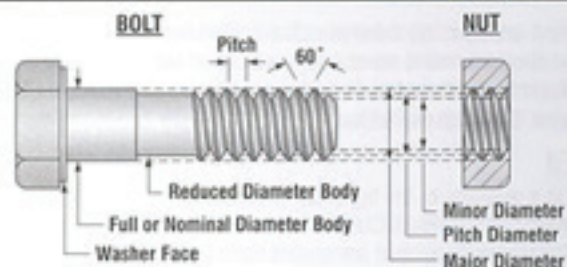


BASIC FASTENER TERMINOLOGY



SCREW THREAD: A ridge of uniform section in the form of a helix on the external or internal surface of a cylinder. This is known as a straight or parallel thread to distinguish it from a taper thread that is formed on a cone or frustum of a cone.

EXTERNAL THREAD: Thread on the outside of a cylindrical piece of stock.

INTERNAL THREAD: Thread on the inside of a cylindrical hole.

FASTENER: A fastener is a mechanical device for holding two or more bodies in definite positions with respect to each other.

THREADED FASTENER: A threaded fastener is a fastener, a portion of which has some form of screw thread.

STANDARD FASTENER: Is one which can be referenced from nationally recognized standards documents.

EXAMPLE 2: Hex cap screw 3/4-10 UNC x 4-2A SAE Grade 5.

EXAMPLE 1: Hex bolt M12 x 1.75 x 150, class 4.6 zinc plated.

SCREW: A screw is the term used for a threaded fastener, with or without a head (headless - as in set screw) so designed as to permit it to be properly assembled in a pre formed internal threaded hole (or forming its own thread) and secured by means of tightening the head.



CAP SCREW: A term used to describe an externally threaded fastener with a protruding head, designed to be torqued by a spanner or wrench and always preceded by a head style such as 'Hex cap screw', 'Socket head cap screw' etc.



SET SCREW: A set screw is a headless threaded fastener that is typically used to hold a sleeve, collar or gear on a shaft to prevent relative motion.



BOLT: It is the term used for a threaded fastener, with a head, designed to be used in conjunction with and properly assembled by means of tightening a nut.



STUD: A stud is a headless fastener, which has threads at both ends of the shank. One end is inserted into an internally tapped hole and tightening a nut on the other end induces tension. If a stud is threaded its entire length and a nut is used on both ends, it serves the function of a bolt and is then classified as a stud bolt.



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NUT: A nut is a geometrically designed block (usually of metal or plastic) with an internal thread and designed to be assembled in conjunction with a bolt or screw.



LOCK NUT: Any nut with a special design that helps to prevent the nut from loosening.

PREVAILING TORQUE NUT: A type of lock nut which has a prevailing torque to assist in preventing self loosening. There are two main categories of prevailing torque nuts, all metal and nylon insert. All metal torque prevailing nuts generally gain a prevailing torque by distorting the threads at the top of the nut by some means. Nylon insert torque prevailing nuts utilize a nylon (or other polymer) insert to achieve a prevailing torque.



WASHER: A washer is a part having a centrally located hole. The washer performs various functions when assembled between the bearing surface of a fastener and the part being attached.



WASHER FACE: A washer face is a circular boss under the head of the fastener, providing a bearing surface. Applicable for a bolt or nut.

HEADLESS FASTENER: A headless threaded fastener is a fastener normally having a slot, recess, or socket in one end to drive the fastener into the assembly. Commonly referred to as Set Screw or Grub Screw.



RIGHT HAND THREAD: A thread is a right hand thread if, when viewed axially, it winds in a clockwise and receding direction. All threads are right hand unless otherwise designated.



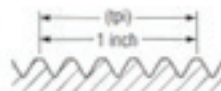
LEFT HAND THREAD: A thread is a left hand thread if, when viewed axially, it winds in a counter-clockwise and receding direction. All left hand threads are designated LH.



PITCH: The distance from a point on the screw thread to a corresponding point on the adjacent thread measured parallel to its axis in the same axial plane and on the same side of the axis. The term **pitch** is mainly used in the **metric system** and is specified in mm.



THREADS PER INCH (tpi): A decimal count of the number of threads in one inch of screw thread. The term **threads per inch (tpi)** is used for **inch** fasteners.



MAJOR DIAMETER: This is the diameter of an imaginary cylinder parallel with the crests of the thread; in other words it is the distance from crest to crest for an external thread, or root to root for an internal thread.

MINOR DIAMETER: This is the diameter of an imaginary cylinder which just touches the roots of an external thread, or the crests of an internal thread.

ROOT DIAMETER: Identical to Minor Diameter.

PITCH DIAMETER: It is the effective diameter of the thread which passes through

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the thread in such a position that the widths of the thread ridges and thread grooves are equal and lies approximately half way between the major and minor diameters.

EFFECTIVE DIAMETER: Identical to Pitch Diameter.

HEAD: The head of a fastener is the enlarged configuration, performed on one end of a headed fastener, to provide a bearing surface.

BODY: The unthreaded portion of a bolt between the head and the threaded portion.

SHANK: That portion of a headed fastener that lies between the head and the extreme end point.

SHOULDER: A shoulder is an enlarged portion of a threaded fastener or the shank of an unthreaded fastener.

LENGTH: The length of a headed fastener is the distance from the intersection of the largest diameter of the head with the bearing surface to the extreme point, measured in a line parallel to the axis of the fastener. (See page 21)

GRIP LENGTH: Total distance between the underside of the nut to the bearing face of the bolt head; includes washer, gasket thickness etc.

THREAD ENGAGEMENT: The percentage of the thread height that is in the material being fastened. For full thread engagement, the pilot hole should be equal to or smaller than the root diameter of the fastener.

WIDTH ACROSS CORNERS: The width across corners of a hexagon, square or rectangular geometry and used as tightening media, are measured from corner to corner.

WIDTH ACROSS FLATS: The width across flats of hexagon or square heads of fasteners is the distance measured perpendicular to the fastener axis across the flats of the fastener.

GRADE: Used for externally threaded **INCH** fasteners to designate the strength of the fastener.

CLASS: Used for **METRIC** fasteners to designate the fastener strength. **Class** is a material designation equivalent to the US term **Grade**.

HIGH STRENGTH FASTENER: A high strength fastener is a fastener having high tensile and shear strengths attained through combination of material types, work hardening and heat treatment.

TENSILE STRENGTH: Tensile strength is the maximum tension (pull or tautness) applied as a loading, that a fastener can support prior to, or coincidental with, its fracture.

FINISH: The term finish is commonly applied to the condition of the surface of fastener because of chemical or organic treatment, subsequent to the manufacture of the fastener. The term finish is also applied to some types of fasteners to indicate the condition of a materials surface texture because of mechanical operations and the degree of precision achieved or required.



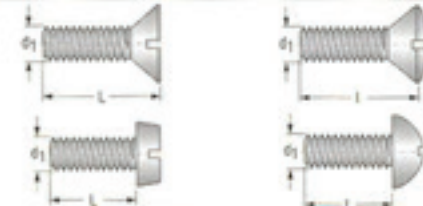
BASIC FASTENER MEASUREMENTS

Standard Fasteners are basically measured / specified by the nominal thread diameter (d_1) x nominal length L .

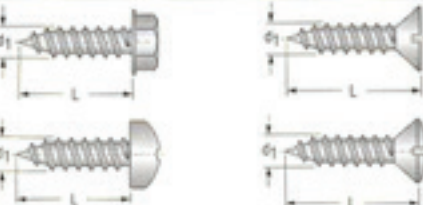
Hex Cap Screws / Bolts



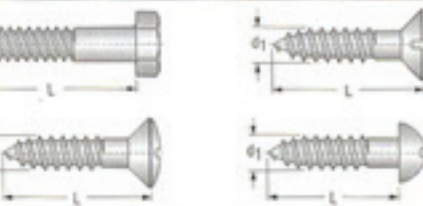
Machine Screws



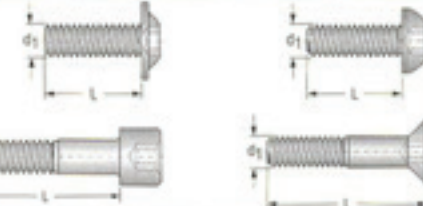
Self Tapping Screws



Wood Screws



Socket Head Cap Screws



Eye Bolts



Carriage Bolts



Shoulder Screws

Shoulder screws are measured / specified by shoulder diameter (d_2) x Shoulder length L . To avoid doubt, it is better to also specify the thread detail 'd' as well.

