

## How to determine when tyres should be removed

### 1. Background:

Occasionally tyres are removed from vehicles before they are worn out. This means the customer is not receiving full value from the tyres and also creates a premature "End of life" tyre. This adds costs to the consumer and impacts the environment. Often the reason tyres are removed prematurely is due to a lack of understanding of where tread depth indicators are and how to check if the tyre still has legal tread depth remaining

This Tyre industry Service Bulletin clarifies the situation and ensures consumers and fleets get the best tyre performance and minimise their costs

### 2. References:

1. Australian Design Rule AS/NZS 2230:1999 New pneumatic tyres for light trucks and trucks/buses:  
Section 4.2 Treadwear Indicators

The tread pattern shall incorporate at least four treadwear indicators approximately equally spaced around the circumference, each of which shall provide a visual indication that **the remaining tread in the vicinity of the indicator** has a normal tread depth of 1.6mm. The indicator height moulded into the tyre shall be 1.6 +0.4, -0.25 mm above the base of the tread grooves.

2. Vehicle Standards Information No. 9 Rev 4, November 2003

#### Condition of Tyres

- For vehicles with a GVM 4.5 tonnes or less, a tyre must have a tread pattern around its circumference that is at least 1.5mm deep across the entire surface which contacts the road.
- For all other vehicles, a tyre must have a tread pattern around its circumference that is at least 1.5mm deep across at least 75% of the tyre surface that contacts the road.

### 3. Tread Wear Indicators (TWI)

As mentioned above, all road going tyres legally must have Tread Wear Indicators (TWI). These are small raised platforms of rubber moulded into the main tread grooves around the tyres circumference. TWIs are located in the tyre by the following indicators located in the shoulder of the tyre at a minimum of 4 "clock position" around the tyre

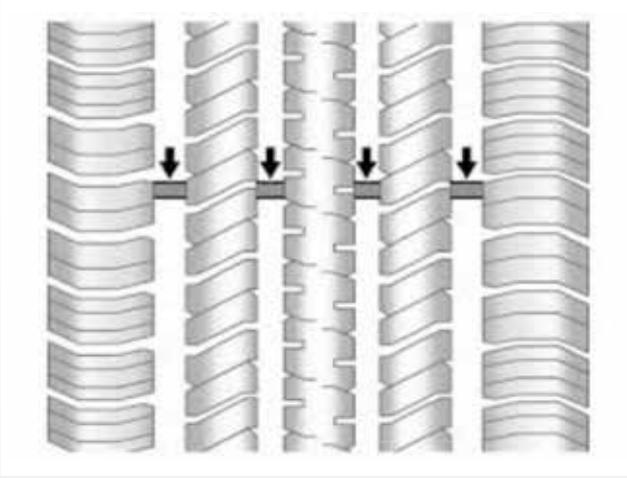
These are designated as:

- the letters "TWI"
- a small triangular arrow head shape (see below)
- Sometimes by a company brand logo (Goodyear "Wingfoot" the "Michelin Man" etc.)

If a tyre's tread is worn down to the same level of any of these TWIs then the tyre is legally worn out and must be replaced.

This Bulletin should be considered as being of a general advisory nature only. In case of conflict with existing recommendations issued by a vehicle manufacturer, these latter recommendations should apply.

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Tread Wear Indicators



Markings showing TWI locations

### 4. Reasons Tyres are Replaced

Tyres are designed and built to provide many thousands of kilometres of excellent service. However typical reasons for tyres to be removed are:

- The tyre's tread has worn down to the Tread Wear Indicator (TWI)
- A road hazard (gutters etc.) has damaged the tyre
- The tyre is fatigued (run underinflated or overloaded)
- Consumer has some other personal preference (larger diameter tyres, different ride / handling characteristics or qualities, etc.)

### 5. Worn Tyre Appearance

All road tyres of whatever brand are designed and manufactured with a pattern moulded across the tread face. These patterns often include "tie bars" these are raised areas of tread connecting the ribs or blocks of the tyre but do not touch the road until the tyre is partially worn.

Tyres can also have shallow cross grooves which are not full pattern depth and these can disappear as the tyre is worn away. It is also worth noting that as a tyre wears away the main grooves which run around the tyres circumference are almost never parallel so as the tyre wears these main grooves become narrower.

All tyres contain at least one of these design features and many contain all of them so its fair to say that **as tyres wear their tread pattern appearance changes.**

On page 3 there is a picture of the same tyre when it is new versus when it is partially worn. As the tyre wears the cross grooves in the tread ribs start to disappear which affects the tread pattern appearance. The tread shoulder becomes a solid rib.

Even though the cross grooves have disappeared the tyre is still serviceable and has legal tread remaining.

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To ascertain if the tyre has worn out, we need to check if the tread has worn down to the TWI in the main grooves as indicated by the red arrows.

### Cross Grooves Worn or Wearing Away To Reveal A Solid Rib



New Tyre



Part Worn Tyre

Tyres have grooves in order to allow water to drain away effectively and allow a direct contact between the rubber and the road.

Users should consider replacing their tyres once the depth of the tread falls below 3mm. Below this value the ability to drain water decreases substantially and the risk of aquaplaning resulting in loss of control increases.

### Summary :

1. The tread patterns of all tyre change appearance as they wear
2. To check if a tyre has legal tread depth remaining check the tyre at the treadwear indicators

### The only way to check if a tyre's tread has worn out is:

**Inspect the tyre at the treadwear indicators. If the tread is worn down at any point on the tyre to the treadwear indicators then tyre is no longer serviceable and must be replaced.**

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