

# TYPE APPROVAL CERTIFICATE

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

with type designation(s)

**Alfagomma: 1 SN Temp-tech / Dunlop Hiflex: Commander 1SN**

Issued to

**Alfagomma Hydraulic S.p.A.  
Castelnuovo Vomano, 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.****Temperature range: -40°C to 150°C (see cert.)****Max. working press.: 40 to 225 bar****Sizes: DN 6/10/12/16/19/25/31/38/51 (1/4" to 2")**Issued at **Høvik** on **2020-09-08**for **DNV GL**This Certificate is valid until **2023-03-31**.DNV GL local station: **Italy/Malta CMC**Approval Engineer: **Andreas Hansen****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.



Job Id: **262.1-016581-11**  
Certificate No: **TAP000012S**  
Revision No: **2**

## Product description

Designation: 1SN Temp-tech acc. to EN 853 1SN and SAE 100 R1AT

Tube: Oil resistant synthetic rubber compound

Cover: Synthetic rubber compound, weather-, oil- and abrasion, Ozone and hydrocarbon resistant

Hose size			Carbon Steel 11SMnPb30 according UNI EN 10277 Stainless Steel AISI 304 - AISI 316				
			Skive fittings		No skive fittings		
Dash	DN	inch	AG Branding		DH Branding	AG Branding	DH Branding
- 04	6	¼	H1100204-04	H1100SK1-04	D330000-04	H1200AD1-04	D110000-04
- 06	10	3/8	H1100204-06	H1100SK1-06	D330000-06	H1200AD1-06	D110000-06
- 08	12	½	H1100204-08	H1100SK1-08	D330000-08	H1200AD1-08	D110000-08
- 10	16	5/8	H1100204-10	H1100SK1-10	D330000-10	H1200AD1-10	D110000-10
- 12	19	¾	H1100204-12	H1100SK1-12	D330000-12	H1200AD1-12	D110000-12
- 16	25	1	H1100204-16	H1100SK1-16	D330000-16	H1200AD1-16	D110000-16
- 20	31	1 ¼	H1100104-20	-	-	H1200AD1-20	D110000-20
- 24	38	1 ½	H1100104-24	-	-	H1200AD1-24	D110000-24
- 32	51	2	H1100104-32	-	-	H1200AD1-32	D110000-32

### Couplings manufacturer:

- Alfagomma Hydraulic S.p.A., Zona Industriale Piano Lago, 87050 Mangone (CS)

### Hoses manufacturer:

- Alfagomma Hydraulic S.p.A., Via Enrico Mattei no.6, 64020 – Castelnuovo, Vomano (TE)
- Alfagomma Hydraulic S.p.A., Area Industriale Piano Lago, 87050 Figline Vegliaturo (CS)

## 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 locations:

- 1- Alfagomma Hydraulic S.P.A., Mangone, Italy
- 2- Dunlop Hiflex Oy, Pirkkala, Finland
- 3- Dunlop Hiflex OY, Vantaa, Finland
- 4- Alfagomma Hydraulic France, Vendin, France
- 5- Dunlop Hiflex AB, Halmstad, Sweden
- 6- Dunlop Hiflex OY, Turku, Finland
- 7- Alfagomma hydraulic S.P.A, Bellusco, Italy
- 8- Alfagomma Germany GmbH, Herne, Germany
- 9- Alfagomma Germany GmbH, Hamburg, Germany
- 10- Dunlop Hiflex AS, Stavanger, Norway
- 11- Dunlop Hiflex AS, Bergen, Norway
- 12- Dunlop Hiflex AS, Kristiansand, Norway
- 13- Dunlop Hiflex AS, Esbjerg, Denmark
- 14- Dunlop Hiflex AS, Kolding, Denmark
- 15- Alfagomma UK Ltd, Hydock, UK
- 16- ARGUS Fluidtechnik GmbH, Ettlingen, Germany

Hose assemblies covered by this certificate may be used in

- Petroleum based hydraulic fluids (-40°C to +150°C)
- Water based Hydraulic fluids and compressed air (-40°C to +110°C)
- Fresh Water 0°C to +70°C

For compressed air or gases, the cover shall be pin pricked.

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.

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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 size			Maximum working pressure in bar
Dash	DN	inch	
- 04	6	¼	225
- 06	10	3/8	180
- 08	12	½	160
- 10	16	5/8	130
- 12	19	¾	105
- 16	25	1	88
- 20	31	1 ¼	63
- 24	38	1 ½	50
- 32	51	2	40

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

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.

The outer end of the pipe coupling (performing the connection to the fixed piping) is not covered by this certificate and shall follow the below requirements:

- Flanged ends shall be according to a recognized standard
- Slip-on threaded joints having pipe threads where pressure-tight joints are made on the threads with parallel or tapered threads, shall comply with requirements of a recognized standard. Limitations stated in DNVGL-RU-SHIP Pt.4 Ch.6 Sec.9 [5.6.2] to be followed.
- If these outer ends are going to be part of a mechanical joint as covered by DNVGL-RU-SHIP Pt.4 Ch.6 Sec.9 [Table 10], then they shall be separately type approved.

### Production testing

Each hose assembly shall be hydrostatically tested at a pressure of 1.5 times the maximum working pressure and be delivered with the pressure test report with reference to this type approval certificate.

### Type Approval documentation

DNV test reports dated 2009-10-12.

LAPI test reports Test report n. 1413, 1414 and 1415.0ISO0110//09 dated 2009-11-09 and 2009-11-05 and 2093, 2094 & 2095 .0ISO0110/16 dated 2016-12-12.

Impulse test reports numbers 006/16, 047/16, 095/16 & 003/16 dated 2008-07-30, 2009-05-25, 2009-03-30 and 2009-10-06.

Test reports dated 2009-10-23.

Crimping table 5.G.U.TA.179 REV01 & 5.G.U.TA.240 REV02

Alfagomma technical datasheet

Test report dated 2014-03-05 witnessed by DNV local station Milan (acc. to ISO 1402)

Rubber test quality report dated 2017-10-20

Renewal burst pressure test report number:

177,169,70,86, 117,65,48,43,95,55,106,130,138,149,184/2018 performed in 2018

Renewal burst pressure test report witnessed by DNV GL, dated 2019-08-20

Renewal burst pressure test report number 0125, 0154, 0155 witnessed by DNV GL, dated 2020-03-03

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### **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.