

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Butterfly Valves

with type designation(s)
FL(W), FA(WM), FI(WM), FG(W), LUG(W), BBV(W)

Issued to

SIGEVAL, S.A.
Torrejon de Ardoz Madrid, Spain

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 :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Temperature range: dep. on seat and body material, see cert.
Max. working press.: See the certificate
Sizes: See the certificate

This Certificate is valid until **2020-07-18**.

Issued at **Høvik** on **2015-07-19**

DNV GL local station: **Madrid**

Approval Engineer: **Mehdi Rowshan**

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

Wafer, lug and flanged type butterfly valves with soft seats.
Design basis: EN-12516-2:2004

Design types:

Type FL(W) 16 bar: DN25, 32, 40, 50, 65, 80, 100, 125, 150
Type FL(W) 10 bar: DN200, 250, 300, 350, 400, 450, 500, 600, 700, 800
Type FA(WM) 16 bar: DN25, 32, 40, 50, 65, 80, 100, 125, 150
Type FA(WM) 10 bar: DN200, 250, 300
Type FI(WM) 16 bar: DN25, 32, 40, 50, 65, 80, 100, 125, 150
Type FI(WM) 10 bar: DN200, 250, 300
Type FG(W) 16 bar: DN200, 250, 300, 350, 400, 450, 500, 600, 700, 800
Type FG(W) 10 bar: DN200, 250, 300, 350, 400, 450, 500, 600, 700, 800
Type LUG(W) 16bar: DN25, 32, 40, 50, 65, 80, 100, 125, 150
Type LUG(W) 10bar: DN200, 250, 300, 350, 400, 450, 500, 600
Type FL(w) 25 bar: DN25, 32, 40, 50, 65, 80, 100, 125, 150, 200, 250, 300
Type LUG(w) 25 bar: DN25, 32, 40, 50, 65, 80, 100, 125, 150, 200, 250, 300
Type FG(w) 25 bar: DN25, 32, 40, 50, 65, 80, 100, 125, 150, 200, 250, 300
Type BBV(W) 16 bar: DN40, 50, 65, 80, 100, 125, 150
Type BBV(W) 10 bar: DN200, 250, 300, 350, 400, 450, 500, 600, 700, 800

Materials:

Part	Material
Body	
Grey Cast Iron	EN GJL250
Ferritic Nodular Cast Iron	EN GJS400-15
Cast Steel	ASTM A216/A216M WCB
Cast Stainless Steel	ASTM A351/A351 M CF8-CF8M
Cast Tin Bronze	CuSn10-C (CC480K)
Steel	EN10025 S275JR
Stainless Steel	AISI 304/316 S355J2N
Disc	
Cast Stainless Steel	ASTM A351/A351 M CF8/CF8M
Ferritic Nodular Cast Iron	EN GJS400-15
Cast Tin Bronze	CuSn10-C (CC480K)
Cast Aluminum Bronze	DIN1714 G Ni Al Bz F60 CuAl10Fe5NiS-C (CCC3336)
Stem	
Stainless Steel	AISI 420, 304 or 316
Seat	EPDM, NBR or Viton

Application/Limitation

Valves are approved for ship piping systems, machinery piping systems and cargo piping systems onboard ships and offshore mobile units (considering below limitations).
Maximum working temperatures for valves with the following seats:

Sealing	Temperature
EPDM	-40°C to 110°C
NBR (e.g. Perbunan)	-10°C to 100°C
Viton	-20°C to 210°C

EPDM sealing shall not be used in hydrocarbon systems.

The valves may not be used where "fire safe" application is required.

Valves of grey cast iron are not permitted fitted in the following systems:

- Class I and II piping systems
- Service temperatures below 0 °C and above 120°C
- Hydraulic piping systems
- Ship's side or bottom and on sea chest
- Collision bulkheads
- Under static head fitted on external wall of fuel tanks
- Ballast lines to forward tanks through cargo oil tanks
- Bilge and ballast piping in tunnels in double bottom

Valves of nodular cast iron are not permitted fitted in/on the following:

- Class I piping systems
- Service temperatures below 0 °C and above 350°C

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

The maximum output torque from actuators used on butterfly valves must not exceed the limit at which the valve spindle or disc can be damaged if the disc is restrained in any position.

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

In seawater applications, surface preparation and coating of cast iron and cast steels shall be approved by society. Stainless steels AISI 420 and SUS 304 & 316 are not considered as seawater resistant material.

Type Approval documentation

Drawing Nos:

FA(WM)/ FI(WM)-001-DT, General Dimensions DN32-DN300

FA(WM)-010-DT, Technical sheet DN32-DN200

FA(WM)-011-DT, Technical sheet DN250-DN300

FI(WM)-010-DT, Technical sheet DN32-DN200

FI(WM)-011-DT, Technical sheet DN250-DN300

FG(W)-001-DT, General Dimensions DN150-DN800

FG(W)-010-DT, Technical sheet DN200

FG(W)-011-DT, Technical sheet DN250- DN500

FG(W)-012-DT, Technical sheet DN600- DN800

FL(W)-001-DT, General Dimensions DN32-DN800

FL(W)-010-DT, Technical sheet DN32-DN200

FL(W)-011-DT, Technical sheet DN250-DN500

FL(W)-012-DT, Technical sheet DN600-DN800

LUG(W)-001-DT, General Dimensions DN32-DN600

LUG(W)-010-DT, Technical sheet DN32-DN200

LUG(W)-011-DT, Technical sheet DN250-DN500

LUG(W)-012-DT, Technical sheet DN600

PN25-FL(w) -001- DT, FL(w) PN 25 valve general dimensions.
PN25-FL(w) -005- DT, FL(w) PN 25 valve assembly screwing.
PN25-FL(w) -010- DT, FL(w) DN 25/200 PN 25 valve material details
PN25-FL(w) -011- DT, FL(w) DN 250/300 PN 25 valve material details
PN25-LUG(w)-001- DT, LUG(w) PN 25 valve general dimensions.
PN25-LUG(w)-005- DT, LUG(w) PN 25 valve assembly screwing.
PN25-LUG(w)-010- DT, LUG(w) DN 25/200 PN 25 valve material details
PN25-LUG(w)-011- DT, LUG(w) DN 250/300 PN 25 valve material details
PN25-FG(w)-001- DT, FG(w) PN 25 valve general dimensions.
PN25-FG(w)-005- DT, FG(w) PN 25 valve assembly screwing.
PN25-FG(w)-010- DT, FG(w) DN 125/200 PN 25 valve material details
PN25-FG(w)-011- DT, FG(w) DN 250/300 PN 25 valve material details
BBV(W)-001-DT, DN 40/1200, General Dimensions
BBV(W) -010-DT, DN40/200, Materials
BBV(W) -011-DT, DN250/500, Materials
BBV(W) -012-DT, DN600/1200, Materials
Design Reports & calculations

Certification

The Society's product certificates are required for valves with DN > 100 mm having a design pressure, $p > 16$ bar and for ship side valves with DN > 100 mm regardless of pressure rating. For other valves manufacturers certificate be accepted. (Reference is made to DNV GL ship rules Pt.4 Ch.6 Sec.1 Table5) Valve's body shall be delivered with material certificate according to DNV GL ship rules Pt.4 Ch.6 Sec.2 table 3.

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).

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

Marking of product

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

- Manufacturer's name
- Type designation
- Size
- Maximum design pressure or pressure class

Periodical assessment

For retention of the Type Approval a DNV GL Surveyor shall perform a periodical assessment every second Year. The objective of the periodical assessment is to verify that the conditions for the TA are not altered since the TAC was issued.