

Product Guide

# THE ULTIMATE GUIDE TO FASTENERS

# EVERYTHING YOU NEED TO KNOW, FROM SCREW TYPES TO CALCULATING RIVET SIZE

With so many fasteners available, how do you know which ones to use? Take screws, for example. They come in different head types, drive types, and materials. We've designed this guide to help you understand your options, from plastic knurled head thumb screws to nylon grommet nuts, snap rivets and everything in between.

We recommend that you try before you buy with **free samples** so that you can ensure they're exactly what your application requires. You can also download **free CADs** to help with your design.

## LET'S GET STARTED

Already have an idea of what you need? Jump to that section now by clicking on the link below. Otherwise, here are the categories of fasteners you should become familiar with.



### **SCREWS** Page 3

Fastens components by digging into a material and turning.



### **RODS** Page 11

Also called studs and typically used as fixings for support systems.



### **THUMB SCREWS AND KNOBS** Page 5

For non-structural uses.



### **WASHERS** Page 12

Evenly distributes a threaded fastener's load to minimize risk of damage to materials.



### **BOLTS** Page 6

Typically untapered and require a nut to tighten.



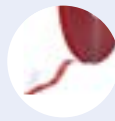
### **SUCTION CUPS** Page 13

An alternative to fasteners; attaches to surfaces for retail displays.



### **NUTS** Page 7

A type of fastener with a threaded hole, usually used with a mating bolt.



### **HIGH-BOND TAPE** Page 14

Used instead of screws and rivets to bond materials together seamlessly.



### **PANEL FASTENERS** Page 8

Attaches a component to panels on their edge or through holes.



### **INDUSTRIES** Page 15

The fasteners used by different industries.



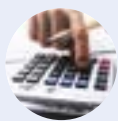
### **RIVETS** Page 9

Joins together two materials, either by hand or with a tool, depending on the rivet type.



### **MATERIALS: OVERVIEW** Page 20

A look at the materials that make fasteners.



### **CALCULATING THE SIZE RIVET YOU NEED** Page 10

The formula explained for determining the rivet size you need for your application.

# FASTENERS

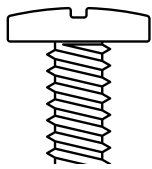
Here’s a closer look at the different types of fasteners available, and what your choices are.

## SCREWS

The screw head has two functions:

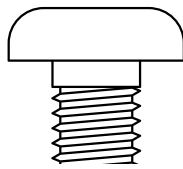
- Provide the stopping point once the screw is driven into a surface
- House the drive, which is how the screw is turned

### COMMON HEAD TYPES INCLUDE:



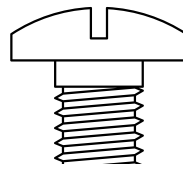
**BINDER**

Binder machine screws are typically used for electrical applications. The area beneath the head provides space for wire connections.



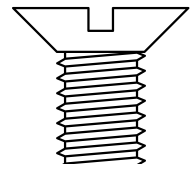
**BUTTON**

Rounded head is usually used in socket-driven screws.



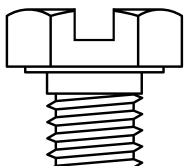
**FILLISTER**

A fillister machine screw is similar to a pan head machine screw, but with a higher profile and deeper slot. Used in electrical applications. An example of a modified fillister is the shoulder screw.



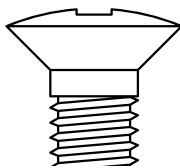
**FLAT**

Once installed, countersunk head enables smooth, flat surface.



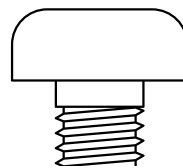
**HEX**

Available slotted, as shown here, or flat. Applications include automotive, machinery and construction.



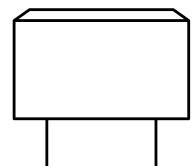
**OVAL**

A countersunk machine screw with a decorative rounded head that protrudes above the surface. Typically used for switch covers.



**PAN**

Decorative and non-countersunk and used when a flat or low-profile surface is needed. This decorative screw is ideal for avoiding the head being snagged in use.



**SOCKET HEAD**

Typically installed flush with a surface for an aesthetic appearance while enabling easy access to the drive. Considered the strongest of all screw-head types.

# SCREWS

The next question is, which type of screw drive do you use? This refers to the kind of tool you use to install or remove the screw. Some examples include slotted, Phillips – or a combination of both – hex and hex socket. Slotted head screws are a great choice if the screws will be turned by hand but should be avoided when using electric screwdrivers. This is because the power forces the screwdriver to slip out and damage your surface.

Hex drives are desirable for tight spaces, while a hex socket requires a hex key, also known as an Allen key, to install. These are for tight tolerances and are less likely to strip the screw than other methods of driving in screws.

If you don't want your screw heads to show, then use [secure screw covers](#). These are available in different colors to give your application a finished look.

## EXAMPLES OF SCREWS INCLUDE:

**Need:** Flush with surface to prevent contact with skin, clothes and other components

**Solution:** MACHINE SCREWS – FLAT PHILLIPS

[View online](#)

**Why?**

- Phillips flat head machine screw with range of thread lengths and sizes
- Nylon 6/6 for strength and durability



**Need:** Require tight tolerances

**Solution:** HEX HEAD CAP SCREWS

[View online](#)

**Why?**

- Ideal for OEM applications
- Nylon 6/6
- Lightweight hex head cap screw is also corrosion resistant



**Need:** Electrical insulation

**Solution:** MACHINE SCREWS – CHEESE

[View online](#)

**Why?**

- Ideal for electronic applications
- Nylon 6/6 has excellent electrical insulation properties
- Slotted cheese head machine screw is ideal as a permanent fixture
- Lightweight and corrosion resistance



**Need:** Need for high tensile strength in areas with limited space where a wrench will not fit

**Solution:** SOCKET HEAD CAP SCREWS – BUTTON

[View online](#)

**Why?**

- Socket head cap screw fastens with hex key, which alleviates the need to accommodate a wrench
- Nylon 6/6



# THUMB SCREWS AND KNOBS

Thumb screws have a distinctive look, dictated by their function. Two of the most common types have either a tall, knurled head or a vertical flat head that acts as a sort of key. Both are blunt-nosed with easy-to-grip heads, enabling you to tighten or loosen by hand as needed. This makes them ideal for applications such as safety covers for electronic devices, battery covers and other front panels that require quick and easy access.

Plastic thumb screws with knurled heads often have slotted heads. This allows you to give it a final turn with a flathead screw driver. Wing head thumb screws are another type, which can also perform as thumb screw knobs. They fit any length of standard socket head cap screws with a simple press.

## EXAMPLES OF THUMB SCREWS AND KNOBS INCLUDE:

**Need:** Extra grip for tightening

**Solution:** THUMB SCREWS – PLASTIC WING

[View online](#)

**Why?**

- Head provides added leverage
- Range of thread sizes
- Nylon 6/6



**Need:** Extra grip and ribbed design for secure and comfortable tightening

**Solution:** THUMB SCREWS – PLASTIC OVAL HEAD

[View online](#)

**Why?**

- Easy to tighten by hand – extra grip due to shape and ribbed design
- Nylon 6/6



**Need:** Easy installation in restricted space for general fixing purposes or attaching components to panels

**Solution:** KNURLED THUMB SCREWS – SLOTTED PLASTIC

[View online](#)

**Why?**

- Plastic thumb screws with knurled head provide excellent grip
- Nylon 6/6



**Need:** Knob for socket head cap screw

**Solution:** THUMB SCREWS – FLOWERETTE KNOB

[View online](#)

**Why?**

- Versatile: Can be used as thumb screw or knob
- Caps available for any size socket head cap screws
- Available in different colors
- Acetal; style: rosette knob thumb screws
- [Knurled nylon round caps also available](#)



# BOLTS

Bolts are often confused with screws, because they do similar jobs. Bolts join two unthreaded components, while screws join threaded components. Usually, the head of bolts is bigger than the shaft. While screws are most often tapered, bolts are not. A bolt needs a nut for tightening, while a screw works on its own.

Like screws, bolts come in a variety of head types, which are designed according to the tool that will engage with it for tightening. Sometimes a bolt is even called a screw. For example, a machine screw can be a type of bolt, but not always. The general rule of thumb is, if it has a hex head, it's a bolt. If it has a slotted head, such as a Phillips or Flat head, then it's a screw.

Bolts designed to do specialist jobs are also available. Plastic eye bolts, for example, are used to route and secure wires or cables to another component.

## EXAMPLE OF A NYLON EYE BOLT:

**Need:** Attachment point for wires or cables

**Solution:** **PLASTIC EYE BOLT**

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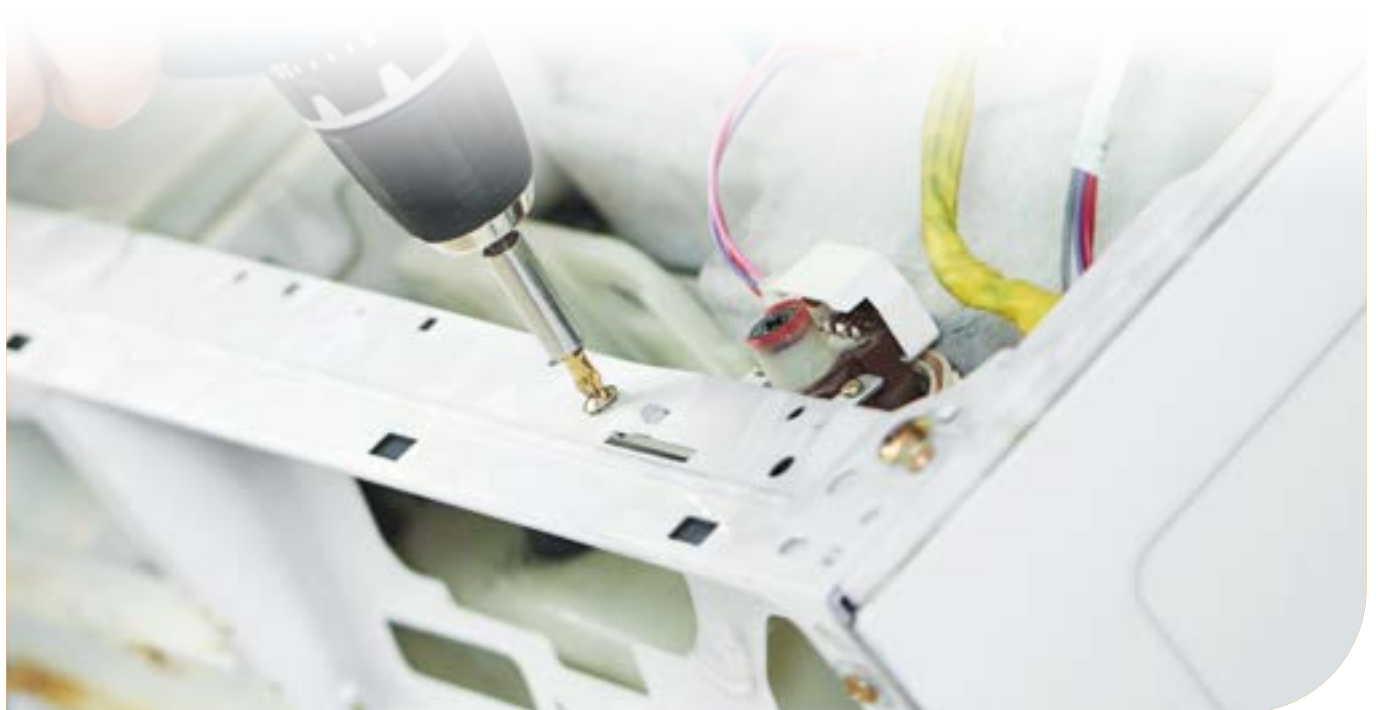
### Why?

- Designed to route cable, wire, and for other lightweight applications
- Thread lengths range from .625 in (15.9 mm) to 2.5 in (63.5 mm)
- Nylon 6/6



**WE WORK TO HIGH STANDARDS, WITH THE ACCREDITATIONS TO PROVE IT:**

ISO 9001:2008  
ISO 14001:2004  
IATF 16949:2009



# NUTS

Nuts, which have threaded holes, work in conjunction with bolts, strengthening the parts they hold together. Usually, most nuts have a hexagonal shape. This is only on the exterior, while the interior is actually cylindrical. The purpose of the hex exterior is to make installation easier. Six sides makes the hex nut easier to grip, which translates to easy installation or removal.

A wing nut has tabs, or wings, on the side, enabling manual turning. This is especially useful if the wing nut has to undergo frequent removal and reinstallation. A thumb nut is also applied manually. Like the wing nut, it's ideal if the nut needs to be removed often. However, it should never be used as structural support. It works well, for example, on panel and machinery covers. A cap nut is of a different order all together. It protects exposed bolt threads while also improving safety. Its secondary purpose is to provide a smooth, clean appearance.

## RESISTING VIBRATIONS

Another important aspect is being able to stand up to vibrations, which can loosen the nut, and thus the bolt, causing the joint to fail. In these cases, you should consider a jam nut. This is a lower-profile nut installed below a larger nut. The jam nut should only be tightened between a quarter and a half of the full torque. The other, thicker nut is installed next and fully torqued. This pulls the bolt up through the jam nut. What essentially happens is that both nuts provide opposing forces on the bolt. Joints that fail usually rely on friction, while components such as jam nuts provide tension, which opposes vibrations.

### EXAMPLES OF NUTS INCLUDE:

**Need:** Easy to grip, install and remove

**Solution:** **PLASTIC HEX NUT – STANDARD**

[View online](#)

**Why?**

- Hex shape for easy grip; easy to install and remove
- Lightweight compared to metal nuts
- Nylon 6/6, UL94 V-2



- Ideal for outdoor application
- Resists corrosion, oil, abrasion and most chemicals
- Also available in [PEEK®](#) and [Polycarbonate \(PC\)](#)

**Need:** Manual installation

**Solution:** **WING & FLY NUTS**

[View online](#)

**Why?**

- Thumb tabs (wings) provide sure grip for turning
- Easily tightened and loosened by hand
- Ideal for frequent removal and installation



- Nylon 6/6
- Also available in [co-polyester](#)

**Need:** Install and remove a nut within limited space

**Solution:** **KNURLED THUMB NUTS – PLASTIC**

[View online](#)

**Why?**

- Knurled for non-slip grip, easy application and quick tightening and loosening
- Ideal for electrical panel covers



- Nylon 6/6

**Need:** Withstand vibrations

**Solution:** **GROMMET NUTS**

[View online](#)

**Why?**

- Grommet nut provides secure, threaded connection between panels
- Designed to resist vibrations
- Corrosion resistant



- Cost effective
- Nylon 6/6

**Need:** Fast assembly time

**Solution:** **KWIK NUTS**

[View online](#)

**Why?**

- To install, push down the length of the threaded fastener to desired location and lock with a 180° turn
- Corrosion resistant



- Lightweight
- To remove, unscrew with a wrench
- Nylon 6/6, UL94 V-2

You might also find our guide helpful: **When to Use Polycarbonate Fasteners.**

# PANEL FASTENERS

Panel fasteners do what the name says: they connect items to panels. They do this on the edge or through holes or slots. However, not all panel fasteners go by that name. Snap rivets are a prime example.

Another solution are quarter-turn panel fasteners. These are typically used to secure a panel or cover, yet still enable easy access. Comprising of two pieces, quarter-turn fasteners join a fixed surface with a removable one. The base fits into the fixed panel, and then the slotted screw is inserted through the panel that can be removed, and into the fastener base. A quarter turn of the screw secures – or loosens – the panels. For more solutions that can fasten panels, go to [rivets](#). You can also learn more in our [Guide to panel fasteners](#).

## EXAMPLES OF [PANEL FASTENERS](#) INCLUDE:

**Need:** Provide easy access to panels

**Solution:** [QUARTER-TURN PANEL FASTENERS](#)

[View online](#)

**Why?**

- A simple quarter turn releases fastener to allow access
- Preassembled to reduce hardware and cost
- Available in two different styles
- Acetal, UL94 HB



**Need:** Hold glass or panel in door frame

**Solution:** [PANEL RETAINER CLIPS](#)

[View online](#)

**Why?**

- Attractive and economical method of securing a mirror to a wall or as a means of mounting a picture into a frame
- Nylon 6/6 and Butyrate





# RIVETS

Rivets serve as another type of panel fastener, although their purpose is broader, joining together other items as well.

**Push-in rivets**, also called push rivets, are particularly popular, as they come in so many different styles. Most simply push into place by hand, hence the name. In some cases, you'll need a push rivet installation tool, which is easy to use. You can also get removable plastic rivets, which allow you to access the panel and then reuse them.

**Snap rivets** have male and female parts that pass through the panels to join together and present a finished edge on both sides. [Snap rivets](#) are a type of push-in rivet.

**Solid rivets** are the oldest type of rivet, dating back to the Bronze Age. These are another type of push-in rivet. Incredibly strong and durable, [solid rivets](#) offer a tamper-proof solution while also resisting vibrations.

**Push-in blind rivets** are so called because they can be installed even if you can't access the rear side ("blind" side). An example is a [clinch rivet](#). All you need to install it is a pop rivet installation tool. Another type of blind rivet is the drive rivet. The [drive rivet](#) has a short mandrel that protrudes from the head. It's placed into the hole and a hammer is used to drive the mandrel in, flaring out inside the hole to provide a secure, load-spreading fix. Drive rivets have a specific application, used to secure panels and architectural features to masonry walls.

[You can learn more in our guide: How to choose your plastic rivets.](#)

## EXAMPLES OF RIVETS INCLUDE:

**Need:** Resistance to tampering

**Solution:** **PUSH-IN – COUNTERSUNK**

[View online](#)

**Why?**

- Designed for security
- Countersunk rivet for flush surface
- Easy installation by hand



- Accommodates countersunk hole specification DIN ISO 7721
- Available in black or white
- Nylon 6/6
- Operating temperature range: -40°F to 239°F (-40°C to 115°C)

**Need:** Fast, easy installation

**Solution:** **PUSH-IN RIVETS – SNAP**

[View online](#)

**Why?**

- Push head in and grommet expands to hold in place
- Easy to remove by pulling head



**Available in:**

- Nylon 6, UL94 V-2 (black or white)
- Nylon 66/6, UL94-V-2 (black). Operating temperature range: 40°F to 239°F (-40°C to 115°C)
- Nylon 4/6, UL94 V-2 (tan). Operating temperature range: -40°F to 266°F (-40°C to 130°C)

**Need:** Quick fastening

**Solution:** **PUSH-IN RIVETS - BARBED**

[View online](#)

**Why?**

- Barbed rivets – also called fir tree rivets – ensure fast and easy installation
- Securely hold different materials, including metal, foam, rubber and plastic



- Available in Nylon 6/6, UL94 V-2
- Operating temperature range: -40°F to 185°F (-40°C to 85°C)

**Need:** Easy removal

**Solution:** **PUSH-IN RIVETS - REMOVABLE**

[View online](#)

**Why?**

- Removable plastic rivets by pulling pin's side taps
- Push rivets snap in by hand
- Allow blind side fastening



- Pin and grommet provided separately
- Can be used in round or square hole
- Nylon 6/6, UL94 V-0
- Operating temperature range: -40°F to 248°F (-40°C to 120°C)

**Need:** Ability to install without access to back of panel

**Solution:** **PUSH-IN RIVETS – CLINCH**

[View online](#)

**Why?**

- Blind rivet



- Set by pulling the mandrel head into rivet body and expanding it to cause flare against reverse side
- Mandrel head snaps off
- Available in [Nylon 6/6](#) or polycarbonate, as shown
- Operating temperature range: -40°F to 185°F (-40°C to 85°C)

# CALCULATING THE SIZE RIVET YOU NEED

A good manufacturer and distributor makes it easy to determine the correct size of rivet you need. For example, Essentra Components tells you the hole diameter range and panel thickness that a rivet will fit. Let's look at [push-in drive rivets](#), which are easy to install, and mainly used for decorative reasons.

In the example shown here for one specific size, this is what you'd see among the relevant product information. You don't have to calculate anything. If your parameters fit what you see in the table, then that's the rivet size you want.

Compatible Hole Diameter	0.126 in
Compatible Panel Thickness Range	0.039 - 0.177 in

However, it's still wise to know how to calculate the size you need. That knowledge could come in handy. With that in mind, you need to consider two points:

1. The thickest material, or panel, that you're joining
2. The sum of all the materials' thicknesses that you're joining

Say you're fastening two sheets together, and the thickness for each are:

- .061 inch
- .052 inch

The sum total is 0.113 of an inch. Remember that number because we're going to come back to it.

## FIGURING THE DIAMETER

- 1 MULTIPLY** The rivet's diameter is 3 x the thickest piece you're joining, which in this case, is .061.  $.061 \times 3 = .183$
- 2 CONVERT** Rivets are manufactured by 1/32 differences, so you can't get a rivet with a diameter of .183, unless you have it custom made. Not a problem. You simply get the closest 1/32 of an inch to .183. To figure this, you'll need to convert .183 to 1/32s. To do that, start by taking .183 and divide by 1/32. Here's the formula:  $.183 \text{ or } .183 \times 32 = 5.856$   
1/32
- 3 ROUND TO THE NEAREST WHOLE NUMBER** Round that final figure to the nearest whole number, and we have 6. The diameter of the rivet you want is **6/32 of an inch**.

## FIGURING THE LENGTH

Now that we know the diameter needed, we can figure the length.

- 1 MULTIPLY AND ADD** The formula for this is (rivet diameter x 1.5) + sum of thicknesses, so for our scenario, that's  $6/32 \times 1.5 + .113$ .
- 2 CONVERT** 6/32 as a decimal is .1875. If we multiply that by 1.5, we get .28125. So our formula now looks like this:  $.28125 + .113$ . The total is **.39425** of an inch for your length.  
  
Rivet lengths typically come in 1/16 inch increments. Just as we did with the diameter, we have to convert our .39425 figure by dividing it by 1/16. Our formula now looks like this:  
 $.39425 \text{ or } .39425 \times 16 = 6.308$   
1/16
- 3 ROUND TO THE NEAREST WHOLE NUMBER** The nearest whole number is 6, so **6/16** is the length of the rivet you need.

Now you have your diameter and your length, so you can choose rivets in the correct size.

# THREADED RODS AND STUDS

Threaded rods are designed to handle a high level of pressure and tension. With that in mind, some people think metal is the only way to go, but that’s not true.

Plastic has skyrocketed in popularity as a choice for threaded rods and studs. The reason: plastics’ properties. For example, a nylon threaded rod is extremely strong, easy to cut to size and resists vibrations, abrasions and most chemicals. It’s also non-corrosive, lightweight, electrically insulating, non-magnetic, and has low thermal conductivity. These attributes make it ideal for industries and applications such as:

- Automotive
- HVAC
- Marine
- Construction
- Electrical

What’s the difference between a threaded rod and threaded stud? That depends on who you talk to. In some quarters, they’re one and the same. To others, a threaded stud refers to a shorter length than a threaded rod. A stud also often has a slot in the end for installation.

A dowel pin is another type of fastener, popular with these industries:

- Aerospace
- Equipment manufacturing
- Automotive
- Furniture manufacturing

For example, an acetal dowel pin is inserted into receiving holes, which hold parts of an assembly together through the use of friction. A tight fit keeps the parts firmly together in fixed alignment.

## EXAMPLES OF THREADED RODS AND DOWEL PINS:

**Need:** Fasten two materials together

**Solution:** **THREADED RODS & STUDS**

[View online](#) 

**Why?**

- Electrically insulating
- Non-magnetic
- Lightweight
- Low thermal conductivity
- Resistant to vibration, abrasion and most chemicals
- Threaded studs with chamfer on both ends available in most popular sizes and lengths
- Nylon 6/6



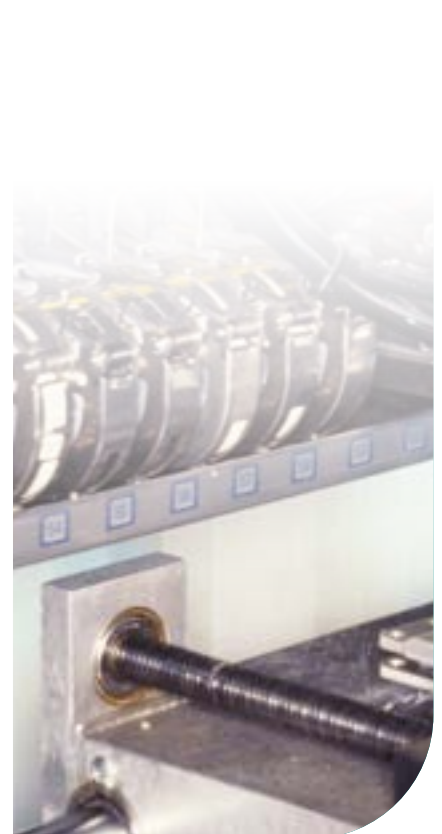
**Need:** Keep parts in alignment

**Solution:** **DOWEL PINS – STANDARD**

[View online](#) 

**Why?**

- Strong and rigid with low water absorption
- Available in various diameters and lengths
- Acetal



# WASHERS

Washers are used to distribute the load of threaded fasteners by increasing the surface area. They reduce the risk of stress-related damage to the material that the threaded fastener is driving into. Sometimes, washers can give you spacing as well, preventing your fastener from going deeper into the material than you might want.

Using the wrong washers for your application can result in weakening the joint or increasing the threat of loosening a dynamic joint. Just as there are various types of screws, you'll also find different types of washers.

The flat washer helps reduce surface pressure on softer materials, which in turn decreases the loss of clamp load. The material it's made of can provide additional properties. For example, nylon flat washers resist chemicals. [PVC flat washers](#) resist water absorption.

The shoulder washer is also referred to as an insulation sleeve because it insulates rivets, screws or wires. A nylon shoulder washer, for instance, can be used for connections between incompatible metals. Another nylon shoulder washer is designed to reduce vibrations. A plastic shoulder washer can also be inserted into a housing, giving a rotary application a bearing surface. Another of its capabilities is that it stops heat from flowing through the screw to other parts of the assembly.

## EXAMPLES OF WASHERS INCLUDE:

**Need:** Hold a screw or other component in place

**Solution:** **RETAINING WASHERS**

[View online](#)

**Why?**

- Retaining washer with anti-loss lip
- Grips the screw shank or bolt
- Sealing capabilities



- Resistant to corrosion and many chemicals
- Available in nylon 6/6 and LDPE

**Need:** Decorative appearance

**Solution:** **FINISHING WASHERS**

[View online](#)

**Why?**

- Finishing washer ideal for visible screws, giving them a neat finish
- Good insulating properties
- Excellent protection against damage to application
- Nylon 6/6



**Need:** Evenly distribute the force applied with tightening the fastener by increasing surface area

**Solution:** **FLAT WASHERS - PLASTIC**

[View online](#)

**Why?**

- Flat washers insulate against moisture and electricity
- Resists corrosion, abrasion and most chemicals
- Also provides cushioning and spacing
- Nylon 6/6, UL94 V-2



**Need:** Eliminates rattles

**Solution:** **SPRING WASHER**

[View online](#)

**Why?**

- Used to take up tolerance variables and provide accurate spacing and tension
- May be used for a wide range of deflection and load capacity



- Acetal

**Need:** Insulate rivets, screws or wires

**Solution:** **SHOULDER WASHERS**

[View online](#)

**Why?**

- Impervious to moisture, dirt and most chemicals
- Self-lubricating and resistant to corrosion and abrasion
- Nylon 6/6, UL94 V-2
- Operating temperature range: -40°F to 185°F (-40°C to 85°C)



You can learn more about washers in our guides: [When to use plastic washers](#) and [How and when to use washers effectively.](#)

# SUCTION CUPS

Suction cups are an ideal solution for Retail. They adhere to any clean, flat surface without damaging it, providing a secure hold for the items you want to display. No mounting hole, nor fastener, is needed with most styles. Pressure is applied to the suction cup, which forces out the air, creating a vacuum. It's this vacuum that creates the strong hold.

## EXAMPLES OF SUCTION CUPS INCLUDE:

**Need:** Use with string hanger, wire dowels or various other fasteners

**Solution:** **SUCTION CUP – HOLE**

[View online](#)

**Why?**

- Designed with a side pilot hole to allow for insertion of other items for hanging
- PVC, clear



**Need:** Hang wide range of products

**Solution:** **SUCTION CUP – GROOVE**

[View online](#)

**Why?**

- Mushroom head design allows for versatility for self-hanging products
- PVC, clear



**Need:** Mount signs and decorations on a window

**Solution:** **SUCTION CUP – HOOK**

[View online](#)

**Why?**

- Attached metal or plastic hook for hanging display materials
- PVC, clear



**Need:** Hang glass or other surfaces

**Solution:** **SUCTION CUP – DOUBLE SIDED**

[View online](#)

**Why?**

- Double suction cup securely holds, separates, and cushions parallel glass or related surfaces
- PVC, clear



# HIGH BOND TAPES

Not every application requiring fastening should use screws and similar components. Sometimes the best solution is high bond tape. Screws, for example, create stress points. These stress points can rust, become weak and break. High bond tapes eliminate that threat. With an adhesive made of acrylic foam, the tape distributes stress evenly across the joined surface, providing a stronger bond with a seamless appearance.

High bond tape also compensates for irregular bonded surfaces. In a perfect world, materials are flat against each other, but we all know this rarely happens. Surface textures, thermal expansion or chemical reactions can impact the bond or create gaps. High bond tape can correct these problems.

If you're joining metals, corrosion can often result in an accelerated fashion. High bond tape, however, performs as a buffer, preventing bimetallic corrosion. It's also fast and easy to apply. Screws, for example, can require tools to apply. High bond tape lets you save that time. Simply peel back the liner and apply with pressure.

## AN EXAMPLE OF HIGH BOND TAPE:

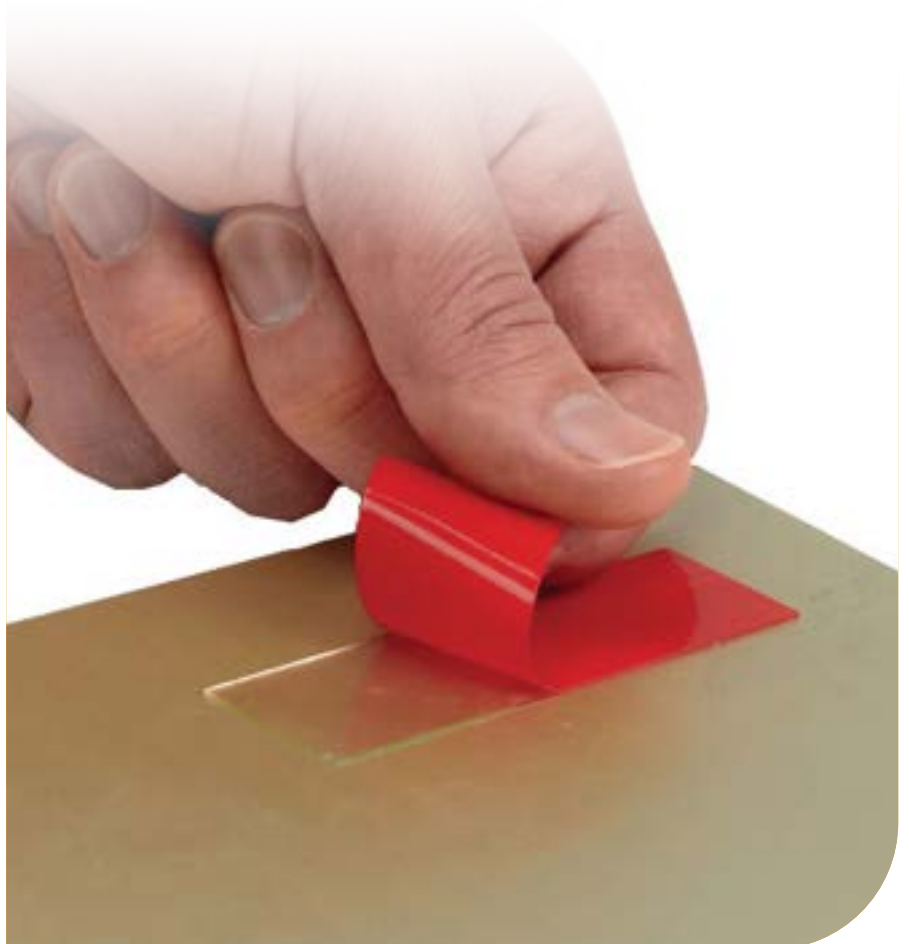
**Need:** Seamless bonding of decorative panels

**Solution:** **HIGH BOND TAPE ROLLS**

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### Why?

- Acrylic foam core permanent adhesive
- Tamper resistant
- Available in clear, white, grey and black
- Excellent resistant to temperature cycles
- Temperature range: -20°F to 300°F (-29°C to 149°C)



# INDUSTRIES

It might help to see the fasteners popular with your industry. Here's a glance:

## CONSUMER ELECTRONICS / APPLIANCES

### MACHINE SCREWS - CHEESE

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- Suitable in applications where the head is not seen
- These head styles have a cylindrical outer edge

### BARBED RIVETS

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- Fast, tool-free assembly
- Reliable fitting in bore holes with larger tolerances
- Barbed qualities work for blind holes or holes with or without screw threads
- Available in over 100 sizes and styles for different hole diameters and panel thicknesses

### HEAT RESISTANT SNAP RIVETS

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- The heat generated by consumer electronics makes this a must-have, withstanding temperatures up to 266°F (130°C)
- Quicker to install than screws, they're also ideal for awkward spaces
- Aesthetically pleasing from the outside, helping the finished product look stylish

### CAP NUTS

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- Cap nuts (also known as dome nuts) are ideal for covering and protecting a bolt or screw that sits proud of the application

### FLAT WASHERS

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- Insulate against moisture and electricity
- Resist corrosion, abrasion and most chemicals
- Provide full insulation, cushioning and spacing

# RETAIL/FURNITURE

## SCREW COVER CAPS

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- Snap securely into place to protect and conceal the bolt head or nut
- Cover Caps and bases can be mixed and matched in six different colors to create a customized appearance
- Ideal for point of sale products, furniture, and outdoor equipment

## SINGLE SIDED SUCTION CUPS

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- Ideal for hanging string, wire, or cord through for display materials
- Attach to clean, flat surfaces without requiring a fastener

## CLINCH RIVETS

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- These expansion rivets can be set "blind" without the need for access to the back of the panel
- Provide an extremely strong hold
- Particularly good for soft materials

## KNURLED THUMB SCREWS

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- Easy to apply and fasten
- Ideal for applications where space is restricted and fastening with a tool is not possible

## WING/FLY NUTS

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- Thumb tabs provide extra grip for ease of turning and securing into position



# INDUSTRIAL MACHINERY

## FINISHING WASHERS

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- Good insulation properties
- Have a high-quality finish and give excellent protection against damage to your application

## THREADED STUDS AND RODS

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- Easily cut to size
- Resistant to vibrations, abrasions and most chemicals
- Electrically insulating, non-magnetic, lightweight and low thermal conductivity

## SHOULDER WASHERS

[View online](#)



- Prevent contact with conducting materials.
- Help prevent parts vibrating loose
- Self-lubricating and resistant to corrosion and abrasion

## PHILLIPS SHOULDER SCREWS

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- Feature unthreaded shoulder below the head of the screw
- Used in mechanical applications to allow for rotation of moving parts
- To be used in conjunction with the VG series vibration grommets

## PUSH IN RIVETS - COUNTERSUNK

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- Easily installed by hand
- Countersunk design for flush surface
- Tamper-resistant design. Accommodates countersunk hole specification DIN ISO 7721

# AUTOMOTIVE

## PUSH-IN RIVET

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- Quick and economical way to hold together a vehicle's front lower valance to the front bumper
- Push rivets install quickly and easily without needing tools to provide a strong hold and clean finished look

## HEX HEAD CAP SCREWS

[View online](#)



- Ideal fasteners for mechanically securing materials
- Lightweight and resistant to corrosion, oil, abrasion and most chemicals

## QUARTER TURN PANEL FASTENER

[View online](#)



- Secures plastic interior trim components, such as access panels
- Easy solution to fix two panels together
- A flat screwdriver will enable a quarter-turn release

## GROMMET NUT

[View online](#)



- A cost-effective, vibration and corrosion resistant solution for connection of thin gauge materials
- Provides a secure threaded connection between two panels

## RETAINING WASHERS

[View online](#)



- Conveniently hold screws and bolts in place during assembly
- Lightweight, yet strong natural LDPE or nylon
- Provide full moisture and electrical insulation, cushioning and spacing

# HEALTHCARE

## PUSH-IN RIVET

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- Easily inserted by hand
- Multi-purpose, front-loaded fastener
- Hollow body which increases flexibility for ease of insertion and removal

## THUMB NUTS

[View online](#)



- Knurled grip for easy application and quick tightening
- Available in Conical or Standard designs

## PEEK SOCKET HEAD SCREWS

[View online](#)



- Perfect for electronics in demanding applications
- Outstanding mechanical properties and high-temperature stability
- Resist most chemicals and stand up to continuous temperature use of 356°F (180°C)

## THUMB SCREWS

[View online](#)



- Wing shaped head provides a secure grip when tightening
- Offer excellent wear resistance and good fatigue resistance
- Lightweight, yet strong, and possesses good chemical resistance to acids

## HEX NUT - PEEK

[View online](#)



- 6 flat sides provide an easy way to tighten and loosen the nuts using a tool
- Provides excellent electrical insulation and resistance to sterilization processes at high temperatures

# MATERIALS

What your fastener is made of should play a critical role in guiding your choice. Will your fastener be used in or outdoors? What environment will it need to withstand? Are vibrations a factor? Here's a look at common materials used to make fasteners. You can also learn more with our guide [Fasteners: which material do I need?](#) Also check out our [Fastener material selection guide](#)

## NYLON

Tough, strong and abrasion resistant, Nylon has a very low coefficient to friction. With good thermal and chemical resistance, it also provides resistance to tears, chemicals, and can be formulated to stand up to UV rays. Nylon's strength means it can be used instead of more expensive and heavier low-strength metals.

You'll find that nylon 6.6, a variant, is stronger still, and absorbs less moisture than standard nylon. When a high level of torque is required in your fastener, it's the ideal material. Nylon 6.6 is popular and used to make everything from fasteners to cable ties.

## POLYETHYLENE (PE)

Tough and durable, Polyethylene has high impact strength. It also has high ductility, and as a result, provides a degree of flexibility. It's crush-resistant, protecting applications against damage.

## POLYPROPYLENE (PP)

Polypropylene is semi-rigid with good fatigue resistance. It also offers superb electrical and chemical resistance (including acids, polyhydric alcohols, neutral salts and basic salts). It has a lower tensile strength than nylon 6/6, but the trade-off is more flexibility. It doesn't suffer stress-cracking problems and has excellent fatigue resistance, retaining its shape after a lot of torsion. This is a tough material, though it can perform with elasticity.

Polypropylene can also stand up to UV exposure, and depending on the environment, it can be a good choice for outdoor use, especially when you consider that it doesn't absorb or emit moisture. However, it's not suited for freezing temperatures, as it can become brittle.

The material has good impact strength, pliability, and is cost-effective. It also offers excellent electrical resistance, so it's often used in electronics. You'll find polypropylene used in pharmaceuticals, too, due to its high resistance to many chemicals.

## POLYVINYL CHLORIDE (PVC)

With good resistance to oils and low permeability to gases, PVC is inherently self-extinguishing. This makes it an excellent material for wire and cable insulation.

A durable and long-lasting material, PVC also offers flexibility. Unlike some hard plastics, it won't crack or shred. It also performs as an insulative materials and can withstand high temperatures and chemicals. For these reasons, it's a popular choice for electrical applications.

## POLYCARBONATE (PC)

Polycarbonate is tough and transparent. It provides high impact strength and high modulus of elasticity. Other benefits include its high heat deflection temperature and very low moisture absorption. It's a popular material for electrical and electronic applications due to its low frequency and high-voltage insulating properties. Because of its strength and transparency, it's also ideal for point of sale and displays. You might find it helpful to read our guide: [When to use polycarbonate fasteners](#).

## POM

Polyoxymethylene (POM) is also known as acetal. It's a highly crystalline thermoplastic favored for its stiffness, hardness, and low creep under stress. It also provides high flexural and tensile strength, has a low coefficient of friction, excellent chemical resistance and outstanding fatigue properties. The flip side is, POM has moderate heat stability and insufficient flame resistance. While it's the perfect material for many applications, it's not ideal for those where heat is involved.

## PEEK®

PEEK (polyetheretherketone) is a high-performance plastic that maintains stiffness at high temperatures. It has outstanding resistance to harsh chemicals, and excellent mechanical strength and dimensional stability. Another benefit is its resistance to steam and water. All of these reasons make it a favorite of the healthcare industry.

## POLYSULFONE

Polysulfone (PSU) is a transparent material with high-impact resistance. It provides high performance, has good electrical properties and resistance to chemicals. One reason for its popularity is its outstanding hydrolytic stability against hot water and steam sterilization. It performs especially well in high-temperature environments and resists detergents and hydrocarbon oils even in those conditions, under moderate stress levels.

## ACETAL

Acetal provides high strength and stiffness. Its good dimensional stability makes it an easy material to machine. A semi-crystalline material, acetal has good chemical resistance. It offers a low coefficient of friction and good wear. It has very low moisture absorption while resisting abrasions.

## LOW-DENSITY POLYETHYLENE (LDPE)

With high-impact strength, LDPE is rigid, but softer than nylon or HDPE. It performs as a cross between elastomers and thermoplastics. LDPE can withstand the cold, specifically temperatures down to -58°F (-50°C) before it becomes brittle. When placed in high temperatures, it quickly becomes soft.

## CARBON STEEL

Carbon steels are iron-carbon alloys containing up to 2.5% carbon. The addition of carbon adds strength to steel, though like any steel, it can still stress and break under pressure. There are different grades of strength in carbon steels. ASI 1022 carbon steel is often used in structural applications with moderate strength, such as bolts and cold formed fasteners, and recessed head screws and low-strength fasteners.



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