



Certificate / Certificat Zertifikat / 合格証

DEL 1804039 C004

exida hereby confirms that the:

High Performance Butterfly 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 Butterfly 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

DEL 1804039 C004

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	433
Tight Shut-Off	0	0	0	1112
Open on Trip	0	137	0	296
Full Stroke with PVST [†]	0	0	120	313
Tight Shut-Off with PVST	0	0	120	992
Open on Trip with PVST	136	1	120	176
Static Application – Severe Service	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
Full Stroke	0	0	0	780
Tight Shut-Off	0	0	0	1989
Open on Trip	0	238	0	542
Full Stroke with PVST	0	0	210	570
Tight Shut-Off with PVST	0	0	210	1779
Open on Trip with PVST	236	2	210	332

* 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 R010 V1R2 (or later)

Safety Manual: DEL-SM:18/04-39 R004A & R004B (or later) Page 2 of 2

Triple Offset
High
Performance
Butterfly Valve
– Series 4A–4F

Double Offset
High
Performance
Butterfly Valve
– Series 44 - 49



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