



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	Roxtec International AB
Address	Box 540, S-37123, Karkskrona, Sweden
Type	Cable Penetration (Standard Fire Test)
Description	Multi Cable Penetration Types: S Frame in steel and aluminium divisions
Trade Name	'Roxtec S Frame'
Specified Standard	IMO Res.MSC.61(67) - (FTP Code) Section 8, and Annex 1, Part 3 IMO Res. MSC.307 (88) - (2010 FTP Code) IMO MSC/Circ.1120 & 1488

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.

1330 Enclave Parkway, Houston, Texas, 77077,
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. SAS F150098-M3-07

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 Renewal and Amalgamation of Certificate Numbers SAS F150098-M3-06 and SAS F160311.

APPROVAL DOCUMENTATION

TEST REPORTS

SP Research Institute of Sweden (RISE) test report numbers: PX05454 dated 30 September 2010 and 4P04959 dated 24 March 2015

Research Institute of Marine Engineering (RIME) Japan test report numbers: 09-344(E) dated 20 January 2009 and 09-346(E) dated 27 February 2009

Danish Institute of Fire and Security Testing Denmark test report numbers: PGA10024 dated 21 December 2011, PGA10025 dated 22 December 2011, PGA10651 & PG10652 both dated 3 July 2015, PGA 10723A dated 4 February 2016, PGA11301A dated 22 November 2018 and PGA11302A dated 16 January 2019.

Ship Design and Research Centre S.A Poland test report numbers: RS-17/B-177/E dated 26 May 2017, RS-18/B-293/E dated 13 September 2018, RS/18/B-484/E dated 10 December 2018 and RS-19/B-035/E dated 25 February 2019 RS-17/B-210/E dated 2 June 2017, RS-18/B-179/E dated 25 June 2018, RS-19/B-020/E dated 5 December 2018 and RS-19/B-224/E dated 29 March 2019

CONDITIONS OF CERTIFICATION

- For applications in A-60 Class steel/aluminum bulkheads and decks.
- “S series” cable transits consist of: Roxtec mild steel frames 10mm thick (types S, SO, SF, SFO, SK, SR, SRC, r20 & r40 and BTB), filled with 60mm thick RM, Standard or EMC types (ES, PE, BG, BGB) modules, around the cables and welded/bolted to the steel bulkhead or deck. Roxtec RM FOC modules, comprising intumescent seal for sealing fibre optic cable conduits, may also be used in transits in conjunction with the RM modules and derivations described above for sealing electric cables.
- Tables below give details for penetrations in steel and aluminum bulkheads and decks.

Table 1. Steel bulkheads and decks

Penetration size	Application bulkhead/deck	Position of Penetration in Division	Insulation arrangements A-60	Insulation arrangements A-0
S1x1 to S8+8x10	Bulkhead	symmetrical	S1593865	S1593867
S1x1 to S8+8x10	Deck	symmetrical	S1593865	S1593867

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**ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS F150098-M3-07****Table 2. Aluminium Bulkheads and Decks**

Penetration size	Application bulkhead/deck	Position of Penetration in Division	Insulation arrangements A-60
S1x1 to S8+8x3	Bulkhead	symmetrical	S1593877
S1x1 to S8+8x3	Deck	symmetrical	S1593877

4. Composition and application of insulation material, including any flame retardants, to be maintained in production and use in accordance with originally tested composition formula and method of application, and Manufacturer's instruction.
5. 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.
6. 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.

Notes

1. An indicative fire test was conducted on a type: "S BTB 8x1" cable penetration for 60 minutes, after cooling the specimens were subjected to a hydrostatic test of 2 bar, held for 30 minutes, without any reported leakage. All detailed in Roxtec Test Report No. 101108 for test conducted at their test facilities and all witnessed by DNV Surveyor and detailed in their survey report No. 40007014 dated 4 March 2011. The penetration device consisted of a back to back Roxtec "S" seal fitted to both ends of a 200mm long fully insulated steel sleeve with an approved A-60 insulation system as shown in drawing No: S1023416, Rev. A. These results may only be considered for applications onboard ships constructed before 1 January 2020.
2. Roxtec RM FOC modules, comprising intumescent seal for sealing fibre optic cable conduits, may also be used in transits in conjunction with the RM Modules and derivations described above for sealing electric cables.
3. A variety of penetration sizes were tested for hydraulic and pneumatic pressure tightness with various cable sizes to:
 - a hydrostatic pressure of 6 bar for 60 min, and a gas pressure of 4 bar for 30 min, as detailed in DNV Report No. MLM020106 dated 19 December 2001 and No. MLM020133 dated 26 February 2002, and No.SKM-04-4088 dated 16 June 2004;
 - a hydrostatic pressure of 4 bar for 60 min, as detailed in DNV Report No. N141CR4U, Rev.1 dated 23 March 2017;
 - a hydrostatic pressure of 3 bar for 60 min, followed by gas pressure 1 bar for 30 min, as detailed in DNV Statement No. N141805F dated 27 February 2018.



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PLACE OF PRODUCTION

Roxtec International AB
Box 540
S-371 23 Karlskrona
Sweden

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)