

6 Simple Tips to Help You Beat Your Workshop Woes

How to Stop Tap Tiddle and Twist

You might be one of the few level headed, sharp-eyed, co-ordinated geniuses that can tap a threaded hole freehand & dead straight every time, if so, simply skip this tip. For the rest of us, here's a suggestion. You'll need a drill press and any piece of flat sided scrap aluminium or steel. Best choice is aluminium because it's easier to drill and tap. Suppose the final hole you need to tap is an M10x1 thread repair and in an engine block or manifold. Take your scrap piece of aluminium to the drill press and clamp the flat face downwards to the drill's table. Now, using the drill press drill and tap a hole in this piece of aluminium with the M10x1 tap that you are going to use to tap the engine block. Instead of using your tap wrench, use the chuck of the drill to do the tapping job so that your final tapped hole has got to be square to the base. Turn the chuck over by hand as in the picture below (DON'T use power). Always lubricate when drilling and tapping. This procedure means your piece of aluminium is now a jig with a truly square tapped hole.



Take this piece of aluminium to your engine block, hold it flat against the hole to be repaired and by running your drill and tap through the block, you have to be square with the hole to be repaired. You could also make a second hole in this aluminium jig (correctly spaced and maybe a bit bigger than the 10mm of the stud to be repaired). Now, use this second hole over a neighbouring manifold or head bolt and put a nut on this nearby bolt to clamp the jig down so that you don't need to hold it yourself. Simple - you can now tap your hole like a level headed genius!

Torque-talk . . . Did You Know?

Torque is often confused with tension but there's a big difference and it can easily cause trouble. Talking about bolts or studs, **torque** is how hard you have to turn to tighten a nut or bolt. **Tension** is how much pull or clamp down stress there is along the length of the bolt. Problem is, the clamping power [or tension] of a bolt is usually "measured" by using a torque wrench just because you can't practically put a "tension metre" inside the bolt. Take the workshop scenario where you can have a lot of friction in a badly made thread or a rusty or poorly plated washer etc. The friction caused by things like this means you have to put a lot more turning force [torque] into rotating the bolt to tighten it before it has as much clamping power [tension] as it would have if the friction wasn't there. This is why bolts break or loosen i.e. because it's very hard to get proper tension in a bolt just by measuring torque with a wrench. To beat the problem you really need to make sure there's a light smear of lubricant under the bolt head or nut and on any thread or washer you use. By using lubricant you get approximately the same conditions every time you use a torque wrench and this makes a torque reading more consistent and meaningful. Probably the best lubricant for a thread is Loctite. While it's liquid it acts as a lubricant and once it sets it stops the bolt loosening. So, by lubricating you get much closer to the same tension every time you get a certain torque reading.

Tapping in Aluminium

Here's one picked up along the way from an old "digger". Try methylated spirits as the lubricant next time you're tapping a thread in aluminium. Use plenty of it and you'll probably be surprised how neat and clean the finished thread is.

Tapping in Stainless Steel

Here's another one picked up from an old friend. The best lubricant when you're tapping in stainless is lard [still at some supermarkets] plus Trichloroethane which is very hard to come by now but you may be able to get some from an industrial chemical supplier. A more modern lubricant worth trying is one of the oils with teflon additive such as Nulon.

Tip 2 - Tapping in Stainless Steel

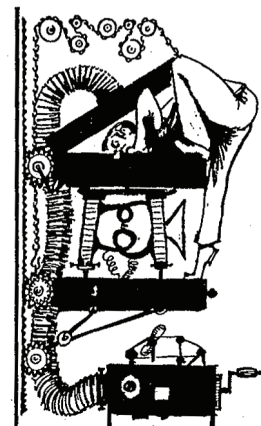
You've probably been taught to back

off every turn or 2 while you're tapping a thread so as to break the swarf. Stainless steel is totally different. NEVER back off till you've finished cutting the thread . . . and WHY? Because as soon as a cutting tool rubs on most grades of stainless, the tool "work" hardens the steel's surface where it's been rubbed. Most stainless steel doesn't harden with heat treatment but it does harden with mechanical treatments such as cutting or rolling. So, if you back off while you're tapping, the metal around the front of your tap's teeth will be hardened and when you go forward again you'll be cutting into very hard metal and you could quite possibly break the tap. The same applies when cutting a male thread with a die DON'T back off - keep going.

Piggyback & Helicoil Type Inserts

We sometimes get asked about "doubling up" or putting 2 inserts one behind the other to get more thread engagement in a repaired hole. With helicoil type inserts this is quite OK to do. You just have to break off the tang on both coils so that a fastener can freely wind into the second coil. With other solid type inserts this very seldom works because the internal and external threads are usually a different pitch i.e. number of threads to the inch. Because outside and inside don't match you'll almost always end up with one insert out of step with the other and a fastener won't screw in. Coil type threads are different because both inserts have to follow the same tapped thread and they can't be misaligned with one another.

So You Think You've Got Problems . . .



Tell us what the equipment is and what this guy's doing

The answer was - the equipment is an old graphic arts camera used for making printing plates and the fellow is fixing something in the lens/film holder area