



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. P-13705

This is to certify that the
Butterfly Valves

with type designation(s)
Types A, LT and Double flanged

Manufactured by
Duvalco Valve (Tianjin) Co., Ltd.
Tianjin, China

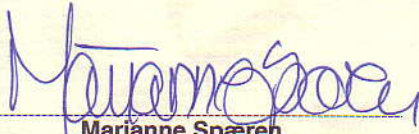
is found to comply with
Det Norske Veritas' Rules for Classification of Ships
Det Norske Veritas' Standards for Certification 2.9 No. 5-794.40

Application

May be used in the following systems: freshwater, marine, petroleum, chemical, food, pharmaceutical, textile, paper making, water supply and drainage, metallurgy and energy system. For specific limitations, see certificate.

Temperature range:	0 to +80°C
Max. working press.:	PN10
Sizes:	See certificate.

Høvik, 2011-02-10
for Det Norske Veritas AS


Marianne Spæren
Head of Section

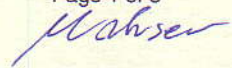


DNV local office:
Dalian

This Certificate is valid until
2015-06-30


Øyvind Skåra
Surveyor

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. If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.





Certificate No.: P-13705
File No.: 794.41
Job Id.: 262.1-011062-1

Product description

Wafer: DN50 - DN1200
Lug: DN50 - DN600
Double flanged: DN50 - DN1200

Materials:
Body and disc: QT400-15
Shaft: 1Cr13
Seat: NBR

Application/Limitation

Material certification of body material for fuel, lubricating oil, hydraulic and flammable fluids

Piping Class		DN>100	DN≤100
I	No	-	-
I	No	-	-
II	Yes	W	R
III	Yes	R	R

Material certification of body material for other media

Piping class		DN>100	DN≤100
I	No	-	-
I	No	-	-
I	No	-	-
II	Yes	W	R
III	Yes	R	R

Explanations:

No: Not allowed
Yes: Allowed
R: Test report
W: Works material certificate

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

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

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

Valves may not be used for sea water systems or hydrocarbon services where "fire safe" application is required ref. DNV Rules for Ships Pt.4 Ch.1 Sec.3 B500.

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.

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



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- Instruction manual/specification sheet.

The valve housing of each valve shall be subjected to a hydrostatic pressure test at minimum 1.5 times the design pressure. The test pressure need not be more than 70 bar in excess of the design pressure.

Holding time: 2 min. for sizes up to 100 mm/4"
5 min for sizes 125 - 250 mm/5" - 10",
10 min for sizes 300 mm - 450 mm/12" - 18",
15 min for sizes 500 mm and larger/ 20" and larger.

No leakage is permitted.

The valve assembly shall be subjected to a hydrostatic seat leakage test. The test pressure shall at least be equal to the design pressure. The test shall be performed with closed valve with the other end open to atmosphere. The pressure shall be applied independently on each side of the closed disc.

Holding time: 5 min. for all sizes.
Acceptable leakage range: Drop tight

Type Approval documentation

Drawings as included in letter received with letter dated 2010-12-28.
Burst test reports witnessed by DNV dated 2010-12-16.

Tests carried out

Burst test

Marking of product

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

- Manufacturer's name:
- Type designation
- Size
- Max. design pressure(s) or pressure class
- Direction of flow
- Serial numbers on each valve, as relevant

Certificate Retention Survey

For retention of the Type Approval, a DNV 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.