Certificate No: LR21382475TA
Issue Date: 31/05/2021
Expiry Date: 30/05/2026

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	**TECHNOFLEX CORPORATION**
Address	1-5-1 Kuramae, Taito-ku, Tokyo, 111-0051, Japan
Place of Production	TECHNOFLEX CORPORATION Niigata Factory, 281 Ohta, Saberi, Murakami-shi, Niigata, 958-0821, Japan
Place of Production	TECHNOFLEX CORPORATION Chiba Factory, 34-17 Shiomi-cho, Funabashi-shi, Chiba, 273-0016, Japan
Type	Expansion Joints
Description	Bellows type expansion joints for LNG and LPG carriers
Trade Name	LUS053-2996 (single type), LUD053-2997 (double type), LBS053-2998 (balanced A type) & LBL053-2999 (balanced B type)
Application	Marine use for cargo and associated piping systems in ships constructed for the carriage of liquefied gases in bulk
Specified Standard	Lloyd's Register's Rules and Regulations for the Classification of Ships, Part 5, Chapter 12, July 2020 Lloyd's Register's Rules and Regulations for the Construction and Classification of Ships for the Carriage of Liquefied Gases in Bulk, incorporating the IMO IGC Code, July 2020

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Yasushi Sawada

Lead Surveyor to Lloyd's Register Group Ltd
A member of the Lloyd's Register group

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

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Standards of the Expansion Joint Manufacturers Association, Inc.

Ratings

Design pressure (MPa) : 1.0
Design temperature (°C) : -163 ~ +80
Nominal pipe diameter (mm) : 150A ~ 800A
Convolution pitch/height (mm) : 35 / 40
Number of plies : 2
Inner ply material : SUS316L or SUS304L
Outer ply material : SUS836L or Inconel 625/825
Cumulative usage factor : ≤0.97

Other Conditions

Where the expansion joints are intended to be installed on a ship classed with Lloyd's Register (LR), the following comments are applicable:-

1) Plans showing full details of construction with design conditions specified for the bellows intended duty in a specific piping system for a specific ship are to be submitted for approval in accordance with Part 5, Chapter 12, Section 9.8 of the Rules and Regulations for the Classification of Ships as applicable.

2) The bellows are to be constructed, tested and installed onboard to the satisfaction of the attending Surveyors.

3) For the balanced A type, additional burst pressure tests are to be carried out for the centre bellows element at the time of the first production where the nominal dimeter of centre bellows elements is in excess of 800 mm.

The valid reports of the audit assessment of the Production Quality Assurance system (PQA) for each place of production are to be retained.

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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 Group Ltd of any modification or changes to the equipment in order to obtain a valid Certificate.

Previous Version: 06/10012(E3)

The Design Appraisal Document LR21382475TA and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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