



CERTIFICATE NUMBER	20-HS1949018-PDA
EFFECTIVE DATE	10-Feb-2020
EXPIRY DATE	09-Feb-2025
ABS TECHNICAL OFFICE	Houston ESD - Piping

CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

PARKER HANNIFIN CORP.

located at

**HOSE PRODUCTS DIV., 30240 LAKELAND BOULEVARD,
WICKLIFFE, OH, United States, 44092**

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product Non-metallic Flexible Hydraulic Hose

Model 487TC and 487ST (Sizes -4, -6, -8, -10, -12, -16, -20, -24 and -32)

This Product Design Assessment (PDA) Certificate remains valid until 09/Feb/2025 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.

American Bureau Of Shipping
Yongjin Lee,Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

PARKER HANNIFIN CORP.
HOSE PRODUCTS DIV.
30240 LAKELAND BOULEVARD
WICKLIFFE OH
United States 44092
Telephone: 440-943-5700
Fax: 440-943-3129
Email: ncerutti@parker.com
Web:

Tier: 2 - PDA Issued

Product: Non-metallic Flexible Hydraulic Hose
Model: 487TC and 487ST (Sizes -4, -6, -8, -10, -12, -16, -20, -24 and -32)
Intended Service:
Marine and Offshore Applications - Petroleum based Hydraulic Fluids and Lubrication Oils.

Description:
Non-Metallic Flexible Hydraulic Hose.

Rating:
487TC Abrasion Resistant Rubber Covered and 487ST High Abrasion Resistant Rubber Covered.

Size: -4 to -32; MAWP: 4000 psi;
Burst Pressure: 16000 psi;

End Fitting:
Sizes -4 to -16 Parker Hannifin 43 series
Sizes -4 to -12 Parker Hannifin 48 series
Size -20 to -32 Parker Hannifin 77 series

Applications and Temperature Range:
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, up to +185°F (+85°C);
Polyol ester fluids, up to +150°F (+65°C);
Air, up to +158°F (+70°C).

Service Restriction:

- i) Unit Certification is required for this product.
- ii) Flexible Hose assemblies are not applicable in high pressure fuel oil injection systems.
- iii) The types of end connections utilized (e.g. threaded, flanged, etc.) are to comply with the applicable requirements and limitations of the Marine Vessels Rules 4-6-2/5.7.3 b)
- iv) Flexible hoses are not applicable to hoses intended to be used in fixed fire extinguishing systems.
- v) 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 Vessels Rules 4-6-2/5.7.5 b)
- vi) 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 Vessels 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 Vessels 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 Vessels Rules 4-6-2/5.7.6.

Notes/Drawing/Documentation:

Report Test No. T-772, Burst and Impulse Test Results for 487TC/ST Hoses, 2020-01-07, Parker Hannifin HPD
Drawing No. GHS-487TC, Rev B, Hydraulic Hose Specification
Drawing No. GHS-487ST, Rev B, Hydraulic Hose Specification
Drawing No. 387 Hydraulic Hose Product Catalog

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Drawing No. HS-D02, Hose to Fitting Compatibility Matrix (Page 5 of 22)

The following reference drawings and test reports refer to the previous PDA no. 15-HS1281532-2-PDA.
Drawing No. 487TC Catalog Page, Catalog Page
Drawing No. GHS-487TC, Spec Sheet

LAPI LABORATORIO PREVENZIONE INCENDI, ITALY, Fire Test, 07/11/2014
Test Report No. 487TC-12(43) Fire Test
Test Report No. 487TC-12(48) Fire Test
Test Report No. 487TC-16(43) Fire Test
Test Report No. 487TC-20(77) Fire Test
Test Report No. 487TC-32(77) Fire Test
Test Report No. 487TC-4(43) Fire Test
Test Report No. 487TC-4(48) Fire Test
Test Report No. 487TC-8(43) Fire Test
Test Report No. 487TC-8(48) Fire Test

PARKER HANNIFIN HPD, ISO 18752 Assemblies Pressure Test, 06/14/2013
Test Report No. W17973, Lab Test Request Results
Test Report No. W19131, Lab Test Request Results
Test Report No. W19132, Lab Test Request Results
Test Report No. W19232, Lab Test Request Results
Test Report No. W19574, Lab Test Request Results
Test Report No. W19641, Lab Test Request Results
Test Report No. W20250, Lab Test Request Results
Test Report No. W20251, Lab Test Request Results
Test Report No. W20252, Lab Test Request Results
Test Report No. W20253, Lab Test Request Results
Test Report No. W20254, Lab Test Request Results

PARKER HANNIFIN HPD, Burst Test, 06/26/2014
Report No. W20981, 487TC-4 DNV Witness Test Report
Report No. W20982, 487TC-4 DNV Witness Test Report
Report No. W20983, 487TC-6 DNV Witness Test Report
Report No. W20984, 487TC-6 DNV Witness Test Report
Report No. W20985, 487TC-8 DNV Witness Test Report
Report No. W20986, 487TC-8 DNV Witness Test Report
Report No. W20987, 487TC-10 DNV Witness Test Report
Report No. W20988, 487TC-10 DNV Witness Test Report
Report No. W20989, 487TC-12 DNV Witness Test Report
Report No. W20990, 487TC-12 DNV Witness Test Report
Report No. W20991, 487TC-20 DNV Witness Test Report
Report No. W20992, 487TC-24 DNV Witness Test Report
Report No. W20993, 487TC-32 DNV Witness Test Report
Report No. W21172, 487TC-16 DNV Witness Test Report
Report No. W22057_487TC-24_1, Lab Test Request, Rev A
Report No. W22058_487TC-32_1, Lab Test Request, Rev A

LAPI LABORATORIO PREVENZIONE INCENDI, ITALY, Fire Test, 07/14/2015
Test Report 823.0IS0110/15: ISO 15540 Fire Test Cert 487ST-4 (43 series)
Test Report 824.0IS0110/15: ISO 15540 Fire Test Cert 487ST-4 (48 series)
Test Report 825.0IS0110/15: ISO 15540 Fire Test Cert 487ST-16 (43 series)

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Test Report 826.0IS0110/15: ISO 15540 Fire Test Cert 487ST-24 (77 series)

PARKER HANNIFIN HPD, General Tests - 2/10/2015 - 3/27/2015

Test Summary Report T-517A 487ST-4 (43)
Test Summary Report T-517B 487ST-4 (48)
Test Summary Report T-518A 487ST-6 (43)
Test Summary Report T-518B 487ST-6 (48)
Test Summary Report T-519A 487ST-8 (43)
Test Summary Report T-519B 487ST-8 (48)
Test Summary Report T-520A 487ST-10 (43)
Test Summary Report T-520B 487ST-10 (48)
Test Summary Report T-521A 487ST-12 (43)
Test Summary Report T-521B 487ST-12 (48)
Test Summary Report T-522 487ST-16 (43)
Test Summary Report T-523 487ST-20 (77)
Test Summary Report T-524 487ST-24 (77)
Test Summary Report T-525 487ST-32 (77)

PARKER HANNIFIN HPD, Burst Test, 08/26/2015

Test Report No. W22400, Rev. A, Witness Test 487ST-4 43 series
Test Report No. W22401, Rev. A, Witness Test 487ST-4 48 series
Test Report No. W22404, Rev. A, Witness Test 487ST-8 43 series
Test Report No. W22405, Rev. A, Witness Test 487ST-8 48 series
Test Report No. W22406, Rev. A, Witness Test 487ST-10 43 series
Test Report No. W22407, Rev. A, Witness Test 487ST-10 48 series
Test Report No. W22410, Rev. A, Witness Test 487ST-16 43 series
Test Report No. W22411, Rev. A, Witness Test 487ST-20 77 series
Test Report No. W22412, Rev. A, Witness Test 487ST-24 77 series

Terms of Validity:

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STANDARDS

ABS Rules:

2020 ABS Rules for Building and Classing Marine Vessels 1-1-4/7.7, 1-1-A3, 1-1-A4, 4-6-2/5.7
2020 ABS Rules for Building and Classing Mobile Offshore Units 1-1-4/9.7, 1-1-A2, 1-1-A3, 4-2-1/11.29
2020 ABS Rules for Facilities on Offshore Installations 3-4/5.11.5, A2/Table 1
2019 ABS Guide for the Classification of Drilling Systems 4-2/7

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National:

NA

International:

ISO 1402:2009 Rubber and plastics hoses and hose assemblies - Hydrostatic testing
ISO 6605:2017 Hydraulic fluid power - Hoses and hose assemblies - Test methods
ISO 6803:2017 Rubber or plastics hoses and hose assemblies - Hydraulic-pressure impulse test without flexing
ISO 6945:1991 Rubber hoses - Determination of abrasion resistance of the outer cover
ISO 7233:2006 Rubber and plastics hoses and hose assemblies - Determination of resistance to vacuum
ISO 7326:2006 Rubber and plastics hoses - Assessment of ozone resistance under static conditions
ISO 15540:1999 Ships and marine technology - Fire resistance of hose assemblies - Test methods
ISO 18752:2014 Rubber hoses and hose assemblies - Wire- or textile-reinforced single-pressure types for hydraulic applications - Specification

Government:

NA

EUMED:

NA

OTHERS:

NA