ASK THE DOCTOR

What are the HIGH COSTS of low air pressure

The Tire Doctor Responds:

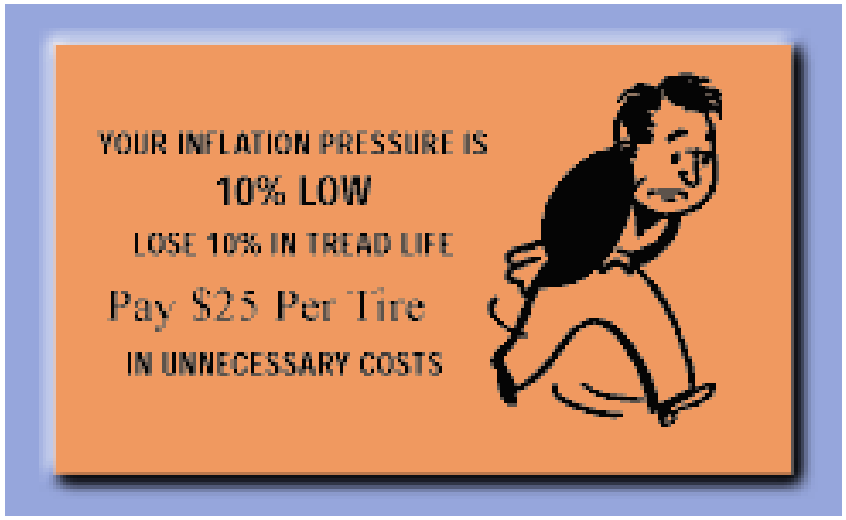
Air may be free, but as stingy as some people are with it, you'd think it cost a fortune. In fact, as we'll see, a simple, preventable problem like low air pressure costs many fleets real money in both tires and fuel.

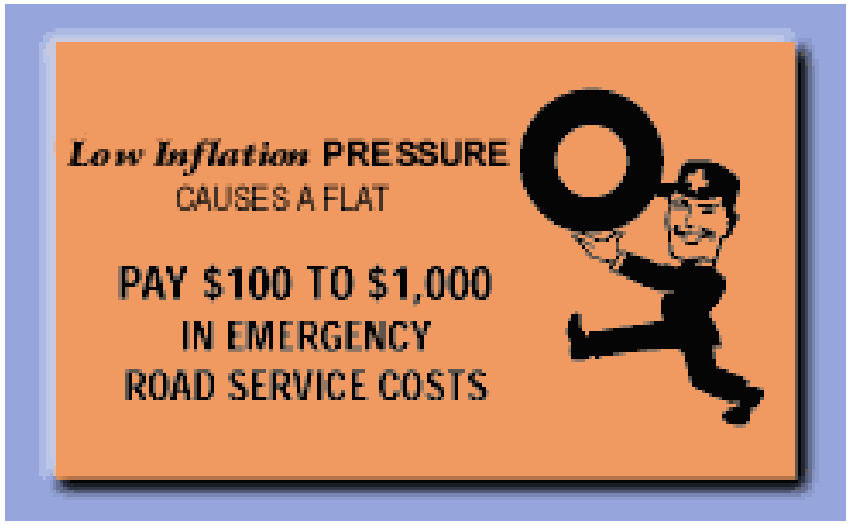
Clearly, it's not the tire that supports the load, but the pressureed air inside it.

Why are you always harping on proper inflation pressure?
Tires are called “pneumatic,” from the Greek word “pneuma,” meaning “air, wind or breath.” And there’s a reason for that.

What supports your cargo is pressurized air, NOT your tires. The tire is just the container – that holds the air – that supports the load.

But why so much fuss about exactly the right pressure?
As we mentioned in “By Popular Demand,” the right inflation pressure can minimize many types of irregular wear. And that means higher removal mileages and reduced tire handling costs. In other words, tires last longer when properly inflated.





How much longer?

The Maintenance Council (TMC) reports that 10 percent underinflation will shorten tread life by 9 to 16 percent.

If we use an average tire price of $250, that underinflation costs you $25 per tire. And, because you'll change tires more often, you'll pay more in tire service fees, along with downtime.

And how many drivers and maintenance people, if they had a target inflation pressure of 100 psi, would consider 90 psi (10 percent underinflated) "close enough"?

What if the underinflation is worse than that?
TMC suggests that each 10 percent results in a similar loss in tread life.

So 20 percent underinflation could cost you $50 per tire. And if underinflation exceeds 10 percent, you may have bigger problems. Like flats and emergency road service calls that can cost anywhere from $100 to $1,000.

Both TMC and the Rubber Manufacturers' Association (RMA) recommend that any tire found to be 20 percent or more underinflated should be immediately removed from service, demounted and inspected for damage.

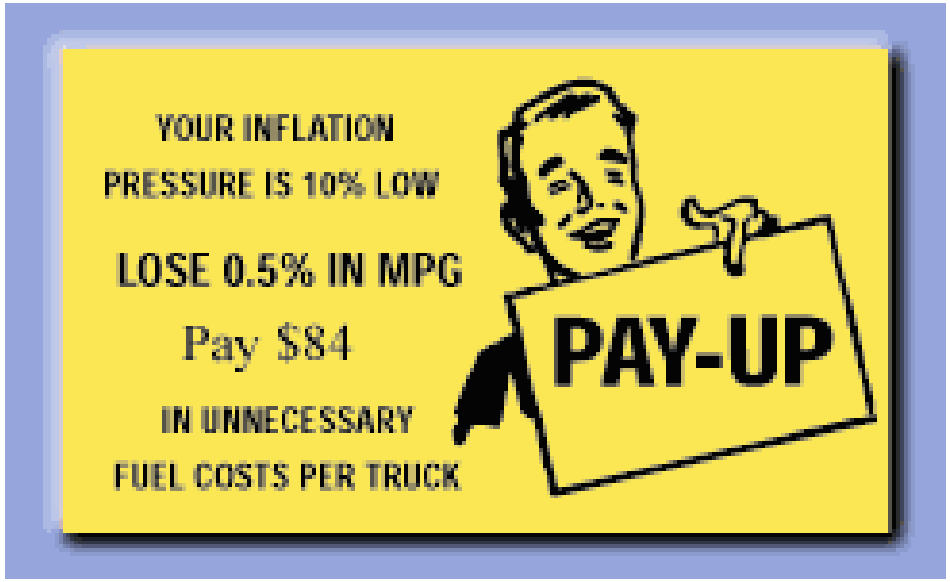
What about duals?

If the tires don't match in diameter, the smaller tire is dragged along by the larger (see "By Popular Demand,").

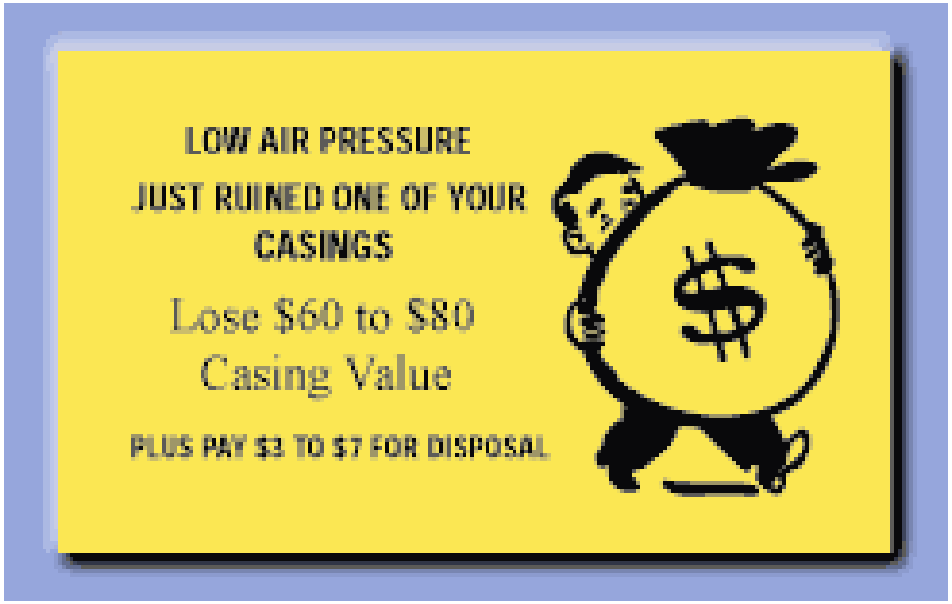
This can result in extremely rapid and irregular wear on the smaller tire. If duals differ in inflation, their diameters can differ enough to cause this kind of problem.

Are wear and fuel economy the only losses?

They’re just the beginning. Imagine bending the sidewall of a tire with your hands 500 times a minute. A truck tire goes through a full revolution, flexing all the way around, about 500 times per mile. At 60 miles per hour – a mile a minute, that’s 500 times a minute. Tire engineers call this flexing “deflection.” With underinflation, there’s even more deflection, consuming more energy and using more fuel.



How much more?
Underinflation by 10 psi will probably cost you about 0.5 percent in miles per gallon. (See "Technically Speaking,") If you currently get 6 mpg, it would drop to 5.97 mpg. At 100,000 miles per year, you'd use an extra 84 gallons of diesel, or about $84 per truck, just in wasted fuel.

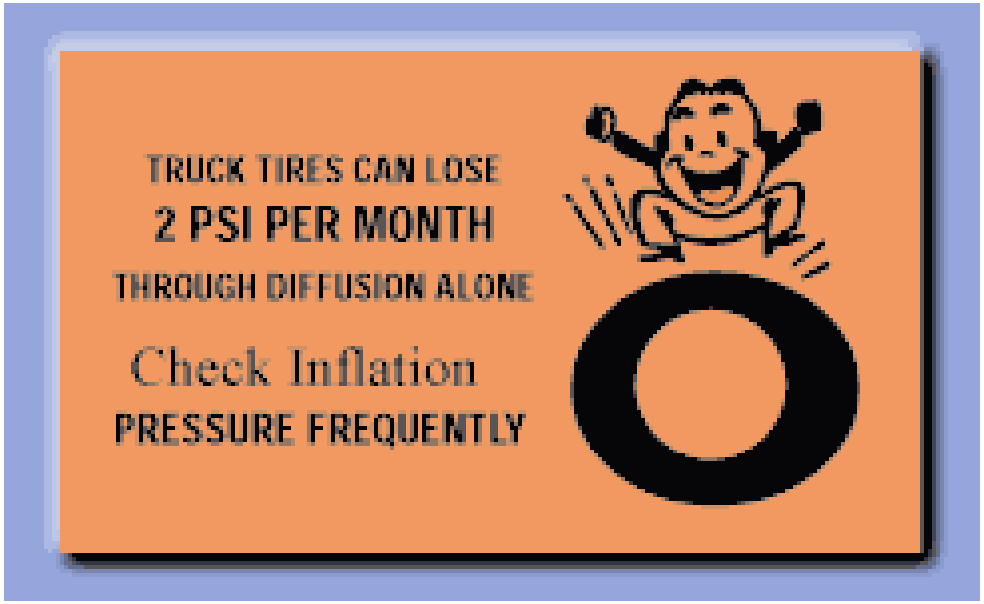


What would that cost?
If your casings are worth $60-$80, instead of getting a useful retread, you could lose that much, plus the $3-$7 disposal fee required by most states.

Are there any other losses as a result of underinflation?
Unfortunately, lots of them.

Remember what we said about "deflection"? Excessive deflection weakens steel cords excessively. And it's accepted as a fact in the tire industry that under-inflation is a major contributor to premature tire removals.

But even if things don't go that far, flexing can generate excessive heat, the enemy of tire casings. Just as time ages people, heat ages tires. And, if you've been accustomed to getting 2 retreads from each casing, you may discover that your average has dropped to 1.5.



Why don’t you just make tires that don’t leak?
Because the gas molecules in air are too small. Eventually they can diffuse through the rubber of a tire, and escape into the atmosphere. This doesn’t happen quickly, but it means you can lose up to 2 psi per month through diffusion alone.

What can we do to prevent pressure losses?

Check pressure regularly. Use a good gauge, and calibrate it often. (In a future issue of Real Answers magazine, we'll show you how to build your own master gauge.)

To keep air in, keep wheels clean and properly lubricated. And, make sure valve stems and cores are in good condition.

Finally, quality metal valve caps are a must. Caps are the primary seal against valve leaks, and also keep dirt and water out of the mechanism.

Why is that important?
A valve core is a mechanical device that must seal at very high pressures. If a tiny bit of dirt gets in, it can prevent proper sealing.

Likewise, just as water can freeze and crack concrete, water can freeze inside valve stems, disrupting the seal.

But it does cost something to check air pressure, doesn't it?
Certainly. But according to TMC data, it only takes about 20 minutes to check and adjust inflation pressure on an 18-wheeler. If you do it every week, chances are you'll have very few problems with underinflated tires.

That means increased uptime, better fuel efficiency, longer tread life and improved retreadability – all of which can put real money into your pocket.