

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Application of: Council Directive 96/98/EC of 20 December 1996 on Marine Equipment as amended by directive (EU) 2015/559, issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Directorate. 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 Class Multi-Cable Transit Sealing System-ESST system

Issued to

HS Inc.

Busan, Republic of Korea

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

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

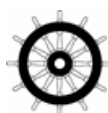
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2019-11-25**.

Issued at **Høvik** on **2016-06-28**

DNV GL local station:
Ulsan

Approval Engineer:
Ragnar Tonjer



Notified Body
No.: **0575**

for **DNV GL AS**

Vidar Dolonen
Head of Notified Body

Product description

"A-60 Class Multi-Cable Transit Sealing System-ESST system"
composed of a 180 mm long steel coaming welded to the bulkhead/deck. Coaming wall thickness as specified in the below table.

The cable transits and inside of coaming are fitted with 140 mm long sleeve type "AV-810 Sleeve" and 20 mm sealant type "AP-910" in each end of the penetration system.

Approved sizes:

		Coaming size [mm]	Min. cable filling	Max. cable filling	Coaming positioning in deck / bulkhead	Insulation Density [kg/m³]	Coaming wall thickness [mm]
Rectang- ular with rounded corners	Deck	Min. 100 x 80 (w x h)	1 %	36 %	General application	64	5
		Max. 654 x 366 (w x h)					
		654 x 366 (w x h)	1 %	40 %	General application	120	8
	Bulk- head	Min. 100 x 80 (w x h)	3 %	36 %	General application	64	5
		Max. 654 x 366 (w x h)		40 %		64	8
						120	5
Circular	Deck	Min. Ø 50	1 %	31 %	Unexposed side	120	5
		Max. Ø 200		39 %		120	5
	Bulk- head	Min. Ø 50	3 %	51 %	General application	64	5
		Max. Ø 200		39 %		64	5

All transits are partially insulated with approved A-60 insulation fitted around the coaming, with density of 120 kg/m³ or 64 kg/m³ as specified in the table above. For details see approved drawings listed under Type Examination documentation below.

Application/Limitation

The penetration is approved for installation in steel bulkhead/deck as class A-60. Other applications are subject to case-by-case approval. Class A-0, A-15 and A-30 shall be insulated as class A-60 and in addition the division is to be insulated at least 200 mm around the penetration.

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

Minimum distance between cables and between cables and coaming is 6 mm.

Maximum approved cable diameter is 96 mm for the rectangular penetration.
Maximum approved cable diameter is 37 mm for the circular penetration.

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

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

Type Examination documentation

Deck test reports Nos. from "KOMERI" Korea Marine Equipment Research Institute:

- KOMERI-0402-14T1519 dated 31 July 2014
- KOMERI-0402-14T1520 dated 31 July 2014
- KOMERI-0402-14T2853 dated 30 December 2014
- KOMERI-0402-15T3925 dated 15 January 2016

Bulkhead test reports Nos. from "KOMERI" Korea Marine Equipment Research Institute:

- KOMERI-0402-14T2194 dated 24 October 2014
- KOMERI-0402-14T2195 dated 24 October 2014
- KOMERI-0402-14T2854 dated 30 December 2014
- KOMERI-0402-15T3856 dated 17 February 2016

Drawing Nos. from manufacturer:

- HS-14-07 Rev. 0 (4 sheets) dated 30 June 2014 (Deck)
- HS-14-08 (4 sheets) dated 30 June 2014 (Deck)
- HS-14-05 (4 sheets) dated 25 September 2014 (Bulkhead)
- HS-14-06 (4 sheets) dated 25 September 2014 (Bulkhead)
- HS-14-07-01 Rev. 0 (5 sheets) dated 5 November 2014 (deck)
- HS-14-05-01 Rev. 0 (5 sheets) dated 5 November 2014 (Bulkhead)
- HS-15-11(A60) Rev. 0 (4 sheets) dated 19 November 2015 (Deck)
- HS-15-12-10 Rev. 0 (5 sheets) dated 01 December 2015 (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 of manufacturer, type designation, fire technical rating, the Mark of Conformity and USCG approval (see page 1).

APPENDIX

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

Product description

"A-60 Class Multi-Cable Transit Sealing System-ESST system"
composed of a 180 mm long steel coaming welded to the bulkhead/deck. Coaming wall thickness as specified in the table on page 2.

The cable transits and inside of coaming are fitted with 140 mm long sleeve type "AV-810 Sleeve" and 20 mm sealant type "AP-910" in each end of the penetration system.

Approved sizes:

- Rectangular: 180 x 124 - 654 x 366 mm (w x h)
- Circular: Ø 50 – 200 mm

Application/Limitation

Approved for penetration in steel bulkhead/decks limited to a pressure of 1.67 bar watertightness (2.5 bar - tested pressure) and 0.3 bar gastightness (0.5 bar - tested pressure).

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

Type Approval documentation

Test reports No. HS-14-001 dated 14 August 2014 from HS inc., Korea.

Tests carried out

Pressure tests with water and air according to DNVGL-CP-0165 Sec. 2 Ch. 4.