DNV·GL

Certificate No:
TAP000017X

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings

with type designation(s)
TESS type 5528 Eternity/2

Issued to
Tess AS
Lierstranda, Norway

is found to comply with
DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition January 2018
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.

Temperature range:	**-40°C to +100°C (see page 3)**
Max. working press.:	**225 to 450 bar (see page 3)**
Sizes:	**1/4" to 1"**

Issued at **Høvik** on **2018-12-03**
This Certificate is valid until **2022-12-30**.
DNV GL local station: **Oslo Maritime and CAP**

Approval Engineer: **Iselinn Vindstad**

for **DNV GL**

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.

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Product description

Design in accordance with SAE J517 100R16S and ISO 11237 R16S:
TESS Type 5528 Eternity/2:
Tube: oil resistant synthetic rubber (CR)
Reinforcement: two high tensile steel spirals
Cover: Synthetic rubber with high ozone, weather and heat resistance (CR)

Hose manufacturing location:

Manuli Hydraulics Manufacturing Sp. z o.o.,
97-500 Radomsko, ul. Przedsiebiorcow 5, Poland

Manuli Hydraulics (Suzhu) Co., Ltd.,
No. 85, Xingling Street, Suzhu Industrial Park,
Jinangsu Province, P.R China

Coupling material:

Carbon steel: 11SMnPb37, EN 10087
11SMnPb30, EN 10087
Or
Stainless steel: 1.4401 (316) or 1.4404 (316L), EN10088-3

Coupling is of Manuli type:

Insert: MF2000
Ferrule: M00120, M03400

Coupling manufacturing location:

Manuli Hydraulics Polska S.A.
41404 Myslowice, Ul.Brzezinska, Poland

Application/Limitation

Application: hydraulic and lubricating oil, compressed air, fresh water, sea water, and sanitary systems.

Austenitic stainless steels (1.4401 and 1.4404) are not to be used in direct contact with seawater.

This certificate is valid for the specific assembly of hose and coupling type as specified, assembled and delivered by the holder (named as manufacturer) of this certificate and below assembling locations:

- TESS Logistikk AS, Lierstranda
- TESS Sør AS, Arendal
- TESS Sør AS, Kristiansand
- TESS Vest AS, Stavanger
- TESS Vest AS, Karmøy
- TESS Vest AS, Stord
- TESS Vest AS, Bergen/Kokstad
- TESS Vest AS, Sotra
- TESS Vest AS, Mongstad
- TESS Esbjerg
- TESS Aberdeen

The hoses are to be mounted in accordance with the manufacturer’s instructions.

Flexible hoses are only to be used where it is necessary due to vibrations or flexible mounting of the machinery. The hoses shall not replace/be used where permanent piping is possible/required.

The hoses must only be fitted in places where they are always accessible.

Flexible hoses of these types are not to be used on boiler fronts.

Design temperature:

- Oil based hydraulic fluids fluids HH, HL, HR and HV in accordance with ISO 6743-4: -40°C to 100°C
- Water based fluids HFC, HFAE, HFAS and HFB: 0°C to 60°C
- Water: 0°C to 60°C

Maximum working pressure:

Nominal size		TESS Type 5528 Eternity/2
inch	DN	bar
¼"	6	450
5/16"	8	400
3/8"	10	365
½"	12	350
5/8"	16	300
¾"	19	300
1"	25	225

Type Approval documentation

Tests carried out

Dimensional check, change-in-length, burst, oil resistance, ozone resistance, cold flexibility, cover adhestion, fire test, impulse test, vacuum test

Production testing

Every hose assembly shall be hydrostatically tested at a hydrostatic pressure of 1.5 times the maximum working pressure and shall be delivered with the pressure test report with reference to the type approval certificate.

Marking of product

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

- Manufacturer's name or trade mark
- Type designation
- Date of manufacturing
- Nominal diameter
- Pressure rating
- Temperature rating

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.