

TYPE APPROVAL CERTIFICATE

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

with type designation(s)

CR1, CR2, MXT, Pro1T, Pro2T

Issued to

Gates UK Ltd**St. Neots, Cambridgeshire, United Kingdom**

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.**

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
MXT	-40°C to +100°C	165 bar to 414 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

Issued at **Høvik** on **2019-10-29**This Certificate is valid until **2024-10-28**.for **DNV GL**DNV GL local station: **Manchester**Approval Engineer: **Adel Samiei**

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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.



Product description

Five type of hose assemblies:

CR1: Hoses are made from black, oil resistance, 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 resistance, 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

MXT: Hoses are made from black, oil resistance, synthetic rubber (Nitrile-Type C) tube, reinforced with braided high-tensile steel wire, with black abrasion resistant, synthetic rubber cover.
Couplings: G

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

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

Hoses manufacturer:

- 1- Gates Corporation, 1450 Montana Road, Iola Kansas 66749, USA (Only MXT)
- 2- Gates Mexico COHISA, Calle 6 S/N, Parque Industrial Atlacomumco, Atlacomumo Estado De Mexico, 50450, Mexico (Only CR1, CR2, MXT)
- 3- Gates Fluid Power Technologies (Changzhou) Co., Ltd., Changzhou, China (all 5 types)
- 4- Gates India Private Limited, Punjab, India (Only CR1, CR2, MXT)
- 5- Gates Polska Sp. z o.o. Legnica, Poland (all 5 types)

Couplings manufacturer:

- 1- Gates Karvina Fluid Power Plant, Karvina, Czech Republic.
- 2- Gates Corp, Versailles, MO, USA
- 3- Gates India Private Limited, Punjab, 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	MXT	Pro1T	Pro2T
inch	DN	Dash					
¼	6	-4	225	400	414	225	400
5/16	8	-5	215	350	380	215	350
3/8	10	-6	180	330	330	180	330
½	12	-8	160	275	280	160	275
5/8	16	-10	130	250	250	130	250
¾	19	-12	105	215	215	105	215
1	25	-16	88	165	165	88	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
- air at temperature range of -40°C to +85°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.

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

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 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.