

# TYPE APPROVAL CERTIFICATE

Certificate no.:  
**TAF000016B**  
Revision No:  
**3**

## This is to certify:

that the **Class A and B Penetration**

with type designation(s)  
**Roxtec RS and RS PPS/S sealing systems for pipes (Back-to-Back Arrangement).**

issued to

**Roxtec International AB**  
**Karlskrona, Sweden**

is found to comply with

**DNV statutory interpretations DNV-SI-0364 – SOLAS interpretations, Edition July 2021**

## Application:

**The system is approved for watertightness after 60 minutes A-class fire test.**

**Penetration systems acceptable for use in watertight bulkhead divisions on passenger ships and SPS vessels in accordance with SOLAS Ch. II-1 Reg. 13.2.3 (2014 issue) and IMO MSC/Circ. 736 Paragraph 2.1. For Application/Limitation see page 2.**

Issued at **Høvik** on **2024-04-24**

This Certificate is valid until **2029-04-23**.  
DNV local unit: **Sweden Fleet In Service**

Approval Engineer: **Marcin Tobiasz**

for **DNV**



Digitally Signed By:  
**Jowita Permoda**  
Location: **DNV Gdynia, Poland**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



## Product description

“Roxtec RS and Roxtec RS PPS/S sealing systems for pipes (Back-to-Back Arrangement)”

RS and RS PPS/S sealing systems consist of two seals installed, one in each side of an extended sleeve (minimum 600 mm) generating a “back-to-back arrangement”. The sleeve shall have a centred position in the bulkhead or deck and be welded watertight to it.

The Back-to-Back Arrangement in bulkhead is partly insulated on both sides with additional cookie of A-60 insulation (OD 250 mm) on exposed side. In addition, Roxtec RS system requires 650 mm A-60 insulation along pipe on both sides.

The Back-to-Back Arrangement in deck is partly insulated on exposed (from below) side only.

## Application/Limitation

The system is approved for watertightness after 60 minutes A-class fire test.

Tightness test pressure is applied to the same side of the division which is exposed to the fire test. The following results have been achieved:

Table 1 Approved watertight penetration system in bulkhead

Pipe system size	Pipe outer diameter [mm]	Type of pipes	Approved pressure [bar]	Insulation drawing
RS PPS/S (BTB) 43 -150	16 – 110	Thermoplastic pipes ABS, PP, PVC, PVDF	1.33	S1026802 Rev.C
RS PPS/S (BTB) 43 -150	16 – 110	Thermoplastic pipes PB	1.33	S1026802 Rev.C
RS PPS/S (BTB) 43 -150	20 – 110	Thermoplastic pipes PE	1.33	S1026802 Rev.C
RS PPS/S (BTB) 43 -100	16 – 63	Multilayer plastic pipes PE/ALU/PE	1.33	S1026802 Rev.C
RS-seal (BTB) 125 - 600	90 – 500	GRE / GRP	0.67	S1590482 Rev.A

Table 2 Approved watertight penetration system in deck

Pipe system size	Pipe outer diameter [mm]	Type of pipes	Approved pressure [bar]	Insulation drawing
RS PPS/S (BTB) 43 -150	16 – 110	Thermoplastic pipes PB	1.33	S1026802 Rev.C
RS PPS/S (BTB) 43 -150	20 – 110	Thermoplastic pipes PE	1.33	S1026802 Rev.C
RS PPS/S (BTB) 43 -100	16 – 63	Multilayer plastic pipes PE/ALU/PE	1.33	S1026802 Rev.C

This certificate for back-to-back arrangements does not cover fire rating, hence shall be accompanied by separate valid type approval certificate for this.

Class A-0, A-15 and A-30 shall be insulated as class A-60.

For penetration systems acceptable for use in watertight bulkheads and deck divisions, only type approved thermoplastic and multilayer plastic piping shall be used. The pipes shall have a nominal external pressure rating of at least 1.0 bar.

## Type Approval documentation

Certification in accordance with Class Programme DNV-CP-0338, September 2021.

Fire resistance and Water tightness Survey and Test Reports:

Test report DOC-002562 dated 31 October 2018 from Roxtec, Sweden and witnessed by DNV.

Test report DOC-002621 dated 23 January 2019 from Roxtec, Sweden and witnessed by DNV.

Test report DOC-002676 dated 5 March 2019 from Roxtec, Sweden and witnessed by DNV.

Test report DOC-002700 dated 6 March 2019 from Roxtec, Sweden and witnessed by DNV.

Test report DOC-002718 dated 13 March 2019 from Roxtec, Sweden and witnessed by DNV.

Test report DOC-002719 dated 13 March 2019 from Roxtec, Sweden and witnessed by DNV.

Test report DOC-002736 dated 15 March 2019 from Roxtec, Sweden and witnessed by DNV.

Test report DOC-003037 dated 9 September 2019 from Roxtec, Sweden and witnessed by DNV.

Test report DOC-003037 dated 18 February 2020 from Roxtec, Sweden and witnessed by DNV.

Test report DOC-003037 dated 9 September 2019 from Roxtec, Sweden and witnessed by DNV.

Test report DOC-002962 dated 7 August 2019 from Roxtec, Sweden and witnessed by DNV.

Survey Report No. N141NBR5 dated 5 November 2018 from DNV Malmö.  
Survey Report No. N141RA6Z dated 24 January 2019 from DNV Malmö.  
Survey Report No. N141S7E5 dated 10 March 2019 from DNV Malmö.  
Survey Report No. N141SGZW dated 10 March 2019 from DNV Malmö.  
Survey Report No. N141SMF7 dated 15 March 2019 from DNV Malmö.  
Survey Report No. N141SMF8 dated 15 March 2019 from DNV Malmö.  
Survey Report No. N141SRGA dated 15 March 2019 from DNV Malmö.  
Survey Report No. N141W15W dated 30 September 2019 from DNV Malmö.  
Survey Report No. N141Y94A dated 20 February 2020 from DNV Malmö.  
Survey Report No. N141Y94C dated 24 February 2019 from DNV Malmö.  
Survey Report No. N141UBRY dated 7 August 2019 from DNV Malmö.  
Survey Report No. N142G51K dated 11 November 2022 from DNV Malmö.  
Survey Report No. N142K9GN dated 23 March 2023 from DNV Malmö.

Drawing No. S1026802 Rev.C dated 17 June 2020 from Roxtec.  
Drawing No. S1590482 Rev.A dated 28 March 2023 from Roxtec.

### Tests carried out

The systems have been pressure tested with water up to 2 bars (RS PPS/S) / 1 bar (RS) immediately after an A-60 class bulkhead fire test. The fire test was based on the principles given in IMO 2010 FTP Code Part 3, except the furnace size.

The pressure test was based on the test procedures described in resolution MSC.429(98) for compliance with regulation II-1/13.2.1 and 13.2.3 of SOLAS-74 (2014 issue).

### Marking of product

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

### Periodical assessment

DNV's surveyor is to be given permission to perform Periodical Assessments at any time during the validity of this certificate and at least every second year. The arrangement is to be in accordance with procedure described in Class Programme DNV-CP-0338, Section 4.