

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Butterfly Valves**

with type designation(s)
Marine 3-way and 2-way dampers

Issued to

Sammet Dampers Oy
JYVÄSKYLÄ, Finland

is found to comply with

DNV GL rules for classification – Ships Pt.6 Ch.7 Environmental protection and pollution control

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

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

Application :

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

Marine 3-way and 2-way dampers approved by this certificate fulfill the requirement of self-cleaning (soot cleaning arrangement) as per rules for classification: Ships - DNV-RU-SHIP Pt.6 Ch.7 Environmental protection and pollution control, Sec.7 - 4 Exhaust systems - Pt.4.1.9 soot cleaning arrangement

Temperature range: 450°C

Max. working press.: 5000Pa

Sizes: DN350 - DN2000

Issued at **Hamburg** on **2022-06-02**

This Certificate is valid until **2027-06-01**.

DNV GL local station: **Finland CMC**

for **DNV GL**

Approval Engineer: **Frank Poetsch**

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Olaf Drews
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 GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") 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

Marine 2-way and 3-way dampers.

Design conditions

Design pressure and temperature conditions for Sammet dampers exhaust gas damper nominal sizes vary according to the different requirements of the applications. The range is listed as following:

Nominal marine 2-way dampers, gas damper sizes:	DN 350 to DN 3400
Nominal marine 3-way dampers, gas damper sizes:	DN 350 to DN 2000
Design pressure:	-1000Pa... +3000Pa
Temperature range:	450°C (exhaust gas, max.), 450°C (damper, body, max.)
Operation in general:	pneumatic single actuator, SAM-Series or equivalent, air supply min. pressure: 5,0bar
Damper fail safe:	Spring opens or closes the damper
Sealing type, marine 2-way dampers:	LTO or LT10 (DN350-DN2000) / LT4
Sealing type, marine 3-way dampers:	LTO / LT4 / LT10

Materials

All exhaust gas damper sizes are fabricated of carbon steel depending on the operating requirements of the applied process.

Frame: Cor-Ten / S235 (Q235) / Cor-Ten B (S235JOW and S355JOW), or equivalent

Blade: Cor-Ten / 16Mo3 / Cor-Ten B (S235JOW and S355JOW), or equivalent

Flanges: S235 (Q235), or equivalent

Surface treatment: Painting according to Sammet instruction TS-100220

Sealing

Construction options:

- Double LTO sealing, seal air
- Double LT4 sealing, seal air
- Double LT10 soft sealing, seal air
- Single LT1 sealing, no seal air
- Single LT4 sealing, no seal air

Sealing methods without counterparts in frame (contact) do not need soot cleaning.

Connection

For mounting purpose into an exhaust gas duct all exhaust gas dampers are designed with a flange connection.

- Installation to counter flanges
- Installation by welding
- Standard flange option: JIS 7805/JIS B2220 10K; DIN86044 / EN ISO 1062-1 PN10 (flange surfaces non-machined, other flange standards available)

Installation

The installation of the exhaust gas dampers can be made in horizontal, vertical or inclined position.

Application/Limitation

Marine piping systems / scrubber and SCR, NG damper series.

Model series	Damper type	Use	Sealing air	Sealing type	Size range	Standardization year
CF0002W	2-way	Custom	Custom	Custom	Custom	None
CF1102W	2-way	Indoor	Yes	LTO	DN350-DN2000	2017-2018
CF1202W	2-way	Indoor	Yes	LT4	DN300-	2017-2018

					DN2000	
CF1402W	2-way	Indoor	No	LT4	DN300-DN2000	2017-2018
CF2102W	2-way	Indoor	Yes	LT10	DN350-DN2000	2020
CF2202W	2-way	Indoor	Yes	LT4	DN350-DN2000	2020
CF2402W	2-way	Indoor	No	LT4	DN300-DN2000	2020
CF3202W	2-way	Indoor	Yes	LT4	DN2100-DN3400	2020
CF0003W	3-way	Custom	Custom	Custom	Custom	None
CF1103W	3-way	Indoor	Yes	LT0	DN350-DN2000	2017-2018
CF1203W	3-way	Indoor	Yes	LT4	DN350-DN2000	2017-2018
CF2103W	3-way	Indoor	Yes	LT10	DN350-DN2000	2020
CF2203W	3-way	Indoor	Yes	LT4	DN350-DN2000	2020
CF2403W	3-way	Indoor	No	LT4	DN300-DN2000	2020

In other cases: re-calculation by SAMMET. The re-calculation is part of the survey. This re-calculation shall be presented to the surveyor and checked for plausibility. It is attached internally to the SAMMET-documentation.

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

Type Approval documentation

Tests carried out

Test standards

- DNV GL Rules Pt.4 Ch.6
- DNV GL CP 0186 – Valves
- Sammet Damper - Self Cleaning Test Procedure
- Sammet Damper Standard Inspection Test / QA Plan for Manufacturing, IT-1000455-00-PR-Q, Rev. 2020-06

Type of tests

- Visit Report, 3-way damper, DN1600, I003004-2120562, witnessed by surveyor, 2021-12-16, control no. PRJ11100348031
- FAT protocol I003004-2108499, 3-way damper, DN350; 2021-12-09
- FAT protocol I003004-2120562, 3-way damper, DN1600; 2021-12-10
- Damper sealing test, proj. no. 130064, VTT-CRM-172650-21, 2021-05-31

Testing and documentation is an essential part of acceptance test. The re-calculation if needed and data sheet (part list, maintenance booklet) is part of the survey. This shall be presented to the surveyor and checked for plausibility. It is attached internally to the SAMMET-documentation.

After completion, at least one damper shall be shop tested with respect to required function and, if relevant sealing tightness and soot cleaning. Calculations indicating compliance with the requirements may be dispensed with when complete shop test verification shall be carried out. In such case, a test program shall be submitted on request.

Place of production



Job Id: **262.1-033951-1**
Certificate No: **TAP000029N**

Periodical assessments

Periodical assessments (DNV-CP-0338) will, when possible, be harmonised with normal surveys for product certification and/ or other surveys and audits carried out. Periodical assessments for type approvals with a validity period of five years will be required after two years (+/- 90 days) and after 3.5 years (+/- 90 days).

Marking of product

Manufacturer's name or trademark and type designation.

END OF CERTIFICATE