

TYPE APPROVAL CERTIFICATE

This is to certify:

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

with type designation(s)

Alfagomma Alfatech 5000, Alfagomma Alfatech 6000/R15 (Dunlop 420G)

Issued to

Alfagomma Hydraulic S.p.A.
Castellalto TE, Italy

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems

DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition January 2018

DNV GL class programme DNVGL-CP-0183 – Type approval – Flexible hoses

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:
Alfagomma Alfatech 5000	-40°C to 125°C	350 to 380 bar	DN8 to DN63
Alfagomma Alfatech 6000/R15 (Dunlop 420G)	-40°C to 125°C	420 to 455 bar	DN10 to DN51

Issued at **Høvik** on **2018-10-03**

for **DNV GL**

This Certificate is valid until **2023-03-31**.

DNV GL local station: **Milan**

Approval Engineer: **Adel Samiei**

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Marianne Spæren Marveng
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.



Job Id: **262.1-016581-7**
 Certificate No: **TAP00001GG**

Product description

ALFATECH 5000

Tube: Oil resistant syntetic rubber compound
 Cover: Syntetic rubber compound, weather-, oil- and abrasion resistant
 Reinforcement: Two high tensile steel braids (DN8, 10, 12 and 16)
 Four high tensile steel spirals (DN16, 20, 25, 32 and 38).
 Six high tensile steel spirals (DN32, 38 and 63 mm)

ALFATECH 6000/R15 (according to 100R15 in SAE J517 (DUNLOP 420G))

Tube: Oil resistant syntetic rubber compound
 Cover: Syntetic rubber compound, weather-, oil- and abrasin resistant
 Reinforcement: Four (DN < 32) or six (DN =>32) layers of high tensile spiral steel wire wrapped in alternating directions.

Manufacturing plants:

Hoses: Alfagomma Hydraulic S.p.A, Via Enrico Mattei no. 6, Castelnuovo Vomano (TE), Italy
 Alfagomma Hydraulic S.p.A, Area Industriale Piano Lago, Figline Vegliaturo (CS), Italy
 Couplings: Alfagomma Hydraulic S.p.A, Zona Industriale Piano Lago, Mangone (CS), Italy
 Alfagomma Hydraulic S.p.A, Via dell'industria, 12, Bellusco (MI), Italy

Couplings Material: Carbon Steel 11SMnPb30 according UNI EN 10277
 Stainless Steel AISI 304 - AISI 316

ALFATECH 5000						
Hose size	Skive fittings		No skive fittings		Interlock fittings	
Dash	AG Branding (Carbon Steel)	AG Branding (INOX Version)	AG Branding (Carbon Steel)	AG Branding (INOX Version)	AG Branding (Carbon Steel)	AG Branding (INOX Version)
-05	H1100204-05	-	H1200102-05	H3200102-05	-	-
-06	H1100204-06	H3100204-06	H1200202-06 H1200212-06	H3200202-06 H3200212-06	-	-
-08	H1100204-08	H3100204-08	-	-	-	-
-10	H1100204-10 H1100404-10	-	-	-	H1400200-10	H3400200-10
-12	H1100404-12	-	-	-	H1400200-12	H3400200-12
-16	-	-	-	-	H1400200-16	H3400200-16
-20	-	-	-	-	H1400200-20 H1400301-20	H3400200-20 H3400301-20
-24	-	-	-	-	H1400301-24	H3400301-24
-32	-	-	-	-	H1400301-32	H3400301-32
-40	-	-	-	-	H1T00600-40	

ALFATECH 6000/R15, Dunlop 420G				
Hose size	Skive fittings		Interlock fittings	
Dash	AG Branding (Carbon Steel)	AG Branding (INOX Version)	AG Branding (Carbon Steel)	AG Branding (INOX Version)
-06	H1100404-06	H3100204-06	H1400200-06	-
-08	H1100404-08	H3100204-08	H1400200-08	-
-10	-	-	H1400301-10	H3400200-10
-12	-	-	H1400200-12	H3400200-12
-16	-	-	H1400200-16	H3400200-16
-20	-	-	H1400301-20	H3400301-20
-24	-	-	H1400301-24	H3400301-24
-32	-	-	H1T00600-32	-

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 or below assembling locaitons:

1. Dunlop Hiflex Oy, Pirkkala, Finland
2. Dunlop Hiflex OY, Vantaa, Finland
3. Dunlop Hiflex OY, Turku, Finland
4. Alfagomma Germany GmbH, Herne, Germany
5. Alfagomma Germany GmbH, Hamburg, Germany
6. Alfagomma UK Ltd, Hydock, UK
7. Alfagomma hydraulic S.P.A, Bellusco, Italy

Hose size		Maxium working Pressure (bar)	
Dash	DN	Alfatech 5000	Alfatech 6000
-05	8	375	-
-06	10	350	445
-08	12	350	420
-10	16	350	420
-12	19	380	420
-16	25	380	420
-20	31	350	420
-24	38	350	420
-32	51	350	420
-40	63	350	-

Hose assemblies covered by this certificate may be used in:
Petroleum based (-40°C to +100°C), water based Hydraulic fluids (-40°C to +70°C) fluids, water and air (0°C to +70°C)

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.

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.

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.

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.

Type Approval documentation

Alfagomma Thecnical data sheet edition 2 dated 27/05-2004.

Alfagomma Hose/fitting combination dated 04/06-2004.

Ferrule drawings: H1100204-040000/01, H1100204-060000/01, H1100204-080000/01, H1400200-100000/01, H1400200-120000/03, H1400200-160000/02, H1400200-200000/02, H1400200-240000/01, H1400301-200000/02, H1400301-240000/02, H1400301-320000/02.

Alfagomma drawing for interlock coupling H1T00600-32 for for Alfatech6000 – 2”

Test reports on Rubber Compounds: Cold flex.test, Ozone resistance test, and Oil resistance test (volume change) and report numbers: 959/2018, 960/2018, 961/2018, 962/2018, 963/2018, 964/2018, 965/2018, 966/2018, 967/2018, 968/2018, 969/2018, 970/2018, 971/2018.

Alfagomma test reports numbers: 119/2004, 120/2004, 121/2004, 122/2004, 123/2004, 124/2004, 125/2004, 126/2004, 127/2004, 127/2004, 128/2004 and 157/2004 dated 10/05-2004, 153/2012, 25/2012

LAPI fire test reports: 219.0IS0110/05, 277.0IS0110/05, 279.0IS0110/05, 225.0IS0110/05, 278.0IS0110/05, 385.0IS0110/12 & 299.0IS0110/14

Alfagomma Impulse Test Report 140/11A for Alfatech6000 – 2”

Job Id: **262.1-016581-7**
Certificate No: **TAP00001GG**

Impulse test report for for AT5K - 2.1/2" with coupling H1T00600-40 n° 020/12

Tests carried out

Dimensional Check Test, Change in Length Test, Burst Test, Cold Flexibility Test, Ozone Resistance Test, Impulse Test, Oil Resistance Test 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 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.