

## Overview

This article is an overview of the analysis behind the Identify BMX crank length recommendation.

## Outline

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## Taking the Measurement

### [Rider Leg Position](#)

While standing, get one leg bent at 90 degrees, or close to it. Position the lower portion of the leg vertically. A great place to do this is on a set of steps. See *Figure 1*.



**Figure 1:** Measurement stance

### 1st Measurement - Floor to Knee Joint

Find the bone where the knee pivots/hinges. This is usually very easy to find as it is the bone on the side of the knee that sticks out when the leg is bent. Make sure the rider's leg from the floor to the knee is as vertical as possible to help with the most accurate measurement. To make things easier, put a dot at this spot with an erasable marker. This will help with the 2nd measurement as well. Try to measure directly to the center of the bone at the center of where the knee is pivoting. If you are off a little because you went to the top of the bone it shouldn't affect the results that much. See *Figure 2* for an illustration of this measurement.



*Figure 2: Illustration of 1st measurement*

### 2nd Measurement - Knee Joint to Hip Joint

For the 2nd measurement, find the top of the femur where it articulates in the hip joint (the ball and socket joint). This is also typically easily located because when the leg is bent it is the bone that can be felt on the side of the butt. *Figure 3A* shows the typical location of this bone. *Figure 3B* illustrates how to take this measurement. The black dot on the knee is nice for measurement repeatability and to guarantee the 1st and 2nd measurements are taken at the same location on the knee. Again, when searching for this bone, try to locate the center of the ball and socket joint. If you locate the end of the bone, it will slightly affect the results but not to the point that will be detrimental to your rider.



**Figure 3A:** *Locating the top of the femur*



**Figure 3B:** *Illustration of 2nd measurement*

### **3rd Measurement - Shoe Size**

The 3rd measurement is a simple one, rider's shoe size.

### **Results**

Now that you have these measurements, or if you have any questions, send them on over to Identify BMX on Instagram or Facebook and we will get the recommendation to you! Sarah monitors emails and messages daily and can generally have a response within a few hours or sooner.

### **Some Things to Consider**

What are some reasons to consider reducing the results for this method of measurement?

1. **Foot position on pedal** - if your rider does not put the ball of their foot on the pedal axis then the foot is in the wrong position. If your rider puts the pedal more toward the center of the foot, be aware they are effectively shortening the lever arm their feet provide to lengthen their overall reach. Identify BMX strongly suggests you encourage your rider to begin to put the ball of their foot on the pedal axis. They will generate more power... period.
2. **Large Q-Factors for smaller riders** - this method assumes there is a small Q-factor on your rider's bike, around 130mm-135mm or under. The larger the Q-factor and the shorter the rider the less effective leg length they have to the pedals. If your rider has a Q-factor above 135mm, Identify BMX highly suggests lowering the Q-factor below this value, however, if this is not possible consider reducing the recommended crank length from this measurement method by 2.5mm.
3. **Currently on a very small crank length** - We are always very hesitant to recommend going up in crank length by more than 7.5mm, maximum of 10mm. If the recommended length is determined to be more than 10mm greater than your current crank length, consider only going up 10mm on the crank length for about 3 months as a stepping stone to the correct crank length. If you decide to make a

jump more than 10mm, expect the rider to take more than the normal amount of time to adjust to the new crank length and be able to spin them efficiently.

4. **Rider Proficiency** - Identify BMX firmly believes that all newer riders that are novice or new intermediates should learn to spin their cranks efficiently. This will benefit greatly when they achieve expert status. Consider reducing the recommended crank length by 5mm if your rider is a novice or newer intermediate. A longer crank length gives a pure mechanical advantage because of the increased leverage, however, the only downfall is the larger diameter when going through one revolution. Most experienced intermediates and experts know how to spin their cranks and there is no need to compensate.

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