DNV·GL

Certificate No:
**TAP0000240**

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**That the Butterfly Valves**

with type designation(s)
**S578**

Issued to
## AFFCO Flow Control (Shanghai) Co., Ltd
**Fengxian District, Shanghai, P.R.C.**

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 :

**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.:** | **JIS 5K, JIS 10K, JIS 16K, PN6, PN10, PN 16, CL150** |
| **Sizes:** | **DN 40 to DN 400** |

Issued at **Hamburg** on **2020-06-02**

This Certificate is valid until **2025-06-01**.

for **DNV GL**

DNV GL local station: **Shanghai**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") 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.



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## Product description

Butterfly valve type: S578 for installations in pipng systems.

Valve design: Semi Lug Type Butterfly Valve

Flange connections according to: EN 1092 PN6, PN10, PN16
JIS B2239 JIS 5K, JIS 10K, JIS 16K
ASME B16.5 CL150
JIS B2220 JIS 5K, JIS 10K , JIS 16K

Top Flange: ISO 5211

Face to Face: JIS F7480 series 46; API 609 Category A, EN 558 Series 20

Design Standard: JIS F7400, EN 593, API 609

Testing Standard: JIS F7400, API 598, EN 12266-1

Butterfly valve nominal sizes: DN 40 to DN 400

Pressure ratings: JIS 5K, JIS 10K, JIS 16K, PN6, PN10, PN16, CL150

Design temperature: Depending on seat materials

| Seat design type | Temperature range [°C] |
|---|---|
| NBR | -15° to 80° |
| EPDM | -23 to 120° |
| VITON | -15° to 200° |

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** | **Material type** | **EN Standard** | **ASTM Standard** | **JIS Standard** |
|---|---|---|---|---|
| **Body** | Ductile Iron | JS1030 EN 1563 (GGG40 DIN1693) | Gr.65-45-12 ASTM A536 | FCD450 JIS G5502 |
| | Carbon Steel | - | WCB ASTM A216 | SCPH2 JIS G5151 |
| | Stainless Steel | 1.4408 EN 10213 | CF8, CF8M, CF3, CF3M ASTM A351 | - |
| | Aluminium Bronze | AB2 BS 1400 | C95500, C95800 ASTM B148 | - |
| **Disc** | Ductile Iron 300um Rilsan coated/ Halar coating | JS1030 EN 1563 (GGG40 DIN1693) | Gr.65-45-12 ASTM A536 | FCD450 JIS G5502 |
| | Stainless Steel | 1.4408 EN 10213 | CF8M ASTM A351 | - |
| | Duplex | 1.4470 EN 10213 | Gr.4A,5A,6A ASTM A890 | - |
| | Aluminium Bronze | AB2 BS1400 | C95500, C95800 | - |

| | | | | |
|---|---|---|---|---|
| | | | ASTM B148 | |
| **Shaft** | Stainless Steel | 1.4122 EN 10088-3 | 431 ASTM A276/ F316, F316L ASTM A182 | - |
| | Duplex | 1.4462 EN 10088-3 | F51, F53, F55 ASTM A182 | - |
| | Alloy steel | - | Monel (K500) UNSN05500 ASTMB865 | - |
| **Seat** | NBR(NITRILE) | - | - | - |
| | EPDM | - | - | - |
| | VITON | - | - | - |

## Application

The butterfly valve of type S578 are type approved for the following operating media:

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 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 material of copper and copper alloys are subjected to requirements according to DNV GL 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
- Copper Nickel: 300°C

## Tests carried out

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

| Test standard: JIS F7400<br>API 598<br>EN 12266-1<br>DNVGL Pt.4 Ch.6<br>DNV GL CP 0186 | | Purpose |
|---|---|---|
| Title | Test reference | |
| Hydrostatic Pressure Test | Valve Body | To confirm the pressure containing capability of the shell against internal pressure<br>Test pressure = 1,5 times the design pressure<br>No leakage is permitted. |
| Hydrostatic/Pneumatic Seat tighness | Valve seat | To confirm the capability of the seats to comply with the specified leakage rate<br>At the manufacture<br>In the direction(s) for which the valve is designed<br>No visiable leakage.. |
| Fucntional test | Valve assembly | Function test of completed 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

## 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

## Production Place

**AFFCO Flow Control (Shanghai) Co., Ltd**
Building 3,No. 99, Desheng Road, Fengcheng Town, Fengxian District, Shanghai, P.R.C.

## 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.

- 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.dnvgl.com