

TYPE APPROVAL CERTIFICATE

This is to certify:

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

with type designation(s)

GH681 corresponding to DIN EN 857 / 1SC, FLAME RESISTANT HYDRAULIC HOSES IN ACC. WITH ISO 15540

Issued to

Eaton Germany GmbH
Baden-Baden Baden-Württemberg, Germany

is found to comply with

DNV GL rules for classification – Ships

DNV GL rules for classification – Yachts

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

Application :

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

Temperature range: - 46°C up to + 126°C

Max. working press.: according to DIN EN 857

Sizes: DN 5 up to DN 51

Issued at **Hamburg** on **2017-07-18**

This Certificate is valid until **2022-07-17**.

DNV GL local station: **Augsburg**

for **DNV GL**

Approval Engineer: **Peter Gierhan**

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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.



Production Place

Hose manufacturers:

Eaton Corporation 1830 Highway 201 South Spur Mountain Home, Arkansas 72653	POLİMER KAÜÇUK SAN. VE PAZ. A.Ş. Çerkezköy Organize Sanayi Bölgesi Karaağaç mah. 6. Sok No:3 Kapaklı / TEKİRDAĞ TURKEY
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Coupling manufacturers:

Eaton Germany GmbH Dr. Reckewegstrasse 1 D-76532 Baden-Baden Germany	Eaton Corporation 1225 W. Main Street Van Wert, Ohio 45891-0389 USA
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Product description

Inner tube: synthetic rubber
Reinforcement: one steel wire braid
Cover: synthetic rubber
Size range: DN 5 up to DN 51
Pressure rating: according to DIN EN 857
Couplings: Global 1A TTC-Fittings

Application/Limitation

PART NUMBER	DN	I.D. ø mm [in]	O.D. max. ø mm [in]	OPERATING PRESSURE bar [PSI]	PROOF PRESSURE bar [PSI]	BURST PRESSURE bar [PSI]	MIN. BEND RADIUS mm [in]	WEIGHT kg/m [lbs/ft]
GH681-3	5	4.8 [.19]	11.5 [.45]	250 [3625]	500 [7250]	1000 [14500]	45 [1.77]	0.13 [0.09]
GH681-4	6	6.4 [.25]	13.5 [.53]	255 [3700]	510 [7395]	1020 [14800]	50 [1.97]	0.14 [0.09]
GH681-5	8	7.9 [.31]	14.5 [.57]	225 [3250]	450 [6500]	900 [13000]	55 [2.17]	0.15 [0.10]
GH681-6	10	9.5 [.38]	16.9 [.66]	235 [3400]	470 [6800]	940 [13600]	63 [2.48]	0.22 [0.15]
GH681-8	12	12.7 [.50]	20.4 [.80]	221 [3200]	442 [6400]	883 [12800]	90 [3.54]	0.29 [0.20]
GH681-10	16	15.9 [.63]	23.0 [.91]	140 [2025]	280 [4050]	559 [8100]	100 [3.94]	0.28 [0.19]
GH681-12	19	19 [.75]	26.7 [1.05]	138 [2000]	276 [4025]	552 [8000]	120 [4.72]	0.37 [0.25]
GH681-16	25	25.4 [1.00]	34.9 [1.37]	103 [1500]	207 [3000]	414 [6000]	150 [5.91]	0.54 [0.36]
GH681-20	31	31.8 [1.25]	42.3 [1.67]	69 [1000]	138 [2000]	276 [4000]	210 [8.27]	0.68 [0.45]
GH681-24	38	38.1 [1.50]	48.9 [1.93]	52 [750]	104 [1500]	207 [3000]	250 [9.84]	0.80 [0.54]
GH681-32	51	50.8 [2.00]	65.5 [2.58]	41 [600]	82 [1200]	166 [2400]	315 [12.40]	1.29 [0.87]

Range of Application

The a.m. hose sizes of GH681 are approved for use in:

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

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

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 shall be delivered with manufacturer's pressure test certificate.

Flexible hoses are only to be used 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 hoses must only be fitted in places where they are always accessible.

The hoses are not to be used for suction.

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

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

Type Approval documentation

Tests carried out

Proof pressure test, Change in length test, Burst test, Pressure pulsation test, Fire test, Dimensional Check test, Cold Flexibility test, Oil Resistance test, Cover Adhesion test, Ozone resistance test.

Marking of product

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

- Manufacturers name or trade mark
- Type designation

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.

Main scope of the assessment:

- Dimensional check.
- Change in length
- 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 couplings fitted that are Type Approved with the hoses.



Job Id: **262.1-025979-1**
Certificate No: **TAP0000116**

END OF CERTIFICATE