



Marine & Offshore

Certificate number: 50608/B0 BV

File number: ACM 135/2022/11

Product code: 21011

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

TUBIFLEX SPA
ORBASSANO -TO - ITALY

for the type of product

METALLIC EXPANSION JOINTS / BELLOWS

Metallic Expansion Bellows: ASFF, ASMM types

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 02 Aug 2028

For Bureau Veritas Marine & Offshore,

At BV NAPOLI, on 02 Aug 2023,

Sandro BRUSEGAN

This certificate was created electronically and is valid without signature



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 June 2017

This certificate consists of 4 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION

Metallic Expansion Bellows (ASFF, ASMM)

1.1 Qualified product range

Type	Size (mm)	Working pressure	Number of plies x thickness (mm)	Axial Movement (mm)	Number of cycles	End Connection
ASFF	DN 80	0,01 mbar to 0,03 bar	3 x 0,3	-32	3000	Flanged
ASFF	DN 100	0,01 mbar to 0,03 bar	3 x 0,3	-50	3000	Flanged
ASFF	DN 125	0,01 mbar to 0,03 bar	3 x 0,3	-35	3000	Flanged
ASFF	DN 150	0,01 mbar to 0,03 bar	3 x 0,3	-35	3000	Flanged
ASFF	DN 450	0,01 mbar to 0,03 bar	3 x 0,3	-50	3000	Flanged
ASFF	DN 500	0,01 mbar to 0,03 bar	3 x 0,3	-45	3000	Flanged
ASMM	DN 100	0,01 mbar to 2 bar	3 x 0,3	-50	3000	Welded
ASMM	DN 150	0,01 mbar to 0,03 bar	3 x 0,3	-50	3000	Welded

- Maximum working temperature depending on the materials: 450 °C (carbon steel) / 550°C (stainless steel)

- Class range: PN6

1.2 Material specification

Part	ASFF Material	ASMM Material
Bellows	X6CrNiTi 18-10 (1.4541) EN10028-7	X6CrNiTi 18-10 (1.4541) EN10028-7
End Connection	P245GH EN10222-2 (1.0352) X5CrNi 18-10 (1.4301) EN10028-7	X5CrNi 18-10 (1.4301) EN10217-7

When other choices of materials are used per manufacturer's recommendations, the BV agreement is to be obtained.

2. DOCUMENTS AND DRAWINGS

- Drawing N° T30098 Rev. B dated 07/12/2018: ASFF DN 100
- Drawing N° T30099 Rev. B dated 07/12/2018: ASFF DN 450
- Drawing N° T30101 Rev. D dated 31/11/2020: ASMM DN 100
- Drawing N° T30473 dated 11/01/2019: ASMM DN 150
- Drawing N° T30366 dated 06/07/2018: ASFF DN 500
- Drawing N° T30367 dated 06/07/2018: ASFF DN 125
- Drawing N° T30368 dated 06/07/2018: ASFF DN150
- Drawing N° T30369 dated 06/07/2018: ASFF DN 80
- Drawing N° T30462 dated 03/12/2018: ASFF DN150
- Drawing N° T30463 dated 07/12/2018: ASFF DN 80
- Drawing N° T30464 dated 07/12/2018: ASFF DN 100
- Drawing N° T30465 dated 07/12/2018: ASFF DN 125
- Drawing N° T30466 dated 07/12/2018: ASFF DN 450
- Drawing N° T30467 dated 07/12/2018: ASFF DN 500
- EJMA Calculation N° SR-T30098/B dated 07/12/2018
- EJMA Calculation N° SR-T30099/B dated 07/12/2018
- EJMA Calculation N° SR-T30101/D dated 30/11/2020
- EJMA Calculation N° SR-T30366 dated 06/07/2018
- EJMA Calculation N° SR-T30367 dated 06/07/2018
- EJMA Calculation N° SR-T30368 dated 06/07/2018
- EJMA Calculation N° SR-T30369 dated 06/07/2018
- EJMA Calculation N° SR-T30462 dated 03/12/2018
- EJMA Calculation N° SR-T30463 dated 07/12/2018
- EJMA Calculation N° SR-T30464 dated 07/12/2018

- EJMA Calculation N° SR-T30465 dated 07/12/2018
- EJMA Calculation N° SR-T30466 dated 07/12/2018
- EJMA Calculation N° SR-T30467 dated 07/12/2018
- EJMA Calculation N° SR-T30473 dated 11/01/2019

No departure from the above documents shall be made without the prior consent of the Society. The manufacturer must inform the Society of any modification or changes to these documents and drawings.

3. TEST REPORTS

- Burst test report N° 06-17 dated 17/11/2017 witnessed by a BV Surveyor
- Burst test report N° 151_21 dated 22/09/2021 witnessed by a BV Surveyor
- Test report N° 004_18 dated 27/09/2018 (vacuum, hydrostatic and burst test). Vacuum test performed at 0,01mbar

4. APPLICATION / LIMITATION

- 4.1 - The expansion bellows may be used for exhaust gas systems and vacuum room according to testing conditions in part 3.
- 4.2 - Reduction factors are to be taken in consideration for maximum working pressure and tolerable movement caused by temperature influence according to manufacturer's instructions.
- 4.3 - The calculated maximum values of axial and lateral movements at design full cycles are not to be exceeded.
- 4.4 - In all cases, the associated pipelines are to be suitably aligned, supported and anchored. The joints are to be at any time accessible, well visible and protected against over extension and compression and against mechanical damage.
- 4.5 - Piping system drawings and calculation notes are to be submitted for review whenever expansion bellows are fitted on board BV-classed ships.
- 4.6 - The joints are to be installed according to manufacturer's instructions and Bureau Veritas Rules requirements.
- 4.7 - The expansion joint are not to be used in piping systems where high levels of vibration are expected to occur in service.
- 4.8 - The use of stainless steel is to be restricted as per the BUREAU VERITAS Rules.

5. PRODUCTION SURVEY REQUIREMENTS

- 5.1 - The products are to be supplied by **TUBIFLEX SPA** in compliance with the type and the requirements described in this certificate.
- 5.2 - This type of product is within the category IBV of Bureau Veritas Rule Note NR320.
- 5.3 - BV product certificate is required.
- 5.4 - Each expansion joint with end fittings is to be hydraulically pressure tested to 1,5 times the maximum working pressure and provided with the manufacturer's pressure test report and conformity of production.
- 5.5 - For information, **TUBIFLEX SPA** has declared to Bureau Veritas the following production site:

TUBIFLEX SPA
STRADA TORINO 25
10043 ORBASSANO -TO
ITALY

6. MARKING OF PRODUCT

Each hose assembly is to be clearly marked with at least:

- Manufacturer name or logo
- Date of manufacture
- Type description
- Maximum working pressure
- Nominal Diameter
- Temperature rating
- Society's brand as relevant

7. OTHERS

It is **TUBIFLEX SPA**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

This certificate supersedes the Type Approval Certificate N° 50608/A3 BV issued by the Society.

***** END OF CERTIFICATE *****