

TYPE APPROVAL CERTIFICATE

This is to certify:

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

with type designation(s)

HB3K, HB4K, HB5K, HB6K, HHT2, HBR1, HBR2

issued to

Diesse Rubber Hoses S.p.A.
Filago, BG, 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 all vessels classed by DNV.

Type:	Temperature range:	Max. working press.:	Sizes:
HB3K	-40°C to +100°C	210 bar	DN6 to DN25
HB4K	-40°C to +100°C	280 bar	DN10 to DN19
HB5K	-40°C to +100°C	350 bar	DN6 to DN16
HB6K	-40°C to +100°C	420 bar	DN6 and DN10
HHT2	-40°C to +100°C	165 bar to 400 bar	DN6 to DN25
HBR1	-40°C to +100°C	50 bar to 225 bar	DN6 to DN38
HBR2	-40°C to +100°C	90 bar to 400 bar	DN6 to DN38

Issued at **Høvik** on **2025-06-13**

This Certificate is valid until **2030-06-12**.

for **DNV**

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

Approval Engineer: **Marc Avice**

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

Eleven types of hose assemblies:

HB3K

Tube: Black synthetic rubber resistant to oil
Reinforcement: One high tensile steel braid up to -8, two braids from -10 to -16
Cover: Black, synthetic rubber resistant to oils, abrasion and weather condition
Coupling: SHF 43-SS series

HB4K

Tube: Black synthetic rubber resistant to oil
Reinforcement: Two high tensile steel braids
Cover: Black, synthetic rubber resistant to oils, abrasion and weather condition
Coupling: SHF 43-SS series

HB5K

Tube: Black synthetic rubber resistant to oil
Reinforcement: Two high tensile steel braids
Cover: Black, synthetic rubber resistant to oils, abrasion and weather condition
Coupling: SHF 43-SS series

HB6K

Tube: Black synthetic rubber resistant to oil
Reinforcement: Two high tensile steel braids
Cover: Black, synthetic rubber resistant to oils, abrasion and weather condition
Coupling: SHF 43-SS series

HBR1

Tube: Black synthetic rubber resistant to oil
Reinforcement: One high tensile steel braid
Cover: Black, synthetic rubber resistant to oils, abrasion and weather condition
Coupling: SHF 43-SS series

HBR2

Tube: Black synthetic rubber resistant to oil
Reinforcement: Two high tensile steel braids
Cover: Black, synthetic rubber resistant to oils, abrasion and weather condition
Coupling: SHF 43-SS series

HHT2

Tube: Black synthetic rubber resistant to oil
Reinforcement: Two high tensile steel braids
Cover: Black, synthetic rubber resistant to oils, abrasion and weather condition
Coupling: SHF 43-SS series

Hoses manufacturer: Diesse Rubber Hoses S.P.A., Filago BG, Italia

Coupling manufacturer: SHF, Stainless Hos Fittings Ltd., Houston, USA

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.

Maximum working pressure (bar):

Size		HB3K	HB4K	HB5K	HB6K	HHT2	HBR1	HBR2
Dash	DN							
-4	6	210	-	350	420	400	225	400
-6	10	210	280	350	420	330	180	330
-8	12	210	280	350	-	275	160	275
-10	16	210	280	350	-	250	130	250
-12	19	210	280	-	-	215	105	215
-16	25	210	-	-	-	165	87	165
-20	31	210	-	-	-	-	62	125
-24	38	210	-	-	-	-	50	90

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.6 Sec.9 [Table 8], then they shall be separately type approved.

Hose assemblies are suitable for use with:

- Hydraulic fluids in accordance with ISO 6734-4 (with exception of HFD-R, HFD-S and HFD-T) at temperature ranging on the front page
- Water based fluids at temperature ranging from -40°C to 70°C
- Water at temperature ranging from 0°C to 70°C

Materials and material protection chosen for the specific system shall be suitable for the intended medium and environmental conditions.

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.

Hose assemblies covered by this certificate shall not be installed in system with pressure below atmospheric or vacuum condition.

Hose assemblies with couplings made of carbon steel are not to be used at temperatures below -10°C unless the material is normalized.

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

Type Approval documentation

Tests carried out

Dimensional check, change-in-length, oil resistance, ozone resistance, cold flexibility, cover adhesion, vacuum test, fire test, impulse test, burst 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	TEXCEL part number	SHF Coupling series
HB3K	HB3K-4 / HB3KXT-4	117-06-04	F2-SS Series	SHF43-SS Series
	HB3K-6 / HB3KXT-6	117-10-06		43-SS
	HB3K-8 / HB3KXT-8	117-12-08		43-SS

	HB3K-10 / HB3KXT-10	117-16-10		43-SS
	HB3K-12 / HB3KXT-12	117-19-12		43-SS
	HB3K-16 / HB3KXT-16	117-25-16		43-SS
HB4K	HB4K-6 / HB4KXT-6	R19-10-06	F2-SS Series	43-SS
	HB4K-8 / HB4KXT-8	R19-12-08		43-SS
	HB4K-10 / HB4KXT-10	R19-16-10		43-SS
	HB4K-12 / HB4KXT-12	R19-19-12		43-SS
				43-SS
HB5K	HB5K-4 / HB5KXT-4	FGT16-06-04	F2-SS Series	43-SS
	HB5K-6 / HB5KXT-6	FGT16-10-06		43-SS
	HB5K-8 / HB5KXT-8	2STK-12-08		43-SS
	HB5K-10 / HB5KXT-10	2OV-16-10		43-SS
HB6K	HB6K-4 / HB6KXT-4	FGT16-06-04	F2-SS Series	43-SS
	HB6K-6 / HB6KXT-6	2STK-PLUS-10-06		43-SS
HHT2	HHT2-4	2FF-06-04	F2-SS Series	43-SS
	HHT2-6	2FF -10-06		43-SS
	HHT2-8	2FF -12-08		43-SS
	HHT2-10	2FF -16-10		43-SS
	HHT2-12	2FF -19-12		43-SS
	HHT2-16	2FF -25-16		43-SS
HBR1	HBR1-4	1SN-06-04	F2-SS Series	43-SS
	HBR1-6	1SN-10-06		43-SS
	HBR1-8	1SN-12-08		43-SS
	HBR1-10	1SN-16-10		43-SS
	HBR1-12	1SN-19-12		43-SS
	HBR1-16	1SN-25-16		43-SS
	HBR1-20	1SN-31-20		43-SS
	HBR1-24	1SN-38-24		43-SS
HBR2	HBR2-4	2SN-06-04	F2-SS Series	43-SS
	HBR2-6	2SN-10-06		43-SS
	HBR2-8	2SN-12-08		43-SS
	HBR2-10	2SN-16-10		43-SS
	HBR2-12	2SN-19-12		43-SS
	HBR2-16	2SN-25-16		43-SS
	HBR2-20	2SN-31-20		43-SS
	HBR2-24	2SN-38-24		43-SS

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>.