



Certificate No:
TAP00002G5

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Metallic Expansion Joints

with type designation(s)

Expansion Bellow: 48-6175, Expansion Bellow: 48-6176

Issued to

MES Tokki & Engineering Co., Ltd.
Tamano, Okayama Pref, Japan

is found to comply with

DNV rules for classification – Ships Pt.4 Ch.6 Piping systems

DNV-OS-D101 – Marine and machinery systems and equipment, Edition July 2021

Application :

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

Type:	Temperature range:	Max. working press.:	Sizes:
Single Expansion Bellow: 48-6175	20 to 50°C	5 bar	ø150
Single Expansion Bellow: 48-6176	20 to 50°C	5 bar	ø350

Issued at **Høvik** on

2022-02-09

This Certificate is valid until **2027-02-08**.

for **DNV**

DNV local station: **Kobe**

Approval Engineer: **Sarah Miller**

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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.



Form code: TA 251

Revision: 2021-03

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Product description

Two single type metallic expansion bellows designed according to EJMA 10th edition.

Size	Code	Inner diameter (mm)	Pitch (mm)	Height (mm)	Ply x thk. (mm)	Convolutions
ø150	48-6175	160.2	35	35	4x0.8	8
ø350	48-6176	351.7	40	33	4x0.8	7

Material:

Bellow: SUS316 (JIS G4305)
Flange: SS400 (JIS G3101)
Internal sleeve: SUS304 (JIS G4305)

Application/Limitation

Expansion bellows covered by this certificate are approved to be only used for fuel oil line.

Size	Code	<i>movement</i>	<i>Life cycles</i>	<i>Design pressure (bar)</i>	<i>Design temperature</i>
		Axial(mm)			
ø150	48-6175	-40, +42	5000	5	50°C
ø350	48-6176	-40, +42	5000	5	50°C

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 VL or W material certificates.

Type Approval documentation

Marking of product

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

- Manufacturer's trademark
- 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.