

TYPE APPROVAL CERTIFICATE**This is to certify:****That the Class A Bulkhead**

with type designation(s)

Dynamic Shaft Penetration ProfiSeal Series 500 fire resistant A-60 Bulkhead Seal

Issued to

**ProfiSeal GmbH
Schornsheim, Rheinland-Pfalz, Germany**

is found to comply with

GL Rules for Classification and Construction I - Ship Technology**DNV GL offshore standards****DNV GL statutory interpretations DNVGL-SI-0364 – SOLAS interpretations****DNV GL class programme DNVGL-CP-0165 – Type approval – Cable and pipe penetrations****Application :****Approved for installation in a Class A-60 bulkhead for a shaft diameter from 50 mm up to 500 mm. See limitations regarding maximum shaft penetration diameter under Application/Limitation****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Hamburg** on **2020-11-02**for **DNV GL**This Certificate is valid until **2025-11-01**.DNV GL local station: **Augsburg**Approval Engineer: **Timo Linn****Jörg Kallies
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

"Dynamic Shaft Penetration ProfiSeal Series 500 fire resistant A-60 Bulkhead Seal"

The ProfiSeal Series 500 fire resistant A-60 Bulkhead Seal is a sealing ring assembly consisting of two stainless steel split housings with grooves in which split carbon sealing rings are fitted. The sealing ring assembly is fitted around the shaft, bolted to the class A-60 bulkhead and covered from both sides of the bulkhead with fire insulated split linings. The construction and installation of the bulkhead seal is illustrated in the drawing in Appendix A, Fig. 1.1 to Fig. 5.1 of the test report.

On the side of the bulkhead exposed to the fire hazard the bulkhead seal is fully covered with a fire insulated split lining. This lining consists of Firemaster Marine Plus Insulation covered with a perforated steel sheet of 1.5 mm in thickness. From the opposite side of the bulkhead (unexposed to the fire hazard) a fire insulated split lining is mounted to the other side of the sealing ring housing through the cut out in the bulkhead.

Insulation material used for fire insulated split lining:

"Firemaster Marine Plus Blanket 38/50" made by Morgan Thermal Ceramics with a density of 128 kg/m³:

- The nominal thickness is 38 mm for shaft penetrations up to Ø400 mm. For total insulation thickness and other details see assessment 20140917.1.
- For shaft penetrations range of larger than Ø400 mm and up to Ø500 mm, thicker thermal insulation (used nominal thicknesses are 38 mm and 50 mm) combined with minimum 40 mm thick mounting flange on the bulkhead to be used. For total insulation thickness and other details see assessment No. 20170057.

Application/Limitation

Approved for installation in bulkhead of Class A-60. Other applications are subject to case-by-case approval.

General application: fire against either side.

The sealing has been successfully tested according to water tightness for shaft penetrations up to Ø465 mm. For details see test report No. N14062F2 and Ref. A0420238/262.1-024963-2.

Type Approval documentation

Test report No. 20140917 (for shaft penetrations: up to Ø340 mm) and assessment No. 20140917.1 (up to Ø400 mm) both dated 3rd of June 2015 and assessment No. 20170057 dated 11th of January 2017 (up to Ø500 mm) all issued by MPA Dresden, Freiberg, Germany.

Test report No. N14062F2 dated 9th of February 2015 and Ref. A0420238/262.1-024963-2 dated 22nd of August 2017 all issued by DNV GL.

Tests carried out

Tested according to IMO Res. MSC.307(88) – 2010 FTP Code Annex 1, Part 3

Marking of product

The product or packing is to be marked with name and address 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 DNVGL-CP-0338 Section 4.



Marine & Offshore

Certificate number: 52847/B0 BV

File number: ACI 4010/052/001

Product code: 5301H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

ProfiSeal GmbH

Schornsheim - GERMANY

for the type of product

PIPE PENETRATIONS IN FIRE DIVISIONS

Dynamic Shaft Penetration Fire resistant A-60 Bulkhead Seal, type "ProfiSeal Series 500" - Sizes 50 mm up to 500 mm

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships Part C Chapter 4

SOLAS 74 convention as amended, Regulations II-2/9

IMO Res. MSC.307(88) (2010 FTP Code)

IMO MSC.1/Circ.1276

IMO MSC.1/Circ.1488

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 29 Apr 2029

For Bureau Veritas Marine & Offshore,

At BV HAMBURG, on 29 Apr 2024,

Adama Diene

This certificate was created electronically and is valid without signature



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 June 2017

This certificate consists of 3 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

Dynamic Shaft Penetration Fire resistant A-60 Bulkhead Seal, type "ProfiSeal Series 500" - Sizes Ø50 mm up to Ø500 mm

Sealing ring assembly consisting of two stainless steel split housings with grooves in which split carbon sealing rings are fitted. The sealing ring assembly is fitted around the shaft, bolted to the class A-60 bulkhead and covered from both sides of the bulkhead with fire insulated split linings.

The construction and installation of the bulkhead seal is illustrated in drawings (see §2).

On the fire side of the bulkhead, the seal is fully covered with a fire insulated split lining type "Firemaster Marine Plus" blanket, covered with a 1.5 mm thick perforated steel sheet (V4A).

From the opposite side of the bulkhead (unexposed to the fire hazard), a fire insulated split lining type "Firemaster Marine Plus" blanket covered with a 1.5 mm thick perforated steel sheet (V4A) is mounted to the other side of the sealing ring housing through the cut-out in the bulkhead.

Insulation material used for fire insulated split lining on the fire side of the bulkhead:

"Firemaster Marine Plus Blanket" manufactured by Morgan Thermal Ceramics with a density of 128 kg/m³:

- The nominal thickness is 38 mm for shaft penetrations up to Ø400 mm.
- For shaft penetrations' range of larger than Ø400 mm and up to Ø500 mm, thicker thermal insulation (minimum thickness of 80 mm) combined with minimum 40 mm thick mounting flange on the bulkhead to be used.

For total insulation thickness and other details, see assessment No. 20170057.

Insulation material on the unexposed fire side of the bulkhead:

"Firemaster Marine Plus Blanket" manufactured by Morgan Thermal Ceramics with a density of 128 kg/m³:

- The nominal thickness is 87 mm for shaft penetrations up to Ø400 mm.
- For shaft penetrations' range of larger than Ø400 mm and up to Ø500 mm, the minimum thickness is 100 mm.

For total insulation thickness and other details, see assessment No. 20170057.

2. DOCUMENTS AND DRAWINGS :

- Drawing N° 05.300.01A dated 22/04/2021, for sizes up to Ø400 mm
- Drawing N° 05.415.01A dated 22/10/2018, for sizes above Ø400 mm and up to Ø500 mm
- Information Drawing N°05.415.02A, rev 1, dated 20/12/2017

3. TEST REPORTS :

- Test report N° 20140917 (for sizes up to Ø340 mm), dated June 3, 2015, with amendment dated September 10, 2018, as per IMO 2010 FTP Code, Annex 1, Part 3, from MPA Dresden, Germany
- Expert opinion N°20140917.1, for sizes above Ø340 mm and up to Ø400 mm, dated June 3, 2015, from MPA Dresden, Germany
- Expert opinion N°20170057, for sizes above Ø400 mm and up to Ø500 mm, dated January 11, 2017, from MPA Dresden, Germany

4. APPLICATION / LIMITATION :

4.1- The fitting aboard to be the same as used for the test.

4.2- Approved for use in A-60 class steel bulkheads with fire insulation as described in §1.

4.3 - The tests have been carried out with fire insulating material Firemaster Marine Plus Blanket (density 128 kg/m³); any alternative insulation material is subject to case by case approval providing that it has been approved as giving at least an equivalent insulation performance.

5. PRODUCTION SURVEY REQUIREMENTS :

5.1- The **ProfiSeal Series 500** are to be supplied by **ProfiSeal GmbH** in compliance with the type described in this certificate.

5.2- This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.

5.3- **ProfiSeal GmbH** has to make the necessary arrangements to have its office and production site(s) recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.

5.4 - For information, **ProfiSeal GmbH** has declared to Bureau Veritas the following production site(s):

ProfiSeal GmbH
Mühlerstr. 13
55288 Schornsheim
GERMANY

6. MARKING OF PRODUCT:

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

7. OTHERS :

7.1 - It is **ProfiSeal GmbH** responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

7.2 - This Certificate supersedes the Type Approval Certificate N°52847/A0 BV issued on 29/10/2018 by the Society.

***** END OF CERTIFICATE *****