



## FUNCTIONAL SAFETY CERTIFICATE

This is to certify that the

### ***Triple Offset Butterfly Valve Series***

manufactured by

#### ***HOBBS Valve Ltd***

*Trecenydd Business Park,  
Caerphilly,  
Wales, CF83 2RZ.*

Have been assessed by Sira Certification Service with reference to the CASS methodologies and found to meet the requirements of

### **IEC 61508-2:2010 Routes 1<sub>H</sub> & 1<sub>S</sub> Systematic Capability (SC3)**

As an element/subsystem suitable for use in safety related systems;

**Single triple offset butterfly valve = SIL 2\***  
**Double block and bleed triple offset butterfly valve = SIL 3\***

When used in accordance with the scope and conditions of this certificate.

\*This certificate does not waive the need for further functional safety verification to establish the achieved Safety Integrity Level (SIL) of the safety related system.

Certification Manager:

James Lynskey

Initial Certification: 07/10/2015  
This certificate issued: 20/08/2020  
Renewal date: 01/05/2025

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Certificate No.: Sira FSP 15004/03  
Form 7016 issue 5  
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## Product description and scope of certification

The triple offset butterfly valves (TOBV) manufactured by Hobbs Valve Ltd are purely mechanical devices that are part of the tomorrows valves today (TVT) valve type. The valves range in size from 2" to 48" with the ability of operating within the following pressure ranges; 150lb, 300lb and 600lb.

The body of the triple offset butterfly valves can be manufactured in a wide range of materials from metals, stainless steel to corrosion resistance Nickel Aluminum bronze and Titanium. When used within a system the triple offset butterfly valves can be controlled by either manual operation (rotation of the manual wheel) or by automated control (actuator).

When used within a system the triple offset butterfly valves can be configured as a standalone valve or as a double block and bleed valve (two valves in series).



**Figure 1.** Final assembly of the Triple offset butterfly valve – single valve.

## Use in safety function(s)

The element safety function of the product in all configurations is defined as follows:

***'To move the disc to a predefined safe position upon a demand'.***

**Note:** safe position can be to close or to open.

## Certified data in support of use in safety functions

The assessment has been carried out with reference to the *Conformity Assessment of Safety-related Systems* (CASS) methodology using the Route 1<sub>H</sub> approach.

A Failure Mode and Effect Analysis (FMEA) has established the failure modes and failure rates from the products assessed as show in Table 1 below. Failure sources have been taken from RIAC NPRD and Technis Faradip 3.0.

The following results in Table 1 summarises the FMEA assessment of the Triple offset butterfly valve when configured as a standalone valve and as a double block and bleed valve.



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**Table 1:** Summary of assessment for the triple offset butterfly valve series

<b>Safety Function:</b>			
<i>'To move the valve(s) disc(s) to a close position upon a demand'.</i>			
<b>Summary of Clauses 2/7.4.2 and 2/7.4.4</b>	<b>(1001) Triple offset butterfly vlv (Single)</b>	<b>(1002) Triple offset butterfly vlv (Double block and bleed)</b>	<b>Verdict</b>
Architectural constraints Safe Failure Fraction (SFF)	<b>HFT=0</b>	<b>HFT=1</b>	<b>Type A</b>
	<b>60%</b>	<b>75%</b>	<b>(1001)=SIL 2 (1002)=SIL 3</b>
Random hardware failures: [h <sup>-1</sup> ]	$\lambda_{DD}$ 1.81E-06	0.00E+00 7.91E-08	
Random hardware failures: [h <sup>-1</sup> ]	$\lambda_{SD}$ 2.76E-06	0.00E+00 2.34E-07	
Diagnostic coverage (DC)	0.00%	0.00%	
PFD <sub>AVG</sub> @ PTI = 8760Hrs MTTR = 8 Hrs	<b>7.93E-03</b>	<b>3.47E-04</b>	<b>(1001)=SIL 2 (1002)=SIL 3</b>
Avg' frequency of Dangerous failure (High Demand - PFH)	1.81E-06	7.91E-08	
Hardware safety integrity compliance <sup>1</sup>	Route 1 <sub>H</sub>		
Systematic safety integrity compliance	Route 1 <sub>S</sub>		
Systematic Capability (SC1, SC2, SC3, SC4)	See systematic assessment report R56A30520B, Hobbs have been assessed to SC 3		
Hardware safety integrity achieved	The triple offset butterfly valve achieved the following: <ul style="list-style-type: none"> <li>- Standalone triple offset butterfly valve: <b>SIL 2</b></li> <li>- Double block and bleed triple offset butterfly valve: <b>SIL 3</b></li> </ul>		

**Note 1:** The failure data:

- 1) Failure rates stated in Table 1 are in units of failures per hour
- 2) The PFD<sub>AVG</sub> figure shown is for illustration only assuming a proof test interval of 8760 hours and MTTR of 8 hours. Refer to IEC 61508-6 for guidance on PFD<sub>AVG</sub> calculations from the failure data.

The failure data above is supported by the base information given in Table 2 below.

**Table 2: Conditions for maintaining safety integrity capability**

1	Product identification:	Triple offset butterfly valve series.
2	Functional specification:	'To move the disc to a predefined safe position upon a demand'.
3-5	Random hardware failure rates:	Refer to table 1 of this certificate, or page 6 of hardware report R56A30520A rev1.0.
6	Environment limits:	70°C.
7	Lifetime/replacement limits:	Refer to safety manual - Form 042.
8	Proof Test requirements:	Refer to safety manual
9	Maintenance requirements:	Refer to safety manual
10	Diagnostic coverage:	0% diagnostic coverage.
11	Diagnostic test interval:	No diagnostic test interval is required as no form of diagnostics



		is available in the products supported by this certificate.
12	Repair constraints:	None, other than compliance with the safety manual instructions - Refer to safety manual - Form 042.
13	Safe Failure Fraction:	See table 1 on page 3 of this certificate.
14	Hardware fault tolerance (HFT):	See table 1 on page 3 of this certificate.
15	Highest SIL (architecture/type A/B):	See table 1 on page 3 of this certificate.
16	Systematic failure constraints:	None, other than compliance with the safety manual instructions - Form 042.
17	Evidence of similar conditions in previous use:	Not applicable.
18	Evidence supporting the application under different conditions of use:	Not applicable.
19	Evidence of period of operational use:	Not applicable.
20	Statement of restrictions on functionality:	Not applicable.
21	Systematic capability (SC1, SC2, SC3)	See systematic assessment report R56A30520B, Hobbs have been assessed to SC 3.
22	Systematic fault avoidance measures:	See systematic assessment report R56A30520B.
23	Systematic fault tolerance measures:	See systematic assessment report R56A30520B.
24	Validation records:	All documents that have been used in support of the hardware assessment have been documented in report R56A30520A V0.1.

Failure to observe the above conditions will invalidate the certified data and may compromise the integrity of the safety function performed by the valves.

### Management of functional safety

The assessment has demonstrated that the certified products are supported by an appropriate functional safety management system that meets the relevant requirements of IEC 61508-1:2010 clause 6. See report R56A30520B.

### Identification of certified equipment

A full list of certified equipment is defined in Table 3 below.

**Table 3: Certified Equipment**

Sira ID	Document no	Rev	Date	Document description
HOBFS01	TVTLAYOUT600 224OPT1-2-A	A7	03/12/09	Drawing of 2" to 24" class 600 quarter turn triple offset valve.
HOBFS02	TVTLAYOUT324 OPT1-2-BS-A	A2	01/08/12	Drawing of 3" to 24" option 1 & 2 triple offset valves.
HOBFS03	Brochure	A	Oct 2012	Product data sheet.
HOBFS04	BOM CC333G NAB	A	09/04/13	Bill of materials for FMEA assessment.
HOBSF05	TVTG30008DBB	A7	02/06/09	Drawing of the double block and bleed valve configuration and bill of materials.
HOBSF06	Form 042	6	09/2013	Operating & maintenance instructions.

### Conditions of Certification

The validity of the certified failure data is conditional on the manufacturer complying with the following conditions:



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1. The manufacturer shall analyse failure data from returned products on an on-going basis. Sira Certification Service shall be informed in the event of any indication that the actual failure rates are worse than the certified failure rates. (A process to rate the validity of field data should be used. To this end, the manufacturer should co-operate with users to operate a formal field-experience feedback programme).
2. Sira shall be notified in advance (with an impact analysis report) before any modifications to the certified equipment or the functional safety information in the user documentation is carried out. Sira may need to perform a re-assessment if modifications are judged to affect the product's certified functional safety.
3. On-going lifecycle activities associated with this product (e.g., modifications, corrective actions, field failure analysis) shall be subject to surveillance by Sira in accordance with 'Regulations Applicable to the Holders of Sira Certificates'.

### Conditions of Safe Use

The validity of the certified failure data in any specific user application is conditional on the user complying with the following conditions:

1. The user shall comply with the conditions given in Table 2 above and the requirements given in the manufacturer's user instructions in regard to all relevant functional safety aspects such as application of use, installation, operation, maintenance, proof tests, maximum ratings, environmental conditions, repair, etc.
2. Selection of this equipment for use in safety functions and the installation, configuration, overall validation, maintenance and repair shall only be carried out by competent personnel, observing all of the manufacturer's conditions and recommendations in the user documentation.
3. All information associated with any field failures of this product should be collected under a dependability management process (e.g., IEC 60300-3-2) and reported to the manufacturer.
4. The safety device is to have an independent power supply; it must not share the same power supply as non-safety devices that may cause a fault to the safety device.
5. A proof test interval of 1 year.

### General Conditions and Notes

1. This certificate is based upon a functional safety assessment of the product described in Sira Test & Certification Assessment Reports R56A30520A and R56A30520B.
2. If certified product is found not to comply, Sira Certification Service should be notified immediately at the address shown on this certificate.
3. The use of this Certificate and the Sira Certification Mark that can be applied to the product or used in publicity material are subject to the 'Regulations Applicable to the Holders of Sira Certificates' and 'Supplementary Regulations Specific to Functional Safety Certification'.
4. This document remains the property of Sira and shall be returned when requested by the issuer.
5. No part of the Functional safety related aspects stated in the instruction manual shall be changed without approval of the certification body.
6. This certificate will remain valid subject to completion of two surveillance audits within the five year certification cycle, and upon receipt of acceptable response to any findings raised during this period. This certificate can be withdrawn if the manufacturer no longer satisfies scheme requirements.



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## Certificate History

Issue	Date	Report no.	Comment
00	07/10/2015	SIRA FSP 15004	Original certificate released to client.
01	01/05/2018	N/A	Certificate updated to state SC value.
02	13/03/2019	N/A	Certificate updated to amend incorrect report reference in 'General Conditions and Notes' section.
03	20/08/2020	R80051773A	Re-issue of certificate following successful audit via desktop questionnaire.



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