DNV·GL

Certificate No:
TAP00000B1

TYPE APPROVAL CERTIFICATE

This is to certify:

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

with type designation(s)
GATES hoses with DICSA stainless steel permanently fitted couplings: G1, G2, CM2T, M3K, M4K, M5K, M6K, EFG3K, EFG4K, EFG5K, EFG6K

Issued to
DISTRIBUIDORA INTERNACIONAL CARMEN, S.A -DICSA-
Zaragoza Zaragoza, Spain

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 July 2015
DNV GL class programme DNVGL-CP-0183 – Type approval – Flexible hoses

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Type:	Temperature range:	Max. working press.:	Sizes:
G1	-40°C to +100°C	40 to 225 bar	DN6 to DN51
G2	-40°C to +100°C	80 to 400 bar	DN6 to DN51
CM2T	-40°C to +100°C	165 to 400 bar	DN6 to DN25
M3K	-40°C to +100°C	210 bar	DN6 to DN25
M4K	-40°C to +100°C	280 bar	DN6 to DN25
M5K	-40°C to +100°C	350 bar	DN6 to DN12
M6K	-40°C to +100°C	420 bar	DN6
EFG3K	-40°C to +121°C	210 bar	DN31 to DN51
EFG4K	-40°C to +121°C	280 bar	DN16 to DN31
EFG5K	-40°C to +121°C	350 bar	DN12 to DN51
EFG6K	-40°C to +121°C	420 bar	DN10 to DN51

This Certificate is valid until **2021-11-20**.

Issued at **Høvik** on **2016-11-21**
DNV GL local station: **Barcelona** for **DNV GL**

Approval Engineer: **Adel Samiei**

Marianne Spæren Marveng
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.

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Job Id:
Certificate No: **TAP00000B1**

Product description

11 types of hoses assemblies :

1. G1 : 1-Wire Braid Hose

Tube: Black, oil resistant, synthetic rubber (Nitrile - Type C)
Reinforcement: One braid of high-tensile steel wire
Cover: Black, oil and abrasion resistant, synthetic rubber (Nitrile/PVC – Type C2)
End fittings (Ferrule): ZPF2212

2. G2: 2-Wire Braid Hose

Tube: Black, oil resistant, synthetic rubber (Nitrile - Type C)
Reinforcement: Two braids of high-tensile steel wire
Cover: Black, oil and abrasion resistant, synthetic rubber (Modified Nitrile -Type C2)
End fittings (Ferrule): ZPF2212 (DN6, 10, 12, 16, 19, 25) – ZAC68010 (DN31, 38, 51)

3. CM2T® MegaFlex® 2-Wire Braid Hose

Tube: Black, oil resistant, synthetic rubber (Nitrile - Type C)
Reinforcement: Two braids of high-tensile steel wire
Cover: Black, oil, abrasion and weather resistant, synthetic rubber (Modified Nitrile - Type C2), with color coded layline. Also available with unique abrasion resistant MegaTuff® or XtraTuff™ cover)
End fittings (Ferrule): ZPF2212

4. M3K: Mega3000® Hose

Tube: Black, oil resistant, synthetic rubber (Nitrile - Type C)
Reinforcement: Braided, high-tensile steel wire. -4, -5, -6 and -8 sizes are one braid; -10, -12 and -16 sizes are two braid.
Cover: Black, oil, abrasion and weather resistant, synthetic rubber (Nitrile/PVC - Type C2), with color coded layline. Also available with unique abrasion resistant MegaTuff® or XtraTuff™ cover
End fittings (Ferrule): ZSC2112 (DN6, 10, 12) – ZPF2212 (DN16, 19, 25)

5. M4K: Mega4000™ Hose

Tube: Black, oil resistant, synthetic rubber (Nitrile - Type C)
Reinforcement: Two braids of high-tensile steel wire
Cover: Black, oil, abrasion and weather resistant, synthetic rubber (Modified Nitrile - Type C2), with color coded layline. Also available with unique abrasion resistant MegaTuff® or XtraTuff™ cover
End fittings (Ferrule): ZPF2212

6. M5K: Mega5000™ Hose

Tube: Black, oil resistant, synthetic rubber (Nitrile - Type C)
Reinforcement: Two braids of high-tensile steel wire
Cover: Black, oil, abrasion and weather resistant, synthetic rubber (Nitrile/PVC - Type C2) (4, 5, 6), Polychloroprene - Type A (8) with color coded layline. Also available with unique abrasion resistant MegaTuff® or XtraTuff™ cover
End fittings (Ferrule): ZPF2212

7. M6K: Mega6000™ Hose

Tube: Black, oil resistant, synthetic rubber (Nitrile - Type C)
Reinforcement: Two braids of high-tensile steel wire
Cover: Black, oil, abrasion and weather resistant, synthetic rubber (Nitrile/PVC - Type C2), with color coded layline. Also available with unique abrasion resistant MegaTuff® or XtraTuff™ cover.
End fittings (Ferrule): ZPF2212

8. EFG3K: Spiral Wire Hose

Tube: Black, oil resistant, synthetic rubber (Nitrile - Type C)
Reinforcement: Four alternating layers of spiraled, high-tensile steel wire
Cover: Black, oil resistant, synthetic rubber (Polychloroprene - Type A), with color coded layline. Also available with unique abrasion resistant MegaTuff® or XtraTuff™ cover.
End fittings (Ferrule): ZPF1224

9. EFG4K Spiral Wire Hose
Tube: Black, oil resistant, synthetic rubber (Nitrile - Type C)
Reinforcement: Four alternating layers of spiraled, high-tensile steel wire
Cover: Black, oil resistant, synthetic rubber (Polychloroprene - Type A), with color coded layline. Also available with unique abrasion resistant MegaTuff® or XtraTuff™ cover
End fittings (Ferrule): ZPF1224 (DN16, 19) – ZAC68010 (DN25, 31)

10. EFG5k: Spiral Wire Hose
Tube: Black, oil resistant, synthetic rubber (Nitrile - Type C)
Reinforcement: Four (six for -20, -24 and -32) alternating layers of spiraled,high-tensile steel
Cover: Black, oil resistant, synthetic rubber (Polychloroprene - Type A), with color coded layline. Also available with unique abrasion resistant MegaTuff® or XtraTuff™ cover.
End fittings (Ferrule): ZAC68010 (DN12, 16) - ZA6101 (DN19, 25) – Z6101 (DN31, 38, 51)

11. EFG6K Spiral Wire Hose
Tube: Black, oil resistant, synthetic rubber (Nitrile - Type C)
Reinforcement: Four (six for -20, -24 and -32) alternating layers of spiraled, high-tensile steel
Cover: Black, oil resistant, synthetic rubber (Polychloroprene - Type A). Color coded layline. Also available with unique abrasion resistant MegaTuff® or XtraTuff™ cover.
End fittings (Ferrule): ZPF1224 (DN10, 12, 16) - ZA6101 (DN19, 25) – Z6101 (DN31, 38, 51)
Fittings material: AISI 316L

Hoses are made by Gates Hydraulics.
Fittings are made by Distribuidora Internacional Carmen, S.A –DICSA, Spain.
Manufacturer (assembling) location: Distribuidora Internacional Carmen, S.A –DICSA, Spain.

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.

Hose assemblies covered by this type approval certificate are approved for use with petroleum base and water base hydraulic fluids within a temperature range as specified below:

Hose type	Minimum temperature	Maximum temperature
G1, G2, CM2T, M3K, M4K, M5K, M6K	-40°C	+100°C
EFG3K, EFG4K, EFG5K, EFG6K	-40°C	+121°C

Also they may be used in fresh water and compressed air within temperature 0° to 70°C
Operating temperature in excess of maximum working temperature can materially reduce the life of the hose.

Maximum working pressure of each hose type/size (in bar):

Hose Type	**DN6 -4**	**DN10 -6**	**DN12 -8**	**DN16 -10**	**DN19 -12**	**DN25 -16**	**DN31 -20**	**DN38 -24**	**DN51 -32**
G1	225	180	160	130	105	88	63	50	40
G2	400	330	275	250	215	165	125	90	80
CM2T	400	330	275	250	215	165	-	-	-
M3K	210	210	210	210	210	210	-	-	-
M4K	280	280	280	280	280	280	-	-	-
M5K	350	350	350	-	-	-	-	-	-
M6K	420	-	-	-	-	-	-	-	-
EFG3K	-	-	-	-	-	-	210	210	210
EFG4K	-	-	-	280	280	280	280	-	-
EFG5K	-	-	350	350	350	350	350	350	350
EFG6K	-	420	420	420	420	420	420	420	420

All hose assemblies delivered under this type approval certificate shall be in compliance with an assembly procedure issued by the certificate holder.

Each hose assembly is before delivery to be hydraulic pressure tested to 1.5 times the maximum working pressure and be delivered with pressure test report with reference to the type approval certificate.

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

It must be possible to shut off from the system all flexible hoses used in systems for lubrication oil, fuel oil and petroleum base hydraulic oil.

Hoses assemblies covered by this certificate shall not be installed in systems subject to pressure below atmospheric.

Type Approval documentation

- EI20141111/1 dated 2014-11-11 (CM2T – ¾") - EI2014116/2 (CM2T – 3/8 dated 2014-11-06)
- EI20141219/1 dated 2014-12-19 (EFG4K – ¾") EI20141128/1 (EFG4K – 1 ¼ dated 2014-11-28)
- EI201524/1 dated 2015-04-01 (EFG5K – ¾") EI2015119/1 (EFG5K – ½ dated 2015-01-19) EI2015323/1 (EFG5K – 1 1/2" dated 2015-03-23)
- EI201541/1 dated 2015-04-01 (EFG6K – ¾") EI201523/1 (EFG6K – 3/8 dated 2015-02-03) EI201533/1 (EFG6K – 1 ½ dated 2015-03-03)
- EI2014107/1 dated 2014-10-07 (G1 – ¾") EI20141020/1 (G1 – 3/8 dated 2014-10-20) EI20141020/1 (G1 – 1 ¼ dated 2014-10-20)
- EI20141015/1 dated 2014-10-15 (G2 – ¾") EI20141023/1 (G2 – 3/8 dated 2014-10-23) EI2016210/1 (G2 – 1 ½ dated 2016-02-10)
- EI2015316/1 dated 2015-03-16 (M3K – ¾") EI201519/1 (M3K – 3/8 dated 2015-01-09)
- EI2014122/1 dated 2014-12-02 (M4K – 3/8") EI20141124/1 (M4K – 3/8 dated 2014-11-24)

Tests carried out

Dimensional check, Change-in-length, burst, cover adhesion, oil resistance, cold flex, ozone resistance, impulse, leakage tests, fire test

Marking of product

For traceability to this type approval the hoses are to be marked with:

- Manufacturer Name or identification
- Hose type - standard
- Nominal bore
- Date of production

Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform a periodical assessment every second year, to verify that the conditions for the type approval are complied with and to witness the following tests on a selection of sizes:

- Dimensional check
- Change in length
- Burst test

The tests are to be performed with the type of couplings fitted that are Type Approved with the hoses.