



中国船级社  
CHINA CLASSIFICATION SOCIETY

证书编号/Certificate No.  
GB23PTB00036\_01

型式认可证书  
CERTIFICATE OF TYPE APPROVAL

兹证明本证书所述制造厂具备按照下列标准的要求生产本证书所列产品的能力和条件。

This is to certify that the manufacturer stated in the certificate meets the requirements of the standards listed below and is available with the ability and conditions to produce the products described in the certificate.

制造厂/Manufacturer

Roxtec International AB

地址/Address

Box 540,S-37123 Karlskrona,Sweden

产品名称/Product

电缆贯穿装置  
Cable Transits

附加标志/Notations

无/Nil.

认可标准/Approval Standard

- 1974年SOLAS公约及其修正案第II-2章第3条和第9条  
Regulations 3 and 9, Chapter II-2 of 1974 SOLAS Convention, as Amended
- IMO 2010年FTP规则附件1第3部分  
IMO 2010 FTP Code Annex One Part Three

用于/Intended for

船舶/Ships

产品明细/Product Description

电缆贯穿装置/Cable Transits (M0001)

名称/Name	属性(值)/Value	单位/Unit
规格/Specification	详见附页/See additional page(s)	
电缆占据率/Cable Spacing Factor	详见附页/See additional page(s)	%
密封填料/Sealing	详见附页/See additional page(s)	
密封堵料/Caulking	详见附页/See additional page(s)	
气密性/Air Tight	详见附页/See additional page(s)	mbar
水密性/Water Tight	详见附页/See additional page(s)	bar

证书有效期至/This Certificate is valid until 2026年11月13日/Nov. 13,2026

发证机构/Issued by 中国船级社哥德堡办事处  
CCS Gothenburg Office

签发日期/Date 2023年10月06日  
Oct. 06,2023

本证书根据中国船级社规范和相关规定签发。所有证书页为一个整体，必须同时使用。纸质证书每页均须由本社盖章方为有效，电子证书含数字签名方为有效，本证书复印件无效。任何单位和个人均不应摘录或节选本证书的部分内容。有关方对所持证书的真实性有疑问时，可以向我社检验机构咨询。This Certificate is issued pursuant to the Rules of the Society and related regulation. All pages of the certificate are taken as a whole and are used simultaneously. No paper certificate page is valid without bearing the stamp of the Society, no electronic certificates is valid without the digital signature, and no copied form of the certificate is regarded as valid. Any part of the certificate is not to be extracted or abridged by any unit or individual in any form. Related parties who are doubted about the authenticity of the certificate may inquire of the Society or its offices.



Form No: T01.

联系方式/Contact Us, 见本社官方网站/See official web site of the Society (<http://www.ccs.org.cn>)

UTN:P023-29565977

舱壁电缆贯穿耐火等级/受火面/Fire Class of Bulkhead Cable Transits /Exposed Face	详见附页/See additional page(s)	
甲板电缆贯穿耐火等级/受火面/Fire Class of Deck Cable Transits /Exposed Face	详见附页/See additional page(s)	

### 批准的图纸/Approved Drawings

图纸批准号/ Drawings Approval No. : 详见附页/See additional page(s)

### 产品认可试验报告/ Approval Test Report

试验报告编号/ Test Report No. : 详见附页/See additional page(s)

试验报告日期/ Test Report Date :

试验单位/ Laboratory: 详见附页/See additional page(s)

试验单位地址/ Test Address: 详见附页/See additional page(s)

### 认可后的产品检验方式/ Method of Product Inspection after Approval

按规范只认可不进行产品检验的产品/The product approved only in term of the rules:  
 认可后的产品检验由制造厂按本社批准的产品检验计划进行检验, 经检验合格后由制造厂签发合格证明, 并连同该产品的本社认可证书复印件一并交付用户, 制造厂对产品符合公约、法规、本社规范和本社认可的标准规定负责。  
 After approval, product inspection should be carried out by the Manufacturer in accordance with the product inspection scheme approved by the Society. Upon satisfactory inspection, and the Quality Certificate issued by the Manufacturer should be provided to the purchaser together with the copy of the approval certificate issued by the Society. The manufacturer should take responsibility for the product being in compliance with the convention, statutory regulation, the Society rules and the standard accepted by the Society.

### 认可保持条件/ Maintenance Requirements of Approval

1. 型式认可后, 如果产品及其重要零部件的设计、所用材料或制造方法有所改变, 且影响到产品的主要特性、特征; 或产品的性能指标有所更改, 且超过认可的范围, 则有关图纸和文件应经检验机构审批。并在检验机构认为必要时, 经本社检验人员见证有关试验和进行检查, 其结果应能证实仍符合认可条件。

After type approval, if there are changes to the design, materials used or manufacturing method of the product and important components and such changes affect major characteristics and properties of the product, or property indexes of the product are changed and exceed the scope of approval, related drawings and documents are to be examined and approved by the concerned survey office. Where deemed necessary by the survey office, the surveyor to the Society will go to witness relevant tests and conduct inspection and the results should be able to demonstrate compliance with the approval conditions.

2. 工厂的质量管理体系应保持有效运行, 并且与认可时一致。如果质量管理体系发生改变, 应经原体系认证机构审核并报本社批准。

The quality management system of the factory shall be ensure effective operation, and shall be the same as the situation of approval. If there are any changes to the quality management system, auditing of the original certification organization for quality management system and the society's approval shall be obtained.

3. 认可证书有效期内, 如果出现可能导致本社取消认可的情况, 工厂应及时采取有效的纠正措施。

Within the validity of the approval certificate, if cases occur that may cause the Society to withdraw the approval, the manufacturer should take corrective actions in a prompt and effective manner.

4. 在认可证书有效期内, 本社检验人员可在未经事先通知的情况下对工厂的产品制造过程进行审核, 以验证产品的生产是否符合业经本社批准的图纸和文件。工厂应予以配合。

Within the validity of the approval certificate, the surveyor to the Society may pay unannounced audit to the manufacturing process of the product in order to confirm whether it is in compliance with the drawings and documents approved by the Society. The factory should provide an active cooperation and necessary for the surveyor.

5. 如果属于获得型式认可B 模式证书, 且无需颁发船用产品证书/等效证明文件的情况, 证书获得者应接受本社每年一次的定期审核, 定期审核日为认可证书期满之日对应的每一周年日, 检查工作应在周年日的前后三个月内进行。

If belong to the situation of the product has type approval mode B certificate, and marine product certificate/equivalent document is not necessary, those who have obtained the certificate should be subject to periodical audit every year. The date of periodical audit shall be each anniversary date which corresponds to the date of expiry of the relevant certificate and the periodical audit shall be done within a time span of three months before and after the annual surveillance date.

**备注/Remarks**

1. 本社已审核了产品厂无石棉声明，但本社的审核不免除产品厂按照合同关系向订货方保证产品无石棉的责任。  
The declaration of asbestos-free submitted by manufacturer has been reviewed by the Society.  
However, liability of the manufacturer to guarantee the products are asbestos-free to purchaser under contract will not be exempted.
2. 本证书由原型式认可证书 (No. GB22PTB00041\_01) 变更并替代原证书。  
This Certificate is modified from and supersedes the previous Type Approval Certificate No. GB22PTB00041\_01.
3. This cert was issued to Roxtec International AB.  
Besides production site at Karlskrona, Sweden, Roxtec Sealing System (Shanghai) Co., Ltd (address: Ground floor, Building A, No. 875 Qiuxin Road, Lingang Nicheng Industrial Area, Pudong District Shanghai, P.R.China) is the assessed production site for the following components of the approved products:  
R-series: Sleeve  
RS-series: Sleeve  
S-series: Frame, Stayplates  
G-series: Frame Stayplates
4. 本证书认可产品应根据制造厂安装手册和批准图纸安装。  
The approved products shall be installed as per the manufacuter's installation instructions and the approved drawings.

**中国船级社哥德堡办事处**

**CCS Gothenburg Office**

注：本证书含有附页，共11页

Note: The certificate is attached with additional 11 page(s)

## 产品明细 Product Description

产品名称/Product name	电缆贯穿装置 Cable transits				
型号/Type	S Series	R Series	RS Series	G Series	GK FS SK
规格 Specification	See “Detailed Parameters”	See “Detailed Parameters”	See “Detailed Parameters”	See “Detailed Parameters”	See “Detailed Parameters”
图纸批准号 Drawings approval No.	GB17A00007, NP18A01797	GB17A00007, NP18A01797	GB17A00007, NP18A01797	NP23PPP00217	HB20PPP20003
界面（甲板/舱壁）材质 Material of divisions(deck/bulkhead)	aluminum/steel Bulkhead and Deck	aluminum/steel Bulkhead and Deck	aluminum/steel Bulkhead and Deck	steel Bulkhead and Deck	aluminum/steel Bulkhead and Deck
贯穿装置与舱壁或甲板连接方式 Connection method of penetration device to bulkhead or deck	焊接/welded 螺栓链接/bolted	焊接/welded 螺栓链接/bolted Attached by expansion (SLFR X & SLFRS X) or with a nut (SLA)		焊接/welded 螺栓链接/bolted	焊接/welded 螺栓链接/bolted
电缆占据率 Cable spacing factor	0% to max 44%	0% to max 44%	0% to max 60%	0% to max 44%	0% to max 68% (Recommended maximum cable density), the cable bundle shall be arranged in the center of the sleeve.
密封填料 Sealing	Roxtec EPDM Rubber	Roxtec EPDM Rubber	Roxtec EPDM Rubber	Roxtec EPDM Rubber	<b>Sealing strip and Straps</b> Strip: Armacell Straps: Ahlsell <b>Fiberglass Cloth</b> <b>Fiber glass:</b> Klevers, manufactured by Klevers GmbH&Co.KG <b>Intumescent material:</b> PROMASEAL-PL, manufactured by Promat GmbH
密封堵料 Caulking	No Caulking	No Caulking	No Caulking	No caulking	<b>Sealant</b> Generic smoke-tight marine grade sealant
框架或套筒材料 Material of frame or sleeve	aluminum/steel	aluminum/steel	aluminum/steel	steel	steel
框架或套筒包覆用隔热材料 Insulation material bundled for frame or sleeve	A-60 approved type	A-60 approved type	A-60 approved type	A-60 approved type	A-60 approved type

舱壁贯穿耐火等级/受火面 Fire class of bulkhead transits /Exposed face	See “Detailed Parameters”	See “Detailed Parameters”	See “Detailed Parameters”	See “Detailed Parameters”	See “Detailed Parameters”
甲板贯穿耐火等级/受火面 Fire class of deck transits/Exposed face	See “Detailed Parameters”	See “Detailed Parameters”	See “Detailed Parameters”	See “Detailed Parameters”	See “Detailed Parameters”
试验前试样空气试验压力(气密性) Pressure of air before test specimen(Airtight)	Bolted: 1.67 bar Welded: 2.67 bar	Bolted: 1.67 bar Welded: 2.67 bar Long sleeves: 1 bar	Bolted: 1.67 bar Welded: 2.67 bar Long sleeves: 1.5 bar	Bolted: 1.67 bar Welded: 2.67 bar	Not Applicable
试验前试样液压试验压力(水密性) Pressure of hydraulic before test specimen(Watertight)	Bolted: 3.33 bar Welded: 4 bar	Bolted: 3.33 bar Welded: 4 bar Long sleeves: 2 bar	Bolted: 3.33 bar Welded: 4 bar Long sleeves: 3 bar	Bolted: 3.33 bar Welded: 4 bar	Not Applicable
使用限制 Installation limitation	<b>1. Approved for cable transition in decks or bulkheads with “A” class divisions (including A-0, A-15, A-30, A-60). For A-15 and A-30 applications, the penetration shall be insulated as for A-60 and the division is to be fitted with A60 insulation for a minimum distance of 200 mm around the penetration.</b> <b>2. Not for use in tank boundaries.</b> <b>3. More details please refer to “Detailed parameters”</b>				
应用型式/Application Type	See “Detailed Parameters”	See “Detailed Parameters”	See “Detailed Parameters”	See “Detailed Parameters”	See “Detailed Parameters”

# Detailed Parameters

## 1. S series

### 1.1 Product specifications

Roxtec sealing system with multidiameter™ technology, S-series consists of Roxtec S-series frames with a depth of 60 mm (S, S Ex, SF, SFHM, SO, SFO, SFOH, SR/T, SR/S, SRC r20, SRC r40, SRC r60) in height 1-8 and width 60-120, and combinations thereof, welded or bolted to the steel/aluminum sections. Also included in the S-series is the subgroup of SK-series frames with a single barrier with a depth of more than 60 mm (SK, SK Ex, SFK, SFOK, SFOHK, SRCK r20, SRCK r40, SRCK r60) and a subgroup SBTB-series frames with two barriers (SBTB, SBTB Ex, SFBTB, SRBTB, SRCBTB r20, SRCBTB r40, SRCBTB r60).

The S-series (including subgroups) is filled with Roxtec halogen free RM modules (\*1. & \*2.). Assembled with Roxtec Wedge, Roxtec ES Wedge, Roxtec Ex Wedge or Roxtec ES Ex Wedge and corresponding stayplates.

\*1. Standard RM, RM Ex, RM PPS, RM FOC, RM ES, RM ES B, RM PE, RM PE B, RM BG, RM BG B, RM ES Ex, RM ES B Ex, RM PE Ex, RM ES B Ex, RM BG Ex, RM BG B Ex

\*2. RMX, RX BG, RX BG B.

### 1.2 Application limitation

- Watertight bulkheads or decks are to be tested as per CCS Rules for Classification of Sea-going Steel Ships.
- When requested to be used in watertight bulkheads on passenger ships or special purpose ships, the penetration system has to comply with the requirements give in SOLAS Ch.11-1 Reg. 13.2.3 (2014 Consolidated Edition or latest issue).
- 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 1974 as amended.

S-series

Application for (Std & CLX) cables and fiber optic conduits in terms of deck and bulkhead.

Type & Size	Type of frame	Division	Type of cable	Max. cable diameter [mm]	Frame Length and thickness [mm]	Frame position	Frame insulation Drawing No.
S series 1-8 combination thereof.	Std	A60 Aluminum Bulkhead/Deck	Std	90	Length: 60 Thickness: 10	All positions	S1581136 Rev A
	SFOHK	A60 Steel Bulkhead/Deck	Std & FOC	Std: 82 FOC: 18	Length: 100-200 Thickness: 10	Unexposed	S1581774 Rev A
	SFOHK	A0 Steel Bulkhead/Deck	Std & FOC	Std: 82 FOC: 18	Length: 100-200 Thickness: 10	Unexposed	S1581775 Rev A
	Std	A60 Steel Bulkhead/Deck	CLX	98	Length: 60 Thickness: 10	All positions	S1581776 Rev A
	Std	A0 Steel Bulkhead/Deck	CLX	98	Length: 60 Thickness: 10	All positions	S1581777 Rev A
	Std	A60 Steel Bulkhead/Deck	Std & FOC	Std: 90 FOC: 18	Length: 60 Thickness: 10	All positions	S1581778 Rev B
	Std	A0 Steel Bulkhead/Deck	Std & FOC	Std: 88 FOC: 18	Length: 60 Thickness: 10	All positions	S1581779 Rev A
	SFOHK	A60 Steel Deck	CLX	60	Length: 100-200 Thickness: 10	Unexposed	S1581780 Rev B

	SFOHK	A0 Steel Deck	CLX	60	Length: 100-200 Thickness: 10	Unexposed	S1581781 Rev B
	SBTB	A60 Steel Bulkhead/Deck	Std & FOC	Std: 82 FOC: 18	Length: 200-400 Thickness: 10	All positions	S1582132 Rev A
	SBTB	A0 Steel Bulkhead/Deck	Std & FOC	Std: 82 FOC: 18	Length: 200-400 Thickness: 10	All positions	S1582134 Rev A
	SK	A60 Steel Bulkhead/Deck	Std & FOC	Std: 82 FOC: 18	Length: 100-200 Thickness: 10	Unexposed	S1582129 Rev A
	SK	A0 Steel Bulkhead/Deck	Std & FOC	Std: 82 FOC: 18	Length: 100-200 Thickness: 10	Unexposed	S1582133 Rev A
	SK	A60 Steel Deck	CLX	60	Length: 100-200 Thickness: 10	Unexposed	S1582135 Rev B
	SK	A0 Steel Deck	CLX	60	Length: 100-200 Thickness: 10	Unexposed	S1582136 Rev B
	SBTB	A60 Steel Bulkhead/Deck	CLX	60	Length: 200-400 Thickness: 10	All positions	S1582138 Rev B
	SBTB	A0 Steel Bulkhead/Deck	CLX	60	Length: 200-400 Thickness: 10	All positions	S1582137 Rev B

**Note 1: Type of frame**

<b>Std</b>	Standard Frame
<b>SFOHK</b>	SK frame with openable bolted flange
<b>SBTB</b>	Back-to-back frame
<b>SK</b>	Standard frame with extended depth

**Note 2: Type of cable**

<b>Std</b>	Standard Marine cable.
<b>CLX</b>	Metal clad cable
<b>FOC</b>	Fiber optic conduit

**1.3 list of type test reports**

No.	Test report no.	Division material	Division orientation	Fire rating	Test report date	Testing organization
1	RS-18/B-179/E	Aluminum	Deck	A60	2018-06-25	CTO, Gdansk, Poland
2	RS-18/B-180/E	Aluminum	Bulkhead	A60	2018-06-25	CTO, Gdansk, Poland
3	RS-19/B-224/E	Aluminum	Deck	A60	2019-08-01	CTO, Gdansk, Poland
4	RS-21/B-446/E	Aluminum	Bulkhead	A60	2021-10-07	CTO, Gdansk, Poland
5	PGA10652	Steel	Bulkhead	A0	2015-07-03	DBI, Hvidovre, Denmark
6	RS-17/B-176/E	Steel	Bulkhead	A0	2017-05-25	CTO, Gdansk, Poland
7	PGA11301A	Steel	Bulkhead	A0	2018-11-22	DBI, Hvidovre, Denmark
8	RS-18/B-293/E	Steel	Bulkhead	A0	2018-09-13	CTO, Gdansk, Poland
9	PGA10024	Steel	Bulkhead	A60	2011-12-21	DBI, Hvidovre, Denmark
10	PGA10453	Steel	Bulkhead	A60	2014-05-28	DBI, Hvidovre, Denmark
11	6P02516	Steel	Bulkhead	A60	2016-08-29	SP, Borås, Sweden.
12	RS-20/B-409/E	Steel	Bulkhead	A60	2020-12-21	CTO, Gdansk, Poland
13	09-344E	Steel	Bulkhead	A60	2009-12-11	Research institute of Marine Engineering, Tokyo, Japan
14	4P08662	Steel	Bulkhead	A60	2015-06-08	SP, Borås, Sweden.
15	RS-19/B-355/E	Steel	Bulkhead	A60	2019-10-18	CTO, Gdansk, Poland
16	8P04039	Steel	Bulkhead	A60	2018-08-06	SP, Borås, Sweden.
17	PGA10723A	Steel	Deck	A0	2016-02-04	DBI, Hvidovre, Denmark

18	RS-17/B-177/E	Steel	Deck	A0	2017-05-26	CTO, Gdansk, Poland
19	PGA11302A	Steel	Deck	A0	2019-01-16	DBI, Hvidovre, Denmark
20	PGB10119A	Steel	Deck	A0	2021-11-15	DBI, Hvidovre, Denmark
21	6P02249	Steel	Deck	A60	2016-08-17	SP, Borås, Sweden.
22	RS-18/B-484/E	Steel	Deck	A60	2018-12-10	CTO, Gdansk, Poland
23	8P04040	Steel	Deck	A60	2018-08-13	SP, Borås, Sweden.
24	6P07563	Steel	Deck	A60	2016-12-20	SP, Borås, Sweden.
25	6P10022	Steel	Deck	A60	2017-03-07	SP, Borås, Sweden.
26	4P07023	Steel	Deck	A60	2015-02-04	SP, Borås, Sweden.
27	RS-19/B-356/E	Steel	Deck	A60	2019-10-18	CTO, Gdansk, Poland
28	PGA10025	Steel	Deck	A60	2011-12-22	DBI, Hvidovre, Denmark
29	PGA10871A	Steel	Deck	A60	2018-01-16	DBI, Hvidovre, Denmark

#### 1.4 Watertightness/gastightness test reports

No.	Test report no.	Testing organization	Test report date
1.	MLM 020106	DNV, Malmö, Sweden	2001-12-19
2.	MLM 020133	DNV, Malmö, Sweden	2002-02-26
3.	MLM 020408	DNV, Malmö, Sweden	2002-06-03
4.	SKM-04-4088	DNV, Stockholm, Sweden	2004-06-16
5.	N141805F	DNV, Gothenburg, Sweden	2018-02-27



## 2. R series

### 2.1 Product specifications

Roxtec sealing system with multidiameter™ technology: R-series (steel/aluminum division)

the R-Series sealing system consist of a rubber frame filled with Roxtec RM modules of different sizes depending on diameter and configuration of the cables/pipes. It is available in standard, Ex and EMC versions depending on application.

The R-seal is installed into an aluminum/steel sleeve that is welded/bolted, attached by expansion (SLFR X) or with a nut (SLA) onto the aluminum/steel division.

### 2.2 Application limitation

- Watertight bulkheads or decks are to be tested as per CCS Rules for Classification of Sea-going Steel Ships.
- When requested to be used in watertight bulkheads on passenger ships or special purpose ships, the penetration system has to comply with the requirements give in SOLAS Ch.11-1 Reg. 13.2.3 (2014 Consolidated Edition or latest issue).
- 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 1974 as amended.

R-series.

Application for cables in terms of deck and bulkhead.

Type	Size	Division	Max. cable diameter [mm]	Sleeve Length and thickness[mm]	Sleeve position	Sleeve insulation Drawing No.
R series with SLR/SLFR	50- 200	A60 Aluminum Bulkhead/Deck	67	Length: 55 Thickness: 6	All positions	S1581128 Rev A
R series with SLA	50- 100	A60 Aluminum Bulkhead/Deck	50	Length: 119-126 Thickness: 4-6	Exposed/ Unexposed	S1581129 Rev A
R series with SLFR X	79- 200	A60 Aluminum Bulkhead/Deck	50	Length: 55 Thickness: 6	Exposed/ Unexposed	S1582321 Rev A
R series with SLFR X	70- 200	A0 Steel Bulkhead/Deck	83	Length: 55 Thickness: 6	Exposed/ Unexposed	S1581100 Rev A
R series with SLFR X	70- 200	A60 Steel Bulkhead/Deck	83	Length: 55 Thickness: 6	Exposed/ Unexposed	S1581099 Rev A
R series with SLA	50- 100	A0 Steel Bulkhead/Deck	50	Length: 119-126 Thickness: 4-6	Exposed/ Unexposed	S1581097 Rev A
R series with SLA	50- 100	A60 Steel Bulkhead/Deck	50	Length: 119-126 Thickness: 4-6	Exposed/ Unexposed	S1581094 Rev A
R series with SLR/SLFR	50- 200	A0 Steel Bulkhead/Deck	67	Length: 55 Thickness: 6	All positions	S1581087 Rev A
R series with SLR/SLFR	50- 200	A60 Steel Bulkhead/Deck	90	Length: 55 Thickness: 6	All positions	S1581085 Rev A
R series with long sleeves	50-200	A60 Steel Deck	90	Length: 55-400 Thickness: 6	All positions	S1588323 Rev A
R series with long sleeves	50-200	A0 Steel Deck	90	Length: 55-400 Thickness: 6	All positions	S1588324 Rev A

The R-series can be installed into sleeves equal to Roxtec dimensions specified in drawing S1587721.

### 2.3 list of type test reports

No.	Test report no.	Division material	Division orientation	Fire rating	Test report date	Testing organization
1	RS-20/B-408/E	Aluminum	Bulkhead	A60	2020-12-17	CTO, Gdansk, Poland
2	RS-20/B-082/E	Aluminum	Bulkhead	A60	2020-04-21	CTO, Gdansk, Poland

3	PGA11370A	Aluminum	Bulkhead	A60	2019-02-20	DBI, Hvidovre, Denmark
4	PGA11371A	Aluminum	Deck	A60	2019-02-20	DBI, Hvidovre, Denmark
5	RS-19/B-224/E	Aluminum	Deck	A60	2019-08-01	CTO, Gdansk, Poland
6	RS-18/B-179/E	Aluminum	Deck	A60	2018-06-25	CTO, Gdansk, Poland
7	PGB10167A	Steel	Bulkhead	A60	2022-03-18	DBI, Hvidovre, Denmark
8	RS-18/B-485/E	Steel	Bulkhead	A60	2018-12-10	CTO, Gdansk, Poland
9	RS-19/B-255/E	Steel	Bulkhead	A60	2019-08-20	CTO, Gdansk, Poland
10	RS-21/B-518/E	Steel	Bulkhead	A60	2021-12-15	CTO, Gdansk, Poland
11	RS-22/B-152/E	Steel	Bulkhead	A60	2022-05-04	CTO, Gdansk, Poland
12	PGA10724A	Steel	Bulkhead	A0	2916-02-05	DBI, Hvidovre, Denmark
13	8P07094	Steel	Bulkhead	A0	2020-01-16	SP, Borås, Sweden.
14	RS-22/B-153/E	Steel	Deck	A60	2022-05-04	CTO, Gdansk, Poland
15	PGB10172A	Steel	Deck	A60	2022-06-17	DBI, Hvidovre, Denmark
16	PGA10800A	Steel	Deck	A60	2016-05-26	DBI, Hvidovre, Denmark
17	PGA10871A	Steel	Deck	A60	2018-01-16	DBI, Hvidovre, Denmark
18	7P02167	Steel	Deck	A60	2017-08-07	SP, Borås, Sweden.
19	PGB10169A	Steel	Deck	A0	2022-03-18	DBI, Hvidovre, Denmark
20	PGA10723A	Steel	Deck	A0	2016-02-04	DBI, Hvidovre, Denmark
21	8P07092	Steel	Deck	A0	2020-01-16	SP, Borås, Sweden.
22	RS-22/B-336/E	Steel	Bulkhead	A60	2022-10-28	CTO, Gdansk, Poland
23	RS-22/B-337/E	Steel	Deck	A60	2022-10-28	CTO, Gdansk, Poland

## 2.4 Watertightness/gastightness test reports

No.	Test report no.	Testing organization	Test report date
1.	MLM030473-1	DNV, Malmö, Sweden	2003-01-27
2.	N1429Y4V	DNV, Gothenburg, Sweden	2022-03-21
3.	N142G50V	DNV, Gothenburg, Sweden	2022-11-11

## 3. RS series

### 3.1 Product specifications

Roxtec sealing system with multidiameter™ technology: RS-series (steel/aluminum 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 an steel/aluminum sleeve that is either welded, bolted, attached through expansion (SLFRS X) or attached with a nut (SLA) onto the steel/aluminum division.

### 3.2 Application limitation

- Watertight bulkheads or decks are to be tested as per CCS Rules for Classification of Sea-going Steel Ships.
- When requested to be used in watertight bulkheads on passenger ships or special purpose ships, the penetration system has to comply with the requirements give in SOLAS Ch.11-1 Reg. 13.2.3 (2014 Consolidated Edition or latest issue).
- 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 1974 as amended.

RS-series

Application for (Std & CLX) cables in terms of deck and bulkhead.

Type	Size	Division	Max. cable diameter [mm]	Sleeve Length and thickness [mm]	Sleeve position	Sleeve insulation Drawing No.
RS series with SLA	25- 100	A60 Aluminum Bulkhead/Deck	50	Length: 77-126 Thickness: 4-6	Exposed/ Unexposed	S1581154 Rev A
RS series with SLRS/SLFRS	23- 125	A60 Aluminum Bulkhead/Deck	88	Length: 35-65 Thickness: 4-6	All positions	S1581150 Rev A
RS series with SLFRS X	25- 125	A60 Steel Bulkhead/Deck	90	Length: 65 Thickness: 6	Exposed/ Unexposed	S1581291 Rev A
RS series with SLRS/SLFRS Including CLX cable	23- 644	A60 Steel Bulkhead/Deck	100	Length: 35-65 Thickness: 4-6	All positions	S1581292 Rev A
RS series with SLRS/SLFRS Including CLX cable	23- 644	A0 Steel Bulkhead/Deck	86	Length: 35-65 Thickness: 4-6	All positions	S1581293 Rev A
RS series with SLA	25-75	A60 Steel Bulkhead/Deck	32	Length: 77-124 Thickness: 4-6	Exposed/ Unexposed	S1581294 Rev A
RS series with SLA	25-75	A0 Steel Bulkhead/Deck	32	Length: 77-124 Thickness: 4-6	Exposed/ Unexposed	S1581295 Rev A
RS series with long sleeves	23- 664	A60 Steel Deck	90	Length 35-400 Thickness: 6	All positions	S1581298 Rev A
RS series with long sleeves	23- 664	A0 Steel Deck	90	Length 35-400 Thickness: 6	All positions	S1582128 Rev A
RS series with SLFRS X	25- 125	A0 Steel Bulkhead/Deck	90	Length: 65 Thickness: 6	Exposed/ Unexposed	S1582125 Rev A

The RS-seal can be installed into sleeves equal to Roxtec dimensions specified in drawing S1586454.

### 3.3 list of type test reports

No.	Test report no.	Division material	Division orientation	Fire rating	Test report date	Testing organization
1	RS-17/B-210/E	Aluminum	Deck	A60	2017-06-02	CTO, Gdansk, Poland
2	RS-17/B-555/E	Aluminum	Bulkhead	A60	2018-01-15	CTO, Gdansk, Poland
3	PGA11371A	Aluminum	Deck	A60	2019-02-20	DBI, Hvidovre, Denmark

4	RS-19/B-224/E	Aluminum	Deck	A60	2019-08-01	CTO, Gdansk, Poland
5	PGB10031A	Aluminum	Bulkhead	A60	2020-07-09	DBI, Hvidovre, Denmark
6	RS-20/B-410/E	Aluminum	Bulkhead	A60	2020-12-17	CTO, Gdansk, Poland
7	RS-21_B-189E	Aluminum	Bulkhead	A60	2021-06-04	CTO, Gdansk, Poland
8	PGA10800A	Steel	Deck	A60	2016-05-26	DBI, Hvidovre, Denmark
9	RS-22/B-153/E	Steel	Deck	A60	2022-05-04	CTO, Gdansk, Poland
10	PGA10871A	Steel	Deck	A60	2018-01-16	DBI, Hvidovre, Denmark
11	PGB10118A	Steel	Deck	A60	2021-11-15	DBI, Hvidovre, Denmark
12	RS-17/B-395/E	Steel	Deck	A60	2017-10-30	CTO, Gdansk, Poland
13	6P02249	Steel	Deck	A60	2016-08-17	SP, Borås, Sweden.
14	PGB10172A	Steel	Deck	A60	2022-06-17	DBI, Hvidovre, Denmark
15	PGA11611A	Steel	Deck	A60	2020-01-11	DBI, Hvidovre, Denmark
16	8P07092	Steel	Deck	A0	2020-01-16	SP, Borås, Sweden.
17	PGB10169A	Steel	Deck	A0	2022-03-18	DBI, Hvidovre, Denmark
18	PGA10723A	Steel	Deck	A0	2016-02-04	DBI, Hvidovre, Denmark
19	PGA11610A	Steel	Deck	A0	2020-01-10	DBI, Hvidovre, Denmark
20	PGA10870A	Steel	Bulkhead	A60	2016-12-13	DBI, Hvidovre, Denmark
21	6P10024	Steel	Bulkhead	A60	2017-03-07	SP, Borås, Sweden.
22	RS-20/B-017/E	Steel	Bulkhead	A60	2020-01-23	CTO, Gdansk, Poland
23	RS-20/B-191/E	Steel	Bulkhead	A60	2020-06-05	CTO, Gdansk, Poland
24	7P02024	Steel	Bulkhead	A60	2017-06-08	SP, Borås, Sweden.
25	RS-18/B-022/E	Steel	Bulkhead	A60	2018-01-29	CTO, Gdansk, Poland
26	RS-21/B-517/E	Steel	Bulkhead	A60	2021-12-15	CTO, Gdansk, Poland
27	RS-20/B-083/E	Steel	Bulkhead	A60	2020-04-20	CTO, Gdansk, Poland
28	8P07094	Steel	Bulkhead	A0	2020-01-16	SP, Borås, Sweden.
29	PGA10652	Steel	Bulkhead	A0	2015-07-03	DBI, Hvidovre, Denmark
30	RS-21/B-518/E	Steel	Bulkhead	A0	2021-12-15	CTO, Gdansk, Poland
31	RS-20/B-081/E	Steel	Bulkhead	A0	2020-03-31	CTO, Gdansk, Poland

### 3.4 Watertightness/gastightness test reports

No.	Test report no.	Testing organization	Test report date
1.	MLM 020133	DNV, Malmö, Sweden	2002-02-26
2.	MLM030473-1	DNV, Malmö, Sweden	2003-01-27
3.	N141EX8Z Rev. 2	DNV, Malmö, Sweden	2017-08-10
4.	N142G50V	DNV, Gothenburg, Sweden	2022-11-11

## 4. G series

### 4.1 Product specifications

“Roxtec sealing system with multidiameter™ technology: G-series (steel)” consisting of Roxtec G-series steel frames (G, GO and GHM) in sizes 1-8 and combinations thereof, bolted or welded to a steel section. The G frame is filled with Roxtec (standard or Ex, EMC of type PE, ES and BG, BGB) halogen free RM modules. Assembled with Roxtec wedge kit or Roxtec EMC wedge kit.

### 4.2 Application limitation

- Watertight bulkheads or decks are to be tested as per CCS Rules for Classification of Sea-going Steel Ships.
- When requested to be used in watertight bulkheads on passenger ships or special purpose ships, the penetration system has to comply with the requirements give in SOLAS Ch.11-1 Reg. 13.2.3 (2014 Consolidated Edition or latest issue).
- 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 1974 as amended.

G-series.

Application for cables in terms of deck and bulkhead.

Type & Size	Division	Max. cable diameter [mm]	Frame Length and thickness [mm]	Frame position	Frame insulation Drawing No.
G series in size 1-8 and combination thereof.	A60 Steel Bulkhead/Deck	88	Length: 60 Thickness: 6	All positions	S1582076 Rev A
G series in size 1-8 and combination thereof.	A0 Steel Bulkhead/Deck	88	Length: 60 Thickness: 6	All positions	S1582341 Rev A

### 4.3 list of type test reports

No.	Test report no.	Division material	Division orientation	Fire rating	Test report date	Testing organization
1	6P10022	Steel	Bulkhead	A60	2017-03-07	SP, Borås, Sweden.
2	RS-17/B-395/E	Steel	Bulkhead	A60	2017-10-30	CTO, Gdansk, Poland
3	RS-17/B-396/E	Steel	Deck	A60	2017-10-31	CTO, Gdansk, Poland
4	RS-18/B-181/E	Steel	Deck	A60	2018-05-07	CTO, Gdansk, Poland

### 4.4 Watertightness/gastightness test reports

No.	Test report no.	Testing organization	Test report date
1.	MLM 020106	DNV, Malmö, Sweden	2001-12-19
2.	MLM 020133	DNV, Malmö, Sweden	2002-02-26
3.	MLM 020401	DNV, Malmö, Sweden	2002-03-25

## 5. GK FS SK sealing kit

### 5.1 Product specifications

“GK FS SK sealing kit” consisting of a fiberglass cloth with built in heat activated intumescent material to be wrapped around cable bundles and fitted into circular or oval steel pipe sleeves. Folded back on each side with ends sealed off to create a cold smoke tight seal and secured by metal cable ties.

“GK FS SK sealing kit” is intended to be used for bundled cables or as a blank fire stop solution. The installation shall be made in symmetrically welded or bolted pipe sleeves.

### 5.2 Application limitation

- The systems must not be installed in bulkheads and decks if water or gas tightness is required.
- The weight of the cables must be supported on both sides of the GK Fire stop Sealing Kit.
- The sleeve size,  $\emptyset$  or  $\emptyset \times L$  (mm):

Round: 89-273mm; Oval: 200x150, 200x170, 250x170 and 2x(250x170) mm

Application for cables in terms of deck and bulkhead.

Type	Division	Max. cable diameter [mm]	Sleeve Length and thickness [mm]	Sleeve position	Sleeve insulation Drawing No.
GK FS SK in round and oval sizes.	A60 Steel Deck	100	Length: 105-205 Thickness: $\geq 3$	Symmetric	S1581191 Rev A
GK FS SK in round and oval sizes.	A0 Steel Deck	100	Length: 105-205 Thickness: $\geq 3$	Symmetric	S1581271 Rev A
GK FS SK in round and oval sizes.	A0 Steel Bulkhead	100	Length: 105-205 Thickness: $\geq 3$	Symmetric	S1581276 Rev A
GK FS SK in round and oval sizes.	A60 Steel Bulkhead	100	Length: 105-205 Thickness: $\geq 3$	Symmetric	S1581277 Rev A
GK FS SK in round and oval sizes.	A60 Aluminum Bulkhead	50	Length: 105-205 Thickness: $\geq 3$	Symmetric	S1581194 Rev A
GK FS SK in round and oval sizes.	A60 Aluminum Deck	50	Length: 105-205 Thickness: $\geq 3$	Symmetric	S1581829 Rev A

### 5.3 list of type test reports

No.	Test report no.	Division material	Division orientation	Fire rating	Test report date	Testing organization
1	PGB10016A	Aluminum	Deck	A60	2020-06-03	DBI, Hvidovre, Denmark
2	RS-20/B-082/E	Aluminum	Bulkhead	A60	2020-04-21	CTO, Gdansk, Poland
3	RS_19_B_225_E	Steel	Deck	A60	2019-08-01	CTO, Gdansk, Poland
4	RS-19/B-256/E	Steel	Deck	A60	2019-08-20	CTO, Gdansk, Poland
5	PGB10118A	Steel	Deck	A60	2021-11-15	DBI, Hvidovre, Denmark
6	PGB10172A	Steel	Deck	A60	2022-06-17	DBI, Hvidovre, Denmark
7	PGB10112A	Steel	Bulkhead	A60	2021-09-20	DBI, Hvidovre, Denmark
8	RS-19/B-355/E	Steel	Bulkhead	A60	2019-10-16	CTO, Gdansk, Poland
9	RS-19/B-255/E	Steel	Bulkhead	A60	2019-08-20	CTO, Gdansk, Poland
10	8P07092	Steel	Deck	A0	2020-01-16	SP, Borås, Sweden.
11	PGA11610A	Steel	Deck	A0	2020-01-10	DBI, Hvidovre, Denmark
12	PGB10119A	Steel	Deck	A0	2021-11-15	DBI, Hvidovre, Denmark
13	8P07094	Steel	Bulkhead	A0	2020-01-16	SP, Borås, Sweden.
14	PGA11387A	Steel	Bulkhead	A0	2019-07-05	DBI, Hvidovre, Denmark
15	RS-19/B-423/E	Steel	Bulkhead	A0	2019-11-19	CTO, Gdansk, Poland
16	RS-20/B-081/E	Steel	Bulkhead	A0	2020-03-31	CTO, Gdansk, Poland
17	RS-21_B-240E	Steel	Bulkhead	A0	2021-06-30	CTO, Gdansk, Poland