



Ball segment valve

Si-101 GB

Type KVT/KVX and KVTF/KVXF

Edition: 1999-10

Nominal pressure	- PN 50
Nominal size	- DN 25/2 - 65
Material	- Stainless steel - High nickel alloy (Hastelloy C®)

Somas Ball segment-valve type KVT:

- is a control and shut-off valve.
- with high capacity.
- has a ball segment and shaft made in one piece, that gives a torque transmission free of backlash.
- Excellent tightness irrespective of differential pressure.

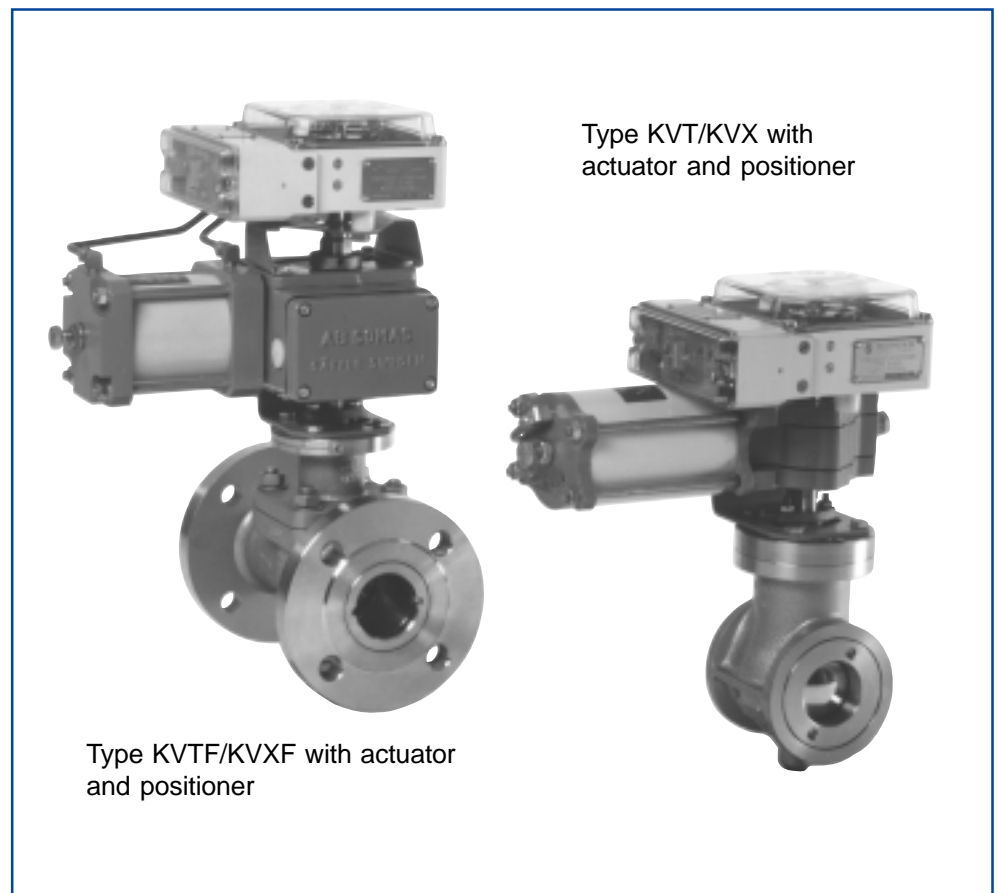
The Somas ball segment valve type KVT, with a centrally mounted shaft and KVX, with an eccentrically mounted shaft, are of wafer design. KVTF, with centrally mounted shaft, and KVXF, with eccentrically mounted shaft, are flanged.

The valves are of *top entry* design. Short face to face dimension, low weight and small space requirement make the installation of KVT/KVX very easy. One-piece ball segment and shaft design gives backlash-free operation and accurate control. The shaft is guided in the valve body and stuffing box sleeve. The spring-loaded seat is available in PTFE, PTFE 53 and Stellite.

The valves can be used for control, as well as for shut-off applications on practically every type of media within a wide temperature range.

Choose KVT/KVTF for liquids, media containing impurities etc. For dry media such as acids, gases and steam, choose KVX/KVXF. In the KVX/KVXF-valve the ball segment is eccentrically mounted and rotates out from the seat when the valve is opened. The wear on seat and segment is then reduced.

The valves are delivered ready for operation as tested units complete with our pneumatic actuators, positioners and other accessories.





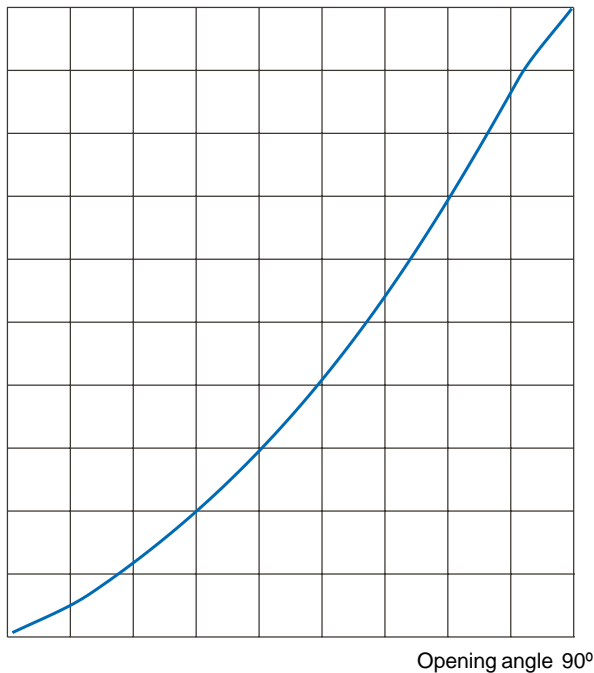
Tightness class

The tightness class is related to the chosen material in the seat.

PTFE-seat	Code A	IEC 534-4 VI
PTFE 53-seat	Code B	IEC 534-4 VI
Stellite-seat	Code T	IEC 534-4 IV alt V

Flow characteristics

100% Flow



Liquid pressure recovery factor F_L

Factor	Opening angle									
	10°	20°	30°	40°	50°	60°	70°	80°	90°	
F_L	0.85	0.82	0.80	0.77	0.74	0.71	0.67	0.64	0.60	

Capacity factor K_V and Resistance factor ζ for ball segment valve KVT / KVTF

DN	Opening angle											
	10°	20°	30°	40°	50°	60°	70°	75°	80°	90°	ζ_{90°	
25/2	0.003	0.013	0.031	0.053	0.085	0.12	0.16	0.18	–	–	–	
25/3	0.003	0.014	0.035	0.067	0.12	0.18	0.26	0.29	–	–	–	
25/5	0.014	0.055	0.13	0.23	0.39	0.56	0.72	0.8	–	–	–	
25/7	0.05	0.24	0.44	0.6	0.8	1.05	1.3	1.6	–	–	–	
25/10	0.2	0.75	1.6	2.2	2.8	3.25	4.05	–	4.25	–	–	
25/15	0.21	0.9	1.8	2.8	3.8	5.7	8.1	–	9.9	–	–	
25/20	0.21	0.95	2.0	4.3	6.8	9.5	13.9	–	20	–	–	
25	1.7	4.3	7.5	11.3	15.4	20.4	25.7	–	32.8	38	0.43	
40/32	1	3.3	6.9	12.9	19	25	35	–	48	–	–	
40	4.3	11	19	29	39	53	66	–	84	96	0.44	
50	6.8	17	30	45	61	82	103	–	131	150	0.44	
65	9.8	25	43	65	87	113	139	–	171	191	0.78	

Capacity factor K_V and Resistance factor ζ for ball segment valve KVX / KVXF

DN	Opening angle											
	10°	20°	30°	40°	50°	60°	70°	75°	80°	90°	ζ_{90°	
25	1.1	3.3	6.1	9.7	13.6	18	23	–	31	35	0.51	
40/32	1	3.1	5.9	11.5	17.2	22.5	32.5	–	47	–	–	
40	2.7	8.4	15	25	35	46	60	–	80	91	0.49	
50	4	13	25	39	54	72	94	–	124	140	0.51	
65	6.4	19	35	55	77	99	126	–	162	180	0.88	

Relation between K_V och C_V : $K_V = 0.86 C_V$

Pressure and temperature rating

(According to the material in the seat)

Material code Seat	Max working pressure (bar at °C)				
	150	170	200	350	>350
A	40	30	–	–	Note 1
B	40	32	15	–	Note 1
T	40	32	25	15	Note 1

10 bar = 1 MPa Note 1: Check with Somas

Factor F_{LP}

Faktor	Opening angle									
	10°	20°	30°	40°	50°	60°	70°	80°	90°	
F_{LP1}	0.85	0.82	0.78	0.75	0.70	0.66	0.60	0.55	0.50	
F_{LP2}	0.85	0.82	0.78	0.73	0.68	0.62	0.56	0.50	0.45	
F_{LP3}	0.85	0.82	0.78	0.73	0.67	0.61	0.54	0.49	0.43	

F_{LP1} = One dimension bigger pipe size

F_{LP2} = Two dimensions bigger pipe size

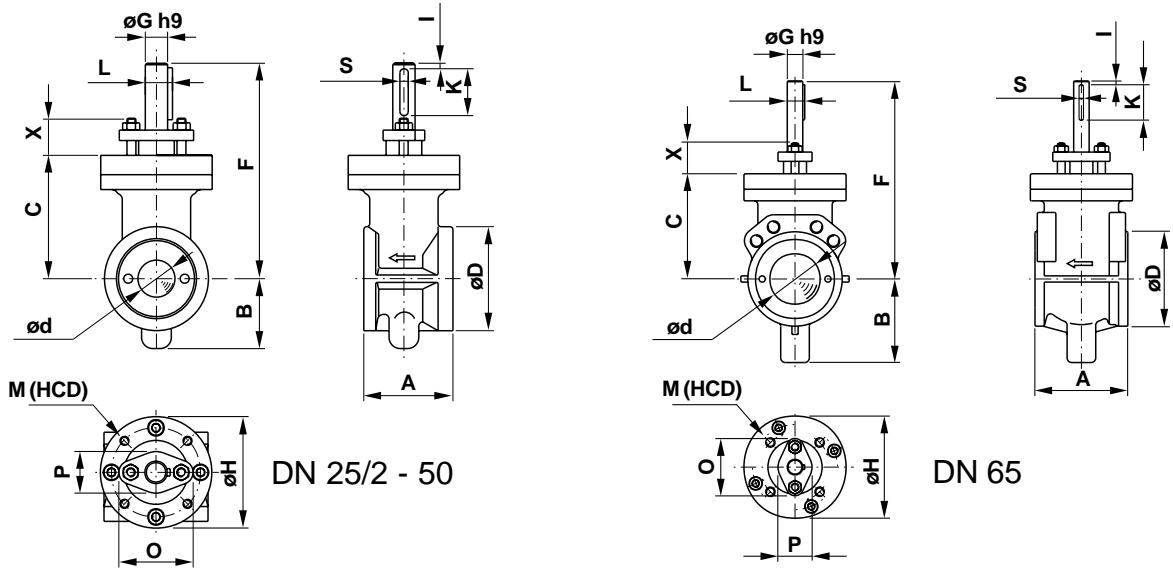
F_{LP3} = Three dimensions bigger pipe size

Pipe geometry factor F_p

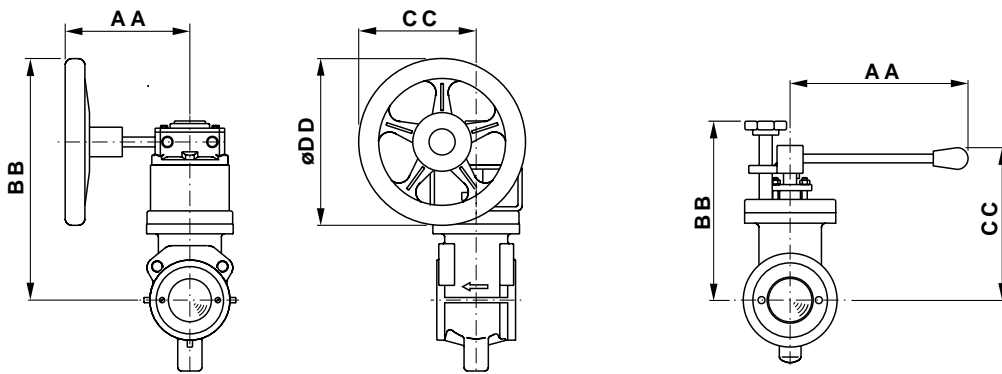
Valve DN	Pipe DN	Opening angle									
		10°	20°	30°	40°	50°	60°	70°	80°	90°	
25	32				0.98	0.96	0.93	0.90	0.85	0.81	
	40	1.0	0.99	0.98	0.95	0.91	0.85	0.79	0.71	0.66	
	50				0.92	0.87	0.80	0.73	0.64	0.59	
40	50				0.98	0.97	0.94	0.91	0.87	0.83	
	65	1.0	0.99	0.98	0.95	0.91	0.85	0.79	0.71	0.66	
	80				0.92	0.87	0.80	0.73	0.64	0.59	
50	65				0.98	0.96	0.93	0.89	0.86	0.84	
	80	1.0	0.99	0.98	0.95	0.91	0.85	0.79	0.71	0.66	
	100				0.92	0.87	0.80	0.73	0.64	0.59	
65	80				0.98	0.96	0.93	0.89	0.86	0.84	
	100	1.0	0.99	0.98	0.95	0.91	0.85	0.79	0.73	0.64	
	125				0.92	0.87	0.80	0.73	0.64	0.59	



Wafer type design



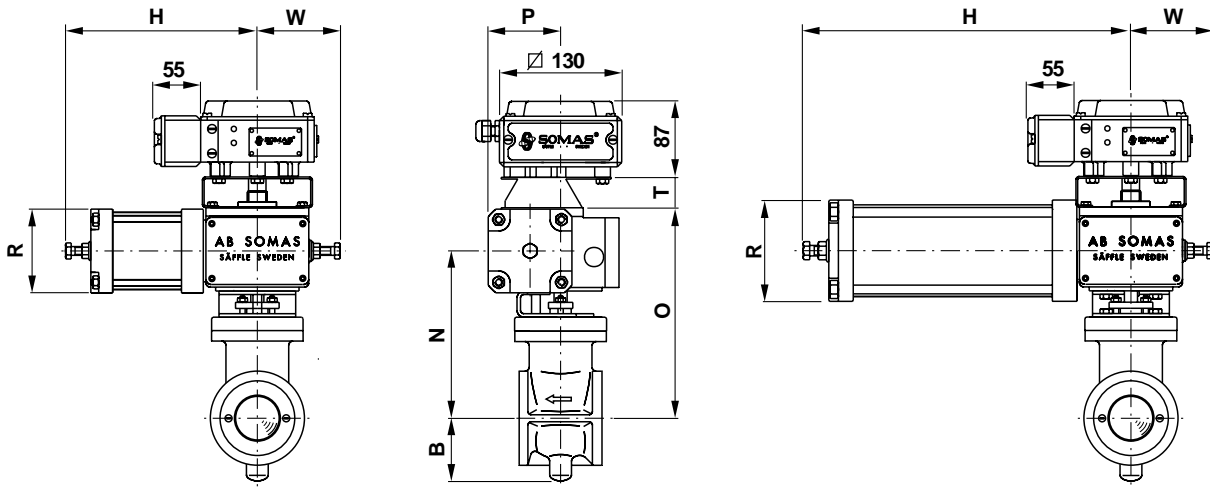
BALL SEGMENT VALVE, BAR SHAFT (measure in mm, weight in kg)																			
DN	A	B	C	øD	ød	F	øG	øH	I	K	L	M (HCD)	O	P	S	X	Weight	DN	
25/2	60	47	83	70	2	145	15	75	3	35	17	M6	60	50	28	5	25	2.5	25/2
25/3	60	47	83	70	3	145	15	75	3	35	17	M6	60	50	28	5	25	2.5	25/3
25/5	60	47	83	70	5	145	15	75	3	35	17	M6	60	50	28	5	25	2.5	25/5
25/7	60	47	83	70	7	145	15	75	3	35	17	M6	60	50	28	5	25	2.5	25/7
25/10	60	47	83	70	10	145	15	75	3	35	17	M6	60	50	28	5	25	2.5	25/10
25/15	60	47	83	70	15	145	15	75	3	35	17	M6	60	50	28	5	25	2.5	25/15
25/20	60	47	83	70	20	145	15	75	3	35	17	M6	60	50	28	5	25	2.5	25/20
25	60	47	83	70	25	145	15	75	3	35	17	M6	60	50	28	5	25	2.5	25
40/32	85	64	106	93	32	170	15	95	3	35	17	M8	80	50	28	5	25	5	40/32
40	85	64	106	93	40	170	15	95	3	35	17	M8	80	50	28	5	25	5	40
50	95	72	116	108	50	180	15	105	5	35	17	M8	80	50	28	5	25	7	50
65	120	108	136	122	65	255	20	132	5	45	22.5	M12	90	74	44	6	40	14	65



BALL SEGMENT VALVE WITH GEAR UNIT (measure in mm, weight in kg)							VALVE WITH HAND LEVER (measure in mm, weight in kg)					
DN	Type	AA	BB	CC	øDD	Weight	Type	AA	BB	CC	Weight	DN
25/2 - 25	-	-	-	-	-	-	HK115	195	175	145	3	25/2 - 25
40/32 - 40	-	-	-	-	-	-	HK125	195	200	170	6	40/32 - 40
50	-	-	-	-	-	-	HK125	195	210	180	8	50
65	M10/F07	190	370	180	255	22	HK310	350	305	245	16	65



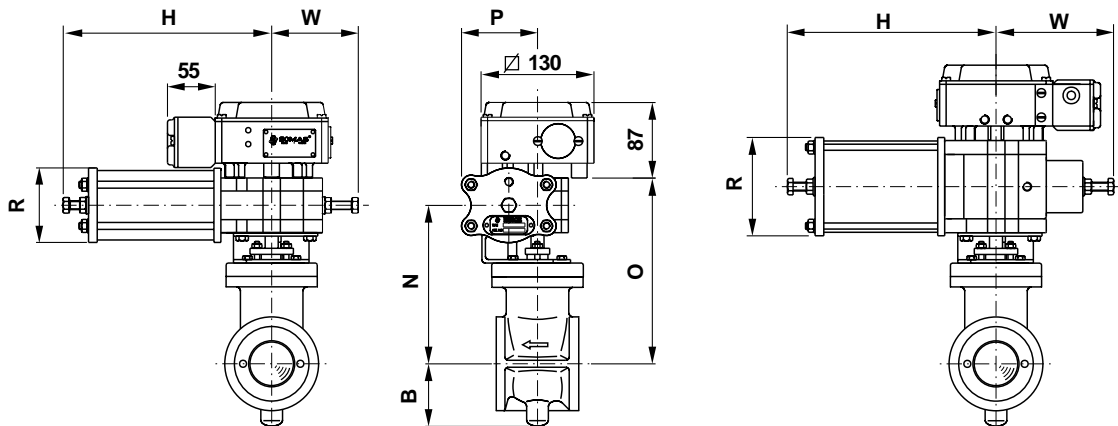
Wafer type design



BALL SEGMENT VALVE WITH ACTUATOR TYPE S (measure in mm, weight in kg)										BALL SEGMENT VALVE WITH ACTUATOR TYPE SR (measure in mm, weight in kg)										
DN	Actuator	B	H	N	O	P	R	T	W	Weight	Actuator	B	H	N	O	P	R	T	W	Weight
25/2 - 25	S12	47	220	159	209	83	96	35	95	9	SR12x	47	370	159	209	93	116	35	95	13.5
40/32 - 40	S12	64	220	182	232	83	96	35	95	11.5	SR12x	64	370	182	232	93	116	35	95	16
50	S12	72	220	192	242	83	96	35	95	13.5	SR12x	72	370	192	242	93	116	35	95	18
65	S21	108	300	268	326	118	116	39	130	28	SR21x	108	610	268	326	132	144	39	130	27

For units with positioner type SP400 you have to add 1.5 kg
 For units with positioner type SPE400 you have to add 2.5 kg

x = depends on type of spring to return. See table on page 7



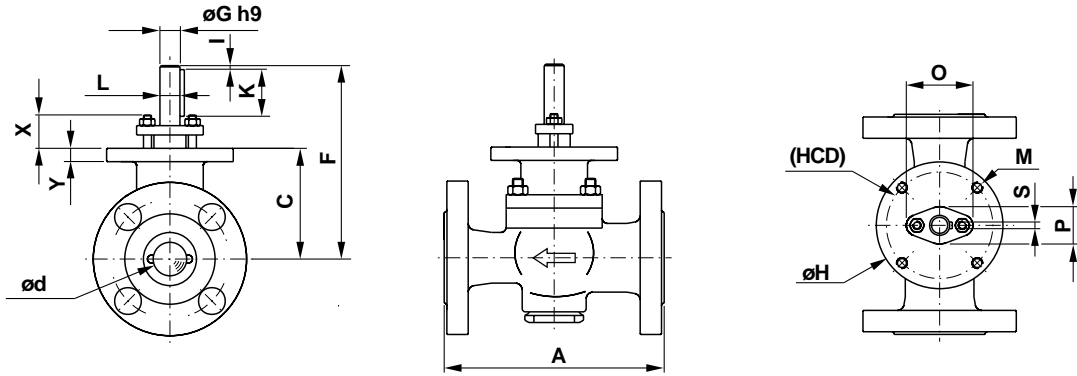
BALL SEGMENT VALVE WITH ACTUATOR TYPE C (measure in mm, weight in kg)										BALL SEGMENT VALVE WITH ACTUATOR TYPE CR (measure in mm, weight in kg)									
DN	Actuator	B	H	N	O	P	R	W	Weight	Actuator	B	H	N	O	P	R	T	W	Weight
25/2 - 25	C1015	47	240	150	181	88	86	95	6	CR1015x	47	240	171	224	83	113	35	135	8.5
40/32 - 40	C1015	64	240	173	204	88	86	95	8.5	CR1015x	64	240	194	247	83	113	35	135	11
50	C1015	72	240	183	214	88	86	95	10.5	CR1015x	72	240	204	257	83	113	35	135	13
65	C2120	108	325	259	302	132	110	130	24	CR2120x	108	435	280	344	163	136	39	265	34

For units with positioner type SP400 you have to add 1.5 kg
 For units with positioner type SPE400 you have to add 2.5 kg

x = depends on type of spring to return. See table on page 7

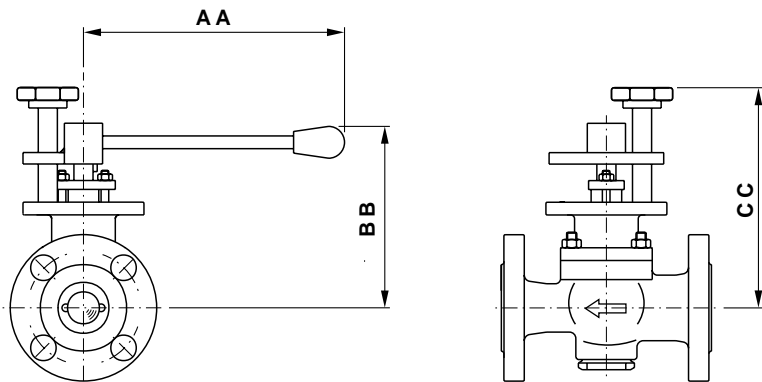


Flanged design



BALL SEGMENT VALVE (measure in mm, weight in kg)																		
DN	A ₁	A ₂	C	ϕd	F	ϕG	ϕH	I	K	L	M	(HCD)	O	P	S	X	Weight	DN
25/2	160	165	83	2	145	15	75	3	35	17	M6	60	50	28	5	25	6.5	25/2
25/3	160	165	83	3	145	15	75	3	35	17	M6	60	50	28	5	25	6.5	25/3
25/5	160	165	83	5	145	15	75	3	35	17	M6	60	50	28	5	25	6.5	25/5
25/7	160	165	83	7	145	15	75	3	35	17	M6	60	50	28	5	25	6.5	25/7
25/10	160	165	83	10	145	15	75	3	35	17	M6	60	50	28	5	25	6.5	25/10
25/15	160	165	83	15	145	15	75	3	35	17	M6	60	50	28	5	25	6.5	25/15
25/20	160	165	83	20	145	15	75	3	35	17	M6	60	50	28	5	25	6.5	25/20
25	160	165	83	25	145	15	75	3	35	17	M6	60	50	28	5	25	6.5	25
40/32	200	190	106	32	170	15	95	3	35	17	M8	80	50	28	5	25	11	40/32
40	200	190	106	40	170	15	95	3	35	17	M8	80	50	28	5	25	11	40
50	230	216	116	50	180	15	105	5	35	17	M8	80	50	28	5	25	14	50

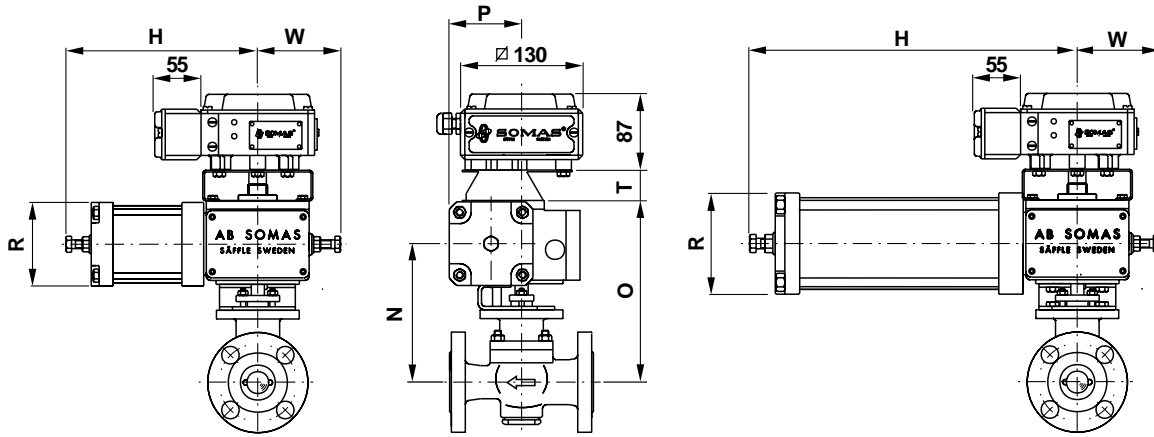
A₁ = EN 558-1 series 1
 A₂ = EN 558-2 series 4, API 600, ANSI B16.10 or MS-SP72



BALL SEGMENT VALVE WITH HAND LEVER (measure in mm, weight in kg)					
DN	Lever	AA	BB	CC	Weight
25/2 - 25	HK115	195	175	145	7
40/32 - 40	HK125	195	200	170	12
50	HK125	195	210	180	16



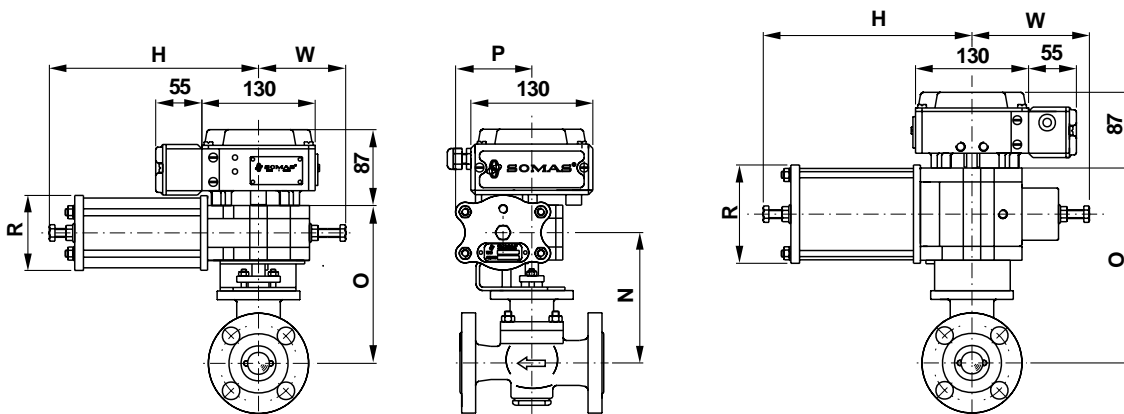
Flanged design



BALL SEGMENT VALVE WITH ACTUATOR TYPE S (measure in mm, weight in kg)										BALL SEGMENT VALVE WITH ACTUATOR TYPE SR (measure in mm, weight in kg)								
DN	Actuator	H	N	O	P	R	T	W	Weight	Actuator	H	N	O	P	R	T	W	Weight
25/2 - 25	S12	240	150	209	83	96	35	95	13	SR12x	370	159	209	93	116	35	95	17.5
40/32 - 40	S12	240	173	232	83	96	35	95	17.5	SR12x	370	182	232	93	116	35	95	22
50	S12	240	183	242	83	96	35	95	20.5	SR12x	370	192	242	93	116	35	95	25

For units with positioner type SP400 you have to add 1.5 kg
 For units with positioner type SPE400 you have to add 2.5 kg

x = depends on type of spring return. See table on page 7



BALL SEGMENT VALVE WITH ACTUATOR TYPE C (measure in mm, weight in kg)									BALL SEGMENT VALVE WITH ACTUATOR TYPE CR (measure in mm, weight in kg)							
DN	Actuator	H	N	O	P	R	W	Weight	Actuator	H	N	O	P	R	W	Weight
25/2 - 25	C1015	240	150	181	88	86	95	9.5	CR1015x	240	171	224	83	113	135	12.5
40/32 - 40	C1015	240	173	204	88	86	95	14	CR1015x	240	194	247	83	113	135	17
50	C1015	240	183	214	88	86	95	17	CR1015x	240	204	257	83	113	135	20

For units with positioner type SP400 you have to add 1.5 kg
 For units with positioner type SPE400 you have to add 2.5 kg

x = depends on type of spring return. See table on page 7



Flange standard

Somas ball segment valves type KVT and KVX (DN 25/2 - 65) are flangeless for mounting between flanges.

Ball segment valves type KVTF and KVXF (DN 25/2 - 50) are flanged and can be drilled for PN 10 - 50 and ANSI 150/300.

When ordering, please state pressure rating on counter flanges. See the valve specification system on page 8, code 11.

Further technical information

Technical data for the materials used in the Somas valves, flange standard, steam data, etc can be found in section 6 of the Somas catalogue.

Actuators and accessories

The valves can be fitted with Somas manual, on/off or control actuators in accordance with selection table. The valves will be delivered as tested units ready for operation.

See section 4 and 5 of our catalogue, where also positioners, limit switches and solenoid valves are presented.

We can also fit other types of actuators and accessories in accordance with your specification.

Torque

Valve DN	Shaft diameter (mm)	Necessary closing torque	
		Min (Nm)	Max (Nm)
25/5-25	15	25	35
40	15	45	80
50	15	55	80
65	20	120	200

Selection table

Valve DN	Double acting		Pneumatic actuators				Manual operation	
			Spring to return		Hand lever	Gear unit		
			Spring to close	Spring to open				
25/2-25	S12	C1015	SR121	CR10151	SR122	CR10152	HK115	—
40/32-40	S12	C1015	SR121	CR10151	SR122	CR10152	HK125	—
50	S12	C1015	SR121	CR10151	SR122	CR10152	HK125	—
65	S21	C2120	SR211	CR21201	SR212	CR21202	HK310	M10/F07



Ordering

State required valve code according to the valve specification system below, and state type of actuator, positioner and accessories.

Valve specification system

KVT - A 6 - A K A - B 1 1 -DN... -PN...
1 2 3 4 5 6 7 8 9 10 11

1 Type of valve

KVT (Centrically mounted shaft)
KVX (Eccentrically mounted shaft)
KVTF (Centrically mounted shaft, flanged)
KVXF (Eccentrically mounted shaft, flanged)

2 Design - valve body

A = Wafer design
L = Flanged design, according to DIN

3 Nominal pressure

6 = PN50

4 Material - valve body

A = SS 2343
B = SS 2343 hard chromed
C = SS 2353
T = High nickel alloy (Hastelloy C®) *)

5 Material - ball segment

A = SS 2343
B = SS 2343 Hard chromed *)
C = SS 2343 Stellite coated
J = SS 2324
K = SS 2324 Hard chromed
L = SS 2324 Stellite coated *)
P = SS 2353 Hard chromed *)
V = High nickel alloy (Hastelloy C®)

6 Material - seat

A = PTFE
B = PTFE 53
T = Stellite
W = Without seat
(hard chromed cover plate) *)

7 Material - shaft

A = SS 2324
B = SS 2324 Hard chromed
D = SS 2343
E = SS 2343 Hard chromed
G = SS 2353 Hard chromed *)
U = High nickel alloy (Hastelloy C®)
Chrome oxide coated bearing area *)

8 Bearing - valve body/shaft

1 = Without bearing
4 = Rulon

9 Stuffing box

1 = Graphite
2 = PTFE

10 Valve dimension, DN

11 Nominal pressure, counter flanges, PN

*) Not applicable to KVTF/KVXF

Somas reserve the right to make improvements without prior notice.



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