

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 May, 2009



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'Brien

Product Assessor

Steve J. Case

Auditor

ASCO 09/02-15-C C001

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 551/552/553 Spool Valves in FIT*

Failure Category	λ_{sd}	λ_{su}	λ_{dd}	λ_{du}	SFF
Series 551/552/553 Spool Valves 3/2 Single	0 FIT	1601 FIT	0 FIT	507 FIT	76%
Series 551/552/553 Spool Valves 3/2 Single NAMUR	0 FIT	1937 FIT	0 FIT	551 FIT	78%
Series 551/552/553 Spool Valves 3/2 Single, w/NF Operator	0 FIT	1759 FIT	0 FIT	493 FIT	78%
Series 551/552/553 Spool Valves 3/2 Single NAMUR, w/NF Operator	0 FIT	2095 FIT	0 FIT	538 FIT	79%
Series 551/552/553 Spool Valves 5/2 Single	0 FIT	1905 FIT	0 FIT	659 FIT	74%
Series 551/552/553 Spool Valves 5/2 Single NAMUR	0 FIT	1997 FIT	0 FIT	691 FIT	74%
Series 551/552/553 Spool Valves 5/2 Single w/NF Operator	0 FIT	2070 FIT	0 FIT	659	76%
Series 551/552/553 Spool Valves 5/2 Single NAMUR, w/NF Operator	0 FIT	2161 FIT	0 FIT	692	76%

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 PF_{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 / 10⁹ hours

Series 551, 552, and 553 Pilot Operated Spool Valves

ASCO Numatics
Lucé, France



Form	Version	Date
C61508	2.20	Feb 2010