



Italia

# COMPLIANCE

with IEC EN 61508:2010

Certificate No.: C-IS-257230

CERTIFICATE OWNER: IMI TRUFLO RONA S.r.l.  
Via E. GRILLI S.NICOLÒ, 2/A  
29010 ROTTOFRENO (PC)

WE HEREWITH CONFIRM THAT

**BALL VALVES:** Side entry ball valve bolted body, Side entry ball valve fully welded  
body and Top entry ball valve

**MEET THE SIL REQUIREMENTS DETAILED IN THE ANNEXED TABLES**

**FOR THE SAFETY FUNCTION:**

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

**Examination result:** The above described report was found to meet the standard defined requirements of the safety levels detailed in the following tables (T-IS-257230) according to IEC 61508:2010, under fulfillment of the conditions listed in the Report R-IS-257230 Rev. 1 dated April 30<sup>th</sup> 2015 in its currently valid version, on which this Certificate is based

**Examination parameters:** Construction/Functional characteristics and reliability and availability parameters of the above ball valves

**Official Report No.:** R-IS-257230 Rev. 1

**Expiry Date** April, 29<sup>th</sup> 2018

**IT IS TO BE INTENDED THAT THE ABOVE OFFICIAL REPORT AND ITS ANNEXES ARE AN  
INTEGRAL PART OF THIS DOCUMENT  
THE PRESENT DOCUMENT SUBSTITUTES AND REPEALS THE DOCUMENTS C-IS-  
239259 Rev. 1**

**Reference Standard** IEC EN 61508:2010 Part 1, 2, 4, 6, 7

**Sesto San Giovanni, April, 30<sup>th</sup> 2015**

TÜV ITALIA Srl



TÜV ITALIA Srl  
Industry Service Division  
Director

Gennaro Oliva



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## SUMMARY TABLE T – IS – 257230

<i>E/EE/EP safety-related system (final element)</i>	<b>BALL VALVES produced by IMI TRUFLO RONA (ITALY)</b>					
<i>System type</i>	Type A					
<i>Class</i>	Side entry ball valves bolted body	Side entry ball valves fully welded body	Top entry ball valves			
<i>Safety Function Definition</i>	<i>“Correct switching on demand (open to closed and closed to open) and tight for closing phase, in low demand mode of operation”</i>					
<i>Max SIL claimable</i>	SIL 2 (with HFT = 0)	SIL 3 (with HFT = 1)	SIL 2 (with HFT = 0)	SIL 3 (with HFT = 1)	SIL 2 (with HFT = 0)	SIL 3 (with HFT = 1)
<i>Additional requirements for the max SIL classification</i>	<i>Execution of Partial Stroke Test with time interval not higher than 2 months and Full Functional Proof Test with time interval not higher than 12 months</i>		<i>Execution of Partial Stroke Test with time interval not higher than 2 months and Full Functional Proof Test with time interval not higher than 12 months</i>		<i>Execution of Partial Stroke Test with time interval not higher than 2 months and Full Functional Proof Test with time interval not higher than 12 months</i>	
$\lambda_{TOT}$	1,55E-06		1,40E-06		1,54E-06	
$\lambda_S$	7,57E-07		7,32E-07		7,57E-07	
$\lambda_{DD}$	5,78E-08		4,50E-08		5,78E-08	
$\lambda_{DU}$	3,22E-07		3,22E-07		3,18E-07	
$\lambda_{DU,FFT}$	9,35E-08		9,35E-08		9,35E-08	
$\lambda_{DU,PST}$	2,29E-07		2,29E-07		2,25E-07	
<b><math>PFD^{(1)}</math></b>	<b>5,772E-04</b>		<b>5,771E-04</b>		<b>5,742E-04</b>	
<i><math>\beta</math> and <math>\beta_D</math> factor</i>	10%		10%		10%	
<b>MTTR</b>	8 h		8 h		8 h	
<b>SFF</b>	72%		71%		72%	
<b>DC</b>	15%		12%		15%	
<b>Hardware Safety Integrity</b>	Route 1 <sub>H</sub>		Route 1 <sub>H</sub>		Route 1 <sub>H</sub>	
<b>Systematic Safety Integrity</b>	Route 1 <sub>S</sub>		Route 1 <sub>S</sub>		Route 1 <sub>S</sub>	
<p><b>Remarks</b>            (1) PFD of reference calculated on the basis of a Partial Stroke Test with time interval reported. This time intervals are 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 SIL 3 are reported. Note that, concerning Partial Stroke Test, time intervals for higher than 12 months are considered by TÜV as not adequate and consistent for equipment for safety related applications.</p>						

*SIL classification according to Standards IEC EN 61508:2010 (Chapters: 1, 2, 4, 6, 7) for the ball valves produced by IMI TRUFLO RONA S.r.l. – Without automatic Partial Stroke Test*



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NOTE : The present table is integral part of the Document: C – IS – 257230  
Date: April, 30<sup>th</sup> 2015



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<i>E/EE/EP safety-related system (final element)</i>	<b>BALL VALVES produced by IMI TRUFLO RONA (ITALY)</b>		
<i>System type</i>	Type A		
<i>Class</i>	Side entry ball valves bolted body	Side entry ball valves fully welded body	Top entry ball valves
<i>Safety Function Definition</i>	<i>“Correct switching on demand (open to closed and closed to open) and tight for closing phase, in low demand mode of operation”</i>		
<i>Max SIL claimable</i>	<b>SIL 3 (with HFT = 0)</b>	<b>SIL 3 (with HFT = 0)</b>	<b>SIL 3 (with HFT = 0)</b>
<i>Additional requirements for the max SIL classification</i>	<i>Execution of Full Functional Proof Test with time interval not higher than 12 months</i>	<i>Execution of Full Functional Proof Test with time interval not higher than 12 months</i>	<i>Execution of Full Functional Proof Test with time interval not higher than 12 months</i>
$\lambda_{TOT}$	1,55E-06	1,40E-06	1,54E-06
$\lambda_S$	7,57E-07	7,32E-07	7,57E-07
$\lambda_{DD}$	2,86E-07	2,74E-07	2,82E-07
$\lambda_{DU}$	9,35E-08	9,35E-08	9,35E-08
$\lambda_{DU,FPT}$	9,35E-08	9,35E-08	9,35E-08
<b>PFD</b>	<b>4,936E-04</b>	<b>4,935E-04</b>	<b>4,921E-04</b>
<i><math>\beta</math> and <math>\beta_D</math> factor</i>	10%	10%	10%
<b>MTTR</b>	8 h	8 h	8 h
<b>SFF</b>	92%	92%	92%
<b>DC</b>	75%	75%	75%
<i>Hardware Safety Integrity</i>	Route 1 <sub>H</sub>	Route 1 <sub>H</sub>	Route 1 <sub>H</sub>
<i>Systematic Safety Integrity</i>	Route 1 <sub>S</sub>	Route 1 <sub>S</sub>	Route 1 <sub>S</sub>

*SIL classification according to Standards IEC EN 61508:2010 (Chapters: 1, 2, 4, 6, 7) for the ball valves produced by IMI TRUFLO RONA S.r.l. – With automatic Partial Stroke Test*



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