



Marine & Offshore

Certificate number: 64391/A0 BV

File number: .

Product code: 21011

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

www.veristar.com

TYPE APPROVAL CERTIFICATE

This certificate is issued to

AMNIFLEX BV

ROTTERDAM - NETHERLANDS

for the type of product

METALLIC EXPANSION JOINTS / BELLOWS

Metallic expansion joints type RFB, RWB, RFA-R and RFA-S

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: 16 Feb 2027

For Bureau Veritas Marine & Offshore,

At BV GRONINGEN, on 16 Feb 2022,

Olaf RUITER



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.

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION

Metallic expansion joints type RFB, RWB, RFA-R and RFA-S

1.1. Ratings

Model	Type RFB	Type RWB	Type RFA-R	Type RFA-S
Size range	DN40 - DN250	DN40 - DN250	DN80 - DN200	DN80 - DN200
Design Standard	EJMA 10th Edition	EJMA 10th Edition	EJMA 10th Edition	EJMA 10th Edition
Design Pressure (bar)	For DN 40~200 : 16 bar For DN 250 : 10 bar	For DN 40~200 : 16 bar For DN 250 : 10 bar	16 bar at 20°C 10 bar at 200°C	16 bar at 20°C 10 bar at 200°C
Design Temperature	-20/+250°C	-20/+250°C	-20/+200°C	-20/+200°C
End connections	Flanged and butt welded	Butt welded	Flanged	Flanged
Number of cycles	1000	1000	1000	1000

Allowable displacement as per technical datasheets Rev. 01 dated 01/06/2021

Number of plies as per calculation sheets indicated in §3

1.2. Materials

Part	Material
Bellow	AISI 316
Outer cover	AISI 304L/AISI 316L
End pipe	AISI304/AISI 304L/AISI 316L/ Carbon steel
Flanges	AISI 304L/AISI 316L/Carbon steel

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

2. DOCUMENTS AND DRAWINGS

- Technical datasheet for type RFA-R Rev. 01 dated 01/06/2021
- Technical datasheet for type RFA-S Rev. 01 dated 01/06/2021
- Technical datasheet for type RFB Rev. 01 dated 01/06/2021
- Technical datasheet for type RWB Rev. 01 dated 01/06/2021
- Manual of installation and maintenance Rev. 01 dated 01/06/2021
- Manual of use Rev. 01 dated 01/06/2021
- Calculation Sheets according to EJMA code 10th Edition:

Type	Reference N°
RFA	0080-0160-11-2-000
	0100-0160-11-2-000
	0125-0160-09-2-000
	0150-0160-11-2-000
	0200-0160-09-2-000
RFB/RWB	0040-0160-11-2-000
	0050-0160-09-2-000
	0065-0160-09-2-000
	0080-0160-09-2-000
	0100-0160-09-2-000
	0125-0160-09-2-000
	0150-0160-08-2-000
	0200-0160-09-2-000
	0250-0160-09-2-000

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

3.1 - Burst test witnessed by a BV Surveyor at 4 times the design pressure:

- Test report N° 2112295 dated 28/01/2022 for type RFB DN 40
- Test report N° 2112294 dated 28/01/2022 for type RFB DN 150
- Test report N° 2110215 dated 29/10/2021 for type RFB DN 250
- Test report N° 2112296 dated 28/01/2022 for type RFA-S DN 80
- Test report N° 2112297 dated 28/01/2022 for type RFA-S DN 200

3.2 - Fire resistance test not performed.

3.3 - Vibration test not performed.

4. APPLICATION / LIMITATION

4.1 - May be used for the following services on board:

- Thermal oil systems

4.2 - Expansion joint is not accepted in high pressure fuel oil injection systems.

4.3 - Reduction factors are to be taken in consideration for maximum working pressure and tolerable movement caused by temperature influence according to manufacturer's instructions.

4.4 - The calculated maximum values of axial and lateral movements at design full cycles are not to be exceeded.

4.5 - 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.

4.6 - Piping system drawings and calculation notes are to be submitted for review whenever expansion bellows are fitted on board BV-classed ships.

4.7 - The joints are to be installed according to manufacturer's instructions and Bureau Veritas Rules requirements.

4.8 - The use of stainless steel is to be restricted as per the BUREAU VERITAS Rules.

4.9 - The expansion joint are not to be used in piping systems where high levels of vibration are expected to occur in service.

5. PRODUCTION SURVEY REQUIREMENTS

5.1 - The products are to be supplied by **AMNIFLEX BV** in compliance with the type and the requirements described in this certificate.

5.2 - This type of product is within the category IBV of BV Rule Note NR320.

5.3 - BV product certificate is required.

5.4 - Each metallic 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, **AMNIFLEX BV** has declared to Bureau Veritas the following production site:

AMNIFLEX BV
Abraham van Stolkweg 118
3041 JA ROTTERDAM
Rotterdam
NETHERLANDS

6. MARKING OF PRODUCT

Each expansion joint shall be permanently marked with at least:

- Manufacturer's name or trademark
- Date of manufacture (month/year)
- Designation type reference
- Nominal diameter
- Pressure rating
- Temperature rating
- Society's brand as relevant

7. OTHERS

It is **AMNIFLEX BV**'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.

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