

Certificate of Conformity No.: 28716262

Manufacturer: Biffi Italia S.r.l.
Loc. Caselle S. Pietro
I-29017 Fiorenzuola d'Arda (PC)

Specifications: IEC 61508-1÷7:2010

Product: Quarter turn double acting pneumatic actuator

Type: Series TPD

RESULT:

As per the TÜV Rheinland Italia Report No. FS 28716262 Rev. 0, we declare that the product meets the below requirements:

IEC 61508: 2010, part 1 to 7

Functional Safety of electrical/electronic/programmable electronic safety related systems; Type A, Low Demand Mode, HFT=0

Safety Action	λ_D [1/h]	$\lambda_{DD(PS)}$ [1/h]	Systematic Capability
Close / Open	8,30E-08	7,55E-08	3

The values in the above table are compatible with SIL 3.

The requirements of minimum hardware fault tolerance (HFT) according to par. 11.4.3 of IEC 61511-1 have to be observed.

The product can be used up to SIL 2 without external diagnostics.

For further details, see what written in the Safety Manual.

Expiry date: 2019-12-31

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Location **Milan**
Date **2016-12-28**

Diego Sirtori
Business Stream Manager



Attachment 1 to
 Certificate of Conformity No.: 28716262



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		Test Interval Frequency (months)				
		6	12	24	36	48
Partial Stroke frequency (months)	1	4,59E-05	6,23E-05	9,50E-05	1,28E-04	1,60E-04
	2	7,35E-05	8,98E-05	1,23E-04	1,55E-04	1,88E-04
	3	1,01E-04	1,17E-04	1,50E-04	1,83E-04	2,16E-04
	6		2,00E-04	2,33E-04	2,66E-04	2,98E-04
	9				3,48E-04	
	12			3,98E-04	4,31E-04	4,64E-04

PFD_{AVG} values according to IEC 61508 for different values of TI and TI_{PS}

Test Interval Frequency (months)				
6	12	24	36	48
1,84E-04	3,65E-04	7,29E-04	1,09E-03	1,46E-03

PFD_{AVG} values according to IEC 61508 for different values of TI (no Partial Stroke Test)

NOTES:

- The above values of PFD_{AVG} are calculated for MRT=24 h and Proof Test Coverage=100%. For other values of MRT, TI, TI_{PS} and/or non-perfect Proof Test, the PFD_{AVG} values must be re-calculated.
- The PFD_{AVG} values including Partial Stroke Test are calculated considering the use of a commercial automatic Partial Stroking Test System: for further details, see the Safety Manual.

-----End certificate

