

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

with type designation(s)

GK Packing System - GK-SPK, GK-SPKh, GK-EMC-SPR, GK-RM and GK-EMC-RM

Issued to

**Roxtec GmbH
Hamburg, Germany**

is found to comply with

DNV GL rules for classification – Ships**DNV GL offshore standards****DNV GL class programme DNVGL-CP-0165 – Type approval – Cable and pipe penetrations****Application :****Approved for use as cable penetration system for ship cables in class A-60 and A-0 steel bulkheads and decks.****For further details see Application/Limitations on page 3 of this certificate.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Hamburg** on **2019-09-27**for **DNV GL**This Certificate is valid until **2024-09-26**.DNV GL local station: **Hamburg**Approval Engineer: **Carsten Hunsalz****Arne Schaarmann
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

GK Packing System for cable- transits in A-0 and A-60 Class STEEL Bulkheads and Decks

GK-SPK/ SPKh system consisting of rectangular shaped frames, compression-wedge, standard modular cable and/or filling modules, accessories and metal/plastic anchor plates. GK-EMC-SPR system consisting of frame with compression-screw, EMC modular cable and/or filling modules, accessories and metal anchor plates. Module System length: GK-SPK/ SPKh is 60mm; GK-EMC-SPR is 80mm.

GK-RM and GK-EMC-RM system consisting of circular sleeves, Round Module type RM (Halogen-free and green) with square packing space including compression function and modular cable and/or filling modules. Module System length: GK-RM is 60mm; GK-EMC-RM is 80mm.

Approved Frame Types

GK Packing System	Frame Type	Frame Sizes	Fixing Method
GK-SPK (rectangular shape)	SPK	single and group frames in nominal sizes 2, 4, 6 and 8 with chamber width(s) of 60mm, and 120mm. Frames available in different combinations incl. Back to-Back.	welded
	SPK-F		bolted+welded
	SPK-S30		welded
	SPK-S50		welded
	SPK-F-R		bolted+welded
	SPK-BTB		welded
GK-SPKh (oval shape)	SPKh-120 SPKh-180	single frames in nominal sizes 2, 4, 6 and 8 with chamber width(s) of 120mm and 180mm incl. Back to-Back.	welded
GK-EMC-SPR (rectangular shape)	EMC-SPR	single and group frames in nominal sizes 2, 4, 6 and 8 with chamber width(s) of 60mm, and 120mm. Frames available in different combinations incl. Back-to-Back	welded
	EMC-SPR-S50		welded
	EMC-SPR-50		welded
	EMC-SPR-F		bolted+welded
GK-RM GK-EMC-RM (circular shape)	SLRM	nominal sizes 50, 70, 100, 125, 150 and 200. incl. Back-to-Back	welded
	SLRM-F		bolted+welded
	SLRM-BTB		welded
	EMC-SLRM		welded
	EMC-SLRM-F		bolted+welded
	EMC-SLRM-BTB		welded
	SLRM-RED	nominal sizes 50, 70 and 100.	bolted+welded

Approved Blank Covers

Frame types SPK, SPK-F, SPK-S30, SPK-S50 and SPK-F-R can be closed using blank covers of type GK-BD when empty in non-watertight bulkhead and deck applications.

Approved Packing Modules

Halogen-free (green) cable modules, filling modules and accessories (Standard 3-Rib or EMC). GK-SPK-Frames may also be fitted with Roxtec international (blue) modules, compressions system and stay plates, however mixing of GK-components and Roxtec-Modules in one opening is not permitted.

Approved Maximum Frame Sizes

GK-Packing System	Fire Rating	Maximum Combination Frame Size
GK-SPK	A-0 Steel Bulkhead	SPK-8+8x3
	A-0 Steel Deck	SPK-8+8x3
	A-60 Steel Bulkhead	SPK-8+8x10
	A-60 Steel Deck	SPK-8+8x6
GK-EMC-SPR	A-0 Steel Bulkhead	EMC-SPR-8+8x3
	A-0 Steel Deck	EMC-SPR-8+8x3
	A-60 Steel Bulkhead	EMC-SPR-8+8x10
	A-60 Steel Deck	EMC-SPR-8+8x6
GK-RM GK-EMC-RM	A-0 Steel Bulkhead	SLRM 200
	A-0 Steel Deck	SLRM 200
	A-60 Steel Bulkhead	SLRM 200
	A-60 Steel Deck	SLRM 200

The minimum length and wall thickness for sleeves used for GK-RM Packing System is:

length: min. 65mm / thickness: min. 4mm

The minimum length and wall thickness for sleeves used for GK-EMC-RM Packing System is:

length: min. 85mm / thickness: min. 4mm

Application/Limitation

Approved for use as cable penetration system in class A-0 (in most cases without insulation) and A-60 steel bulkheads and decks. Approved for use in A-15 and A-30 division, the penetration system is to be insulated as for class A-60, and in addition the division shall be insulated at least 200 mm around the penetration. Other applications are subject to case-by-case approval.

The insulation material shall be of approved type.

Approved for air tightness

GK-SPK (with metal stay-plates) and GK-EMC-SPR (with metal stay-plates) and GK-RM as well as GK-EMC-RM up to a design pressure of 0.02 MPa (0.2 bar), test pressure - 0.03 MPa (0.3bar)

Approved for water tightness

GK-SPK (with metal stay-plates) and GK-EMC-SPR (with metal stay-plates) up to a design pressure of 0.25 MPa (2.5 bar), test pressure - 0.38 MPa (3.8 bar)

GK-RM and GK-EMC-RM size 50 - 150 up to a design pressure of 0.2 MPa (2 bar), test pressure - 0.3 MPa (3 bar)

GK-RM and GK-EMC-RM size 200 up to a design pressure of 0.13 MPa (1.3 bar), test pressure - 0.2 MPa (2 bar)

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

Approved for maximum diameter: Cables 88 mm, metal bundle pipes 29 mm.
Penetration systems are not to be used for penetrating boundaries of tanks, the use in dry void spaces is applicable.

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

Installation of all GK Packing Systems components is to be done in accordance with actual version of manufacturer's welding, mounting and insulation instructions listed below.

Type Approval documentation

Test Reports Fire Class:

DMT-DO-53-099 dated 2019-01-24, DMT-DO-53-100 dated 2019-01-24, DMT-DO-53-103 dated 2019-02-27, DMT-DO-53-104 dated 2019-02-26, DMT-DO-53-110 dated 2019-03-27, DMT-DO-53-111 dated 2019-03-27, DMT-DO-53-112 dated 2019-05-22,

PGA10517 dated 2014-11-20, PGA10518 dated 2014-11-20, PGA10568 dated 2015-03-04, PGA10569 dated 2015-03-04, PGA11387A dated 2019-07-05, PGA11388A dated 2019-08-14

RS-19/B-017/E dated 2019-05-27, RS-19/B-018/E dated 2019-06-17, RS-19/B-019/E dated 2019-05-27, RS-19/B-020/E dated 2019-05-27, RS-19/B-224/E dated 2019-08-01, RS-19/B-225/E dated 2019-08-01,

GV 09/6415 dated 2009-06-15, GV05/4113.1 dated 2005-02-11, GV05/4113.2 dated 2005-02-11, GV05/4237.1 dated 2005-04-28, 4P06068 dated 2015-01-17, 4P00572 dated 2014-05-06, 4P00576 dated 2014-05-07, 4P07023 dated 2015-02-04, N141TXUX dated 2019-07-05, N141UMGR dated 2019-07-16, N141UMHA dated 2019-07-16,

Installation

The installation and insulation of the GK-Packing System is to be carried out according to the following manufacturer's welding, mounting and insulation instructions:

Welding & Mounting Instructions

GK_Welding_Instruction_Steel&Alu, from October 2018 or newer
GK_SPK_Mounting_Instruction, from August 2018 or newer
GK_RM_Mounting_Instruction, from February 2016 or newer
GK_EMV-SPR-RM_Mounting_Instruction, from January 2015 or newer

Insulation Instruction

Drawing Titel	Drawing Number	Transit
Cable Rectangular A-60 Steel B & D	Z2019001, Rev. A or newer	Rectangular
Cable Circular A-60 Steel B & D	Z2019002, Rev. A or newer	Circular
Cable Rectangular A-0 Steel B & D	Z2019016, Rev. A or newer	Rectangular
Cable Circular A-0 Steel B & D	Z2019017, Rev. A or newer	Circular
Cable Circular SLRM-RED A-0 Steel B & D	Z2019018, Rev. A or newer	Circular
Blind Cover BD Rectangular A-60 Steel B & D	Z2019019, Rev. A or newer	Rectangular
Routing Combination Frames A-60 Steel B & D	Z2019030, Rev. A or newer	Rectangular/Circular
Routing BTB Frames A-Class Steel B & D	Z2019032, Rev. A or newer	Rectangular/Circular



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Pressure tests: Documents no. GK 20190815 dated 2019-08-15, GK 20190730 dated 2019-07-30, GK 20190606 dated 2019-06-06, GK 20190526 dated 2019-05-16, GK 20190424 dated 2019-04-24, HBG 0200283-1

Tests carried out

Fire Test acc. 2010 FTP Code, Annex 1: Part 3, IMO Resolution MSC.307(88)
Pressure tests according to DNVGL-CP-0165 Sec. 2 Ch. 4.

Marking of product

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

Periodical assessment

DNV GL'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 DNVGL-CP-0338 Section 4.