The manufacturer may use the mark:

Reports:
ASCO Q08/12-38 R002 FMEDA Report V2 R3

ASCO Q08/12-38 R005 IEC 61508 Assessment Report V2 R1

Validity:
This assessment is valid for the Series 8316 Solenoid Valves

This assessment is valid until Feb 28, 2013.

Revision 2.0 January, 2010

Certificate / Certificat

Zertifikat / 合格証

ASCO 08/12-38 C002

exida hereby confirms that the:

Series 8316 Solenoid Valves

ASCO Numatics
Florham Park, NJ - USA

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:

For a standalone Valve:
Type A Device: SIL 3 @ HFT=1 / SIL 2 @ HFT=0

For a Valve used in a final element assembly:
SIL must be verified for the specific application

Safety Function:
The Valve will move to the designed safe position when de-energized / energized within the specified safety time.

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

exida Certification

Product Assessor

Auditor

Certificate / Certificat / Zertifikat / 合格証

ASCO 08/12-38 C002

Series 8316 Solenoid Valves

ASCO Numatics
Florham Park, NJ - USA

Systematic Integrity: SIL 3 Capable

Random Integrity:

For a standalone Valve:
Type A Device: SIL 3 @ HFT=1 / SIL 2 @ HFT=0

For a Valve used in a final element assembly:
SIL must be verified for the specific 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

For valves used in a final element assembly, SIL must be verified for the specific application using the following failure rate data.

Failure rates for the Series 8316 Solenoid Valves in FIT*

Device	λ_{sd}	λ_{su}	λ_{dd}	λ_{du}	SFF
8316A	0 FIT	528 FIT	0 FIT	166 FIT	76.1%
8316A with NF Operator	0 FIT	695 FIT	0 FIT	153 FIT	82.0%
8316B	0 FIT	774 FIT	0 FIT	204 FIT	79.2%
8316A with PVST	0 FIT	528 FIT	164 FIT	2 FIT	99.8%
8316A with NF Operator PVST	0 FIT	695 FIT	151 FIT	2 FIT	99.8%
8316B with PVST	0 FIT	774 FIT	199 FIT	5 FIT	99.6%

Applications

8316A	8316 5/16” & 5/8” port, low power and zero minimum, Normally Closed
8316B	8316 1” port, unlinked poppet, low power only, Normally Closed

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

exida® Certification Services

Form	Version	Date
C61508	2.20	Feb 2010