

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pipe Couplings, Bite and Compression Type

with type designation(s)
BPH

Issued to

Boss Paslanmaz Hidrolik Baglanti Elemanlari San. ve Tic. Ltd.Sti
Istanbul, Türkiye

is found to comply with

DNV rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV-OS-D101 – Marine and machinery systems and equipment, Edition July 2021
DNV class programme DNV-CP-0185 – Type approval – Mechanical joints

Application :

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

Temperature range: See page 3
Max. working press.: 420 bar up to 630 bar, see page 3
Sizes: Tube O.D. 6mm to 42mm (see page 3)

Issued at **Høvik** on **2024-08-19**

for **DNV**

This Certificate is valid until **2029-08-18**.

DNV local unit: **Istanbul**

Approval Engineer: **Andreas Hansen**

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Bosman van der Merwe
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 AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") 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

Bite type compression pipe couplings made from stainless steel with non-metallic sealing rings of the following types:

| Configuration name | Symbol |
|---|-------------------|
| <i>Mechanical joints</i> | |
| Stainless L & S type Metric Nipples | BPNM1 & BPNM2 |
| Stainless L type Metric Reducer Adapters | BPONM1 |
| Stainless S type Metric Reducer Adapters | BPONM2 |
| Stainless BSP – Metric L type Adapters | BPBMM1 |
| Stainless BSP – Metric S type Adapters | BPBMM2 |
| Stainless Metric L type Tube end reducers | BPKRM1 |
| Stainless Metric S type Tube end reducers | BPKRM2 |
| Stainless Metric Elbows | BPDM1 & BPDM2 |
| Stainless NPT – Metric L type Elbows | BPDNM1 |
| Stainless NPT – Metric S type Elbows | BPDNM2 |
| Stainless metric L & S type swivel elbows | BPDMT1 & BPDMT2 |
| Stainless Metric Tee Adapters | BPTM1 & BPTM2 |
| Stainless Metric Adjustable Run Tee Adapters | BPYBTM1 & BPYBTM2 |
| Stainless Metric L & S type weld bulkhead couplings | BPKM1 & BPKM2 |
| Stainless Metric L & S type bulkhead couplings | BPPM1 & BPPM2 |
| <i>Parts of Mechanical joints (body)</i> | |
| UNF adapters | BPHNJ |
| UNF male elbow | BPHDJE |
| UNF male elbow with swivel nut | BPHDJT |
| UNF male TEE | BPHTJE |

Materials:

| Component | Material |
|--------------|---|
| Body | Stainless steel X6CrNiMoTi17-12-2/ 1.4571 or X2CrNiMo17-12-2/ 1.4404 (EN 10088-3) |
| Nut | |
| Cutting ring | |
| Sealing ring | FPM, NBR, and PTFE |

Manufacturing location:

Boss Paslanmaz Hidrolik Baglanti Elemanlari San. ve Tic. Ltd.Sti
Evllya Celebi, Mahallesi, Fedai Sk. No. 15/1
34944 Tuzla, Istanbul, Turkey

Application/Limitation

Couplings covered by this certificate are approved to be used in class I, II, and III piping systems according to the latest requirements of governing rules in the following applications:

| Systems | Classification of Piping system | Approved fire resistant type ⁵⁾ |
|--|---------------------------------|--|
| Flammable fluids (flash point ≤ 60 °C) | | |
| 1. Cargo oil lines | dry | + ¹⁾ |
| 2. Crude oil washing lines | dry | + ¹⁾ |
| 3. Vent lines | dry | + ²⁾ |
| Inert gas | | |
| 4. Water seal effluent lines | wet | + |
| 5. Scrubber effluent lines | wet | + |
| 6. Main lines | dry | + ¹⁾ |
| 7. Distribution lines | dry | + ¹⁾ |
| Flammable fluids (flash point > 60 °C) | | |
| 8. Cargo oil lines | dry | + ¹⁾ |
| 9. Fuel oil lines | wet | + |
| 10. Lubricating oil lines | wet | + |
| 11. Hydraulic oil | wet | + |
| 12. Thermal oil | wet | + |

| Systems | | Classification of Piping system | Approved fire resistant type ⁵⁾ |
|--|--|---------------------------------|--|
| Fresh water | | | |
| 13. | Cooling water system | wet | + |
| 14. | Condensate return | wet | + |
| 15. | Non-essential systems | dry, dry/wet, wet | + |
| Sanitary/drains/scuppers | | | |
| 16. | Deck drains (internal) | dry | + ⁴⁾ |
| 17. | Sanitary drains | dry | + |
| 18. | Scuppers and discharge (overboard) | dry | + |
| Sounding/vent | | | |
| 19. | Water tanks/dry spaces | dry/wet | + |
| 20. | Oil tanks (f.p > 60 °C) | dry | + ²⁾ |
| Miscellaneous | | | |
| 21. | Starting/control air | dry | + ³⁾ |
| 22. | Service air (non-essential) | dry | + |
| 23. | Brine | wet | + |
| 24. | CO ₂ system (outside protected space) | dry | NP |
| 25. | CO ₂ system (inside protected space) | dry | NP |
| 26. | Steam | wet | + |
| Abbreviations | | | |
| + Application permitted (with limitations, if any, as in the footnotes below) | | | |
| NP Application not permitted | | | |
| Footnotes | | | |
| 1) Not permitted when mechanical joints are installed in pump rooms and open decks. | | | |
| 2) Not permitted except in cases where such mechanical joints are installed on exposed open decks, as defined in SOLAS II-2/Reg. 9.2.3.3.2.2(10) and not used for fuel oil lines. | | | |
| 3) Not permitted when mechanical joints are installed in machinery spaces of category A. | | | |
| 4) Permitted only above bulkhead deck of passenger ships and freeboard deck of cargo ships. | | | |
| 5) <i>Approved fire-resistant types</i> as per this certificate are those couplings of various sizes and types as provided in Table 1 below that are allowed to be used in 'wet' piping systems fulfilling fire testing at '30 min wet' conditions as per DNV-RU-SHIP Pt.4 Ch.6 Sec.9 Table 9. | | | |

Materials chosen for the specific system shall be suitable for the intended medium and environmental conditions. Couplings covered by this certificate shall not be used in seawater systems.

Pipe minimum wall thickness shall be as per DNV-RU-SHIP Pt.4 Ch.6 Sec.9 [1.2.1]. Requirements for pipe materials are further defined in DNV-RU-SHIP Pt.4 Ch.6 Sec.2 [1.8.1].

Couplings covered by this certificate shall not be installed in systems subject to pressure below atmospheric or vacuum conditions.

Table 1: Maximum allowable working pressure

| Product line | Tube size, O.D [mm] | Maximum working pressure [bar] |
|--------------|---------------------|--------------------------------|
| L | 6 – 10 | 500 |
| | 12 – 18 | 400 |
| | 22 – 42 | 250 |
| S | 6 – 10 | 630 |
| | 12 – 16 | 630 |
| | 20 – 38 | 420 |

Maximum working temperatures for non-metallic materials:

| Material | Temperature range |
|----------|-------------------|
| NBR | -35°C to +100°C |
| FPM | -20°C to +200°C |
| PFTE | -55°C to +200°C |

For use at elevated temperatures the maximum allowable working pressure shall be reduced as per DNV-CP-0185 Sec.2 [Table 1].

The following limitations are to be observed for Mechanical joints of types BPKM1, BPKM2, BPPM1 & BPPM2:

- Bulkhead and Deck pipe penetrations: Screwed bulkhead fittings are not approved through tank walls, watertight decks, and bulkheads. For application through fire divisions a separate type approval is required.
- Straight Bulkhead weld fittings are approved through tank walls, watertight decks and bulkheads provided that all relevant requirements from SOLAS II-2/ 9.3.1 are met.

Threaded connections where pressure-tight joints are made on the threads with parallel or tapered threads shall not be used for piping systems conveying toxic or flammable media or services where fatigue, sever erosion or crevice corrosion is expected to occur. For other applications threaded connections with pressure-tight joints on threads may be used for outside diameters:

- Threaded joints with tapered thread shall be allowed for class I systems only when the outside diameter is not more than 33.7mm
- Threaded joints with parallel thread shall be allowed only for class III systems.

The approval is only valid when the couplings are assembled with tubing of correct temper and tolerances as recommended by the manufacturer.

Type Approval Documentation

| <u>Document no.</u> | <u>Title</u> | <u>Rev.</u> | <u>Date</u> |
|---------------------------|--|-------------|-------------|
| - | Boss Stainless Steel Fluid Connectors Technical Catalogue | - | - |
| BS02404-001 – BS02404-105 | Burst test report no. BS02404-001 to BS02404-105, witnessed by DNV | - | 2024-04-25 |
| BS02311-101 – BS02311-157 | Tightness test and repeated assembly test reports | - | 2024-04-25 |
| 2023150901 - 2023150924 | EUROLAB Fire resistance test reports | - | 2023-09-15 |
| 2023150929 – 2023150960 | EUROLAB Fire resistance test reports | - | 2023-09-15 |
| 2023150945 | EUROLAB Fire resistance test report | - | 2023-09-15 |
| 2023021091 – 2023310896 | Vibration and pressure impulse test report | - | 2023-08-31 |
| - | Boss Stainless Steel Fluid Connectors Technical Catalogue | - | - |
| - | Assembly sketch - UNF 37° FLARE FITTING SYSTEM ACC. TO ISO 8434-2 | - | 13.08.2024 |

Tests carried out

Tightness, repeated assembly, burst pressure, fire resistance (wet), and combined vibration and pressure pulsation tests.

Marking of product

For traceability to this type approval, each fitting is to be marked with:

- Manufacturer's name or trademark
- Size

Periodical assessment

This certificate is only valid if required periodical assessments are carried out with satisfactory results.

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNV-CP-0338.

To check the validity of this certificate, please look it up at <https://approvalfinder.dnv.com>.