

SHAPE UP!

Square and triangular drivers are on center stage. And while these ideas aren't exactly new, how they are applied to the science of hitting a golf ball has designers dreaming up new shapes.



Listed clockwise: Callaway's Bazooka, Cleveland's HiBore XL, Nike's Sumo 2, Tour Edge's FT-i

By James Achenbach

Geometry. It's back.

For those who wrestled with geometry in school, never fear. This is golf we're talking about. The new math is full of eye-popping drivers with distinct clubhead shapes. These drivers promise improved accuracy and modest distance gains on off-center hits.

In the first two months of 2007, Nike, Callaway and Adams will begin shipping drivers with squarish clubheads. By April, Titleist will introduce a triangular driver. Cleveland will showcase the enlarged HiBore XL with a curvy crown that resembles a sideways S.

Other companies also are expected to venture into this new category, known as geometric drivers. Mizuno likely will introduce a driver in late summer. "We've been working on this for some time," Mizuno club designer Harry Taylor said. "I think golf clubs in the future will have a lot of different looks."

Notable exceptions are TaylorMade and Ping. These two industry giants, already with top-selling drivers, have said they will stick with their current design philosophies.

In February, Tour Edge will begin selling a driver that the company describes as "elongated," meaning a traditional pear-shaped driver head is stretched and lengthened from front to back. The club pushes the margins but still fits within the U.S. Golf Association rules that prohibit any clubhead that is longer from front to back than from heel to toe. However, the two dimensions can be equal, creating what is essentially a square clubhead.

"These drivers will be the big story in 2007," said Kerry Kabase, sales director for Edwin Watts Golf. "I think golfers are looking for something different right now. More than that, they will help average golfers hit the ball straighter. For most of us, straighter is longer. I've hit the new drivers, and they are sensational."

The evolution of geometric drivers was made possible by improvements in the use of titanium for clubheads. For example, square drivers from Callaway and Nike use sophisticated bonding techniques to combine titanium with graphite.

The prices consumers pay for

new geometry will vary widely from driver to driver. Callaway's graphite-and-titanium FT-i, with a suggested retail price of \$625, is expected to sell for about \$499. According to Tour Edge, the street price of its titanium GeoMax will come in at \$199.

Nike staff member K.J. Choi used the square-bodied Nike Sumo² (or Sumo Squared, as it is called) when he won the PGA Tour's Chrysler Championship in late October. Nike also has a more traditional version of the Sumo driver with a rounded body.

Late in the season Vijay Singh carried Cleveland's HiBore XL. Tiger Woods has experimented with Nike's Sumo².

What is going on here? Why have so many golf companies introduced geometric shapes at the same time?

There are few secrets in the golf industry. The development of Callaway's square driver began almost five years ago, and other companies learned about it. The race was on, and the goal was to increase something called moment of inertia.

MOI is the measurement of a club's resistance to twisting. The higher the MOI, the more stable the clubhead on off-center hits.

On April 12, the USGA announced an MOI limit of 5,900 grams/centimeter squared. This set the bar for club manufacturers.

With few drivers producing an MOI reading greater than 4,000, clubmakers have a definitive goal.

Some viewed MOI as one of the last frontiers. Drivers already were limited by overall length (48 inches), clubhead volume (460 cubic centimeters) and spring-like effect of the face (.830 coefficient of restitution).

As clubheads grew larger, MOI went up. "The example I like to use, is somebody on a tight rope holding onto a long pole," said Dick Rugge, USGA senior technical director. "Because of the pole, he doesn't twist as much. It's a lot like that with drivers."

Tim Reed, vice president of research and development for Adams Golf, traced recent increases in MOI. "When driver size went from 360 to 460 (CCs), there was about a 20 percent increase in MOI," Reed said. "Now, with these geometric shapes, it has gone up about another 20 percent."

The geometric driver from Adams is called the Insight BUL 4950. This is short for big, ugly and long. The 4950 reflects the MOI rating that Adams claims to have achieved.

"With the new drivers, some golfers get a 5- or 6-yard increase on off-center hits," said Reed.

Even if this is true for a multitude of players, the geometric drivers face two major hurdles. One, they tend to produce a loud, >>>