



Confirmation of Product Type Approval

Company Name: ROXTEC SEALING SYSTEM (SHANGHAI) CO LTD

Address: GROUND FLOOR, BUILDING A, NO 875 QIUXIN ROADLINGANG NICHENG INDUSTRIAL AREA, PUDONG DISTRICT SHANGHAI China

Product: Penetration Device for Pipe Deck and Bulkhead Penetration Sealing

Model(s): Roxtec RS / RS OMD Seals in Steel Divisions

Endorsements:

Certificate Type	Certificate Number	Issue Date	Expiry Date
Product Design Assessment (PDA)	19-1900390-1-PDA-DUP	05-JUL-2023	18-SEP-2024
Manufacturing Assessment (MA)	23-6047656	28-SEP-2023	27-SEP-2028
Product Quality Assurance (PQA)	NA	NA	NA

Tier

3 - Type Approved, unit certification not required

Intended Service

Single pipe penetration in Class A0, A15, A30 and A60 bulkhead and decks for marine and offshore application. Please see service restrictions for types of pipes, pipes sizes, and the tested and approved insulation arrangements used with the Roxtec RS / RS OMD Seals in Steel Divisions. Single pipe penetration of watertight and gastight steel bulkheads and decks up to the specified pressure. Please see Ratings sections for approved pressures.

Description

Roxtec sealing system with multidiameter™ technology: RS-series (steel division)

The RS pipe penetration seal consist of two halves with removable layers making it adaptable to a single pipe of different diameters. It is available in different versions, RS, RS OMD, RS EMC or RS EX, depending on application.

The RS-seal is installed into an steel sleeve that is either welded, bolted, attached through expansion (SLFRS X) or attached with a nut (SLA) onto the steel division.

Ratings

Fire Ratings: A0, A15, A30 and A60 Bulkheads and decks. Please see service restriction section.

Watertight (WT) and Gastight (GT) Ratings:

Welded RS Sleeve:

Steel pipe - 4 bar WT and 2 bar GT - 6mm pipe in RS 23 frame to 558mm pipe in RS 644 frame

Copper Pipe and Cu-Ni Pipes - 4 bar WT and 2 bar GT - 6mm pipe in RS 23 frame to 420mm pipe in RS 500 frame

Fiberglass Pipes - 4 bar WT and 2 bar GT - 32mm pipe in RS 68 frame to 1040mm pipe in RS 1125 frame

Bolted RS SLA Sleeve:

Steel pipe - 2.67 bar and 1 bar - 6mm pipe in RS 25 frame to 34mm pipe in RS 75 frame

Copper pipe - 2.67 bar and 1 bar - 6mm pipe in RS 25 frame to 34mm pipe in RS 75 frame

Expansion RS SLFRSX:

Steel pipe - 4 bar WT and 2 bar GT- 6mm pipe in RS 25 frame to 168mm pipe in RS 200 frame

Copper pipe - 4 bar WT and 2 bar GT- 6mm pipe in RS 25 frame to 168mm pipe in RS 200 frame

Service Restrictions

A) Steel Pipe: Outside diameter 6 to 558 mm through A-Class bulkhead and deck using RS Series sealing system size from 23 to 644 with welded SLRS sleeve.

Steel Pipe: Outside diameter 6 to 30 mm through A-Class bulkhead and deck using RS Series sealing system size 25 to 75 with bolted with SLA sleeve.

Steel Pipe: Outside diameter 6 to 168 mm through A-Class bulkhead and deck using RS Series sealing system size 25 to 200 with expansion sleeve (SLFRS X).

For A-60 bulkhead sleeve and insulation arrangements see drawings S1577746, S1579079, S1579138

For A-60 deck and sleeve and insulation arrangements see drawings S1578992, S1579233, S1579138, S1579079

For A-0 bulkhead sleeve and insulation arrangements see drawing S1579018, S1580043

For A-0 deck sleeve and insulation arrangements see drawing S1579016, S1580043

B) Cu-Ni: Pipe: Outside diameter 6 to 420mm through A-Class bulkhead and deck using RS Series sealing system size 23 to 500 with welded SLRS sleeve.

For A-60 bulkhead sleeve and insulation arrangements see drawing S1579192

For A-60 deck and sleeve and insulation arrangements see drawing S1579206

For A-0 bulkhead sleeve and insulation arrangements see refer to drawing S1580068

For A-0 deck sleeve and insulation arrangements see refer to drawing S1580065

C) Copper Pipe: Outside diameter 6 to 222 mm through A-Class bulkhead and deck with RS Series sealing system in size 23 to 300 with welded SLRS sleeve.

Copper Pipe: Outside diameter 6 to 34 mm through A-Class bulkhead and deck with RS Series sealing system in size 25 to 75 with SLA sleeve.

Copper Pipe: Outside diameter 6 to 108 mm for copper pipes for bulkhead and deck with RS Series sealing system in size 25 to 150 with expansion sleeve (SLFRS X)

For A-60 bulkhead sleeve and insulation arrangements see drawings S1577860, S1579117, S1579120

For A-60 deck and sleeve and insulation arrangements see drawings S1578982, S1579117, S1579120

For A-0 bulkhead sleeve and insulation arrangements see drawings S1579002, S1580051

For A-0 deck sleeve and insulation arrangements see drawings S1579005, S1580051

D) Sheathed Bundled Pipe (steel cores): Outside diameter 8 to 50 mm through A-Class bulkhead and deck with RS Series sealing system size 25 to 100 with welded SLRS sleeve.

For A-60 bulkhead and deck sleeve and insulation arrangements see drawing S1579231

For A-0 bulkhead and deck and sleeve and insulation arrangements see drawing S1591613

E) GRE Pipe: Outside diameter 25 to 1040mm through A-Class bulkhead and deck with RS Series sealing system size 50 to 1125 with welded SLRS sleeve.

For A-60 bulkhead sleeve and insulation arrangements see drawing S1579165

For A-60 deck and sleeve and insulation arrangements see drawing S1579186

For A-0 bulkhead sleeve and insulation arrangements see drawing S1579190

For A-0 deck sleeve and insulation arrangements see drawing S1580064

F) For ROXTEC systems tested solely in A-60 Class Divisions, the system and pipe(s) when installed in A-0, A-15 or A-30 divisions is to be insulated per the A-60 arrangement for 200 mm around the penetration transits per 2010 IMO FTP Code Annex1, part 3, A.III 2.2.1

Comments

a) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

b) 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 per tested/approved prototype.

c) This certificate may not be used for EU and US flagged vessels (MED and/or USCG have their own specific requirements).

d) Not performed on behalf of any flag Administration.

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) Individual review to the intended use on specific vessel, MODU or facility is required.

g) The pipe penetrants should be in conjunction with the tested and approved ROXTEC seal types and installed in accordance with manufacturer's ABS approved installation drawings.

h) The arrangement of the transit sleeves in the fire rated divisions and the installation of the fire rated insulation is to be in accordance with manufacturer's ABS approved drawings.

i) Insulation material is to be A-60 approved type and properly installed to the satisfaction of the Surveyors.

j) Installation of transits are only permissible where strength and fatigue characteristics are not diminished or where satisfactory structural compensation has been provided.

k) Not to use in tank boundaries.

- l) Application for gas tight and water tight bulkhead penetration and hydrostatic test are to be indicated on the plan for each project by shipyard.
- m) During installation of deck and bulkhead watertight and fire-rated pipe penetrations, the attending Surveyor is to confirm that the installer is familiar with and has access to the manufacturer's installation procedures for transit devices.
- n) After installation, all watertight and fire-rated pipe penetrations are to be visually examined. Watertight pipe penetrations are to be tested as required by 3-7-1/Table 1 per ABS Marine Vessel Rules (MVR), 4-8-4/ 29.15.
- o) The use of plastic pipes should in accord with the ABS Marine Vessel Rules 4-6-3 and 4-6-3 / Table 1 (Fire Endurance Matrix).
- p) In accordance with ABS Marine Vessel Rules 4-6-3 / 7.11(iii) If the bulkhead or deck is also a fire division and destruction by fire of plastic pipes may cause inflow of liquid from a tank, then a metallic shut-off valve operable from above the bulkhead deck is to be fitted at the bulkhead or deck. Valves are to be fitted on both sides of plastic pipe
- q) Bundling of tubes / pies are not permitted in watertight divisions, with the exception of the OSNALINE sheathed tube bundles tested in DNV Report MLM060561 (WT Pressure 4 Bar / GT Pressure 2 bar).
- r) 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. II -1 Reg. 13.2.3. 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 1974 as amended.
- s) Unit Certification is not required for this product. If the manufacturer or purchaser's request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.
- t) Continued compliance with the statutory requirements requires maintenance of full Type Approval (PDA and MA). The scope of Type Approval is to comply with MSC.1/Circ. 1221 dated 11 December 2006.

Notes, Drawings and Documentation

Test Reports:

01. CTO SA RS-19/B-035/E, A-60 Bulkhead Pipe and Cable Transit Tests date 25 Feb 2019 Gdansk Poland.
02. DBI PGA10871A, Rev 2, Cable transits and pipe penetrations in class A-60 steel deck date 31 Oct 2016 Hvidovre Denmark.
03. CTO SA RS-19/B-355/E, A-60 Steel Bulkhead Cable and Pipe Transit date 16 Oct 2019 Gdansk Poland.
04. SP 6P02249, IMO Test Of Pipe Penetration Seals In A60 Steel Deck date 17 Aug 2016 Boras Sweden.
05. DBI PGB10118A, Rev. 1, Transits in Class A-60 Steel Deck date 15 Nov 2021 Hvidovre Denmark.
06. DBI PGB10047A, Rev. 0, Test Report Class A-60 Deck with Penetrations date 30 Nov 2020 Hvidovre Denmark.
07. CTO SA RS-21/B-519/E, A-60 Steel Bulkhead Cable and Pipe Transit date 15 Dec 2021 Gdansk Poland.
08. DBI PGB10020A, Rev. 0, Pipe Penetrations in Class A-60 Steel Bulkhead date 5 May 2020 Hvidovre Denmark.
09. CTO SA RS-21/B-241/E, A-60 Steel Bulkhead Cable and Pipe Transit date 30 June 2021 Gdansk Poland.

10. DBI PGB10111A, Rev. 0, Pipe Penetrations in Class A-60 Steel Deck date 20 Sep 2021 Hvidovre Denmark.
11. DBI PGB10032A, Rev. 0, Pipe and Drain Penetrations in A-60 Steel Deck date 1 July 2020 Hvidovre Denmark.
12. SP 5P03457, IMO Test of Cable Penetration Seals in A60 Steel Deck date 12 May 2015 Boras Sweden.
13. CTO SA RS-19/B-356/E, A-60 Steel Deck Pipe and Cable Transit Tests date 18 Oct 2019 Gdansk Poland.
14. DBI PGA10649, Rev. 0, ROXTEC - Cable Transits and Pipe Penetrations in A Steel Deck date 18 May 2015 Hvidovre Denmark.
15. DBI PGA10650, Rev. 0, ROXTEC - Pipe Penetrations in A Steel Deck date 18 May 2015 Hvidovre Denmark.
16. CTO SA RS-20/B-017/E, A-60 Steel Bulkhead Pipe and Cable Transits date 23 Jan 2020 Gdansk Poland.
17. CTO SA RS-20/B-191/E, A-60 Steel Bulkhead Pipe and Cable Transits date 5 June 2020 Gdansk Poland.
18. SP 7P02167, IMO Test of Pipe Penetration Seals in A60 Steel Deck date 7 Aug 2017 Boras Sweden.
19. DBI PGB10110A, Rev. A, Cable Transits and Pipe Penetrations in Class A-0 Steel Deck date 27 Apr 2021 Hvidovre Denmark.
20. SP 6P04351, IMO Test of Pipe Penetration Seals in A60 Steel Bulkhead date 28 June 2016 Boras Sweden.
21. CTO SA RS-21/B-445/E, A-60 Steel Bulkhead Pipe and Cable Transits date 7 Oct 2021 Gdansk Poland.
22. DBI PGA10800A, Rev. 0, Pipe Penetrations and Cable Transits in a Class A-60 Steel Deck date 26 May 2016 Hvidovre Denmark.
23. DBI PGA11611A, Rev. 0, Cable Transits and Pipe Penetrations in Class A-60 Steel Deck date 11 Jan 2020 Hvidovre Denmark.
24. DBI PGB10020A, Rev. 0, Pipe Penetrations in Class A-60 Steel Bulkheads date 05 May 2020 Hvidovre Denmark.
25. CTO SA RS-22/B-336/E, A-60 Steel Bulkhead Pipe and Cable Transits date 28 Oct 2022 Gdansk Poland.
26. CTO SA RS-22/B-337/E, A-60 Steel Deck Pipe and Cable Transits date 28 Oct 2022 Gdansk Poland.
27. CTO SA RS-18/B-023/E, A-60 Steel Deck Pipe and Cable Transits date 29 Jan 2018 Gdansk Poland.
28. CTO SA RS-20/B-081/E, A-60 Steel Bulkhead Pipe and Cable Transits date 31 Mar 2020 Gdansk Poland.
29. CTO SA RS-21/B-517/E, A-60 Steel Bulkhead Pipe and Cable Transits date 15 Dec 2021 Gdansk Poland.
30. DBI PGA11610A, Rev. 0, Cable Transits and Pipe Penetrations in Class A-0 Steel Deck date 10 Jan 2020 Hvidovre Denmark.
31. DBI PGA10119A, Rev. 1, Transits in Class A-0 Steel Deck date 15 Nov 2021 Hvidovre Denmark.

32. DBI PGA10112A, Rev. 1, Cable Transits and Pipe Penetrations in Class A-60 Steel Deck date 20 Sep 2020 Hvidovre Denmark.
33. SP 4P08662, IMO Test of Penetration Seals in A60 Steel Bulkhead date 8 June 2015 Boras Sweden.
34. SP 4P06068, IMO Test of Penetration Seals in A60 Steel Bulkhead date 17 Jan 2015 Boras Sweden.
35. SP 4P07023, IMO test of cable penetration seals in A60 steel deck date 4 Feb 2015 Boras Sweden.

Roxtec Drawings:

- S1577746, Rev. A, RS with Steel Pipe SLRS/SLFRS A-60 Steel BHD.
- S1577860, Rev. A, RS with Copper Pipes SLRS/SLFRS A-60 Steel BHD.
- S1578982, Rev. A, RS with Copper Pipes SLRS/SLFRS A-60 Steel Deck.
- S1578992, Rev. A, RS with Steel Pipe SLRS/SLFRS A-60 Steel Deck.
- S1579002, Rev. A, RS with Copper Pipes SLRS/SLFRS A-0 Class Steel BHD.
- S1579005, Rev. A, RS with Copper Pipes SLRS/SLFRS A-0 Class Steel Deck.
- S1579016, Rev. A, RS with Copper Pipes SLRS/SLFRS A-0 Class Steel Deck.
- S1579018, Rev. A, RS with Copper Pipes SLRS/SLFRS A-0 Class Steel BHD.
- S1579079, Rev. A, RS with Steel Pipe SLA A-60 Class Steel BHD/Deck.
- S1579117, Rev. A, RS with Copper Pipe SLA A-60 Class Steel BHD/Deck.
- S1579120, Rev. A, RS with Copper Pipe SLFRS X A-60 Class Steel BHD/Deck.
- S1579138, Rev. B, RS with Steel Pipe SLFRS X A-60 Class Steel BHD/Deck.
- S1579165, Rev. A, RS with GRE Pipes SLRS/SLFRS A-60 Class Steel Deck.
- S1579186, Rev. A, RS with GRE Pipes SLRS/SLFRS A-60 Class Steel BHD.
- S1579190, Rev. A, RS with GRE Pipes SLRS/SLFRS A-0 Class Steel Deck.
- S1579192, Rev. A, RS with CuNi Pipes SLRS/SLFRS A-60 Class Steel BHD.
- S1579206, Rev. A, RS with CuNi Pipes SLRS/SLFRS A-60 Class Steel Deck.
- S1579231, Rev. B, RS with Bundle Pipes SLRS/SLFRS A-60 Class Steel Deck/Bulkhead.
- S1591613, Rev. A, RS with Bundle Pipes SLRS/SLFRS A-0 Class Steel Deck/Bulkhead.
- S1579233, Rev. A, RS OC with Steel Pipe SLRS/SLFRS A-60 Class Steel Deck.
- S1580043, Rev. A, RS with Steel Pipe SLA A-0 Class Steel Deck/BHD.
- S1580051, Rev. A, RS with Copper Pipe SLA A-0 Class Steel Deck/BHD.
- S1580064, Rev. A, RS with GRE Pipes SLRS/SLFRS A-0 Class Steel BHD.
- S1580065, Rev. A, RS with CuNi Pipes SLRS/SLFRS A-0 Class Steel Deck.
- S1580068, Rev. A, RS with CuNi Pipes SLRS/SLFRS A-0 Class Steel BHD.

Watertight and GasTight Reports:

DNV Report N1421782 ROXTEC RS 23 - 644 for Metal Pipes 6mm to 558mm (date 1 Sep 2020).

DNV Report N141EX8Z ROXTEC RSA Sleeve 25, 75, 100 (date 10 Aug 2017).

DNV Report N142JK4Z ROXTEC SFHM 1x1 SHHM 8x1 (date 27 Mar 2023).

DNV Report N142JK51 ROXTEC RS 23 and ROXTEC RS 150 Bolted SLRFS w/ Pre-Punched Gasket (date 27 Feb 2023).

DNV Report N14254FG ROXTEC RS 1125 (GRP Pipe of 1040mm OD) (date 30 Apr 2021).

DNV Report MLM 030473-1 ROXTEC RS-23 and RS-200 Steel Pipe and Cables (date 27 Jan 2003).

DNV Report MLM 060561 (date 1 Dec 2006) for ROXTEC:

- RS-43 w/ Osnaline sheathed stainless steel bundle pipes 6x6x0.5 OD 22.4mm.
- RS-68 w/ GRP Pipe OD 32mm and 3.7mm thick.
- RS-100 w/ Osnaline sheathed stainless steel bundle pipes 19x9.8x1.4 OD 54.3mm.
- RS-500 w/ GRP Pipe OD 410mm and 12mm thick.
- S BTB w/ Osnaline sheathed bundle pipes 6x6x0.5 OD 22mm (stainless steel) and 4x6x1.1 OD mm (copper).

Term of Validity

This Product Design Assessment (PDA) Certificate remains valid until 18/Sep/2024 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

2023 Rules for Conditions of Classification, 1-1-4/7.7, 1-1-A3, 1-1-A4, which covers the following:

2023 Rules for Building and Classing Marine Vessels: 3.4-1, 4-6-2/9.7, 4-6-3/7.11.

2023 Rules for Conditions of Classification - Offshore Units and Structures 1-1-4/9.7, 1-1-A2, 1-1-A3, which covers the following:

2023 Rules for Building and Classing Mobile Offshore Units: 4-2-1/11.15, 5-1-1/3.19.

2023 Rules for Building and Classing Facilities on Offshore Installations: 3-8/9.13, 4-8/9.13.

International Standards

IMO Resolution MSC.307(88) adopted 3 December 2010.

IMO FTP Code 2010 (2012 Edition), Annex 1 Part 3, in conjunction with SOLAS (Consolidated Edition 2020), as amended.

EU-MED Standards

NA

National Standards

NA

Government Standards

This PDA conforms to Transport of Canada requirements:

When produced at a facility with an ABS manufacturing assessment (MA) the product is recognized by Transport Canada in accordance with TP 14612E-Procedures for Approval of Life-Saving Appliances and Fire Safety Systems, Equipment and Products.

TP 14612E Transport Canada Procedures for Approval of Life-Saving Appliances and Fire Safety Systems, Equipment and Products (4th edition 2019): 1.1.2, 1.1.7, 2.1., and 2.3;

SOR/2017-14 Canada Consolidation Vessel Fire Safety Regulations (23 June 2021), Part 2/ Sections 209, 226 and 325;

C.R.C, c. 1431 Canada Consolidation Hull Construction Regulations (23 June 2021), Part 1 / Section 14(7)(b);

SOR/90-264 Canada Consolidation Marine Machinery Regulations (23 June 2021), Schedule IX [14, 15, 16].

Other Standards

DNV-CP-0165 Class Programme Type Approval for Cable and Pipe Penetrations [Section 4 - Watertightness and Gastightness]



Corporate ABS Programs
American Bureau of Shipping
Print Date and Time: 17-Nov-2023 4:26

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.