



CERTIFICATE NUMBER  
14-HS1191665-3-PDA

DATE  
02 Apr 2015

ABS TECHNICAL OFFICE  
Houston SED Machinery -  
Equipment

# CERTIFICATE OF DESIGN ASSESSMENT

This is to certify that a representative of this Bureau did, at the request of **EMERSON PROCESS MANAGEMENT-VALVE AUTOMATION** 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: **Actuator, Pneumatic and Hydraulic for Quarter-Turn Valves**

Model: **G, GC, GH & GHC Series**

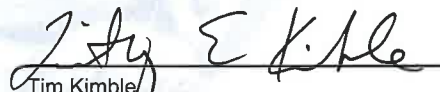
This Product Design Assessment (PDA) Certificate 14-HS1191665-3-PDA, dated 02/Apr/2015 remains valid until 30/Jul/2019 or until the Rules or specifications used in the assessment are revised (whichever occurs first).

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

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).

## EMERSON PROCESS MANAGEMENT-VALVE AUTOMATION

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Web: www.emerson.com

**Tier: 2 - PDA Issued**

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**Product:** Actuator, Pneumatic and Hydraulic for Quarter-Turn Valves

**Model:** G, GC, GH & GHC Series

**Intended Service:**

Marine & Offshore Applications.

**Description:**

- Pneumatic and hydraulic actuators for ball butterfly or plug valves along with louvers, dampers and other 90 degree rotating mechanisms.
- Spring-return (SR) or double-acting (DA) configurations.
- Can operate with either a symmetric or canted yoke.

**Rating:**

Pneumatic Models:

Operating Pressures: 40 psig to 200 psig;

Operating (Ambient) Temperatures: -20 °F to +200 °F;

Degrees of Protection: IP66 and IP67;

Torque Output Range, DA, Start: 7074 lbf-in to 6139796 lbf-in;

Torque Output Range, DA, Min.: 4196 lbf-in to 3240448 lbf-in;

Torque Output Range, DA, End: 6961 lbf-in to 6139796 lbf-in;

Torque Output Range, SR, Start: 4820 lbf-in to 4791173 lbf-in;

Torque Output Range, SR, Min.: 1904 lbf-in to 2224509 lbf-in;

Torque Output Range, SR, End: 2529 lbf-in to 3677393 lbf-in;

Hydraulic Models:

Operating Pressures: 921 psig to 5000 psig;

Operating (Ambient) Temperatures: -20 °F to +200 °F;

Degrees of Protection: IP66 and IP67;

Torque Output Range, DA, Start: 6925 lbf-in to 5773266 lbf-in;

Torque Output Range, DA, Min.: 3655 lbf-in to 3047001 lbf-in;

Torque Output Range, DA, End: 6925 lbf-in to 5773266 lbf-in;

Torque Output Range, SR, Start: 8851 lbf-in to 4776955 lbf-in;

Torque Output Range, SR, Min.: 3500 lbf-in to 2216952 lbf-in;

Torque Output Range, SR, End: 4768 lbf-in to 3663174 lbf-in.

**Service Restriction:**

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

**Comments:**

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

1. Covers standard temperature trim range only.
2. In general, each hydraulic actuator is to be hydrostatically tested to 1.5 times the design pressure by the manufacturer and affixed with a permanent nameplate or marking bearing the manufacturer's name or trademark and the design pressure and temperature. However, hydraulic actuators that do not form part of the vessel's piping systems, machinery or equipment covered in Part 4 of the Steel Vessels Rules or Offshore Support Vessel Rules are

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exempted from these requirements as per Section 4-6-7/3.5.5(f) of the Steel Vessels Rules or Offshore Support Vessel Rules, as applicable; or, hydraulic actuators that do not form part of the vessel's piping systems, machinery or equipment covered in Part 4 of the Steel Vessels Under 90 Meters Rules are exempted from these requirements as per Section 4-4-6/3.11 of the Steel Vessels Under 90 Meters Rules; or, hydraulic actuators that do not form part of the unit's piping systems covered in Part 4, Chapter 2 and Part 6, Chapter 1 of the Mobile Offshore Drilling Units Rules are exempted as per 4-2-2/19.11 of the Mobile Offshore Drilling Units Rules.

#### Notes/Drawing/Documentation:

Drawing No. Correspondence, Email Correspondence, Revision: -, Pages: 1  
Drawing No. Correspondence, Type Approval Application, Revision: -, Pages: 1  
Drawing No. DOC, Product Brochure, Revision: -, Pages: 1  
Drawing No. Design File #62-1, Design File, Revision: -, Pages: 1  
Drawing No. Design File #62-2, Design File, Revision: -, Pages: 1  
Drawing No. Design File #62-3, Design File, Revision: -, Pages: 1  
Drawing No. ESMA 1421, Material Spec, Revision: BB, Pages: 1  
Drawing No. ESMA 1438, Material Spec, Revision: AZ, Pages: 1  
Drawing No. FEA Analysis-G-HYD, FEA Analysis, Revision: -, Pages: 1  
Drawing No. G-HYD Drawing, G-Series Dwg, Revision: -, Pages: 1  
Drawing No. G-HYD Models-Matrix, G-Series Matrix, Revision: -, Pages: 1  
Drawing No. G-HYD-Torques, Product Datasheet, Revision: B, Pages: 1  
Drawing No. Notes to ABS, Notes, Revision: -, Pages: 1  
Drawing No. Shell Test of G-HYD-2, Test Report, Revision: -, Pages: 1

#### 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 4-6-7/3.5.5, 4-6-7/5.3.3;

Steel Vessels Under 90 Meters (295 Feet) in Length 4-4-6/3;

Offshore Support Vessels 4-6-7/3.5.5, 4-6-7/5.3.3;

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

Mobile Offshore Drilling Units 4-2-2/19, 6-1-6/5.9;

##### National:

NA

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**International:**

NA

**Government:**

NA

**EUMED:**

NA

**OTHERS:**

NA