

**TYPE APPROVAL CERTIFICATE****This is to certify:****That the Class A and B Penetration**

with type designation(s)

**Sleev-it - Fire penetration seal (FC), Sleeve-it - Watertight penetration seal (WT)**

Issued to

**Roxtec International AB**  
**KARLSKRONA, Sweden**

is found to comply with

**DNV GL rules for classification – Ships****DNV GL class programme DNVGL-CP-0165 – Type approval – Cable and pipe penetrations****DNV GL statutory interpretations DNVGL-SI-0364 – SOLAS interpretations****Application :****The Sleeve-it pipe penetration system is type approved for plastic pipes, penetrating bulkheads and decks of class A-0, A-15, A-30 and A-60. Refer to certificate.****Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.**This Certificate is valid until **2021-12-14**.Issued at **Hamburg** on **2017-03-10**DNV GL local station: **Malmö**Approval Engineer: **Hagen Markus**for **DNV GL**.....  
**Olaf Drews**  
**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.

Job Id: **262.1-016326-5**  
Certificate No: **TAF00000HK**  
Revision No: **1**

## Product description

The Roxtec Sleeve-it penetration system is composed of a stainless steel tubular collar casing. This type approval includes two types:

Types	Casing design	Installation	Inserts
Fire penetration seal, type FC Drawing S1026329	Flange with break in the casing / flange	Spot welded or bolted to bulkhead / deck	Roxtec Sleeve-it layers of graphite intumescent material
Fire / Watertight penetration seal, type WT Drawing S1026339	Continuous casing / flange	Fully welded to bulkhead / deck	Roxtec Sleeve-it layers of graphite intumescent material <b>plus</b> Roxtec Sleeve-it grommet fitted on flange

## Materials

Part	Specification	Notes
Flange	Mild steel BS EN10130 / CR4	None
Steel collar	Stainless steel 1.4301	None
Grommet	Rubber EPDM	Black Grommet for metric size pipes Red Grommet for inch size pipes
Intumescent	Roxtec data sheet TRP 345 Promaseal - PL	Colour dark grey / black

## Application/Limitation

The Sleeve-it pipe penetration system is type approved for plastic pipes penetrating bulkhead and deck of class A-0, A-15, A-30 and A-60.

For A-15 and A-30 applications, the penetration shall be insulated as for A60 and the division is to be fitted with A-60 insulation for a minimum distance of 200 mm around the penetration.

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

For Multi-pipe penetration type "SLV75M", Roxtec Sleeve-it smoke seal putty shall be applied to fill openings around the pipes and between pipes and collar.

Standard design is that one pipe should be routed in each Roxtec Sleeve-it. In case two or more pipes are routed the gap between pipes and collar must be plugged with Roxtec smoke seal putty.

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

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### Bulkhead – General Application A-60

Pipe material*	Pipe Diameter (mm)	Fitting of fire collar	Drawing
ABS	114	Either side	S1508739A
PB	16 to 160	Either side	S1508739A
PE	16 to 225	Either side	S1508739A
PE	226 to 315	Insulated side plus additional insulation	S1508746A
PP	16 to 200	Either side	S1508739A
PVC	12 to 200	Either side	S1508739A
PVC	201 to 271	Uninsulated	S1508739A
PVC	201 to 271	Insulated side plus additional insulation	S1508747A
PVDF	169	Either side	S1508739A
PE / ALU / PE	16 to 32	Either side	S1508739A
PE / ALU / PE	33 to 63	Either side plus additional insulation	S1516429A
Beverage multipipe	75 to 100	Either side	S1508739A

### Deck – General Application A-60

Pipe material*	Pipe Diameter (mm)	Fitting of fire collar	Drawing
ABS	110 up to 219	Insulated side	S1508739A
PB	16 up to 24	Insulated side	S1508739A
PB	25 up to 125	Either side	S1508739A
PB	>125 up to 200	Insulated side	S1508739A
PE	16 up to 24	Insulated side	S1508739A
PE	25 upto 225	Either side	S1508739A
PE	>225 upto 320	Insulated side	S1508739A
PP	16 up to 19	Insulated side	S1508739A
PP	20 upto 110	Either side	S1508739A
PP	>110 up to 320	Insulated side	S1508739A
PVC	16 upto 24	Insulated side	S1508739A
PVC	25 upto 160	Either side	S1508739A
PVC	>160 up to 321	Either side plus additional insulation	S1508747A
PVDF	48 up to 166	Either side	S1508739A
PE / ALU / PE	16 up to 63	Either side	S1508739A
Beverage multipipe	75 up to 100	Either side	S1508739A

#### \*Pipe reference list

ABS	Acrylonitrile Butadiene Styrene
PB	Polybutylene
PE	Polyethylene
PP	Polypropylene (including PP, PPr and three layer PP)
PVC	Polyvinyl Chloride (including cPVC and uPVC)
PVDF	Polyvinylidene Fluoride
PE / ALU / PE	Multilayer pipe Polyethylene/Aluminium/Polyethylene
Beverage multipipe	Bundle of plastic pipes covered with thermal insulation

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**Deck – General Application A-60 – Roxtec Sleeve-it with smoke seal putty**

Type	Pipe material*	Pipe Diameter (mm)	Fitting of fire collar	Drawing
SLV75M	PP, PVC	22, 48, 25,4	Uninsulated side	S1508739A
SLV75M	PE/ALU/PE, PVC, PP	50, 25,4, 22	Insulated side	S1508739A

**Deck – General Application A-60 – Roxtec Sleeve-it WT-MAR type A**

Pipe material*	Pipe Diameter (mm)	Fitting of fire collar	Drawing
PP	50 to 110	Insulated side	S1036417A

**Bulkhead – General Application A-0**

Pipe material*	Pipe Diameter (mm)	Fitting of fire collar	Drawing
ABS	114	Either side + Extra insulation	S1508742A
PB	15 up to 160	Either side + Extra insulation	S1508742 A
PE	16 up to 225	Either side + Extra insulation	S1508742 A
PE	>225 up to 315	Insulated site	S1508750 A
PP	16 up to 39	Either side + Extra insulation	S1508742 A
PP	40 up to 169	Either side	S1508740 A
PP	170 up to 200	Either side + Extra insulation	S1508742 A
PVC	20 up to 160	Either side	S1508740 A
PVC	> 160 up to 200	Either side + Extra insulation	S1508742 A
PVC	> 200 up to 271	Insulated site	S1508751 A
PE/ALU/PE	16 up to 63	Either side	S1508740 A
Beverage multipipe	75 up to 100	Either side + Extra insulation	S1508742 A

**\*Pipe reference list**

ABS	Acrylonitrile Butadiene Styrene
PB	Polybutylene
PE	Polyethylene
PP	Polypropylene (including PP, PPr and three layer PP)
PVC	Polyvinyl Chloride (including cPVC and uPVC)
PVDF	Polyvinylidene Fluoride
PE / ALU / PE	Multilayer pipe Polyethylene/Aluminium/Polyethylene
Beverage multipipe	Bundle of plastic pipes covered with thermal insulation

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**Deck – General Application A-0**

<b>Pipe material*</b>	<b>Pipe Diameter (mm)</b>	<b>Fitting of fire collar</b>	<b>Drawing</b>
ABS	110 to 219	Insulated side	S1508742 A
PB	16 to 24	Insulated side	S1508742 A
PB	25 to 125	Either side + Extra insulation	S1508742 A
PB	>125 to 200	Insulated side	S1508742 A
PE	16 to 24	Insulated side	S1508742 A
PE	25 to 225	Either side + Extra Insulation	S1508742 A
PE	>225 to 320	Insulated side	S1508742 A
PP	16 to 19	Insulated side	S1508742 A
PP	20 to 110	Either side + Extra Insulation	S1508742 A
PP	>110 to 320	Insulated side	S1508742 A
PVC	16 to 24	Insulated side	S1508742 A
PVC	25 to 160	Either side + Extra Insulation	S1508742 A
PVC	>160 to 321	Insulated side + Extra insulation	S1508751 A
PVDF	48 to 166	Either side + Extra Insulation	S1508742 A
PE/ALU/PE	16 to 63	Either side + Extra Insulation	S1508742 A
Beverage multipipe	75 to 100	Either side + Extra Insulation	S1508742 A

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### **Water and or gas tightness**

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.

For application on passenger ships and special purpose ships (SPS), the penetration system shall comply with the requirements given in SOLAS Ch. II-1 Reg. 13.2.3 (2014 issue). Penetrations passing through watertight bulkheads are subject for separate examination and approval (water tightness after a standard fire test).

The Society shall be contacted for separate details of performing such additional testing.

It is however be noted that use of such product on board passenger ships/SPS vessel, even if successfully tested as watertight after a standard fire test, is subject to separate case by case approval for each ship for which the product is intended to be used and may not be accepted at all for certain applications and / or flags.

### **Type Approval documentation**

Fire test reports BRE Fire and Risk Sciences Division, Garston, England

- 208971 dated 12 February 2003 (deck)
- 208972 dated 20 March 2003 (bulkhead)
- 223968 dated 5 September 2005 (deck)
- 223969 dated 1 September 2005 (bulkhead)
- Assessment CC 228739 dated 11 May 2006 (number of intumescent material).
- Email dated 4 May 2006
- Letter dated 5 July 2005 (error in test report)
- Supplement to test report No. 223969 (error in test report)

#### **Fire test reports Bodycote Warrington fire / Exova Warringtonfire, UK**

- 164476 B dated 23 July 2007 (bulkhead)
- 177105/A dated 6 January 2009 (bulkhead)
- 170080 B dated 30 April 2008 (deck)
- 175486/A dated 31 October 2008 (deck)
- 183387A dated 23 October 2009 (bulkhead)
- 188626 dated 22 December 2009 (alu deck)
- 190890/A Issue 2, dated 26 May 2010 (steel deck)
- Indicative test No. 189958 dated 9 February 2010 (EDPM rubber seal)
- Assessment No. 184391/A dated 17 December 2009 (alu deck)
- 320420A dated 29 October 2012 and Assessment report No. 336024 dated 18 December 2013. (Sleev-it WT-MAR, type A)

#### **Fire test reports Laboratoire de Resistance au feu du GERBAM, France**

- 881/07/A//NP/R 102 dated 21 March 2007 (bulkhead)
- 878/07/A//NP/R 102 dated 28 March 2007 (deck)

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## Fire test reports

### A60 Bulkhead

881/07/A/NP/R 102	DGA	2007-03-21
180251A,	Bodycote Warringtonfire	2009-05-26
183387A,	Exova Warringtonfire	2009-10-23
198004A,	Exova Warringtonfire	2010-12-07
303584A,	Exova Warringtonfire	2011-04-07
316943,	Exova Warringtonfire	2012-04-26
314670,	Exova Warringtonfire	2012-06-25
324083,	Exova Warringtonfire	2013-04-24
5P08394,	SP	2016-03-02

### A60 Deck

878/07/A/NP/R 102	DGA	2007-03-28
170080B	Bodycote Warringtonfire	2008-04-30
175486A	Bodycote Warringtonfire	2008-10-31
190890/A, Issue 2	Exova Warringtonfire	2010-05-26
314669	Exova Warringtonfire	2012-04-26
320402A	Exova Warringtonfire	2012-10-29
325332	Exova Warringtonfire	2013-07-10
329449	Exova Warringtonfire	2013-08-13
334429	Exova Warringtonfire	2013-12-17
6P02249	SP	2016-08-17

### A0 Bulkhead

198004A	Exova Warringtonfire	2010-12-07
324083	Exova Warringtonfire	2013-04-24
303584A	Exova Warringtonfire	2011-04-07
309855A	Exova Warringtonfire	2011-12-23
337717	Exova Warringtonfire	2014-05-13
307171/A, Issue 2	Exova Warringtonfire	2011-06-17

## Water and gas tightness reports

Survey report LDN-08-045 dated 9 May 2008 issued by DNV London  
Test witness certificate no. SOU 0901586/1 dated 8 January 2010 issued by Lloyd's Register

## Drawings No

S1026329 Rev. H, dated 2016-10-11 – Fire Penetration Seal Assembly (FC collar details)  
S1026339 Rev. E, dated 2016-11-15 – Water Tight Penetration Seal Assembly (WT collar details)  
SLV 342A , dated 2010-02-02, Sealant drawing  
SLV 320M DNV, dated 2011-09-06  
S1036341 Rev. A, dated 2013-11-15 (WT-MAR type A collar details)  
S1508739 Rev. A, dated 2015-12-17, FC/WT W Plastic pipes ST BLKHD/Deck Div A-Class  
S1508740 Rev. A, dated 2015-12-17, FC/WT W Plastic pipes ST BLKHD/Deck Div A0-Class  
S1508742 Rev. A, dated 2015-12-18, FC/WT W Plastic pipes ST BLKHD/Deck Div A0-Class  
S1508746 Rev. A, dated 2015-12-18, FC/WT W Plastic pipes ST BLKHD Div A-Class  
S1508747 Rev. A, dated 2015-12-18, FC/WT W Plastic pipes ST BLKHD/Deck Div A-Class  
S1508750 Rev. A, dated 2015-12-18, FC/WT Plastic pipes ST BLKHD Div A0-Class  
S1508751 Rev. A, dated 2015-12-18, FC/WT Plastic pipes ST BLKHD/Deck Div A0-Class  
S1516429 Rev. A, dated 2016-10-17 (bulkhead insulation)  
S1036417 Rev. A, dated 2013-11-19, WT-MAR type A ST Deck Div A-class

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### **Installation instructions**

ASS2012012001201 C – Installation instruction Roxtec Sleeve-it – Waterproof penetration seal  
ASS2012012001301 C – Installation instruction Roxtec Sleeve-it – Fire penetration seal

### **Tests carried out**

Fire test according to IMO RESOLUTION MSC.307(88) (2010 FTP Code),  
Annex 1, Part 3 - *Test for "A", "B" and "F" class, Annex1, A.III Pipe and Duct Penetrations.*  
Water and gas tightness according to DNV GL CP – 0165.

### **Marking of product**

The sealing system is marked, amongst others, with:

- name of manufacturer
- type designation
- fire rating

### **Periodical assessment**

For retention of the type approval certificate periodical assessments shall be carried out at production places.

The objective of the periodical assessment is to verify that the design and production conditions for the type approval have not been altered.

Main scope of the assessment:

- verification of the production and quality control system
- review of quality control documentation of recent deliveries
- review of drawings in production to verify any design changes which may have an impact on data specified in the type approval certificate, performance and range of application
- verification of the product marking

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

### **End of certificate**