

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, 15700 Lahti, Finland
Type	Fire Damper (Standard Fire Test)
Description	Single or Multi-bladed Rectangular Fire Dampers – Types: "FDB2-EL, FDB2-PNR"
Trade Name	FDB2-EL, FDB2-PNR
Specified Standard	IMO Res. MSC.61 (67) - (FTP Code) Annex 1, Part 3 IMO MSC/Circ.1120 IMO Res. MSC.307(88) – (2010 FTP Code) Section 8

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 EMEA 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.

ATTACHMENT TO CERTIFICATE OF FIRE APPROVAL No. LR2018101SF

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 a replacement of previous Lloyd's Register Certificate of Fire Approval No: SAS F150094/M2.

APPROVAL DOCUMENTATION

1. VTT Technical Research Centre of Finland, Espoo, Finland, Test Report No's: RTE 1133/05 and RTE 1134/05, both dated 24 May 2005; VTT-S-10161-07, dated 23 November 2007; VTT-S-7445-10 and VTT-S-7447-10, dated 27 September 2010; VTT-S-08754-13 and VTT-S-07638-13, both dated 07 January 2014.
2. VTT Statement No VTT-S-3913-09 for thickness casing more than 5 mm up to 10 mm, dated 16 June 2009.
3. VTT Statement No. VTT-S-3542-10 for joining single units in a multiple unit assembly, dated 28 April 2010.

CONDITIONS OF CERTIFICATION

1. For use in A-0 Class divisions with fire damper insulated and in A-15, A-30 and A-60 Class divisions with both the ducting and fire damper suitably insulated in accordance with Condition 9 below.
2. Minimum and maximum size of damper: 100mm x 100mm up to 2000mm x 1900mm (mullion arrangement)
3. Single or Multi-bladed fire dampers 210mm deep with outer casing composed of at least 3mm thick stainless steel or galvanised steel. Blades are composed of stainless or galvanized steel 1mm, with a double skin hollow profile of total thickness 20mm.
4. Fire dampers are bolted to the coamings with M10 bolts spaced at 150 mm intervals.
5. The fire dampers are fitted with Pyrocryl gasket seals (intumescent based gasket seal) between the fire damper and the coaming which may emit smoke and toxic gases at elevated temperatures, therefore they are restricted for use in ducts serving unmanned spaces only. The use of such dampers in ducts serving manned spaces, defined as spaces where people normally work or live, must be separately approved at the design stage by the Plan Approval authority for each project.
6. The dampers are fitted with either:
 - a. (FDB2-EL) Schischek: 15F, ExMAX-15-SF, RedMAX-15-SF, ExMAX-5.10-SF
 - b. (FDB2-EL) Belimo: SF24 ALON, SR 24/120/230
 - c. (FDB2-EL) Siemens: GGA 326.1 E & GGA 126 electric actuators
 - d. (FDB2-PNR) Air Torque AT100 S10 B
 - e. (FDB2-EL) Elodrive CSQP 15A1E electric actuator
 - f. (FDB2-EL) Belimo SF24A-SR-S2 electric actuator, for applications in steel decks only
 - g. (FDB2-EL) Schischek ExMax-5.10-YF electric actuator, for applications in steel decks only
7. 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. Factory tests performed under Lloyd's Register witness in

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ambient temperature conditions with 5 seconds applied as a compensation factor (due to factory testing conducted, not under fire conditions) may also be accepted as suitable test evidence; for example, if the closure time for larger damper in the fire test is 30 seconds, actuator tested with smaller dampers must be able to close the larger damper at least within 25 seconds in the factory test.

8. Derivations of fire tested actuators, outlined in Condition 6 above, such as in different voltage supplies, different electric connection specifications (European/American etc.) and with higher performance ratings such as IP Ratings, Explosive Ratings etc. may be accepted on a case-by-case basis, subject to formal confirmation from the actuator manufacturer provided to the final project authorities that such changes do not adversely affect their functionality and performance or reduce damper closure times. Tested actuators in alternative material options cannot be accepted under this Certificate.
9. Table of Insulation Requirements for Decks and Bulkheads (insulated length may be interpolated from the results shown below using the cross-sectional area of fire damper). Insulation on duct to be the same fire rating as that used on the division, but insulation on fire damper in all cases to be A-60 Class. For single fire dampers joined together in a multiple unit assembly each fire damper to be insulated separately as shown in the below table.

Cross-Sectional Area of Fire Damper (mm)	Total Insulated length (mm) including fire damper	Fire Damper Unit Type
100 x 100	900	Single
1600 x 1200	1400	Single
2000 x 1900	1900	Double with mullion

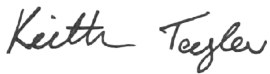
10. Production items are to be manufactured in accordance with a quality control system which shall be maintained to ensure that items are of the same standard as the approved prototype.
11. The Certificate holder is solely responsible for the products supplied under this Certificate and to ensure that their products, whether manufactured by themselves or their licensee manufacturers, if agreed by Lloyd's Register, are fully compliant with the relevant statutory regulations and Lloyd's Register Class Rules as applicable and designed, manufactured and installed to the same quality and specifications as the prototype tested, including components that are designed and manufactured by third parties.

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PLACES OF PRODUCTION

Halton Marine Oy
Pulttikatu 2
FI-15700 Lahti
Finland

Halton Ventilation (Shanghai) Co. Ltd.
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Shanghai, 201306
People's Republic of China



Keith Taylor
Team Lead, Fire & Safety
Statutory Discipline Team
UK&I Technical Support Office, Marine & Offshore
Lloyd's Register

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).