

Henrob BG-Rivet

Atlas Copco

A new rivet specifically developed for joining high strength steel to aluminum



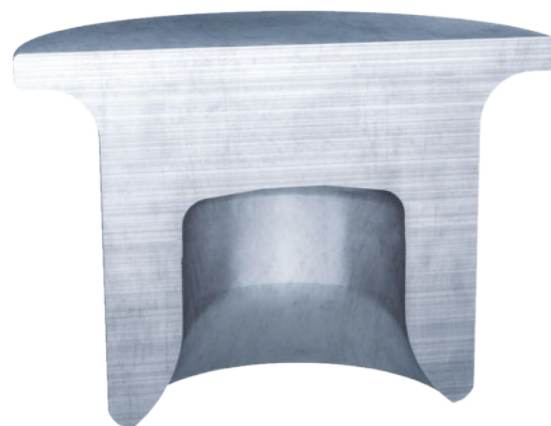
The increasing demand to use ultra-high strength steels (UHSS) in vehicle light-weighting highlights the difficulty in joining these materials to aluminum sheets and castings. We are pleased to introduce the new Henrob BG-Rivet, a solution that has been specifically developed not to buckle or crack against these extreme strengths.

Target applications

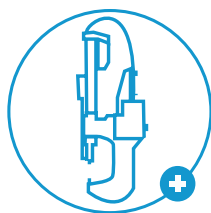
The BG-Rivet is targeted for MVI safety-critical areas such as A- and B-Pillars. It is also effective for joining HSS with aluminum castings in applications such as shock towers.

Suggested joining limit

- 1.5mm thick, 1500MPa top sheet
- 0.8mm Usibor 2000MPa top sheet



Key features



Can be used with existing equipment. No further investment is needed.



Able to join HSS with aluminum sheets and castings.



Lower required insertion forces are achieved with a new head style that provides a close fit on the underhead radius, and a low friction coating that lubricates the rivet during insertion.

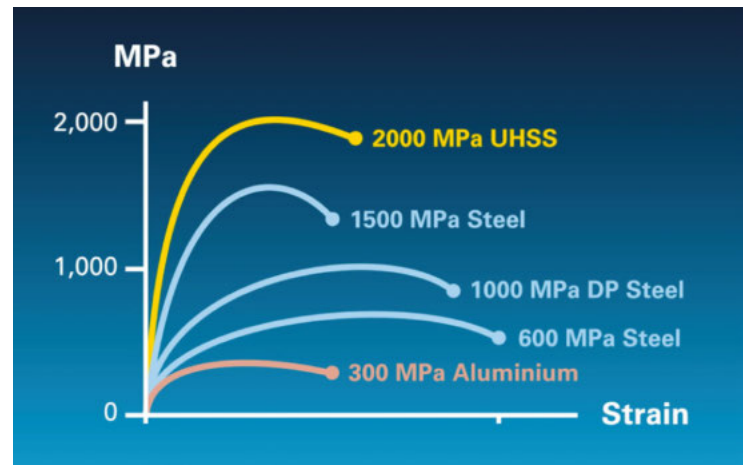
Henrob BG-Rivet Advantages

By combining advanced engineering, simulations, and testing we developed a solution for riveting high strength steel to aluminum. The BG-Rivet is specifically designed to strengthen the rivet column to enable punching through UHSS.

When pursuing weight reduction in automotive manufacturing, special consideration needs to be given to maintaining strength in safety-critical areas. On a vehicle these areas are typically A- or B-Pillars.

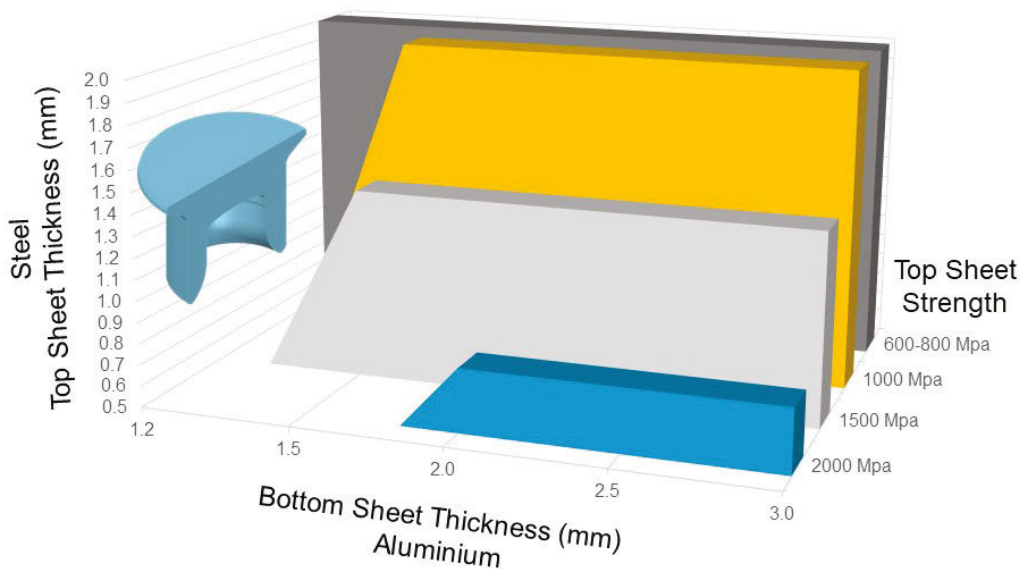
Conventional car body steel or aluminum does not exceed 1000MPa tensile strength while recently developed UHSS can reach tensile strengths of up to 2000MPa. The ideal joining approach is to use a strong rivet that doesn't buckle or crack against these extreme strengths.

The ability to securely join the high strength steels that make a car body safer with the aluminum that makes the vehicle lighter is essential to meeting manufacturing standards now and in the future.



Rough Estimate of B Rivet Capability

■ 2000 Mpa ■ 1500 Mpa ■ 1000 Mpa ■ 600-800 Mpa



Riveting through steel top sheets upto 600MPa can be carried out using conventional hardness level 6 countersink head C-Rivets. When using a C-Rivet for 600MPa steel the high hardness rivet should only be flared by a small amount to stay within the ductility limit of the thin wall section of the C-Rivet.

For top sheets over 600MPa a rivet with a higher column strength and thicker web is required.

The BG-rivet resists flaring while piercing the top sheet, while the hole in the top sheet remains similar to upper rivet shank diameter.

The final result is a correctly flared rivet under low stress, with no cracking or buckling, and joined at a force of only approximately 55kN compared to 85kN.

Henrob BG-Rivet

Part number build up

