

TYPE APPROVAL CERTIFICATE

This is to certify:

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

with type designation(s)
FAHRENHEIT 302/5, DS5

Issued to

Diesse Rubber Hoses S.p.A.
Filago, BG, 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.

Type:	Temperature range:	Max. working press.:	Sizes:
FAHRENHEIT 302/5	see certificate page 2	see certificate page 2	DN5 to DN46
DS5	see certificate page 2	see certificate page 2	DN5 to DN46

Issued at **Høvik** on **2021-06-23**

This Certificate is valid until **2026-06-22**.

for **DNV**

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

Approval Engineer: **Renata Rossi**

.....
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 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

Two types of hose assemblies:

- FAHRENHEIT 302/5
Constructed according to J517 SAE 100 R5
Inner Tube: Black synthetic rubber resistant to oils
Reinforcement: One textile braid and one high tensile steel braid
Cover: Blue, oil resistant, polyester braid
Fitting: RC5/RE5
- DS5
Constructed according to J517 SAE 100 R5
Inner Tube: Black synthetic rubber resistant to oils
Reinforcement: One textile braid and one high tensile steel braid
Cover: Black, oil resistant, polyester braid
Fitting: RC5/RE5

Hoses made by: Diesse Rubber Hoses S.p.A.
Address: Via Provinciale, 8 – SP 155 – 24040 FILAGO (Bergamo) ITALIA

Fittings made by: Koman Hydraulic Co. Ltd
Address: Changwon-si, Gyeongsangnam-do, Republic of Korea
According to catalogue section E1

Application/Limitation

The hoses assemblies are suitable for use with petroleum base hydraulic fluids within a temperature range of -40 to +100°C for type DS5 and range of -40 to +150°C for type FAHRENHEIT 302/5. The use of water base hydraulic fluids is limited to a temperature range of -40 to +70°C for both types.

Maximum working pressure (bar) of each hose assembly shall be according to following table:

Size	FAHRENHEIT 302/5	DS5
DN05	210 bar	210 bar
DN06	210 bar	210 bar
DN08	155 bar	155 bar
DN10	140 bar	140 bar
DN12	122 bar	122 bar
DN16	105 bar	105 bar
DN22	55 bar	55 bar
DN28	43 bar	43 bar
DN35	35 bar	35 bar
DN46	24 bar	24 bar

The hoses shall not be installed in the systems subject to pressure below atmospheric or vacuum.

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 [5.2.6] to be followed;
- If these outer ends are going to be part of a mechanical joint as covered by Table 10 DNVGL-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 hydrostatically tested to a pressure of 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

Tests on hoses: dimensional check, cold flexibility, cover adhesion, oil resistance, proof, & change in length tests
Tests on hose assemblies: Burst, Impulse 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.

Hose assemblies covered by this certificate may be delivered with TEXCEL designation by the holder of this certificate. TEXCEL marking is according to below table:

Family	TEXCEL PART NUMBER	DIESSE PART NUMBER	KOMAN COUPLING SERIES	TEXCEL COUPLING SERIES
HBR5	HBR5-4	5PN-05-04	RC5/RE5	FA5
	HBR5-5	5PN-06-05	RC5/RE5	FA5
	HBR5-6	5PN-08-06	RC5/RE5	FA5
	HBR5-8	5PN-10-08	RC5/RE5	FA5
	HBR5-10	5PN-12-10	RC5/RE5	FA5
	HBR5-12	5PN-16-12	RC5/RE5	FA5
	HBR5-16	5PN-22-16	RC5/RE5	FA5
	HBR5-20	5PN-28-20	RC5/RE5	FA5
	HBR5-24	5PN-35-24	RC5/RE5	FA5
	HBR5-32	5PN-46-32	RC5/RE5	FA5
HBHTR5	HBHTR5-4	5FF-05-04	RC5/RE5	FA5
	HBHTR5-5	5FF-06-05	RC5/RE5	FA5
	HBHTR5-6	5FF-08-06	RC5/RE5	FA5
	HBHTR5-8	5FF-10-08	RC5/RE5	FA5
	HBHTR5-10	5FF-12-10	RC5/RE5	FA5
	HBHTR5-12	5FF-16-12	RC5/RE5	FA5
	HBHTR5-16	5FF-22-16	RC5/RE5	FA5
	HBHTR5-20	5FF-28-20	RC5/RE5	FA5
	HBHTR5-24	5FF-35-24	RC5/RE5	FA5
	HBHTR5-32	5FF-46-32	RC5/RE5	FA5

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 DNVGL-CP-0338.