

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings**

with type designation(s)

Trale hoses with DICSА stainless/carbon steel permanently fitted couplings

Issued to

DISTRIBUIDORA INTERNACIONAL CARMEN, S.A.
Zaragoza, Spain

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:** **Dependent on the application (see page 2)****Max. working press.:** **Dependent on the size (see page 2)****Sizes:** **DN 6/8/10/12/16/19/25/31/38/51 (see page 2)**This Certificate is valid until **2024-06-30**.Issued at **Høvik** on **2019-07-08**DNV GL local station: **Barcelona**for **DNV GL**Approval Engineer: **Maheshraja Venkatesan**

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: **262.1-016224-3**
Certificate No: **TAP00000MD**
Revision No: **1**

Product description

Seven types of flexible hoses of non-metallic material with permanently fitted couplings.

Hoses (Semperit hoses) Branded TrΔle® and Semperit:

<u>Brand name</u>	<u>Hose type/ construction standard</u>
TrΔle® SAE 100 R1AT	EN853 1SN
TrΔle® SAE 100 R2AT	EN853 2SN
TrΔle®	EN853 2SNK
TrΔle® SAE 100 R9R (4SP)	EN856 4SP
TrΔle®	EN856 4SH
TrΔle®	EN857 1SC
TrΔle®	EN857 2SC

DISCA Couplings made of stainless steel (AISI 316L / 1.4404) and carbon steel (EN 10277-3, 1.0737).

End couplings manufacturing location:

- DISTRIBUIDORA INTERNACIONAL CARMEN, S.A.,
Zaragoza, Spain

Hose assembling location:

- DISTRIBUIDORA INTERNACIONAL CARMEN, S.A.,
Zaragoza, Spain

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.

Hose assemblies by this certificate are approved to be used in:

- hydraulic fluids in accordance with ISO 6743-4 with the exception of HFD R, HFD S and HFD T at temperatures ranging from -40°C to +100°C;
- water based fluids at temperatures ranging from -40°C to +70°C;
- water at temperatures ranging from 0°C to +70°C.

Maximum working pressure as below:

Hose size			EN853 1SN (bar)	EN853 2SN (bar)	EN 856 4SP (bar)	EN 856 4SH (bar)	EN857 1SC (bar)	EN857 2SC (bar)	EN 857 2SNK (bar)
DN	Inch	Dash							
6	¼	-04	225	400	-	-	225	400	450
8	5/16	-05	215	350	-	-	215	350	420
10	3/8	-06	180	330	445	-	180	330	385
12	½	-08	160	275	415	-	160	275	345
16	5/8	-10	130	250	350	-	130	250	290
19	¾	-12	105	215	350	420	105	215	280
25	1	-16	88	165	280	380	88	165	200
31	1-¼	-20	63	125	210	325	-	-	-
38	1-½	-24	50	90	185	290	-	-	-
51	2	-32	40	80	165	250	-	-	-

All hose assemblies delivered under this type approval certificate shall be in compliance with an assembly procedure issued by the certificate holder.

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.

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Hose type 2SNK is constructed according to EN 857 type 2SC except for minimum bending radius which is reduced as follows:

Hose size (2SNK)			Minimum bending radius (mm)
DN	Inch	Dash	
6	¼	-04	45
8	5/16	-05	60
10	3/8	-06	70
12	½	-08	90
16	5/8	-10	130
19	¾	-12	160
25	1	-16	210
31	1-¼	-20	300

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

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 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 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

Tests carried out

On the hoses: Dimensional check test, Change in length test, Cold flexibility test, Oil Resistance test, Cover adhesion test, Ozone resistance test


On the hose assembly: Burst test, Fire test, Impulse test

Marking of product

Flexible hoses are to be permanently marked by the manufacturer with the following details:

- Hose manufacturer's name or trademark;
- Date of manufacture (month/year);
- Designation type reference;
- Nominal diameter;
- Pressure rating;
- Temperature rating

Periodical assessment



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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.