

INSPECTION CERTIFICATE

Registration No.: 5119154-3E/19

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

ID No.: **49609050**

Product: **triple eccentricity shut-off (or regulating) flap**

Type designation: **3E**

Product line: **DN 80-125, PN 6-50;
DN 150-200, PN 6-40
DN 250-800, PN 6-25 for use in the temperature
range from -60 ° C to +500 ° C depending on the
material variant intended for gases and liquids**

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

Inspection report No.: **5119154/01/01**

TÜV NORD Czech, s.r.o, as an independent organization (third party) according to ČSN EN 61508-4, article 3.8.13 confirms that the 3E valves with actuator 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 ČSN 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

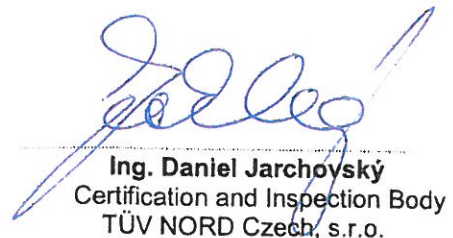
This certificate is issued at the request of the manufacturer as voluntary certification; does not include the production supervision.

The certificate is valid until 17.12.2022

Prague, 17.12.2019

Place and date




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

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TÜV NORD GROUP

Attachment of the inspection certificate no. 5119154-3E/19

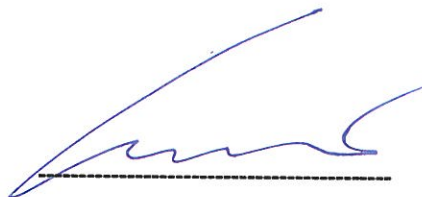
Member of functional reliability report	Butterfly valve 3E series with triple eccentricity, without limit switch	
Type of subsystem	ČSN EN 61508-2, para. 7.4.3.1.3, type A	
Hardware failure tolerance	HFT	0
Diagnostic coverage	DC	69%
Safety functions	Delivery of regulation and shut-off flap without actuator	
Mode of operation	Low Demand Mode	

Systematic Capability	SC 3					
1 year	8760 hours					
Architectural constraints	Route 1H:	Use (SFF)	Route 2H:	Use (reclamations)	Route 2s:	acc.to NE 130
	SIL2 can be reached in a 1oo1 architecture and SIL3 in a 1oo2 architecture					
Random failure rates						
Configuration 1oo1	Safety function	λ_{DU} [1/a]	λ_{DD} [1/a]	λ_{SD} [1/a]	λ_D [1/a]	
	Flats 3E	1,115E-04	2,475E-04	0,00E+00	3,59E-04	
safe failure fraction	SFF	%		68,9		
average probability of failure to perform its safety function on demand			$PFD_{AVG(1oo1)}$	1,795E-04		
Average probability of failure to perform its safety function on demand at partial stroke test every 3 months				4,43E-05		
Remark:	Partial stroke test(PST) every 2 to 3 months					

Remarks:

For further details, including environmental conditions, limitations of use, lifetime, failure rates traceability, make reference to in the Safety Instructions for Installation, Operation and Maintenance of ABO Butterfly Valves Series 3E. Certification of flats 3E does not include fire resistance and dissipation of static electricity.

END OF CERTIFICATE



Elaborated by the inspector: Ing. Oldrich Schieferstein

