

Certificate of Conformity No.: 28716197

Manufacturer: Rotork Controls, Inc.
675 Mile Crossing Blvd.
Rochester, NY 14624
United States of America

Specifications: IEC 61508-1÷7:2010

Product: Pneumatic linear double acting actuator

Type: Series LP/D

RESULT:

As per the TÜV Rheinland Italia Report No. FS 28716197 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

Model	Safety Action	λ_D [1/h]	$\lambda_{DD(PS)}$ [1/h]	Systematic Capability
LP/FD	Stem extended	1,90E-08	1,73E-08	3
LP/FU	Stem retracted	1,91E-08	1,74E-08	3

The above values 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.

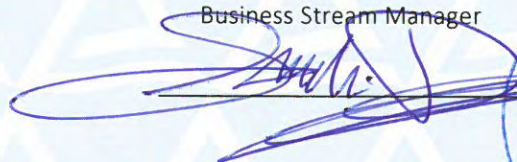
For further details, see what written in the Safety Manual.

Expiry date: 2019-03-31

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Location **Milan**
Date **2016-07-08**

Diego Sirtori
Business Stream Manager




Attachment 1 to
 Certificate of Conformity No.: 28716197



Manufacturer: Rotork Controls, Inc.
 675 Mile Crossing Blvd.
 Rochester, NY 14624
 United States of America

Specifications: IEC 61508-1÷7:2010

Product: Pneumatic linear double acting actuator

Type: Series LP/D – Model LP/FD

		Test Interval Frequency (months)				
		6	12	24	36	48
Partial Stroke frequency (months)	1	1,08E-05	1,50E-05	2,33E-05	3,16E-05	3,99E-05
	2	1,71E-05	2,12E-05	2,95E-05	3,79E-05	4,62E-05
	3	2,33E-05	2,75E-05	3,58E-05	4,41E-05	5,24E-05
	6		4,62E-05	5,45E-05	6,28E-05	7,11E-05
	9				8,15E-05	
	12			9,19E-05	1,00E-04	1,09E-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
4,20E-05	8,36E-05	1,67E-04	2,50E-04	3,33E-04

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.

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Attachment 2 to
Certificate of Conformity No.: 28716197

Manufacturer: Rotork Controls, Inc.
675 Mile Crossing Blvd.
Rochester, NY 14624
United States of America

Specifications: IEC 61508-1÷7:2010

Product: Pneumatic linear double acting actuator

Type: Series LP/D – Model LP/FU

		Test Interval Frequency (months)				
		6	12	24	36	48
Partial Stroke frequency (months)	1	1,09E-05	1,51E-05	2,35E-05	3,19E-05	4,03E-05
	2	1,72E-05	2,14E-05	2,98E-05	3,82E-05	4,66E-05
	3	2,35E-05	2,77E-05	3,61E-05	4,45E-05	5,28E-05
	6		4,66E-05	5,49E-05	6,33E-05	7,17E-05
	9				8,22E-05	
	12			9,27E-05	1,01E-04	1,09E-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
4,24E-05	8,43E-05	1,68E-04	2,52E-04	3,36E-04

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.

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