ASK THE BIKE FITTER

A.N. of Irvine asks "I hear the terms BDC and TDC, can you explain what these are?"

The acronym (a) BDC means Bottom Dead Center. (b) TDC is short for Top Dead Center. While some fitters still use these acronyms, these terms make more sense as (a) Max Knee Extension (MKE), (b) Max Knee Flexion (MKF). BDC and TDC might not get the cyclist into the real position for angle measurement where MKE and MKF always will.

D.T. of Costa Mesa writes "A friend of mine I cycle with is exactly the same height as I am – we are both 5'10". He actually had a bike fitting from you and you recommended 165mm cranks. My bike has 172.5mm. Why did he end up with 165mm cranks?

Last issue we mentioned that people are asymmetric machines. Not only are people different from their left side to their right side, but these differences can be even greater comparing individuals. Your friend had very long legs and a very short torso. I would suspect you have the opposite. With his 'stock' 172.5mm cranks, at TDC, his knees were almost hitting his chest. In this extreme position he was also hyper-flexing or over-flexing his knees. With 165mm cranks, the outcome was that he had (a) the perfect saddle height as measured from LATERAL MALLEOLUS (ankle bone) / HEAD OF FIBULA (center of outside of knee) / GREATER THOCHANTER (head of femur) angle, and (b) he was not over-flexing his knees. After the bike fit and the 165mm cranks, he was in a much more powerful position showing an increase of 30 watts on the CompuTrainer.

M.T. of Huntington Beach asks "What's the difference between Bike Sizing vs. Bike Fitting?"

BIKE SIZING is done first and happens BEFORE you purchase your bicycle. Bike sizing has to do mainly with the size of a frame. The bike shop should take 2 measurements. Just be aware that not all shops do. Measurements are then converted into a range of sizes based on current industry accepted formulas.

With modern frame geometries, the options in stem lengths, seat post lengths, crank arm lengths, etc., a cyclist can be sized to fit on up to 8 different frame sizes. For example, based on height alone, a cyclist who is 6'-0.5" (72.5", 184cm) has an industry accepted frame size range of 55, 56, 57, 58, 59, 60, 61, 62. So the bike shop will start asking questions to help narrow down this range.

FRAME SIZE – there are three ways bike shops look for your correct frame size.

1. HEIGHT – the least accurate since, for a given height, people can have long legs/short torso or short legs/long torso. This method has the most variability and results in a wide range of frame sizes for a given height. As stated above, using this method, up 8 frame size options exist.
2. INSEAM – a little more accurate and is based on your inseam measurement. Since you only have 1 inseam measurement, one frame size is shown using this method. For example, let's assume that the same 72.5" cyclist has a 34" or 86cm inseam. This would convert to a 59cm frame. So now more questions need to be asked by the bike shop. Since one customer might want to race, another might want to ride 100 miles on Saturdays, this frame size based on inseam measurement is not a 'one-size-fits-all'.
3. HYBRID – both HEIGHT & INSEAM – in my opinion, the most accurate. With this method, a frame size can be narrowed down to 2-3. For example, the resulting table (using the same cyclist as mentioned above) would indicate a recommended frame size range of 58, 59, 60, but also, can accommodate special cases such as extremely long or short legs where frame sizes of 56, 57, 60, 61 are also acceptable.

BIKE FITTING is accomplished after the customer has bought their bike. Bike fitting takes the bike and through different components, fits the bike to the person. The big 3 are CLEAT fitting, SADDLE height/fore/aft positioning and cockpit sizing including stem length and bar width.

So basically, for maximum enjoyment and fun, you need the correct size frame that is custom fit to you!