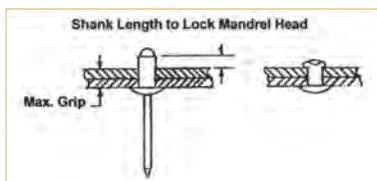


A blind rivet that is properly set in the recommended hole size at maximum grip range will set with a good mandrel head retention. Mandrel head retention is the term given to the locking of the mandrel head in the blind rivet body after the mandrel has set the blind rivet. The mandrel has a crimp just below the mandrel head. This crimp is a reduction of the diameter of the shank of the mandrel, thus creating a weak point in the shank of the mandrel and it is at this crimp that the mandrel will break when the pulling force



of the blind rivet setting tool is greater than the tensile strength of the crimp point of the mandrel. It is the length of the blind rivet body that extends beyond the work piece that upsets and captures the head of the mandrel.

Another way to describe the term is " how well did the blind rivet body locks the mandrel head of the set blind rivet"

When a blind rivet (of any diameter) is set at the maximum grip range, there is enough length of the blind rivet body to capture and lock the mandrel head after setting. It is important that all blind rivets set in work pieces, have a mandrel head retention of 2.5 to 5 lbs. This pertains to the Open-End Type Blind rivet series

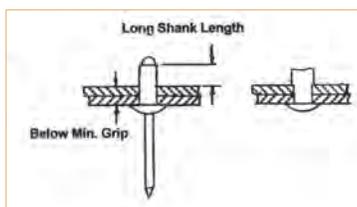
Blind Riveting

by Anthony Di Maio

per Industrial Fasteners Institute IFI-114 specification. If these mandrel head retention values are not achieved when setting blind rivets, a user will have loose mandrel heads moving about in their riveted product. You can see what problems could occur if the riveted product has electrical terminals where loose mandrel heads could make an electrical contact and cause a short circuit in the electrical system.

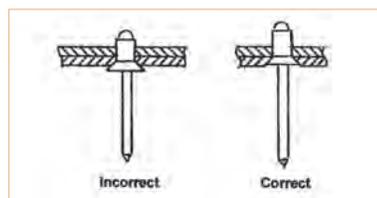
Good mandrel head retention is achieved by the length of the blind rivet body that is extended on the blind rivet upset side. It is this portion of the blind rivet body length that captures the mandrel head. When a blind rivet is set at the maximum grip range, the rivet body length on the upset side is at its minimum length to capture the mandrel head of the set blind rivet.

If a user sets a blind rivet in a work piece thickness beyond the maximum grip range of the blind rivet, the rivet body length on the upset side will be too short to capture the mandrel head when the blind rivet is set. When a blind rivet is set in this work thickness condition, the mandrel head will be shot outward like a projectile when the mandrel breaks setting the blind rivet.



One should not set blind rivets in a work thickness beyond the blind rivet manufacturers specifications. You can set blind rivets in work thickness less than the

manufacturers specifications but you will have a long rivet body length on the upset side after setting the blind rivet, but you will have mandrel head retention.



When setting countersunk blind rivets, you must be sure the work piece is countersunk deep enough. If the countersunk head of

the blind rivet is not flush or below the surface of the work piece, you will have a short rivet body length on the upset side and you will not have good mandrel head retention.

Countersunk blind rivet work thickness includes the height of the countersunk head. For this reason, the countersunk head must be flush or below the surface of the work piece to achieve good mandrel retention.

About the Author



Anthony (Tony) Di Maio attended Wentworth Institute and Northeastern University. In 1962 he started working with Blind Fasteners as Vice-President of Engineering & Manufacturing for two blind rivet manufacturers. He has been Chairman of the Technical Committee of the Industrial Fasteners Institute (IFI) and is still involved in the writing of IFI specifications. In 1991, he started ADM Engineering and is working with Fastener Manufacturers developing new fasteners and special machinery. He can be reached at ADM Engineering, 6 Hermon Ave., Haverhill, MA 01832; phone and fax 978-521-0277; e-mail: tdimaio@verizon.net.