

# EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

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 the Kingdom of Norway.

## This is to certify:

**That the Materials other than steel for pipes conveying oil or fuel oil: flexible pipe assemblies**

with type designation(s)

**FLEXOR 1ST,-1A,-1SN,-1AT, FLEXOPAK 2, FLEXOR 2ST,-2A,-2AT,-2SN, 122T, 122G, 222T, 222G, 1SN-HF, 2SN-HF, 122 PLUS, 222 PLUS, Flexopak 1SC, 1SN MINETUFF, 2SN MINETUFF, 1SN H1-TUFF, 2SN H1-TUFF**

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) 2017/306,**

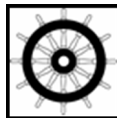
**item No. MED/3.15c. SOLAS 74 as amended, Regulation II-2/4 & X/3 and 2000 HSC Code 7 & 10 and IMO MSC/Circ.1120**

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

This Certificate is valid until **2021-10-23.**

Issued at **Høvik** on **2017-06-13**

DNV GL local station:  
**Milan**



for **DNV GL AS**

Approval Engineer:  
**Adel Samiei**

Notified Body  
No.: **0575**

**Vidar Dolonen**  
**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 This certificate remains valid unless suspended, withdrawn, recalled or cancelled.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.



**Product description**

(1)	Skive		No-Skive	
Standard	EN853	SAE J517	EN853	EN853
Alfagomma	Flexor 1ST	FLEXOR 1A	Flexor 1SN	FLEXOR 1AT
Dunlop Hiflex	122T			
	Skive/No-Skive		No-Skive	
Standard	EN853	EN853	EN857	
Alfagomma	Flexor 1SN-HF	1SN-MINETUFF	Flexopak 1SC	
Dunlop Hiflex	122 PLUS	1SN H1-TUFF	121	

Design: Flexible rubber hoses reinforced by one steel wire braid.  
 Tube: Oil resistant synthetic rubber nitrile.  
 Reinforcement: One, high tensile steel wire braid.  
 Cover: Chloroprene rubber, weather-, oil- and abrasion resistant.  
 Couplings: Carbon steel (9SMnPb28 acc. UNI 4838) or  
 Stainless Steel (XCrNi18 10 acc. UNI 6901)

(2)	Skive		No-Skive	
Standard	EN853	SAE J517	EN853	SAE J517
Alfagomma	Flexor 2ST	FLEXOR 2A	Flexor 2SN	FLEXOR 2AT
Dunlop Hiflex	222T			
	Skive/No-Skive		No-Skive	
Standard	EN853	EN853	EN857/ SAE J517	
Alfagomma	Flexor 2SN-HF	2SN-MINETUFF	Flexopak 2	
Dunlop Hiflex	222 PLUS	2SN H1-TUFF	241 Superslimline	

Design: Flexible rubber hoses reinforced by two steel wire braids.  
 Tube: Oil resistant synthetic rubber nitrile.  
 Reinforcement: Two high tensile steel wire braids.  
 Cover: Chloroprene rubber, weather-, oil- and abrasion resistant.  
 Couplings: Carbon steel.

Hoses made by: Alfagomma Hydraulic S.p.A.  
 Couplings made by: Alfatechnology S.r.l.

Flexor 1ST, Flexor 1A, Flexor 1SN, Flexor 1AT, 122T, 122G

Size		FERRULE		INSERT		No Skive fittings	
inch	DN	Carbon Steel	Stainl. Steel	Carbon Steel	Stainless Steel	Carbon Steel	Stainless Steel
1/4	6	H1100204-04	H3100204-04	H12-04	H32-04	H1200102-04	D110000-04
5/16	8	H1100204-05	H3100204-05	H12-05	H32-05	H1200202-05	D110000-05
3/8	10	H1100204-06	H3100204-06	H12-06	H32-06	H1200202-06 H1200212-06	D110000-06
1/2	12	H1100204-08	H3100204-08	H12-08	H32-08	H1200202-08 H1200212-08	D110000-08
5/8	16	H1100204-10	H3100204-10	H12-10	H32-10	H1200202-10	D110000-10
3/4	19	H1100204-12	H3100204-12	H12-12	H32-12	H1200202-12	D110000-12
1	25	H1100204-16	H3100204-16	H12-16	H32-16	H1200202-16	D110000-16
1 1/4	31	H1100104-20	H3100104-20	H12-20	H32-20	H1200102-20	D110000-20
1 1/2	38	H1100104-24	H3100104-24	H12-24	H32-24	H1200202-24	D110000-24
2	51	H1100104-32	H3100104-32	H12-32	H32-32	H1200202-32	D110000-32

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Flexopak 2, Flexor 2ST, Flexor 2A, Flexor 2AT, Flexor 2SN, 222T, 222G, 241 Superslimline

Size		FERRULE		INSERT	
inch	DN	Carbon Steel	Stainl. Steel	Carbon Steel	Stainless Steel
¼	6	H1100204-04	H3100204-04	H12-04	H32-04
5/16	8	H1100204-05	H3100204-05	H12-05	H32-05
3/8	10	H1100204-06	H3100204-06	H12-06	H32-06
½	12	H1100204-08	H3100204-08	H12-08	H32-08
5/8	16	H1100204-10	H3100204-10	H12-10	H32-10
¾	19	H1100204-12	H3100204-12	H12-12	H32-12
1	25	H1100204-16	H3100204-16	H12-16	H32-16
1 ¼	31	H1100204-20 H1100104-20 *)	H3100204-20 H3100104-20 *)	H12-20	H32-20
1 ½	38	H1100204-24	H3100204-24	H12-24	H32-24
2	51	H1100204-32	H3100204-32	H12-32	H32-32

\*) - Flexopak 2

Flexor 1SN-HF, 122 PLUS, 1SN MINETUFF, 1SN H1-TUFF

Size		Carbon Steel 95MnPb28 acc. UNI4838 Stainless Steel XCrNi 18 10 acc. UNI 6901				
		Skive fittings		No Skive fittings		
DN	inch	AG Branding	DH Branding	AG Branding	DH Branding	AG Branding
6	¼	H1100204-04	D330000-04/0	H1200102-04	D110000-04/0	H1200AD1-04
8	5/16	H1100204-05	D330000-05/0	H1200202-05	D110000-05/0	H1200AD1-05
10	3/8	H1100204-06	D330000-06/0	H1200212-06	D110000-06/0	H1200AD1-06
13	½	H1100204-08	D330000-08/0	H1200212-08	D110000-08/0	H1200AD1-08
16	5/8	H1100204-10	D330000-10/0	H1200202-10	D110000-10/0	H1200AD1-10
19	¾	H1100204-12	D330000-12/0	H1200202-12	D110000-12/0	H1200AD1-12
25	1	H1100204-16	D330000-16/0	H1200202-16	D110000-16/0	H1200AD1-16
32	1 ¼	H1100104-20	H1100104-20	H1200102-20	D110000-20/0	H1200AD1-20
38	1 ½	H1100104-24	H1100104-24	H1200202-24	D110000-24/0	H1200AD1-24
51	2	H1100104-32	H1100104-32	H1200202-32	D110000-32/0	H1200AD1-32

Flexor 2SN-HF, 222 PLUS, 2SN MINETUFF, 2SN H1-TUFF

Size		Carbon Steel 95MnPb28 acc. UNI4838 Stainless Steel XCrNi 18 10 acc. UNI 6901				
		Skive fittings		No Skive fittings		
DN	inch	AG Branding	DH Branding	AG Branding	DH Branding	AG Branding
6	¼	H1100204-04	D330000-04/0	H1200202-04	D220000-04/0	H1200AD2-04
8	5/16	H1100204-05	D330000-05/0	H1200202-05	D220000-05/0	H1200AD2-05
10	3/8	H1100204-06	D330000-06/0	H1200212-06	D220000-06/0	H1200AD2-06
13	½	H1100204-08	D330000-08/0	H1200212-08	D220000-08/0	H1200AD2-08
16	5/8	H1100204-10	D330000-10/0	H1200202-10	D220000-10/0	H1200AD2-10
19	¾	H1100204-12	D330000-12/0	H1200202-12	D220000-12/0	H1200AD2-12
25	1	H1100204-16	D330000-16/0	H1200202-16	D220000-16/0	H1200AD2-16
32	1 ¼	H1100204-20	D330000-20/0	H1200202-20	D220000-20/0	H1200AD2-20
38	1 ½	H1100204-24	D330000-24/0	H1200202-24	D220000-24/0	H1200AD2-24
51	2	H1100204-32	D330000-32/0	H1200202-32	D220000-32/0	H1200AD2-32

Flexopak 1SC

Hose size		Carbon Steel 11SMnPb30 according UNI EN 10277 Stainless Steel AISI 304 - AISI 316 No skive fittings	
Inch	mm	AG Branding	DH Branding
¼	6	H1200103-04 H1200101-04	-
5/16	8	H1200103-05	D110000-05
3/8	10	H1200103-06	D110000-06
½	12	H1200103-08	D110000-08
5/8	16	H1200202-10	D110000-10
¾	19	H1200202-12	D110000-12
1	25	H1200103-16	D110000-16

### 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 (MAWP):

Size		MWP[bar]			
Inch	mm	Note (1)	Note (2)	Flexopak 2	Flexopak 1SC
¼	6	225	400	400	225
5/16	8	215	350	375	215
3/8	10	180	330	350	210
½	12	160	275	310	160
5/8	16	130	250	280	130
¾	19	105	215	240	105
1	25	88	165	185	88
1 ¼	31	63	125	-	-
1 ½	38	50	90	-	-
2	51	40	80	-	-

(1) Flexor 1ST, Flexor 1A, Flexor 1SN, Flexor 1AT, 122T, 122G , Flexor 1SN-HF, 122 PLUS, 1SN MINETUFF

(2) Flexor 2ST, Flexor 2A, Flexor 2AT, Flexor 2SN, 222T, 222G, Flexor 2SN-HF, 222 PLUS, 2SN MINETUFF

### Type Examination documentation

- Fire test reports (done by LAPI) numbers: 156.0IS0110/05 (Flexor 1SN DN06), 216.0IS0110/05 (Flexor 1SN DN19), 217.0IS0110/05 (Flexor 1SN DN51)
- Fire test reports (done by LAPI) numbers: 218.0IS0110/05 (Flexor 2SN DN06), 270.0IS0110/05 (Flexor 2SN DN19), 271.0IS0110/05 (Flexor 2SN DN51)
- Fire test reports (done by LAPI) numbers: 219.0IS0110/05 (Flexopak 2 DN6), 157.0IS0110/05 (Flexopak 2 DN12), 220.0IS0110/05 (Flexopak 2 DN25)
- Fire test reports (done by LAPI) numbers: 767.0IS0110/15 (1SN MINETUFF – DN6), 768.0IS0110/15 (1SN MINETUFF – DN16) & 769.0IS0110/15 (1SN MINETUFF – DN51) with AD1 type fittings / dated 2015-06-01
- Fire test reports (done by LAPI) numbers: 770.0IS0110/15 (2SN MINETUFF – DN6), 771.0IS0110/15 (2SN MINETUFF – DN16) & 772.0IS0110/15 (2SN MINETUFF – DN51) with AD2 type fittings / dated 2015-06-01
- Fire test reports (done by LAPI) numbers: 1666.0IS0110/10 (1SN/1AT HF – DN6), 1667.0IS0110/10 (1SN/1AT HF – DN16) & 1668.0IS0110/10 (1SN/1AT HF – DN51) with H1100204

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- Fire test reports (done by LAPI) numbers: 1669.0IS0110/10 (2SN/2AT HF – DN6), 1670.0IS0110/10 (2SN/2AT HF – DN16) & 1671.0IS0110/10 (2SN/2AT HF – DN51) with H1100204 type fittings / dated 2010-11-26
- Fire test reports (done by LAPI) numbers: 1416.0IS0110/09 (1SC DN6), 1417.0IS0110/09 (1SC DN12), 1418.0IS0110/09 (1SC DN25),

### **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)