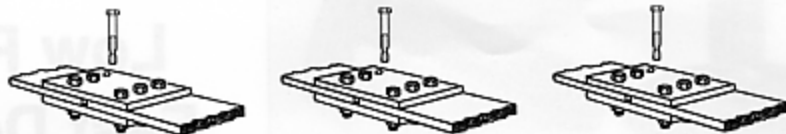


Bad Bolts Are Not Smart Enough to Find the Same Location to Fail In Every Time

By Joe Greenslade

Sooner or later every fastener supplier has to respond to a customer who complains that some of the fasteners they have been supplied are failing in their application. I field many



calls in which the supplier is frustrated and confused. This is because as soon as the customer complained, the supplier immediately re-inspected the fasteners and/or sent them to an independent laboratory for examination, only to find that the fasteners meet all of their specification requirements. They are usually calling me to ask what they are missing and what can possibly be the reason for the failures.

The first questions I ask are:

- "How many of the same fastener are used in each assembly?" If the answer is more than one piece per assembly, I ask the next question.
- "Do the parts always fail in the same location in every assembly or are they failing randomly throughout the various locations in the assemblies?"

In most cases the supplier does not know the answer to the second question and has to contact the customer for the information. I strongly urge suppliers to go into the customer's operation and make first-hand observations if at all possible. I have found over the years that it is frequently difficult to get detailed information from customers when they have problems. Seeing what is happening first-hand will greatly help the supplier find the root problem instead of wasting valuable time and effort dealing only with the symptoms of the problem.

About one-third of the time suppliers report back that the failing fasteners are all associated with one particular location in an assembly. When that is the response the fas-

tener can be eliminated as the root of the problem! I always tell the supplier, "All of the bad fasteners are NOT smart enough to find the same location in every assembly!"

If all of the failures occur in the same location, it is a product design problem or an installation problem, but it is definitely NOT a "bad fastener" problem.

Below are a few of the reasons for these types of failures that I have encountered over the years:

Reported problem: One fastener out of several is stripping out when being seated and the others are not.

- Real Problem #1: In this case the die casting was thinner in the stripping location than it was in all other locations.
- Real problem #2: The core pin making the hole in the failing location was larger than in all of the other locations.

Reported problem: Bolt is breaking when seating in one location out of several.

- Real problem: The breaking bolts were being driven at an angle because of a clearance problem above the one location that was not present in the other locations.

Reported problem: One of several thread rolling screws would not seat in one location as did all the other parts.

- This part was being driven in a hard-to-reach location for the operator and he was driving the part at an angle into an extruded hole, whereas, in all other location he had easy access.

Reported problem: The head on the first of two screws driven in a flat, rectangular piece of steel was breaking off when the second screw was seated. The flat piece of steel was straddling a rod. The flat piece was intended to hold the rod in a permanent location.

• Real problem: Per the customer's requirements, the screws were soft machine screws. The customer was completely seating the first screw before driving the second. When the second screw was driven to seat, the piece of steel remained straight and literally pried the head off the first screw.

To solve this the customer changed to grade 5.1 screws. The heads on the first screws stayed in tact and the steel piece bent over the rod when the second screw was seated.

Reported problem: Bolt is breaking when seating in one location out of several.

- Real problem: The bolt that was breaking was driven at a different location on the assembly line than were the other bolts in the assembly. The air driver being used to drive the breaking bolts was putting out much more torque than the driver being used to drive the bolts in all of the other locations.

Again, when dealing with customer complaints about breaking fasteners, I urge suppliers to go see the problems first-hand so they can help clearly identify the true nature of the problem before trying to solve it with poor or incomplete information from the customer. Remember, if the fasteners are consistently breaking in only one location, it is not a "bad fastener" problem. □



Joe Greenslade is President of Greenslade and Company, Inc. located in Rockford, Illinois. His firm specializes in providing manufacturing tooling and inspection equipment to suppliers of screws, bolts, rivets, and nuts throughout the world.

Joe is an inventor, author, and lecturer. He holds eleven U.S. Patents, has written over 80 technical articles for industrial trade journals, and has spoken frequently at trade association meetings and technical

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He is an Associate Member of the Industrial Fastener Institute and a member of the American Society of Mechanical Engineers B1 Thread Specification Committee. In 1992, Joe was recognized for his technical and innovative contributions to the fastener industry when, at age 44, he became the youngest person to be inducted into the National Industrial Fastener Show "Hall of Fame."