



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **P-13493**

This is to certify that the
Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings

with type designation(s)
DS1-T EN853, DS2-T EN853, DS1-SC EN857, DS2-SC EN857, SAE 100 R17, MASTER (Exceeds R16), OVERMASTER

Manufactured by
DIESSE RUBBER HOSES SPA
FILAGO BG, Italy

is found to comply with
Offshore Standard DNV-OS-D101, Marine and Machinery Systems and Equipment
Det Norske Veritas' Standards for Certification 2.9 No. 5-791.70
Det Norske Veritas' Rules for Classification of Ships

Application

The hoses may be used for: **Hydraulic or pneumatic power and control systems for steering gear, lubricating, hydraulic and fuel oil, seawater, fresh water and sanitary systems.**

Type:	Temperature range:	Max. working press.:	Sizes:
DS1-T EN853	-40 °C to +100 °C	40 to 225 bar (dep. size, see cert)	DN6 to 51 (see cert.)
DS2-T EN853	-40 °C to +100 °C	80 to 400 bar (dep. size, see cert)	DN6 to 51 (see cert.)
DS1-SC EN857	-40 °C to +100 °C	100 to 275 bar (dep. size, see cert.)	DN6 to 25 (see cert.)
DS2-SC EN857	-40 °C to +100 °C	185 to 420 bar (dep. size, see cert.)	DN6 to 25 (see cert.)
SAE 100 R17	-40 °C to +100 °C	Dep. size and type, see cert.	DN6 to 25 (see cert.)
MASTER (Exceeds R16)	-40 °C to +100 °C cont. (+125 °C discount.)	165 to 400 bar (dep. size, see cert.)	DN6 to 31 (see cert.)
OVERMASTER	-40 °C to +100 °C cont. (+125 °C discount.)	250 to 480 bar (dep. size, see cert.)	DN8 to 25 (see cert.)

Høvik, 2011-01-19
for Det Norske Veritas AS



This Certificate is valid until
2013-12-31


Marianne Spæren
Head of Section

DNV local office:
Milan


Øyvind Skåra
Surveyor

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.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.



Certificate No.: P-13493
File No.: 791.70
Job Id.: 262.1-008998-1

Product description

Flexible hose with permanently fitted couplings.

Couplings:

Made by Tieffe SPA, Italy

Coupling material:
11SMnPb37 UNI EN10277

Hose design and couplings:

DS1-T:

Cover: Black synthetic rubber (SBR/CR), resistant to abrasion, oils and weather conditions.

Reinforcement: One high tensile steel braid.

Inner tube: Synthetic rubber inner tube (NBR) resistant to oils.

Couplings: Tieffe series BXT1

DS2-T:

Cover: Black synthetic rubber (SBR/CR), resistant to abrasion, oils and weather conditions.

Reinforcement: Two high tensile steel braids.

Inner tube: Synthetic rubber inner tube (NBR) resistant to oils.

Couplings: Tieffe series BXT2

DS1-SC:

Cover: Black synthetic rubber (SBR/CR), resistant to abrasion, oils and weather conditions.

Reinforcement: One high tensile steel braid.

Inner tube: Synthetic rubber inner tube (NBR) resistant to oils.

Couplings: Tieffe series BXC

DS2-SC:

Cover: Black synthetic rubber (SBR/CR), resistant to abrasion, oils and weather conditions.

Reinforcement: Two high tensile steel braids.

Inner tube: Synthetic rubber inner tube (NBR) resistant to oils.

Couplings: Tieffe series BXT1

SAE 100 R17:

For sizes DN6 to DN 12, the hose is identical to DS1-SC.

For sizes above DN 12, the hose is identical to DS2-SC.

Master:

Exceeds SAE 100 R16

Cover: Black synthetic rubber (SBR/CR), resistant to abrasion, oils and weather conditions.

Reinforcement: Two high tensile steel braids.

Inner tube: Synthetic rubber inner tube (CR) resistant to oils.

Couplings: Tieffe series BXLP.

Overmaster:

Exceeds SAE 100 R16

Cover: Black synthetic rubber (SBR/CR), resistant to abrasion, oils and weather conditions.

Reinforcement: Two high tensile steel braids.

Inner tube: Synthetic rubber inner tube (CR) resistant to oils.

Couplings: Tieffe series BXLP.



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Application/Limitation

Maximum working pressure and sizes

Hose type	Size DN		Maximum working pressure	
	mm	Inches	bar	psi
DS1-T	6	¼	225	3250
	8	5/16	215	3100
	10	3/8	180	2600
	12	½	160	2300
	16	5/8	130	1900
	19	¾	105	1500
	25	1	88	1300
	31	1 ¼	63	900
	38	1 ½	50	725
DS2-T	51	2	40	580
	6	¼	400	5800
	8	5/16	350	5100
	10	3/8	330	4800
	12	½	275	4000
	16	5/8	250	3600
	19	¾	215	3100
	25	1	165	2400
	31	1 ¼	125	1800
DS1-SC	38	1 ½	90	1300
	51	2	80	1150
	6	¼	275	4000
	8	5/16	255	3700
	10	3/8	215	3100
	12	½	170	2470
	16	5/8	150	2180
DS2-SC	19	¾	125	1820
	25	1	100	1450
	6	¼	420	6100
	8	5/16	380	5500
	10	3/8	350	5100
	12	½	350	5100
	16	5/8	280	4100
MASTER	19	¾	250	3620
	25	1	185	2700
	6	¼	400	5850
	8	5/16	400	5850
	10	3/8	400	5850
	12	½	350	5150
	16	5/8	275	4050
OVERMASTER	19	¾	235	3450
	25	1	185	2700
	31	1 ¼	165	2400
	8	5/16	480	7000
	10	3/8	450	6550
	12	½	400	5850
	16	5/8	350	5150
	19	¾	320	4650
	25	1	250	3650

The hoses may not be used in vacuum systems.

Flexible hoses are only to be used in lengths up to 2 meters 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.



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

The hoses are to be mounted in accordance with the manufacturer's instructions.
It must be possible to shut off from the system all flexible hoses used in systems for compressed air, lube oil, fuel oil and petroleum base hydraulic oil.

Each hose is to be hydraulic pressure tested to 1.5 times the working pressure, and delivered with the manufacturer's pressure test report.

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

Type Approval documentation

Manufacturer's catalogue 2003 edition.

Manufacturer's test reports No:
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17
Impulse test report for the 1SC and 2SC dated 2005-06-23

Tieffe test reports No:
260, 276, 277, 278, 294, 318, 319/b, 324, 348, 281, 332, 379, 382, 390

LAPI fire test reports No:
315/05, 316/05, 317/05, 318/05, 319/05, 320/05, 321/05, 322/05, 323/05, 324/05, 325/05, 326/05, 1391, 1390, 1579, 1389, 1387, 1388.
Letter from LAPI ref. 536/05/AC dated 2005-04-20.

DNV Retention survey report dated 2010-04-28 with test reports.

Tests carried out

Change in length, burst, dimensional, impulse, oil resistance, ozone, cold flexibility and fire 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 or "PFM"
- Type designation
- Maximum working pressure

Certificate Retention Survey

For retention of the Type Approval, DNV Surveyor shall perform a survey every second year, to verify that the conditions for the type approval are complied with and to witness the following tests on a selection of sizes:

- Dimensional check.
- Change in length
- Leakage test
- Burst test

The tests shall be performed in accordance with procedures given in Det Norske Veritas' Certification Notes no. 2.9 – 5.791.70, "Type Approval of Flexible Hoses of Non-Metallic Material", or another recognized standard.

The tests are to be performed with the type of couplings fitted that are Type Approved with the hoses.