

**SUPERBOLT®**

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Alternative Removal Procedure

(use if experiencing removal difficulty with standard procedure)

Overview: For some high temperature and/or corrosive applications, the following procedure will improve the speed of removal and reduce the removal effort. The procedure involves removing, relubricating, and re-torquing the jackbolts individually. The standard procedure of "walking down" the jackbolts in a circular pattern is then followed.	Preparation: Apply penetrating or hydraulic oil prior to removal. For application at ambient temperature, use penetrating oil followed by hydraulic oil. Use hydraulic oil for nut temperature up to 300°F. Above 300°F, use synthetic oil to avoid smoking. If possible, let the oil sit for several hours and reapply once or twice if time permits. If the tensioner is inverted, apply oil in the gap between the nut body and washer. Also, read the reference to "sockets" at the bottom of Fig. 1.
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STEP 1: Remove a Jackbolt

Determine the torque that was used for the installation. Select an air tool based on the installation torque (see Fig. 1). Using this tool, completely remove a jackbolt. If any one jackbolt is not easily extracted, try one of the other jackbolts. Try all of the jackbolts to find one that will loosen. Always start with the tool listed in the column labeled "Try 1st". If the tool doesn't have enough power to extract a jackbolt, try the tool from the next column labeled "Try 2nd". The tool in the "Try 3rd" column is used as a last resort.

*Fig. 1***STEP 2: Lubricate the Jackbolt**

Lubricate the jackbolt thread and jackbolt tip with the correct Superbolt lubricant. JL-G is a graphite lubricant and JL-M is a moly lubricant. It is important to choose the correct lubricant to assure proper bolt load. Call Superbolt for a commercially available substitution if JL-G or JL-M is not available.

STEP 3: Insert and Torque the Jackbolt

Using an air tool (see Fig. 11) insert and tighten the jackbolt 10-20% higher than the initial installation torque. Mark the jackbolt head with a paint stick. If an air tool with a compatible torque output is not available, use an air impact with a lower output to insert the jackbolt and then tighten it with a torque wrench.

STEP 4: Repeat Steps 1-3

Extract, lubricate, and tighten an adjacent jackbolt. Repeat this process, following a circular pattern, until all jackbolts have been extracted and relubricated. Complete steps 1-4 for all tensioners before going to Step 5.

STEP 5: Loosen the Jackbolts

Starting with the jackbolt that was last tightened in Step 4, loosen all jackbolts 1/4 turn each in a circular pattern. If Steps 1-4 were done counter-clockwise around the tensioner, move clockwise for Step 5, and vice-versa. Stop after one round and loosen the jackbolts on the remaining tensioners one round. This will assure even unloading of the joint. Repeat the process for the second and successive rounds, until loose. Most of the load should be released after 3-4 rounds.

Air impact Selection for Step 1 (jackbolt extraction)			
For Installation Torque	Try 1st <small>(drive / setting)</small>	Try 2nd <small>(drive / setting)</small>	Try 3rd** <small>(drive / setting)</small>
0-35 ft-lbs	3/8" L*	3/8" M	3/8" H
36-55 ft-lbs	3/8" M	3/8" H	1/2" L
56-80 ft-lbs	3/8" M	3/8" H	1/2" L
81-100 ft-lbs	1/2" L	1/2" M	1/2" H
101-130 ft-lbs	1/2" M	1/2" H	3/4" L
131-160 ft-lbs	1/2" H	3/4" L	3/4" M
161-200 ft-lbs	3/4" L	3/4" M	3/4" H
201-230 ft-lbs	3/4" M	3/4" H	
230+ ft-lbs	3/4" M	3/4" H	

* "L" = light duty or low setting. "M" = medium duty or medium setting. "H" = heavy duty or high setting
 ** Chance of jackbolt breakage. First try to loosen all jackbolts by pulsing the trigger. Try all jackbolts before impacting with a steady, prolonged impact.

SOCKETS: Special Superbolt sockets are usually required when using a 3/4" impact or 3/4" torque wrench due to the limited clearance between the jackbolts. Otherwise an adapter is needed to connect the 3/4" drive tool to the 1/2" drive socket. Have several adapters available as breakage may occur with repeated use.

Fig. 11

Air impact Selection for Step 3 (jackbolt insertion)
<p><i>Note: The <u>jackbolt</u> torque actually achieved by an air impact wrench is usually only 30-50% of its rated output. For minimum hand work, use an impact with an output of 110%-120% target torque. For maximum power, use the largest air line and fitting.</i></p>
<p>Ratings below are for 90-100 psi air pressure:</p> <p>Up to 70 ft-lbs: For 15-35 ft-lbs use a right angle ratchet or light duty 3/8" impact. For 35-70 ft-lbs use a heavy duty 3/8" impact.</p> <p>70-100 ft-lbs: Use a light duty 1/2" impact at a reduced pressure or setting. (Be careful not to overtighten! Calibrate the impact before starting)</p> <p>100-170 ft-lbs: For 100-130 ft-lbs use a light duty 1/2" impact. For 130-170 ft-lbs use a heavy duty 1/2" impact.</p> <p>170-200 ft-lbs: Use a light duty 3/4" impact on low setting. Some heavy duty 1/2" impacts will also reach this range.</p> <p>Over 200 ft-lbs: For 200-300 ft-lbs, use a light to medium duty 3/4" impact. Over 300 ft-lbs, use a heavy duty 3/4" impact.</p>
<p><i>Calibrating an air impact wrench: Tighten one jackbolt until the socket rotation stops and check the jackbolt with a torque wrench. The torque required to move the jackbolt further is the output of the impact wrench as measured on Superbolt Tensioners.</i></p>