

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED), issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Authority. This Certificate is issued by DNV GL AS under the authority of the Government of Norway.

This is to certify:

That the Penetrations through "A" class divisions: electric cable transits

with type designation(s)

A-0 Class cable penetrations through rectangular sleeve with GPG Marine Mortar sealing

Issued to

Firesafe Energy AS
Lørenskog, Norway

is found to comply with the requirements in the following Regulations/Standards:
Regulation **(EU) 2018/773**,
item No. MED/3.26a. SOLAS 74 as amended, Regulation II-2/9 and IMO 2010 FTP Code

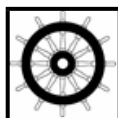
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2024-04-25**.

Issued at **Høvik** on **2019-04-26**

DNV GL local station:
Oslo Maritime and CAP

Approval Engineer:
Tessa Bieber



Notified Body
No.: **0575**

for **DNV GL AS**

Roald Vårheim
Head of Notified Body

A U.S. Coast Guard approval number will be assigned to the equipment when the production module has been completed and will appear on the production module certificate (module D, E or F), as allowed by the "Agreement between the United States of America and the EEA EFTA states on the mutual recognition of Certificates of Conformity for Marine Equipment" signed 17 October 2005.

The mark of conformity may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-surveillance module (D, E or F) of Annex B of the MED is fully complied with and controlled by a written inspection agreement with a Notified Body. The product liability rests with the manufacturer or his representative in accordance with Directive 2014/90/EU.

This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV GL AS of any changes to the approved equipment. This certificate remains valid unless suspended, withdrawn, recalled or cancelled.

Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply.



Product description

'A-0 Class cable penetrations through rectangular sleeve with GPG Marine Mortar sealing system'

Penetration composed of a 10 mm thick rectangular steel sleeve symmetrically welded to steel bulkhead/deck.

All deck and bulkhead penetrations are sealed with GPG Marine Mortar (GPGM Mortar) which is a powder mainly consisting of plaster, perlite and glass fibre. To be mixed with water to obtain desired consistency (see datasheet for correct mixing ration depending on application). The density of GPGM Mortar is 701 kg/m³.

See below table for penetration details:

Name	Sleeve length [mm]	Outer Sleeve Dimensions (w x l) [mm]	Filling	Use	Sleeve insulation	Remarks
OPH1	60	1020 x 70	Empty, but totally filled with GPGM Mortar	bulkhead	none	20 mm additional GPGM Mortar on both sleeve ends
OPV1	60	70 x 1020	Empty, but totally filled with GPGM Mortar	bulkhead	none	20 mm additional GPGM Mortar on both sleeve ends
CG42 CG44 CG46	60-90	240 x 532	Multi cable : Max. Ø52 mm	deck	None	- 20 mm additional GPGM Mortar on top of upper sleeve end - distance between cables is 16 mm in vertical direction - Max filling grade 35%
CG46	60	240 x 532	Empty, but totally filled with GPGM Mortar	deck	none	20 mm additional GPGM Mortar on top of upper sleeve end
CG70 CG71	60	240 x 532	Multi cable: Max. Ø52 mm AND Cable conduits: 4 cable conduits with length 330 mm (2 x Ø76 mm, Ø51 mm, Ø32 mm)	bulkhead	None	- 20 mm additional GPGM Mortar on both sleeve sides - distance between cables is 16 mm in vertical direction - distance between conduits is 25 mm in both horizontal and vertical direction - Max. filling grade 28%
CG71	60	240 x 532	Empty, but totally filled with GPGM Mortar	bulkhead	none	20 mm additional GPGM Mortar on both sleeve ends
CG71 CG74	60	240 x 532	2 x cable bundle Ø90 mm with cables of Ø10 mm	bulkhead	none	- 20 mm additional GPGM Mortar on both sleeve ends - Firesafe FT graphite 10 mm width and 25 mm depth is applied around each cable bundle - Distance between cable bundels is 76 in vertical direction - Max. filling grade 28%

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Certificate No: **MEDB00004W8**

CG83	90	240 x 532	Empty, but totally filled with GPGM Mortar	bulkhead	none	20mm additional GPGM Mortar on both sleeve ends
CG83 CG85	90	240 x 532	Multi cable: Max. Ø52 mm AND Cable conduits: 4 cable conduits with length 330 mm (2 x Ø76 mm, Ø51 mm, Ø32 mm)	bulkhead	none	- 20 mm additional GPGM Mortar on both sleeve ends - distance between cables is 16 mm in vertical direction - distance between conduits is 25 mm in both horizontal and vertical direction - Max. filling grade 28%

For further details see drawings in the test reports listed under Type Examination documentation below.

Application/Limitation

Approved for use as cable penetration system in A-0 steel bulkheads/decks. Other applications are subject to case-by-case approval.

Watertightness and gastightness is not covered in this certificate.

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

Type Examination documentation

Test report Nos.:

- 150072-06A (A-0, steel deck) dated 2017-12-18
- 150072-08A (A-0, steel bulkhead) dated 2018-09-14
- 150072-08B (A-0, steel bulkhead) dated 2018-09-14

All from RISE, Trondheim, Norway.

Tests carried out

Tested in according to IMO 2010 FTP Code part 3.

Marking of product

The product or packing is to be marked with name and address of manufacturer, type designation, fire-technical rating, MED Mark of Conformity and USCG approval number if applicable (see first page).