

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Class H Penetration

with type designation(s)
LAMBDA PIPE PENETRATION SEAL

Issued to

Bilfinger Industrier AS
Stavanger, Norway

is found to comply with
DNV GL offshore standards

Application :

Approved for use as pipe penetration system in class H-0 bulkheads and decks.

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

This Certificate is valid until **2021-09-26**.

Issued at **Høvik** on **2016-09-27**

DNV GL local station: **Stavanger**

Approval Engineer: **Piotr Orzechowski**

for **DNV GL**

Petter Langnes
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.

Product description

"Lambda Pipe Penetration Seal"

Single- or multi-pipe penetration system for steel pipes, composed of steel sleeve of minimum length 250 mm and minimum thickness 4mm, bolted or welded to the deck/bulkhead.

"Lambda Anklet" to be wrapped around pipe and sleeve on either side of deck/bulkhead for single pipe penetrations with sleeves $\varnothing \leq 508$ mm, on fire exposed side for single-pipe penetration with sleeve $\varnothing > 508$ mm and on both sides for multi-pipe penetrations. Sealed with "Conlit Silicone" where required. Stainless steel bands type "Band-it" are used to clamp the anklet around pipe and sleeve.

Maximum distance between sleeve and pipe (void) in a single- pipe penetration system: 135mm.

Minimum distance between outer walls of adjacent pipes in a multi-pipe penetration system: 50mm

For further details see drawings mentioned under Type Approval documentation below.

Application/Limitation

Approved for use as pipe penetration system in class H-0 bulkheads and decks. Other applications are subject to case-by-case approval.

Penetrated deck/bulkhead to be insulated with at least H0-400 insulation on fire exposed side. Fire against opposite side of penetration detail for single-pipe penetrations with sleeve OD > 508 mm.

Pipe sizes: $\varnothing 33.4 - 914.4$ mm (single-pipe)
max $\varnothing 609.6$ mm (multi-pipe)

Sleeve size: $\varnothing 114.3 - 1016$ mm
300 x 400 mm – 750 x 1500 mm

Each product/system is to be supplied with its manual for installation, use and maintenance.

Type Approval documentation

Certification in accordance with Class Programme DNVGL-CP-0338, October 2015.

Test Reports Nos. from SINTEF, Trondheim, Norway:

- 22N007.20 A and 22N007.20 B dated 19 September 2000
- 103070.18 B dated 4 November 2002
- 103070.21 A dated 5 December 2002
- 103070.24 A and 103070.24 B dated 4 April 2003

Drawing No. LPPS-DNV-H0-002 Rev. 005 (16 sheets) dated 16 June 2016 from Bilfinger.

Tests carried out

Tested according to IMO Res. A.754 (18) and the hydrocarbon time-temperature curve specified in ISO 834-3 (NPD HC curve).

Marking of product

The product or packing is to be marked with name of manufacturer, type designation and fire-technical rating.

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.