

TYPE APPROVAL CERTIFICATE

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

Issued to

Trelleborg Engineered Systems (Qingdao) Co., Ltd.
Qingdao City, China

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems**DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition January 2018****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.****Temperature range:** 0°C to +100°C**Max. working press.:** 16 bar @20°C**Sizes:** DN25 to DN300Issued at **Høvik** on **2019-05-23**This Certificate is valid until **2024-05-22**.for **DNV GL**DNV GL local station: **Qingdao**Approval Engineer: **Adel Samiei**

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.



Product description

Rubber compensators type T-R with flanged end connections

Design:

Inner liner: Butyl (IIR) / EPDM
Reinforcement: PA textile cord, Butyl rubberized
Cover: EPDM
Flange: PN 16 flanges according to EN1092
Flange material: Carbon steel Q235 - zinc coated

Sizes: DN25, 32, 40, 50, 65, 80, 100, 125, 150, 200, 250, 300

Application/Limitation

Compensators covered by this certificate are approved to be used in fresh water cooling systems or compressed air applications.

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

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

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

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

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

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

Material of flanges (Q235) shall be delivered with the material certificate showing compliance with the requirements of P235GH (EN10028-2).

Type Approval documentation

Tests carried out

Burst test, resistance against liquid (water), ozone resistance, endurance 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 trade Mark
- Type designation
- Size
- Maximum working Pressure

Periodical assessment

For retention of the Type Approval, a DNV GL 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 DNVGL-CP-0338.