

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Butterfly Valves**

with type designation(s)

Wafer, Lug, Flanged, Long Flanged

Issued to

**Hanyang Valve Ind. Co., Ltd.,
Busan, Republic of Korea**

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****Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.****Temperature range:** 80°C (NBR, EPDM, PTFE), 120°C (viton)**Max. working press.:** JIS 10K and JIS 16K**Sizes:** DN50, DN65, DN80, DN100, DN125, DN150, DN200, DN250, DN 300, DN350, DN400, DN450, DN500, DN550, DN600, DN650, DN700, DN750, DN800, DN900, DN1000This Certificate is valid until **2020-12-31**.Issued at **Høvik** on **2016-05-20**for **DNV GL**DNV GL local station: **Pusan**Approval Engineer: **Simon Ratcliffe**

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 valves. Wall thickness according to EN 12516-1.

Arrangement	Rating	Operation	Connection	Sizes
Concentric	JIS 10K	Lever	Wafer	DN50 ~ DN200
			Lug	
			Flange	
			Long flange	
		Gear	Wafer	DN50 ~ DN1000
			Lug	
			Flange	
			Long flange	
Double eccentric	JIS 16K	Gear	Wafer	DN50 ~ DN1000
			Lug	
			Flange	
			Long flange	

Rating according to JIS B2210 JIS 10K and JIS 16K.

Materials:

Body: Spheroidal graphite cast iron JIS G5502 FCD 450
(nodular ferritic)

Carbon steel JIS G5101 SC 480,
JIS G5121 SCS 13, SCS 14, SCS16,
ALBC JIS H5120 CAC 703

Disc: SCS 13, SCS 14, SCS16, ALBC, BC

Seat: PTFE, RTFE, NBR, EPDM, VITON

Stem: SUS 304, SUS 316, SUS 630, SUS 410

Application/Limitation

Maximum allowable working pressure according to applicable material and rating in JIS B2210.

The valves are not considered fire safe.

Nodular cast iron of the ferritic type, 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.

Valves made from nodular cast iron shall not be used for media having a temperature exceeding 350°C or below 0 °C.

These valves may be used for bilge suction when fitted in connection with a non-return valve.

Bilge valves and shipside valves shall be arranged for manual operation even if these valves are remote controlled. A portable hand pump is not accepted as equivalent to manual operation.

When used as shipside valves the disc must not extend outside the hull plating in open position.

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

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



Job Id: **262.1-011660-3**
Certificate No: **TAP00000AC**

Type Approval documentation



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Tests carried out
N/A

Production testing

Each valve body shall be subjected to a hydrostatic pressure test at;

- 1,5 times the allowable pressure at room temperature.

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.

Testing shall follow procedures and acceptance criteria in EN 12266-1.

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.

Marking of product

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

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

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.