

# C E R T I F I C A T E

This certifies, that the company

**Duncan Engineering Limited**  
**F-33, MIDC, Ranjangaon, Karegoan, Tal-Shirur**  
**Pune - 412220, Maharashtra, India**

Is authorized to provide the product mentioned below

Description of product: **Cylinders**  
**1. INCH Series**  
**2. ISO Series**

In accordance with: **EN 61508:2010 Parts 2, 4**

Registration No 23 23695 01  
Test Report No PS-23695-23-M  
File reference 23695-01



TÜV NORD Italia S.r.l. (TÜV NORD Group)  
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Validity  
from 2023-04-04  
until 2026-04-04

Cerro Maggiore, 2023-04-04  
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*Please also pay attention to the information stated overleaf*

# ANNEX

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To Certificate-Nr. 23 23695 01

E/EE/EP safety-related system (final element)		Cylinders produced by Duncan Engineering Limited	
Size (Class)		G1	
Series		INCH	ISO
Environment / Application <sup>(1)</sup>	Size	1 1/2" to 14"	12mm to 320mm
	Pressure Rating	Upto 10 bar	Upto 10 bar
	Temperature Range	-60 °C to +125 °C	-60 °C to +125 °C
Safety Function Definition		Correct switching (Open to Close / Close to open) on demand , in low demand mode of operation	
Max SIL (with HFT = 0)		SIL2	
Max SIL (with HFT = 1)		SIL3	
SC		SIL3	
λ <sub>TOT</sub>		4,59E-08	
λ <sub>s</sub>		0.00E+00	
λ <sub>DU</sub>		4,59E-08	
PFD <sub>avg</sub> <sup>(2)</sup> (FPT 12 months)		8,08E-04	
FPT interval		12 months	
β and β <sub>D</sub> factor		10%	
MRT		8 h	
Hardware Safety Integrity		Route 2 <sub>H</sub>	
Systematic Safety Integrity		Route 2 <sub>S</sub>	
Remarks			
(1) Category identified according to specific environment and application, in particular for cylinder design for the specific fluid type and temperature range. Refer to the product safety manual for the detailed information on the categories.			
(2) PFD of reference calculated on the basis of a Full Functional Proof Test with time intervals reported for HFT = 0 configuration only. This time interval is considered by TÜV as reasonably consistent with the implementation of the equipment for safety related-applications, with reference to the overall range of results shown in the report, where other possible combination of time intervals adequate for a classification up to the SIL reported. Note that, concerning Full Proof Tests and the Partial Stroke Test, time intervals respectively higher than 36 months and 12 months are considered by TÜV as not adequate and consistent for equipment for safety related applications.			