

## Type Approval Certificate

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

This certificate is issued to:

<b>PRODUCER</b>	Belman Production A/S
<b>PLACE OF PRODUCTION</b>	Oddesundvej 18 6715 Esbjerg N Denmark
<b>DESCRIPTION</b>	Belman steel expansion bellows for absorption of axial, angular, lateral and universal movements.
<b>TYPES</b>	<b>Axial</b> - AX1S, AX2S, AX1F, AX2F <b>Angular</b> - AN1S, AN2S, AN1F, AN2F <b>Lateral</b> - LA1S, LA2S, LA1F, LA2F <b>Universal</b> - UN1S, UN2S, UN1F, UN2F
<b>APPLICATION</b>	For use in metallic cargo piping system of LPG/LNG carriers.
<b>SPECIFIED STANDARDS</b>	Lloyd's Register Rules and Regulations for the Construction and Classification of Ships for the Carriage of Liquefied Gases in Bulk, IGC Code, EJMA 9th Edition.
<b>RATINGS</b>	<b>Design temperature :</b> -165 °C to +125°C <b>Pressure rating:</b> PN 5 and PN 10 (PN5 only applicable for open-ended systems) <b>Design cycle:</b> Minimum 8000 <b>Nominal Diameter :</b> DN 40 to DN 400 <b>Inner Sleeve:</b> With or without inner sleeve <b>Materials :</b> 1.4301/304, 1.4306/304L, 1.4401/316, 1.4404/316L, 1.4541/321, 1.4550/347
<b>Certificate No.</b>	12/00088
<b>Issue Date</b>	21 December 2012
<b>Expiry Date</b>	20 December 2017
<b>Sheet</b>	1 of 2



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## OTHER CONDITIONS

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.

Pipe supports, their attachment and the structures to which they are attached must be designed to withstand the forces acting on them.

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."*

*The Design Appraisal Document No. 12/00088 and its supplementary Type Approval Terms and Conditions form part of this Certificate.*

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