

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Ball Valve**with type designation(s)
DF197, DF198, DF184

Issued to

Dalian Marine Valve Co., Ltd.
DALIAN LIAONING, China

is found to comply with

DNV GL rules for classification – Ships**DNV GL class programme DNVGL-CP-0186 – Type approval – Valves****Application :****The valves may be used in the following service: Fresh water, sea water, sanitary, ballast water, lube oil transfer, fuel oil transfer, cargo oil filling & discharge on open deck and exhaust gas.****Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.****Temperature range:** 350deg C
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

Valve type	Description	Pressure (Lb)	Material	Seat Material
DF197 Series	Ball valves DN15-50 Design according to ASME / ANSI B16.34	150/300/600	A), B), C)	PTFE
DF198 Series	Ball valves DN 50-300 Design according to ASME / ANSI B16.34	150	A), B)	PTFE
DF184 Series	Ball valves DN15-50 Design according to ASME / ANSI B16.34	150	A), B)	PTFE

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

Application/Limitation

The valves may be used in the following systems:

Fresh water, Sea water, Water ballast, lube oil transfer, fuel oil transfer and exhaust gas.

Max. pressure to be de-rated dependant on temperature.

The approval does not cover systems with oxygen.

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

Valves for hydrocarbon service must be equipped with an anti static device.

Material used, shall be resistant to the fluid carried through the valves.

Using valves with screw thread connection are limited and allowed as following:

Tapered thread:

- Class I piping system, outside diameter not more than 33.7 mm
- Class II and Class III, outside diameter not more than 60.3 mm.

Parallel thread

- Class III piping system, outside diameter not more than 60.3 mm.

Note: Valves with screw thread connection is not allowed for flammable media.

Fabrication testing

Each product is to be accompanied by the following documents:

- DNV GL product certificates for valves with DN > 100 mm having a design pressure, $p > 16$ bar and for ship side valves with DN > 100 mm regardless of pressure rating. For other valves product certificate prepared by the manufacturer .
- Valves shall be delivered with material certificates in accordance with DNV GL Rules for Ships, Pt.4 Ch.6 Sec.2 Table 3

Each valve body is to be subjected to a hydrostatic pressure test at minimum 1.5 times the design pressure.

- Holding time:
 - 2minutes for $DN \leq 100\text{mm}$
 - 5 minutes for $125\text{mm} \leq DN \leq 250\text{mm}$
 - 10 minutes for $275\text{mm} \leq DN \leq 450\text{mm}$

Acceptance criterion: No leakage

Each valve assembly shall be subjected to a hydrostatic seat leakage test at minimum 1.1 times the design pressure. The test shall be performed with closed valve with the other end open to atmosphere.

- Holding time:
 - 5 minutes for all sizes

Acceptance criterion: Drop tight

Each valve shall be certified by DNV GL when required by DNV GL Rules, or by the Purchaser.

Type Approval documentation

- Assembly drawings
- Design standard overview
- Valve housing wall thickness overview
- Initial survey report dated 2011-12-09

Marking of product

For traceability to this type approval, each valve is at least 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