Certificate No: LR23304975TA
Issue Date: 30/04/2023
Expiry Date: 29/04/2028

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	**Taiyo Joint Co., Ltd.**
Address	12-21, Hamamachi, Moji-ku, Kitakyushu-shi, Fukuoka Pref., 801-0856, Japan
Place of Production	TAIYO JOINT CO., LTD. SHIN-MOJI WORKS 1379-1, Tsunemi, Moji-ku, Kitakyushu-shi, Fukuoka Pref., 800-0117, Japan
Type	Expansion And Slip-On Joints
Description	MECHANICAL JOINT DRESSER TYPE F-1 series (LR-F-1-01) F-2 series (LR-F-2-01) F-3 series (LR-F-3-01) F-R series (LR-F-R-01, Fire resistant type) MECHANICL JOINT SLEEVE TYPE F-S series (LR-5KF-S-01 & LR-10KF-S-01) F-S series (LR-5KF-S-FR-01 & LR-10KF-S-FR-01, Fire resistant type) F-SL series (LR-5KF-SL-01, LR-10KF-SL-01 & LR-16KF-SL-01) F-SL series (LR-5KF-SL-FR-01, LR-10KF-SL-FR-01 & LR-16KF-SL-FR-01, Fire resistant type)
Trade Name	F-1, F-2, F-3, F-R, F-S & F-SL series
Application	Marine piping systems:- F-1, F-2, F-3 & F-R series with NBR or FKM seal gland & F-S & F-SL series with glass fiber, aramid fiber or graphite ceramic fiber

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seal gland:
For services and locations listed in Part 5, Chapter 12, Table 12.2.8 (Slip-on joints) where approved fire resistant types are not required.
Fire resistant F-R series with NBR or FKM seal gland &
Fire resistant F-SL & F-S series with ceramic fiber seal gland:
For services and locations listed in Part 5, Chapter 12, Table 12.2.8 (Slip-on joints) where approved fire resistant types are not required and for services and locations listed in Part 5, Chapter 12, Table 12.2.8 (Slip-on joints) where approved wet fire resistant types of wet condition are required but excluding bilge suction services inside machinery spaces of Category A.

Specified Standard

Lloyd's Register (LR) Rules and Regulations for the Classification of Ships (July 2022), Part 5, Chapter 12
IACS UR P2 "Rules for Piping Design, Construction and Testing" (Rev.10 Jan 2021)

Ratings

F-1, F-2 & F-3 series (dresser type)
Nominal pipe diameter (mm) : 40A ~ 500A (F-1)
25A ~ 800A (F-2)
40A ~ 600A (F-3)
Nominal pressure rating (MPa) : 1.6
Seal materials : NBR or FKM
F-S & F-SL series (sleeve type)
Nominal pipe diameter (mm) : 40A ~ 350A
Nominal pressure rating (MPa) : 0.5, 1.0 (F-S: 40A ~ 350A)
0.5, 1.0 (F-SL: 40A~350A)
1.6 (F-SL: 100A ~ 350A)
Seal materials : glass fiber, aramid fiber or graphite ceramic fiber
Fire resistant F-R series (dresser type)
Nominal pipe diameter (mm) : 25A ~ 800A
Nominal pressure rating (MPa) : 1.6

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Seal materials : NBR or FKM

Fire resistant F-SL & F-S series (sleeve type)

Nominal pipe diameter (mm) : 40A ~ 350A

Nominal pressure rating (MPa) : 0.5. 1.0 (F-S: 40A ~ 350A)
0.5, 1.0 (F-SL: 40A~350A)
1.6 (F-SL: 100A ~ 350A)

Seal materials : ceramic fibre

Other Conditions

Where the joints are intended to be installed on a ship classed with LR, the following conditions of acceptance will be applicable:-

1. The positions of joints are to be indicated on individual diagrammatic plans of piping systems which are submitted for approval, for consideration.
2. The joints are to be installed and tested in accordance with Part 5, Chapter 13, Section 2 of LR Rules and Regulations for the Classification of Ships in so far as applicable.
3. The joints are to be made, installed and tested to appropriate pipe class requirements in accordance with Part 5, Chapter 12 of LR Rules and Regulations for the Classification of Ships in so far as applicable.
4. Where applicable, bonding for the control of static electricity is to be provided to comply with Part 6, Chapter 2 of LR Rules and Regulations for the Classification of Ships.
5. In all case the materials are to be suitable for their intended service conditions.
6. F-S & F-SL series joints for which no vacuum test is carried out, are not qualified for use in suction lines.
7. F-S & F-SL series joints have not been intended to be for use in suction lines and are not qualified for same.
8. Where joints are restrained, they are permitted in steam pipes with a design pressure of 1.0 MPa or less on the weather decks of oil and chemical tankers.
9. F-1, 2, 3 series joints cannot be used where fire endurance test is required in Part 5, Chapter 12, Table 12.2.8 of the Rules and Regulations for the Classification of Ships.

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10. F-R series Joints and F-S & F-SL series joints (except Fire Resistance Type) are not conducted required fire endurance test for dry condition and cannot be used where fire endurance test for dry condition is required in Part 5, Chapter 12, Table 12.2.8 of the Rules and Regulations for the Classification of Ships.

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

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: 13/10030(E1)

The Design Appraisal Document LR23304975TA and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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