

# Competitive Cyclist Fit Calculator

Nothing is really more important for creating a great cycling experience than matching yourself---your body, your goals, and your dreams---to the right bike. Some will tell you that there is one perfect fit for you and only one perfect bike. But we take a different approach. We know from experience that you can fit on a bicycle in a variety of ways and that each of them can be perfect for the many kinds of riding you want to do. We also believe that different bikes, sizes, and parts create different riding experiences and that there is more than one perfect experience. Undoubtedly, that is one of the beauties of great bicycles. We ride lots of different bikes and in different ways. Our experience tells us there are all kinds of bikes and ways to ride.

Because everyone is different, there is no one, single formula that creates the perfect fit. Different bikes and styles of riding create different fit options. We believe that there are different bicycle fits that will be perfect for *you* and different bicycles that will suit your needs, goals, and expectations. This means that we can tailor the fit to your style of riding and tailor the bike to fit you. Finding a great match between yourself and a bike isn't complicated but it is a matter of knowing what you really want and what you can expect from different kinds of bicycles.

Our fit methodology combines two - and if needed, three -- traditional approaches to fitting.

**1. Body measurements and tested formulas.** The numbers don't lie and are an important feature of your individual experience. We understand that measuring your body for the purpose of buying a new bicycle can be a daunting and confusing exercise. There are numerous techniques for determining your ideal size and fit, the most widely accepted of which is the "Lemond method", as set forth by Greg Lemond in his classic late-80's book "[The Complete Book of Bicycling](#)". The Lemond method provides the logic and the math behind virtually every bike fitting system you'll encounter. Whether your fitting is performed in a retail environment with tools such as Bio-Racer, the Fit Stik or the Fit Kit, or if you've derived your fit from a database-driven on-line fitting system, certain truths almost always hold true:

1. You will always be asked for your inseam, and you will always be provided with the following conclusions:
  - a. Your center-to-center seat tube will equal  $(\text{inseam} \times 0.65)$ .
  - b. Your center-to-top seat tube will equal  $(\text{inseam} \times 0.67)$ .
  - c. Your bb-saddle height will equal  $(\text{inseam} \times 0.883)$ .
2. You will always be asked for a torso length and an arm length, and you will always be provided with the following conclusion:
  - . Your total effective reach (i.e. the sum of your top tube length plus your stem length) will equal  $(\text{torso} + \text{arm})/2 + 4$ .
  - a. Alternatively, instead of torso length, you might be asked for the length of your sternal notch to the ground. In this case, your total effective reach will equal  $(\text{sternal notch} - \text{inseam} + \text{arm})/2 + 4$ .

Most folks rely on the Lemond method for one good reason: it's quite accurate. Over time, though, we became fixated on the two significant drawbacks of the process:

1. It computes your ideal seat tube measurement and initial seat height based solely on your inseam. Your femur length, however, can play a major role in determining your ability to produce maximum power in an adequately comfortable position. For example, if your femurs are long, you'll need a setback seatpost and a higher saddle position than someone with a smaller bone structure.
2. It offers only an overall effective reach measurement for your upper body. In other words, you won't be provided specific information about your top tube length and your stem length. Rather, you'll get the sum of an idealized top-tube-plus-stem measurement. Some riders are better suited to a combination of a long top tube and a short stem, some riders are the opposite, and some are in between.

When we made the decision to develop our Fit Calculator, it was specifically an effort to address these limitations. It became a bit of an obsession for us. We traveled to New York (more than once) to attend the weeklong Serotta Bike Fit Certification seminar, we logged countless hours fitting people on our Fit Cycle, we analyzed systems such as the Fit Kit inside and out, and we worked with the cycling consultants at the Australian Institute of Sport. We expanded the scope of biomechanical variables taken into account by the Lemond Method, allowing us to substantially improve upon its accuracy.

In terms of your upper body, our Fit Calculator takes into account both your torso length and your arm length, which sheds quite a bit of light on the inter-relationship between your top tube and stem. In terms of your legs, our Fit Calculator evaluates your femur length and tibia length independently, allowing it to provide you a more accurate assessment of both your frame size and initial seat height.

Is our system better than Lemond's? Not necessarily. But it's a more comprehensive evaluation of your anatomy, which in turn allows us to provide you with a greater amount of information for selecting and setting up your new bike. Think of it as a trustworthy second opinion to put alongside Lemond's tried and true system. After you enter your measurements, we'll supply you with fit and sizing data based on our Fit Calculator methodology. When you consider these numbers in combination with your sense of how well you fit on your existing bike, you'll be armed with virtually all of the data you'll need for sizing yourself to a new bike.

**2. The experience of the master designer and fitter.** While formula-driven fit systems are extraordinarily useful, there's a reason why stock geometry frames of the companies whose bikes we sell have made countless riders - many of them the most experienced, most demanding connoisseurs of the bicycle - so happy with the fit and the handling of, say, their Colnago, Pegoretti, or Pinarello. What's the secret? The years of wisdom of a master builder or fitter cannot be replaced by numbers or machine calculations.

**3. Your positioning on your current bike.** The optional third step of our Fit Calculator is to contact us via e-mail or phone to discuss your positioning on your current bike. Typically this sort of conversation is an excellent way to get a clear grasp of how your measurements might inform the output provided to us by the Fit Calculator.

In these ways we can combine facts, experiential input from you the rider, and the expertise we possess from years of fitting all types of cyclists and bodies. Ideally we can learn more about you, your cycling style, fitness and physical needs, as well as your plans for riding and what you can expect from a great bike. Our goal is to create a fit that matches you and the bike into a seamless relationship that meets your most realistic expectations as well as your dreams. Getting to know you will create confidence that you're making a great decision. We want to take the fear out of buying a high end bicycle and that means creating a relationship rooted in understanding, trust, and professional expertise.

Choosing the "right" bike means choosing a bike that keeps its end of the bargain. If you are planning on racing or enjoying fast club rides then the bike should perform to match your expectations. If you are looking to ride long days or face challenging climbs that test your endurance, then the bike should match your goals. The truth is that many bikes can perform well under all sorts of conditions and in different scenarios: what you need is one that matches your needs.

We are sometimes mistakenly led to believe that there is only one "right" size for each individual. Actually there may be more than one size of the same bike model that works well for you and the "right size" depends more on how you choose to ride. We'll help you make the best choice for you and your riding style. It's certainly possible to find one bike that serves you well under a variety of circumstances but this means coordinating the best match between rider, bike, and fit. Even if you have only one bike there can be more than one great fit on that bike. We know this from hard won experience.

We need 7 core pieces of information in order to calculate your optimum frame size and initial position. You'll need the assistance of another person to make the most accurate measurements possible. And don't be afraid to take each measurement 2 or 3 times and average the measurements together. Please keep in mind that the accuracy of the Fit Calculator is strictly a function of the accuracy of the information you provide! We've discovered over time that if there is a large variation between the results

from the Lemond method and the results from the Fit Calculator, it's a strong indication that the body measurements you've provided are inaccurate. Please take your time and be as meticulous as possible!

## Input

**Wear your cycling shorts, and take the measurements in bare feet.**

- 1. Inseam**  
Set your feet approximately 8" apart and straddle a straight edge – something like a square or a 2' level is ideal. Put as much pressure on your crotch as you feel when sitting on your bike seat. Measure the distance from the top of the level to the ground. Alternatively, mark the wall, then step away and take the measurement of the mark to the ground. And whatever you do, please don't use the inseam measurement from your Levi's! Pants inseams are at least 2" shorter than your actual inseam.
- 2. Trunk**  
Sit on a stool with your back straight and your pelvis hard against the wall. Make sure your back is straight and your pelvis is against the wall. Place the level on top of your AC (Acromioclavicular) joint and against the wall. The AC is the bony bump on top of your shoulder. Measure from the bottom of the level to the top of the stool. Measure both sides of your body and average the measurements.
- 3. Forearm**  
Remain seated and hold a cylindrical object (a magic marker is ideal) in your fist. Lower your arm so that it is to your side and extend your forearm ahead of you. Keep the object in your hand perpendicular to your forearm, and measure from the center of the object, which should fall in line with your knuckles to the bony protrusion at your elbow pivot.
- 4. Arm**  
Continue to hold the cylindrical object and extend your arm in front of you, holding your arm parallel to the ground. Try not to allow your shoulder to come forward. Make sure that the object in your hand is perpendicular to your arm. Locate the Pivot of the arm to shoulder point and measure from this point to the center of the object, which should fall in line with your knuckles. Measure both arms and average the measurements.
- 5. Thigh**  
Sit on a stool again making sure your back is straight and your pelvis is hard against the wall. Make sure your femur is parallel to the ground and your tibia is perpendicular to the ground. Place the level across the front of both of your kneecaps, then measure from the inside face of the straight edge to the wall. Take this measurement from both legs, then take the average
- 6. Lower Leg**  
Remain seated. Place the level across the top edge of your kneecaps (where they connect to the bottom of your inner quadriceps muscles). Measure from the bottom of the level to the ground.
- 7. Sternal Notch**  
Stand up against the wall. Set your feet approximately 8" apart and straddle a level. Find the sternal notch in your neck – it's the bony "V" immediately beneath your Adam's apple. Measure the distance from the apex of the notch to the floor.
- 8. Total Body Height**  
Remain standing against the wall with your feet 8" apart. Set a hardback book or a ruler on top of your head and make sure it touches the wall without sagging. Mark the wall at the point where the book or ruler meets your head. Measure from this point to the floor.

## Output

### 1. **Seat Tube Range C-C**

Your new bike's seat tube height should fall within this range. "Center-to-Center" signifies the length of the seat tube as measured from the center of the bottom bracket spindle to the midpoint of where the seat tube intersects the top tube. The seat tube height is most important as it relates to your head tube. If your seat tube is too short, your head tube will almost certainly be too short. This results in too low of a handlebar position placing an inordinate amount of stress on your neck and back. For this very reason, if you feel as though you could go with either of two sizes, going with the bigger frame is normally advisable. Please keep in mind that many frames come with a sloping or "compact" frame geometry in which the C-C seat tube measurement is artificially short. In the case of compact frames, you should primarily focus on the top tube measurement.

### 2. **Seat Tube Range C-T**

"Center-to-Top" signifies the length of the seat tube as measured from the center of the bottom bracket spindle to the top of the seat tube where it intersects the top tube. Colnago is the one brand we sell that sizes their bikes according to C-T instead of C-C, so pay close attention to this measurement range if your primary interest is in a Colnago.

### 3. **Top Tube Range**

This measurement is along the top tube, from the midpoint at the seat tube to the midpoint at the head tube. No single piece of frame geometry has a greater impact on comfort than your top tube. If you plan on paying attention to one measurement and one measurement only, make it this one. Keep in mind that we do not measure the actual top tube on bikes with compact frame geometry. Rather, we use an "Effective Top Tube" measurement – an imaginary line drawn parallel to the ground along the length of the top tube.

### 4. **Stem Length**

This measurement indicates your ideal stem length. It takes into account that your stem will be flipped to its flatter angle (e.g. 80° for Deda, 84° for Ritchey).

### 5. **BB-Saddle Position**

This measurement is along the seat tube, from the center of the bottom bracket spindle to the top of the saddle. It is an ideal starting point for saddle height. Given the varying differences of cleat and pedal heights, and given the varying differences in the thickness of saddles, the BB-Saddle position has a broad range of 2cm.

### 6. **Saddle-Handlebar**

This measurement ties together your choice of stem length with your saddle setback. It is measured from the nose of the saddle to the near edge of your handlebar. Keeping within this range will assure that you don't accidentally push the weight balance of your bike either too far forward or backward.

### 7. **Saddle Setback**

This measurement is primarily a function of your femur length. The longer your femurs, the further your saddle needs to be behind the bottom bracket in order to allow you to produce power. If you sit too far forward (or too far back) you can over-emphasize certain muscles and joints, which robs you of power and can potentially cause you injury. Saddle setback is measured by dropping a plumb bob from the nose of your saddle and measuring how far behind the center of the bottom bracket it falls. This is not to be confused with the setback measurement of your frame, which is a measurement taken by dropping a plumb bob from the center of your seat tube/top tube interface, and measuring how far behind the center of the bottom bracket it falls.

### 8. **Seatpost Type**

This measurement is also primarily a function of your femur length, as well as your inseam. Tall riders and riders with long femurs benefit from the additional leverage they derive from a setback seatpost. Short riders and riders with medium-to-small femurs benefit from a non-setback post as it allows them harness the power of their hamstrings and glutes. Ritchey,

Campagnolo, and Deda all make superb setback seatposts. Thomson is legendary for their non-setback Elite seatpost.