

## Introduction to Fasteners

A Fastener is a device used for holding together two or more objects or parts.

The term fastener is used for different applications. For instance, things like Thumb Tacks, Safety Pins, and Buttons fall under the definition of Fasteners.

The earliest known use of screws was during the first century B.C. These early wooden screws were used in wine presses and olive oil presses. Metal screws used to affix two objects together were found by at least the 15<sup>th</sup> century in Europe.

Since their humble beginnings, fasteners have evolved into precision articles for use in highly critical and specific applications.

USA Fasteners does not sell Thumb Tacks, Safety Pins or Buttons. It's product line falls under Industrial Fasteners, basically Screws, Nuts, and Bolts. The product line USA Fasteners carries is very diverse related to type and material.

USA Fasteners LLC is a Fastener Distributor with an office in Saylorsburg PA and a warehouse in Perkasio PA.

## Fastener Measurements and Materials

USA Fasteners sells both **SAE** (Society of Automotive Engineers) fasteners and **Metric** fasteners.

The fastener is identified by the **Type of Fastener**, followed by the **Size**, followed by the **Grade** and/or **Finish**.

### **Type of Fastener:**

The types of fasteners are described in the Types of Fasteners section below. Abbreviations are used in the *QuickBooks* part number preface which are printed in red. All fastener part numbers in *QuickBooks* start with the abbreviations of the type of fasteners.

### **Size:**

All fasteners are measured by the diameter x the thread pitch x length.

**SAE Fasteners** – These fasteners are measured in inches. The thread pitch is the number of threads per inch of length. A thread size of 1/4-20 x 1-1/2 is a fastener 1/4" diameter with 20 threads per inch and is 1-1/2" long.

There are both course thread fasteners and fine thread fasteners in the SAE system. A fine thread fastener has more threads per inch.

A 1/4-20 x 1-1/2 fastener is a course thread fastener.

A 1/4-28 x 1-1/2 is a fine thread fastener. The course thread fastener has 20 threads per inch where the fine thread fastener has 28 threads per inch.

**Metric Fasteners** – These are fasteners measured in millimeters. The thread pitch is the distance in millimeters from one thread to the next. A size of M5-0.8 x 40 is a fastener 5 millimeters in diameter

with 0.8 millimeters between each thread, and 40 millimeters long.

These descriptions are explained in depth in the SAE and Metric sections below. The Types of fasteners are listed below with the QuickBooks part number designation.

## Material and Grades

### Carbon Steel:

There are many grades of carbon steel. The most common grades applied to fasteners are listed below.

Alloy – High strength fasteners containing alloys such as Nickel and Monel.

Grade A307 – Most common grade of carbon steel. Applies to bolts.

Grade A563 – Higher grade applied to hex nuts

Grade 2 – Another common grade similar to A307. Applies to bolts and nuts. Also called grade LC.

Grade 5 – Stronger than A307. Applies to Hex Head Cap Screws, Bolts, and nuts.

Grade 8 – Automotive quality. Applies to Head Hex Cap Screws and bolts.

### Stainless Steel:

There are many grades of stainless steel. The most common grades applied to fasteners are listed below.

Grade 18-8 and 304 – 18-8 is a blanket grade which 304 falls under. These two grades are interchangeable.

Grade 316 – Better than 18-8. Used where high anti corrosion is required.

## Material Finishes

Black Oxide – Sometimes referred to as Black. Black Oxide is a black finish used mostly on alloy fasteners.

Clear Zinc – CZ - Clear zinc goes over a silver coat of zinc plating and leaves a silver finish. Used on most common fasteners. [If a fastener finish is referred to as just zinc, it is usually Clear Zinc.](#)

Hot Dipped Galvanized – HDG – Heavy zinc coating used in marine and other corrosive applications.

Passivated – A clear coating applied to stainless steel fasteners to prevent contamination.

Unfinished – No finish, bare material.

Yellow Zinc – YZ - Leaves a yellowish finish. Used on higher class fasteners. [Unlike Clear Zinc fasteners, the color yellow will always be referred to as Yellow Zinc fasteners.](#)

## Types of Fasteners

As there are many types of fasteners, the most common with the most common finishes are listed below.

---

**All Thread** – This is threaded rod.

Materials – Carbon Steel, grade 5  
Stainless Steel grades 18-8 and 316  
Finishes - Clear Zinc, Unfinished

---

**Button Head Cap Screw** – These are screws with a round button head usually with a socket drive.

Materials - Stainless Steel  
Finishes - Unfinished

---

**Carriage Bolt** – These are bolts with a round domed head with a square under the head.

Materials - Carbon Steel grade A307  
Stainless Steel grades 18-8 and 316  
Finishes - Hot Dip Galvanize, Zinc Plated, Unfinished

---

**Fender Washer** -These are extra wide flat washers.

Materials - Stainless Steel grade 18-8  
Finishes - Unfinished

---

**Flat Washer** – These are standard washers.

Materials - Carbon Steel  
Stainless Steel, grades 18-8 and 316  
Finishes - Clear Zinc, Hot Dip Galvanize, Unfinished

---

**Hex Bolt** – These are hex head bolts.

Materials – Carbon Steel, Grade A307  
Stainless Steel, Grade 18-8, 316  
Finishes – Hot Dip Galvanize

---

**Hex Head Cap Screw** – These are hex head screws similar to hex bolts.

Materials – Carbon Steel, grades 5 and 8  
Stainless Steel, grades 18-8 and 316  
Finishes - Black Oxide, Clear Zinc, Unfinished, Yellow Zinc

---

**Hex Nut** – These are standard hex nuts.

Materials - Carbon Steel, grades 2, 8, and A563  
Stainless Steel, grades 18-8 and 316  
Finishes - Clear Zinc, Hot Dip Galvanize, Unfinished, Yellow Zinc

---

**Jam Nut** – These are thinner hex nuts used to jam against a regular hex nut to lock them in place.

Materials - Carbon Steel  
Stainless Steel, grades 18-8 and 316  
Finishes - Clear Zinc, Unfinished

---

**Lag Bolt** – These are basic hex head bolts used to force themselves into wood. They sometimes have square heads

Materials - Carbon Steel  
Stainless Steel, grades 18-8 and 316  
Finishes - Hot Dip Galvanize, Unfinished

---

**Lock Nut** -These are nuts with a nylon insert to lock them in place.

Materials - Carbon Steel, grad C  
Stainless Steel, grades 18-8 and 316  
Finishes - Clear Zinc, Unfinished, Yellow Zinc

---

**Lock Washer** – These are washers with a split in them to lock them in place. They can also be serrated.

Materials - Carbon Steel  
Stainless Steel, grades 18-8 and 316  
Finishes - Clear Zinc, Hot Dip Galvanize, Unfinished, Yellow Zinc

---

**Phillips Flat Head Screw** – These are flat head screws for a phillips screwdriver.

Materials - Carbon Steel  
Stainless Steel, grade 18-8  
Finishes - Clear Zinc, Unfinished

---

**Phillips Pan Head Screw** – These are round pan head screws for use with a phillips screwdriver. They have a wider head than Round Head screw.

Materials - Stainless Steel, grade 18-8  
Finishes - Unfinished

---

**Round Head Screw Phillips Drive** – These are round head screws for use with a phillips screwdriver.

Materials - Carbon Steel  
Stainless Steel, grade 18-8  
Finishes - Clear Zinc, Unfinished

---

**Round Head Screw Slotted Drive** – These are round head screws for use with a straight screwdriver.

Materials - Carbon Steel  
Stainless Steel, grade 18-8  
Finishes - Clear Zinc, Unfinished

---

**Serrated Flange Bolt** – These are bolts with a serration inside the head to lock them in place.

Materials - Stainless Steel, grade 18-8  
Finishes - Unfinished

---

**Serrated Flange Nut** – These are nuts with a serration on the face to lock them in place.

Materials - Carbon Steel, grade Case Hardened  
Stainless Steel, grade 18-8  
Finishes - Clear Zinc, Unfinished, Yellow Zinc

---

**Socket Flat Head Screw** – These are flat head screws with a socket drive head.

Materials - Carbon Steel, Alloy  
Stainless Steel, grade 18-8  
Finishes - Black Oxide, Clear Zinc, Unfinished

---

**Socket Head Cap Screw** – These are round head screws with a socket drive head.

Materials - Carbon Steel, Alloy  
Stainless Steel, grades 18-8 and 316  
Finishes - Black Oxide, Clear Zinc, Unfinished, Yellow Zinc

---

**Sheet Metal Screw** – These are screws used on sheet metal.

Materials - Carbon Steel  
Stainless Steel, grades 18-8 and 316  
Finishes - Black Oxide, Clear Zinc, Unfinished

---

**Shim Washer** – These are thin washers used as shims or spacers.

Materials - Stainless Steel, grade 18-8  
Finishes - Unfinished

---

**Self-Tapping Screw** – These are screws that cut their own thread.

Materials - Carbon Steel  
Stainless Steel, grades 18-8 and 316  
Finishes - Clear Zinc, Black Oxide

---

**Thread Cutting Screw** – These are screws that cut their own thread.

Materials - Carbon Steel  
Stainless Steel, grades 18-8 and 316  
Finishes - Clear Zinc, Black Oxide

---

**Thread Forming Screw** – These are screws that form their own thread.

Materials - Stainless Steel, grade 18-8  
Finishes - Unfinished

---

**Wedge Anchors** – These are anchors used in concrete.

Materials - Carbon Steel  
Stainless Steel, grade 18-8  
Finishes - Clear Zinc, Unfinished

---