

# TYPE APPROVAL CERTIFICATE

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

with type designation(s)  
**EFG3K, EFG4K, EFG5K and EFG6K**

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 to +100°C, short peaks to 120°C**

**Max. working press.:** **EFG3K: 210 bar, EFG4K: 280 bar, EFG5K: 350 bar, EFG6K: 420 bar**

**Sizes:** **EFG3K: 1 1/4" to 2", EFG4K: 3/8" to 1 1/4", EFG5K: 3/8" to 2" and EFG6K: 3/8" to 2"**

Issued at **Høvik** on **2018-01-19**

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

for **DNV GL**

DNV GL local station: **Augsburg**

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.



Form code: TA 251

Revision: 2016-12

[www.dnvg.com](http://www.dnvg.com)

Page 1 of 5

© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

## Product description

Hose Type	Hose standard	Ferrule type	Hose end fitting	Material
EFG3K and EFG4K	Tube: Synthetic rubber Cover: Synthetic rubber Reinforcement: Four or six layers of spirally wound steel wire wrapped Abrasion resistant MegaTuff® cover, EN 856, Typ R12.	PF5	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)
EFG5K	Tube: Synthetic rubber Cover: Synthetic rubber Reinforcement: Four or six layers of spirally wound steel wire wrapped Abrasion resistant MegaTuff® cover, EN 856, Type R13.	3/8" & 5/8": PF5 3/4"-2": PFI	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° ; DKO - IN ; DKO 45° - IN ; DKO 90° - IN ; DKR - IN ; DKR 45° - IN ; DKR 90° - IN ; AGR - IN ; AGR 45° - IN ; AGR 90° - IN ; SFL3 / SFS6 - IN ; SFL3 / SFS6 45° - IN ; SFL3 / SFS6 90° IN ; DKJ - IN ; DKJ 45° - IN ; DKJ 90° - IN ; AGN - IN ; AGN 45° - IN ; AGN 90° - IN	1.4571 (316Ti)
EFG6K	Tube: Synthetic rubber Cover: Synthetic rubber Reinforcement: Four or six layers of spirally wound steel wire wrapped Abrasion resistant MegaTuff® cover, SAE 100R15.	3/8"-5/8": PF5 3/4"-2": PFI	Hose end fitting type see hose type EFG5K	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

### Maximum allowable working pressure (M.A.W.P)

Size	Products			
	EFG3K	EFG4K	EFG5K	EFG6K
	bar			
3/8"	-	280	350	420
1/2"	-	280	350	420
5/8"	-	280	350	420
3/4"	-	280	350	420
1"	-	280	350	420
1 1/4"	210	280	350	420
1 1/2"	210	-	350	420
2"	210	-	350	420

### 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 applicable for the order.

<b>Rules</b>	<b>Test pressure</b>
DNV	1.5 x M.A.W.P.
DNV GL	2.0 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 to 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:

<b>On the hoses</b>	<b>On the hose end fitting</b>
- Manufacturer's name/trade mark: Gates	- Manufacturer logo
- Type designation	- Heat code
- Dash size	- Date / Serial number
- M.A.W.P.	- 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 3<sup>rd</sup> size:

- Dimensional check<sup>1</sup>
- Change in length<sup>1</sup>
- 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**

<sup>1</sup> Manufacturer test reports in connection with quality control of production may be accepted.

**END OF CERTIFICATE**