DNV·GL

TYPE APPROVAL CERTIFICATE

Certificate No:
TAP00000HM
Revision No:
1

This is to certify:

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

with type designation(s)
G1, G2, M3K, M4K, M5K, M6K and CM2T

Issued to
Volz Gruppe GmbH
Deilingen, Germany

is found to comply with
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV GL class programme DNVGL-CP-0183 – Type approval – Flexible hoses

Application :

Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.

Temperature range:	**-40°C up to +100°C, short peaks to 120°C**
Max. working press.:	**Refer to certificate.**
Sizes:	**Refer to certificate.**

This Certificate is valid until **2022-08-09**.

Issued at **Høvik** on **2018-01-19**
DNV GL local station: **Augsburg** for **DNV GL**

Approval Engineer: **Andrii Pishchanskyi**

Olaf Drews
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: **262.1-023539-2**
Certificate No: **TAP00000HM**
Revision No: **1**

Product description

Hose Type	Hose standard	Ferrule type	Hose end fittings	Material
G1	Tube of NBR reinforced by one braid of high-tensile steel wire, cover of NBR/PVC, SAE 100 R1AT/EN 853, 1SN.	PF3	DKO ; DKO 45° ; DKO 90° ; DKLL / DKL / DKS; DKLL / DKL / DKS 45° ; DKLL / DKL / DKS 90° ; BE ; BE 45° ; BE 90° ; BE SW ; BE SW 45° ; BE SW 90° ; DKR ; DKR 45° ; DKR 90° ; DKRF ; DKRF 45° ; DKRF 90° ; AGJ ; DKJ ; DKJ 45° ; DKJ 90° ; CE ; AGR ; AGR WD ; AGR BSPT-m ; AGN ; DSN ; SFL3 / SFS6 ; SFL3 / SFS6 45° ; SFL3 / SFS6 90° ; RGN ; DKO KÄ ; DKNPSM ; GADV ; ORFS-m ; ORFS-f ; ORFS-f 45° ; ORFS-f 90° ;TW ; SAE-f ; SAE 45°-f ; SAE 90°-f ; STL ; STL 45° ; STL 90°	1.4571 (316Ti)
G2	Tube of NBR reinforced by two high-tensile steel wire braids, cover of NBR/PVC, SAE 100 R2AT/EN 853, 2SN.	¼"–1": PF3 1.1/4"-2": PF11	Hose end fittings type see Hose type G1	1.4571 (316Ti)
M3K Mega3000®	Tube of NBR reinforced by one braid (-4, -5, -6, and -8), two braids (-10, -12 and -16) of high-tensile steel wire, cover of NBR/PVC. Abrasion resistant MegaTuff® or XtraTuff™ cover, SAE 100 R 17	5/16" & ½"-1": PF3 ¼" & 3/8": PF17	Hose end fittings type see Hose type G1	1.4571 (316Ti)
M4K Mega4000™	Tube of NBR reinforced by two high-tensile steel wire braids, cover of NBR/PVC. Abrasion resistant MegaTuff® or XtraTuff™ cover, SAE 100 R 19.	PF3	Hose end fittings type see Hose type G1	1.4571 (316Ti)
M5K Mega5000™	Tube of NBR reinforced by two high-tensile steel wire braids, cover of NBR/PVC. Abrasion resistant MegaTuff® or XtraTuff™ cover.	PF3	Hose end fittings type see Hose type G1	1.4571 (316Ti)
M6K Mega6000™	Tube of NBR reinforced by two high-tensile steel wire braids, cover of NBR/PVC. Abrasion resistant MegaTuff® or XtraTuff™ cover.	PF3	Hose end fittings type see Hose type G1	1.4571 (316Ti)
Megaflex CM2T MegaFlex	NBR-based tube with two wire braid reinforcement SBR-based cover. Abrasion resistant MegaTuff® or XtraTuff™ cover EN 857 2SC/ISO 11237-1.	PF3	Hose end fittings type see Hose type G1	1.4571 (316Ti)

Production places

Hose end fittings and hose assemblies

Volz Gruppe GmbH Deilingen Germany

Hoses

The Gates Rubber Company 1450 Montana Road Iola, KS 66749 USA	Gates India Private Limited Ambala-Chandigarh Highway P.O. Lalru 140 501 Punjab INDIA

Gates Mexico Cohisa Conexiones Hidraulicas. SA. De CV. Calle 6 S/N Parque Industrial Atlacomulco Atlacomulco, Estado de Mexico 50450 MEXICO	Gates Fluid Power Technologies (Changzhou) Co. Ltd #11 Kohler Rd National Hi-Tech District, Changzhou 213022, P.R. China

Application/Limitation

Max Allowable Working Pressure (M.A.W.P.)

Type	Max. working pressure [bar]	Dash sizes
M3K	225	4, 5, 6, 8, 10, 12, 16
M4K	280	
M5K	350	4, 5, 6, 8
M6K	420	4

G1		G2		Megaflex CM2T	
Dash size	MWP [bar]	Dash size	MWP [bar]	Dash size	MWP [bar]
4	225	4	400	4	400
5	215	5	350	5	350
6	180	6	330	6	330
8	160	8	275	8	275
10	130	10	250	10	250
12	105	12	215	12	215
16	90	16	165	16	165
20	64	20	125	-	-
24	50	24	90	-	-
32	42	32	80	-	-

Temperature range

- 40°C to +100°C constant, short peaks up to 120°C
+ 75°C for air
+ 85°C for water

Piping systems

- Fuel oil, lubricating oil and hydraulic oil systems
- Bilge systems
- Fresh and seawater cooling systems
- Compressed air systems**

**Pin prick cover is required for air or gas applications above 17 [bar].
Manufacturer's recommendation shall be observed for a specific application (combination of medium and temperature).

Installation

Hose assemblies shall be fitted in places where they are always accessible.
They should be in as short length as practicable, but should not, in general exceed 1.5m in length.
Hose assemblies shall only be used where necessary to accommodate relative movement between fixed piping and machinery parts (Ref. to MSC.1/Circ.1321). Exceptions are subject to case by case approval.

For installation, the manufacturer's instructions are to be observed.

Means shall be provided to isolate flexible hoses used in systems for fuel oil, lubricating oil, sea-water cooling and compressed air.

When used in systems conveying flammable fluids flexible hoses shall be shielded from hot surfaces and other sources of ignition.

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

Hose assemblies with hose end fittings made of carbon steel are not to be used at temperatures below -10°C unless the material is normalized.

The use of hose assemblies is not permitted in permanently pressurized starting air lines of diesel engines.

Hose assemblies covered by this certificate shall not be installed in systems with pressure below atmospheric (vacuum condition).

Flexible hoses of these types are not to be used in boiler fronts.

Responsibility

The company VOLZ, Deilingen takes the responsibility that both design and production are in compliance with Rules, Standards and/or Regulations listed on page 1 of this certificate.

Production testing

Each manufactured hose assembly is to be subjected to a hydraulic pressure test in accordance to the purchaser specifications, at least in accordance with the DNV GL Rules for the order.

Rules	Test pressure
DNV DNV GL	1.5 x M.A.W.P
DNV	1.5 x M.A.W.P

Remark
For determination of the M.A.W.P. of the hose assembly both, the maximum operating pressure of the hose end fitting pipe connection part and of the hose type, as specified in the VOLZ catalogue, is be considered.

Example
The M.A.W.P. specified for the hose type is 210bar, for the hose end fitting pipe connection part it is 160bar. Accordingly the M.A.W.P. for the hose assembly is 160 bar.

Type Approval documentation

Tests carried out

Marking of product

For traceability to this type approval the products are to be marked at least with:

On the hoses:
- Manufacturer's name/trade mark: Gates
- Type designation
- Dash size
- M.A.W.P.

On the hose end fittings:
- Manufacturer logo
- Heat code
- Date / Serial number
- M.A.W.P.

Periodical assessment

The scope of the Periodical Assessment is to verify that the conditions stipulated for the Type Approval is complied with and that no alterations are made to the product design or choice of materials.

Periodical Assessment to be performed after two and a half year (2.5 years, certificate retention) and prior to renewal after five (5 years, certificate renewal).

The objective of the periodical assessment is to verify that the design and production conditions for the hose assemblies covered by this type approval have not been altered.
In addition, a surveyor shall witness the following tests on every 3rd size:

- Dimensional check[1]
- Change in length[1]
- Leakage test
- Burst test

The tests shall be performed in accordance with procedures given in DNV GL CP 0183 "Type Approval of Flexible Hoses of Non-Metallic Material".
The tests are to be performed with the type of hose end fittings fitted that are Type Approved with the hoses.

Note
1 Manufacturer test reports in connection with quality control of production may be accepted.

END OF CERTIFICATE