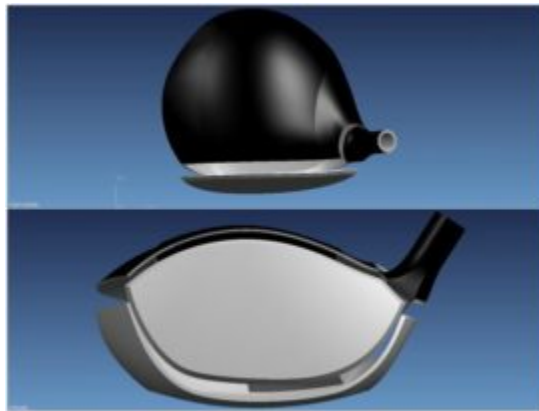


# Clubhead Cup Face and How it Affects Performance

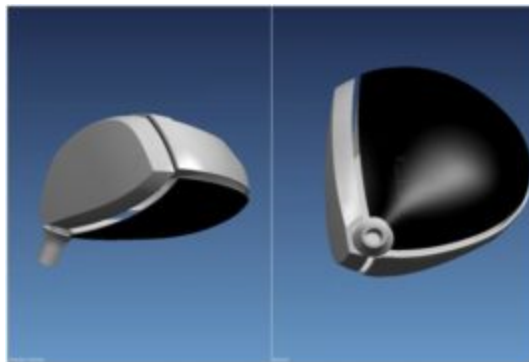
All driver heads as well as some fairway wood and hybrid heads are manufactured from a number of separate pieces which are welded together to complete the final construction of the clubhead. Most common are driver heads which are manufactured from 4 separate pieces, as shown by this illustration below.



Of the separate pieces which make up the complete clubhead, one is always the clubface. Within such types of driver, fairway wood and hybrid head construction, the face can be formed to be welded to the body in two different ways, one called an EDGE WELDED face and the other referred to as a CUP FACE CONSTRUCTION.

The above illustration shows the more common of the two, an edge welded face. In a clubhead with an edge welded

face, the face is made so that as the term states, the welding line to secure the face piece to the body of the head is on the very edge of the face. To contrast, the cup face is formed in a manner so the face piece is more like a cup, meaning it could hold water because the edges are angled around the surface of the face. In a cup face construction, the welding line to secure the cup face to the head body is not on the edge of the face, but is rather a distance back from the edge of the face. Below is an illustration of a cup face construction to contrast against the above edge welded face design.



The purpose of a cup face construction is to improve the amount of face flexing for areas off the center of the face to achieve a higher ball speed and from that, better distance, performance and a more solid feel from off center hits. In modern clubface performance, the more the face flexes inward from impact with the ball, the higher the speed of the ball will be coming off the face.

With an edge welded face, a portion of the welding line that secures the face to the body extends past the actual seam onto the rear surface of the face. This welding line can extend  $\frac{1}{4}$ " onto the back of the face, all 360\* around the face. That can act as an additional "stiffener" or "brace" to prevent the face from flexing as much inward for shots hit off the center of the face.

Since the welding line on a cup face construction is well back from any portion of the face, this means the welding line is nowhere near any portion of the face. In addition, the inside edge of the face is more curved so there is no additional agent causing resistance to the face flexing inward. Below is a photo showing an actual cup face 4-piece driver head on which the pieces of the head and the cup face have been initially tack welded to position the pieces for full robotic welding.



There is no question maximum ball speed comes only from impact in the center or slightly above the center of the face.

But with a cup face construction, accompanied by a variable thickness face construction, in comparison with a uniform thickness edge welded face, the off center hit performance can be improved remarkably.

**Tom**