

Safety Tips #37
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Hey, Nice Suspenders!

“You wouldn’t want my trousers to fall down now, would you?” – Mick Jagger.

OK, not that type of suspenders. I’m talking about our bikes’ shocks and springs: their *suspensions*. Some bikes have very basic suspension systems and some have rather elaborate systems. Shocks, springs, air suspension, hydraulic fluid, compression, rebound, sag, damping, etc., etc. What’s it all mean? Why do we have these things on our bikes, and how much attention should we pay to them? Are they even adjustable? If so, how should we adjust them?

I have been riding about 36 years and have totaled about a third- to a half-million miles on two-wheelers. Not an insignificant amount of experience. Yet the amount of knowledge I have about bike suspension is pathetically small. This is about to change... and I invite you to learn with me.

One thing I know is that suspension helps out with comfort and control. The comfort part is a no-brainer; I own a rigid-frame (hardtail) chopper, which means the bike has no rear suspension. None. And it is sorely (yes, the pun is intended) lacking in comfort. Sometimes I think I can feel every ant I run over in the road! Yes, the bike looks great and has a very low seat height, but it just plain hurts to ride it over most road surfaces. So suspension adds a major amount of comfort to the ride.

I have also seen how suspension (or, in this case, lack thereof) also affords more control for the rider. Leaning around a turn on a bike that has no rear suspension is not a problem, but when you are

leaned over and then hit a bump, things can get, shall we say, *interesting* very quickly. Suspension helps with control, for sure. But there are many types of suspension, both front and rear, and many ways to adjust them, even modify them. From my contact with the high-performance riding crowd and from things I have read I found out that high-performance riders are very picky about the type of suspension that's on their bikes and how that suspension is set up. What's all the fuss about? That's what we are going to delve into now.

Bike suspension consists of basically two things: springs and dampers. The springs actually suspend most of the bike above the rest of it. Springs, by themselves, can get into a pogo-ing action as they compress and expand over uneven surfaces, and that would be unacceptable by itself, so we need dampers (shock absorbers) to smooth that out. Most automobiles have separate springs and shock absorbers, but on bikes they are combined into one unit. Springs can be made and purchased with different weight ratings for different applications. And most bikes have units with adjustable springs; the method for adjusting the springs is to "pre-load" them, or compress them with a special tool so that they are stiffer to start out with. Your bike very well may have this feature, most do, so check your owner's manual to see.

The damper units are kind of like a piston in a cylinder which contains oil, and when they are in use the piston tries to push the oil through some holes into another chamber within the damper's housing. The viscosity of the oil and the size of the holes, among other factors, make a big difference in how quickly the damper will allow the spring to compress and expand. So the springs "suspend" the bike, and the dampers control the action of the springs. Many models of suspension offer adjustments to spring preload, compression, and rebound damping. High-performance riders are very finicky about how their suspension is set up, because it helps keep their tires on the road, even when there are surface irregularities or rapid control inputs from the rider. And, by the way, "high performance" doesn't mean just "racing". It means

touring, as well as other applications. Most dirt bike riders know all about this stuff, too; you can imagine how important it is off-road.

In future installments we'll look at different types of suspension and get some tips on how to set up the suspension on different types of bikes. But first I need to do more research! Stay tuned.