DNV·GL

Certificate No:
TAP00001X8

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Butterfly Valves

with type designation(s)
Centric Resilient Seated BF Valves, type series: 50, 51, 52 and 53

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 and PN 16**
Sizes:	**see certificate**

Issued at **Hamburg** on **2020-02-04**
This Certificate is valid until **2025-02-03**.
DNV GL local station: **Mumbai NB & CMC**

for **DNV GL**

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

Resilient Seated Butterfly Valve type series: 50, 51, 52 and 53 for installation in piping systems.

Valve design: API 609 Category A / EN 593
Valve side flanges: DIN EN 1092, ASME B 16.5, JIS B2220, ASME 16.47
Valve top flange: EN ISO 5211

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

Butterfly valve	Nominal sizes	Pressure ratings (depending on sizes)
Wafer type	DN 50 to DN 600 (2" to 24") DN 650 to DN 1000 [1] (26" to 40")	PN 10 / PN 16 [2]
Lug type	DN 50 to DN 600 (2" to 24")	PN 10 / PN 16 [2]

Design temperatures:

Temperature range (°C)	Seat type
-25°C to 100°C (-13°F to 212°F)	for NBR seated valves of all body material combination
-29°C to 140°C (-20°F to 284°F)	for EPDM seated valves with body material ductile iron and carbon steel
-35°C to 140°C (-31°F to 284°F)	for EPDM seated valves with body material Nickel Alumnium Bronze, Stainless Steel [2]

Butterfly valves may be equipped with manual, pneumatic or electric actuator.[3]

Materials

Valve parts	Material type	Standard
Body	Ductile Cast Iron	ASTM A395 (Gr.60-40-18);
	Cast Copper Alloy	ASTM B148 Gr. C95800
	Nickel Aluminium Bronze	NES 747 Part 2
	Cast Copper Alloy	BS 1400 Gr. LG4C
	Carbon Steel	ASTM A216 Gr.WCB;
	Stainless Steel	ASTM A351 Gr.CF8M/CF8;
	Duplex Stainless Steel	ASTM A995 Gr. 4A/5A/6A
	Duplex Stainless Steel	ASTM A995 Gr. 4A/5A/6A;
Disk	Ductile Cast Iron	ASTM A536 Gr.65-45-12 + Aroxy coated
	Stainless Steel	ASTM A351 Gr.CF8M/CF8
	Nickel Aluminium Bronze	NES 747 Part 2
	Cast Copper Alloy	ASTM B148 Gr. C95800
Stem[4]	Stainless steel	ASTM A479 type SS410; ASTM A564 type 630 (17-4PH); UNS S31803 (F51)
	Copper Alloy Bars	NES 833 Part 2; Monel K400; Monel K500
Seat	EPDM, NBR- (BUNA-N)	

Notes:
[1] Applicable for General Assembly (Wafer) BFV bare stem (series 51 and 53)
[2] Not applicable for General Assembly (Wafer) BFV bare stem (series 51 and 53)
[3] Actuators and additional mountings are not included in this type approval.

[4] For nominal valve size 8" and above and for PN 16 ratings stem ASTM A564 type 630 (17-4PH) only applicable.

Application

Butterfly valves for control and shut-off applications
Operating media: Non flammable gases, sea water, water, air, oil.[5]

Note[5]:
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.

Valves fabricated of nodular cast iron of the ferritic type with specified eleongation 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 bulkead

Valves fabricates of grey cast iron and nodular cast iron with specified elongation of <12% are not permitted for the following installations and service conditions:

- Media having temperature below 0°C (32°F) and a temperature exceeding 120°C (248°F)
- Class I and II piping systems
- At the ship's side and bottom on sea chest and on collision bulkeads
- Valves under static head fitted on external wall of fuel oil tanks and taks for other flammable liquids.

EPDM shall not be used for hydrocarbon service.

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:

DNV GL Pt. 4, Ch.6 - Piping systems
DNV GL CP 0186 - Valves
DIN EN 12266-1 - "Industrial valves - Testing of metallic valves", Part 1
"Pressure tests, test procedures and acceptance criteria – Mandatory requirements

The butterfly valves are subjected to the following scope of tests:

Test standard: EN 12266-1/API 598 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 pirmited.
Hydrostatic / Pneumatic Seat tightness	Valve seat	To confirm the capability of the seat(s) to comply with the specified leakage rate, Leakage rate A - 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 assemble valve

Type Approval documentation

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 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.com

End of Certificate