



CLUBMATE **GOLF** AUSTRALIA  
GOLF CLUB COMPONENTS

## eTECHREPORT

### April-May 2006 eTECHreport - Welcome!

#### Countdown is over for Common Sense Fitting!

Tom Wishon's new book devoted exclusively to custom fitting, Common Sense Clubfitting: The Wishon Method, is in stock and ready to ship. [[continues below](#)]

#### The Function of Offset

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#### Swingweight vs. Total Weight – When to Choose One Over the Other

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#### Search and 12 Myths Updates

The real, potential effect of TWGT's books, The Search for the Perfect Golf Club and 12 Myths That Can Wreck Your Golf Game, on your clubmaking business can best be summed up in a post that clubmaker Tom Spargo from West Warwick, R.I., submitted on the TWGT Clubmaker Forum in March. [[continues below](#)]

#### A Primer on Wedge Fitting

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#### The Most Common Sense Principles of Fitting

The longer the length, the lower the loft, the heavier the total weight and the stiffer the shaft, the harder the club will be to hit for all golfers. [[continues below](#)]

#### Design Updates

While business mavens would say that "it's a good problem to have", TWGT utterly dislikes when the demand is greater than our ability to anticipate the supply and causes us to be out of stock on any of our original clubmaking designs. We're working very hard with our production factories to be able to catch up with the demand for the 730CL Slow Swing Speed sets and the 949MC Drivers. [[continues below](#)]

# Countdown is over for Common Sense Fitting!



Tom Wishon's new book devoted exclusively to custom fitting, *Common Sense Clubfitting: The Wishon Method*, is finally in stock and ready to ship. We can now fill your request for the latest and most complete information on clubfitting technology!

One of the unique features of the book is how it breaks down the procedure of true game improvement for the golfer into the five game improvement factors of Distance, Accuracy, Trajectory, Consistency and Feel, and then reveals which of the twenty plus golf club specifications have what are called an "A" or a "B" effect on each of the game improvement factors for all golfers. The sections which describe in detail how to methodically "hunt down" the specs which will have a visible effect on each of the five game improvement factors are completely up-to-date with the latest fitting information to ensure that every clubmaker will be able to accurately identify precisely how to enable each golfer to get the most from their ability.

Each copy of *Common Sense Clubfitting* includes a 16" x 22" color poster that clubmakers can display in their shop which illustrates the "A" and "B" effect golf club specifications on the five game improvement factors of Distance, Accuracy, Trajectory, Consistency and Feel. The poster is a great way to be able to explain the primary theme of *The Wishon Method of Common Sense Clubfitting* to golfers – to focus only on the golf club specifications which have a major "A" effect or a moderate "B" effect on changing and improving the Distance, Accuracy, Trajectory, Consistency and Feel for each golfer.

If you haven't placed your order, it's definitely time to do that now so you can start catching up on all of the latest in fitting information from the industry leader in clubfitting research.

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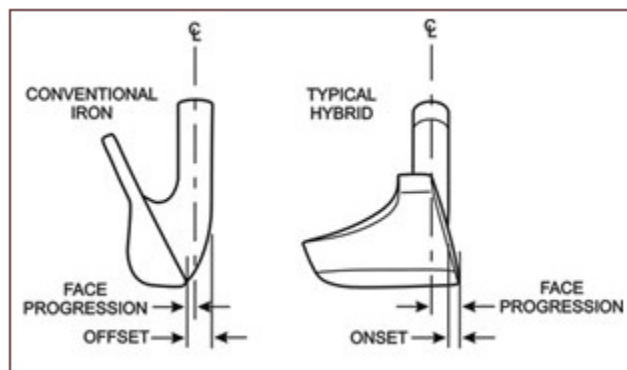
## The Function of Offset

The distance from the forward outside wall of the hosel to the leading edge at the bottom of the clubface is known as the offset measurement of any clubhead. Within ironhead designs, offset can range from as much as 9mm down to as little as 0 mm. While there are a few irons or wedges which are designed with the leading edge in front of the forward outside wall of the hosel, such heads with "onset" are pretty rare. Thus the vast majority of iron and wedge heads are made with some amount of offset. As such, the dimension can be expressed as offset, with the measurement made from the forward wall of the hosel back to the leading edge at the bottom of the face.

Among woodheads and the majority of hybrid heads, the dimension from the forward wall of the hosel to the leading edge can assume a far greater range from offset to onset. Obviously the most typical hosel to leading edge relationship seen in woodheads and hybrids is that of onset – in which the leading edge is well in front of the hosel. In addition there are woodheads in which the forward wall of the hosel is actually in front of the leading edge at the bottom of the face. These are woodheads and hybrids which truly can be referred to as being offset in the same sense as an iron or wedge head. Because the most typical hosel to leading edge relationship in woodheads and hybrids is that of onset, in which the leading edge is well in front of the hosel, it makes more sense to describe the measurement in the form of face progression, which is the distance from the centerline of the hosel bore to the leading edge of the face.

There are three ways that the hosel to leading edge relationship in clubheads may affect shot performance.

1. *The distance from the center of the hosel bore back to the center of gravity within the clubhead sets a limit for how much the shaft may bend forward at impact to potentially increase the launch angle and trajectory of the shot.*



The amount that a shaft may bend forward before impact to increase the launch angle is chiefly determined by the point in the downswing when the wrist-cock angle between the arms and the shaft is unhinged (AKA the "release"). Golfers who release the club very early in the downswing will not experience a change in the trajectory from different shaft designs simply because the forward bending which results from this unhinging of the wrist-cock angle happens so soon in the downswing that the shaft recovers and arrives at impact in a straight position. Thus it is only golfers who release the club later in the downswing who are able to experience any change in the launch angle and height of the shot from shafts with different bend profile designs.

For golfers who do have a later release, the actual amount that the shaft can bend forward before impact and change the launch angle is determined by the overall stiffness plus the bend profile of the shaft, as well as by the distance the clubhead's center of gravity is located to the rear of the center of the hosel bore where the shaft is inserted. The stiffer the shaft and the more tip firm the shaft's bend profile, the less the shaft can flex forward at impact (vice versa as well). In addition, the greater the distance of the head CG back from the hosel bore centerline, the more the shaft could bend forward to potentially increase the launch angle (vice versa as well).

Thus the more hosel offset in the clubhead, the greater the distance from the hosel bore may be to the CG of the head. The other mitigating factor in this is of course the actual weight distribution design of the head and how it along with the shape of the clubhead ordains the rear CG position in the clubhead. In other words, it is possible for a head with more offset and a more forward CG position to have the same hosel bore to CG distance as a head with less offset and a more rear CG position.

Among ironheads, it is generally true that the greater the hosel offset, the farther back the CG will be from the shaft centerline, and from that, the higher the trajectory for any given loft angle. Among woodheads, the lower the face progression (meaning the greater the offset), the higher the trajectory will be for any given loft.

*2. The distance from the hosel to the leading edge of the face can affect the position of the clubface (open, square or closed) at the moment of impact.*

All golfers have to rotate the club to properly complete the backswing. For RH golfers this is a clockwise rotation of the club/clubhead and for LH golfers this is a counter-clockwise rotation to set the club in the proper position at the end of the backswing. In other words, all golfers have to rotate the clubface considerably open at the top of the backswing in relation to the head's face position at address and impact.

This also means we golfers have to "re-rotate" the club/clubhead back to square on the downswing to be able to hit the ball accurately. Obviously, some golfers are not able to do that and make the swing error(s) which result in the face being open or closed by the time impact takes place.

The majority of golfers who make a face angle error on the downswing do bring the clubhead to impact with the face open, resulting in anything from a slight fade to an all out banana slice. For such golfers, clubheads with more offset can be a superb way to offer slice reduction without requiring the golfer to change anything in their swing motion. Offset can enable this accuracy improvement to happen because the hosel is more in front of the face.

The golfer's hands and arms hold on to the shaft. The shaft is inserted into the hosel. Thus if the hosel is more in front of the face, this affords the golfer a split second "more time" before the face contacts the ball for the golfer to continue rotating the clubhead back around to arrive at impact less open than with a non-offset or onset clubhead design.

*3. The position of the hosel with respect to the leading edge can affect the stance and alignment of the golfer to the intended target line.*

Offset also plays a key role in the "look" of the clubhead in the address position. From that, the offset design of the head can have an effect on not only the golfer's confidence but their actual stance and alignment as well.

Most clubmakers have heard one or more golfers utter something to the effect of, "Ugh, I can't stand to look at that much offset" when setting a head with a fully offset hosel design down on the ground in the address position. While many golfers do not have a negative pre-disposition to the look of the hosel to face position in a clubhead, some do, who may have grown up in the game playing with nothing but low to non-offset head models. Most clubmakers also know what happens when a golfer tries to hit shots or play with a club they don't like the looks of – a much lower percentage of quality shots.

In addition, there are some golfers who cannot align themselves square to the target when setting up to a shot with a club built with a fully offset hosel. Most common when this happens is for the golfer to allow the offset hosel design to force their shoulders to line up to the hook side of the target line. When this happens, the shot result can be anything from a dead pull to a pull slice.

In the end, the most powerful game improvement aspect of hosel offset is its ability to reduce a slice or fade with the driver and/or fairway woods. Second after that is its ability to slightly increase the launch angle and trajectory of the shot for golfers who have a midway to late release on the downswing. But without question, hosel offset also has a strong influence on the golfer's confidence as well.

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## Swingweight vs. Total Weight – When to Choose One Over the Other

It's not exactly clubmaking's version of the "chicken or the egg", but it is important for clubmakers to gain an understanding of when to change swingweight or when to change the total weight of the club when it comes to addressing the golfer's need for some aspect of club weighting to match well with their strength and swing tempo.

No question, it is critical for clubmakers to match the "weight" of the golf club to the golfer's strength, backswing to downswing transition, downswing tempo and their overall swing timing and rhythm to ensure the highest percentage of on center hits. But which "weight" should be addressed to do that? Swingweight? Or Total Weight?

Some of you who are already familiar with MOI matching of clubs may think about this question and answer to the effect that picking the right MOI for all the clubs in the set will cover both "weights" in the fitting of the clubs. To a certain extent, you are right. But on the other hand, it is possible to build two clubs of totally different total weights to have the same MOI simply by manipulating the headweight of the club. It is also possible to duplicate the MOI in two clubs of different total weight by altering the length of one of the clubs as well, but in Common Sense Clubfitting, length is a specification which should not be altered if the change would put the wrong length for maximum control over the club in the hands of the golfer.

As a result, whether you are matching clubs by MOI or swingweight, it is still important to choose the right total weight for the golfer by selecting the right shaft weight that will result in a total weight that is well matched to the golfer's strength, backswing to downswing transition, downswing tempo and their overall swing timing and rhythm to ensure the highest percentage of on center hits. For some golfers, swingweight/headweight alone won't get that job done the best.

In the past, I have written that it is possible to help a golfer with a quick transition and faster swing tempo to gain more control over these downswing factors by increasing the swingweight/headweight and leaving the shaft weight light (light meaning a 60-65g shaft weight in the woods and a 70-75g shaft in the irons). However, there are some golfers for whom a light shaft and heavier headweight will just not provide enough "weight" to allow them to really gain the greatest level of control over the club to prevent themselves from continuing to swing too quick.

Who are these golfers so you know when to increase the shaft weight AND increase the headweight at the same time to meet their overall weight requirements for controlling their swing tempo and rhythm? Typically, when you encounter a golfer who is of a average to slightly above average physical strength and who has a relatively strong transition move and above average swing tempo, you can still fit such golfers into lighter shafts with a higher headweight/swingweight and offer them enough "weight feel" to enable them to gain a greater level of control over their swing tempo.

But if you fit golfers who are definitely on the higher end of the physical strength scale AND who also have a strong transition with an aggressive downswing tempo, these players are going to need a higher total weight and higher swingweight/headweight all together to be able to get enough of a "weight feel" to be able to gain more control over their swing tempo. This is precisely why shaft companies (and TWGT) offer some of their shaft models in both a light 60-65g weight as well as a "heavier" 85-95g weight.

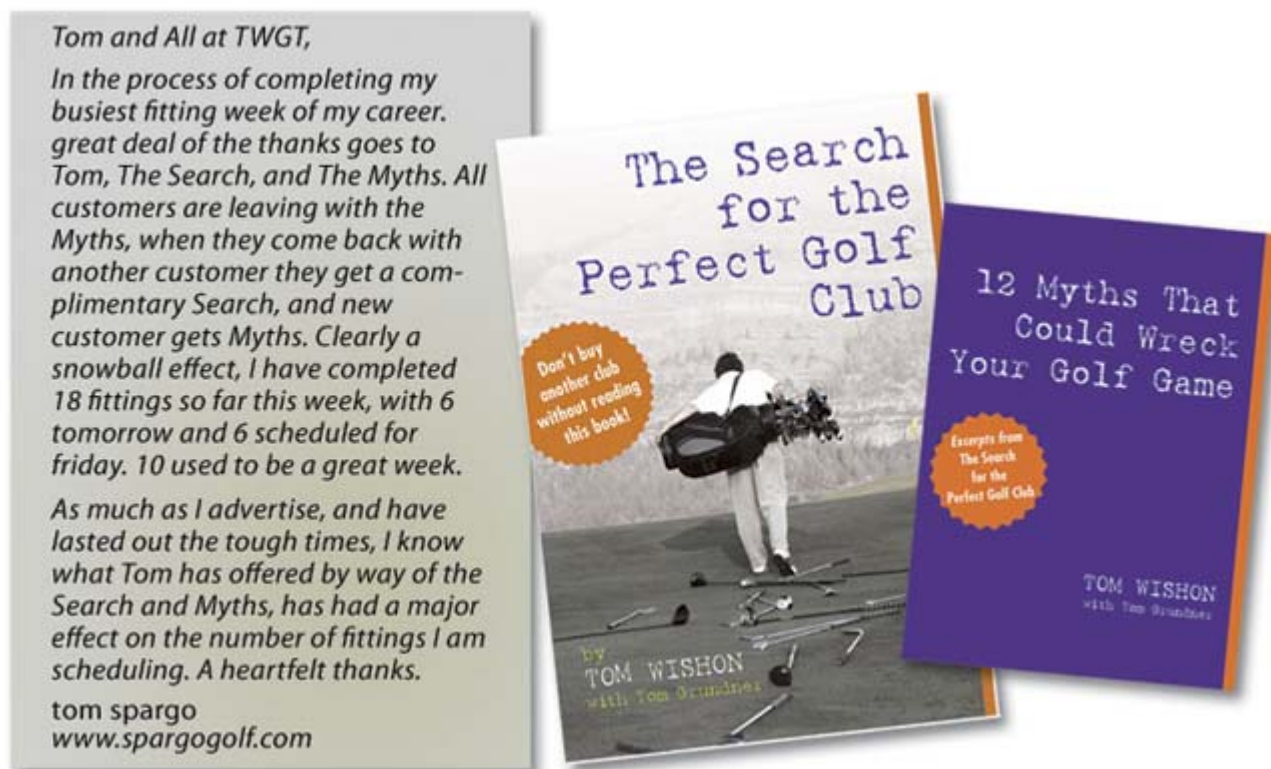
So remember —when you see golfers with average to slightly above average physical strength and who has a relatively strong transition move and above average swing tempo, you can still fit such golfers into lighter shafts with a higher headweight/swingweight. But when you encounter players who are definitely on the higher end of the physical strength scale AND who also have a strong transition

with an aggressive downswing tempo, these players are going to need a heavier shaft weight and higher swingweight/headweight all together to be able to get enough of a "weight feel" to be able to gain more control over their swing tempo.

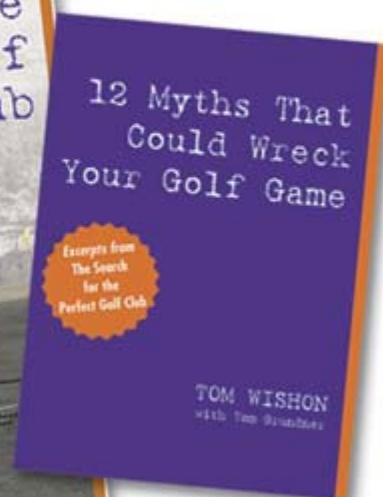
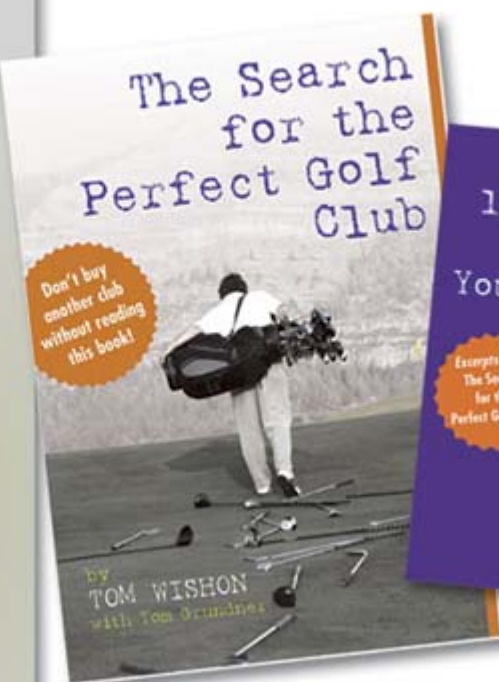
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## Search and 12 Myths Updates

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*Tom and All at TWGT,  
In the process of completing my busiest fitting week of my career. great deal of the thanks goes to Tom, The Search, and The Myths. All customers are leaving with the Myths, when they come back with another customer they get a complimentary Search, and new customer gets Myths. Clearly a snowball effect, I have completed 18 fittings so far this week, with 6 tomorrow and 6 scheduled for friday. 10 used to be a great week.  
As much as I advertise, and have lasted out the tough times, I know what Tom has offered by way of the Search and Myths, has had a major effect on the number of fittings I am scheduling. A heartfelt thanks.  
tom spargo  
[www.spargogolf.com](http://www.spargogolf.com)*



There is no better proof of the effect that Search and 12 Myths can have on YOUR clubmaking business this season than what Tom Spargo and many other clubmakers have experienced simply by making an effort to get copies of either book in the hands of regular golfers. But YOU have to make the effort to stock copies and find ways to get them in the hands of golfers for this to happen. The good news is that if you do, it will happen.

TWGT is pleased to announce that we are happily back in stock with plenty of copies of the new 12 Myths booklets. The demand for this 32-page booklet of key excerpts from the main Search book caught us completely off guard in March. From January 17 to March 15, clubmakers bought over 8,000 copies of the 12 Myths booklet, a quantity that we simply did not expect, given the fact this was before the golf season had even begun in most parts of the country. However, on April 11, we received a shipment of 10,000 more of the 12 Myths booklets to put us comfortably back in stock and hopefully help us to keep on top of the future demand as well.

Remember, TWGT is offering 12 Myths to clubmakers for our cost to enable you to not have to spend anything close to a significant amount for a short publication that you can GIVE AWAY FOR FREE to golfers to educate them about the real benefits of buying custom fit clubs rather than expensive standard made brand name clubs.

In other news about the ongoing promotion of Search and 12 Myths by TWGT to keep driving golfers into your shops...

- Golf Digest magazine has agreed to put audio files of 12 Myths on their web site starting in late-April. Golfers who visit [www.golfdigest.com](http://www.golfdigest.com) will be able to listen to each one of the 12 Myths That Can Wreck Your Golf Game on their computers and learn why custom is better than standard off the rack for their games.
- While we are not yet at liberty to reveal which one, we can tell you that a major consumer golf publication is test marketing the 12 Myths booklets as a free promotional giveaway to golfers who subscribe or re-subscribe to their publication. Cross your fingers clubmakers, because if the test is successful, this magazine will then distribute hundreds of thousands of copies of 12 Myths to regular golfers by early summer.
- Alaska Airlines and Delta Airlines have featured the Search book in their recent in-flight magazines.
- TWGT is close to cinching agreement from ESPN's morning show "Cold Pizza" to feature Search and for TWGT's Tom Wishon and Matt Mohi to demonstrate custom fitting on a future program to be broadcast from a special Cold Pizza remote location in Central Park in NYC.
- The main Search book continues to sell well in all of the major US bookstore chains and major on-line booksellers.

We'll keep you updated on all the latest promotional efforts to gain more publicity for TWGT's Search and 12 Myths campaigns in successive editions of the E-TECH report. In the meantime, if you are not doing business with TWGT, you need to know that Search and 12 Myths are generating demand for clubmakers' services. For the first time ever in the golf industry, a company has actually been able to convince regular golfers that custom is better than buying standard off the rack. But you need to help too by doing all you can to keep getting the message into the hands of regular golfers. Join with your fellow clubmakers in helping to get the word out – order copies of 12 Myths and make the effort to get them into the hands of regular golfers. If you do, you will see an increase in your clubmaking work.

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## A Primer on Wedge Fitting

### Pitching Wedges

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While gap, sand and lob wedges are often selected from standalone wedge models independent of the numbered irons, most PWs are bought as a part of the numbered set of irons, as the next club after the 9-iron. Should the PW be chosen independent from the numbered irons? Not really, but it does depend on the PW's loft and sole design vs. the golfer's ability and the golf course design considerations. Obviously the first requirement of the PW is that its loft be 4 to 5 degrees higher than the loft of the 9-iron so it can deliver a unique distance which is less than the 9-iron.

The sole width of the PW for virtually all golfers should be the same as the numbered short irons in the set. Because PW shots are rarely to be played from anywhere but short to tall grass, there is no need for the width of the PW sole to be any different from that of the numbered short irons in the set.

The sole angle is one design and fitting factor of the PW that infrequently may need to be addressed independently of the short irons, depending on the course design requirements. Because the vast majority of PWs are an extension of the design of the short irons within a set, most PWs will be designed with the same sole width as the 9-iron and with a bounce sole angle of 3 to 5 degrees. For 90% + of the golf course conditions and 90%+ of the shots to be hit with a PW, these sole width and sole angle specifications are going to be fine. Make sure the loft is 4-5 degrees higher than the 9-iron and in 90+% of your PW fitting situations you are home free.

The only time you may wish to address the golfer's PW sole design specifications independent of the 9-iron may be:

- If the course has a lot of hardpan, thin grass and otherwise turf conditions which could resist the PW sole's ability to penetrate the turf when hitting a less than 50 yard pitch to a chip and run shot, it would be advisable to choose an independent PW with less bounce/more narrow sole which reduces the distance the leading edge is up off the ground to <1/8".
- In Bermuda, Kikuyu or other wiry grasses in warm climates, it may be beneficial to have a greater bounce sole angle on the PW to help the sole glide more smoothly through the grass when hitting the short chips and pitches that the golfer may prefer to hit with the loft of the PW. Granted, many golfers who play on such grasses do learn to hit the SW for these shots so that they can take advantage of the SW's much greater bounce sole angle/leading edge higher off the ground design factor. But if the golfer who plays on such grasses does prefer to hit the PW for such shots, it can be better for the solid hit percentage to fit them into a separate PW with more bounce/leading edge a little higher off the ground (>1/8" to 1/4")
- As a tip, if the Bermuda grass golfer loves to hit the PW a very high percentage of the time for short shots around the green, as long as the 9-iron to PW loft separation can be maintained to be no greater than 6 degrees, you can bend the loft to a 5-6 separation above the 9-iron as a way to increase the bounce sole angle. Remember, loft and sole angle are directly linked; for every degree you increase the loft by bending, the bounce sole angle also increases by one degree. (and vice versa when you bend the loft of any iron/wedge lower).

## The Key Elements in PW Fitting are . . .

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1. Loft in relation to the 9-iron to be not less than 4 degrees higher, not more than 5 degrees higher, and only 6 degrees higher if the golfer really needs to create a little more bounce sole angle by bending the loft weaker for special grass/turf conditions.
2. Sole width is never to be greater than the 9-iron unless the golfer plays a lot on Bermuda/wiry grass golf courses which do keep their grass length a little higher around the chipping/pitching areas of the greens.
3. Bounce sole angle is to be chosen with respect to the course turf conditions and the golfer's angle of attack with the PW shots he/she hits.
  - Dry, hard ground – sole angle 4 degrees or less
  - Wet, lush ground – sole angle 4 to 7 degrees
  - Short grass around the greens – sole angle 3 to 5 degrees
  - Long grass around the greens – sole angle 4 to 7 degrees
  - Golfer hits down steeply with most PW chips/pitches – sole angle 4 to 7 degrees
  - Golfer unhinges wrists early too often on PW chips/pitches – sole angle 3 to 5 degrees and take *some lessons or move the ball back in the stance.*

4. Swingweight to be the same as, or up to +2 points higher than the 9-iron. (MOI same to +1% higher than numbered irons.)

## Gap or Approach Wedges

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You're all aware that the Gap Wedge of modern times is really the PW of twenty to thirty-some years ago, so the PW of modern times is the 9-iron from back then as well. "Shrinking Loft Disease" created by the big standard made club companies' voracious appetite for equipment sales made this a fact.

What the heck does that have to do with fitting? Simple. Since the PW of today is yesterday's 9-iron, you must fit the needs of the Gap Wedge to the requirements of the golf course the same exact way you do the PW as described just previously. Period.

The most important point to learn in Gap Wedge fitting is when such a wedge is required. That's easy. Whenever the loft difference between the PW and the SW is 6 degrees, a Gap Wedge could be required. When the loft difference between the PW and SW is 7 degrees and higher, a Gap Wedge should definitely be considered.

But here's a different approach. Clubmakers should definitely fit the golfer for their PW and SW requirements first before fitting the Gap Wedge. The reason is that the PW and SW have very specific fitting and shotmaking requirements for every golfer. The PW is the first of the wedges and the SW is perhaps the most versatile wedge most golfers will carry. Since the main function of the Gap Wedge is simply to fill in a distance gap between the PW and SW, its loft cannot be chosen until you know what that PW to SW gap in loft is going to be.

Hence if the loft of the PW has to be 48 degrees to space it 4-5 degrees higher than the 9-iron and if the loft of the SW is determined to have a loft of 57 degrees to best suit the golfer and his/her course design factors, you now know the loft of the Gap Wedge should logically be halfway in between at 52.5 degrees.

Here's one other way you can squeeze just a little more versatility from the Gap Wedge. Remember our very recent discussion about the possible need of a PW to have a lower or higher degree of bounce or possibly a slightly more narrow or wider sole than the 9-iron? Instead of altering the PW by bending or separate selection, leave the PW to be the +4 degree increase in loft and with the same sole design as the 9-iron and then choose the sole design of the Gap Wedge to address those sole design differences which may be dictated by the design of the golf course. Gap Wedges are more frequently bought as a standalone wedge. While some companies do offer their iron sets with a matching Gap Wedge, some do not as of the era of the writing of this book. Thus you may have more chance in selecting the right combination of loft, sole angle and sole width in a Gap Wedge which is bought as a standalone wedge than in a GW which is a part of the set of numbered irons.

When choosing a Gap Wedge, be sure to look at the sole angle and sole width first. Worry about the loft, but only after you check out the playability of the sole angle/sole width for the golfer first. Why? You can bend the loft to be halfway between the PW and SW loft. If you have to bend the loft of the Gap Wedge to set it directly between the PW and SW, you'll likely only change the Gap Wedge's sole angle by 1 to 2 degrees. Getting the sole angle within 2 degrees for just about any golfer is really going to be close enough and never going to be a major reason they do not hit a wedge consistently.

## The Key Elements in Gap Wedge Fitting are. . .

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1. Loft to be half way between the loft of the PW and the SW. (duh!)

2. Sole width to be the same as the PW unless the golfer plays a lot on Bermuda/wiry grass golf courses which do keep their grass length a little higher around the chipping/pitching areas of the greens. In this case you may select the sole width of the Gap Wedge to be a little wider than the PW.

3. Bounce sole angle to be chosen with respect to the course turf conditions and the golfer's angle of attack with the Gap Wedge shots he/she hits.

- Dry, hard ground – sole angle 4 degrees or less
- Wet, lush ground – sole angle 4 to 7 degrees
- Short grass around the greens – sole angle 3 to 5 degrees
- Long grass around the greens – sole angle 4 to 7 degrees
- Golfer hits down steeply with most PW chips/pitches – sole angle 4 to 7 degrees
- Golfer unhinges wrists early too often on PW chips/pitches – sole angle 3 to 5 degrees and take some lessons or move the ball back in the stance.

4. Swingweight to be the same as, or up to +2 points higher than the 9-iron. (MOI same to +1% higher than numbered irons.)

## Sand Wedge

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The use of the Sand Wedge within the set makeup of wedges can be so varied that my friend Dave Pelz could easily write a whole "bible within his bible" just about the Sand Wedge! Seriously, no one has studied the function and use of the wedges more than Dave, not even me by a long shot! I recommend his Short Game Bible book to any clubmakers who want to take their short game shotmaking awareness to a higher level.

From a common sense fitting standpoint, the first decision the clubmaker and golfer have to make about the SW is whether it will be the primary tool or not for hitting the ball from green side sand traps. What? The SW might not to be the primary club for use from the sand? Hey, this is golf. Anything is fair game when it comes to our war on par!

There are golfers who like to use the SW for anything from full swing to short approach shots into the green. One reason for this centers around the greater loft of the SW compared to the lofts of the PW and Gap Wedge. Many golfers are more confident with their ability to hit the ball consistently solid and straight with a full swing than with a 3/4 or half swing. When the loft of the PW and Gap Wedge will hit the ball too far when swung close to full, the greater loft of the SW may handle the distance of the shot much better and still allow the golfer to make that full swing with which they have more confidence and control.

In the wedge fitting process it is important to ask the golfer, "Do you like to hit your SW with more of a full swing than a 3/4 or half swing?" If the golfer prefers to hit a full SW than a 3/4 Gap or PW for approach shots into the green, you need to start thinking about whether to select the sole design of the SW more with the needs of the shots from grass, or whether you can select the SW sole design to allow for both grass and sand use.

How do you know this? You'll know this by first discovering the skill of the golfer in hitting shots from green side sand traps. "How good are you in hitting basic green side sand shots? Do you have problems with leaving the ball in the sand or blading it well past the pin?" The better the skill of the golfer in hitting the ball consistently from green side sand traps, the more you can alter the selection of the sole design of the SW to help accent its use from the fairway and grass. The less skilled the golfer in shotmaking from the sand, the more you have to address the fitting requirements of the SW sole design (or think about a second SW expressly for use in sand, or a LW with a sole design chosen for use in the sand) to offer more game improvement for sand shots for the golfer. While not all sole

design considerations chosen expressly for using the SW in the sand will get in the way of the playability of the SW sole from the fairway or grass around the greens, some will.

Most notably, the wider the sole and the greater the bounce sole angle (i.e. the higher the leading edge is up off the ground), the less conducive the SW or any wedge becomes for hitting an array of shots from the fairway and shorter grass lies. Hence rule #1 in SW fitting has to be to determine if the SW is going to be the primary wedge to be used from the sand and if so, whether its sole design requirements for the golfer have to be wider and/or with more bounce sole angle to address sand play game improvement needs.

If the golfer really needs the leading edge to be higher off the ground, i.e. a combination of either a wider sole, more bounce or both, that wedge will not be the greatest to use for hitting shots from normal fairway lies. Why? Common sense. The more the leading edge of the wedge is up off the ground, which comes either from more bounce or a wider sole or both together, the more the trailing edge of the sole has to penetrate the ground at impact to make enough of a divot so the leading edge can get well under the ball at impact.

When the ball is sitting on short grass, the greater bounce/wider sole has to get down into the ground to allow solid contact with the ball. If the ground under the short grass is firm, this becomes somewhat like trying to cut 2-day old bread with a butter knife. Resistance, in other words. And in this case, resistance means a higher incidence of fat or even bladed shots from the fairway as the wide sole/heavy bounce sole design literally bounces off the ground into the ball. Then too, there is always the option for the golfer to keep the hands in front of the ball more at impact and hit firmly through the ball to hit such a wedge sole design more consistently from short grass/firm ground. As long as they can live with the lower trajectory a "hands-ahead" position at impact will bring, this is one way the golfer can use a wider sole/greater bounce sole angle design from short grass/firm ground.

If the golfer needs sand play help that is best addressed by a change in the sole angle and/or sole width, it truly is better to select the SW or Lob Wedge specifications so the club is chiefly used in the sand, secondarily used in tall grass and infrequently to be used from the fairway/short grass/firm turf. Hmmm. Lob Wedge instead of the Sand Wedge for the primary sand club? Absolutely.

The vast majority of green side sand traps will require the golfer to fly the ball from 10 to 30 yards from the sand. Typical LWs with 60 degrees of loft can do that for golfers of almost any swing speed, as long as the sole design specifications are conducive for the golfer's technique and the condition of the sand in the bunkers. If the golfer really likes to hit the SW from the fairway and for a lot of shots off the grass, choose the loft and sole design of the SW with these shotmaking situations in mind and then fit the LW to be the golfer's primary sand club.

That's what Payne Stewart did when I had the opportunity to design his clubs. Payne used a 60 degree LW with enough sole width and bounce to complement his sand technique to be his primary sand club. While he also hit this LW for flip and cut shots off the grass around the green to tight pin placements, his SW was really a club he preferred to use from 60 to 110 yards or for longer sand shots of 50 yards or more.

Payne's wedge fitting selection makes sense for a lot of golfers too. There is no rule that says the club you hit primarily from green side bunkers has to have the 55-56 degrees of loft with which most SW's are designed. Common sense says if the golfer can add a LW and stay within the 14-club rule, has room in the bag within the 14 club rule, why not choose the LW with green side use from sand primarily in mind? LWs can have 58-60+ degrees of loft, which is not too much for use from most green side traps. And most golf courses have turf into which it is not difficult to hit down and through the ball with a sole angle which is also conducive for use in the sand. Besides, most golfers can't spin the ball that well with the wedges so the increased loft of a LW will help stop the ball more quickly, and also allow the golfer to swing more full from the sand which can definitely make them more consistent in their sand play.

Swingweight/MOI of the club. Unlike the PW or the Gap Wedge, the typical SW is built to have a much higher swingweight/MOI. Most PWs which are a part of a standard made set of irons will have the same swingweight as the numbered irons. Most off the rack SW's are built with a swingweight between D4 – D8. The rationale behind this is for the SW to have more headweight to help get the clubhead through the resistance of the sand and get the ball out of the sand more consistently. If the golfer wishes to use the SW a lot for full shots and other approach shots from the fairway, will the SW's higher swingweight/MOI get in the way of hitting such fairway and approach shots? Maybe, but maybe not. That depends on the golfer's strength and swing athleticism.

If the golfer wants to use the SW almost exclusively for full swing to partial length swings to hit approach shots from the fairway and rough while using a LW from sand, it could make sense for the SW to have a swingweight/MOI which would be closer to the swingweight of the PW and Gap Wedge. On the other hand, if the SW is to be used for shots off grass and sand, its swingweight should be selected to be a notch higher than that of the PW and Gap Wedge. And if the SW is pretty much a sand-only wedge, its swingweight/MOI has to be chosen with the golfer's specific headweight needs for shots hit from sand in mind. We'll talk more about wedge swingweight/MOI a little later in the chapter.

## The Key Elements in Sand Wedge Fitting are. . .

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1. Loft to not be more than 6 degrees higher than the PW when there is no Gap Wedge in the set. SW loft to be no more than 6 degrees higher than the Gap Wedge if there is no LW in the set, 3-4 degrees higher than the Gap Wedge when there is a LW in the set.

2. Determine if the SW is for use primarily from the sand, both from sand and grass or chiefly for use from the fairway and rough. This will guide the selection of the sole design and the swingweight/MOI of the SW.

3. If the SW is to be used chiefly from the fairway and rough. . .

- Sole Angle to be 10 degrees or less, but...
  - Closer to 10 degrees if the fairway turf is normal to moist/lush, not more than 6 degrees if the fairway turf is firm to hard.
  - Closer to 10 degrees if the golfer uses the SW from a lot of rough to tall greenside grass lies, not more than 8 degrees if the golfer uses the SW chiefly from the fairway and full shots from the rough (depending on the turf firmness).
- Sole Width to be 20mm or less (based on center of the sole width), but...
  - Closer to 20mm wide if the fairway turf is normal to moist/lush, less than that if the fairway turf is firm to hard.
  - Swingweight to be +4 to +6 swingweight points higher than the golfer's correct swingweight for the numbered irons. (MOI +5% over numbered irons).

4. If the SW is to be used both from sand as well as from the fairway and rough and there is no LW in the set which could be used from sand. . .

- Sole Angle to be chosen with the golfer's primary sand skill in mind along with the sand consistency requirements.
  - Player leaves ball in sand – sole angle 12-14 degrees + improve technique with instruction.
  - Player takes too little sand – sole angle 8-10 degrees + improve technique with instruction.
  - Sand is firm, shallow, coarse – sole angle <10 degrees.

- Sand is light, fluffy, deep – sole angle >12 degrees for a good bunker player, >15 degrees for average to less skilled sand player.
- Sole Width to be chosen with the golfer's primary sand skill in mind along with the bunker and sand consistency requirements.
  - Player leaves ball in sand – sole width should not be more narrow than 20mm.
  - Player takes too little sand – sole width should be 15mm to 20mm wide.
  - Sand is firm, shallow, coarse – sole width should not be wider than 16mm.
  - Sand is light, fluffy, deep – sole width should not be more narrow than 18mm.
- Swingweight to be +3 to +5 swingweight points higher than the golfer's correct swingweight for the numbered irons. (MOI +2 to 3% over numbered irons).

5. If the SW is to be exclusively for use in the sand and there is no LW in the set which could be used from sand. . .

- Sole Angle to be chosen with the golfer's primary sand skill in mind along with the bunker and sand consistency requirements.
  - Player leaves ball in sand – sole angle >15 degrees + improve technique with instruction.
  - Player takes too little sand – sole width should be 13mm to 18mm wide.
  - Sand is firm, shallow, coarse – sole angle <8 degrees.
  - Sand is light, fluffy, deep – sole angle 10-12 degrees for a good bunker player, >15 degrees for average to less skilled sand player.
- Sole Width to be chosen with the golfer's primary sand skill in mind along with the bunker and sand consistency requirements.
  - Player leaves ball in sand – sole width should not be more narrow than 24mm.
  - Player takes too little sand – sole angle 8-12 degrees + improve technique with instruction.
  - Sand is firm, shallow, coarse – sole width should not be wider than 15mm.
  - Sand is light, fluffy, deep – sole width should not be more narrow than 20mm.
- Swingweight to be +4 to +6 swingweight points higher than the golfer's correct swingweight for the numbered irons. (MOI +3 to +4% over numbered irons).

## Lob Wedge

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I have a good friend in clubmaking from North Carolina named Jason Poston who dislikes the Lob Wedge so much he wishes to solicit members for a group he wants to call, "The He-Man Lob Wedge Haters Club!" Obviously the origin of Jason and his fellow members' fraternity comes from the result of seeing the finesse shot with the LW fall short of its intended target and all too often in a dreadful hazard which the LW was supposed to leapfrog!

Lob Wedges are an interesting species in golf equipment. Almost every golfer who has bought or used one has vastly more experience in hitting a SW than they do the higher lofted LW. As a result, many golfers have to suffer through more than a few shots which fall into the hazard the LW was intended to gently carry in the process of learning how much harder to hit the LW than the SW.

When fitting such a high loft wedge, it's a pretty good idea for the clubmaker to remind the golfer to spend plenty of time around the practice green to acquire the appropriate touch. The other big problem I have seen with golfers who add a LW to their set is trying to hit the LW with a full swing. Clubmakers would be well advised to also tell their golfers who are new owners of a LW to never hit a full swing shot with their new high loft wedge.

There is an interesting phenomenon that seems to happen when a golfer hits a 3/4 to full shot with a wedge with 60 degrees of loft or more that much less of a tendency to occur with a 55-56 degree SW.

As loft increases up to and over 60 degrees, there is much more of a chance the face will slide too far under the ball and result in very inconsistent distance results, with the most predominant being the ball flying too short and yes, into that dreaded hazard the LW shot was intended to gently carry.

Think about it. 60 degrees is a full 2/3's of the way from vertical to horizontal. You know what would happen if you tried to hit a shot with a 90 degree loft! With a wedge which is 2/3's of the way to that point, it's fairly common on 3/4 to full swing shots with a 60 degree wedge that the face can slide more under the ball, especially if the ball is sitting up a little in the grass or rough. The greater the loft, the lower the actual vertical height of the face will be. And the more that much of a tilted face slides under the ball, the shorter the shot will fly.

When you fit a golfer with a LW, be sure to tell them they need to spend a number of hours, not minutes, training their swing to learn how hard to hit the ball to obtain the desired distance. In addition, be sure to tell the golfer to avoid hitting full shots with a LW to prevent problems of the face sliding too far under the ball and frustrating the hell out of the golfer. With those two points uttered, it is now the golfer's responsibility to learn how to make the LW do the job for which it is intended. . . high, soft landing shots from 30-40 yards on in to pins tucked close to the edge of the green, or high, soft landing shots from steep faced bunkers to pins cut close to the edge of the green.

### **When does a golfer need to consider adding a LW to the bag?**

- Golfers who do not have the skill to open the face of the SW or Gap Wedge and hit consistently high cut shots are candidates for a high loft LW.
- Golfers who chronically hit the ball low with all their wedges.
- Golfers whose present or "favorite" SW has a loft of 54 degrees or less.
- Golfers who play on courses with small or undulating greens with tucked pin placements that require a high, soft landing approach shot which stops quickly are candidates for a LW.
- Golfers who play on courses with greens which are typically firm and don't yield much of a ball mark.
- Golfers who play on courses which have a variety of steep and deep sand traps which require a shot with a higher trajectory than they are able to hit consistently with their SW.
- Golfers who play on courses with longer and/or wiry grass around the greens which requires more clubhead speed to get the clubhead through the grass to make solid contact with the ball.

### **When does a golfer NOT need to consider adding a LW to the bag?**

- Golfers who are very skilled in consistently being able to control the unhinging of the wrist-cock to hit a variety of different shot heights with their SW or Gap Wedge.
- Golfers who play on courses with grass that is lush enough to never cause the bounce sole angle of their SW to "bounce" off the ground and blade the ball.
- Golfers who can hit all of the higher flight shots their golf course may require with a SW that has a loft of 55-58 degrees.
- Golfers who play on courses with medium to large greens on which there are no small tucked pin areas which require a high, soft landing shot.
- Golfers who play on courses which are designed with the greens and the bunkers at close to the same height to each other.

Lob Wedges are typically designed and offered in lofts from 58 to 62 degrees, with 60 degrees being the loft most frequently seen. Lob Wedges are typically created with 2-4 degrees less bounce sole angle than a SW so they can be used more efficiently from fairway and turf conditions. They are also usually designed to be built to a swingweight/MOI that is a little higher than the PW and Gap Wedge, but lower than the SW.

I'm a big fan of fitting the LW to the golfer so it can be used equally off fairway and rough as well as in the sand when a much higher shot is required. Fortunately the typical specs of most LWs at the time of this writing allows them to be fit that way. The only consideration clubmakers need to make in advising a LW which can function equally well from sand and turf is whether that reduced bounce sole angle provides enough bounce for the golfer's sand play ability. For many golfers a bounce sole angle of 8-10 degrees, which is usual for many LWs today, is just not enough to ensure consistency in hitting the LW successfully from the sand.

If the golfer has a more steep, downward angle of attack on the sand shot, less bounce will definitely make it more difficult to prevent leaving the ball in the sand or falling well short of the desired carry distance. LWs with 8-10 degrees of bounce are most successfully used from sand by players who have much less of a downward angle of attack into the sand. One way to identify this difference in the golfer is to view a slow-motion video of their hand position relative to the ball at impact in the sand. If the golfer's hands at impact with a normal sand shot are straight up or only very slightly in front of the ball, they are a candidate for using a LW with its lower bounce sole angle from the sand. If the golfer's hands are noticeably in front of the ball so the shaft looks as it is leaning toward the target, they need more bounce on a LW which would be asked to do double duty between the grass and the sand.

The only problem with choosing a LW with more bounce (12-15 degrees) is that the more bounce sole angle, the more chance of running into a shot from the fairway or thin grass that simply can't be hit that consistently well with that much bounce, even if the golfer has a steeper angle of attack into all shots hit with their wedges. The best advice I can give you in this matter is the people who are poor sand players are better off working with clubmakers to find ONE wedge they can use from the sand as successfully as possible for their ability, and not to mess with trying to fit another wedge with the idea of serving double duty between the sand and turf.

Only if the golfer is reasonably proficient in consistently getting the ball out of the sand and onto the green with a SW should they consider experimenting with finding a LW which will serve double duty around the greens. I'm not talking about players who are good enough to get the ball within 20 feet 90% of the time. I'm talking about the minimum playing skill requirement is to say the golfer is reasonably consistent in the amount of sand they take in a basic sand shot so the ball lands on the green 90+% of the time, although the distance from the hole may vary from 50 feet to inches and most typically be in the 10 to 30 feet range.

When fitting golfers for a LW it is always wise to ask them how they would like to use the LW. "Do you plan to use the LW as a wedge to hit only high, soft shots from grass or do you envision the LW being a second SW? Which use is more important in your game, and are you a reasonably consistent sand player with your present SW?" If you get reasonably clear answers to these questions, you then have a stronger guideline to follow when making decisions about the loft but particularly for the sole angle/sole width/sole design characteristics of the LW.

One other point you may run into in your LW fitting. Rare though they may be, there are golfers who may prefer to have the SW and LW both able to be used for sand shots, but to have the same loft on both wedges. Huh?? When this happens, the reason is usually because the golfer is very proficient in controlling their release to be able to hit shots high enough with 56-58 degrees of loft, but wants the LW to have a bounce sole angle that is less than that of the SW so he can use the LW for high shots from thin, firm turf for which the use of the higher bounce SW would be dangerous.

## **The Key Elements in Lob Wedge Fitting are. . .**

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1. Determine the primary use the golfer has in mind for the LW. Is the LW to be used only from grass lies for high, soft landing shots or additionally for use as a second SW when a higher trajectory is required?

2. Loft should be at least 3-4 degrees higher than the loft of the SW so the LW can offer a distinctly higher trajectory and thus verify its value as an additional wedge. 1 to 2 degrees more is OK for skilled wedge players.

3. If the LW is to be used chiefly from the fairway and rough. . .

- Sole Angle to be 10 degrees or less.
- Closer to 10 degrees if the fairway turf is normal to moist/lush, not more than 6 degrees if the fairway turf is firm to hard.
- Closer to 10 degrees if the golfer uses the LW from a lot of rough to tall greenside grass lies, not more than 8 degrees if the golfer uses the LW a lot from the short grass of the fairway (depending on the turf firmness).
- Sole Width to be 20mm or less (based on center of the sole width).
  - Closer to 20mm wide if the fairway turf is normal to moist/lush, less than that if the fairway turf is firm to hard.

4. Swingweight to be +2 to +3 swingweight points higher than the golfer's correct swingweight for the numbered irons. (MOI +2% over numbered irons).

5. If the LW is to be used both from sand as well as from the fairway and rough:

- Sole Angle to be chosen with the golfer's primary sand skill in mind along with the bunker and sand consistency requirements.
  - Player leaves ball in sand – sole angle 12-14 degrees plus improve technique with instruction.
  - Player takes too little sand – sole angle 8-10 degrees plus improve technique with instruction.
  - Sand is firm, shallow, coarse – sole angle 6-8 degrees.
  - Sand is light, fluffy, deep – sole angle 8-10 degrees for a good bunker player, 10-12 degrees for average to less skilled sand player.
- Sole Width to be chosen with the golfer's primary sand skill in mind along with the bunker and sand consistency requirements.
  - Player leaves ball in sand – sole width should not be narrower than 20mm.
  - Player takes too little sand – sole width should be 15mm to 20mm wide.
  - Sand if firm, shallow, coarse – sole width should not be wider than 16mm.
  - Sand is light, fluffy, deep – sole width should not be less than 18mm wide.

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## The Most Common Sense Principles of Fitting

1. The longer the length, the lower the loft, the heavier the total weight and the stiffer the shaft, the harder the club will be to hit for all golfers.

2. The higher the golfer's handicap and/or the less skilled the golfer's ball striking ability, the more #1 will apply to the fitting.

3. The slower the swing speed of the golfer, the higher the loft of the driver has to be to maximize their potential for distance into real distance. However, to know what loft for what swing speed, you

really need to factor the golfer's angle of attack into the decision of what loft for what swing speed to maximize distance.

4. Golfers with slower swing speeds can reduce loft on the 5, 7, 9 woods and decrease loft on the 7, 8, 9, PW to gain more distance. At these lofts, even slower swing speeds can generate a high enough launch angle to be able to turn the lower lofts into longer shots.

5. Make it a practice to build more sets of irons without the #3 and 4 irons than with them.

6. Never use the flex letter code or flex number code as a method of predicting the stiffness of the shaft. Use swing speed ratings or bend profile graphs to start your shaft fitting process for the golfer.

7. A change in the face angle or the offset of the woods will affect a change in accuracy far more than moving weight around the perimeter of the head.

8. When in doubt, it is better to err on the side of shorter length, lighter total weight, higher swingweight, less stiffness in the shaft, and a larger grip size.

9. Learn to recognize the difference between a smooth and forceful back to downswing transition, a smooth to fast swing tempo and an early to late release of the wrist-cock on the downswing to become a better shaft fitter.

10. It is ok to advise the golfer on a poor ball position and poor alignment of the shoulders, hips and feet to the target. Leave the other swing recommendations to a competent swing teacher.

11. The stronger the golfer, the more forceful their back to downswing transition, the faster their swing tempo, the higher the swingweight or MOI of the clubs should be.

12. The combination of very light total weight plus higher than average swingweight (>D1 men, >C5 Women) is good for the swing timing and distance of most golfers.

13. Vertical center of gravity height in the clubhead is not as important for increasing the height of the shots as will be the proper length, shaft flexibility, swingweight/MOI, and loft.

14. It is far easier to increase the height of the golfer's shots than to decrease it because a high trajectory is almost always the result of the golfer flexing their wrists forward before impact.

15. Fitting for a desirable FEEL is just as important as fitting for improved DISTANCE, ACCURACY, CONSISTENCY or TRAJECTORY.

16. Fitting for the best Set Makeup can effect as much or more game improvement for the golfer as fitting for any other specification in the clubs.

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## TWGT Design Updates

While business mavens would say that "it's a good problem to have", TWGT utterly dislikes when the demand is greater than our ability to anticipate the supply and causes us to be out of stock on any of our original clubmaking designs. We're working very hard with our production factories to be able to catch up with the demand for the 730CL Slow Swing Speed sets and the 949MC Drivers. Slowly but surely we are gaining on this by having increased the production of both of these models. In short,

that means we have been able to reduce the time that both of these hot models are on back order with the plan in place to try our best to establish an ongoing stock of the 730CL heads plus shafts and the 949MC drivers by the end of May. In the meantime, the best advice we can give to clubmakers who have done well with fitting both of these models to your golfers is to not sit back and wait until we get in stock, but to place your orders soon so we have a much better idea of the real demand. Thank you for your patience.

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