



Certificate / Certificat Zertifikat / 合格証

MIC 2105141 C001

exida hereby confirms that the:

3-Way Floating Ball Valve

**Microfinish Valves Private Limited
Karnataka - India**

Has been assessed per the relevant requirements of:

IEC 61508 : 2010 Parts 1-2

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 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.

The manufacturer
may use the mark:



Revision 2.0 March 25, 2025
Surveillance Audit Due
January 01, 2028



Evaluating Assessor

Certifying Assessor

MIC 2105141 C001

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.

Versions:

| Valve Type | Bore Sizes | Pressure Class |
|---------------------|----------------|----------------|
| 3-Way FBV Series 71 | DN 15 – DN 300 | 150# |
| 3-Way FBV Series 72 | DN 15 – DN 50 | 800# |
| 3-Way FBV Series 74 | DN 15 – DN 300 | 300# |

IEC 61508 Failure Rates in FIT*

| Static Application – Clean Service | λ_{SD} | λ_{SU} | λ_{DD} | λ_{DU} |
|------------------------------------|----------------|----------------|----------------|----------------|
| Full Stroke | 0 | 0 | 0 | 501 |
| Tight Shut-Off | 0 | 0 | 0 | 1796 |
| Open on Trip | 0 | 229 | 0 | 272 |

* FIT = 1 failure / 10⁹ hours

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: MIC 21/05-141 R002 V2R1 (or later)

Safety Manual: 3DD055 REV 01 (or later)



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