



Certificate no.:
TAP000030M

TYPE APPROVAL CERTIFICATE

This is to certify:

that the **Compensator, Bellows of Rubber Material**

with type designation(s)
DYV-W, DYV-WR

issued to

Dong Woo FGM Co., Ltd.
Busan, Korea, Republic of

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
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 vessels classed by DNV.

Type:	Temperature range:	Max. working press.:	Sizes:
DYV-W	0° to 100°C	See page 2	DN 25 to DN 400
DYV-WR	0° to 100°C	See page 2	DN 25 to DN 400

Issued at **Høvik** on **2025-06-25**

This Certificate is valid until **2030-06-24**.

for **DNV**

DNV local unit: **Busan, CMC Korea**

Approval Engineer: **Tobias Berntsen**

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 USD 300 000.

Product description

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

Model/parts	DYV-W	DYV-WR
Inner Layer	NBR	EPDM
Outer	Layer CR (Chloroprene)	EPDM
Reinforcement	Wire braid	Wire braid
Steel Flange	SS400 with zinc coating, S304, SUS304L, SUS316, SUS316L, A105	SS400 with zinc coating, S304, SUS304L, SUS316, SUS316L, A105

Sizes: DN 25, 32, 40, 50, 65, 80, 100, 125, 150, 175, 200, 250, 300, 350, 400

Application/Limitation

Temperature range: 0 °C to 100 °C
Maximum Allowable Working Pressure: 16 bar for DN 25 to DN200
10 bar for DN 250 to DN400

Rubber compensator may be accepted for use in fuel oil systems, lubricating, hydraulic and thermal oil systems, fresh water and sea water cooling systems, compressed air systems, bilge and ballast systems.

Stainless steel grades 304/304L are not allowed for any sea water applications; 316/ 316L are not allowed in stagnant sea water conditions.

The compensators are not permitted used in systems where pressure pulses may occur.

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.

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

Type Approval documentation

Authorization letter dated **27th March 2025** from Dong Yang S& T valid until **17th February 2029**

Tests carried out

Endurance Test, Burst Test, Fire Test, Oil Resistance Test, Ozone Resistance Test.

Marking of product

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

- Manufacturer's trade Mark
- Type designation
- Size
- Maximum working Pressure

Periodical assessment

This certificate is only valid if required periodical assessments are carried out with satisfactory results.

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.

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

Manufactured by:

Dong Yang S&T, 69, Najeon-ro 161 beon-gil, Saengnim-myeon, Gimhae-si, Gyeongsangnam-do, Korea.