

Golf Shafts Buying Guide

The shaft of the golf club is often ignored when it comes to performance, but it is the engine of the golf club. The length, flex, torque, kick-point, weight and alignment of the shaft all have an effect on the performance of your golf club. What does this all mean? Let us explain...

Types of Golf Shafts

Steel Shafts

Steel shafts are stronger, more durable and generally less expensive than graphite and are made from carbon steel, although stainless steel is sometimes used.

Steel shafts do not experience the torque or lateral twisting found in all graphite shafts and therefore most players would benefit by having steel shafts in their irons. They offer more control on shots and have a greater emphasis on accuracy than distance than graphite shafts. Steel shafts do require a faster swing speed to generate the same distance as a graphite shaft. Steel shafts are recommended for players with normal swing speeds who could use a little extra control in their game.

There are two main types of steel shaft:

1. Stepped Steel Shafts



Stepped steel shafts are used to gradually reduce the diameter of the shaft from the wider butt end to the narrower tip end that goes into the hosel of the clubhead.

A steel strip is rolled into a tube and then mechanically drawn until the diameter and thickness is correct. The step pattern is then formed and the walls are made thinner at the tip and thicker at the top to produce the flexibility or kickpoints. The shaft is then hardened and straightened and finally chrome plated. This advanced manufacturing process offers consistency from shaft to shaft and gives the same stiffness throughout an entire set. Stepped steel shafts are used in the majority of golf clubs by all the major manufacturers.

2. Rifle Steel Shafts



The main difference with Rifle shafts is that the steel is smooth from top to bottom and has no steps.

The shaft design and construction uses different technologies to provide greater performance and consistency. Frequency Matching of each shaft perfectly matches the flex throughout a set of clubs using electronic calibration. Flexes in Rifle shafts can also be more exactly tailored for the average golfer as they use decimals to measure stiffness (eg 5.0, 5.5, 6.0, etc). The stepless design technology

eliminates the energy-robbing steps' found on most other steel shafts, which Rifle manufacturers claim provides greater accuracy. Some Rifle shafts offer 'flighted' versions that can produce variable ball trajectories for different clubs within a single set.

Graphite Shafts



Generally graphite is more expensive than steel and less durable. The lighter weight provides greater swing speed for more power, but it sacrifices control due to the flex generated during the swing.

The variation in flexes (and colours) make graphite shafts a very popular choice with professionals and amateurs alike. They are also suited to lady golfers and seniors who cannot produce the swing speed to use a steel shaft effectively. The shaft is produced using Graphite tape, with an epoxy binder, wrapped around a steel mandrel. The shaft is then heated and the mandrel removed. After it has cooled, the shaft is sanded and cut, it is painted. Graphite golf club shafts can reduce the weight of your club (you can really feel the difference if you've used steel shafts before).

They weigh between 50-85 grams, while their steel counterparts generally start at 120 grams. Graphite shafts also dampen shaft vibration better than steel which is why several high profile injured golf pros recovering from surgery use them to recover. On the downside it is more difficult than steel to get a consistent feel and stiffness in a set of graphite shafted irons. Graphite shafts are great for getting greater distances from today's oversize titanium drivers as they allow shafts to be longer. But remember, longer clubs are good for distance, not for control. Lighter than steel and can be made in many variations, making it easier to select a shaft best suited to your game.

The major negative of graphite shafts is that they need looked after more than steel shafts. Make sure you have extra long headcovers on woods or padded dividers in your golf bag so that the paint on the graphite shaft does not get worn off, as this will negatively affect the performance of the shaft.

Multi-Material Shafts



A recent addition to the shaft market is the multi-material shaft. Used on both irons and drivers, this shaft combines both steel and graphite into one shaft to try and get the best of both worlds.

Typically it is mainly a steel shaft that has a graphite tip. The steel section of the shaft offers a solid shaft that allows players to control the ball flight more. The graphite tip lets the driver have a limited amount of 'whip' into the ball that can help produce more distance. The graphite tip also helps filter out any unwanted vibrations at contact to optimize the feel of each shot.

Titanium Shafts

Titanium is a relatively new material in shafts and there is not currently much information available about the manufacturing process. The shaft itself is lightweight (titanium being lighter than steel) and it has the ability to dampen vibrations, although this can give the shaft a stiff feel.

Nanofuse Shafts

Nanofuse shafts are not steel, but they are metallic. They're not graphite, but they are firmly rooted in carbon fibre.

They are created by fusing a nanocrystalline alloy with a carbon fibre composite polymer sublayer. The manufacturers claim this gives you a shaft with the consistency of steel and the distance and feel benefits of graphite, without any of the downsides. The key lies in an unimaginably small and tight grain structure in the NanoFuse material, increases strength dramatically which is so strong that the weight of the shaft can be reduced for distance without losing any of the strength which helps accuracy.

Shaft Technology

What is shaft flex?

Flex is the most important factor in the shaft as it affects distance and direction. Getting the correct flex in your golf equipment is of the utmost importance. The flex is a rating of a golf club shaft's ability to bend during the golf swing. All shafts, no matter how stiff, exhibit flex under the forces of the golf swing. A player with a very fast swing will require a shaft with less flex, while a player with a slower swing will need a shaft with greater flex.

Flex is generally rated as Extra Stiff (XS), Stiff(S), Firm(F), Regular(R), Senior(S), Amateur(A) and Ladies(L). The less the bend in a shaft, the more control a powerful swinger will have. On the other hand, beginners and those with less powerful swings generally use a shaft with greater flexibility. The average swing speed with a driver is from 65 miles per hour for the beginner up to over 100 miles per hour for powerful swingers.

Different shaft manufacturers have differences in their specifications of flex. One manufacturer's regular flex might be another's firm flex. There are 2 methods of measuring flex. The more traditional Shaft Deflection Board and the modern Frequency Analyzer. Both are effective in the measurement of flex. Stiffness defines the bending characteristics of the shaft when weight is applied. Frequency is another way of defining stiffness and indicates how fast a club will vibrate with that particular shaft. The stiffer the shaft the faster the vibration. If you have a low swing speed, more flexible shafts will propel the ball more at the downswing. If you have a high swing speed, a stiffer shaft avoids lagging clubheads.

What is shaft torque?

Torque is the twisting movement of the shaft during the golf swing. It is measured in degrees and shown as a rating that gives information about the 'twisting' characteristics. The higher the rating, the more the shaft twists and vice versa. The more torque a shaft has, the softer it will feel. A shaft with a 3 degree torque will feel much stiffer than one that has 5 degree torque. Every shaft, graphite or steel, has a certain amount of torque. Most steel shafts have up to about 3 degrees of torque. Torque however has a slight effect on ball trajectory, with the lower the torque, the lower the trajectory.

What is a shaft kick-point (Flex-point)?

This defines the point where the shaft bends and affects the trajectory of the shot. The effect is small but measurable. A shaft with a high kick-point will usually give a low shot trajectory and more of a "one-piece" feel to the shaft. A low Kick-point will usually give a high shot trajectory and a feeling of the shaft tip whipping the clubhead through.

Kick-point will also affect the feel of the shaft. Some club specialists will dispute this by saying that the Kick-point and bend-point are the same. Bend-point is the highest point of the shaft when it is bending by applying pressure to both ends of the shaft. Kick-point is the highest point the shaft is bending, by clamping down the grip and pressure is applied onto the club head, like in the swing. There will be some shafts where both bending points are similar or very close.

Weight of a shaft?

The weight is the actual weight of the raw, uncut shaft before installation, in grams. Lighter shafts mean lighter total weight and therefore the prospect of additional clubhead speed and more distance.

Alignment of a shaft?

Have you noticed that sometimes you will have a favorite club in a set of clubs that you just seem to hit better and more consistently than the others? This is most likely due to the fact that the spine in that club happens by chance to be correctly aligned in the club. The opposite is probably true for the club in the set that you can't seem to hit well at all!

Most golf shafts have some sort of minor irregularity in them that is inherent in the manufacturing process. This could be from the join of the shaft, the shaft not being perfectly round; the material of the shaft may be just slightly heavier on one side of the shaft than the other, or from an imperfection in the shaft material. This can cause the shaft to bend towards a certain point when you swing, causing the clubface to open or close.

You can get your clubs 'Spine Aligned' to sort this problem out. What they do is test the shaft to determine the characteristics of the golf shaft. Then the shaft can be installed so that the spine of the shaft is directly behind your target line. This way it does not affect the direction of your shot.

Parallel/Tapered Tip?

Parallel tip shafts are the same diameter for a specific distance up from the tip. Taper tip shafts reduce in diameter to a specific location on the shaft tip section. Taper tipped shafts and parallel tipped shafts do play similar to one another. The only difference between the two is tip diameter and weight. Taper tip shafts are constant weight, meaning that each shaft weighs the same from the long irons to the wedges. Parallel tip shafts have a descending weight through the set.

Pureing a shaft?

Pureing is a patented process that locates the most stable plane of the shaft, regardless of type or manufacturing process. Using a number of mathematical formulas, Pure computer software reveals how round, how straight and how stiff each shaft is and allows the operator to mark the dominant orientation that is most consistent. By installing each shaft so that the marked area is placed in a neutral position, every shaft or club within a set will have the exact same Plane of Uniform Repeatability (PURE). PUREing does not rely on human judgement – it is a science that is accurate to less than 1 degree.

Is shaft length important?

Once the shaft is installed, you must then determine the proper length. This is just as important as flex, torque or anything else to do with the shaft. To determine the length of your club, stand up straight and have someone measure from the crease where your wrist and hand meet to the floor. Do this with both hands and take an average. It is critical that the irons be cut at a length that is suitable to that particular player's height & distance from their hands to the floor.

The importance of length, according to research, is extreme: Ball impact that is 0.5 inches off-centre equates to a 7% loss of carry distance. An impact that is 1 inch off-centre equates to a 14% loss of carry distance. So, while longer shafts can certainly provide greater overall distance, the key to choosing the right driver is finding the longest one that provides a repeating, solid hit.

The following table shows what length of shafts you should consider for certain heights. If the crease where your wrist and hand meet to the floor is:

- 29-32 inches, your irons should be based on a 5-iron length of 37 inches
- 33-34 inches, your irons should be based on a 5-iron length of 37 1/2 inches

- 35-36 inches, your irons should be based on a 5-iron length of 38 inches
- 37-38 inches, your irons should be based on a 5-iron length of 38 1/2 inches
- 39-40 inches, your irons should be based on a 5-iron length of 39 inches
- 41 or more inches, your irons should be based on a 5-iron length of 39 1/2 inches

The length of the shaft is measured from the top of the grip to the base of the heel of the club as it lies on the ground.

Don't guess, get custom fitted

In recent years, custom fitting has been brought to the forefront of the golfing public's mind. What once was reserved for Tour players and the best amateurs is now available to any golfer who's willing to spend the time and money to get a properly fitted set of clubs. With today's technology and vast amount of products to examine, an experienced club fitter can truly solve the shaft mystery. Custom fitting can be done with woods, irons, wedges and even putters from most manufacturers. Fitters will work with you to decide the custom fit lie angles, face angles, lofts, lengths, swing weights and other options.

For the intrepid golfer, custom fitting is the passport to better golf. A comprehensive custom fitting process will usually go through a 4 step system that includes static fitting, dynamic fitting, ball flight analysis and ongoing analysis. The first step, static fitting, requires the golfer to record his or her physical characteristics, including height, wrist-to-floor measurement, hand length and finger length. These pieces of information give the fitter an idea of what club length, lie angle and grip size might be appropriate.

Next, the golfer goes through a dynamic fitting, which consists of actually hitting golf balls with face tape attached to the club. During this process, the fitter observes the golfer's swing motion, posture, clubhead speed, level of flexibility and swing path. All of this information, including the location of the face hits, is used to help determine what club makeup works with the individual's physical ability.

After the dynamic fitting, a ball flight observation session follows in which the fitter works with the golfer on the range to fine-tune the fit of the club. The curvature of shots, the trajectory, carry distance and general flight characteristics are all carefully observed and discussed until both the fitter and golfer are convinced that the proper club and shaft specifications have been determined for optimal tee-box performance. Sometimes this aspect of fitting is done on indoor state of the art simulators.

Finally, an ongoing observation process, in which the golfer carefully notes his or her performance with the chosen driver and reports back to the fitter (if necessary) is used. This information is discussed, and any necessary adjustments can be made to correct the problem. This portion of the fitting process is considered extremely important because the goal of a fitted and custom-built club is to provide optimum performance over a long period of time. Without an ongoing process, this goal isn't always met.

Custom fitting may well increase the cost of your set of clubs, but the benefits in terms of performance (and not changing clubs so often) are worth the extra money.

How shafts can change your game

What can I do to hit the ball further?

- Use a lighter weight shaft.
- Reduce the stiffness of the shaft.
- Check your lofts and lies on your clubs

What can I do to hit the ball straighter?

- Use a heavier shaft.
- Use a stiffer shaft.
- Check your lofts and lies on your clubs.

- Check the shaft alignment.

What can I do to hit the ball higher?

- Weaken (increase) the loft of the club. (major effect)
- Use a lower kick-point shaft. (minor effect)

What can I do to hit the ball lower?

- Strengthen (decrease) the loft of the club. (major effect)
- Use a higher kick-point point shaft. (minor effect)