Certificate No: LR21310313TA
Issue Date: 11/08/2021
Expiry Date: 10/08/2026

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	**Macoga S A**
Address	Apartado No. 1, Ordenes-A Coruna, 15681, Spain
Place of Production	Macoga S A Apartado No. 1, Ordenes-A Coruna, 15681, Spain
Type	MWA and MFA
Description	Convoluted Metallic Expansion Joints
Trade Name	Macoga S.A.
Application	Expansion joints for use in the following metallic piping systems: Air, Fuel (crude oil, diesel oil and benzene), Exhaust Gas, Inert Gas, Oil (thermal and cargo) Steam and Condensate, Fresh Water, Sea water.
Specified Standard	EJMA ASME VIII Div 1 / ANSI B31.3 Lloyd's Register's Rules and Regulations for the Classification of Ships, Part 5, Chapter 12 Lloyd's Register's Rules and Regulations for the Classification of Special Service Craft, Part 15, Chapter 1
Ratings	Working Pressure / Bar — Max Diameter/mm

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John Baghurst
Machinery Specialist to Lloyd's Register EMEA
A member of the Lloyd's Register group

71 Fenchurch Street, London, EC3M 4BS, United Kingdom

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1.0	7000
2.5	3600
5.0	2800
10.0	2000
16.0	1600
25.0	1400
40.0	1200
64.0	1000
100.0	400
160.0	300

Other Conditions

1. Expansion joint materials intended for use in Class I and Class II piping systems on LR Classed ships are to be manufactured and tested in accordance with the applicable requirements of Lloyd's Registers Rules for the Manufacture, Testing and Certification of Materials.
2. Expansion pieces are to be protected against mechanical damage and over-extension or over-compression. The adjoining pipes are to be suitably aligned, supported, guided and anchored.
3. Materials exposed to sea water are to be of low-carbon grade (<0.03%C)

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: 00/00050(E3)

The Design Appraisal Document LR21310313TA and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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