100
Weight [kg]	11	14	14	23	25	39	52	97	204

Part list	
Part no.	Item
1	Ball Sector valve
2	Actuator mounting kit
3	Pneumatic actuator
4	Positioner bracket
5	Positioner
6	Filter regulator

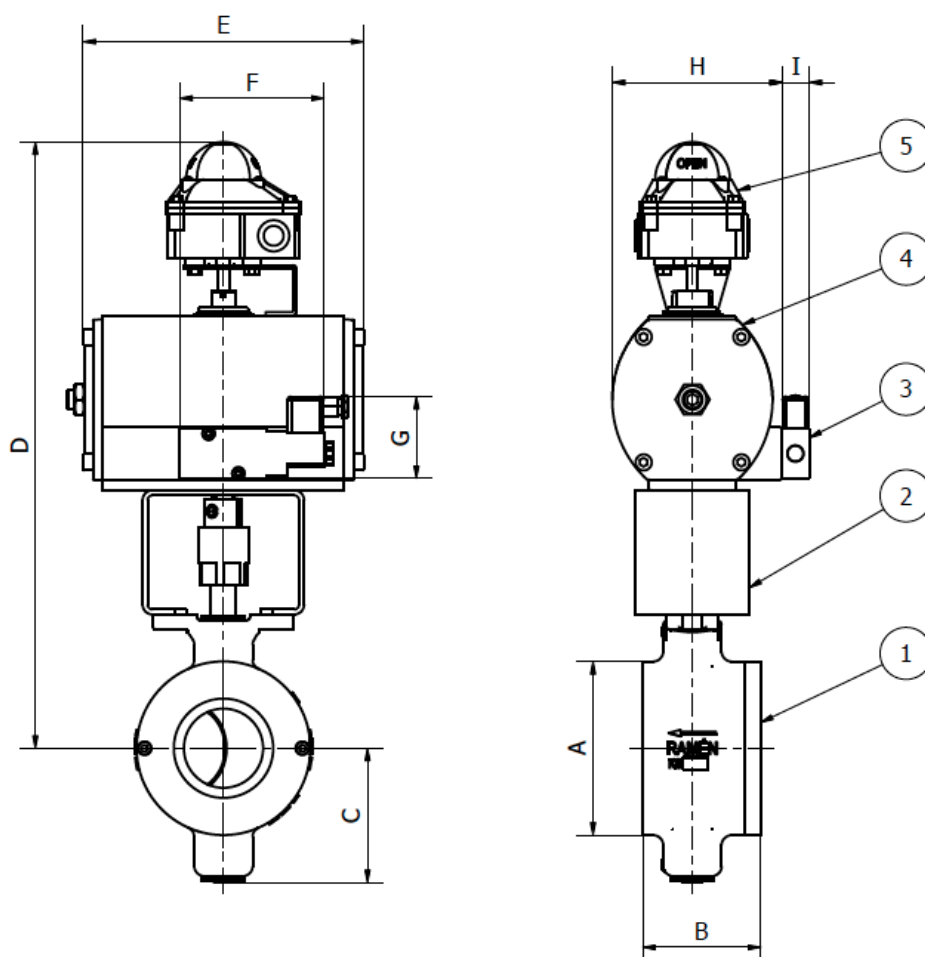
Dimensions KSC pneumatic control single acting actuator



Dimensions									
DN	25	40	50	80	100	150	200	250	300
A [mm]	70	94	94	140	160	220	274	330	460
B [mm]	50	71	71	95	112	170	210	269	368
C [mm]	35	95	95	108	120	168	196	234	307
D [mm]	400	425	425	500	511	635	663	766	912
E [mm]	175	206	206	224	224	270	270	358	394
F [mm]	238	238	238	238	238	238	238	238	238
G [mm]	310	310	310	310	310	310	310	310	310
H [mm]	105	120	120	137	137	156	156	197	280
WM SR size	8	12	12	20	20	35	35	70	150
Weight [kg]	11	14	14	23	25	45	58	97	210

Part list	
Part no.	Item
1	Ball Sector valve
2	Actuator mounting kit
3	Pneumatic actuator
4	Positioner bracket
5	Positioner
6	Filter regulator

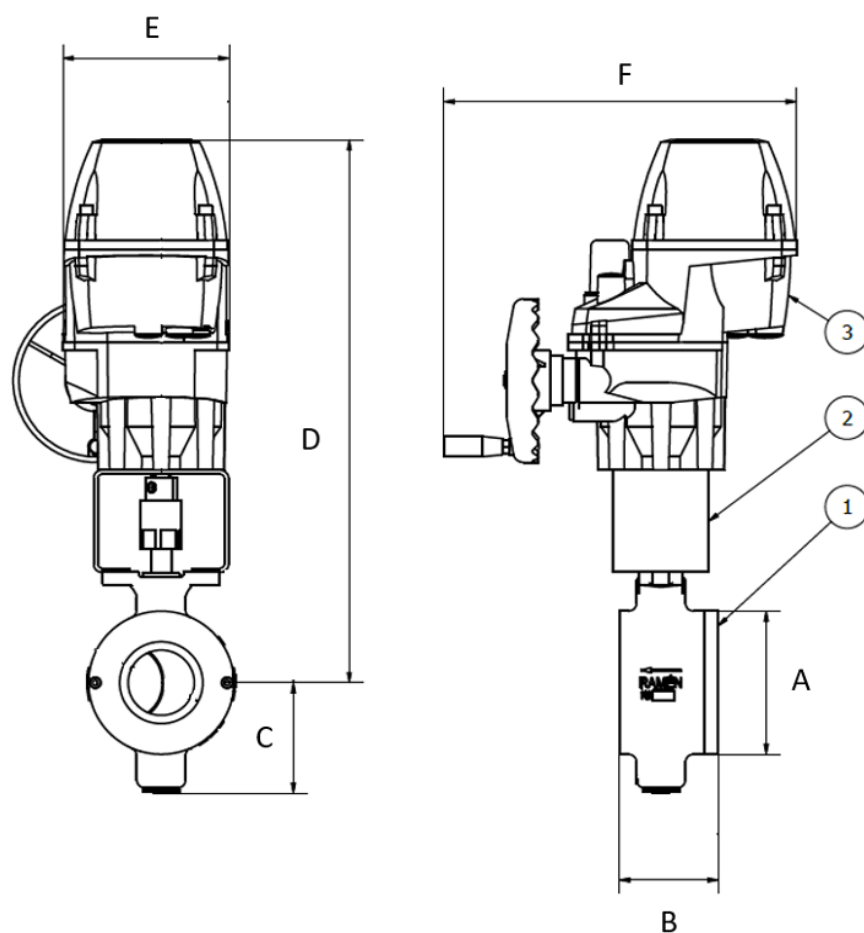
Dimensions KSC pneumatic ON/OFF



Dimensions									
DN	25	40	50	80	100	150	200	250	300
A [mm]	70	94	94	140	160	220	274	330	460
B [mm]	50	71	71	95	112	170	210	269	368
C [mm]	35	95	95	108	120	168	196	236	307
D [mm]	249	274	274	349	360	792	848	991	1108
E [mm]	177	206	206	226	226	270	270	358	394
F [mm]	105	120	120	137	137	116	116	116	116
G [mm]	66	66	66	66	66	66	66	66	66
H [mm]	105	121	121	137	137	156	156	197	280
I [mm]	22	22	22	22	22	22	22	22	22
WM SR size	8	12	12	20	20	35	35	70	150
Weight [kg]	7	9	9	16	20	43	64	98	226

Part list	
Part no.	Item
1	Ball Sector valve
2	Actuator mounting kit
3	Solenoid
4	Pneumatic actuator
5	Limit switch

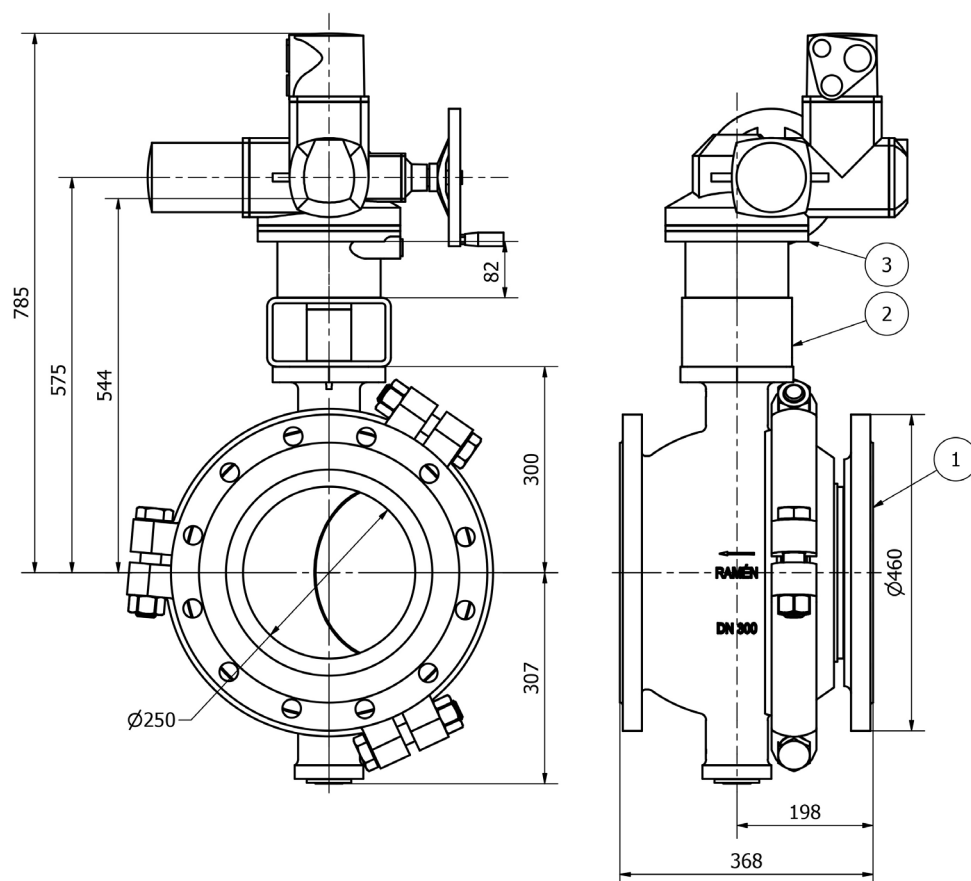
Dimensions KSC electrical control or ON/OFF



Dimensions								
DN	25	40	50	80	100	150	200	250
A [mm]	70	94	94	140	160	220	274	330
B [mm]	50	71	71	95	112	170	210	269
C [mm]	35	95	95	108	120	168	196	236
D [mm]	427	442	442	531	542	610	638	681
E [mm]	160	160	160	160	160	160	160	160
F [mm]	315	315	315	339	339	339	339	339
PROFOX size	Q80	Q150	Q150	Q300	Q300	Q600	Q600	Q600
Weight [kg]	11	12	12	19	23	36	49	78

Part list	
Part no.	Item
1	Ball Sector valve
2	Actuator mounting kit
3	Electrical actuator

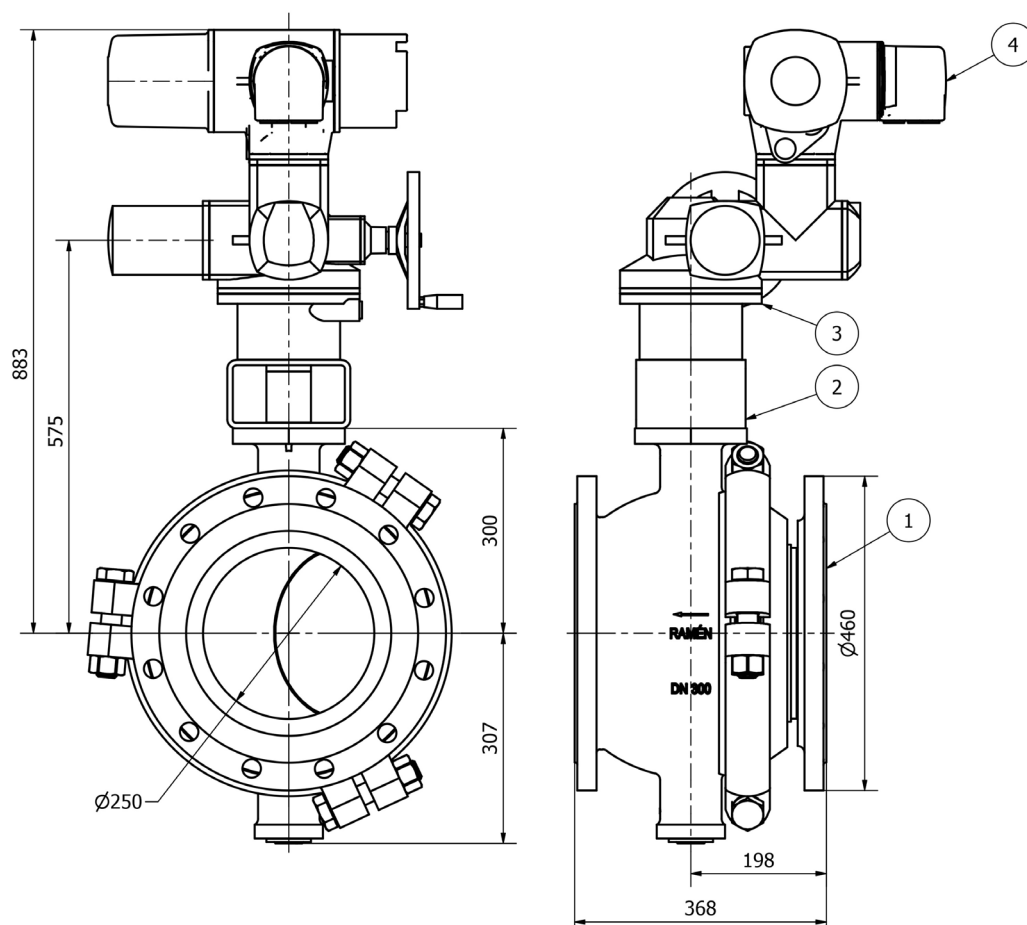
Parts list KSC electrical ON/OFF DN300



Weight: 213 kg

Part list	
Part no.	Item
1	Ball Sector valve
2	Actuator mounting kit
3	Electrical actuator

Parts list KSC electric modulating DN300



Weight: 220 kg

Part list	
Part no.	Item
1	Ball Sector valve
2	Actuator mounting kit
3	Electrical actuator
4	Controller

Valves can also be provided with handlever and actuator mounting kit according to EN-ISO-5211. For more details please refer to our Ball Sector Valves datasheets available [here](#). For pricing, availability and documentation, please visit our [product platform](#).



Address: Fredsforstigen 22 A, SE-168 67 Bromma, Sweden
Office: +46 8 598 931 00 | www.ramenvaives.com