

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)

KVM SEALING COMPOUND WITH MANGANA RETAINING COMPOUND

Issued to

Daemmstoff Industrie Korea Ltd.
Busan, Republic of Korea

is found to comply with the requirements in the following Regulations/Standards:

Regulation **(EU) 2019/1397,**

item No. MED/3.26a. SOLAS 74 as amended, Regulation II-2/9, IMO 2010 FTP Code and IMO MSC.1/1488

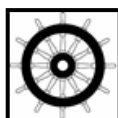
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2024-11-30.**

Issued at **Høvik** on **2019-12-01**

DNV GL local station:
Gimhae Station

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 This certificate remains valid unless suspended, withdrawn, recalled or cancelled.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

"KVM SEALING COMPOUND WITH MANGANA RETAINING COMPOUND"

Is a single cable, multi cable or multi core cable penetration system composed of a 160 mm long steel sleeve symmetrically fitted in steel bulkhead/deck.

For deck applications the sleeve is filled with min. 140 mm KVM Sealing Compound in the upper part and min. 20 mm Mangana Retaining Compound in the lower end.

For bulkhead applications the sleeve is filled with min. 120 mm KVM Sealing Compound and min. 20 mm Mangana Retaining Compound on each end.

The penetration sleeve is welded to the steel bulkhead/deck.

See below table 1 (deck) and table 2 (bulkhead) for penetration details.

Table 1: Penetration details for deck:

Fire rating	Outer Sleeve Dimensions (w x l) [mm]	Sleeve thickness [mm]	Filling* [%]	Max. cable Ø [mm]	Sleeve Insulation**
A-0	100 x 100 - 700 x 300	4.5	0.1 – 37.6	84	none
A-0	Ø50 - Ø350	3.9 – 11.1	0.2 – 39.8	49.6	none
A-60	100 x 100 - 700 x 300	4.5	0.1 – 37.5	84	Partially with A-60 insulation
A-60	Ø50 - Ø350	3.9 – 11.1	0.1 – 37.1	49.6	Partially with A-60 insulation
A-0	100 x 100 - 360 x 200	4.5	0.2 – 26.2	33***	none
A-0	Ø50 - Ø200	3.9 – 8.2	0.4 – 25.5	33***	none
A-60	100 x 100 - 360 x 200	4.5	0.2 – 26.2	33***	Partially with A-60 insulation
A-60	Ø50 - Ø200	3.9 – 8.2	0.4 – 28.2	33***	Partially with A-60 insulation

*Minimum distance between the cables and between the cables and the coaming is 4 mm.

** Underside of deck

*** Multicore cables

Table 2: Penetration details for bulkhead:

Fire rating	Outer Sleeve Dimensions (w x l) [mm]	Sleeve thickness [mm]	Filling* [%]	Max. cable Ø [mm]	Sleeve Insulation
A-0	100 x 100 - 700 x 300	4.5	0.1 – 37.1	84	none
A-0	Ø50 - Ø350	3.9 – 11.1	0.2 – 39.8	49.6	none

A-60	100 x 100 - 700 x 300	4.5	0.1 – 37.8	84	Fully with A-60 insulation
A-60	Ø50 - Ø350	4.5 – 7.9	0.1 – 37	44.5	Fully with A-60 insulation
A-0	100 x 100 - 360 x 200	4.5	0.2 – 26.2	33**	none
A-0	Ø50 - Ø200	3.9 – 8.2	0.4 – 28.2	33**	none
A-60	100 x 100 - 360 x 200	4.5	0.2 – 25.4	33**	Fully with A-60 insulation
A-60	Ø50 - Ø200	3.9 – 5.8	0.4 – 28.2	33**	Fully with A-60 insulation

* Minimum distance between the cables and between the cables and the coaming is 4 mm.

** Multicore cables

Application/Limitation

Approved for use as penetration system in Class A-0 to A-60 in steel bulkheads/decks.

For A-15 and A-30 the penetration is to be insulated as A-60, and in addition the division is to be insulated at least 200 mm around the penetration. Other applications are subject to case-by-case approval.

The insulation material used has to be approved according to the Marine Equipment Directive and bear the Mark of Conformity.

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

Type Examination documentation

Basis for approval:

Test report nos. :

- AK2013-0385 dated 2013-12-11 from FILK, Korea (A-0 deck)
- KOMERI-0402-18T1906 dated 2018-06-20 from KOMERI, Korea (A-0 deck)
- KOMERI-0402-17T2668 dated 2019-03-12 from KOMERI, Korea (A0-deck)
- AK2013-0384 dated 2013-12-11 from FILK, Korea (A0 bulkhead)
- KOMERI-0402-17T2669 dated 2017-12-20 from KOMERI, Korea (A0 bulkhead)
- KOMERI-0402-18T1907 dated 2018-06-20 from KOMERI, Korea (A0 deck)
- KOMERI-0402-17T2968 dated 2019-03-13 from KOMERI, Korea (A0 deck)
- KOMERI-0402-17T2969 dated 2017-12-20 from KOMERI, Korea (A0 bulkhead)
- AK2013-0389 dated 2014-01-08 from FILK, Korea (A-60 deck)
- KOMERI-0402-17T3356 dated 2017-12-20 from KOMERI, Korea (A60 deck)
- AK2013-0388 dated 2014-01-08 from FILK, Korea (A-60 bulkhead)
- KOMERI-0402-18T4191 dated 2019-03-14 from KOMERI, Korea (A60 bulkhead)
- KOMERI-0402-18T4190 dated 2019-03-14 from KOMERI, Korea (A60 bulkhead)
- AK2013-0450 dated 2014-04-09 from FILK, Korea (A-60 bulkhead)
- KOMERI-0402-18T1908 dated 2019-03-13 from KOMERI, Korea (A60 bulkhead)
- KOMERI-0402-19T0157 dated 2019-03-14 from KOMERI, Korea (A60 bulkhead)
- KOMERI-0402-17T3362 dated 2017-12-20 from KOMERI, Korea (A60 deck)
- KOMERI-0402-17T3360 dated 2017-12-20 from KOMERI, Korea (A60 deck)
- KOMERI-0402-18T1910 dated 2019-03-14 from KOMERI, Korea (A60 bulkhead)
- KOMERI-0402-18T4190 dated 2019-03-14 from KOMERI, Korea (A60 bulkhead)



Job Id: **344.1-001788-12**
Certificate No: **MEDB00004X9**

- KOMERI-0402-18T4189 dated 2019-03-14 from KOMERI, Korea (A60 bulkhead)

Tests carried out

Tested 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, the Mark of Conformity and USCG approval if applicable (see first page).

APPENDIX, REV. NO. 0

Additional application/information for Watertightness/gastightness (Not part of the Marine Equipment Directive requirement)

Product description

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For bulkhead applications the sleeve is filled with min. 120 mm KVM Sealing Compound and min. 20 mm Mangana Retaining Compound on each end.

Application/Limitation

The following penetrations have been tested and covers bulkhead and deck:

Outer Sleeve Dimensions (w x l) [mm]	Sleeve thickness [mm]	Filling [%]	Max. cable Ø [mm]	Approved Watertightness [bar]	Approved gastightness [mbar]
100 x 100 - 700 x 300	4.5	0.1 – 37.0	84	1.4 (tested pressure 2.1 bar)	20 (tested pressure 30 mbar)
Ø50 - Ø350	3.9 – 11.1	0.2 – 36.8	49.6	2.67 (tested pressure 4 bar)	20 (tested pressure 30 mbar)
100 x 100 - 360 x 200	4.5	0.2 – 25.2	33*	2.67 (tested pressure 4 bar)	20 (tested pressure 30 mbar)
Ø50 - Ø200	3.9 – 8.2	0.4 – 28.2	33*	2.67 (tested pressure 4 bar)	20 (tested pressure 30 mbar)

* multicore cables

The penetration system is not to be used for penetrating boundaries of tanks.

When requested to be used in watertight bulkheads on passenger ships and Special Purpose Ships (SPS), the penetration system has to comply with the requirements given in SOLAS Ch. II-1 Reg. 13.2.3 (2009 issue). Penetrations passing through watertight bulkheads are subject for separate examination and approval (water tightness after a standard fire test). This product has not been tested according to Reg. 13.2.3.

Type Approval documentation

Test report DIK-TR20190301-1 witnessed by DNVGL dated 2018-12-10/11 and 2019-03-05 (water – and gas tightness).

Tests carried out

Pressure tests with water and air according to DNVGL-CP-0165.