

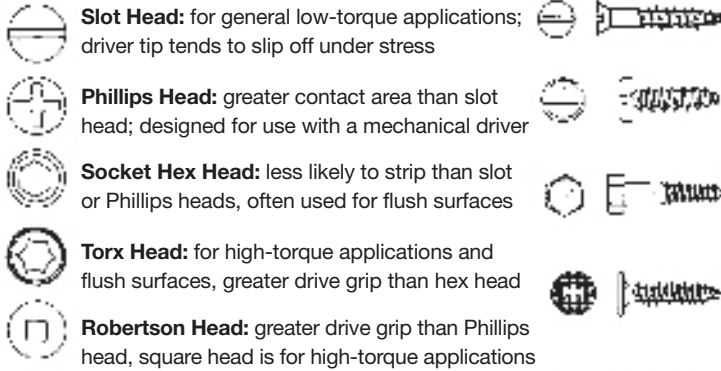


Hundreds of different kinds of fasteners are available, but here are some of the most popular ones and distinctive features of each.

Screws

Cylindrical or conical pieces of metal threaded with a helical ridge; fastens things when turned.

DRIVE TYPES FOR SCREWS



Slot Head: for general low-torque applications; driver tip tends to slip off under stress

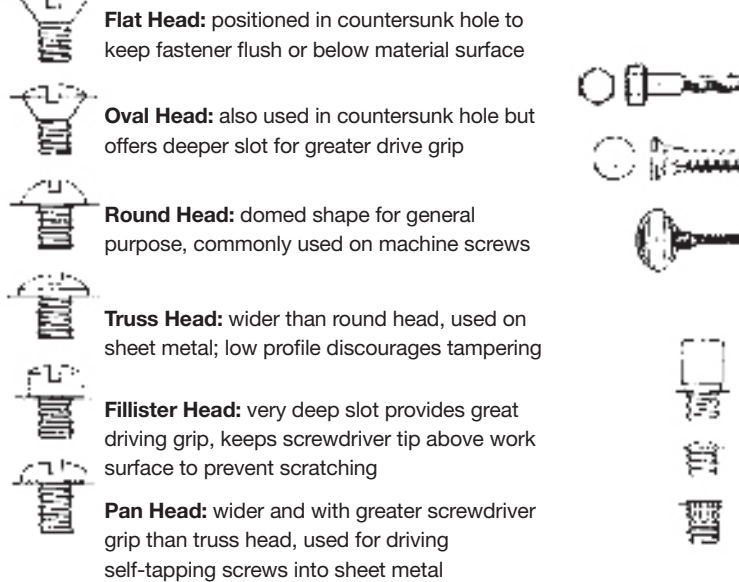
Phillips Head: greater contact area than slot head; designed for use with a mechanical driver

Socket Hex Head: less likely to strip than slot or Phillips heads, often used for flush surfaces

Torx Head: for high-torque applications and flush surfaces, greater drive grip than hex head

Robertson Head: greater drive grip than Phillips head, square head is for high-torque applications

SCREW HEAD TYPES



Flat Head: positioned in countersunk hole to keep fastener flush or below material surface

Oval Head: also used in countersunk hole but offers deeper slot for greater drive grip

Round Head: domed shape for general purpose, commonly used on machine screws

Truss Head: wider than round head, used on sheet metal; low profile discourages tampering

Fillister Head: very deep slot provides great driving grip, keeps screwdriver tip above work surface to prevent scratching

Pan Head: wider and with greater screwdriver grip than truss head, used for driving self-tapping screws into sheet metal

SELF-TAPPING SCREWS (bore into material)

Wood Screw: standard woodworking screw

Sheet Metal Screw: different thread patterns usable in different types of metal; available in thread-forming or thread-cutting configuration, with or without chip-clearing slot

Lag Screw: used for fastening wood to wood, other materials to wood, or (when combined with expansion shield anchor) objects to concrete

Bugle Head Phillips: helical ribs on shank allow screw to self-countersink; excellent for attaching wallboard to stud frames

Hanger or Table Screw: self-taps (after drilling) into wood; protruding end has machine thread that will accept bolts

MACHINE SCREWS (go into pre-threaded metal)

Hex Head Cap Screw: general purpose; same as a bolt, but screws into threaded metal instead of nut

Plow Screw: for recessed surfaces where fastener must be secured by square hole in metal

Thumb Screw: useful where screw must be loosened frequently for adjustments and where security is not important

SET SCREWS (prevents loosening from vibration)

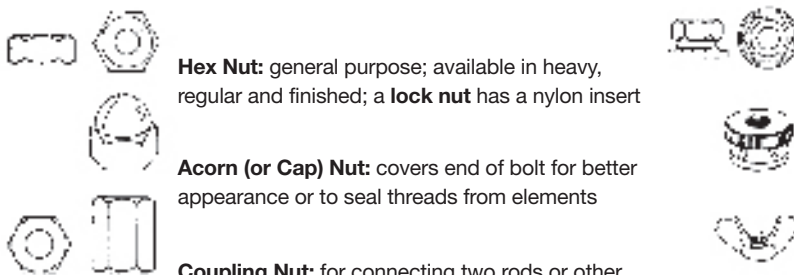
Square Head: for high-torque applications with wrench driver; hole must be wider than untapered head size

Slotted Head: thread reaches the screw head; used on flush surfaces in low-torque applications

Socket Head: usually has a hex socket for rapid disassembly on flush surfaces; moderate torque

Nuts

Small blocks, usually metal, with threaded holes through their centers for tightening against bolts or screws.



Hex Nut: general purpose; available in heavy, regular and finished; a **lock nut** has a nylon insert

Acorn (or Cap) Nut: covers end of bolt for better appearance or to seal threads from elements

Coupling Nut: for connecting two rods or other threaded fasteners together

Flange Nut: provides greater bearing area for nut without using washer; raises nut above surface of material to prevent marring

Knurled Nut: for finger tightening in close locations or where lubricants may make other fasteners too slippery for easy removal

Wing Nut: standard finger-threaded nut; also available with nylon lock

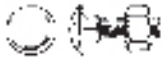


Bolts

Threaded metal rods or pins for joining parts, having a head and usually used with a nut.



Stove Bolt: tapered head allows recessing in countersunk hole; usually fully threaded



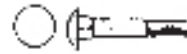
Roundhead Bumper Bolt: wide head gives large surface area for support against metal; square shank locks fastener in hole in metal



Machine Bolt: hexagonal head, general purpose; up to 6 inches long, thread length is usually twice the fastener's diameter plus a quarter inch; over 6 inches long, thread length is twice the diameter plus a half inch



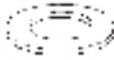
Bent Bolts: for hanging or attaching other objects such as turnbuckles; also available as screws with self-tapping threads



Carriage Bolt: used for very strong joints in wood. Square neck prevents rotation

Washers

Flat rings used to make a seat for the head of a bolt or nut that distributes the downward pressure on a surface.



Flat Washer: standard washer; prevents marring of material's surface and provides secure fit



Spiral Split Washer: the most common lock washer; good security but should be used with flat washer to prevent gouging material



External Toothed Washer: used with large-head screws and bolts because of its wide surface area; will fracture in high-torque situations



Internal Toothed Washer: Same application as external toothed, but prevents snags and provides more attractive finished product



Conical Serrated Washer: prevents head of fastener from moving back and forth; not as secure for rotation as spiral split washer



Spring (or Wave) Washer: used where fastener is not fully tightened (such as taking up shaft end play on electric motor)



Cup Washer: prevents having to drill a countersunk hole when installing flat- or oval-head screw; looks attractive when used on highly visible locations such as on furniture and shelves

Anchors

Devices that hold something else secure, such as screws or nails.



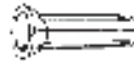
Machine Bolt Expansion Shield: for use in solid masonry; expands full length of anchor; also available for lag screws



Hammer Drive Screw Anchor: device is driven through hole in wall; tightening screw locks anchor into position



Hammer Hit Masonry Anchor: when central nail is driven in, device is securely locked into hole in any solid masonry wall



Plastic Anchor: for use with wood or sheet metal screws; fits in drilled hole and expands when fastener is threaded in; for light duty only



Hollow Wall Screw Anchor: most common fastener for wallboard and other soft materials; expands as screw is threaded in



Toggle Bolt: a secure fastener for hollow walls, concrete block, etc.; requires relatively large hole to pass anchor through