

IN SEARCH OF A PRECISION CUSTOM-FIT

The custom-fitting mission for Dominic Pedler, which he chose to accept, involved several stages of swing analysis, club testing and precision fitting before he eventually emerged with his perfect set

Tiger Woods did a great job of raising the awareness of custom-fitting at the start of last season when discussing his most important equipment switch in years.

"The Nike guys showed me the numbers that said I'd gain 10 yards off my mis-hits with a switch to a larger-headed driver and longer shaft," said Tiger at the company's annual product showcase, explaining how he'd finally ditched his 43.5-inch steel shaft in favour of a 45-inch Diamana graphite one fitted to a 460 cc head.

"I thought it was all BS until I tried it," continued Tiger delicately. "That was a huge combination for me because, all of a sudden, my sweetspot got bigger."

Tiger's tinkering with just three of the many parameters of custom-fitting highlights a revolution – at all levels of the game – in matching equipment to an individual's style of swing rather than buying 'off the shelf'.

Indeed, Sports Marketing Surveys suggests that custom-fitting among all the major brands has doubled since 2000 through a growing network of demo days, company visits and, in cases like Taylor Made and Wilson, 'custom-build trucks'

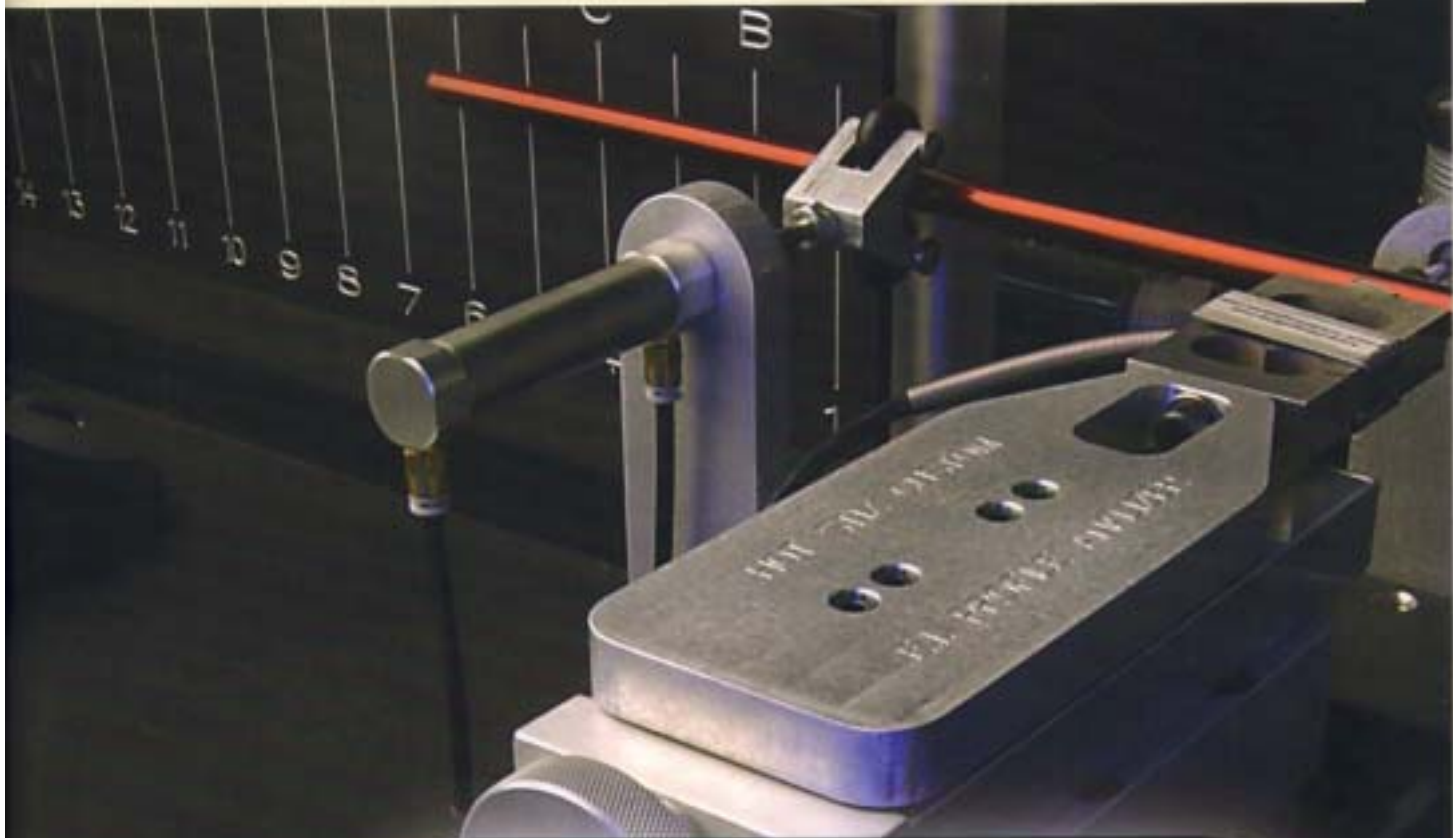
that tour the country offering individual fitting appointments. Not forgetting the PGA-affiliated National Fitting Centre at The Belfry that houses high-tech 'fitting suites' for top brands like Titleist and Ping.

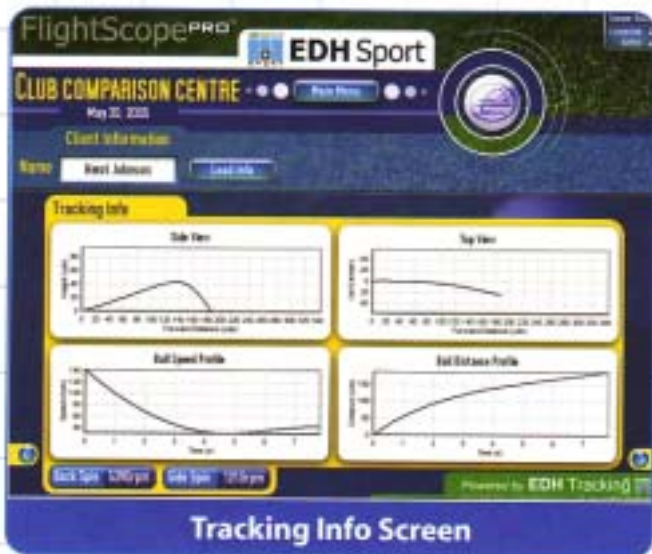
However, while many golfers have a natural affinity to certain brands that dominate the market, others will appreciate the notion of a truly independent service that will assess your swing and equipment requirements with no corporate axe to grind.

Precision Golf, based near Egham in Surrey, offers an exceptionally thorough fitting experience that takes in everything from a static analysis of your existing set through to frequency matching and shaft purring of any new clubs you order, and built precisely to your required specifications.

Their personable approach, swing analysis technology and clubmaking expertise is topped only by the accuracy of their recommendations made with access to an extraordinary database of tested data that now allows golfers to make instant comparisons between a vast array of shafts and clubheads – based on their own individual swing profile.







This intriguing Hot Stix technology, already widely renowned in the US for its independent analysis (see accompanying sidebar, *Homing In With Hot Stix*), is the centrepiece of the two-hour equipment makeover offered by clubmaker extraordinaire, James Davey and fellow director and tour pro, Simon Cooper. Their service is tailored to the most detailed requirements of golfers who range from household name tour pros to humble hackers and (in this case) jaded golf journalists, each with their own individual swings and golfing agendas.

Indeed, if the following detailed summary of my most comprehensive equipment MOT in my 35 years in golf appears too 'personalised', that is the whole point of the exercise. For as Simon Cooper says: "You could pick a handful of golfers of the same height, clubhead speed and – even if they were playing the same clubhead – the chances are they would all have a very different ball flight depending on the dynamics of their swing. As a result they will all need very different types of shaft and flexes to optimise their performance."

So while the advice to their next client will inevitably be different from what follows, here's an outline of the step-by-step process you can expect, while hopefully prompting readers to think comprehensively about their own gear needs for the new season.

PART A. THE DIAGNOSIS...

1. BACKGROUND

My visit began with James making a detailed analysis of my existing equipment while I gave Simon an overview of my own thoughts on my game. As a 40-something, 12-handicapper returning after several months out with chronic back problems, I had been forced (perhaps thankfully) to simplify my swing. I was now looking to rejuvenate my game further in 2006 – starting with a radical equipment overhaul to see how suited I still am to my bag full of clubs acquired purely through trial and error.

Despite my familiarity with the golf equipment market, it was obviously impossible for me to sample the ever-growing range of shafts – let alone head/shaft combinations to find my ideal fit. I wanted experts with access to the exclusive Hot Stix system to identify and build me a set tailored to my current, if more limited, swing potential.

The FlightScope system allows the accurate measurement of a player's launch conditions with each item of equipment, thereby allowing for an instant comparison of impact conditions, trajectories and flight patterns.

2. STATIC ANALYSIS: SHAFT FLEX, LOFTS AND LIES

Meanwhile, the static analysis (involving measuring various specs of the heads, shafts and grips on my clubs) revealed some interesting facts that tied-in with my existing game. For as Simon explained: "Every item of equipment promotes a certain result, and the static analysis alone can highlight certain problems."

Most helpful was the initial presentation of all the shaft flexes on the familiar frequency chart originally developed by Brunswick Golf. Plotting the frequency, in terms of cycles-per-minute (c.p.m.), against the length of each shaft when clamped yields a flex index that reflects its absolute stiffness, while also allowing an instant visual comparison as to the consistency of flex throughout the set. Such a procedure has, of course, long been used by premium clubmakers to weed out rogue flexes in 'off-the-shelf' shafts whose often wide factory tolerances can make a mockery of the nominal tag of 'Extra Stiff', 'Stiff', 'Regular', etc (for which there is, anyway, no accepted standard in terms of absolute frequency).

The key findings were that the existing proprietary shafts on my Callaway Hawk Eye irons (my favoured set over the last several years) showed a reasonably consistent flex progression – though this varied between extreme frequency indices of 3.4 and 4.2, with the 4-iron and 7-iron likely to play weaker and stronger, respectively, than the others.

More radically, the notably higher 5.5 figure in my Yonex Cyberstar Powerbird driver was consistent with my occasional tendency to push and fade off the tee, while an alarmingly low 2.7 (barely equivalent to a typical A flex) shaft on my Callaway Nine wood surely explained my unerring ability to hit this particular club left of the target.

I was reminded that this performance was merely down to the contrast of shafts within the context of my set and my particular swing – rather than anything specific to the heads themselves.

Other static tests revealed that my 3-iron was one-degree flatter than standard (accentuating the common fault of handicap golfers



to push their long irons), while my 6-iron was one-degree upright (perhaps providing some compensation for the rogue shaft flex mentioned earlier).

My swingweights were fairly consistent (falling around the typical D3-D2 level) except for my Kasco 5-wood where the low figure of C9 was due both to the notably small head and the fact that it was the only club in the bag with a steel shaft. We would return to the widely misunderstood concept of swingweight later in the day.

3) DYNAMIC ASSESSMENT

The next stage was for me to hit some balls, firstly with my existing equipment, in the onsite simulator with Simon casting an expert eye over my swing and while every conceivable item of launch data was captured on the state-of-the-art FlightScope system (see sidebar on this impressive new technology).

1) SHAFT LENGTH

It didn't take long before Simon raised what I had myself suspected over recent months – that my standard-length shafts appeared too short to allow me a comfortable position at both address and impact. He explained that grip, set-up, posture and shaft length, often revealed the root cause of any swing problems, with my hands at the very top of the grip an early giveaway.

Moreover, given the "simple, mechanical 'back and through' swing" (as Simon described it) that I had been working to develop, I had indeed been "toeing" far too many shots, initially under the misconception that the culprit was excessive shaft "droop" at impact from too weak a shaft flex.

But we soon agreed that the more upright stance in my new swing resulting from my back problems had no doubt contributed to the need for an extra 1/2-inch shaft length throughout the set.

A switch to the longer shaft when using the Hot Stix control club, a few minutes later, duly resulted in an immediate improvement in my grip position, and my posture in terms of the angle of my spine (now straighter), the shape of my shoulders (less rolled forward) and the position of my head (chin higher to allow shoulder turn).

1) Launch angle, spin rate and efficiency

After this initial "eyeball" analysis (which doubled as a welcome golf

HOMING IN WITH HOT STIX

The intriguing Hot Stix databank of independently tested equipment is redefining the concept of custom fitting.

Dominic Pedler spoke with the company's Director, Mike Helfrich, whose clients include stars from every major professional tour.

With the golf equipment market famous for its lack of specification standards in everything from lofts, weighting and shaft flexes to shoe sizes, golfers have notoriously had no way of measuring how a product might perform for them without trying it themselves.

However, over the last five years the Arizona-based company, Hot Stix Technologies, has steadily compiled a database of independently tested data on a vast range of shafts, irons, drivers and golf balls on the market that finally provides golfers with an objective guide through the increasingly labyrinthine equipment maze.

Specifically, their system provides recommendations not naively for a broad handicap group, or even a narrow swingspeed bracket, but for each specific individual with respect to their specific swing as measured by their launch conditions.

By measuring a golfer's speed, spin and launch with a pre-calibrated control club, a Hot Stix-licensed clubfitter can make direct comparisons with any pre-tested shaft and head combination already in the system and accurately predict its performance in the hands of that particular player.

FITTING SHAFTS

"We don't believe that the letter designation that manufacturers put on shafts really has any bearing on how it performs – whatsoever," says Hot Stix Director, Mike Helfrich, explaining the rationale for the shaft testing system that is at the core of their service.

"You get Regular shafts that plays like Stiff and 5's that play like R's. Our recommendations are based on how a shaft actually tests. ▶



Because we know exactly how a shaft will perform, we can then take a person's data from the control club and compare it with every other shaft we've tested and make a very accurate recommendation."

Product testing is done meticulously back on especially developed proprietary equipment at the Arizona laboratory. Testing a minimum sample of three of every model (more normally 5-10), a shaft's characteristics are analysed to the nth degree. Torque machines measuring shaft 'twist'; Load Symmetry machines capturing spine characteristics; E-I Curve machines that plot the bend profile under load; and Zone Frequency machines that determine kickpoint are among the gadgets that contribute to a complete profile that helps predict any shaft's performance for any given player.

Given my own experience, I was pleased that Helfrich independently raised the importance of shaft weight in the fitting decision.

"Weight has a huge bearing on feel, tempo, clubhead speed, and endurance. The faster somebody's tempo, the heavier the shaft should be. It will be more stable through the transitional period, while more weight will help them to feel the head."

For all the technical hardware and software, Helfrich confirms the importance of discussing an individual's goals and requirements with a skilled clubfitter.

"You need to establish what your desired outcome is. If you're a low-ball hitter and you want to continue to hit it low, then fine. But if you want to hit it high then that those requirements can be directly factored in when searching the system."

FITTING IRONS

When choosing an iron head, for example, the fitter and the customer determine what their goals are in terms of flight as well as the choice between cavity back and blade, cast and

lessen) we turned in detail to the launch monitor data collected by FlightScope that would help towards choosing my ideal shaft – the most crucial stage of custom-fitting.

From the vast array of data on hand, Simon singled out three areas for discussion based on my figures for spin rate, launch angle and the mysterious 'Smash' factor from a dozen 6-iron shots.

a) My average launch angle of 21.7 degrees was towards the top of the ideal 18-22 degree range; a reflection of my shallow swing that picks the ball up with minimal divot (whereas a steeper downward blow would see a lower launch angle from a lower dynamic loft). While this swing trait was no doubt being reinforced by the too-short shafts, I was having no trouble getting the ball airborne.

b) My spin rate average of 4,700 r.p.m. (revolutions-per-minute) was higher than the ideal range of 4,200-4,300 and did not just mean that I would struggle into a headwind. "Excessive spin simply wastes energy that could be used for sending the ball forward – rather than up," explained Simon, confirming that I was not maximising my distance potential for my swingspeed.

c) The 'Smash' factor was revealed as a measure of the efficiency of the strike, and is calculated as the ratio of the clubhead speed and the ballspeed. While golfers intent on maximising distance might seek a figure up towards 1.50, Simon explained that more important was the consistency of the figure (mine was usually around 1.31) to confirm that the flex of the shaft was reacting at the same point in my swing each time, and squaring up the face correctly to deliver a straight shot.

4. SUMMARY DIAGNOSIS

Simon concluded that while I have good consistency of clubhead speed and direction in my shots, I should be looking for equipment that would help bring down both the launch angle and spin rate values, which in turn would automatically have the effect of raising the efficiency.

In particular, we would be looking to change the trajectory profile of my shots, "bringing the flight down and forward," as Simon put it, "ultimately delivering more distance for the same effort".

PART B. THE RECOMMENDATIONS

1. SHAFT PROFILING

The essential task was to find a shaft that would react effectively to the more passive action I had deliberately developed as a result of my bad back. Most golfers would assume that this would merely involve a change of shaft flex to deliver the clubhead to the ball at the greatest possible speed for a given swing.

But Simon explained that correct shaft profiling involves many other factors. "Different shafts of a given nominal flex will react differently to a swing depending on the weight of the club, the location of the kickpoint, and the torque," he explained. "This in turn will affect the attitude of the club at impact: the face angle, the dynamic loft – and hence the launch angle and spin rate".

To make the point he explained that in my case, where I was hitting fairly straight shots, he would be looking to recommend a shaft of broadly similar flex (in terms of frequency) to my existing set – but one with lower weight and a higher kickpoint to provide more "snap" at impact.

Golfers hit with a Hot Stix 'control' club whose known specifications allow the system to search the extensive data-bank of pre-tested shafts and clubheads

