

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Butterfly Valves**with type designation(s)
Dynaxe

Issued to

Wouter Witzel EuroValve B.V.
Losser Overijssel, Netherlands

is found to comply with

Det Norske Veritas' Rules for Classification of Ships Pt.4, Ch.6 "Piping Systems"
Det Norske Veritas' Standards for Certification 2.9 No. 5-794.40**Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.****Temperature range:** See certificate
Max. working press.: Classes 150 & 300 (according to ASME B16.34)
Sizes: DN50 to DN1400This Certificate is valid until **2017-12-31**.Issued at **Høvik** on **2016-05-13**for **DNV GL**DNV GL local station: **Rotterdam**Approval Engineer: **Adel Samiei**-----
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

Design: Double eccentric butterfly valves, wafer or lug type, double flanged.
Type: "Dynaxe"
Sizes: DN50 to DN1400
Pressure rating: Class 150 DN50-DN1400
Class 300 DN50-DN600

Materials:

Body:
Cast carbon steel: ASTM A216 WCB/ EN10213-2 GP240GH
Cast stainless steel: ASTM A351 CF8M/ EN10213-4 GX5CrNiMo 19-11-2
Cast aluminium-bronze: ASTM B148 C95800/ EN1982 CC333G
Cast Duplex SS: ASTM A 995 4A/5A/6A
Forged Titanium: ASTM B 265/348/381 Gr.2 (UNS R50400)
Cast Titanium: ASTM B367 C-2 (UNS R50400)

Body seat:
Stainless steel 1.4370, EN 12072 / Stellite® 21 UNS W73041/W73021 or base material

Seal:
RTFE (Reinforced Polytetrafluoroethylene)
RTFE/Fire Safe (Reinforced Polytetrafluoroethylene / Stainless Steel - ASTM A182 F316)
Metal Laminated - ASTM A182 F316 / Graphite
Metal Solid - Stainless Steel (ASTM A182 F316 / EN 10088-3 X5CrNiMo17-12-2)
Metal Solid - Inconel X 750

Disc:
Forged steel: ASTM A105N
Forged stainless steel: ASTM A182 F316 / X5CrNiMo 17-12-2, EN10088-3
Cast carbon steel: ASTM A216 WCB, UNS J03002 / GP240GH EN10213-2
Cast stainless steel: ASTM A351 - J92900
Cast aluminium-bronze: ASTM B148, UNS C95800/ EN1982 CC333G
Cast Duplex SS: ASTM A 995 4A/5A/6A
Forged Titanium: ASTM B 265/348/381 Gr.2 (UNS R50400)
Cast Titanium: ASTM B 367 C-2 (UNS R50400)

Application/Limitation

Temperature range is to be limited by used sealings (according to the sealing's specification):

RTFE: -29°C to 204°C
RTFE/Fire Safe: -29°C to 204°C
Metal Laminated: -29°C to 425°C
Metal Solid: -29°C to 425°C/ w/Inconel X 750 to 540°C

Pressure-temperature rating is in accordance to ASME B16.34 for classes 150 & 300.

Valves covered by this certificate (with RTFE fire safe or metal sealings) are to be considered fire safe and may be installed in systems where "fire safe" is required.

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

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

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

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

The maximum 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.

Production testing

The valve housing of each valve shall be subjected to a hydrostatic pressure test at minimum 1.5 times the design pressure. The test pressure need not be more than 70 bar in excess of the design pressure. For valves intended for ship's side or bottom the test pressure is not to be less than 5 bar.

Holding time: 2 min. for sizes up to 100 mm/4"
5 min. for sizes 125 - 250 mm/5" - 10",
10 min. for sizes 300 mm - 450 mm/12" - 16",
15 min. for sizes 500 mm / 20" and larger

No leakage is permitted.

The valve assembly shall be subjected to a hydrostatic seat leakage test. The test pressure shall at least be equal to the design pressure. The test shall be performed with closed valve with the other end open to atmosphere. The pressure shall be applied independently on each side. For valves intended for ship's side or bottom the test pressure is not to be less than 5 bar.

Holding time: 5 min. for all sizes.

Acceptable leakage range: Drop tight

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

A product certificate is required for all 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 a manufacturer's certificate may be accepted.

Material certificates are required in line with DNV Rules for Ship Pt.4 Ch.6 Sec.2 Table A2.

All materials delivered with NV or works (W) certificate shall be made at works approved by the Society for the type, grade and dimension of steel being supplied and for the relevant steelmaking and processing route.

Type Approval documentation

Tests carried out

Fire Test according to ISO10497 2nd edition and API 607 4th edition.

Marking of product

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

- Manufacturers name or trade mark
- Identification no.
- Type of material in body/disc/seal
- Max working pressure/Order no./Flange connection

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.