

INFLATION PRESSURE IN TRUCK TYRE

Proper tyre inflation pressure is essential for the safety, efficiency, and performance of commercial truck tyres. As the only point of contact between the vehicle and the road, tyre must be correctly inflated to withstand heavy loads, long distances, and challenging driving conditions. This tech talk will explore the critical role of tyre inflation pressure, examining its impact on vehicle performance and safety. Attendees will gain valuable insights to improve operational efficiency and strengthen safety protocols.

Maintaining the correct tyre inflation pressure is more than just a best practice—it's a cornerstone of fleet safety and maintenance. When truck operators and fleet managers understand and follow recommended pressure guidelines, they can improve vehicle reliability, reduce operating costs, and stay compliant with transportation regulations.

Proper tyre pressure directly impacts several key areas:

- Safety: Prevents blowouts and improves handling.
- Fuel Efficiency: Reduces rolling resistance, saving fuel.
- tyre Longevity: Minimizes uneven wear and extends tyre life.
- Handling Performance: Ensures optimal traction and braking.
- Regulatory Compliance : following and complying the local regulation.

1. Safety

- Under-inflated tyres can overheat and potentially lead to blowouts, especially under heavy loads.
- Over-inflated tyres can reduce traction and increase the risk of skidding or hydroplaning.
- Proper tyre pressure ensures even weight distribution, reducing the chances of accident due to tyre failure.

2. Fuel Efficiency

- Low tyre pressure increases rolling resistance, making the engine work harder and burn more fuel.
- Properly inflated tyres can improve fuel economy by up to 3%–5%, which adds up significantly in long-haul usage.

3. Tyre Longevity

- Incorrect pressure leads to uneven tread wear:
 - Under-inflation causes wear on the outer edges.
 - Over-inflation causes wear in the center.
 - Maintaining the right pressure extends tyre life and reduces replacement costs.

INFLATION PRESSURE IN TRUCK & BUS TYRE



4. Handling Performance

- Proper pressure improves steering response, braking performance, and stability especially during turning or emergency maneuvers.
- It also ensures load carrying capacity is maintained, which is crucial in heavy-duty applications.

5. Regulatory Compliance

- Many countries have regulations for commercial vehicle safety, including mandatory tyre pressure monitoring or checks.
- Non-compliance can lead to fines, downtime, or even accidents, affecting business operations.

Best Practices

- Check pressure daily before trips—tyres can lose pressure naturally or due to temperature changes.
- Use calibrated pressure gauges for better accuracy.
- Follow tyre manufacturers recommendations for the pressure (usually recommended basis the load per axle following the Technical data book or on the tyre placard or on the tyre sidewall based on Load index).
- Consider tyre pressure monitoring systems (TPMS) for real-time tracking.

How to perform proper tyre inflation:

- ✓ tyre pressures must be checked and maintained in cold conditions every two weeks using a calibrated pressure gauge.
- ✓ The spare tyres should also be checked.
- ✓ The valve cap is the primary air seal and must always be fitted, the valve core is only to allow the tyre to be inflated.
- ✓ The state of all wheels including valve should be regularly checked. Any cracked or rusted wheel must be replaced.

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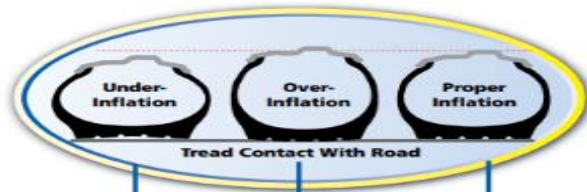


Tyre life impact due to Under or Over inflation of Pressure:

Loss Of Tyre Life Due To Overinflation		
% OVERINFLATION	LOSS OF LIFE	EXAMPLE ON 100,000 Km.
10%	5%	5,000 Km
20%	22%	22,000 Km
30%	36%	36,000 Km

Loss Of Tyre Life Due To Underinflation		
% UNDERINFLATION	LOSS OF LIFE	EXAMPLE ON 100,000 Km.
10%	5%	5,000 Km
15%	8%	8,000 Km
20%	19%	19,000 Km

**Above values are tentative only*



UNDERINFLATION

Causes abnormal tire deflection, which builds up heat and causes irregular wear. Similar to the wheel being too wide.

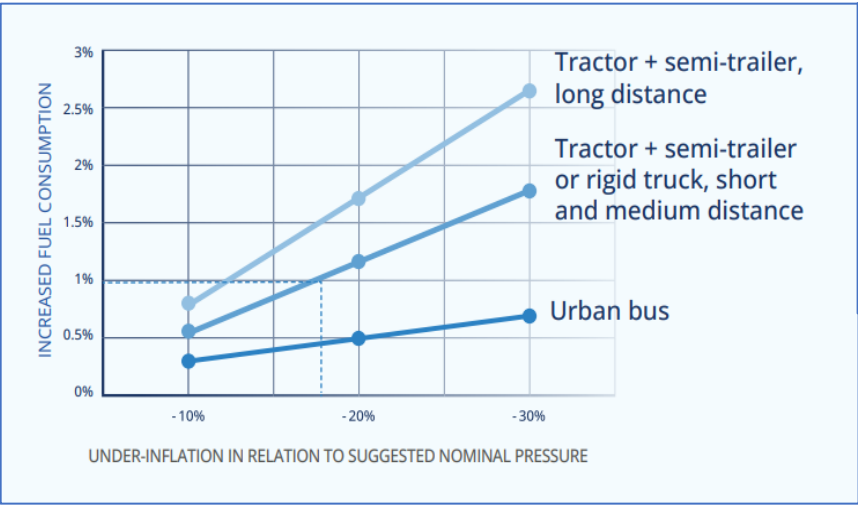
OVERINFLATION

Causes tires to run hard and be more vulnerable to impacts. It also causes irregular wear. Similar to the wheel being too narrow.

PROPER INFLATION

The correct profile for full contact with the road promotes traction, braking capability, and safety.

Fuel consumption impact due to under-inflated tyres:



- 22PSI = +0.3L/100km*

It Means, if we lower the inflation pressure by 22psi then the recommended inflation pressure then the fuel consumption for that vehicle will increase by 0.3L per 100km of distance travelled.

*Data source is from Michelin TBD