



TYPE APPROVAL CERTIFICATE

Certificate No:
TAP00000EH
Revision No:
1

This is to certify:

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

with type designation(s)

040-VHP 10000 MARINER, 041-VHP 10000, 054-R8 MARINER, 060-OFFSHORE MASTER

Issued to

Transfer Oil S.p.A.
Colorno PR, 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:
040-VHP 10000 MARINER	-40°C to +100°C	700 bar	DN6, 10, 12
041-VHP 10000	-40°C to +100°C	700 bar	DN6, 10
054-R8 MARINER	-40°C to +100°C	140 bar to 420 bar	DN4, 5, 6, 8, 10, 12, 16, 19, 25
060-OFFSHORE MASTER	-40°C to +100°C	350 bar	DN5, 6, 10, 12, 19, 25

Issued at **Høvik** on **2022-01-10**

for **DNV**

This Certificate is valid until **2027-01-09**.

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

Approval Engineer: **Vegard Skauge Hjelmeland**

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

Four types of hose assemblies :

040-VHP 10000 MARINER:

Inner Tube: Polyester elastomer
 Reinforcement: Up to three braids of aramid fiber plus one braid of steel wire
 Cover: Polyurethane, black, non-pinpricked, white ink-jet branding

041-VHP 10000

Inner Tube: Polyester elastomer
 Reinforcement: One or two braids of aramid fiber plus one braid of steel wire
 Cover: Polyurethane, black, non-pinpricked, white ink-jet branding

054-R8 MARINER

Inner Tube: Polyester elastomer
 Reinforcement: One or two braids of aramid fiber.
 Cover: Polyurethane, black, pinpricked, white ink-jet branding.

060-OFFSHORE MASTER

Inner Tube: Polyamide PA11 Rilsan® BESNO P40 TLO.
 Reinforcement: Up to three braids of aramid fiber.
 Cover: Polyurethane, black, non-pinpricked, white ink-jet branding.

Couplings material: 11SMnPb37 or AISI 316 L

Hose manufacturing locations:

- Transfer Oil S.p.A., Colorno PR, Italy

Coupling manufacturing location:

- Transfer Oil S.p.A., Colorno PR, Italy

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 (in bar) for each type:

Size			VHP 10000 MARINER	VHP 10000	OFFSHORE MASTER	ID (mm)	Ferrule ^(*)
dash	inch	DN					
-2	1/8"	4	-	-	-	4,00	SAF101/801
-3	3/16"	5	-	-	350	5,00	SAF111/811
-4	1/4"	6	700	700	350	6,50	SAF121/821
-5	5/16"	8	-	-	-	8,10	SAF131/831
-6	3/8"	10	700	700	350	9,70 (**)	SAF141/841
-8	1/2"	12	700	-	350	13,00	SAF151/851
-10	5/8"	16	-	-	-	16,30	SAF161/861
-12	3/4"	19	-	-	350	19,50	SAF171/871
-16	1"	25	-	-	350	25,90	SAF181/881

(*) Insert part may be SOA1XX, SOA8XX, SOB1XX, SOB8XX, SOC1XX, SOC8XX, SOD1XX, SOD8XX, SOF1XX, SOF8XX, SOM1XX, SOM8XX, SOI1XX, SOI8XX, SOL1XX, SOL8XX, SOH1XX, SOH8XX, SOO1XX, SOO8XX, SOP1XX, SOP8XX, SOQ1XX, SOQ8XX which all have same type of tail.

(**) For both VHP types inside diameter is 9,80 mm.

Size			R8	ID (mm)	Ferrule ^(***)
dash	inch	DN	MARINER		
-2	1/8"	4	420	4,00	SAB101/801
-3	3/16"	5	350	5,00	SAB111/811
-4	1/4"	6	350	6,50	SAB121/821
-5	5/16"	8	300	8,10	SAB131/831
-6	3/8"	10	280	9,70	SAB141/841
-8	1/2"	12	245	13,00	SAB151/851
-10	5/8"	16	200	16,30	SAB161/861
-12	3/4"	19	165	19,50	SAB171/871
-16	1"	25	140	25,90	SAB181/881

(***) Insert part may be SBC1XX, SBC8XX, SBE1XX, SBE8XX, SBH1XX, SBH8XX, SBL1XX, SBL8XX, SBM1XX, SBM8XX, SBN1XX, SBN8XX, SBO1XX, SBO8XX, SBP1XX, SBP8XX, SCC1XX, SCC8XX, SCD1XX, SCD8XX, SCF1XX, SCF8XX, SCH1XX, SCH8XX, SCI1XX, SCI8XX, SCL1XX, SCL8XX, SCN1XX, SCN8XX, SCO1XX, SCO8XX, SCP1XX, SCP8XX, SCQ1XX, SCQ8XX, SCR1XX, SCR8XX, SCS1XX,

SCS8XX, SCU1XX, SCU8XX, SDA1XX, SDA8XX, SDB1XX, SDB8XX, SDC1XX, SDC8XX, SDD1XX, SDD8XX, SDE1XX, SDE8XX, SDF1XX, SDF8XX, SDG1XX, SDG8XX, SDM1XX, SDM8XX, SEA1XX, SEA8XX, SEC1XX, SEC8XX, SEE1XX, SEE8XX, SEM1XX, SEM8XX, SEN1XX, SEN8XX, SGB1XX, SGB8XX which all have same type of tail.

Hose assemblies covered by this certificate may be used in:

- Non-flammable hydraulic systems (water based) at temperatures ranging from -40 °C to +70 °C
- Water at temperatures ranging from 0 °C to +70 °C
- Compressed air at temperatures ranging from -40°C to +80 °C / for the use with compressed air the hose cover must be pinpricked

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

Hose assemblies covered by this certificate shall not be installed in below systems:

- Systems subject to pressure below atmospheric
- Systems conveying seawater or flammable fluids

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.

It must be possible to shut off from the system all flexible hoses used in systems for compressed air.

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 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 10], 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

Manufacturer catalogue pages 35, 47, 49 & 51

Burst pressure, change in length and dimensional check tests witnessed by DNV GL surveyor dated 2016-05-19:

201605190956_A64403_0547, 201605190952_A49943_0544, 201605190949_A50162_0541,
201605191003_A64401_0404, 201605191006_A63144_0412, 201605191022_A45036_0608,
201605191010_A62034_0605, 201605191013_A64402_0602

Cold flexibility test report dated 2016-05-16

Document Fitting supplier list dated 2016-09-01

Document Fittings and ferrules design dated 2016-09-01

Burst test report number 201609130940_A66413_0547, 201609131435_A56517_0544, 201609131447_A56517_0544 dated 2016-09-13 witnessed by DNV GL surveyor

Burst test report number 201605190949_A50162_0541 dated 2016-05-19 witnessed by DNV GL surveyor

Impulse test report number CQ13035, CQ13037, CQ13055, CQ14038, CQ14043, CQ14045, CQ, 14046, CQ14062, CQ15007, CQ15009, CQ15029

Burst/change in length/dimensional check test reports number B0M554_0541, A9M300_0543, M2102874_0545, A84321_U0811C, M2100612_U0642A, M2104554_0602, M2104565_U0723A, B07647_U07638 dated 2021-10-18 witnessed by DNV surveyor.

Tests carried out

Burst test, Change in Length, Dimensional Check test, Cold flexibility test, impulse test

Marking of product



Job Id: **262.1-021728-2**
Certificate No: **TAP00000EH**
Revision No: **1**

For traceability to this Type Approval, the products are at least to be marked with:

- Manufacturer's name or trade mark
- Type designation
- Maximum working pressure
- Size
- Additional marking at manufacturer's option

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.