



# Certificate / Certificat Zertifikat / 合格証

MIC 2105141 C004

*exida* hereby confirms that the:

## Trunnion Mounted 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<sub>H</sub> Device**

**PFH/PFD<sub>avg</sub> 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.



Evaluating Assessor

Certifying Assessor

The manufacturer  
may use the mark:



Revision 2.0 March 25, 2025  
Surveillance Audit Due  
December 01, 2027



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**Systematic Capability: SC 3 (SIL 3 Capable)****Random Capability: Type A, Route 2<sub>H</sub> Device****PFH/PFD<sub>avg</sub> 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<sub>H</sub>.

**Versions:**

| Valve Type      | End Connection   | Bore Sizes   | Pressure Class |
|-----------------|------------------|--------------|----------------|
| TMBV Series T84 | Flanged / Welded | 50 - 1200 mm | 150#           |
| TMBV Series T85 |                  | 50 - 1200 mm | 300#           |
| TMBV Series T87 |                  | 50 - 1200 mm | 600#           |
| TMBV Series T89 |                  | 25 - 1200 mm | 900#           |
| TMBV Series T90 |                  | 25 - 600 mm  | 1500#          |
| TMBV Series T91 |                  | 25 - 400 mm  | 2500#          |

**IEC 61508 Failure Rates in FIT\***

| Static Application – Clean Service | $\lambda_{SD}$ | $\lambda_{SU}$ | $\lambda_{DD}$ | $\lambda_{DU}$ |
|------------------------------------|----------------|----------------|----------------|----------------|
| Full Stroke                        | 0              | 0              | 0              | 556            |
| Tight Shut-Off                     | 0              | 0              | 0              | 1058           |
| Open on Trip                       | 0              | 102            | 0              | 454            |

\* FIT = 1 failure / 10<sup>9</sup> hours

**SIL Verification:**

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFH/PFD<sub>avg</sub> 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 R006 V2R1 (or later)

**Safety Manual:** 3DD042 REV 01 (or later)



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