

*The authoritative guide to reducing commercial tire expenditures from
Pressure Systems International,
the manufacturer of the Meritor Tire Inflation System by PSI™*

VOLUME 6 ISSUE 3

MARCH 2012

Tires and Your Vehicle Odometer/Speedometer

Annual Fleet
Technology
Event, San
Antonio, TX
April 10-11;
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Every tire manufacturer publishes an RPM (revolutions/mile) value associated with a specific tire make/model and size. When you purchase a new tractor, the vehicle's odometer & speedometer has been calibrated based on the drive axle tire's RPM. However, as the tire wears down, the RPM's increase and the odometer/speedometer will not be indicating the exact actual mileage. This same issue occurs if you decide to change tire sizes.

Let's take a closer look at these 2 scenarios. If you decide to make the move from a low profile drive tire 295/75R22.5 size which is 41.1" overall diameter to a standard aspect ratio 11R22.5 with a larger 42.4" overall diameter, the odometer will be reading too low. The speedometer will be reading a lower speed than you are really traveling. The result is a potential for some serious speeding tickets.

When you take a new drive tire with 30/32" initial tread depth and wear it down to 6/32" tread depth (typical pull point for truck tires) the odometer will be too high. The speedometer will be reading a higher speed than you are really traveling and will take longer to get to your final destination.

Over the years there have been people who literally roll a tire for a 100 yards and then determine (prorate) what is the actual RPM. They always get the incorrect answer from the published value. Why, because they did not take into account the amount of compression that occurs based on the rated tire load/inflation as well as the dynamic effect of running at 65 mph. Just rolling a tire for a mile will give you a much higher RPM versus actual.

Most 295/75R22.5 drive tires with 30/32 initial tread depth are in the range of 508

RPM's with an overall diameter of 41.1". That same tire with 6/32" tread depth means that 24/32" was worn off. To find out what the worn tire diameter is you would take the 24/32" and multiple by 2. 48/32" has been worn off which is = 1.50".

$41.1" - 1.50" = 39.60"$ worn tire diameter

When the worn tire has a diameter of 39.60", the actual tire RPM would be 41.1/39.60 times 508 RPM.

When you do the math the worn tire RPM = 527 RPM

The worn tire is rotating 3.7% more revolutions per mile versus the new tire (527 RPM versus 508 RPM when new).

This 3.7% variation in RPM between a new and worn tire is actually on the high side. As the tread rubber wears down, the actual casing "grows" slightly in overall diameter. It is difficult to measure this actual growth but it does tend to slightly offset the increased tire RPM as the tread wears. The rule of thumb is the smaller the tire overall diameter, the lower the speed for a given RPM. The good news is that you will not be getting any speeding tickets. Bigger tires or tires with a larger overall diameter get there faster but you will become a revenue generator for local law enforcement.

The solution for many fleets is to calibrate their tractor speedometers or hubodometers with tires that are 50% worn. It is a good compromise.



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