TÜV Rheinland Industrie Service GmbH

TÜVRheinland®
Precisely Right.

LICENCE CERTIFICATE
for TÜV Rheinland Test Mark

No. V 551.01/17

Licence Holder:	**Manufacturer / Manufacturing Plant:**
Vastas Valf Armatur Sanayi Ticaret Anonom Sirketi OSB Sabanci Caddesi No: 22 Cerkezkoy 59500 Tekirdag Turkey	same as licence holder

Date of Application:	**File Ref.:**	**Date of Issue:**
2015-02-25	V 551.01/17	2017-02-28

Test Mark:

TÜVRheinland® CERTIFIED
SIL/PL Capability
www.tuv.com
ID 0600000000

Link for download:
http://fs-products.tuvasi.com/tm/3705

For products that are in conformity with the certified product described below, the holder of this Licence Certificate is authorized to use the TÜV Rheinland Test Mark shown on this page by affixing the same to the product and by using it in print and electronic media for information and advertising purposes for the certified product. All terms of the currently valid Regulation of Certification and Test Mark Regulation have to be considered.
The validity for use of the Test Mark is bound to the existence of a valid certificate for the certified product.

Annual Fee Units for Use of the Test Mark:	**Units of Fee:**
	4

Certified Product, Identification of the Device:

Kind of Product:	Quarter Turn Actuators	
Type Designation:	Pneumatic: GC, GN (single acting); GP (double acting) Gas: GK, GR (single acting) Hydraulic: GL, GF (single acting); GH (double acting)	
Technical Data:	Temperature range:	Standard: -29 °C to + 85 °C (-20 °F to + 185 °F) Optional: -40 °C to + 85 °C (-40 °F to + 185 °F) -60 °C to + 85 °C (-76 °F to + 185 °F)
	Pressure range of power supply:	Pneumatic: 5 - 10 bar Gas: 12 - 100 bar Hydraulic: 12 - 100 bar
	Operating medium	Natural gas, compressed air, nitrogen, hydraulic oil

Special Remarks:	Report-No. V 551.01/17 dated 2017-02-28 and Certificate No.: V 551.01/17 dated 2017-02-28

TÜV Rheinland Industrie Service GmbH
Bereich Automation
Funktionale Sicherheit
Am Grauen Stein, 51105 Köln

2017-02-28
Date

Certification Body
Safety & Security for Automation & Grid

Dipl.-Ing. Stephan Häb

TÜV, TUEV and TUV are registered trademarks. Utilisation and application requires prior approval.

Certificate

SIL/PL Capability

www.tuv.com
ID 0000000000

No.: V 551.01/17

Product tested	Quarter Turn Actuators	**Certificate holder**	Vastas Valf Armatur Sanayi Ticaret Anonom Sirketi OSB Sabanci Caddesi No: 22 Cerkezkoy 59500 Tekirdag Turkey
Type designation	Pneumatic: GC, GN (single acting); GP (double acting) Gas: GK, GR (single acting) Hydraulic: GL, GF (single acting); GH (double acting)		
Codes and standards	IEC 61508 Parts 1-2 and 4-7:2010		
Intended application	Safety function: On demand, the complete valve assembly goes into its fail safe position. The safety position of the actuator can correspond to either valve fully closed or fully opend initiated by compressed air, hydraulic oil, natural gas or spring force. The actuators are suitable for use in a safety instrumented System acc. IEC 61511-1:2016 up to SIL 2 (low demand mode). Under consideration of the minimum required hardware fault tolerance HFT=1 the final element may be used in a redundant architecture up to SIL 3.		
Specific requirements	The instructions of the associated Installation, Operating and Safety Manual shall be considered.		

Summary of test results see back side of this certificate.

Valid until 2022-02-28

The issue of this certificate is based upon an examination, whose results are documented in Report No. V 551.01/17 dated 2017-02-28.
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, 2017-02-28

Certification Body Safety & Security for Automation & Grid

Dipl.-Ing. Stephan Häb

www.fs-products.com
www.tuvasi.com

DAkkS Deutsche Akkreditierungsstelle D-ZE-11052-02-00

TÜVRheinland®
Precisely Right.

TÜV Rheinland Industrie Service GmbH, Am Grauen Stein, 51105 Köln / Germany
Tel.: +49 221 806-1790, Fax: +49 221 806-1539, E-Mail: industrie-service@de.tuv.com

10/222 12.12 E A4 ® TÜV, TUEV and TUV are registered trademarks. Utilisation and application requires prior approval.

TÜVRheinland®
Precisely Right.

Holder: **Vastas Valf Armatur Sanayi Ticaret Anonom Sirketi**
OSB Sabanci Caddesi No. 22
Cerkezkoy 59500 Tekirdag, Turkey

Product tested: **Quarter Turn Actuators**
Pneumatic:
GC, GN (single acting); GP (double acting)
Gas:
GK, GR (single acting)
Hydraulic:
GL, GF (single acting); GH (double acting)

Results of Assessment

Route of Assessment		2_H / 1_S	
Confidence Level	1-α	95 %	
Type of Sub-system		Type A	
Mode of Operation		Low Demand Mode	
Hardware Fault Tolerance	HFT	0	
Lambda Dangerous	λ_D	1.59 E-08 / h	16 FIT
Assumed Test Interval	T_1	8760 h	1 a
Assumed Diagnostic Coverage	DC	0 %	
Lambda Dangerous Undetected	λ_{DU}	1.59 E-08 / h	16 FIT
Mean Time To Dangerous Failure	$MTTF_D$	6.30 E+07 h	7,188 a
Average Probability of Failure on Demand 1oo1	**$PFD_{avg}(T_1)$**	**6.96 E-05**	

Periodic Tests and Maintenance
The given values require periodic tests and maintenance as described in the Safety Manual. The operator is responsible for the consideration of specific external conditions (ensuring of required quality of media, max. temperature, time of impact), and adequate test cycles.

Origin of values
The stated values are the result of extensive test series on the reliability of the safety function under critical conditions.
Random and systematic failures were examined, which are the responsibility of the manufacturer.

Systematic Capability
The development and manufacturing process and the functional safety management applied by the manufacturer in the relevant lifecycle phases of the product has been audited and assessed as suitable for the use in applications with a maximum Safety Integrity Level of 3 (SC 3).

TÜV Rheinland Industrie Service GmbH

TÜVRheinland®
Precisely Right.

LICENCE CERTIFICATE
for TÜV Rheinland Test Mark No. 968/V 1008.00/17

Licence Holder:	**Manufacturer / Manufacturing Plant:**
Vastas Valf Armatur Sanayi Ticaret A.S. Organize Sanayi Bolgesi, 2. Caddesi No: 22 Cerkezkoy 59500 Tekirdag Turkey	same as licence holder

Date of Application:	**File Ref.:**	**Date of Issue:**
2017-10-02	968/V 1008.00/17	2017-10-02

Test Mark:



Link for download:
http://fs-products.tuvasi.com/tm/3705

For products that are in conformity with the certified product described below, the holder of this Licence Certificate is authorized to use the TÜV Rheinland Test Mark shown on this page by affixing the same to the product and by using it in print and electronic media for information and advertising purposes for the certified product. All terms of the currently valid Regulation of Certification and Test Mark Regulation have to be considered.
The validity for use of the Test Mark is bound to the existence of a valid certificate for the certified product.

Annual Fee Units for Use of the Test Mark:	**Units of Fee:**
	4

Certified Product, Identification of the Device:

Kind of Product: Quarter Turn Actuators

Type Designation: GO - Gas Over Oil,
GT - Tandem Air & Manual Hydraulic,
GD - Double Acting Hydraulic

Technical Data:

Temperature range:	Standard:	-29 °C to + 85 °C (-20 °F to + 185 °F)
	Optional:	-40 °C to + 85 °C (-40 °F to + 185 °F)
		-60 °C to + 85 °C (-76 °F to + 185 °F)
Pressure range of power supply:		
	Gas	12 - 100 bar (GO Type)
	Pneumatic	4.5 - 10 bar (GT Type)
Operating medium:	Natural gas, compressed air, nitrogen, hydraulic oil	
Installation position:	all installation positions	

Special Remarks: Report-No. 968/V 1008.00/17 dated 2017-10-02 and
Certificate No.: 968/V 1008.00/17 dated 2017-10-02

TÜV Rheinland Industrie Service GmbH
Bereich Automation
Funktionale Sicherheit
Am Grauen Stein, 51105 Köln

2017-10-02
Date

Certification Body
Safety & Security for Automation & Grid

Dipl.-Ing. Stephan Häb

Certificate

SIL/PL Capability

TÜVRheinland® CERTIFIED

www.tuv.com
ID 0600000000

No.: 968/V 1008.00/17

Product tested	Quarter Turn Actuators	**Certificate holder**	Vastas Valf Armatur Sanayi Ticaret A.S. Organize Sanayi Bolgesi, 2. Caddesi No: 22 Cerkezkoy 59500 Tekirdag Turkey
Type designation	GO - Gas Over Oil, GT - Tandem Air & Manual Hydraulic, GD - Double Acting Hydraulic		
Codes and standards	IEC 61508 Parts 1-2 and 4-7:2010		
Intended application	Safety Function: Transition into fail safe position, which is configurable either valve fully closed or open. The Quarter Turn Actuators are suitable for use in a safety instrumented system e.g. acc. IEC 61511-1 in low demand applications up to SIL 2 if external diagnostic measures of DC ≥ 60 % are realized: - Pressure monitoring of Gas Hydraulic Tank (111) and Hydraulic Accumulator (11), - Position monitoring of Actuator (130), Pilot Solenoid Valves (105A, 105B) and Directional Valve (9) Under consideration of the minimum required hardware fault tolerance HFT=1 and the above mentioned diagnostic measures the final element may be used in a redundant architecture up to SIL 3.		
Specific requirements	The instructions of the associated Installation, Operating and Safety Manual shall be considered.		

Valid until 2022-10-02

The issue of this certificate is based upon an examination, whose results are documented in Report No. 968/V 1008.00/17 dated 2017-10-02.
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, 2017-10-02

Certification Body Safety & Security for Automation & Grid

Dipl.-Ing. Stephan Häb

www.fs-products.com
www.tuv.com

TÜVRheinland®
Precisely Right.

10/222 12. 12 E A4 ® TÜV, TUEV and TUV are registered trademarks. Utilisation and application requires prior approval.

TÜV Rheinland Industrie Service GmbH, Am Grauen Stein, 51105 Köln / Germany
Tel.: +49 221 806-1790, Fax: +49 221 806-1539, E-Mail: industrie-service@de.tuv.com