



Energy - Downstream, Power and Manufacturing Design Appraisal Document

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13 August 2013

Quote this reference on all future communications
NAO 0102524/002/SMR

Manufacturer	:	Emerson Process Management 19200, NW Frwy, Houston TX 77065 USA
Authorized Representative:		El-O-Matic B.V. Asveldweg II 7556 BR, Hengelo, Netherlands
Product Description	:	GH and GHC Series Pneumatic Actuators - GH2, GH3, GH4, GH5, GH7, GH8 - GHC2, GHC3, GHC4, GHC5, GHC7, GHC8
Product Type	:	Pressure Vessel
Size	:	12" (DN 300) through 36" (DN 900)
Max pressure	:	13.8 Barg
Temperature Range	:	- 29°C to 177°C (as permitted by material specification)
Design Code	:	ASME Section VIII Div 1: Edition 2007 Addenda 2009
Category	:	II to IV
Module	:	B+D (Lloyd's Register Verification is notified body for module B only)

The documents listed below have been examined to the requirements of the above Code, and the Essential Safety Requirements of the Pressure Equipment Directive (97/23/EC) supported by the above Code, including the global conformity assessment procedure of the Directive and are found in order. The proposed arrangement is considered to comply with the requirements of the Directive subject to the following:-

- (A) Construction and testing should be carried out to the requirements of the Code and to the satisfaction of the Surveyors.

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- (B) The drawings / document marked # have been received with the present submission and the drawing showing "Document Status" as "BQ" should be revised or the comments contained in the paragraphs to follow should otherwise be resolved
- (C) All materials used for the fabrication must comply with the requirements of Annex I of the directive.
- (D) In respect of Module B of the PED (97/23/EC) / PER (SI 1999: 2001 & SI 2002:1267), this appraisal is limited to:
 - i) examination of technical documentation listed above,
 - ii) identify parts designed in accordance with relevant standards,
 - iii) assessment of materials,
 Module B EC certificate would be issued subject to
 - i) Witness of type testing, records and procedures
 - ii) Review of tests and records
 - iii) Issue of test certificates
- (E) Reference Document: DF126 Rev C
 Contents

1.0 Introduction

- 1.1 General Equipment description
- 1.2 Applicable construction code and materials
- 1.3 Manufacturing location QA approval
- 1.4 Product approval
- 1.5 Conformity assessment table and modules
- 1.6 Final product testing
- 1.7 Conclusion
- 1.8 Reference documents

2.0 Drawing register

3.0 Technical documentation

4.0 Bill of materials

5.0 Essential safety requirements: checklist

6.0 Risk assessment

7.0 Particular material appraisal

8.0 Declaration of conformity

9.0 Installation, operations and maintenance manual

10.0 Welding and Joining procedure

COMMENTS:

- 1. EC Declaration of conformity should reference the latest (valid) EC certificate number for module B. BQS
- 2. Approval is limited to the material appraised below in this DAD BQS

PARTICULAR MATERIAL APPRAISAL:

Under the provisions of the directive, particular material appraisal of materials listed below has been carried and are acceptable.

Material Specification	ASME Sec VIII Div. 1	Temp. °C Max / Min	Notes
ASTM A53 Gr B type S or E		177 / - 29	
ASTM A513 type 5 Gr MT1026 Tensile, yield, elongation to meet ASTM A53 requirements; Restricted to 6mm, max 14" dia. size, straight pipe only	Not listed. Limited to 13.8 bar	177 / - 29	Stress level less than 6000 psi, impact test exempted, considering UCS 66 curve A material with lower stresses.

Material Specification	ASME Sec VIII Div. 1	Temp. °C Max / Min	Notes
ASTM A395 60-40-18		177 / - 29	Also refer ASME B31.3
ASTM A516 Gr 70		177 / - 29	
DIN 1629 St 52.0 (UTS 500, YS 355 N/mm ² , Elong 19% transverse) Thk 7.6 mm	Not listed	177 / - 29	Material accepted based on comparison with ASTM A 53 UCS-66 curve B.
ASTM A194 2H, 2		177 / - 29	
ASTM A105		177 / - 29	
ASTM A193-B7		177 / - 29	

Drawing/ Documents

	Document No.	Revision	Title	Status	Date
#	Technical Construction File DF 126	C	TCF for GH Series	B	13 August 2013

Lloyd's Register Verification Ltd.: Notified Body No. 0038

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Appraisal Status Key

- B Examined
- BM Examined and amended in red
- BQ Examined subject to matters identified within the Design Appraisal Document which require resolution
- BQP Details to be submitted by the client to Plan Appraisal Office.
- BQS Details to be submitted by the client to the local surveyor's office responsible for the building and the arrangements verified in accordance with the Code requirements by the attending surveyor
- RI Used for information only

Distribution:

EC Directives Houston + TCF and DAD
 Emerson + 1 DAD