DNV·GL

Certificate No:
TAP00000RR

TYPE APPROVAL CERTIFICATE

This is to certify:

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

with type designation(s)
Tractor 1SN, Tractor 2SN, Rockmaster 4SP, Rockmaster 4SH

Issued to
EAGLE Fluid Technology (Jiaxing) Co., Ltd.
Jiaxing, 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 July 2015
DNV GL class programme DNVGL-CP-0183 – Type approval – Flexible hoses

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Type:	Temperature range:	Max. working press.:	Sizes:
Tractor 1SN	-40°C to +100°C	40-225 bar	DN6 to DN51
Tractor 2SN	-40°C to +100°C	80-400 bar	DN6 to DN51
Rockmaster 4SP	-40°C to +100°C	380 bar	DN16 & DN19
Rockmaster 4SH	-40°C to +100°C	250-385 bar	DN25 to DN51

This Certificate is valid until **2022-11-20**.

Issued at **Høvik** on **2017-11-21**
DNV GL local station: **Shanghai** for **DNV GL**

Approval Engineer: **Adel Samiei**

Marianne 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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Job Id: **262.1-017045-1**
Certificate No: **TAP00000RR**

Product description

Tractor/1SN & Tractor/2SN:
Hose:
- Tube: Oil Resistance synthetic rubber
- Reinforcement: One (1SN) or two (2SN) high tensile steel braid(s)
- Cover: Synthetic rubber with high ozone, weather and heat resistance

End fittings: SF/DKO types

Rockmaster/4SP and Rockmaster/4SH:
Hose:
- Tube: Oil Resistance synthetic rubber
- Reinforcement: Four high tensile steel spirals
- Cover: Synthetic rubber with high ozone, weather and heat resistance

End fittings: SF/DKO types

Hoses are made by: Manuli Hydraulics (Suzhou) in China
Couplings are made by: EAGLE Fluid Technology (Jiaxing) in China
Assembling locations: EAGLE Fluid Technology (Jiaxing) in China

Application/Limitation

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.

Hose assemblies are suitable for use with:
- Hydraulic fluids in accordance with ISO 6734-4 (with exception of HFD-R, HFD-S and HFD-T) at temperature ranging from -40°C to 100°C
- Water based fluids at temperature ranging from -40°C to 70°C
- Water at temperature ranging from 0°C to 70°C

Maximum working pressure in bar:

Size		Tractor	Tractor	Rockmanster	Rockmaster
DN	DASH	1SN	2SN	4SP	4SH
6	-4	225	400	-	-
8	-5	215	350	-	-
10	-6	180	330	-	-
12	-8	160	275	-	-
16	-10	130	250	400	-
19	-12	105	215	400	-
25	-16	90	165	-	400
31	-20	65	125	-	350
38	-24	50	90	-	300
51	-32	40	80	-	250

Flexible hoses are only to be used in short lengths 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.

Hose assemblies with couplings made of carbon steel are not to be used at temperatures below -10°C unless the material is normalized.

All hose assemblies delivered under the DNV GL type approval scheme shall be subject to a pressure test at 1.5 times the maximum working pressure and shall be delivered with the pressure test report with reference to the type approval certificate.

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

Type Approval documentation

Tests carried out

Cold flexibility, oil resistance, ozone, vacuum, cover adhesion, dimensional check, change in length, leakage test, impulse, fire & burst test.

Marking of product

For traceability to this Type Approval, the products are at least to be marked with:

- Manufacturer's name or trade mark
- Type designation
- Maximum working pressure
- Size
- Additional marking at 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.

Renewal assessment

For renewal of this certificate, during the renewal assessment (as described in DNVGL-CP-0338), burst pressure tests shall be witnessed on every 3rd sizes of each type.