

TYPE APPROVAL CERTIFICATE

Certificate No:
TAP000024D
Revision No:
1

This is to certify:

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

with type designation(s)
ALFAGOMMA 5K Steel Armor

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
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: **-40°C to 121°C (see page 2)**
Max. working press.: **350 bar(g)**
Sizes: **3/4", 1", 1-1/4", 1-1/2" and 2"**

Issued at **Høvik** on **2023-02-01**

This Certificate is valid until **2025-10-12**.

for **DNV**

DNV local unit: **Italy/Malta CMC**

Approval Engineer: **Sarah Miller**

Bosman van der Merwe
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 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 300,000 USD.



Product description

Flexible rubber hoses with permanently attached couplings constructed with the following design:

Tube	:	Oil resistant synthetic rubber and biodegradable hydraulic fluids
Cover	:	Abrasion, ozone and hydrocarbon resistant synthetic rubber and steel armor cover made of AISI 304
Reinforcement	:	Four high tensile steel spirals up to DN32 and six spirals for sizes over DN32

End fittings material: carbon steel
 stainless steel

Manufacturing locations:

Hoses	:	Alfagomma Hydraulic S.p.A., Via Enrico Mattei no.6,64020 - Castelnuovo Vomano (TE), Italy <i>Alfagomma Hydraulic S.p.A., Area Industriale Piano Lago, 87050 Figline Vegliaturo (CS)</i>
Couplings	:	Alfagomma Hydraulic S.p.A, Area Industriale Piano Lago, 87050 Mangone (CS), Italy

Hose assembling location:

Alfagomma Hydraulic S.p.A., Via Enrico Mattei no.6, 64020 - Castelnuovo Vomano (TE), Italy
Alfagomma Pacific Pte Ltd, Singapore
Alfagomma (Ningbo) Co., Ltd., Zhejiang, China
Alfagomma Australia PTY LTD, Sydney
Alfagomma Germany GmbH, Herne, Germany
Alfagomma UK Ltd, Hydock, UK
Dunlop Hiflex AS, Kristiansand, Norway
Dunlop Hiflex AS, Bergen, Norway
Dunlop Hiflex AS, Stavanger, Norway
Dunlop Hiflex Oy, Pirkkala, Finland
Dunlop Hiflex Oy, Turku, Finland
Dunlop Hiflex AB, Halmstad, Sweden

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.

Hose assemblies covered by this certificate are approved to be used in:

- petroleum based hydraulic fluids (-40°C to +121°C),
- water based Hydraulic fluids (-40°C to +70°C) fluids,
- water and air (0°C to +70°C)

Pressure ratings:

Size			Maximum working pressure (bar)	Ferrule designation
DN19	-12	¾"	350	H1400200-12/ H3400200-12
DN25	-16	1"	350	H1400200-16/ H3400200-16
DN31	-20	1 ¼"	350	H1400200-20/ H3400200-20
DN38	-24	1 ½"	350	H1400301-24/ H3400301-24
DN51	-32	2"	350	H1T00600-32/ H3T00600-32

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 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.

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 Table 10 DNV-RU-SHIP Pt.4 Ch.6 Sec.9, then they shall be separately type approved.

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, change in length, burst pressure, proof pressure, impulse test, oil resistance test, ozone resistance test, cold flexibility test, cover adhesion test, 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 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.