

FUNCTIONAL SAFETY CERTIFICATE

Registration No.: 5125068/01/01

Manufacturer: **ABO valve, s.r.o.**
Dalimilova 285/54
CZ-783 35 Olomouc

ID No.: **49609050**

Product: **Butterfly valves**

Type designation: **Series 900**

Product line: **Pw=6/10/16 bar**
Tw=-25 to +200°C

Technical standard and regulations: **Functional safety acc. to EN 61508-1, ed. 2,**
EN 61508-2, ed. 2
EN 61511, ed. 2

Inspection report No.: **5125068/01/04**

TÜV NORD Czech, s.r.o, as an independent organization (third party) according to EN 61508-4, article 3.8.13 confirms that the series 900 butterfly valves modification of the mentioned series together with flanged (or threaded) connection meet the requirements in systems with functional safety **SIL2** (for a separate device without actuator) according to EN 61508, **type A**.

The product can be used in:

- a) configuration of one channel 1oo1 to SIL2
- b) to SIL 2 without external diagnostic tests, or in configuration of two 1oo2 channels, or in one channel with series products up to SIL 3

This certificate is issued on the request of the manufacturer as voluntary certification; does not include the production supervision.

The company is certified by Quality Austria with an ISO 9001 certificate, no. 05209/0.

The certificate is valid until 05.June 2028

Prague, 05.June 2025

Place and date

Libor Laňka

Certification and Inspection Body
TÜV NORD Czech, s.r.o.

TÜV NORD Czech, s.r.o.
Českomoravská 2420/15
CZ-190 00 Praha 9
tuev-nord.cz

Attachment of the functional safety certificate no. 5125068/01/01

Member of functional reliability report	Delivery of series 900 butterfly valves without actuator and limit switch				
Type of subsystem	EN 61508-2, Article 7.4.4.2.2, Type A				
Hardware failure tolerance	HFT ₁₀₀₁	0	HFT ₁₀₀₂	1	
Diagnostic coverage	DC	0%			
Safety functions	Delivery of valves without actuator and limit switch				
Mode of operation	Low Demand Mode				
Systematic Capability	SC3				
1 year	8760 hours				
Architectural constraints	Route 2 _H /1 _s	SIL2 can be reached in a 1001 architecture and SIL3 in a 1002 architecture			

Random failure rates (1FIT=10E-09/hour)					
Configuration 1001	Safety function	λ_S [FIT]	λ_{DU} [FIT]	λ_{DD} [FIT]	λ_D [FIT]
Database from 2020 to 2024, n=191 517		0	9,5	4,2	13,7
Remark: in summary from 2020 to 2024; with λ_D ($\lambda_{DD} + \lambda_{DU}$) on new installation					
				PFD _{avg}	--
PFD _{avg} , (TI=1 year; PTC 100%; with $\lambda_{DD} + \lambda_{DU}$)			1001	6,0 E-05	--
				PFD _{avg}	PFD _{avg}
				only with λ_{DU}	$\lambda_{DD} + \lambda_{DU}$
PFD _{avg} (TI=1 year, PTC=70%, LT=5 years)- Visual test only			1001	9,15 E-05	1,32E-04
PFD _{avg} (TI=1 year, PTC=95%, LT=5 years) Visual test and torque, seal tightness and closing time control			1001	4,99 E-05	7,20 E-05
PFD _{avg} (TI=1 year, β =10%, PTC=70%, LT=5 years) Visual test only			1002	9,16 E-06	1,32 E-05
PFD _{avg} (TI=1 year, β =10%, PTC=95%, LT=5 years) Visual test and torque, seal tightness and closing time control			1002	5,0 E-06	7,21 E-06
PFD _{avg} (PVST= 6 months; FVST=1 year)			1001	2,7 E-05	3,90 E-05
PFD _{avg} (PVST= 3 months; FVST=1 year)			1001	1,97 E-05	2.90 E-05
1001=SIL 2; HFT=0 , SC3 @ 1002=SIL 3; HFT 1; Route 2 _H /1 _s					

Annotation:

LT - live time, PTC - proof test coverage, TI - test interval; PVST partial valve stroke test; FVST full valve stroke test

Remark:

Further details, including environmental conditions, usage limitations, service life and failure rate traceability, can be found in the document "SIL manual IMS-716 from 04.11.2022 from ABO valve.

END OF THE CERTIFICATE



Elaborated by the inspector:

Ing. Schieferstein

TÜV NORD Czech, s.r.o.
Českomoravská 2420/15
CZ-190 00 Praha 9
tuev-nord.cz

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