



Bike sizing and set up

The following information should help you select the correct size bike and achieve a good riding position for a road (racing) bike. Your optimum position on a time trial bike, or when using tribars on a road bike, is likely to be a little different. For those who want a detailed one-to-one analysis of their set up it is worth considering one of the various schemes that are available through specialist bike shops.

Frame Size

Height of Rider	Suggested Frame Size*
144-152 cm (4'9"-5'0")	48.3 cm (19")
152-158 cm (5'0"-5'2")	49.5 cm (19.5")
158-163 cm (5'2"-5'4")	50.8 cm (20")
163-168 cm (5'4"-5'6")	52.1 cm (20.5")
168-173 cm (5'6"-5'8")	53.3 cm (21")
173-178 cm (5'8"-5'10")	54.6 cm (21.5")
178-183 cm (5'10"-6'0")	55.9 cm (22")
183-186 cm (6'0"-6'1")	57.2 cm (22.5")
186-188 cm (6'1"-6'2")	58.4 cm (23")
188+ cm (6'2"+)	59.7 cm (23.5")

*refers to a standard frame, not low profile or frames with a sloping tope tube

Once you have chosen the correct frame size, it should possible to set a correct riding position. When establishing a general riding position on the bike, you should:

- set the saddle height and position.
- set the handlebar position ensuring the position is safe and allows easy access to the brake levers.

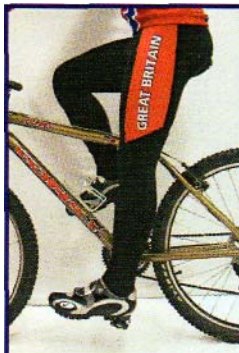
Saddle height

For *introductory* or *general* cycling, and in endurance disciplines, the saddle height is the most important adjustment to the bike with regard to *fit* and position on the bike. Optimal saddle height will depend on a variety of factors, such as the technical requirements of the cycling discipline or activity to be undertaken, the rider's anatomical geometry and stage of development, and specific requirements for efficient performance. Seat height will represent a compromise between aerobic efficiency, aerodynamics, safety and comfort.

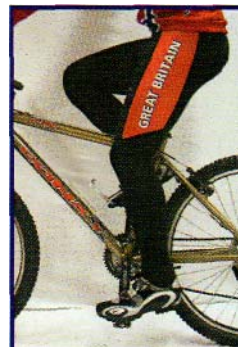
A simple approach to finding a saddle height starting point is to sit on your bike with your heels on the pedals. Set one pedal to its lowest point (in line with the seat tube) and set the saddle height so that your leg is straight; however, you should not have to stretch or lean (rock the pelvis) to put your heels on the pedals. There should be no rocking of the hips as you pedal backwards. With the balls of the feet on the pedals (correct foot position), your knee should be slightly bent when the pedal is at the bottom of the pedal stroke. Pedalling with the ball of the foot over the spindle of the pedal gives a more efficient and comfortable position.

If this position is found to be too low, raise the saddle by 0.5-1cm. If the saddle is raised, you should check that there is no rocking of the hips, by having another rider observe you pedalling from behind. Beginner riders, who are learning to ride a bike, may require a lower saddle position that easily allows them to put their feet on the ground for safety reasons.

The method for establishing an optimal saddle height, as described, is not appropriate for some disciplines, such as BMX, downhill MTB and cycle speedway.



Setting correct saddle height - heel on pedal with knee locked



Correct saddle height and foot position

There are various more scientific methods of calculating saddle height. For example British Triathlon recommend multiplying your inseam by 1.09 to calculate saddle height, to include the crank arm.

Saddle position

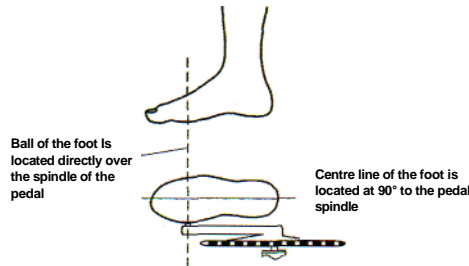
The saddle not only needs to be straight, flat and at the correct height, but its position relative to the cranks should also be considered (called saddle setback). Adjustment of the saddle along its rails (front to back) will achieve this. For general or introductory riding, the saddle setback should be set so that when you are seated, with the cranks level, the knee of the front leg is over the pedal spindle. A more advanced method is to take a vertical line from the head of your fibula, using a plumb line, to set the saddle so that when the cranks are horizontal, the line passes through the centre of the pedal spindle.

The saddle position can be adjusted by:

- lifting or lowering the seat post
- tilting the saddle up or down
- sliding the saddle backwards or forwards.

Foot position

Correct foot position allows the efficient application of force to the pedals, resulting in optimal power output. The ball of the foot should be on the pedal with the foot pointing forwards (parallel to the cranks). However, anatomical differences between individuals may require some cyclists to pedal with their heels pointing slightly in or out. In these instances, it is usually acceptable as long as it is established that it is a definite natural variation (seen when standing up or sitting on a table with legs dangling freely over the side) rather than just how the foot position has evolved over time.



Crank Length

There has been a fairly recent trend towards longer crankarms. However whilst these add power they can restrict pedalling speed (cadence). Crankarm length is usually stamped or marked on the inside, but can be measured from the centre of the fixing bolt to the centre of the pedal mounting hole.

The following table provides guidelines for selecting the correct length;

Inseam	Crankarm Length
Under 29"	165 mm
29-32"	170 mm
32-34"	172.5 mm
Over 34"	175 mm

Handlebar position

The handlebar position will primarily depend on your personal preference and anatomy, and the requirement of the cycling discipline or activity to be undertaken, rather than a precise measurement (eg road racing requires comfort and aerodynamics, cyclo-cross and mountain biking need control, and BMX riders want leverage and control). You should be able to reach the handlebars comfortably, ensuring that the bike can be controlled. If the handlebars are too far away, you will have problems with steering, braking and gear changing, but if it is too close it could compromise control. Generally, you should aim for more of your body weight towards the rear of the bike.

If the handlebars are too low, you will sit too far forward and will therefore have more weight towards the front of the bike. In contrast, if the handlebars are too high, you will sit very upright and therefore will have too much weight towards the rear of the bike. If too much of your body weight is forwards or backwards, the handlebar height can be adjusted to correct this.

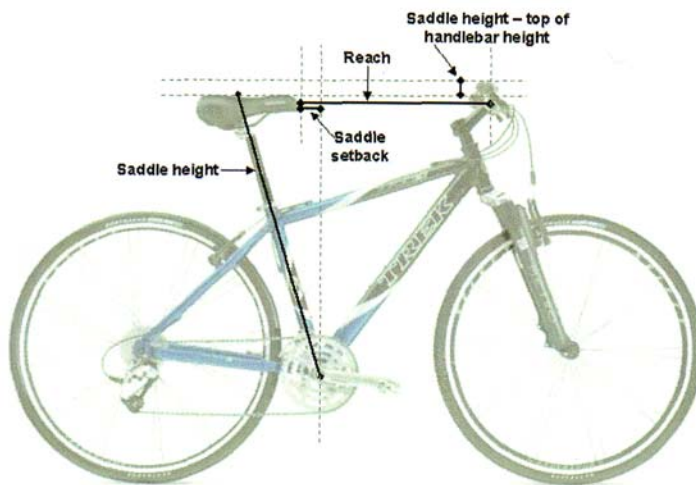
To adjust the handlebar position, you may raise or lower the stem. The length of the stem is fixed and therefore adjustments can only be made by purchasing a new stem.

The width of handlebars should be similar to your shoulder width and generally bikes are supplied with different width bars to reflect the size of the bike frame.

Rider Measurement Record

The following measurements should be recorded:

- **saddle height** - measure along the line of the seat tube, from the centre of the bottom bracket to the top of the saddle.
- **saddle setback** - measure the horizontal distance between a vertical line, from the centre of the bottom bracket to the nose of the saddle. Hold a plumb line (a length of string with a weight on the end) in line with the centre of the bottom bracket, and measure the distance from the nose of the saddle to the plumb line.
- **difference between saddle height and top of handlebar height** - measure the distance from the top of the handlebars to the floor, and subtract it from the distance from the top of the saddle to the floor.
- **reach** - measure from the nose of the saddle to the centre line of the handlebars.
- **optional**-record crankarm length and handlebar width.



Rider: _____

Date: _____

Bike: _____

Measurement/Description

Saddle height: _____

Saddle setback: _____

Difference between saddle height and top of handlebar height; (Top of saddle to floor-top of handlebars to floor= _____)

Reach (saddle to handlebars): _____

Crankarm length: _____

Handlebar width (centre to centre): _____