



Marine &amp; Offshore

Certificate number: 13413/E0 BV

File number: ACM 135/2607/3

Product code: 2104I

*This certificate is not valid when presented without the full attached schedule composed of 7 sections*

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## TYPE APPROVAL CERTIFICATE

*This certificate is issued to*

**Danfoss Power Solutions II GmbH**

Baden-Baden - GERMANY

*for the type of product*

**NON-METALLIC HOSES (FLEXIBLE PIPES) ASSEMBLIES**

FLEXIBLE HOSES, type: FC 234 with 100R5 crimp fittings

### Requirements:

BUREAU VERITAS Rules for the Classification of Steel Ships

BUREAU VERITAS Rules for the Classification of Offshore Units

*This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.*

**This certificate will expire on: 23 Nov 2028**

**For Bureau Veritas Marine & Offshore,**

At BV HAMBURG, on 23 Nov 2023,

Heiko Lange

***This certificate was created electronically and is valid without signature***



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site [www.veristar.com](http://www.veristar.com). Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 June 2017

This certificate consists of 3 page(s)

## **THE SCHEDULE OF APPROVAL**

### **1. PRODUCT DESCRIPTION:**

**Flexible hoses, type: FC234 with 100R5 crimp fittings**

1.1 Technical description:

**Hose type FC234**

| Part number | DN | O.D. nom. [mm] | Max. working pressure [bar] | Min. bending radius [mm] |
|-------------|----|----------------|-----------------------------|--------------------------|
| FC234-05    | 6  | 14.8           | 103                         | 25.4                     |
| FC234-06    | 8  | 17.3           | 103                         | 31.8                     |
| FC234-08    | 10 | 19.4           | 86                          | 44.5                     |
| FC234-10    | 12 | 23.7           | 86                          | 57.2                     |
| FC234-12    | 16 | 27.6           | 52                          | 69.9                     |
| FC234-16    | 22 | 31.6           | 28                          | 89.9                     |

Temperature range: - 40 °C to + 150 °C

The maximum working pressure is not to exceed one quarter of the burst pressure at the service temperature.

1.2 Material specification:

|                      |                                                        |
|----------------------|--------------------------------------------------------|
| <b>Inner tube</b>    | Chlorinated polyethylene ruber                         |
| <b>Reinforcement</b> | Brass plated steel wire, braided refractory insulation |
| <b>Outer cover</b>   | Blue AQP elastomer tube                                |
| <b>End fittings</b>  | Carbon steel or brass                                  |

### **2. DOCUMENTS AND DRAWINGS:**

According to following drawings and documents:

| Drawing no. | Rev. | Designation   |
|-------------|------|---------------|
| FC234       | P    | AEROQUIP HOSE |

### **3. TEST REPORTS:**

- Qualification tests carried out: proof pressure test / burst test / tensile test / flame test according to ISO 15540 (Ed 1999).
- Test reports: aeroquip test report n° 220002 dated 30/11/2000 / n° 219981 dated 20/12/2000.
- Fire test report n° 3-4438-4 dated 23/07/2003 & n° 3-4438-5 dated 11/09/2003 issued by AERO NAV Laboratories.
- Pressure tests including tensile test and burst test. Test reports n° TR-007928A dated 26/06/2012.

### **4. APPLICATION / LIMITATION:**

- 4.1 May be used for the following media: sea water and fresh water / fuel oil / lubricating oil / hydraulic oil / compressed air.
- 4.2 End fittings as per manufacturer's catalogue. The hoses are to be entirely assembled in the manufacturer's workshop.
- 4.3 Taper threaded end fittings are not to be used in engine rooms nor any place containing an ignition source unless otherwise suitably screened at the Society's Surveyor satisfaction.
- 4.4 The hose assemblies are to be installed according to the Society's Rules requirements and the manufacturer's instructions.
- 4.5 The hoses are to be limited to a length necessary to provide for relative movement between fixed and flexibly mounted items of machine/equipment or systems. When the hoses are intended to be used for essential services or containing either flammable or toxic media, they are not to exceed 1.5 m in length. The hoses are to be installed in clearly visible and readily accessible locations at all times.
- 4.6 The hose assemblies intended for use in piping systems where high levels of vibration are expected to occur in service are to be designed for the maximum expected forces due to vibration. Otherwise, this use is to be subject to special consideration by the Society for each case.

**5. PRODUCTION SURVEY REQUIREMENTS:**

- 5.1 The hoses are to be supplied by **Danfoss Power Solutions II GmbH** in compliance with the types and the requirements described in this certificate.
- 5.2 This type of product is within the category IBV of BUREAU VERITAS Rule Note NR320.
- 5.3 BUREAU VERITAS product certificate is required.
- 5.4 For information, **Danfoss Power Solutions II GmbH** has declared to BUREAU VERITAS the following production sites:  
Hose:  
**Danfoss Power Solutions II LLC, Mountain Home, Arkansas / USA** and  
**POLIMER KAUCUK SANAYI VE PAZ. A.S., Tekirdag / TURKEY**  
Hose assemblies and fittings:  
**Danfoss Power Solutions II GmbH, Baden-Baden / GERMANY** and  
**Danfoss Power Solutions II LLC, Van Wert, Ohio / USA**
- 5.5 Each hose with end fittings is to be hydraulic pressure tested to 1.5 times the maximum working pressure under witnessing of a Society's Surveyor.

**6. MARKING OF PRODUCT:**

Each hose with end fittings is to be clearly marked as follows to avoid any wrong utilization:

- Manufacturer's name or logo
- Type designation
- Maximum working pressure
- Maximum and minimum working temperature
- Date of manufacture
- BUREAU VERITAS' marks

**7. OTHERS:**

- 7.1 It is **Danfoss Power Solutions II GmbH**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.
- 7.2 This certificate supersedes the Type Approval Certificate N° 13413/D0 BV issued on 13 Nov 2018 by the Society.

\*\*\* END OF CERTIFICATE \*\*\*