



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 and with the International Convention for the Safety of Life at Sea, (SOLAS), 1974, as amended, for use on ships and offshore installations classed with Lloyd's Register, and for use on ships and offshore installations when authorised by contracting governments to issue the relevant certificates, licences, permits etc.

Manufacturer	Halton Marine Oy
Address	Pulttikatu 2, LAHTI, 15700, Finland
Type	Fire Damper (Standard Fire Test)
Description	Single or Multi-bladed Rectangular Fire Dampers – Types: “FDB2-EL, FDB2-PNR, FDB2-SP, FDB2-MAN”
Trade Name	FDB2-EL, FDB2-PNR, FDB2-SP, FDB2-MAN
Specified Standard	IMO Res. MSC.61(67) - (FTP Code), Annex 1, Part 3 IMO Res. MSC.307 (88) – (2010 FTP Code), Section 8 IMO Res. MSC.307(88) – (2010 FTP Code) Annex 1 Part 3

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 North America, Inc. of any modification or changes to the equipment in order to obtain a valid Certificate.

The Design Appraisal Document and its supplementary Type Approval Terms and Conditions form 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.

820 Gessner Road, Suite 300, Houston, Texas,
77024, United States

Bruce McDonald

Global Fire & Safety Manager to Lloyd's
Register North America, Inc.
A member of the Lloyd's Register group

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ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. LR2018101SF-03

The undernoted documents have been appraised for compliance with the relevant requirements of International Conventions, and this Design Appraisal Document forms part of the Certificate.

This Certificate is an Amendment of Certificate Number LR2018101SF-02

APPROVAL DOCUMENTATION

TUV Eesti Oü, Estonia, Fire test report no. 430-13TD-IMO dated 22nd Nov 2013.

Centrum Techniki Okretowej S.A., Gdansk, Poland, Fire test report no. RS-20/B-037/E dated 25th Feb 2020.

VTT expert Services limited, Espoo, Finland, Fire test report nos: VTT-S-7445 -10 dated 8th July 2010, VTT-S-07638-13-16 dated 04th Nov 2013, VTT-S-08754-13 dated 17th Jan 2014 and VTT-S-7447-10 dated 27th Sept 2010

VTT expert Services limited, Espoo, Finland, Statement on fire resistance of A class Fire Damper with lengthened fire damper frame VTT-S-02124-15 dated 13th May 2015

VTT expert Services limited, Espoo, Finland, Statement on fire resistance of previously tested 'A' and 'H' class Fire Damper with new manual override accessory VTT-S-02124-15 dated 5th Feb 2016

Eurofins Expert Services Oy, Espoo, Finland Fire test report nos: EUFI29-21000981-T1 dated 26th Mar 2021, EUFI29-21000981-T2 dated 31st Mar 2021, EUFI29-21006124-T1 dated 09th Feb 2022 and EUFI29-21005923-T1 dated 31st Jan 2022.

Eurofins Expert Services Oy, Espoo, Finland, Statement no: EUFI29-25001683-T1.

Far East Fire Testing Centre (FEFTC), Fengxian Sub-Zone, Shanghai, China; Fire test report nos: FT15190 dated 03rd June 2015, FT15194 dated 17th June 2015, FT15261 dated 19th Aug 2015, FT15262 dated 20th Aug 2015, FT15263 dated 19th Aug 2015, FT15314 dated 08th Oct 2015 and FT15315 dated 09th Oct 2015.

IOM manuals:

Electrical FDB2 – A0(A60) Fire Damper- Installation, Operation & Maintenance Manual, Rev 11, dated 06.08.2024.

Pneumatic FDB2 – A0(A60) Fire and Gas Damper- Installation, Operation & Maintenance Manual, Rev 09, dated 31.12.2021

Spring FDB2 – A0(A60) Fire and Gas Damper- Installation, Operation & Maintenance Manual, Rev 09, dated 31.12.2021.

CONDITIONS OF CERTIFICATION

1. For use in conjunction with approved 'A-15', 'A-30' and A-60 class steel divisions with the ducting protected by the as-tested insulation system. For use in A-0 Class divisions the damper or ducting need not be insulated.
2. Coaming consisting of 3mm thick steel for 100 × 100 mm (single-blade), 250 × 250 mm (single-blade) dampers & 5mm thick steel for 1200 × 1600mm (multi-blade), 1250 × 1600 mm (multi-blade) & 1900 × 2000mm (multi-blade) mm dampers.
3. Single or multi-bladed fire dampers with 3-5mm thick stainless-steel damper frame and stainless-steel blades of nominal height in range of 200-205 mm for multi-blades dampers and for single bladed respective width and height. Nominal depth of blades of 20mm for all dampers.



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4. Application Bulkhead

- i. Tested dampers achieve a fire rating of A 60, with sizes 100×100 to 1200×1600 mm, and up to 1900×2000 in mullion arrangement. The minimum length of insulation on the coming and fire damper varies between 900 to 1300 mm depending on the size.
- ii. Insulating material have nominal thickness ranging from 50mm to 75mm.
- iii. Dampers tested without intumescent sealing material in blades were of sizes 100 x 100mm & 1200 x 1600mm, equipped with actuators BFN230-T- Belimo/Spring and BF24-TN-Belimo, respectively
- iv. A damper of size 1200 ×1600 has maximum fire rating of A 30, with ISOVER-marine felt ULTIMATE U SeaProtect Roll 50 insulation of thickness 60mm (nominal density 50 kg/m³).

5. Application Deck

- i. Tested dampers achieve a maximum fire rating of A 60 with sizes ranging from minimum 100×100 to maximum 1200 ×1600 mm, with minimum length of insulation on the coming and fire damper between 950 to 1300 mm depending on the size.
 - ii. The insulating material has a nominal thickness ranging from 50 mm to 80 mm.
 - iii. Dampers tested without intumescent sealing material in blades were of sizes 100×100mm & 1200×1600mm fitted with actuators BFN230-T- Belimo/Spring and BF24-TN-Belimo respectively
6. Insulating material used include Fire Slab 110 (nominal density 110 kg/m³; manufactured by Paroc Marine or type "Fyrewrap LT Blanket" (nominal density 128 kg/m³; manufactured by Unifrax) or type "Fyrewrap Marine blanket" (nominal density 128 kg/m³; manufactured by Unifrax (Suzhou) Co. Ltd) or type "Paroc Marine Wired Mat 100" (nominal density 100 kg/m³; manufactured by Paroc Group Oy) or "ULTIMATE U SeaProtect Roll 36" (nominal density 36 kg/m³; manufactured by Isover Saint-Gobain) or "ISOVER-marine felt ULTIMATE U SeaProtect Roll 50" (nominal density 50 kg/m³; manufactured by Isover Saint-Gobain).
 7. Frame of damper shall be fixed to coaming with M10 steel bolts and nuts with sealing material such as 'Pyrocryl or Siak Firesil Marine N/Nordsil P/ or PAPERSEAL ECO or Fire secure Mastic or Ceramic wool' as tested.
 8. Approved actuators for dampers includes: **Electrical** - Belimo BF230-2 HL, Belimo SF24ALON, Belimo BF24-TN, Belimo BFN230, Belimo SR 24/120/230, Belimo SF24A-SR-S2; Schischek In Max 15F, Schischek Exmax -15-SF, Schischek ExMax 5.10-YF; Siemens GGA126; Elodrive CSQP 15A1E; PETZ QT.Ex-MFD03. **Pneumatic** - Airtorque AT104 & Airtorque AT204.
 9. Actuators and corresponding thermal triggers/fusible link mechanisms are restricted for use with up to the maximum size damper tested and in the tested orientation (bulkheads/decks). Actuators fire tested with the smaller dampers and identified on this certificate may be accepted with larger dampers on a case-by-case basis, subject to satisfactory test evidence provided to the final Project Plan Approval Authority to demonstrate they are able to close the larger damper at least within the same time period as in the actual fire tests.
 10. Fire dampers may be fitted with a manual override accessory as described in statement VTT-S-00593-16 and IOM manuals.
 11. Fire dampers may be fitted with a frame up to 300mm depth as described in statement VTT-S-02124-15 and frame thickness may be increased up to 10mm as outlined in EUFI29-25001683-T1.



DESIGN APPRAISAL DOCUMENT

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Certificate No: LR2018101SF-03
Issue Date: 09/07/2025
Expiry Date: 17/03/2030
Reference: GTSO/FIRE/TA/HN/BM/TSO/24-023106/ PRJ11100460504

ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. LR2018101SF-03

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.
13. The certificate holder is solely responsible for the products supplied under this Certificate and to ensure that their products, are fully compliant with the relevant statutory regulate and Lloyd's Register Class rules as applicable and are designed, manufactured, and installed to the same quality and specifications as the prototype tested, including components that are designed and manufactured by third parties.
14.  This product has been verified to be fully in accordance with Transport Canada Procedure TP14621E "Procedures for approval of life-saving appliances and fire safety systems, equipment and products" and is suitable to be placed on Canadian Flagged vessels.

PLACES OF PRODUCTION

Halton Marine Oy
Pulttikatu 2
15700 Lahti
Finland

Halton Ventilation (Shanghai) Co., Ltd.
Block 7, No. 55 Feidu Road,
Lingang New City, Pudong New District
201306 Shanghai
People's Republic of China



Bruce McDonald
Global Fire & Safety Manager
Lloyd's Register Americas

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)

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