Certificate No: LR22454119TA
Issue Date: 27/10/2022
Expiry Date: 26/10/2027

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	**SJM Co., Ltd.**
Address	54, Gongdan 1-daero 322beon-gil,Siheung-si, Gyeonggi, 15108, South Korea
Type	Expansion Bellows
Description	Double wall stainless steel bellows expansion joints
Trade Name	U-Double (Double wall type)
Application	Marine Piping System : Gas fuel lines at DF engines (WIN-GD ENGINE)
Specified Standard	Part 5, Chapter 2 & 12 of Lloyd's Register's Rules and Regulations for the Classification of Ships (July 2022) Rules and Regulations for the Classification of Ships using Gases or other low-flash point (July 2022) EJMA Standards 10th Edition
Ratings	EXP501(DN 80/100 x 407L) Design Pressure : 15 bar Design Temperature : 0~60°C Pitch & Height (In/Out): 9 & 8 / 10 & 9 Plies : 2 EXP501(DN 80/100 x 327L) Design Pressure : 15 bar

Downloaded Copy

Da-Young Kang

Senior Specialist to Lloyd's Register Asia
A member of the Lloyd's Register group

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

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.

Type Approval Certificate

Design Temperature : 0~60°C
Pitch & Height (In/Out): 9 & 8 / 10 & 9
Plies : 2

Other Conditions

1. The metallic expansion joints are to be made, installed and tested are required by the Rules and found to function under working conditions all to the attending surveyor's satisfaction.
2. It is noted that this metallic expansion joints intended to convey LNG fuel gas to be categorized as Class II piping system.
3. Welding and non-destructive testing are to be in accordance with Part 5, Chapter 17 of the Rules, to the attending surveyor's satisfaction.
4. The calculated maximum valve of axial and lateral movements at the design full cycles are not to be exceeded.
5. Piping system drawings and calculation notes are to be submitted for review whenever expansion bellow are fitted on board LR Classed ships.

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

The Design Appraisal Document BTS/ENG/M2237741 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

Downloaded Copy

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

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.