Certificate No:
TAP00002AR

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Valve for Liquefied Gas

with type designation(s)
EZ-C, ES-C

Issued to
Emerson Process Management S.A.S.
CERNAY Cedex, **France**

is found to comply with
DNV GL rules for classification – Ships Pt.5 Ch.7 Liquefied gas tankers
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.

Issued at **Høvik** on **2021-06-11**
This Certificate is valid until **2026-06-10**.
DNV local station: **France CMC**

Approval Engineer: **Renata Rossi**

for **DNV**

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

Cast Stainless steel sliding-stem control valves for throttling control designed according to ASME B16.34 with flanged ends as per ASME B16.5.

Material of construction:

Body	:	ASTM A351 CF8M
Bonnet	:	ASTM A351 CF8M
Gland Bushing/Flange	:	ASTM A351 CF8M
Stud Bolt	:	ASTM A 193 Gr. B8M / ASTM A 194 Gr. 8M
Nut	:	ASTM A 194 Gr. 8M
Gasket and packing	:	N06600

Application/Limitation

Valves covered by this certificate may be used in LNG/LPG applications in below design conditions:

Service : Liquefied Gas - Cryogenic Service

Valve Type	Pressure ratings (ASME Class)	Sizes (inches)	Temperature range
EZ-C	300	1”	+45°C down to -180°C
ES-C	300	2”	+45°C down to -170°C

Maximum operating differential pressure 3,5 bar and seat leakage according to ANSI FCI 70-2-2006 /EN1349/IEC 60534-4 Class IV

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

The valves are not be used as shut off or quick closing valves.

The valves are not to be considered fire safe.

This approval does not cover the valve actuators or operating gear for remote control of the valves.

Type Approval documentation

Tests carried out

Pneumatic and Hydrostatic leakage test (seat and body), Cryogenic leakage (seat and body) and functional test

Production testing

Each valve body shall be subjected to hydrostatic pressure test at 1.5 times the allowable pressure at room temperature; Also, each valve shall be subjected to a seat leakage testing.

Testing shall follow procedures and acceptance criteria according to ANSI FCI 70-2-2006 /EN1349/IEC 60534-4 Class IV. In addition to the above tests, cryogenic testing consisting of valve operation and leakage verification for a minimum of 10% of each type and size of valve intended to be used at a working temperature below -55°C shall be undertaken (DNV GL Ship Pt.5 Ch.7. Sec.5 [13.1]).

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 each valve is at least 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 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.