



Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

Manufacturer	Belman A/S
Address	Oddersundvej 18, Esbjerg N, 6715, Denmark
Type	Expansion Bellows
Description	Belman steel expansion bellows for absorption of axial, angular, lateral and universal movements.
Trade Name	Axial - AX1S, AX2S, AX1F, AX2F ,Angular - AN1S, AN2S, AN1F, AN2F ,Lateral - LA1S, LA2S, LA1F, LA2F ,Universal - UN1S,UN2S, UN1F, UN2F
Application	For use in metallic cargo piping system of LPG/ LNG carriers
Specified Standard	LR Rules and Regulations for the Construction and Classification of Ships for the Carriage of Liquefied Gases in Bulk, Jul 2023 LR Rules and Regulations for the Classification of Ships, Jul 2023 EJMA 10th Edition
Ratings	Design temperature -165°C to +125°C Pressure rating PN 5 (open-ended systems only) and PN 10 Design cycle Min. 8000 Nominal Diameter DN40 to DN400 Inner sleeve With or without inner sleeve Materials 1.4301/ 304, 1.4306/ 304L, 1.4401/ 316,1.4404/

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Lloyd's Register EMEA
A member of the Lloyd's Register group

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316L, 1.4541/ 321, 1.4550/ 347

Other Conditions

1. The approved Belman steel expansion bellow is not suitable for use when ship deformation is experienced. When required additional cyclic fatigue test representing ship deformation is to be carried out on the complete expansion joint.
2. Pipe supports, their attachment and the structures to which they are attached must be designed to withstand the forces acting on them.
3. Installation on ship is to be in accordance with the manufacturer's instruction and recommendations.

This certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid Certificate.

Previous Version: 12/ 00088(E2)

The Design Appraisal Document LR2451164TA and its supplementary Type Approval Terms and Conditions form part of this Certificate.