

TYPE APPROVAL CERTIFICATE**This is to certify:****That the Butterfly Valves**

with type designation(s)

2123 double flanged centric, 2502V Lug type centric, 2302V Wafer type centric

Issued to

Tianjin Galaxy Valve Co.,Ltd
TIANJIN TIANJIN, China

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems**DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition July 2015****DNV GL class programme CP-0186 – Type Approval of valves****Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.****The approval is valid for ship, machinery & cargo piping systems onboard DNV classed ships and mobile offshore units.**

Type:	Temperature range:	Max. working press.:	Sizes:
2123 double flanged centric	EPDM: -20°C to +110°C, NBR: -10°C to +80°C, Viton: -10°C to +150°C	PN16	DN50 - DN600
2502V Lug type centric	EPDM: -20°C to +110°C, NBR: -10°C to +80°C, Viton: -10°C to +150°C	PN16/25	DN50 - DN250 (PN25), DN300 - DN700 (PN16)
2302V Wafer type centric	EPDM: -20°C to +110°C, NBR: -10°C to +80°C, Viton: -10°C to +150°C	PN16/25	DN50 - DN250: (PN25) DN50 - DN700: (PN16)

This Certificate is valid until **2020-12-31**.Issued at **Høvik** on **2016-03-14**for **DNV GL**DNV GL local station: **Tianjin**Approval Engineer: **Tom Berg-Nielsen**-----
Marianne Spæren Marveng
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

Centric soft seated butterfly valves of wafer, lug and double flange type

Materials:

Part	Material	Standard
Body	Nodular cast iron ferrittic/pearlittic type ASTM A536-84 65-45-12 Nodular cast iron ferrittic type GGG40 Nodular cast iron ferrittic type JS1030/1040	ASTM A536-84 DIN 1693-73 EN1563-2011
Disc	Stainless Steel CF8M Stainless Steel Monel.K-400/K-500 Stainless Steel Duplex 4A/5A Aluminium Bronze C95400/C95800 Aluminium Bronze AB2 Aluminium Bronze CC333G	ASTM A351-2006 ASTM B8665-2004 ASTM A890 99 BTM B148-2003 BS1400-1985 BS EN 1982-2008
Shaft	Stainless steel 316, 410 or 431 Stainless Steel Monel.K-400/K-500 Duplex F51/F53/F55	ASTM A276-2006 ASTM B8665-2004 ASTM A182-2013
Seat	Rubber EPDM, NBR or VITON	ASTM D2000-1999

Limitation

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

Each valve is to be surveyed and certified by DNV GL when required by the DNV GL Rules. DNV GL product certificate is required for valves with DN>100 mm and PN>16 bar and for ship side/bottom valves regardless of pressure rating. For other valves manufacturer's certificate is accepted.

Each product/delivery is to be accompanied by the following documents:

- Work's Certificate for materials used in valve body indicating mechanical and chemical properties. Valve bodies with nominal diameter 100 mm or less will be accepted with test report.
- Instruction manual/specification sheet.

These valves with body of nodular cast iron A536 65-45-12 (ferrittic-pearlitic type) shall not be used for class I and II piping systems. See table 1 in the DNV GL Ship Rules Pt.4 Ch.6 Sec.1

These valves with body of nodular cast iron A536 65-45-12 (ferrittic-pearlitic type) shall not to be used for piping subject to pressure shock, excessive strains and vibration.

These valves with body of nodular cast iron A536 65-45-12 (ferrittic-pearlitic type) can be used for class III piping, with the following exceptions:

- valves fitted on ship sides and bottom and on sea chests
- valves fitted on collision bulkhead
- valves under static head fitted on the external wall of fuel tanks, lube oil tanks and tanks for other flammable oils
- valves for fluids with temperatures in excess of 120°C.

These valves with body of nodular cast iron A536 65-45-12 (ferrittic-pearlitic type) shall not be used for media outside a temperature range of 0°C to +200°C.

Valves with EPDM seat is not to be used for hydrocarbon services

Butterfly valves are not to be used as stop valves on fuel oil tanks.

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

The maximum 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 the disc must not extend outside the hull plating in open position.

Bilge valves and shipside 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.

All valve bodies shall be subjected by the manufacturer to a hydrostatic test at a pressure equal to 1.5 times the nominal pressure (The nominal pressure is the maximum allowable working pressure at room temperature). The test pressure need not be more than 70 bar in excess of the nominal pressure. For valves fitted on ship's side and bottom the test pressure shall not be less than 5 bar.

Butterfly valves fitted on ship's side and bottom are also to be hydrostatically tested at a pressure equal to 5 bar applied independently on each side of the closed disc.

The Society's product certificates are required for valves with $D_N > 100$ mm having a design pressure, $p > 16$ bar and for ship side valves with $D_N > 100$ mm regardless of pressure rating. For other valves manufacturers certificate will be accepted.

Valves shall be delivered with material certificates in accordance with DNV GL Ship Rules Pt. 4 Ch. 6, Sec. 2, Table 3.

Type Approval documentation

Tests carried out

Burst test of valve body

Marking of product

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

- Manufacturer's name or trade mark
- Type designation
- Size
- Maximum design pressure(s) or pressure class
- Materials (body, disc and seat)
- Production date (year/month)

Periodical assessment

For retention of the Type Approval, DNV GL Surveyor shall perform a survey – every second year and before the expiry date of this certificate – to verify that the conditions for the type approval are complied with.