

exida®

The manufacturer
may use the mark:

Certificate / Certificat
Zertifikat / 認証

VIR 060919 C001

exida hereby confirms that the:

S Series Floating Ball Valve

**Virgo Engineers Ltd. / Virgo Valves
and Controls Ltd.
Pune, 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

**PFDavg and Architecture Constraints must
be verified for each application**

Safety Function:

The S Series Floating Ball Valve will move to the designed safe position per the actuator design.

Application Restrictions:

The unit must be properly designed into a Safety Instrumented Function per the Safety Manual requirements.

Reports:

VIR 06-09-19 R001 FMEDA
Report V1 R2

VIR 06-09-10 R007
Assessment Report V1 R1

Validity:

This assessment is valid for
the S Series Floating Ball
Valves: ½" – 12" Two Piece
design and ½" – 2" Three
Piece design.

This assessment is valid until
July 30, 2010.

Revision 1.2 July 16, 2007



TD Bredemeyer
Product Assessor

William M. Holt
Auditor

Form	Version	Date
C61508	1.9	June 2007

S Series Floating Ball Valve

Virgo Engineers Ltd. / Virgo Valves and Controls Ltd., Pune, India

Systematic Integrity: SIL 3 Capable

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.

Random Integrity: Type A. PFDavg and Architecture Constraints must be confirmed per application.

Summary for S Series Floating Ball Valve failure rates in FITS*

Failure category	Failure rate (in FIT)		
	Full Stroke	Tight-Shutoff	Open to Trip
<i>Two Piece</i>			
Fail Safe	0	0	0
Fail Dangerous Undetected	357	704	287
No Effect	428	81	81
<i>Three Piece</i>			
Fail Safe	0	0	0
Fail Dangerous Undetected	307	666	230
No Effect	420	61	61

Refer to the FMEDA report for details.

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 / 10^9 hours