

# Certificate



**No.: V 72.11/15**

<b>Product tested</b>	Solenoid Control Valve with Safety Function	<b>Certificate holder</b>	Asco Joucomatic SA 53, Rue de Beauce BP 17 28111 Lucé France
<b>Type designation</b>	126 00 ... and 126 60 ...		
<b>Codes and standards</b>	IEC 61508 Parts 1-2 and 4-7:2010 IEC 61511 Parts 1-3:2004		
<b>Intended application</b>	Safety function: Open lower port and close upper port when de-energized and to vent the equipment connected to the middle port  The valves are suitable for use in a safety instrumented system up to SIL 2. Under consideration of the minimum required hardware fault tolerance HFT=1 the valves may be used in a redundant structure up to SIL 3.		
<b>Specific requirements</b>	The instructions of the associated Installation and Operating Manual shall be considered.		

Summary of test results see back side of this certificate.

Valid until 2019-07-17

The issue of this certificate is based upon an examination, whose results are documented in Report No. V 72.11/15 dated 2015-01-22.

This certificate is valid only for products which are identical with the product tested. It becomes invalid at any change of the codes and standards forming the basis of testing for the intended application.

**TÜV Rheinland Industrie Service GmbH**

Bereich Automation  
Funktionale Sicherheit

Am Grauen Stein, 51105 Köln

Köln, 2015-01-22

Certification Body for FS-Products

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**ASCO Joucomatic**  
**53, Rue de Beauce BP 17**  
**28111 Lucé**  
**France**

Manufacturer

**Solenoid Control Valve with Safety Function**  
**126 00 ... and 126 60 ...**

Product tested

Device-Specific Values		126 00 ...	126 60 ...
		standard design	very low demand design
Probability of Dangerous Failure on Demand	PFD <sub>spec</sub>	1.19 E-05	1.19 E-05
Test Interval	Ti	1 a	6 a
Useful lifetime		5 a	24 a
Confidence Level	1- $\alpha$	95 %	95 %
Safe Failure Fraction <sup>(see note)</sup>	SFF	94.7 %	94.7 %
Hardware Fault Tolerance	HFT	0	0
Diagnostic Coverage	DC	0 %	0 %
Type of Sub System		Type A	Type A
Mode of Operation		Low Demand	Low Demand
Proof Test Coverage	PTC	84 %	84 %
Maintenance Coverage	MTC	96 %	96 %

#### Note

The Safe Failure Fraction (SFF) was estimated by an alternative method with a FMEA according to EN 161:2011/A3:2013.

#### Derived Values for 1oo1-Architecture

Assumed Demands per Year	$f_{np}$	1 / a	1.14 E-04 / h	<< 1 / a	1.14 E-04 / h
Total Failure Rate	$\lambda_S + \lambda_D$	2.57 E-08 / h	26 FIT	2.57 E-08 / h	26 FIT
Lambda Dangerous Detected	$\lambda_{DD}$	0 E+00 / h	0 FIT	0 E+00 / h	0 FIT
Lambda Dangerous Undetected	$\lambda_{DU}$	1.36 E-09 / h	1 FIT	1.36 E-09 / h	1 FIT
Lambda Safe	$\lambda_S$	2.43 E-08 / h	24 FIT	2.43 E-08 / h	24 FIT
Mean Time Between Failures	MTBF	3.89 E+07 h	4 446 a	3.89 E+07 h	4 446 a
Mean Time Between Dangerous Failures	MTBF <sub>D</sub>	7.35 E+08 h	83 887 a	7.35 E+08 h	83 887 a
<b>Average Probability of Failure on Demand</b>	<b>PFD<sub>avg</sub></b>	<b>5.96 E-06</b>		<b>3.58 E-05</b>	

#### Time of Usage

A time of usage of more than 5 years (+ 1.5 years of storage) for 126 00 ... and more than 24 years (+ 1.5 years of storage) for 126 60 ... can only be favored under responsibility of the operator, consideration of specific external conditions (securing of required quality of media, max. temperature, time of impact), and adequate test cycles.

#### Quality Management

These statements are bound to a proven and verified deployment of safety-related quality management of the manufacturer.