

TOYO TIRE TALK

No.04 - 005 (TTT - 162)

Technical Service Department Japan.

Technical tips and information that may allow you to better serve your customers.



We would appreciate your input, please contact us.

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Date : th , 2004

Subject : Inflation Pressure Part 7 - Relationship between Tire Pressure and Fuel Consumption

There is a high possibility that incorrect tire inflation pressures may cause problems or possibly an accident while driving. Regularly in Toyo Tire Talk issues, the importance of regular and consistent tire inflation pressure maintenance has been stressed.

This issue will reinforce that improper inflation pressure has a bad effect not only on safety of while driving, but also has an effect on economical matters, i.e. Fuel Consumption.

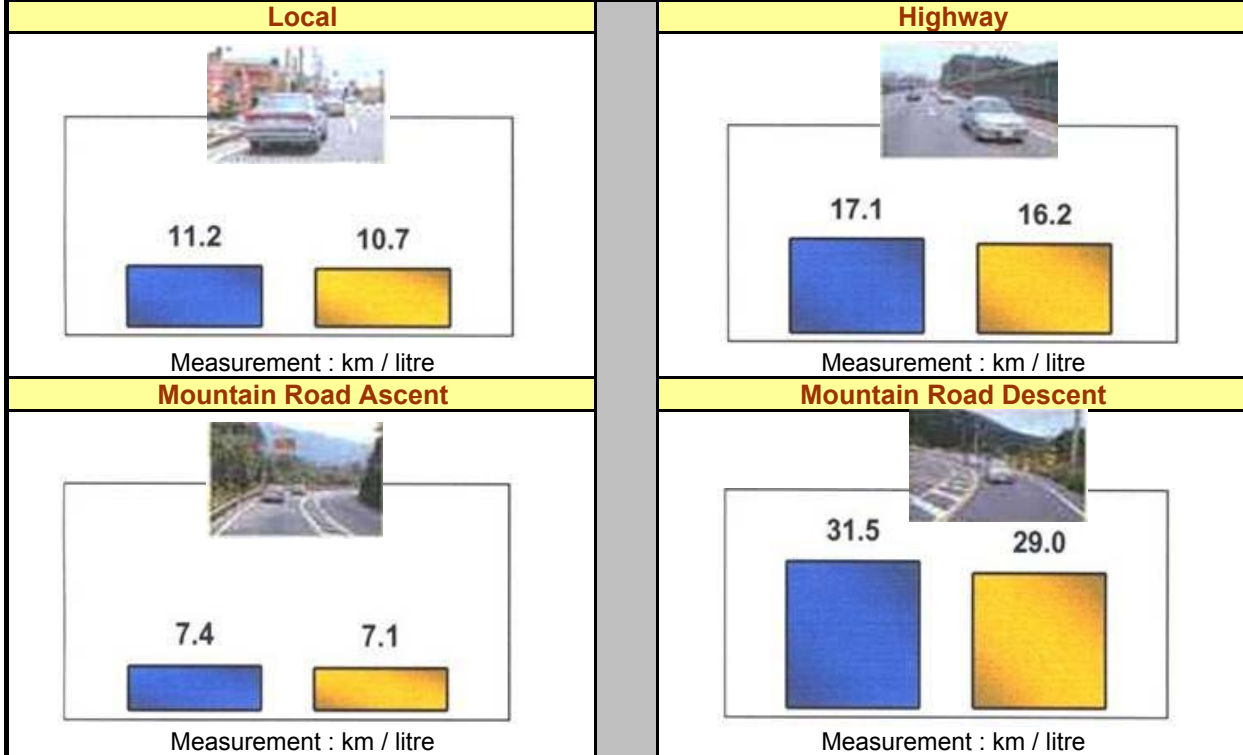
The following is an example of the effect of low pressure on fuel consumption. (Sourced from a monitor test conducted by a road service company in Japan).

Test Method

Number of Test Vehicles		2 vehicles		
Vehicle Type		Normal passenger cars (both vehicles were the same type)		
Engine Capacity		1500cc		
Test Condition	Inflation Pressure	Vehicle A	Front	2.1 kg/cm ² (30 psi / 210 kPa)
		*	Rear	1.9 kg/cm ² (28 psi / 190 kPa)
		Vehicle B	Front	1.6 kg/cm ² (23 psi / 160 kPa)
		**	Rear	1.4 kg/cm ² (20 psi / 140 kPa)
				* Tire inflation pressure of vehicle A was as recommended by the vehicle manufacturer.
				** Tire inflation pressure of vehicle B was reduced to 0.5kg/cm ² below that of vehicle A.
Test Course and Distance (km)		1. Local 2. Highway 3. Mountain road ascent. 4. Mountain road descent. → Total : 150kms		

Note : The test vehicles were equipped with a flowmeter that can measure fuel consumption by "1 cc" increments. Additionally the fuel consumption of both test vehicles was measured before the test, and was almost at the same level.

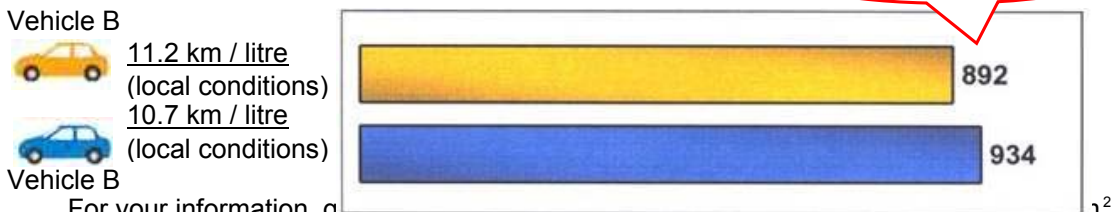
Monitor Test Result	
<p>Vehicle A </p> <p>Recommended Inflation Pressures Front : 2.1 kg/cm² (30 psi / 210 kPa) Rear : 1.9 kg/cm² (28 psi / 190 kPa)</p> <p> = Vehicle A = Vehicle B</p>	<p>Vehicle B </p> <p>Lower Inflation Pressure than vehicle A Front : 1.6 kg/cm² (23 psi / 160 kPa) Rear : 1.4 kg/cm² (20 psi / 140 kPa)</p> <p style="text-align: right;">Total running distance = 150km</p>



As can be seen from the above graphs, the mileage figures of vehicle B (running with lower tire pressures) are worse than vehicle A (equipped with correct tire pressures) in all conditions.

If both vehicles continued running for 10,000 kms, the fuel consumption of vehicle B (equipped with lower tire pressures) is such that vehicle B would have wasted 42 litres of fuel under local driving conditions (please see the following graph).

Fuel Consumption when both vehicles having run 10,000 km



For your information, g (15 psi / 100 kPa), fuel consumption is increased by 10% - 15%.

Conclusion

According to this monitor test result, there is not such a large difference in fuel consumption between the tire with the correct inflation pressure and the tire with the lower inflation pressure.

However, taking the long term view, this small difference will expand to a large difference over time (i.e. a large loss).

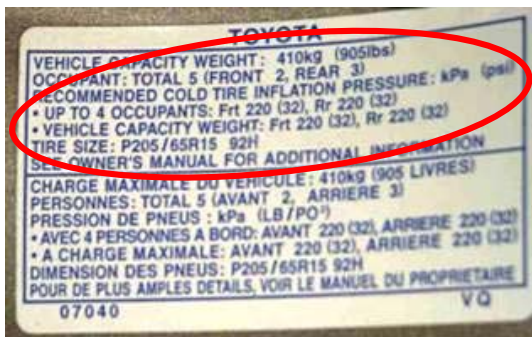
As mentioned in the previous Toyo Tire Talk, No.03-010 (TTT-148) "Inflation Pressure Part 5 - Can you feel a Decrease in Tire Pressure ?", it is difficult to check if tire pressures have decreased just by looking and feel (accurate measurement is required).

The following are recommended as a minimum for improving fuel consumption :

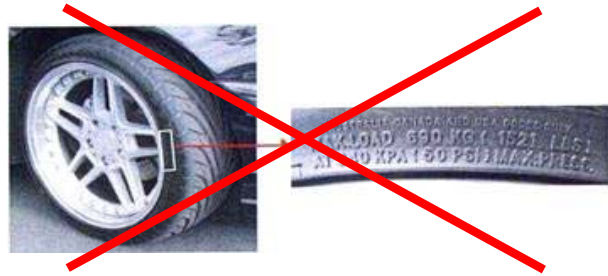
- 1) Check the inflation pressure of all tires (including the spare) periodically (at least monthly).
- 2) Inflate to the recommended inflation pressure* when tires are cold.

* What is the recommended inflation pressure ?

The recommended inflation pressure is that described on the vehicle's Tire Information Placard. This has been mentioned many times, and is included again in this issue for reinforcement.



Tire Information Placard



To review this topic, please see the Toyo Tire Talk No. 01-008 (TTT-117).

Additionally, please do not forget that lower inflation pressures may be the cause of some problems or an accident whilst driving! To review the reasons for this, please refer to the Toyo Tire Talk No. 01-005 (TTT-114).

Enjoy safe driving!

