

The manufacturer
may use the mark:



Reports:

HAW 09/02-33 R008 V1 R1
Assessment Report

HAW 09/02-33C R004 V1 R1
HAW 09/02-33C R005 V1 R1
and HAW 09/02-33C R006
V1 R1 FMEDA Reports

Validity:

This assessment is valid for
the Series BT C, BT DO, and
BT TO Butterfly Valves.

This assessment is valid until
February 1, 2013.

Revision 1.0 January 11, 2010


exida[®]
Certification S.A.

Certificate / Certificat Zertifikat / 合格証

HAW 090233 C004

exida hereby confirms that the:

Series BT C, BT DO, and BT TO Butterfly Valves

**hawa valves (india) pvt. ltd.
Navi Mumbai, Rabale - India**

Has been assessed per the relevant requirements of:

IEC 61508 Parts 1, 2

and meets requirements providing a level of integrity to:

Systematic Integrity: SIL 3 Capable

Random Integrity: Type A Device

**PFD_{AVG} and Architecture Constraints
must be verified for each application**

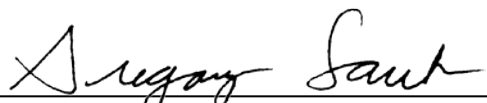
Safety Function:

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.




Product Assessor


Auditor

HAW 090233 C004

Systematic Integrity: SIL 3 Capable**Random Integrity: Type A Device****PFD_{AVG} and Architecture Constraints
must be verified for each application****SIL 3 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 without "prior use" justification by end user or diverse technology redundancy in the design.

IEC 61508 Failure Rates in FIT*

Application	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}
Series BT C - Full Stroke, Clean Service	0	981	0	740
Series BT C - Tight Shut-Off, Clean Service	0	22	0	1699
Series BT C - Open on Trip, Clean Service	0	1178	0	543
Series BT DO - Full Stroke, Clean Service	0	796	0	909
Series BT DO - Tight Shut-Off, Clean Service	0	43	0	1662
Series BT DO - Open on Trip, Clean Service	0	1044	0	661
Series BT TO - Full Stroke, Clean Service	0	947	0	963
Series BT TO - Tight Shut-Off, Clean Service	0	144	0	1766
Series BT TO - Open on Trip, Clean Service	0	1161	0	749

SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of 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 subsystem must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

* FIT = 1 failure / 10⁹ hours

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Valves

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Form	Version	Date
C61508	2.10	Nov 2009