

How To Set Up & Measure For Correct Bike Size

Setting up your bike

Correct set-up on a bicycle will maximise a cyclist's energy efficiency, comfort and performance potential. Incorrect bike set-up can actually lead to muscle strains and overuse injuries in knees, ankles, hips and back. Correct set-up can be achieved by following these guidelines.

THE FRAME

A correctly sized frame will give you a balance between height and length, as well as between responsiveness and comfort. Factory-built bikes are made to a formula which suits the average shaped rider. People with long legs and short bodies (or the reverse) can find it difficult to obtain a stock frame which suits them. In this case, the rider should have his/her frame customised for them by a frame builder.

Measuring Frame Size

Dress in a pair of riding knicks and then socks with no shoes. Take your inseam measurement (crotch to floor). To do this, place a thick spined book between your legs, as if to use it as your saddle. Standing on a hard floor surface, face a wall and mark a line along the top of the book edge touching the wall. Stand up straight when marking. Using a tape measure, or ruler, measure the distance from the floor to the height of the mark. This is your inseam measurement (NB: take the measurement 4 or 5 times and average it). Now substitute the measurement into the following formula: o Road and Track Frame Size (cm) = inseam (cm) x 0.65 o Mountain Frame Size (cm) = inseam x 0.56 Road and track frame measurements are taken from the centre of the bottom bracket to the centre of the top tube. MTB frame size is measured from the centre of bottom bracket to the top of top tube. Please note, these measurements are a guide only and will form a good starting point. Variations will depend on shoe and cleat type.

Saddle Height

Overall seat height is perhaps the single most important measurement for determining correct positioning on the bike. Incorrect saddle height can result in a less efficient pedalling action. Being too low on the bike will cause you to bunch up on the bike and can restrict the full contraction of your leg muscles. Being too high on the bike will result in lost energy through rocking on the saddle and can cause over-stretching of the muscles. There are two methods by which the correct seat height can be determined: the Heel Method and the Calculated Method.

1. Heel Method

The easiest way to Is "the heel method". In a normal riding position, turn the cranks until they line up parallel with the seat tube of the bike frame. Now, position the centre of the heel directly over the centre of the pedal axle. Adjust seat height up or down until leg appears fully extended. NB: If the heel of your shoe is thicker than the sole under the ball of your foot, you will need to lower the seat accordingly (eg. If heel is approximately 3mm thicker than the shoe at the ball of the foot, lower the seat by an extra 3mm).

2. Calculated Method

Use the same inseam measurement taken for frame sizing. Substitute the inseam measurement into the following formula: All on-road cycling (Clips & toe straps): Saddle height = 1.07% of your inseam = $1.07 \times \text{inseam (cm)}$ All on-road cycling (Clipless Pedals – Time, Look, Shimano & clones) Saddle height = 109% of your inseam = $1.09 \times \text{inseam (cm)}$

Fore & Aft Seat Position

Adjusting position: Loosen seat bolt to slide seat back on its rails as far as it will go. Re-tighten seat bolt. Make a plumb bob – tie a key or squeeze a glob of "Blu-tak" to the end of a 1.5m long piece of string.

On a level surface, lean the bike against the wall and sit in your normal riding position with feet at the 3 o'clock- 9 o'clock position (ie. Cranks parallel to the ground). Have someone drop the plumb bob down from the tibial tuberosity on the forward knee (this is the small bump just below the knee-cap) to the floor in between the cranks and frame.

Position the foot parallel to the floor. Adjust saddle position forward until plumb line falls directly through or just slightly (1-2 cm) behind the centre of the pedal axle. Re-tighten the seat bolt. Check to see that the saddle is perfectly level. Check this with a spirit level or lean bike against a brick wall and check against the brick lines (make sure floor is level).

Upper Body Position

Upper body extension is very much a personal thing. There are no rules for correct positioning - just general guidelines. The goal for most racing cycling is to find a healthy balance between comfort and aerodynamics.

1. Head Stem Length

Whilst in the racing position on your bike, looking directly forward, have someone drop a plumb line from the tip of your nose. Ideally, the line should fall directly through or within 1-2cm behind the centre of the point where the handlebars connect to the stem.

2. Head Stem Height

Again this depends on your height and frame size, however, a good guideline is for the top of your head stem to be 5-8cm below the top of your seat. Lowering the head stem even further will improve your aerodynamics, however, it may feel more uncomfortable to those who are less flexible in the lower back, hips and hamstrings – it's a personal decision.

Cleat Position for Clipless Pedals

1. Position the cleat so that the pedal axle lines up directly underneath the ball of the foot. This is the point where you will get the greatest transfer of energy.

2. Provided you do not have any structural/alignment problems with your feet, they should point directly forward when in the pedals (parallel to the crank arms). This is called the "ZERO" position. Should problems exist with the feet DO NOT attempt to straighten this out. Set the cleats to accommodate this characteristic rather than correct it.

It is believed by many that the locked-in position that occurs on the pedals, particularly with clipless pedals, is responsible for overuse injuries in the knee, ankle and hips.

To avoid these injuries most new clipless pedals offer a floating cleat which allows a few degrees float in both sideways directions.

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