



## Confirmation of Product Type Approval

**Company Name:** PARKER HANNIFIN CORP.

**Address:** 101 PARKER LANE ALLIANCE NE 69301 United States

**Product:** Non-metallic Flexible Hydraulic Hose

**Model(s):** 221FR, 451TC, 471TC, 471ST, 772TC, 782TC, 792TC

**Endorsements:**

| <b>Certificate Type</b>         | <b>Certificate Number</b> | <b>Issue Date</b> | <b>Expiry Date</b> |
|---------------------------------|---------------------------|-------------------|--------------------|
| Product Design Assessment (PDA) | 21-2132045-PDA-DUP        | 16-JUN-2021       | 15-JUN-2026        |
| Manufacturing Assessment (MA)   | 23-5592042                | 19-APR-2023       | 18-APR-2028        |
| Product Quality Assurance (PQA) | NA                        | NA                | NA                 |

### **Tier**

3 - Type Approved, unit certification not required

### **Intended Service**

Marine & Offshore Application - Fuel Oil, Lubricating Oil, Hydraulic Fluid, Water, and Air Systems.

### **Description**

Inner Tube of Oil Resistant Nitrile or Synthetic Rubber with High Tensile Steel Wire Reinforcement.

See attached "Hydraulic Hose Manufacturer Specification" for construction details.

### **Ratings**

Model 221FR Size: -5 to -16; MAWP: 500 psi; Burst Pressure: 2000 psi; End Fitting: Parkrimp 26 Sries;

Model 451TC Size: -4 to -20; MAWP: 3000 psi; Burst Pressure: 12000 psi; End Fitting: Parkrimp 43 Series;

Model 471TC/ST Size: -4 (MAWP: 5800 psi; Burst Pressure: 23200 psi), -6 (MAWP: 5000 psi; Burst Pressure: 20000 psi), -8 (MAWP: 4250 psi; Burst Pressure: 17000 psi), -10 (MAWP: 3625 psi; Burst Pressure: 14500 psi), -12 (MAWP: 3125 psi; Burst Pressure: 12500 psi), and -16 (MAWP: 2500 psi; Burst Pressure: 10000 psi); End Fitting: Parker Hannifin 43 Series;

Model 772TC Size: -6 to -16 (MAWP: 4000 psi; Burst Pressure: 16000), -20 (MAWP: 3000 psi; Burst Pressure: 12000 psi), -24 to -32 (MAWP: 2500 psi; Burst Pressure: 10000 psi); End Fitting: Parkrimp 71 Series;

Model 782TC Size: -12 to -24; MAWP: 5000 psi; Burst Pressure: 20000 psi; End Fitting: Parkrimp 78

Series;

Model 792TC Size: -12 to -20; MAWP: 6000 psi; Burst Pressure: 24000 psi; End Fitting: Parkrimp 79 Series;

Applications and Temperature Range:

Model 221FR: Gasoline, ethanol blends, diesel fuels, petroleum-base hydraulic fluids and lubricating oils, -4°F to +212°F (-20°C to +100°C); Water, water/oil emulsion, and water/glycol hydraulic fluids, +185°F (+85°C).

Models 451TC, 471 TC/ST: Petroleum-base hydraulic fluids and lubricating oils, -40°F to +212°F (-40°C to +100°C); Water, water/oil emulsion, and water/glycol hydraulic fluids, +185°F (+85°C); Air -40°F to +158°F (-40°C to +70°C).

Models 772TC, 782TC, 792TC: Petroleum-base hydraulic fluids and lubricating oils, -40°F to +257°F (-40°C to +125°C); Water, water/oil emulsion, and water/glycol hydraulic fluids, +185°F (+85°C); Air, 158°F (+70°C).

Additional Hose Information as per attached "Hydraulic Hose Manufacturer Specification".

### 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 applicable in high pressure fuel oil injection systems.
- ii) The types of end connections utilized (e.g. threaded, flanged, etc.) are to comply with the applicable requirements and limitations of the Marine Vessel Rules 4-6-2/5.7.3 b).
- iii) Flexible hoses are not applicable to hoses intended to be used in fixed fire extinguishing systems.
- iv) All Flexible Hose assemblies are to be burst tested to demonstrate they are able to withstand a pressure not less than four times its design pressure in accordance with Marine Vessel Rules 4-6-2/5.7.5 b).
- v) Fittings made of Aluminum are Not to be used on the Hose Assembly.

### Comments

- i) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
- ii) The Flexible Hoses are to be complete with factory assembled end fittings or factory supplied ends made of steel only and installed in accordance with manufacturer's procedures in accordance with Marine Vessel Rules 4-6-2/5.7.3 b)
- iii) Hose assemblies are to be installed only when flexibility is required and are not to be subject to torsional deflection under normal conditions. In addition, the length of the hose is to be limited to that required for flexibility only as indicated in Marine Vessel Rules 4-6-2/5.7.4.
- iv) Flexible Hoses are to be permanently marked by the manufacturer with the following details: Hose manufacturer's name or trademark, date of manufacturer (month/year), designation type reference, nominal diameter, pressure and temperature rating in accordance with Marine Vessel Rules 4-6-2/5.7.6.

**Notes, Drawings and Documentation**

Doc. No. GHS-221FR, Rev. H, Hose Specification - Parker Hose Style 221FR

Burst and Impulse Test Summary, Model 471ST - STR# - W18836 (221FR-5), W22890 (221FR-6), W18838 (221FR-8), W21819 (221FR-10), W18840 (221FR-12), W18841 (221FR-16)

Report No. W19761 221FR-8 (DNV Witness Test), Witness Test Report

Report No. W21305 221FR-6 (DNV Witness Test), Witness Test Report

Report No. W21306 221FR-10 (DNV Witness Test), Witness Test Report

Doc. No. GHS-451TC, Rev. M, Hose Specification - Parker Hose Style 451TC

Burst and Impulse Test Summary, Model 451TC - STR# - W21394 (451TC-4), W22273 (451TC-6), W21277 (451TC-8), W22535 (451TC-10), W21133 (451TC-12), W21123 (451TC-16), W23063 (451TC-20)

Doc. No. GHS-471TC, Rev. F, Hose Specification - Parker Hose Style 471TC

Burst and Impulse Test Summary, Model 471TC/ST - STR# - W21635 & W21982 (471TC/ST-4), W22614 & W20520 (471TC/ST-6), W20523 & W21896 (471TC/ST-8), W21466 & W21968 (471TC/ST-10), W20229 & W21443 (471TC/ST-12), W20430 & W20499 (471TC/ST-16)

Report No. W19765 471TC-10 (DNV Witness Test), Witness Test Report

Report No. W21321 471TC-6 (DNV Witness Test), Witness Test Report

Report No. W21322 471TC-16 (DNV Witness Test), Witness Test Report

Report No. W21416 471ST-4 (DNV Witness Test), Witness Test Report

Report No. W21417 471ST-6 (DNV Witness Test), Witness Test Report

Report No. W21418 471ST-8 (DNV Witness Test), Witness Test Report

Report No. W21419 471ST-10 (DNV Witness Test), Witness Test Report

Report No. W21420 471ST-12 (DNV Witness Test), Witness Test Report

Report No. W21421 471ST-16 (DNV Witness Test), Witness Test Report

Doc. No. GHS-772TC, Rev. B, Hose Specification - Parker Hose Style 772TC

Burst and Impulse Test Summary, Model 772TC - STR# - W21608 (772TC-6), W21307 (772TC-6), W21639 (772TC-8), W21475 (772TC-12), W21308 (772TC-12), W19041 (772TC-16), W21309 (772TC-32)

Report No. W21307 772TC-6 (DNV Witness Test), Witness Test Report

Report No. W21308 772TC-12 (DNV Witness Test), Witness Test Report

Report No. W21309 772TC-32 (DNV Witness Test), Witness Test Report

Doc. No. GHS-782TC, Rev. A, Hose Specification - Parker Hose Style 782TC

Burst and Impulse Test Summary, Model 782TC - STR# - W16395 (782TC-12), W19624 (782TC-16), W21310 (782TC-16), W18260 (782TC-20), W17695 (782TC-24)

Report No. W21310 782TC-16 (DNV Witness Test), Witness Test Report

Doc. No. GHS-792TC, Rev. A, Hose Specification - Parker Hose Style 792TC

Burst and Impulse Test Summary, Model 792TC - STR# - W18436 (782TC-12), W21317 (782TC-16),

Report No. W21317 792TC-16 (DNV Witness Test), Witness Test Report

Doc. No. GHS-471ST, Rev. E, Hose Specification - Parker Hose Style 471ST

Doc. No. Catalog 4400 US, Sheet A-32, Hydraulic Hose 471TC/ST

Burst and Impulse Test Summary, Model 471ST - STR# - W17608 (471ST-4), W15599 (471ST-6), W15601 (471ST-8), W13312 (471ST-10), W20188 (471ST-12), and W15786 (471ST-16)

Report No. 471ST-16 (43) fire test, Fire Test

Report No. 471ST-4 (43) fire test, Fire Test

Report No. 471ST-8 (43) fire test, Fire Test

387TC, 487TC, 471ST, 722TC and 722ST Material Test Data

Report No. W13312 page2, Lab Test Request Results

Report No. W15599 page2, Lab Test Request Results

Report No. W15601 page2, Lab Test Request Results

Report No. W15786 page2, Lab Test Request Results

Report No. W17608 page2, Lab Test Request Results

Report No. W20188 page1, Lab Test Request Results

### **Term of Validity**

This Product Design Assessment (PDA) Certificate remains valid until 15/Jun/2026 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**

The Rules for Conditions of Classification, 2021 Marine Vessel Rules 1-1-4/7.7, 1-1-A3,1-1-A4, which covers the following:

2021 Rules for Building and Classing Marine Vessels Rules: 4-6-2/5.7.

The Rules for Conditions of Classification, Offshore Units and Structures, 2021 Mobile Offshore Units 1-1-4/9.7, 1-1-A2, 1-1-A3, which covers the following:

2021 Rules for Building and Classing Mobile Offshore Units: 4-2-1/11.29;

2021 Rules for Facilities on Offshore Installations: A2/Table 1 - Marine Support only;

2021 Guide for the Classification of Drilling Systems: 4-2/7 - for the ABS MOU Rules application only, Appendix 7-1/27.

### **International Standards**

ISO 3862:2020 Rubber hoses and hose assemblies - Rubber-covered spiral-wire-reinforced hydraulic types for oil-based or water-based fluids - Specification - Type R12, R15;

DIC EN 856:2020 Rubber hoses and hose assemblies - Rubber-covered spiral-wire-reinforced hydraulic type - Specification - Type R12, R13;

DIN EN 857:2016 Rubber hoses and hose assemblies - wire braid reinforced compact type for hydraulic

applications - Specification Type 2SC;

ISO 11237:2017 Rubber hoses and hose assemblies - Compact wire-braid-reinforced hydraulic types for oil-based or water-based fluids - Specification

ISO 6945:1991 Rubber hoses - Determination of abrasion resistance of the outer cover

ISO 7233:2021 Rubber and plastics hoses and hose assemblies - Determination of resistance to vacuum

ISO 7840:2021 Small craft - Fire-resistant fuel hoses

ISO 6605:2017 Hydraulic fluid power - Hoses and hose assemblies - Test methods

**EU-MED Standards**

NA

**National Standards**

SAE J1527:2011 Marine Fuel Hoses - Type A Class I;

SAE J1942:2019 Hose and Hose Assemblies for Marine Applications

SAE J343:2017 Test and Test Procedures for SAE 100R Series Hydraulic Hose and Hose Assemblies

SAE J517:2020 Hydraulic Hose

**Government Standards**

NA

**Other Standards**

NA



A handwritten signature in blue ink, appearing to read 'Joseph W. ...', is written over the printed name and title.

Corporate ABS Programs  
American Bureau of Shipping  
Print Date and Time: 04-Oct-2023 7:51

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.