

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Compensator, Bellow of Rubber Material

with type designation(s)

Teguflex® type P, Teguflex® type W

Issued to

TRELLEBORG IZARRA, S.A.U.
Izarra, Spain

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.

Type:	Temperature range:	Max. working press.:	Sizes:
Teguflex® type P	see page 2	see page 2	DN25-300
Teguflex® type W	see page 2	see page 2	DN25-600

Issued at **Høvik** on **2018-01-31**

This Certificate is valid until **2022-06-30**.

for **DNV GL**

DNV GL local station: **Bilbao**

Approval Engineer: **Iselinn Vindstad**

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Marianne Spæren Marveng
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.



Job Id: **262.1-015958-2**
Certificate No: **TAP000018F**

Product description

Rubber compensators spherical shaped with synthetic cord reinforcement.

Material for Teguflex types P and W:

Teguflex®	Inner Tube	Outer cover	Applications
Red	EPDM	EPDM	Water (hot water, salt water, chlorine solutions, esters and ketones)
Yellow	ECO	ECO	Oil (Water, saline solutions, alkalis, mineral oils, vegetable/animal oils, oil aerosols)
HP	EPDM HP	EPDM HP	Steam 130°C (hot water, steam, hot air up to 130°C)
HO	HNBR	HNBR	Oil 120°C (Oil, mix of water and oils, mix of compressed air and oils)

Flange: S235JR (other types of material accepted by EN1092-1 may be used)
Flanges are in accordance with EN 1092-1.

Sizes Teguflex P: DN25, 32, 40, 50, 65, 80, 100, 125, 150, 200, 250, and 300
Sizes Teguflex W: DN25, 32, 40, 50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, and 600

Dimensional data shall be in accordance with manufacturer's datasheet.

Application/Limitation

Maximum working pressure and temperatures:

Teguflex®	Sizes type P (DN, mm)	Sizes type W (DN, mm)	Maximum temperature				
			70°C	90°C	100°C	120°C	130°C
Red	25 – 300	25 – 300	16 bar	10 bar	NA		
	NA	350 – 600	10 bar	8 bar			
Yellow	25 – 300	25 – 300	16 bar	10 bar			
	NA	350 – 600	10 bar	8 bar			
HP	25 – 150	25 – 150	16 bar			10 bar	
	200 - 300	200 – 600	10 bar			6 bar	
HO	25 – 150	25 – 150	16 bar		10 bar		NA
	200 – 300	200 – 600	10 bar		6 bar		

Minimum and maximum working temperature of rubber materials:

EPDM -35 to 90°C
EPDM HP -35 to 130°C
ECO -25 to 90°C
HNBR -25 to 120°C

The fire protection cover (Teguflex® Flame Guard) shall be used if the compensator is used in systems containing flammable fluids or in sea water systems.

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

Movements shall be according to datasheet/product catalogue.

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

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Type Approval documentation

Tests carried out

Oil resistance test, sea water/distilled water resistance test, ozone test, burst test, endurance test, elongation 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 with reference to this type approval certificate.

Marking of product

Each compensator shall be permanently marked in a way that enables identification versus the type approval certificate. Additional marking may be performed at the manufacturer's option.

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.