



# Certificate / Certificat Zertifikat / 合格証

BIF 1307019 C001

*exida* hereby confirms that the:

**BXS Pilot & Mechanical Valve**

**Bifold Fluidpower Ltd.**

**Chadderton, Greater Manchester- UK**

The manufacturer  
may use the mark:



Has been assessed per the relevant requirements of:

**IEC 61508 : 2010 Parts 1-7**

and meets requirements providing a level of integrity to:

**Systematic Capability: SC 3 (SIL 3 Capable)**

**Random Capability: Type A, Route 2<sub>H</sub> Device**

**PFH/PFD<sub>AVG</sub> and Architecture Constraints  
must be verified for each application**

Revision 3.0 November 26, 2019  
Surveillance Audit Due  
November 1, 2022

**Safety Function:**

The BXS Pilot & Mechanical Valve will move to the normal position when de-energized within the specified safety time

**Application Restrictions:**


The unit must be properly designed into a Safety Instrumented Function per the Safety Manual requirements.



ISO/IEC 17065  
PRODUCT CERTIFICATION BODY  
#1004



  
Evaluating Assessor

  
Certifying Assessor

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**Systematic Capability: SC 3 (SIL 3 Capable)  
Random Capability: Type A, Route 2<sub>H</sub> Device  
PFH/PFD<sub>AVG</sub> and Architecture Constraints  
must be verified for each application**

**Systematic Capability :**

The product has met manufacturer design process requirements of Safety Integrity Level (SIL) 3. These are intended to achieve sufficient integrity against systematic errors of design by the manufacturer.

A Safety Instrumented Function (SIF) designed with this product must not be used at a SIL level higher than stated.

**Random Capability:**

The SIL limit imposed by the Architectural Constraints must be met for each element. This device meets *exida* criteria for Route 2<sub>H</sub>.

**IEC 61508 Failure Rates in FIT (1 failure / 10<sup>9</sup> hours)**

**Position 1 = Valve Body; Position 2 = Primary Operator; Position 3 = Secondary Operator**

The failure rate must be determined for a combination of devices listed below.

Device Description	Position	λsd	λsu	λbd	λbu
IPV Integrated Pilot Valve	--	0	65	0	49
3/2 Valve	1	0	51	0	155
5/2 Valve	1	0	51	0	217
E1 Internal Pilot Inline	2	0	63	0	28
E2 Internal Pilot Inline	2	0	85	0	28
P1 Standard Air Pilot	2	0	57	0	28
P2 Side Air Pilot	2	0	85	0	28
P9 Air Latch Pilot Operator	2	0	106	0	26
M7 Plunger	2	0	3	0	14
M13 Roller Cam Ball	2	0	3	0	14
00 Spring Return	3	0	0	0	4
02 Spring Return	3	0	0	0	4
E1 Internal Pilot Inline	3	0	0	0	90
E2 Internal Pilot Inline	3	0	0	0	113
P1 Standard Air Pilot	3	0	0	0	84
P2 Side Air Pilot	3	0	0	0	113
M7 Plunger	3	0	0	0	17
M13 Roller Cam Ball	3	0	0	0	17
M3 Push / Pull Button	3	0	3	0	17
M15 Pull Button Spring Return	3	0	0	0	38
M16 Pull Button Spring Return with Latch	3	0	0	0	38
M17 Pull Button Spring Return Padlockable	3	0	0	0	38

**SIL Verification:**

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFH/PFD<sub>AVG</sub> considering redundant architectures, proof test interval, proof test effectiveness, any automatic diagnostics, average repair time and the specific failure rates of all products included in the SIF. Each subsystem must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

The following documents are a mandatory part of certification:

**Assessment Report:** BIF 13/07-019 R002 V3R1 (and later)

**Safety Manual:** SIL-SM.0005 Rev 2 BXS Spool Valves

**BXS Pilot &  
Mechanical Valve**



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