

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Butterfly Valves**with type designation(s)
"A", "LT", 141, 143

Issued to

Ningjin APC Industries Co., Ltd
SHANDONG, 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 :****The valves may be used in the following systems: Fresh water, Lube oil transfer, Fuel oil transfer, cargo oil filling & discharge on open deck, sanitary, compressed air.****Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.**

Type:	Temperature range:	Max. working press.:	Sizes:
"A", "LT"	0°C - 80°C	DN 2" - 8" PN16; DN 10" - 24" PN10	DN 2" - DN 24"
141, 143	0°C - 80°C	PN 25	DN 2" to DN 12"

Issued at **Hamburg** on **2017-03-27**This Certificate is valid until **2022-03-26**.for **DNV GL**DNV GL local station: **Qingdao**Approval Engineer: **Guido Friederich**

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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

Centered disc butterfly valves sizes for installation in piping systems.

Pressure rating: PN16 DN 2" to DN 8"; PN10 DN 10" to DN 24"
"A", Wafer type : PN10/PN16
"LT", Lug type: PN10/PN16
"141", Wafer type: PN25
"143", Lug type: PN25

Material

Item	Material type	Standard
Valve body	Nodular cast iron – EN-GJS-400-18-LT	EN-1563
Valve stem	Stainless steel	EN 1.4401
Valve disk	Aluminium bronze: C958	ASTM B 148 C95800
Seat	NBR	

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 shall be delivered with material certificates in accordance with DNV GL Rules Pt.4 Ch.6, Section 2, Table 3 – Material Certificates

Material certification with (W) works certificate or VL certificate requires a DNV GL approved material manufacturer. See DNV GL Rules Pt.2 – Materials and welding, Ch.1 – General requirements for materials and fabrication.

Certification of valves

DNV GL product certificates are required for valves with DN > 100 mm having a design pressure PN > 16 bar and for ship side valves with DN > 100 mm regardless of their pressure rating.

Butterfly valves approved to be fitted on ship's side and bottom and bodies of valves to fitted on collision bulkhead shall be provided with documentation as required for class II piping systems.

Application/Limitation

The valves may be used in the following systems:

Fresh water, lube oil transfer, fuel oil transfer, cargo oil filling & discharge, sanitary systems and compressed air.

Limitations

- Butterfly valves of "A" wafer type and "141" wafer type are not permitted for installation at ship's side.
- The butterfly valves are not permitted for operating media having temperature below 0°C
- The butterfly valves may not be used for flammable gases and applications with flowing media specified as dangerous and toxic fluids.

Limitations – continuation

- For use as bilge valves and shipside valves the butterfly 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.
- The type approval does not include any operating gear for remote control of the valves.
- The valves are not to be used as stop valves on fuel oil tanks.

Fabrication testing

The valve housing of each valve shall be subjected to a hydrostatic pressure test.
For valves intended for ship's side or bottom the test pressure is not to be less than 5 bar.

Standards for valve testing: DNVGL Pt.4 Ch.6 DNV GL CP 0186 Manufacturer's standard	
Type of test	Purpose of test
Pressure test	To confirm the pressure containing capability of the valve body / valve shell against internal pressure. <u>Test pressure</u> = 1,5 times the design pressure <u>Test duration:</u> 2 min. for sizes up to DN 100 / DN 4", 5 min. for size range DN 125 - DN 250 / DN 5" - DN 10", 10 min. for size range DN 300 - DN 450 / DN 12" - 18", 15 min. for sizes above DN 500 and larger / DN 20" and larger.
Seat tightness Seat / leakage test	To confirm the capability of the seat(s) to comply with the specified leakage rate - at the time of manufacture - In the direction(s) for which the valve is designed <u>Minimum test pressure:</u> Equal to design pressure The test to be performed with closed valve disk with the other end open to atmosphere. Test pressure to be applied independently on each side of the closed valve disc. <u>Test duration :</u> 5 min. for all sizes. Acceptable leakage range: Drop tight

Type Approval documentation

Tests carried out

Burst pressure testing (for initial type approval)

Marking of product

For traceability to this type approval the products are to be marked with:

- Manufacturers name or trade mark
- Valve type designation
- Size
- Maximum design pressure and temperature
- Arrow to indicate direction of flow on one way flow valves

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

- Valve certificate in accordance with DNVGL Rules Pt.4 Ch.6
- Appropriate material certificate for materials in accordance with DNVGL Rules Pt.4 Ch.6
- Instruction manual/specification sheet.

Periodical assessment

A condition for retention of the Type Approval Certificate in its validity period is that periodical assessments are successfully carried out.

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