Certificate no: Page 1 of 1 W03017642/001



Bettis GVO Series Linear Valve Operators

Office:

Aberdeen

Date:

27 August 2012

This certificate is issued to Emerson Process Management Valve Automation Inc., 2500 Park Ave. West, Mansfield, OH 44906 USA

Component Description

Pneumatic type SR and FS 4" to 48" and Hydraulic type SR and FS 2" to 24"

Pneumatic type DA 2" to 48" and Hydraulic type DA 2" to 24"

Component Identification

Models GVO-**-SR-**, GVO-**-FS-** and GVO-**-DA-**

- This certificate is issued to the above manufacturer to certify that Lloyd's Register EMEA have examined the failure data and verify the findings are such that 'proven in use' is demonstrated.
- The calculated 'Average Probability of Failure on Demand' (PFD_{AVG}) is 3.24E-04 for the SR and FS types and is 1.72E-04 for the DA type. The PFD for all types is within the SIL 3 band. This calculation includes a confidence level of 70%.

The equation used to establish this PFD is taken from EEMUA 222 July 2009 App. F with a test interval of twelve months (8760 hours) and a Mean Time To Restore of 8 hours.

- 3. The Safe Failure Fraction (SFF) is calculated as greater than, or equal to 90%. Since the equipment is 'Type A' as defined in IEC 61508 with a Hardware Fault Tolerance (HFT) = 0, this equates to SIL 3 from an architectural perspective.
- 4. The component must be correctly designed into a Safety Instrumented Function per the requirements of the Safety Manual.
- 5. The results of the proof tests and any revealed failures need to be correctly recorded and analysed to ensure the integrity requirements are met throughout the lifecycle of the plant/process.

This certificate is based on the Technical Note W03017642/001

Applicable Standards

IEC 61508 - Functional Safety of Electrical/Electronic/ Programmable Electronic Safety Related Systems

Design Temperature

Temperature rating: -29°C min. to +65°C max (unless stated otherwise in applicable certification/nameplate stamping)

Maintenance schedule

It is recommended that a periodic visual and operation evaluation is carried at least once a year

Product life

The 12 monthly proof test results will confirm if the linear valve operator is fit for continued use

Control of Internal Production Compliance

ISO 9001:2008 (Certificate of Registration US 09000641) issued by Bureau Veritas valid to 19th September, 2012.

Date of issue:

27th August, 2012

Expiry date:

27th August, 2017

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