

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Butterfly Valves**

with type designation(s)

HP 111, HP 111-E, HP 112, HP 114, HP 114-E, HP 114-K3

Issued to

**EBRO Armaturen Gebr. Bröer GmbH
Hagen, Nordrhein-Westfalen, Germany**

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 certificates are accepted for installation on all vessels classed by DNV GL.****Type:****HP 111, HP 111-E****HP 112****HP 114, HP 114-E, HP 114-K3****Temperature range: Max. working press.: Sizes:****for all types****see certificate**Issued at **Hamburg** on **2018-05-15**for **DNV GL**This Certificate is valid until **2023-05-14**.DNV GL local station: **Essen**Approval Engineer: **Guido Friederich**

**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

Butterfly valves designed in double eccentric construction with wafer lug or double flange connection.

HP111, HP111-E

Wafer type butterfly valve in double eccentric construction.

Two seat ring systems available: R-PTFE and Inconel.

HP111: one shaft, the disc is secured to the shaft by pins.

HP111-E: two shafts, upper and lower, the disc is secured to both shafts by pins.

Flange connections:	EN 1092, Form A/B; ASME RF, FF
Sizes:	HP 111: DN 50 to DN 1200 HP 111-E DN 50 to DN 200
Pressure ratings:	HP 111 PN 10 to PN 40 ≤ DN 150 / ASME Class 150 PN 10 to PN 25 DN 200 to DN 1200 / ASME Class 150 HP 111-E PN 10 to PN 16 / ASME Class 150
Design temperature range:	HP 111: -60°C to +600°C HP 111-E: -10°C to +450°C

HP 112

Double-flanged butterfly valve in double-eccentric construction.

Two seat ring systems available: R-PTFE and Inconel.

Flange connections:	EN 1092; Form A/B; ASME RF, FF
Sizes:	DN 80 to DN 600
Pressure ratings:	PN 10 to PN 40 / ASME Class 150 to Class 300
Design temperature range:	-60°C to +600°C

HP114, HP114-E, HP 114-K3

Lug type butterfly valve in double eccentric construction.

Two seat ring systems available: R-PTFE and Inconel.

HP114: One shaft, the disc is secured to the shaft by pins.

HP114-E: Two shafts, upper and lower, the disc is secured to both shafts by pins.

Flange connections:	EN 1092, Form A/B; ASME RF, FF
Sizes:	HP 114: DN 50 to DN 1200 HP 114-E DN 50 to DN 200 HP 114-K3 DN 50 to DN 600
Pressure ratings:	HP 114 PN 10 to PN 40 ≤ DN 150 / ASME Class 150 PN 10 to PN 25 DN 200 to DN 1200 / ASME Class 150 HP 114-E PN 10 to PN 16 / ASME Class 150 HP 114-K3 PN 10 to PN 40 ≤ DN 150 / ASME Class 150 PN 10 to PN 25 – DN 200 to DN 600 / ASME Class 150
Design temperature range:	HP 114 /-K3: -60°C to +600°C HP 114-E: -10°C to +450°C

For elevated temperatures the maximum allowable pressure shall be reduced by using following reduction factors:

Temperature (°C)	20	50	100	150	200	250	300	350	400	450
Carbon steels	1,00	1,00	1,00	0,89	0,81	0,72	0,65	0,59	0,54	0,50
Stainless steels	1,00	0,95	0,85	0,77	0,71	0,67	0,63	0,60	0,58	0,57

Job Id: 262.1-003408-9
Certificate No: TAP00000WV
Revision No: 1

Product description - continuation

Materials:

Valve item	Material	Material No. / Grade	Standard
Body	Stainless steel	A351 CF3M	ASTM
		1.4408	EN 10213-4
	Cast steel	1.0619	EN 10213-2
Disc	Duplex steel	1.4469	EN 10283
	Stainless steel	1.4408	EN 10213-4
	Duplex steel	1.4469	EN 10283
Shaft	Stainless steel	1.4418	
	High temperature steel	1.4980	SEW400
	Duplex steel	1.4462	
Seal	Seal variants:	1.4542	
		Soft-sealing R-PTFE max 230°C.	
		Metallic sealing Inconel 625	

Application/Limitation

The butterfly valves are approved for use in:
Fresh/sea water cooling, Ballast water, Bilge, Cargo oil lines, Fuel oil, lubrication oil, Sanitary systems.

The valve types HP112 (DN 50 to DN150) and HP114-K3 (DN>250) shall be used only as regulation valves in the a. m. mentioned systems.

The valve types HP111 and HP114 may be used as closing/regulation valves in fire main and water spray lines.

The valve types HP111/HP114, DN50-DN250, are approved for fire safe application in dry conditions.

Limitation

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

Wafer type butterfly valves are not approved on the ship's hull, fuel oil tanks and collision bulkheads.

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

The max. output torque from actuators must not exceed the limit at which the spindle or disc can be damaged if the disc is restrained in any position.

Type Approval documentation

Tests carried out

- Pressure test (valve body)
- Seat leakage test,
- Burst test,
- Fire test according to BS 6755
- HP114: Fire test according to EN10497 modified to dry condition testing
- Test reports of product tests conducted at EBRO test laboratory July 2002

Production testing

Test standards:
 DNVGL Pt.4 Ch.6
 DNV GL CP 0186
 EN 12266

Test	Purpose
Shell strength	To confirm the pressure containing capability of the shell against internal pressure Test pressure = 1,5 times the design pressure (DNV GL) Holding time: 2 min. for sizes up to DN 100 5 min. for sizes DN 125 up to DN 250 10 min. for sizes DN 275 up to DN 450 15 min. for sizes DN 500 and larger. Acceptance criterion: No leakage is permitted.
Seat tightness	To confirm the capability of the seat(s) to comply with the specified leakage rate <ul style="list-style-type: none"> - at the time of manufacture - In the direction(s) for which the valve is designed The test shall be performed with closed valve with the other end open to atmosphere. The pressure shall be applied independently on each side of the closed disc. Test pressure = 1,1 times the design pressure Holding time: 5 min. for all sizes. Acceptable criterion: Drop tight

For valves intended for ship's side or bottom the test pressure is not to be less than 5 bar.

Valve certification

Application in machinery 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

DN > 100 mm / PN > 16 bar
 DN ≤ 100 mm / PN ≤ 16 bar

Ship side valves DN > 100 mm
 regardless of pressure rating

Type of Product Certificate (PC) / Issued by

VL Certificate / DNV GL
 W Works Certificate / Manufacturer

VL Certificate / DNV GL

Material certificates (valve bodies)

In accordance with DNV GL Rules Pt.4 Ch.6 – Piping systems, Section 2 – Table 3

Note:

Valves having a nominal diameter DN >100 and to be fabricated with a design temperature > 400°C shall provide VL material certificates for valve body and bolts.

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Certificate No: TAP00000WV
Revision No: 1

Marking of product

For traceability to this type approval the products are to be marked with:

- Manufacturers 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

A condition for retention of the Type Approval Certificate in its validity period is that periodical assessments are successfully carried out.

The objective of the periodical assessment is to verify that the conditions for the type approval have not been altered.

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