Marine & Offshore

Certificate number: 39516/B1 BV
File number: ACM 135/2742/01
Product code: 7311I

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

SFZ

CHASSIEU - FRANCE

for the type of product

METALLIC EXPANSION JOINTS / BELLOWS FOR LIQUEFIED GAS PIPING SYSTEMS

EXPANSION JOINT DN 250, 400, 450 & 550

Requirements:
- BUREAU VERITAS Rules for the Classification of Steel Ships
- IGC Code as amended by IMO Res. MSC.441(99)

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: 05 Nov 2024

For Bureau Veritas Marine & Offshore,
At BV FREDERICIA, on 08 Dec 2022,
Jesper JENSEN

This certificate was created electronically and is valid without signature

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION

Metallic Expansion Joint for heat exchanger on board liquefied gas carriers

1.1 Technical data

Nominal Size	DN 250, 400, 450 & 550
Design Pressure	10 bar
Design Temperature	-196 / 200 °C
Number of Convolutions	4

Design pressure, number of convolutions, movement, thickness and depth of convolution to be according to calculation performed by the manufacturer depending on the service conditions of expansion joints.

1.2 Material specification

Bellows	SA240 304L
Welding End	SA312 TP316L / SA240 304L
Inner Sleeve	SA240 304L

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

2. DOCUMENTS AND DRAWINGS

- Drawing N° PC_LTM_0302AAB04206 Rev.D dated 24/06/2014 & Calculation Sheet Rev. A dated 06/07/2012 for DN 250
- Drawing N° PC_LTM_0418AAB04215 Rev.C dated 04/02/2013 & Calculation Sheet Rev. A dated 12/07/2012 for DN 400
- Drawing N° PC_LTM_0472AAB04215 Rev.C dated 04/02/2013 & Calculation Sheet Rev. A dated 02/07/2012 for DN 450
- Drawing N° PC_LTM_0606AAB04215 Rev.D dated 24/06/2014 & Calculation Sheet Rev. A dated 02/07/2012 for DN 550

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

- Type Tests carried out in presence of an IACS member Surveyor: cycle fatigue test, pressure test at twice the design pressure & burst test at 5 times the design pressure performed on DN 250 & DN 450.
- Test report N°46266.03 dated 05/02/2014

4. APPLICATION / LIMITATION

4.1 - These expansion joints are not to be used on cargo piping on board liquefied gas carriers. They may be used for heat exchangers.

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 welding of the bellows is to be performed by qualified welders and satisfactorily tested.

5. PRODUCTION SURVEY REQUIREMENTS

5.1 - The products are to be supplied by **SFZ** 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 bellow with assemblies 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, **SFZ** has declared to Bureau Veritas the following production site:

RATTAY DK

ENERGIVEJ 20
6700 ESBJERG
DENMARK

6. MARKING OF PRODUCT

Each expansion joint shall be clearly marked with at least:

- Manufacturer name or logo
- Type designation
- Maximum working pressure
- Society's brand as relevant

7. OTHERS

It is **SFZ**'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° 39516/B0 BV issued by the Society.

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