



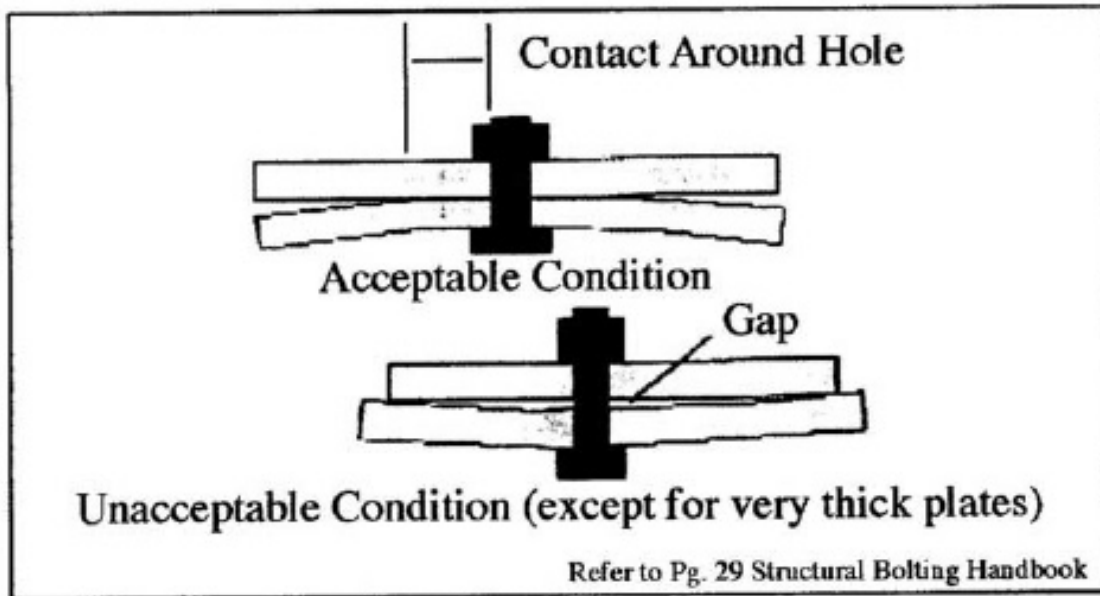
Turn-of-Nut Quick Reference Guide

Important Note:

This guide is intended to serve as a quick reference tool for turn of nut tightening. It is not a substitute for the complete instructions found in the project erection drawings and erection manuals.

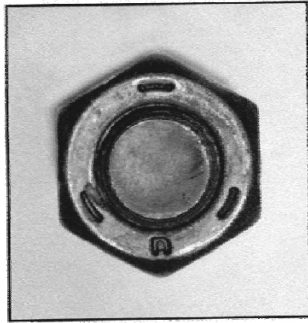
Snug Tightened Joints

Snug tight is defined by the 2009 RCSC specifications as "the condition that exists when all of the plies in a connection have been pulled into firm contact by the bolts in the joint and all of the bolts in the joint have been tightened sufficiently to prevent the removal of the nuts without the use of a wrench".

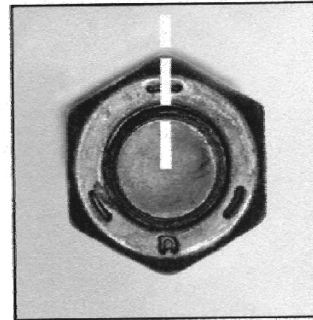


In the snug tight condition, and even in a pretensioned condition, there may be cases where gaps remain between the steel. Gaps along the edges of parts may be caused by member tolerances, misalignment, shear distortion, welding and heat distortion. These types of gaps along the edges of joints should be permitted.

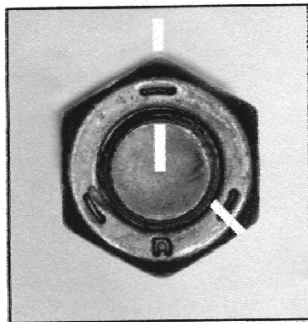
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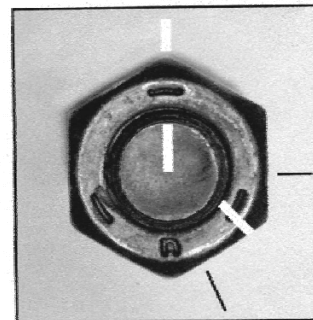
Unmarked A325 Nut



Marked A325 Nut



1/3 Turn A325 Nut



Tolerance +/- 30°

Helpful Hint: If you match mark your fastener at the 12 o'clock position (as shown) your required 1/3 turn will be at the 4 o'clock position, 1/2 required turn will be at the 6 o'clock position and 2/3 turn will be at the 8 o'clock position.



Turn of Nut Method Required Turns for Pre-Tensioning	
Bolt Diameter & Length	Required Turns
1/2" Bolt through 2"	1/3 turn
Over 2" through 4"	1/2 turn
Over 4" through 6"	2/3 turn
5/8" Bolt through 2 1/2"	1/3 turn
Over 2 1/2" through 5"	1/2 turn
Over 5" through 7 1/2"	2/3 turn
3/4" Bolt through 3"	1/3 turn
Over 3" through 6"	1/2 turn
Over 6" through 9"	2/3 turn
7/8" Bolt through 3 1/2"	1/3 turn
Over 3 1/2" through 7"	1/2 turn
Over 7" through 10 1/2"	2/3 turn
1" Bolt through 4"	1/3 turn
Over 4" through 8"	1/2 turn
Over 8" through 12"	2/3 turn

Turn of Nut Method Required Turns for Pre-Tensioning	
Bolt Diameter & Length	Required Turns
1 1/8" Bolt through 4 1/2"	1/3 turn
Over 4 1/2" through 9"	1/2 turn
Over 9" through 13 1/2"	2/3 turn
1 1/4" Bolt through 5"	1/3 turn
Over 5" through 10"	1/2 turn
Over 10" through 15"	2/3 turn
1 3/8" Bolt through 5 1/2"	1/3 turn
Over 5 1/2" through 11"	1/2 turn
Over 11" through 16"	2/3 turn
1 1/2" Bolt through 6"	1/3 turn
Over 6" through 12"	1/2 turn
Over 12" through 18"	2/3 turn

APPLICATION TOLERANCES:

For 1/3 turn, +/- 30°

For 1/2 turn, +/- 30°

For 2/3 turn, +/- 45°