



Certificate No:
TAP00002D8

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Compensator, Bellows of Rubber Material

with type designation(s)
JY-E, JY-N and JY-V

Issued to

Jingjiang Juyou Marine Facilities Co.,Ltd
Jingjiang, China

is found to comply with

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

DNV class programme DNV-CP-0183 – Type approval – Flexible non-metallic hoses

Application :

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

Temperature range: Up to 150°C

Max. working press.: 16 bar

Sizes: DN 20 up to DN 1000

Issued at **Hamburg** on **2022-07-21**

This Certificate is valid until **2027-07-20**.

DNV local station: **Jiangyin NB & CMC**

Approval Engineer: **Andrii Pishchanskyi**

for **DNV**

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Olaf Drews
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.



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Product description

Types JY-E, JY-N and JY-V are rubber expansion joints.

Sizes DN 400 up to DN 1000 consist of a rubber bellows and loose flange on each side. The flanges of sizes DN 20 up to DN 350 are retained on a bellow by reinforcing ring embedded into rubber bellows.

The bellows consist of a rubber material and reinforced by a cord. The components and their materials are as follows:

Component	Material
Bellows	EPDM ²⁾
	NBR
	FKM
Reinforcement	High tensile steel cord of grade HT as per GB/T11181 – 2016 and nylon cords
Flange	Q235B, 20# or A105 (carbon steel)
	304 ¹⁾ , 316L (stainless steel)
Reinforcing ring	High tensile steel cord of grade HT as per GB/T11181 – 2016
Vacuum ring	316 (stainless steel)

Note

- 1) The stainless-steel grade is not considered suitable for use in seawater atmosphere, i.e. unprotected area subject to seawater spray or green water, e.g. open deck;
- 2) Is not compatible with hydrocarbon media.

Application/Limitation

Rubber expansion joints of types JY-E, JY-N and JY-V may be accepted for use in compressed air, fresh water cooling, sea water cooling, bilge and ballast systems as per DNV-RU-SHIP Pt.4 Ch.6 Sec.9 §4.1.2 for application, which do not require fire resistance.

Size DN 20 up to DN 600 are of approved fire resistant type, whereas other sizes are not.

The working temperature range depends on rubber material as follows:

Material	Minimal temperature [°C]	Maximal temperature [°C]
EPDM	-20	90
NBR	-20	90
FKM	-20	150

Use of rubber expansion joints in high pressure fuel oil injection system is not accepted.

Rubber expansion joints of sizes DN 20 up to DN 350 are approved for use in systems subject to pressure pulsation other than water hammer with the maximum medium temperature up to 100°C. Rubber expansion joints of sizes DN 400 up to DN 1000 are not approved for use in systems subject to pressure pulsation other than water hammer.

Compensators are not approved for installation:

- In diving systems or drilling equipment;
- In permanently pressurized starting air lines of diesel engines;
- In cargo lines of tankers;
- Fitted directly onto the ship's side.

Selection of materials

It shall be noted that the selection of the materials considers the applicable service condition with respect to type of media, flow velocity, media temperature etc. and installation area of the piping system. In particular, the resistance to corrosion, erosion, oxidation and other deterioration during projected service life are to be taken into account. Refer to DNV-RU-SHIP Pt.4 Ch.6 Sec.2.

Installation

Rubber compensator shall be accessible for inspection. The quantity of compensators is to be limited as necessary and they shall not be used to compensate pipe misalignment.

Means shall be provided to isolate rubber compensator used in systems sea-water cooling and compressed air.

Production testing

Each compensator shall be subjected to hydrostatic pressure test at 1.5 times maximum working pressure. Appropriate pressure test report with reference to this type approval certificate is to be issued.

Type Approval documentation

Tests carried out

1. Burst pressure test;
2. Pressure impulse test;
3. Resistance against liquids;
4. Ozone resistance test;
5. Endurance test.

Marking of product

For traceability of the type approval each rubber compensator shall be marked as follows:

Marking scope	Example
Manufacturer's name	Jingjiang Juyou Marine Facilities Co.,Ltd.
Size	DN 50
Maximum working pressure	16 bar
Maximum working temperature	90 °C
Tag No.	1WF80
Date	2021-12-09

Periodical assessment

For retention of the Type Approval, a periodical assessment as per DNV-CP-0338 Sec.4 shall be performed by a DNV Surveyor in order to verify that the conditions for the Type Approval are complied with.

To check the validity of this certificate, please look it up in <https://approvalfinder.dnv.com>.