



# Certificate / Certificat Zertifikat / 合格証

CAM 1511061 C002

*exida* hereby confirms that the:

## Trunnion Mounted Ball Valve

**CAMTECH Manufacturing FZCO.  
Jebel Ali Free Zone, Dubai - UAE**

The manufacturer  
may use the mark:



Revision 2.0 February 8, 2019  
Surveillance Audit Due  
February 11, 2022

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<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.



ISO/IEC 17065  
PRODUCT CERTIFICATION BODY  
#1004



Evaluating Assessor

Certifying Assessor

CAM 1511061 C002

**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>.

**IEC 61508 Failure Rates in FIT\* with Good Maintenance Assumption SSI = 2**

Trunnion Ball Valve – Static Application	$\lambda_{SD}$	$\lambda_{SU}$	$\lambda_{DD}$	$\lambda_{DU}$
Full Stroke, Clean Service	0	0	0	477
Tight Shut-Off, Clean Service	0	0	0	997
Open on Trip, Clean Service	0	97	0	380
Full Stroke with PVST, Clean Service	0	0	200	277
Tight Shut-Off with PVST, Clean Service	0	0	200	797
Open on Trip with PVST, Clean Service	96	1	200	180
Full Stroke, Severe Service	0	0	0	870
Tight Shut-Off, Severe Service	0	0	0	1891
Open on Trip, Severe Service	0	193	0	677
Full Stroke with PVST, Severe Service	0	0	352	518
Tight Shut-Off with PVST, Severe Service	0	0	352	1539
Open on Trip with PVST, Severe Service	191	2	352	325

\* FIT = 1 failure / 10<sup>9</sup> 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<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:** CAM15/11-061 R003 V2 R1 (or later)

**Safety Manual:** CAM-TS-0046 Rev 00 December 2018



80 N Main St  
Sellersville, PA 18960

Trunnion Mounted Ball Valves Models BAFBT, BARBT, BTFBT & BTRBT