



COMMERCIAL FLEET TIRE DIGEST

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

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Effect of Speed, Load & Inflation on Tires

A spiral bound copy of Volume II of the **Commercial Fleet Tire Digest** is now available.

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The Tire & Rim Association, along with all tire manufacturers, publish on-line & in their engineering publications, several very important tables showing the relationships between load, inflation, and speed. Since air is what carries the load, the proper inflation pressure is based on the worst case load that the tire experiences running down the highway. These tables indicate the proper inflation based on load weight, but also adjusted for various speed conditions.

For every size commercial tire, there is a specific line item in these tables that lists the maximum tire load for inflation pressures typically ranging from a low of 70 PSI up to 120 PSI. Each tire size also lists the maximum tire load for both single and dual usage. When running as duals, the maximum load is always lower (5% to 13% lower depending on specific tire size). This is because the four dual tires do not each carry the same load due to technical issues such as unbalanced loads and crown of the road. Dual loads are lower versus running the same tire size as a single to protect the tire which carries the highest load; an example: 295/75R22.5 LR G tire is listed in the table (dual tire) at 5675 lbs @ 100 PSI. The same size running as a single tire is rated at a higher load of 5780 lbs @ 100 PSI (105 lbs higher load capacity as a single). The tables also show that if your actual tire loads are less, let's say a maximum of 5000 lbs/tire (295/75R22.5), you would be OK to run only 85 PSI and still carry the load.

There are many service vocations such as logging, where a vehicle may run at 65 MPH on the highway but then must go on an unpaved road to pick-up the logs for a few

miles. These roads typically have a maximum speed allowed of 35 MPH to keep severe road rutting from occurring. Because speed is a variable that can change normal recommended load/inflation ranges, there are tables that will show a higher load capacity if a vehicle has a low maximum speed; an example: 35 MPH max speed, 11R24.5 tire size - According to the low speed load/inflation table, if your maximum load per tire is 5500 lbs. maximum and your max speed is 35 MPH, you can run at 74 PSI. Lower pressure in the tire will allow a longer tire footprint which spreads the load over a larger surface area helping to extend the service life of the road itself. Since an operation like logging runs at two distinctly different maximum speeds (65 MPH vs. 35 MPH), the PSI in the tires should be adjusted as the maximum allowed speed changes.

There is even a load/inflation table that shows the load change and pressure change associated with running at a variety of speeds. If you have a vehicle just creeping along (moving the space shuttle into position is a good example), the maximum tire load can more than double from the normal published load, (increase 140%) as long as you increase the pressure 40 PSI. Another example from the same table shows that if you have a vehicle that never goes higher than 30 MPH. In this case the load can increase 24% with a 10 PSI increase in inflation pressure.

Bottom line: Work with your tire professionals to determine that you are running the appropriate pressure for the loads you are carrying based on your maximum speed.

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Q & A PSI ANSWERS YOUR QUESTIONS

Q. We have a new group of drivers & mechanics that require an update on tires & how to maximize performance...any suggestions?

A. Of course you can work with your tire supplier to provide this important service. At PSI we offer a Tires 101 class to assist drivers/mechanics understand how to maximize mileage, increase retreadability, fuel efficiency & how to diagnose tire issues.