

TSD-02-003

April 15, 2002

Replacing Tires on Light Trucks

Any replacement tire on any light truck must be of a size and load range that will offer equal or higher load carrying capacity compared to the original equipment (OE) tire on the vehicle. Furthermore, the ability of any tire to support a specific load is solely based on the inflation pressure within the tire, and the maximum load and inflation capability of the tire. Even tires with the most robust design and construction will fail in service when under-inflated.

For purposes of this bulletin, light trucks include sport utility vehicles (SUV), pickup trucks, hybrid SUV/pickup trucks, minivans and any vehicle designed as a multipurpose passenger vehicle, truck, bus, or trailer.

Many light trucks today are equipped with P-metric tires as OE. Other, more heavy duty trucks may be equipped with LT-metric tires as standard equipment. Toyo Technical Service is aware that some tire installers promote the replacement of original P-metric tires with LT-metric tires as a more "heavy duty" alternative, for example:

Original Tire: P245/75R16 109
Replacement Tire: LT245/75R16 Load Range 'C'

Warning!

Please note that size-for-size, LT-metric tires require higher air pressures to carry equivalent loads of P-metric tires, and that any failure to adjust air pressures to achieve the vehicle's load requirement will result in tire fatigue and eventual tire failure due to excessive heat build-up. **Due to the higher PSI requirements of LT-metric tires, they may not be suitable for replacing O.E. P-metric tires because of the ride harshness that results from higher PSI requirements.**

Load Comparison Example, P vs. LT:

P245/75R16 109 Max Load = 2,271 lbs @ 35 PSI

In order to carry the equivalent load, a LT245/75R16 LRC must be inflated to 50 PSI. Using this example, even LT245/75R16 Load Range D, or E must be inflated to 50 PSI to carry the P-metric load at 35 PSI. **LT tires do not offer any benefits of being "heavy duty" when under-inflated.**

Replacement Tires Must Carry Equivalent Loads:

If you replace a P-metric original equipment tire with an LT-metric tire, it must be able to carry the equivalent load. To find the equivalent load, refer to the **Tire and Rim Association Yearbook** and find the load of the original tire according to the PSI shown on the vehicle's tire information placard. Then refer to the 'Light Truck' load and inflation tables. Apply the PSI that corresponds to the required load of the P-metric tire. See the last page of this bulletin for additional information.

Heat Build Up Example:

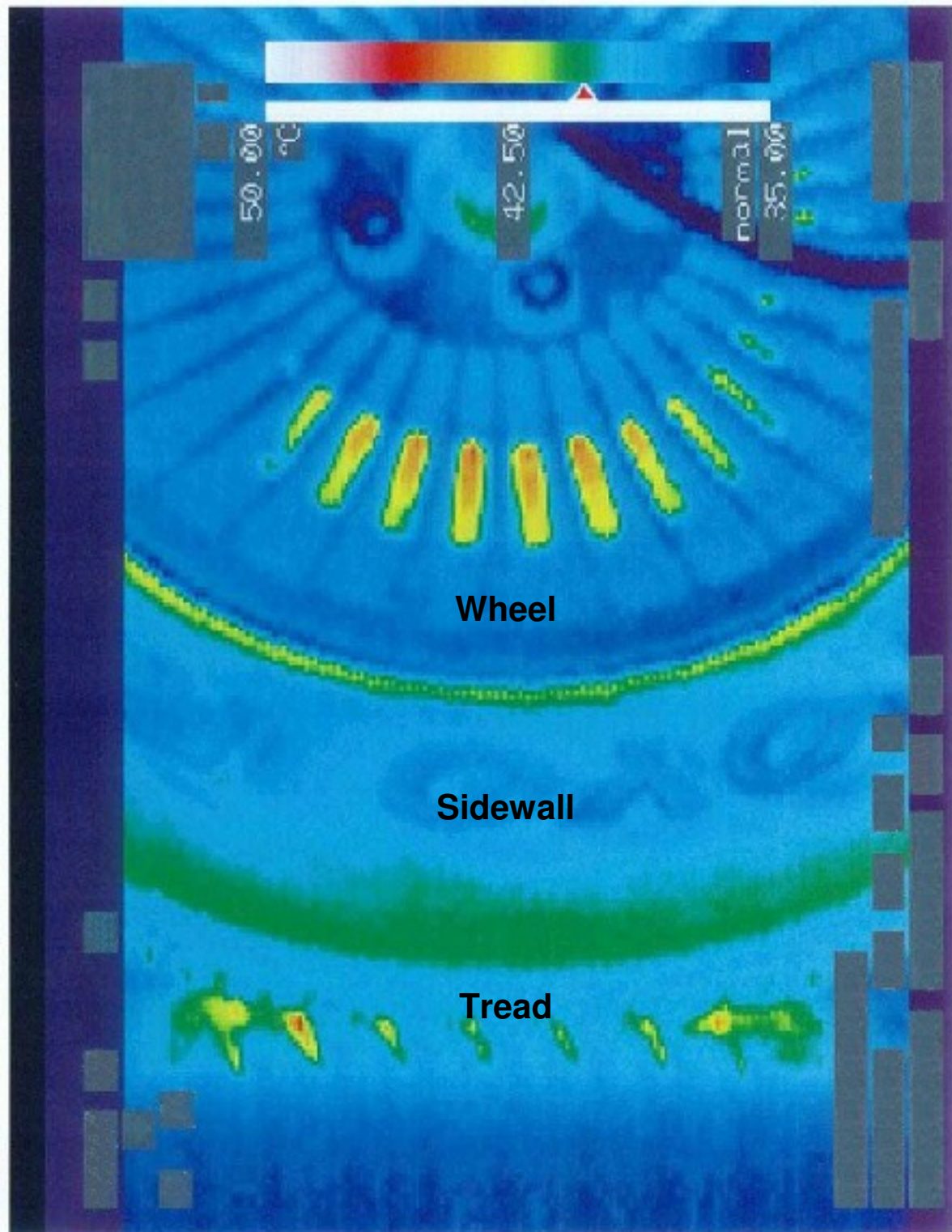
The enclosed photos were taken with a heat sensitive camera, and show the sidewall temperature of a running, loaded LT-metric tire. The two photos represent an LT-metric tire at 30 PSI (cold), vs. 50 PSI (cold), at equivalent loads. The temperature scale runs from 95° F (blue) to 122° F (white).

Please note the considerably higher running temperature of the "under-inflated" (30 PSI) LT tire vs. 50 PSI. **Any increase in the tire's running temperature will have an adverse affect on the long term durability and safe operation of the tire.**

(over)

LT-Metric Tire Properly Inflated vs. Underinflated

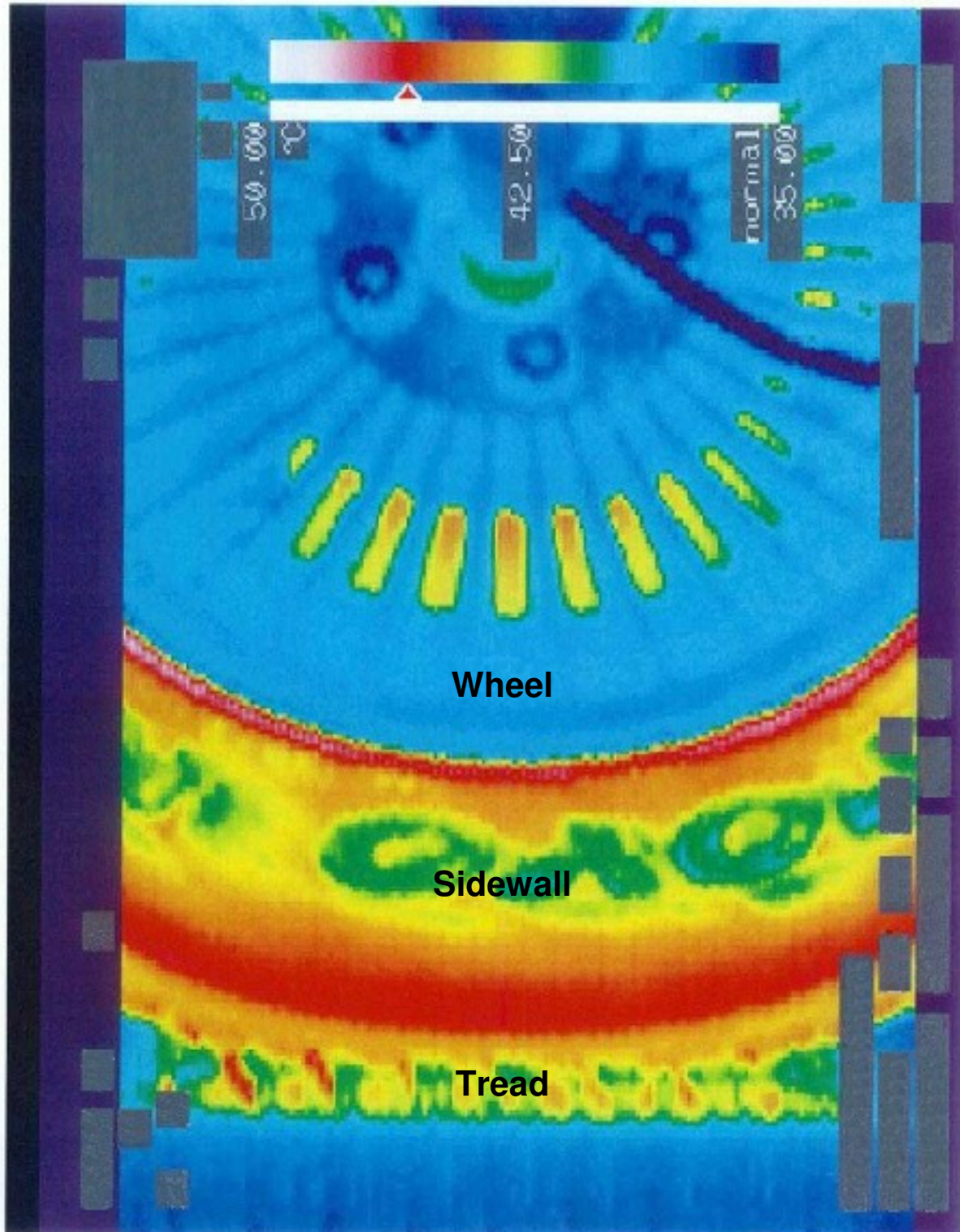
Proper Inflation for the Load
LT-Metric @ 50 PSI



Normal Temperature

LT-Metric Tire Properly Inflated vs. Underinflated

Underinflated for the Load
LT-Metric @ 30 PSI



Higher Temperature Due to Underinflation

P-Metric Tires on Light Trucks Have Reduced Load Rating:

When a P-metric tire is installed as OE on light trucks, the load rating is reduced by a factor of 1.10 by the vehicle manufacturer. This load reduction is mandated by Federal Motor Vehicle Safety Standards (571.120). The reasons for this include the expectation that P-metric tires which are designed mainly for passenger cars, may experience more severe service on light trucks.

Example - P245/75R16 109S:

Tire and Rim Association Yearbook load tables show 2,271 lbs. Max. Load at 35 PSI. If this tire is fitted to light trucks however, the load(s) are reduced by a factor of 1.10.

For example: 2,271 lbs. Divided by 1.10 = 2,065 lbs. (rounded) at 35 PSI.

Therefore, if a light truck is fitted with a P-metric tire as O.E., the load at any pressure is reduced by the 1.10 factor. Using this example, a light truck fitted with P245/75R16 109 as O.E., requiring 35 PSI according to the tire information placard, is actually accommodating a load of 2,065 lbs, not the maximum load for this size of 2,271 lbs.

Replacing Original Equipment LT-metric Tires:

If you replace an O.E. LT-metric with another LT-metric size, it must carry equivalent loads. Inflate to the pressure required in the tire information placard.

If you intend to replace an O.E. LT-metric tire with a P-metric tire, check the load requirements carefully. **Many times, the P-metric tire does not offer enough load capacity.** Also remember that you must reduce the P-metric loads by a factor of 1.10 when replacing O.E. LT tires.

Replacing Dual Tires on Light Trucks:

Toyota does not recommend that P-metric tires be used to replace LT-metric duals on light trucks.

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⚠ WARNING !

Tires must never be operated in excess of their rated speed limit.

Exceeding the tire's speed capability will cause overheating of the tire and sudden failure, possibly leading to loss of vehicle control. Toyopassenger and light truck tires have a maximum speed rating depending on size and type. Consult your tire dealer or contact Toyo Tire @ 800.663.0063 if you are not sure about the maximum speed rating of your tires. Toyo Tire Canada Inc. does not endorse the operation of any vehicle in an unsafe or unlawful manner. Tire speed ratings do not imply that a vehicle can be safely driven at the speed for which the tire is rated. Speed ratings are based on laboratory tests which relate to performance on the road, but are not applicable if tires are underinflated, overloaded, worn out, damaged or altered.

Tires Installed on Vehicles with Modified Suspensions and Increased Ground Clearance. Consumers should be aware that the installation of off-road-type tires combined with modified suspensions and increased ground clearance will significantly alter the handling characteristics of the vehicle, and may result in increased braking distances as well as significant changes in vehicle maneuverability and handling compared to the factory-equipped vehicle. As with any vehicle, Extreme Care must be used to prevent loss of control or roll-over during sharp turns or abrupt maneuvers. Always wear seat belts, and drive safely, recognizing that reduced speeds and specialized driving techniques may be required.

Failure to drive this vehicle safely may result in serious injury or death. Do not drive this vehicle unless you are familiar with its unique handling characteristics and are confident of your ability to maintain control under all driving conditions. Some modifications (and combinations of modifications) are not recommended and may not be permitted in your state. Consult your owner's manual, the instructions accompanying this product and state laws before undertaking these modifications. You are responsible for the legality and safety of the vehicle you modify using these components.