

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Butterfly Valves**with type designation(s)
GEMÜ 480, 481, 487, 488

Issued to

GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Ingelfingen-Criesbach, 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 :****Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.****Temperature range:** -10°C to + 150°C**Max. working press.:** Depending on valve nominal sizes: PN 10 - PN 16**Sizes:** DN 25 to DN 600Issued at **Hamburg** on **2018-05-03**This Certificate is valid until **2023-05-02**.for **DNV GL**DNV GL local station: **Augsburg**Approval Engineer: **Guido Friederich**

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.



Product description

Centered disk butterfly valves sizes for installation in piping systems.

Valve design: ISO 5752/20, EN 558-1/20, API 609 Category A
Valve side flanges: DIN EN 1092, ASME B 16.5, AS 2129 (D/E), BS 10 (D/E), JIS K10
Valve top flange: EN ISO 5211.
Butterfly valve design styles according to the following types:
Wafer type; - Lug type; - U-Type

Butterfly valve nominal sizes:

Wafer type DN 25 to DN 600
Lug type DN 50 to DN 400
U-Type DN 400 to DN 600

Pressure ratings: PN 3, PN 6, PN 10, PN 16 [Depending on valve nominal sizes]

Design temperature: -10°C to +150°C [Depending on seat material]

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

Note:

Actuators and additional mountings are not included in this type approval.

Materials

Item	Material type	Standard
Valve body	Nodular cast iron EN-GJS-400-15	EN-JS 1030 EN 1563
Valve stem	Stainless steel	AISI 420 / EN 1.4021
Valve disk	Stainless steel Nodular cast iron EN-GJS-400-15 Super Duplex	ASTM A351 CF8M / EN 1.4408 EN-JS 1030 DIN EN 1563 1.4469 EN 10213-4
Seat	NBR, EPDM, FPM	

Seat material and operating temperature range:

EPDM	-10 to +130 °C
NBR	-10 to +100 °C
FPM	-10 to +150 °C

Application/Limitation

Butterfly valves for control and shut-off applications

Operating media: Non flammable gases, sea water, water, air, oil.

Note:

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.

Type Approval documentation

Tests carried out / Production testing

The butterfly valves have been tested in accordance with the following standards
DNV GL Pt. 4 Ch. 6 – Piping systems
DNV GL CP 0186 – Valves;
DIN EN 12266-1 – “Industrial valves – Testing of metallic valves”, Part 1
“Pressure tests, test procedures and acceptance criteria –
Mandatory requirements

The butterfly valves are subjected to the following scope of tests

Test standard: EN 12266-1 / DNVGL Pt.4 Ch.6 DNV GL CP 0186		Purpose
Title	Test reference	
Shell strength	P10	To confirm the pressure containing capability of the shell against internal pressure Test pressure = 1,5 times the design pressure
Shell tightness	P11	To confirm the leak tightness of the shell including the operating mechanism sealing against internal pressure Test pressure = 1,5 times the design pressure
Seat tightness	P12	To confirm the capability of the seat(s) to comply with the specified leakage rate, Leakage rate A - at the time of manufacture - In the direction(s) for which the valve is designed Test pressure = 1,1 times the design pressure
Nominal size		Minimum test duration
All butterfly valve types		Type test -liquid or gas
From DN 50 up to DN 350 and above		10 Min

Certification

Application in machinery and piping systems
Valves intended to be installed in piping system 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

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 GL

W Works Certificate / Manufacturer

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 the products are to be marked with:

- Manufacturers name or trade mark
- Valve type designation
- Size
- Maximum design pressure and temperature

Periodical assessment

A condition for retention of the Type Approval Certificate in its validity period is that periodical assessments are successfully carried out.

The objective of the periodical assessment is to verify that the conditions for the type approval have not been altered.

The main scope of the periodical assessment will normally include:

- Verification of the TA applicant's production and quality system w.r.t ensuring continued consistent production of the type approved products at the TA applicant's own premises and at other companies that are given the responsibility for manufacturing of the products.
- Review of the TA documentation and that this is still used as a basis for the production
- Review of possible changes to the design, the material and the performance of the product
- Verification of the product marking

END OF CERTIFICATE