

**EC-TYPE EXAMINATION  
CERTIFICATE (MODULE B)**

Certificate No:  
**MEDB000024R**  
Revision No:  
**2**

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 GL 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)

**ALFABIOTECH 3000 - MINETUFF / POWERFLEX BIO 3000, ALFABIOTECH 4000 - MINETUFF / POWERFLEX BIO 4000, ALFABIOTECH 5000 & 5000 PLUS - MINETUFF / POWERFLEX BIO 5000 & 5000 PLUS, ALFABIOTECH 6000 - MINETUFF / POWERFLEX BIO 6000**

Issued to

**Alfagomma Hydraulic S.p.A.  
Castelnuovo Vomano, TE, Italy**

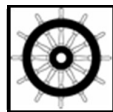
is found to comply with the requirements in the following Regulations/Standards:  
Regulation **(EU) 2019/1397,**

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

This Certificate is valid until **2022-06-08.**

Issued at **Høvik** on **2020-06-29**

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



for **DNV GL AS**

Approval Engineer:  
**Adel Samiei**

Notified Body  
No.: **0575**

**Roald Vårheim**  
**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 GL 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 This certificate remains valid unless suspended, withdrawn, recalled or cancelled.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 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.



Job Id: **344.1-006461-3**  
 Certificate No: **MEDB000024R**  
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### Product description

Five types of flexible rubber hoses with permanently attached couplings constructed according to ISO 18752 with type designations (except Alfabiotech 5000 DN76 which is not according to ISO18752)

Designations:

ALFAGOMMA: ALFABIOTECH 3000, 4000, 5000/ 5000 PLUS, 6000 (SUPERTUFF and MINETUFF)

DUNLOP HIFLEX: POWERFLEXBIO 3000, 4000, 5000/ 5000 PLUS, 6000 (TUFLEX and MINETUFF)

#### Design:

Tube: Oil resistant synthetic rubber and biodegradable hydraulic fluids  
 Cover: Abrasion, ozone and hydrocarbon resistant synthetic rubber. MSHA.  
 Reinforcement: Type 3000: Four/six high tensile steel spirals  
 Type 4000: Four high tensile steel spirals  
 Type 5000: Four/six high tensile steel spirals  
 Type 5000PLUS: Four high tensile steel spirals  
 Type 6000: Four/six high tensile steel spirals

ALFABIOTECH 4000	Size		Ferrule	Insert	Ferrule	Insert
	3/4"	-12	H1200204-12	H12xxxxx-12	-	-
	1"	-16	H1200204-16	H12xxxxx-16	H1100404-16 H3100404-16	H12xxxxx-16 H32xxxxx-16
	1 1/4"	-20	H1200204-20	H12xxxxx-20	-	-
	1 1/2"	-24	H1300NS4-24	H13xxxxx-24	H1400200-24	H14xxxxx-24
	2"	-32	H1300NS4-32	H13xxxxx-32	H1400200-32	H14xxxxx-32

Size		ALFABIOTECH 6000				ALFABIOTECH 3000	
		Ferrule	Insert	Ferrule	Insert	Ferrule	Insert
1/4"	-04	H1100404-04 H3100404-04	H12xxxxx-04 H32xxxxx-04	-	-	-	-
3/8"	-06	H1100404-06 H3100404-06	H12xxxxx-06 H32xxxxx-06	-	-	-	-
1/2"	-08	H1100404-08 H3100404-08	H12xxxxx-08 H32xxxxx-08	H1400200-08	H14xxxxx-08	-	-
5/8"	-10	-	-	H1400301-10 H3400301-10	H14xxxxx-10 H34xxxxx-10	-	-
3/4"	-12	H1300NS4-12	H13xxxxx-12	H1400200-12 H3400200-12	H14xxxxx-12 H34xxxxx-12	-	-
1"	-16	H1300NS4-16	H13xxxxx-16	H1400200-16 H3400200-16	H14xxxxx-16 H34xxxxx-16	-	-
1 1/4"	-20	H1300NS6-20	H13xxxxx-20	H1400301-20 H3400301-20	H14xxxxx-20 H34xxxxx-20	H1100404-20	H12xxxxx-20
1 1/2"	-24	-	-	H1400301-24 H3400301-24	H14xxxxx-24 H34xxxxx-24	H1100404-24	H12xxxxx-24
2"	-32	-	-	H1T00600-32 H3T00600-32	H1Txxxxx-32 H3Txxxxx-32	H1200204-32	H12xxxxx-32
3"	-48	-	-	-	-	H1T00600-48	H1Txxxxx-48

ALFABIOTECH 5000							
Size		Ferrule	Insert	Ferrule	Insert	Ferrule	Insert
5/8"	-10	-	-	H1100404-10	H12xxxxx-10	-	-
3/4"	-12	H1300NS4-12	H13xxxxx-12	H1100404-12	H12xxxxx-12	H1400200-12	H14xxxxx-12
1"	-16	H1300NS4-16	H13xxxxx-16	H1100404-16	H12xxxxx-16	H1400200-16	H14xxxxx-16
1 1/4"	-20	H1300NS4-20	H13xxxxx-20	-	-	H1400200-20	H14xxxxx-20
1 1/2"	-24	H1300NS6-24	H13xxxxx-24	-	-	H1400301-24 H3400301-24	H14xxxxx-24 H34xxxxx-24
2"	-32	H1300NS6-32	H13xxxxx-32	-	-	H1400301-32	H14xxxxx-32
2 1/2"	-40	-	-	-	-	H1T00600-40	H1Txxxxx-40

### ALFABIOTECH 5000 Plus

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Size	Ferrule	Insert	Ferrule	Insert	Ferrule	Insert	
3/4"	-12	H1300NS4-12	H13xxxxx-12	H1100404-12	H12xxxxx-12	H1400200-12	H14xxxxx-12
1"	-16	H1300NS4-16	H13xxxxx-16	-	-	H1400200-16	H14xxxxx-16

End fittings material: Carbon Steel 11SMnPb30 according UNI EN 10277/INOX Steel AISI 316

Manufacturing plants:

Hoses: Alfagomma Hydraulic S.p.A., Via Enrico Mattei no.6, 64020 - Castelnuovo Vomano (TE)

Couplings: Alfagomma Hydraulic S.p.A, Area Industriale Piano Lago, 87050 Mangone (CS) – Italy

### Application/Limitation

Hose assemblies covered by this certificate are tested according to:

- 1) NS-EN ISO 15540: Fire resistance of hose assemblies- Test methods
- 2) NS-EN ISO 15541: Fire resistance of hose assemblies - Requirements for the test bench

Hose assemblies are suitable for use with petroleum base hydraulic fluids and water base hydraulic fluids.

Maximum working pressure for each type and size of hose assembly shall be as below:

Size			ABT 3K	ABT 4K	ABT 5K	ABT 5K PLUS	ABT 6K
DN6	-04	1/4"	-	-	-	-	450 bar
DN10	-06	3/8"	-	-	-	-	445 bar
DN12	-08	1/2"	-	-	-	-	420 bar
DN16	-10	5/8"	-	-	350 bar	-	420 bar
DN19	-12	3/4"	-	280 bar	350 bar	380 bar	420 bar
DN25	-16	1"	-	280 bar	350 bar	380 bar	420 bar
DN31	-20	1 1/4"	210 bar	280 bar	350 bar	-	420 bar
DN38	-24	1 1/2"	210 bar	290 bar	350 bar	-	420 bar
DN51	-32	2"	210 bar	280 bar	350 bar	-	420 bar
DN63	-40	2 1/2"	-	-	350 bar	-	-
DN76	-48	3"	210 bar	-	-	-	-

### Type Examination documentation

Alfagomma hydraulic hose fittings and adapters catalogue dated 2017-01-16

Alfagomma technical data sheets for types 3000/4000/5000 & 5000 Plus/6000

LAPI fire test reports:

2089.OIS0110/16, 2090.OIS0110/16, 2091.OIS0110/16 (ALFABIOTECH 3000)

074.OIS0110/14, 075.OIS0110/14, 076.OIS0110/14, 1049.OIS0110/18, 1050.OIS0110/18,

2314.OIS0110/18 (ALFABIOTECH 4000)

077.OIS0110/14, 078.OIS0110/14, 079.OIS0110/14, 2092.OIS0110/16, 1051.OIS0110/18,

1052.OIS0110/18, 1053.OIS0110/18, 1054.OIS0110/18, 1055.OIS0110/18, 1056.OIS0110/18,

1057.OIS0110/18, 2902.OIS0110/18, 2903.OIS0110/18 (ALFABIOTECH 5000/5000PLUS)

1058.OIS0110/18, 1059.OIS0110/18, 1060.OIS0110/18, 276.OIS0110/18, 277.OIS0110/18,

278.OIS0110/18, 080.OIS0110/14, 081.OIS0110/14, 082.OIS0110/14 (ALFABIOTECH 6000)

### Tests carried out

Fire tests carried out according to ISO 15540/15541

### Marking of product

As a minimum, the final products (hoses with couplings) are to be marked with:

- Manufacturer's name or trademark
- Manufacturer's address
- Specification or hose name
- Hose size (inside diameter in inches)
- Data code (quarterly and daily production code)