

METRIC THREADS

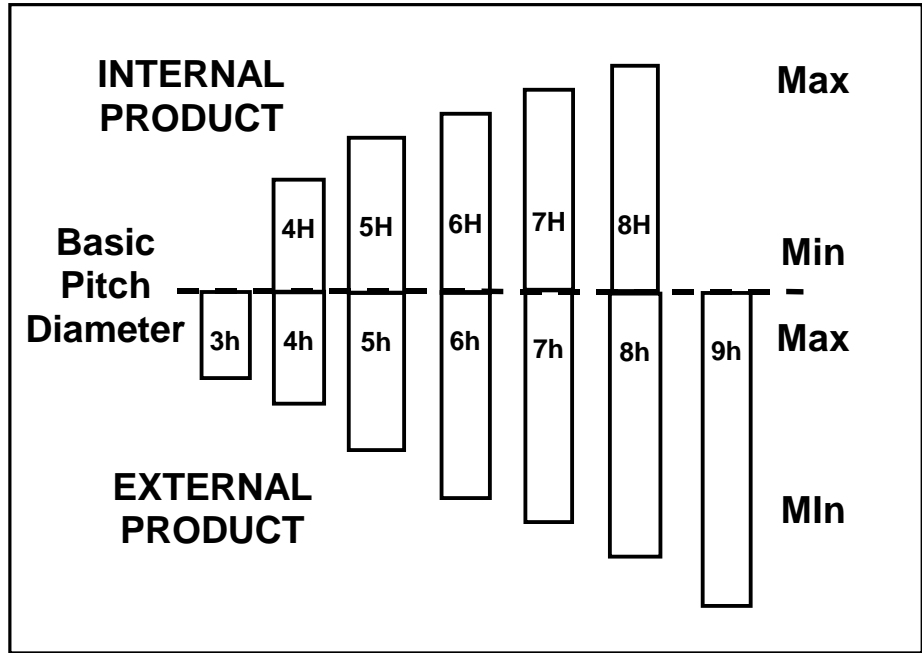
The best way to explain and understand metric threads is by comparison to inch threads. **The first and one of the most important things to remember about metric threads, is that, like inch threads, knowing the tap size is not enough information to manufacture a gage.** A proper and complete nomenclature for the gage or the product is necessary.

Metric threads have been engineered to allow for much variation while still being able to be considered a standardized product. The metric screw thread has five standard internal product classes and seven standard external product classes. The product tolerance or manufacturing window for metric screw threads is the opposite of the inch design. With

metric screw threads the larger the number designation for the class, the larger the product tolerance.

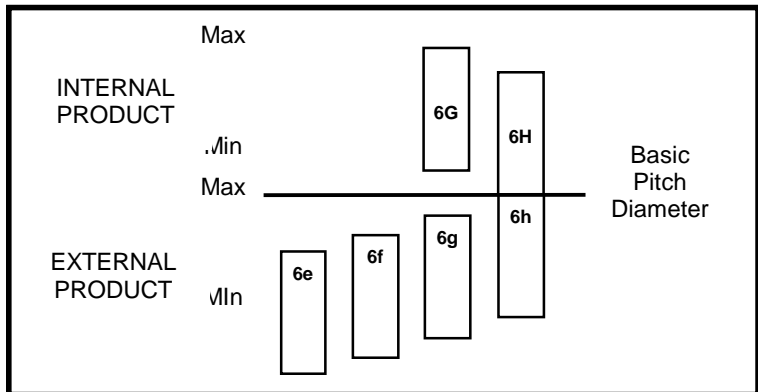
The most common metric product screw thread is the class 6g external product, and the class 6H internal product, which creates

a very similar assembly scenario to the inch 2A / 2B 'Nuts and Bolts' fit. Companies that stock metric gages, usually stock class '6H' plug gages for internal threads and '6g' ring and set plug gages for external threads, because this comprises 80%+ of the metric thread gage market.



METRIC ALLOWANCES

The 'g' & 'H' are commonly confused with the unified method of denoting internal and external of 'A' & 'B'. Here the metric uses a method that is not present in the inch series. **The internal and external threads in metrics are denoted by the case of the letter used**, lower case for external, and upper case for internal.



Glastonbury Southern Gage

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The letter used denotes the amount of allowance adjustment applied to the basic size. For external threads, allowances available are 'e, f, g, & h'. For internal threads, allowances available are 'G & H'.

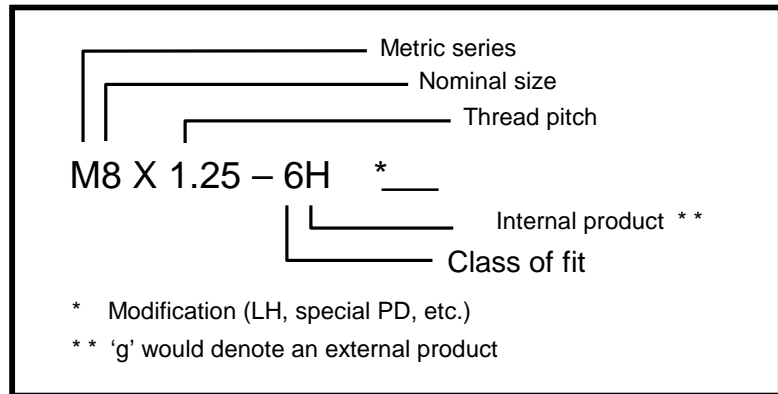
Here again we see a difference in the inch and metric systems. In the Unified, there is only one allowance available and it is only

applied to the external thread. For metric, you can apply allowances to the internal also. In both the internal and external the 'h or H' signifies an allowance factor of zero. The 'G' is the only allowance for internal threads and the 'g' is the smallest allowance available for external, the 'f' being more, and the 'e' being the greatest allowance.

METRIC DESIGNATION

The nomenclature of metric threads begins with the letter M. This is the designation showing the metric series. Other letters may be added after the M showing modifications to the standard metric series. This can be compared to the UN for Unified National, or N for National in the English thread nomenclature. Notice that in metrics, the series designation precedes the nominal size and pitch, unlike in the inch series, which follows the nominal size and pitch.

The nominal size is the first number that follows the metric series designation, followed by the pitch. The nominal size and pitch are separated by the letter 'X', which is pronounced as 'by'. In the inch series the nominal size is followed by the threads per inch, whereas in metric the inverse of the threads per inch, the pitch, the actual



distance from one thread to the next, follows the nominal size.

Following the pitch is the class of fit. The designation that denotes internal or external also signifies allowance. When the class of fit is specified with two different classes, such as 4g6g, the first one, 4g, is the tolerance applied to the product pitch diameters, and the second one, 6g, is the tolerance applied to the product major and minor diameters.

METRIC NOMENCLATURE EXAMPLES

(Type)(Size) x (Pitch) - (Class)(Allow.) (Mod.)

- ✓ M10x1.25-6H
- ✓ M8x.75-4g6g
- ✓ MJ12x1.75-6G LH
- x M6 D5

