

GOVERNMENT APPROVED TEST LABORATORY
 IN TERMS OF ARP 0108: "REGULATORY REQUIREMENTS FOR EXPLOSION PROTECTED APPARATUS"

IA CERTIFICATE

Date Issued: **20 Sep 2018**
 *Expiry date: **20 Sep 2021**
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Issue: 1

Ex – Type Examination Certificate

Certificate Number: **S-XPL/16.0829 X**
 Equipment: **Safety Valve**
 Model / Type: **ASV, ASVG, KVAZ, FDS/VE, GSV**
 Applicant: **Heaton Valves Africa (Pty) Ltd**
PO Box 10
Molendrirt
6537

Manufacturer: **Albrecht-Automatik GmbH**
 Serial No: All serial numbers imported between issued- and expire date and all serial numbers covered by a valid report or acceptable product certification mark.

Supplied by
Heaton Valves Africa (Pty) Ltd
 Identified by Inspection Authority number
S-XPL/16.0829 X

And as described in the ExploLabs file number **XPL/17601/16.0829** is hereby certified "Explosion Protected (Refer to clause 1, for Ex Rating)", having been examined and inspected in accordance with the relevant requirements of South African Standards.

- EN 1127-1: 2007** Explosive atmospheres. Explosion prevention and protection. Basic concepts and methodology
- prEN 13463-1:2007** Non-electrical equipment for use in potentially explosive atmospheres - Part 1: Basic method and requirements.
- prEN 13463-5: 2009** Non-electrical equipment intended for use in potentially explosive atmospheres. Protection by constructional safety 'c'
- IEC 61508-1: 2010** Functional safety of electrical/electronic/ programmable electronic safety-related systems. General requirements
- IEC 61508-2: 2010** Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems
- IEC 61508-4: 2010** Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 4: Definitions and abbreviations
- IEC 61508-7: 2007** Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 7: Overview of techniques and measures
- IEC 61511-2: 2004** Functional safety - Safety instrumented systems for the process industry sector, Part 2: Guidelines for the application
- IEC 61511-3: 2004** Functional safety – Safety instrumented systems for the process industry sector – Part 3: Guidance for the determination of the required safety integrity levels

1. GENERAL

The marking of the Safety Valve shall include the following:
II -/2 GD c IIB Tx X

Intended application

Safety Function: Move into safe position on loss of auxiliary energy. 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 values may be used in a redundant structure up to SIL 3.

Device-Specific Values

Probability of Dangerous Failure on Demand	PFD _{spec}	2,05 E-04
Test Interval	Ti	1a
Confidence Level	1-a	95%
Safe Failure Fraction	SFF	89,25%
Hardware Fault Tolerance	HFT	0
Diagnostic Coverage	DC	0%
Type of Sub System		Type A
Mode of Operation		Low Demand
Proof Test Coverage	PTC	Not considered
Partial Stroke Test Coverage	PSTC	Not considered

Derived Values for 1001-Architecture

Assumed Demands per Year	f _{ap}	1/a	1,14 E-04/h
Total Failure Rate	A _S + A _D	2,18 E-07/h	218FIT
Lambda Dangerous Detected	A _{DD}	0,00 E+00/h	0FIT
Lambda Dangerous Undetected	A _{DU}	2,34 E-08/h	23FIT
Lambda Safe	A _S	1,94 E-07/h	194FIT
Mean Time Between Failures	MTBF	4,59 E+06 h	524a
Mean Time Between Dangerous Failures	MTBF _O	4,27 E+07h	4.877a
Average Probability of Failure on Demand	PFD _{avg}		1,03 E-04

Time of Usage

A time of usage of more than 5 years (1.5 years of storage) can only be favoured 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.

The issue of this certificate is based upon an examination, whose results are documented in Report No. V178.09/15 dated 2015-04-07.

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

Based on the following documentation: V 178.09/15

2. INSTALLATION INSTRUCTIONS

It is the manufacturer's responsibility to supply installation instructions with each unit offered for sale as required by IEC/SANS 60079-0 Clause 30.

3. SPECIAL CONDITIONS FOR SAFE USE (denoted by "X" after certificate number)

The instructions of the associated installation and operating manual shall be considered.

4. SCHEDULE OF LIMITATIONS (denoted by "U" after certificate number)

None.

