DNV·GL

Certificate No:
**TAF00000US**

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**That the Class A and B Penetration**

with type designation(s)
**FCS Multi Cable Transit system**

Issued to
**Shanghai Fan You Sealing Technology Co., Ltd**
**SHANGHAI, China**

is found to comply with
**DNV GL statutory interpretations DNVGL-SI-0364 – SOLAS interpretations**
**DNV GL rules for classification – Ships**
**DNV GL offshore standards**
**DNV GL class programme DNVGL-CP-0165 – Type approval – Cable and pipe penetrations**

## Application :

**Approved for use as a cable penetration system in bulkhead and deck of class A-0 to A-60 (see application/limitation).**

**This certificate is recognized by Transport Canada.**

**Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

Issued at **Høvik** on **2018-03-23**
This Certificate is valid until **2023-03-22**.
DNV GL local station: **Shanghai**

Approval Engineer: **Synnøve Bolstad Eri**

for **DNV GL**

**Mårten Schei-Nilsson**
**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

"FCS Multi Cable Transit System"
consist of steel rectangular frames (FSC and FS) in sizes 2 to 8, or round frame (FR) in sizes 50 to 200 filled with 60 mm deep EPDM rubber modules, compression plate, end packing and stay plate. The frame is to be welded on the top side of the deck and on the insulated side of the bulkhead.

For further details, see drawings and test reports listed under Type Approval documentation below.

## Application/Limitation

Approved for use as a cable penetration system in class A-60 steel bulkheads and decks. Other applications are subject to case-by-case approval. Class A-0, A-15 and A-30 shall be insulated as class A-60 and in addition the division is to be insulated at least 200 mm around the penetration.

FR frame:

| | |
|---|---|
| Max. cable diameter: | Ø 38 |
| Insulation: | Sleeve to be partly insulated with A-60 insulation on the division insulated side |
| Water- and gas tightness: | Approved for water- and gas tightness up to a design pressure of 2.67 bar (test pressure of 4.0 bar). |

FSC frame:

| | |
|---|---|
| Max. cable diameter: | Ø 68 |
| Insulation: | Sleeve to be partly insulated with A-60 insulation on the division insulated side |
| Approved multi frame sizes: | FSC-2x1 to FSC-8+8x6. See table in drawing no. FCS05-7 |
| Water- and gas tightness: | Approved for water- and gas tightness up to a design pressure of 2.67 bar (test pressure of 4.0 bar). |

FS frame:

| | |
|---|---|
| Max. cable diameter: | Ø 68 |
| Insulation: | Insulated according to drawings listed under "Drawings, FS frame".<br>Insulation to be used is "Baiyun" ceramic wool from with density 170 kg/m3, or equivalent approved A-60 insulation with minimum thickness 40 mm |
| Approved multi frame sizes, deck: | FS-2 to FS-8x4. See table in drawing no. FS05-2A |
| Approved multi frame sizes, bulkhead: | FS-2 to FS-8+8x4. See table in drawing no. FS05-2A |
| Water- and gas tightness: | Approved for penetrations in steel bulkheads or steel decks limited to a pressure of 2.67 bar for water tightness and gas tightness (test pressure 4 bar for both). Penetration systems are not to be used for penetrating boundaries of tanks. |

Penetrations passing through watertight bulkheads are subject for separate examination and approval by actual flag administration.

The penetration systems shall not be used for penetrating boundaries of tanks.

Each product is to be supplied with installation manual, use and maintenance.

## Type Approval documentation

Certification in accordance with Class Programme DNVGL-CP-0338, October 2017.

FSC and FR frame:
Test report no. FT13045 dated 01 March 2013 from Far East Fire Testing Centre (FEFTC), Shanghai.
Test report no. FT13046 dated 04 March 2013 from Far East Fire Testing Centre (FEFTC), Shanghai.
Test report no. FT13114 dated 25 April 2013 from Far East Fire Testing Centre (FEFTC), Shanghai.
Letter dated 26 February 2018 from Far East Fire Testing Centre (FEFTC), Shanghai.

Watertight and gastight:
Test report no. ST1301 dated 1 February 2013 from manufacturer.

Drawings:
- Drawing no. FCS05-7 dated 18.02.2018 (FCS multi frame sizes table)
- Drawing no. FCS05-7 dated 23.02.2018 (FCS multi frame sizes table)
- Drawing no. FCS2012-B-3 dated 30.01.2013 (Bulkhead, FSC-8+8x6)
- Drawing no. FCS2012-B-5 dated 30.01.2013 (Bulkhead, FSC-2x1)
- Drawing no. FCS2012-B-7 dated 30.01.2013 (Bulkhead, FR-50)
- Drawing no. FCS2012-B-9 dated 30.01.2013 (Bulkhead, FR-200)
- Drawing no. FCS2012-D-3 dated 30.01.2013 (Deck, FSC-8+8x6)
- Drawing no. FCS2012-D-5 dated 30.01.2013 (Deck, FSC-2x1)
- Drawing no. FCS2012-D-7 dated 30.01.2013 (Deck, FR-50)
- Drawing no. FCS2012-D-9 dated 30.01.2013 (Deck, FR-200)
- Drawing no. FCS06 dated 26.01.2018 (FR frames)

All drawings from Shanghai Fan You Sealing Technology Co., Ltd.

FS frame
Test report No. FT05090 and No. FT05091, both dated 03 August 2005 and No. FT05133 dated 6 September 2005.
Watertight and gastight testing table of FCS Multi-Cable transit, dated 18 July 2005.
Statement No FT051017 dated 17 October 2005.
All reports from Far East Fire Testing Centre (FEFTC), Shanghai.

Drawings, FS frame:
- Drawing no. FCS05-2 dated 23.02.2018 (FS multi frame)
- Drawing no. FCS05-2A dated 23.02.2018 (FS multi frame sizes table)
- Drawing no. FCS2003-B-03 rev. no. A dated 9 May 2005 (bulkhead)
- Drawing no. FCS2003-B-05 rev. no. A dated 9 May 2005 (bulkhead)
- Drawing no. FCS2003-B-07 rev. no. A dated 9 May 2005 (bulkhead)
- Drawing no. FS series FCS2003-D-03 rev. no. A dated 11 May 2005 (deck)
- Drawing no. FCS2003-D-05 rev. no. A dated 11 May 2005 (deck)
- Drawing no. FCS2003-D-07 rev. no. A dated 11 May 2005 (deck)
- Drawing no. FSC2003-B-15 rev. no. A dated 30 November 2005 (multi frame)
- Drawing no. FCS2003-B-16 rev no. A dated 30 November 2005 (multi frame)

All drawings from Shanghai Fan You Sealing Technology Co., Ltd.

## Tests carried out

Tested according to IMO FTP Code Part 3 and in compliance with IMO 2010 FTP Code Ch. 8 (FS frame).

Tested according to IMO 2010 FTP Code Part 3 (FSC and FR frame).

## Marking of product

The product or packing is to be marked with name of manufacturer, type designation and fire-technical rating.

## Transport Canada Approval

Based on the procedures laid down in the Transport Canada Publication entitled "*Approval Procedures for, Life Saving Equipment and Structural Fire Protection Products (TP 4612)",* DNV GL confirms that the product/s listed in this certificate is/are in accordance with Transport Canada's requirements.

## Periodical assessment

DNV GL's surveyor is to be given permission to perform Periodical Assessments at any time during the validity of this certificate and at least every second year. The arrangement is to be in accordance with procedure described in Class Programme DNVGL-CP-0338, Section 4.