



PRODUCT CATALOGUE

DIAMOND TOOLS | WERA TOOLS | VAGUS | CUTTING TOOLS & OIL | LASER MACHINE

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CUTTING TOOLS

refer to tools used for removing material from a workpiece by means of shear deformation to achieve the desired shape, size, and finish. These tools are essential in manufacturing processes such as machining, drilling, milling, and turning.

Types of Cutting Tools

Manual Cutting Tools

These are hand-operated tools used for simple cutting tasks.

Examples include:

- Saw – Used for cutting wood or metal manually.
- Snips – Used for cutting thin metal sheets.
- Chisel – Used to cut or carve hard materials like wood or metal.

Machine Cutting Tools

These tools are used with machinery to perform precise cuts in various materials. Examples include:

- Drill Bits – Used in drilling machines to create holes in materials.
- Lathe Cutting Tools – Used in lathes to shape materials by rotating the workpiece against the cutting tool.
- Milling Cutters – Used in milling machines to remove material from a workpiece.
- Boring Tools – Used to enlarge or finish existing holes in a workpiece.

Special Cutting Tools

These are designed for specific purposes or specialized cutting operations. Examples include:

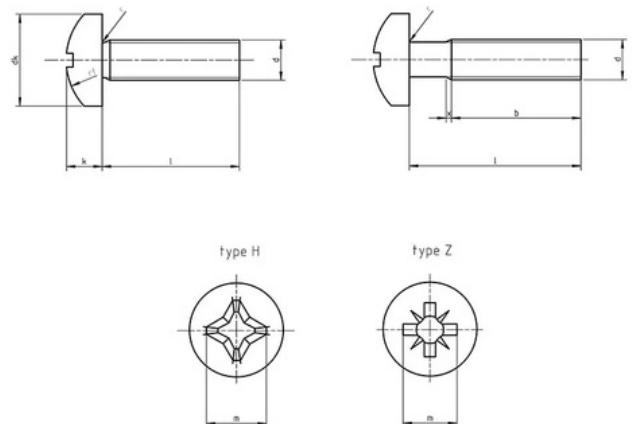
- Taps – Used to create internal threads in holes.
- Dies – Used to create external threads on cylindrical surfaces.
- Broaches – Used for precision shaping or enlarging holes.

Materials Used for Cutting Tools

1. High-Speed Steel (HSS) – Commonly used for general-purpose cutting tools due to its strength and heat resistance.
2. Carbide – Ideal for high-speed applications due to its wear resistance and durability.
3. Ceramics – Used in high-speed precision cutting due to its hardness and ability to retain sharpness at high temperatures.
4. Diamond Tools – Used for cutting extremely hard materials like glass, stone, and hard alloys.

Phillips Head Self-Tapping Screws

Phillips head self-tapping screws are a type of fastener with a cross-shaped recess on the head, designed for use with Phillips screwdrivers. These screws feature sharp threads and a pointed tip, allowing them to tap their own threads into various materials without needing a pre-drilled pilot hole.



Key Characteristics

Screw Head:

- The head is designed with a Phillips cross-shaped drive, which allows the screw to be driven securely using a Phillips screwdriver.
- Common head types include:
 - Flat Head: Flush with the surface when fully driven.
 - Pan Head: Rounded top with a flat underside for better grip on the surface.
 - Round Head: Fully rounded head for decorative or light-duty applications.



Thread:

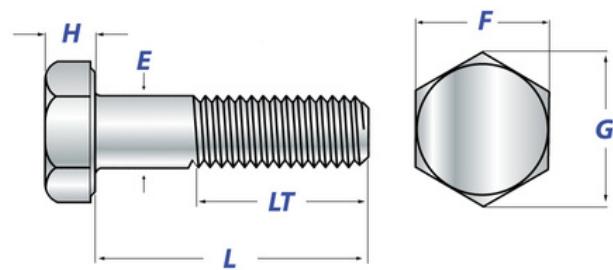
- These screws have deep, sharp threads that can cut into materials such as plastic, thin metal, or wood.
- The self-tapping design means the screw creates its own threads as it is driven into the material.
- It is ideal for applications where speed and convenience are required, as no separate nut is needed.

Tip:

- The tip is usually sharp or pointed, making it easier to start the screw without pre-drilling a hole, especially in soft materials.
- Some variants have a blunt tip or a drilling point, depending on the intended use.

Hex Head Screws

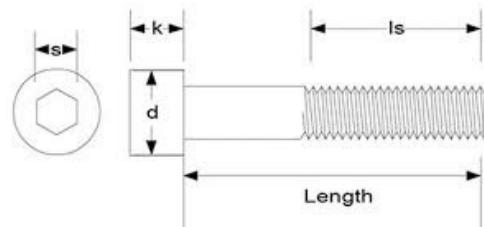
Hex head screws are a type of fastener characterized by their hexagonal-shaped head, which is designed to be tightened or loosened using a wrench or a socket. These screws are commonly used in automotive, construction, and machinery applications due to their strength and ease of torque application.



Key Characteristics

Screw Head:

- The head is hexagonal, allowing for tightening using standard wrenches, ratchets, or hex sockets.
- The hex head provides a larger contact surface compared to other screw heads, which helps distribute force evenly and allows for higher torque application.



Thread:

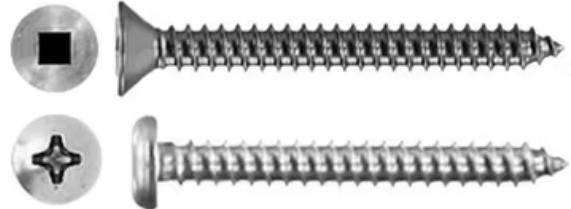
- Hex head screws can have either coarse threads (UNC) or fine threads (UNF), depending on the application.
- Coarse threads are generally preferred for applications where quick assembly is needed or in materials that don't hold fine threads well.
- Fine threads provide a stronger hold and are better suited for precision applications.

Tip:

- Depending on the type, hex head screws may have:
 - Blunt tips for use with pre-threaded holes.
 - Pointed tips for self-tapping versions that create their own threads in softer materials.

Self tapping screw

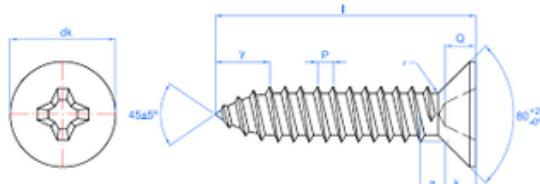
Self-tapping screws are specialized fasteners designed to create or cut their own threads as they are driven into a material. Unlike standard screws, they do not require pre-threaded holes, making them ideal for quick and efficient assembly in various materials such as metal, plastic, and wood.



Key Characteristics

Thread Design:

- Self-tapping screws have sharp, deep threads that can cut into materials, forming a mating thread in the process.
- Threads typically run along the entire length of the screw or part of it, depending on the application.



Tip Types:

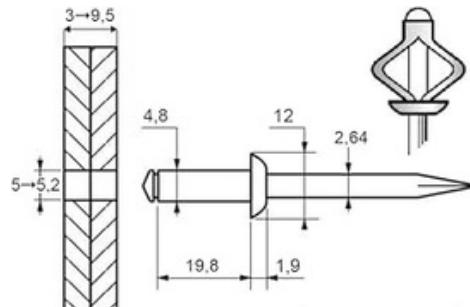
- Sharp Tip:
 - Commonly used for softer materials like plastic, wood, or thin sheet metal.
 - The sharp point allows the screw to pierce the material easily.
- Blunt Tip:
 - Designed for harder materials where a pre-drilled hole may still be required.
- Drilling Tip (Self-Drilling Screws):
 - Features a drill-like tip that eliminates the need for pre-drilling, making it especially useful for thicker metals.

Head Types:

- Phillips Head:
 - Cross-shaped recess, commonly used in general-purpose applications.
- Hex Head:
 - Hexagonal head designed for use with wrenches or socket drivers, providing high torque.
- Flat Head:
 - Designed to sit flush with the surface after installation.
- Pan Head:
 - Rounded top with a flat underside, providing a larger contact area on the surface.

Tri-Fold Blind Rivets

Tri-Fold Blind Rivets are specialized rivets designed to provide a secure, three-legged (tri-fold) grip on the backside of the material being fastened. These rivets are commonly used in applications where extra strength, wide load-bearing surfaces, or vibration resistance are required.



Materials and Finishes

Tri-fold blind rivets are available in various materials to suit different environments:

- Aluminum – Lightweight and corrosion-resistant; suitable for non-critical applications.
- Steel – Stronger than aluminum; suitable for high-stress environments.
- Stainless Steel – Offers excellent corrosion resistance; ideal for outdoor or marine applications.



Key Features of Tri-Fold Blind Rivets

- Three-Legged Expansion
- When the rivet is installed, the mandrel pulls the rivet body into a "tri-fold" shape, forming three legs on the backside. This provides a broad clamping surface and distributes the load evenly.
- Blind Installation
- They can be installed from one side of the material (hence "blind" rivet), making them ideal for situations where access to the backside is difficult or impossible.
- Vibration Resistance
- The wide clamping area and secure fit help prevent loosening due to vibration, making them suitable for automotive, aerospace, and machinery applications.
- High Pull-Out Strength
- The tri-fold design offers excellent resistance against pull-out forces, making them ideal for softer or more fragile materials like plastic or thin sheet metal.

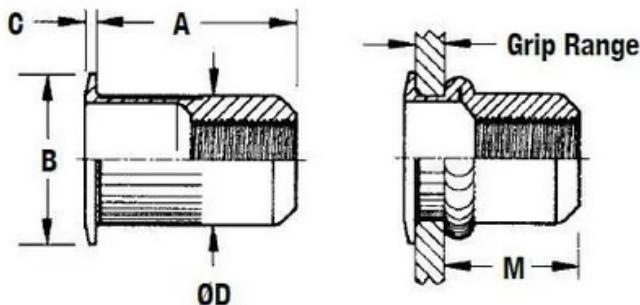
Thin sheet nut insert

Thin sheet nut inserts, also known as nutserts or rivnuts, are fasteners designed to create strong internal threads in thin materials, such as sheet metal or plastic. They allow for secure attachment of screws and bolts in applications where tapping threads directly into the thin material is not practical.



Materials used

- Steel – Offers high strength, suitable for heavy-duty applications.
- Stainless Steel – Provides excellent corrosion resistance, making it ideal for outdoor or marine environments.
- Aluminum – Lightweight and corrosion-resistant, commonly used in aerospace and automotive industries.



Key Features of Thin Sheet Nut Inserts

- Suitable for Thin Materials
Specifically designed to work with thin sheets, including metal, aluminum, or plastic.
- Creates Internal Threads
Once installed, the nut insert provides a reliable threaded hole for fastening screws or bolts, allowing for repeated assembly and disassembly.
- Blind Installation
Thin sheet nut inserts can be installed from one side of the material (blind installation), making them ideal for situations where the backside of the material is inaccessible.
- Enhanced Strength
The nut insert expands and locks into place, providing a much stronger fastening point than self-tapping screws or direct threading in thin materials.

Head Self-Clinching Fasteners

Self-Clinching Stud Fasteners are stud fasteners designed to be permanently installed into thin metal sheets or other materials without the need for welding or additional threading.

Features of Self-Clinching Stud Fasteners

Permanently Embedded – Once pressed into the metal sheet, the stud locks securely in place.

Quick and Easy Installation – Installed using a press or hydraulic tool.

Ideal for Thin Materials – Suitable for thin sheets that cannot be threaded.

Strong and Durable – Resists loosening under tension or torque.

Widely Used in Industries – Commonly found in automotive, electronics, electrical enclosures, and sheet metal applications.

How Self-Clinching Studs Work?

The stud has serrations or knurls at the base, which embed into the sheet metal when pressed.

The applied pressure causes the surrounding material to flow into the stud's grooves, locking it in place.

Once installed, the stud provides a strong attachment point for nuts or other fasteners.

Types of Self-Clinching Studs

Flush Head Stud – Sits flush with the metal surface for a clean appearance.

Non-Flush Stud – Protrudes above the surface for applications where flush mounting is not necessary.

Stainless Steel Stud – Provides corrosion resistance for harsh environments.

Floating Stud – Allows slight movement to assist with component alignment.

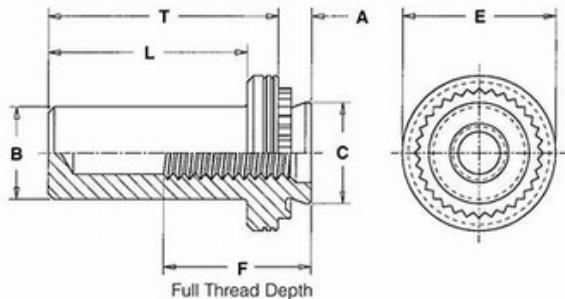
Common Applications

- Automotive Industry – Used for securing body panels and components.
- Electronics Industry – Helps mount circuit boards and enclosures.
- Machinery & Equipment – Used in structural assemblies requiring high strength



Blind fastener

Blind Fastener is a type of fastener designed to be installed from only one side of the workpiece, making it ideal for situations where access to the rear side is restricted or impossible. These fasteners are widely used in various industries, including aerospace, automotive, and construction, where ease of installation and strength are crucial.



Types of Blind Fasteners

1. Blind Rivets (Pop Rivets)

- Blind rivets are permanent fasteners used to join two pieces of material, typically metal or plastic.
- They are installed using a rivet gun, which pulls the mandrel (stem) through the rivet, causing the end to expand and secure the materials.
- Commonly used in sheet metal fabrication, construction, and automotive industries.

2. Blind Bolts

- Blind bolts are high-strength fasteners that can be installed from one side only.
- They are ideal for structural applications where high loads are involved, such as aircraft assembly and heavy steel structures.
- These bolts feature an expanding mechanism that locks them securely in place when tightened.

3. Blind Nuts (Rivet Nuts)

- Blind nuts, also known as rivet nuts or nutserts, are threaded inserts that provide a strong threaded connection in thin materials.
- Installed by pulling the nut against the material using a special tool, they create a secure thread on the front side without needing rear access.
- Often used in automotive applications and thin sheet metal assemblies.



Self-Clinching Nuts

Self-Clinching Nuts are fasteners designed to be permanently embedded into thin sheet metal or other materials using a pressing force. They create strong and reusable threads without the need for welding or additional hardware.

Once installed, the nut becomes a permanent part of the sheet, offering high resistance to torque and push-out forces, making them ideal for industrial and electronic applications.

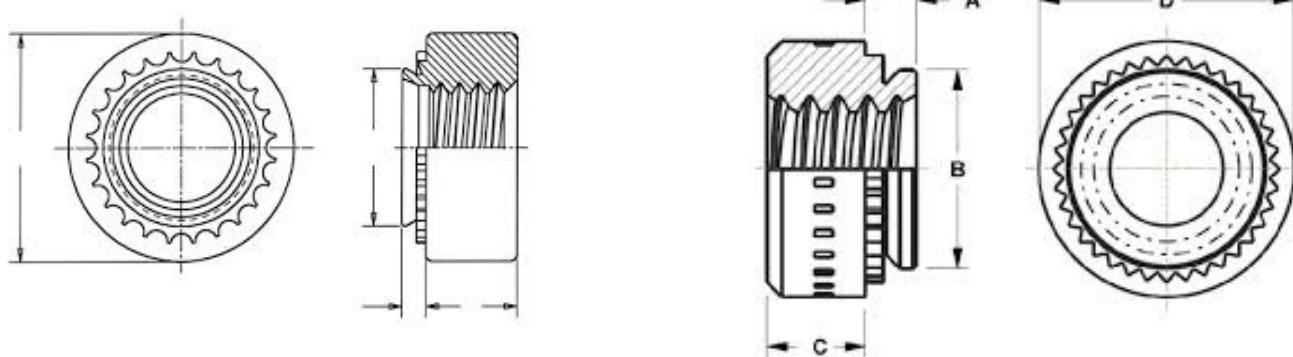
How Self-Clinching Nuts Work

1. Installation Process

- A properly sized hole is drilled or punched into the sheet metal.
- The Self-Clinching Nut is placed into the hole.
- A press applies force, embedding the nut into the sheet.
- The metal surrounding the nut flows into specially designed grooves, securing it permanently.

2. After Installation

- The nut remains flush with the sheet surface.
- It provides a strong internal thread for screws or bolts.
- It can withstand high torque and push-out forces.



Miniature Fastener

A miniature fastener is a small-sized fastening component used in industries requiring high precision and compact designs, such as electronics, medical devices, watches, and small mechanical assemblies. These fasteners are designed to be highly accurate, lightweight, and durable to ensure stability in micro-assemblies.



Characteristics of Miniature Fasteners

1. Extremely Small Size – Typically less than 2 mm in diameter
2. High Precision – Manufactured with fine tolerances for secure fastening
3. Durable Materials – Often made from stainless steel, titanium, brass, or high-performance plastics
4. Lightweight – Reduces the overall weight of the assembled product
5. Vibration Resistance – Some designs include self-locking mechanisms to prevent loosening





Changes for the Better



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