TYPE APPROVAL CERTIFICATE

Certificate No:
TAP00000EW
Revision No:
1

This is to certify:

That the Ball Valve

with type designation(s)
Starline Floating Ball Valves (2-piece, 3-piece, Multiport)

Issued to
STARLINE SPA
Costa di Mezzate, BG, Italy

is found to comply with
DNV 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 vessels classed by DNV.

Temperature range:	**Depending on materials (see cert.)**
Max. working press.:	**Depending on size (see cert.)**
Sizes:	**1/4 to 4" (see cert.)**

Issued at **Høvik** on **2021-12-13**

This Certificate is valid until **2026-07-26**.
DNV local station: **Italy/Malta CMC**

Approval Engineer: **Jane Lozanov**

for **DNV**

Digitally Signed By: Zeinab, Sharifi
Location: DNV Høvik, Norway

Zeinab Sharifi
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.

Product description

The valves bodies are 2-piece, 3-piece and multiport bolted. The balls are forged steel ball of the floating type.

End connection configurations:

- Threaded, BSPP and BSPT acc. BS21 and NPT acc. ASME B1.20.1
- Flanged, acc. ASME B16.5
- Bevelled Weld Ends acc. ASME B16.25
- Plain and Socket Weld Ends acc. ASME B16.11

Material combinations body/trim:

Body and Flanges	Trim (Ball, Seats, Stem Trunnion and Springs)
ASTM A479 316 ASTM A350 LF2 ASTM A182 F316	ASTM A479 316 ASTM A182 F316 ASTM A182 F316

Size ranges:

2-piece	½" to 4" full bore	
3-piece	¼" to 3" full bore	½ " to 4" reduced bore
Multiport	¼" to 2½" full bore	½ " to 3" reduced bore

Application/Limitation

Maximum working temperatures for valves with the following body and sealing materials:

Part and material	**Temp. range**
Body material:	
ASTM A350 LF2 *) ASTM A105 S.S. 316	-45 to 260 °C -29 to 260 °C -55 to 260 °C
Sealing material:	
Virgin PTFE PEEK Reinforced PTFE 20% carbon and 5% graphite PTFE + 60% Bronze	-55 to 200 °C -55 to 250 °C -55 to 250 °C -55 to 260 °C
Graphite	-55 to 320 °C Max PN40

*) - Carbon steel used in body and bonnet shall be Charpy (impact) tested when the thickness exceeds 6 mm, and the minimum working temperature is -10 °C or lower. Acceptance criteria according to the relevant part of DNV-RU-SHIP Pt.2 Ch.2.

2-piece valves only:
Maximum rating Class 150 or PN 16-25-40.
At elevated temperatures, the maximum working pressure has to be reduced with the following factors:

Temp	**Carbon Steel**	**Stainless Steel**
20 °C 50 °C 100 °C	1 1 1	1 0,95 0,85
150 °C 200 °C 260 °C	0,89 0,81 0,70	0,77 0,71 0,66

3-piece valves only: maximum working pressure and flange rating is depending upon and bore and size:

DN		Max. Flange Rating	Max. Working Pressure
FB	**RB**		
1/4 - 3/8" ½" ¾" 1" 1 1/4" 1 1/2"	1/2" ¾" 1" 1 ¼" 1 ½" 2"	800 lbs	138 bar
2" 2 1/2"	2 ½" 3"	600 lbs	99,3 bar
3"	4"	400 lbs	68 bar

Multiport only:

Size	Max. Pressure
1/4 - 3/8" ½" ¾" 1" 1 ¼" 1 ½"	100 bar
2" 2 1/2" 3"	50 bar

Valves with threaded end couplings may not be used for flammable fluids within machinery spaces of Category A.
2-piece and 3-piece valves featuring bolt and nut arrangements and multiport valves.
Valves where the bolts screw directly into the valve body are considered firesafe.
Multiport type valves shall not be used in fire safe applications.

All valves larger than DN 50 for hydrocarbon service shall be fitted with an anti-static device that will ensure electrical conductivity between the ball and the valve body. For valves DN 50 and smaller, only electrical conductivity between ball and stem is required.

These valves can be used for bilge suction when fitted in connection with a non-return valve.

Valves used in the following systems shall be arranged for local manual operation even if these valves are remote controlled:

- Sea suction and discharge
- Bilge
- Fuel and lubrication oil tanks which are located above the double bottom tanks

This approval does not include actuators and/or other equipment for remote control of the valves.

Materials and material protection chosen for the specific system shall be suitable for the intended medium and environmental conditions. Valves of austenitic stainless steel shall not be used in direct contact with seawater.

Type Approval documentation

3-piece valves
Drawings no:
DNV-TAC-12010000A-Rev.01, DNV-TAC-12010001A-Rev.01, DNV-TAC-12010001-Rev.01, DNV-TAC-12010000-Rev.01, DNV-0412010002-Rev.01, DNV-0412010002-A-Rev.01
Starline Floating Ball Valves catalogue 2012 Rev.0

2-piece valves
Drawings No.:

BS-1411070001-Rev.01 dated 2016-09-05
BS-1411070002-Rev.01 dated 2016-09-05
Burst test report BURST-T.001
Fire test reports 272/97A, 273/97A, 271/97A, 275/97A, 274/97A, 270/97A, 234/90A and 235/90A
Starline Floating Ball Valves catalogue 2012 Rev.0

Multiport valves
Drawings no:
DNV-0412010000-Rev.01, DNV-0412010000-A, DNV-0412010001-Rev.01, DNV-0412010001-A-Rev.01
Test report GEN-02-277 dated 2002-05-22, DNV Genoa
Starline Floating Ball Valves catalogue 2012 Rev.0

Tests carried out

Fire test (excluding multiport valves and those featuring a bolt and nut body arrangement)
Burst pressure test

Production Testing and Certification

Production Testing and Certification for the actual intended application shall follow the latest applicable edition of the Rules (as mentioned on the front page of this certificate).

Marking of product

For traceability to this type approval the valves are to be marked as a minimum with:

- manufacturer's name or trade mark
- valve type designation
- size
- pressure rating
- temperature range
- medium

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