



PROPER HOLE CONDITIONS FOR BLIND RIVETING

Work piece hole conditions can affect the performance of a blind rivet. Many times, blind rivet users have a problem with their blind rivets setting properly. In many cases, it is not the blind that is causing their problem, but instead it is the condition of the hole in their work piece that is causing the problem. The following are some of the hole conditions that will give a blind rivet user a problem.

HOLE BURRS

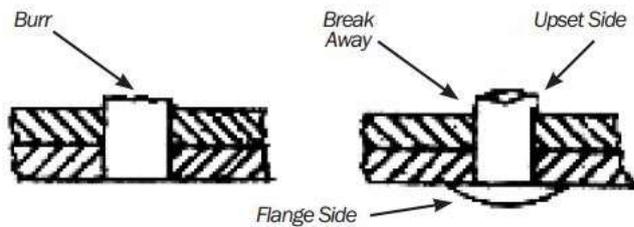


FIGURE 1

This condition occurs when drilling a hole with a dull drill and pushing the drill through the work piece rather than having the drill cut the material. A sharp drill should always be used when drill a hole for a blind rivet. A dull drill will cause a circular burr to be formed around the diameter of the hole.

This condition can be created in a work piece made of any type of metal. A worn or dull hole punch will also leave a burr around the diameter of the hole to be riveted. In most cases, the burr is on the blind rivet upset side of the work piece because the drilling operation is usually performed from the operator side.

When the blind rivet is inserted into the hole of the work piece and set, the mandrel head upsets the barrel of the blind rivet body and forms the barrel against the burr. As the mandrel is being pulled to it's maximum tensile strength, the burr cuts into the blind rivet barrel upset.

If the blind rivet body is made of aluminum and the work piece is made of steel, stainless steel or hard aluminum, the burr will cut away a portion or the entire barrel upset created by the mandrel head when setting the blind rivet. When a part of, or the entire upset is cut away when setting the blind rivet, this greatly reduces the tensile strength of the set blind rivet.

To achieve the tensile strength of the set blind rivet, there must be no burr on the hole either on the upset side or the flange side of the work piece. The upset side burr will cut the blind rivet barrel upset and on the flange side it will cut the flange of the set blind rivet.

Hole Diameter

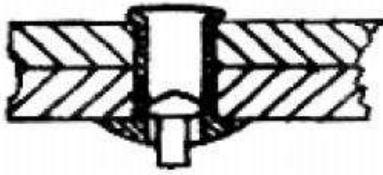


FIGURE 2

The diameter of the hole to be riveted is also important relative to the tensile strength and clamp load of the set blind rivet. All blind rivet manufacturers list the recommended minimum and maximum hole diameters for all sizes of blind rivets they produce. The minimum is not the problem. If the hole diameter is too small the body of the blind rivet will not entirely the hole. The oversized hole is the problem for more than one reason.

When a blind rivet is set in an oversized hole, the mandrel head will pass through the barrel of the blind rivet body. The mandrel will continue down the blind rivet body until it reaches the flange of the blind rivet body.

At this point the mandrel will break at the pre-determined position under the head of the mandrel, and a portion of the mandrel that remains in the rivet body, will protrude outside of the flange of the set blind rivet exposing where the mandrel broke.

This is most dangerous for personnel and the end user of the product. This mandrel projection can easily cut a hand. This set blind rivet has a reduced tensile value because there is not a properly formed upset of the blind rivet body.

Also, this set blind rivet has a low clamp load at the riveted joint because the mandrel head came to rest on the flange of the set blind rivet body and this is where the tensile strength of the mandrel was exerted. Normally, the mandrel tensile would be exerted at the barrel upset and against the work piece to be riveted and this is where clamp load is generated.

Oversized Holes Used For Hole Line Up

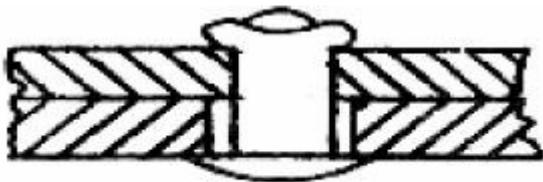


FIGURE 3

“What can be done to the recommended hole dimensions when holes do not line up with each other.”

The hole nearest the operator or the flange side of the hole can be oversized in diameter as long as the flange is larger than the diameter of the hole.

The hole on the blind rivet upset side must be in accordance to the manufacturers specifications. The blind rivet body and mandrel head will give a good upset because the hole diameter is correct on the upset side of the work piece. This system can be used when the shear requirements of the riveted joint is low. The hole being oversized on the flange side, the blind rivet body is not in contact with the wall of the oversized hole. The only resistance in shear on the flange side is the pressure of the flange against the work piece. Blind rivets that are set properly offer a good riveted assembly, strong and vibration proof. Vibration can loosen other fasteners, but a set blind rivet is not affected by vibration.