



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 Bulkhead and Deck Firetight and Watertight Penetrations

Model(s): Roxtec RS-series Frames in H-Class Steel Divisions

Endorsements:

Certificate Type	Certificate Number	Issue Date	Expiry Date
Product Design Assessment (PDA)	24-0026230-PDA-DUP	11-SEP-2024	10-SEP-2029
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/Bundle pipes or cable penetration system in Class H-60/-120 steel bulkheads and decks. Penetrations of watertight and gastight steel bulkheads and decks up to the specified pressure.

Description

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

The RS cable/pipe penetration seal consist of two halves with removable layers making it adaptable to a single cable/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 a steel sleeve that is either welded or bolted onto the steel division.

Ratings

- For steel and titanium pipes: H-60 bulkheads and H-60 decks
- For bundle pipes (steel): H-60 bulkheads, H-60 decks, and H-120 decks
- For cables: H-60 bulkheads, H-60 decks, H-120 bulkheads, and H-120 decks
- For Glassfiber Reinforced Epoxy (GRE) pipes: H-60 decks only.
- Watertight approved pressure (welded mounting): 4.0 bar (steel pipes, cables, bundle pipes (steel), and GRE pipes)
- Gastight approved pressure (welded mounting): 2.67 bar (steel pipes and cables), and 2.0 bar (bundle pipes (steel) and GRE pipes)

g) Watertight approved pressure (bolted mounting): 2.5 bar (steel pipes)

h) Gastight approved pressure (bolted mounting): 1.0 bar (steel pipes)

Notes:

Approved pressure is 2/3 of the test pressure.

Refer to attached Roxtec RS H-Class Tables

Service Restrictions

a) Minimum and maximum tested steel pipes: 6 mm to 324 mm for RS23 to RS400.

b) Minimum and maximum tested bundle pipes (steel): 8 mm to 50 mm for RS25 to RS100

c) Minimum and maximum tested titanium pipes: 6 mm to 26mm for RS23 to RS50

d) Minimum and maximum tested Glassfiber Reinforced Epoxy (GRE) pipes: 32 mm to 90 mm for RS68 to RS125

e) Minimum and maximum tested cables: 10 mm to 90 mm (bulkheads) and 6 mm to 88 mm (decks) for RS23 to RS125

f) For titanium pipe penetration on H-60 bulkheads, fire hazard is to be insulated side only.

g) Insulation material is to be H-60/H-120 approved type and properly installed in accordance with insulation arrangement drawings, S1600894, S1600919, S1600909, S1600918, S1607991, and S1608020.

h) Tested with marine power/instrumentation/control cables.

i) Not for use in tank boundaries

j) 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.

k) 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.

Note: Refer to attached Roxtec RS H-Class Tables.

Comments

a) During installation of the cable/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 cable/pipe penetrations are to be visual inspected and to the satisfactions of the attending Surveyor.

b) Where cables/pipe 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 cable penetrations are to be examined and tested as per ABS Marine Vessels Rules 3-7-1/3.5.7 Table1 and 4-8-4/29.15.

c) All penetrating cables should be type approved in accordance with 4-8-3/9 of the ABS Marine Vessel Rules (MVR) or 4-3-4/7 of the ABS Mobile Offshore Unit (MOU) Rules.

d) 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 (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).

e) Gas-tightness and Watertightness tests were performed in accordance with the DNVGL Class Program Type Approvals, DNVGL-CP-0165, Cable and Pipe Penetrations.

f) 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.

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

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

i) Approval not performed on behalf of any Flag Administration

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

k) The product or packing is to be marked with name of manufacturer, type designation and fire rating.

l) 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. 21/22654-1652, Rev. -, Applus Fire Test Report for Pipe Penetrations in H60 Class Steel Bulkhead dated 09-29-2021

b) Doc. No. RS-19/B-036/E, Rev. -, CTO Fire Test Report for Pipe and Cable Penetrations in H60 Class Steel Deck dated 03-21-2019

c) Doc. No. RS-19/B-037/E, Rev. -, CTO Fire Test Report for Pipe and Cable Penetrations in H60 Class Steel Bulkhead dated 03-21-2019

d) Doc. No. RS-22/B-396/E, Rev. -, CTO Fire Test Report for Cable and Pipe Penetrations in H60 Class Steel Bulkhead dated 11-28-2022

e) Doc. No. PGB10120A, Rev. 0, DBI Fire Test Report Transits in H-Class Steel Bulkhead dated 12-17-2021

f) Doc. No. PGB10215A, Rev. 0, DBI Fire Test Report Transits in H-Class Steel Deck dated 05-04-2023

g) Doc. No. PGB10216A, Rev. 0, DBI Fire Test Report Transits in H-Class Steel Deck dated 05-09-2023

h) Doc. No. PGB10217A, Rev. 0, DBI Fire Test Report Transits in H-Class Steel Bulkhead dated 05-09-2023

i) Doc. No. PGB10344A, Rev. 0, DBI Fire Test Report Transits in H-Class Steel Deck dated 08-05-2024

j) Doc. No. MLM010235, Rev. -, DNV Watertightness and Gastightness Test Inspection Report for Type RS with Cables dated 08-21-2001

k) Doc. No. MLM010247, Rev. -, DNV Watertightness and Gastightness Test Inspection Report for Type RS with Steel Pipes dated 09-28-2001

l) Doc. No. MLM020133, Rev. -, DNV Watertightness and Gastightness Test Inspection Report for Type RS OMD with Cables dated 02-26-2002

m) Doc. No. MLM060561, Rev. -, DNV Watertightness and Gastightness Test Inspection Report for Type RS with Stainless Steel Bundle Pipes and GRP Pipes dated 03-25-2002

n) Doc. No. SKM-04-4088, Rev. -, DNV Survey Report - Watertightness and Gastightness Test for Type RS with Steel and Copper Pipes dated 06-16-2004

- o) Doc. No. N142JK51, Rev. A, DNV Survey Report - Penetration Pressure Testing for Type RS 23 and RS 150 with Steel Pipes dated 02-27-2023
- p) Dwg. No. S1600894, Rev. A, Roxtec RS-Series with Pipes H-60 Class Steel Bulkhead
- q) Dwg. No. S1600919, Rev. A, Roxtec RS-Series with Cables H-60/-120 Class Steel Bulkhead
- r) Dwg. No. S1600909, Rev. B, Roxtec RS-Series with Pipes H-60 Class Steel Deck
- s) Dwg. No. S1600918, Rev. A, Roxtec RS-Series with Pipes H-120 Class Steel Deck
- t) Dwg. No. S1607991, Rev. A, Roxtec RS-Series with Cables H-60/-120 Class Steel Deck - SL-Series
- u) Dwg. No. S1608020, Rev. A, Roxtec RS-Series with Steel Pipes H-60 Class Steel Deck - SL-Series

Term of Validity

This Product Design Assessment (PDA) Certificate remains valid until 10/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:

2024 ABS Rules for Building and Classing Marine Vessels: 4-6-2/9.7.1, 4-6-2/9.7.2, 4-8-4/21.13 and 4-8-4/29.15

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:

2024 ABS Rules for Building and Classing Mobile Offshore Units: 4-2-1/11.15, 4-3-3/5.13, 5-1-1/3.5, and 5-1-1/3.19

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

International Standards

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

b) IMO Resolution MSC.307(88) - 2010 FTP Code (2012 Edition), Annex I: Part 3 with hydrocarbon time-temperature curve according to EN 1363-2

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 blue ink, appearing to read "James J. White".

Corporate ABS Programs
American Bureau of Shipping
Print Date and Time: 12-Sep-2024 7:12

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.

ROXTEC INTERNATIONAL AB
 Roxtec RS-Series Frames in H-Class Steel Divisions
 PDA Nos. 24-0026230-PDA & 24-0026230-PDA-DUP
 Issue Date: 11 September 2024
 Expiry Date: 10 September 2029
 Revision: 0

Table 1: H-60 Bulkhead

RS-series Size	Sleeve Type	Pipe Material or Cables	Pipe/Cable Diameter (OD)[mm]	Sleeve Length [mm]	Sleeve Thickness [mm]	Sleeve Position	Insulation Drawing
23 - 150	SLRS-Series ¹	Steel Pipes	6 – 114	35 - 65	4 – 7	Symmetric	S1600894 Rev A Nos. 2 – 3
25 - 100	SLRS-Series ¹	Bundle Pipes (Steel)	8 – 50	35 - 65	4 – 7	Symmetric	S1600894 Rev A No. 4
23 - 50	SLRS-Series ¹	Titanium	6 – 26	35 - 65	4 – 7	Insulated (Fire Hazard) Side	S1600894 Rev A No. 1
23 – 125	SLRS-Series ¹	Cables	10 – 90	35 - 65	4 – 7	Symmetric	S1600919 Rev A No. 1

Table 2: H-120 Bulkhead

RS-series Size	Sleeve Type	Pipe Material or Cables	Pipe/Cable Diameter (OD)[mm]	Sleeve Length [mm]	Sleeve Thickness [mm]	Sleeve Position	Insulation Drawing
23 – 125	SLRS-Series ¹	Cables	10 – 90	35 - 65	4 – 7	Symmetric	S1600919 Rev A No. 1

Table 3: H-60 Deck

RS-series Size	Sleeve Type	Pipe Material or Cables	Pipe/Cable Diameter (OD)[mm]	Sleeve Length [mm]	Sleeve Thickness [mm]	Sleeve Position	Insulation Drawing
23 - 50	SLRS-Series ¹	Titanium	6 – 26	35 - 65	4 – 7	Any	S1600909 Rev B No. 1
68 - 125	SLRS-Series ¹	GRE	32 – 90	65	7	Any	S1600909 Rev B No. 2
23 - 125	SLRS-Series ¹	Cables	10 – 88	35 - 65	4 – 7	Unexposed	S1600919 Rev A No. 2
25 – 100	SLRS-Series ¹	Bundle Pipes (Steel)	8 – 50	35 - 65	4 – 7	Any	S1600909 Rev B No. 3
25 - 50	SLRS-Series ¹	Steel	6 – 30	35 - 65	4 – 7	Any	S1600909 Rev B No. 4

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RS-series Size	Sleeve Type	Pipe Material or Cables	Pipe/Cable Diameter (OD)[mm]	Sleeve Length [mm]	Sleeve Thickness [mm]	Sleeve Position	Insulation Drawing
50 – 150	SLRS-Series ¹	Steel	30 – 114	65	4 – 7	Any	S1600909 Rev B No. 5
150 - 400	SLRS-Series ¹	Steel	114 – 324	55 - 65	4 – 7	Any	S1600909 Rev B No. 6
23 – 50	SL-Series ²	Titanium	6 – 26	Up to 400	4 – 7	Any	S1608020 Rev A No. 1
68 – 125	SL-Series ²	GRE	32 – 90	Up to 400	4 – 7	Any	S1608020 Rev A No. 2
25 - 125	SL-Series ²	Cables	6 – 67	Up to 400	4 – 7	Any	S1607991 Rev A
25 – 100	SL-Series ²	Bundle Pipes (Steel)	8 – 50	Up to 400	4 – 7	Any	S1608020 Rev A No. 3
25 – 50	SL-Series ²	Steel	6 – 30	Up to 400	4 – 7	Any	S1608020 Rev A No. 4
50 – 150	SL-Series ²	Steel	30 – 114	Up to 400	4 – 7	Any	S1608020 Rev A No. 5

Table 4: H-120 Deck

RS-series Size	Sleeve Type	Pipe Material or Cables	Pipe/Cable Diameter (OD)[mm]	Sleeve Length [mm]	Sleeve Thickness [mm]	Sleeve Position	Insulation Drawing
25 – 100	SLRS-Series ¹	Bundle Pipes (Steel)	8 – 50	35 - 65	4 – 7	Any	S1600918 Rev A No. 1
23 - 125	SLRS-Series ¹	Cables	10 – 88	35 - 65	4 – 7	Unexposed	S1600919 Rev A No. 2
25 - 125	SL-Series ²	Cables	6 – 67	Up to 400	4 – 7	Any	S1607991 Rev A

¹ SLRS-Series includes the following sleeve types: SLRS, SLRS EX, SLFRS, SLFRS Ex, SLFRS BG, SLFO, SLFO/RI or with dimensions specified in drawing S1586454 Rev. A.

² SL-Series are longer versions of the sleeves in SLRS-Series.

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Table 5: Water and Gas Tightness Performance

Sleeve Type	Pipe Material or Cables	Approved Pressure² Watertightness	Approved Pressure² Gas tightness
SLRS-Series ¹ (Welded Mounting)	Steel Pipes and Cables	4.0 bar	2.67 bar
	Bundle Pipes (Steel) and GRE Pipes	4.0 bar	2.0 bar
SLRS-Series ¹ (Bolted Mounting)	Steel Pipes	2.5 bar	1.0 bar

¹ SLRS-Series includes the following sleeve types: SLRS, SLRS EX, SLFRS, SLFRS Ex, SLFRS BG, SLFO, SLFO/RI or with dimensions specified in drawing S1586454 Rev. A.

²Approved pressure is 2/3 of the test pressure.