

The manufacturer  
may use the mark:



**Reports:**

ASCO 09/02-15-C R001  
FMEDA Report V2 R2

ASCO 09/02-15-C R003 IEC  
61508 Assessment Report  
V2 R1

**Validity:**

This assessment is valid for  
the Series 551, 552, and 553  
Pilot Operated Inline Spool  
Valves

This assessment is valid until  
Feb 28, 2013.

Revision 2.0 July 13, 2010



# Certificate / Certificat

## Zertifikat / 合格証

ASCO 09/02-15-C C001

*exida* hereby confirms that the:

**Series 551, 552, and 553 Pilot Operated  
Inline Spool Valves**

**ASCO Numatics, Lucé, France**

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.



*Ch O'B*

Product Assessor

*Steve J. Case*

Auditor

# Certificate / Certificat / Zertifikat / 合格証

ASCO 09/02-15-C C001

**Systematic Integrity: SIL 3 Capable**

**Random Integrity:**

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**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 551/552/553 Spool Valves in FIT\***

Failure Category	$\lambda_{sd}$	$\lambda_{su}$	$\lambda_{dd}$	$\lambda_{du}$	SFF
3/2 Single	0	1271	0	347	79%
3/2 Single NAMUR	0	1887	0	371	84%
3/2 Single, w/NF Operator	0	1429	0	333	81%
3/2 Single NAMUR, w/NF Operator	0	2045	0	358	85%
5/2 Single	0	1857	0	357	84%
5/2 Single NAMUR	0	1949	0	389	83%
5/2 Single w/NF Operator	0	2016	0	343	85%
5/2 Single NAMUR, w/NF Operator	0	2107	0	376	85%

## Applications

Series 551/552/553 Spool Valves	De-energize on trip, normally closed
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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

Series 551, 552, and 553 Pilot Operated Spool Valves

ASCO Numatics  
Lucé, France



Form	Version	Date
C61508	2.3	May 2010