



# Certificate / Certificat Zertifikat / 合格証

ASC 1301001 C002

*exida* hereby confirms that the:

## Series 8316 Solenoid Valves

**ASCO, L.P.**

**Florham Park, NJ - USA**

The manufacturer  
may use the mark:



Have 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**

Revision 2.1 August 1, 2018  
Surveillance Audit Due  
May 1, 2019

### Safety Function:

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

### Application Restrictions:

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



ANSI Accredited Program  
ISO/IEC 17065  
PRODUCT CERTIFICATION BODY  
#1004



Evaluating Assessor

Certifying Assessor

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## Systematic Capability :

These products have 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 these products 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 Types	Description and Application
8316A, LP Coil (<2 Watts), NC, DTT	5/16" & 5/8" ports, Low Power Coil (LP/LP2/LP3/LP4/IS), Zero Minimum, NC (Normally Closed), De-energize To Trip (DTT)
8316A, NF Operator, LP Coil (<2 Watts), NC, DTT	5/16" & 5/8" ports, Low Power Coil (LP/LP2/LP3/LP4/IS), Zero Minimum, NF Operator, NC (Normally Closed), DTT
8316B, LP Coil (<2 Watts), NC, DTT	1" ports, unlinked poppets, Low Power Coil (LP/LP2/LP3/LP4/IS), NC (Normally Closed), DTT
8316 Other Coil Options	Adder for 9-16 and 16-30 Watt Coils, DTT Application
8316 Manual Operator Option	Adder for Manual Operator Option, DTT Application

## IEC 61508 Failure Rates in FIT<sup>1</sup>

Device / Configuration	$\lambda_{SD}$	$\lambda_{SU}$	$\lambda_{DD}$	$\lambda_{DU}$
8316A, LP Coil (<2 Watts), NC, DTT	0	268	0	166
8316A, NF Operator, LP Coil (<2 Watts), NC, DTT	0	331	0	153
8316B, LP Coil (<2 Watts), NC, DTT	0	408	0	204
Adder for Coils <sup>2</sup> 9-16 Watts	0	299	0	0
Adder for Class H Coils 16-30 Watts	0	729	0	0
Adder for MO Option (Manual Operator)	0	32	0	36

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

<sup>2</sup> Failure Rate Adders for other Coil Options available from ASCO

## 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:** ASC 13/01-001 R001 V2 R2 (or later)

**Safety Manual:** V9629R8 (or later)

Series 8316 Solenoid  
Valves



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