

Cleaning Head Bolt Threads in Cylinder Blocks

When cleaning cylinder head bolt threads in cylinder blocks, especially late model engines that utilise torque to yield head bolts, it is strongly advised that you DO NOT use standard engineering taps for this purpose.

These bolts have a rolled thread, which are machined to a much finer tolerance than that of standard threads, to allow for a greater surface contact area to compensate for the higher loads that are applied to these bolts during service. Tests have shown that the thread in cylinder blocks will suffer from slight stretching over time.

For this reason the use of a standard tap to clean the cylinder head bolt threads in the engine block can remove extra material from the thread, in some instances as much as 0.152 mm (0.006") or more, reducing the surface contact area between the head bolt and the block thread. This can result in the incorrect amount of clamping load being applied to the cylinder head gasket and possibly cause a premature head gasket failure or in severe cases the thread being 'torn' from the cylinder block during assembly.

As an alternative to standard engineering taps for cleaning threads in cylinder blocks, some people have used one of the old cylinder head bolts. They have machined a groove, approximately 3 mm wide and 2 or 3 mm deep the length of the thread, so it has a sharp 90 degree edge that will remove any foreign objects without removing any additional metal from the cylinder block. As the torque to yield head bolts should always be replaced, why not take in a couple of used head bolts, when taking the head in for machining, and have the groove cut in them by your engine reconditioner. This will ensure you can clean the block threads without doing any damage.