DNV·GL

Certificate No:
TAP000024Y

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Butterfly Valves

with type designation(s)
S465 and S466

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 :

Products approved by these certificate are accepted for installation on all vessels classed by DNV GL.

Temperature range:	**see certificate**
Max. working press.:	**JIS 5K, JIS 10K, JIS 16K, PN 6, PN 10, PN 16, CL150**
Sizes:	**DN 40 - DN 1200**

Issued at **Hamburg** on **2020-07-28**

This Certificate is valid until **2025-07-27**.

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.

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Job Id: **262.1-034126-1**
Certificate No: **TAP000024Y**

Product description

Butterfly valve type: S465 and S466 for installations in piping systems.

Valve design: Double Flange Type Butterfly Valve

Flange connections according to: EN 1092 PN6, PN10, PN16
JIS B2239/ JIS B2220 JIS 5K, JIS 10K, JIS 16K
ASME B16.5 /ASME16.47 CL150

Top Flange: ISO 5211

Face to Face: JIS F7480,
JIS F7480 series 42;
API 609,
API 609 Category B,
EN 558,
EN 558 series 13

Design Standard: JIS F7480, EN 593, API 609

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

Butterfly valve nominal sizes: DN 40 to DN 1200

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	-
	Aluminum 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	-
	Aluminum 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 S465 and S466 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 aluminum 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 API 598 EN 12266-1 DNVGL Pt.4 Ch.6 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 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.

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 trademark
- 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

END OF CERTIFICATE