

# Certificate



SIL/PL  
Capability

www.tuv.com  
ID 0600000000

**No.: 968/V 1025.01/23**

## Product tested

Butterfly Valves in  
concentric and eccentric design

## Certificate holder

TTV Válvulas  
Técnicas  
Transformaciones y  
Ventas SA  
C/ Severo Ochoa, 11.  
P.I. Nuestra Señora de  
Butarque  
28914 Leganés (Madrid)  
Spain

## Type designation

Concentric soft seated: DN32 ... DN3000  
Concentric PTFE: DN32 ... DN600  
High Temperatur metal concentric: DN32 ... DN2000  
"Colossus" Metal/PTFE Double and triple eccentric: DN32 ... DN1600  
Double eccentric soft seat: DN32 ... DN1600

## Codes and standards

IEC 61508 Parts 1-2 and 4-7:2010

## Intended application

The safety function can either be:  
- Close on demand and external tightness  
- Open on demand and external tightness  
- Tight Shut Off on demand and external tightness  
The valves are suitable for use in a safety instrumented system up to SIL 2 in low demand mode. Under consideration of the minimum required hardware fault tolerance HFT = 1 the valves 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.

The issue of this certificate is based upon an evaluation in accordance with the Certification Program CERT FSP1 V3.0:2020 in its actual version, whose results are documented in Report No. 968/V 1025.01/23 dated 2023-07-06. This certificate is valid only for products, which are identical with the product tested. Issued by the certification body accredited by DAkkS according to DIN EN ISO/IEC 17065. The accreditation is only valid for the scope listed in the annex to the accreditation certificate D-ZE-11052-02-01.

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

Köln, 2023-08-07

Certification Body Safety & Security for Automation & Grid

Dipl.-Ing. (FH) Wolf Rückwart

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



**TÜVRheinland®**  
Precisely Right.

**Holder:** TTV Valvulas  
 C/ Severo Ochoa, 11.P.I. Nuestra Senora de  
 Butarque  
 28914 Leganes (Madrid)  
 Spain

**Product tested: Butterfly Valve in concentric & eccentric design**

### Results of Assessment

|                          |                 |
|--------------------------|-----------------|
| Route of Assessment      | $2_H / 1_S$     |
| Type of Sub-system       | Type A          |
| Mode of Operation        | Low Demand Mode |
| Hardware Fault Tolerance | HFT = 0         |
| Systematic Capability    | <b>SC 3</b>     |

#### Close on demand and external tightness

|                                               |                  |               |                |
|-----------------------------------------------|------------------|---------------|----------------|
| Dangerous Failure Rate                        | $\lambda_D$      | 2.40 E-07 / h | <b>240 FIT</b> |
| Average Probability of Failure on Demand 1001 | $PFD_{avg}(T_1)$ | 1.07 E-03     |                |
| Average Probability of Failure on Demand 1002 | $PFD_{avg}(T_1)$ | 1.08 E-04     |                |

#### Open on demand and external tightness

|                                               |                  |               |                |
|-----------------------------------------------|------------------|---------------|----------------|
| Dangerous Failure Rate                        | $\lambda_D$      | 3.08 E-07 / h | <b>308 FIT</b> |
| Average Probability of Failure on Demand 1001 | $PFD_{avg}(T_1)$ | 1.37 E-03     |                |
| Average Probability of Failure on Demand 1002 | $PFD_{avg}(T_1)$ | 1.39 E-04     |                |

#### Tight Shut Off on demand and external tightness

|                                               |                  |               |                |
|-----------------------------------------------|------------------|---------------|----------------|
| Dangerous Failure Rate                        | $\lambda_D$      | 2.10 E-07 / h | <b>210 FIT</b> |
| Average Probability of Failure on Demand 1001 | $PFD_{avg}(T_1)$ | 9.35 E-04     |                |
| Average Probability of Failure on Demand 1002 | $PFD_{avg}(T_1)$ | 9.44 E-05     |                |

Assumptions for the calculations above: DC = 0 %,  $T_1 = 1$  year, MRT = 72 h,  $\beta_{1002} = 10$  %

### Origin of failure rates

The stated failure rates for low demand are the result of an FMEDA with tailored failure rates for the design and manufacturing process.

Furthermore the results have been verified by field-feedback data.

Failure rates include failures that occur at a random point in time and are due to degradation mechanisms such as ageing. The stated failure rates do not release the end-user from collecting and evaluating application-specific reliability data.

### 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 (e.g. ensuring of required quality of media, max. temperature, time of impact), and adequate test cycles.