

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings**with type designation(s)
Smart fuel hose

Issued to

DUNLOP HIFLEX OY
Vantaa, Finland

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**Max. working press.:** 16 bar (inner hose) / non pressurized (outer hose)**Sizes:** DN32 (inner hose) / DN63 (outer hose)Issued at **Høvik** on **2020-02-18**for **DNV GL**This Certificate is valid until **2025-02-17**.DNV GL local station: **Finland CMC**Approval Engineer: **Adel Samiei**

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.



Job Id: **262.1-031711-1**
Certificate No: **TAP00001ZR**

Product description

Double layered hose assemblies. First layer is 1SN and second layer is 142AK.
Coupling according to the manufacturer's drawing.
Coupling material: 1.4404 AISI 316L

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 Dunlop Hiflex OY Pirkala and Dunlop Hiflex OY Turku.

Hose assemblies covered by this certificate may be used in systems conveying fuel oil.

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.

The hoses are to be mounted in accordance with the manufacturer's instructions.

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

Production testing

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 this type approval certificate.

Type Approval documentation

Coupling drawing dated 2019-05-20
Drawing DAAF362167 Rev.A dated 2018-08-15
Burst Pressure test reports stamped as witnessed by DNV GL dated 2019-02-20 (64 bar) & 2019-01-30
Technical Specification for multi layer hose
Quality test report (on flexible hose) dated 2014-03-05
Quality test report (on flexible hose) dated 2019-09-13
LAPI Fire test report number 051.0IS0110/19
Authorization letter from Alfagomma with Ref. Nr. AUT 04/2020 dated 2020-02-05

Tests carried out

Dimensional Check Test, Change in Length Test, Leakage test, Burst Test, Cold Flexibility Test, Ozone Resistance Test, fluid 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.



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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.