



COMMERCIAL FLEET TIRE DIGEST

*The authoritative guide to reducing commercial tire expenditures from
Pressure Systems International,
the global leader in Automatic Tire Inflation Systems*

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Understanding Why Tires Lose Air & Tire Inflation Solutions

Tires are usually one of the first items a law enforcement officer will check during a roadside inspection. See Al Cohn's tips for maintaining proper inflation and reducing penalties [here](#).

There are really only four (4) reasons why commercial truck tires lose air:

1. Osmosis
2. Leaking valve stems/cores
3. Slow leaking punctures
4. Impact breaks

Tires are similar to a balloon. You inflate a balloon and it may stay inflated for several hours, a day, or sometimes even a couple of days. The osmosis rate depends on the gauge of the balloon material plus the actual materials used to manufacture the balloon. The osmosis rate also changes depending on the ambient temperature. An inexpensive balloon will always lose air more rapidly compared to the more expensive balloon.

Tires are not all simply black and round. A tire manufactured with several layers of chlorinated butyl rubber innerliner compound tends to trap the air inside the tire/wheel cavity very well so they have a very slow rate of osmosis. They also will have a higher price tag associated with the combination of heavier gauge innerliner and the better compound that is less prone to osmosis. This is only one of several reasons why tire prices vary.

Commercial truck tires typically lose between one and three psi per month just sitting there. Dynamically, the osmosis rate increases by about 60% when the tire is running at 65 mph resulting in actual loss of up to five psi per month. Trailer tires typically are not seen for many months at a time and inspected only yearly. As the

monthly osmosis rate accumulates on these tires, they can end up with some of the lowest air pressures.

Leaking valve cores and stems also lead to an additional loss of air pressure. Over tightening of valve cores is a common problem. Valve cores have a torque spec of only 4 inch-lbs. Too tight or too loose will lead to loss of air. Slow leaking nail hole punctures primarily in the tread area is a huge industry problem. In addition to losing several psi per month because of osmosis, a 20-penny nail can cause a tire to lose several psi per day.

Since air is what carries the load, running 10, 20, or 30% underinflated will lead to all negative issues with the vehicle and the tire. Underinflated tires will decrease fuel economy, increase punctures because of the longer tire footprint, reduce retreadability because of the increased heat generated by the casing, and total mileage for the tire will be reduced because of irregular wear.

There are several options available to monitor and keep tires properly inflated. TPMS (tire pressure monitoring systems) advise the driver that a tire has low inflation pressure. They are only effective if the driver reacts, finds air and then repairs the tire. Automatic tire inflation systems (ATIS) not only let the driver know that he or she has a low tire, but air is automatically added while the vehicle is rolling down the highway. The advantage is that the driver is always running the correct air pressure and not stuck on the side of the road.

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Q&A PSI ANSWERS YOUR QUESTIONS

Q. How often should I be checking if my tire pressure gauges are calibrated correctly?

A. The typical stick truck gauge is not very accurate even when brand new. Accuracy is in the +/- 3 psi range out of the box. Dropping on the hard concrete will only decrease the accuracy. Check your gauges at least weekly using a calibrated master air station.