

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Certificate no.:
MEDB00008TH

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED), issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Authority. This Certificate is issued by DNV AS under the authority of the Government of Norway.

This is to certify:

that the Materials other than steel for pipes conveying oil or fuel oil: flexible pipe assemblies and compensators

with type designation(s)

T1S/D/F, T2C/D/S, RQP1, RQP2, T5, T3000D/S, T3600D/S, T4000D/S, T5000D, T6000D/S, BT1, DF1D, DF2D, DK1D, DK2D, TXA2D

issued to

Manuli Hydraulics (Suzhou) Co., Ltd.
Suzhou,, Jiangsu,, China

is found to comply with the requirements in the following Regulations/Standards:

Regulation (EU) 2024/1975,

item No. MED/3.15c. SOLAS 74 as amended, Regulation II-2/4 & X/3 and 2000 HSC Code 7 & 10 and IMO MSC/Circ.1120

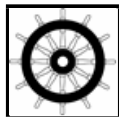
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2029-12-15**.

Issued at **Høvik** on **2024-12-16**

DNV local unit:
Shanghai

Approval Engineer:
Maheshraja Venkatesan



Notified Body
No.: **0575**

for **DNV AS**

Mydlak-Röder, Christine
Head of Notified Body



The mark of conformity may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-surveillance module (D, E or F) of Annex B of the MED is fully complied with and controlled by a written inspection agreement with a Notified Body. The product liability rests with the manufacturer or his representative in accordance with Directive 2014/90/EU.

This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV AS of any changes to the approved equipment. This certificate remains valid unless suspended, withdrawn, recalled or cancelled.

Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product Description

17 types of non-metallic hoses with permanently fitted couplings tested according to:

- ISO 15540:2016 – Fire resistance of non-metallic hose assemblies and non-metallic compensators – Test methods
- ISO 15541:2016 – Fire resistance of non-metallic hose assemblies and non-metallic compensators – Requirements for the test bench

- 1) **T1 S/D**
 - Inner tube : Oil resistant synthetic rubber
 - Reinforcement : One braid of high tensile steel wire
 - Cover : a) Type D (DIEHARD): Oil and extra abrasion resistant synthetic rubber (or)
b) Type S (SLIDER): Synthetic rubber sheathed with a layer of extremely abrasion resistant polyethylene
 - Couplings : T2000 series
- 2) **T1 F**
 - Inner tube : Oil resistant synthetic rubber
 - Reinforcement : One braid of high tensile steel wire
 - Cover : Heat, abrasion and oil on resistant synthetic rubber
 - Couplings : T2000 series
- 3) **T2 D/S/C**
 - Inner tube : Oil resistant synthetic rubber
 - Reinforcement : Two braids of high tensile steel wire
 - Cover : a) Type D (DIEHARD): Oil and extra abrasion resistant synthetic rubber (or)
b) Type S (SLIDER): Synthetic rubber sheathed with a layer of extremely abrasion resistant polyethylene (or)
c) Type C (ICEBREAKER): Cold resistant synthetic rubber
 - Couplings : T2000 series for all variants (except for T232D for which T7000 series to be used)
- 4) **T3000 D/S**
 - Inner tube : Oil resistant synthetic rubber
 - Reinforcement : One or two braids of high tensile steel wire
 - Cover : a) Type D (DIEHARD): Oil and extra abrasion resistant synthetic rubber (or)
b) Type S (SLIDER): Synthetic rubber sheathed with a layer of extremely abrasion resistant polyethylene
 - Couplings : T2000 series
- 5) **RQP1**
 - Inner tube : Synthetic rubber, compounded for temperature resistance and multi fluid resistant
 - Reinforcement : One braid of high tensile steel wire
 - Cover : Oil and abrasion resistant synthetic rubber
 - Couplings : T2000 series
- 6) **RQP2**
 - Inner tube : Synthetic rubber
 - Reinforcement : Two braids of high tensile steel wire
 - Cover : Oil and abrasion resistant synthetic rubber
 - Couplings : T2000 series (up to size -20) and T7000 series (for sizes -24 & -32)
- 7) **T5**
 - Inner tube : Oil resistant synthetic rubber
 - Reinforcement : Polyester inner braid covered with one braid of high tensile steel wire
 - Cover : Oil and abrasion resistant synthetic rubber
 - Flame protection : Type FS1072
 - Couplings : T4000 series
- 8) **T3600D/S**
 - Inner tube : black synthetic rubber
 - Reinforcement : 1 (sizes -04 and -06) or 2 (sizes -08 to -16) layers of wire braid of high tensile steel wire
 - Cover : black synthetic rubber
 - Couplings : T2000 series

- 9) **T4000 D/S**
Inner tube : Oil resistant synthetic rubber
Reinforcement : One or two braids of high tensile steel wire
Cover : a) Type D (DIEHARD): Oil and extra abrasion resistant synthetic rubber (or)
b) Type S (SLIDER): Synthetic rubber sheathed with a layer of extremely abrasion resistant polyethylene
Couplings : T2000 series
- 10) **T5000D**
Inner tube : Oil resistant synthetic rubber
Reinforcement : Two braids of high tensile steel wire
Cover : Oil and extra abrasion resistant synthetic rubber
Couplings : T2000 series
- 11) **T6000 D/S**
Inner tube : Oil resistant synthetic rubber
Reinforcement : Two braids of high tensile steel wire
Cover : a) Type D (DIEHARD): Oil and extra abrasion resistant synthetic rubber (or)
b) Type S (SLIDER): Synthetic rubber sheathed with a layer of extremely abrasion resistant polyethylene
Couplings : T2000 series
- 12) **BT1**
Inner tube : oil resistant synthetic rubber
Reinforcement : One braid of high tensile steel wire
Cover : Oil and abrasion resistant synthetic rubber
Couplings : T2000 series
- 13) **DF1D**
Inner tube : Oil resistant synthetic rubber
Reinforcement : One braid of high tensile steel wire
Cover : DIEHARD™ Oil and abrasion resistant synthetic rubber
Couplings : T2000 series
- 14) **DF2D**
Inner tube : Oil resistant synthetic rubber
Reinforcement : Two braids of high tensile steel wire
Cover : Oil and abrasion resistant synthetic rubber
Couplings : T2000 series
- 15) **DK1D**
Inner tube : Oil resistant synthetic rubber
Reinforcement : One braid of high tensile steel wire
Cover : Oil and abrasion resistant synthetic rubber
Couplings : T2000 series
- 16) **DK2D**
Inner tube : Oil resistant synthetic rubber
Reinforcement : Two braids of high tensile steel wire
Cover : Oil and abrasion resistant synthetic rubber
Couplings : T2000 series
- 17) **TXA2D**
Inner tube : Oil resistant synthetic rubber
Reinforcement : Two braids of high tensile steel wire
Cover : Oil and abrasion resistant synthetic rubber
Couplings : T2000 series

Hoses manufacturing location

Hose types	Location
T1S/D/F, T2C/D/S, RQP1, RQP2, T3000D/S, T3600D/S, T4000D/S, T5000D, T6000D/S, BT1, DF1D, DF2D, DK1D, DK2D and TXA2D	MANULI RYCO Hydraulics Sdn. Bhd., Malaysia
T5	Fluiconnecto Ryco Australia Pty. Ltd., Victoria, Australia

Couplings manufacturing location

Manuli RYCO Hydraulics (DALIAN) Co., Ltd, P.R.China

Hose assembling location

Manuli Hydraulics (Suzhou) Co., Ltd., Suzhou, Jiangsu, China

Application/Limitation

Hose assemblies covered by this certificate are suitable for systems conveying oil or fuel oil with the following maximum allowable working pressures:

Size			Maximum working pressures (bar)								
In	DN	DASH	T1S/D	T1F	T2	RQP1	RQP2	T5*	T3000S	T3000D	T4000
1/4"	6	-04	225	225	420	225	400	207	245	-	280
5/16"	8	-05	215	215	350	215	350	207	245	-	280
3/8"	10	-06	180	180	350	180	350	155	215	210	280
1/2"	12	-08	160	160	350	160	300	138	215	210	280
5/8"	16	-10	130	130	250	130	250	121	215	210	280
3/4"	19	-12	105	105	215	120	215	103	-	210	280
1"	25	-16	90	-	175	90	167	55	-	-	-
1 1/4"	31	-20	65	-	140	-	150	43	-	-	-
1 1/2"	38	-24	50	-	100	-	100	35	-	-	-
2"	51	-32	40	-	90	-	90	-	-	-	-

* Hose type T5 shall be installed with flame protection cover FS1072

Size			Maximum working pressures (bar)			
In	DN	DASH	T5000	T6000	BT1	T3600
1/4"	6	-04	-	-	50	-
5/16"	8	-05	-	-	50	-
3/8"	10	-06	350	420	50	-
1/2"	12	-08	350	420	50	250
5/8"	16	-10	350	-	50	250
3/4"	19	-12	350	-	50	250
1"	25	-16	-	-	50	250
1 1/4"	31	-20	-	-	-	-
1 1/2"	38	-24	-	-	-	-
2"	51	-32	-	-	-	-

Size			Maximum working pressures (bar)				
In	DN	DASH	DF1D	DF2D	DK1D	DK2D	TXA2D
1/4"	6	-04	225	420	295	450	-
5/16"	8	-05	215	350	250	420	-
3/8"	10	-06	180	350	230	385	-
1/2"	12	-08	160	295	200	345	375
5/8"	16	-10	130	250	150	290	345
3/4"	19	-12	105	215	125	280	313
1"	25	-16	88	167	110	200	225
1 1/4"	31	-20	-	-	100	175	175

Type Examination documentation

Tests carried out

Fire testing according to ISO 15540 and ISO 15541.

Marking of product

For traceability to this certificate, each hose is marked with:

- Manufacturer's name or trademark
- Specification or hose name
- Hose size and type designation
- Date of manufacture
- Mark of conformity according to Article 10 of the Council Directive 2014/90/EU

Mark of Conformity may only be affixed to the product when the corresponding certification related to production-control phase module (D, E, or F) is valid.