

WINTER HARDWARE PRODUCT CATEGORY

# Technical Bulletin

When to use “fresh” bolts  
and fastener hardware.



How can we help you today?

## Why use “fresh” bolts?

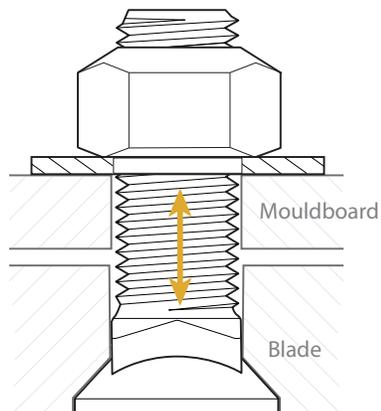
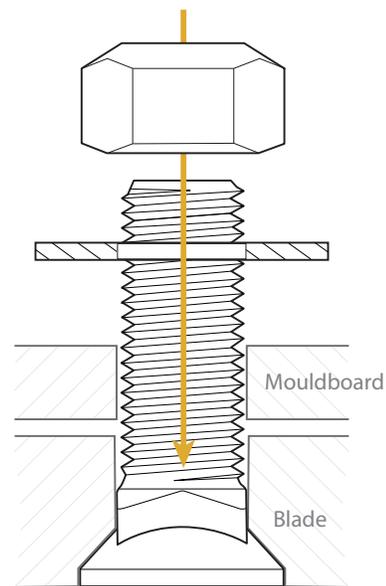
How many times have you seen someone install a fastener assembly using the old “grip it and rip it” method of tightening? You know, the guy who wrenches down on the nut as hard as he can, muscles bulging, sweat beads forming on the brow, usually finished off with some grunting expression as to say, “There, that thing ain’t comin’ off!” The reality is that final grunt says, “There! I just completely destroyed that bolt assembly.”

When performing regular maintenance on your plow assembly or any application, it is important to understand how a bolt assembly functions and why it’s imperative to replace bolts and nuts that have been subjected to the “grip it and rip it” tightening method.

### How a bolt assembly works

Think of a bolt assembly as a rubber band: The more times you stretch the rubber band to its maximum load it begins to lose its original shape. If you shoot a rubber band across the room multiple times, you will find that you need to pull the band back farther and farther each time you launch it to achieve the same distance, as the band loses some of its strength each time you pull it back. Eventually the rubber band will snap, backfiring in your face.

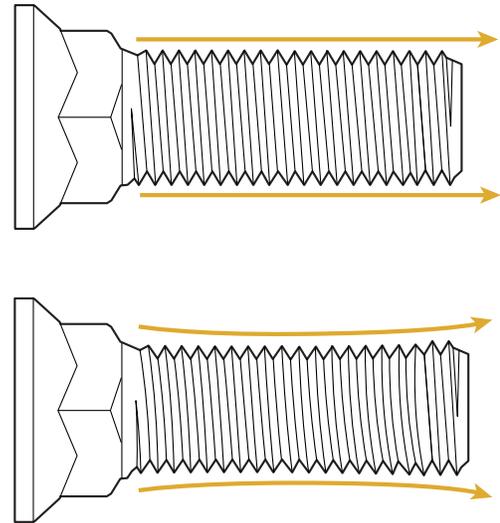
The same holds true with a fastener assembly. You have a bolt, a washer, and a nut that, when tightened to a specified torque rate, creates a clamping effect. This clamping effect is called “clamp load”; torque is simply the turning force applied to the assembly — in this instance to a fastener system, achieving the resulting clamp load.



## Why use “fresh” bolts?

Clamp load in essence stretches a bolt, creating a clamp effect of the two materials being joined — much like the rubber band. Over-tightening the assembly applies too much torque to the assembly, permanently altering the shape of the bolt and threads of the nut. Continued releasing of the clamp load (loosening the nut) and reapplication of excess torque continues to stretch the bolt and threads of the assembly.

You may have noticed this if you repeatedly loosen and tighten a bolt, you have to apply more and more force to the assembly to achieve a specific torque range, or wrench on it harder to get the bolt tight. This is because the original bolt has been stretched and is now outside of its original specification. This causes a reduction in clamp load, risking additional stresses on the assembly. When load is not as evenly distributed, vibration may occur and bolt assemblies may loosen because proper torque rate has not been achieved.



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Re-using an old bolt that has been properly torqued is perfectly fine; however, the nut should always be replaced, as the threads alter even under acceptable torque loads. When changing the cutting-edge blade, using a fresh bolt, nuts, and washer is always the ideal process to follow. Always consult the manufacturer’s recommended torque guidelines or have a certified technician maintain your plow system, and always use fresh bolts for your blade assembly or other application.



## Recommended Torques for # 3 Head Plow Bolts Assembled with Earnest All-Metal Lock Nuts

Always consult the plow blade manufacturer's recommendation for installation torque. If torque values are not available from the manufacturer, use the torques shown below. When installing plow blades, it is recommended to initially torque all bolts to half the value listed in the chart, to "set the blade" and then go back and tighten all the bolts to the torque listed below.

DIAMETER	TPI	GRADE	TORQUE
3/8	16	Grade 5	26 ft-lb
7/16	14	Grade 5	42 ft-lb
1/2	13	Grade 5	64 ft-lb
1/2	13	Grade 8	90 ft-lb
5/8	11	Grade 5	128 ft-lb
5/8	11	Grade 8	175 ft-lb
5/8	11	170M	211 ft-lb
3/4	10	Grade 5	226 ft-lb
3/4	10	Grade 8	319 ft-lb
3/4	10	170M	374 ft-lb
7/8	9	Grade 8	515 ft-lb
7/8	9	170M	604 ft-lb
1	8	Grade 8	773 ft-lb
1	8	170M	906 ft-lb
1 1/8	7	Grade 8	1094 ft-lb
1 1/4	7	Grade 8	1544 ft-lb
1 1/4	7	170M	1811 ft-lb

The torques listed above are based on Earnest's line of plain finished plow bolts being assembled with Earnest's all-metal lock nuts with a zinc plating and wax (lubricated) finish.

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