Spotting Quality

Your guide to sourcing high quality fasteners.

Earnest

How can we help you today?

Earnest

Getting what you pay for.

When sourcing fasteners, it's easy to choose price over quality. However, the old saying of "you get what you pay for" summarizes the current conditions of the fastener industry today.

Cheap parts are cheap for a reason. Inconsistent manufacturing processes, lack of attention to technical specifications, or poor training of machinists results in substandard parts being made available at lower and lower price points.

No matter the reason, poor manufacturing shows in ways you can (and often in ways you cannot) see. As some global areas of manufacturing still struggle to achieve consistent steel formulation, machining, and heat-treating practices, saving a few dollars on parts with questionable manufacturing processes provides a less than comforting feeling and can come at a cost to your reputation.

Earnest

Earnest Machine has a 70-year history of providing only high-quality parts sourced from manufacturers that meet our strict quality standards, helping you rest assured on the quality we provide in every high-grade product we sell.

Our vendor process is rigid — sometimes taking up to a year before we determine if a manufacturer can produce parts at the consistency and quality we demand. We visit the factories, evaluate machinery, and validate the manufacturing processes first hand. Once a manufacturer is approved, each lot of parts we accept are inspected to ensure quality standards are being met — all to provide you peace of mind in the quality of the products you purchase from Earnest Machine.

So, as you are sourcing fasteners, keep that old adage in mind “you get what you pay for”. A penny saved today can come at the cost of the reputation you have earned.

Earnest

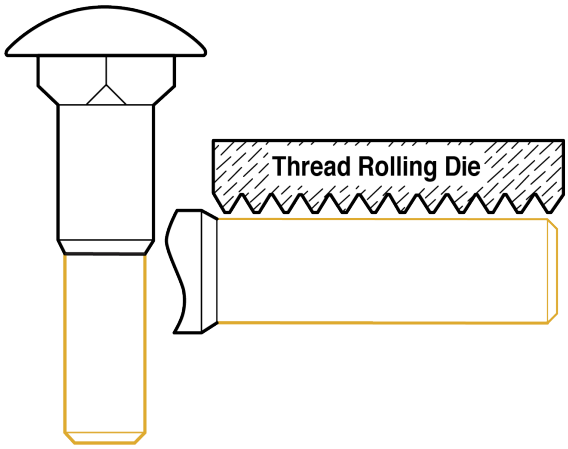
Head Marking.

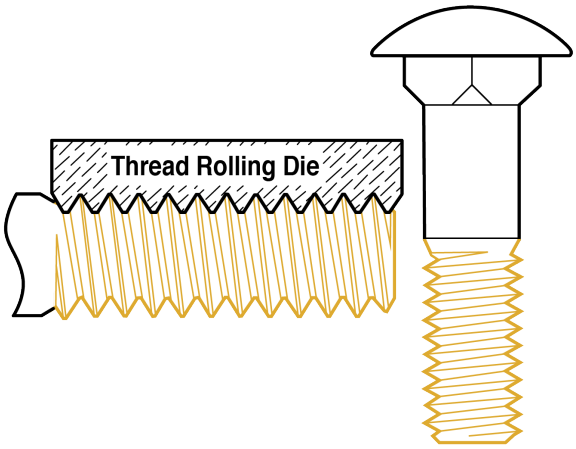
Head markings allow you to identify and trace a part back to a manufacturer. If the manufacturer isn't proud to put their mark on it, why would you want to sell it? Every high-quality part from Earnest has a head marking to allow for traceability in the event there is a product failure or quality issue. We only sell products from manufacturers whose product quality meets our strict guidelines and are proud to display our Earnest "E" head marking on the parts made to Earnest specifications.

There are numerous resources on-line that can help you identify a head marking or you can download the PDF of fastener head markings on file with the U.S. Patent office at www.uspto.gov/trademarks/law/FQA_Registry.pdf.

Rolled Threads

Products manufactured for Earnest are made with rolled threads, meaning the threads are compressed into the steel to form the thread. This compression retains and enhances the strength of the bolt and creates a better defined root radius. The fully defined root radius makes a stronger thread and reduces the likelihood of thread fatigue failures.

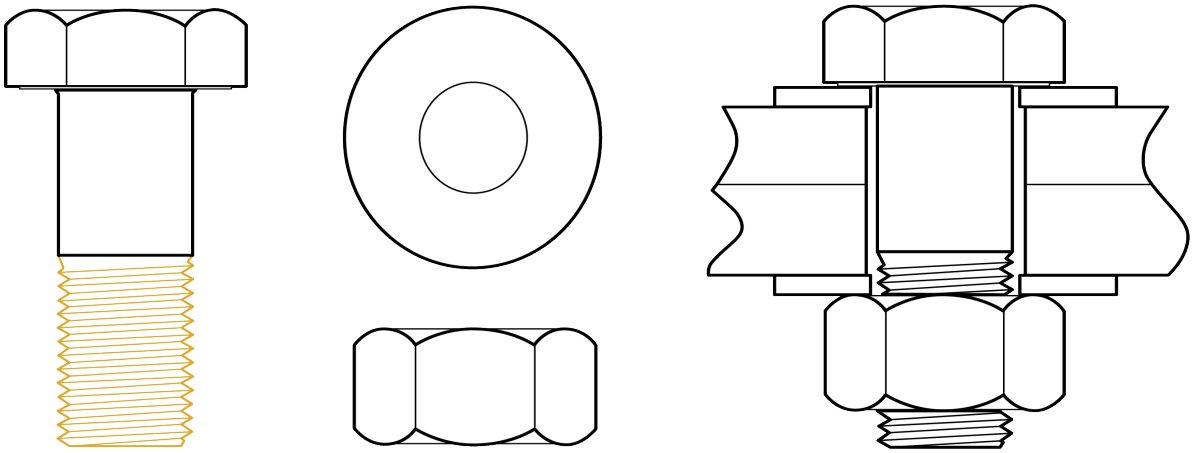




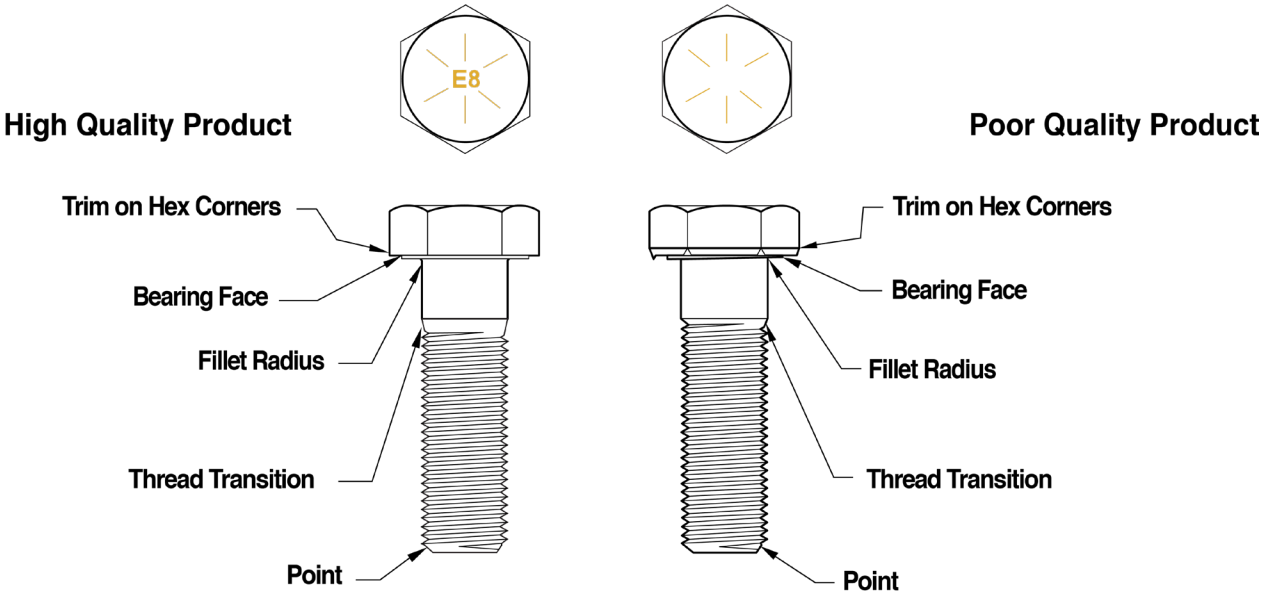
Earnest

Detecting Quality:

In order to ensure that the fastener assembly (nut, bolt and washer) will perform as designed, it's essential that all the components in the assembly are compatible and have been made to the quality requirements specified by the designer. The strength of the assembly is only as strong as the quality of the weakest component.

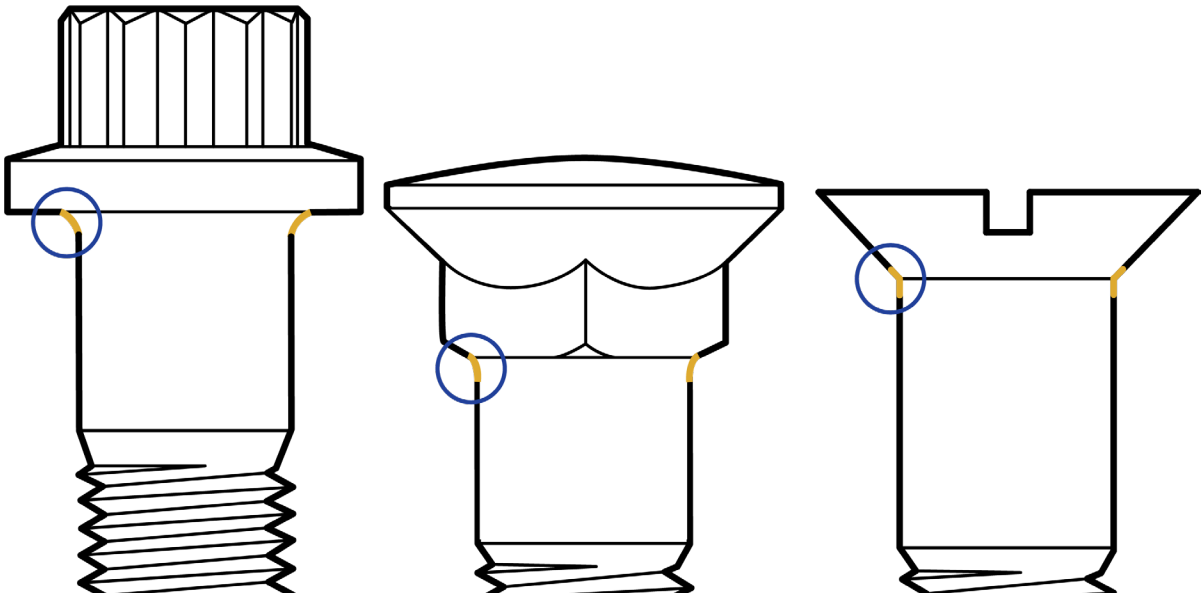


Poor quality fasteners that do not assemble are relatively obvious to the person performing the assembly but many quality issues are not as easy to detect.



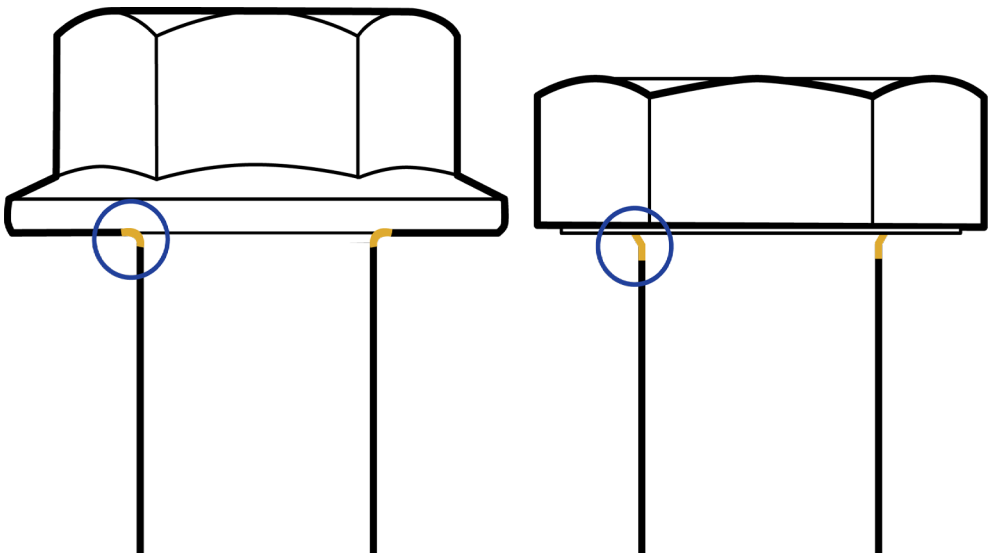
Fasteners are produced in many ways (cold formed, hot formed, machined) and knowing what to look for in the inspection process is key to ensuring quality reliable fasteners are supplied in each and every lot.

Earnest



Fillet Radius:

Look for parts that have a well-defined fillet radius — the transition area below the head into the body of the bolt. A well defined fillet radius would be one that does not have sharp pronounced transitions. An angular or sharp transition actually promotes stress concentrations which lead to micro fractures that grow into major fractures and failures. Fluctuations in the machining of this critical stress area can result in “head popping,” where the head of the part literally pops off of the bolt.

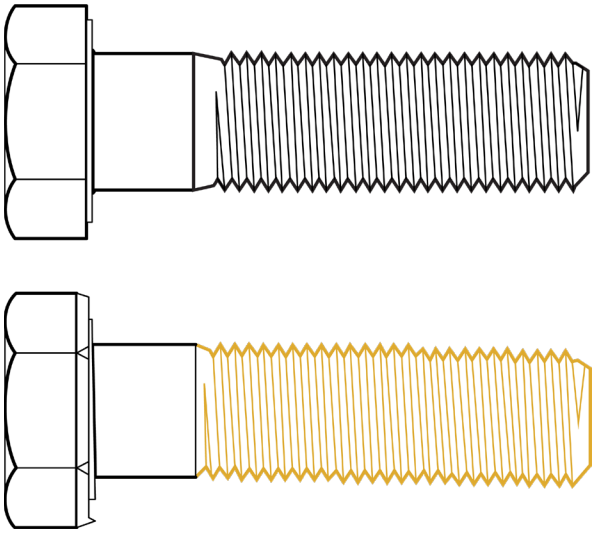


Earnest

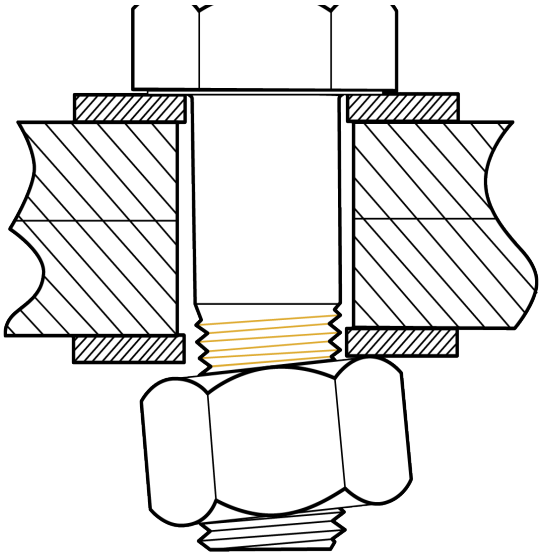
Concentricity of Threads:

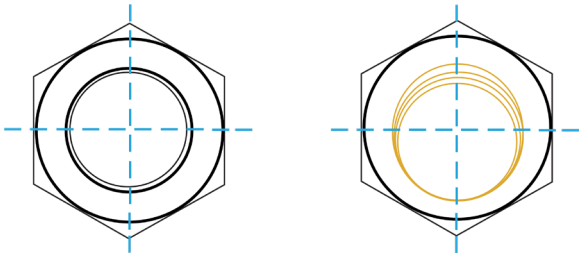
Thread concentricity is the alignment and straightness of the bolt body or nut flats and threads to the center point of the bolt or nut. Inconsistent manufacturing of parts can result in deviations of thread concentricity, leading to binding during installation and part failure. When you tighten a bolt, you are creating a “tensile stress” that results in the desired clamp load. Tensile stress can only be achieved when the components of the assembly and more specifically the bolt head, body and threads are in complete alignment.

A bolt that is out of concentric alignment will feel as if it is tightening, but is instead actually bending the bolt into the hole. This creates what is called “bending stress” and is obviously not a desired installation procedure.



Looking down the threads at a concentirc bolt (left) and and non-concentric alignment (right)





A bolt that is out of concentric alignment will feel as if it is tightening, but is instead actually bending the bolt into the hole. This creates what is called “bending stress” illustrated in yellow above. This bending stress leads to fatigue failure of the fasteneing system.

Earnest

Alloy Steel:

Alloy steel is a blanket statement that simply indicates some type of alloy was added to the standard steel mix of carbon, manganese and iron. What alloys were added play a critical role in the toughness, strength and wear resistance of a fastener.

Earnest grade 8 bolts and screws are made with varying levels of chrome, molly or nickel, creating a bolt that is harder, stronger and resist wear and corrosion better than carbon steel. Earnest only sources Grade 8 and higher strength level bolts from manufacturing regions that have mastered the process of creating high-grade alloy steel. Our engineering team translates Manufacturing Test Reports (MTR's) to ensure the steel mix and process meets industry standards and ours as well.

Standard steel mix

6	26	25
C	Fe	Mn
Carbon	Iron	Manganese
12.011	55.847	54.938

+

Added Alloys

24	28	42
Cr	Ni	Mo
Chromium	Nickel	Molybdenum
51.9961	58.693	95.94
Increased corrosion resistance	Increased toughness and ductility	Increased hardness

Certifications:

Earnest engineers and sourcing specialists review certifications to confirm steel quality and heat-treating standards are being met. Every high strength heat treated part you order should have corresponding certification documents — if they're not in the box, they should at the least be made available to you. Quality is everything, and we are not afraid to prove it. We make sure our certs (or MTRs) are accurate, legible, and show you the build specification of the part you order. No questions about it. Our cert library stems back 20 years and is made available at any time you need it, free of charge through our website, earnestmachine.com or by contacting a member of our sales staff.

Earnest only works with manufacturers that take quality as serious as we do and proves it through detailed Manufacturing Testing Reports on every lot we sell.

Earnest

Uniform Heat Treating:

Heat treating is the process of exposing a part to extreme heat, in turn adding strength to the finished product when it cools. Making sure parts are heat treated to industry specifications, correct temperatures and cooling stages can be a challenge for some manufacturers. Attention to heating and cooling times, heat treating process and quality standards can directly affect the strength and quality of the end product.

Earnest Machine uses a quench and temper process where the bolts are heated to 1400°, then quenched in an oil bath, then tempered to 800°. The trick here is to get the bolt back to room temperature as quickly as possible after the first heat treatment. If you do not get the bolt heated to the right temperature or cooled in the correct amount of time the result will be a bolt that is too brittle or too soft.

What's most important is the quality plan put in place at the manufacturer for testing heat treating. Earnest Machine insists that every lot of product produced is tested to the inspection level requirements of ASTM B18.18. Working with manufacturers that have heat treating quality processes in place is critical to the end product.