

TYPE APPROVAL CERTIFICATE

This is to certify:

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

with type designation(s)

FLAME RESISTANT HYDRAULIC HOSES IN ACC. WITH ISO 15540, FC 510

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 rules for classification – Offshore units

Application :

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

Temperature range:	-40 [°C] to 150 [°C], pneumatic* systems 100 [°C] max. * Rubber covered hose styles for use with gases above 17,5 bar must be perforated.
Max. working press.:	265 [bar] to 112 [bar]
Sizes:	DN 6 to DN 31

This Certificate is valid until **2021-03-15**.

Issued at **Hamburg** on **2016-04-22**

DNV GL local station: **Augsburg**

Approval Engineer: **Peter Gierhan**

for **DNV GL**

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: **262.1-021106-3**
Certificate No: **TAP00000BD**

PRODUCTION PLACES

HOSES: Eaton Corporation
GHO-Hose Operation
1830 Highway 201 South Spur
Mountain Home, Arkansas 72653 USA

FITTINGS: Eaton Fluid Power GmbH
P.O. Box 2060
76532 Baden-Baden
Germany

Product description

Hose is a Eaton proprietary hose

Design: Inner tube of synthetic rubber reinforced by single wire layers with intermediate layers of rubber. Outer cover of synthetic rubber

- Synth. AQP Rubber Tube
- HI-PAC Wire Braid Reinforcement
- Synth. AQP Rubber Cover, Blue Color

Application/Limitation

AEROQUIP PART NUMBER Teilenummer	DN	I.D Innen- $\varnothing$ (mm)	O.D. Aussen- $\varnothing$ (mm)	WBOD Draht- $\varnothing$ (mm)	OPERATING PRESSURE Betriebsdruck (BAR)	PROOF PRESSURE Prüfdruck (BAR)	MIN. BURST PRESSURE min. Berst- druck (BAR)	MIN. BEND RADIUS min. Biege- radius (mm)	WEIGHT Gewicht kg/m
FC510-04	6	6.4 $\pm$ 0.25	14.5 $\pm$ 0.4	12.2 $\pm$ 0.25	345	690	1380	75	0.34
FC510-06	10	9.5 $\pm$ 0.25	17.2 $\pm$ 0.5	15.1 $\pm$ 0.4	275	550	1100	90	0.43
FC510-08	12	12.7 $\pm$ 0.25	20.1 $\pm$ 0.5	17.8 $\pm$ 0.4	240	480	960	130	0.50
FC510-10	16	15.9 $\pm$ 0.25	23.6 $\pm$ 0.5	21.5 $\pm$ 0.5	190	380	760	150	0.66
FC510-12	19	19.0 $\pm$ 0.4 -0.25	27.4 $\pm$ 0.5	25.1 $\pm$ 0.5	155	310	620	180	0.77
FC510-16	25	25.4 $\pm$ 0.4 -0.25	34.4 $\pm$ 0.6	31.5 $\pm$ 0.5	140	280	560	230	1.05
FC510-20	31	31.8 $\pm$ 1.0 -0.25	43.0 $\pm$ 0.6	39.0 $\pm$ 0.5	112	225	450	280	1.61

RANGE OF APPLICATION

The a.m. hose type is approved for use in:

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

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.

Job Id: **262.1-021106-3**
Certificate No: **TAP00000BD**

Type Approval documentation

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

Tests carried out

DVV GL class programme CP 0183 - Type Approval of flexible hoses non-metallic materials

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

For retention of the Type Approval, a DNV GL Surveyor shall perform a survey 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
- Leakage test
- Burst test

The tests shall be performed in accordance with procedures given in DNV Type Approval Program "Type Approval of Flexible Hoses of Non-Metallic Material" or another recognized standard.

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

END OF CERTIFICATE