

TYPE APPROVAL CERTIFICATE

Certificate No:
TAP00000H1
Revision No:
1

This is to certify:

That the **Butterfly Valves**

with type designation(s)
F012 A/ (K1), T211, T212, T214, Z011 A/ (K1), Z014 A/ (K1)

Issued to
EBRO Armaturen Gebr. Bröer GmbH
Hagen, Nordrhein-Westfalen, Germany

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

Application :

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

Temperature range: - 50°C up to +150°C
Max. working press.: 10 bar up to 16 bar
Sizes: DN 20 to DN 2000 (see cert.)

Issued at **Hamburg** on **2021-10-05**

for **DNV**

This Certificate is valid until **2026-10-04**.

DNV local station: **Essen**

Approval Engineer: **Ana Cristina Do Carmo Insfran**

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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 valve type: F012 A/ (K1), T211, T212, T214, Z011 A/ (K1), Z014 A/ (K1) for installations in piping systems.

Valve design:

- Double flanged type: F012 A/ (K1)/ ISO SHORT
- Centric wafer type: T211
- Centric double flanged type: T212
- Centric lug type: T214
- Wafer type: Z011 A/ (K1)
- Wafer lug, with tapped holes: Z014 A/ (K1)

Butterfly valve nominal sizes:

- F012 A/ (K1)/ ISO SHORT: DN40 - DN2000
- T211 / T214: DN50 – DN300
- T212: DN350 - DN900
- Z011 A/ (K1): DN20 – 1200
- Z014 A/ (K1): DN20 – 1400

Pressure ratings: PN 6, PN 10 and PN 16 acc. DIN 2501,
JIS 5K, JIS 10K and ANSI B16.5 150 lb.

- Concentric soft-sealing butterfly valves with divided or undivided stem. Rubber seated.
Two-disc design: TS- Version, plug type or fixed by pins and version with splitter shaft. The undivided stem is locked to the disc by 2 *conical pins* or with square part in the shaft. A locking bolt lock the upper divided stem to the housing.
- PTFE-Lined Centric valves

Materials:

Valve Part	Material type	EN Standard	ASTM Standard
Body	Grey Cast Iron	EN-GJL-250 EN 1561	-
	Nodular Cast Iron	EN-GJS-400-15 and EN- GJS400-18-LT EN 1563	-
	Stainless Steel	1.4408 GP240GH+N EN 10213	-
	Carbon Steel	-	WCB ASTM A216
	Bronze Casting	2.0975 DIN1982	-
	Aluminium Casting	EN AC-AI Si9Cu3(Fe) DIN1706	-
Disc	Nodular Cast Iron	EN-GJS-400-15 EN 1563	-
	Bronze Casting	2.0975 DIN1982	-
	Aluminium Bronze Casting	-	ASTM B148 Grade 9D
	Stainless Steel	304, 316L	AISI
		CF8M	ASTM A351
		1.4408 EN 10213-4	-
	Carbon Steel	1.4462, 1.4469, 1.4404, 1.45711.4462/PTFE EN 10088-3	-
		St52 - PTFE coated EN 10305-1	-
		1.0718 EN 10277-3	-
Nickel Alloy	2.4883/ CW12MW (Hastelloy C-276) ISO 12725	ASTM A494	
Shaft	Stainless Steel	1.4462, 1.4418, 1.4122 1.4104, 1.4401 EN10088-1	-
	Copper alloy	2.0966 DIN 17665	-
	Nickle Alloy	2.4883/ CW12MW (Hastelloy C-276) ISO 12725	ASTM A494
Seat	NBR, EPDM, FPM, VSI, AU, PTFE or CSM		
Tapper pins	1.4571, 144.62, 1.4462, 2.4375, 2.0975, Monel K-500		

Temperature range dependent on the rubber materials as follows:

Materials	Temperature [°C]
NBR	-20°C to 90°C
NBR (Medium Heavy Fuel Oil)	Max. 80°C
EPDM	-10°C to 120°C
FPM	-25°C to 150°C
VSI (Silicon rubber)	-50°C to 150°C
CSM (Chlorosulphonated polyethylene)	-10°C to 100°C

Butterfly valves may be equipped with manual, pneumatic or electric actuator hydraulic¹.

Note 1:

Actuators, remote operating control devices and additional mountings are not included in this type approval.

Application

The butterfly valves of type F012 A/ (K1), T211, T212, T214, Z011 A/ (K1), Z014 A/ (K1) are type approved for the following operating media:

Non-flammable gases, sea water, fresh water, air, oil.²

Note 2:

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 may not be used for flammable gases and applications with flowing media specified as dangerous and toxic fluids.

Body material of copper and copper alloys are subjected to requirements according to DNV Rules Pt.2, Ch.2 – Metallic Materials, Section 10 and 11 and to operating temperatures limits specified in DNV Rules Pt.4, Ch. 6 – Piping Systems, Section 2 – Materials.

Valves fabricated of copper and copper alloy shall not be used for media having temperature above the following limits:

- Copper and aluminum brass: 200°C
- Copper Nickel: 300°C

Main parts of valve (Exclude seat) shall have melting point equal or greater than 925° C.

Valves with disc material grades stainless steel 304 or 316 shall not be used in systems intended for seawater.

Valves cover by this type approval certificate shall not be used in fire main and water spray, foam and sprinkler systems.

In general valves of grey cast iron are subjected to requirements according to DNV Rules Pt.4 Ch.6 – Piping Systems – Section 2 – Materials.

Within machinery spaces valve bodies made of aluminium are not approved for application in fuel, bilge, seawater piping systems.

For application in fire mains and hydrants the valve body is to be protected by type approved fire insulation.

The max. output torque from actuators must not exceed the limit at which the spindle or disc can be damaged if the disc is restrained in any position.

Certification

Application in machinery and piping systems

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

Valve nominal size / Pressure rating

DN > 100 mm / PN > 16 bar

DN ≤ 100 mm / PN ≤ 16 bar

Ship side valves DN > 100 mm
 regardless of pressure rating

Type of Product Certificate (PC) / Issued by

VL Certificate / DNV

W Works Certificate / Manufacturer

VL Certificate / DNV

Material certificates (valve bodies)

In accordance with DNV Rules Pt.4 Ch.6 – Piping systems, Section 2 – Table 3

The valve housing of each valve shall be subjected to a hydrostatic pressure test at minimum 1.5 times the design pressure. For valves intended for ship's side or bottom the test pressure is not to be less than 5 bar.

Holding time: 2 min. for sizes up to 100 mm
5 min. for sizes 125 - 250 mm
10 min. for sizes 275 mm - 450 mm
15 min. for sizes 500 mm and larger

Acceptance criterion: No leakage is permitted.

The valve assembly shall be subjected to a hydrostatic seat leakage test. The test pressure shall at least be equal to 1.1 times the design pressure. The test shall be performed with closed valve with the other end open to atmosphere. The pressure shall be applied independently on each side of the closed disc. For valves intended for ship's side or bottom the test pressure is not to be less than 5 bar.

Holding time: 5 min. for all sizes.
Acceptable criterion: Drop tight

Type Approval documentation

Type Approval Application dated on 2021-09-
Type Approval Assessment Report dated on 2021-09-23

Tests carried out

Body and seat leakage test, burst test

Marking of product

For traceability to this type approval the products are to be marked in particular with:

- Manufacturer's name or trademark
- Valve type designation
- Size
- Maximum design pressure and temperature
- Arrow to indicate direction of flow

Periodical assessment

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 Type Approval are complied with. Refer to DNVGL-CP-0338, Sec.4.

- The certificate is only valid if required periodical assessments are carried out with satisfactory results. To check the validity of this certificate, please look it up in <https://approvalfinder.dnv.com>

END OF CERTIFICATE