

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Butterfly Valves

with type designation(s)
KE

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
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. (see limitations in certificate)

Temperature range: 0°C to 160°C
Max. working press.: 10 bar
Sizes: DN40 to DN600 (1 1/4" to 24")

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

Issued at **Høvik** on **2016-08-02**

DNV GL local station: **Saint Nazaire**

Approval Engineer: **Simon Ratcliffe**

for **DNV GL**

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

Cast iron butterfly valves, wafer and lug type. Twin-piece body where the inner lining acts as the flange gasket. Disc overmolded or pure metal.

Rating PN 10
Sizes DN40 to DN600

Body:

DN40 to DN300: Ductile cast iron, EN1563 EN-GJS-400-18-LT

DN350 to DN600: Ductile cast iron, EN1563 EN-GJS-400-15-LT

Disc: Stainless steel 1.4408 EN10213-4 alt. 1.4404 EN10272

Shaft: Stainless steel type 17-4, 1.4542 EN10272

One-piece shaft/disc: Stainless steel type 13% Cr or 17-4 overmolded in PFA

Internal Seat and Lining: PFA-TEFLON, with silicone or Viton back up liner.

Application/Limitation

Maximum allowable working pressures shall be according to EN 1092-2.

The valves 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.

The valves are not permitted in class I piping and shall not be used in piping subject to pressure shock, excessive strains and vibration.

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

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

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.

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

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

The valves are not considered fire safe.

Type Approval documentation

<i>Doc no.</i>	<i>Rev.</i>	<i>Description</i>	<i>Status</i>
FT-A8-014 CDI 001	01	General drawing DN40 to DN100, dated 2013-04-12	AP
FT-A8-013 CDI 001	01	General drawing DN125 to DN300, dated 2013-04-12	AP
FT-A8-024 CDI 001	01	General drawing DN350 to DN500, dated 2013-04-12	AP
FT-A8-025 CDI 001	01	General drawing DN600, dated 2013-04-12	AP
0166.1		Technical leaflet KE Plastomer DN 40-600 PS 10 bar	FI
0167.1		Technical leaflet KE Elastomer DN 40-300 PS 10 bar	FI
R390000599	D	KE Valve Calculation PN10 DN40 - DN600	FI
X24211_ZDR_B01_B		KE Valve DN600	AP
X21635_ZDR_B01_A		KE valve Liner DN600	FI
X21634_ZDR_B01_A		KE valve Liner DN500	FI
X21633_ZDR_B01_A		KE valve Liner DN450	FI
X21632_ZDR_B01_A		KE valve Liner DN400	FI

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X21631_ZDR_B01_A	KE valve Liner DN350	FI
X21593_ZDR_B01_A	KE Valve DN500	AP
X21592_ZDR_B01_A	KE Valve DN450	AP
X21591_ZDR_B01_A	KE Valve DN400	AP
X21590_ZDR_B01_B	KE Valve DN350	AP
X20914_ZDR_B01_A	KE Valve Liner DN300	FI
X20913_ZDR_B01_B	KE Valve Liner DN250	FI
X20912_ZDR_B01_A	KE Valve Liner DN200	FI
X20911_ZDR_B01_A	KE Valve Liner DN150	FI
X20910_ZDR_B01_A	KE Valve Liner DN125	FI
X20909_ZDR_B01_A	KE Valve Liner DN100	FI
X20908_ZDR_B01_A	KE Valve Liner DN80	FI
X20907_ZDR_B01_A	KE Valve Liner DN65	FI
X20906_ZDR_B01_A	KE Valve Liner DN50	FI
X20905_ZDR_B01_A	KE Valve Liner DN40	FI
X20859_ZDR_B01_A	KE Valve Lug DN300	AP
X20858_ZDR_B01_A	KE Valve Lug DN250	AP
X20857_ZDR_B01_A	KE Valve Lug DN200	AP
X20856_ZDR_B01_A	KE Valve Lug DN200	AP
X20855_ZDR_B01_A	KE Valve Lug DN150	AP
X20854_ZDR_B01_A	KE Valve Lug DN125	AP
X20853_ZDR_B01_A	KE Valve Lug DN100	AP
X20852_ZDR_B01_A	KE Valve Lug DN80	AP
X20851_ZDR_B01_A	KE Valve Lug DN80	AP
X20850_ZDR_B01_B	KE Valve T4 DN65	AP
X20849_ZDR_B01_B	KE Valve T4 DN50	AP
X20848_ZDR_B01_B	KE Valve T4 DN40	AP
X20847_ZDR_B01_A	KE Valve T1 DN300	AP
X20846_ZDR_B01_A	KE Valve T1 DN250	AP
X20845_ZDR_B01_B	KE Valve T1 DN200	AP
X20844_ZDR_B01_A	KE Valve T1 DN150	AP
X20843_ZDR_B01_B	KE Valve T1 DN125	AP
X20842_ZDR_B01_B	KE Valve T1 DN100	AP
X20841_ZDR_B01_B	KE Valve T1 DN80	AP
X20840_ZDR_B01_B	KE Valve T1 DN65	AP
X20839_ZDR_B01_B	KE Valve T1 DN50	AP
X20838_ZDR_B01_B	KE Valve T1 DN40	AP
X21888_ZDR_B01_A	KE Rubber DN200	AP
X21883_ZDR_B01_A	KE Rubber DN80	AP
X21701_ZDR_B01_A	KE Rubber Liner DN300	FI
X21700_ZDR_B01_A	KE Rubber Liner DN250	FI
X21699_ZDR_B01_A	KE Rubber Liner DN200	FI

X21698_ZDR_B01_A	KE Rubber Liner DN150	FI
X21697_ZDR_B01_A	KE Rubber Liner DN125	FI
X21696_ZDR_B01_A	KE Rubber Liner DN100	FI
X21695_ZDR_B01_A	KE Rubber Liner DN80	FI
X21694_ZDR_B01_B	KE Elastomer Liner DN65	FI
X21693_ZDR_B01_B	KE Elastomer Liner DN50	FI
X21692_ZDR_B01_B	KE Elastomer Liner DN40	FI
X21691_ZDR_B01_A	KE Rubber DN300	AP
X21690_ZDR_B01_A	KE Rubber DN250	AP
X21689_ZDR_B01_A	KE Rubber DN200	AP
X21688_ZDR_B01_A	KE Rubber DN150	AP
X21687_ZDR_B01_A	KE Rubber DN125	AP
X21686_ZDR_B01_A	KE Rubber DN100	AP
X21685_ZDR_B01_A	KE Rubber DN80	AP
X21684_ZDR_B01_B	KE Elasto DN65	AP
X21683_ZDR_B01_B	KE Elasto DN50	AP
X21682_ZDR_B01_C	KE Elasto DN40	AP
X21681_ZDR_B01_A	KE Rubber DN300	AP
X21680_ZDR_B01_A	KE Rubber DN250	AP
X21679_ZDR_B01_A	KE Rubber DN200	AP
X21678_ZDR_B01_A	KE Rubber DN150	AP
X21677_ZDR_B01_B	KE Elasto DN125	AP
X21676_ZDR_B01_A	KE Rubber DN100	AP
X21675_ZDR_B01_A	KE Rubber DN80	AP
X21674_ZDR_B01_B	KE Elasto DN65	AP
X21673_ZDR_B01_B	KE Elasto DN50	AP
X21672_ZDR_B01_C	KE Elasto DN40	AP

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

DNV GL product certificates are required for valves with DN > 100 mm and PN > 16 bar and for ship side valves with DN > 100 mm regardless of pressure rating. For other valves the manufacturer's certificate may be accepted.

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Valve bodies shall be delivered with material certificates according to DNV GL Ship Pt.4 Ch.6 Sec.2 Table 3.

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

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.