DNV·GL

Certificate No:
TAP00001SN

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Butterfly Valves

with type designation(s)
BVKI, Wafer type, BLKI, Lug type, BFKI, Double flange, BVKA, Wafer type, BLKA, Lug type, BVKX, Wafer type, BLKX, Lug type, BVPD, Wafer type, BLPD, Lug type, BVTT, Wafer type, BLTT, Lug type

Issued to
Ghibson Italia S.r.l.
Zola Predosa, BO, Italy

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 :

Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.

Type:	Temperature range:	Max. working press.:	Sizes:
BVKI, Wafer type	Dependent on seat material	see certificate	DN 40-800
BLKI, Lug type	-"-	-"-	DN 40-800
BFKI, Double flange	-"-	-"-	DN 80-600
BVKA, Wafer type	-"-	-"-	DN 40-800
BLKA, Lug type	-"-	-"-	DN 40-800
BVKX, Wafer type	-"-	-"-	DN 50-250
BLKX, Lug type	-"-	-"-	DN 50-250
BVPD, Wafer type	-"-	-"-	DN 40-800
BLPD, Lug type	-"-	-"-	DN 40-800
BVTT, Wafer type	-"-	-"-	DN 32-600
BLTT, Lug type	-"-	-"-	DN 32-600

Issued at **Hamburg** on **2019-08-27**

This Certificate is valid until **2024-08-26**.
DNV GL local station: **Venice**

Approval Engineer: **Guido Friederich**

for **DNV GL**
Digitally Signed By: Drews, Olaf
Location: DNV GL SE Hamburg, Germany
Signing Date: 2019-08-28

Olaf Drews
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

Rubber lined butterfly valves for installation in piping systems.

Valve design:	EN 12516; EN 736; EN 593; API 609
Butterfly valve design styles:	Lug type; Wafer type; Double flange
Pressure / Temperature rating:	ASME B 16.34
Valve face-to-face:	EN 558; ISO 5752/20;
Valve face flanges:	EN 1092; ASTM B 16.5
Valve top flanges:	EN ISO 5211; DIN 3337

Butterfly valves may be equipped with manual, pneumatic or electric actuator. [1]

VALVE TYPE	DESIGN STYLE	SIZE	STEM	PRESSURE RATING	CLASS	DESIGN PRESSURE
BVKI	Wafer type	DN 40-500	2 piece stem	PN 10-16	ANSI 150	16 bar
		DN 600-800	1 piece stem			16 bar
BLKI	Full lug	DN 40-500	2 piece stem	PN 10-16	ANSI 150	16 bar
		DN 600-800	1 piece stem			16 bar
Body material	Nodular cast iron EN-GJS-400-15 (EN-JS1030			Disc material	Carbon steel forged ASTM A105	
	Carbon steel ASTM A216-WCB				Nodular cast iron EN-GJS-400-15 (EN-JS1030	
	Stainless steel ASTM A351 CF8M				Stainless steel ASTM A351 CF8M ASTM A351 CF3M	
	Alu-Bronze ASTM B148-C958.00				Alu-Bronze ASTM B148-C958.00 EN CC333G	
	Aluminium EN AB/AC 46400 AlSi9Cu1Mg EN 1706/EN 1676				"DUPLEX" 1.4470 (GX2CrNiMoN22-5-3) ASTM A351-A890-A995 CD3MN	
					"Super Duplex" 1.4469 ((GX2CrNiMoN26-7-4) ASTM A995 Gr.5A (CE3MN) ASTM A995 Gr.CD3MWCuN/6A	
					"Hastelloy" ASTM A494 CX2MW (C22) ASTM A494 CW-12MW (C276)	
					"Monel" ASTM A494 M35-1	
BFKI	Double flange	DN 80-500 DN 600	2 piece stem 1 piece stem	PN 6 PN10-16	ANSI 150	16 bar
Body material	Nodular cast iron EN-GJS-400-15 (EN-JS1030			Disc material	Carbon steel forged ASTM A105	
					Nodular cast iron EN-GJS-400-15 (EN-JS1030	
					Stainless steel ASTM A351 CF8M ASTM A351 CF3M	
					Alu-Bronze ASTM B148-C958.00 EN CC333G	
					Further disk materials: See butterfly valve type BLKI	

Product description - continuation

VALVE TYPE	DESIGN STYLE	SIZE	STEM	PRESSURE RATING	CLASS	DESIGN PRESSURE
BVKA	Wafer type	DN 40-150 DN 200-800	2 piece stem 1 piece stem	PN 10-16	ANSI 150	20 bar
BLKA	Full lug	DN 40-150 DN 200-800	2 piece stem 1 piece stem	PN 10-16	ANSI 150	20 bar
Body material	Nodular cast iron EN-GJS-400-15 (EN-JS1030			Disc material	Nodular cast iron EN-GJS-400-15 (EN-JS1030	
	Carbon steel ASTM A216-WCB				Stainless steel ASTM A351 CF8M ASTM A351 CF3M	
	Stainless steel ASTM A351 CF8M				Alu-Bronze ASTM B148-C958.00 EN CC333G	
	Alu-Bronze ASTM B148-C958.00				"DUPLEX" 1.4470 (GX2CrNiMoN22-5-3) ASTM A351-A890-A995 CD3MN	
					"Super Duplex" 1.4469 ((GX2CrNiMoN26-7-4) ASTM A995 Gr.5A (CE3MN) ASTM A995 Gr.CD3MWCuN/6A	
					"Hastelloy" ASTM A494 CX2MW (C22) ASTM A494 CW-12MW (C276)	
					"Monel" ASTM A494 M35-1	
BVKX	Wafer type	DN 50-100 DN 125-250	2 piece stem 1 piece stem	PN 16-25	ANSI 150	25 bar
BLKX	Full lug	DN 50-100 DN 125-250	2 piece stem 1 piece stem	PN 16-25	ANSI 150	25 bar
Body material	Nodular cast iron EN-GJS-400-15 (EN-JS1030			Disc material	Stainless steel ASTM A351 CF8M ASTM A351 CF3M	
	Carbon steel ASTM A216-WCB				Alu-Bronze ASTM B148-C958.00 EN CC333G	
	Stainless steel ASTM A351 CF8M				"DUPLEX" 1.4470 (GX2CrNiMoN22-5-3) ASTM A351-A890-A995 CD3MN	
	Alu-Bronze ASTM B148-C958.00 EN CC333G				"Super Duplex" 1.4469 ((GX2CrNiMoN26-7-4) ASTM A995 Gr.5A (CE3MN) ASTM A995 Gr.CD3MWCuN/6A	
					"Hastelloy" ASTM A494 CX2MW (C22) ASTM A494 CW-12MW (C276)	
					"Monel" ASTM A494 M35-1	

Product description - continuation

VALVE TYPE	DESIGN STYLE	SIZE	STEM	PRESSURE RATING	CLASS	DESIGN PRESSURE
BVPD	Wafer type	DN 40-800	2 piece stem	PN 6 PN 10 -16	ANSI 150	10 bar
BLPD	Full lug	DN 40-800	2 piece stem	PN 6 PN 10 -16	ANSI 150	10 bar
Body material	Nodular cast ironEN-GJS-400-15 (EN-JS1030			Disc material	Carbon steel forged ASTM A105	
	Carbon steel ASTM A216-WCB				Nodular cast ironEN-GJS-400-15 (EN-JS1030)	
	Stainless steel ASTM A351 CF8M				Stainless steel ASTM A351 CF8M ASTM A351 CF3M	
	Alu-Bronze ASTM B148-C958.00 EN CC333G				Alu-Bronze ASTM B148-C958.00 – EN CC333G	
	Aluminium EN AB/AC 46400 AlSi9Cu1Mg EN 1706/EN 1676				"DUPLEX" 1.4470 (GX2CrNiMoN22-5-3) ASTM A351-A890-A995 CD3MN	
					"Super Duplex" 1.4469 (GX2CrNiMoN26-7-4) ASTM A995 Gr.5A (CE3MN) ASTM A995 Gr.CD3MWCuN/6A	
					"Hastelloy" ASTM A494 CX2MW (C22) ASTM A494 CW-12MW (C276)	
					"Monel" ASTM A494 M35-1	
BVTT	Wafer type	DN 32-600	2 piece stem	PN 10 -16	ANSI 150	10 bar
BLTT	Full lug	DN 32-600	2 piece stem	PN 10 -16	ANSI 150	10 bar
Body material	Nodular cast iron EN-GJS-400-15 (EN-JS1030			Disc material	Stainless steel ASTM A351 CF8M ASTM A351 CF3M	
	Carbon steel ASTM A216-WCB				Steel ASTM A564 T630 With PTFE coating	
	Stainless steel ASTM A351 CF8M				"DUPLEX" 1.4470 (GX2CrNiMoN22-5-3) ASTM A351-A890-A995 CD3MN	
					"Super Duplex" 1.4469 (GX2CrNiMoN26-7-4) ASTM A995 Gr.5A (CE3MN) ASTM A995 Gr.CD3MWCuN/6A	
					"Hastelloy" ASTM A494 CX2MW (C22) ASTM A494 CW-12MW (C276)	
					"Monel" ASTM A494 M35-1	

Product description - continuation

Seal/ Lining materials:

EPDM -35°C to +130°C	EPDM HT -30°C to +145°C	EPDM White -35°C to +130°C	NBR -25°C to +100°C	NR -40°C to +80°C
FKM -20°C to +200°C	PTFE -60°C to +190°C	CR -20°C to +100°C	MVQ -60°C to +190°C	CARBOXIDE -25°C to +100°C
CSM -20°C to +125°C	PU Polyurethane -20°C to +80°C			

[1] Actuators, remote operating control devices and additional mountings are not included this type approval.

Application

Butterfly valves for control and shut-off applications.
Operating media: Non flammable gases, sea water, water, air, oil. [2]

[2] Fuel oil, lubrication oil, hydraulic oil and thermal oil are in this context regarded as "Flammable liquids".
See DNV GL Rules, Pt. 4 Ch. 1, Section 3 – Design principles

Limitation

- Butterfly valves are not approved for flammable gases and applications with flowing media specified as dangerous and toxic fluids.

- Valves fabricated of nodular cast iron of the ferritic type with specified elongation (A5) of 12% may be used on the following installations:
  - Class II and class III piping systems
  - Ship's side and bottom and on the collision bulkhead

- Valves fabricated of grey cast iron and nodular cast iron with specified elongation (A5) of < 12% are not permitted for the following installations and service conditions:
  - Media having temperature below 0 °C and a temperature exceeding 120°C
  - Class I and II piping systems
  - At the ship's side and bottom, on sea chest and on collision bulkheads
  - Valves under static head fitted on external wall of fuel oil tanks and tanks for other flammable liquids

- The valve lining material shall be compatible with fluid in the system. This shall be documented.
- EPDM shall not be used for hydrocarbon service.
- Body materials of copper, copper alloys, Al-Bronze and Aluminium are subjected to requirements according to DNV GL Rules Pt. 2 Ch.2 – Metallic materials, Secton 10 and 11 and to operating temperature limits specified in DNV GL Rules Pt. 4 Ch.6 – Piping systems, Section 2 – Materials
- The type approved butterfly valve type series are not fire tested.
- The valves are not approved for fire mains and water spray, foam, sprinkler.
- The valves may not be used as shut off or quick closing valve on oil tanks

Tests carried out

Test standard	Type of test
DNVGL Pt.4 Ch.6 DNV GL CP 0186	Pressure test, test pressure 1,5 times the design pressure

Fabrication / Production testing

The butterfly valve types are subjected to the following scope of tests:

Test standard: DNVGL Pt.4 Ch.6 EN 12266-1 ISO 5208, Rate A API 598 Title	Test reference	Purpose
Hydrostatic pressure test	Valve body	To confirm the pressure containing capability of the valve body against internal pressure Test pressure = 1,5 times the design pressure Test duration 2 min. for sizes DN ≤ 10 / DN ≤ 4” 5 min. for sizes 125 ≤ DN ≤ 250 / 5” ≤ DN ≤ 10” 10 min. for sizes 275 ≤ DN ≤ 450 / 11” ≤ DN ≤ 18” 15 min. for sizes DN ≥ 475 / DN ≥ 19” No leakage is permitted.
Seat tightness	Valve seat	To confirm the capability of the seats to comply with the specified leakage rate at the time of manufacture In the direction(s) for which the valve is designed Test pressure = 1,1 times the design pressure Test duration 5 min for all sizes Leakage permitted: Drop tight
Functional test	Valve assembly	Function test of complete assembled valve

Type Approval documentation

The approval is based on the following documentation:
Valve arrangement and cross section drawings :
BFKI, BLKA, BLKI, BLKX, BLPD, BLTT, BVKA, BVKI, BVKX, BVPD, BVTT
Ghibson SSTA Application, dated March 2019
EU Certificate of Conformity, Cert. No. PED/0497/037/02, dated 2019-02-12
EU Certificate of Conformity, Cert. No. PED/0497/387/05, dated 2019-06-19
Manufacturers catalogues:
Ghibson valves catalogue : BVKA / BLKA ; BVKX / BLKX
Ghibson valves catalogue : BVKI / BLKI - BFKI
Ghibson valves catalogue : BVPD / BLPD
Ghibson valves catalogue : BVTT / BLTT
Strength calculations of valve body.
Type Approval Assessment Report, dated: 2018-11-16

Certification

Application in machinery and piping systems
Valves intended to be installed in piping system listed in DNVGL Rules Pt.4,Ch.6 – Section 1 shall be certified according to DNV GL Rules Pt.4 Ch.6 – Piping systems, Section 9

Valve nominal size / Pressure rating	Type of Product Certificate (PC) / Issued by
DN > 100 mm / PN > 16 bar	VL Certificate / DNV GL
DN ≤ 100 mm / PN ≤ 16 bar	W Works Certificate / Manufacturer
Ship side valves DN > 100 mm regardless of pressure rating	VL Certificate / DNV GL

Material certificates (valve bodies)
In accordance with DNV GL Rules Pt.4 Ch.6 – Piping systems, Section 2 – Table

Marking of product

For traceability to this type approval the products are marked according to EN 19 [2016] and in particular with:
Manufacturers name or trade mark
Pressure rating
Valve type designation
Size

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 Type Approval are complied with. Refer to DNVGL-CP-0338, Sec.4.

The main scope of the periodical assessment will normally include:
Verification of the TA applicant's production and quality system w.r.t ensuring continued consistent production of the type approved products at the TA applicant's own premises and at other companies that are given the responsibility for manufacturing of the products.
Review of the TA documentation and that this is still used as a basis for the production
Review of possible changes to the design, the material and the performance of the product
Verification of the product marking

END OF CERTIFICATE