



TYPE APPROVAL CERTIFICATE

Certificate No:
TAP000008J
Revision No:
2

This is to certify:

That the **Butterfly Valves**

with type designation(s)
"BFL" Series: "AW", "LT"

Issued to

Center Tech Armaturen GmbH
Laufeld, Rheinland-Pfalz, Germany

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV GL class programme DNVGL-CP-0186 – Type approval – Valves

Application :

Butterfly valves approved for use in ship piping, machinery piping and cargo piping systems.

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

Temperature range: Dependent on seal material (see certificate)
Max. working press.: Depending on rating (see certificate)
Sizes: DN 40 to DN 600 / DN 1.5" to DN 24"

Issued at **Hamburg** on **2021-03-24**

for **DNV**

This Certificate is valid until **2026-03-23**.

DNV local station: **Essen**

Approval Engineer: **Guido Friederich**

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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

Butterfly valves, designed as wafer or lug type. Body lining integrated with the valve seat.

Type: "BFL"

Series: "AW", "LT"

Design data

Nominal sizes (DN) metric	Nominal sizes (DN) inch	Pressure ratings (EN 12516-1 ¹ , ASME 16.34 ²)
DN40, 50, 65, 80, 100, 125 DN150	DN 1,5", 2", 2,5", 3", 4", 5" DN 6"	up to PN40, Class 150 up to PN25, Class 150
DN200, 250, 300, 350, 400 DN450, 500, 600	DN 8", 10", 12", 14", 16" DN 18", 20", 24"	up to PN40, Class 150 up to PN25, Class 150

Materials

Valve item	Material types	Material standards
Valve body	Grey cast iron	EN-GJL-250 EN 1561:2011
	Nodular cast iron (ferritic)	EN-GJS-400-15 EN 1563:2019 EN-GJS-400-18-LT EN 1563:2011
	Cast steel	GP240GH EN 10213:2007 ASTM A216 WCB
	Low Carbon Steel Stainless Steel	ASTM A352 LCB/LCC 1.4408 EN10213-4 ASTM A3512CF8M
Disc	Aluminium bronze Nodular cast iron (ferritic)	ASTM B148 GR.958 and 2.0975 EN-GJS-400-15 EN 1563:2011 with polyamide coating
	Carbon steel	GP240GH EN 10213:2007 ASTM A216 WCB rubber lined
	Stainless steel	1.4408 EN10213-4 ASTM A3512CF8M
	Aluminium bronze Hastelloy Titan Duplex Stainless Steel	ASTM B148 GR.958 and 2.0975 C, C4 or C4C Titanium Gr.2 / ASTM B348 UNS J93404
Lining/seats		EPDM, NBR, Viton, CR (neoprene), CSM (hypalon) H-NBR, VSI (Silikon-Kautschuk)

Design temperatures

Body and seat lining material	Permissible design temperature
NBR (Buna-N)	-20°C to + 80°C
CR (Neoprene)	-10°C to + 100°C
EPDM	-30°C to + 120°C
FPM (Viton)	-12°C to + 180°C
CSM (Hypalon)	-20°C to + 135°C
H-NBR	-30°C to + 140°C
VSI (Silikon-Kautschuk)	-30°C to + 180°C

Application

Butterfly valves approved for use in ship piping, machinery piping and cargo piping systems for control and shut-off applications.

Operating media may include: Sea water, water, air, non-flammable gases, oil³.

¹: Maximum allowable pressure shall be according to the relevant tables in EN 12516-1 and EN 12516-4 as appropriate.

²: For maximum allowable working pressure at ambient and elevated temperatures see ASME B16.34 as appropriate.

³: Fuel oil, lubrication oil, hydraulic oil and thermal oil are in this context regarded as "Flammable liquids".

See DNV GL Rules, Pt. 4 Ch. 1, Section 3 – Design principles

Limitation

Butterfly valves are not approved for flammable gases and applications with flowing media specified as dangerous and toxic fluids.

The valves may not be used where "fire safe" application is required.

Valves fabricated of nodular cast iron of the ferritic type with specified elongation (A5) of 12% may be used on the following installations:

- Class II and class III piping systems
- Ship's side and bottom and on the collision bulkhead

Nodular cast iron shall not be used for media having a temperature exceeding 350°C.

Valves fabricated of grey cast iron and nodular cast iron with specified elongation (A5) of < 12% are not permitted for the following installations and service conditions:

- Media having temperature below 0 °C
- Class I and II piping systems
- Media having temperature exceeding 120°C
- At the ship's side and bottom, on sea chest and collision bulkheads
- Valves under static head fitted on external wall of fuel oil tanks and tanks for other flammable liquids
- Systems subject to pressure shock, excessive strains and vibration.

The type approval does not include the actuator including any operating gear for remote control of the valves.

Type Approval documentation

Upgraded drawings as received in 03/2021

Size (DN, inch)		Serie AW	Revision	Serie LT	Revision
40-600	Datasheets	AW-O.---.00	05	LT-O.---.00	05

Drawings of the housings

Nominal valve sizes		Serie A	Revision	Serie LT	Revision
40	1,5"	BHAK.04X.00	01	BHLK.04-.00	01
50	2"	BHAK.05X.00	03	BHLK.05-.20	01
65	2,5"	BHAK.06X.00	03	BHLK.06-.00	04
80	3"	BHAK.08X.00	02	BHLK.08-.00	03
100	4"	BHAK.10X.00	02	BHLK.10-.00	02
125	5"	BHAB.12X.00	02	BHLB.12-.00	03
150	6"	BHAB.15X.00	02	BHLB.15-.00	03
200	8"	BHAM.20X.00	02	BHLM.20-.00	03
250	10"	BHAC.25X.00	03	BHLC.25-.00	02
300	12"	BHAD.30X.00	03	BHLD.30-.00	03
350	14"	BHAD.35-.00	04	BHLD.35-.00	03
400	16"	BHAD.40-.00	05	BHLD.40-.00	04
450	18"	BHAN.45-.00	03	BHLN.45-.00	03
500	20"	BHAN.50-.00	04	BHLN.50-.00	03
600	24"	BHAF.60-.00	02	BHLF.60-.00	02

Calculation and minimum body thicknesses

QMH 608, dated 2009-03-03

Zeichnungsübersicht CTA-DNV Zulassung Rev. 2021.01.27

Type Approval Assessment Report, dated: 2021-03-15

Type approval tests carried out

N/A

Production testing

Test standard: EN 12266-1 / DNVGL Pt.4 Ch.6 DNV GL CP 0186	
<u>Test title / Test reference</u>	<u>Purpose</u>
Hydrostatic pressure test	To confirm the pressure containing capability of the shell against internal pressure Test pressure 1,5 times the design pressure
Seat leakage	Confirmation of leak tightness of the shell including the operating mechanism sealing against internal pressure Test pressure: 1,1 times the design pressure in the valve flow direction 5 bar applied independently on each side of the disc

Certification

Application in machinery and piping systems
 Valves intended to be installed in piping systems listed in DNVGL Rules Pt.4 Ch.6 – Section 1 shall be certified according to DNV GL Rules Pt.4 Ch.6 – Piping systems, Section 9

<u>Valve nominal size / Pressure rating</u> DN > 100 mm / PN > 16 bar DN ≤ 100 mm / PN ≤ 16 bar	<u>Type of Product Certificate (PC) / Issued by</u> VL Certificate / DNV GL W Works Certificate / Manufacturer
Ship side valves DN > 100 mm regardless of pressure rating	VL Certificate / DNV GL

Material certificates (valve bodies)
 In accordance with DNV GL Rules Pt.4 Ch.6 – Piping systems, Section 2 – Table

Marking of product

For traceability to this type approval, each valve is at least to be marked with:

- Type designation
- Size
- Pressure rating
- Manufacturer's name or trade mark

Periodical assessment

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

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

End of certificate