

SIL



Functional Safety Certificate

No. 01190419.LCVUS94

Certificate's Holder:

LONG CHENG VALVES CO., LTD.
Dabu Pingpu Industrial Zone, Sanxiang Town, Zhongshan City,
Guangdong Province.

**Product:
Model(s):**

Ball Valve
TC2** /TC1** Series

Standard:

Standard:
Has been assessed per the relevant requirements of:
IEC 61508:2010 Parts 1-7
And meets requirements providing a level of integrity to:
Systematic Capability: SC 3 (SIL 3 Capable)
Random Capability: Type A Element
SIL 3@ HFT=1; SIL 2@ HFT=0 Route 2H
PFDavg and Architecture Constraints must be verified each application

* Safety Function:
The Valve will move to the designed safe position when on working within the specified safety time.

* Application Restrictions:
The unit must be properly designed into a Safety Instrumented Function per the Safety Manual requirements.

* Is suitable to be safety function according to the description and the configuration defined in Annex I.

Verification Mark:



The Verification Mark can be affixed on the product. It is NOT permitted to alter the Verification Mark in any way

Remark: This SIL Verification of Compliance has been issued on a voluntary basis. ECM confirms that a Test Report is existent for the above listed product(s) and found to meet the requirements of above standards for application in safety related system up to Safety Level of SIL 3.
The unit must be properly designed into a Safety Instrument Function as per the requirements in the Safety Manual. The Verification Mark shown above can be affixed on the product. It is NOT permitted to alter the Verification Mark in any way. In addition the Verification's Holder is NOT allowed to transfer the Verification to third parties. This certificate can be checked for validity at www.entecerma.it

Date of issue 19 April 2019

Expiry date 18 April 2024

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Annex I

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- SC 3 (SIL 3 Capability):
The product has met manufacturer design process requirements of Safety Integrity Level (SIL) 3. These are intended to achieve sufficient integrity against systematic errors of design by the manufacturer.
- Acceptable environmental constraints for the system are recalled in the safety Manual. These elements must be checked for each integration operation of the product.
- The SIL 3 capable certified Safety Instrumented Function of product is the following:
 - SF1: To actuate valve to close.
 - SF2: to actuate valve to open.
- Hypothesis used for calculations are presented here under: The mode of operation is Low demand, which means less than 1 trip demand each year;

Component architecture	SIL Capability	Demand frequency	PFD
1oo1 configuration	SIL2	Low	1.64E-03
1oo2 configuration	SIL3	Low	1.73E-04

Safety function	Failure rate	Undetected dangerous failure rate	Tests intervals	MTTR
SF1	3.52E-07	3.82E-07	12months	24h
SF2	1.34E-07	1.21E-07	12months	24h

- The Safety Integrated Level of the safety function using the product shall be calculated taking into account the characteristics of the whole system.