

**Certificate of Conformity No.: 28716268**

**Manufacturer:** GT Attuatori S.r.l.  
Viale Europa, 17  
I-20090 Cusago (MI)

**Specifications:** IEC 61508-1÷7:2010

**Product:** Pneumatic rack & pinion double acting actuator

**Type:** Series GTX, GTK, GTW, RCR

**RESULT:**

As per the TÜV Rheinland Italia Report No. FS 28716268 Rev. 0, we declare that the product meets the below requirements:

**IEC 61508: 2010, part 1 to 7**

**Functional Safety of electrical/electronic/programmable electronic safety related systems; Type A, Low Demand Mode, HFT=0**

Safety Action	Actuator Class	$\lambda_D$ [1/h]	$\lambda_{DD(PS)}$ [1/h]	Systematic Capability
Close / Open	A 14 Nm < Torque < 120 Nm	5,48E-09	4,99E-09	3
Close / Open	B 120 Nm < Torque < 690 Nm	5,42E-09	4,94E-09	3
Close / Open	C 690 Nm < Torque < 8000 Nm	5,59E-09	5,09E-09	3

The above values are compatible with SIL 3.

The requirements of minimum hardware fault tolerance (HFT) according to par. 11.4.3 of IEC 61511-1 have to be observed.

The product can be used up to SIL 2 without external diagnostics.

For further details, see what written in the Safety Manual.

**Expiry date: 2019-09-30**

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Location **Milan**  
Date **2016-09-07**

Diego Sirtori  
Business Stream Manager



Attachment 1 to  
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**Manufacturer:** GT Attuatori S.r.l.  
 Viale Europa, 17  
 I-20090 Cusago (MI)

**Specifications:** IEC 61508-1÷7:2010

**Product:** Pneumatic rack & pinion double acting actuator

**Type:** Series GTX, GTK, GTW, RCR – Class A

		Test Interval Frequency (months)				
		6	12	24	36	48
Partial Stroke frequency (months)	1	3,13E-06	4,33E-06	6,73E-06	9,13E-06	1,15E-05
	2	4,93E-06	6,13E-06	8,53E-06	1,09E-05	1,33E-05
	3	6,73E-06	7,93E-06	1,03E-05	1,27E-05	1,51E-05
	6		1,33E-05	1,57E-05	1,81E-05	2,05E-05
	9				2,35E-05	
	12			2,65E-05	2,89E-05	3,13E-05

PFD<sub>AVG</sub> values according to IEC 61508 for different values of TI and TI<sub>PS</sub>

Test Interval Frequency (months)				
6	12	24	36	48
1,21E-05	2,41E-05	4,81E-05	7,21E-05	9,61E-05

PFD<sub>AVG</sub> values according to IEC 61508 for different values of TI (no Partial Stroke Test)

NOTES:

- The above values of PFD<sub>AVG</sub> are calculated for MRT=24 h and Proof Test Coverage=100%. For other values of MRT, TI, TI<sub>PS</sub> and/or non-perfect Proof Test, the PFD<sub>AVG</sub> values must be re-calculated.
- The PFD<sub>AVG</sub> values including Partial Stroke Test are calculated considering the use of a commercial automatic Partial Stroking Test System: for further details, see the Safety Manual.

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Attachment 2 to  
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**Manufacturer:** GT Attuatori S.r.l.  
 Viale Europa, 17  
 I-20090 Cusago (MI)

**Specifications:** IEC 61508-1÷7:2010

**Product:** Pneumatic rack & pinion double acting actuator

**Type:** Series GTX, GTK, GTW, RCR – Class B

		Test Interval Frequency (months)				
		6	12	24	36	48
Partial Stroke frequency (months)	1	3,10E-06	4,29E-06	6,66E-06	9,04E-06	1,14E-05
	2	4,88E-06	6,07E-06	8,44E-06	1,08E-05	1,32E-05
	3	6,66E-06	7,85E-06	1,02E-05	1,26E-05	1,50E-05
	6		1,32E-05	1,56E-05	1,79E-05	2,03E-05
	9				2,33E-05	
	12			2,63E-05	2,86E-05	3,10E-05

PFD<sub>AVG</sub> values according to IEC 61508 for different values of TI and TI<sub>PS</sub>

Test Interval Frequency (months)					
6	12	24	36	48	
1,20E-05	2,39E-05	4,76E-05	7,14E-05	9,52E-05	

PFD<sub>AVG</sub> values according to IEC 61508 for different values of TI (no Partial Stroke Test)

NOTES:

- The above values of PFD<sub>AVG</sub> are calculated for MRT=24 h and Proof Test Coverage=100%. For other values of MRT, TI, TI<sub>PS</sub> and/or non-perfect Proof Test, the PFD<sub>AVG</sub> values must be re-calculated.
- The PFD<sub>AVG</sub> values including Partial Stroke Test are calculated considering the use of a commercial automatic Partial Stroking Test System: for further details, see the Safety Manual.

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Attachment 3 to  
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Viale Europa, 17  
I-20090 Cusago (MI)

**Specifications:** IEC 61508-1÷7:2010

**Product:** Pneumatic rack & pinion double acting actuator

**Type:** Series GTX, GTK, GTW, RCR – Class C

		Test Interval Frequency (months)				
		6	12	24	36	48
Partial Stroke frequency (months)	1	3,19E-06	4,42E-06	6,86E-06	9,31E-06	1,18E-05
	2	5,03E-06	6,25E-06	8,70E-06	1,11E-05	1,36E-05
	3	6,86E-06	8,09E-06	1,05E-05	1,30E-05	1,54E-05
	6		1,36E-05	1,60E-05	1,85E-05	2,09E-05
	9				2,40E-05	
	12			2,71E-05	2,95E-05	3,20E-05

PFD<sub>AVG</sub> values according to IEC 61508 for different values of TI and TI<sub>PS</sub>

Test Interval Frequency (months)				
6	12	24	36	48
1,24E-05	2,46E-05	4,91E-05	7,36E-05	9,80E-05

PFD<sub>AVG</sub> values according to IEC 61508 for different values of TI (no Partial Stroke Test)

NOTES:

- The above values of PFD<sub>AVG</sub> are calculated for MRT=24 h and Proof Test Coverage=100%. For other values of MRT, TI, TI<sub>PS</sub> and/or non-perfect Proof Test, the PFD<sub>AVG</sub> values must be re-calculated.
- The PFD<sub>AVG</sub> values including Partial Stroke Test are calculated considering the use of a commercial automatic Partial Stroking Test System: for further details, see the Safety Manual.

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