

Certificate of Conformity No.: 28716037 Rev. 1

Manufacturer: Rotork Fluid Systems S.r.l.
Via dei Salanetti, 138B
I-55016 Porcari (LU)

Specifications: IEC 61508-1÷7:2010

Product: Hydraulic compact spring return (single spring) actuator

Type: Series CQH

RESULT:

As per the TÜV Rheinland Italia Report No. FS 28716037 Rev. 1, 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	3,26E-08	2,93E-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: 2019-02-28

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Location **Milan**
Date **2016-06-28**

Diego Sirtori
Business Stream Manager




Attachment 1 to
 Certificate of Conformity No.: 28716037 Rev. 1



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		Test Interval Frequency (months)				
		6	12	24	36	48
Partial Stroke frequency (months)	1	1,86E-05	2,58E-05	4,00E-05	5,43E-05	6,86E-05
	2	2,93E-05	3,65E-05	5,07E-05	6,50E-05	7,93E-05
	3	4,00E-05	4,72E-05	6,14E-05	7,57E-05	9,00E-05
	6		7,93E-05	9,35E-05	1,08E-04	1,22E-04
	9				1,40E-04	
	12			1,58E-04	1,72E-04	1,86E-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
7,21E-05	1,43E-04	2,86E-04	4,29E-04	5,72E-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.

-----End certificate

