



MARINE DIVISION

Certificate number: 03149/E0 BV

File number: ACM 135/0407/002

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

DJURO DJAKOVIC KOMPENZATORI d.o.o.
Slavonski Brod - CROATIA

for the type of product

METALLIC EXPANSION JOINTS / BELLOWS

Axial and Lateral expansion units Types SB and AR

Requirements:

- BUREAU VERITAS Rules for the Classification of Steel Ships
- BUREAU VERITAS Rules for the Classification of Offshore Units

This certificate is issued to attest that BUREAU VERITAS 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: 31 May 2015

For BUREAU VERITAS,

At BV RIJEKA, on 31 May 2010,

Branko Viskovic



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. 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 Division 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 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 :

Axial and Lateral expansion units Types SB and AR

1.1 Rating

Type of expansion joint		Type of bellows	Dwg N° (SB)					ND (mm)	Working pressure (bar)	Working temperature (° C)
AR	Axial expansion joint - with pipe end - with flange	SB axial expansion bellows - with pipe end - with flange	8139	8140	8141	8142	8143	ND 65 to ND 2000	1	500
UD	United double expansion joint - with pipe end - with flange	SB axial expansion bellows - with pipe end - with flange	8145	8146	8147	8148		ND 65 to ND 2000	1	500
AR, UD, HS, HD, GS, GD	Axial and axial-lateral expansion joint	SB axial expansion bellows SB axial/lateral expansion bellows - with pipe end - with flange	8491	8492	8494	8496	8499	ND 40 to ND 300	6, 10	200
AR, UD, HS, HD, GS, GD	Axial and axial-lateral expansion joint	SB axial/lateral expansion bellows - with flange	8493	8495	8497	8498		ND 50 to ND 300	6, 10, 16	100
TD, TS, TM	Tied axial-lateral expansion joint	SB axial/lateral expansion unit - with flange	8500					ND 50 to ND 150	30	100
AR	Axial expansion unit - with flange	AR axial expansion unit - with flange	AR	25	/ 65	/ 25	/ O/1	ND 65	20	-5
AR	Axial expansion unit - with flange	AR axial expansion unit - with flange	AR	25	/ 40	/ 25	/ O/1	ND 40	20	-5

The values of temperature, pressures, axial and lateral displacements are not to exceed those specified by the manufacturer.

1.2 Materials and/or components :

Bellows: 316 S16 BS1449 (C4573) / 321 S12 BS1449 (C4572)
 Welding ends: JUS CB5.221 (C1214) / JUS CB5.221 (C1212)
 Flanges: SB 7661 (C0461) / SB 1377 (C0461) / SB 1378 (C0461)

2. DOCUMENTS AND DRAWINGS :

- Manufacturer's catalogue
- Drawings

- . N° SB 8139 to SB 8148 SB axial expansion unit with pipe end/with flange PN 1
- . N° SB 8491, SB 8492, SB 8494, SB 8496 and SB 8499 SB axial/lateral expansion unit with pipe end/with flange PN 6, 10
- . N° SB 8493, SB 8495, SB 8497 and SB 8498 SB axial/lateral expansion unit with flange PN 6, 10, 16
- . N° SB 8500 Axial/lateral expansion unit SB with flange PN 40
- . N° 14-02-16 Axial expansion unit AR 25/40/20/Ns/1
- . N° 14-10-12 Axial expansion unit AR 25/65/25/Ns/1

3. TEST REPORTS :

Tests carried out:

- Impulse test report N° DN 4-415-1/87 dated 21/12/1987
- Vibration test report N° DN 4-415-2/87 dated 04/03/1988

4. APPLICATION / LIMITATION :

4.1 The metallic expansion joints may be used for the following services on board depending on type:

- Exhaust (SB 8139 to 8148 - ND 65 to ND 2000)
- Fresh water, steam, lub-oil and crude-oil (SB 8491, SB 8492, SB 8494, SB 8496, SB 8499 - ND 40 to ND 300)
- Sea water (SB 8493, SB 8495, SB 8497, SB 8498 - ND 50 to ND 300)
- Compressed air (SB 8500 - ND 50 to ND 150)
- Refrigerating cooling system (AR 25/65/25/0/1 - ND 65 and AR 25/40/25/0/1 - ND 40)

4.2 The expansion joints are to be installed according to manufacturer's instructions and Bureau Veritas Rules.

4.3 The expansion joints must only be fitted in areas where they are always accessible.

5. PRODUCTION SURVEY REQUIREMENTS :

5.1 The products are to be manufactured, examined and tested by the manufacturer in accordance with the type described in this certificate and Bureau Veritas Rules for the Classification of Steel Ships. Arrangements shall be made for a Society's Surveyor to attend the relevant tests and examinations at manufacturer's works or to perform the relevant audits when an alternative survey scheme (BV Mode I) has been agreed. Relevant Bureau Veritas certificate will be issued after satisfactory completion of the procedure.

5.2 The manufacturer has declared to Bureau Veritas that the products detailed in this certificate are manufactured at the production site stated on the front page of this certificate.

5.3 Each metallic expansion joint is to be hydraulic pressure tested to twice the maximum working pressure under witnessing of a Society's Surveyor.

6. MARKING OF PRODUCT :

Each metallic expansion joint is to be marked clearly to avoid any wrong utilization with:

- Manufacturer's name or trade mark
- Type designation
- Date of manufacture
- Society's brand as relevant

7. OTHERS :

7.1 This approval is given with the understanding that the manufacturer will accept full responsibility for informing shipbuilders or their sub-contractors of the proper methods of fitting and general maintenance of the approved products and of the conditions of this approval.

7.2 This certificate supersedes Type Approval certificate N° 03149/D0 BV issued on 31/01/2005 by the Society.

*** END OF CERTIFICATE ***