

# Verification Certificate


This is to certify that: Severn Glocon Limited  
Olympus Park  
Quedgeley  
Gloucester  
GL2 4NF  
United Kingdom

Holds Certificate Number: VC 688596

In respect of:

**Valves as listed on page 2**

**Concerning verification of the manufacturers reports as detailed in this certificate to the relevant requirements of BS EN 61508-2:2010 Functional safety of electrical / electronic / programmable electronic safety-related systems. Part 2: Requirements for electrical/electronic/ programmable electronic safety-related systems.**



For and on behalf of BSI:

Chris Lewis - Certification Director, Product Certification

First Issued: 2018-04-10  
Latest Issue: 2018-04-10

Effective Date: 2018-04-10  
Expiry Date: 2021-04-09

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# Verification Certificate

No. VC 688596

Manufacturer: Severn Glocon Limited

Verification Report Number: 8890007

## **Product Description**

Product Name	Description	Normative References
Series 5000	Pneumatically actuated control valve	BS EN 61508-2:2010
Series 8000	High Performance, Multi offset Butterfly valves	

## **Verification of SIL levels:**

**Systematic Capability:** Refer to tables on following pages  
**Random Capability:** Type A, Route 1<sub>H</sub> devices

**Note:** These devices have been considered for **Low demand operation** applications.

The safety function(s) of the product is defined as:

### **Fail Close Type**

- The valve moves to the fully closed position via the spring in the pneumatic actuator.

**Or**

### **Fail Open Type**

- The valve moves to the open position via the spring in the pneumatic actuator.

The figures quoted in this certificate are based on analysis of the following documentation:

5.5.8 Revision 5 Product Reliability Analysis Severn Glocon Control Valve (PRA-001) Revision 5 - 18/10/16  
5.5.9 Revision 1 Product Reliability Analysis SLV bfv PRA-002 Butterfly valve (PRA-002) Revision 1 - 02/03/17

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# Verification Certificate

No. VC 688596

## Series 5000 data:

Series 5000				
Description	Symbol	Value (0% DC)	Value (60% DC)	Comments
Mean Time To Failure (hours)	MTTF	192,310	192,310	-
Architecture	-	1001	1001	-
Failure rate (hours)	$\lambda$	$5.2 \times 10^{-6}$	$5.2 \times 10^{-6}$	-
Diagnostic coverage	DC	0%	60%	60% Diagnostic coverage to be provided by appropriate smart positioner
Proof test interval (hours)	$TI_{PT}$	4380	4380	-
Mean Time to Restore (hours)	MTTR	8	8	-
Dangerous failure rate (hours)	$\lambda_D$	$2.6 \times 10^{-6}$	$2.6 \times 10^{-6}$	-
Undetected dangerous failure rate (hours)	$\lambda_{DU}$	$2.6 \times 10^{-6}$	$1.04 \times 10^{-6}$	-
Detected dangerous failure rate (hours)	$\lambda_{DD}$	$2.6 \times 10^{-6}$	$1.56 \times 10^{-6}$	-
Mean down time for voted channels (hours)	$t_{CE}$	2198	884	-
Probability of failure on demand	$PFD_G$	$5.715 \times 10^{-3}$	$2.298 \times 10^{-3}$	-
Safe Failure Fraction	SFF	35%	80%	-
Hardware Fault Tolerance	HFT	0	0	-
<b>SIL Capability</b>	<b>SIL</b>	<b>1</b>	<b>2</b>	-

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## Series 8000 data:

Series 8000				
Description	Symbol	Value (0% DC)	Value (80% DC)	Comments
Mean Time To Failure (hours)	MTTF	192,310	192,310	-
Architecture	-	1001	1001	-
Failure rate (hours)	$\lambda$	$5.2 \times 10^{-6}$	$5.2 \times 10^{-6}$	-
Diagnostic coverage	DC	0%	80%	80% Diagnostic Coverage to be provided by SIL3 capable smart positioner actuator with 80% diagnostics and Partial Valve Stroke test
Partial Stroke test interval (hours)	$TI_{PST}$	-	168	
Proof test interval (hours)	$TI_{PT}$	N/A	2190	
Mean Time to Restore (hours)	MTTR	8	8	-
Dangerous failure rate (hours)	$\lambda_D$	$2.6 \times 10^{-6}$	$2.6 \times 10^{-6}$	-
Undetected dangerous failure rate (hours)	$\lambda_{DU}$	$2.6 \times 10^{-6}$	$0.52 \times 10^{-6}$	-
Detected dangerous failure rate (hours)	$\lambda_{DD}$	$2.6 \times 10^{-6}$	$2.08 \times 10^{-6}$	-
Mean down time for voted channels (hours)	$t_{CE}$	2198	452.4	-
Probability of failure on demand	$PFD_G$	$5.715 \times 10^{-3}$	$9.18 \times 10^{-3}$	-
Safe Failure Fraction	SFF	35%	90%	-
Hardware Fault Tolerance	HFT	0	0	-
<b>SIL Capability</b>	<b>SIL</b>	<b>1</b>	<b>2</b>	-

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## Manufacturing locations:

Severn Glocon Ltd  
Olympus Park  
Quedgeley  
Gloucester  
GL2 4NF  
UK

Severn Unival Ltd  
Heywoods industrial Park  
Birds Royd Lane  
Brighouse  
West Yorkshire  
HD6 1NA  
UK

Severn Glocon India PVT Ltd  
F96/97 Sipcot Industrial Park  
Irungattukkottai  
Chennai  
India



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