Rennen.Tech.Talk
with George Costa

Twenty to Cruiser Rollout Sizing

In this installment of Tech talk I thought I'd hit upon a topic in which I find myself explaining at almost every national I attend. A common question which is asked is how do I size my cruiser to my twenty? I have many parents constantly telling me about how little Johnny is riding a 55" rollout. Every time I hear this I ask immediately what does this mean to you? Many believe this to be the actual distance a bike travels under one pedal revolution, which is false. This is called "Gear Inches" and it is a topic I have explained in a two part article just about a year ago. What we will do in this article is take concepts of true rollout which has been explained and show you how to properly match your cruiser to your twenty.

I have to give credit to Rob Vargo of Cedar BMX for the inspiration for writing about this topic. He called me on his way back from Reno to discuss his son (RJ) gearing and how to go about matching the two. We will use their situation as our example.

First order of business is I asked Rob to send me some important info:

> -Both cruiser and twenty tire circumferences
> -Both cruiser and twenty gearing

I asked Rob to actually measure the circumference in order to make sure that we are working with accurate numbers. This is easily accomplished if you take a non-stretchable tape (ex, heavy masking tape) and wrap it around the rear wheel inflated to the correct pressure. Be sure to mark the start and end of the tape and then you can measure this accurately on a table using a tape measure for example. Rob measured both the Twenty and Cruiser and reported back the following:

> -Twenty Gearing 42/15; Circumference = 61.0 inches
> -Cruiser Gearing 40/17; Circumference = 73.3125 inches

Now referring back to our Rollout article:

$$Rollout = Wheel\ Circumference \times \frac{Front\ Gear}{Rear\ Cog}$$

Now we can figure out what RJ's rollouts are:

> Twenty; $61 \times 42 / 15 = 170.8$
> Cruiser ; $73.3125 \times 40 / 17 = 172.5$

Now this where most people get in trouble had we used traditional gear charts we would have seen that these two rollouts look like

> Twenty; $170.8/Pi = 54.39$ Gear inches
> Cruiser; $172.5/Pi = 54.94$ Gear inches

Most will size these two gears to be very close (within 0.55 Gear inches). But in reality looking at these numbers in gear inches is misleading cause we tend to round the numbers up and down at will.

Just to prove to you that this is the case for fun lets take RJ's Cruiser Rollout and act like that's what he runs on his twenty, but we are going to find the front gear that will give him this rollout;

$$\frac{172.5\ rollout}{61\ twenty\ circumference} \times \left(15\ rear\ cog\right) = 42.42T\ Front\ gear$$

This shows that RJ is running a Cruiser gear that is 0.42T harder than his twenty. My opinion is that this would be too hard and its because of rounding the gear inch numbers. Lets all save us some headaches and throw away these gear inch charts please.

Now back to sizing up RJ. I sent Rob the following based on what RJ likes riding better his cruiser or twenty:

If RJ likes his cruiser feel better then run 40/17 on the cruiser and this on 20;

$172.5/61 \times 14 = 39.59$
$172.5/61 \times 15 = 42.42$
$172.5/61 \times 16 = 45.24$
$172.5/61 \times 17 = 48.076 \sim 48T$
$172.5/61 \times 18 = 50.90 \sim 51T$

If RJ likes his twenty feel better then run 42/15 on the twenty and this on cruiser;

$170.8/73.3125 \times 14 = 32.62$
$170.8/73.3125 \times 15 = 34.95 \sim 35T$
$170.8/73.3125 \times 16 = 37.28$
$170.8/73.3125 \times 17 = 39.61$
$170.8/73.3125 \times 18 = 41.94 \sim 42T$

Clearly we need to select the closest options to a whole number namely what I have highlighted. What I have done is taken the Rollout equation and rearranged it so that we use the desirable rollout and divide it by the wheel size of the other bike then multiple by different rear cog sizes to find the match. This has always worked for me in helping people and usually the response is that their bikes now feel similar.

As a side note this is what I do to help G-Cog customers size their gearing so that they can purchase one device and use it on both bikes. In the Case of RJ he could get a 17T or 15T G-Cog depending on which bike feels better to him.

Hopefully this Demystifies Gear matching and Rollout/Gear inches for you.