

# TYPE APPROVAL CERTIFICATE

Certificate No:  
**TAP000026Z**  
Revision No:  
**2**

## This is to certify:

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

with type designation(s)

**MXG4K-XTP, MXT-XTP, MXT, MXG5K-XTP**

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:
<b>MXG4K-XTP</b>	<b>See page 2</b>	<b>See page 3</b>	<b>DN10, 12, 16, 19 and 25</b>
<b>MXT-XTP</b>	<b>See page 3</b>	<b>See page 3</b>	<b>DN6, 8, 10, 12, 16, 19 and 25</b>
<b>MXT</b>	<b>See page 3</b>	<b>See page 3</b>	<b>DN6, 8, 10, 12, 16, 19 and 25</b>
<b>MXG5K-XTP</b>	<b>-40°C to +121°C (see page 2)</b>	<b>350 bar(g)</b>	<b>DN10, 12, 16 and 19</b>

Issued at **Høvik** on **2023-02-21**

for **DNV**

This Certificate is valid until **2025-10-11**.

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

Approval Engineer: **Maheshraja Venkatesan**

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**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

4 types of flexible rubber hoses with permanently attached couplings:

- |               |  |
|---------------|--|
| Type          | : <b>MXG4K-XTP</b>   |
| Tube          | : Black, oil resistant, synthetic rubber (Nitrile) tube;                             |
| Reinforcement | : two layers of braided, high-tensile steel wire;                                    |
| Cover         | : Black, XtraTuff™ Plus abrasion resistant, ozone resistant, synthetic rubber        |
| End fittings  | : GlobalSpiral™ (GS)   |
| Standard      | : SAE J517 type 100R19 and ISO 18752 280DC   |
|               |  |
| Type          | : <b>MXT-XTP</b>   |
| Tube          | : Black, oil resistant, synthetic rubber (Nitrile) tube;                             |
| Reinforcement | : Braided high-tensile steel wire;   |
| Cover         | : Black, abrasion and ozone resistant, synthetic rubber, XtraTuff Plus cover         |
| End fittings  | : MegaCrimp Couplings (Type G)   |
| Standard      | : SAE J517 type SAE 100R16   |
|               |  |
| Type          | : <b>MXT</b>   |
| Tube          | : Hoses are made from black, oil resistance, synthetic rubber (Nitrile-Type C) tube; |
| Reinforcement | : Braided high-tensile steel wire;   |
| Cover         | : Black abrasion resistant, synthetic rubber   |
| End fittings  | : MegaCrimp Couplings (Type G)   |
| Standard      | : SAE J517 type SAE 100R16   |
|               |  |
| Type          | : <b>MXG5K-XTP</b>   |
| Tube          | : Black, oil resistant, synthetic rubber (Nitrile) tube;                             |
| Reinforcement | : Xpiral™ woven spiral construction with four layers of high tensile wire            |
| Cover         | : Black, XtraTuff™ Plus abrasion resistant, ozone resistant, synthetic rubber        |
| End fittings  | : GlobalSpiral™ (GS)   |
| Standard      | : SAE J517 type 100R13 and ISO 18752 350DC   |

Material of construction for couplings: ASTM A108 grade 1215

### Manufacturing location for hoses:

Hose types	Location
MXG4K-XTP, MXT, MXT-XTP, MXG5K-XTP	Gates India Private Limited, Ambala-Chandigarh Highway, Lalru, Punjab 140501, India
MXT	Gates Corporation, 450 Montana Road, Iola Kansas 66749, USA
MXT, MXT-XTP, MXG5K-XTP	Gates de México S.A. de C.V., Calle 6 entre 4 y 14 Parque Industrial Atlacomulco 50450 Estado de Mexico, Mexico
MXT	Gates Fluid Power Technologies (Changzhou) Co. Limited, 11 Kohler Road, National Hi-Tech District, 213022 Changzhou, China.
MXT	Gates Polska Sp. z o.o., ul. Jaworzyńska 301, 59-220 Legnica, Poland

### Manufacturing location for couplings:

- (1) Gates India Private Limited, Plot No 133-134, Sector59, Phase 2, Industrial Area, Faridabad, Haryana 121006, India
- (2) Gates Fluid Power Technologies (Changzhou) Co., Ltd., #11 Kohler Rd National Hi-tech District, Changzhou, China, 213022
- (3) Gates Hydraulics s.r.o., Dětmárovičká 409/1, 733 01 Karviná, Czech Republic
- (4) Gates Corporation. 1001 Petty Dr, Versailles, Missouri, US, 65084

### Assembling locations:

- (1) Gates (U.K.) Limited, 5, Alpha Drive, Eaton Socon, Cambridgeshire, PE19 8JJ, United Kingdom.
- (2) Gates Fluid Power Technologies (Changzhou) Co., Ltd. #11 Kohler Rd National Hi-tech District, Changzhou, China, 213022

## 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 and assembling locations as listed above.

Hose assemblies of type MXG4K-XTP and MXG5K-XTP covered by this certificate are approved to be used in:

- petroleum based hydraulic fluids -40°C to +121°C
- water based hydraulic fluids -40°C to +70°C
- water fluids 0°C to +70°C

Hose assemblies of type MXT-XTP covered by this certificate are approved to be used in petroleum based hydraulic fluid at temperature range of -40°C to +100°C

Hose assemblies of type MXT covered by this certificate are approved to 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

Hose assemblies covered by this certificate are not allowed to be used in systems related to DNV classed drilling units (applications covered by DNV-OS-E101).

#### Pressure ratings:

Size (Inside diameter)			MXG4K-XTP		MXT-XTP		MXT	
DN	Dash	in	Hose item code	Maximum working pressure (bar)	Hose item code	Maximum working pressure (bar)	Hose item code	Maximum working pressure (bar)
6	-4	1/4	-	-	4MXT-XTP	414	4MXT	414
8	-5	5/16	-	-	5MXT-XTP	380	5MXT	380
10	-6	3/8	6MXG4K-XTP	280	6MXT-XTP	330	6MXT	330
12	-8	1/2	8MXG4K-XTP	280	8MXT-XTP	280	8MXT	280
16	-10	5/8	10MXG4K-XTP	280	10MXT-XTP	250	10MXT	250
19	-12	3/4	12MXG4K-XTP	280	12MXT-XTP	215	12MXT	215
25	-16	1	16MXG4K-XTP	280	16MXT-XTP	165	16MXT	165

Size (Inside diameter)			MXG5K-XTP		
DN	Dash	in	Hose item code	Maximum working pressure (bar)	Minimum bend radius (mm)
10	-6	3/8	6 MXG5K-XTP	350	65
12	-8	1/2	8 MXG5K-XTP	350	90
16	-10	5/8	10 MXG5K-XTP	350	100
19	-12	3/4	12 MXG5K-XTP	350	120

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.

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

The hose assemblies shall not be installed in the systems where pressure pulses and/or high levels of vibration are expected to occur.

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 hydrostatically tested to a pressure of 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

<u>Document No.</u>	<u>Rev.</u>	<u>Title</u>
-	-	Gates Hose catalog for type MXG4KXTP dated 14NOV2019
-	-	Gates Hose catalog for type MXG4KXTP dated 21MAR2019
-	-	GS Coupling catalog
-	-	MegaCrimp Couplings catalog
-	-	Submission for DNV Type Approval – MXG 4K XTP Hose with GS Couplings, dated 26 March 2020
-	-	Submission for DNV Type Approval – MXT-XTP Hose with G Couplings
-	-	Submission for DNV Type Approval – MXT Hose with G Couplings, dated 16 May 2019
LOCC12743	-	Fire test report for type 6MXG4K XTP witnessed by DNV dated 2020-09-02
LOCC12743	-	Fire test report for type 10MXG4K XTP witnessed by DNV dated 2020-09-02
LOCC12666	-	Fire test report for type 16MXG4K XTP witnessed by DNV dated 2020-05-13
LOCC12408	-	Fire test report for types 4MXT/8MXT/16MXT witnessed by DNV dated 2019-07-04
LOCC12867	-	Fire test report for types 4MXT-XTP/8MXT-XTP /16MXT-XTP witnessed by DNV dated 2021-10-06
WR7462	-	Burst test reports for Gates UK assembly location for type MXG4K XTP witnessed by DNV dated 29.06.2020
LOCC12743	-	Burst test reports for Gates China assembly location for type MXG4K XTP witnessed by DNV dated 2020-06-03
WR7311B	-	Burst test report for Gates UK assembly location for types 4MXT/8MXT/16MXT witnessed by DNV dated 2019-07-12
LOCC12408	-	Burst test report for Gates China assembly location for types 4MXT/8MXT/16MXT witnessed by DNV dated 2019-07-18
	-	Burst test report for Gates UK assembly location for types 4MXT-XTP/8MXT-XTP /16MXT-XTP witnessed by DNV dated 2021-10-06
LOCC12867	-	Burst test report for Gates China assembly location for types 4MXT-XTP/8MXT-XTP /16MXT-XTP witnessed by DNV dated 2021-10-06
-	-	Submission for DNV Type Approval – MXG5K-XTP hose with GS couplings dated Nov.16th 2022 (Gates Lalru India)
-	-	Submission for DNV Type Approval – MXG5K-XTP hose with GS couplings dated Nov.16th 2022 (Gates Atlacomulco Mexico)
LE037445	-	Burst test reports at UK for type for type MXG5K XTP witnessed by DNV dated 2022-11-10
LOCC13261	-	Burst and fire test reports at Changzhou China witnessed by DNV dated 2022-10-20

## Tests carried out

Dimensional check test, change in length test, abrasion resistance, leakage test, burst test, cold flexibility test, ozone resistance 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.