



## Confirmation of Product Type Approval

**Company Name:** ROXTEC INTERNATIONAL AB

**Address:** ROMBVAGEN 2 LYCKEBY SE 371 65 Sweden

**Product:** Cable, Deck and Bulkhead Penetration Sealings

**Model(s):** Roxtec S Series Frames for steel divisions for Marine and Offshore Applications.

**Endorsements:**

<b>Certificate Type</b>	<b>Certificate Number</b>	<b>Issue Date</b>	<b>Expiry Date</b>
Product Design Assessment (PDA)	24-2397982-PDA	02-FEB-2024	01-FEB-2029
Manufacturing Assessment (MA)	24-6227546	25-JAN-2024	08-JAN-2029
Product Quality Assurance (PQA)	NA	NA	NA

### **Tier**

3 - Type Approved, unit certification not required

### **Intended Service**

Approved for use as empty, single or multiple cable penetration system in class A-0, A-15, A-30 and A-60 steel bulkheads and decks for approved ship cables, inc. continuously welded aluminium clad cables (e.g. CLX type) and fiber optic conduits and cables, within type and size limitations indicated in the attached tables. Penetrations of watertight and gastight bulkheads and decks up to the specified pressure indicated in the rating section.

### **Description**

Roxtec sealing system with multidiameter™ technology, S-series consists of Roxtec S-series frames with a depth of 60 mm (S, S Ex, SF, SFHM, SO, SFO, SFOH, SR/T, SR/S, SRC r20, SRC r40, SRC r60) in height 1-8 and width 60-120, and combinations as indicated in the attached tables. welded or bolted to the steel sections. Also included in the S-series is the subgroup of SK-series frames with a single barrier with a depth of more than 60 mm (SK, SK Ex, SFK, SFOK, SFOHK, SRCK r20, SRCK r40, SRCK r60) and a subgroup SBTB-series frames with two barriers (SBTB, SBTB Ex, SFBTB, SRBTB, SRCBTB r20, SRCBTB r40, SRCBTB r60).

The S-series (including subgroups) is filled with Roxtec halogen free RM modules (Notes 1,2) . Assembled with Roxtec Wedge, Roxtec ES Wedge, Roxtec Ex Wedge and corresponding stay plates.

1 Standard RM, RM Ex, RM FOC, RM ES, RM ESB, RM PE, RM PE B, RM BG, RM BG B, RM ES BG, RM ES BGB

2 RMX, RX BG, RX BG B.

### **Ratings**

A0, A15, A30 and A60 Bulkheads and Decks

Watertight test pressure 6 bar (except bolted versions test pressure at 5 bar)

Gastight test pressure 4 bar (except bolted versions test pressure at 2.5 bar)

For penetrations incorporating FOC-modules, watertight test pressure is 3 bar and gastight test pressure is 1 bar.

For penetrations incorporating RMX modules, watertight test pressure is 3 bar and gastight test pressure is 1.5 bar

See the attached tables for detailed ratings.

### Service Restrictions

a) Maximum tested frame sizes for S-Series Frames with RM Modules. :

1) Single - 8x1 ( One frame of size 8)

2) Multiple Frames - see Below

2.1) For bulkheads/ decks up to A60 rating, two frames of size 8 arranged vertically and ten arranged horizontally, designated S 8+8x10., Maximum Cable size 90 mm ( Marine) and 18 mm ( Fiber Optic)

2.2) For bulkheads up to A60 rating, two frames of size 8 arranged vertically and three arranged horizontally, designated S 8+8x3., Maximum CLX Cable size 98 mm

2.3) For decks up to A60 rating, two frames of size 8 arranged vertically and two arranged vertically, designated S 8+8x2., Maximum CLX Cable size 98 mm

2.4) For bulkheads A-0 rating with out insulation , two frames of size 8 arranged vertically and five arranged horizontally, designated S 8+8x5., Maximum Cable size 86 mm ( Marine) and 18 mm ( Fiber Optic)

2.5) For decks A-0 rating with out insulation , two frames of size 8 arranged vertically and three arranged horizontally, designated S 8+8x3., Maximum Cable size 88 mm ( Marine) and 18 mm ( Fiber Optic)

b) Minimum Tested Frame Size 1x1 ( size 1 Frame)

c) See attached tables for all tested combinations and cable sizes for all frame types. Other applications are subject to case-by-case approval.

d) Not for use in tank boundaries

e) For detail information about insulation arrangement, please see ABS approved drawings specified in the Notes, Drawings and Documentation section of this Certificate..

f) Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

### Comments

a) All seal types should be installed with the manufacturer's instructions in accordance with ABS approved drawings.

b) Watertight or fire rated bulkheads or decks for cable penetrations are to be examined and tested as per ABS Marine Vessels Rules 3-7-1/Table1 and 4-8-4/29.15.

c) This approval of penetrations passing through watertight bulkhead is not to be construed as a substitute for flag Administration's approval for the purpose of SOLAS (2020 consolidated edition).

d) When requested to be used in watertight bulkheads or decks on passenger ships or special purpose ships, the penetration system has to comply with the requirements given in SOLAS (Consolidated Edition 2020), Ch. II-1 Reg.

## 13.2.3.

- e) The product or packing is to be marked with name of manufacturer, type designation and fire rating.
- f) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

**Notes, Drawings and Documentation**

## 1) Test Reports

## 1.1) SP Technical Research Institute of Sweden

- PX05454 A-60, Insulated Steel Bulkhead, dated 8th September 2011
- 4P07023 A-60 Steel deck SP report dated 4th February 2015
- 4P08662 A-60 Steel bulkhead SP report dated 8th June 2015
- 4P04959, IMO test of cable penetration seals in A60 Steel Bulkheads, dated 24 March 2015
- 6P07563, IMO test of cable penetration seals in A60 Steel Deck, Dated 20 Dec 2016
- 6P02249, IMO test of cable penetration seals in A60 Steel Deck, Dated 17 August 2016
- 6P02516, IMO test of cable penetration seals in A60 Bulkhead, Dated 29 August 2016
- 6P10022 A-60 Steel deck SP report dated 7th October 2017
- 8P04039 A-60 Steel bulkhead SP report dated 6th August 2018
- 8P04040 A-60 Steel deck SP report dated 13th August 2018

## 1.2) Danish Institute of Fire and Security Technology.

- PGA10024, Penetrations through "A" Class Bulkhead, dated 21st December 2011
- PGA10025, Penetrations through "A" Class Deckhead, dated 22nd December 2011
- \* PGA10453 A-60 Steel bulkhead DBI report dated 28th May 2014
- PGA10651, Cable Transits a steel deck, dated 3rd July 2015
- PGA10652, Cable Transits in a steel bulkhead, dated 3rd July 2015
- PGA10723A, Cable Transits and Pipe Penetration in class A-0 Steel Deck, dated 4 February 2016
- PGA10871Arev1, Cable Transits and Pipe Penetration in class A-60 Steel Deck, dated 09 Dec 2016
- PGA11301A A-0 Steel bulkhead DBI report dated 22nd November 2018
- PGA11302A A-0 Steel deck DBI report dated 16th January 2019
- PGB10116A A-60 Steel deck DBI report dated 2nd August 2021
- PGB10117A A-60 Steel bulkhead DBI report dated 2nd August 2021
- PGB10119A A-0 Steel deck DBI report dated 15th November 2021

- PGB10172A A-60 Steel deck DBI report dated 17th June 2022
- PGB10176A A-60 Steel bulkhead DBI report dated 4th November 2022
- PGB10177A A-60 Steel deck DBI report dated 4th November 2022

1.3) Japan Ship Machinery Quality Control Association – Research Institute of Marine engineering – Test Report 09-344(E), dated 11th December 2009

1.4) Centrum Techniki Okrtowej S.A. - Maritime Advanced Research Centre:

- RS-17/B-176/E A-0 Steel bulkhead CTO report dated 5th May 2015
- RS-17/B-177/E A-0 Steel deck CTO report dated 26th May 2017
- RS-18/B-293/E A-0 Steel bulkhead CTO report dated 13th September 2018
- RS-18/B-484/E A-60 Steel deck CTO report dated 10th December 2018
- RS-19/B-355/E A-60 Steel bulkhead CTO report dated 16th October 2019
- RS-19/B-356/E A-60 Steel deck CTO report dated 18th October 2019
- RS-20/B-409/E A-60 Steel bulkhead CTO report dated 21st December 2020
- RS-22/B-337/E A-60 Steel deck CTO report dated 28th October 2022
- RS-22/B-394/E A-60 Steel bulkhead CTO report dated 28th November 2022
- RS-22/B-425/E A-60 Steel bulkhead CTO report dated 2nd January 2023
- RS-22/B-427/E A-60 Steel bulkhead CTO report dated 2nd January 2023

1.5) Watertightness and Gas Tightness Test Reports:

- MLM 020133 dated 26 Feb 2002
- SKM-04-4088 dated 16 June 2004
- N141805F Tightness report dated 27th February 2018
- N142G5DA Tightness report dated 14th November 2022

2) Drawings

Drawing No. S1589708, Revision: A, A-60 Class Steel Bulkhead & Deck – S Series

Drawing No. S1589709, Revision: A, A-60 Class Steel Bulkhead & Deck – S Ex Series

Drawing No. S1589710, Revision: A, A-60 Class Steel Bulkhead & Deck – SK Series

Drawing No. S1589711, Revision: A, A-60 Class Steel Bulkhead & Deck- SBTB Series

Drawing No. S1589712, Revision: A, A-0 Class Steel Bulkhead & Deck- S Series

Drawing No. S1589713, Revision: A, A-0 Class Steel Bulkhead & Deck- S Ex Series

Drawing No. S1589714, Revision: A, A-0 Class Steel Bulkhead & Deck- SK Series

Drawing No. S1589715, Revision: A, A-0 Class Steel Bulkhead & Deck- SBTB Series

Drawing No. S1589727, Revision: A, A-60 Class Steel Bulkhead & Deck – S Series with CLX Cables

Drawing No. S1589728, Revision: A, A-0 Class Steel Bulkhead & Deck- S Series with CLX Cables

Drawing No. S1589729, Revision: A, A-60 Class Steel Bulkhead & Deck – SK Series with CLX Cables

Drawing No. S1589730, Revision: A, A-60 Class Steel Bulkhead & Deck- SBTB Series with CLX Cables

Drawing No. S1589735, Revision: A, A-0 Class Steel Bulkhead & Deck- SK Series with CLX Cables

Drawing No. S159046, Revision: A, A-0 Class Steel Bulkhead & Deck- SK Series with CLX Cables

**Term of Validity**

This Product Design Assessment (PDA) Certificate remains valid until 01/Feb/2029 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

**ABS Rules**

2024 ABS Rules for Building and Classing Marine Vessels 1-1-4/7.7, 1-1-A3, 1-1-A4, 4-8-4/21.13, 4-8-4/29.15

2024 ABS Rules for Building and Classing Facilities on Offshore Installations 1-1-4/9.7, 1-1-A2, 1-1-A3, 3-8/9.13, 4-8/9.13

2024 ABS Rules for Building and Classing Mobile Offshore Units 1-1-4/9.7, 1-1-A2, 1-1-A3, 4-3-3/5.13

**International Standards**

Regulation II-2/ 9.3.1 of SOLAS (2020 Consolidated Edition);

IMO Resolution MSC.307(88) - (2010 FTP Code), Annex I: Part 3, adopted 3 December 2010

**EU-MED Standards**

NA

**National Standards**

NA

**Government Standards**

This PDA conforms to Transport Canada Requirements

**Other Standards**

NA



A handwritten signature in blue ink, appearing to read "Joseph W. White".

Corporate ABS Programs  
American Bureau of Shipping  
Print Date and Time: 09-Feb-2024 2:48

ABS has used due diligence in the preparation of this certificate, and it represents the information on the product in the ABS Records as of the date and time the certificate is printed.

If the Rules and/or standards used in the PDA evaluation are revised or if there is a design modification (whichever occurs first), a PDA revalidation may be necessary.

The continued validity of the MA is dependent on completion of satisfactory audits as required by the ABS Rules. The validity of both PDA and MA entitles the product to receive a **Confirmation of Product Type Approval**.

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or prior to the effective date of the ABS Rules and standards applied at the time of PDA issuance. ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. The manufacturer is responsible to maintain compliance with all specifications applicable to the product design assessment. Unless specifically indicated in the description of the product, certification under type approval does not waive requirements for witnessed inspection or additional survey for product use on a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.

Table 1: approved cable penetration in A-60 Bulkhead

Frame type	Size	Cable type	Max. cable diameter (OD) [mm]	Frame length [mm]	Frame thickness [mm]	Frame position	Insulation drawing
<b>S-series frames with RM modules<sup>1</sup></b>	1-8x1	Marine	86	60	10	Any	S1589708 No.1
	1-8+8x3	Marine	86	60	10	Symmetric	S1589708 No.2
	1-8+8x10	Marine	86	60	10	Symmetric	S1589708 no 3
	1-8+8x10	Marine	90	60	10	Symmetric, non-insulated side	S1589708 No.4
	1-8+8x10	Marine	90	60	10	Symmetric	S1589708 No.5
	1-8+8x3	CLX	98	60	10	Symmetric	S1589727 No.1
	1-8+8x10	Fiber optic <sup>3</sup>	18	60	10	Any, Symmetric	S1589708 No.1-3
	1-8+8x10	Fiber optic <sup>3</sup>	18	60	10	Symmetric, non-insulated side	S1589708 No.4
<b>S-series frames with RM modules<sup>2</sup></b>	1-6+6x3	Marine	34	60	10	Symmetric	S1589709 No.1-2
<b>SK-series frames with RM modules<sup>1</sup></b>	2-8x1	Marine	82	100-400	10	Insulated side	S1589710 No.1
	2-8+8x5	Marine	90	100-400	10	Insulated side	S1589710 No.2
	2-8x1	Fiber optic <sup>3</sup>	18	100-400	10	Insulated side	S1589710 No.1
	2-8+8x5	Fiber optic <sup>3</sup>	18	100-400	10	Insulated side	S1589710 No.2
<b>SBTB-series frames with RM modules<sup>1</sup></b>	2-8x1	Marine	90	200-400	10	Symmetric	S1589711 No.1
	2-8x1	Fiber optic <sup>3</sup>	18	200-400	10	Symmetric	S1589711 No.1

<sup>1</sup> Standard RM, RM Ex, RM FOC, RM ES, RM ESB, RM PE, RM PE B, RM BG, RM BG B, RM ES BG, RM ES BGB

<sup>2</sup> RMX, RX BG, RX BG B

<sup>3</sup> Fiber optic conduits can only be installed in FOC-modules

Table 2: approved cable penetration in A-0 Bulkhead

Frame type	Size	Cable type	Max. cable diameter (OD) [mm]	Frame length [mm]	Frame thickness [mm]	Frame position	Insulation drawing
<b>S-series frames with RM modules<sup>1</sup></b>	1-8+8x5	Marine	86	60	10	Symmetric	S1589712 No.1-2
	1-8+8x10	Marine	86	60	10	Symmetric	S1589712 No.3
	1-8+8x3	CLX	98	60	10	Symmetric	S1589728 No.1
	1-8+8x5	Fiber optic <sup>3</sup>	18	60	10	Symmetric	S1589712 No.1-2
	1-8+8x10	Fiber optic <sup>3</sup>	18	60	10	Symmetric	S1589712 No.3
<b>S-series frames with RM modules<sup>2</sup></b>	1-6+6x3	Marine	34	60	10	Symmetric	S1589713 No.1-2
<b>SK-series frames with RM modules<sup>1</sup></b>	2-8x1	Marine	82	100-400	10	Insulated side	S1589714 No.1
	2-8+8x5	Marine	90	100-400	10	Insulated side	S1589714 No.2
	2-8x1	Fiber optic <sup>3</sup>	18	100-400	10	Insulated side	S1589714 No.1
	2-8+8x5	Fiber optic <sup>3</sup>	18	100-400	10	Insulated side	S1589714 No.2
<b>SBTB-series frames with RM modules<sup>1</sup></b>	2-8x1	Marine	82	200-400	10	Symmetric	S1589715 No.1
	2-8x1	Fiber optic <sup>3</sup>	18	200-400	10	Symmetric	S1589715 No.1

<sup>1</sup> Standard RM, RM Ex, RM FOC, RM ES, RM ESB, RM PE, RM PE B, RM BG, RM BG B, RM ES BG, RM ES BGB

<sup>2</sup> RMX, RX BG, RX BG B

<sup>3</sup> Fiber optic conduits can only be installed in FOC-modules



Table 3: approved cable penetration in A-60 Deck

Frame type	Size	Cable type	Max. cable diameter (OD) [mm]	Frame length [mm]	Frame thickness [mm]	Frame position	Insulation drawing
<b>S-series frames</b> with RM modules <sup>1</sup>	1-8+8x2	Marine	86	60	10	Any	S1589708 No.6-7
	1-8+8x10	Marine	90	60	10	Top side, Symmetric	S1589708 No.8
	1-8+8x2	CLX	98	60	10	Any	S1589727 No.2
	1-8+8x10	Fiber optic <sup>3</sup>	18	60	10	Any, Top side, Symmetric	S1589708 No.6-8
<b>S-series frames</b> with RM modules <sup>2</sup>	1-6x1	Marine	34	60	10	Top side	S1589709 No.5
	1-6+6x3	Marine	34	60	10	Any	S1589709 No.3-4
<b>SK-series frames</b> with RM modules <sup>1</sup>	2-8x1	Marine	82	100-400	10	Top side	S1589710 No.4
	2-8+8x5	Marine	90	100-400	10	Any	S1589710 No.3
	2-8x1	CLX	60	100-400	10	Top side	S1589729 No.1
	2-8x1	Fiber optic <sup>3</sup>	18	100-400	10	Top side	S1589710 No.4
	2-8+8x5	Fiber optic <sup>3</sup>	18	100-400	10	Any	S1589710 No.3
<b>SBTB-series frames</b> with RM modules <sup>1</sup>	1-8x1	Marine	90	200-400	10	Any	S1589711 No.2
	1-8x1	CLX	60	200-400	10	Symmetric, Top side	S1589730 No.1
	1-8x1	Fiber optic <sup>3</sup>	18	200-400	10	Any	S1589711 No.2

<sup>1</sup> Standard RM, RM Ex, RM FOC, RM ES, RM ESB, RM PE, RM PE B, RM BG, RM BG B, RM ES BG, RM ES BGB

<sup>2</sup> RMX, RX BG, RX BG B

<sup>3</sup> Fiber optic conduits can only be installed in FOC-modules

Table 4: approved cable penetration in A-0 Deck

Frame type	Size	Cable type	Max. cable diameter (OD) [mm]	Frame length [mm]	Frame thickness [mm]	Frame position	Insulation drawing
<b>S-series frames with RM modules<sup>1</sup></b>	1-8x1	Marine	88	60	10	Top side, symmetric	S1589712 No.4
	1-8+8x3	Marine	88	60	10	Top side	S1589712 No.7
	1-8+8x10	Marine	90	60	10	Top side, symmetric	S1589712 No.5-6
	1-8+8x2	CLX	98	60	10	Any	S1589728 No.2
	1-8x1	Fiber optic <sup>3</sup>	18	60	10	Top side, symmetric	S1589712 No.4
	1-8+8x3	Fiber optic <sup>3</sup>	18	60	10	Top side	S1589712 No.7
	1-8+8x10	Fiber optic <sup>3</sup>	18	60	10	Top side	S1589712 No.5-6
<b>S-series frames with RM modules<sup>2</sup></b>	1-6x1	Marine	34	60	10	Top side	S1589713 No.5
	1-6+6x3	Marine	34	60	10	Any	S1589713 No.3-4
<b>SK-series frames with RM modules<sup>1</sup></b>	2-8x1	Marine	82	100-400	10	Top side	S1589714 No.4
	2-8+8x5	Marine	90	100-400	10	Any	S1589714 No.3
	2-8x1	CLX	60	100-400	10	Top side	S1589735 No.1
	2-8x1	Fiber optic <sup>3</sup>	18	100-400	10	Top side	S1589714 No.4
	2-8+8x5	Fiber optic <sup>3</sup>	18	100-400	10	Any	S1589714 No.3
<b>SBTB-series frames with RM modules<sup>1</sup></b>	1-8x1	Marine	90	200-400	10	Any	S1589715 No.2
	1-8x1	CLX	60	200-400	10	Symmetric, Top side	S1590462 No.1
	1-8x1	Fiber optic <sup>3</sup>	18	200-400	10	Any	S1589715 No.2

<sup>1</sup> Standard RM, RM Ex, RM FOC, RM ES, RM ESB, RM PE, RM PE B, RM BG, RM BG B, RM ES BG, RM ES BGB

<sup>2</sup> RMX, RX BG, RX BG B

<sup>3</sup> Fiber optic conduits can only be installed in FOC-modules