DNV·GL

Certificate No:
**MEDB00001X6**

# 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 the Kingdom of Norway.

## This is to certify:

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

with type designation(s)
**A-60 PENESEAL PS-100A**

Issued to
**PnC TECH BUSAN CO., LTD.**
**Busan, Republic of Korea**

is found to comply with the requirements in the following Regulations/Standards:
Regulation **(EU) 2015/559,**
**Annex A.1, item No. A.1/3.26a and Annex B, Module B in the Directive; SOLAS 74 as amended, Regulation II-2/9, IMO MSC/Circ.1276 and IMO 2010 FTP Code**

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

This Certificate is valid until **2022-01-10**.

Issued at **Høvik** on **2017-01-11**

DNV GL local station:
**Busan**

Approval Engineer:
**Piotr Orzechowski**

Notified Body
No.: **0575**

for **DNV GL AS**

**Vidar Dolonen**
**Head of Notified Body**


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## Product description

"A-60 PENESEAL PS-100A"
Composed of a rectangular/circular 180 mm long steel sleeve welded to the bulkhead/deck and filled with Resins types "PS-A" and "PS-B" and Sealer "PS-S".

**For bulkhead installation:**
The sleeve is fitted symmetrically into the bulkhead and is filled with 140 mm Resin "PS-A and PS-B" and 20 mm Sealer "PS-S" at each end of the cable penetration. The steel sleeve shall be partially insulated on unexposed side of the bulkhead with A-60 class insulation.

**For deck installation:**
The sleeve is fitted symmetrically or unsymmetrically (150 mm on exposed side) into the deck and is filled with 160 mm Resin "PS-A and PS-B" and 20 mm Sealer "PS-S" on the exposed side of the cable penetration. The steel sleeve shall be partially insulated on exposed side of the deck with A-60 class insulation.

The filling compound is made of two Resin types "PS-A" and "PS-B", mixed together before use. For penetration with lower filling rates additional Filler made of Resin types "PS-A" and "PS-B", is used for filling the empty space inside the sleeve. For rectangular penetrations two ø 50 mm filling holes are fitted in the sleeve for filling resin inside.

Spacer may necessary be installed between cables and between cable and transit to keep the minimum distance (at least 4mm).

For further details please see approved manufacturer's drawings PS-A60 DK and PS-A60 BH.

## Application/Limitation

The penetration is approved for installation in steel bulkhead/deck of class A-60. Class A-0, A-15 and A-30 shall be insulated as class A-60 and in addition the division shall be insulated at least 200 mm around the penetration.

Restricted application for deck penetration - fire from Sealer side only.

**Approved sizes for symmetrical sleeve in deck:**

| | | | | |
|---|---|---|---|---|
| Minimum size: | 176 x 116 x 5 mm | (W x H x T) | with min/max filling rate: | 3%/29% |
| | 40A (ø48.6) x 3.25 mm | (D x T) | with min/max filling rate: | 8% |
| Maximum size: | 670 x 310 x 5 mm | (W x H x T) | with min/max filling rate: | 2.6%/34% |
| | 100A (ø108) x 4.5mm | (D x T) | with min/max filling rate: | 1.4%/23% |
| | 200A (ø216.3) x 5.85mm | (D x T) | with min/max filling rate: | 3.4%/33% |

**Approved sizes for unsymmetrical sleeve in deck:**

| | | | | |
|---|---|---|---|---|
| Minimum size: | 176 x 116 x 5 mm | (W x H x T) | with min/max filling rate: | 3.2%/30% |
| | 40A (ø48.6) x 3.25 mm | (D x T) | with min/max filling rate: | 9% |
| Maximum size: | 670 x 310 x 5 mm | (W x H x T) | with min/max filling rate: | 2.6%/34% |
| | 100A (ø108) x 4.5 mm | (D x T) | with min/max filling rate: | 1.4%/23% |

**Approved sizes for symmetrical sleeve in bulkhead:**

| | | | | |
|---|---|---|---|---|
| Minimum size: | 176 x 116 x 5 mm | (W x H x T) | with min/max filling rate: | 3.2%/30% |
| | 100A (ø108) x 4.5 mm | (D x T) | with min/max filling rate: | 1.4%/23% |
| | 50A (ø60.5) x 3.65 mm | (D x T) | with min/max filling rate: | 17% |
| | 40A (ø48.6) x 3.25 mm | (D x T) | with min/max filling rate: | 9% |
| Maximum size: | 672 x 312 x 6 mm | (W x H x T) | with min/max filling rate: | 2.6%/34% |
| | 200A (ø216.3) x 5.85mm | (D x T) | with min/max filling rate: | 3.4%/33% |

Minimum distance between cables: 4 mm
Distance between cable and sleeve: 4 mm

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

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

## Type Examination documentation
Test Report Nos.:

## 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, MED Mark of Conformity and USCG approval number if applicable (see first page).

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

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Composed of a rectangular/circular 180 mm long steel sleeve welded to the bulkhead/deck and filled with Resins types "PS-A" and "PS-B" and Sealer "PS-S".

**For bulkhead installation:**
The sleeve is fitted symmetrically into the bulkhead and is filled with 140 mm Resin "PS-A and PS-B" and 20 mm Sealer "PS-S" in each end of the cable penetration. The steel sleeve shall be partially insulated on unexposed side of the bulkhead A-60 class insulation.

**For deck installation:**
The sleeve is fitted symmetrically or unsymmetrically (150 mm on exposed side) into the deck and is filled with 160 mm Resin "PS-A and PS-B" and 20 mm Sealer "PS-S" on the exposed side of the cable penetration. The steel sleeve shall be partially insulated on exposed side of the deck with A-60 class insulation.

The filling compound is made of two Resin types "PS-A" and "PS-B", mixed together before use. For penetration with lower filling rates additional Filler made of Resin types "PS-A" and "PS-B", is used for filling the empty space inside the sleeve. For rectangular penetrations two ø 50 mm filling holes are fitted in the sleeve for filling resin inside.

Spacer may necessary be installed between cable and between cable and transit to keep the minimum distance (at least 4mm).

For further details please see approved manufacturer's drawings PS-A60 DK and PS-A60 BH.

## Application/Limitation

Approved for penetration in steel bulkheads or steel decks limited to a pressure of 2.5 bar watertightness (3.75 bar – tested pressure) and 1 bar gastightness (1.5 bar - tested pressure).

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

## Type Approval documentation

Test reports No. PnC-WT-01~08 and PnC-GT-01~08 dated 31 May 2016 from PnC Tech Busan, Co., Ltd.

## Tests carried out

Pressure tests with water and air according to Class Programme DNVGL-CP-0165, Edition Fabruray 2016.