

TYPE APPROVAL CERTIFICATE

Certificate No:
TAP00001Y4
Revision No:
2

This is to certify:

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

with type designation(s)
CR1, CR2, Pro1T, Pro2T, ProV

Issued to
Gates UK Ltd
St. Neots, Cambridgeshire, United Kingdom

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 vessels classed by DNV.

Type:	Temperature range:	Max. working press.:	Sizes:
CR1	-40°C to +100°C	88 bar to 225 bar	-4, -5, -6, -8, -10, -12, -16
CR2	-40°C to +100°C	165 bar to 400 bar	-4, -5, -6, -8, -10, -12, -16
Pro1T	-40°C to +100°C	88 bar to 225 bar	-4, -5, -6, -8, -10, -12, -16
Pro2T	-40°C to +100°C	165 bar to 400 bar	-4, -5, -6, -8, -10, -12, -16
ProV	-40°C to +100°C	165 bar to 400 bar	-4, -5, -6, -8, -10, -12, -16

Issued at **Høvik** on **2023-01-10**

for **DNV**

This Certificate is valid until **2024-10-28**.

DNV local unit: **UK & Ireland CMC & VMC**

Approval Engineer: **Andreas Hansen**

Bosman van der Merwe
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

For type of hose assemblies:

CR1: Hoses are made from black, oil resistant, synthetic rubber (Nitrile-Type C) tube, reinforced with single braid of high-tensile steel wire, with black abrasion resistant, synthetic rubber cover.

Couplings: P, PB and EX

CR2: Hoses are made from black, oil resistant, synthetic rubber (Nitrile-Type C) tube, reinforced with Two braid of high-tensile steel wire, with black abrasion resistant, synthetic rubber cover.

Couplings: P, PB and EX

Pro1T: Hoses are made from black, oil resistant, synthetic rubber (Nitrile-Type C) tube, reinforced with one layer of braided high-tensile steel wire, with black abrasion resistant, synthetic rubber cover.

Couplings: EX

Pro2T: Hoses are made from black, oil resistant, synthetic rubber (Nitrile-Type C) tube, reinforced with two layers of braided high-tensile steel wire, with black, abrasion and ozone resistant, synthetic rubber cover.

Couplings: EX

ProV: Hoses are made from black, oil resistant, synthetic rubber (Nitrile-Type C) tube, reinforced with two braided high-tensile steel wire, with black, abrasion and ozone resistant, synthetic rubber cover.

Couplings: EX

Material of couplings: ASTM A108 Grade 1215 (20 according to GB/T 699-2015)

Hoses manufacturer:

- 1- Gates de México S.A. de C.V., Calle 6 S/N, Parque Industrial Atlacomumco, Atlacomumo Estado De Mexico, 50450, Mexico (Only CR1, CR2 and ProV-4)
- 2- Gates Fluid Power Technologies (Changzhou) Co., Ltd., Changzhou, China (all types except ProV)
- 3- Gates India Private Limited, Punjab, India (Only CR1, CR2)
- 4- Gates Polska Sp. z o.o. Legnica, Poland (all types)

Couplings manufacturer:

- 1- Gates Karvina Fluid Power Plant, Karvina, Czech Republic.
- 2- Gates Corp, Versailles, MO, USA
- 3- Gates India Private Limited, Faridabad, Haryana, India
- 4- Gates Fluid Power Technologies (Changzhou) Co., Ltd., Changzhou, China

Assembling location:

- 1- Gates (U.K.) Limited, 5 Alpha Drive, Eaton Socon, St. Neots, Cambridgeshire, UK
- 2- Gates Fluid Power Technologies (Changzhou) Co., Ltd., Changzhou, China

Application/Limitation

This certificate is valid for the specific assembly of hose and coupling type as specified, assembled and delivered by the specified assembling location.

Maximum working pressure (bar):

Hose size			CR1	CR2	Pro1T	Pro2T	ProV
inch	DN	Dash					
¼	6	-4	225	400	225	400	400
5/16	8	-5	215	350	215	350	350
3/8	10	-6	180	330	180	330	330
½	12	-8	160	275	160	275	275
5/8	16	-10	130	250	130	250	250
¾	19	-12	105	215	105	215	215
1	25	-16	88	165	88	165	165

Hose assemblies covered by this certificate may be used in systems conveying:

- petroleum based hydraulic fluid at temperature range of -40°C to +100°C
- water based Hydraulic fluids at temperature range of -40°C to +70°C
- fresh water at temperature range of 0°C to +70°C

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 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.

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

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

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

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 Table 10 DNV-RU-SHIP Pt.4 Ch.6 Sec.9, 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

Hose datasheets

Coupling datasheet

Fire test reports stamped as witnessed by DNV

Quality test report on rubber hoses manufactured in each hose manufacturing location

Burst pressure test from each assembling location stamped as witnessed by DNV

Burst pressure test report no. LE037445, dated 2022-11-10, witnessed by DNV

Type testing report ProV Hose with EX couplings, Gates Poland, dated 2022-11-16

Type testing report ProV Hose with EX couplings, Gates Mexico, dated 2022-11-16

Fire test certificate LOCC13260, dated 2022-10-20, witnessed by DNV

Tests carried out

Dimensional Check Test, Change in Length Test, Leakage test, Burst Test, Cold Flexibility Test, Ozone Resistance Test, Impulse Test, fluid resistance Test and Fire 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.

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