

The manufacturer
may use the mark:



Reports:

FLO 06-06-11 R001 FMEDA
Report V1 R1

FLO 06-06-11 R002 IEC
61508 Functional Safety
Assessment Report V1 R2

FLO 08-04-37 R001 IEC
61508 Functional Safety
Assessment V1 R2

FLO 08-09-08 R002 IEC
61508 Functional Safety
Assessment V1 R1

Validity:

This assessment is valid for
the MaxFlo 3 Valve and
Diaphragm Actuator.

This assessment is valid
until March 12, 2011.

Revision 3.0 November 11, 2008


exida
Certification S.A.

Certificate / Certificat Zertifikat / 合格証

FLO 060611 C001

exida hereby confirms that the:

MaxFlo 3 Valve and Diaphragm Actuator

**Flowserve Corporation - Flow Control Division
Thiers, France
Springville, UT USA
Bangalore, India**

Has been assessed per the relevant requirements of:

IEC 61508 Parts 1, 2

and meets requirements providing a level of integrity to:

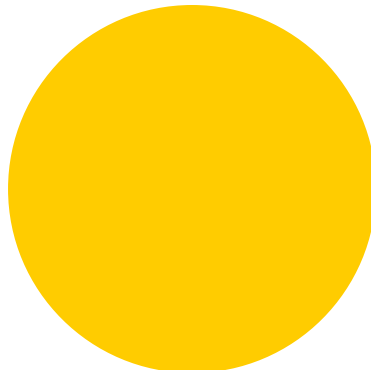
**Systematic Integrity: SIL 3 Capable
Random Integrity: Type A, SIL must be
verified for the entire final element
application**

Safety Function:

The MaxFlo 3 Valve and Diaphragm Actuator will move to the
specified safe position when air supply is removed from the
actuator.

Application Restrictions:

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





Product Assessor



Auditor

Certificate / Certificat / Zertifikat / 合格証

FLO 060611 C001

Systematic Integrity: SIL 3 Capable

Random Integrity: Type A, SIL must be verified for the entire final element application.

SIL 3 Capability:

The product has 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 the stated without "prior use" justification by end user or diverse technology redundancy in the design.

IEC 61508 Failure Rates

Device	λ_{sd}	λ_{su}	λ_{dd}	λ_{du}
Full Stroke	0 FIT	2664 FIT	0 FIT	1334 FIT
Tight Shutoff	0 FIT	1229 FIT	0 FIT	2769 FIT
Open to Trip	0 FIT	3023 FIT	0 FIT	975 FIT
Full Stroke with PVST	520 FIT	2144 FIT	519 FIT	815 FIT
Tight Shutoff with PVST	520 FIT	709 FIT	519 FIT	2250 FIT
Open to Trip with PVST	2314 FIT	709 FIT	519 FIT	456 FIT

SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of 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 subsystem must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

* FIT = 1 failure / 10⁹ hours

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Form	Version	Date
C61508	2.01	July 2008