Certificate No:
TAP00002SZ

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Butterfly Valves

with type designation(s)
FB-D-3-Series, FB-D-73-Series

Issued to
Fabia Valve Industry (Suzhou) Co., Ltd.
Suzhou City, Jiangsu, China

is found to comply with
DNV rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV class programme DNV-CP-0186 – Type approval – Valves
DNV rules for classification – Ships Pt.6 Ch.7 Sec.7 Emission reduction system for NOx or SOx – ER

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Type:	Temperature range:	Max. working press.:	Sizes:
FB-D-3-Series	0°C - 400°C	PN 0.25 MPa	DN 150 - DN 1500
FB-D-73-Series	0°C - 400°C	PN 0.25 MPa	DN 150 - DN 1100

Issued at **Hamburg** on **2023-09-06**
This Certificate is valid until **2028-09-05**.
DNV local unit: **Shanghai**

for **DNV**

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

Sven Klinger
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

Butterfly valve type: FB-D-3 Series and FB-D-73 Series for installations in piping systems.

Valve design:
- Wafer Type Butterfly Valve: FB-D-3 Series, FB-D-73 Series
- Flange Butterfly Valve: FB-D-3 Series, FB-D-73 Series

Design and Manufacture: JB/T 8692-2013

Ende Dimensions: BS EN 1092-1-2002

Face to Face: ISO 5752

Pressure Test: GB/T 13927-2008

Testing Standard: JB/T8692-2013, BS-EN-60534-4-2015

Butterfly valve nominal sizes:

Type	Nominal sizes [mm]	Nominal pressure [MPa]	Design Standard	Medium
FB-D-3 Series	DN 150 to DN 1500	PN 0.25	JB/T8692-2013	Exaust gas
FB-D-73 Series	DN 150 to DN 1100	PN 0.25	JB/T8692-2013	Exaust gas

Design temperature:

Seat design type	Temperature range [°C]
Graphite Ring acc. to JB/T 6617-1993	0 - 400

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

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

Materials: Valve Flange and Wafer type FB-D-73 Series

Valve	Material type	Standard
Body	Stainless Steel	316/316L/304/304L
Disc		
Stem		
Seat	Graphite	-

Materials: Valve Flange and Wafer type FB-D-3 Series

Valve	Material type	Standard
Body	Stainless Steel	316/316L/304/304L
Disc		
Drive stem		
Seat		

Application

The butterfly valves of type FB-D-3 Series and FB-D-73 Series are type approved for the following operating media:

Exhaust gas, Non-flammable gases, sea water, fresh 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 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 material of copper and copper alloys are subjected to requirements according to DNV Rules Pt.2, Ch.2 – Metallic Materials, Section 10 and 11 and to operating temperatures limits specified in DNV Rules Pt.4, Ch. 6 – Piping Systems, Section 2 – Materials.

Type Approval documentation

Tests carried out

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

Test standard: JB/8692-2013 BS EN IEC 60534-4-2015 DNV Pt.4 Ch.6 DNV CP-0186		Purpose
Title	Test reference	
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 manufacture In the direction(s) for which the valve is designed No visible leakage.
Functional test	Valve assembly	Function test of completed assembled valve.

Certification

Application in machinery piping systems

Valves intended to be installed in piping systems listed in DNV Rules Pt.4 Ch.6 – Section 1
shall be certified according to
DNV Rules Pt.4 Ch.6 – Piping systems, Section 1, Table 3 Compliance documents – piping components

Valve nominal size / Pressure rating	Type of certificate / Issued by
DN > 100 mm / PN > 16 bar	Product Certificate (PC) / DNV
DN ≤ 100 mm / PN ≤ 16 bar	Product Declaration (PD) / Manufacturer

Material certificates (valve bodies)
In accordance with DNV Rules Pt.4 Ch.6 – Piping systems, Section 2, Table 3 – Material certificates

Marking of product

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

- Manufacturer's name or trademark
- Valve type designation
- Size
- Maximum design pressure and temperature
- Material designation

Periodical assessment

For retention of the Type Approval, a DNV 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 DNV-CP-0338, Sec.4.

The 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.dnv.com

END OF CERTIFICATE