



Marine & Offshore  
Division

Certificate number: 43916/A0 BV

File number: ACM 188/0802/03

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*

**HKS - CZ, s.r.o.**

Litomerice - CZECH REPUBLIC

*for the type of product*

**METALLIC EXPANSION JOINTS / BELLOWS**

Axial Double-Wall Metallic Expansion Joint Type AD

### Requirements:

- BUREAU VERITAS Rules for the Classification of Steel Ships
- BUREAU VERITAS Rules Note NR 481
- IGC Code

*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: 28 Feb 2021**

**For BUREAU VERITAS,**

At BV PRAGUE, on 29 Feb 2016,

Martin Dlouhy



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 & Offshore Division available on the internet site [www.veristar.com](http://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.

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BV Mod. Ad.E 530 October 2014

This certificate consists of 3 page(s)

## **THE SCHEDULE OF APPROVAL**

### **1. PRODUCT DESCRIPTION**

#### **Axial Double-Wall Metallic Expansion Joint Type AD**

##### 1.1 Design Specifications

Size (mm)	DN 100 / DN 125
Design	Double-wall
Design pressure (bar)	10
Design temperature (°C)	+ 60
Length (mm)	400 ± 2
End connection	Flanged
Flange size (mm)	DN 100
Pipe wall thickness (mm)	3
Axial movement (mm)	± 8
Lateral movement (mm)	+5
Number of plies	3

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 Materials

Bellow	1.4571/ AISI 316 Ti DIN EN 10028-7
Flange	1.4301/ AISI 304 DIN EN 10028-7
Pipe	1.4571/ AISI 316 Ti DIN EN 10028-7

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

### **2. DOCUMENTS AND DRAWINGS**

- HKS-Axial drawing N° 3503095-1 dated 31/03/2015
- EJMA-Standard, 9th Edition data sheets reference N° 150465-3503095 dated 12/02/2016
- Operating instructions for HKS corrugated tube compensators Rev 2.0 dated 24/02/2016

*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 a BV Surveyor: cycle fatigue test (40 000 cycles), pressure test at twice the design pressure & burst test at 5 times the design pressure and leakage test
- Low cycle fatigue test report N° 1530 253 dated 24/09/2015
- Inspection certificate 3.2 N° 19633 dated 02/09/2015
- Pressure test report N° 6972 dated 02/09/2015
- Leakage test report N° 18838 dated 02/09/2015

### **4. APPLICATION / LIMITATION**

- 4.1 The double-wall expansion joint may be used for fuel gas application.
- 4.2 Double-wall type belongs to class II piping according to BUREAU VERITAS Rule Note NR 481, Sec 4 [2.4.1].
- 4.3 The air space between the gas pipe and the double-wall is to be provided with a mechanical exhaust ventilation system and a continuous gas detection in accordance with the applicable rules.
- 4.4 Electrical equipment located in the air space in 4.3 above is to be of a suitable safe type complying with the applicable rules.
- 4.5 In case of high level of vibrations in the piping systems, care shall be taken in order to avoid that the natural frequency of bellows doesn't coincide with the system frequency.
- 4.6 In all cases, the associated pipelines are to be suitably aligned, supported and anchored. The expansion joints are to be at any time accessible, well visible and protected against over extension and compression and against mechanical damage.
- 4.7 The expansion joints are to be installed according to manufacturer's instructions and BUREAU VERITAS Rules.

**5. PRODUCTION SURVEY REQUIREMENTS**

5.1 The products are to be supplied by **HKS - CZ, s.r.o.** 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 Each expansion bellow with end fittings is to be hydraulically pressure tested to twice the maximum working pressure and provided with the manufacturer's pressure test report and conformity of production.

5.4 BV product certificate is required.

**Place of production**

**HKS - CZ, s.r.o.**

**Mlekojedská 1994/7**

**412 01 Litomerice**

**CZECH REPUBLIC**

**6. MARKING OF PRODUCT**

Each expansion joint shall be clearly marked with at least:

- Manufacturer name or logo
- Type designation
- Design pressure and temperature
- Society's brand as relevant

**7. OTHERS**

This approval is given on 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 products and of the conditions of this approval.

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