



Technical Service BULLETIN

November 24, 2003

Title:

ADJUSTMENT OF TIRE INFLATION PRESSURE

Models:

'04 – '07 4Runner

REVISED

PG009-03

PRODUCT GENERAL INFORMATION

TSB REVISION NOTICE:

- December 21, 2006: 2005 – 2007 model years have been added to Applicable Vehicles.
- December 15, 2003: In Temperature Compensation Examples, word changes have been made to clarify the calculations.

Previous versions of this TSB should be discarded.

Introduction

The purpose of this bulletin is to provide additional details regarding the tire pressure warning system on the 4Runner, as well as provide guidelines for temperature compensation of tire pressure – taking into account changes in ambient temperature and actual tire temperature.

Seasonal temperature change can dramatically alter tire pressure. In addition, popular pencil type tire pressure gauges and service station air pumps have been proven on many occasions to be inaccurate and misleading.

Low Tire Pressure Detection Timing:

The tire pressure at each wheel is monitored when the ignition is ON. If the tire pressure falls below 27 PSI while the ignition is ON, the warning light will illuminate.

Tire Pressure vs. Tire Temperature:

Air in a tire expands and contracts as the temperature of the tire changes, changing the tire's air pressure. Tire temperature is dependent on "cold" tire pressure, driving distance and speed, ambient temperature and road surface temperature. The "cold" tire pressure for the 4Runner is 220 Kpa (31.9 PSI), shown as 32 PSI in the Owner's Manual.

When adjusting tire pressures for your customer, you have to consider all of these factors, plus the difference between the temperature in the workshop and the lowest outside temperature you expect to have in your area in the next few weeks.

"Cold" tire pressure, as recommended by the tire manufacturer (and shown on the tire pressure label in our vehicles), is generally considered to be the pressure in a tire that has not been driven the previous 4 hours, and has been parked outdoors.

Applicable Vehicles

- 2004 – 2007 model year 4Runner vehicles.

Warranty Information

OP CODE	DESCRIPTION	TIME	OFF	T1	T2
N/A	Not Applicable to Warranty	–	–	–	–



Tire Pressure Adjustment**Recommended Tire Pressure Adjustment:**

As noted above, there are many variables that can affect tire pressure in operation. However, you can use these guidelines to optimize the pressure when you set it in the workshop:

- Use a high quality accurate tire pressure gauge, and check its accuracy regularly.
- Consider the difference in the air temperature in the workshop and the lowest ambient temperature you expect in the next few weeks (especially in winter).
- Use the chart (Figure 1) to compensate for temperature of the tires when you adjust the pressure.
- Use temperature compensation Example 1 for the spare tire.

Temperature Compensation Example 1Assumed conditions:

- The vehicle's spare tire pressure is being adjusted.
- The 4Runner has been parked overnight outside your shop (vehicle has "cold" tires), or is the spare tire for the vehicle.
- Your workshop temperature is 68°F (20°C), and you expect the lowest ambient temperature in your area to be 14°F (–10°C).

Calculations:

- Compute the temperature difference between the seasonable lowest temperature and the workshop temperature: 68°F (20°C) – [14°F (–10°C)] = **54°F or 30°C**.
- Using the tire pressure chart (Figure 1), find the intersection of the cold tire line at the point corresponding to 54°F or 30°C, and read off the value on the tire pressure change axis. In this case it would be about **4.6 PSI**.
- Compute the actual tire pressure the tires should be filled to:
 $31.9 + 4.6 \text{ PSI} = \mathbf{36.5 \text{ PSI}}$.

In this example the tires would need to be filled to 37 PSI to compensate for the seasonal temperature difference.

Temperature Compensation Example 2Assumed conditions:

- The 4Runner has been driven to your shop on surface streets for about 30 minutes (vehicle has "warm" tires).
- Your workshop temperature is 68°F (20°C), and you expect the lowest ambient temperature in your area to be 14°F (–10°C).

Calculations:

- Compute the temperature difference between the seasonable lowest temperature and the workshop temperature: 68°F (20°C) – [14°F (–10°C)] = **54°F or 30°C**.
- Using the tire pressure chart (Figure 1), find the intersection of the warm tire line at the point corresponding to 54°F or 30°C, and read off the value on the tire pressure change axis. In this case it would be about **6.7 PSI**.
- Compute the actual tire pressure the tires should be filled to:
 $31.9 + 6.7 \text{ PSI} = \mathbf{38.6 \text{ PSI}}$.

In this example the tires would need to be filled to 39 PSI to compensate for the seasonal temperature difference and the heat in the tires from the short drive to your dealer.

Temperature Compensation Example 3

Assumed conditions:

- The 4Runner has been driven to your shop on the highway for at least 60 minutes (vehicle has “hot” tires).
- Your workshop temperature is 68°F (20°C), and you expect the lowest ambient temperature in your area to be 14°F (–10°C).

Calculations:

- Compute the temperature difference between the seasonable lowest temperature and the workshop temperature: $68^{\circ}\text{F} (20^{\circ}\text{C}) - [14^{\circ}\text{F} (-10^{\circ}\text{C})] = \underline{54^{\circ}\text{F or } 30^{\circ}\text{C}}$.
- Using the tire pressure chart (Figure 1), find the intersection of the hot tire line at the point corresponding to 54°F or 30°C, and read off the value on the tire pressure change axis. In this case it would be about **9.0 PSI**.
- Compute the actual tire pressure the tires should be filled to:
 $31.9 + 9.0 \text{ PSI} = \underline{40.9 \text{ PSI}}$.

In this example the tires would need to be filled to 41 PSI to compensate for the seasonal temperature difference and the heat in the tires from the long, high-speed drive to your dealer.

From these examples you can see that while the “cold” tire pressure specified for the tires is 32 PSI in the Owner’s Manual, you may need to inflate the tires to 41 PSI, or more, depending on seasonal weather conditions and initial tire temperature.

Tire Pressure Chart

Figure 1: Tire Pressure Chart

