Certificate No:
TAP00002S3

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Ball Valve

with type designation(s)
TEV SSB

Issued to
BAC VALVES S.A.
Figueres, Girona, Spain

is found to comply with
DNV class programme DNV-CP-0186 – Type approval – Valves
DNV rules for classification – Ships Pt.5 Ch.7 Liquefied gas tankers

Application :

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

Temperature range:	**-196°C to +150°C**
Max. working press.:	**Class 150 and 300**
Sizes:	**NPS 6" and 8"**

Issued at **Høvik** on **2023-08-30**

This Certificate is valid until **2028-08-29**.

for **DNV**

DNV local unit: **Area NB/CMC Iberia**

Approval Engineer: **Rob Oerlemans**

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

Trunnion mounted, single seat bi-directional, top entry, ball valve for cryogenic service

Design code: ASME B16.34 and API 6D.
Valve Inspection and Testing: API STD 598.
End connections: ASME B16.25 BW – SCH80
Fire test: API 6FA Fourth edition

Materials of construction:

Component	Material spec.
Body	ASTM A351 CF3M
Bonnet	ASTM A351 CF8M
Ball	ASTM A182 F316
Stem	ASTM A479 316
Bolting	ASTM A320 grade B8M Class 2
Seat	MELDIN 5301
Seals, Gasket	PTFE + ELGILOY (Stem lip seal) BRAIDED GRAPHITE (Stem Seal) Graphite (Fire safe seat seal), SS316 + GRAPHITE (body cover seal)

Application/Limitation

Valves covered by this certificate may be used under the following design conditions:

Parameter	**Values**
Pressure class	Class 150 and Class 300
Service	LNG/LPG applications - Cryogenic Service
Temperature range	-196 °C to +150 °C
Pressure-Temperature	Acc to ASME B16.34
Size	NPS 6” and 8”
Type	Trunnion, TRI-Eccentric C-shape, Full bore

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

Austenitic stainless-steel grades (such as 304, 316, 304L and 316L) are not permitted for use in sea water systems.

Type Approval documentation

Tests carried out

Cryogenic prototype-test witnessed by DNV, BAC certificate number 22001399/1-BS6364:1984 dated 15-06-2023 and 23005272/01 - BS6364:1984 dated 10-08-2023.

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

Minimum marking requirements shall be as outlined in the valve design standard.

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.