

## Top Ten Tips

1. Always follow the vehicle manufacturer's specifications when making torque settings.
2. Study any additional information that may indicate any special conditions under which the torque settings were established, for example whether the fixing is to be applied dry or lubricated.
3. If there are several nuts or bolts holding an assembly together such as a cylinder head for example, tighten each nut or bolt a little at a time in turn until you reach the specified torque. Refer to the manufacturer's documentation to ascertain if there is a specific pattern or order of tightening,
4. Never store a torque wrench with a load setting still applied as this will over time damage the internal load mechanism and make the wrench inaccurate. Always adjust to the lowest torque setting (but not below) before storage.
5. Never overload a torque wrench.
6. If you want to tighten a bolt to higher than the wrench can go then use an alternative torque wrench with the correct capacity.
7. Never use torque wrenches to undo fixings.
8. Have your torque wrench regularly calibrated. The frequency of this requirement varies but a good guide in an average size automotive workshop would be every two years.
9. When setting your wrench always wind up to the setting not down to. For example if the wrench has previously been used set at 150Nm and you now want to set it to 50Nm you should return to less than 50Nm then adjust up to 50Nm. This ensures the setting is correct.
10. Your torque wrench is a precision tool. Do not abuse, drop or throw the wrench.

The calibration certificate supplied is generated when the wrench was tested for accuracy by the manufacturer. It has no valid "to date", that is down to the regulations the workshops work to (i.e. in some ISO cases can be every six months). Tool Connection cannot recalibrate a torque wrench.

Our products are designed to be used correctly and with care for the purpose for which they are intended. No liability is accepted by the Tool Connection for incorrect use of any of our products, and the Tool Connection cannot be held responsible for any damage to personnel, property or equipment when using the tools. Incorrect use will also invalidate the warranty.

If applicable, the applications database and any instructional information provided has been designed to offer general guidance for a particular tool's use and while all attention is given to the accuracy of the data no project should be attempted without referring first to the manufacturer's technical documentation (workshop or instruction manual) or the use of a recognised authority such as Autodata.

It is our policy to continually improve our products and thus we reserve the right to alter specifications and components without prior notice. It is the responsibility of the user to ensure the suitability of the tools and information prior to their use.



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# LASER<sup>®</sup>

## What is **TORQUE**?



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## What is torque?

Torque is a force that causes or tends to cause rotation. Used in reference to a nut or bolt or similar fastening, it indicates the resistance the nut or bolt has to turning. For example, pushing or pulling the handle of a wrench connected to a nut or bolt produces a torque (turning force) that loosens or tightens the nut or bolt. Torque is based on the law of leverage.

Force multiplied by distance equals torque. It is commonly measured in foot-pounds (Ft-lb), Newton Meters (Nm) or kilogram-meters (Km).

For example, if 1lb force is applied at a distance of 1 ft from the nut or bolt, the torque developed is 1 foot-pound. Similarly, a 2kg force applied at 1.5m from the nut would develop a torque of  $2 \times 1.5 = 3$  kilogram-metres.

If a nut or bolt is not tightened sufficiently it will eventually work loose and may even drop off resulting in damage or a dangerous situation. On the other hand, if the nut or bolt is tightened too much, the nut or bolt may either strip its thread, snap, or stretch the stud being fastened.

A torque wrench is specifically designed to avoid both of these situations. When you apply a specified amount of torque to a nut or bolt, it produces the correct amount of tension in the bolt necessary to hold the parts together without the danger of distorting the bolt, nut or the parts they are holding together.

## Warning

Read these instructions carefully before you use the torque wrench. If you do not use the tool correctly, as described in these instructions, you may damage either the tool or the component on which you are working. You may also injure yourself.

Your torque wrench is a precision measuring instrument, designed to measure or limit the amount of torque being applied to a nut, bolt or other component. It contains a rugged and dependable torque limiting mechanism using a design that minimised friction and is sealed against dirt and liquids to avoid damage to the precision made parts. To ensure the accuracy of this precision instrument is maintained, we recommend the calibration is checked regularly.

The torque wrench would be issued with certificate stating the calibration at the date of manufacture. Due to storage conditions and lifestyle this may change over time so checking the calibration is always recommended. Not all torque wrenches can be re-calibrated.