



Butterfly valve Type VSS PN 50

Si-204 EN

Edition: 2006-10

Nominal pressure	–	PN 50
Nominal size	–	DN 80 - 600
Material	–	Stainless steel

The SOMAS butterfly valve type VSS

- **Advanced triple eccentric design**
- **is designed for control and shut-off applications**
- **is designed for applications up to 550 °C (1020 °F)**
- **has a tightness class in accordance with IEC 534-4 Class V as standard**
- **has a solid seat made of stainless steel**
- **is designed to be mounted between flanges alt. with lugs**

Option

- **PTFE-seat**
- **HiNi seat**

SOMAS butterfly valve, type VSS PN 50, is a control, on/off and shut-off valve. The valve is designed to handle a wide range of liquids, gases and steam within a broad temperature range.

The VSS PN 50 valve can be mounted between flanges and also supplied in lugged design.

The valves have an advanced triple eccentric design including a unique shape of the disc allows the use of a solid stainless steel seat. The solid seat remains unaffected by high flow velocities and temperatures. A good valve function is achieved even on difficult applications.

The SOMAS valves are delivered ready for installation and operation. The valve assemblies are delivered factory tested as complete units with actuators, positioners and accessories.

For nominal pressure PN 25, see type MTV in the datasheet Si-205 (DN 80 - 500) and type VSS in the data sheet Si-203 for remaining dimensions (section 2 of the SOMAS catalogue).

Valve sizing

Use SOMAS valve sizing program SOMSIZE to find the correct valve size. All sizing factors are included in the program.





Tightness class

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

Metal seat	(Code C)	IEC 534-4 Class V
PTFE-seat	(Code A)	IEC 534-4 ClassVI (Option)

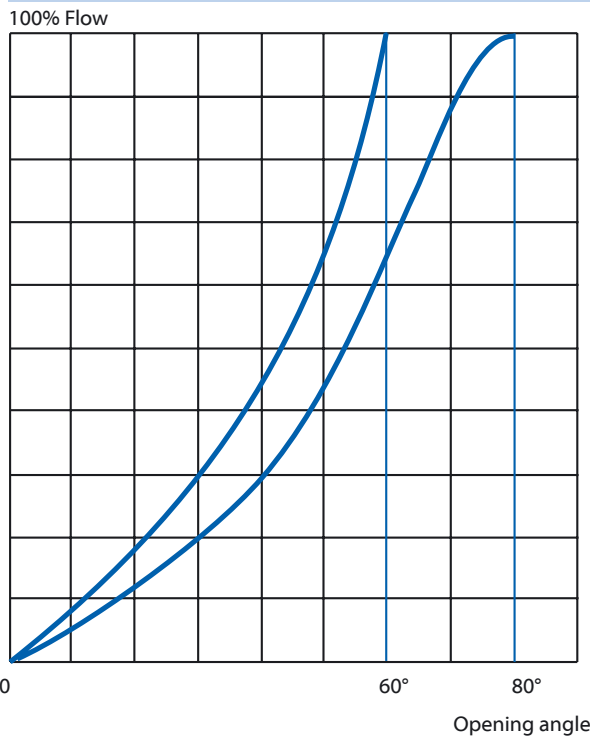
Actuators and accessories

The valves can be fitted with SOMAS manual, on/off or control actuators in accordance with the selection table.

The valves will be delivered as tested units ready for installation.

See sections 4 and 5 of the SOMAS catalogue for positioners, limit switches and solenoid valves. Other types of actuators and accessories can be fitted in accordance with your specifications.

Flow characteristics



Flange standard

SOMAS butterfly valve type VSS PN 50 in this data sheet is of wafer type for mounting between flanges PN 25-50.

The valve can also be delivered with "lugs".

Both types of valves can also be drilled for mounting between flanges according to ANSI, BS, etc.

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

Seat design

The valves with a nominal size between DN 80-600 have a metal seat (3 pcs.) according to the code C.

PTFE and HiNi-seat is available as an option.

Also check the valve specification system (code 6) to find further seat alternatives.



Capacity factor Kv and Resistance factor ξ for butterfly valve type VSS PN 50

DN	Öppningsvinkel									
	10°	20°	30°	40°	50°	60°	70°	80°	90°	ζ 90°
80	14	31	48	73	108	165	203	235	205	1,19
100	21	45	70	107	158	247	340	394	343	1,03
150	50	108	168	256	379	598	819	950	823	0,90
200	89	193	299	457	675	1069	1460	1690	1446	0,94
250	142	307	476	727	1076	1700	2321	2683	2333	0,87
300	207	446	692	1058	1566	2472	3380	3906	3397	0,85
350	279	602	934	1427	2111	3327	4558	5271	4580	0,86
400	371	800	1242	1898	2809	4429	6064	7009	6095	0,83
500	584	1258	1951	2981	4413	6963	9525	11010	9574	0,82
600	853	1839	2851	4357	6448	10177	13920	16090	13950	0,82

Relation between KV and CV: KV = 0.86 CV

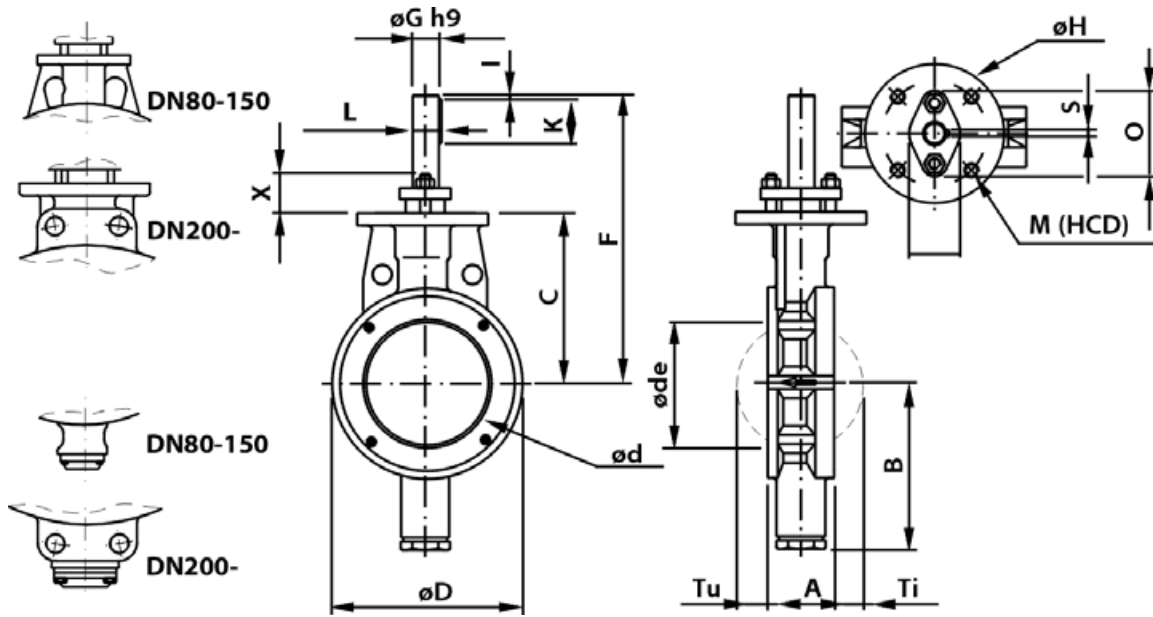
Max working pressure in bar (material in SS 2343 / CF8M)

PN	Working temperature °C																					
	0-20	30	40	50	60	70	80	90	100	120	140	160	180	200	250	300	350	400	450	500	550	°C
50	50	49	48	47	46	45	44	43	42	41	40	38	37	36	35	33	32	31	31	30	30	bar

10 bar = 1 Mpa

Temperature ranges for valve body, seat and shaft

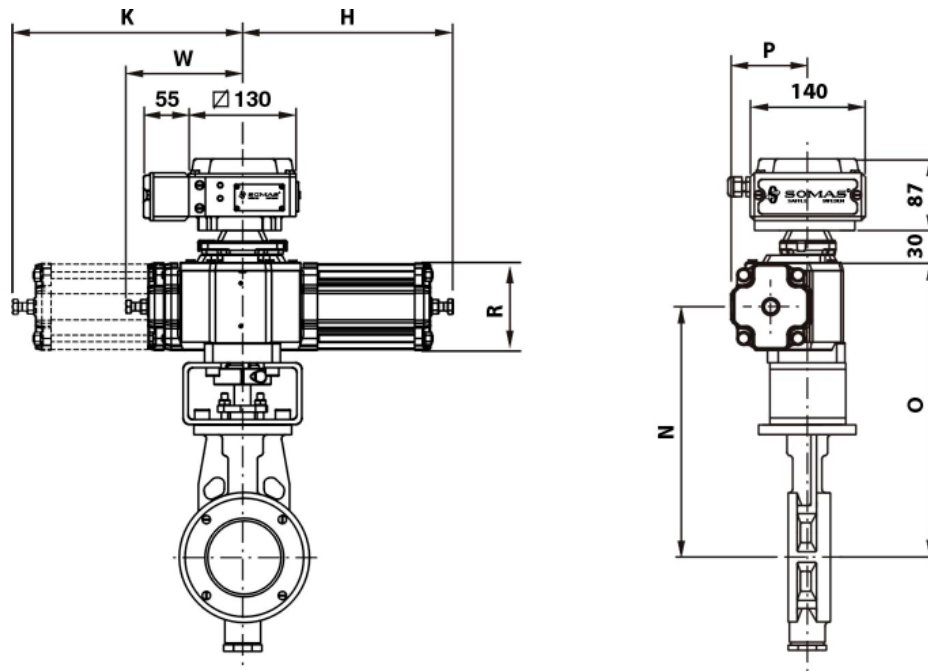
Seat	Max. temp.	Shaft	Max. temp.
A = PTFE (10% carbon)	170 °C	A = 1.4460	150 °C
C = 1.4462	350 °C	B = 1.4460, hard chromed	350 °C ¹
E = 1.4547	400 °C	C = 1.4460 HiCo - coated	350 °C ¹
G = SS 2562 (904L)	400 °C	J = 1.4547	400 °C ¹
L = HiNi (High Nickel alloy)	550 °C	L = 1.4923 HiCo - coated	550 °C ¹
T = HiCo (High Cobalt Alloy)	550 °C		
Valve body	Max. temp.	¹ Check with SOMAS for temperatures between 350 and 550 .	
A = 2343-12	550 °C		
CF8M	500 °C		
D = 1.4408	400 °C		
E = CK-3MCuN	400 °C		



A = Mounting dimension according to EN 558-1 series 16 and EN 558-2 series 16 (valid for DN 100 - 600)

Butterfly valve type VSS PN 50																					
DN	A	B	C	ød	øde	øD	F	øG	øH	I	K	L	M (HCD)	O	P	S	X	Tu	Ti	Weight	
80	50	113	150	70	60	133	270	20	120	5	45	22.5	M12	90	74	44	6	40	50	28	8
100	64	148	165	90	86	162	285	25	120	5	45	28	M12	90	78	50	8	40	64	34	11
150	76	186	195	140	138	218	330	30	150	5	60	33	M12	120	92	58	8	44	76	38	20
200	89	220	225	187	186	280	360	35	150	5	50	38	M12	120	100	64	10	44	89	44.5	34
250	114	265	265	236	235	335	400	40	150	5	50	43	M12	120	108	70	12	48	114	57	55
300	114	295	295	285	285	395	505	50	150	10	80	53.5	M12	120	124	82	14	52	114	57	75
350	127	330	330	331	330	430	540	60	200	10	90	64	M16	160	147	96	18	68	127	63.5	108
400	140	375	370	382	380	512	595	70	200	10	110	74.5	M16	160	162	112	20	68	140	70	158
500	152	442	440	479	475	605	685	80	200	10	120	85	M16	160	183	120	22	78	152	76	250
600	178	490	495	579	575	745	740	80	200	10	120	95	M20	160	183	120	22	78	178	89	445

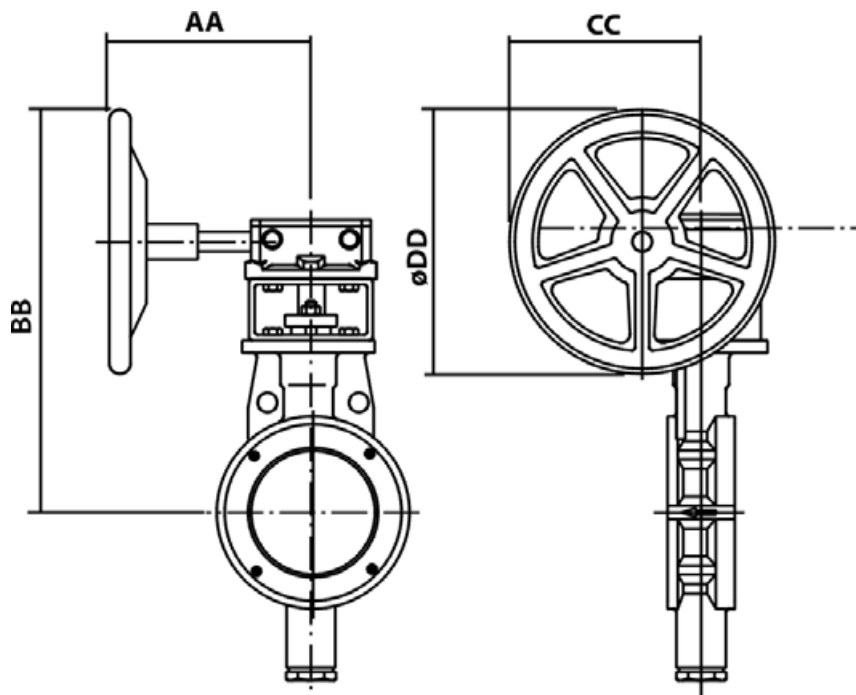
øde = Necessary free diameter for the disc under movement



Butterfly valve type VSS PN 50 with actuator type A-DA										Actuator type A-SC/SO									
DN	Type	H	K	N	O	P	R	W	Weight	DN	Type	H	K	N	O	P	R	W	Weight
80	A21	255	---	295	360	94	106	140	18	80	A24-X	415	420	295	360	117	152	---	35
80	A22	255	260	295	360	94	106	---	19	100	A24-X	415	420	310	375	117	152	---	38
100	A22	255	260	310	375	94	106	---	22	150	A33-X	660	---	390	480	185	230	215	78
150	A22	255	260	340	410	94	106	---	31	200	A33-X	660	---	420	510	185	230	215	92
150	A23	305	---	340	410	117	152	140	37	250	A34-X	665	680	460	550	185	230	---	141
200	A31	380	---	420	510	144	152	215	59	300	A34-X	665	680	480	580	185	230	---	161
250	A31	380	---	460	550	144	152	215	80	350	A43-X	920	---	605	715	280	355	315	271
250	A32	380	395	460	550	144	152	---	86	400	A43-X	920	---	645	755	280	355	315	320
300	A32	380	395	490	580	144	152	---	106	500	A44-X	925	935	715	840	280	355	---	470
350	A41	550	---	605	715	210	230	315	185										
400	A41	550	---	645	755	210	230	315	235										
500	A42	545	560	715	840	210	230	---	345										
600	A51	745	---	815	990	315	355	370	650										

For units with the positioner type SP405, add 2 kg.
For units with the positioner type SPE405, add 3 kg.

X = SC – Spring closes
X = SO – Spring opens



Butterfly valve type VSS PN 50 with gear unit						
DN	Type	AA	BB	CC	øDD	Weight
80	M10/F07	210	385	190	255	16
100	M10/F07	210	400	190	255	19
150	M12/F12	210	460	190	255	28
200	M12/F12	210	490	190	255	42
250	M12/F12	255	525	230	255	67
300	M14/F14	255	590	230	305	87
350	M14/F14	255	645	230	305	120
400	M15/F16	255	770	230	355	180
500	M15/F16	385	840	355	460	290
600	MFF3/S5	480	885	240	360	525



Supplemental information

Gaskets

Note: Use gaskets with the correct inside diameter to ensure that pressure is applied on the cover plate.

For mounting between flanges according to PN 50, the inside gasket diameter should not exceed the dimensions specified in the standard DIN-EN 1514-1.

See the table below.

For mounting between flanges according to ANSI 300 dimensions according to the standard ANSI B 16.21 RF. Following dimensions refer to the gasket:

Valve DN	Max. Ins. dia. di (mm)	Outs. dia. (dy) (mm) PN 50	Valve DN	Max. Ins. dia. di (mm)	Outs. dia. (dy) (mm) ANSI 300
80	89	142	80	89	149
100	115	168	100	114	181
150	169	224	150	168	250
200	220	290	200	219	308
250	273	352	250	273	362
300	324	417	300	324	422
350	356	474	350	356	486
400	407	546	400	406	540
500	508	628	500	508	654
600	610	747	600	610	775

Max. allowable pressure drops/torque figures

Maximum allowable pressure drops are valid at 20°C (see below).

Valve DN	PN	Max. pressure drop, bar at opening angle			Torque min. at ΔP		Torque min. at ΔP		Torque Max. shaft Nm
		0°	60°	80°	bar	Nm	bar	Nm	
80	50	50	16	6	≤ 20	120	> 20	180	220
100	50	50	15	5	≤ 20	165	> 20	250	300
150	50	50	10	3	≤ 20	250	> 20	350	420
200	50	50	7.5	2	≤ 20	290	> 20	460	550
250	50	50	5	1.5	≤ 20	480	> 20	680	820
300	50	50	5	1.5	≤ 20	600	> 20	900	1080
350	50	50	5	1.5	≤ 20	950	> 20	1350	1620
400	50	50	5	1.5	≤ 20	1300	> 20	1750	2100
500	50	50	4	1.2	≤ 20	2600	> 20	3000	3600
600	50	50	4	1.2	≤ 20	4750	> 20	5800	6960



Selection table VSS PN 50

Valve DN	Shaft dia. (mm)	Pneumatic actuators						Manual operation	
		Double acting		Spring return				Hand lever	Gear unit
		5,5 bar	4 bar	Spring closes		Spring opens			
5,5 bar	4 bar	5,5 bar	4 bar	5,5 bar	4 bar	5,5 bar	4 bar		
80	20	A21	A22	A24-SC	A24-SC	A24-SO	A24-SOL	----	M10/F07
100	25	A22	A22	A24-SC	A24-SC	A24-SO	A24-SOL	----	M10/F07
150	30	A22	A23	A33-SC	A33-SC	A33-SO	A33-SOL	----	M12/F12
200	35	A31	A31	A33-SC	A33-SC	A33-SO	A33-SOL	----	M12/F12
250	40	A31	A32	A34-SC	A34-SC	A34-SO	A34-SOL	----	M12/F12
300	50	A32	A32	A34-SC	A34-SC	A34-SO	A34-SOL	----	M14/F14
350	60	A41	A41	A43-SC	A43-SC	A43-SO	A43-SOL	----	M14/F14
400	70	A41	A41	A43-SC	A43-SC	A43-SO	A43-SOL	----	M15/F16
500	80	A42	A42	A44-SC	A44-SC	A44-SO	A44-SOL	----	M15/F16
600	80	A51	A51					----	MFF3/S5

Valve specification system

VSS - A 6 - A A C - A 1 1 - DN... - PN...

- | | | |
|---|--|---|
| <p>1 Valve type</p> <p>2 Valve body design
A = Wafer design according to EN 558-1
F = "Lugs"- according to DIN</p> <p>3 Nominal pressure
6 = PN 50 (ANSI 300 Lbs)</p> <p>4 Material – valve body
A = SS 2343-12
D = 1.4408
E = CK-3MCuN</p> <p>5 Material – disc
A = SS 2343-12
B = SS 2343-12 hard chromed
C = SS 2343-12 HiCo - coated
S = CK-3MCuN</p> | <p>6 Material – seat
A = PTFE (10% carbon¹)
C = 1.4462 (metal seat, 3 pcs.)
E = 1.4547
L = HiNi (High Nickel Alloy)
T = HiCo (High Cobalt Alloy)</p> <p>7 Material – shaft
A = 1.4460 (max temp =150 °C)
B = 1.4460 hard chromed
C = 1.4460 HiCo- coated
J = 1.4547
L = 1.4923 HiCo - coated</p> <p>¹ percentage by weight</p> | <p>8 Bearing – valve body/shaft
3 = HiCo (High Cobalt alloy)
6 = 1.4547
7 = 1.4539</p> <p>9 Stuffing box
1 = Graphite
2 = PTFE</p> <p>10 Valve size, DN</p> <p>11 Drilling, counter flanges</p> |
|---|--|---|

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.

SOMAS reserves the right to make improvements without prior notice.



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