

Introduction

Easily the most important aspect of selecting a new bike is achieving the right fit. Forget the in's and out's of titanium vs. steel vs. aluminum, ignore the road tests and race wins. One thing matters more than anything else when you select your new bike-that it fits you! When a cyclist fits her bike well, she rides more comfortably and efficiently. She rides with more power, and yet the effort comes easier to her. Her body is relaxed, her bike handling skills almost second nature.

True, setting up your ideal position on a bike takes some time, and can be difficult. Why? We cyclists hear conflicting advice, and conflicting formulas, on sizing and positioning. Variances in body sizes and proportions, in levels of fitness and flexibility, in technique and style, all affect a cyclist's best position on the bike.



How To Fit Your Custom Bicycle

<https://www.coloradocyclist.com/bikefit>

Where do you learn how to fit yourself correctly on the bike? We've found useful sizing and positioning information in books by coaches and racers (Eddie Borysewicz's, Greg LeMond's, Davis Phinney and Connie Carpenter's). About once a year the major cycling magazines publish articles on sizing and bike fit, which are also often available at their websites. Commercial sizing systems such as the Fit Kit, BioRacer and Serotta's Size-Cycle can be very helpful.

Truthfully, though, the best resource you have is your own experience, especially when teamed with feedback from a coach or knowledgeable cycling friend, video or mirror analysis.

Drawing on your expertise, and ours, together we can set you up on a bike that feels like a natural extension of your body, and invites you out to ride for hours at a time!

Measuring Inseam and Frame Size

We'll talk primarily about fitting a road bike and make notes about fitting a mountain bike when appropriate.

The best frame size for a cyclist is as small vertically as possible, with enough length horizontally to allow a stretched out, relaxed upper body. This frame will be lighter and stiffer than a larger one, and will handle better and be more comfortable than a smaller one.

To determine your proper frame size, you'll first need to get an accurate inseam measurement. Stand with your back against a wall, your bare feet 6" apart on a hard floor, looking straight ahead. Place a book or carpenter's square between your legs with one edge against the wall, and pull it up firmly into your crotch, simulating the pressure of your saddle while riding. Have a helper measure from the top edge of the book to the floor, in centimeters. (You can convert inches to centimeters by multiplying inches by 2.54.) Repeat two or three times, for consistency, and average the results to get your inseam length.

Frame Size

Frame size refers to the length of the frame's seat tube. Pro frames are measured along the seat tube in one of two ways, center-to-top (C-T) or center-to-center (C-C). C-T measures the distance from the center of the bottom bracket to the top of the top tube or seat lug (See image below). C-C measures from the center of the bottom bracket to the center of the top tube. Since C-T measures to a point higher on the frame, a frame measuring 55cm C-T would also measure roughly 53.5 - 54cm C-C, a difference of 1 - 1.5cm.

To size your C-T road frame, we use a guideline of $.67 \times$ inseam length. For example, if you have an 85cm inseam, your C-T frame size would be $.67 \times 85\text{cm}$, or 57cm.

LeMond's formula, from his former coach, Cyrille Guimard, establishes C-C size by the formula $0.65 \times$ inseam length, which yields virtually the same frame size when you add the 1-1.5cm difference between C-C and C-T.

Larger riders (6'0" and up) may find that this formula puts them on a too small, and uncomfortable, road frame. A taller cyclist who wants a more comfortable frame may be better off selecting a frame 27-28cm less than inseam length, C-T.

For a mountain bike, we start by recommending a frame in the range of 10-12cm smaller than you take in a road frame. For example, if you ride a 55cm C-T road frame, look for a 43-45cm (17-18") C-T mountain frame.

Frame Dimensions

In many ways, though, it is more important to fit a mountain frame by the top tube length needed, rather than by the seat tube length.

For instance, you might be able to get to the proper frame clearance, saddle height and neutral knee position (see below) on either a 17" frame or a 19" frame. Yet the 19" frame will likely have a top tube 1" longer than the 17" frame, which changes your stem length accordingly. Or, one manufacturer's 17" frame may give you a 22" top tube, while the next one's 17" gives you a 22.8".

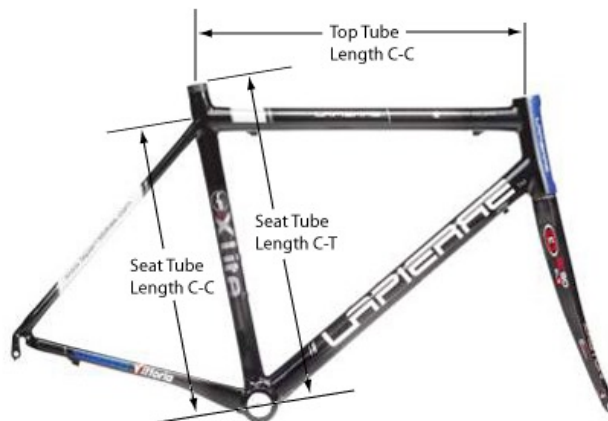
More on this below, just make sure that you'll be able to work out your top tube and stem length for a given frame.

If you're just interested in learning enough to make your frame purchase, congratulation! You've succeeded! Now the only thing left to do is check out our outstanding selection of road bike frames or mountain bike frames.

Saddle Height

With the right frame size, you'll be able to set your correct saddle height, which will be within a centimeter of $.883 \times$ inseam length, measured from the center of the bottom bracket to the low point of the top of your saddle. This allows full leg extension, with a slight bend in the leg at the bottom of the pedal stroke.

LeMond recommends that you then shorten this length by 3mm when using clipless pedals. Also, you might consider a slightly taller saddle height if you ride with your toes down and your heel raised. Most importantly, make any changes in saddle height gradually, and give your body time to adapt to the new position.



Knee Position

Next, put your bike in a stationary trainer, raising the front wheel to level the bike. Check your position with a video camera or mirrors in front and to the side, or with the help of a friend. Position your cleats with the ball of your foot directly over the pedal axle, and in line with any natural "toe-in" or "toe-out" foot position. Warm up by riding easily for 8-10 minutes.

Then, as you continue to look ahead, slowly stop pedaling, and bring the cranks to rest at horizontal, parallel to the ground. Check the position of your forward knee relative to the pedal spindle - for a "neutral knee position," you'll be able to drop a plumb line from just below the front of the forward kneecap, and have it bisect the pedal spindle and ball of your foot below. Remember to not raise or drop your heel or hip as you check this. Then, move the saddle fore or aft, as needed, to achieve this neutral position.



The neutral knee position serves as a good starting point for most cyclists, though many adjust it from here: long distance (stage) racers and mountain bikers often move the saddle back by 1cm or more, for power, and sprinters may move it forward, "getting on top of the gear" for quick acceleration.

One more note on frame size and geometry: if you cannot move the saddle back far enough to get your knee to the neutral position, you should look for a frame with a more relaxed seat tube angle, or consider a slightly larger frame; if you have trouble moving the saddle forward enough, look for a steeper seat tube angle on your next frame, or consider a smaller frame. For most frames, a seat tube angle shallower by 1 degree moves the seat lug 1cm back, relative to the bottom bracket.

Finally, recheck your saddle height. If you've moved your saddle forward or back, you've effectively shortened or lengthened your saddle height, and will need to readjust it.

Top Tube and Stem

Next, dial in the correct "reach" to the bar, or horizontal fit. Proper reach gives you easier breathing, better neck back and lower comfort, and better weight distribution and bike handling.

That "ideal position" varies here more than anywhere else for cyclists, depending on riding style, flexibility, body proportions, and frame geometry, among others. And, your upper body position will evolve with more hours in the saddle. That is, you may And that you develop a lower, longer position as your fitness and flexibility improve. As Phinney notes, though it may be difficult to achieve a truly flat back, we cyclists should all strive to be "longer" across the top of the bike.

Unfortunately, there is no formula for sizing the top tube and stem that works as well as the inseam method. One indicator comes from glancing down at the front hub while riding in the drops; your view of the front hub should be obstructed by the handlebar. LeMond recommends that your elbows, bent at 65 - 70 degrees with your hands in the drops, should be within an inch or two of your knees at the top of your stroke.

Measure your current bike's top tube and stem. Then, decide how you'd like to alter that. At; add the top tube length to the stem length to get your overall top dimension. The very reason we stock stems in 1cm increments, from 7cm to 14cm, is just to let you dial in your best top tube and stem length.

Handlebar Size

Road handlebars come in several widths and bends. Most cyclists select a bar that is just as wide as their shoulders, measured as the distance between the shoulder joints. A wider bar opens the chest for better breathing and more leverage, but is less aerodynamic. You'll need to find your own balance between the two.

Crank Length

Choosing the right crank arm length, like the rest of this, comes down to your size and riding style. Longer cranks give you more leverage, helpful if you like to push big gears at a low cadence (climbing, time trialing, etc.). On the other hand, if you like to spin at a high cadence, you'll do better with standard cranks. As a starting point, we often recommend 170mm cranks on 54cm C-T road frames and smaller, 170-172.5mm cranks on 55-61cm frames, and 172.5-175mm cranks on 62cm frames and larger. Mountain bikes generally get cranks 2.5-5mm longer than road bikes; that is, you might want a 175mm crank on your mountain bike if you're set up with a 172.5 on your road bike.

We offer a wide range of gearing options for chainrings and cassettes. Depending on your strength and terrain, you're welcome to specify the close-ratio gearing generally used for racing, or wider ratios for hilly terrain or more recreational riding.

Final Note

One of the objections your local shop may have to your purchasing a bike through the mail is that it cannot be fitted correctly. For the resourceful cyclist, the opposite is true. The retail shop often offers a cursory fit that involves the customer standing over the top tube of a few bikes on the floor; frames 5cm (2 inches) apart rather than 1-2cm apart in sizing; no stem sizing, no bar sizing, no crank sizing, no wheelbuilding options. Compare that with the program we have for you. The Colorado Cyclist offers quality and variety in professional road and mountain bikes, at significant savings-as well as a great fit!

Our Guarantee

We guarantee the fit of your new bike with this simple promise: After you've ridden your new bike for a few days, let us know if you need to swap out the bar or stem, or make other adjustments, and we'll make it right for you.

