



CLUBMATE **GOLF** AUSTRALIA
GOLF CLUB COMPONENTS

eTECHREPORT

July-August 2005 eTECHreport - Welcome!

- **Launch for Less – The Sequel** by Matt Mohi

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- **The Facts of Life About the 715CLC Driver Design, Straight from the Designer!**

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- **NEW High Launch Drivers from TWGT in Larger Head Sizes**

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- **TWGT Designs Setting the Standard**

If you follow what we've done as a company, then you are aware that clubhead and shaft design innovation is a significant focus. NOT ALL CLUBHEAD AND SHAFT DESIGNS ARE THE SAME. There are distinct performance benefits to many of our models. [continues below]

- **The Message of "Search" to Continue Onward**

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- **Series 7-FL-45 and Series 7-SUL-55 Shafts Deliver Lighter Total Weight for Higher Swing Speed**

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Launch for Less – The Sequel

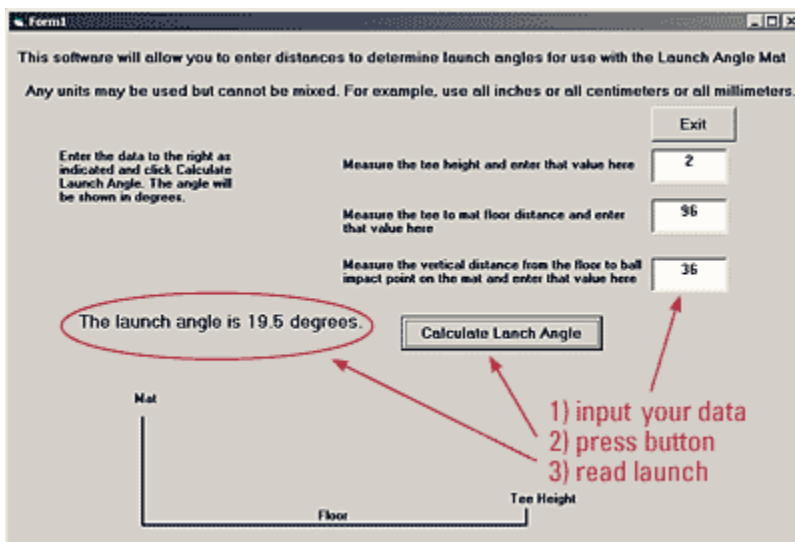
By Matt Mohi

So you want to do high end fitting, but can't afford a launch monitor? TWGT has the solution for you! Many clubmakers are already using the Launch Angle Mat with the Trajectory Profiling software to make the fitting process more accurate. We all know the importance of fitting clubs that generate the proper launch angle to get the best performance.

This year there's been a number of upgrades in the Launch Angle Mat and Trajectory Software that will give clubmakers more flexibility in using the tools for fitting.

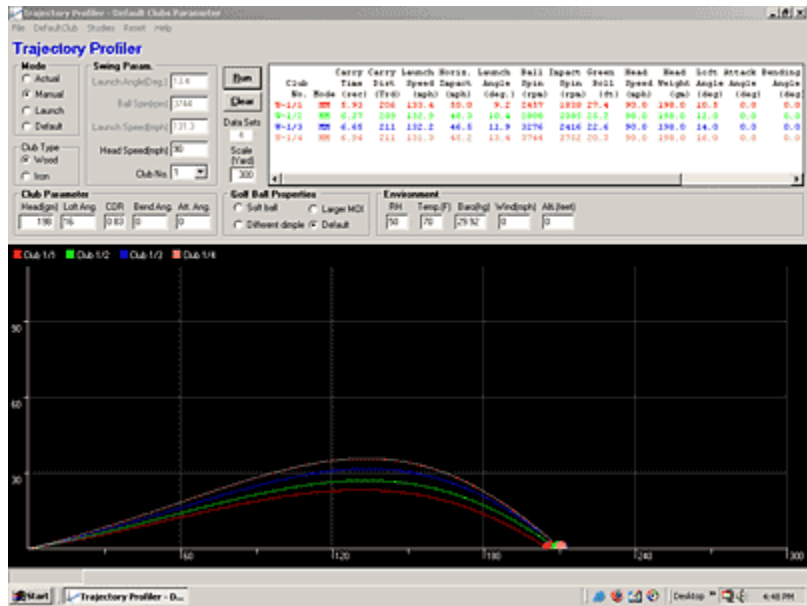
The Launch Angle Mat has a New Piece of Software

The Launch Angle Mat itself has not changed, but we've added a program that will allow you to input the tee height, the distance from the mat, and the height of the impact of the ball on the mat. This allows the mat to be set up at almost any distance from the tee that is convenient for you. This will give you greater flexibility in fitting for different clubs, as well as for golfers with very high or low launch angles. [To download the file, click here](#) (5KB zipped Windows .exe). Screenshot from this free software application seen here >



Trajectory Profiler Software – Supercharged!!!

This year the Trajectory Software has been upgraded to a different look and feel as well as additional capabilities. The "Help" section has been greatly expanded to give more options in the fitting process and includes tutorials that demonstrate the additional features as well as how to use the software to both fit and determine the proper set make up. We've added shaft bend to the program and we are working on a technology to be better able to determine that for golfers. Also, it is much easier to print from the program now. Screenshot shown here.



Measuring Head Speed

We've mentioned before that we really like the radar head speed-measuring device from Sport Sensors™. Their latest model also has the ability to measure swing duration, which will help in determining tempo for proper shaft fitting. The unit we like has red on the casing, but if you don't care about tempo, then you can buy the model that has the blue. Here is a link to more information about the radar unit:

www.swingspeedradar.com

Putting it all Together

The Trajectory Profiler is a very versatile piece of software that will allow some different approaches to fitting depending on the information that can be gathered. Now that we've added the ability to position the mat at different distances, it is simply a matter of putting the numbers in the appropriate boxes and letting the program run through the different studies to optimize launch conditions. If you don't presently have the ability to fit for launch angle, this is the most cost effective and functional way to do it.

We wrote a more detailed step-by-step approach in the [April 2004 eTECHreport](#), but we wanted to take this opportunity to mention some of the improvements that have been made for 2005 to make this system more dynamic.

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The Facts of Life About the 715CLC Driver Design, Straight from the Designer!

by Tom Wishon

The more I work with the 715CLC driver, the more fascinated I become with it. This applies not only to the 715's technical and performance aspects, but also to a fascinating point about the model that I have never encountered in my 20+ years as a clubhead designer.

What do I mean? The 715 has really opened a door about clubhead design that I have never been through before. It is the only clubhead I have ever designed that not only can perform better than any other driver in the game for a golfer (our other model's excepted of course), but can also perform worse for the same golfer!

With the ability to move as much as 40 grams of weight a full 360 degrees around the inside of the head, you can put the 715's weight arm into positions that will change the Center of Gravity and the Moment of Inertia of the head so drastically that the head will perform perfectly in one position, but horribly when the weight arm is in a position that's in total opposition to how the same golfer swings.

As a designer with hundreds of different driver designs under my belt, this design aspect of the 715CLC driver is utterly fascinating. Think about it. All of the other weight adjustment drivers enable you to only move 10 to 24 grams of weight from heel to toe or back to front on the head. That small amount of weight simply cannot move the CG or change the MOI of the head to a point that such a driver could ever provide a remarkable increase or decrease in performance for a golfer.

If you look at our website (<http://www.clubmate-golf.com.au/E-comModule/twgt-woods.php3#715>), you will see a graphic depiction of the basic weight arm positions for the 715. I want to specifically point out that there are a couple of weight arm positions that we annotated with an "X", meaning in essence that we do not recommend installing the weight arm so the weight points directly at the toe or the heel of the head.

During the testing phase in the development of the 715, we did discover that placing the 30g, 35g or 40g weight arm so the mass of the weight was directly pointed at the toe or heel would move the CG so much from toe to heel that a dead-center hit on the face would deliver an unsolid feel and decrease ball speed off the center of the face. For fade or draw correction we advise clubmakers to only place the weight arm so the weight is pointed at an angle toward the toe (for draw reduction or fade enhancement) or at an angle toward the heel (for fade reduction or draw enhancement).

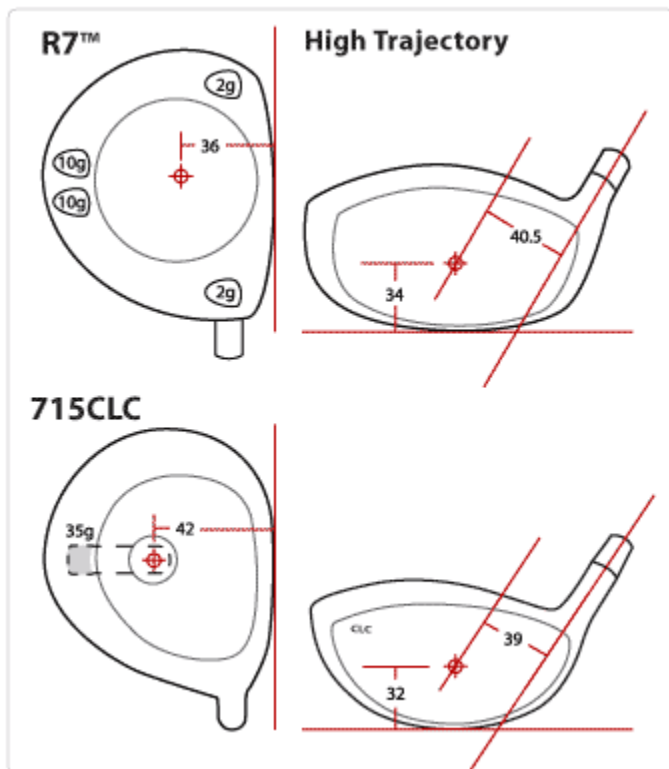
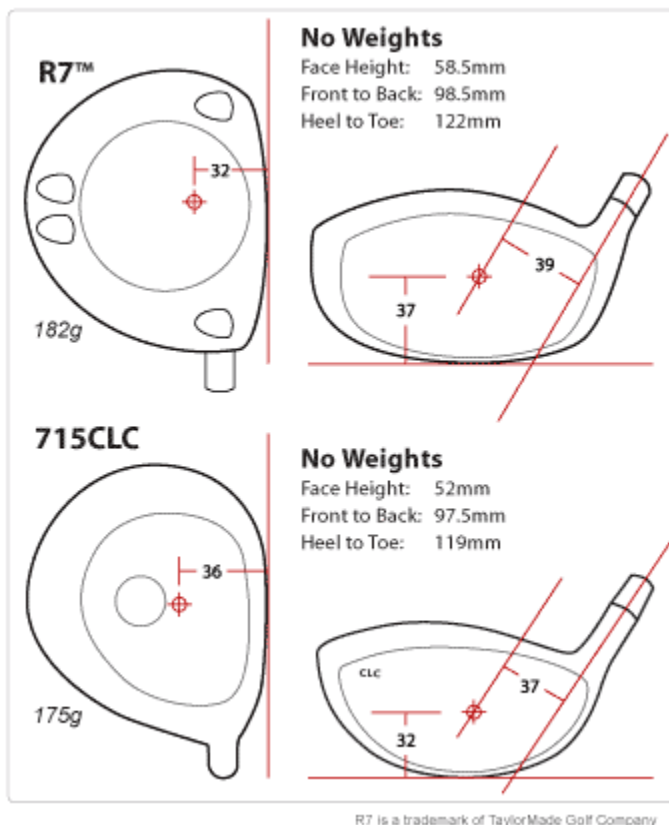


I want to offer some proof of the dramatic changes that the 715 can create in clubhead performance dynamics so clubmakers can better understand how remarkably the performance of the 715 can be altered for golfers. The best way to actually show you the greater change in the CG that can be created in the 715 is by comparing it to the CG changes capable with the TaylorMade R7™ driver.

1. Measurements of the heads with no weights added or installed

Much of a clubhead's CG position is determined by the initial size of the head and then modified by the wall thickness created by the designer at any point around the head. In general, the taller the face height, the higher the vertical CG position. As well, the deeper the size of the head from face to back, the farther back the CG will be. And the longer the head shape from heel to toe, the farther the CG will be from the centerline of the hosel bore.

In the comparison of the R7™ and the 715CLC, these points can be seen by first looking at the height, length and breadth of the two driver heads and then comparing the three CG axis locations which define the position of the CG inside the head. For example, the reason the R7 has a higher CG than the 715CLC with no weights added to either head is simply because the R7 is designed with a 58mm face height while the 715CLC is created with a 52mm face height. Likewise the reason the R7 has its CG farther from the hosel bore centerline is because the R7 is longer from heel to toe. However, despite the fact the R7 is slightly broader than the 715, the reason that the 715 has a rear CG location that is farther back in the head than the R7 is because of the weight of the chamber in the 715 that receives the weight arm.

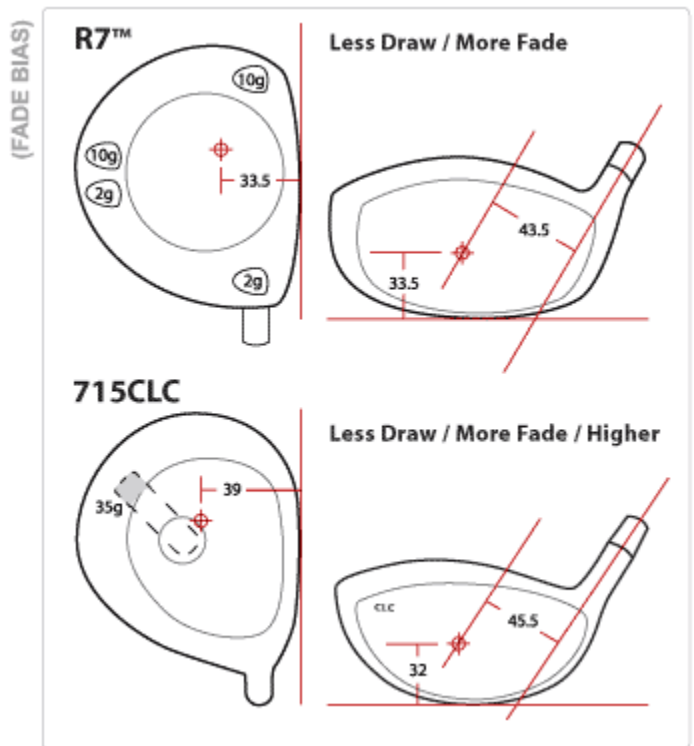
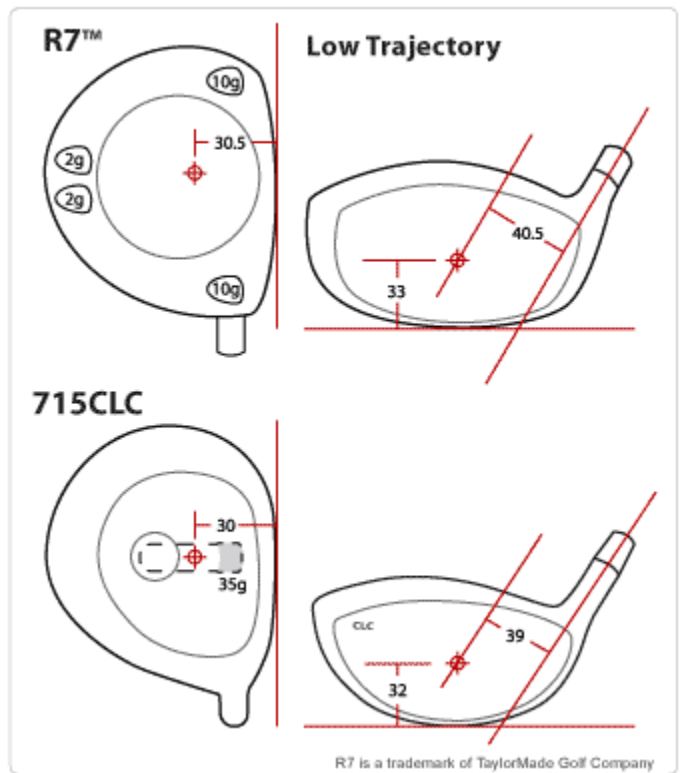


2. Measurements of the heads with weights installed for Higher and Lower Trajectory

Here you see the comparison of the R7 and the 715 with the weights/weight arm installed in each head, first, back in the heads for higher flight, and then with the weights/weight arm installed closer to the hosel and face of the heads for a lower flight. Higher ball flight is achieved by moving the CG farther back from the face, while lower flight is offered by positioning the CG closer to the face. In both cases, the trajectory changes come only as a result of the action of the head's CG position on the bending of the shaft during the downswing. And as we have stressed in previous articles, this can only happen for golfers who possess a midway to late unhinging of the wrist-cock angle during the downswing. Thus if a golfer has a very early release and swings mostly with the arms, no rear or forward weight change in any driver will result in a change in the height of the shot.

The 715 can offer a greater trajectory increase than the R7 for two reasons – one, the 715 starts out with its CG farther back from the face than the R7, and two, the 715 has the ability to move more weight from back to front in the clubhead than the R7. In the CG comparisons, a 35 gram weight arm was used in the 715. If a lighter weight arm is used, the CG changes and resulting trajectory changes will not be as great because the CG movements are directly linked to the amount of weight being moved around the head. Likewise, there is also a 40g weight arm for the 715 driver, so use of that will slightly increase the high and low flight capability over what we show in the CG position changes with the 35g weight arm.

Points to note in the comparison:



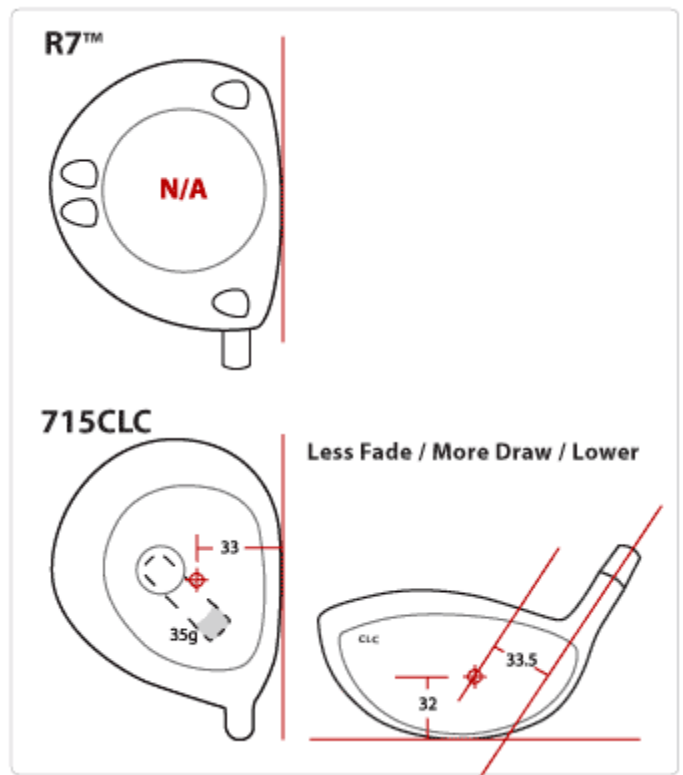
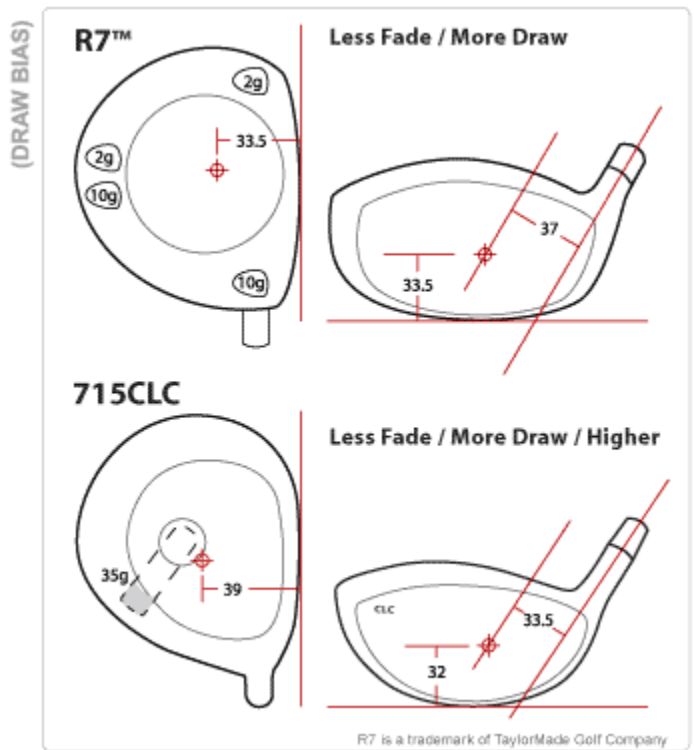
- The reason the horizontal CG changes in the R7 even though the weight movement is uniformly fore and aft is because of the orientation of the R7 weight chambers to the hosel bore. Even the heel side weight is slightly out from the center of the bore.
- The 715 horizontal CG movement is slightly greater in the 715 from the empty head horizontal CG position because all of the 715 weight mass is in one place and not split between two locations in the head as it is in the R7.

3. Measurements of the heads with the weights installed for Draw and Fade Bias

First of all keep in mind that the term “fade bias” means less of a tendency to draw the ball and more tendency to fade the ball. Likewise, the term “draw bias” means less of a tendency to fade the ball and more tendency to draw the ball. Placing more weight in the heel side of the head will offer the capability for draw bias while placing more weight in the toe side will make it possible to create a fade bias in the flight of the ball.

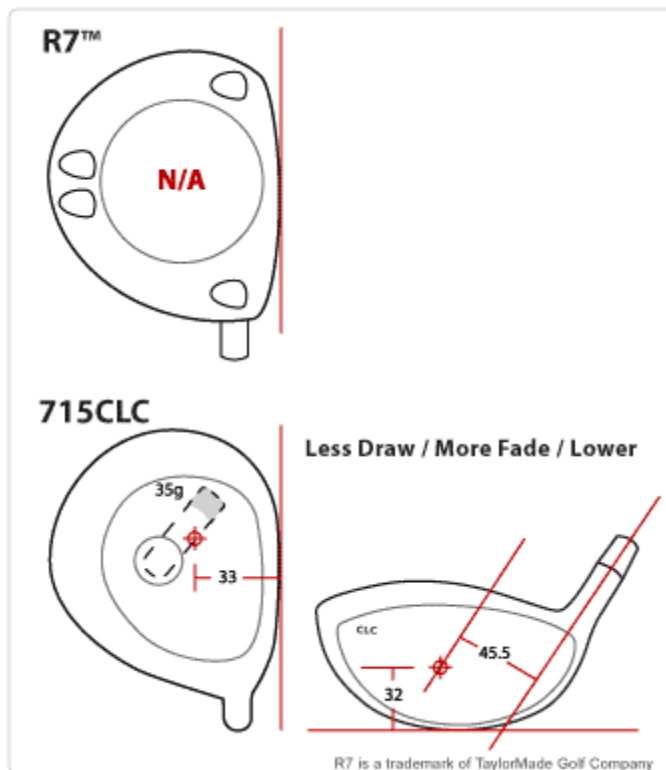
The 715CLC and the R7 differ in their capability to enhance a draw or fade. Because of the rotating weight arm design that keeps the mass position change of the 715 in one place, draw or fade bias can be offered with a slightly higher or lower trajectory at the same time. This same multiple flight capability is not possible with the R7 because of its design.

In addition, clubmakers must be aware that draw and fade bias is created by moving the CG across the face from the heel side of the face center (draw bias) to the toe side of the face center (fade bias). Because it is also important that the ball is hit



relatively close to the CG position, if the CG is moved too far off the center of the face and impact occurs in the center, the draw or fade bias will come at the expense of a decrease in ball speed, which means less distance. This is the reason that TWGT insists that clubmakers realize that draw and fade bias in the 715CLC is to be offered ONLY with the weight arm pointing at an angle to the toe or heel and never with the weight arm pointing dead straight at the toe or heel.

In the comparison of draw and fade bias weight positions, the CG comparison shows that the 715 is able to move the CG slightly more to the heel or toe (of face-center) than can the R7 – even with the weight arm positioned at an angle.



Conclusions

Our goal in offering this static comparison of CG position changes between the R7 and the 715CLC is simply to illustrate the effect of the optional and heavier weight movement offered by the 715CLC to offer golfers a little wider range in ball flight adjustment. The R7 is a fine clubhead design that is manufactured to high quality. So is the 715CLC. But our goal in designing the 715 was to be able to offer a larger change in CG position than any other weight adjustment driver in the game today, so clubmakers could have a wider range of possible fitting options for their golfers. We are pleased that we have achieved that goal in the design of the 715CLC.

Fitting Tips for the 715CLC Driver

- For maximum fade correction with a higher flight, position the weight arm at a 45 degree angle toward the back heel area of the head.
- For maximum fade correction with a lower flight, position the weight arm at a 45 degree angle toward the front heel area of the head.
- For maximum draw correction with a higher flight, position the weight arm at a 45 degree angle toward the back toe area of the head.



- For maximum draw correction with a lower flight, position the weight arm at a 45 degree angle toward the front toe area of the head.
- For the highest trajectory, position the weight arm directly toward the back of the head.
- For the lowest trajectory, position the weight arm directly toward the face.
- The total headweight of the 715 will change as the weight of the weight arm is changed. This controls the length that you can make the assembled 715 driver to achieve normal ranges of swingweight as follows:
 - 715 + 25g weight arm = 200g headweight = 45" length with a graphite shaft of 65-70g or 44" with steel shaft
 - 715 + 30g weight arm = 205g headweight = 44.5" length with a graphite shaft of 65-70g or 43.5" with steel shaft
 - 715 + 35g weight arm = 210g headweight = 44" length with a graphite shaft of 65-70g or 43" with steel shaft
 - 715 + 40g weight arm = 215g headweight = 43.5" length with a graphite shaft of 65-70g or 42.5" with steel shaft

NOTE: Lengths to achieve a swingweight of D1 are approximations based on 50g grip weight and normal shaft balance point.

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NEW High Launch Drivers from TWGT in Larger Head Sizes

One of the ways clubmakers can become a real "hero" to golfers is to identify when a golfer needs more loft on the driver in order to maximize the golfer's potential for distance off the tee. Over the past 3 years, tens of thousands of golfers have finally begun to realize with the help of their custom clubmaker that more distance off the tee can result from using MORE loft on the driver.

Because the trend has continued toward more and more golfers preferring to play larger drivers, TWGT has completed the tooling and development of two brand new High Launch drivers within our popular 915CFE model – the 915-420cc with 15



degrees loft and the 915-460cc with 13 degrees of loft.

Available in September, these two new additions to the popular 915 driver line will give you a much wider assortment of custom fitting options in larger head shapes to meet your need for a higher launch angle to maximize distance potential.

Both of the new larger 915CFE High Launch drivers are designed with the same high COR forged titanium variable face thickness construction offering maximum ball velocity from on-center hits with a minimum of ball speed loss when impact occurs off the sweet spot. Both new 915 High Launch Drivers are designed with TWGT's unique GRT face to offer golfers the most consistent launch angle and distance in the game today.

And remember TWGT's popular Hand Select service will allow you to request +1 or -1 degree loft or face angle specifications for the 420cc or 460cc High Launch drivers to meet your precise custom fitting requirements. Book your order today!

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TWGT Designs Setting the Standard

If you follow what we've done as a company, then you are aware that clubhead and shaft design innovation is a significant focus. NOT ALL CLUBHEAD AND SHAFT DESIGNS ARE THE SAME. There are distinct performance benefits to many of our models.

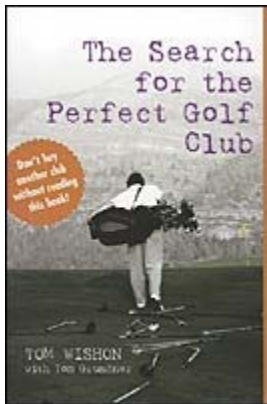
We hope that we provide great information in this regard. We are always willing to answer any questions about each of our designs and how it actually affects performance. For cutting edge designs that outperform, look at the line up of Drivers that have the GRT Face Design ([949G/Ti](#), [515GRT](#), [915CFE](#)), the 515GRT fairways that produce exceptionally high ball speed, and the thin-faced, high-COR [770 CFE irons](#) that have received high praise from golfers and media awards for their increased ball speed and outstanding performance for off-center hits. If you haven't tried any of the above designs, you probably haven't experienced why we are unique in the industry and why many clubmakers have invigorated their new club sales using Wishon designs.

If you've all but given up on new club sales and are reverting to retrofitting for the main source of revenue in your work, it is time to get back in the game and reverse course. We've got the ammo for you to do it with, both in designs and information to share with your customers. Find out what makes us different and remember why you became a clubmaker in the first place: to see golfers grinning from ear to ear as they hit the best shots of their lives. We are here to help. All you need do is to take advantage of what we offer.

Have a look at the list of Tom's Design Firsts: <http://www.clubmate-golf.com.au/Newsletters/twgt-design-firsts/twgt-design-firsts.html>

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The Message of "Search" to Continue Onward



"A few years ago, Tom Wishon, with his experience as a designer, helped me understand more about a particular aspect of golf club performance.

"With this book, Tom will help you understand the entire field, make good buying decisions and get the most from your game."

- Arnold Palmer (Member, Golf Hall of Fame)

"In the course of my career I don't know how many pro-am rounds I have played. In all those rounds, rarely have I seen amateurs with clubs that genuinely fit their game. For me, Tom Wishon stripped away the mystery of club fitting, which I believe helped me to become a Top 20 player on the PGA Tour.

"I am convinced this book will allow average golfers to get on the right track with their equipment as well. It is a 'must read' whether you are a scratch player or a beginner."

- Scott Verplank (PGA Touring Pro)

"If you are a woman golfer, you MUST get this book! It's the best club information for women golfers I've seen. Tom covers everything we need to know (but maybe were afraid to ask). Do not buy a club from the rack before you learn how much better off you could be with custom fitting."

- Carol Mann (Member, Golf Hall of Fame)

Ann Arbor Sports Media Group, the publisher of Tom Wishon's new book **The Search for the Perfect Golf Club**, has announced that they have signed Tom to write two sequels to the book for 2006. AAMG indicated that the success of **The Search for the Perfect Golf Club** has been much greater than forecast, and responses from retail booksellers such as Barnes & Noble, Borders, Amazon.com, etc. are so positive that AAMG wants a series of shorter books that will specifically address golfers' needs for the individual clubs in their bag.

In addition, AAMG has announced that **The Search for the Perfect Golf Club** will be published in paperback next year to extend its distribution and sales. Typically, a publisher will only make the decision to print a hardbound book in paperback when they and their retail booksellers feel a book can sell many more copies when printed to meet the demand of readers who prefer a paperback's lower price.

We know the message is getting out and we are extremely pleased. Many clubmakers have told us that they have booked fitting sessions from golfers who have bought and read the book and made the effort to find a clubmaker in their area to be custom fit.

If you have not yet bought a copy of **The Search for the Perfect Golf Club**, we urge you to do so TODAY. Not only will you learn more about what golfers need to play their best, but you will see for yourself how we are working to change the way quality clubs are bought by regular golfers.

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Series 7-FL-45 and Series 7-SUL-55 Shafts Deliver Lighter Total Weight for Higher Swing Speed

This year, TWGT expanded the custom shaft fitting options for clubmakers with two new original shaft designs that have proven to be a superb match for golfers in search of more distance and comfort with their driver and fairway woods.

The new Series 7-FL-45 and 7-SUL-55 are designed in super ultra-light 45 gram and 55 gram versions for golfers who wish to further decrease the total weight of their woods in an effort to increase swing speed. The weight of the shaft is what controls the total weight of the club, and very few shafts that are as light as 45g and 55g are available to custom clubmakers today.

The Series 7-FL-45 is available in an A and AA flex. AA=L but notated as "AA" so men with slow swing speeds can be fit into the shaft without the ego-bruising problem of using a shaft marked with a letter "L". The Series 7-FL-45 AA is designed for golfers with a driver swing speed under 70mph – the 7-FL-45 A is for golfers with a 70-85mph driver swing speed. Both shafts are designed with a bend profile that matches well to golfers of these swing speeds with a smooth to slightly quick transition, smooth to slightly quick tempo and an early to midway release of the wrist-cock on the downswing.

The Series 7-SUL-55 is available in R and S flexes. The Series 7-SUL-55 R is designed for golfers with a driver swing speed of 85-100mph – the 7-SUL-55 S is for golfers with a 95-110mph driver swing speed. Both shafts are designed with a bend profile that matches well to golfers of these swing speeds with a slightly quick to strong transition, a moderate to fast tempo and a midway to late release of the wrist-cock on the downswing.

The best way to fit these two super light wood shafts is to build them with a slightly higher swingweight of D2 to D5 so the golfer still has a very light total weight from the shafts' weight, but the higher headweight will work to generate more ball speed.

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Wishon Series 7-FL-45 & 7-SUL-55

