

TYPE APPROVAL CERTIFICATE

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

with type designation(s)

VF-73 Series, VF-91 Series, VF-92 Series, VF-93 Series, VF-265 Series

Issued to

Value Valve (Suzhou) Co., Ltd.
Suzhou, China

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:
VF-73 Series		1,6 MPa	DN 40 to DN 1200
VF-91 Series	See	2,5 MPa	DN 50 to DN 1200
VF-92 Series	Certificate	2,5 MPa	DN 50 to DN 600
VF-93 Series		2,5 MPa	DN 50 to DN 600
VF-265 Series		1,6 MPa	DN 50 to DN 600

Issued at **Hamburg** on **2018-04-10**This Certificate is valid until **2023-04-09**.for **DNV GL**DNV GL local station: **Shanghai**Approval Engineer: **Guido Friederich**

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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

High performance butterfly valves with soft seal or metal seal ring.
The butterfly valves may be installed in piping systems.
The type approval comprises the following butterfly valve type series:
(Note ¹)

VF-73 Series

DN 40, DN 50, DN 65, DN 80, DN 100, DN 125, DN 150, DN 200, DN 250, DN 300,
DN 350, DN 400, DN 450, DN 500, DN 600, DN 650, DN 700, DN 750, DN 800, DN 900,
DN 1000, DN 1050, DN 1100, DN 1200

VF-91 Series

DN 50, DN 65, DN 80, DN 100, DN 125, DN 150, DN 200, DN 250, DN 300,
DN 350, DN 400, DN 450, DN 500, DN 600, DN 650, DN 700, DN 750, DN 800, DN 850, DN 900,
DN 1000, DN 1100, DN 1200

VF-92 Series

DN 50, DN 65, DN 80, DN 100, DN 125, DN 150, DN 200, DN 250, DN 300,
DN 350, DN 400, DN 450, DN 500, DN 600

VF-93 Series

DN 50, DN 65, DN 80, DN 100, DN 125, DN 150, DN 200, DN 250, DN 300,
DN 350, DN 400, DN 450, DN 500, DN 600

VF-265 Series

DN 50, DN 65, DN 80, DN 100, DN 125, DN 150, DN 200, DN 250, DN 300,
DN 350, DN 400, DN 450, DN 500, DN 600

Valve design: ISO 5752, ASME B 16.34, API 609
Valve side flanges: DIN EN 1092, ASME B 16.5
Valve top flange: EN ISO 5211.

Butterfly valve design styles:

Wafer type; - Lug type; - Double flange

Pressure ratings: PN 16 / ANSI Class 150 VF-73 Series, VF-265 Series
 PN 16, PN 25 / ANSI Class 150 VF-91 Series, VF-92 Series, VF-93 Series

Design temperature: -20°C to +150°C [Depending on seat material]
 [See table seat materials]

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

Note ¹:

Actuators and additional mountings are not included in this type approval.

Materials

Butterfly valve type series

VF-73 Series	VF-91 Series	VF-92 Series	VF-93 Series	VF-265 Series
<u>Valve body</u>				
A126-B	A216 WCB	A216 WCB	A216 WCB	A536 65-45-12
A536 65-45-12	A351 CF8	A351 CF8	A351 CF8	A395 60-40-18
A395 60-40-18	A351 CF8M	A351 CF8M	A351 CF8M	A216 WCB
A216 WCB	A351 CF3M	A351 CF3M	A351 CF3M	A351 CF8
A351 CF8	A890 5A	A890 5A	A890 5A	A351 CF8M
A351 CF8M				A351 CF3M
A351 CF3M				
A890 5A				
<u>Valve disc</u>				
A536 65-45-12	A351 CF8	A351 CF8	A351 CF8	A351 CF8
A395 60-40-18	A351 CF8M	A351 CF8M	A351 CF8M	A351 CF8M
A351 CF8	A351 CF3M	A351 CF3M	A351 CF3M	B148 C95400
A351 CF8M	A890 5A	A890 5A	A890 5A	A890 5A
B148 C95400				A890 2A
A890 5A				
A890 2A				
<u>Valve stem</u>				
A182 F6A	A182 F304	A182 F304	A182 F304	A182 F6A
A182 F304	A182 F316	A182 F316	A182 F316	A182 F304
A182 F316	A182 F316 L	A182 F316 L	A182 F316 L	A182 F316
A182 F316 L	A536 630	A536 630	A536 630	A182 F316 L
A564 630	UNS S32750	A479 XM-19		A564 630

Seat materials

Material type	Temperature range [°C]
EPDM	-20° to +120 °C
PTFE	-29° to +160 °C
NBR	-12° to +100 °C
VITON	-18° to +204 °C
CR	0° to + 80 °C
EPT	-20° to +140 °C
PTFE+FIBER	-29° to +180 °C
PTFE+GRAPHITE	-29° to +210 °C

It is the manufacturer's responsibility to ensure that the materials applied for the manufacturing of the product are suitable for the intended flowing media installation area and service conditions applicable.

Application

Butterfly valves for control and shut-off applications to be used for operating media:
Sea water, water, air, oil, non-flammable gases.

Note:

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.

Type Approval documentation

Production testing

The butterfly valves are to be tested in accordance with the following standards

DNV GL Pt. 4 Ch. 6 – Piping systems

DNV GL CP 0186 – Valves;

ISO 5208 – “Industrial valves – Pressure testing of metallic valves”

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

Test standard: ISO 5208
DNVGL Pt.4 Ch.6
DNV GL CP 0186

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)
Closure test	Check of opening and closing operation Test pressure = 1,1 times the cold working pressure (CWP – ISO 5208)
Seat tightness	To confirm the capability of the seat(s) 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 cold working pressure (CWP-ISO 5208)

Minimum test duration for shell's strength test

Nominal size (DN)	Minimum test duration	
	Production and acceptance test (liquid or gas)	Type approval test (liquid or gas)
DN≤50	15 s	2 mins
65≤DN≤100	60 s	2 mins
125≤DN≤150	60 s	5 mins
200≤DN≤250	120 s	5 mins
DN300	120 s	10 mins
350≤DN≤450	300 s	10 mins
DN≥500	300 s	5 mins

Tests carried out - continuation

Minimum duration for seat tightness test

Nominal size (DN)	Minimum test duration	
	Production and acceptance test (liquid or gas) Metal seat and soft seat valves	Type approval test (liquid or gas) All valves
DN≤50	15 s	5 mins
65≤DN≤150	60 s	5 mins
200≤DN≤300	120 s	5 mins
DN≥350	120 s	5 mins

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 certificate / 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.

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

Job Id: **262.1-023154-1**
Certificate No: **TAP00000XK**

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