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STEELMASTERS

Fastener Manufacturers and Distributors



The Nuts & Bolts of It - January '03

Well it's a new year, so the writer has decided to change the name of our monthly newsletter, to more accurately reflect its content. As mentioned in the past we are open to suggestions on topics to be covered, and your comments, positive or disparaging are welcome. 2003 promises to be huge, with two World Cups, the Warriors looking like contenders, and of course the America's Cup.

Torque Tables

In December we were alerted to a problem with interpretation of Torque Tables. A customer brought in a 5/8 UNC grade 8 Bolt that had stretched (obviously stretched). The writer's immediate comment was, "What a good bolt!" (I was impressed that it had stretched so far, proving the bolt was not brittle). The customer's response was, shall we say, impolite. He advised that he had already broken three similar bolts without clicking out his torque wrench. It transpired that he had set his torque wrench to the recommendation in an engineering text book. The writer compared the figure to **STEELMASTER'S** Torque Table and found them to be almost the same.

What was wrong?

Evidence of some compound in the thread was the clue. In order to achieve an even tension in all the bolts in the joint, the Customer had coated each thread with anti-seize.

Most torque Tables, ours included, suggest a torque that will achieve 65 - 75% of Proof Load in a plain Black (uncoated), lightly oiled, (as supplied), Bolt. This usually gives enough safety margin for Torque Controlled tightening with indefinite reusability of the Bolt and Nut assembly.

Because friction is the major variable affecting the relationship between Torque and the Bolt Tension induced, the presence of a light coating of oil is the minimum standard recommended for consistency in controlled tightening of fasteners. Most plain finished fasteners have sufficient oil residue from the manufacturing processes.

However for Bolts with surface finishes such as Hot Dip Galvanising, or assembled heavily greased, the Torque induced Pre-Load, or Tension in the bolt will be altered and Torque Table recommendations must be modified.

The table below lists factors based on averages, by which Torque Table recommendations should be multiplied for varying surface finishes.

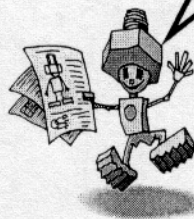
Galvanised - Degreased	x 2.1
Galvanised - Lightly Oiled *	x 1.1
Zinc Plated - As Supplied	x 1.0
Zinc Plated - Lightly Oiled	x 0.9
Heavily Greased	x 0.7

* Galvanised nuts are tapped after galvanising. This "usually" leaves a residual oil coating on the Nut thread

For other surface treatments, or special locking nuts, or where higher tension is required, it may be wise to determine the Torque Tension relationship by experimentation.

Also be aware that Static Friction is greater than Dynamic Friction. It is therefore important, as the Set Torque approaches, that another purchase is taken early enough to avoid stall before rotation continues up to the Set Torque.

Our plan for 2003. We will continue to maintain the best stock, & back it with Knowledge & Service!!!



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