How to measure a U-Bolt



Semi-Round



Square



- <u>A</u>. Diameter of the rod at the threaded ends. (*Note: the diameter of the rod in the non-threaded on is smaller, due to the fact that u-bolts have formed, rather than cut threads*)
- B. Inside dimension between the legs.
 (note that this measure is between and not center to center on the legs.
 It is the size of the die which we form the u-bolt on)
- <u>C</u>. Length of the leg (measured to bottom of the inside of the u-bolt)
- $\underline{\mathbf{D}}$. Style of the top (Round, square, or semi-round)
- <u>E</u>. Year, Make, Model, and Position of the application

Semi-Round U-bolt Fit

An often overlooked cause of failure to maintain proper U-bolt clamping force is the potential for mismatch between the shape of the semi-round U-bolt and its mating part, the top plate. Unlike either square or round bend U-bolts where the shapes from one manufacturer to another <u>usually</u> do not vary significantly, semi-round bend shapes are usually unique to a particular vehicle or suspension manufacturer.

The following three figures show what can happen when using semi-round U-bolts.



Proper Fit

U-bolt is in uniform contact

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It is critical, when installing u-bolts to alternate from one leg to the other in criss cross fashion so that the torque is evenly applied to all four legs on each set of u-bolts. Tighten each nut only a small amount before switching to the leg diagonally across. Continue alternating until all four legs on each set reach the specified torque.

U-bolts should be re-torqued after 20 kilometres of use after installation. If they are found to be far under the specified torque, they should be checked a second time after driving 20 more kilometres. This is critical because initial settling in of the spring leaves may cause a loss of torque values. If not properly re-torqued, flexing in the center section of the spring may result in spring breakage or in some cases the center bolt may shear or bend with axle shifting being the result.

U-bolt torque should be checked after 500 ,1,000, & then at 20,000 kilometres intervals

_____ Removed U-Bolts should NEVER be placed back onto the vehicle, they should be thrown away. Suspension U-Bolts are manufactured with a smooth rolled thread, while the mating Hi-Nuts are manufactured with sharp cut threads. When a U-Bolt is tightened to it's recommended torque level, the U-Bolt threads stretch as they mate with the Hi-Nuts. Although, not always visible to the naked eve, this damages the threads. Removing the Hi-Nuts from the U-Bolt will cause a cross-threading that will not allow the U-Bolt to be adequately re-torqued. A common practice in most maintenance facilities is to use a impact wrench to tighten U-Bolts. Consistent, accurate torque is next to impossible to obtain with a impact wrench, and in most cases an over-torqued fastener is the result.

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U-Bolt Torque Chart

This page contains a reference chart of torque values for tightening u-bolts nuts on vehicle axles. It assumes a light coating on machine oil on the threads and washers has been applied.

RECOMMENDED U-BOLT TORQUE FOR COLD-FORMED U-BOLTS

COLD I ORUHLD C DOLLIS		
Bolt Size and Thread	Grade	Torque (foot-pounds)
3/8" - 24	5	25
7/16" - 20	5	45
1/2" - 20	5	70
9/16" - 18	5	100
5/8" - 18	8	175
3/4" - 16	8	320
7/8" - 14	8	500
1" - 14	8	900
1-1/8" - 12	8	1100
1-1/4" - 12	8	1550

Actual torque applied to u-bolt nuts is also dependent on the ability of the anchor plates to take the pressure without deforming. A lot depends on proper tightening as the leg of the u-bolt must be stretched to do its job, but as in many mechanical systems final judgement falls to the technician and his knowledge. An example would be on a light truck suspension using a 5/8" diameter u-bolts passing through a 1/4" thick anchor plate. The plate may deform long before the recommended torque values are reached.

All the above values are general guidelines.

THE OEM SERVICE SPECS. ON SPECIFIC MODELS <u>ALWAYS</u> TAKES PRECEDENCE OVER VALUES SHOWN.

<u>A impact wrench is</u> not recommended for <u>tightening u-bolts.</u>

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U-Bolts



At the Edson Branch We bend U-Bolts to YOUR specifications.

Most popular sizes and bends from 3/8" to 1" available.