Torque Wrenches

Regular calibration of torque wrenches is an essential part of workshop maintenance. A wrench can quite easily fall out of specification if it is dropped or misused. As an example, a torque wrench set at 90 ft lb was used to tighten a test bolt in an electronic clamp meter. The clamping force at this setting was 5712 lbs. The wrench was reset to 81 ft lb to duplicate a 10% error; the reading on the clamp meter went down to 3534 lbs, or a reduction of 38%. This shows that an error of 10% in a torque wrench reduced the clamp load by 38%. Multiply this error by the number of cylinder head bolts and the end result is gasket failure. It is essential that torque wrenches are looked after by being kept clean, correctly stored, and not abused in any way.

Training in the use of torque wrenches is also worth considering. Torque wrenches do not operate like a spanner or ratchet. When torquing a fastener, ensure that the wrench is kept parallel to the surface of the work, as with micrometer type wrenches, variations will occur in the reading if the wrench is allowed to deviate off the parallel line. With micrometer adjusted torque wrenches, it is also necessary to return the barrel to a zero reading at the completion of the job, to allow the spring mechanism to settle. Micrometer wrenches will develop errors if this is not done.

When using a torque wrench, apply the load smoothly, as sudden jerking of the wrench causes deflection, giving a false reading. The Australian Standard, AS 4115-1993, Hand Torque Tools, specifies "the torque to be applied with an increasing torsional force until the test value is indicated, the increase in the force above 80 percent of this value is to be applied smoothly during a period of 1 - 4 seconds unless otherwise indicated by the manufacturer".

By adhering to a few simple rules, and a little bit of care, torque wrenches will not give any problems, and the job will be completed without any come-back resulting from incorrect torque control leading to gasket failures.