Marine & Offshore

**Certificate number:** 40893/B1 BV
**File number:** ACI4000/032/009
**Product code:** 5300H

*This certificate is not valid when presented without the full attached schedule composed of 7 sections*

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# TYPE APPROVAL CERTIFICATE

*This certificate is issued to*

## ROXTEC International AB

KARLSKRONA - SWEDEN

*for the type of product*

## PIPE, CABLE, DUCT PENETRATIONS IN FIRE DIVISIONS

ROXTEC cable sealing system with multidiameter technology
Jet Fire Application for S-Series Frames and RS-Series Seals
(certified products, frame position and achieved performances - see §1)

**Requirements:**
Bureau Veritas Rules for the Classification of Offshore units Part C Chapter 4
ISO 22899-1

*This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.*

**This certificate will expire on: 12 Apr 2026**

**For Bureau Veritas Marine & Offshore,**
At BV GOTHENBURG, on 24 Nov 2023,
Hans-erik ERICSSON

***This certificate was created electronically and is valid without signature***

# THE SCHEDULE OF APPROVAL

## 1. PRODUCT DESCRIPTION:

**ROXTEC cable sealing system with multidiameter technology**

1.1 - Roxtec S series frames

Consisting of Roxtec S series frame (S, SO, SF, SFO, SR, SK, SRC r20&r40 and SBTB), welded or bolted on to the Jet Fire steel division, and filled with Roxtec (standard, Ex or EMC, PE, ES, BG, BGB) halogen free insert modules. Assembled with Roxtec Wedge kit or Roxtec EMC, EX Wedge kit.

Additional insulation on penetrations and/or cables:
- should be approved as having the same level of performance as the penetrated division and expected classification of penetration,
- is to be fitted as shown in the referred Manufacturer's drawings (see §2.1) and also according to Manufacturer's insulation guidelines.

| Penetration designation | Max. external dimensions (mm) | Min. frame depth (mm) | Classification | Frame position | Max. cable diameter / Pipe outer diameter range | Max. filling ratio |
|---|---|---|---|---|---|---|
| **S-series SK 1x1 up to 8+8x2** | 596x271 | 200 | When installed/insulated according drawing N° S1501671 rev. B dated 24/08/2015 (detail J-30), the penetration can withstand the jet fire (250 kW/m²) for 30 min.<br><br>When installed/insulated according drawing N° S1501671 rev. B dated 24/08/2015 (detail J-60), the penetration can withstand the jet fire (250 kW/m²) for 60 min. | Unexposed<br><br>Unexposed | Cables, incl. Metal Clad (MC) and Steel Wire Armored (SWA) cables ≤ 103 mm | 39.3% |
| **S-series SBTB 1x1 up to 8x1** | 298x141 | 300 | When installed/insulated according drawing N° S1577491 rev. A dated 14/03/2022 (N°1), the penetration can withstand with regards to integrity only the jet fire (250 kW/m²) for 180 min.<br>**Restricted application: exposed side of frame and division is the side coated with passive fire protection.** | Any | Cables ∅ ≤ 90 mm<br>Steel pipes ∅ 6-30 mm | 20.6% |
| **S-series SBTB 1x1 up to 8x1** | 298x141 | 300 | When installed/insulated according drawing N° S1577491 rev. A dated 14/03/2022 (N°2), the penetration can withstand with regards to integrity only the jet fire (250 kW/m²) for 180 min. | Any | Cables ∅ ≤ 77 mm<br>Steel pipes ∅ 6-30 mm | 16.2% |
| **S-series SBTB 1x1 up to 8+8x1** | 596x141 | 300 | When installed/insulated according drawing N° S1501671 rev. B dated 24/08/2015 (detail J-60 SBTB), the penetration can withstand the jet fire (250 kW/m²) for 60 min. | Unexposed | Cables ∅ ≤ 43 mm<br>Steel pipes ∅ 20 mm | 7.5% |
| **S-series SBTB 1x1 up to 8x4** | 296x532 | 400 | When installed/insulated according drawing N° S1501671 rev. B dated 24/08/2015 (detail J-120 SBTB), the penetration can withstand the jet fire (250 kW/m²) for 120 min. | Unexposed | Cables ∅ ≤ 79 mm<br>Steel pipes ∅ 10-30 mm | 13.2% |
| **S-series SBTB 1x1 up to 8x2** | 298x271 | 400 | When installed/insulated according drawing N° S1558321 rev.C dated 15/03/2022 (N°1), the penetration can withstand with regards to integrity only:<br>- the HHF jet fire (350 kW/m²) for 20 min,<br>- the extended pool fire (250 kW/m²) for 35 min. | Any | Cables ∅ ≤ 83 mm<br><br>Steel pipes ∅ 6-30 mm | 12.7% |
| **S-series SBTB 1x1 up to 8x2** | 298x271 | 400 | When installed/insulated according drawing N° S1558321 rev.C dated 15/03/2022 (N°2), the penetration can withstand with regards to integrity only:<br>- the HHF jet fire (350 kW/m²) for 20 min,<br>- the extended pool fire (250 kW/m²) for 10 min. | 300 mm exposed side / 100 mm unexposed side | Cables ∅ ≤ 83 mm<br>Steel pipes ∅ 6-30 mm | 12.7% |
| **S-series SBTB 1x1 up to 6x4** | 238x532 | 300 | When installed/insulated according drawings N° S1558321 rev.C dated 15/03/2022 (N°3), the penetration can withstand with regards to integrity only:<br>- the HHF jet fire (350 kW/m²) for 15 min,<br>- the jet fire (250 kW/m²) for 30 min,<br>- the extended pool fire (150 kW/m²) for 75 min. | Unexposed | Cables ∅ ≤ 83 mm<br>Steel pipes ∅ 6-30 mm | 10.0% |
| **S-series SBTB 1x1 up to 6x4** | 238x532 | 300 | When installed/insulated according drawings N° S1558321 rev.C dated 15/03/2022 (N°4), the penetration can withstand with regards to integrity only:<br>- the HHF jet fire (350 kW/m²) for 15 min,<br>- the jet fire (250 kW/m²) for 20 min. | Unexposed | Cables ∅ ≤ 90 mm<br>Steel pipes ∅ 6-30 mm | 10.7% |

****Following on next page****

| Penetration designation | Max. external dimensions (mm) | Min. frame depth (mm) | Classification | Frame position | Max. cable diameter / Pipe outer diameter range | Max. filling ratio |
|---|---|---|---|---|---|---|
| **S-series SBTB 1x1 up to 8x4** | 296x532 | 400 | When installed/insulated according drawing N° S1558323 rev. B dated 14/03/2022 (N°1), the penetration can withstand:<br>- the HHF jet fire (350 kW/m²) for 30 minutes,<br>- the extended pool (250 kW/m²) for 30 minutes.<br>**Restricted application: exposed side of frame and division is the side coated with passive fire protection.** | Any | Cables ∅ ≤ 83 mm<br>Steel pipes<br>∅ 6-30 mm | 6.2% |
| **S-series SKFOH 1x1 up to 6x4** | 238x532 | 370 | When installed/insulated according drawing N° S1558323 rev. B dated 14/03/2022 (N°2), the penetration can withstand HHF jet fire (350 kW/m²) for 60 min.<br>**Restricted application: exposed side of frame and division is the side coated with passive fire protection.** | Any | Cables ∅ ≤ 49 mm<br>Steel pipes<br>∅ 16 mm | 16.0% |
| **S-series SKFOH 1x1 up to 6x4** | 238x532 | 370 | When installed/insulated according drawing N° S1558323 rev. B dated 14/03/2022 (N°3), the penetration can withstand:<br>- the HHF jet fire (350 kW/m²) for 20 minutes,<br>- the pool fire (200 kW/m²) for 40 minutes.<br>**Restricted application: exposed side of frame and division is the side coated with passive fire protection.** | Any | Cables ∅ ≤ 49 mm<br>Steel pipes<br>∅ 16 mm | 16.0% |

1.2 - Roxtec RS seals

Composed of steel sleeves (welded or bolted) with RS-type (Ex and EMC versions included) halogen free rubber seals mounted in steel deck and bulkheads.

Additional insulation on penetrations and/or cables:
- should be approved as having the same level of performance as the penetrated division and expected classification of penetration,
- is to be fitted as shown in the referred Manufacturer's drawings (see §2.1) and also according to Manufacturer's insulation guidelines.

| Penetration designation | External dimensions (mm) | Sleeve depth (mm) | Classification | Sleev position | Pipe outer diameter range |
|---|---|---|---|---|---|
| **RS-series 23 up to 400 (back-to-back installation)** | ∅32 to 414 | 480 | When installed/insulated according drawing N° S1501673 rev. B dated 24/08/2015, the penetration can withstand the jet fire (250 kW/m²) for 60 minutes. | Unexposed | Steel pipes ∅ ≤ 324 mm |

## 2. DOCUMENTS AND DRAWINGS:

As per the Manufacturer's insulation drawings quoted in tables in §1.

## 3. TEST REPORTS:

3.1 - Test report N° 846031.02 dated 04/11/1997, as per Health and Safety Executiv, Offshore Technology Report - OTI 95 634 "Jet Fire Resistance Test of Passive Fire Protection Materials", from SINTEF, Norway.

3.2 - Test report N° NBL-107332 dated 03/06/2005, as per Health and Safety Executiv, Offshore Technology Report - OTI 95 634 "Jet Fire Resistance Test of Passive Fire Protection Materials", from SINTEF, Norway.

3.3 - Test report N° NBL-F10106 dated 13/10/2010, as per ISO 22899-1:2007, from SINTEF, Norway.

3.4 - Test report N° NBL-F10107 dated 15/11/2010, as per ISO 22899-1:2007, from SINTEF, Norway.

3.5 - Study report N° F15 20119-1 Version 1, "Evaluation of jet fire attack direction on response of products", dated 29/01/2015, from SP Fire Research AS, Norway (technical justification for worst case scenario being horizontal jet fire test).

3.6 - Test report N° 120000-56 Version 1, "Sequential HHF jet fire test and “extended pool fire” test", dated 09/12/2019, from RISE, Norway.

3.7 - Test report N° F17 120000-15:2 Version 1, "Jet fire test based on ISO 22899-1", dated 06/07/2017, from RISE, Norway.

3.8 - Test report N° F19 120000-48:1 Version 1, "Jet fire test based on ISO 22899-1", dated 11/04/2019, from RISE, Norway.

3.9 - Test report N° F19 120000-48:2 Version 1, "Jet fire test based on ISO 22899-1", dated 11/04/2019, from RISE, Norway.

3.10 - Test report N° 120000-59 Version 2, "Sequential HHF jet fire test, “standard” jet fire test and “pool fire” test", dated 17/08/2020, from RISE, Norway.

3.11 - Statement N° 120000-81 on results in test reports N° F17 120000-15:2 Version 1 and N° F19 120000-48:1 Version 1, dated 04/03/2022, from RISE, Norway.

3.12 - Test report N° 120000-70 Version 1, "Jet fire test based on ISO 22899-1", dated 18/05/2021, from RISE, Norway.

3.13 - Test report N° 120000-67 Version 1, "Sequential HHF jet fire test and “extended pool fire” test", dated 05/10/2020, from RISE, Norway.

## 4. APPLICATION / LIMITATION:

4.1 - Approved for use as cable transits in jet-fire resistant steel divisions with limitations contained in §1.

4.2 – **Restricted application (refer to §1 for concerned cable penetration systems):** the use of cable penetration systems in bulkhead or deck is restricted to application where on board fire hazard has been identified as being from the bulkhead's or deck's insulated side.

4.3 - For S-Series including cables, filling ratio not to exceed the one tested (see § 1).

## 5. PRODUCTION SURVEY REQUIREMENTS:

5.1 - The **ROXTEC cable sealing system with multidiameter technology, S-series and RS-series** are to be supplied by **ROXTEC International AB** in compliance with the type described in this certificate.

5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.

5.3 - **ROXTEC International AB** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.

5.4 - For information, **Roxtec International AB** has declared to Bureau Veritas the following production site(s):

**ROXTEC International AB**
**Rombvägen 2**
**371 23 KARLSKRONA**
**SWEDEN**

## 6. MARKING OF PRODUCT:

The product or packing is to be marked with Manufacturer name, type, designation and fire-technical rating.

## 7. OTHERS:

7.1 - It is **ROXTEC International AB**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

7.2 - This Certificate supersedes the Type Approval Certificate N° 40893/B0 BV issued on 12/04/2021 by the Society.

7.3 - Testing for water and gas tightness witnessed by third party (DNV):

| Product | Report N° | Date |
|---|---|---|
| SLFO/RI | MLM090673 | 08/10/2009 |
| Bolted sleeve | MLM020401 | 25/03/2002 |
| S-frame | MLM020400 | 25/03/2002 |
| S-frame | SKM-04-4088 | 16/06/2004 |
| RS-seal | MLM090652 | 15/06/2009 |

| Product | Test pressure water tightness | Test pressure gas tightness |
|---|---|---|
| S Series frame | 6 bar | 3 bar |
| RS Series seal | 6 bar | 3 bar |
| Welded SL, SLF sleeve and frame | 6 bar | 3 bar |
| Bolted SLF sleeve and frame | 5 bar | 2.5 bar |
| SLFO/RI sleeve | 2 bar | 1 bar |

***** END OF CERTIFICATE *****