



CERTIFICATE OF FIRE APPROVAL

This is to certify that

The product detailed below will be accepted for compliance with the applicable Lloyd's Register Rules and Regulations for use on offshore installations classed with Lloyd's Register, and for use on offshore installations when authorised by contracting governments to issue the relevant certificates, licences, permits etc.

Manufacturer	Halton Marine Oy
Address	Pulttikatu 2, 15700 Lahti Finland
Type	FIRE DAMPER (STANDARD FIRE TEST)
Description	Single / Multi Bladed Rectangular H-class Fire Dampers - Type: "FDH" for use in steel bulkheads and decks
Specified Standard	IMO Res. MSC.307 (88) – (2010 FTP Code) Part 3 With Hydrocarbon Fire Curve

**The attached Design Appraisal Document forms part of this certificate.
This certificate remains valid unless cancelled or revoked, provided the conditions in the attached Design Appraisal Document are complied with and the equipment remains satisfactory in service.**

Date of issue 24 May 2019 Expiry date 23 May 2024

Certificate No. SAS F190072

Signed



Sheet No. 1 of 5

Name

T. Radtke
Surveyor to Lloyd's Register EMEA
A Member of the Lloyd's Register Group

Note:

This certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Lloyd's Register of any modification or changes to the equipment in order to obtain a valid Certificate.

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DESIGN APPRAISAL DOCUMENT

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ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS F190072

This Design Appraisal Document forms part of the Certificate.

APPROVAL DOCUMENTATION

TUV Esti OU, Maardu, Estonia, Test Report No. 682-17TD-IMO, dated 3 November 2017, for Bulkhead 1200x1200 mm
TUV Esti OU, Maardu, Estonia, Test Report No. 688-17TD-IMO, dated 3 November 2017, for Bulkhead 250x250 mm and 600x600 mm

VTT Expert Services Ltd, Lahti, Finland, Test Report No. VTT-S-01115-17, dated 26 October 2017 for Deck 800x1200 mm
VTT Expert Services Ltd, Lahti, Finland, Test Report No. VTT-S-06330-17 dated 20 December 2017 for Deck 250x250 mm 300x300 mm 600x600 mm

VTT Expert Services Ltd, Lahti, Finland, Test Report No. VTT-S-03190-17 20 November 2017 for Deck 1200x1200 mm

Drawing for Bulkhead installation: N° LH-51359 Rev.A, dated December 12, 2017.

Drawing for Deck installation: N° LH-51360 Rev.A, dated December 12, 2017.

CONDITIONS OF CERTIFICATION

1. For applications in H-0, H-30, H-60 and H-120 Class steel bulkheads and decks with both the ducting and fire damper suitably insulated in accordance with Conditions 9 and 10 below.
2. The arrangement of the fire damper is subject to approval in each case. (fire insulation / coaming)
3. Minimum and maximum size of damper: 250mm x 250mm up to 1200mm x 1200mm
4. Single or Multi-Bladed fire dampers with outer casing composed of at least 3mm up to and including 600mm and to 5mm from 760mm and over thick stainless steel. 250mm or 200mm high blades are comprised of stainless steel or galvanized steel 1 mm with a double skin hollow profile of total thickness 22mm. Minimum coaming length: 650 mm for Bulkhead and 900 mm for Deck.
5. Fire dampers are bolted to the steel coamings with M10 bolts at 150mm maximum spacing (80-105mm at the corners of the frame)
6. To be fitted with 'Fire Secure Mastic Adhesive 1027' manufactured by FintexTetrakem Oy, between the fire damper and the coaming or an equivalent fire rated product meeting Part 1 of the 2010 IMO FTP Code.
7. Insulation is made with Insulfrax LT Blanket (nominal density 128 kg/m³) with thickness and arrangement as described in Table 2 and 3 and shown in manufacturer's drawings referenced in Approval Documentation.
8. Alternative insulation material: The fire tests were conducted with insulation material type Insulfrax LT Blanket (density 128 kg/m³); any approved H-class insulation of similar type giving at least an equivalent insulation performance may be used.
9. The fire dampers may be operated by fusible links by the actuators dependent upon damper size and mode of actuation as per Table 1 below:

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Table 1 – Actuator Type

Actuator	Type *	Manufacturer	Fire Damper Type
Pneumatic	Air Torque FA SB AT304 S12	Air Torque S.p.A.	FDH 800mm x 1200mm Deck FDH 1200mm x 1200mm Deck and Bulkhead
Pneumatic	Air Torque AT101U S12 B LLT2	Air Torque S.p.A.	FDH 800 mm x 1200mm Deck FDH 250mm x 250mm Deck
Pneumatic	Air Torque FA SB AT304	Air Torque S.p.A.	FDH 1200mm x 1200mm Bulkhead
Pneumatic	Air Torque AT104	Air Torque S.p.A.	FDH 250mm x 250mm Bulkhead
Electric	Schischek InMax-15-SF-VAS	Schischek GmbH	FDH 300mm x 300mm Deck and Bulkhead
Electric	Schischek InMax-15-F1	Schischek GmbH	FDH 600mm x 600mm Bulkhead
Electric	Schischek InMax-15-SF	Schischek GmbH	FDH 600mm x 600mm Deck

* Actuators from the same manufacturer but different model type may be used provided they have similar installation arrangement and equivalent fire technical and functional safety properties.

10. For use in H-0, H-30, H-60 and H-120 Class Bulkheads as shown in Table 2 below, the fire damper should be insulated with an approved H-120 insulation system and the coaming and ducting should be insulated with an approved insulation system to the same rating as the bulkhead, for the total insulated lengths specified in Table 2 below, which may be interpolated for intermediate sizes based on the internal cross-sectional area of the duct. Reference is also made in Table 2 below to the corresponding approval document listed above which shows the corresponding insulation arrangements.

Table 2 - Minimum Duct Insulation Lengths for Bulkhead Applications:

Fire Rating	FDH 1200mm x 1200mm (Multi-Blade)	FDH 600mm x 600mm (Single-Blade)	FDH 250mm x 250mm (Single-Blade)
H-30	2x38 mm thick until 714 mm from Blkhd and 1x38 mm thick up to 1000 mm from Blkhd *	2x38 mm thick until 714 mm from Blkhd and 1x38 mm thick up to 1000 mm from Blkhd *	2x38 mm thick until 714 mm from Blkhd and 1x38 mm thick up to 1000 mm from Blkhd *
H-60	2x38 mm thick until 714 mm from Blkhd and 1x38 mm thick up to 2000 mm from Blkhd *	2x38 mm thick until 714 mm from Blkhd and 1x38 mm thick up to 1980 mm from Blkhd *	2x38 mm thick until 714 mm from Blkhd and 1x38 mm thick up to 1000 mm from Blkhd *
H-120	2x38 mm thick until 714 mm from Blkhd and 1x38 mm thick up to 2700 mm from Blkhd *	2x38 mm thick until 714 mm from Blkhd and 1x38 mm thick up to 1980 mm from Blkhd *	2x38 mm thick until 714 mm from Blkhd and 1x38 mm thick up to 1500 mm from Blkhd *

* Additional Insulation arrangement on the Damper Side : 1x38 mm thick on top of damper frame 2x38 mm thick between damper frame and Bulkhead structural steel core. Prolongation of insulation on Bulkhead with 176 mm length.



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11. For use in H-0, H-30, H-60 and H-120 Class Decks as shown in Table 3 below, the fire damper should be insulated with an approved H-120 insulation system and the coaming and ducting should be insulated with an approved insulation system to the same rating as the bulkhead, for the total insulated lengths specified in Table 2 below, which may be interpolated for intermediate sizes based on the internal cross-sectional area of the duct. Reference is also made in Table 3 below to the corresponding approval document listed above which shows the corresponding insulation arrangements.

Table 3 - Minimum Duct Insulation Lengths (Including Fire Damper) for Deck Applications:

Fire Rating	FDH 1200mm x 1200mm and 1200mm x 800mm (Multi-Blade)	FDH 600mm x 600mm (Single-Blade)	FDH 300mmx300mm (Single-Blade)	FDH 250mm x 250mm (Single-Blade)
H-30	2x25 mm thick until 600 mm from Deck and prolongation of insulation 1x25 mm thick up to 750 mm from Deck *	2x25 mm thick until 600 mm from Deck and prolongation of insulation 1x25 mm thick up to 750 mm from Deck *	2x25 mm thick until 600 mm from Deck and prolongation of insulation 1x25 mm thick up to 750 mm from Deck *	2x25 mm thick until 600 mm from Deck and prolongation of insulation 1x25 mm thick up to 750 mm from Deck *
H-60	2x25 mm thick until 600 mm from Deck and prolongation of insulation 1x25 mm thick up to 750 mm from Deck *	2x25 mm thick until 600 mm from Deck and prolongation of insulation 1x25 mm thick up to 750 mm from Deck *	2x25 mm thick until 600 mm from Deck and prolongation of insulation 1x25 mm thick up to 750 mm from Deck *	2x25 mm thick until 600 mm from Deck and prolongation of insulation 1x25 mm thick up to 750 mm from Deck *
H-120	2x25 mm thick until 600 mm from Deck and prolongation of insulation 1x25 mm thick up to 1600 mm from Deck *	2x25 mm thick until 600 mm from Deck and prolongation of insulation 1x25 mm thick up to 1600 mm from Deck *	2x25 mm thick until 600 mm from Deck and prolongation of insulation 1x25 mm thick up to 1200 mm from Deck *	2x25 mm thick until 600 mm from Deck and prolongation of insulation 1x25 mm thick up to 1200 mm from Deck *

* Additional arrangement on the Damper side: 1x38 mm thick on top of damper frame and until Deck Insulation

12. Production items are to be manufactured in accordance with a quality control system which shall be maintained to ensure that items are of the same standard as the approved prototype.



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PLACE OF PRODUCTION

Halton Marine Oy
Pulttikatu 2
FI-15700 Lahti
Finland



Torsten Radtke
Senior Specialist Statutory Services
Hamburg Technical Support Office
Lloyd's Register EMEA

Supplementary Type Approval Terms and Conditions

This certificate and Design Appraisal Document relates to type approval, it certifies that the prototype(s) of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein, it does not mean or imply approval for any other use, nor approval of any products designed or manufactured otherwise than in strict conformity with the said prototype(s).