



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 BSB Engineering Services Ltd

Address 56 Trinity Trade Centre
Mill Way
Sittingbourne
Kent ME10 2PD
United Kingdom (UK)

Type FIRE DAMPER (STANDARD FIRE TEST)

Description Single/Multi Bladed Rectangular Fire Damper – Type: "BSB Marine Fire Damper A60"

Specified Standard IMO Res. MSC.307(88) – (2010 FTP Code) Annex 1 Part 3

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 11 June 2018

Expiry date 30 April 2023

Certificate No. SAS F180117/M1

Signed

Sheet No 1 of 4

Name

J. M. Evans
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.

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as the 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.



Page 2 of 4
Document number SAS F180117/M1
Issue number 1

DESIGN APPRAISAL DOCUMENT

Date 11 June 2018	Quote this reference on all future communications SOUTSO/SFS/TA/JE/WP31077506
----------------------	--

ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS F180117/M1

This Design Appraisal Document forms part of the Certificate.

APPROVAL DOCUMENTATION

RINA Fire Protection Research Laboratory, Genova, Italy; Fire Test Report No. 2017CS011024/1 and 2017CS011024/2 both dated 27th July 2017.

LGAI Technological Center S.A., Campus UAB, Ronda de la Font del Carme, 08193 Bellaterra, Barcelona, Spain; Fire Test Report No. 17/14594-1339 dated 20th September 2017.

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 A-60 Class insulation system or equivalent
2. The internal cross-sectional area of the fire damper tested, application, maximum fire rating achieved and the minimum duct insulation lengths applicable for all fire ratings are as described in Table 1 below. The minimum duct insulation lengths for any intermediate damper sizes within the tested range (if applicable) may be determined by linear interpolation based on the internal cross-sectional area of the duct. For use in A-0 Class divisions the damper or ducting need not be insulated

Table 1

Tested damper sizes (width x height)	Application	Maximum Fire rating achievable	Minimum length of A-60 insulation layer to be provided on exposed side of the duct	Minimum length of A-60 insulation layer to be provided on unexposed side of the duct	Approved Actuator Type
100mm x 100mm (Single)	Deck	A-60	130mm	950mm	PMC-TF
300mm x 300mm (Multi)	Deck	A-60	130mm	950mm	PMC-TF
1000mm x 1000mm (Multi)	Deck	A-60	130mm	1400mm	PM-TF
1000mm x 1000mm (Multi)	Bulkhead	A-60	130mm	1250mm	PM-TF
2080mm x 1000mm (Multi) (dual units 2 x 1000mm x 1000mm)	Bulkhead	A-60	130mm	2000mm	PM-TF



Page 3 of 4
Document number SAS F180117/M1
Issue number 1

DESIGN APPRAISAL DOCUMENT

Date 11 June 2018	Quote this reference on all future communications SOUTSO/SFS/TA/JE/WP31077506
----------------------	--

ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS F180117/M1

3. Maximum permissible clear openings of damper combinations as shown in Table 1
4. Dampers with smaller clear openings may also be considered for use as A60 for bulkheads in addition to decks if they have identical construction / insulation lengths / actuators as the as-tested 1000mm x 1000mm damper
5. Minimum damper length/depth: 210mm
6. Single or multi-bladed fire dampers with 1.2mm thick galvanised steel damper frame and 0.7mm thick steel hollow profile blades of height 108mm and depth 21mm. Different steels and thicknesses of 2mm and 3mm may be considered for use on a case by case basis subject to final project authority approval considering the weight of the blades and the closing performance times of the dampers
7. Coaming consisting of 3mm thick steel for 100mm x 100mm and 300mm x 300mm dampers, and of 5mm thick steel for 1000mm x 1000mm damper
8. Frame of damper fixed to coaming with M10 steel bolts and nuts
9. Ducting of single unit dampers insulated with 'SEAROX SL620' (100 kg/m³ density, thickness 50mm + 25mm). Total insulation thickness 75mm. Insulation retained to structure with steel pins and washers. Dual unit dampers: unexposed ducting of dual unit 1000mm x 1000mm dampers insulated with one layer of 'FireMaster Marine Plus Blanket' (128 kg/m³ density, thickness 45mm) manufactured by Morgan Thermal Ceramics and thickness 25mm on joints; exposed ducting covered with two layers of 'FireMaster Marine Plus Blanket' (128 kg/m³ density, thickness 45mm + 25mm) manufactured by Morgan Thermal Ceramics. Equivalent insulation could be accepted; such acceptance of equivalent insulation is subject to agreement by the design Plan Approval Authority for the project
10. Dual unit dampers installed side by side horizontally with 75mm wide central joining strips of 1.2mm thick galvanised steel, and fitted together between 1.2mm thick galvanised steel sheets each side, secured with self-tapping screws
11. To be fitted with spring return, fail safe close type actuators Type 'PM-24 and PMC-TF of torque rating 20/20Nm with associated thermo electric release closing mechanisms (72°C) type 'BAE72B-S' as tested
12. Composition, application and installation of sub components, including insulation and any fire retardants, to be maintained in production and use in accordance with originally tested composition formula and method of application and installation, and manufacturer's instructions
13. 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



Lloyd's
Register

Lloyd's Register EMEA

71 Fenchurch Street, London, EC3M 4BS

Telephone 020 7423 2416 Fax 020 7423 2053

Email tass@lr.org

Page 4 of 4
Document number SAS F180117/M1
Issue number 1

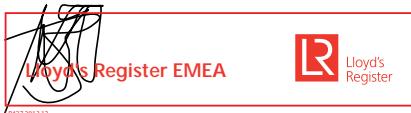
DESIGN APPRAISAL DOCUMENT

Date 11 June 2018	Quote this reference on all future communications SOUTSO/SFS/TA/JE/WP31077506
----------------------	--

ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS F180117/M1

PLACE OF PRODUCTION

BSB Engineering Services Ltd
56 Trinity Trade Centre
Mill Way
Sittingbourne
Kent ME10 2PD
United Kingdom (UK)



Jessica Evans
Senior Specialist
Statutory Fire & Safety
Southampton Technical Support Office, Marine & Offshore
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).