



## Confirmation of Product Type Approval

**Company Name:** ROXTEC INTERNATIONAL AB

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

**Product:** Penetration Device for Pipe Deck and Bulkhead Penetration Sealing

**Model(s):** Roxtec S-series Frames in A-Class Steel Divisions

**Endorsements:**

| <b>Certificate Type</b>         | <b>Certificate Number</b> | <b>Issue Date</b> | <b>Expiry Date</b> |
|---------------------------------|---------------------------|-------------------|--------------------|
| Product Design Assessment (PDA) | 24-0023682-PDA            | 09-SEP-2024       | 08-SEP-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**

Empty, single, or multiple pipe penetration in Class A-0, A-15, A-30 and A-60 steel bulkheads and decks for steel, copper, titanium, CuNi and bundle pipes. Penetrations of watertight and gastight steel bulkheads and decks up to the specified pressure.

### **Description**

Roxtec sealing system with Multidiameter™ technology: S-series (steel division)

Consisting of Roxtec S-series steel frames (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 mm, and combinations thereof, welded or bolted to the steel sections. S-series also includes the subgroup of SK-series frames with a single barrier with a depth of more than 60 mm (SK, SK Ex, SFK, SFÖK, 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<sup>1</sup>. Assembled with Roxtec Wedge, Roxtec ES Wedge, Roxtec Ex Wedge or Roxtec ES Ex Wedge and corresponding stayplates.

<sup>1</sup>Standard RM, RM Ex, RM ES, RM ES B, RM PE, RM PE B, RM BG, RM BG B, RM ES Ex, RM ES B Ex, RM PE Ex, RM ES B Ex, RM BG Ex, RM BG B Ex.

### **Ratings**

A-0, A-15, A-30 and A-60 Steel Bulkheads and Decks

Watertight approved pressure: 4.0 bar (welded installation), 3.33 bar (bolted installation), and 2.67 bar

(openable bolted installation)

Gastight approved pressure: 2.67 bar (welded installation), and 1.67 bar (bolted installation)

Notes:

Approved pressure is 2/3 of the test pressure.

Refer to attached ROXTEC S-series Tables.

### **Service Restrictions**

- a) Minimum and maximum tested sizes of steel and titanium pipes: 6 mm OD to 54 mm OD
- b) Minimum and maximum tested sizes of copper and CuNi pipes: 6 mm OD to 54 mm OD
- c) Minimum and maximum tested sizes of bundle pipes with steel cores: 8 mm OD to 50 mm OD
- d) Minimum and maximum tested frame size:

1) Single - 1x1 to 8x1 for S-series & SBTB-series frames and 2x1 to 8x1 for SK-series frames.

2) Multiple Frames - see below

For bulkheads up to A-60 rating, S-series with steel, titanium, and bundle pipes - 1x1 to 8+8x5, two frames of size 8 arranged vertically and 5 arranged horizontally.

For decks up to A60 rating, S-series with steel and titanium pipes, 1x1 to 8+8x5, two frames of size 8 arranged vertically and 5 arranged horizontally.

For decks up to A60 rating, S-series with bundle pipes, 1x1 to 8+8x5, two frames of size 8 arranged vertically and 2 arranged horizontally.

Note: Refer to attached ROXTEC S-series Tables.

e) Class A-0, A-15 and A-30 shall be insulated as class A-60 and in addition the division is to be insulated at least 200 mm around the penetration.

f) Insulation material is to be A-60 class approved type and properly installed in accordance with the insulation arrangement drawings: S1603114, S1603117, S1603126, S1603243, S1603244, S1603245, S1603254, S1603259, S1603262, S1603263, and S1603264.

g) Not for use in tank boundaries

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

i) Continued compliance with the statutory requirements requires maintenance of fully Type Approval (PDA+MA). The scope of Type Approval is to comply with MSC.1/Circ.1221 dated 11 December 2006.

### **Comments**

a) During installation of the pipe penetration systems, the attending Surveyor is to confirm that the installer is familiar with and has access to the manufacturer's installation procedures. After installation, all fire-rated pipe penetrations are to be visual inspected and to the satisfactions of the attending Surveyor.

b) Where pipes pass through watertight and/or fire-rated bulkheads or decks, the penetrations are to be made through the use of approved transit devices installed in accordance with manufacturer's installation

procedures to maintain the watertightness and/or fire-rating of the bulkheads or decks. Watertight or fire-rated bulkheads or decks for pipe penetrations are to be examined and tested as per ABS Marine Vessels Rules 3-7-1/3.5.7 Table1.

- c) When requested to be used in watertight bulkheads on passenger ships or special purpose ships, the penetration system has to comply with the requirements given in SOLAS Ch.11-1 Reg. 13.2.3 (Consolidated Edition). 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 (Consolidated Edition). 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 (Consolidated Edition).
- d) Gas-tightness and Watertightness tests have been performed in accordance with the DNVGL Class Program Type Approvals, DNVGL-CP-0165, Cable and Pipe Penetrations.
- e) Any component of penetration systems shall not be replaced by materials that have not been tested in accordance with the IMO FTP Code and/or accepted by the Flag Administration.
- f) Installation of transits are only permissible where strength and fatigue characteristics are not diminished or where satisfactory structural compensation has been provided.
- g) This certificate may not be used for EU and US flagged vessels (MED and/or USCG have their own specific requirements).
- h) Approval not performed on behalf of any Flag Administration
- i) Individual review to the intended use on specific vessel, MOU or facility is required.
- j) The product or packing is to be marked with name of manufacturer, type designation and fire rating.
- k) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

#### **Notes, Drawings and Documentation**

- a) Doc. No. RS-17/B-395/E, Rev. -, CTO Fire Test Report for Pipe and Cable Penetrations in A60 Class Steel Deck dated 10-30-2017
- b) Doc. No. RS-18/B-484/E, Rev. -, CTO Fire Test Report for Pipe and Cable Penetrations in A60 Class Steel Deck dated 10-12-2018
- c) Doc. No. RS-18/B-485/E, Rev. -, CTO Fire Test Report for Pipe and Cable Penetrations in A60 Class Steel Bulkhead dated 12-10-2018
- d) Doc. No. RS-22/B-336/E, Rev. -, CTO Fire Test Report for Cable and Pipe Penetrations in A60 Class Steel Bulkhead dated 10-28-2022
- e) Doc. No. RS-22/B-337/E, Rev. -, CTO Fire Test Report for Cable and Pipe Penetrations in A60 Class Steel Deck dated 10-28-2022
- f) Doc. No. RS-23/B-104/E, Rev. -, CTO Fire Test Report for Cable and Pipe Penetrations in A0 Class Steel Bulkhead dated 04-25-2023
- g) Doc. No. RS-23/B-339/E, Rev. -, CTO Fire Test Report for Cable and Pipe Penetrations in A60 Class Steel Bulkhead dated 11-03-2023
- h) Doc. No. PGB10174A, Rev. 0, DBI Fire Test Report Transits in A60 Class Steel Deck dated 07-13-2022
- i) Doc. No. PGB10233A, Rev. 0, DBI Fire Test Report Transits in A60 Class Steel Bulkhead dated 12-20-2022
- j) Doc. No. PGB10220A, Rev. 0, DBI Fire Test Report Transits in A60 Class Steel Deck dated 07-10-2023

- k) Doc. No. PGB10221A, Rev. 0, DBI Fire Test Report Transits in A60 Class Steel Bulkhead dated 11-24-2023
- l) Doc. No. 6P02249, Rev. -, SP Fire Test Report for Pipe Penetration Seals in A60 Class Steel Deck dated 08-17-2016
- m) Doc. No. MLM02133, Rev. -, DNV Watertightness and Gastightness Test Inspection Report for Type S2X1BTB and S6x1BTB dated 02-26-2002
- n) Doc. No. MLM020400, Rev. -, DNV Watertightness and Gastightness Test Inspection Report for Type S8X1BTB dated 03-25-2002
- o) Doc. No. MLM020401, Rev. -, DNV Watertightness and Gastightness Test Inspection Report for Type G-Frame 6X1 and 2x1 dated 03-25-2002
- p) Doc. No. N141CR4U, Rev. 1, DNVGL Survey Report – Pressure Testing ROXTEC SFOHK 2X1, 4X1, 6X1, & 8X1 dated 03-23-2017
- q) Doc. No. N142VXZX, Rev. -, DNV Verification Statement for Penetration Pressure Testing S-Frame S8X1 and S1X1 dated 03-04-2024
- r) Dwg. No. S1603114, Rev. B, S-Series Frames with Steel & Titanium Pipes A-60 Class Steel Bulkhead/Deck
- s) Dwg. No. S1603117, Rev. A, S-Series Frames with Copper & CuNi Pipes A-60 Class Steel Bulkhead/Deck
- t) Dwg. No. S1603126, Rev. B, S-Series Frames with Bundle Pipes A-60 Class Steel Bulkhead/Deck
- u) Dwg. No. S1603243, Rev. B, S-Series Frames with Steel & Titanium Pipes A-0 Class Steel Bulkhead/Deck
- v) Dwg. No. S1603244, Rev. A, S-Series Frames with Copper & CuNi Pipes A-0 Class Steel Bulkhead/Deck
- w) Dwg. No. S1603245, Rev. B, S-Series Frames with Bundle Pipes A-0 Class Steel Bulkhead/Deck
- x) Dwg. No. S1603254, Rev. A, SBTB-Series Frames with Steel & Titanium Pipes A-0 Class Steel Bulkhead
- y) Dwg. No. S1603259, Rev. A, SK-Series Frames with Steel & Titanium Pipes A-60 Class Steel Deck
- z) Dwg. No. S1603262, Rev. A, SK-Series Frames with Bundle Pipes A-60 Class Steel Deck
- aa) Dwg. No. S1603263, Rev. A, SK-Series Frames with Steel & Titanium Pipes A-0 Class Steel Deck
- bb) Dwg. No. S1603264, Rev. A, SK-Series Frames with Bundle Pipes A-0 Class Steel Deck

**Term of Validity**

This Product Design Assessment (PDA) Certificate remains valid until 08/Sep/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**

- a) ABS Rules for Conditions of Classification, Part 1A (2024): 1A-1-4/7.7, 1A-1-A3 and A4, which covers

the following:

ABS Rules for Building and Classing Marine Vessels: 4-6-2/9.7.1, and 4-6-2/9.7.2

b) ABS Rules for Conditions of Classification - Offshore Units and Structures, Part 1B, 2024: 1B-1-4/9.7, 1B-1-A2, and 1B-1-A3, which covers the following:

ABS Rules for Building and Classing Mobile Offshore Units, 2024: 4-2-1/11.15, 5-1-1/3.5, and 5-1-1/3.19

ABS Rules for Building and Classing Facilities on Offshore Installations, 2024: 3-8/9.13 and 3-8/9.15

**International Standards**

a) International Convention for the Safety of Life at Sea (SOLAS), as amended: Ch. II-2, Reg. 9.3.1

b) IMO Resolution MSC.307(88) - 2010 FTP Code (2012 Edition), Annex I: Part 3

**EU-MED Standards**

NA

**National Standards**

NA

**Government Standards**

The products comply with the following sections of the Canadian Vessel Fire Safety Regulations (SOR/2017-14): Part 2 - 209 & 227, Part 3 - 325 (1) and C.R.C., c. 1431 Canada Consolidation Hull Construction Regulations (Last amended 20 Dec. 2023), Part 1 / Section 14(7)(b), and when produced at a facility with an ABS manufacturing assessment (MA) is approved on behalf of the Minister of Transport in accordance with TP14612E - Procedures for Approval of Life-Saving Appliances and Fire Safety Systems, Equipment and Products (4th Ed., Feb. 2019 - Ch. 2)

**Other Standards**

NA



A handwritten signature in black ink, appearing to read 'James J. White'.

Corporate ABS Programs  
American Bureau of Shipping  
Print Date and Time: 09-Sep-2024 9:04

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 Pipe Penetration in A-60 Steel Bulkhead

| Frame Type   | Size        | Pipe Material            | Max Pipe Diameter (OD)[mm] | Sleeve Length [mm] | Sleeve Thickness [mm] | Sleeve Position | Sleeve Insulation Arrangement |
|--|-------------|--------------------------|----------------------------|--------------------|-----------------------|-----------------|-------------------------------|
| <b>S-Series Frames with RM Modules<sup>1</sup></b> | 1x1 – 8x1   | Steel, Titanium          | 6 – 53                     | 60                 | 10                    | Symmetric       | S1603114 Rev. B No. 3         |
|  | 1x1 – 8+8x5 | Steel, Titanium          | 6 – 54                     | 60                 | 10                    | Symmetric       | S1603114 Rev. B No. 4         |
|  | 1x1 – 8x1   | Copper, CuNi             | 6 – 54                     | 60                 | 10                    | Symmetric       | S1603117 Rev. A No. 1         |
|  | 1x1 – 8+8x5 | Bundle Pipe <sup>2</sup> | 8 – 50                     | 60                 | 10                    | Symmetric       | S1603126 Rev. B No. 3 – 4     |

<sup>1</sup> RM, RM Ex, RM ES, RM ES B, RM PE, RM PE B, RM BG, RM BG B, RM ES Ex, RM ES B Ex, RM PE Ex, RM ES B Ex, RM BG Ex, RM BG B Ex.

<sup>2</sup> Bundle pipe with steel cores

Table 2: Approved Pipe Penetration in A-0 Steel Bulkhead

| Frame Type  | Size        | Pipe Material            | Max Pipe Diameter (OD)[mm] | Sleeve Length [mm] | Sleeve Thickness [mm] | Sleeve Position | Sleeve Insulation Arrangement |
|---|-------------|--------------------------|----------------------------|--------------------|-----------------------|-----------------|-------------------------------|
| <b>S-Series Frames with RM Modules<sup>1</sup></b>    | 1x1 – 8x1   | Steel, Titanium          | 6 – 53                     | 60                 | 10                    | Symmetric       | S1603243 Rev. B No. 3         |
|   | 1x1 – 8+8x5 | Steel, Titanium          | 6 – 54                     | 60                 | 10                    | Symmetric       | S1603243 Rev. B No. 4         |
|   | 1x1 – 8x1   | Copper, CuNi             | 6 – 54                     | 60                 | 10                    | Symmetric       | S1603244 Rev. A No. 1         |
|   | 1x1 – 8+8x5 | Bundle Pipe <sup>2</sup> | 8 – 50                     | 60                 | 10                    | Symmetric       | S1603245 Rev. B No. 3 – 4     |
| <b>SBTB-Series Frames with RM Modules<sup>1</sup></b> | 1x1 – 8x1   | Steel, Titanium          | 6 – 30                     | 200 – 400          | 10                    | Symmetric       | S1603254 Rev. A No. 1         |

<sup>1</sup> RM, RM Ex, RM ES, RM ES B, RM PE, RM PE B, RM BG, RM BG B, RM ES Ex, RM ES B Ex, RM PE Ex, RM ES B Ex, RM BG Ex, RM BG B Ex.

<sup>2</sup> Bundle pipe with steel cores



Table 3: Approved Pipe Penetration in A-60 Steel Deck

| Frame Type  | Size        | Pipe Material            | Max Pipe Diameter (OD)[mm] | Sleeve Length [mm] | Sleeve Thickness [mm] | Sleeve Position     | Sleeve Insulation Arrangement |
|---|-------------|--------------------------|----------------------------|--------------------|-----------------------|---------------------|-------------------------------|
| <b>S-Series Frames with RM Modules<sup>1</sup></b>  | 1x1 – 8x1   | Steel, Titanium          | 6 – 30                     | 60                 | 10                    | Symmetric, Top Side | S1603114 Rev. B No. 1         |
|   | 1x1 – 8+8x5 | Steel, Titanium          | 6 – 50                     | 60                 | 10                    | Symmetric, Top Side | S1603114 Rev. B No. 2         |
|   | 1x1 – 8x1   | Copper, CuNi             | 6 – 53                     | 60                 | 10                    | Symmetric, Top Side | S1603117 Rev. A No. 2         |
|   | 1x1 – 8+8x5 | Bundle Pipe <sup>2</sup> | 8 – 50                     | 60                 | 10                    | Symmetric, Top Side | S1603126 Rev. B No. 1 – 2     |
| <b>SK-Series Frames with RM Modules<sup>1</sup></b> | 2x1 – 8x1   | Steel, Titanium          | 6 – 54                     | 100 – 400          | 10                    | Any                 | S1603259 Rev. A No. 1         |
|   | 2x1 – 8x1   | Steel, Titanium          | 6 – 30                     | 200                | 10                    | Top Side            | S1603259 Rev. A No. 2         |
|   | 2x1 – 8x1   | Bundle Pipe <sup>2</sup> | 8 – 50                     | 100 – 400          | 10                    | Any                 | S1603262 Rev. A No. 1         |

<sup>1</sup> RM, RM Ex, RM ES, RM ES B, RM PE, RM PE B, RM BG, RM BG B, RM ES Ex, RM ES B Ex, RM PE Ex, RM ES B Ex, RM BG Ex, RM BG B Ex.

<sup>2</sup> Bundle pipe with steel cores

Table 4: Approved Pipe Penetration in A-0 Steel Deck

| Frame Type   | Size        | Pipe Material            | Max Pipe Diameter (OD)[mm] | Sleeve Length [mm] | Sleeve Thickness [mm] | Sleeve Position     | Sleeve Insulation Arrangement |
|--|-------------|--------------------------|----------------------------|--------------------|-----------------------|---------------------|-------------------------------|
| <b>S-Series Frames with RM Modules<sup>1</sup></b> | 1x1 – 8x1   | Steel, Titanium          | 6 – 30                     | 60                 | 10                    | Symmetric, Top Side | S1603243 Rev. B No. 1         |
|  | 1x1 – 8+8x5 | Steel, Titanium          | 6 – 50                     | 60                 | 10                    | Symmetric, Top Side | S1603243 Rev. B No. 2         |
|  | 1x1 – 8x1   | Copper, CuNi             | 6 – 53                     | 60                 | 10                    | Symmetric, Top Side | S1603244 Rev. A No. 2         |
|  | 1x1 – 8+8x5 | Bundle Pipe <sup>2</sup> | 8 – 50                     | 60                 | 10                    | Symmetric, Top Side | S1603245 Rev. B No. 1 – 2     |



| Frame Type                                    | Size      | Pipe Material            | Max Pipe Diameter (OD)[mm] | Sleeve Length [mm] | Sleeve Thickness [mm] | Sleeve Position | Sleeve Insulation Arrangement |
|---|-----------|--------------------------|----------------------------|--------------------|-----------------------|-----------------|-------------------------------|
| SK-Series Frames with RM Modules <sup>1</sup> | 2x1 – 8x1 | Steel, Titanium          | 6 – 54                     | 100 – 400          | 10                    | Any             | S1603263 Rev. A No. 1         |
|   | 2x1 – 8x1 | Steel, Titanium          | 6 – 30                     | 200                | 10                    | Top Side        | S1603263 Rev. A No. 2         |
|   | 2x1 – 8x1 | Bundle Pipe <sup>2</sup> | 8 – 50                     | 100 – 400          | 10                    | Any             | S1603264 Rev. A No. 1         |

<sup>1</sup> RM, RM Ex, RM ES, RM ES B, RM PE, RM PE B, RM BG, RM BG B, RM ES Ex, RM ES B Ex, RM PE Ex, RM ES B Ex, RM BG Ex, RM BG B Ex.

<sup>2</sup> Bundle pipe with steel cores

Table 5: Water and Gas Tightness Performance

| Frame Type   | Size                              | Approved Pressure <sup>2</sup> Watertightness | Approved Pressure <sup>2</sup> Gas tightness |
|--|-----------------------------------|---|--|
| <b>S-series, SK-series, SBTB-series welded frame installation with RM modules<sup>1</sup></b>          | 2x1 – 8x1 and combination thereof | 4.0 bar                                       | 2.67 bar                                     |
| <b>S-series, SK-series, SBTB-series bolted frame installation with RM modules<sup>1</sup></b>          | 2x1 – 8x1 and combination thereof | 3.33 bar                                      | 1.67 bar                                     |
| <b>S-series, SK-series, SBTB-series bolted openable frame installation with RM modules<sup>1</sup></b> | 2x1 – 8x1 and combination thereof | 2.67 bar                                      | -  |

<sup>1</sup> Standard RM, RM Ex, RM ES, RM ES B, RM PE, RM PE B, RM BG, RM BG B, RM ES Ex, RM ES B Ex, RM PE Ex, RM ES B Ex, RM BG Ex, RM BG B Ex.

<sup>2</sup>Approved pressure is 2/3 of the test pressure.