

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Compensator, Bellows of Rubber Material**with type designation(s)
DYV-R, DYV-Y

Issued to

Dong Yang S&T
Gimhae-si, Korea, Republic of Korea

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems**DNV GL class programme DNVGL-CP-0183 – Type approval – Flexible hoses****Application :****Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV GL.**

Type:	Temperature range:	Max. working press.:	Sizes:
DYV-R	0°C to 90°C	16 bar	DN 25, 32, 40, 50, 80, 100, 125 and 150
DYV-Y	0°C to 90°C	16 bar	DN 25, 32, 40, 50, 80, 100, 125 and 150

Issued at **Høvik** on **2021-02-02**This Certificate is valid until **2025-07-10**.for **DNV GL**DNV GL local station: **Gimhae Station**Approval Engineer: **Andreas Hansen**

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 GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") 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.



Job Id: **262.1-034164-1**
Certificate No: **TAP0000270**

Product description

Two types of rubber bellows (DYV-R / DYV-Y) with spherical shape fitted between two loose steel flanges with the following material specifications:

Type	Color code	Materials			
		Core	Reinforcement	Cover	Flange
DYV-R	Red	EPDM	Nylon	EPDM	SS400
DYV-Y	Yellow	NBR		CR	(Zinc plated)

Manufactured By: DONG YANG S&T Service & Technology

Application/Limitation

Compensators covered by this certificate are approved to be used in freshwater cooling systems.

Compensators are only to be used where it is necessary due to vibrations or flexible mounting of the machinery.

The approval does not cover compensators that will be installed in diving systems or drilling units. For these applications, separate approval shall be granted for each case.

The location of the bellows in the piping system shall be approved in each separate case.

The compensators shall only be fitted on places where they are always accessible.

The compensators covered by this certificate shall not be installed in systems where fire safe application is required.

The application of these compensators is limited to prevailing static pressure loading of non-cyclic nature.

Material of flanges (SS400) shall be delivered with a material certificate showing compliance with the requirements of P235GH (EN10028-2).

Type Approval documentation

Tests carried out

Endurance test, ozone resistance test, oil resistance test, burst test and change in length test.

Production testing

Each compensator is to be hydraulic pressure tested to 1.5 times the working pressure and delivered with the manufacturer's pressure test report.

Marking of product

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

- Manufacturer's trademark
- Type designation
- Size
- Maximum working pressure



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Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform a 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