



CERTIFICATE NUMBER
15-HS1445596-PDA

DATE
17 Nov 2015

ABS TECHNICAL OFFICE
Houston SED Machinery - Piping
& Electrical Sys.

CERTIFICATE OF DESIGN ASSESSMENT

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

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 Fittings

Model: Tube Fitting Components (See Description)

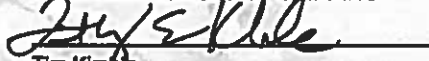
This Product Design Assessment (PDA) Certificate 15-HS1445596-PDA, dated 17/Nov/2015 remains valid until 16/Nov/2020 or until the Rules or specifications used in the assessment are revised (whichever occurs first).

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


Tim Kimble
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-A.3.9.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

SWAGELOK COMPANY

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Web: www.swagelok.com

Tier: 3 - Type Approved, unit certification not required

Product: Tube Fittings

Model: Tube Fitting Components (See Description)

Intended Service:

Marine & Offshore Applications - Tubing / Piping Systems

Description:

Tees, Straight, 45° & 90° Elbows Configuration Unions, Port , Connections, Reducers, Caps & Plugs, Adapters, Crosses, etc.

For specific details on Gaugeable Tube Fittings and Adapter Fittings refer to Swagelok Catalog MS-01-140.

Rating:

For Ratings, Sizes, Configurations, Material , etc. refer to the latest Swagelok Catalog MS-01-140.

Stainless Steel Size 1/16" to 2" (2-50mm)

Carbon Steel Size 1/16" to 2" (2-50mm)

Alloy 400 Size 1/8" to 1" (3-25mm)

Brass Size 1/8" to 1-1/8" (3-28mm)

Service Restriction:

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.

Brass fittings are not to be used in oil systems. Brass fittings are not to be used in systems where pressure pulsation other than water hammer is expected (e.g. systems using positive displacement pumps). Fittings with o-rings are not to be used in systems with flammable fluids. Back Ferrules (Dwg. Nos.: SS-1614-1A and SS-1614-1) for the 1 inch and 25 mm, the design pressure is not to exceed 3,750 psi.

Comments:

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

For your ready reference find here the link to the Swagelok Catalog that defines the Pressure Ratings, <http://www.swagelok.com> then search for ms-01-140.pdf - 2517k ABS has no control on the content and any questions are to be defered to ABS for resolution.

Notes/Drawing/Documentation:

This Product Design Assessment (PDA) is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

01-140R12_TubeFitting (Gaugeable Tube Fittings and Adapter Fittings), 02-10R4_SpecialAlloys (Special Alloy, Fluid System Components), 02-200R4_FlangeAdapters, Carbon Steel Tube Fittings Burst Test, Brass Tube Fittings Burst Test, Monel Tube Fittings Burst Test, Impulse Test Summary for SS Swagelok Tube Fittings, NK Type Approval Testing of Alloy 400 Swagelok Tube Fittings, NK Type Approval Testing of Brass Swagelok Tube Fittings, NK Type Approval Testing of Carbon Steel Swagelok Tube Fittings, Nitrogen Gas Seal Test with Repeated Reassembly of SS Swagelok Tube Fittings, Tensile Pull Test of SS Swagelok Tube Fittings with SS Tubing, Hydrostatic Pressure Test of 316 SS Swagelok Tube Fittings with SS Heavy-Wall Tubing, Rotary Flexure Test of 316 SS Swagelok Tube Fittings with SS Tubing, NK Brass Rotary Flex Test, Rotary Flex and Pressure Impulse Test of Alloy 400 Swagelok Tube Fittings with Alloy 400 Tubing, Rotary Flex and Pressure Impulse Test of Carbon Steel Swagelok Tube Fittings with Carbon Steel, Rotary Flex and Pressure Impulse Test of 316 SS Swagelok Tube Fittings with SS Tubing, Rotary Flexure Test 316 SS Swagelok Tube Fittings with SS Tubing, Rotary Flex and Pressure Impulse Test of 316 SS Swagelok Tube Fittings with SS Tubing, Hydrostatic Pressure Test of 316 SS Swagelok Tube Fittings with SS Heavy-Wall Tubing, Positive Pressure Helium Leak Test and Nitrogen Gas Seal Test with Repeated Reassembly of 316 SS Swagelok Tube Fittings with Heavy-Wall SS Tubing, Tensile Pull Test of 316 SS Swagelok Tube Fittings with SS Tubing, Hydrostatic Pressure Test of SS Swagelok Tube Fittings on Extra Heavy Wall Tubing,

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Tier: 3 - Type Approved, unit certification not required

Fire (Burn) Test with Water Quench (Reference API 607) of SS Swagelok Tube Fittings, Nitrogen Gas Seal Test with Repeated Reassembly of 316 SS Swagelok Tube Fittings with Thin-Wall Tubing, Nitrogen Gas Test of Swagelok Tube Fittings with Thin-Wall Tubing, Fire Test with Water Quench (Reference API 607) of SS Swagelok Tube Fittings, Hydrostatic Pressure Test of Swagelok Tube Fittings, Summary of Vibration Test Performance Data Using a Shaker Table for 316 SS Swagelok Tube Fittings, LAB TEST METHOD TENSILE PULL, LAB TEST FITTING REMAKE PROCEDURE, STANDARD TEST METHOD FOR HELIUM LEAK TESTING, LAB TEST METHOD FOR VIBRATION FATIGUE TEST, HYDRAULIC PRESSURE TEST PROCEDURE, LAB TEST METHOD PROOF AND BURST HYDRAULIC FOR TUBE FITTING REASSEMBLY, Southwest Labs Qualification Tests of Swagelok Mechanically Attached Fittings Tested in accordance with ASTM F 1387-93 Standard Specification.

Terms of Validity:

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STANDARDS

ABS Rules:

Rules for Conditions of Classification, Part 1 2015 Steel Vessels Rules 1-1-4/7.7, 1-1-A3, 1-1-A4, which covers the following:

Steel Vessels Rules 1-1-4/7.7, 4-6-1/7.5.2 Table 1 & 2, 4-6-2/5.9;

2015 ABS Rules for Conditions of Classification, Part 1 – 2015 Offshore Units and Structures 1-1-4/9.7, 1-1-A2, 1-1-A3, which covers the following:

Mobile Offshore Drilling Units 4-2-2/1.3, 5.9, 11.1, 17. 4-2-4/1.3, 11.1, 17;

2015 Steel Vessels Under 90 Meters Rules, 4-1-1/3.3 & 4-7-1/5.39;

2015 Offshore Support Vessels Rules, 4-1-1/3.3, 4-6-1/7.1.2, 4-6-2/5.9;

National:

ASME B31.1 (2014), SAE J1926/3 (2010), ASTM F 1387 (2012)

International:

NA

Government:

NA

EUMED:

NA

OTHERS:

Swagelok Catalog MS-01-140 (10 March 2010).