

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Butterfly Valves**with type designation(s)
SYLAX, TILIS

Issued to

SOC LA SAS
MERY, France

is found to comply with

DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition July 2015
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:
SYLAX	-25°C to 200°C (see page 3)	6 bar to 25 bar	DN32-1200
TILIS	-25°C to 200°C (see page 3)	6 bar to 25 bar	DN50-300

Issued at **Høvik** on **2017-12-15**This Certificate is valid until **2022-06-30**.for **DNV GL**DNV GL local station: **Marseille**Approval Engineer: **Adel Samiei**

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

Two types of butterfly valves designed according to EN593:2009

SYLAX:

Fig.1 - Wafer type with 2 centring lugs - DN32,40,50,65,80,100,125,150, 200, 250, 300

Fig.2 - Lug type with tapped lugs - DN32,40,50,65,80,100,125,150,200,250,300,350,400,450,500,600

Fig.3 - Double flange type - DN150, 200, 250,300,350,400,450,500,600,700,800,900,1000,1200

TILIS:

Fig.1 - Lug type with tapped lugs - DN50,65,80,100,125,150,200,250,300

Fig.2 - Wafer type with 4 centring lugs - DN50,65,80,100,125,150,200,250,300

Flange rating:

Flange rating	EN1092-1 & EN1092-2				
	PN6	PN10	PN16	PN25	PN40
Sylax Fig 1	OK	OK	OK	OK	OK
Sylax Fig 2 DN32 up to DN350	OK	OK	OK	OK	OK
Sylax Fig 2 DN400 up to DN600	OK (Except DN450)	OK	OK	DN500	NO
Sylax Fig 3 DN150 up to DN350	OK (Except DN200)	OK	OK	DN200, 300	NO
Sylax Fig 3 DN400 up to DN1200	OK	OK	OK	DN500, 900, 1200	NO
Tilis Fig 1	OK	OK	OK	DN50, 80, 100, 200, 250	DN50, 80, 100
Tilis Fig 2	OK	OK	OK	OK	OK

Flange rating	ASME/ANSI B16.5	BS10		JIS B2238 & JIS B2239	
	Class 150	Table d	Table e	10K	16K
Sylax Fig 1	OK	OK	OK	OK	OK
Sylax Fig 2 DN32 up to DN350	OK	OK	OK	OK	OK
Sylax Fig 2 DN400 up to DN600	OK	NO	NO	OK (Except DN600)	DN400, 500
Sylax Fig 3 DN150 up to DN350	OK	OK	OK	OK	DN200, 300
Sylax Fig 3 DN400 up to DN1200	DN400 up to DN600	NO	NO	OK	DN400, 500, 600, 900, 1200
Tilis Fig 1	OK	OK (Except DN100,250)	OK	OK (Except DN300)	DN100,200
Tilis Fig 2	OK	OK	OK	OK (Except DN300)	OK (Except DN150, 300)

Materials:

Body: Nodular Cast Iron EN GJS 400-15 (JS-1030) (ferritic type)
Carbon steel ASTM A216 WCB (Up to DN300)

Disc: Nodular Cast Iron EN GJS 400-15 (JS-1030) (ferritic type), Stainless steel AISI 316/316L
Aluminium Bronze, Titanium T40.

Stem: Stainless Steel AISI 420, AISI 316L, AISI 630
Titanium T40 (Up to DN350)

Internal seat: SYLAX: EPDM, High grade nitrile, Silicone, FKM, White EPDM, White nitrile, CSM
(Hypalon), Carboxylated nitrile
TILIS: EPR PTFE coated

Application/Limitation

Valves covered by this certificate are approved to be use in ship piping, machinery piping and cargo piping systems.

Design temperature range for rubber materials:

Liner Material	Temperature Range	Pressure
EPDM	-15° up to +120°C	16 bar up to DN1200
	-10° up to +90°C	20 bar up to DN350
		25 bar up to DN150
High grade Nitrile (H.NBR)	+5° up to +85°C	16 bar up to DN1200
		20 bar up to DN200
		25 bar up to DN150
Silicone	-25° up to +200°C	6 bar up to DN1200
		10 bar up to DN200
FKM	+5° up to 180°C	10 bar up to DN1200
White EPDM	+8° up to +80°C	10 bar up to DN1200
White Nitrile	+5° up to +70°C	6 bar up to DN1200
		10 bar up to DN150
CSM (Hypalon)	+5° up to +90°C	10 bar up to DN1200
		16 bar up to DN350
Carboxyted Nitrile	+5° up to +110°C	6 bar up to DN1200
		10 bar up to DN150
EPR PTFE coated	+5° up to +150°C	6 bar up to DN300
		10 bar up to DN150

EPDM is not to be used for hydrocarbon applications.

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

Valves covered by this certificate shall not be considered fire safe and cannot be used in systems where fire safe applications are required.

Nodular cast iron of the ferritic type (EN GJS 400-15), 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. In this case minimum design temperature shall not be less than 0°C.

Austenitic stainless steels (e.g. AISI 316/316L) are not seawater resistant and shall not be used in direct contact with seawater.

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

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

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.

This certificate does not cover valves installed in LNG/LPG applications.

Type Approval documentation

Production tests

All valve bodies shall be subjected by the manufacturer to a hydrostatic test at a pressure equal to 1.5 times the nominal pressure (The nominal pressure is the maximum allowable working pressure at room temperature).

All valve assemblies shall be subjected to seat leakage test at 1.1 times maximum working pressure at closed position.

Production Testing and acceptance criteria shall be in accordance with EN 12266-1, Rate A.

Valves fitted on ship's side and bottom are also to be hydrostatically tested at a pressure equal to 5 bar applied independently on each side of the closed disc.

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 ≥ 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, the final products are to be marked with:

- manufacturer's name or trade mark
- valve type designation
- size
- maximum design pressure and temperature
- arrow to indicate direction of flow on one way flow valves

Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNVGL-CP-0338.