

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Plastic Pipes, Fibre Reinforced Thermosetting**

with type designation(s)

Nocorflex™; GRP Dresser (Slip) Type Expansion Couplings

Issued to

ISP Co., Ltd.**Miryang-si Gyeongsangnam-do, Republic of Korea**

is found to comply with

Det Norske Veritas' Type Approval Programme 1-501.1, 2011, Fibre Reinforced Thermosetting Plastic Pipes**IMO Resolution A.753(18). Guidelines for the Application of Plastic Pipes on Ships****Det Norske Veritas' Rules for Classification of Ships****Application :****To be used as joint on approved glass fibre reinforced plastic pipes of size 2 - 30 inches. ISP's installation procedures are to be followed. The expansion couplings have not been tested w.r.t. to Fire Endurance and Low Flame Spread characteristics.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**This Certificate is valid until **2019-10-26**.Issued at **Høvik** on **2015-10-27**for **DNV GL**DNV GL local station: **Gimhae MC & FIS**Approval Engineer: **Gisle Hersvik**

Martin Strande
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Product description

Nocorflex™; GRP Dresser (Slip) Type Expansion Couplings.

- Drawing Nos.: ISP-G-B-003, ISP-G-B-F-MR-0750, ISP-G-B-F-FR-0750, ISP-GFECF-02 and ISP-G-B-F-GS-0750
- Design Pressure: 8 bar
- Size range: 2" – 30" (50 – 750 mm)
- Maximum working temperature: 65°C.

Application/Limitation

- To be used as expansion couplings on approved glass fibre reinforced plastic pipes of size 2-30 inches.
- ISP Co., Ltd.'s installation procedures are to be followed.
- The expansion couplings' materials and fabrication to be of same quality as originally tested.
- The expansion couplings have not been tested with respect to Fire Endurance and Low Flame Spread characteristics.

Type Approval documentation Tests carried out

Type Testing carried out in accordance with **Type Approval documentation**, and in accordance with DNV's Type Approval Programme No. 5-792.20, *Pipe Couplings* (April 2010), including tightness test, burst pressure test and vacuum test.

Marking of product

Product shall be marked with *manufacturer's name or trade mark; ISP Co., Ltd., Korea, size, design pressure, pressure class and type designation, product code, manufacturing code.*

The marking is to be carried out in such a way that it is visible, legible and indelible. The marking of product is to enable traceability to the DNV GL Type Approval Certificate.

Periodical assessment

The scope of the Periodical Assessment is to verify that the conditions stipulated for the Type Approval is complied with and that no alterations are made to the product design or choice of materials.

Periodical Assessment to be performed after two (2) years (Certificate Retention) and at renewal after four (4) years (Certificate Renewal).

The main elements of the Periodical Assessment are to:

- Ensure that **Type Approval documentation** is available.
- Review design, materials, production process, and performance with respect to possible changes, in order to ensure compliance with **Type Approval documentation** and/or referenced material specifications.
- Ensure traceability between manufacturer's product marking and the DNV GL Type Approval Certificate.

END OF CERTIFICATE