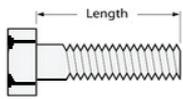


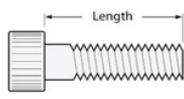
5 More Bits of Astounding or Useful Stuff

The Mystery of Measuring Bolts and Screws

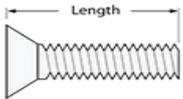
Ever been puzzled how to specify the kind of bolt and the length you want? Here's a little help. If you get hold of the general scheme - basically the length of a bolt or screw is specified by the length of the fastener that is below the surface when it's fully screwed in. Here's some diagrams and names of the most common types:



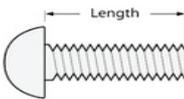
BOLT - Hex Head



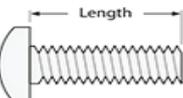
CAP SCREW
"Socket Head Cap Screw"



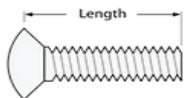
COUNTERSUNK HEAD SCREW
Usually called a "Machine Screw"



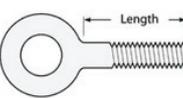
BUTTON HEAD
Usually called a "Machine Screw"



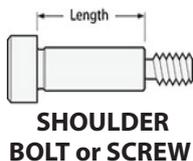
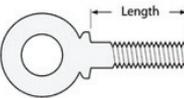
PAN HEAD
Usually called a "Machine Screw"



OVAL HEAD COUNTERSUNK
Usually called a "Machine Screw"



EYE BOLTS in 2 different styles



SHOULDER BOLT or SCREW

Other Characteristics of Screw Heads

Most machine screws other than cap screws and shoulder screws [bolts] can have either a hex key [Allen key] drive or a Phillips head and some are also available with slotted screwdriver heads.

Helicoils & Loctite - NO... NO

Loctite will not work with helicoil type inserts for 2 reasons (1) It seeps through from outside to inside and locks the whole assembly together (2) Helicoil inserts flex and break the Loctite bond. Loctite doesn't work once the bond is broken.

Save Yourself a Headache - Tips on Head Bolt Hole Thread Repair

YOU (our customers) keep telling us of the frustrations of doing a thread repair - it could be on anything, but mostly the offenders are engine head bolt holes. They're in things like BMW engine blocks, Gen 3 and LS Series or Toyota engines.

Scenario is, you fix one or two stripped threads and go to all the trouble of re-assembling the job with gaskets and whatever else only to find that as you tighten up to the required torque/tension ... ping ... ping! - and just when you thought you'd finished your job you find some more threads that wouldn't hold the tension. So you strip the job back down and go through the procedure to fix the other delinquent threads.

REMEDY No. 1

Quite frankly, particularly with engine head bolt threads, it's almost always best to bite the bullet and repair all threads in the assembly. From the feedback we keep getting it seems many aluminium and light alloy castings such as engine blocks deteriorate over time due to constant heating and cooling. Also, ALWAYS use the longest thread insert you can. We suggest you use even longer than the original thread if there is extra depth in the hole that you're repairing. A standard length insert will almost invariably pull out in these weak materials and is the usual cause of a second time round thread failure.

SUGGESTION No. 2

If you don't want to repair all threads in your job (or can't afford to) we suggest this scheme for checking every hole before you finally re-assemble the job. By using this check, you can pretty well reassure yourself all bolts can be done up to the required torque reading e.g. in stripped head bolt threads. Instead of reassembling the head straight onto the job, make up a metal spacer the same thickness as the length of the bolt hole through the side of the head. Place this spacer under the head of one of the bolts for the job and screw the bolt [plus spacer] into each one of the holes to be checked [one at a time in succession]. Your spacer could be a pack of washers or a larger nut or best of all a custom made spacer using

a piece of aluminium or steel with a clearance hole drilled through it to suit the head bolt diameter. In fact, there's no reason why you couldn't use the head itself unless you're afraid of warping it. Don't fit the gasket and only work with one head bolt at a time. Now, with your "trial" set up bring the bolts, one at a time, to their full torque reading. Then, unless they pull the thread during your test, you can be pretty sure they will hold up on final assembly. That way you can sort out how many extra threads you actually must repair and you won't waste a gasket and the extra time needed to do every thread.

NOTE: remember to lubricate under the head of bolts, the faces of any washers used and the thread of the bolt being used (See our last Newsletter #10 in the article headed "Torque Talk .. Did you Know".

Double Trouble - Could a Thread Kill You?

Did you know that some screw threads have an identical twin (nearly). There's a few listed below and according to a story we heard the other day this phenomenon was the cause of a serious air crash. An aircraft mechanic "measured" a screw instead of going to the written manual and using the prescribed size. He fitted the "twin" of the screw instead of the one that should have been used and because it was very slightly undersize, it worked loose over time. A main external component of the aircraft came off as a result and the plane crashed killing a substantial number of passengers. Serious stuff - so here's a partial list:

- 14mm Sparkplug = 1/4" BSP
- 5mmx0.8 = #10-32 UNF (3/16")
- 11mmx1.25 = 7/16" UNF
- 3/16" BSF = #10-32 UNF
- 3/16" BSW = #10-24 UNC
- 6mm x 1 = No. 0BA

Good Tools are Good Gifts

