



As the fat bike category finds its voice dropping and hair growing in new places, riders continue to discover the benefits of wider rims and tires. The wider tire platform provides float, stability and traction to keep you in control and moving on any terrain.

When increasing the width of the rear tire, you quickly find that chain interference becomes a limiting factor in the search for more tire girth. Without modifications to the drivetrain, the chain will rub against the outside edge of the tire when the bike is shifted into the lowest gears. For example, on a Pugsley with a standard 3 x 9 drivetrain, 82mm Rolling Darryl rims and 3.8" Nate tires, the chain will rub the rear tire in the lowest available gear combo. On a bike designed to crawl over the gnarliest terrain possible, the lowest gears are essential and cannot be limited. **See Figure 1.**

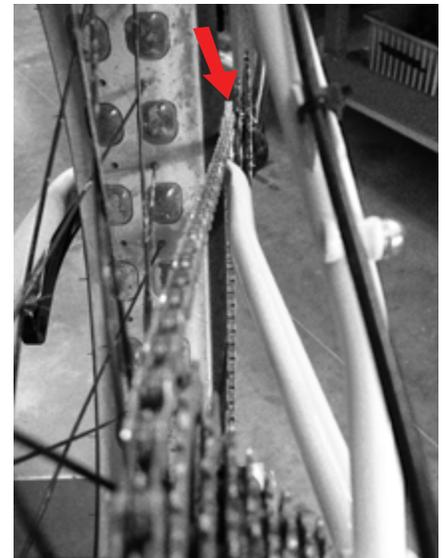
So as you can imagine, the primary design challenge while developing our Moonlander frame was creating chain clearance for 4.7" tires on 100mm rims. With that challenge, the MWOD system (Mr. Whirly Offset Double |em-wäd|) was born.

The MWOD system is a set of two front chainrings (20/33t or 22/36t). The granny ring is mounted directly to the 58mm mounting holes of a Mr. Whirly crank arm and the middle ring mounts directly to the granny. This system eliminates the outer chainring from a standard triple and uses the available space to shift the granny and middle chainring to the old locations of the middle and outer chainrings. Still following? Good. As a result, the MWOD system will increase the distance between the chain and rear tire by about 5mm in the lowest gear. That makes space for an additional 10mm of tire width! **See Figure 2 & 3.**

For example, the additional chain offset MWOD supplies will allow you to run a full 2 x 9 drivetrain on a Pugsley with 82mm Rolling Darryl rims and a 3.8" Nate rear tire. Furthermore, because this is only a modification to the chainrings the MWOD system gets you more tire clearance without increasing your Q-factor, or pedal-stance width. This is key on a bike with an already wide Q-factor.

Here at Surly we like to think of the MWOD as a great high/low range transmission. If the ground is hard, high gear. If the ground is soft, low gear.

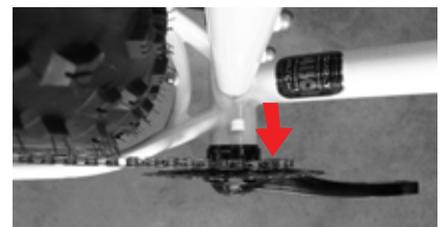
Think you still need that big outer chainring from your triple? Well (adjust taped glasses), the Moonlander will hum along at about 33mph if you are in the 'big' gear (36:11) at a 120rpm cadence. Not fast enough? You're an animal. Pedal faster.



**Figure 1**  
Additional tire width causes chain to interfere with the tire



**Figure 2**  
Mr. Whirly Triple



**Figure 3**  
Mr. Whirly MWOD

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