



Certificate no. TAI-FS-C-22-0040

WE HEREBY CERTIFY THAT

Product description ELECTRO-HYDRAULIC SPRING RETURN AND DOUBLE ACTING ACTUATOR

Models SERIES EH/S, EH/D

Manufacturer ROTORK CONTROLS, INC.
675 Mile Crossing Blvd.
Rochester, NY 14624
United States of America

IS IN COMPLIANCE WITH THE REQUIREMENTS OF THE STANDARDS

IEC 61508 Parts 1–7:2010

AS RESULT OF THE ASSESSMENT ACCORDING TO THE PROVISION SET OUT IN THE ABOVE-MENTIONED STANDARDS

Report no. TAI-FS-R-22-0081

Expiry date 27.06.2025

Issue date 10.08.2022

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10.08.2022, Monte Roberto (AN)

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Annex to certificate no. TAI-FS-C-22-0040

Type	A
HFT	0
Safety functions	<p><u>Spring return actuators:</u></p> <p>1. Delivery of a full stroke ($90^\circ \pm$ tolerance) driven by the spring, with power fluid exhausted from the cylinder through the control system</p> <p><u>Double acting actuators:</u></p> <p>1. Delivery of a full stroke ($90^\circ \pm$ tolerance) driven by the piston of cylinder, powered by the specified medium working pressure</p>
Mode of operation	Low Demand Mode


Random failure rates					
Circuit diagram	λ_D [1/h]	$\lambda_{DD(PS)}$ [1/h]	PFD _{AVG} ($\Pi=12$ m, MRT=24 h)	PFD _{AVG} ($\Pi=12$ m, $\Pi_b=1$ m, MRT=24 h)	PFD _{AVG} ($\Pi=12$ m, $\Pi_b=3$ m, MRT=24 h)
85615	7,56E-07	6,85E-07	3,33E-03	5,81E-04	1,08E-03
85619	9,71E-08	9,16E-08	4,28E-04	6,00E-05	1,27E-04
85620	9,71E-08	9,16E-08	4,28E-04	6,00E-05	1,27E-04
85623	1,50E-07	1,44E-07	6,61E-04	8,27E-05	1,88E-04
HDC167	7,56E-07	6,85E-07	3,33E-03	5,81E-04	1,08E-03
HDC167-1	9,71E-08	9,16E-08	4,28E-08	6,00E-05	1,27E-04
85692	1,76E-06	1,73E-06	3,40E-03	4,11E-04	9,53E-04
85693	1,10E-06	1,08E-06	4,94E-04	1,28E-04	1,94E-04
85694	1,10E-06	1,08E-06	4,94E-04	1,28E-04	1,94E-04
85695	1,15E-06	1,13E-06	7,25E-04	3,59E-04	4,25E-04
HS24259-02	1,76E-06	1,73E-06	3,40E-03	4,11E-04	9,53E-04
BR2851HDD01	1,38E-06	1,36E-06	1,74E-03	2,49E-04	5,19E-04

Systematic capability	3 (Route 1s applied)			
Architectural constraints	Route 1H:	Applied ✓	Route 2H:	Applied
	<p>The product can be used in:</p> <ul style="list-style-type: none"> • single channel configuration: <ul style="list-style-type: none"> ○ up to SIL 2 without external diagnostic tests ○ up to SIL 3 considering external diagnostic tests • double channel configuration: up to SIL 3 			

Remarks:

- Modifications of the schemes, which do not involve the safety function, do not impair the validity of the present certificate.
- 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.
- For further details, including environmental conditions, limitations of use, lifetime, failure rates traceability, mean repair times, common cause factors and systematic capability constraints, make reference to Safety Manual SM-EH-B-02-E.

END OF CERTIFICATE



Ing. Crescenzo Di Fratta

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