DNV·GL

TYPE APPROVAL CERTIFICATE

Certificate No:
TAP000015X
Revision No:
2

This is to certify:

That the Butterfly Valves

with type designation(s)
EVS, EVBS, EVMS, EVFS, EVTLS, EVCS, EVBLS, EVUS, EVML, EVFL, EVS-VG

Issued to
Wouter Witzel EuroValve B.V.
Losser, Overijssel, Netherlands

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 January 2018
DNV GL class programme DNVGL-CP-0186 – Type approval – Valves

Application :

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

Temperature range:	**see certificate**
Max. working press.:	**PN10/PN16/PN25 (see page 2)**
Sizes:	**DN50 - DN2200 (see page 2)**

Issued at **Høvik** on **2020-10-27**

This Certificate is valid until **2023-02-19**.
DNV GL local station: **Netherlands CMC**

Approval Engineer: **Mehdi Rowshan**

for **DNV GL**
Digitally Signed By: Zeinab Sharifi
Location: DNV GL Høvik, Norway

Zeinab Sharifi
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

Ten types of butterfly valves designed in accordance with EN 12516-2/-4.

Type	Size	Pressure rating	Type
EVS	DN 50, 65	PN25	Wafer
	DN 80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 900, 1000, 1200, 1400	PN16	
EVBS	DN 50, 65	PN25	Wafer
	DN 80, 100, 125, 150, 200, 250, 300	PN16	
EVMS	DN 80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 750, 800, 900, 1000	PN16	Wafer
EVFS	DN 50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650	PN25	Flanged
	DN 700, 750, 800, 900, 1000, 1200, 1400, 1500, 1600, 1800, 2000, 2100, 2200	PN16	
EVTLS	DN 50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 750, 800, 900, 1000, 1200	PN16	Lugged
EVCS	DN 50, 65	PN25	Wafer
	DN 80, 100, 125, 150, 200, 250, 300	PN16	
EVBLS	DN 50, 65	PN25	Wafer
	DN 80, 100, 125, 150, 200	PN16	
EVUS	DN 600, 700, 750, 800, 900, 1000, 1200, 1400, 1500, 1600, 1800, 2000	PN16	Flanged
	DN 2200	PN10	
EVML	DN 80, 100, 125, 150, 200, 250, 300	PN25	Wafer
	DN 350, 400, 450, 500, 600, 700, 750, 800	PN16	
EVFL	DN 50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600	PN25	Flanged
	DN 700, 800, 900, 1000, 1200, 1400, 1500	PN16	
EVS-VG	DN 50, 65, 80, 100, 125, 150, 200, 250, 300	PN16	Wafer

Valve ends for flanged types (EVFS, EVUS, EVFL) are in accordance with EN 1092-1/EN1092-2.

Material:

Body:	Group	Design temperature
60-40-18, ASTM A395:1999	Cast iron, nodular ferritic	0°C – 350°C
60-40-18, ASTM A536:1999	Cast iron, nodular ferritic	0°C – 350°C
EN-GJS-400-15, EN 1563:1997	Cast iron, nodular ferritic	0°C – 200°C
EN-GJS-400-18U-LT, EN 1563:1997	Cast iron, nodular ferritic	0°C – 350°C
GP240GH(1.0619), EN 10213:2007	Cast steel	-20°C – 450°C
WCB, ASTM A216:2003	Cast steel	-20°C – 450°C
LCB, ASTM A352:2003	Cast steel	-46°C – 371°C
EN-GJL-250, EN1561:1997*	Grey cast iron	0°C – 120°C
G-CUSn10Zn, DIN1705:1981	Copper alloy	0°C – 20°C
UNS C95800, ASTM B 148	Al-Bronze casting	-29°C – 350°C
EN AC-42100 from EN 1706, grade: EN AC-AlSi7Mg0.3 (T6) **	Aluminium alloy	20°C – 200°C

* Can only be used for models EVBS, EVBLS, EVS for sizes DN50-DN600
** Can only be used for models EVS and EVS-VG up to and including DN 300

Disc:

1.4057, EN 10088-3, stainless steel
1.4462, EN10088-3, stainless steel
1.4469, EN 10213:2007, stainless steel
5A UNS J93404, ASTM A890:2003, cast iron

1.4408, EN 10213:2007, stainless steel
F51 S31803, ASTM A 182:2002, stainless steel
CF8M UNS J92900, ASTM A351:2003, stainless steel
1.4517, EN 10213:2007, stainless steel
CC333G, EN 1982:2008, copper alloy
UNS C95800, ASTM B 148, Al-bronze casting
60-40-18, ASTM A395:1999/ASTM A536:1999, cast iron
UNS J26625, ASTM A494:20030 nickel alloy
UNS C95500, ASTM 148

Shaft:

1.4057, EN 10088-3, stainless steel
1.4462, EN10088-3, stainless steel
1.4501, EN 10272, stainless steel
CW307G, EN 1653, copper alloy
NA 18 (Monel K-500), BS 3076:1999, nickel alloy

Seat:

EPDM
NBR
FPM
VMQ (silicone)

Application/Limitation

Pressure temperature rating depending on seat materials:
EPDM: -29°C – 120°C
NBR: 0°C – 80°C
FPM: 0°C – 200°C
VMQ: -40°C – 200°C

The valves covered by this certificate are not:

- Considered fire safe
- To be used as ESD-valves (emergency shut down)
- To be installed in LNG/LPG applications

Materials chosen for the specific system shall be suitable for the intended medium and environmental conditions.
Austenitic stainless steels (A351 CF8M, 1.4057 and 1.4408) are not to be used in direct contact with seawater.

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

Grey cast iron shall not to be used for piping subject to pressure shock, excessive strains and vibration.

Grey cast iron shall not be used for class I and II piping with the following exceptions:

- components in hydraulic piping systems where failure would not render the system inoperative or introduce a fire risk
- pump and filter housings in fuel and lubrication oil systems where the design temperature does not exceed 120°C.

Grey cast iron may be used for class III piping, with the following exceptions:

- pipes and valves fitted on ship sides and bottom and on sea chests
- valves fitted on collision bulkhead
- valves under static head fitted on the external wall of fuel tanks, lub. oil tanks and tanks for other flammable oils
- valves for fluids with temperatures in excess of 120°C.

Nodular cast iron of the ferritic type, 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. The use of nodular cast iron in class I piping shall be subject to consideration for approval in each case.

Type Approval documentation

Drawing No	Rev. /Date	Title
	jan.16	Guide to Nickel Aluminium Bronze for Engineers
	Feb. 14, 2018	Data Sheet Compound VV708D
		Silicone Rubber - VMQ, PMQ, or PVMQ viton-selection-guide
SPP9602/20	12.05.2017	Technical Data Sheet NBR
	09.06.2015	Datablad NGW-70
	11.01.2007	Datablad ESW-70
	11.01.2007	Datablad EDJ-70
	27.07.2004	Datablad EAF-70
		Calculation note DN1600-2200-flanges-PN10
GD102.01.01.001-A.06		Dim Body WAFER
GD102.01.01.001-A.06		Dim Body FLANGED
GD102.01.01.001-A.06		Mech Prop (CALC)
		Design calculation - Body-EV-Wafer type
		Design calculation - Body-EV-Flanged type
PDS01.11.001	2015.04.01	Product data sheet - Wouter Witzel - EVFL
PDS01.10.001	2015.04.01	Product data sheet - Wouter Witzel - EVFS
PDS01.09.001	2015.04.01	Product data sheet - Wouter Witzel - EVML
PDS01.08.001	30.11.2018	Product data sheet - Wouter Witzel - EVMS
PDS01.07.001	2015.04.01	Product data sheet - Wouter Witzel - EVUS
PDS01.06.001	2015.04.01	Product data sheet - Wouter Witzel - EVTLS
PDS01.05.001	2014.04.01	Product data sheet - Wouter Witzel - EVBLS
PDS01.04.001	2015.04.01	Product data sheet - Wouter Witzel - EVBS
PDS01.03.001	2015.03.02	Product data sheet - Wouter Witzel - EVCS
PDS01.01.001	01.08.2017	Product data sheet - Wouter Witzel - EVS
PDS01.12.001	2015.04.01	Product data sheet - Wouter Witzel - EVTLLS
D-AWA016	D	Butterfly valve, 50-300- EVCS
D-AUA058	D	Butterfly valve, 600-2200, EVUS

D-AJA019	D	Butterfly valve, 50-1500, EVFL
D-AHA291	D	Butterfly valve, 50-2200, EVFS
D-AGA003	D	Butterfly valve, 80-800, EVML
D-AFA025	E	Butterfly valve, 80-1000, EVMS
D-ADA150	D	Butterfly valve, 50-1200, EVTLS
D-ACA003	D	Butterfly valve, 50-200, EVBLS
D-ABA071	D	Butterfly valve, 50-300, EVBS
D-AAA279	D	Butterfly valve, 50-1400, EVS
D-AAA199	F	Butterfly valve, 50-2200, EVS
GD102.01.01.001-B- Body EV - Wafer_DN50_EVS-VG - LA0218_ 2020-09-25	B	Design Calculation, DN50_EVS-VG
GD102-01-01-001-B-Body EV-Wafer_DN65_EVS-VG-LA2507_2020-09-25	B	Design Calculation, DN65_EVS-VG
GD102.01.01.001-B - Body EV - Wafer_DN80_EVS-VG - LA0320_2020-09-25	B	Design Calculation, DN80_EVS-VG
GD102.01.01.001-B - Body EV - Wafer_DN100_EVS-VG - LA0419_2020-09-25	B	Design Calculation, DN100_EVS-VG
GD102.01.01.001-B - Body EV - Wafer_DN125_EVS-VG - LA0514_2020-09-25	B	Design Calculation, DN125_EVS-VG
GD102-01-01-001-B-Body EV-Wafer_DN150_EVS-VG-LA0621_2020-09-25	B	Design Calculation, DN150_EVS-VG
GD102-01-01-001-B-Body EV-Wafer_DN200_EVS-VG-LA0818_2020-09-25	B	Design Calculation, DN200_EVS-VG
GD102-01-01-001-B-Body EV-Wafer_DN250_EVS-VG-LA1007_2020-09-25	B	Design Calculation, DN250_EVS-VG
GD102-01-01-001-B-Body EV-Wafer_DN300_EVS-VG-LA1215_2020-09-25	B	Design Calculation, DN300_EVS-VG
LA0218-A	2020-05-04	Body Machine Detail DN50_EVS-VG
LA2507-A	2020-05-04	Body Machine Detail DN65_EVS-VG
LA0320-A	2020-05-04	Body Machine Detail DN80_EVS-VG
LA0419-A	2020-05-04	Body Machine Detail DN100_EVS-VG
LA0514-A	2020-05-04	Body Machine Detail DN125_EVS-VG
LA0621-A	2020-05-04	Body Machine Detail DN150_EVS-VG
LA0818-A	2020-05-04	Body Machine Detail DN200_EVS-VG
LA1007-A	2020-05-04	Body Machine Detail DN250_EVS-VG
LA1215-A	2020-05-04	Body Machine Detail DN300_EVS-VG
FA0206 A	2019-05-28	Body Cast Detail DN50_EVS-VG
FA2506 A	2019-05-28	Body Cast Detail DN65_EVS-VG
FA0308-A	2019-05-28	Body Cast Detail DN80_EVS-VG
FA0408-A	2019-05-28	Body Cast Detail DN100_EVS-VG
FA0506-A	2019-05-28	Body Cast Detail DN125_EVS-VG
FA0607-A	2019-05-28	Body Cast Detail DN150_EVS-VG
FA0805-A	2019-05-28	Body Cast Detail DN200_EVS-VG
1-401010-20121205	2019-05-28	Body Cast Detail DN250_EVS-VG
1-401009-20121205	2019-05-28	Body Cast Detail DN300_EVS-VG
DTAAA000-A	2020-05-08	GA Drawings EVS-VG 50-300

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.

Testing shall follow procedures and acceptance criteria in EN 12266-1 (leakage 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 and design pressure ≥ 16 bar, and for ship side valves where DN>100 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.