



CERTIFICATE NUMBER      DATE  
16-HS1569287-1-PDA      28 Jul 2017

ABS TECHNICAL OFFICE  
Houston ESD - Offshore  
Equipment

# CERTIFICATE OF DESIGN ASSESSMENT

This is to certify that a representative of this Bureau did, at the request of  
**PARKER HANNIFIN CO.**

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: **Tube and Tubebundle**  
Model: **HCB and CHCB Tube Bundles, Multicore**

This Product Design Assessment (PDA) Certificate 16-HS1569287-1-PDA, dated 28/Jul/2017 remains valid until 07/Nov/2021 or until the Rules or specifications used in the assessment are revised (whichever occurs first).

This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product.

Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA.

Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

AMERICAN BUREAU OF SHIPPING

  
\_\_\_\_\_  
Ting Jiang  
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 the terms and conditions as contained in ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010).

**PARKER HANNIFIN CO.**  
1300 NORTH FREEDOM STREET  
RAVENNA OH  
United States 44266  
Telephone: 330-296-2871  
Fax: 330-296-8433  
Email: tlininger@parker.com  
Web: www.parker.com/parflex

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**Tier: 5 - Unit Certification Required**

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**Product:** Tube and Tubebundle  
**Model:** HCB and CHCB Tube Bundles, Multicore  
**Intended Service:**  
Marine application: Hydraulic and Pneumatic control lines

**Description:**

Multicore Metal Tube Bundles, made separately of the following two materials, with Flame Resistant Polyvinyl Chloride outer sheath, black for HCB family and colored for CHCB family, which complies with IEC 60332-1-2 & IEC 60332-3-22 Category A

- Seamless or Welded Type 316/316L Stainless Steel ASTM A269
- Seamless Copper Alloy ASTM B75 C12200 Soft Annealed

**Rating:**

0.25 inch to 0.5 inch or 6 mm to 12 mm tube OD.

Bundles with 1 to 12 tubes (Nominal O.D. and Minimum Bend Radius of the bundle see drawings)

Working Pressure:

- 662 psi to 2932 psi (45.64 bar to 202.15 bar) for copper tubes
- 1849 psi to 8737 psi (127.48 bar to 602.39 bar) for stainless steel tubes

Working temperature: -20°F to 221°F (-28.89°C to 105.00°C)

Details see attached table of ratings

**Service Restriction:**

Unit Certification is required for this product.

**Comments:**

1. Copper alloy tubes are to be Tension and Expansion tested in accordance with Steel Vessel Rules 2-3-18/11&13 at the mills to the satisfaction of the attending ABS Surveyor as per 2-3-18/5 of the Steel Vessel Rules.
2. All tubes are to be hydrostatically tested in the presence of an ABS Surveyor at 1.5 times design pressure as per 4-6-2/7.3.1 of the Steel Vessel Rules.
3. Each particular application, pressure / temperature rating and installation of the tubes and tube bundles is to be specifically approved in conjunction with the relevant systems.
4. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
5. The purchaser of tube bundles is to ensure that fittings connected to the tubes meet an applicable recognized stand, or be design-approved by ABS for installation on ABS Classed Vessels, as per 4-6-1/Table 2 of the Steel Vessel Rules.

**Notes/Drawing/Documentation:**

Drawing No. 1HCB-20835-VN-22431, Setup Sheet (Printed 27 September 2016, Reference for Future Production Use), Revision: -, Pages: 1

Drawing No. 22431, Production Reports (Issued 19 July 2016, Reference for Future Production Use), Revision: -, Pages: 1

Drawing No. 60332-1-2 Intertek Report (23 September 2016), Revision: -, Pages: 1

Drawing No. 60332-1-2 Test Data (22 September 2016), Revision: -, Pages: 1

Drawing No. 60332-3-22 Intertek Report (27 September 2016), Revision: -, Pages: 1

Drawing No. 60332-3-22 Test Data (27 September 2016), Revision: -, Pages: 1

Drawing No. Design Drawing.dwg, HCB Product Family dwg, Revision: D, Pages: 16

Drawing No. Design Drawing.dwg, CHCB Product Family, Revision: A, Pages: 16

Drawing No. Design Pressure Calculations 12200 Copper, Stainless Steel Tubes Calc Excel File, Revision: 2, Pages: 1

Drawing No. Design Pressure Calculations 316-316L SS, Copper Tubes Calc Excel File, Revision: 2, Pages: 1

Drawing No. Design Pressure Calculations for 316, Stainless Steel Tubes Calc Word File, Revision: 2, Pages: 1

Drawing No. Design Pressure Calculations for Copper, Copper Tubes Calc Word File, Revision: 2, Pages: 1

**PARKER HANNIFIN CO.**

1300 NORTH FREEDOM STREET

RAVENNA OH

United States 44266

Telephone: 330-296-2871

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Email: tlininger@parker.com

Web: www.parker.com/parflex

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Drawing No. HS-1069, Pressure Test Specification (Revised 7/12/17), Revision: A, Pages: 2

Drawing No. MS-012, MATERIAL STANDARDS FOR STAINLESS STEEL TUBING, Revision: C, Pages: 1

Drawing No. MS-013, MATERIAL SPECIFICATION FOR COPPER AND COPPER ALLOY, Revision: C, Pages: 1

Drawing No. MS-038, Parflex Low Temperature 105C FR OVC Jacket Material Specification, Revision: -, Pages: 1

Drawing No. CHCB Weight per Ft Calculation, Revision: -, Pages:1

**Terms of Validity:**

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**STANDARDS**

**ABS Rules:**

ABS Rules for Conditions and Classification, Part I - 2017 Rules for Building and Classing Steel Vessels 1-1-4/7.7, 1-1-A3, 1-1-A4;

2017 ABS Rules for Building and Classing Steel Vessels Part 2: 2-3-12, 2-3-18

2017 ABS Rules for Building and Classing Steel Vessels Part 4: 4-6-1/Table 2, 4-6-1/3.11, 4-6-1/7.1, 4-6-1/7.5.1, 4-6-2/5.15, 4-6-2/5.17, 4-6-2/7.3.1, 4-6-3/5.13.2;

**National:**

ASTM A269 - 2015a

ASTM B75 - 2011

ASME B31.1 - 2016

**International:**

IEC 60332-1-2, 1st Edition (2004-07)

IEC 60332-3-22, Edition 1.1 (2009-02)

**Government:**

NA

**EUMED:**

NA

**OTHERS:**

IACS UI SC10, Rev 2 (May 2001)