

**Educator's Note:** *Following is part 2 of the articles sent to us by SmarTire. The following article was sent to us, unsolicited. However, it contains information related to your safety while riding that is worth reviewing. The article has been provided by SmarTire, Inc., which manufactures and sells products related to the subject of this article. The inclusion of this article in our newsletter is **not** to be construed as an endorsement or recommendation either for or against their product line. It is included here merely for your awareness of the subject in order to increase the safety of our members. The article is reproduced here without editing.*

SmarTire Tire Tips

By John Bolegoh, Technical Services Manager, SmarTire Systems Inc.

## **Article Two**

### **The Problem with Under-inflation**

Last month, we looked at the effects of tire pressure on motorcycle safety and performance. In this installment, we'll dig a little deeper on the performance side of things and look at some of the consequences on riding on under-inflated (and over-inflated) tires.

#### **Riding on Under-Inflated Tires**

Riding on under-inflated tires is extremely dangerous with a number of serious (or even fatal!) consequences.

#### **Too Much Heat = Trouble**

Under-inflation causes excessive flexing of the sidewall which results in heat build-up in the tire. Heat is the number one enemy of tires. Higher temperatures expose the body of the tire to greater damage from normal road impacts, cause accelerated tread wear and can cause hidden interior separations that can result in premature tire failure.

Riding on under-inflated tires for prolonged periods greatly increases the chance of suffering a blow out. And as any rider knows, a blowout can cause a total loss of control and result in a serious accident.

#### **Resistance to Road Hazards – Pothole Alert**

Under-inflation lowers a tire's ability to handle various road hazards. For example, hitting a pothole with an under-inflated tire can cause the tire to buckle over the rim flange, causing extensive internal tire damage and eventual failure. In some cases, hitting a pot hole with an under-inflated tire will instantly cause the tire to rupture.

#### **Hydroplaning – Slip Sliding Away**

Low tire pressure reduces the speed at which a tire maintains full contact with a water covered road. This situation is commonly referred to as hydroplaning and is one of the main hazards of riding on wet roads. The reason that an under-inflated tire hydroplanes is

that the larger footprint area results in a lower ground contact pressure reducing the tire's ability to push the water away from the contact area. Motorcycle tires are designed to provide their optimal wet weather traction when they are properly inflated.

#### Adverse Handling – I Didn't Want To Do That!

Riding on under-inflated tires can significantly affect the handling of a motorcycle. A bike that feels stable while riding in a straight line may react unpredictably when cornering with an under-inflated tire.

As a general rule, cornering with an under-inflated rear tire will cause the bike to over-steer (turn more sharply than anticipated), whereas cornering with an under-inflated front tire will cause the bike to under-steer (turn less sharply than anticipated). Either situation is extremely dangerous for a rider not expecting this change in handling.

As soon as you feel your bike handling a little strangely, it's a very good idea to stop and check the tire pressures. Even though the tire may not look like it has lost air (today's stiff sidewalls often don't show much deflection) make sure to check with a good quality gauge. If you were using an active tire pressure monitoring system, you would have received a low pressure warning and would have pulled over to check out the situation.

#### Reduced Tire Life & Increased Fuel Consumption – Ouch!

Riding on under-inflated tires can dramatically shorten the life of a tire. 20% under-inflation can reduce tire life by up to one third. For some bikes, this can mean tire life dropping from 10,000 miles to 7,000 miles. As well, a motorcycle running on under-inflated tires consumes more fuel and increases the level of exhaust emissions that are released into the atmosphere.

#### All Tires Lose Air - Naturally

It is important to realize that air loss occurs naturally through the sidewall of virtually every tire, regardless of brand, price, or quality.

This air pressure loss can be between 2-4 psi (0.14 - 0.27 bar) per month. Because the loss happens gradually over time, it often goes unnoticed until the tire becomes dangerously low.

Since most riders check their tire pressures infrequently, this normal loss of air can have disastrous consequences. If a tire loses more than 2 psi per month, the tire, valve or wheel may be damaged so make sure to take your bike in to a service center for a complete tire and wheel inspection.

#### Tire Over-Inflation – Too Much of a Good Thing

Riding on over-inflated tires can also be dangerous. Over-inflated tires reduce riding comfort and stability, and are more susceptible to cuts, punctures or damage by a sudden impact. Over-inflation can also result in uneven tire wear and a reduction of a tire's contact area with the road, resulting in reduced grip while cornering.

### I'm Going To Tell You One More Time

At the very least, invest in a good quality tire pressure gauge and check your tires before every ride (make sure your tires are cold when you check them). Or better yet, install an active tire pressure monitoring system. Motorcycle tires only work properly when they are inflated properly – just a few PSI (or kilopascals) can make a huge difference.

### Send Us Your Flat Tire Stories!

If you have an interesting story related to a tire problem while riding, we'd love to hear it. Send us your best flat tire story, and I'll compile them into document for future distribution. If we publish it, we'll send you a SmarTire gift and we'll put your name in a draw for a free SmarTire for Motorcycles, Active Tire Pressure Monitoring System. Send your stories to: [tiretips@smartire.com](mailto:tiretips@smartire.com).

In next month's installment, we'll look at the importance of tire pressure in relation to load (both passengers and gear) as well as discuss some practical tire care tips.

John Bolegoh is SmarTire's Technical Services Manager with over 30 cumulative years experience in the tire and tire monitoring industries. To contact John with a question, email [tiretips@smartire.com](mailto:tiretips@smartire.com) SmarTire offers the world's first active tire pressure monitoring system for motorcycles. [www.smartire.com](http://www.smartire.com)