

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, EFG6K

Issued to

Otto Olsen AS
Lillestrøm, Norway

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:
EFG3K	-40°C to +121°C	210 bar	1 1/4", 1 1/2", 2"
EFG4K	-40°C to +121°C	280 bar	3/4", 1", 1 1/4"
EFG5K	-40°C to +121°C	350 bar	1/2", 5/8", 3/4", 1", 1 1/4", 1 1/2", 2"
EFG6K	-40°C to +121°C	420 bar	3/8", 1/2", 5/8", 3/4", 1", 1 1/4", 1 1/2", 2"

Issued at **Høvik** on **2019-04-01**This Certificate is valid until **2023-06-30**.for **DNV GL**DNV GL local station: **Oslo Maritime and CAP**Approval Engineer: **Iselinn Vindstad**

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.



Job Id: **262.1-010111-7**
Certificate No: **TAP00001EB**

Product description

Design:

Hose				
Designation	EFG3K	EFG4K	EFG5K	EFG6K
Tube	CR	NBR	NBR for sizes up to 1 1/4"	
			CR for 1 1/2" and 2"	
Reinforcement (Number of high tensile spiral steel wire braid)	Four	Four for sizes up to 1"		
		Six for sizes greater than 1"		
Cover (*)	CR	CR	CR	CR
Hose Manufacturer	- Gates India Private Limited, Ambala-Chandigarth Highway, PO Lalru 140501, Punjab, India - Gates Mexico COHISA, Calle 6 S/N, Parque Industrial Atlacomumco, Atlacomumo Estado De Mexico, 50450, Mexico - Gates Fluid Power Technologies (Changzhou) Co. Limited, 11 Kohler Road, National Hi-Tech District, 213022 Changzhou, China			
Couplings				
Carbon steel	GS-/GSP- and P-series	GS- and P-series	GS-/GSM-/P- and I-series	GS-/GSM- and P- and I-series
Stainless steel	P-Series		P- and I-Series	
Carbon Steel Material	Nr. 1.0737; 1.0718; 1.0214; 1.1191; 1.1201			
Stainless steel Material	Nr. 1.4401; 1.4404			
Coupling Manufacturer	Gates (G-, GS-, GSP-, GSM- Series) Intertraco (P-, I-Series) Custom Fittings (P- and I-Series)			

(*) All Gates hoses can be delivered with MegaTuff® cover.

Application/Limitation

This certificate is valid for the specific assembly of hose and coupling type as specified, assembled in Otto Olsen (Frogenr, Norway) and delivered by the holder (named as manufacturer) of this certificate.

Hose assemblies covered by this certificate may be used in

- Petroleum based hydraulic fluids(-40°C to +121°C)
- Water based Hydraulic fluids and compressed air(-40°C to +70°C)
- Fresh Water 0°C to +70°C.

For compressed air or gases the cover should be pin pricked.

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.

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 the type approval certificate.

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

The outer end of the pipe coupling (performing the connection to the fixed piping) are 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 DNVGL-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 DNVGL-RU-SHIP Pt.4 Ch.6 Sec.9, then they shall be separately type approved.'

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

Type Approval documentation

GS-Hydro "Gates Hoses & Carbon Steel Couplings" Catalogue

GS-Hydro Stainless Steel Hose Couplings

Type test reports as per type approval certificate TAP000003S rev.3 Gates Authorization letter dated 2013-07-12

1172, 1173 & 1174 .0ISO110/09 / 1175, 1176 & 1177 .0ISO110/09 / 1559, 1393 & 1394 .0ISO110/09
1184, 1185 & 1186 .0ISO110/09 / 1398, 1399 & 1400 .0ISO110/09 / 1181, 1182 & 1183 .0ISO110/09
1389, 1390 & 1391 .0ISO110/09 / 1178, 1179 & 1180 .0ISO110/09 / 1677, 1678, 1679 &
1401 .0ISO110/09

LAPI fire test reports performed on Gates hoses with Intertraco & Custom fittings couplings:

096, 097, 098, 099, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115,
116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135,
136, 137, 139, 140, 141, 142, 143, 161, 189, 190, 191, 192 - .0ISO110/05

Renewal burst pressure test reports witnessed by DNV GL surveyor

Tests carried out

Dimensional Check Test, Change in Length Test, Burst Test, Cold Flexibility Test, Ozone Resistance Test, Impulse Test, Oil 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.