

## 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.

<b>Manufacturer</b>	<b>Roxtec International AB</b>
<b>Address</b>	Box 540, Karlskrona, 371 23, Sweden
<b>Type</b>	CABLE AND PIPE PENETRATION (STANDARD FIRE TEST)
<b>Description</b>	Multi Cable and Pipe Penetration Types: RS Frame in steel and aluminium divisions
<b>Trade Name</b>	RS Frame
<b>Specified Standard</b>	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 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.

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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. LR21217042SF-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.

This Design Appraisal Document forms part of the Certificate.

This Certificate is an Amendment of Certificate Number LR21217042SF

**FIRE TEST REPORTS**

SP Technical research institute of Sweden (RISE). Test report numbers ;

6P02249 dated 17<sup>th</sup> August 2016, 6P10024 dated 7<sup>th</sup> March 2017, 8P07092rev 1 dated 16<sup>th</sup> January 2020, 8P07094rev1 dated 16<sup>th</sup> January 2020, 4P06068 dated 17<sup>th</sup> January 2015, 4P07023 dated 4<sup>th</sup> February 2015, 6P04351 dated 28<sup>th</sup> June 2016, 4P08662 dated 8<sup>th</sup> June 2015, 6P02999 dated January 23<sup>rd</sup> 2007, 7P02167 dated 7<sup>th</sup> August 2017, PX05454rev1 dated 8<sup>th</sup> September 2011, P603000 dated 27<sup>th</sup> January 2007.

Research Institute of Maritime Engineering (RIME) Test Report Numbers;

09-346(E) dated 11December 2009, 09-345(E) dated 11<sup>th</sup> December 2009,

DBI Danish Institute of Fire and Security Testing. Test report numbers ;

PGA11371A dated 20<sup>th</sup> February 2019, PGA10870A dated 13<sup>th</sup> November 2016, PGA10800A dated 26<sup>th</sup> May 2016, PG10871Arev2 dated 16<sup>th</sup> January 2018, PGB10031A dated 09<sup>th</sup> July 2020, PGA10723A dated 4<sup>th</sup>February 2016, PG10652 dated 3<sup>rd</sup> July 2015, PGA 11302A dated 16<sup>th</sup> January 2019, PGA10047A dated 30<sup>th</sup> November 2020, PGB10032A dated 1<sup>st</sup> July 2020, PGA11611A dated 11<sup>th</sup> January 2020, PGA11301A dated 22<sup>nd</sup> November 2018, PGB10020A dated 5<sup>th</sup> May 2020, PGA10650 dated 18<sup>th</sup> May 2015, PGA10649 dated 18<sup>th</sup> May 2015, PGA11610A dated 18<sup>th</sup> December 2019, PGB10110A dated 27<sup>th</sup> April 2021, PGB10110A dated 27<sup>th</sup> April 2021.

Centrum Techniki Okretowej ( Ship Design and Research centre S.A Gdansk) Test reports numbers;

RS-18/B-022/E dated, 29<sup>th</sup> January 2018, RS-18/B-484/E dated 10<sup>th</sup> December 2018, RS-18/B-485/E dated 10<sup>th</sup> December 2018, RS-17/B-396/E dated 31<sup>st</sup> October 2017, RS-18/B-023/E dated 29<sup>th</sup> January 2018, RS-19/B-224/E dated 1<sup>st</sup> August 2019, RS-17/B-395/E dated 30<sup>th</sup> October 2017, RS-18/B-555/E dated 15<sup>th</sup> January 2018, RS-20/B-017/E dated 23<sup>rd</sup> January 2020, RS-17/B-210/E dated 2<sup>nd</sup> June 2017, RS-20/B-191/E dated 5<sup>th</sup> June 2020, RS-18/B292/E dated 13<sup>th</sup> September 2018, RS-18/B293/E dated 13<sup>th</sup> September 2018, RS-18/B-181/E dated 7<sup>th</sup> May 2018, RS-20/B-181/E dated 31<sup>st</sup> March 2020, RS-19/B-356/E dated 18<sup>th</sup> October 2019, RS-19/B-355/E dated 16<sup>th</sup> October 2019, RS-20/B-410/E dated 17<sup>th</sup> December 2020, RS-19/B-020/E dated 27<sup>th</sup> May 2019, RS-21/B-241/E dated 30<sup>th</sup> June 2021.

**PRESSURE TEST REPORTS**

Pressure witness reports, N141EX8Z dated 10<sup>th</sup> August 2017, N1421782 dated 1<sup>st</sup> September 2020.

**ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. LR21217042SF-02**

**CONDITIONS OF CERTIFICATION**

1. "Roxtec sealing system with multidiameter technology: RS-series (steel/aluminium)" consisting of a sleeve, bolted, welded or attached through expansion (SL X) to a steel/aluminium section. Sleeve is fitted with a Roxtec RS series seal (standard, Ex or EMC) in sizes 23-1125.
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	RS23-RS125	Cable	10-88	Centre-line, exposed or unexposed.	S1561774
SL	RS23-RS400	Steel Pipe	6-330	Centre-line, exposed or unexposed.	S1561020
SL	RS23-RS644	Steel Pipe	6-558	Unexposed	S1561020
SL	RS23-RS300	Copper Pipe	6-225	Centre-line, exposed or unexposed.	S1561052
SL	RS25-RS500	CuNi 90:10 Pipe	10-420	Centre-line, exposed or unexposed.	S1561128
SL	RS50-RS1125	Fibreglass Composite Pipe	25-1040	Centre-line, exposed or unexposed.	S1569740
SL	RS43-RS100	Pipe Bundle (steel)	16-50	Centre-line, exposed or unexposed.	S1561205
SLA	RS25-RS75	Cable	10-32	Exposed or unexposed	S1561776
SLA	RS25-RS75	Steel Pipe	6-30	Exposed or unexposed	S1561137
SLA	RS25-RS75	Copper Pipe	6-34	Exposed or unexposed	S1569744
SL X	RS25-RS200	Steel pipe	6-168	Unexposed	S1561185
SL X	RS25	Steel pipe	6	Exposed	S1561185

Table 1 RS series A-60 penetrations in Steel bulkheads

**ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. LR21217042SF-02**

Steel Decks A-60					
Sleeve Type	Penetration size	Cable/Pipe	Cable/Pipe Outer diameter (OD) [mm]	Collar Position	Drawing Reference
SL	RS23-RS125	Cable	10-88	Centre-line, exposed or unexposed.	S1561774
SL	RS23-RS400	Steel Pipe	6-330	Centre-line, exposed or unexposed.	S1561020
SL	RS23-RS644	Steel Pipe	6-558	Unexposed	S1561020
SL	RS23-RS300	Copper Pipe	6-225	Centre-line, exposed or unexposed.	S1561052
SL	RS25-RS500	CuNi 90:10	10-420	Centre-line, exposed or unexposed.	S1561073
SL	RS50-RS1125	Fibreglass Composite Pipe	25-1040	Centre-line, exposed or unexposed.	S1569741
SL	RS43-RS100	Pipe Bundle (steel)	16-50	Centre-line, exposed or unexposed.	S1561205
SLA	RS25-RS75	Cable	10-32	Exposed or unexposed	S1561776
SLA	RS25-RS75	Steel Pipe	6-30	Unexposed	S1561137
SLA	RS25-RS75	Copper Pipe	6-34	Unexposed	S1569744
SL X	RS25-RS200	Steel Pipe	6-168	Exposed or unexposed	S1561185

Table 2 RS 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	RS23-RS125	Cable	10-88	Centre-line, exposed or unexposed.	S1561780
SL	RS23-RS400	Steel Pipe	6-330	Centre-line, exposed or unexposed.	S1561212
SL	RS23-RS644	Steel Pipe	6-558	Unexposed	S1561212
SL	RS23-RS300	Copper Pipe	6-225	Centre-line, exposed or unexposed.	S1561217
SL	RS25-RS500	CuNi 90:10 Pipe	10-420	Centre-line, exposed or unexposed.	S1561349
SL	RS50-RS1125	Fibreglass Composite Pipe	25-1040	Centre-line, exposed or unexposed.	S1569741
SL	RS43-RS100	Pipe Bundle (steel)	16-50	Centre-line, exposed or unexposed.	S1561500
SLA	RS25-RS75	Cable	10-32	Exposed or unexposed	S1561783
SLA	RS25-RS75	Steel Pipe	6-30	Exposed or unexposed	S1561494
SLA	RS25-RS75	Copper Pipe	6-34	Exposed or unexposed	S1569745
SL X	RS25-RS200	Steel pipe	6-168	Unexposed	S1561497
SL X	RS25	Steel pipe	6	Exposed	S1561497

Table 3 RS series A-0 penetrations in Steel bulkheads

**ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. LR21217042SF-02**

Steel Decks A-0					
Sleeve Type	Penetration size	Cable/Pipe	Cable/Pipe Outer diameter (OD) [mm]	Collar Position	Drawing Reference
SL	RS23-RS125	Cable	10-88	Centre-line, exposed or unexposed.	S1561780
SL	RS23-RS400	Steel Pipe	6-330	Centre-line, exposed or unexposed.	S1561212
SL	RS23-RS644	Steel Pipe	6-558	Unexposed	S1561212
SL	RS23-RS300	Copper Pipe	6-225	Centre-line, exposed or unexposed.	S1561217
SL	RS25-RS500	CuNi 90:10	10-420	Centre-line, exposed or unexposed.	S1561242
SL	RS50-RS1125	Fibreglass Composite Pipe	25-1040	Centre-line, exposed or unexposed.	S1569741
SL	RS43-RS100	Pipe Bundle (steel)	16-50	Centre-line, exposed or unexposed.	S1561500
SLA	RS25-RS75	Cable	10-32	Exposed or unexposed	S1561783
SLA	RS25-RS75	Steel Pipe	6-30	Unexposed	S1561495
SLA	RS25-RS75	Copper Pipe	6-34	Unexposed	S1569745
SL X	RS25-RS200	Steel Pipe	6-168	Exposed or unexposed	S1561497

Table 4 RS series A-0 penetrations in Steel Decks

Aluminium Bulkheads A-60					
Sleeve Type	Penetration size	Cable/Pipe	Cable/Pipe Outer diameter (OD) [mm]	Collar Position	Drawing Reference
SL	RS23-RS125	Cable	10-88	Centre-line, exposed or unexposed.	S1561775
SL A	RS25-RS100	Cable	10-50	Exposed or Unexposed	S1561779

Table 5. Rs series 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	RS23-RS125	Cable	10-86	Centre-line, exposed or unexposed.	S1561775
SL A	RS25-RS100	Cable	10-50	Unexposed	S1561779

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

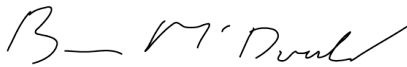
**ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. LR21217042SF-02****Notes**

1. Penetrations underwent a hydrostatic and pneumatic pressure test as detailed below;

Penetration type / sleeve	Hydrostatic Pressure	Pneumatic Pressure
RS23-RS644	6bar	3bar
SL Sleeve	6bar	3bar
SL A Sleeve	4bar	1.5bar
SL X Sleeve	6bar	3bar
Bolted sleeve	5 bar	2.5bar

**PLACE OF PRODUCTION**

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Bruce McDonald  
TSC Manager - Americas, Marine  
Lloyd's Register Americas  
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).*