CLASSIFICATION OF TYPICAL TYRE DAMAGE

**Centre Wear**
- Causes:
  - Over-inflation
  - Improper matching of tyres and rims
  - Rotate tyres unperiodically

**Shoulder Wear**
- Causes:
  - Under-inflation and/or overload
  - Improper matching of tyres and rims
  - Rotate tyres unperiodically

**One-sided Wear**
- Causes:
  - Improper wheel alignment (especially faulty toe-in)
  - Rotate tyres unperiodically
  - Overload

**Heel and Toe Wear**
- Causes:
  - Under-inflation and/or overload
  - Rotate tyres unperiodically

**Tread Cut (Through)**
- Causes:
  - Under-inflation and/or overload

**Side Cut (Through)**
- Causes:
  - Sharp objects such as nails, sharp stones, pieces of glass, metal, etc.
  - Tyres are more likely to suffer cut under improper air pressure and overload

**CBU (Cord Broken Up)**
- Causes:
  - Excessive distortion or pinching between object and wheel (tyre)
  - Front hit against the object
  - Low aspect ratio tyre is more likely to CBU

**Checking/Side Crack**
- Causes:
  - Excessive deformation in shoulders and sidewalls due to under-inflation and/or overload
  - Rubber deterioration due to chemicals (such as cosmetic wax), oil and ozone

**Run Flat**
- Causes:
  - Continuous run after puncture
  - Excessive under-inflation (close to a flat condition)

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Tyre Safety Information

Check your tyres once a month to maintain safety and comfort when driving!

**TYRE CHECK POINTS**
- Maintain correct inflation pressure
- Inspect tread grooves to ensure tyres are safe and legal
- Visually check tyre failures and damage
4 Important Functions of Tyres

Supporting the weight of your vehicle

Absorbing road shocks

Providing traction and braking

Changing and Maintaining direction of travel

Basic Tyre Information

The inside of the tyre is made of...

As illustrated, the tyre is not just rubber: it’s a complicated mixture of steel cords and fibers.

The tyre size code tells you...

265 / 35 ZR 20 99 Y

1  2  3  4  5  6

1: Section Width (mm)  2: Rim Diameter (inch)
3: Aspect Ratio (%)  4: Load Index
5: Radial Construction  6: Speed Symbol

*ZR: Speed Category Over 240km/h

Load Index (LI)
The number 99 (775kg) indicates the maximum load carrying capacity.

*For details, please contact a member of staff.

Speed Symbol

<table>
<thead>
<tr>
<th>Speed Symbol</th>
<th>Q</th>
<th>R</th>
<th>S</th>
<th>T</th>
<th>H</th>
<th>V</th>
<th>W</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max.speed (km/h)</td>
<td>160</td>
<td>170</td>
<td>180</td>
<td>190</td>
<td>210</td>
<td>240</td>
<td>270</td>
<td>300</td>
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Aspect Ratio

The aspect ratio is the ratio of a tyre's section height (H) to its section width (W)

Aspect ratio (%) = H / W × 100

Measuring the size of a tyre...

The picture shows where the tyre is measured for the tyre size code.
Do you know that the tyre inflation pressure falls naturally by approximately 10-20kPa (0.1-0.2bar/1.5-3.0psi) a month? The inflation pressure leaks whether you use your car or not!

Negative Effects of Low Inflation Pressure!

1. Lowers Fuel Economy!
   If the tyre pressure is only 155kPa (1.55bar, 22.5psi), 30% lower than the specified pressure of 220kPa (2.2bar, 31.0psi)...
   A loss of fuel consumption is around 2%

2. Cause of Abnormal Wear!
   If the proper inflation pressure is not applied, abnormal wear, as shown below, may occur.
   In the worst case, the tyre could burst due to underinflation.

   **Shoulder Wear**
   If the inflation pressure is too low, it causes excessive wear on both sides of tread.

   **Centre Wear**
   If the inflation pressure is too high, it causes excessive wear on the centre part of tread.

Lack of proper tyre maintenance (e.g. underinflation) causes problems!

About 21% of cars do not have properly maintained tyres. 78% of this is due to improper tyre inflation pressure.

Survey results of improper car maintenance (2007)

- Improper maintenance of tyres
  - Driving over a nail or similar 4%
  - Injury by obstacles 21%
  - Abnormal wear 7%
  - Worn-down tyre grooves 22%

Source: JATMA

Check your tyre inflation pressure once a month!

How to check the inflation pressure

Remove the valve cap on the wheel, attach the inflation pressure gauge to the valve, pressing firmly to avoid escaping air, then check the number. Don’t forget to put the valve cap back on when you have finished.

*Please check the valve base for damage and air leakage.

The recommended inflation pressure is written on a label stuck in one of these places inside the driver’s door. You can also refer to the vehicle owner’s manual for the recommended inflation pressure.

The inflation pressure should be measured when the tyre is cold. When driving, the temperature inside the tyre rises causing inflation to expand and the inflation pressure to increase. As a result, measurements taken immediately after driving will be inaccurate.

Go to a tyre shop when your tyres need to be inflated.
Worn tyres are a sign of danger. Tread grooves are vital for safe driving! Tread wear causes poor tyre performance and can lead to serious problems!

Any tyre can fail if it is used wrongly or if it is not maintained. Failures and damage to tyres can threaten safe driving!

Dangers of Using Worn Tyres!

1 Worn tyres need a longer stopping distance on wet roads!
According to JATMA* study

Comparison of the stopping distance of new tyres and worn tyres on wet surface.

2 Driving in the rain with worn tyres is very dangerous!
Driving fast on a wet road with worn tyres may lead to slipping (hydroplaning phenomenon).

Replace the tyre immediately when the tread wear indicator shows!
The Tread wear indicator appears when the tread has worn out to 1.6mm. Never use a tyre where even just one tread wear indicator is exposed.

Abnormal Wear

Advantages of Tyre Rotation
- Prevention of Uneven Tread Wear
- Extension of Tyre Service Life
- Averaging of Tyre Fatigue

Note: The rotation of the rear wheels changes the orientation of the wear on the tread, resulting in a more uniform wear pattern.

For longer tyre life, it is necessary to rotate your tyres periodically (after 5,000km for the first rotation and then every 10,000km).

It is recommended that you change your tyre if tyre wear progress to an advanced stage!

Damage & Crack

Side Cut
- Causes:
  - Obstacles on the road
  - Scratching into a curb or similar

Scratching
- Causes:
  - Obstacles on the road
  - Scratching into a curb or similar

Side Crack
- Causes:
  - Underinflation and/or overload
  - Growth of cuts
  - Rubber deteriorations due to sun (UV rays) and heat
  - Extreme load concentration due to running into a curb or similar

Groove Crack
- Causes:
  - Underinflation and/or overload
  - Growth of cuts
  - Rubber deteriorations due to sun (UV rays) and heat
  - Extreme load concentration due to running into a curb or similar

It is recommended that you change your tyres if damage or cracks appear!