

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Butterfly Valves

with type designation(s)

Wafer type, Lug type, Double flanged type

Issued to

Qingdao Huaan Xinda Machinery Co., Ltd.
Qingdao, China

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 :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Type:	Temperature range:	Max. working press.:	Sizes:
Wafer type	0 to 80 °C	PN10, PN16 & PN25	DN40 to DN600 (for PN10 & PN16), DN40 to DN300 (for PN25)
Lug type	0 to 80 °C	PN10, PN16 & PN25	DN40 to DN900 (for PN10 & PN16), DN40 to DN300 (for PN25)
Double flanged type	0 to 80 °C	PN10, PN16 & PN25	DN50 to DN1200 (for PN10 & PN16), DN50 to DN300 (for PN25)

This Certificate is valid until **2017-12-31**.

Issued at **Høvik** on **2016-06-01**

for **DNV GL**

DNV GL local station: **Qingdao**

Approval Engineer: **Maheshraja Venkatesan**

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

Butterfly valve of wafer, lug & double flanged type with rubber lining according to EN 593:2011:-

Valve type	Pressure rating	Sizes (DN)
Wafer type	PN10	40, 50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500 & 600
	PN16	40, 50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500 & 600
	PN25	40, 50, 65, 80, 100, 125, 150, 200, 250 & 300
Lug type	PN10	40, 50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800 & 900
	PN16	40, 50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800 & 900
	PN25	40, 50, 65, 80, 100, 125, 150, 200, 250 & 300
Double flanged type	PN10	50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 600, 650, 700, 750, 800, 900, 1000 & 1200
	PN16	50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 600, 650, 700, 750, 800, 900, 1000 & 1200
	PN25	50, 65, 80, 100, 125, 150, 200, 250 & 300

Materials for the wafer, lug & double flanged type:

Part	Material Description	Material No/standard
Body	Nodular cast iron	EN-GJS-400-18-LT EN 1563
	Grey cast iron ¹⁾	EN-GJL-250, EN 1561
	Carbon steel	ASTM A216 Gr. WCB
Disc	Nodular cast iron	EN-GJS-400-18-LT EN 1563
	Stainless steel	ASTM A351 Gr. CF8M
	Aluminum-Bronze	ASTM B148 UNS C95400 & C95800
Shaft	Stainless steel ²⁾	ASTM A276 type 316, ASTM A582 type 416, ASTM A564 type 630 (S17400)
Lining/seat	Rubber	EPDM, NBR, Viton, Silicon, Rubber, Neoprene, Nitrile, Hypalon, PTFE

¹⁾ Valves of grey cast iron - up to size DN600

²⁾ Type 316 & 416 material grade for shaft/ spindle - up to 16 bar & size DN150

Limitations

Valves of grey cast iron shall not to be used for piping subject to pressure shock, excessive strains and vibration.

Valves of grey cast iron may be used for class III piping, with the following exceptions:

- pipes and 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 & lub. oil tanks

Valves having EPDM lining are not to be used for hydrocarbon service.

Lining material used shall be resistant to the fluid carried through the valves.

Nodular cast iron of the ferritic type (EN-GJS-400-18-LT), with specified minimum elongation of 12%, may be used in class II and III piping and in pipes and valves located on the ship's side and bottom and valves on the collision bulkhead.

The valves may not be used as shut off or quick closing valve.

The valves are not considered fire safe.

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.

Type Approval documentation

- Manufacturer's product catalogue
- Manufacturer's instruction manual, calculations and specifications.
- Drawing: D71X-10/16-00 Assembly drawing 2" to 24" 2 pages
- Manufacturer's burst test reports No.: 06-B-01, 06-B-02, 06-B-03, 06-B-04, and 06-B-05 dated 2006-03-28 witnessed by DNV.
- DNV type approval application dated 2013-11-15 signed by DNV Qingdao, China
- DNV type approval assessment report dated 2013-11-28 signed by DNV Qingdao, China
- Manufacturer's burst test reports dated 2014-12-16 witnessed by DNVGL.
- Drawing no: D341X-10/16-00, for double flanged butterfly valves for sizes DN50-DN300.
- DNV type approval assessment report dated 2014-12-16 signed by DNV Qingdao, China
- Justification report to verify that testing methodology for burst testing as per TAP 5-794.40 is acceptable when compared with EN 12516-3
- Burst test report dated 2016-04-18, signed by DNV GL Qingdao, China dated 2016-05-04
- Document titled 'Part 1: TA extension-general' (23 pages) containing scope extension documents including drawings

Tests carried out

Burst test

Production testing

Each valve body shall be subjected to:

- a hydrostatic pressure test at 1,5 times the allowable pressure at room temperature
- an operability test

In addition each valve shall be subject to seat leakage testing as follows:

- 1,1 times the design pressure in the valve flow direction.
- 5 bar applied independently on each side of the disc.

For all testing and acceptance criteria ref. EN 593.

Marking of Product

For traceability to this type approval the valves are to be marked as a minimum with:

- Manufacturers name or trade mark
- Type designation
- Size
- Maximum design pressure or pressure class

Certification

Valve bodies shall be delivered with material certificates in accordance with DNV GL Ship Pt.4 Ch.6 Sec.2 Table 3. Materials with VL and W certificates shall be manufactured in a foundry approved by the society.

DNV GL product certificates are required for valves with DN > 100 mm and design pressure $\geq$ 16 bar, and for ship side valves where DN > 100 mm regardless of pressure. For other valves a manufacturer's product certificate may be accepted.



Job Id: **262.1-000663-8**
Certificate No: **TAP00000CE**

Periodical assessment

For retention of the Type Approval, a 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.