



Certificate / Certificat Zertifikat / 合格証

DEL 1804039 C002

exida hereby confirms that the:

Industrial Process Floating Ball Valve DeVal Flow Controls Private Ltd Pune - India

The manufacturer
may use the mark:



Has 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**

Revision 1.1 Aug 09, 2019
Surveillance Audit Due
August 1, 2022

Safety Function:

The Ball Valve will move to the designed safe position per the actuator design within the specified safety time.

Application Restrictions:

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



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 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 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 FIT*

Static Application – Clean Service	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
Full Stroke	0	0	0	404
Tight Shut-Off	0	0	0	1140
Open on Trip	0	121	0	283
Full Stroke with PVST [†]	0	0	144	260
Tight Shut-Off with PVST	0	0	144	996
Open on Trip with PVST	120	1	144	139
Static Application – Severe Service	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
Full Stroke	0	0	0	727
Tight Shut-Off	0	0	0	2199
Open on Trip	0	241	0	485
Full Stroke with PVST	0	0	239	488
Tight Shut-Off with PVST	0	0	239	1960
Open on Trip with PVST	239	2	239	246

* FIT = 1 failure / 10⁹ hours

† PVST = Partial Valve Stroke Test of a final element Device

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: DEL Q18/04-039 R009 V1R2 (or later)

Safety Manual: DEL- SM:18/04-039 R002 (or later)

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Series 65,
66, 67, 68,
69, 70, 71, 72
and Series F
Industrial
Process
Floating Ball
Valve

