

TYPE APPROVAL CERTIFICATE

This is to certify:

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

with type designation(s)
DS2-T, FIGHTER DS 2SC/R16, 2 STARK, DS19, XFIGHT 4000, XFIGHT 5000, XFIGHT 6000

Issued to
Diesse Rubber Hoses S.p.A.
Filago, BG, Italy

is found to comply with
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV GL class programme DNVGL-CP-0183 – Type approval – Flexible hoses
DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition January 2018

Application :

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

Type:	Temperature range:	Max. working press.:	Sizes:
DS2-T	-40°C to 100°C	165 to 400 bar	DN6 to 25
FIGHTER DS 2SC/R16	-40°C to 100°C	350 to 420 bar	DN6 & DN10
2 STARK	-40°C to 100°C	350 bar	DN12
DS19	-40°C to 100°C	280 bar	DN16
XFIGHT 4000	-40°C to 121°C	280 bar	DN25
XFIGHT 5000	-40°C to 121°C	380 bar	DN19
XFIGHT 6000	-40°C to 121°C	420 bar	DN10 to 25

Issued at **Høvik** on **2021-01-07**

This Certificate is valid until **2026-01-06**.

for **DNV GL**

DNV GL local station: **Italy/Malta CMC**

Approval Engineer: **Thomas Wilhelm Juell**

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Zeinab Sharifi
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 GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") 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

5 types of hose assemblies:

DS2-T According to SAE 100 R2AT - EN 853 2SN
Tube: Black synthetic rubber resistant to oil
Reinforcement: Two high tensile steel braids
Cover: Black, synthetic rubber resistant to oils, abrasion and weather condition
STANDARD, MSHA, MSHA HARC, MSHA ENDLESS, HARC, ENDLESS COVERS
Coupling: DICSA fitting ZPF2212

FIGHTER DS 2SC/ 2 STARK/ DS19

Tube: Black synthetic rubber resistant to oil
Reinforcement: Two high tensile steel braids
Cover: Black, synthetic rubber resistant to oils, abrasion and weather condition
STANDARD, MSHA, MSHA HARC, MSHA ENDLESS, HARC, ENDLESS COVERS
Coupling: DICSA fitting ZPF2212
Construction standard: FIGHTER DS 2SC and 2 STARK - SAE 100 R16/ EN 857 2SC;
DS19 - SAE 100 R19

XFIGHT 4000

Constructed according to SAE 100 R12 - EN 856 R12
Tube: Black synthetic rubber resistant to oil
Reinforcement: Four high tensile steel spirals
Cover: Black, synthetic rubber resistant to oils, abrasion and weather condition
STANDARD, MSHA, MSHA HARC, MSHA ENDLESS, HARC, ENDLESS COVERS
Coupling: DICSA fitting ZPF1224

XFIGHT 5000

Constructed according to SAE 100 R13 - EN 856 R13
Tube: Black synthetic rubber resistant to oil
Reinforcement: Four high tensile steel spirals
Cover: Black, synthetic rubber resistant to oils, abrasion and weather condition
STANDARD, MSHA, MSHA HARC, MSHA ENDLESS, HARC, ENDLESS COVERS
Coupling: DICSA fitting ZPF1224

XFIGHT 6000

Constructed according to SAE 100 R15
Tube: Black synthetic rubber resistant to oil
Reinforcement: Four high tensile steel spirals
Cover: Black, synthetic rubber resistant to oils, abrasion and weather condition
STANDARD, MSHA, MSHA HARC, MSHA ENDLESS, HARC, ENDLESS COVERS
Coupling: DICSA fitting ZPF1224

Hoses are manufactured: DIESSE Rubber Hoses S.P.A.,
Filago BG, Italy
Couplings are manufactured: DISTRIBUIDORA INTERNACIONAL CARMEN, S.A.,
Zaragoza, Spain
according to DICSA fitting catalogue AISI 316L from 2020.
Hose assembling location: DIESSE Rubber Hoses S.P.A.,
Filago BG, Italy

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 at temperatures range mentioned in the front page of the certificate
- Water based fluids at temperature ranging from -40°C to 70°C
- Water at temperature ranging from 0°C to 70°C

Job Id: **262.1-032515-1**
Certificate No: **TAP000026Y**

Maximum working pressure:

Size		DS2-T		FIGHTER DS 2SC		2 STARK		DS19	
DN	size	Hose	(bar)	Hose	(bar)	Hose	(bar)	Hose	(bar)
06	-4	2SN-06-04	400	FGT16-06-04	420	-	-	-	-
10	-6	2SN-10-06	330	FGT16-10-06	350	-	-	-	-
12	-8	2SN-12-08	275	-	-	2STK-12-08	350	-	-
16	-10	2SN-16-10	250	-	-	-	-	R19-16-10	280
19	-12	2SN-19-12	215	-	-	-	-	-	-
25	-16	2SN-25-16	165	-	-	-	-	-	-

Size		XFIGHT 4000		XFIGHT 5000		XFIGHT 6000	
DN	size	Hose	(bar)	Hose	(bar)	Hose	(bar)
10	-6	-	-	-	-	XFGT-6000-10-06	420
12	-8	-	-	-	-	XFGT-6000-12-08	420
16	-10	-	-	-	-	XFGT-6000-16-10	420
19	-12	-	-	XFGT-5000-19-12	380	XFGT-6000-19-12	420
25	-16	XFGT-4000-25-16	280	-	-	XFGT-6000-25-16	420

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

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

Production testing

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.

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



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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.