

TYPE APPROVAL CERTIFICATE

Certificate No:
TAP00001SN
 Revision No:
1

This is to certify:

That the **Butterfly Valves**

with type designation(s)

BVKI, Wafer type, BLKI, Lug type, BFKI, Double flange type, BVKA, Wafer type, BLKA, Lug type, BVKX, Wafer type, BLKX, Lug type, BVPD, Wafer type, BLPD, Lug type, BVTT, Wafer type, BLTT, Lug type

Issued to

GIBSON ITALIA S.R.L.
Zola Predosa BO, BO, Italy

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-0186 – Type approval – Valves

Application :

Products approved by this certificate are accepted for installation on all vessels classed by DNV.

| Type: | Temperature range: | Max. working press.: | Sizes: |
|--------------------------|--------------------------------|----------------------|-----------|
| BVKI, Wafer type | acc. to sealig/lining material | PN6,10,16 | DN 40-800 |
| BLKI, Lug type | dto. | PN6,10,16 | DN 40-800 |
| BFKI, Double flange type | dto. | PN6, PN10-16 | DN 80-600 |
| BVKA, Wafer type | dto. | PN10,16,20 | DN 40-800 |
| BLKA, Lug type | dto. | PN10,16,20 | DN 40-800 |
| BVKX, Wafer type | dto. | PN16,25 | DN 50-250 |
| BLKX, Lug type | dto. | PN16,25 | DN 50-250 |
| BVPD, Wafer type | dto. | PN6,10,16 | DN 40-800 |
| BLPD, Lug type | dto. | PN6,10,16 | DN 40-800 |
| BVTT, Wafer type | dto. | PN10,16 | DN 32-600 |
| BLTT, Lug type | dto. | PN10,16 | DN 32-600 |

Issued at **Hamburg** on **2023-01-26**

for **DNV**

This Certificate is valid until **2024-08-26**.

DNV local unit: **Venice**

Approval Engineer: **Hagen Markus**

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Olaf Drews
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
Product description

Rubber lined butterfly valves for installation in piping systems.

Valve design: EN 12516; EN 736; EN 593; API 609
 Butterfly valve design styles: Lug type; Wafer type; Double flange
 Pressure / Temperature rating: ASME B 16.34
 Valve face-to-face: EN 558; ISO 5752/20
 Valve face flanges: EN 1092; ASTM B 16.5
 Valve top flanges: EN ISO 5211; DIN 3337

Butterfly valves may be equipped with manual, pneumatic or electric actuator.
 Performance testing of pneumatic and electric actuators is not confirmed by this type approval certificate.

Overview of valve types

| VALVE TYPE | DESIGN STYLE | SIZE | STEM | PRESSURE RATING ¹ | CLASS | DESIGN PRESSURE |
|---------------|---|-----------|--|------------------------------|---|-----------------|
| BVKI | Wafer type | DN40-500 | 2 pc. stem | PN6,10,16 | ANSI150 | 16bar |
| | | DN600-800 | 1 pc. stem | | | 16bar |
| BLKI | Full lug | DN40-500 | 2 pc. stem | PN6,10,16 | ANSI150 | 16bar |
| | | DN600-800 | 1 pc. stem | | | 16bar |
| Body material | Nodular cast iron EN-GJS-400-15, (EN-JS1030) | | | Disc material | Carbon steel forged ASTM A105 | |
| | Carbon steel ASTM A216-WCB | | | | Nodular cast iron EN-GJS-400-15, (EN-JS1030) | |
| | Stainless steel ASTM A351 CF8M | | | | Stainless steel ASTM A351 CF8M, ASTM A351 CF3M | |
| | Alu-Bronze ASTM B148-C958.00 | | | | Alu-Bronze ASTM B148-C958.00, EN CC333G | |
| | Aluminium EN AB/AC 46400, AISI9Cu1Mg EN 1706/EN 1676 | | | | "DUPLEX" 1.4470 (GX2CrNiMoN22-5-3) ASTM A351-A890-A995 CD3MN | |
| | | | | | "Super Duplex" 1.4469 ((GX2CrNiMoN26-7-4) ASTM A995 Gr.5A (CE3MN) ASTM A995 Gr.CD3MWCuN/6A | |
| | | | "Hastelloy" ASTM A494 CX2MW (C22) ASTM A494 CW-12MW (C276) | | | |
| | | | "Monel" ASTM A494 M35-1 | | | |

| VALVE TYPE | DESIGN STYLE | SIZE | STEM | PRESSURE RATING ¹ | CLASS | DESIGN PRESSURE |
|---------------|--|-------------------|--|------------------------------|---|-----------------|
| BFKI | Double flange | DN80-500 DN600 | 2 pc. stem 1 pc stem | PN6,10,16 | ANSI150 | 16bar |
| Body material | Nodular cast iron EN-GJS-400-15 (EN-JS1030) | | | Disc material | Carbon steel forged ASTM A105 | |
| | | | | | Nodular cast iron EN-GJS-400-15, (EN-JS1030) | |
| | | | | | Stainless steel ASTM A351 CF8M ASTM A351 CF3M | |
| | | | | | Alu-Bronze ASTM B148-C958.00, EN CC333G | |
| | | | Further disk materials: See butterfly valve type BLKI | | | |

Notes

¹ For elevated temperatures the maximum allowable pressure shall be reduced according to the applied valve design standard.

Product description - continuation

| VALVE TYPE | DESIGN STYLE | SIZE | STEM | PRESSURE RATING ¹ | CLASS | DESIGN PRESSURE |
|---------------|--|-----------------------|--|------------------------------|--|-----------------|
| BVKA | Wafer type | DN40-150 DN200-800 | 2 pc. stem 1 p. stem | PN10,16,20 | ANSI150 | 20bar |
| BLKA | Full lug | DN40-150 DN200-800 | 2 pc. stem 1 pc. stem | PN10,16,20 | ANSI150 | 20bar |
| Body material | Nodular cast iron EN-GJS-400-15 (EN-JS1030) | | | Disc material | Nodular cast iron EN-GJS-400-15, (EN-JS1030) | |
| | Carbon steel ASTM A216-WCB | | | | Stainless steel ASTM A351 CF8M, ASTM A351 CF3M | |
| | Stainless steel ASTM A351 CF8M | | | | Alu-Bronze ASTM B148-C958.00, EN CC333G | |
| | Alu-Bronze ASTM B148-C958.00 | | | | "DUPLEX" 1.4470 (GX2CrNiMoN22-5-3) ASTM A351-A890-A995 CD3MN | |
| | | | | | "Super Duplex" 1.4469 (GX2CrNiMoN26-7-4) ASTM A995 Gr.5A (CE3MN) ASTM A995 Gr.CD3MWCuN/6A | |
| | | | "Hastelloy" ASTM A494 CX2MW (C22) ASTM A494 CW-12MW (C276) | | | |
| | | | "Monel" ASTM A494 M35-1 | | | |

| VALVE TYPE | DESIGN STYLE | SIZE | STEM | PRESSURE RATING ¹ | CLASS | DESIGN PRESSURE |
|---------------|--|-----------------------|----------------------------|------------------------------|---|-----------------|
| BVKX | Wafer type | DN50-100 DN125-250 | 2 pc. stem 1 pc. stem | PN16,25 | ANSI 150 | 25bar |
| BLKX | Full lug | DN50-100 DN125-250 | 2 pc. stem 1 pc. stem | PN16,25 | ANSI 150 | 25bar |
| Body material | Nodular cast iron EN-GJS-400-15 (EN-JS1030) | | | Disc material | Stainless steel ASTM A351 CF8M ASTM A351 CF3M | |
| | Carbon steel ASTM A216-WCB | | | | Alu-Bronze ASTM B148-C958.00, EN CC333G | |
| | Stainless steel ASTM A351 CF8M | | | | "DUPLEX" 1.4470 (GX2CrNiMoN22-5-3) ASTM A351-A890-A995 CD3MN | |
| | Alu-Bronze ASTM B148-C958.00, EN CC333G | | | | "Super Duplex" 1.4469 ((GX2CrNiMoN26-7-4) ASTM A995 Gr.5A (CE3MN) ASTM A995 Gr.CD3MWCuN/6A | |
| | | | | | "Hastelloy" ASTM A494 CX2MW (C22) ASTM A494 CW-12MW (C276) | |
| | | | "Monel" ASTM A494 M35-1 | | | |

Notes

¹ For elevated temperatures the maximum allowable pressure shall be reduced according to the applied valve design standard.

Product description - continuation

| VALVE TYPE | DESIGN STYLE | SIZE | STEM | PRESSURE RATING ¹ | CLASS | DESIGN PRESSURE |
|---------------|---|----------|--|------------------------------|--|-----------------|
| BVPD | Wafer type | DN40-800 | 2 pc. stem | PN6,10,16 | ANSI150 | 16bar |
| BLPD | Full lug | DN40-800 | 2 pc. stem | PN6,10,16 | ANSI150 | 16bar |
| Body material | Nodular cast iron EN-GJS-400-15, (EN-JS1030) | | | Disc material | Carbon steel forged ASTM A105 | |
| | Carbon steel ASTM A216-WCB | | | | Nodular cast iron EN-GJS-400-15, (EN-JS1030) | |
| | Stainless steel ASTM A351 CF8M | | | | Stainless steel ASTM A351 CF8M, ASTM A351 CF3M | |
| | Alu-Bronze ASTM B148-C958.00, EN CC333G | | | | Alu-Bronze ASTM B148-C958.00, EN CC333G | |
| | Aluminium EN AB/AC 46400 AlSi9Cu1Mg EN 1706/EN 1676 | | | | "DUPLEX" 1.4470 (GX2CrNiMoN22-5-3) ASTM A351-A890-A995 CD3MN | |
| | | | | | "Super Duplex" 1.4469 (GX2CrNiMoN26-7-4) ASTM A995 Gr.5A (CE3MN) ASTM A995 Gr.CD3MWCuN/6A | |
| | | | "Hastelloy" ASTM A494 CX2MW (C22) ASTM A494 CW-12MW (C276) | | | |
| | | | "Monel" ASTM A494 M35-1 | | | |

| VALVE TYPE | DESIGN STYLE | SIZE | STEM | PRESSURE RATING ¹ | CLASS | DESIGN PRESSURE |
|---------------|--|----------|------------|------------------------------|--|-----------------|
| BVTT | Wafer type | DN32-600 | 2 pc. stem | PN10,16 | ANSI150 | 16bar |
| BLTT | Full lug | DN32-600 | 2 pc. stem | PN10,16 | ANSI150 | 16bar |
| Body material | Nodular cast iron EN-GJS-400-15 (EN-JS1030) | | | Disc material | Stainless steel ASTM A351 CF8M ASTM A351 CF3M | |
| | Carbon steel ASTM A216-WCB | | | | Steel ASTM A564 T630 With PTFE coating | |
| | Stainless steel ASTM A351 CF8M | | | | "DUPLEX" 1.4470 (GX2CrNiMoN22-5-3) ASTM A351-A890-A995 CD3MN | |
| | | | | | "Super Duplex" 1.4469 (GX2CrNiMoN26-7-4) ASTM A995 Gr.5A (CE3MN) ASTM A995 Gr.CD3MWCuN/6A | |
| | | | | | "Hastelloy" ASTM A494 CX2MW (C22) ASTM A494 CW-12MW (C276) | |
| | | | | | "Monel" ASTM A494 M35-1 | |

Notes

¹ For elevated temperatures the maximum allowable pressure shall be reduced according to the applied valve design standard.

Application/Limitation

The butterfly valves are type approved for application in pipe class II and III piping systems listed in Pt.4 Ch.6 - Table 2 Documentation requirements. The valve seat/lining material shall be compatible with fluid in the system.

Sea water application

The standard stainless-steel material such as 1.4571 is not approved for application in sea water systems or unprotected installation on the open deck.

It shall be noted that the selection of the materials considers the intended service condition and installation area of the piping system. In particular, the resistance to corrosion, erosion, oxidation and other deterioration which may occur during intended service life.

Reference is made to DNVGL Rules Pt.4, Ch.6 – Section 2 – Materials.

Service temperature range

The service temperature range applicable depends on valve material and seat/lining material selected. In addition, temperature limits with regard to seal durability with hydraulic fluids are to be observed.

Temperature rating depends of the seat/lining materials.

| | | | | | |
|--------------------------------------|---|--|------------------------|-----------------------------------|------------------------------|
| EPDM ¹ -35°C to +130°C | EPDM ¹ HT -30°C to +145°C | EPDM ¹ White -35°C to +130°C | FKM -20°C to +200°C | PTFE -60°C to +190°C | MVQ -60°C to +190°C |
| NBR -25°C to +100°C | NR -40°C to +80°C | CR -20°C to +100°C | CSM -20°C to +125°C | PU Polyurethane -20°C to +80°C | CARBOXIDE -25°C to +100°C |

Notes

1 EPDM shall not be used for hydrocarbon service.

Temperature range examples

| | |
|---|---------------------------|
| Ferritic nodular cast iron valve EPDM seat/lining | 0°C up to +130°C (EPDM) |
| Stainless valve with EPDM or FKM sealing | -35°C up to +130°C (EPDM) |
| | -20°C up to +200°C (FKM) |

Limitation

Valves made of aluminium are not approved for fire extinguishing systems such as fire mains, water spray, foam and sprinkler systems.

The valves are not approved for application shut off or quick closing valve on oil tanks.

Tests carried out

DNV CP 0186

Design approval according to valve standard, Visual inspection, Pressure test on valve body and seat tightness test.

Production testing

Each valve body shall be subjected to a hydrostatic pressure test at 1.5 times the nominal pressure PN at room temperature

In addition seat leakage testing with 1.1 times PN in the valve flow direction.

Testing shall follow procedures and acceptance criteria in EN 12266-1 (leakage rate A).

Valves fitted on ship's side and bottom are to be at least hydrostatically tested at a pressure equal to 5 bar, applied independently on each side of the closed disc.

Product Certification

Valve bodies shall be delivered with material certificates in accordance with DNV Ship Pt.4 Ch.6 Sec.2 - Table 3 Material certificates.

Materials with material certificate "MC issued by the Society" (3.2 acc. to EN10204) or "MD issued by manufacturer" (3.1 acc.to EN10204) shall be purchased from DNV approved material manufacturer (AoM).

DNV product certificate (PC) is required for valves with DN>100 and design pressure ≥ 16 bar, and for ship side valves where DN>100 regardless of pressure. For other valves a manufacturer's product certificate may be accepted.

Type Approval documentation

TAP00001SN and Rev.1

Documents

- Valve arrangement and cross section drawings BFKI, BLKA, BLKI, BLKX, BLPD, BLTT, BVKA, BVKI, BVKX, BVPD, BVTT
- EU Certificate of Conformity, Cert. No. PED/0497/037/02, dated 2019-02-12
- EU Certificate of Conformity, Cert. No. PED/0497/387/05, dated 2019-06-19
- Gibson valve catalogues BVKA / BLKA ; BVKX / BLKX, BVKI / BLKI – BFKI, BVPD / BLPD, BVTT / BLTT
- Strength calculations of valve body.
- DNV Type Approval Assessment Report, dated: 2018-11-16

Marking of product

For traceability to this type approval the products are marked according to EN 19 [2016] and PED (2014/68/EU) and in particular with:

Manufacturer's name or trademark, Pressure rating, Valve type designation and size.

Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment to verify that the conditions for the Type Approval are complied with. Refer to the DNV Class Programme DNV-CP-0338, Sec.4.

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

End of certificate