



Confirmation of Product Type Approval

Company Name: DANFOSS POWER SOLUTIONS II, LLC

Address: 1225 WEST MAIN STREET VAN WERT OH 45891 United States

Product: Non-Metallic Flexible Hose

Model(s): FC619-12, -16, -20, -24, -32, -40, -48 H039 -12, -16, -20, -24, -32 FC332-04, -06, -08, -10, -12
2661-16, -20, -24, -32, -40 FC619C-12, -16, -20, -24, -32

Endorsements:

Certificate Type	Certificate Number	Issue Date	Expiry Date
Product Design Assessment (PDA)	26-0553375-PDA	15-JUL-2026	14-JUL-2031
Manufacturing Assessment (MA)	23-6055863	23-OCT-2023	22-OCT-2028
Product Quality Assurance (PQA)	NA	NA	NA

Tier

3 - Type Approved, unit certification not required

Intended Service

Marine & Offshore Applications: for Fuel Oil, Lubricating Oil, Hydraulic Fluid and Water Systems.

Description

FC619 / H039 with Fire Sleeve, Flexible ½ SAE Bend Wire Inserted Suction manufactured with synthetic rubber and cover reinforcement consisting of a helical wire between two textile reinforcement layers.

FC332 with Fire Sleeve, AQP Low Pressure SOCKETLESS Textile Braid manufactured with AQP elastomer tube and cover, textile braid reinforcement.

2661 with Fire Sleeve, Wire Inserted Suction manufactured with AQP elastomer tube, reinforcement consisting of a helical wire between two textile braids and blue AQP elastomer cover.

FC619C with Fire sleeve, Synthetic rubber inner tube, fabric reinforcement with steel helix wire, and synthetic rubber cover.

Ratings

2661:

Maximum Operating Pressure: 50 PSI (3.5 Bar) to 305PSI (21 Bar);

Operating Temperature Range: -40 °C to +150 °C (-40 °F to +302 °F);

FC619:

Maximum Operating Pressure: 60 PSI (4 Bar) to 305 PSI (21 Bar);

Operating Temperature Range: -40 °C to +135 °C (-40 °F to +275 °F);

H039:

Maximum Operating Pressure: 100 PSI (7 Bar) to 305 PSI (21 Bar);

Operating Temperature Range: -40 °C to +135 °C (-40 °F to +275 °F);

FC332:

Maximum Operating Pressure: 300 PSI (20.7 Bar);

Operating Temperature Range: -40 °C to +150 °C (-40 °F to +302 °F), Air not to exceed +250 °F and Water not to exceed +180 °F;

FC619C

Maximum Operating Pressure: 60 PSI (4 Bar) to 305 PSI (21 Bar);

Operating Temperature Range: -40 °C to +135 °C (-40 °F to +275 °F);

Maximum Operating Pressure is not to exceed one-fourth the minimum burst pressure as specified in the manufacturer's documentation for specific models and sizes of hoses.

Service Restrictions

Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

- i) Flexible hose assemblies are not acceptable in high pressure fuel oil injection systems.
- ii) Flexible hose assemblies are not applicable to hoses intended to be used in fixed fire extinguishing systems.
- iii) Where non-metallic hose piping is to be electrically conductive, the resistance of the pipes and fittings is not to exceed 1 ×10⁵ #/m (3 ×10⁴ #/ft). See also 4-6-3/5.15 and 4-6-3/7.7

Comments

The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

- a) Flexible hose assemblies are to be complete with factory assembled end fittings or factory supplied ends installed in accordance with manufacturer's procedures in accordance with Marine Vessel Rules 4-6-2/5.7.3(b).
- b) Flexible Hose assemblies are to be installed only where flexibility is required and are not to be subject to torsional deflection under normal conditions in accordance with Marine Vessel Rules 4-6-2/5.7.4.
- c) Flexible hose assemblies are to be permanently marked by the manufacturer with the following details: Hose manufacturer's name or trademark, date of manufacture (month/year), designation type reference, nominal diameter, pressure and temperature rating in accordance with Marine Vessel Rules 4-6-2/5.7.6.
- d) Please note that only Eaton Aeroquip approved steel/stainless steel and brass crimp or reusable fittings are approved for use with subject hoses.
- e) The brass fittings are not to be used on hoses for flammable oils.

Notes, Drawings and Documentation

Drawing No. 1A32FJ32_SHT1, Fitting Assembly, Revision: F,

Drawing No. TR-052089A Engineering Test Report, TR-052089A Physical requirements- ES2313 Supportive information, Revision: June 2023,

Drawing No. DOC00108311_A_Test Report, DOC00108311_A_Test Report, Revision: A,

Drawing No. ES2313_SHT1, Hose and Hose Assemblies Using FC332, EC036, H332 and FBV Hose, Functional and Performance Requirements for, Revision: M,

Drawing No. 1A20FJ20_SHT1, Fitting Assembly, Revision: C,

Drawing No. 21-2170578-PDA_SHT1, 21-2170578-PDA_markup, Revision: 1,

Drawing No. FC619C_SHT1, Aeroquip Hose SAE 100R4 Type, Revision: A,

Drawing No. 1A12FJ12_SHT1, Fitting Assembly, Revision: E,

Drawing No. ES3001_SHT1, Hose and Hose Assemblies Using 2661, FC318, and GH180 Hose, Functional Performance Requirements for, Revision: J,

Drawing No. ES 5526, ES5526 Engineering Standard FC619C, Revision: A,

Drawing No. 1G32FJ32_SHT1, Fitting Assembly, Revision: B,

Drawing No. 1G12FJ12_SHT1, Fitting Assembly, Revision: A,

Drawing No. H039_SHT1, Weatherhead Hose SAE 100R4 Type, Revision: F,

Drawing No. 2661_SHT1, Aeroquip Hose SAE 100R4 Type, Revision: AN,

Drawing No. FC619C Fact sheet, AM549960561334en-000101_FC619C Fact Sheet, Revision: 2025.11,

Drawing No. 1G20FJ20_SHT1, Fitting Assembly, Revision: B,

Drawing List from Previous Approval 21-2170578-PDA

Drawing No. 1AA12FJ12_SHT1, Fitting Assembly, High pressure SAE 37 degree female swivel, Revision: L

Drawing No. 2661_SHT1, Aeroquip Hose, Wire inserted suction hose (SAE 100R4/AQP), Revision: AM

Drawing No. 4741-B_SHT1, Fitting Assembly, SAE 37 degree swivel, socketless type, Revision: AM

Drawing No. ABS PDA Application, ABS PDA Application, Revision: -

Drawing No. DoC_Sht1, Declaration of conformity, Revision: A

Drawing No. ES 2313, Hose and Hose Assemblies Using FC332, EC036, H332 & FBV Hose, Functional and Performance Requirements for, Revision: K

Drawing No. ES 3001, Hose and Global Crimp Hose Assemblies Using 2661, H039H, FC318 and GH180 Hose, Functional and Performance Requirements for, Revision: G

Drawing No. ES4060, Hose and Hose Assemblies Using FC619 & H039 Hose, Functional and Performance Requirements for, Revision: F

Drawing No. FC619_SHT1, Eaton Hose, 2 Fabric Ply, Wire Inserted (SAE 100R4), Revision: G

Drawing No. FC8153-S_SHT1, Nipple Assembly, Split Flange Type (Code 61) 2661 Hose, Revision: F

Drawing No. H039_SHT1, Weatherhead Hose, 2 fabric ply, wire inserted (SAE 100R4), Revision: D

Drawing No. TR-044994A, SUMMARY REPORT OF COLD FLEX AND VACUUM TESTING USING EATON AEROQUIP FC619 AND EATON WEATHERHEAD H039 SAE 100R4 TYPE HOSE ASSEMBLIES TO ES4060 TABLE 1 MINIMUM BEND RADIUS, Revision: A, Dated 31 August 2021

Term of Validity

This Product Design Assessment (PDA) Certificate remains valid until 14/Jul/2031 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

ABS Rules

2026 Rules for Conditions of Classification, Part 1A-4/7.7, 1A-1-A3, 1A-1-A4, which covers the following:

2026 Rules for Building and Classing Marine Vessel: 4-6-2/5.7.1, 5.7.2, 5.7.3 (a, b, c, d and e), 4-6-2/5.7.4, 5.7.5, and 5.7.6

2026 Rules for Conditions of Classification, Offshore Units Part 1B-1-4/9.7, 1B-1-A2, 1B-1-A3, which covers the following:

2026 Rules for Building and Classing Offshore Units: 4-2-1/11.29

International Standards

NA

EU-MED Standards

NA

National Standards

SAE J517 202007, Type 100R4, (Revised 17 July 2020),

SAE J1942-1_202512 Revised 2025-12-26

Government Standards

NA

Other Standards

NA



A handwritten signature in dark ink, appearing to read "James J. Wilk".

Corporate ABS Programs

American Bureau of Shipping
Print Date and Time: 20-Jul-2026 6:47

ABS has used due diligence in the preparation of this certificate, and it represents the information on the product in the ABS Records as of the date and time the certificate is printed.

If the Rules and/or standards used in the PDA evaluation are revised or if there is a design modification (whichever occurs first), a PDA revalidation may be necessary.

The continued validity of the MA is dependent on completion of satisfactory audits as required by the ABS Rules. The validity of both PDA and MA entitles the product to receive a **Confirmation of Product Type Approval**.

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or prior to the effective date of the ABS Rules and standards applied at the time of PDA issuance. ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. The manufacturer is responsible to maintain compliance with all specifications applicable to the product design assessment. Unless specifically indicated in the description of the product, certification under type approval does not waive requirements for witnessed inspection or additional survey for product use on a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.