DNV·GL

Certificate No:
TAP00001X7

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Butterfly Valves

with type designation(s)
Double- and Triple-Offset HP Butterfly Valves
Series 44 to 49 and Series 4A to 4F

Issued to
Delval Flow Controls Pvt. Ltd.
Satara, Maharashtra, India

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.

Temperature range:	**See certificate**
Max. working press.:	**PN 10 to PN 40 / ASME Class 150 + 300 (see certificate)**
Sizes:	**DN 50 to DN 600 / DN 2" to DN 24"**

Issued at **Hamburg** on **2020-02-04**

This Certificate is valid until **2025-02-03**.

for **DNV GL**

DNV GL local station: **Mumbai NB & CMC**

Approval Engineer: **Ana Cristina Do Carmo Insfran**

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.

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Product description

I. Double Offset HP Butterfly Valve Series: 44, 45, 46, 47, 48 and 49 for installation in piping systems.

Valve design:	API 609 Category B; EN 593
Valve side flanges:	DIN EN 1092; ASME B 16.5, JIS B2220
Valve top flange:	EN ISO 5211
Testing Standard:	API 598; EN12266-1

Butterfly valve design styles according to the following types:
Wafer type; Lug type; Double Flange type

Butterfly valve nominal sizes:

Wafer type:	DN 50 to DN 600 (2" to 24")
Lug type:	DN 50 to DN 600 (2" to 24")
Double Flange type:	DN 80 to DN 600 (3" to 24")
Pressure ratings:	PN 10, PN 16, PN 25, PN 40 [Depending on valve nominal sizes] ANSI Class 150; ANSI Class 300
Design temperature: ASTM A216 Gr.WCB:	-29°C to +220°C (-20°F to 428°F)
Design temperatures: ASTM B148 Gr.C95800 NAB/NES 747 Part 2 ASTM A995 Gr.4A and Gr.6A ASTM A351 Gr.CF8 & CF8M	-50°C to +220°C (-58°F to 428°F)

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

Materials Double Offset; ANSI Class 150 and ANSI 300:

Valve	Material type	Standard
Body	Carbon Steel	ASTM A216 Gr.WCB;
	Stainless Steel	ASTM A351 Gr.CF8 & CF8M
	Duplex Stainless Steel	A995 Gr.4A and Gr.6A
	Cast Copper Alloy	ASTM B148 Gr.C95800
	Nickel Aluminium Bronze	NES 747 Part 2
Disk	Stainless Steel	ASTM A351 Gr.CF8 & CF8M; A995 Gr.4A and Gr.6A
	Cast Copper Alloy	ASTM B148 Gr.C95800
	Nickel Aluminium Bronze	NES 747 Part 2
Stem	Stainless steel	ASTM A479 Type SS410; A564 type 630; (17-4PH); A479 Type XM-19; UNS S31803, S32760 (F55)
	Copper Alloy Bars	Monel K500; NES 833
Seat	RPTFE/ULTRA/Firesafe	

II. Triple Offset HP Butterfly Valve Series:: 4A, 4B, 4C, 4D, 4E and 4F for installation in piping systems.

Valve design:	API 609 Category B; EN 593
Valve side flanges:	DIN EN 1092, ASME B 16.5, JIS B2220
Valve top flange:	EN ISO 5211
Testing Standard:	API 598; EN12266-1

Butterfly valve design styles according to the following types:
Wafer type; Lug type; Double Flange type

Butterfly valve nominal sizes for all type:
DN 80 to DN 600

Pressure ratings:	PN 10, PN 16, PN 25, PN 40 [Depending on valve nominal sizes] ANSI Class 150 & ANSI Class 300
Design temperature:	
ASTM A216 Gr.WCB:	-29°C to +425°C (-20°F to 797°F)

Design temperature:	
ASTM A995 Gr.4A and Gr.6A:	-50°C to +325°C (-58°F to 617°F)
ASTM B148 Gr.C95800	
NES 747 Part 2, NAB	
ASTM A351 Gr.CF8 & CF8M:	-50°C to +500°C (-58°F to 932°F)

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

Materials Triple Offset Class 150# and 300#:

Valve	Material type	Standard
Body	Carbon Steel	ASTM A216 Gr.WCB;
	Stainless Steel	ASTM A351 Gr.CF8 & CF8M
	Duplex Stainless Steel	ASTM A995 Gr.4A and Gr.6A
	Cast Copper Alloy	ASTM B148 Gr.C95800
	Nickel Aluminium Bronze	NES 747 Part 2
Disk	Stainless Steel	ASTM A351 Gr.CF8 & CF8M; A995 Gr.4A and Gr.6A
	Cast Copper Alloy	ASTM B148 Gr.C95800
	Nickel Aluminium Bronze	NES 747 Part 2
Stem	Stainless Steel	ASTM A479 Type SS410; A564 type 630; (17-4PH); A479 Type XM-19; UNS S31803, S32760 (F55)
	Cast Copper Alloy Bars	Monel K500; NES 833

Note 1:
Actuators, remote operating control devices and additional mountings are not included in this type approval.

Application

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

Note 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 may not be used for flammable gases and applications with flowing media specified as dangerous and toxic fluids.

Body materials of cooper, cooper alloys and Al-Bronze are subjected to requirements according to DNVGL Rules Pt.2, Ch.2 – Metallic Materials, Section 10 and 11 and to operating temperatures limits specified in DNV GL Rules Pt.4, Ch.6 – Piping Systems, Section 2 – Materials.

Valves fabricated of copper and copper alloy shall not be used for media having temperature above the following limits:

- Copper and aluminium brass: 200°C (392°F)
- Copper nickel: 300°C (572°F)

Tests carried out/Production testing

The butterfly valves have been tested in accordance with the following standards:

Test standard: EN 12266-1/API598 DNVGL Pt.4, Ch.6 DNV GL CP 0186		
Title	Test reference	Purpose
Hydrostatic Pressure test	Valve body	To confirm the pressure containing capability of the shell against internal pressure Test pressure = 1,5 times the design pressure No leakage is permitted.
Hydrostatic / Pneumatic 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 No visible leakage
Functional test	Valve assembly	Function test of complete assembled valve

Type Approval documentation

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 3.

Marking of product

For traceability to this type approval the products are to be marked according to EN 19 [2016] and in particular with:

- Manufacturer's name or trade mark
- Valve type designation
- Size
- Maximum design pressure and temperature
- Arrow to indicate direction of flow

Place of manufacturing

Delval Flow Controls Pvt. Ltd.
Gat No. 25, Kavathe
Javale PO, Tal.Khandala,
Dist Satara PIN 412801,
Maharshtra State
INDIA

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.
This certificate is only valid if required periodical assessments are carried out with satisfactory results.
To check the validity of this certificate, please look it up in https://approvalfinder.dnvgl.co

End of Certificate