FASTENER REFERENCE GUIDE

**TYPES OF BOLT AND SCREW HEADS**

- **PAN HEAD:** Recommended for new designs to replace round, nose, and flanged heads. Provides a nice legal head, but with characteristically high value and appearance. The Pan head is usually utilized on a flush finishing unit. The counterbore portion offers good centering possibilities.
- **FLAT HEAD:** Supplied in standard dimensions with an 80° to 82° angle to be adaptable to flush assemblies in thin stock. The flat head is usually employed in a neat appearance. A thread cutting screw with a tapping screw thread with blunt tapered point and a special edge along the outer periphery of the head where driving action is most effective.
- **SUNK HEAD:** Fully specified as a “standard countersunk,” this head is identical to the standard flat head, but possesses, in addition, a reduced root appearance suitable for flush finishing units.
- **FULLER HEAD:** The standard oval filler head has a smaller diameter that the countersunk but with a corresponding sharper edge. The smaller diameter head increases the pressure applied on the smaller area and can be assembled down to fine and related surface required in counterbored dies in inconspicuously, it may be used successfully in counterbored holes. A thread cutting screw in the fine thread series offering maximum thread cutting power.
- **TRUNS HEAD:** Also known as an over head, housed head, and oval filler head. A type, requiring large diameter head having excellent die qualities, and as described can be used to cover larger diameter clearance holes. The over head assembly is used in assembly/machining is required. Suggested pan head as a再也.
- **HEX HEAD:** Provides the perfect nutted mitten assembly. Third-proof decorative, yet inexpensive. Special drivers available for field removal on power driven assembly machines.
- **ONE-WAY HEAD:** This ingenious, tamper-proof type of head, once assembled cannot be removed, but is driven with a standard screwdriver. Manufactured with amazing accuracy in productive quantities, this simple design is frequently used value added assembly procedures.
- **PHILLIPS FINISHING WASHERS:** Designed as a neat appearance product for the electronic and appliance trade with all threaded edges.
- **WASHER HEAD:** This design has the finished appearance of a conventional hexagon head, and was originally conceived as an extra large bearing surface under the head. The modern “truns” head carried in stock normally answers this purpose. When a larger diameter is required this washer head design is recommended.
- **FLAT AND DUVAL HEADS (UNIFORM):** This is the standard flat or oval head 80° to 82° countersunk screw which has the lower onefourth of the counterbore portion removed to facilitate production of extremely short lengths. An illustrated flat is the standard counterbore head in particular applications and for production work to be used in batch.
- **FLAT HEAD (60° COUNTERBORE):** The standard flat head screw has been developed for applications requiring flush surfaces, and is recommended for flanged assemblies. The 60° counterbore head has a very desirable feature; it offers an excellent bearing surface. Very well adapted for use with thin aluminum, soft-plate, etc. The “truns” head is adaptable to die broaching, forming, and the application of the latest in finishing tools. Possesses a true head in a square box which remains unchanged under variable stresses. This square situation may also be included into pseudo as a perimeter balanced. A great many varieties in all screw diameters are available in production quantities.
- **MISDESIGN HEXAGON HEAD:** An inexpensive wrench head fastener made to conform to standard head dimensions. The hex is completely cold upset in a counterbored die and possesses an identifying depression in the top surface of the design.
- **MISDESIGN HEXAGON WASHERS:** Made as the same manner as the Misedesign Hexagon head but with a washer section on the base of the head to protect the finish of the assembly from wriggling out.
- **ACORN HEAD (FULL UNDERCUT):** A very neat appearing slim head for application to applications—excellent sheet surfaces.
- **ACORN HEAD (SUNK):** This is the exact type of wrench applied because holes characterized by clear undercuts continues to place stresses. Recommended for general applications. It is available in all standard patterns and all thread diameters.
- **HEADS STYLES WELDING SCREWS:** The welding screw has been developed to provide a stringent permanent threaded fastener which becomes an integral part of the assembly. It affords the principle of permanent welding by means of multiple layers applied to various head surfaces. Types can include: several applications. Applications easily into the counterbore portion of normal thread designed for efficient welding angle contact.
- **TYPE 1 (SMEARING):** Afew advantages of the self-facing nature of the counterbore portion and provide a smooth, flush outer surface.

* Most head styles also available as Recessed or Clutch.

**THREAD TERMINOLOGY**

- **A. FULL DIAMETER SHANK:** Equal to major diameter of thread. Produced by cut or thread by roll thread on threaded screw. Characteristic of machine and cap screws.
- **B. UNDERRIZED SHANK:** Equal approximately to pitch diameter of thread. Producing not thread on non-threaded machine screws. Characteristic of machine screws.
- **C. PITCH:** The distance from one point on the screw thread to a corresponding point on the next thread measured parallel to the thread.
- **D. PITCH DIAMETER:** The simple, effective diameter of screw threads. Approximately half way between the major and minor diameters.
- **E. MAJOR DIAMETER:** The largest diameter of a screw thread.
- **F. MINOR DIAMETER:** The smallest diameter of a screw thread.
- **LEAD:** The distance a screw thread advances axially in one turn.
- **G. CUT THREAD:** Threads are cut or chased, the unfitted portion of shank be equal to the major diameter of thread.
- **H. ROLLED THREAD:** Threads are cold formed by squeezing the blank between reciprocating serrated dies. This acts to increase the major diameter of the thread over and above the diameter of unfitted shank (if any), unless an estimated blank is used.

**CLASSES OF THREADS**

- **TYPE FZ POINT:** For plastics and other soft materials with large chip clearing and cutting edges.
- **TYPE A POINT:** A precision forming operation to provide any required included angle. Often a smooth surface acceptable length, and at a slight pitch which can be produced to any desirable contour to fit your individual requirements.
- **TYPE 1 POINT:** A thread cutting screw with machine threads with blunt tapered point, having multi-cutting edges and chip cavities. For heavy gauge sheet metal, aluminum, zinc and lead die castings.
- **TYPE 2 POINT:** A thread cutting screw with tapering thread point and blunt tapered point and multi-cutting edges and chip cavities. For plastics, die castings, metal cast and resin impregnated phenolics and other materials.
- **TYPE 3 POINT:** A thread cutting screw with single flute for general use. Produces a fine standard machine thread screw (thread for die replacement).
- **TYPE 4 POINT:** A thread cutting screw for use with large tolerances and pipe fitting screw thread and standard and special requirements.

**DIE POINT:** One of the least expensive point forming operations applied in the form of heads. This operation provides a reduced shank with a diameter similar to the root diameter of the thread. This member tolerance of the point is approximately ±1/8. Below the major diameter shank with an indicated angle of 60° or 90°.

**GAGE POINT:** A prestamped position in diameter slightly below the root diameter of the thread, usually extending in length about two-thirds the diameter of the thread. Recommended for use in dentistry, to ensure against engaging fine threaded products, and to increase efficiency during production times.

**ROLLERS POINT:** An efficient method of producing long rods in long runs with a slow thread smaller similar to Die Points. The roller head and half is slightly tapped by the threaded roller over counterbore.

**PRIOR POINT (ENDED):** An inefficient method of applying a 45° or 90° head pointing into a slightly countersunk or surface for bending or holding against washer or other soft materials.

**KAIL POINT (FINISHED):** Usually supplied with an approximate 45° indented angle having a deep stop point and slightly rough edge. Used for bending or holding against washer or other soft materials. Other degrees of indentation and sharpnesses also available.

**CUPPED POINT:** A sharply sharpened nose supplied at the end of the threaded member allowing an easy insertion and use in the line of contact with the surface which increases its holding and bending power quickly.

**ROUND POINT:** A screw-round surfaced applied to the end of the threaded member in order to face pressure without deformation. Used as sub-assemblies where friction without cutting action is desirable.

**CONE POINT:** A precision forming operation to provide any required included angle. Often a smooth surface acceptable length, and at a slight pitch which can be produced to any desirable contour to fit your individual requirements.

**TYP H POINT:** A thread forming screw for use in thin metals (015 to 020 thick. Used with steels, punched or nested holes in steel sheet, resin impregnated phenolics, aluminum combinations, among others. Not recommended for new design.

**TYP B POINT:** A screw-thread forming screw for use in metal 050 to 0200 thick. Larger root thread forming screw with fine point for light and heavy steel metal and hardwood casings, plastics, closed end, non-iron and non-stable.

**TYP AB POINT:** A thread forming screw combining locating point type A with thread sizes and pitch of Type B. Normal thread sizes of Type B apply.

**TYP C POINT:** A thread forming screw with sharp or coarse or fine point forming screw thread and straight or tapered point, characteristic of machine and cap screws.

**TYP D POINT:** A straight or tapered point forming screw for use in heavier metal .050 to .200 thick. Larger root thread forming screw with fine point for light and heavy steel metal and hardwood casings, plastics, closed end, non-iron and non-stable.

**TYP E POINT:** A thread cutting screw with machine threads with blunt tapered point, having multi-cutting edges and chip cavities. For heavy gauge sheet metal, aluminum, zinc and lead die castings.

**TYP 17 POINT:** A thread cutting screw with tapering thread point and blunt tapered point and multi-cutting edges and chip cavities. For plastics, die castings, metal cast and resin impregnated phenolics and other materials.

**TYP 1 POINT:** A thread cutting screw with single flute for general use. Produces a fine standard machine thread screw (thread for die replacement).

**TYP 101 POINT:** A thread cutting screw for use with coarse tapping thread screw and special long point thread to facilitate tapping.

**TYP 201 POINT:** A screw-thread forming screw in the fine thread series offering maximum thread cutting area and excellent chip clearing, with minimum tightening torque.

**TYP 25 POINT:** A thread cutting thread similar to Type 25 except without corrective Type 8 thread. For plastics and other soft materials with large chip clearing and cutting edges.

**SELF-DRILLING:** With special die, forming the threads and diameters for the drill bit through 1/16 metal. Standard at four preparation—tools better than 0.015. No punching, die or tapping required.

**SELF-DRILLING:** Produces more secure sheet metal assemblies faster—used as self-drilling screw or driving to pre-hedged washers. Can be used with or without pilot holes. Produce nice "Paradigm cutting edge" allow this sheet metal washers. Perfectly formed threads increase strip and back out pressures.

**MISC**

- **BOLTS**
- **NUTS**
- **SCREWS**
- **SHEETS**
- **GAGES**

**HARDY’S HANDBOOK FOR COMMON WOOD (NUTS) SCREWS, SHEET METAL SCREWS, MACHINE SCREWS AND BOLTS, NUTS AND WASHERS**