

# 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 5166 Rockmaster 1SN**

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.:** 40 bar to 225 bar (see page 3)

**Sizes:** 1/4" to 2" (see page 3)

Issued at **Høvik** on **2018-12-17**

This Certificate is valid until **2022-12-30**.

DNV GL local station: **Oslo Maritime and CAP**

for **DNV GL**

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: **262.1-009105-5**  
Certificate No: **TAP000017U**

## Product description

Design in accordance with EN 853 type 1SN.  
TESS Type 5166 Rockmaster 1SN:  
Tube: oil resistant synthetic rubber (NBR)  
Reinforcement: one high tensile steel spiral  
Cover: Synthetic rubber with high ozone, weather and heat resistance (CR)

### Hose manufacturing locations:

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

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

### Coupling material - electroplated normalised carbon steel:

Carbon steel: 9SnMnPb36, DIN 1651  
Electroplating: FeZn5c2z, UNI ISO 4520/ UNI ISO 2081-07/89  
or  
Stainless steel: 1.4401 (316) or 1.4404 (316L), EN10088-3

### Coupling is of Manuli type:

Insert: MF2000  
Ferrule: 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:

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- Hydraulic fluids in accordance with ISO 6743-4 (except HFD R, HFD S, HFD T): -40°C to 100°C
- Water based fluids: -40°C to 70°C
- Water: 0°C to 70°C

Maximum working pressures:

| Nominal size |    | TESS Type 5166<br>Rockmaster 1SN |
|--------------|----|----------------------------------|
| Inch         | DN | Bar                              |
| 1/4"         | 6  | 225                              |
| 5/16"        | 8  | 215                              |
| 3/8"         | 10 | 180                              |
| 1/2"         | 12 | 160                              |
| 5/8"         | 16 | 130                              |
| 3/4"         | 19 | 105                              |
| 1"           | 25 | 90                               |
| 1 1/4"       | 31 | 65                               |
| 1 1/2"       | 38 | 50                               |
| 2"           | 51 | 40                               |

## Type Approval documentation

### Tests carried out

Dimensional check, change-in-length, burst, oil resistance, ozone resistance, cold flexibility, cover adhesion, 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.