

Classes of Thread Fit

Thread fit is a measure of looseness or tightness between mating threads. Classes of fit are specific combinations of allowances and tolerances applied to external and internal threads.

For Unified inch screw threads there are 3 thread classes for external threads – 1A, 2A and 3A, and 3 for internal threads – 1B, 2B and 3B. All are clearance fits, which means they assemble without interference. The higher the class number, the tighter the fit. The designator 'A' denotes an external thread, 'B' denotes an internal thread. The mating of Class 1A and 1B threads provides the loosest fit, the mating of Class 3A with 3B the tightest.

Classes 1A-1B

Classes 1A and 1B are very loosely tolerance threads, with an allowance applied to the external thread. These classes are ideally suited when quick and easy assembly – and, disassembly – are a prime design consideration. They are standard only for coarse and fine thread series in sizes $\frac{1}{4}$ in. and larger. These classes are rarely specified for mechanical fasteners. In fact, it is doubtful if more than one-tenth of one percent of all fasteners produced in North America have this class of thread fit.

Classes 2A-2B

Classes 2A and 2B are by far the most popular thread classes specified for inch series mechanical fasteners. Close to 90 percent of all commercial and industrial fasteners produced in North America have this class of thread fit. Class 2A external threads have an allowance, Class 2B internal threads do not. Classes 2A and 2B, for most engineering applications, offer the optimum thread fit that balances fastener performance, manufacturing convenience and economy.

Classes 3A-3B

Classes 3A and 3B threads are suited for closely tolerance fasteners such as socket cap and set screws, aerospace bolts and nuts, connecting rod bolts, and other high strength fasteners intended for service in applications where safety is a critical design consideration. Classes 3A and 3B have restrictive tolerances and no allowance.



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