

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Metallic Expansion Joints

with type designation(s)
SJH-34196-00

Issued to
SJM Co., Ltd.
Siheung-si, Gyeonggi-do, Korea, Republic of

is found to comply with
DNV rules for classification – Ships Pt.4 Ch.6 Piping systems

Application :

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

Temperature range: -50°C to +65°C
Max. working press.: 10 bar
Sizes: O.D 970 x 950L

Issued at **Høvik** on **2022-03-03**

This Certificate is valid until **2027-03-02**.

DNV local station: **Seoul**

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

Unreinforced single bellow type part of heat exchanger design.

Bellow Length	No. of Convolution	Thickness	Ply	Material
210 mm	3	2 mm	2	A240-304/304L

Application/Limitation

Expansion bellow covered by this certificate may be installed in heat exchangers with below allowable movements

Design pressure	Design temperature	Movement	
		Axial	Lateral
10 bar	-50°C to +65°C	+23.71 mm	-

Each expansion bellow is approved for 2000 life cycles. Allowable movements (axial only) shall be in accordance with the documents listed in this certificate.

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

The installation shall be done according to type approval holder's procedures.

Production testing

Each expansion bellow shall be subjected to hydrostatic pressure test upon completion to at least 1.5 times the design pressure.

Certification

Whenever the piping system is subject to approval by the society, the below limitations shall be considered:

- Bellows covered by this certificate shall be delivered with test report with reference to this type approval certificate (See to DNV-RU-SHIP Pt.4 Ch.6 Sec.1 Table 3).
- Welding shall fulfill requirements in DNV-RU-SHIP Pt.2 Ch.4.
- Material of bellow shall have material certificates in accordance with DNV-RU-SHIP Pt.4 Ch.6 Sec.2 Table 3. Approval of manufacturer is required for MC or MD.

Type Approval documentation

Marking of product

For traceability to this type approval, the expansion joints are to be marked with:

- Manufacturer's trade mark
- Type designation (as stated in the submitted drawings)
- Size
- Maximum working pressure
- Temperature range
- The flow direction, if applicable

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.