DNV·GL

Certificate No:
TAF000014B

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Class A and B Penetration

with type designation(s)
A-60 Class cable pentration through rectangular sleeve with GPG Marine Mortar sealing system

Issued to
Firesafe Energy AS
Lørenskog, Norway

is found to comply with
DNV GL rules for classification – Ships
DNV GL offshore standards
DNV GL statutory interpretations DNVGL-SI-0364 – SOLAS interpretations

Application :

Approved for use as cable penetration system in A-60 in steel bulkheads/decks.

This certificate is recognized by Transport Canada.

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

Issued at **Høvik** on **2019-04-26**
This Certificate is valid until **2024-04-25**.
DNV GL local station: **Oslo Maritime and CAP**

Approval Engineer: **Tessa Biever**

for **DNV GL**

Mårten Schei-Nilsson
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.

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Product description

'A-60 Class cable pentrations 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.

The 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 data sheet for correct mixing ration for application). The density of GPGM Mortar is 701 kg/m^3.

See below table for penetration details:

Name	Sleeve length [mm]	Outer Sleeve Dimensions (w x l) [mm]	Filling	Use	Sleeve Insulation	Remarks
CG31 CG33 CG35 CG38	60-120	532 x 240	Multi cable : Ø10 - Ø52 mm	deck	Partialy insulated with approved A-60 insulation	- 20 mm additional GPGM Mortar on top of upper sleeve end - Distance between cables is 16 mm in horizontal direction - Max. filling grade 35 %
CG31 CG38	60	532 x 240	Multi cable : Max. Ø52 mm	deck	Partialy insulated with approved A-60 insulation	- 20 mm additional GPGM Mortar on top of upper sleeve end - Distance between cables is 16 mm in horizontal direction - Max. filling grade 35 %
CG38	60	532 x 240	Empty – total sleeve filled with GPGM	deck	Partialy insulated with approved A-60 insulation	20 mm additional GPGM Mortar on top of upper sleeve end
CG38 CG39	60	532 x 240	Max. 2 x cable bundle Ø120 mm with 100 cables of Ø10 mm	deck	Partialy insulated with approved A-60 insulation	- 20 mm additional GPGM Mortar on top of upper sleeve end - Firesafe FT graphite 10 mm width and 10 mm depth is applied around the cable bundles - Max. filling grade 14 %
CG75	60	240 x 532	Empty – total sleeve filled with GPGM	bulkhead	Partialy insulated with approved A-60 insulation	20mm additional GPGM Mortar on both sleeve ends
CG75 CG76	60	240 x 532	multiple cable: Max. Ø52 mm AND: 4 cable steel conduits with length 330 mm (2 x Ø76 mm, Ø51 mm, Ø32 mm) Filled with cables Ø10mm	bulkhead	Partialy insulated with approved A-60 insulation	- 20mm additional GPGM Mortar on both sleeve ends - intumescent material in cable conduits is Intumex L - Max. filling grade 28% incl. cable conduits

CG75 CG77	60	240 x 532	2 x cable bundle Ø120 mm with cables of Ø10 mm	bulkhead	Partialy insulated with approved A-60 insulation	- 20mm additional GPGM Mortar on both sleeve ends - 130 mm between the bundles - Firesafe FT graphite 10 mm width and 25 mm depth is applied around the cable bundles - Max. filling grade 28% incl. cable conduits
CG81 CG86	90	240 x 532	multiple cable: Max. Ø52 mm AND: 4 cable steel conduits with length 330 mm (2 x Ø76 mm, Ø51 mm, Ø32 mm) Filled withcables Ø10 mm	bulkhead	Partialy insulated with approved A-60 insulation	- 20mm additional GPGM Mortar on both sleeve ends - intumescent material in cable conduits is Intumex L - Distance between cables is 16 mm in horizontal direction - Distance between conduits is 25 mm in both horizontal and vertical direction - Max. filling grade 28% incl. cable conduit
CG86	90	532 x 240	Empty – total sleeve filled with GPGM	bulkhead	Partialy insulated with approved A-60 insulation	20mm additional GPGM Mortar on both sleeve ends

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

Application/Limitation

Approved for use as cable penetration system in A-60 steel bulkheads/decks. Other applications are subject to case-by-case approval.

Approved for use in class A-0, A-15 and A-30 when the penetration system is insulated as A-60 and in addition the division is to be insulated with A-60 insulation at least 200 mm around the penetration.

The insulation material used has to be type approved.

Watertightness and gastightness is not covered in this certificate.

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

Type Approval documentation

Certification in accordance with Class Programme DNVGL-CP-0338, September 2018.

Test report Nos.:
- 150072-06A (A-60, steel deck)
- 150072-08B (A-60, steel bulkhead)
- Technical Assessment report 150101-34 dated 2018-02-22 (CG-39 classified as A-60 penetration)

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 of manufacturer, type designation and fire technical rating.

Transport Canada Approval

Based on the procedures laid down in the Transport Canada Publication entitled "Approval Procedures for, Life Saving Equipment and Structural Fire Protection Products (TP 14612)", DNV GL confirms that the product/s listed in this certificate is/are in accordance with Transport Canada's requirements.

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 Class Programme DNVGL-CP-0338, Section 4.