

**TYPE APPROVAL CERTIFICATE****This is to certify:****That the Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings**with type designation(s)  
**GH681, GH681B**

Issued to

**Eaton Germany GmbH**  
**Baden-Baden, Baden-Württemberg, 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.**

Type:	Temperature range:	Max. working press.:	Sizes:
<b>GH681</b>	<b>- 46°C up to + 126°C</b>	<b>250 bar</b>	<b>DN 5 up to DN 51</b>
<b>GH681B</b>	<b>- 40°C up to + 126°C</b>	<b>250 bar</b>	<b>DN 5 up to DN 51</b>

Issued at **Hamburg** on **2018-11-05**This Certificate is valid until **2022-07-18**.for **DNV GL**DNV GL local station: **Augsburg**Approval Engineer: **Christian Kaemmer**.....  
**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: **262.1-025979-2**  
Certificate No: **TAP0000116**  
Revision No: **1**

## Product description

### **GH681-Series:**

Flexible non-metallic hose consisting of rubber tube, one wire braid reinforcement, neoprene cover. Fire resistant acc. to ISO 15540.

Inner tube: synthetic rubber NBR  
Reinforcement: one steel wire braid  
Cover: synthetic rubber NBR/PVC

Couplings: Global 1A TTC-Fittings

### **GH681B-Series:**

Flexible non-metallic hose consisting of rubber tube, one wire braid reinforcement, neoprene cover and polyethylene sheath. Fire resistant acc. to ISO 15540.

Inner tube: synthetic rubber NBR  
Reinforcement: one steel wire braid  
Cover: synthetic rubber Neoprene  
Sheath: polyethylene  
Couplings: Global 1A TTC-Fittings

### **Size and pressure range: GH681 & GH681B-Series:**

Part Number	DN	Hose I.D.		Maximum working pressure	
		mm	inch	[bar]	[psi]
GH681-3/GH681B-3	5	4.8	.19	250	3625
GH681-4/GH681B-4	6	6.4	.25	255	3700
GH681-5/GH681B-5	8	7.9	.31	225	3250
GH681-6/GH681B-6	10	9.5	.38	235	3400
GH681-8/GH681B-8	12	12.7	.50	221	3200
GH681-10/GH681B-10	16	15.9	.63	140	2025
GH681-12/GH681B-12	19	19	.75	138	2000
GH681-16/GH681B-16	25	25.4	1.00	103	1500
GH681-20/GH681B-20	31	31.8	1.25	69	1000
GH681-24/GH681B-24	38	38.1	1.50	52	750
GH681-32/GH681B-32	51	50.8	2.00	41	600

## Production places

- Eaton Corporation, 1830 Highway 201 South Spur, Mountain Home, Arkansas 72653, USA
- POLİMER KAUCUK SAN. VE PAZ. A.Ş., Çerkezköy Organize Sanayi Bölgesi Karaağaç mah. 6. Sok No:3, Kapaklı / TEKİRDAĞ, TURKEY
- Eaton Germany GmbH, Dr. Reckewegstr. 1, D-76532 Baden-Baden, Germany
- Eaton Corporation 1225 W. Main Street Van Wert, Ohio 45891-0389, USA

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### **Responsibility**

Eaton Germany GmbH, Baden-Baden takes the responsibility that the design and production of the hoses, hose end fittings and manufacturing of hose assemblies are in compliance with Rules, Standards and/or Regulations listed on page 1 of this certificate.

### **Application/Limitation**

Hose assemblies covered by this type approval certificate are approved for fuel oil, lubricating oil and hydraulic oil, bilge and seawater, fresh water and seawater, compressed air \*\*.

Flexible hoses are only to be used in short lengths up to 2 m 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.

\*\*Pin prick cover is required for air or gas applications above 17 [bar].

### **Installation**

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.

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

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

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

### **Type Approval documentation**

### **Tests carried out**

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### **Production testing**

All hose assemblies 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.

### **Marking of product**

For traceability to this type approval, each hose assembly is to be marked with:

Manufacturer's name
Type, Nominal Diameter
Maximum working pressure M.A.W.P.
Date Code
Temperature Rating

### **Periodical assessment**

For retention of the type approval certificate periodical assessments shall be carried out at production places by DNVGL surveyor.  
The objective of the periodical assessment is to verify that the design and production conditions for the type approval have not been altered.

Main scope of the assessment:

- verification of the production and quality control system
- review of quality control documentation of recent deliveries
- review of drawings in production to verify any design changes which may have an impact on data specified in the type approval certificate, performance and range of application
- verification of the product marking

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate. In connection with the renewal assessment, a surveyor shall witness / review test reports with respect to the following tests on every 3rd size appropriate test reports to be submitted:

- dimensional check, change in length test,
- pressure test with 1.5 times M.A.W.P. and burst test (witnessed by DNV GL surveyor)