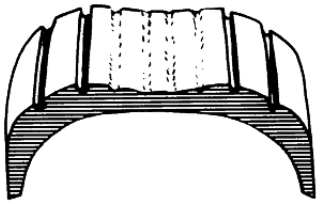
Tire maintenance = money saved

by Jacob Bustad

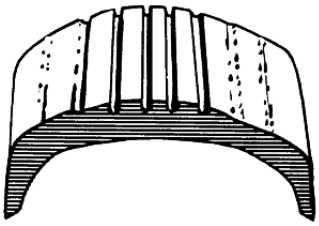
Transit agencies, whether rural or metro and regardless of size, all have one common goal when it comes to money: try and save as much as possible. With costs for owning and operating vehicles always increasing, managers continue to search for way to control expenses.

One way to start with what it all rides on: the tires. Proper tire maintenance is an easy way to save money, because proper inflation pressure—adjusted correctly for tire size and load—can result in longer life for the tire, increased safety, and, even better fuel economy.

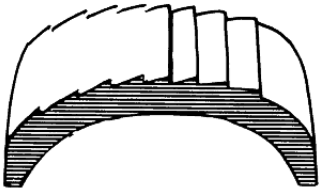
The air pressure of a tire is so critical because the pressurized air —not the tire itself—carries the weight of a vehicle, absorbing shock and keeping the tire's shape. This means air pressure also influences handling, traction, and braking.



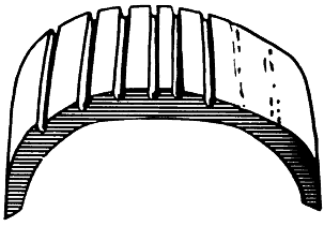
Excessive wear at the center of the tread indicates that the air pressure in the tire is consistently too high.



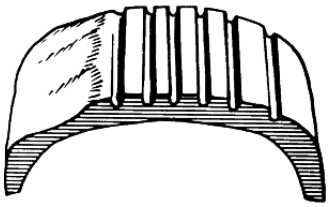
This type of wear usually indicates consistent under inflation, causing too much contact with the road by the outer treads.



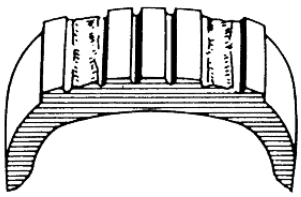
Feathering—usually indicates deteriorated bushings in the front suspension, causing the wheel alignment to shift.



When an inner or outer rib wears faster than than the rest of the tire, improper wheel alignment is usually the cause.



Cups or scalloped dips appearing around the edge of the tread, on one side or the other, almost always indicate worn or bent suspension parts.



Second-rib wear: A bit of this kind of wear is normal for radial tires, but excessive amounts of wear indicate the tires are too wide for the wheels.

http://www.procarcare.com

How a tire wears down

When tires roll, they "flex." Rubber and steel reinforcement within the tire bend; this "flexing" and the friction of the tire on the road create heat. Heat is what wears down the tire. When a tire is not properly inflated, the tire's "footprint"—the part of the tire that makes contact with the ground—becomes irregular. Inconsistent contact with the road surface can cause increased tire wear and reduced traction, performance and handling for the vehicle.

As a vehicle is driven, an underinflated tire will flex even more, and rolling resistance increases, as well. This is what causes increased fuel consumption.

Overinflating a tire causes excessive wear because the center of the tread will bear the majority of the vehicle's weight. Also, this leads to a harsher ride in the vehicle, because overinflated tires do not absorb shock as well. This means debris in

Sources:
"Proper Tire Maintenance Reduces Vehicle Operating Costs," *On the Move,* Utah LTAP Center newsletter, July 2006.
"Keep Tires In Check So You Can Keep On Truck'n!," *Rhode Report,* Rhode Island LTAP Center newsletter, Winter 2006-2007.

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the road and potholes are an increased risk for puncture or impact damage to the tire.

Improper inflation leads to problems which in general result in tires having to be changed more often. Not only does this increase cost for replacement tires, but also the cost for tire service and vehicle downtime.

Checking tire inflation

But while tires and service may be expensive, air is cheap. And checking inflation pressures does not take much time. It takes about 20 minutes to check and adjust tire pressure on an 18 wheel tractor-trailer. Tires should be checked when they are cold—before begin driven less than one mile. After a vehicle is driven for an extended period, the tires warm up and air pressure increases, which means the air pressure reading would be inaccurate. A "hot" tire can take up to four hours to cool down after the vehicle is parked.

Tire tips

For some general tips about tire maintenance, check below:

- Invest in a good tire pressure gauge, and keep it in your glove compartment. Beware of service station gauges that may be inaccurate with wear and tear. Make sure that you are familiar with the units on the gauge, and that the gauge is the correct one for the vehicle (gauges differ depending on vehicle size).
- Check tires when they are cold (parked for 3 hours or more). Check tires often and immediately if a tire looks low!
- Know the proper air pressure for your tires. The pressure marked on the side of the tires is the maximum allowed, and the pressure listed in the manual is the recommended amount.
- Check for wear and tear regularly to prevent any serious damage before it is too late. Look for cuts, cracks, blisters, or signs of zippering. Feel the tires for abnormalities like feathering. (Check the diagram below for tips on how to spot different kinds of tire wear.)
- Consider the temperature. Every 10 degree difference in the temperature can mean the loss or gain of a pound of pressure. This is something to keep in mind when weather conditions change, which can directly affect both the tire performance as well as the reading on your gauge. When the outside temperature increases or decreases dramatically, such as in the spring or fall, it's wise to check your tire pressure even more frequently.
- Know that tires will lose air because rubber is a porous material through which air can travel. Also, leaks can occur through the valve caps or punctures.
- Repair leaks immediately and correctly. Patch the inside and set a plug through any rupture. Know that patches on the outside of a tire will void the warrantee. ▲

Getting a good gauge

For anyone who has ever looked at a tire, announced "Oh, it's fine" and then felt their vehicle wobbling when they picked up speed, this lesson is already learned: your eyes can be deceiving. In fact, it can be tough to spot the difference between tires that are 10 psi apart—and that can be extremely dangerous. This is why you have to get a good tire gauge, and use it often.

Photo from www.motoworldracing.com

There are two main types of gauges:

—One style has a numbered indicator that pops out on the end (most commonly the "pencil" style)

—The other type uses a dial to indicate the tire pressure (example at left.)

While both styles are used, the dial type—in both analog and digital—is usually favored by car professionals. The pencil-style gauge can be inaccurate.

It's important to know that while there is a pressure listed on the tire, it's actually the maximum allowable air pressure, not the recommended pressure. The recommended pressure is usually lower. The owner's manual is where to look for this. Also, when you check the tire pressure make sure to check all four tires, and check the spare sometimes as well.

When you bring the vehicle in for service, always make sure to check the tire pressure. Usually the garage will have an accurate gauge, which you can then use to check the accuracy of yours.

Source: Cars.com "Car Talk Advice," http://www.cars.com/go/advice/Story.jsp?section=ct&story=ctTire&subject=adv&referer=advice&aff=boston