CLUBMATE GOLF AUSTRALIA
GOLF CLUB COMPONENTS

eTECHREPORT

March-April 2006 eTECHreport - Welcome!

- **Three Keys to Common Sense Clubfitting**

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- **PCS Expo Review**

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- **Updates on Popular TWGT Designs**

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- **Summing Up the Matter of Shaft Bending**

  Over the past three years my engineering staff and I have spent a lot of time digging deeper into the subject of what the shaft does and how it does it during the swing. We've done this through computer analysis and experimentation based on properly applied principles of engineering and physics, as well as with hit testing and launch monitor analysis with different golfers.[continues below]

Three Keys to Common Sense Clubfitting

Note: With the release of Tom Wishon's new book, "Common Sense Clubfitting: The Wishon Method" coming very soon, in each issue of the E-TECHrport TWGT will be offering clubmakers selected excerpts from the book as a way for you to see and read some of the tremendous depth of information contained in the book.

Golfer descriptions of their own shotmaking generally fall into one of two categories. It's either "Well, that's not too bad" or "Aww Rats!" While from a technical standpoint those descriptions leave something to be desired, if you are doing Common Sense Clubfitting they are as good a place to start as any.

You see, it's YOUR job to translate the golfer's (usually inarticulate) desires into very real, very tangible, very functional game-improvement golf clubs. Very often "Aww Rats!" is all you have to start with. Okay, fair enough. Then, let's start there.

Key Number *ONE:* Work Backwards

The first key to Common Sense Clubfitting is to work BACKWARDS from the desired result. That being the case, teasing out that desired result from the golfer becomes your first step.

Over the course of many rounds or sessions on the driving range, all golfers, even those with a short tenure in the game, are capable of summing up the ineptitudes which if improved will result in the most improvement - IF you lead them in the right direction. You need information that will help you to diagnose and prescribe. You need information that will boil down their game improvement desires to a relatively narrow group of factors, regardless of whether they are talking about the driver, the fairway woods, the long, mid or short irons, the wedges or even the putter.

Fortunately, that is do-able. No matter how strange the golfer's swing or shotmaking tendencies, all possible game improvement desires can be reduced to five factors. The trick is to ask questions, listen hard and distill what you hear. Sooner or later, one or more of the following will emerge.

- I want more DISTANCE.
- I want to change the TRAJECTORY of my shots.
- I want to hit shots with more CONSISTENCY.
- I want the shots I hit to FEEL more solid, and the club to FEEL more comfortable when I swing.

Once one or more of these factors have been identified, Common Sense Clubmaking truly begins.

Clubmakers who are familiar with my earlier practical fitting book may recognize that I have added CONSISTENCY and deleted BACKSPIN to the game improvement factors. I have come to believe that BACKSPIN is a result of specific swing movements that some golfers have and most never will. In other words, increasing the amount of backspin is not so much affected by a change in the specifications of the clubs as it is by distinct swing improvements.

I have also come to believe that CONSISTENCY is a separate and distinct game improvement factor that at times can be independent of any of the others. Improved CONSISTENCY may take the form of the golfer wanting to hit the ball on-center a higher percentage of the time, or the golfer wants to lesson the severity of their miss-hits. Equally, CONSISTENCY can be an adjunct of the golfer's desire for more distance and/or better accuracy as well. To this end you will need to use "common sense" to address a demand for more CONSISTENCY within the golfer's goal of more DISTANCE and/or better ACCURACY. As a result, Common Sense Clubfitting will address shot CONSISTENCY as a separate improvement factor and I will show you how that factor can be addressed through proper fitting.

Key Number *TWO:* No More Orphan Clubs

Ultimately, all golfers want to score lower; after all, that IS the objective of the game, is it not? It should therefore come as no surprise that when golfers are looking for a new set of golf clubs, they are hoping the result will enable them to play better. At times it is easy to lose track of that simple, bottom-line, COMMON SENSE fact.

All too often clubfitting has limited itself to searching for the best fitting specifications for the woods and irons. In the process, we have made orphan clubs out of the wedges and putter, even though we all know they are perhaps the most important element to better scoring.

The second key to Common Sense Clubfitting is to improve shot-making with ALL clubs, not just the woods and irons.

Here's the trap we've gotten ourselves into:

If custom fitting allows golfers to hit the ball farther and more accurately with the driver, they will have a shorter distance to the green. If golfers have a shorter distance to the green, they should be able to hit their approach shots on or near the green a higher percentage of the time. If golfers are on or near the green a higher percentage of the time, they will not only have more chances to steal a birdie, but their ability to make par will be far greater. If their chances for birdie or par are greater, their scores will drop. Therefore, all we have to do to enhance a golfers level of play is to pay attention to their woods and irons.

Now, what's wrong with that picture?

You got it! It completely ignores the vital role of wedges and putters. It's as though we're saying: "Once we get you close to the green, Jack, you're on your own. In Common Sense Clubfitting, that stops! Each of the five game improvement factors will be applied to the wedges and putter as well as the woods and irons.

Key Number *THREE:* Focus on What Matters

The next key, then, is this: Common Sense Clubfitting focuses ONLY on those club specifications that have the best chance of resulting in a visible impact on the golfer's desired outcome. Here's how we'll do that.

Every golf club can be separated into specifications surrounding the clubhead, shaft and grip, along with specifications for the assembled club. As a result of my recent work in design, I have also been able to identify the factors that contribute to the total performance of the golf club. The sum of all these specifications are what makes one golf club perform differently than another and can be identified as follows:

Clubhead Specifications

- Loft Angle
- Lie Angle
- Face Angle (woods, hybrids)
- Horizontal Bulge (woods, hybrids)
- Face Peogression/Hosel Offset
- Vertical Roll (woods, hybrids and the hosel bore centerline axis)
- Sole Angle (irons and wedges)
- Sole Width/Radius
- Center of Gravity Location
- Moment of Inertia (i.e: about the CG Axis)
- Face Design (woods, irons)

Shaft Specifications

- Weight
- Primary Flex
- Bend Profile
- Torque
- Weight Distribution (aka Shaft Balance Point)

Grip Specifications

- Style/Type
- Size
- Weight

Assembled Golf Club(s) Specifications

- Length
- Total Weight
- Swingweight/Moment of Inertia
- Set Make-Up

Properly combining these individual specifications into a finished golf club is the essence of clubfitting. It is the secret to what makes one golf club (and one clubmaker) perform better for a golfer than another. Your goal is to come up with those specifications which perfectly match the golfer's swing mechanics and athletic ability, and which will allow the golfer to hit the ball and score to the best of his or her ability.

Where the process of clubfitting gets confusing is when clubmakers get caught up in trying to look at each of the golf club specifications individually without first identifying the game improvement factor(s) the golfer needs to develop. Common Sense Clubfitting involves applying a very simple approach. Instead of going down the list of all of the specifications one by one and trying to figure out which is best for the golfer, you first identify the game improvement factors that will bring about the most improvement for the golfer, and then address only those specifications that are known to have a real, visible, effect on the game improvement factors deemed most important for each golfer.

The only thing that can make this approach confusing or difficult is that golfers are very likely to indicate their desire for maximum improvement in every one of the five game improvement factors! OK, that's only natural. Down deep we all want to hit each shot perfectly and break par every time we play! Common Sense Clubfitting will require that you and the golfer both realize that improvement in certain game improvement factors may very well be limited by the golfer's swing/athletic ability/strength, or that some changes which bring about improvement in one area may counteract possible improvement in another area. But not always.

For example, swing speed is the single most limiting factor for increasing distance. If the golfer's maximum swing speed with the driver is 80mph, you're not going to be able to fit them into a new driver that will allow them to hit the driver 250 yards. The physics of impact and ball flight just won't add up to that. But on the other hand, if the golfer is hitting the ball off-center and using the wrong length and loft on his current driver, there is no question you will be able to fit him into a new driver that will increase his distance. When you do this, will that now cause his accuracy to decrease? After all, we know that the farther you hit the ball, the margin of error in accuracy is decreased.

If this same golfer is also a chronic slicer of the ball and has been using a driver head with a square face angle, you will be able to improve distance and accuracy at the same time. But if the golfer has currently been hitting the ball with enough of a fade that typically lands him on the edge of the fairway, you might want to anticipate the effect of the increase in distance on his "on the edge" accuracy and recommend changing the face angle just 1 degree more closed than his current driver so that when the distance increase kicks in, it won't take that same fade from the edge of the fairway into the rough.

That's a little example of how you have to think about multiple fitting factors in a cause and effect manner as well as an example of knowing when you can and cannot achieve success in two of the game improvement factors at the same time.

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PCS Expo Review

TWGT's Mike Duggan, Matt Mohi and Tom Wishon attended the 2006 PCS Expo and trade show over the weekend of March 3-5 in Louisville, Kentucky. In addition to displaying all of the TWGT designs and products in the company exhibit and answering tons of technical questions from the PCS members, Tom Wishon delivered a seminar on the new TWGT Shaft Bend Profile software.

Receiving a lot of positive comments from the clubmakers were the new 949MC drivers, the Series 9-Rapid Taper shafts, and the yet to come 560MC forged irons. Most of the clubmakers told our staff that they had done very well in their 2005 fitting with models like the 321Li hybrids and matching GI-335 shafts, the 515GRT fairways, 915CFE and HL drivers and fairway woods. Among the TWGT shafts, the PCS members were very pleased with the fitting results they are having with the InterFlexx graphite shafts and Series 5 Steel shafts.

In addition, many of the clubmakers congratulated TWGT on the top ranking position of the 515GRT fairway woods in Golf Digest magazine's 2006 Hot List Awards and being the first company from the custom clubmaking side of the golf industry to have a head design achieve that recognition.

"During a break on the morning of the third day of the show, I asked Mike and Matt how many clubmakers they had spoken with so far who had not seen an increase in their fitting business as a result of Search," Tom commented upon his return from Louisville. "We believe that at least 3/4's of the clubmakers at the show had between 1 and 12 fittings in 2005 that were driven exclusively by Search to their shops. That's tremendous for us to hear because we know if we keep pushing for publicity for Search and 12 Myths, more golfers will read the message about custom fitting and respond by booking a fitting with their local clubmaker. I am really pleased that TWGT is actually creating the very beginning of a demand for clubmakers' services and elevating the image of real custom fitting."

Another highlight of the PCS Expo was the award of 2006 PCS Clubmaker of the Year to Keith Chatham from Precision Fit Golf in Kerrville, Texas. Keith uses TWGT designs and technology in the majority of his custom fitting services and is a long time friend of company owner Tom Wishon. Keith received his award from the 2005 PCS COY, Rene Cleaver from ClubMasters in Cheltenham, England, who is also a strong supporter of TWGT designs in her fitting. Congratulations from all of us at TWGT for your well deserved recognition, Keith!

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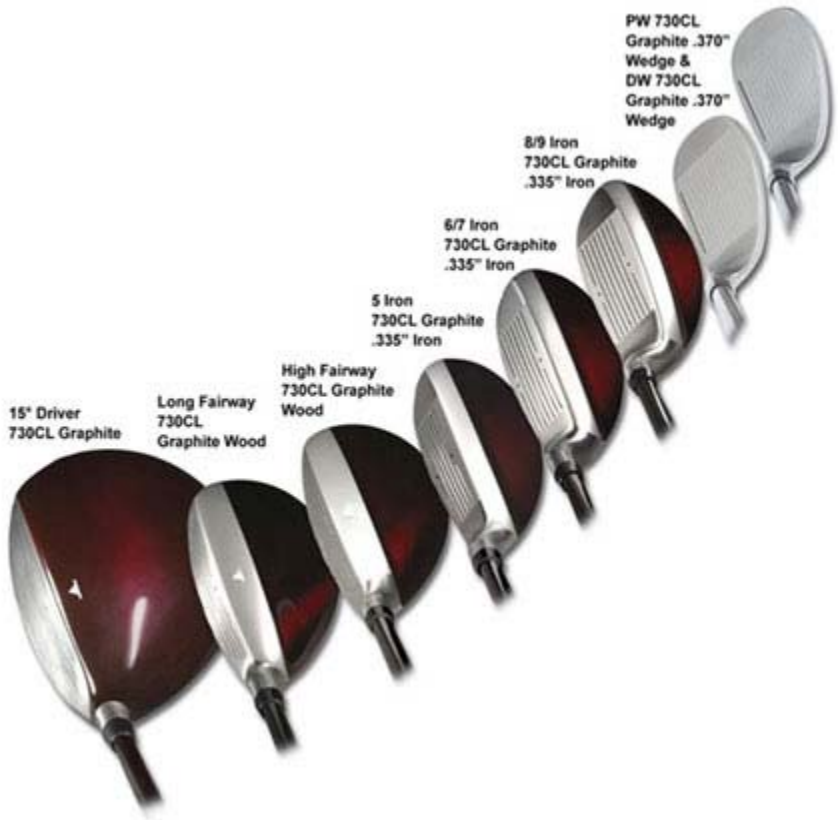
Updates from Tom on Popular TWGT Designs

First of all let me say that all of us at TWGT appreciate all the clubmakers' patience with us in working as hard as we can to meet the order demands for our products. I have to admit that we're very pleased with the volume of early season orders for so many of our new clubhead and shaft designs. It caught us a little off guard that the requests have been coming so early in the season and we are pushing as hard as we can to increase production as soon as possible to maintain a proper stocking position for these models.



We're definitely starting to catch up and we do "see the light in the production tunnel" for an in-stock availability of the new 730CL slow swing speed set. The early demand for the 730CL sets came so fast that it wiped out our first two production runs for the heads and shafts almost before we could respond. Depending on how demand continues as the season ramps up, we should be in a decent inventory position by the middle of April. From now until then we will have some slight delays in delivering orders for our new senior mens and ladies set.

The incredible early rush for the radical looking and amazing playing Series 9-Rapid Taper wood shafts is now under control and we are in a good stocking position for these designs. We do expect that we will be in and out of stock in the new 949MC Drivers. Again, the volume of the early demand really surprised us and just like the 730CL's, we are moving as fast as we can to increase their production. I do think that we will be in good shape for your 949MC orders by mid April. And by the way, the new 9 degree/460cc version of the 949MC are expected to be ready to ship to you by April 7.

Finally I get around to updating you on the 785HF hot face hybrid irons and the 560MC forged irons. We're getting there but there is still time yet to go to complete these models which are both very different and I might add, very difficult to produce correctly. We are onschedule for the 785HF's to be ready to ship by mid-April.

Unfortunately I had a little bit of an additional delay on the completion of the 560MC's, and I sincerely apologize to those of you who are very anxious to receive your orders for this new forged iron addition to the TWGT line. Each 560MC back cavity is fully CNC machined, a procedure which requires a very precisely written program to "tell" the CNC machining center where, how much, at what angle and radius to machine away the carbon steel from the back of the raw forging to create the finished cavity. What makes this more difficult is that I designed the 560MC set so that each of the heads has a slightly different cavity design to achieve what I wanted in the sole, lower backpad and CG design of each head. So that means there are 9 totally different machining pathway programs to create for the 9 heads in the #3-AW 560MC set.

We expect to receive a partial shipment of the opening production run by the end of the first third of April, but unfortunately that will not fill the volume of 560MC are orders we have presently. We will be fully in stock in early May. Sorry about that, I certainly wish it was otherwise, but this design is not being made from an open model nor with an easy back cavity machining path. I'll keep doing my best but I have to beg for a little more of your patience with this model. If it's any consolation when we completed the last adjustments of the raw forging tooling in January, I have to say that the profile shapes of each and every head in the set are absolutely sterling. In other words, you're not as anxious as I am to complete this design properly.

I want to say that I really appreciate your support so far in 2006! It really looks like we've reached a point in our work that we are seeing a real response to our designs, our service and our marketing programs which are now starting to result in measurable awareness into the consumer market. The clubmakers in this side of the golf equipment industry who take their work seriously and make a commitment to offer custom fitting to the best of their knowledge and experience have suffered from a lack of respect in the overall golf industry for way too long. Now that we know we have a tool in the form of the Search and 12 Myths books which will drive golfers to be custom fit, I can assure you that every one of us at TWGT are busting our tails to keep pushing that message to consumer golfers as much as possible.

In my 30-some years in this side of the golf business I have never been close to being this excited and optimistic that we really can pull this off and make a change in the way a significant number of golfers buy golf clubs. There's nothing better than seeing some of your work is beginning to make a difference. In other words, we all at TWGT are "really into this" and will keep pushing this message of custom fitting as hard as we can. The other night when the Academy Awards were on TV, something that Reece Witherspoon said in her Best Actress response really hit me as being exactly what our

efforts in our work for custom clubmaking is all about. "We're just trying to do something that matters." Tom Wishon

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Summing Up The Matter of Shaft Bending- What Does The Shaft Really Do in the Swing?

Note: The following article is taken from Chapter 5 in the new book, Common Sense Clubfitting: The Wishon Method. Common Sense Fitting is at the printing company now and is expected to be ready to ship to clubmakers in early April. Finally!

Over the past three years my engineering staff and I have spent a lot of time digging deeper into the subject of what the shaft does and how it does it during the swing. We've done this through computer analysis and experimentation based on properly applied principles of engineering and physics, as well as with hit testing and launch monitor analysis with different golfers. Even as I write this section of the book, our work is not fully complete in terms of where we hope to eventually be in our goal to fully predict shaft performance for any golfer. However, we do believe we are at a point where we understand the performance of the shaft in the swing more clearly than it has ever been presented before, particularly from the standpoint of being able to offer far better information to guide the process of fitting the shaft more accurately to each individual golfer.

Let me start by first telling you what the shaft does NOT do in the swing. Many, in fact most, clubmakers and serious golfers think that the shaft "loads" up energy from its initial bending at the start of the downswing and then "unloads" in a buggy whip/spring action to slingshot the ball down the fairway. Most think that the shaft does this in a spring back then spring forward manner and that the right shaft really does increase the velocity of the clubhead when it hits the ball.

I'm here to tell you this is not how the shaft works. But don't feel bad, I used to think the same thing until we really started to look into the subject. I mean heck, when you make a mind's eye picture of the bending of the shaft in the swing, it all seems logical that the shaft should work like a slingshot or a catapult. Bend it back and let it spring forward to launch the ball. Like I said, it used to make sense to me too.

OK, now you're sitting there reading this, thinking that I've been telling you how much more confidence you will have in your shaft fitting, and wham, I may have just hammered one of your beliefs in shaft fitting that you thought you were sure about. Don't worry, I had a little difficulty myself in accepting the truth of how the shaft bends during the swing until I started to open my mind to the real explanation of how the golf swing makes this happen.

The reason you need to know exactly how the shaft bends under the influence of the different movements of the swing is because this is the entire foundation of shaft performance.

To know exactly how the shaft bends under the influence of the different actions in the swing is to be able to know exactly whether and how much the shaft will contribute to the outcome of the shot for any golfer. Without this awareness of what causes the shaft to bend as it truly does, shaft fitting can never be more than an exercise in trial and error. So here goes. (The rest of Chapter 5, along with the entire book, Common Sense Clubfitting, will be available before you receive the next E-Tech Report.)

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