

TYPE APPROVAL CERTIFICATE

This is to certify:

That the **Butterfly Valves**

with type designation(s)
SPV, VSS HT, MTV HT

Issued to

AB Somas Ventiler
Säffle, Värmlands Län, Sweden

is found to comply with

DNV rules for classification – Ships Pt.4 Ch.6 Piping systems

DNV rules for classification – Ships Pt.6 Ch.7 Sec.7 Emission reduction system for NOx or SOx – ER

DNV class programme DNV-CP-0186 – Type approval – Valves

Application :

Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV.

Type:	Temperature range:	Max. working press.:	Sizes:
SPV	0 to 525°C (see page 2)	PN10	DN80 to DN1200 (see page 2)
VSS HT	0 to 675°C (see page 2)	PN10 or PN25 (see page 2)	DN400 to DN1200 (see page 2)
MTV HT	0 to 675°C (see page 2)	PN25	DN80 to DN350 (see page 2)

Issued at **Høvik** on **2023-09-15**

for **DNV**

This Certificate is valid until **2028-09-14**.

DNV local station: **Sweden CMC**

Approval Engineer: **Maheshraja Venkatesan**

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Zeinab Sharifi
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

2-way butterfly damper assembly for installation within SCR and exhaust gas systems designed according to EN 12516-1/-2. The dampers are of wafer butterfly valve design, with additional mounted actuator – performing self-cleaning function using mechanical scraping rings of proven design.

For mounting purpose into an exhaust gas duct, all exhaust gas dampers are designed with a flange connection according to the applicable PN rating as per EN 1092-1.

Material of construction:

Part	Material grade		
	SPV	VSS HT	MTV HT
Body	ASTM A487-CA6NM	ASTM A351 Gr. CF8M/ EN 10213 1.4408/ EN 10213 1.4552	ASTM A351 Gr. CF8M/ EN 10213 1.4408/ EN 10213 1.4552
Cover plate	ASTM A487-CA6NM	1.4408 EN 10213	1.4408 EN 10213
Stuffing box	Graphite	Graphite	Graphite
Seat	1.4000 EN 10088-3	EN 10297 1.4835	EN 10297 1.4835
Disc	ASTM A487-CA6NM	ASTM A351 Gr. CF8M/ EN 10213 1.4408/ EN 10213 1.4552	ASTM A351 Gr. CF8M/ EN 10213 1.4408/ EN 10213 1.4552
Upper and lower shaft	1.4923 EN 10302	EN 10297 1.4835	EN 10297 1.4835
Bottom cover	1.4301 EN 10088-2	-	ASTM A351 Gr. CF8M
Gasket	Graphite	Graphite	Graphite

Application/Limitation

Valves covered by this certificate are approved for use in SCR and exhaust gas systems onboard ships.

Sizes and Pressure ratings

Model	Pressure-Temperature ratings as per EN 12516-1	Sizes covered
SPV	PN10	DN80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000, 1200
VSS HT	PN25	DN350, 400, 450, 500, 600, 700, 800
VSS HT	PN10	DN900, 1000, 1200
MTV HT	PN25	DN80, 100, 125, 150, 200, 250, 300, 350

Maximum shut-off pressure for SCR systems will be 3.5 bar(g).

At elevated temperatures, the maximum pressures are to be reduced according to following in line with EN 12516-1 with the following maximum temperature limits:

1.4408	: 0°C to +675°C
CF8M	: 0°C to +675°C
CA6NM/ 1.4552	: 0°C to +600°C
1.4301	: 0°C to +600°C

Exhaust dampers shall be fitted with a permanently connected soot cleaning arrangement for contact surfaces, or equivalent arrangements maintaining the valve operability.

Materials and material protection chosen for the specific system shall be suitable for the intended medium and environmental conditions.

The approval does not include actuator and/or other equipment for remote control of the valves.

Type Approval documentation

Document No.	Rev.	Title
Si-217 EN	-	Datasheet SPV Butterfly valve for exhaust gas applications dated 2021-09
F200920-TSP-058-100 U20	0	Technical specification SPV-DN100
F200920-TSP-059-125 U20	0	Technical specification SPV-DN125
F200920-TSP-060-150 U20	0	Technical specification SPV-DN150
F200920-TSP-061-200 U20	0	Technical specification SPV-DN200
F200920-TSP-062-250 U20	0	Technical specification SPV-DN250
F200920-TSP-039-300 U20	0	Technical specification SPV-DN300
F200920-TSP-040-350 U20	2	Technical specification SPV-DN350

<u>Document No.</u>	<u>Rev.</u>	<u>Title</u>
F200920-TSP-041-400 U20	0	Technical specification SPV-DN400
F200920-TSP-029-500 U20	0	Technical specification SPV-DN500
F200920-TSP-030-600 U20	1	Technical specification SPV-DN600
F200920-TSP-031-700 U20	0	Technical specification SPV-DN700
F200920-TSP-032-800 U20	0	Technical specification SPV-DN800
F200920-TSP-034-1000 U20	0	Technical specification SPV-DN1000
F200920-TSP-035-1200 U20	0	Technical specification SPV-DN1200
Si-207 EN	-	Datasheet Butterfly valve for exhaust gas applications VSS HT/MTV HT dated 2021-01
F190924-TSP-007-500	2	Technical specification VSS HT-DN500
F190924-TSP-001-600	2	Technical specification VSS HT-DN600
F190924-TSP-005-700	2	Technical specification VSS HT-DN700
F190924-TSP-003-800	2	Technical specification VSS HT-DN800
F190924-TSP-004-900	2	Technical specification VSS HT-DN900
F190924-TSP-002-1000	2	Technical specification VSS HT-DN1000
F190924-TSP-006-1200	2	Technical specification VSS HT-DN1200
F200508-TSP-020-100	0	Technical specification MTV HT-DN100
F200508-TSP-021-125	0	Technical specification MTV HT-DN125
F200508-TSP-022-150	0	Technical specification MTV HT-DN150
F200508-TSP-023-200	0	Technical specification MTV HT-DN200
F200508-TSP-024-250	0	Technical specification MTV HT-DN250
F200130-TSP-016-300	0	Technical specification MTV HT-DN300
F200130-TSP-017-350	0	Technical specification MTV HT-DN350
PR001e	1	Pressure testing of valves (Instruction)
-	-	Sub: Evidence for Somas valve self-cleaning function dated 2022-08-15
0045/202/9140/Z/00001/19/D/001(00)	-	PED module H certificate
-	02	Kompetenskrav för speciella arbetsuppgifter
10.2	3	Tillverkningskontroll
4139_001	-	Soot cleaning arrangement in Somas Exhaust gas butterfly valves dated 2021-11-25
0743965-4	-	Tier III valve – Test specification for standard and acid resistant Tier III valve from MAN Diesel & Turbo
2700-2019-592.2	-	Certificate of Approval dated 2019-08-08
2700-2021-594.3	-	Certificate of Approval dated 2021-02-26
-	-	DENSIQ – Grafex rings catalogue
TB-60	-	Grafex NQ/ Nuclear grade graphite dated 2018-12-01
58048-01-010-L	-	Testing of Butterfly valves DN150 for TIER III application dated 2020-10-14
58053-01-010-L	-	Testing of Butterfly valves DN400 for TIER III application dated 2021-01-28
70484-01-L	-	Testing of Butterfly valves DN600 for TIER III application dated 2020-04-30
WIN GD SCR	-	Presentation related to Service experience from Winterthur Gas & Diesel
DNV-TA-001	-	Test procedure for self-cleaning function dated 2022-10-14
DNV-TA-002	-	Test report for self-cleaning function witnessed by DNV dated 2022-11-03
<u>Drawings</u>		
D-4064	-	VSS HT-A2-XXX-XX1-DN900
D-4164	-	VSS HT-A5-XXX-XX1-DN800
D-4189	-	VSS HT-A5-XXX-XX1-DN500
D-4060	-	VSS HT-A5-XXX-XX1-DN700
D-4210	-	VSS HT-A5-XXX-XX1-DN400
D-4225	-	VSS HT-A5-XXX-XX1-DN450
D-4149	-	VSS HT-A2-XXX-XX1-DN1000
D-4139	-	VSS HT-A2-XXX-XX1-DN1200
D4072	-	VSS HT-A5-XXX-XX1-DN600
D-4183	-	MTV HT-A5-XXX-XX1-DN100
D-4208	-	MTV HT-A5-XXX-XX1-DN150
D-4182	-	MTV HT-A5-XXX-XX1-DN200
D-4207	-	MTV HT-A5-XXX-XX1-DN350
D-4178	-	MTV HT-A5-XXX-XX1-DN80
D-4172	-	MTV HT-A5-XXX-XX1-DN300
D-4173	-	MTV HT-A5-XXX-XX1-DN125
D-4186	-	MTV HT-A5-XXX-XX1-DN250
D-4952	-	SPV-A2-GGH-L91-DN700-D60-E59-C5-0A
D-4951	-	SPV-A2-GGH-L91-DN600-D50-E58-C5-0A

<u>Document No.</u>	<u>Rev.</u>	<u>Title</u>
D-4948	-	SPV-A2-GGH-L91-DN300-D30-E54-C5-0A
D-4950	-	SPV-A2-GGH-L91-DN400-D40-E56-C5-0A
D-4845	-	SPV-A2-GGH-L91-DN350-D35-E55-C5-0A
D-4866	-	SPV-A2-GGH-L91-DN1000-D80-E62-C5-0A
D-4789	-	SPV-A2-GGH-L91-DN500-D50-E57-C5-0A
D-4834	-	SPV-A2-GGH-L91-DN125-D20-E50-C5-0A
D-4848	-	SPV-A2-GGH-L91-DN100-D20-E49-C5-0A
D-4946	-	SPV-A2-GGH-L91-DN200-D25-E52-C5-0A
D-4881	-	SPV-A2-GGH-L91-DN1200-D90-E63-C5-0A
D-4945	-	SPV-A2-GGH-L91-DN150-D25-E51-C5-0A
D-4944	-	SPV-A2-GGH-L91-DN80-D20-E48-C5-0A
D-4947	-	SPV-A2-GGH-L91-DN250-D30-E53-C5-0A
D-4953	-	SPV-A2-GGH-L91-DN800-D70-E60-C5-0A
D-4954	-	SPV-A2-GGH-L91-DN900-D80-E61-C5-0A
D-4968	-	SPV-A5-GGH-L91-DN450-D40-E56-C5-0A
B-1223	U-7	Lock till MTV-ventil
B-5724	U2	Lock MTV DN80 PN25-02
C-983	U-2	Lock MTV DN300
C-984	U3	Lock MTV DN350
D-2657	U-2	Valve body MTV DN350 PN25 bearing-02
D-2889	U5	Hus MTV DN100 lager-02
D-2992	U-2	Hus MTV DN300 PN25 lager serie-02
D-3014	U3	Hus MTV DN200 PN25 lager-02
D-3161	U5	Hus MTV DN80 PN25 lager-02
D-3191	U3	Hus MTV DN150 PN25 lager-02
D-3255	U3	Hus MTV DN125 lager-02
D-3439	U2	Hus MTV DN250 PN25 lager-02
D-4538	U14	Hus SPV DN600 PN10
D-4700	U6	Hus SPV DN150 PN10
D-4703	U4	Hus SPV DN400 PN10
D-4734	U8	Hus SPV DN800 PN10
D-4742	U2	Hus SPV DN80 PN10
D-4747	U3	Hus SPV DN200 PN10
D-4756	U2	Hus SPV DN250 PN10
D-4797	U10	Hus SPV DN700 PN10
D-4813	U3	Hus SPV DN300 PN10
D-4835	U2	Hus SPV DN125 PN10
D-4844	U4	Hus SPV DN350 PN10
D-4854	U2	Hus SPV DN500 PN10
D-4967	U4	Hus SPV DN450 PN10
E-1221	U8	Hus SPV DN900 PN10
E-1235	U7	Hus SPV DN1000 PN10
E-1241	U9	Hus SPV DN1200 PN10
D-4038	U5	Hus VSS HT DN600 PN25-05NPB
D-4042	U6	Hus VSS HT DN700 PN25-05
D-4058	U6	Hus VSS HT DN500 PN25-05
D-4087	U9	Hus VSS HT DN800 NPB-06
D-4209	U4	Hus VSS DN400 PN10-05
D-4224	U4	Hus VSS DN450 PN10 NPB
E-1121	U6	Hus VSS DN900 NPB
E-1137	U5	Hus VSS DN1200 PN10 Spec
E-1138	U5	Hus VSS DN1000 PN10-Spec

Production Testing and Certification

Each damper shall be subjected to functional, visual & dimensional as well as leakage testing as per the test plan ITP 62007 MAN-SCR.

Certification for the actual intended application shall follow the latest applicable edition of the Rules (as mentioned on the front page of this certificate).

Tests carried out

Pressure test, seat tightness test, functional test, self-cleaning test (with bitumen and melted sugar)

Marking of product

For traceability to this type approval the valves are to be marked as a minimum with:

- manufacturer's name or trademark
- valve type designation
- size
- maximum design pressure and temperature

Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNV-CP-0338.