

TYPE APPROVAL CERTIFICATE

This is to certify:

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

with type designation(s)
FC234

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.

Temperature range: -40°C up to +150°C

Max. working press.: 28 bar up to 103 bar

Sizes: DN 6 up to DN 25

Issued at **Hamburg** on **2018-05-09**

This Certificate is valid until **2019-01-14**.

DNV GL local station: **Augsburg**

for **DNV GL**

Approval Engineer: **Christian Kaemmer**

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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.



Product description

FC234-Series: Flexible non-metallic hose consisting of chlorinated polyethylene rubber inner tube, brass plated steel wire braid reinforcement, braided refractory insulation and blue chlorinated polyethylene cover. Fire resistant acc. to ISO 15540.

Materials:

Reinforcement: Brass plated steel wire braid
Coupling: Crimp and reusable fittings Type R5; Carbon steel
Tube: Synthetic chlorinated polyethylene rubber
Cover: Synthetic chlorinated polyethylene rubber

Size and pressure range:

Part Number	DN	Hose I.D.		Maximum working pressure	
		mm	inch	[bar]	[psi]
FC234-5	8	6.4	0.25	103	1500
FC234-6	10	7.9	0.31	103	1500
FC234-8	12	10.3	0.41	86	1250
FC234-10	16	12.7	0.5	86	1250
FC234-12	19	15.9	0.62	52	750
FC234-16	25	22.2	0.88	28	400

Production places

- Eaton Germany GmbH, Dr. Reckwegstr. 1, 76532 Baden-Baden.
- Eaton Aeroquip LLC, 1830 Highway 201 South Spur, Mountain Home, Arkansas, USA.
- Eaton Corporation, 1225 W. Main Street, Van Wert, Ohio, USA.

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 lubricating oil, hydraulic systems with petroleum and water based fluid, water.

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.

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

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)