



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:



Has been assessed per the relevant requirements of:

IEC 61508 : 2010 Parts 1-2

and meets requirements providing a level of integrity to:

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type A, Route 2_H Device

**PFH/PFD_{avg} and Architecture Constraints
must be verified for each 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.



Evaluating Assessor

Certifying Assessor

Revision 3.0 September 30, 2022
Surveillance Audit Due
June 1, 2025



Certificate / Certificat / Zertifikat / 合格証

ASC 1301001 C002

Systematic Capability: SC 3 (SIL 3 Capable)

Random Capability: Type A, Route 2_H Device

PFH/PFD_{avg} and Architecture Constraints must be verified for each application

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_H.

Versions:

| Valve Types | Description and Application |
|---|--|
| 8316 Size Group A, 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) |
| 8316 Size Group A, 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), De-energize To Trip (DTT) |
| 8316 Size Group B, LP Coil (<2 Watts), NC, DTT | 1" port, 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 OperatorOption | Adder for Manual Operator Option, DT Application |

IEC 61508 Failure Rates in FIT¹:

| Device | λ_{SD} | λ_{SU} | λ_{DD} | λ_{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 ² 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 |

¹FIT = 1 failure / 10⁹ hours

²Failure 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_{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 element must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

Series 8316 Solenoid Valves

The following documents are a mandatory part of certification:

Assessment Report:
ASC 13/01-001 R001 V4 R1 (or later)

Safety Manual:
V9629 Rev JC (or later)



80 N Main St
Sellersville, PA 18960