DNV·GL

Certificate No:
TAP000007X

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Butterfly Valves

with type designation(s)
DANAIS TBT II, DANAIS MT II

Issued to
AMRI-KSB
LA ROCHE CHALAIS, France

is found to comply with
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV GL rules for classification – Ships Pt.5 Ch.7 Liquefied gas tankers
DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition July 2015
DNV GL class programme DNVGL-CP-0186 – Type approval – Valves

Application :

Butterfly valves approved for use in ship piping, machinery piping and cargo piping systems.

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:
DANAIS TBT II	**See cert**	**Class 150**	**2" to 56"**
DANAIS MT II	**See cert**	**Class 150**	**2" to 48"**

This Certificate is valid until **2019-06-30**.

Issued at **Høvik** on **2016-06-29**

for **DNV GL**

DNV GL local station: **Saint Nazaire**

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.

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Job Id: **262.1-019388-1**
Certificate No: **TAP000007X**

Product description

Butterfly valves, wafer, lug, butt weld and flanged types.

Type	Fitting	Pressure class	Sizes
DANAIS TBT II	Wafer, Lug	Class 150*	DN50 – DN1200 (2" – 48")
	Flanged		DN50 – DN1650 (2" – 56")
	Butt weld top entry		DN50 – DN1200 (2" – 48")
	Butt weld side entry		DN200 – DN1200 (2" – 48")
DANAIS MT II Carbon steel	Wafer, Lug		DN50 – DN1200 (2" – 48")
	Flanged		DN50 – DN1200 (2" – 48")
DANAIS MT II Stainless steel	Wafer, Lug		DN50 – DN1200 (2" – 48")
	Flanged		DN50 – DN1200 (2" – 48")

*DANAIS TBT II is limited to maximum pressure 10 bar for temperatures below -55 °C.

Materials

Part	DANAIS MT II	DANAIS TBT II
Body and disc	Carbon steel ASTM A216 WCC Stainless steel A351 CF8M	Stainless steel ASTM A351 CF3M, CF8M
Shaft	AISI 431, AISI 316L, ASTM A564 Gr. 630	ASTM A479 316L ASTM A638 Gr. 660
Seat	EPDM, VITON, Reinf. PTFE, AISI 316L, Nickel or Copper	Copper, Nickel, AISI 316L, Inconel 718 or ASTM A638 Gr. 660

Application/Limitation

Maximum allowable working pressures shall be according to ASME B16.34 Class 150, with the exception of DANAIS TBT II copper seated models below -55 °C which are limited to 10 bar.

Allowable temperatures and pressures are dependent on valve type and seat material

Valve type	Body material	Seat material	Sizes	Min/Max. temp	Max. pressure
Metal seated					
DANAIS MT II	Carbon steel	316L Nickel Copper	All sizes	-29/260 °C	Class 150
DANAIS MT II	Stainless steel	316L Nickel Copper	All sizes	-55/260 °C	Class 150
DANAIS TBT II	Stainless steel	316L, Nickel Inconel 718 ASTM A638 Gr. 660	All sizes	-55/260 °C	Class 150
DANAIS TBT II	Stainless steel	Copper	All sizes	-55/260 °C	Class 150
			DN100 – DN700 (4" – 28") DN900 (36")	-196/260 °C	10 bar
Soft seated					
All types	All types	EPDM	All sizes	-35/130 °C	Class 150
		Viton	All sizes	-20/200 °C	Class 150
		RPTFE	All sizes	-55/190 °C	Class 150

Stainless valves are not approved for sea water systems.

Valves with non-metallic seats are not considered fire safe.

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

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

Butterfly valves are not to be used as quick closing valves on fuel oil tanks or ship’s side and bottom or as stop valves on fuel oil tanks.

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.

Screwed-on valve bonnets/bottoms shall not be used for valves with nominal diameter exceeding 40 mm in Class I piping systems, for valves on ship's side and bottom and for valves in systems for flammable fluids.

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

Type Approval documentation

Tests carried out
Cryogenic testing DANAIS TBT II, 10 bar, sizes DN100 to DN700 and DN900.

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.

In addition to the above tests, cryogenic testing consisting of valve operation and leakage verification (to BS6364) for a minimum of 10% of each type and size of valve intended to be used at a working temperature below -55°C shall be undertaken (DNV GL Ship P.5 Ch.7. Sec.5 [13.1.1])

Certification
LNG/LPG service, liquefied gas carriers, gas fuel systems.
Material certificate requirements are outlined in DNV GL Ship Pt.5 Ch.7 Sec.1 Table 8.

DNV GL product certificates are required for valves with DN ≥ 100 mm. For valves with DN < 100 mm, a manufacturer's product certificate may be accepted.

Other service
Material certificate requirements are outlined in DNV GL Ship Pt.4 Ch.6 Sec.2 Table 3.

DNV GL product certificates are required for valves with DN > 100 mm and design pressure ≥ 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:
- Type designation
- Size
- Max. design pressure
- Manufacturer's trade mark

All valves shall be clearly marked to indicate where the connected pipelines lead.

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