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A Rhode Island Safety Alert

Posted 10-Jun-2009 - Last updated 24-Jun-2017

Manufacturer: [Sartori](#)

Posted By: [Rhode Island Building Commission](#)

Good Day CARES Subscribers: Following are deficiencies in the Sartori Twister/1001 Nights Manual, regarding ONLY the 14 vehicle bolts and nuts:

- Grades of bolts and nuts are not specified.
- Tightening specs (torque chart) not provided.

Consequences arising from the above deficiencies

- As years go by, bolts and nuts are replaced in routine maintenance. Bolts and nuts must be replaced in kind (grade 8.8 for 8.8 and 10.9 for 10.9). Replacing with higher grade, and tightening to the higher grade may damage the plates being mated or connected. However, the worst case scenario inspectors must watch for happens if an operator changes a bolt to a higher grade and fails to replace the nut with a new nut compatible with the higher grade. If the operator tightens to the higher grade standard, the original grade nut will be damaged and will eventually fail under this worst case scenario. Therefore any replacement other than in kind must be done in strict coordination with the manufacturer.
- Because the amount of tightening (torque) is not specified, some operators may conclude that the intent of the manufacturer is for them to follow a "tighten as much as you can" standard. Such a standard for tightening will eventually damage the nuts. A damaged nut deteriorates over time and will eventually fail completely. At such point, it would be simple to get the bolt out by hand since a failed nut is equivalent to a missing nut. Please make sure tightening standards are available and are never exceeded.
- An Operator might go to the internet to get tightening specs (torque values) for the bolt size and grade. Even if he does that, he will be overtightening. The generic internet values will most likely be for a different applications (e.g. buildings, which are never subject to multiple assembly/disassembly or to repeated dynamic forces). Sartori validated this issue when they sent two sets of torque value according to the particular application. One set was for Frequent Assembly/Disassembly, and the other for Rare assembly/disassembly.

Please ask the jurisdiction(s) you work with to contact the manufacturer directly and obtain All the information they perceive as missing from the Manual.

The attached diagram and charts, as well as an e-mail, all from Sartori, are the information Rhode Island obtained from the manufacturer on the Vehicle Bolts and Nuts ONLY. Please do not rely on this information as it may not be complete and/or sufficiently accurate. This serves only as an Alert that Safety Critical information are missing from the Manual and must be obtained directly from the Manufacturer.

 [20090608153339363.pdf](#)

 [20090608153358348.pdf](#)

Rides and Devices:

[Twister](#)

[1001 Nachts](#)

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recommendations should be verified with the manufacturer and/or the jurisdictional authority to ensure safe and proper use. If you identify any errors, please [contact CARES](#).

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From: "Carlo Guglielmi" <Carlo@italintl.com>
To: "Magdy Guirguis" <MagdyG@gw.doa.state.ri.us>
Date: 5/21/2009 11:50:23 AM
Subject: FW: FW: Sartori Twister No. 1500003 - 1998

Magdy,
see below the e-mail I just received from the Twister manufacturer
Sartori.
Best regards

CARLO GUGLIELMI

Chief manager

Ital International LLC and Bertazon America LLC

4117 Hillsboro Pike, Ste. 103-358

Nashville, TN 37215

Tel: +1 (615) 383 3986 ext. 402; fax 383 9244 Cell : +1-(615) 347 5295

e-mail: carlo@italintl.com

web site: www.italintl.com
<file:///C:/Documents%20and%20Settings/Carlo/Application%20Data/Microsof
t/Signatures/www.italintl.com>

From: gabriella
Sent: Thursday, May 21, 2009 10:35 AM
To: Carlo Guglielmi
Subject: Rif: FW: Sartori Twister No. 1500003 - 1998

Dear Carlo,

Further to your request please take note that Sartori's Technical
Department confirms that based on structural calculations of the Twister
ride, the grade of bolts on vehicle are minimum grade 8.8.
The fact that have been found some bolts grade 10.9 in any case is not a
problem for the good and safe operation of the ride.

Here below the tightening torque the client requires

M8

Frequent assembly/disassembly: GRADE 8.8 = 16 lbf*ft
GRADE 10.9 = 24 lbf*ft

Rare assembly/disassembly: GRADE 8.8 = 18 lbf*ft
GRADE 10.9 = 26 lbf*ft

M24

Frequent assembly/disassembly: GRADE 8.8 = 489 lbf*ft
GRADE 10.9 = 630 lbf*ft

Rare assembly/disassembly: GRADE 8.8 = 560 lbf*ft
GRADE 10.9 = 700 lbf*ft

We remain at your disposal,
Best regards,

Gabriella
SAC SARTORI SRL - Exp.Dept.
Tel: 0039 0429 800 222
Fax: 0039 0429 800 333

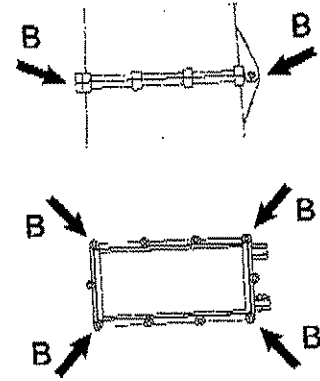
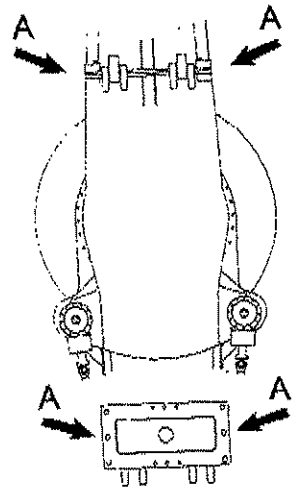
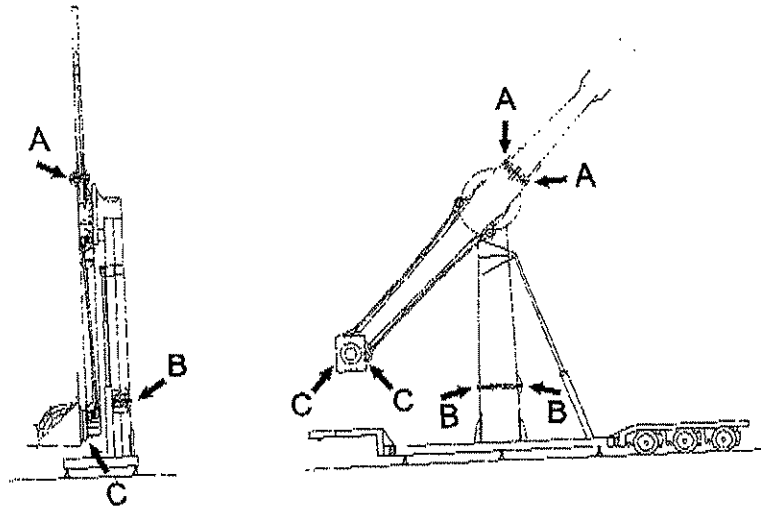
Ai sensi del D.Lgs. n.196 del 30.06.03 si precisa che le informazioni contenute in questo messaggio sono riservate e ad uso esclusivo del destinatario. Qualora il messaggio Le fosse pervenuto per errore, La preghiamo eliminarlo senza copiarlo e non inoltrarlo a terzi, dandocene gentilmente comunicazione. Grazie.

According to D.Lgs. n.196/30.06.2003 (Italian Law), be informed that this message may contain confidential and/or privileged information intended for the addressee(s) only. If you are not the intended recipient or authorized to receive messages for the addressee and you have received this message by mistake, please delete it and inform us immediately. Reading, copying, disclosure or use by anybody else is unauthorized. Thank you.

CC: <HFera@aol.com>, "John Leyden" <JLeyden@gw.doa.state.ri.us>

C- VEHICLE BOLTS

(14+28+14+56 pcs)



- N° 14 DADI M24
- N° 14 NUTS M24
- N° 14 TUERCAS M24

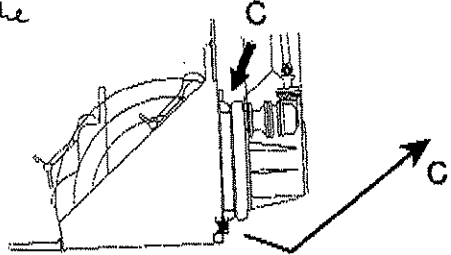
- N° 14x4 DADI AUTORLOCCANTI M8
- N° 14x4 SELF BLOCKING NUTS M8
- N° 14x4 TUERCAS AUTOBLOQUEANTES M8

- N° 14 VITI M24x60
- N° 14 SCREWS M24x60
- N° 14 TORNILLOS M24x60

- N° 14x2 RONDELE M24
- N° 14x2 WASHERS M24
- N° 14x2 ARANDELAS M24

Nuts are not accessible (to inspect them, the vehicle must be disassembled)

Vehicle →



Vehicle Bolts + Nuts

← Bolts

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| ASSEMBLIES AND DISASSEMBLIES | | | RARE ASSEMBLIES AND DISASSEMBLIES | | |
|------------------------------|-------|------|-----------------------------------|------|------|
| | 8.8 | 10.9 | | 8.8 | 10.9 |
| | Nm | Nm | | Nm | Nm |
| M 8 | 22 | 32 | M 8 | 25 | 35 |
| M 10 | 44 | 62 | M 10 | 49 | 69 |
| M 12 | 81 | 101 | M 12 | 90 | 113 |
| M 14 | 129 | 162 | M 14 | 144 | 180 |
| M 16 | 202 | 253 | M 16 | 225 | 281 |
| M 18 | 278 | 348 | M 18 | 309 | 387 |
| M 20 | 395 | 494 | M 20 | 439 | 549 |
| M 22 | 537 | 672 | M 22 | 597 | 747 |
| M 24 | (883) | 854 | M 24 | 759 | 949 |
| M 27 | 989 | 1249 | M 27 | 1110 | 1388 |
| M 30 | 1357 | 1686 | M 30 | 1508 | 1885 |
| M 33 | 1730 | 2480 | M 33 | 1930 | 2750 |
| M 36 | 2390 | 3420 | M 36 | 2660 | 3800 |



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