

Benefits Of Latest Shaft TECHNOLOGY



1 Graphite Design's YS Type II graphite shaft series combines advanced, ultra-high modulus materials with an exacting manufacturing process. The YS-6 model mimics the bend profiles and performance benefits of the tour-proven YS line, but with value pricing.

2 Grafalloy's new Prototype Comp NT dives into the world of carbon nano technology, which improves the strength properties of a golf shaft. The carbon nanotubes joined with high-tech tip technology result in long, straight drives.

3 The Stulz Nano Arrow shaft combines a never-before-used mid-shaft, tri-edge shape with nano technology. The triangle shape results in better diffusion of load and energy transfer.

4 Recognizable throughout the golf market, Aldila's new VS Proto features revolutionary Micro Laminate Technology mixed with nano technology for huge benefits. The NV line will remain the company's flagship shaft this year.

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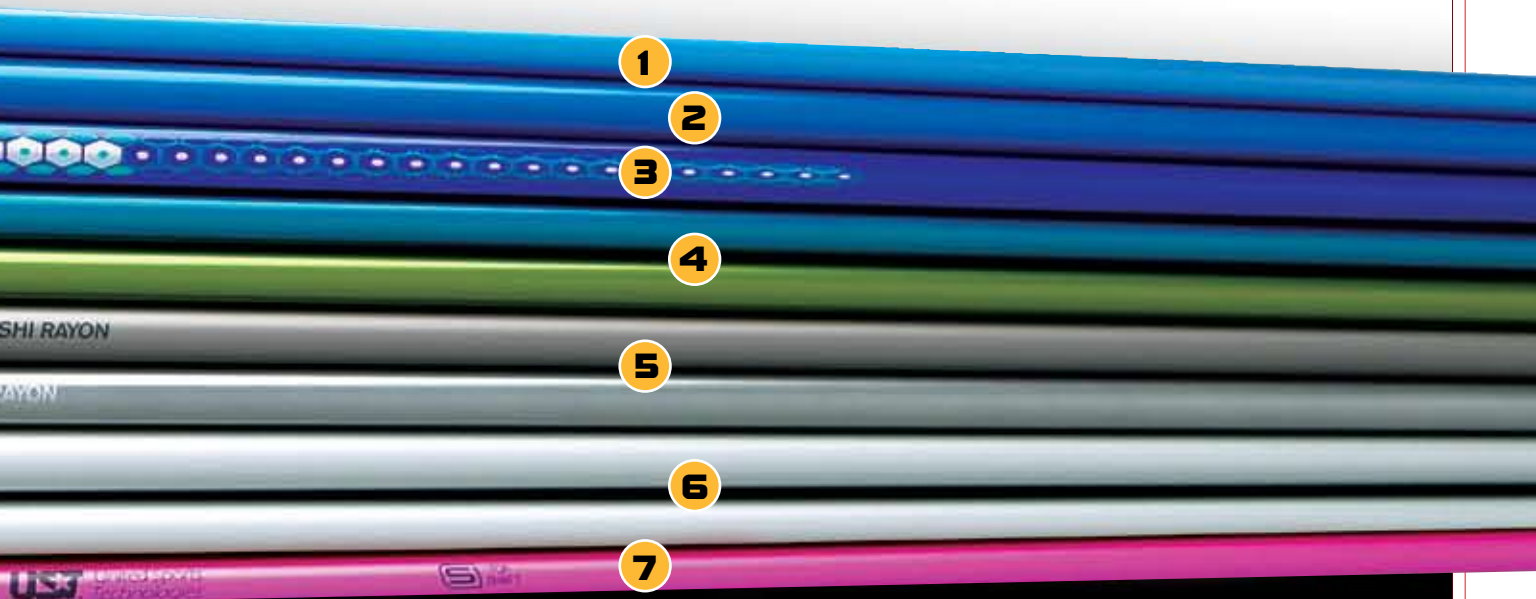
By Laurie Lee Dovey, Equipment Editor

Imagine the new Lamborghini Gallardo SE without a transmission. The automobile's capability to go from 0 to 100 kilometers per hour (62 mph) in 3.95 seconds or hit its top speed of 315 kilometers per hour (193 mph) are meaningless without the mechanism that transmits the power from the engine to the driving axle. Without the transmission, the car would be nothing more than an artistic piece of metal and fiberglass.

The same is true of the golf club. No matter how much technology is packed into a 460cc driver clubhead, incredibly designed hybrid clubhead or forged ironhead, without the shaft there's little to talk about. Like a transmission, the shaft is the device that transfers the power generated by the engine (the golfer) to the driving axle (the clubhead).

Golfers who consider shaft technology and investigate which golf club "transmission" best fits their swing and physical capabilities can increase on-course performance.

Shaft technology continues to evolve at a frenetic pace. More focus by original equipment manufacturers (OEMs) on shaft design and provid-



5 MRC's new **Bassara** shaft meets the needs of players looking for a versatile, high-performance shaft at an affordable price. The **MRC Diamana Red Board** offers a more active tip section and stiffer mid section that make it easier to draw. MRC can make the distinction of being the only manufac-

turer that processes all the raw materials for the shaft, including the monomer, acrylic fiber, carbon fiber, resin and prepreg.

6 The new **AccuLAUNCH** shaft series from **AccuFlex** features four weight categories so all golfers can fit a shaft to their swing characteristics. The shaft series is tuned for optimal launch and spin conditions within each weight and flex profile. More than 500 fitting options within the 13 separate flex/weight models are possible.

7 UST's popular **Proforce V2** shaft is back and now available in a .350 tip diameter for use in oversized driver heads configured with the same size hosel. Also showing up more and more in televised tournament coverage is the **Proforce V2 Lady**, with a tip diameter of .335 and length of 46 inches.

ing consumers with custom shaft choices, the incorporation of nano technology into composite shafts, new alloys in the steel segment, shafts made specifically for hybrid clubs, and counter-balanced shafts for putters are all significant trends and recent innovations.

The potential of the shaft is most evident in the driver segment, where clubhead design continues to be limited by the United States Golf Association (USGA). For now, the limits have thrown club designers a curve ball. Engineering gurus are working hard to find ways to significantly enhance or alter clubhead playability while conforming to USGA parameters. Consequently, many hopes for driver playability improvement fall on the shaft.

This doesn't mean new iron shafts aren't better than ever or offering tremendous playability benefit. They are. The gap between steel and graphite shaft weights and performance continues to narrow. Steel alloys are allowing manufacturers to make lighter steel shafts for more graphite-like perfor-

5 STEPS TO MAXIMIZE DRIVING POTENTIAL

Jamie Pipes, manager of product testing and field research for United Sports Technologies (UST), offers players five ways to maximize driving potential.

Choose a driver that is pleasing to the eye. With all the limitations on driver heads, all have reached the maximum COR (spring-like effect) and size limits, and most will probably meet the proposed moment of inertia (forgiveness factor) limitation.

Select the correct loft. Some clubheads help with launch, but make sure you select the correct loft to ensure you produce the trajectory that yields optimum ball flight and roll for maximum distance.

Check swing speed. With launch monitors available at practically every retail and clubfitting outlet, there is no reason to buy a driver without identifying your swing speed and launch angle to determine proper shaft flex. Pipes believes only golfers who swing more than 95 mph should consider a stiff flex shaft.

Determine distance vs. control factor. Finding the proper balance between distance and control is critical to good golf. It's also all about trying several different shafts in a club to decide which performs optimally. Use a launch monitor to evaluate your driving and determine if more distance or more control is beneficial. Change shafts to achieve added distance or control. Generally, lighter weight shafts produce more distance, while heavier shafts give the player more control. Most OEMs push the weight envelope to help average golfers hit it as far as possible. So make sure the shaft is controllable. A long shot into the woods is not better than a shot 10 yards shorter that's sitting in the middle of the fairway.

Fine tune launch with shaft characteristics. Golfers can fine tune launch angle and trajectory with tip stiffness and/or launch type in the shaft. A high-launch shaft typically has a more flexible tip, while a lower launch shaft has a firmer tip.

mance (distance increases), while composite iron shaft tolerances are much tighter, allowing for more steel-like accuracy and dependability.

“The evolution of shaft materials, designs, processes and technologies continues to allow us to provide golfers enhanced performance from their golf clubs,” says Todd Cassidy, vice president of AccuFlex. “A better shaft can make a golf club work better, and different shafts offer different playability characteristics. When the exact same clubhead and grip combination are fit with five different shafts, different performance characteristics are produced by each club. That means there are more options for golfers of all skill levels, so every player can get what he needs.”

Wide-ranging shaft performance capabilities have resulted in a much-needed offering from OEMs — custom shaft upgrades. Only a few years ago, just a handful of OEMs offered shaft upgrades. Now, every major golf manufacturer offers upgrade/custom options.

“Golfers and OEMs are more focused on the shaft than ever before,” explains Robb Schikner, vice president of research and development for Graphite Design International. “OEMs have upgraded the stock shafts they put into their product and are offering custom upgrade shafts that add both value and performance to their product. I think we will see an even wider selection of shaft offerings in the future. Golf swings are so varied in speed, tempo, release point, etc., that it’s

very difficult to fit every customer with the standard flex offerings of A, R, S and X.”

With stock shafts, OEMs must hit a certain retail price point. That hampers the manufacturer’s ability to use high-end shafts in their off-the-rack clubs. In shafts, price is generally indicative of quality. The higher a designer can go on shaft costs, the more materials and processes there are available to lower torque, bring shaft weight down and enhance other performance characteristics.

In addition, stock shafts must perform for wide player segments based on flex, while most high-end shafts fit specific categories or players. They simply are not appropriate in a stock club regardless of cost. This doesn’t mean stock shafts don’t perform. They per-



1 Penley's P2 shaft is an ultra-low-torque shaft with great feel. Lower torque produces improved accuracy and distance, even on off-center hits, by helping square the clubface at impact. Penley's patented dampening technology absorbs harsh torsional vibrations without affecting the flex of the shaft.

2 Grafalloy's new Prototype Comp NT hybrid uses the same nano technology as the driver shaft, giving players consistent and long hybrid shots. The 69-gram shaft has a tip diameter of .335, is 44 inches long and comes in regular, stiff and extra stiff.

3 The Graphite Design YS Type II shafts continue down the line to the YS-H and YS-I for hybrid and iron clubs. The shafts provide finely tuned weights, flexes, kick points, torques and tip sections to maximize performance from the widest range of swing types.

4 ACCRA brought its proprietary Tolerance Technology to iron shafts in the ACCRA i Series. The shafts incorporate super-high modulus materials for an extraordinarily stable graphite iron shaft without sacrificing its Active Tip Technology.

form well for a wide range of players, and they're better than ever.

"Upgrade shaft options simply allow golfers to fine tune their clubs to achieve

tor of marketing for True Temper Sports, the world's largest shaft manufacturer.

"Without a properly fit shaft, it doesn't matter what clubhead you have," adds Chris Elson, vice president of business development and tour relations for Harrison Sports. "The club isn't going to work for you. The shaft must fit the club-

confusion. Selecting the right shaft for a particular clubhead that also matches the player's swing characteristics isn't a simple task.

Hall acknowledges that many golfers are so overwhelmed by the shaft options available that they're actually reluctant to jump in and try to find the shaft that per-

No matter how much technology is packed into a 460cc driver clubhead, incredibly designed hybrid clubhead or forged ironhead, without the shaft there's little to talk about.

peak performance from the shaft and the golf club by matching the shaft to swing characteristics and thus optimize launch conditions," explains Chad Hall, direc-

tor of marketing for True Temper Sports, the world's largest shaft manufacturer.

The only pitfall of all the shaft technology and design offerings is consumer

forms best for them with their woods and irons, and for good reason.

The odds of finding the right shaft by thumbing through the vast selec-

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5 The new **Matrix Studio** was designed to be the ultimate shaft franchise for the serious clubfitting and building studio. The shaft is offered in 64, 74, 84 and 94 woods and irons, giving you an ideal fit to every player and club, driver through wedge.

6 Royal Precision's **Rifle Project X High Launch** iron shaft family features lighter weights and longer tip parallel sections than the original tour design. They deliver a higher launch angle and increased ball velocity and spin rates.

7 True Temper's **Black Gold** shaft incorporates Frequency Tuned technology with the company's proprietary Gold manufacturing process. The shaft combines pinpoint frequency specification with exacting weight tolerances and balance for repeatability and consistency.

8 UST's **Frequency Filtered** putter shaft, designed as a system that significantly improves a player's ability to perceive or feel exactly where a ball impacts the putterface, is the first putter shaft ever to be offered by PING as a custom upgrade through the PING Wrx custom-fitting department.

tion in the Golfsmith catalog are slim. Golfers have two viable options — utilize upgrade offerings available from OEMs and/or work with a professional fitter to get the right shaft.

“Most consumer confusion comes from the lack of proper fitting,” Schikner says. “Consumers may try a shaft based on an advertisement or what professional players use, but the best way to make sure their shaft fits their swing is to go to a reputable golf shop and try out different products.”

Hitting and comparing the performance of different shafts are the keys to making the right selection. Today, this is easier than ever. In the past several years, OEMs have made clubs with the same clubhead and their different custom shafts available to consumers at the point of sale. At the shop or through demo-day participation, anyone can test one clubhead with different shafts. Comparing different shafts with similar flex properties allows the player to see which shaft provides optimum ball

flight, distance and feel.

What the professional clubfitter or high-end golf retailer brings to the shaft-fitting mix that may not be available during a demo day is the chance to try various manufacturers’ clubheads and shaft options and to analyze each by using a launch monitor.

“Launch monitors measure ball speed, launch angle and spin rate, among other things,” Hall notes. “There’s no standard combination of numbers in regard to these elements that results in optimum performance for all players. It varies from player to player. So what players need to do is find the combination of spin rate and launch angle that maximizes ball speed with the clubhead they choose to use. By reviewing the data measured by a launch monitor, clubfitters can make solid shaft recommendations.”

Looking to the future, shaft manufacturers are optimistic about the potential to continue improving their products and bringing measurable playability benefit to golfers of all skill levels. **GI**

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