

# TYPE APPROVAL CERTIFICATE

Certificate No:  
**TAP00001RK**  
Revision No:  
**1**

## This is to certify:

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

with type designation(s)

**DS1-T, DS2-T, FIGHTER 1SC, FIGHTER DS 2SC/R16, DS17, MASTER, OVERMASTER, 1 STARK, 2 STARK**

Issued to

**Diesse Rubber Hoses S.p.A.**  
**Filago, BG, Italy**

is found to comply with

**DNV rules for classification – Ships Pt.4 Ch.6 Piping systems**  
**DNV-OS-D101 – Marine and machinery systems and equipment, Edition July 2021**  
**DNV class programme DNV-CP-0183 – Type approval – Flexible non-metallic hoses**

## Application :

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

Type:	Temperature range:	Max. working press.:	Sizes:
DS1-T	-40°C to +100°C	40 to 225 bar	DN6 to 51
DS2-T	-40°C to +100°C	80 to 400 bar	DN6 to 51
FIGHTER 1SC	-40°C to +100°C	100 to 275 bar	DN6 to 25
FIGHTER DS 2SC/R16	-40°C to +100°C	185 to 420 bar	DN6 to 25
DS17	-40°C to +100°C	210 bar	DN6 to 25
MASTER	-40°C to +100°C	165 to 400 bar	DN6 to 31
OVERMASTER	-40°C to +100°C	250 to 480 bar	DN8 to 25
1 STARK	-40°C to +100°C	100 to 295 bar	DN6 to 31
2 STARK	-40°C to +100°C	175 to 450 bar	DN6 to 31

Issued at **Høvik** on **2023-01-24**

This Certificate is valid until **2027-12-31**.

for **DNV**

DNV local unit: **Italy/Malta CMC**

Approval Engineer: **Per Ola Nymoen**

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**Bosman van der Merwe**  
**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.

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

Nine types of flexible hose with permanently fitted couplings. Hoses made of covers Black synthetic rubber (SBR/CR), resistant to abrasion, oils and weather conditions, and Synthetic rubber inner tube (NBR) resistant to oils, reinforced with one or two high tensile steel braids.

DS1-T:	1SN hoses according to EN 853 / SAE 100 R1AT
DS2-T:	2SN hoses according to EN 853 / SAE 100 R2AT
FIGHTER 1SC:	1SC hoses according to EN 857
FIGHTER DS 2SC/R16:	2SC hoses according to EN 857 / SAE 100 R16
DS17:	SAE 100 R17
Master:	Constructed according to SAE 100 R16
Overmaster:	Constructed according to SAE 100 R16
1 STARK:	Constructed according to EN857 1SC
2 STARK:	Constructed according to EN857 2SC

Hose made by Diesse Rubber Hoses S.p.A., Italy

Hose size			DS1-T	DS2-T	FIGHTER 1SC	FIGHTER DS 2SC/R16
DN	DASH	inch				
6	-4	¼	BXT1/BNK1	BXT2	BXC/BNK1	BXT1/BNK1
8	-5	5/16	BXT1/BNK1	BXT2	BXC/BNK1	BXT1/BNK1
10	-6	3/8	BXT1/BNK1	BXT2	BXC/BNK1	BXT1/BNK1
12	-8	½	BXT1/BNK1/BXT2	BXT2	BXC/BNK1	BXT1/BNK1
16	-10	5/8	BXT1/BNK1	BXT2	BXC/BNK1	BXT1/BNK1
19	-12	¾	BXT1/BNK1/BXT2	BXT2	BXC/BNK1	BXT1/BNK1
25	-16	1	BXT1/BNK1/BSN2	BXT2/BSN2	BXC/BNK1	BXT1/BNK1
31	-20	1 ¼	BXT1/ BSN2	BXT2/BSN2	-	-
38	-24	1 ½	BXT1/ BSN2	BXT2/BSN2	-	-
51	-32	2	BXT1/ BSN2	BXT2/BSN2	-	-

Hose size			R17	MASTER	OVERMASTER	1 STARK	2 STARK
DN	DASH	inch					
6	-4	¼	BXC/BNK1	BXLP	-	BNK1	BNK1
8	-5	5/16	BXC/BNK1	BXLP	BXLP	BNK1	BNK1
10	-6	3/8	BXC/BNK1	BXLP	BXLP	BNK1	BNK1
12	-8	½	BXC/BNK1/BXT2	BXLP	BXLP	BNK1	BNK1/BXT2
16	-10	5/8	BXT1/BNK1/BXT2	BXLP	BXLP	BNK1	BNK1
19	-12	¾	BXT1/BNK1/BXT2	BXLP	BXLP	BNK1	BNK1
25	-16	1	BXT1/BNK1/BSN2	BXLP	BXLP	BNK1	BNK1
31	-20	1 ¼	-	BXLP	-	BXT1	BXT1

Couplings: Couplings: Made by Hydro Holding Spa (Tieffe brand), Italy  
 Coupling material: 11SMnPb37 UNI EN10277

### 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 covered by this certificate are suitable for use with:

- Petroleum based hydraulic fluids at temperatures ranging from -40 °C to +100 °C
- water based fluids at temperatures ranging from -40 °C to +70 °C
- water at temperatures ranging from 0 °C to +70 °C

Maximum working pressure in bar:

Hose size			DS1-T	DS2-T	FIGHTER 1SC	FIGHTER DS 2SC/R16	DS17	MASTER	OVERMASTER	1 STARK	2 STARK
inch	DN	Dash									

¼	6	-4	225	400	275	420	210	400	-	295	450
5/16	8	-5	215	350	255	380	210	400	480	250	420
3/8	10	-6	180	330	215	350	210	400	450	230	390
½	12	-8	160	275	170	310	210	350	400	200	350
5/8	16	-10	130	250	150	280	210	275	350	150	290
¾	19	-12	105	215	125	240	210	235	320	125	280
1	25	-16	88	165	100	185	210	185	250	110	200
1 ¼	31	-20	63	125	-	-	-	165	-	100	175
1 ½	38	-24	50	90	-	-	-	-	-	-	-
2	51	-32	40	80	-	-	-	-	-	-	-

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.

The hose assemblies must only be fitted in places where they are always accessible. Flexible hoses of these types are not to be used on boiler fronts.

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

Hose assemblies covered by this certificate shall not be used in system subject to pressure below atmospheric or vacuum condition.

The cover of hoses for gaseous applications shall be pin-pricked.

The outer end of the pipe coupling (performing the connection to the fixed piping) is not covered by this certificate and shall follow the below requirements:

- Flanged ends shall be according to a recognized standard
- Slip-on threaded joints having pipe threads where pressure-tight joints are made on the threads with parallel or tapered threads, shall comply with requirements of a recognized standard. Limitations stated in DNV-RU-SHIP Pt.4 Ch.6 Sec.9 [5.2.6] to be followed.
- If these outer ends are going to be part of a mechanical joint as covered by Table 10 DNV-RU-SHIP Pt.4 Ch.6 Sec.9, then they shall be separately type approved.

### Production testing

All hose assemblies delivered under the DNV 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 this type approval certificate.

### Type Approval documentation

#### Tests carried out

Change in length, burst, dimensional check, impulse, oil resistance, ozone resistance, leakage, cold flexibility and fire test.

#### Marking of product

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

- hose manufacturer's name or trademark;
- date of manufacture (month/year);
- designation type reference;
- nominal diameter;
- pressure rating;
- temperature rating.

#### Periodical assessment

For retention of the Type Approval, a DNV 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 DNV-CP-0338.