



# 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-\*\*

1. 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.
2. 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 19<sup>th</sup> September, 2012.

Date of issue: **27th August, 2012**

Expiry date: **27th August, 2017**

Ian Harris  
Surveyor to Lloyd's Register EMEA

A member of the Lloyd's Register Group