



Certificate / Certificat Zertifikat / 合格証

NAF 070721 C003

exida hereby confirms that the:

NAF - Turnex Pneumatic Actuators

On/Off Service, Spring-Return
NAF 791292 / 94, NAF 791392 / 94

Flowserve - NAF AB

SE-581 87 Linköping, Sweden

Have 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_H Device

**PFH/PFD_{avg} and Architecture Constraints
must be verified for each application**

Safety Function:

The Actuator will move the Valve to the fail-safe state (open or closed) within the specified safety time when hold position air is released.

Application Restrictions:

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

The manufacturer
may use the mark:



Revision 2.2 June 12, 2018
Surveillance Audit Due
June 1, 2021



ANSI Accredited Program
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_H Device****PFH/PFD_{avg} and Architecture Constraints
must be verified for each application****Systematic Capability:**

The products have 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_H.

IEC 61508 Failure Rates in FIT¹

Application	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
Single Acting, Spring Return	0	199	0	473
Single Acting, Spring Return with PVST ²	199	0	291	182

¹ FIT = 1 failure / 10⁹ hours

² PVST = Partial Valve Stroke Test

SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFH/PFD_{avg} 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 element must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

The following documents are a mandatory part of certification:

Assessment Report: NAF 07/07-21 R005 V4 R1 (or later)

Safety Manual: NFENDS7459

Turnex Series
Pneumatic Actuators



80 N Main St
Sellersville, PA 18960