

# TYPE APPROVAL CERTIFICATE

Certificate no.:  
**TAF00001AZ**  
Revision No:  
**1**

## This is to certify:

that the **Class A and B Penetration**

with type designation(s)

**GK Packing System - with fix diameter sealing technology: SPK and RM series (for aluminium divisions)**

issued to

**Roxtec GmbH**  
**Hamburg, Germany**

is found to comply with

**DNV rules for classification – Ships**

**DNV offshore standards**

**DNV class programme DNV-CP-0165 – Type approval – Cable and pipe penetrations**

## Application:

**Penetrations through "A" class divisions for pipes.**

**Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.**

Issued at **Hamburg** on **2024-09-09**

This Certificate is valid until **2029-09-08**.

DNV local unit: **Hamburg – CMC North/East**

Approval Engineer: **Hagen Markus**

for **DNV**



Digitally Signed By:  
Sven Klinger  
Location: DNV Hamburg,  
Germany

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.

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## Product description

GK sealing system consisting of rectangular or circular shaped metal frame filled with halogen-free sealing modules with fix-diameter technology for pipe transits A-60 class aluminium bulkhead and deck divisions.

### Rectangular shape

**SPK Series (SPK, SPKh)** consisting of a rectangular shaped metal frame with outside radii 10-100mm, available in nominal sizes 2-8 and chamber-width(s) 60 up to 180mm.

Frames available as single-chamber or multi-chamber variants with or without flange and are either welded or bolted to the metal division. The frames are filled with standard sealing modules, filling modules, stay-plates (plastic or metal), accessories and a wedge seal, which compresses the complete sealing arrangement inside the metal frame, thus closing the pipe transit with its intended properties. Standard system depth is 60mm.

### Circular shape

**RM Series (SLRM, SLRM-RED, RM)** consisting of a metal sleeve with an elastomer RM-Frame insert, which provides a square packing space and an incorporated compression function.

Sleeves with RM-Frame are available in nominal sizes 50-200 (SLRM-RED 50 up to size 100) and are either welded or bolted to the steel division.

The square packing space is filled with standard fix-diameter sealing modules and filling modules and is compressed using the incorporated compression mechanism, thus closing the pipe transit with its intended properties. Standard system depth is 60mm.

GK Sealing System	Frame Type <sup>1,2</sup>	Frame Sizes	Fixing Method
GK-Type SPK (rectangular shape) Outside radii R=10 - 100mm	SPK SPK-R SPK-S30 SPK-S50	Single and group frames in nominal sizes 2, 4, 6 and 8, with chamber width(s) of 60mm and 120mm. Frames with or without flange in different combinations incl. Back-to-Back <sup>2</sup>	Welded or bolted (flange only)
GK-Type SPKh (rectangular shape) Outside radii R=70 – 100mm	SPKh-120 SPKh-180	Single frames in nominal sizes 2, 4, 6 and 8 with chamber width(s) of 120mm and 180mm. Frames available with or without flange incl. Back-to-Back <sup>2</sup>	Welded or bolted (flange only)
GK-Type RM (circular shape)	SLRM	Sleeves with RM-Frame in nominal sizes 50, 70, 100, 125, 150 and 200, with or without flange incl. Back-to-Back <sup>2</sup>	Welded or bolted (flange only)
GK-Type SLRM-RED (circular shape)	SLRM-RED	Reduced sleeves with RM-Frame in nominal sizes 50, 70, 100 for reduced cutout dimension and retrofit installations	Welded or bolted

#### Notes

<sup>1</sup> Empty frame types SPK, SPK-F, SPK-S30, SPK-S50, SPK-F-R intended to be installed in non-watertight bulkhead or decks may be closed by using blank covers of type GK-BD.

<sup>2</sup> Recommended test procedures see Doc. GK20231114001

### Penetration sleeve GK-Type RM

Minimum sleeves length and wall thickness: Standard System L ≥ 65mm and S ≥ 4mm.

### Approved Packing Modules

Halogen-free fix diameter modules (Standard 3-Rib, green color), filling modules and accessories.

Frames GK-Type "SPK" may also be fitted with Roxtec RM modules (blue) with Multidiameter™, accessory modules, compressions system and stay plates, however mixing of GK-components and Roxtec-Modules in one opening is not permitted.

#### Approved Maximum Frame Group Sizes

GK-Packing System	Fire Rating	Maximum Combination Frame Size
GK-Type "SPK"	A-0 Aluminium Bulkhead	8x4
	A-0 Aluminium Deck	8x4
	A-60 Aluminium Bulkhead	8x4
	A-60 Aluminium Deck	8x4

## Application/Limitation

Approved for use as pipe penetration system in class A-60 steel bulkheads and decks, general application.

For A-0, A-15 and A-30 applications, the penetration shall be insulated as for A-60 and the division is to be fitted with A-60 insulation for a minimum distance of 200 mm around the penetration  
 Other applications are subject to case-by-case approval.

The sealing system insulation material shall be approved according to the Marine Equipment Directive, bearing the Mark of Conformity.

Minimum Filling Rate 0%: no pipe installed - all modules are empty.  
 Maximum Filling Rate 100%: multiple pipes installed - pipe installed in every module.

## Size range media pipe

Pipe material	Outer diameter	Frame types
Carbon, Stainless Steel and Copper	6 - 108mm	Rectangular, Circular
	6 - 51	SLRM-Red
Bundle tubes	max. 29mm	Rectangular

## Water - and Gas tightness

GK Packing System	Water Pressure		Gas Pressure (air)	
	Tested	Approved	Tested	Approved
GK-SPK (with metal stay-plates)	3.8 bar	2.5 bar	0.3 bar	0.2 bar
GK-RM, size 50 up to size 150	3.0 bar	2.0 bar	0.3 bar	0.2 bar
GK-RM, size 200	2.0 bar	1.3 bar	0.3 bar	0.2bar

## Water tightness – special cases

### Penetrations with heat-sensitive materials in SPS and passenger ships

The GK Packing System is not tested regarding the requirements given in SOLAS Ch. II-1 Reg. 13.2.3 (combined fire and water tightness test, 2014 issue).

### Penetration of tank boundaries

Penetration systems are generally not to be used for penetrating boundaries of tanks.  
 When a penetration system is requested for penetrating tanks, an approval may be given on a case by case basis.

Refer to DNV CP-0165, Sec. 2 - Ch.5 Watertightness and gas tightness – special cases

## GK Packing System - Installation

The installation and insulation of the GK-Packing System is to be carried out according to the following manufacturer`s instructions, actual versions apply.

## Welding and mounting instructions

- GK-WELD-RECOMMANDATION\_ST-AL\_SEP2019 (or newer)
- GK-INSTRUCTION\_SPK\_JAN2020 (or newer)
- GK-INSTRUCTION\_RM\_JAN2020 (or newer)
- GK-INSTRUCTION\_BD\_SPK\_JUN2024 (or newer)
- GK-TEST\_RECOMMENDATION\_SPK-BTB\_NOV2023 (or newer)

Penetrations through structural divisions should not impair the structural strength of the division.  
 Special consideration should be given to bulkheads and decks with high stress locations.  
 Reference IMO MSC.1/Circ.1488, where relevant.

Each pipe penetration system is to be supplied with its actual manual for installation and use.

### Insulation instructions

Drawing Title	Drawing	Transit
Steel Pipe Rectangular A-60 Alu B & D	Z2019009	Rectangular
Steel Pipe Circular A-60 Alu B & D	Z2019010	Circular
Copper Pipe Rectangular A-60 Alu B & D	Z2019011	Rectangular
Copper Pipe Circular A-60 Alu B & D	Z2019012	Circular
Blind Cover BD Rectangular A-60 Alu B & D	Z2019020	Rectangular
Routing Combination Frames A-60 Alu B & D	Z2019031	Rectangular
Routing BTB Frames A-Class Alu B & D	Z2019033	Rectangular / Circular

### Tests carried out

- Fire tests according to IMO Res.MSC.307(88)-(2010 FTP Code).
- IMO MSC.1/Circ.1488
- Pressure tests according to DNV CP-0165, Sec. 2 - Ch.4 Water tightness and gas tightness.

### Type Approval documentation

TAF00001AZ, Rev. 1

Work scope: Standard renewal, editorial update

Documents included

- GK-TEST-RECOMMENDATION\_SPK\_BT B, Doc. GK20231114001, date November 2023
- GK-INSTRUCTION Blind cover\_BD\_SPK, date June 2024

TAF00001AZ

Refer to job 262.1-031421-1

### Marking of product

Scope	Examples	
	Packaging unit – Modules	Frames
Manufacturer name	Roxtec GmbH	Roxtec GmbH
Type designation	GK Packing System FM-30/00 HF	GK Marine Packing System SPK-S50-6x2/1.0570-Sigmaweld
Fire Rating	A0, A15, A30, A60	A0, A60

### Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment to verify that the conditions for the Type Approval are complied with. Refer to the Class Programme DNV-CP-0338, Section 4.

To check the validity of this certificate, please look it up in <https://approvalfinder.dnv.com>

### End of certificate