TYPE APPROVAL CERTIFICATE

Certificate No:
TAF00000HK
Revision No:
9

This is to certify:

That the Class A and B Penetration

with type designation(s)
Roxtec sealing system: Sleev-it steel divisions

Issued to
Roxtec International AB
Karlskrona, **Sweden**

is found to comply with
DNV statutory interpretations DNV-SI-0364 – SOLAS interpretations, Edition July 2021
DNV rules for classification – Ships
DNV offshore standards

Application :

Approved for use as a plastic pipe penetration system in class A-0 and A-60 steel bulkheads and decks.

Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Issued at **Høvik** on **2023-04-11**

This Certificate is valid until **2027-04-26**.
DNV local unit: **Malmö**

Approval Engineer: **Marcin Tobiasz**

for **DNV**
Digitally Signed By: Permoda, Jowita

DNV Gdynia, Poland

Jowita Permoda
Head of Section

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.

Product description

"Roxtec sealing system: Sleev-it steel divisions"
consist of a steel collar casing lined with intumescent material on the inside and a flange. It is available in FC MAR (fire penetration seal) and WT MAR (Fire/Watertight penetration seal) versions depending on application.

The Sleev-it is installed onto a steel division by welding (FC/WT MAR) or bolting (FC MAR) depending on version. Marine graded sealant is applied during the installation to achieve a cold smoke seal.

Application/Limitation

Approved for use as a plastic pipe penetration system in class A-60 steel bulkheads and decks according to tables below.

Approved for use in class A-0, A-15 and A-30 when the penetration system is insulated as A-60 and in addition the division is to be insulated with A-60 insulation at least 200 mm around the penetration.

Other applications are subject to case-by-case approval.

Table 1: Approved pipe penetration in A-60 steel bulkhead

Sleev-it size (OD) [mm]	Pipe material	Pipe diameter (OD) [mm]	Seal position	Insulation drawing
28 - 286	ABS	16 - 225	Uninsulated side	S1585224, ID 1
28	ABS	16	Insulated side	S1585224, ID 2
28 – 198	PB	16 - 160	Either	S1508739 Rev. A
28 – 286	PE	16 - 225	Either	S1508739 Rev. A
28 – 240	PP	16 - 200	Either	S1508739 Rev. A
32 - 248	PVC	12 - 200	Either	S1508739 Rev. A
207	PVDF	169	Either	S1508739 Rev. A
102 - 125	Beverage multipipe	75 - 100	Either	S1508739 Rev. A
28 - 48	PE/ALU/PE	16 - 32	Either	S1508739 Rev. A
48 - 85	PE/ALU/PE	33 - 63	Either	S1516429 Rev. A
248 - 350	PVC	201 - 271	Insulated side	S1508739 Rev. A
248 - 350	PVC	201 - 271	Insulated side	S1508747 Rev. A
286 - 391	PE	226 - 315	Insulated side	S1508746 Rev. A
102 - 391	Pre-insulated pipe	75 - 315	Uninsulated side	S1552357 Rev. A
36 - 102	Multi pipe[1)] PVC, PP	20 - 41	Either	S1508739 Rev. A

1) Penetration type FC MAR-75M

Table 2: Approved pipe penetration in A-60 steel deck

Sleev-it size (OD) [mm]	Pipe material	Pipe diameter (OD) [mm]	Seal position	Insulation drawing
28 - 286	PE	25 - 225	Either	S1508739 Rev. A
36 - 143	PP	20 - 110	Either	S1508739 Rev. A
28 - 158	PB	25 - 125	Either	S1508739 Rev. A
28 - 198	PVC	25 - 160	Either	S1508739 Rev. A
69 - 213	PVDF	48 - 166	Either	S1508739 Rev. A
28 - 85	PE/ALU/PE	16 - 63	Either	S1508739 Rev. A
102 - 125	Beverage multipipe	75 - 100	Either	S1508739 Rev. A
36 - 69	Multi pipe[1)] PP, PVC	22 - 50	Either	S1508739 Rev. A[1]
36 - 69	PE/ALU/PE, PVC, PP	22 - 50	Either	S1508739 Rev. A[1]
198 - 400	PVC	>160 - 321	Either	S1508747 Rev. A

Sleev-it size (OD) [mm]	Pipe material	Pipe diameter (OD) [mm]	Seal position	Insulation drawing
28 - 286	ABS	16 - 225	Underside	S1585224, ID 4
28	ABS	16	Either	S1585224, ID 3
28 - 41	PB	16 - 24	Underside	S1508739 Rev. A
158 - 248	PB	>125 - 200	Underside	S1508739 Rev. A
28 - 41	PE	16 - 24	Underside	S1508739 Rev. A
286 - 400	PE	>225 - 320	Underside	S1508739 Rev. A
28 - 36	PP	16 - 19	Underside	S1508739 Rev. A
143 - 400	PP	>110 - 320	Underside	S1508739 Rev. A
28 - 41	PVC	16 - 24	Underside	S1508739 Rev. A
102 - 391	Pre-insulated pipe	75 - 315	Underside	S1552357 Rev. A
69 - 143	PP	50 - 110	Underside	S1036417 Rev. A

1) Penetration type FC MAR-75M

Table 3: Approved pipe penetration in A-0 steel bulkhead

Sleev-it size (OD) [mm]	Pipe material	Pipe diameter (OD) [mm]	Seal position	Insulation drawing
28 - 286	ABS	16 - 225	Uninsulated side	S1586443, ID 1
28	ABS	16	Insulated side	S1586443, ID 2
28 - 198	PB	15 - 160	Insulated side	S1508742 Rev. A
28 - 286	PE	16 - 225	Either	S1508742 Rev. A
286 - 391	PE	> 225 - 315	Either	S1508750 Rev. A
36 - 207	PP	20 - 169	Either	S1508740 Rev. A
36	PP	20	Either	S1553615 Rev. A
28 - 56	PP	16 - 39	Either	S1508740 Rev. A
28 - 85	PE/ALU/PE	16 - 63	Either	S1508740 Rev. A
207 - 248	PP	170 - 200	Either	S1508742 Rev. A
102 - 125	Beverage multipipe	75 - 100	Either	S1508742 Rev. A
28 - 198	PVC	16 - 160	Either	S1553615 Rev. A
198 - 248	PVC	> 160 - 200	Either	S1508742 Rev. A
248 - 350	PVC	> 200 - 271	Insulated side	S1508751 Rev. A
102 - 391	Pre-insulated pipe[1)]	75 - 315	Uninsulated side	S1552430 Rev. A

1) Georg Fischer COOL-FIT 2.0 or equivalent

Table 4: Approved pipe penetration in A-0 steel deck

Sleev-it size (OD) [mm]	Pipe material	Pipe diameter (OD) [mm]	Seal position	Insulation drawing
28 - 286	ABS	16 - 225	Underside	S1586443, ID 4
28	ABS	16	Either	S1586443, ID 3
28 - 41	PB	16 - 24	Underside	S1508742 Rev. A
158 - 248	PB	>125 - 200	Underside	S1508742 Rev. A
28 - 41	PE	16 - 24	Underside	S1508742 Rev. A
286 - 400	PE	>225 - 320	Underside	S1508742 Rev. A
28 - 36	PP	16 - 19	Underside	S1508742 Rev. A
143 - 400	PP	>110 - 320	Underside	S1508742 Rev. A
28 - 69	PVC	16 - 50	Underside	S1552408 Rev. A

Sleev-it size (OD) [mm]	Pipe material	Pipe diameter (OD) [mm]	Seal position	Insulation drawing
28 - 69	PVC	16 - 50	Either	S1553615
85	PVC	63	Topside	S1564115
69 - 400	PVC	>50 - 321	Either	S1508742 Rev. A
41 - 158	PB	25 - 125	Either	S1508742 Rev. A
41 - 158	PE	25 - 225	Either	S1508742 Rev. A
36 - 143	PP	20 - 110	Either	S1508742 Rev. A
198 - 400	PVC	>160 - 321	Either	S1508742 Rev. A
69 - 213	PVDF	48 - 166	Either	S1508742 Rev. A
28 - 85	PE/ALU/PE	16 - 63	Either	S1508742 Rev. A
102 - 125	Beverage multipipe	75 - 100	Either	S1508742 Rev. A
102 - 391	Pre-insulated pipe[1)]	75 - 315	Underside	S1552430 Rev. A

1) Georg Fischer COOL-FIT 2.0 or equivalent

Pipe reference list

ABS	Acrylonitrile Butadiene Styrene
PB	Polybutylene
PE	Polyethylene
PP	Polypropylene (including PP, PPr and three-layer PP)
PVC	Polyvinyl Chloride (including PVC-C and PVC-U)
PVDF	Polyvinylidene Fluoride
PE/ALU/PE	Composite pipes made of outer/inner PE layer and intermediate Al thin-walled pipe.
Beverage multipipe	Bundle of plastic pipes covered with thermal insulation
Pre-insulated pipe	Thermoplastic pipe with integrated thermal insulation

Cold service piping insulated with Armaflex rubber insulation layer is to be locally interrupted through the penetration system.

Standard design is one pipe is routed through each Roxtec Sleev-it penetration. For multi-pipe application, the penetration type “SLV75M and FC-MAR75M” shall be used.

The insulation material used has to be approved according to the Marine Equipment Directive and bear the Mark of Conformity.

Each product is to be supplied with its manual for installation and maintenance.

For applications where water and or gas tightness is requested Sleev-it type WT is to be used exclusively. This type is approved for application in steel bulkheads or decks limited to a pressure of 2,33 bar water tightness and 0,67 bar gas tightness.

The penetration system is generally not to be used for penetrating boundaries of tanks.

The pipe penetrations are not approved for use in watertight bulkheads on passenger ships and special purpose ships (SPS).

Type Approval documentation

Installation instructions:
ASS2012012001201 D Installation instruction Roxtec Sleev-it – Waterproof penetration seal
ASS2012012001301 D Installation instruction Roxtec Sleev-it – Fire penetration seal

Bulkhead Class A-60:
Test report No. 164476A dated 2007-07-23 from Bodycote Warringtonfire, UK
Test report No. 164476B dated 2007-06-26 from Bodycote Warringtonfire, UK
Test report No. 180251A dated 2009-02-16 from Bodycote Warringtonfire, UK
Test report No. 177105A dated 2008-11-04 from Bodycote Warringtonfire, UK

Test report No. 183387A dated 2009-06-12 from Exova Warringtonfire, UK
Test report No. 309855A dated 2011-10-05 from Exova Warringtonfire, UK
Test report No. 303585A dated 2011-02-17 from Exova Warringtonfire, UK
Test report No. 198004A dated 2010-12-07 from Exova Warringtonfire, UK
Test report No. 303584A dated 2011-04-07 from Exova Warringtonfire, UK
Test report No. 316943 dated 2012-04-26 from Exova Warringtonfire, UK
Test report No. 314670 dated 2012-06-25 from Exova Warringtonfire, UK
Test report No. 324083 dated 2013-04-24 from Exova Warringtonfire, UK
Test report No. 30717A dated 2011-06-17 from Exova Warringtonfire, UK
Test report No. RS-18/B-264/E dated 2018-09-14 from CTO S.A, Poland
Test report No. RS-19/B-424/E dated 2019-11-27 from CTO S.A, Poland
Test report No. RS-21/B-241/E dated 2021-06-30 from CTO S.A, Poland
Test report No. PGB10030A dated 2020-07-16 from DBI, Denmark
Test report No. 881/07/A/NP/R 102 dated 2007-03-21 from DGA
Test report No. 5P08394 dated 2016-03-02 from SP, Sweden
Test report No. RS-21/B-241/E dated 2021-06-30 from CTO S.A, Poland
Test report No. PGB10167A dated 2022-03-03 from DBI, Denmark

Deck Class A-60:
Test report No. 170080B dated 2008-01-21 from Bodycote Warringtonfire, UK
Test report No. 175486A dated 2008-08-11 from Bodycote Warringtonfire, UK
Test report No. 170080A dated 2008-01-21 from Bodycote Warringtonfire, UK
Test report No. 175486B dated 2008-08-11 from Bodycote Warringtonfire, UK
Test report No. 170080B dated 2008-01-21 from Bodycote Warringtonfire, UK
Test report No. 190890A_2 dated 2010-03-02 from Exova Warringtonfire, UK
Test report No. 309638A dated 2011-08-03 from Exova Warringtonfire, UK
Test report No. 325332 dated 2013-01-13 from Exova Warringtonfire, UK
Test report No. 188626 dated 2009-12-22 from Exova Warringtonfire, UK
Test report No. 314669 dated 2012-04-26 from Exova Warringtonfire, UK
Test report No. 320402A dated 2012-10-29 from Exova Warringtonfire, UK
Test report No. 329449 dated 2013-08-13 from Exova Warringtonfire, UK
Test report No. 334429 dated 2013-12-17 from Exova Warringtonfire, UK
Test report No. RS-18/B-265/E dated 2018-09-17 from CTO, Poland
Test report No. PGB10032A dated 2020-07-01 from DBI, Denmark
Test report No. PGB10047A dated 2020-11-30 from DBI, Denmark
Test report No. PGA10871A dated 2018-01-18 from DBI, Denmark
Test report No. 6P02249 dated 2016-05-17 from SP, Sweden
Test report No. 6P10022 dated 2017-03-07 from SP, Sweden
Test report No. 878/07/A/NP/R 102 dated 2007-03-28 from DGA
Test report No. PGA11611A dated 2020-01-11 from DBI, Denmark
Test report No. RS-22/B-153/E dated 2022-05-04 from CTO S.A, Poland
Test report No. PGB10172A dated 2022-06-17 from DBI, Denmark

Bulkhead Class A-0
Test report No. 198004A dated 2010-12-07 from Exova Warringtonfire, UK
Test report No. 324083 dated 2013-04-24 from Exova Warringtonfire, UK
Test report No. 303584A dated 2011-04-07 from Exova Warringtonfire, UK
Test report No. 337717 dated 2014-05-13 from Exova Warringtonfire, UK
Test report No. 307171/A dated 2011-05-26 from Exova Warringtonfire, UK
Test report No. 8P07092 Rev.1 dated 2020-01-16 from SP, Sweden
Test report No. RS-19/B-423/E dated 2019-11-19 from CTO, Poland
Test report No. RS-20/B-081/E dated 2020-03-31 from CTO, Poland

Deck Class A-0
Test report No. PGA11388A dated 2019-08-14 from DBI, Denmark
Test report No. PGB10110A dated 2021-04-27 from DBI, Denmark
Test report No. 8P07092, Rev.1 dated 2020-01-16 from RISE, Sweden

Miscellaneous documents:
Excel spread sheet "Test Review-Sleeve-it", 2020
Indicative test No. 189958 dated 9 February 2010 (EDPM rubber seal)
Assessment No. 184391/A (Alu deck), 17 December 2009
(Sleev-it WT-MAR, type A)
Drawing 320420A,29 October 2012 and Assessment report No. 336024, 18 December 2013

Water and gas tightness reports
Survey report LDN-08-045 dated 2008-05-09 from DNV London
Test witness certificate no. SOU 0901586/1 dated 2010-01-08 from Lloyd's Register

Drawing No. S1026329, Rev. H dated 2016-10-11
Drawing No. S1026339, Rev. E dated 2016-11-15
Drawing No. S1036341, Rev. A dated 2013-11-15
Drawing No. SLV 342A dated 2010-02-02
Drawing No. S1508739 Rev. A dated 2015-12-17
Drawing No. S1508747 Rev. A dated 2015-12-18
Drawing No. S1508746 Rev. A dated 2015-12-18
Drawing No. S1036417 Rev. A dated 2013-11-19
Drawing No. S1552357 Rev A dated 2020-02-12
Drawing No. S1552408 Rev A dated 2020-02-13
Drawing No. S1552430 Rev A dated 2020-02-13
Drawing No. S1508740 Rev. A dated 2015-12-17
Drawing No. S1508742 Rev. A dated 2015-12-18
Drawing No. S1508750 Rev. A dated 2015-12-18
Drawing No. S1508751 Rev. A dated 2015-12-18
Drawing No. S1553615 Rev. A dated 2020-03-13
Drawing No. S1516429 Rev. A dated 2016-10-17
Drawing No. S1585224 Rev. A dated 2022-11-08
Drawing No. S1586443 Rev. A dated 2022-11-29

Tests carried out
Tested in accordance with IMO 2010 FTP Code Part 3.

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.