TYPE APPROVAL CERTIFICATE

Certificate no.:
TAP00002BX
Revision No:
2

This is to certify:

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

with type designation(s)
Alfagomma Evolution 1SN HT150 / Dunlop Hiflex Commander 150 1SN PLUS

issued to
Alfagomma Hydraulic S.p.A.
Castelnuovo Vomano – Castellalto, TE, Italy

is found to comply with
DNV rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV-OS-D101 – Marine and machinery systems and equipment, Edition July 2021 (Amended July 2025)
DNV class programme DNV-CP-0183 – Type approval – Flexible non-metallic hoses

Application:

Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV.

Temperature range:	**See page 2**
Max. working press.:	**40 bar to 225 bar**
Sizes:	**DN06 to DN51**

Issued at **Høvik** on **2026-10-01**
This Certificate is valid until **2031-05-18**.
DNV local unit: **Italy/Malta CMC**

for **DNV**

Approval Engineer: **Maheshraja Venkatesan**

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 AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") 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 USD 300 000.

Product description

Flexible non-metallic hose assembly constructed according to EN 853 1SN and SAE 100 R1AT.

Type:	1SN Evolution HT 150 Blue Cover (ALFAGOMMA type designation) Hiflex Commander 150 1SN PLUS (DUNLOP HIFLEX type designation)
Inner tube:	Oil Resistant Synthetic Rubber
Reinforcement:	One steel wire-braid
Cover:	Abrasion, Ozone and Hydrocarbon Resistant Synthetic Rubber
Fitting:	11SMnPb30 (1.0718) EN 10277

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 and assembling locations as listed in end of this Certificate.

Hose assemblies covered by this certificate are suitable for use with:

- hydraulic fluids at temperatures ranging from -40°C to +150°C;
- water based fluids and compressed air at temperature ranging from -40°C to +110°C (DN≥19);
  water based fluids and compressed air at temperature ranging from -40°C to +85°C (DN≤16);
- water at temperatures ranging from 0°C to +70°C.

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

The hose covered by this certificate shall not be used in systems subject to pressure below atmospheric or vacuum.

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.

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 DNV-RU-SHIP Pt.4 Ch.6 Sec.9 [5.2.6] to be followed;
- If these outer ends are going to be part of a mechanical joint as covered by DNV-RU-SHIP Pt.4 Ch.7 Sec.9 [Table 9], they shall be separately type approved.

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

The hose assemblies are to be mounted in accordance with the manufacturer’s instructions.

Maximum working pressure:

Size	DN06	DN10	DN12	DN16	DN20	DN25	DN32	DN38	DN51
MAWP [bar]	225	180	160	130	105	88	63	50	40

Production testing

All hose assemblies delivered under the DNV 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 this type approval certificate.

Type Approval documentation

Tests carried out

Dimensional check, cold flexibility, oil resistance, ozone, cover adhesion, change in length, burst test, impulse test, and fire resistance test.

Marking of product

Minimum marking requirements shall be as outlined in the edition of the Rules (as mentioned on the front page of this certificate).

Periodical assessment

This certificate is only valid if required periodical assessments are carried out with satisfactory results.

For retention of the Type Approval, a DNV 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 DNV-CP-0338.

To check the validity of this certificate, please look it up in https://approvalfinder.dnv.com.

Manufactured by:

Hose manufacturing locations

- Alfagomma Hydraulic S.p.A, Via E, Mattei, 6 – 64020 Castelnuovo Vomano (TE), Italy
- Alfagomma Hydraulic S.p.A, Area Industriale Piano Lago – 87050 Figline Vegliaturo (CS), Italy
- Alfagomma Malaysia Sdn. Bhd., PLO 344, Jalan Perak 4, Kawasan Perindustrian Pasir Gudang Johor, Malaysia

Coupling manufacturing location

- Alfagomma Hydraulic S.p.A, Zona Industriale Piano Lago 87050 Mangone (CS), Italy (according to submitted drawings)

Hose assembly locations

- Dunlop Hiflex Oy, Orikedonkatu 11, FI-20380 Turku, Finland
- Dunlop Hiflex Oy, Jasperintie 320, FI-33960 Pirkkala, Finland
- Alfagomma Hydraulic S.p.A, Via Dell'Industria 12, 20040 Bellusco (MI), Italy
- Alfagomma, Seldonsvängen 2, 301080 Halmstad, Sweden
- Alfagomma Ltd., 43 Wilcock Road, WA11 9TG Haydock, United Kingdom
- Alfagomma (Ningbo) Co., Ltd., No. 1 Cixi Southeast Avenue, Cixi Binhai Economic Development Zone, Ningbo, Zhejiang, China