



CERTIFICATE

according to IEC EN 61508

Certificate No.: TUV IT 24 SIL 0348

CERTIFICATE OWNER: Chaoda Valves Group Co., Ltd.
Registered Address: Jiangbei Street, Oubei, Yongjia,
PC: 325105, Zhejiang Province, P. R. China
Manufacturing Address: Wuxing Industry Zone, Oubei,
Yongjia, PC: 325105, Zhejiang Province, P. R. China

**WE HEREWITH CONFIRM THAT
CD SERIES GATE VALVES
MEET THE SIL REQUIREMENTS DETAILED IN THE ANNEXED TABLE
FOR THE SAFETY FUNCTIONS:**

***SIF1: “correct switching on demand (open to closed) and tight for closing phase,
in low demand mode of operation”***

***SIF2: “correct switching on demand (closed to open), in low demand mode of
operation”***

Examination result: The above reported CD Series Gate Valves were found to meet the standard defined requirements of the safety levels detailed in the following table according to IEC EN 61508, under fulfillment of the conditions listed in the Report R TUV IT 24 SIL 0321, on which this Certificate is based

Examination parameters: Construction/Functional characteristics and reliability and availability parameters of the above mentioned CD Series Gate Valves

Official Report No.: R TUV IT 24 SIL 0321

Expiry Date February, 22nd 2027

THE PRESENT DOCUMENT SUBSTITUTES AND REPEALS THE DOCUMENT C-IS-722244543

Reference Standard IEC EN 61508:2010 Part 2, 4, 6, 7

Milan, February, 23rd 2024

TÜV ITALIA Srl



TÜV ITALIA Srl
Industrie Service Division
Managing Director

Alberto Carelli

SUMMARY TABLE



Italia

<i>E/EE/EP safety-related system (final element)</i>	CD Series Gate Valves produced by Chaoda Valves Group Co., Ltd.	
<i>System type</i>	Type A	
<i>Systematic Capability</i>	SC3	
<i>Safety Function Definition</i>	<i>SIF1: “Correct switching on demand (open to closed) and tight for closing phase, in low demand mode of operation”</i>	<i>SIF2: “Correct switching on demand (closed to open), in low demand mode of operation”</i>
<i>Max SIL⁽¹⁾</i>	SIL3	SIL3
λ_{TOT}	2,326E-09	2,326E-09
λ_{NE}	5,566E-10	7,959E-10
λ_S	0,000E+00	0,000E+00
$\lambda_{DD,PST}^{(2)}$	4,720E-10	1,126E-09
$\lambda_{DU,FPT}$	1,298E-09	4,041E-10
<i>β and β_D factor</i>	10%	10%
<i>MRT</i>	8 h	8 h
<i>Hardware Safety Integrity</i>	Route 2 _H	Route 2 _H
<i>Systematic Safety Integrity</i>	Route 2 _S	Route 2 _S
Remarks (1) The Safety Integrity Level (SIL) of the entire Safety Instrumented Function (SIF) must be verified via a calculation of PFD _{AVG} considering the redundant architectures, proof test interval, proof test effectiveness, any automatic diagnostics, average repair time and the specific failure rates of all products included in the SIF. Each subsystem must be checked to assure compliance with the minimum hardware fault tolerance (HFT) requirements. (2) Considering an automatic Partial Stroke Test.		

SIL classification according to Standard IEC EN 61508:2010 CD Series Gate Valves produced by Chaoda Valves Group Co., Ltd.

NOTE: The present table is integral part of the Document TUV IT 24 SIL 0348
Date: February, 23rd 2024