

Datasheet

Butterfly valve for exhaust gas applications

VSS HT/MTV HT

Si-207 EN

Edition: 2024-05

Features

- Robust design
- Low leakage
- Easy maintenance
- Stainless steel for both EGR and SCR
- High reliability
- Bi-directional



Type VSS HT:	Wafer design
Type MTV HT:	Wafer design
Nominal pressure:	PN 10-25
Nominal size:	VSS HT DN80-1200
	MTV HT DN80-350
Material:	Stainless steel



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Sales and distribution

Somas Instrument AB
P.O. Box 107
SE-661 23 SÄFFLE, Sweden
Visiting address: Norrlandsv. 26-28

Phone: +46 533 69 17 00
Mail to: sales@somas.se
Internet: www.somas.se



Product Information

Application

Somas has developed a range of butterfly valves for exhaust gas applications that comply with EN 12516-2 and ASME B16.34.

Typical applications for our valves within Diesel engines, Gas engines and Exhaust systems are:

- Waste gate
- Air Bypass
- SCR
- EGR
- Scrubber
- Waste Heat Recovery
- Turbo cut out/Slow steaming

Advantages of Somas Exhaust gas valves

Somas Exhaust gas valves have a lot of technical advantages.

The advanced disc shape is designed to only be in contact with the seal when the valve is in its fully closed position. This means that you will reduce the wear on the sealing surface over time.

The valves have a solid seat design. With this seat design your valves won't be sensitive to clogging.

As a standard solution the shaft bearings are of a metal to metal design which means that the valve can easily handle high temperature applications.

All valves come equipped with a graphite stuffing box by default. Other materials are also available. Somas VSS/HT and MTV/HT valves are Bi-directional and can then be installed in both directions.

Advantages of Somas Actuator

Somas actuator offers a robust design along with several advantages.

The high temperature design allows it to handle temperatures up to 120° C. If a higher temperature range is needed, the actuator can be fitted with an extended bracket to reduce the heat transfer.

4 alternative mounting positions are available for the actuator. This means that you can get the best possible support from the actuator to the engine/construction.

Service friendly design

Somas exhaust gas valves are designed to prevent clogging of media for large valves (DN400- DN1200). It is possible to change the bearings and the shaft seals while the valves are still installed in a pipeline

Service and spare parts

If support is needed, we can help! Service support and spare parts can be offered for all valve sizes.

Somas production of exhaust valves

Somas production is situated in Sweden and the facilities are certified in accordance with the certificates ISO 9001 and ISO 14001.

Standards

Marine certifications (LR, BV, DNVGL etc.) are obtained based on order specific requirements.



Temperature performance

The VSS is designed to operate at very high temperature and still maintain tight shutoff over a long period. The standard material combination for VSS exhaust gas valve is based on 1.4408 material for applications up to 700°C depending on internal parts.

EN	Rating	0 °C	100 °C	150 °C	200 °C	250 °C	300 °C	350 °C	400 °C	450 °C	500 °C	550 °C	600 °C	650 °C	675 °C
1.4408	PN10	10 bar	9.5 bar	8.5 bar	7.6 bar	7 bar	6.4 bar	6.2 bar	5.9 bar	5.7 bar	5.5 bar	5.2 bar	3.6 bar	1.8 bar	1.2 bar
	PN25	25 bar	23.8 bar	21.4 bar	18.9 bar	17.5 bar	16.1 bar	15.4 bar	14.7 bar	14.1 bar	13.9 bar	12.9 bar	9.1 bar	4.5 bar	2.9 bar

Tightness class

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

Standard leakage class	Optional leakage class
EN 60534-4 Metal - Class V	Leakage specified by Major Engine Manufacturer

Liquid pressure recovery factor F_L

Factor	Opening angle								
	10°	20°	30°	40°	50°	60°	70°	80°	90°
F_L	0.88	0.86	0.82	0.80	0.74	0.68	0.61	0.60	0.59

Factor F_L is valid for all sizes

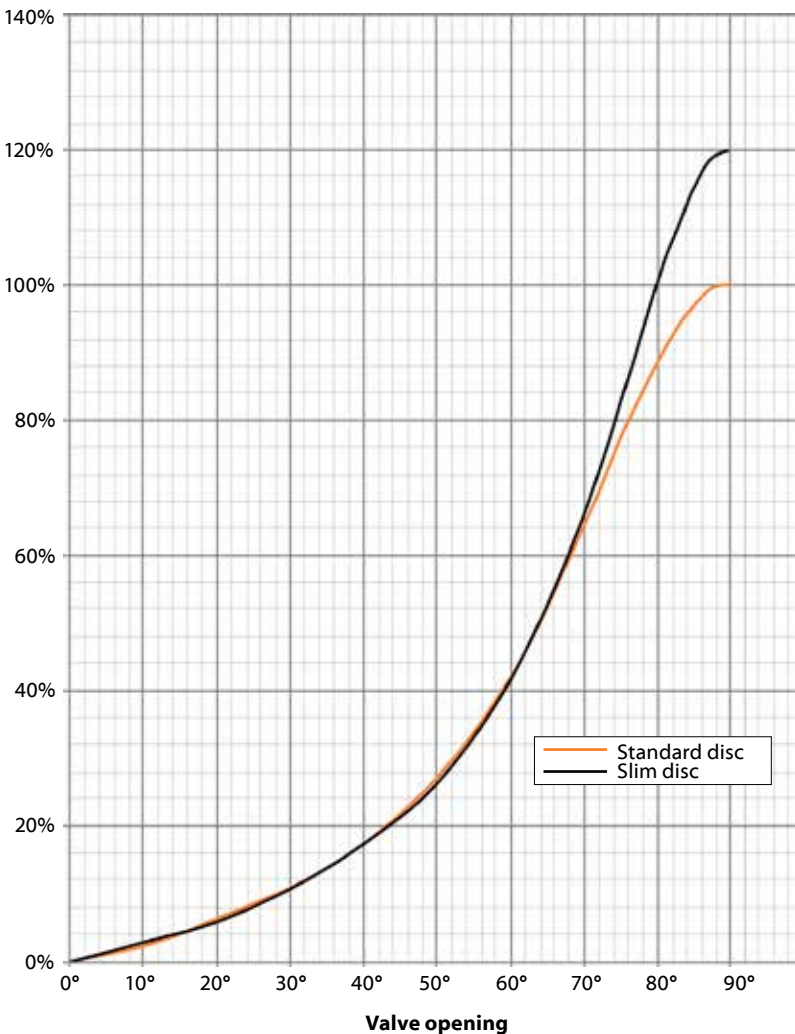
Factor F_{LP}

Factor	Opening angle								
	10°	20°	30°	40°	50°	60°	70°	80°	90°
F_{LP}	0.88	0.86	0.82	0.80	0.74	0.68	0.61	0.60	0.59

Factor F_{LP} is valid for all sizes

Flow characteristics

Flow





Standard disc - Capacity factor Kv and Resistance factor ζ

Opening angle

DN	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	ζ_{90°
80	0	8	16	32	51	71	92	118	138	145	3,169
100	0	16	32	63	99	138	180	231	274	288	1,991
125	0	28	57	112	177	246	324	418	497	525	1,432
150	0	44	88	173	273	381	505	656	785	832	1,156
200	0	84	168	329	518	730	977	1288	1564	1668	0,882
250	0	135	271	525	829	1177	1595	2134	2627	2821	0,744
300	0	196	393	755	1192	1708	2347	3191	3984	4308	0,661
350	0	265	531	1009	1596	2310	3221	4454	5644	6144	0,605
400	0	340	680	1278	2026	2965	4202	5915	7610	8341	0,565
450	0	419	837	1551	2464	3652	5270	7562	9882	10906	0,534
500	0	498	996	1818	2893	4351	6406	9382	12457	13844	0,510
600	0	650	1300	2281	3651	5695	8792	13474	18500	20851	0,475
700	0	915	1830	3211	5140	8018	12378	18969	26045	29355	0,451
800	0	1226	2451	4301	6884	10739	16579	25407	34884	39318	0,433
900	0	1579	3159	5542	8872	13840	21366	32743	44956	50671	0,419
1000	0	1974	3947	6926	11086	17295	26699	40916	56177	63318	0,408
1200	0	2868	5737	10065	16111	25134	38802	59463	81643	92020	0,392

Relation between Kv and Cv: $Cv = 1,156 \times Kv$

Slim disc - Capacity factor Kv and Resistance factor ζ

Opening angle

DN	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	ζ_{90°
600	0	611	1222	2255	3626	5483	8686	13722	20807	24829	0.336
650	0	721	1443	2663	4281	6473	10256	16200	24569	29319	0.332
700	0	837	1674	3091	4970	7514	11905	18807	28518	34030	0.331
800	0	1128	2255	4163	6694	10122	16036	25332	38412	45837	0.311
900	0	1421	2843	5247	8437	12758	20213	31930	48418	57777	0.314

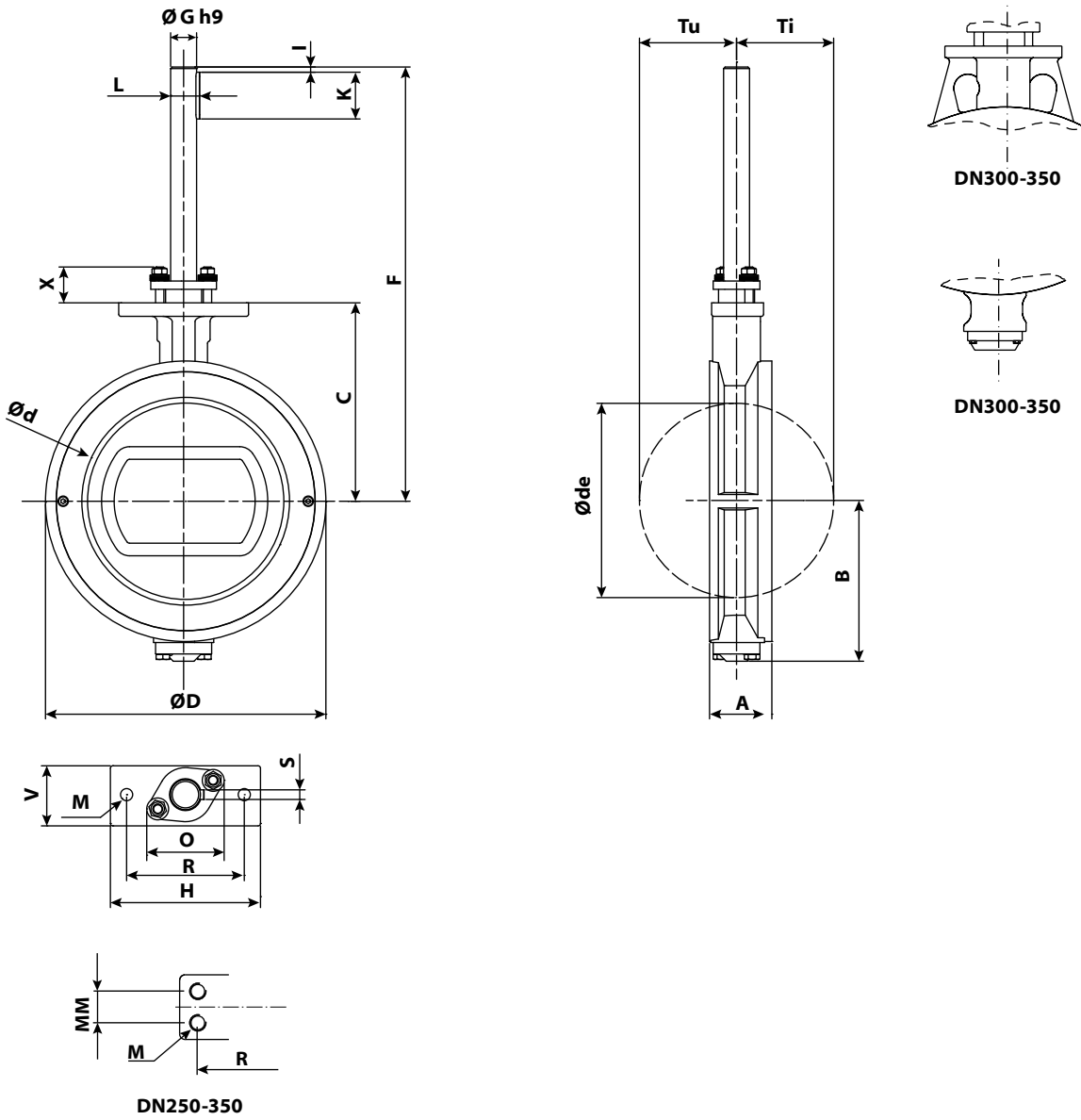
Max. allowable pressure drops/torque figures

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°	90°	bar	Nm	bar	Nm	
80	25	25	15	6	≤ 10	100	> 10	120	150
100	25	25	15	6	≤ 10	120	> 10	165	220
125	25	25	14	6	≤ 10	180	> 10	220	260
150	25	25	12	2.7	≤ 10	200	> 10	250	300
200	25	25	9	1.8	≤ 10	250	> 10	290	350
250	25	25	7.5	1.7	≤ 10	400	> 10	500	600
300	25	24	6.5	1.6	≤ 10	500	> 10	620	750
350	25	22	5.5	1.5	≤ 8	800	> 8	1000	1200
400	25	20	5	1.43	≤ 8	1000	> 8	1350	1600
450	25	18	4.7	1.25	≤ 7	1350	> 7	1900	2250
500	25	15	4.4	1.19	≤ 6	1900	> 6	2700	3250
600	25	12	4	1.13	≤ 5	2400	> 5	2900	3500
650	25	10	3.9	1.1	≤ 5	2800	> 5	3250	3750
700	25	8	2.7	0.75	≤ 4	3200	> 4	4200	5000
800	25	8	2.6	0.75	≤ 4	4000	> 4	5000	6000
900	10	7	2.4	0.65	≤ 3	4800	> 3	5800	6900
1000	10	6	2.2	0.55	≤ 3	6000	> 3	7500	9000
1200	6-10	4.5	1.8	0.45	≤ 3	7500	> 3	9000	10800



MTV HT DN80-350



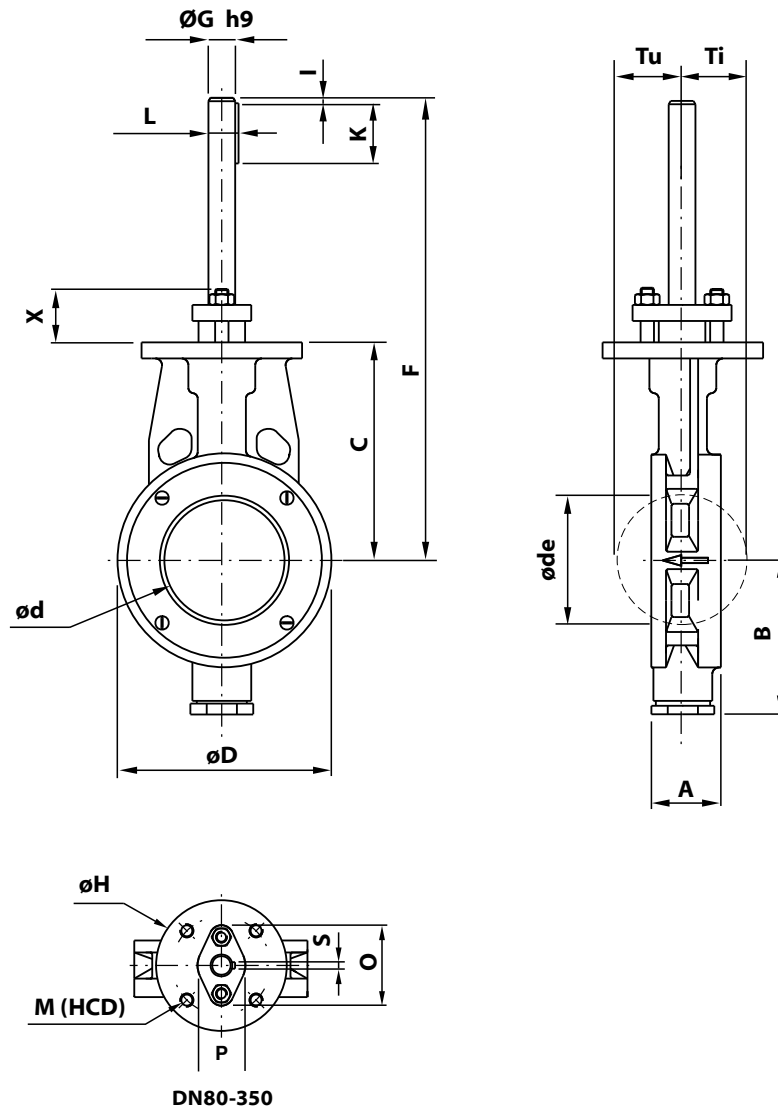
DN250-350

Butterfly valve type MTV HT

DN	A	B	C	Ød	Øde	ØD	F	ØG	H	I	K	L	M	MM	O	R	S	V	X	Tu	Ti	Vikt
80	46	84	111	70	60	133	334	20	125	5	45	22.5	M12	-	60	98	6	40	35	41	38	5
100	52	99	128	90	86	160	355	20	125	5	45	22.5	M12	-	61	98	6	44	32	52	48	6
125	56	113	146	116	110	190	374	20	125	5	45	22.5	M12	-	61	98	6	48	35	64	60	9
150	56	127	161	140	138	215	387	25	125	5	45	28	M12	-	64	98	8	50	36	77	73	11
200	60	154	191	187	186	270	418	25	125	5	45	28	M12	-	65	98	8	50	35	100	96	16
250	68	188	225	236	235	324	488	30	150	5	60	33	M12	24	72	123	8	50	39	124	120	26
300	78	261	265	285	285	375	517	35	150	5	50	38	M12	24	74	123	10	60	39	149	145	40
350	78	287	294	331	330	432	563	40	150	3	70	43	M12	40	94	132	12	70	53	172	167	55



VSS HT DN80-350

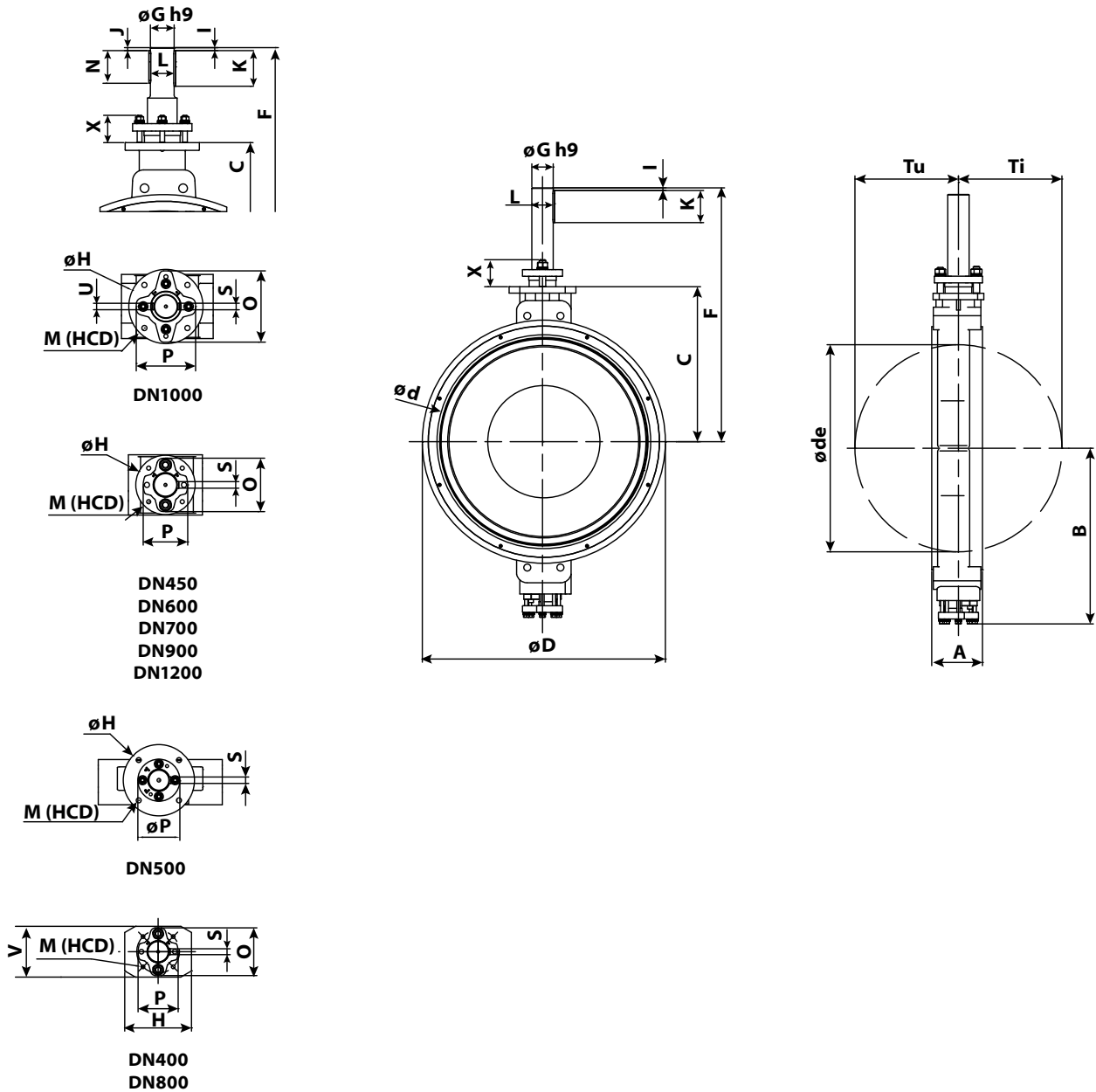


Butterfly valve type VSS HT

DN	A	B	C	ød	øde	ØD	F	ØG	ØH	I	K	L	M	(HCD)	O	P	S	X	Tu	Ti	Weight
80	48	120	150	70	60	133	380	20	120	5	45	22.5	M12	90	69	40	6	40	41	37	7.5
100	52	120	163	90	86	160	388	20	120	5	45	22.5	M12	90	69	40	6	40	52	48	9.5
125	56	135	175	116	110	190	402.5	20	120	5	45	22.5	M12	90	69	40	6	40	64	60	11.5
150	56	155	195	140	138	215	420	25	120	5	45	28	M12	90	69	45	8	40	77	73	14.5
200	60	180	235	187	186	270	460	25	120	5	45	28	M12	90	69	45	8	40	100	96	19.5
250	68	205	275	236	235	324	516	30	150	5	60	33	M12	120	80	50	8	50	124	120	31
300	78	240	290	285	285	375	545	35	150	5	50	38	M12	120	85	55	10	50	149	145	44
350	78	320	315	331	330	435	580	40	150	5	50	43	M12	120	108	70	12	50	172	167	57.5



VSS HT DN400-1200



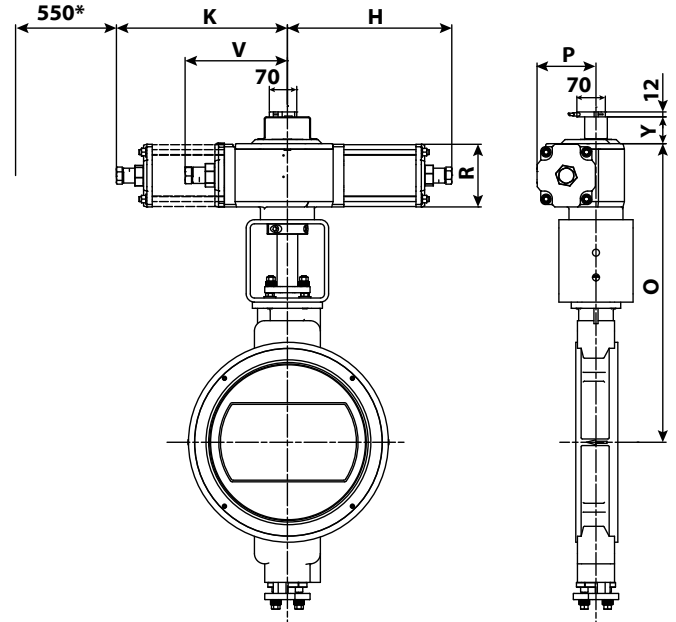
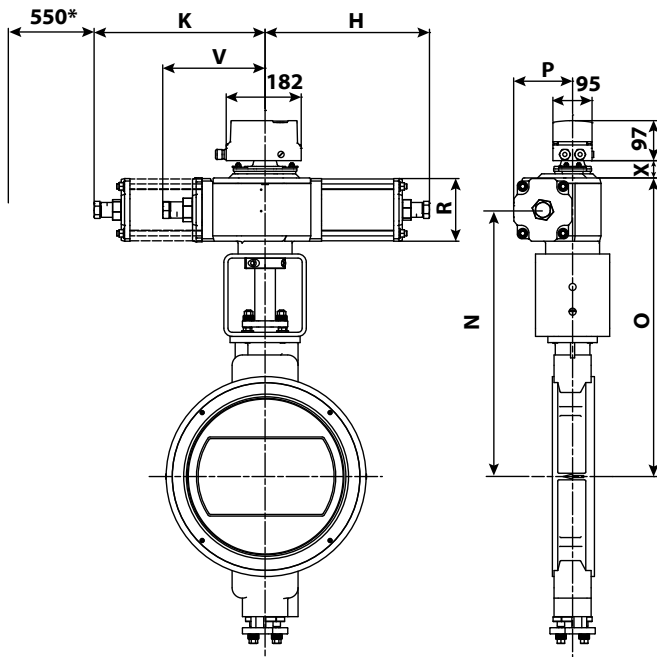
Butterfly valve type VSS HT

DN	A	B	C	$\varnothing d$	$\varnothing de$	$\varnothing D$	F	$\varnothing G$	$\varnothing H$	I	J	K	L	M	N	(HCD)	O	P	$\varnothing P$	S	V	X	U	Tu	Ti	Weight
400	102	405	340	382	380	485	624	50	-	10	-	80	53.8	M12	-	120	126	110	-	14	120	64	-	199	194	97
450	114	429	370	429	425	535	654	50	150	10	-	80	53.8	M12	-	120	130	100	-	14	-	58	-	223	217	116
500	127	464	400	479	475	590	740	60	200	10	-	90	64	M16	-	160	147	118	118	18	-	73	-	249	242	164
600	154	526	450	579	575	690	815	70	200	10	-	110	74.5	M16	-	160	176	130	-	20	-	80	-	300	292	227
700	165	580	515	674	675	800	875	70	200	10	-	110	74.5	M16	-	160	176	130	-	20	-	79	-	343	343	289
800	190	657	580	774	775	910	950	80	-	10	-	120	85	M16	-	160	180	150	-	22	190	101	-	393	393	417
900	203	710	645	900	875	1010	1016	80	200	10	-	120	85	M20	-	160	180	150	-	22	-	101	-	449	449	528
1000	216	779	730	975	975	1110	1050	80	250	10	10	120	90	M20	110	205	240	200	-	22	-	92	21.7	498	488	663
1200	254	879	786	1175	1175	1330	1106	100	250	10	-	125	106	M20	-	205	240	200	-	28	-	92	-	598	588	957



With PS2 positioner

With NCS sensor



* Minimum required space for manual emergency manouver.

VSS Butterfly valve with double acting actuators

DN	Type	H	K	N	O	P	R	V	X	Y	Weight W/PS2	Weight W/NCS
80	A21 DA	255	-	398	460	92,5	106	140	40	64	21	19
100	A21 DA	255	-	402.8	474	92.5	106	140	40	64	22	20
125	A22 DA	255	260	420.8	475	92.5	106	-	40	64	26	24
150	A22 DA	255	260	435.8	490	92.5	106	-	40	64	28	26
200	A22 DA	255	260	465.8	520	92.5	106	-	40	64	33	31
250	A23 DA	316	-	493	547	116	152	184	40	64	49	46
300	A31 DA	399	-	572	650	143	152	240	42	65	83	80
350	A32 DA	399	415	601	679	143	152	-	42	65	103	101
400	A32 DA	399	415	647	725	143	152	-	42	65	146	143
450	A32 DA	399	415	677	755	143	152	-	42	65	165	162
500	A41 DA	608	-	803	912	210	228	373	49	72	266	263
600	A41 DA	608	-	853	962	210	228	373	49	72	329	327
700	A42 DA	610	625	918	1027	210	228	-	49	72	408	405
800	A42 DA	610	625	983	1092	210	228	-	49	72	536	533
900	A42 DA	610	625	1048	1157	210	228	-	49	72	647	644
1000	A51 DA	764	-	1128	1292	315	354	-	53	76	924	921
1200	A51 DA	764	-	1184	1348	315	354	446	53	76	1218	1215



Selection table

VSS Butterfly valve with single acting (spring loaded) actuators											Weight	Weight
DN	Type	H	K	N	O	P	R	V	X	Y	W/PS2	W/NCS
80	A23-SX	425	-	386	439	116	152	184	40	64	33	31
100	A23-SX	425	-	403	456	116	152	184	40	64	35	32
125	A24-SX	438	449	421	474	116	152	-	40	64	48	45
150	A24-SX	438	449	436	489	116	152	-	40	64	50	47
200	A24-SX	438	449	466	519	116	152	-	40	64	54	52
250	A33-SX	721	-	567	645	182	228	240	42	65	95	93
300	A33-SX	721	-	607	685	182	228	240	42	65	109	106
350	A34-SX	723	739	636	714	182	228	-	42	65	151	148
400	A34-SX	723	739	682	760	182	228	-	42	65	193	93
450	A43-SX	948	-	758	868	280	354	375	49	71.5	269	150
500	A43-SX	948	-	838	948	280	354	375	49	71.5	322	156
600	A43-SX	948	-	888	998	280	354	375	49	71.5	385	156
700	A44-SX	948	963	953	1063	280	354	-	49	71.5	522	519
800	-	-	-	-	-	-	-	-	-	-	-	-
900	-	-	-	-	-	-	-	-	-	-	-	-
1000	-	-	-	-	-	-	-	-	-	-	-	-
1200	-	-	-	-	-	-	-	-	-	-	-	-

Valve DN	Shaft dia. (mm)	Pneumatic actuators		
		Double acting	Single acting	
		5.5 bar	Spring to close 5.5 bar	Spring to open 5.5 bar
80	20	A21	A23	A23
100	20	A21	A23	A23
125	20	A22	A24	A24
150	25	A22	A24	A24
200	25	A22	A24	A24
250	30	A23	A33	A33
300	35	A31	A33	A33
350	40	A32	A34	A34
400	50	A32	A34	A34
450	50	A32	A43	A43
500	60	A41	A43	A43
600	70	A41	A43	A43
700	70	A42	-	A44
800	80	A42	-	-
900	80	A42	-	-
1000	80	A51	-	-
1200	100	A51	-	-

Somas actuators are sized for 5,5 bar air supply.



Flange standard

Somas butterfly valve type VSS in this datasheet is of wafer type for mounting between flanges PN10-25.

For other standards consult Somas.

The valve can be ordered in other flange standards.

When ordering, please always state the type and rating of the counter flanges. See the valve specification system in this data sheet.

Seat design

The valves with a nominal size between DN80 - DN1200 have a Y-shaped metal seat according to code D, N or X.

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

Actuators and accessories

The valves can be fitted with on/off or control actuators in accordance with the selection table. The valves will then be delivered as tested units ready for installation.

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

Face to face dimension

Valves face to face dimension according to EN 558 Series 20.

Valve specification system

VSS HT - A 5 - A A D - B 7 1 - DN... - D... - E... - PN...

1 2 3 4 5 6 7 8 9 10 11 12 13

1 Type of valve

VSS
VSS HT
MTV HT

5 Material – disc

A = 1.4408/CF8M
X = 1.4552
X = 1.4408/CF8M Slim disc

8 Bearing – valve body/shaft

7 = Stainless steel
X = Alloy 625
X = Stainless steel bushing (316)

2 Valve body design

A = Wafer design

6 Material – seat

D = 1.4462
N = 1.4835
X = 1.4835, 3 pcs seat

9 Stuffing box

1 = Graphite
X = Special graphite
X = Graphite with Seal air connection

3 Nominal pressure

2 = PN10
5 = PN 25

7 Material – shaft

B = 1.4460 Hard chromed
X = 1.4835

10 Valve size. DN

80, 100, 125, 150, 200, 250, 300, 350,
400, 450, 500, 600, 650, 700, 800, 900,
1000, 1200

11 Shaft diameter

12 Actuator mounting flange drilling

13 Drilling, counter flanges, PN/Class

10, 16, 25

Check with Somas for further combinations.

Somas reserves the right to make improvements without prior notice.



Somas.se



LinkedIn

Head office:

Somas Instrument AB

Norrlandsvägen 26

SE-661 40 SÄFFLE

Sweden

Phone: +46 (0)533 69 17 00

E-mail: sales@somas.se

www.somas.se

