

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, Karlskrona, 371 23, Sweden
Type	CABLE AND PIPE PENETRATION (STANDARD FIRE TEST)
Description	Multi Cable and Pipe Penetration Types: R Series in steel and aluminium divisions
Trade Name	R Series
Specified Standard	IMO Res. MSC.307(88) (2010 FTP Code) Annex 1 Part 3 & 11 and section 8. IMO Res. MSC.61(67) IMO FTP Code Annex 1 Part 3 & 11 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

Fire & Safety Lead Specialist to Lloyd's
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A member of the Lloyd's Register group

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DESIGN APPRAISAL DOCUMENT

ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. LR21217347SF-02

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.

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FIRE TEST REPORTS

SP Technical research institute of Sweden (RISE). Test report numbers P602999 dated 23rd January 2007, P303000 dated 27th January 2007, 4P8662 dated 8th June 2005, 4P06068, dated 17 January 2015, 6P02249 dated 17 August 2016, 6P07563 dated 20th December 2016, 7P02167 dated 7th August 2017, 8P04039 dated 06th August 2018, 8P04040 dated 13th August 2018, 8P07092 rev 1 dated 13th August 2018, 8P07092 rev 1 dated 16th January 2020,

DBI Danish Institute of Fire and Security Testing. Test report numbers PGA10723A dated 4th February 2016, PGA10799A dated 5 February 2016, PGA 10800A dated 18th April 2016, PGA10870A dated 1st November 2016, PGA10871A rev2 dated 16th January 2018, PGA =11301A dated 22 November 2018, PGA11302A rev1 dated 5th November 2018, PGA 11370A dated 14th January 2019, PGA 11371A dated 20th February 2019,

Centrum Techniki Okretowej (Ship Design and Research centre S.A Gdansk) Test reports RS-19/B-225/E dated 1st August 2019, RS-19/B-255/E dated 20th August 2019, RS-18/B-291/E dated 20th August 2018, RS-18/B-291/E dated 13th September 2018, RS-18/B-484/E dated 10th December 2018, RS-18/B-485/E dated 10th December 2018, RS-19/B-224/E dated 1st August 2019, RS-17/B-210/E dated 2nd June 2017, RS-18/B-179/E dated 25th June 2018 and Rs-20/B-82/E dated 21st April 2020.

PRESSURE TEST REPORTS

DNV witness reports 40007647-1 dated 13th December 2011, MLM 010238 dated 30th August 2001, N141EX82 rev 1 dated 10th August 2010.

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CONDITIONS OF CERTIFICATION

1. "Roxtec sealing system with multidiameter technology: R-series (steel/aluminium)" consisting of a sleeve, bolted, welded or attached through expansion (RX) to a steel/aluminium section. Sleeve is fitted with a Roxtec R frame (standard, Ex or EMC) in sizes 50-200. The R frame is filled with Roxtec (standard, Ex or EMC) halogen free RM modules.
2. Penetration details are defined below in Tables 1-6
3. 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
4. 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
5. The test laboratory is solely responsible for all tests performed within the scope of this certificate and to ensure that the testing is conducted in full compliance with the relevant test standard, approved operational procedures, statutory regulations and Lloyd's Register requirements as applicable and to meet client objectives as per contractual agreements

Steel Bulkheads A-60					
Sleeve Type	Penetration size	Cable/Pipe	Cable/Pipe Outer diameter (OD) [mm]	Collar Position	Drawing Reference
SL	R50-R200	Cable	10-67	Centre-line, exposed or unexposed	S1553819
SL	R50-R200	Steel Pipe	6-54	Centre-line, exposed or unexposed	S1553894
SL	R70-R200	Cu pipe	10-54	Centre-line, exposed or unexposed	S1553980
SLA	R50-R100	Cable	10-50	Unexposed	S1553824
SLA	R50	Cable	10	Exposed	S1553824
SL X	R70-R200	Cable	10-67	Unexposed	S1553819
SL X	R70-R200	Steel Pipe	6-53	Unexposed	S1553861

Table 1 R series A-60 penetrations in Steel bulkheads

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Steel Decks A-60					
Sleeve Type	Penetration size	Cable/Pipe	Cable/Pipe Outer diameter (OD) [mm]	Collar Position	Drawing Reference
SL	R50-R200	Cable	10-67	Centre-line, exposed or unexposed	S1553819
SL	R50-R200	Steel Pipe	6-95	Centre-line, exposed or unexposed	S1553894
SL	R50-R200	Cu pipe	8-54	Centre-line, exposed or unexposed	S1553980
SL A	R50-R100	Cable	10-50	Exposed or unexposed (Topside or underside)	S1553824
SL X	R75-R200	Cable	10-83	Exposed (Underside)	S1553819
SL X	R70-R200	Steel Pipe	6-54	Exposed (Underside)	S1553861

Table 2 R series A-60 penetrations in Steel Decks

Steel Bulkheads A-0					
Sleeve Type	Penetration size	Cable/Pipe	Cable/Pipe Outer diameter (OD) [mm]	Collar Position	Drawing Reference
SL	R50-R200	Cable	10-67	Centre-line, exposed or unexposed	S1553898
SL	R50-R200	Steel Pipe	6-54	Centre-line, exposed or unexposed	S1553907
SL	R50-R200	Cu pipe	8-54	Centre-line, exposed or unexposed	S1553977
SL A	R50	Cable	10	Exposed	S1554009
SL A	R50-R100	Cable	10-50	Unexposed	S1554009

Table 3 R series A-0 penetrations in Steel bulkheads

Steel Decks A-0					
Sleeve Type	Penetration size	Cable/Pipe	Cable/Pipe Outer diameter (OD) [mm]	Collar Position	Drawing Reference
SL	R50-200	Cable	10-39	Centre-line, exposed or unexposed	S1553898
SL	R50-200	Steel Pipe	6-95	Centre-line, exposed or unexposed	S1553988
SL	R50-200	Cu pipe	8-54	Centre-line, exposed or unexposed	S1553977
SL A	R50-R100	Cable	10-50	Exposed or unexposed (Topside)	S1554009

Table 4 R series A-0 penetrations in Steel Decks

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Aluminium Bulkheads A-60					
Sleeve Type	Penetration size	Cable/Pipe	Cable/Pipe Outer diameter (OD) [mm]	Collar Position	Drawing Reference
SL	R70-R200	Cable	10-28	Centre-line, exposed or unexposed	S1559533
SL A	R50-R100	Cable	10-50	Exposed or unexposed	S1559534
SL X	R70-R200	Cable	13-50	unexposed	S1559533

Table 5. R series A-60 penetrations in Aluminium Bulkheads

Aluminium Decks A-60					
Sleeve Type	Penetration size	Cable/Pipe	Cable/Pipe Outer diameter (OD) [mm]	Collar Position	Drawing Reference
SL	R50-R200	Cable	10-67	Centre-line, exposed or unexposed	S1559533
SL A	R50-R100	Cable	10-50	Unexposed (Upperside)	S1559534
SL X	R70-R200	Cable	10-50	Exposed (Underside)	S1559533

Table 6. R series A-60 penetrations in Aluminium Decks

Notes

- The following penetrations underwent a hydrostatic and pneumatic pressure test.

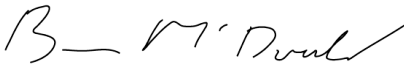
Penetration type	Hydrostatic Pressure	Pneumatic Pressure
R50 – R200	6 bar	3 bar
Bolted Sleeve	5 bar	2.5 bar
SLA Sleeves	4 bar	1.5 bar
SLX Sleeve	6 bar	3 bar

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PLACE OF PRODUCTION

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Bruce McDonald
Fire & Safety Lead Specialist to Lloyd's
Register North America, Inc.
A member of the Lloyd's Register group

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).