



Certificate / Certificat Zertifikat / 合格証

ASC 1501030 C002

exida hereby confirms that the:

Series 362 3-Way & 562 4-Way Spool Valves
Sizes: 1/4", 3/8", 1/2", 3/4" and 1"

ASCO, L.P.
Florham Park, NJ - USA

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:

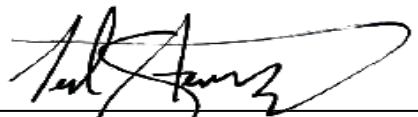
The Valve will move to the designed safe position when de-energized / energized within the specified safety time.

Application Restrictions:

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




Evaluating Assessor


Certifying Assessor

The manufacturer may use the mark:



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



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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.

IEC 61508 Failure Rates in FIT¹

| Type | Function and Safe Mode Considered | Series | No Diagnostics | | Automated PVST ² Diagnostics | | | |
|---|--|--------|-----------------|-----------------|---|-----------------|-----------------|-----------------|
| | | | λ _{SU} | λ _{DU} | λ _{SD} | λ _{SU} | λ _{DD} | λ _{DU} |
| SOV | Single Solenoid Valve, Spring Return, NC or NO, DTT | 362 | 624 | 389 | 607 | 17 | 344 | 45 |
| | Single Solenoid Valve, Spring Return, 4 Way, DTT | 562 | 626 | 680 | 617 | 9 | 624 | 56 |
| | Single Solenoid Valve, Spring Return, NC or NO, ETT | 362 | 35 | 610 | 23 | 12 | 563 | 47 |
| | Single Solenoid Valve, Spring Return, 4 Way, ETT | 562 | 47 | 890 | 43 | 4 | 837 | 53 |
| | Single Solenoid Valve, Spring Return, Latching, 4 Way, DTT | 562 | 627 | 592 | | | | |
| | Single Solenoid Valve, SR, Latching, 4 Way, Manual Trip (MT) | 562 | 297 | 447 | | | | |
| | Double Solenoid Valve, ETT | 362 | 41 | 898 | 28 | 13 | 820 | 78 |
| | Double Solenoid Valve, 4 Way, ETT | 562 | 41 | 928 | 37 | 4 | 860 | 68 |
| | Adder for >16 Watt Coils - DTT | All | 446 | 0 | 442 | 4 | 0 | 0 |
| Adder for >16 Watt Coils - ETT ³ | All | 0 | 94 | 0 | 0 | 93 | 1 | |
| Non-SOV | Pilot Operated, Spring Return, NC or NO, DTT | 362 | 158 | 261 | 143 | 15 | 231 | 30 |
| | Pilot Operated, Spring Return, 4 Way, DTT | 562 | 155 | 581 | 151 | 4 | 535 | 46 |
| | Pilot Operated, Spring Return, NC or NO, ETT | 362 | 30 | 391 | 18 | 12 | 359 | 32 |
| | Pilot Operated, Spring Return, 4 Way, ETT | 562 | 30 | 683 | 27 | 3 | 638 | 45 |
| | Pilot Operated, Spring Return, 4 Way, Manual Trip (MT) | 562 | 297 | 487 | | | | |
| | Double Pilot Operated, Detent, ETT | 362 | 30 | 573 | 18 | 12 | 521 | 52 |
| | Double Pilot Operated, Detent, 4 Way, ETT | 562 | 30 | 638 | 27 | 3 | 587 | 51 |
| | Pilot Operated, Spring Return, Latching, DTT | 362 | 220 | 312 | 215 | 5 | 281 | 31 |
| | Pilot Operated, Spring Return, Latching, 4 Way, DTT | 562 | 158 | 488 | | | | |
| | Pilot Operated, SR, Latching, 4 Way, Manual Trip (MT) | 562 | 30 | 440 | | | | |

¹ FIT = 1 failure / 10⁹ hours

² PVST = Partial Valve Stroke Test of a final element Device

³ Only one adder is used for ETT Double Solenoid Valves

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.

The following documents are a mandatory part of certification:

Assessment Report: ASC 13/-01-001 R001 V4R1 (or later)

Safety Manual: V9629 Rev JC (or later)

Series 362 3-Way & 562 4-Way Spool Valves



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