How Characteristic Time Is Used to Measure Spring Effect

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Well if there weren't enough acronyms and abbreviations surrounding the game of golf, we have another one to discuss with you today.

CT stands for characteristic time and is one of two measures used specifically for driver clubheads. That's right, just when

you thought you had COR (coefficient of restitution) figured out, we're going to explain why and how characteristic time is now being used by both R&A and USGA as a unified standard to limit the maximum amount of allowable spring effect for the face of a driver.

If you were searching online using ***ct*** or ***characteristic time*** as the keyword for your query, chances are you may be in the market for a new metal driver. If so, you've come to the right place to learn what you need to know to make the best equipment decision for your game.

Why Shave the Face of a Driver?

Understanding that golfers want to hit the ball farther off the tee, club manufacturers began to mill metal drivers to increase the spring effect by shaving the thickness of the club's face. This precision CNC milling process raises the coefficient of restitution to reduce the compression of the ball, which allows the ball to come off the face faster with increased ball speed and reduced spin. By comparison, the COR of a permission wood face was around .780 whereas the COR of a shaved metal driver face could be increased to .930. This exceeds the current COR limits for a driver used in USGA competitions, which is set at .822 with +/- .008 for a maximum of .830 and basically means the transfer of energy from the head to the ball cannot exceed 83%.

Measuring COR versus CT Values

Coefficient of restitution has been around since Sir Isaac Newton applied the concepts of physics to explain what happens when two objects collide (like a ball and clubface). To measure the COR of a driver is a rather complicated process that requires firing a ball at the club and measuring the velocity (ball speed) after it has made contact with the center of the face. Even though golf swing analyzers using video cameras are readily available today, the set-by-step process of determining COR is still cumbersome and time consuming.

In 2004, the USGA developed a CT (characteristic time) testing device that would be portable enough to use at sanctioned golf tournaments to determine clubface conformity. A pendulum test uses a metal ball that swings down striking the face of a metal driver to measure the number of microseconds the ball remains in contact with the center of club face. Currently, the CT limit for a driver's face is 239 units with +/- 18 units for a maximum tolerance of 257 units. In turn, clubhead designers have focused more attention on managing the spring effect across the entire surface of the face for optimal results with off center hits.

It should be noted that the USGA and R&A only use characteristic time for measuring the spring effect of the face of a driver. Nonetheless, any given manufacturer may

also specify a CT score for other metal woods that they produce; but COR continues to be the official measurement employed by the sanctioning bodies to determine the spring effect for fairway woods, hybrids and even irons. Due to differences in how tests are setup, some experts say that CT testing of off-center hits is not as accurate as COR measurements.

The Unfair Advantage of Spring Effect Rules

You may or may not remember when Xander Schauffele's Calloway driver failed a CT test performed by the R&A prior to The Open Championship in 2019. Nowadays, characteristic time tests performed on drivers has become a more familiar topic due to the increase in clubface testing of drivers used on the PGA Tour. As swing speed increases, a golf ball hit the same way will travel a farther distance off the tee box. Conversely, as a golfer's swing speed decreases, each incremental reduction in the COR measurement will reduce the distance of the ball's flight. This is why the USGA rule unfairly penalizes a recreational golfer who has a much slower swing speed than today's professional golfer.

For the past two decades, KRANK GOLF has been developing and refining the art of driver clubface designs with USGA-conforming clubs born out of the Sport of Long Drive. Now we have grown to fully understand what it takes

to build a driver that can deliver optimal performance at any given swing speed. The simple truth is many golfers just want to enjoy his or her round of golf and have more fun playing with friends. If your swing speed is under 110 MPH, and you want to absolutely maximize your distance off the tee box, a new Formula Fire X High-COR or Formula Fire XX Super High-COR driver could be perfect for your game.

Since this driver in non-conforming due to the spring effect of the clubface, we do not recommend it for USGA tournament play. However, if your foursome decides the rules on the first tee, Krank golf can custom fit a driver to your specific swing speed. To schedule a custom fitting and start designing the driver that is right for your swing, click here... and stop giving away distance today.