



CERTIFICATE NUMBER
EFFECTIVE DATE
EXPIRY DATE
ABS TECHNICAL OFFICE

24-0023682-PDA-DUP
09-Sep-2024
08-Sep-2029
Houston OED - Safety

CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

ROXTEC SEALING SYSTEM (SHANGHAI) CO LTD

located at

**GROUND FLOOR, BUILDING A, NO 875 QIUXIN ROAD, LINGANG
NICHENG INDUSTRIAL AREA, PUDONG DISTRICT, , SHANGHAI,
China**

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: Penetration Device for Pipe Deck and Bulkhead Penetration Se...
Model: Roxtec S-series Frames in A-Class Steel Divisions
Endorsements:
Tier: 3 - Type Approved, unit certification not required

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.

American Bureau Of Shipping

Daniel Hyun SON

Hyun Young Son, Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

ROXTEC SEALING SYSTEM (SHANGHAI) CO LTD
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Tier: 3 - Type Approved, unit certification not required

Product: Penetration Device for Pipe Deck and Bulkhead Penetration Sealing
Model: Roxtec S-series Frames in A-Class Steel Divisions
Endorsements:

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, 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 modules¹. Assembled with Roxtec Wedge, Roxtec ES Wedge, Roxtec Ex Wedge or Roxtec ES Ex Wedge and corresponding stayplates.

¹Standard 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.

Rating:

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 Restriction:

- 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.

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- 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/Drawing/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

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- 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

Terms of Validity:

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STANDARDS

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

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

National:
NA

International:

- 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

Government:

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)

EUMED:
NA

OTHERS:
NA