

TYPE APPROVAL CERTIFICATE

Certificate No:
TAP0000135
Revision No:
1

This is to certify:

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

with type designation(s)

1SN(EN853), 1SC(EN857), 2SN(EN853), 2SC (EN857), Power (2SC or 2SN-K), Diamante (2SC)

Issued to

CAST S.p.A.
Volpiano, TO, Italy

is found to comply with

DNV-OS-D101 – Marine and machinery systems and equipment, Edition July 2021

DNV rules for classification – Ships Pt.4 Ch.6 Piping systems

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 vessels classed by DNV.

Type:	Temperature range:	Max. working press.:	Sizes:
1SN(EN853)	-40°C to 100°C	40-225 bar	DN6 to DN51
1SC(EN857)	-40°C to 100°C	160-225 bar	DN6 to DN12
2SN(EN853)	-40°C to 100°C	80-400 bar	DN6 to DN51
2SC (EN857)	-40°C to 100°C	165-400 bar	DN6 to DN25
Power (2SC or 2SN-K)	-40°C to 100°C	345-450 bar	DN6 to DN12
Diamante (2SC)	-40°C to 100°C	275-400 bar	DN6 to DN12

Issued at **Høvik** on **2022-09-29**

for **DNV**

This Certificate is valid until **2027-06-29**.

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

Approval Engineer: **Sarah Miller**

Sinisa Sedlan
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

Six types of hose assemblies:

- 1) Type 1SN: Synthetic rubber hose with one internal steel wire braid 100R1AT acc. to SAE J517 / 1SN acc. to EN 853.
- 2) Type 1SC: Synthetic rubber hose with one internal steel wire braid according to EN 857.
- 3) Type 2SN: Synthetic rubber hose with two internal steel wire braids 100R2AT acc. to SAE J517 / 2SN acc. to EN 853.
- 4) Type 2SC: Synthetic rubber hose with two internal steel wire braids according to EN 857
- 5) Power Type 2SC or 2SN-K: Substrate of synthetic rubber reinforced with two braids of high resistant steel, covered with black synthetic rubber
- 6) Diamante Type EN 857 2SC: Substrate of synthetic rubber reinforced with two braids of high resistant steel, covered with black synthetic rubber

Hoses: Made by SEMPERIT Technische Produkte Gesellschaft G.m.b.H

Couplings Made by Cast S.P.A in carbon steel and stainless steel according to Catalogue C4 printed March 2013 and 70 series printed April 2008

Application/Limitation

Hose assemblies types 1SN, 1SC, 2SN, 2SC & Power(2SC or 2SN-K) and Diamante(2SC) are suitable for use 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 + 100 °C;
- water based fluids and compressed air at temperatures ranging from -40 °C to +70 °C;
- water at temperatures ranging from 0 °C to +70 °C.

Size		Maximum working Pressure (bar)					
DN	inch	1SN	1SC	2SN	2SC	Power	Diamante
6	1/4"	225	225	400	400	450	400
8	5/16"	215	215	350	350	420	350
10	3/8"	180	180	330	330	385	330
12	1/2"	160	160	275	275	345	275
16	5/8"	130	-	250	250	-	-
19	3/4"	105	-	215	215	-	-
25	1"	88	-	165	165	-	-
31	1 1/4"	63	-	125	-	-	-
38	1 1/2"	50	-	90	-	-	-
51	2"	40	-	80	-	-	-

All hoses 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 the type approval certificate.

The hoses shall not replace/be used where permanent piping is possible/required and must only be fitted in places where they are always accessible. 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, lube oil, fuel oil and petroleum base hydraulic oil.

The hoses shall not be used in systems subject to pressure below atmospheric or vacuum conditions.

The cover of hoses for gaseous applications shall be pin-pricked.

Type Approval documentation

- Manufacturer complete catalogue Edition 1/C - June 2016
- Rubber hoses data sheets (1SN,1SC,2SC,2SN,Power, Diamante)
- Semperit test reports on Rubber Hoses (1SN,1SC,2SC,2SN) dated November 2014
- Semperit test reports on Rubber Hoses (Power, Diamante) dated January 2014
- Hose manufacturer's test reports from Cold flex, Oil Resistance, Cover Adhesion and Ozone Resistance dated 19.07.2012
- Manufacturers burst test report no. 12/12 dated 19/11-2012 witnessed by DNV
- Manufacturer burst test report V.d.P. n°06/14 dated 07/04-2014 witnessed by DNV (For power type and Diamante)
- Manufacturers test reports no 16/11 from impulse test dated 6/12-2011, 14/7-2011 and 17/5-2011
- Impulse test reports V.d.p. n° 19/13: 15.50.08 dated 02/08-2013, 16.22.31 dated 25/07-2013 and tests dated 01/08-2013 & 27/07-2013 (Power type)
- Impulse test reports V.d.p. n° 19/13: 15.36.00 dated 12/10-2013, 14.02.20 dated 17/10-2013, 18.21.01 dated 20/10-2013 & 23.33 dated 27/10-2013 (DIAMANTE Type)

- Fire test reports (Done by Lapi); ref. 1554.0IS0110/12, 1555.0IS0110/12, 1556.0IS0110/12, 1560.0IS0110/12 and 1561.0IS0110/12 dated 3/12-2012, 1562.0IS0110/12, 1565.0IS0110/12, 1566.0IS0110/12, 1570.0IS0110/12, 1571.0IS0110/12 and 1572.0IS0110/12 dated 04/12-2012
- Fire test reports (Done by Lapi); ref. 343/14/AC & 345/14/AC dated 03/03-2014 reports numbers: 216.0IS0110/14 (Power DN6), 217.0IS0110/14 (Power DN12), 218.0IS0110/14 (Diamante DN6) & 219.0IS0110/14 (Diamante DN12)
- Renewal burst pressure test report V.d.P. n°11/17 dated 2017-07-24 witnessed by DNV GL surveyor
- Renewal burst pressure test report 2022-07-13
- Renewal Assessment Report. 2022-08-13

Tests carried out

- Change in length, Ozone resistance, Oil resistance test, Cold flexibility, Adhesion test (on the hoses)
- Fire test, Burst test & Impulse Test (On the hose assemblies)

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

Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform a survey every second year (viz., periodical assessment) and before the expiry date of this certificate (viz., renewal assessment) to verify that the conditions for the type approval are complied with.

The main scope of the periodical & renewal assessment will normally include:

- verification of the TA applicant's production and quality system w.r.t. ensuring continued consistent production of the type approved products at the TA applicant's own premises and at other companies that are given the responsibility for manufacturing of the products
- review of the TA documentation and that this is still used as basis for the production
- review of possible changes to the design, the material and the performance of the product
- verification of the product marking

In addition, the Surveyor shall witness burst testing of samples of hose assemblies for every third sizes of each type as a part of renewal assessment.