

## TTIPS VOL 7/22 - Techniques

### Bike Chain Maintenance

*My wife, Donna, wanted to surprise me on Valentine's Day. She told me she was going out for a stroll but secretly she walked to the bike store and bought a bike for me as a gift.*

*While she was riding home on it, a neighbor asked her what she was doing.*

*Pointing to the bike, Donna said, "I got this for my husband."*

*The neighbor replied, "good trade!"*

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### Thanks

Thanks to fellow KABC rider and trained bike mechanic John Pedigo who contributed content to this article. John is a great friend and skilled cyclist.

### INTRODUCTION

Hey, here's a question for you? What are the two things you should do to your bike just prior to each ride? The answer is that you should (1) check your tire pressure and adjust it accordingly and (2) wipe off your chain and lubricate it.

In the South Carolina low country, chain maintenance requires special attention. The prevalence of sandy soil, riding on asphalt paths, and just plain gritty road conditions will wreak havoc on your chain and other key components of your drive chain if neglected. The negative impact is excessive wear on the chain, and on the cassette of gears on your back wheel, and the chain rings connected to your pedal crank arms. The result over time will be reduction of pedaling power, poor shifting, a noisy drive chain, excessive chain wear, and more frequent replacement of drive chain parts.

## **YOUR CHAIN – MANY MOVING PARTS – LOTS OF POTENTIAL FRICTION**

Your bike's chain has more moving parts than any other single component on your bike. A new bike chain is composed of 116 chain links, each of which has eight parts as further explained below.

Now, the chain on YOUR bike likely is a bit shorter because it was sized to your bike. Let's say six links were removed to fit your bike leaving 110 links. That means your chain has about 880 moving parts!

### **YOUR CHAIN: EXPLAINED IN DETAIL**

Your bike chain transfers motion from the front chainring (s) to the rear sprocket(s) (also known as gears). Chains are made of multiple pairs of steel outer and inner plates held together by rivets. The rivets pass through an inner roller and should pivot freely on the inner plates and roller. Bike chains widths vary and are typically specific to the number of rear sprockets. Chain pitch is the distance from rivet to rivet and is 0.5 inches for most derailleur bike chains.

### **THE CASE FOR PROPER MAINTENANCE**

Proper chain maintenance will significantly increase and prolong the negative impacts of wear and thus the subsequent inevitable need for chain and cassette replacement. Chain cleanliness can make the difference between replacement in as little as 500 miles or in as many as 1500 miles. While chain replacements may only cost tens of dollars, cassette replacement typically costs hundreds of dollars. OUCH! Cleaning will add life and improve chain performance.

### **STEP ONE – GET RID OF THE GRIME AND GRIT**

Before cleaning the chain, GENTLY wipe or brush clean the derailleur pulley wheels (the small plastic cogs that guide the chain) and wipe the chainrings if they are extremely dirty. With a dry rag, wipe off the chain. I like to wrap a rag around the chain at the lowest point, and while gently grasping the rag with my left hand, I rotate the pedals backwards with my right hand. Keep doing that until you get most of the grime, sand, and dirt off the chain.

Then, drip a mixture of water and dishwashing liquid on the lowest stretch of the chain as you rotate the pedals backwards. With that mixture now on the chain, keep rotating the pedals and let gravity help coat the chain.

Now, again wrap a CLEAN rag on the lowest stretch of the chain and rotate the pedals to wipe off the mixture. Keep going for a while.

Now, rotate the chain while dripping clean water on the chain to rinse off the dish soap: you want to get all the soap off the chain and from inside the chain. Go ahead and use a garden hose if you wish. You won't hurt the chain. Wipe the chain again with a clean cloth.

## **STEP TWO – LUBRICATE THE CHAIN**

Now that your chain is mostly clean, you likely have removed most, or all of the dirty lubricant. Your chain rivets and link pivots now require more lubrication. As you slowly rotate the pedals backwards drip lubricant on each rivet of the lowest stretch of the chain. Lubrication is only required at the rivets, NOT all over the outer plates. A drip applicator helps avoid applying too much lubrication, which can and does attract dirt.

After you have lubricated each rivet, continue to rotate the pedals to allow lubricant to spread evenly. Do this for about 30-45 seconds. Now, with a clean rag wipe off the lubricant. This is counterintuitive, I know. The outside of the chain does not need lubricant. In fact, lubricant on the outside of the chain provides a wet surface to which sand and dust will stick. Actually, you can't wipe it too much. Wipe off as much as you can.

You are now ready to ride.

## **FREQUENTLY ASKED QUESTIONS AND OTHER TIPS**

Q. What should I use to clean the chain in Step One?

A. There are many commercial cleaning solvents on the market, however many times just a mixture of dishwashing soap and water with a stiff brush are sufficient for removing any sand and excess lubricant from your chain.

Q. Can I really use water to clean my chain? Won't my chain rust?

Q. It's OK to use water. Water helps to distribute detergent and most importantly, when rinsing, it removes detergent and degreaser. You don't, however, want residual detergent or degreaser on your chain when you re-apply lubricant. Normally your chain would rust after getting drenched with water, but re-application of lubricant after properly cleaning is more than sufficient to protect your chain.

Q. I've heard that putting paraffin wax on a chain works as a good lubricant. Is that right?

A. Yes, waxing a chain is extremely effective, and it lasts for many rides. To do it correctly, however, requires you to remove your chain, clean it exquisitely (there can be no residual

chemicals on your chain), melt the wax, submerge the chain, dry the chain, and then reinstall the chain. This usually is more than most of us want to do or have time to do. There are, however, local bike shops who will do it for you.

Q. What should I use to lubricate my chain?

A. It's best to use a lubricant that is formulated specifically for bike chains. Get it from a bike store or online. In general, you will find lubricants labeled as "Wet" or "Dry" lubricants. Both are in liquid form in a bottle. Wet lube is used in when riding in wet or rainy conditions. The type of riding and location best determines the type of chain lubrication. In a wet and humid area with a lot of precipitation, select a thicker lubricant that will adhere to the chain. Dry lube is used when you don't anticipate riding in rain or wet conditions. Dry lube works well for KABC rides because we rarely ride in inclement weather. Also, once applied, the liquid in dry lube evaporates leaving dry lubricant (often TEFLON) on your chain. When your chain is dry, sand and dust does not adhere as well: that's a good thing.

Q. Can I use grease to lubricate my chain?

A. Please don't. Grease is too heavy and, in quantity, makes it harder to pedal. Also, grease will pick up and retain sand, dirt, dust, glass fragments, etc. It will gum up your derailleur too. It's not as effective as specifically formulated bike chain lubricants. Your bike shop mechanic will think you're goofy.

Q. Is there bike-specific equipment I can buy to help me clean my chain?

A. Yes, there are devices that you can purchase that enclose your chain while allowing you to draw your chain through brushes and a cleaning solution. Short of removing your chain and soaking it, or treating with ultrasound at a bike store, they are the most effective at cleaning your chain. If you wish to know more, send me a note and I'll provide more detail.

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