

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Ball Valve**

with type designation(s)

1/2/3-piece floating ball type, 2/3-piece trunnion mounted ball type, cast steel floating ball type, 3-piece side entry type

Issued to

**Jiangsu YDF Valve Co.,Ltd
Yancheng, China**

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems**DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition January 2018****DNV GL class programme DNVGL-CP-0186 – Type approval – Valves****Application :****Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV GL.****Temperature range:** Dependent on sealing material used (see page 3)**Max. working press.:** Class 150/300/600/900/1500/ 2500 (see page 2)**Sizes:** 1/2" to 48" (see page 2)This Certificate is valid until **2023-03-14**.Issued at **Høvik** on **2018-03-15**DNV GL local station: **Nantong CMC**for **DNV GL**Approval Engineer: **Maheshraja Venkatesan**

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Marianne Spæren Marveng
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

Ball valves – Floating, Side entry & trunnion mounted type designed in accordance with API 6D

Pressure-Temperature ratings : ASME B16.34
Wall thickness : ASME B16.34
End dimensions : RTJ/RF flange ends – ASME B16.5/ ASME B16.47
Butt welding ends – ASME B16.25
Face-to-face dimensions : API 6D/ ASME B16.10

S.No.	Valve Type	Class rating	Sizes covered
1.	3-piece floating ball valve	Class 150	1/2", 3/4" X 1/2", 3/4", 1" X 3/4", 1", 1 1/2" X 1", 1 1/2", 2" X 1 1/2", 2", 3" X 2", 3", 4" X 3", 4", 6" X 4", 6", 8" X 6", 8", 10" X 8", 10", 12" X 10" & 12"
		Class 300	1/2", 3/4" X 1/2", 3/4", 1" X 3/4", 1", 1 1/2" X 1", 1 1/2", 2" X 1 1/2", 2", 3" X 2", 3", 4" X 3", 4", 6" X 4", 6", 8" X 6", 8", 10" X 8" & 10"
		Class 600	1/2", 3/4" X 1/2", 3/4", 1" X 3/4", 1", 1 1/2" X 1", 1 1/2", 2" X 1 1/2", 2", 3" X 2", 3", 4" X 3" & 4"
2.	3-piece trunnion mounted ball valve	Class 150/ 300/ 600/ 900/ 1500	2" X 1 1/2", 2", 3" X 2", 3", 4" X 3", 4" & 6" X 4"
		Class 2500	1 1/2", 2" X 1 1/2", 2", 3" X 2", 3", 4" X 3", 4" & 6" X 4"
3.	3-piece side entry ball valve (forged steel)	Class 150/ 300/ 600	6", 8" X 6", 8", 10" X 8", 10", 12" X 10", 12", 14" X 12", 16" X 12", 14", 16", 18" X 16", 20" X 16", 18", 20", 24" X 20", 24", 28" X 24", 30" X 24", 26", 28", 30", 36" X 30", 32", 36", 40" X 36", 42" X 36", 40", 42", 48" X 42" & 48"
		Class 900	6", 8" X 6", 8", 10" X 8", 10", 12" X 10", 12", 14" X 12", 16" X 12", 14", 16", 18" X 16", 20" X 16", 18", 20", 24" X 20", 24", 28" X 24", 30" X 24", 26", 28", 30", 36" X 30", 32" & 36"
		Class 1500	6", 8" X 6", 8", 10" X 8", 10", 12" X 10", 12", 14" X 12", 16" X 12", 14", 16", 18" X 16", 20" X 16", 18", 20", 24" X 20" & 24"
		Class 2500	6", 8" X 6", 8", 10" X 8", 10", 12" X 10" & 12"
4.	Cast steel floating ball valve	Class 150/ 300	1/2", 3/4", 1", 1 1/2", 2", 3", 4", 6", 8" & 10"
5.	2-piece trunnion mounted ball valve	Class 150/ 300/ 600/ 900/ 1500	2" X 1 1/2", 2", 3" X 2", 3", 4" X 3", 4" & 6" X 4"
6.	3-piece side entry ball valve (cast steel)	Class 150/ 300/ 600	6", 8" X 6", 8", 10" X 8", 10", 12" X 10", 12", 14" X 12", 16" X 12", 14", 16", 18" X 16", 20" X 16", 18", 20", 24" X 20", 24", 28" X 24", 30" X 24", 26", 28", 30", 36" X 30", 32", 36", 40" X 36", 42" X 36", 40", 42", 48" X 42" & 48"
7.	1/2-piece floating ball valve	Class 150	1/2", 3/4" X 1/2", 3/4", 1" X 3/4", 1", 1 1/2" X 1", 1 1/2", 2" X 1 1/2", 2", 3" X 2", 3", 4" X 3", 4", 6" X 4", 6", 8" X 6", 8", 10" X 8", 10", 12" X 10" & 12"
		Class 300	1/2", 3/4" X 1/2", 3/4", 1" X 3/4", 1", 1 1/2" X 1", 1 1/2", 2" X 1 1/2", 2", 3" X 2", 3", 4" X 3", 4", 6" X 4", 6", 8" X 6", 8", 10" X 8" & 10"

Material of construction:

Valve type	Body	Trim	Stem & key	Sealing materials
3-piece floating ball valve, 3-piece trunnion mounted ball	ASTM A105, ASTM A350 Gr. LF2, ASTM A182 Gr. F304/ F304L/ F316/	ASTM A105, ASTM A182 Gr. F6a/ F316/ F304/	ASTM A322 Gr. 4140	PTFE, RPTFE, NYLON, PEEK,

Job Id: **262.1-022165-1**
Certificate No: **TAP00000JA**

valve, 3-piece side entry ball valve (forged steel)	F316L/ F51/ F53/ F55/ F347/ F321	F304L/ F316L/ F51/ F53/ F55/ F347/ F321, ASTM B637 UNS N07718 (formerly Grade 718)		DELVON, PA12
Cast steel floating ball valve, 2-piece trunnion mounted ball valve, 3-piece side entry ball valve (cast steel), 1/2-piece floating ball valve	ASTM A216 Gr. WCB/ WCC, ASTM A352 Gr. LCB/ LCC, ASTM A351 Gr. CF3/ CF3M/ CF8/ CF8M/ CF8C/ CG8M, ASTM A995 Gr. 4A/ 5A/ 6A			

Application/Limitation

Minimum/ maximum working temperatures for the valves depend on the type of sealing material used as follows:

Sealing material	Temperature limits
PTFE	-29 °C to 190 °C (for ferritic material grades)
	-46 °C to 190 °C (for Duplex/ austenitic SS material grades)
RPTFE	-40 °C to 190 °C
NYLON	-40 °C to 110 °C
PEEK	-55 °C to 250 °C
DELVON	-40 °C to 125 °C
PA12	-50 °C to 80 °C

The approval does not include any operating gear for remote control of the valves.

This certificate does not cover valves to be installed in LNG/LPG applications.

Materials chosen for the specific system shall be suitable for the intended medium and environmental conditions.

Austenitic stainless steels (e.g. 304, 316 & 316L) are not seawater resistant and shall not be used in direct contact with seawater.

Valves covered by this certificate are not fire safe and shall not be installed in systems where fire safe application is required.

Type Approval documentation

Production Test

All valve bodies shall be subjected by the manufacturer to a hydrostatic test at a pressure equal to 1.5 times the nominal pressure (The nominal pressure is the maximum allowable working pressure at room temperature). The test pressure need not be more than 70 bar in excess of the nominal pressure.

All valves assembly shall be subjected to seat leakage test at 1.1 times maximum working pressure at closed position.

Production Testing and acceptance criteria shall be in accordance with API 6D.

Certification

Valve bodies shall be delivered with material certificates in accordance with DNV GL Ship Pt.4 Ch.6 Sec.2 Table 3. Materials with VL and W certificates shall be manufactured in a foundry approved by the society.

DNV GL product certificates are required for valves with DN > 100 mm and design pressure $\geq$ 16 bar, and for ship side valves where DN > 100 mm regardless of pressure. For other valves a manufacturer's product certificate may be accepted.



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Tests carried out

N/A

Marking of product

For traceability to this type approval, the final products are to be marked with:

- manufacturer's name or trade mark
- valve type designation
- size
- maximum design pressure and temperature
- arrow to indicate direction of flow on one way flow valves

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 approval are complied with. Reference is made to DNVGL-CP-0338.