DNV·GL

Certificate No:
TAP00000EH

TYPE APPROVAL CERTIFICATE

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 GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition July 2015
DNV GL class programme DNVGL-CP-0183 – Type approval – Flexible hoses

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

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

This Certificate is valid until **2021-09-29**.

Issued at **Høvik** on **2016-09-30**

for **DNV GL**

DNV GL local station: **Milan**

Approval Engineer: **Adel Samiei**

Marianne Spæren Marveng
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.

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

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 ore 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

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	¼”	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	½”	12	700	-	350	13,00	SAF151/851
-10	5/8”	16	-	-	-	16,30	SAF161/861
-12	¾”	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	¼”	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	½”	12	245	13,00	SAB151/851
-10	5/8”	16	200	16,30	SAB161/861
-12	¾”	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 pinpriked

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.

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 the type approval certificate.

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.

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

Tests carried out

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

Marking of product

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, DNV GL Surveyor shall perform a periodical assessment every second year, to verify that the conditions for the type approval are complied with and to witness the following tests on a selection of sizes:

- Dimensional check
- Change in length
- Burst test

The tests are to be performed with the type of couplings fitted that are Type Approved with the hoses.