

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Butterfly Valves**with type designation(s)
1xx, 2xx, DF32, DF27 & DF25 Series

Issued to

Dalian Marine Valve Co., Ltd.
DALIAN LIAONING, Chinais found to comply with
DNV GL rules for classification – Ships
DNV GL class programme DNVGL-CP-0186 – Type approval – Valves
Det Norske Veritas' Offshore Standards**Application :****The valves may be used as regulation valves in systems as specified in the certificate.****Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.****Temperature range:** See certificate
Max. working press.: See certificate
Sizes: See certificateThis Certificate is valid until **2021-06-30**.Issued at **Hamburg** on **2016-07-01**DNV GL local station: **Dalian**Approval Engineer: **Guido Friederich**for **DNV GL**-----
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

Product	Type	Pressure	Material	Seat Material
1xx Series	Centric. Wafer, flange or double flange, DN50-800, Design according to GB/T 3036, GB/T 12238, JIS F 7480	PN 6/10/16	A)F)G)H)	NBR, FPM
	Centric Type Butterfly valve. Wafer or flange, DN 50-200 Design according to API 609	150 Lb	A)B)C)	
2xx Series	Double Eccentric. Wafer or flange, DN 80-800 Design according to GB/T3037, JIS F 7480	PN 6/10/16	A)D)E)F)G)H)	NBR, FPM
	DN 850-900, Design according to GB/T 12238, JIS F 7480	PN 6/10	A)D)E)F)G)H)	
	Bi-eccentric Butterfly valve DN 80-900 Design according to API 609	150Lb	A)B)C)	
DF32 Series	Double Eccentric. Wafer or flange, DN 80-500 Design according to GB/T 12238, JIS F 7480	PN10/16	A)D)G)H)	PTFE
	Anti-corrosion butterfly valves DN50- 600 Design according to API 609	150Lb	A)B)C)	
DF27 Series	Double Eccentric. Flange, DN 80-500 Design according to JB/T 8527	PN10	A)E)	Metal seat
	DN 100-450, Design according to JB/T 8527	PN10/16		
DF25 Series	Check Valve. DN 50-800 Design according to JB/T 8937	PN10/16	A)E)F)G)H)	NBR, FPM
	Check Valve. DN 65-500 Design according to JB/T 8937	PN25	A)E)F)G)H)	NBR, FPM
	Butterfly Check valves DN50-900 Design according to API594	150Lb	A)B)C)	NBR, FPM Metal seat

Materials:

- A) Cast steel ASTM A216/A216M Grade WCB (Not suitable for seawater)
- B) Cast stainless steel ASTM A351/351A Grade CF8, CF8M, CF3 and CF3M
- C) Cast copper alloy ASTM B584-06a Grade C83600
- D) Cast stainless steel ASTM A351/351M Grade CF8
- E) Cast stainless steel ASTM A351/351M Grade CF8M
- F) Cast bronze ASTM B824 Grade C96-800
- G) Cast iron ASTM A48 Class 35
- H) Nodular cast iron ASTM536 Grade 60-40-18

Application/Limitation

The valves may be used as regulation valves in Fresh water, Sea water, Water ballast, Cargo oil filling & discharge, crude oil transfer systems with following limitations.

- The valves may not be used for sea water cooling system.
- The valves may not be used for sea water systems or hydrocarbon services where "fire safe" application is required ref. DNV Rules for Ships Pt.4 Ch.1, Section 3 - Design Principles and as shut off or quick closing valve.
- The valves are not to be used as stop valves (Closing valves).
- The approval does not include any operating gear for remote control of the valves.
- 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.
- These valves can be used for bilge suction when fitted in connection with a non-return valve.
- When used as ship side valves (metal seated only) the disc must not extend outside the hull plating in open position.

Application/Limitation - continuation

- Bilge valves and ship side valves should always be arranged for manual operation even if these valves are remote controlled. A portable hand pump is not accepted as equivalent to manual operation.
- Material used shall be resistant to the fluid carried through the valves.
- Valves for hydrocarbon service must be equipped with an anti static device.

The valves of cast iron and nodular cast iron with A5 <12% are not permitted fitted in/on the following:

- Media having temperature below 0 °C
- Class I and II piping systems
- Hydraulic piping systems
- Ship's side or bottom and on sea chest
- Collision bulkheads
- Under static head fitted on external wall of fuel oil tanks
- Ballast lines to forward tanks through cargo oil tanks
- Bilge and ballast piping in tunnels in double bottom
- Media having temperature exceeding 120°C

Valves of nodular cast iron are not permitted fitted in/on the following:

- Media having temperature below 0 °C
- Class I piping systems

Generally acceptable temperature range for rubber used for some media:

Type of rubber	Minimum temperature, °C	Maximum temperature, °C		
		Dry air	Seawater steam	Oil
Perbunan (Nitrile or NBR)	-10 to -30	100	80 - 90	60 - 90
Viton (FPM)	-20 to -45	150 - 200	100 - 150	150 - 170

Fabrication testing

Each product is to be accompanied by the following documents:

- Product certificate prepared by the manufacturer.
- Work's certificate 3.1B for the materials used in the body, disc and stem, indicating mechanical and chemical properties and heat treatment. For valves sizes ≤ DN 100 / DN 4" or valves intended for Class III piping systems, a test report (2.2) is sufficient.

The valve housing of each valve shall be subjected to a hydrostatic pressure test at minimum 1.5 times the design pressure.

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 475 and larger

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 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 leakage range: Drop tight

Each valve to be surveyed and certified by DNV GL when required by DNV GL Rules, or by the Purchaser. DNV product certificates are required for valves with DN > 100 mm and PN > 16 bar and for ship side valves with DN > 100 mm regardless of pressure rating. For other valves manufacturers certificate may be accepted.

Job Id: **262.1-015950-3**
Certificate No: **TAP00000HK**

Type Approval documentation

- Assembly drawings
- Design standard overview
- Valve housing wall thickness overview

Marking of product

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

- Manufacturer's trade mark:
- Type designation
- Size
- Max. design pressure or pressure class

Periodical assessment

A condition for retention of the Type Approval Certificate in its validity period is that periodical assessments are successfully carried out. Periodical assessments will be carried out bi-yearly. 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