

Vehicle Safety

Module One



Module Objectives

By the end of this module you should;

- Be able to identify vehicle safety devices and their impacts.
- Be able to know about pre-trip inspections.
- Be able to know about features of tyres and tyre inspection methodologies.

1 SEAT BELTS

Seat belts save lives. Always wear one!

Seat belts can help prevent injury and death.

- Drivers and passengers should always wear seat belts, preferably shoulder-lap belts, whenever the car is in motion.
- If you are wearing a shoulder-lap belt at the time of a crash, your risk of being killed is reduced by about 50%.
- Seat belts protect the wearer against injury in a collision.
- They lessen the chance that you or your passengers will be thrown against the dashboard, through the windshield, or out of a door that has sprung open in a crash. In addition, seat belts help keep you behind the wheel and in control of the car in cases where you have to swerve or brake abruptly or are struck by another vehicle.
- Wearing a seat belt is compulsory in Fiji regardless of whether you are sitting in front or at the back. As a driver you should ALWAYS take the precaution of wearing your seat belt and ensure that your front and rear seat passengers are also wearing their seat belts.

What the LAW says!

A person over 8 years in a vehicle must wear a seatbelt and those who are under 8 years should wear a child restraint if available, or wear a seatbelt at the rear seat with adult supervision.

1.1 How do seat belts work in a crash?

To understand how it works we have to see the dynamic of a crash.

There are three types of collision in any road crash:

- **The car collision** is the first collision. The car hits something and then comes to a stop. The part of the vehicle that receives the first impact of the collision stops immediately. In most cases, the engine bay or the boot absorbs some of the impact. The driver/ passenger compartment sometimes remains comparatively undamaged.
- **The human collision** is the second and more dangerous collision. In this collision, occupants are thrown about inside the car, or even out of the car.
 - If you are not restrained by a seat belt, you will keep moving inside the car when it comes to a sudden stop.
 - If you are travelling at 80 km/h on impact, your body will still be moving at that speed after the collision.
- If you are not wearing a seat belt, you will hit some part of the car; dashboard, steering wheel etc. or the other people in the car. The higher the speed, the greater the force with which you will be thrown around inside the car or out of the car.
 - It is the human collision that injures and kills people.
- **The internal collision** is the third and "silent killer" collision. In this collision, when the human body is stopped by the dash board or steering wheel, the internal organs is still moving at the same speed and is only stopped by the (broken) bone structure. Thus internal rupture occurs.

2 AIR BAGS AND RESTRAINTS

2.1 Air Bags

- Millions of cars are now equipped with air bags, which inflate automatically in a frontal crash, then deflates again in a fraction of a second. Some cars also have air bags that inflate in a side collision. Air bags are very effective in preventing injuries, but they do not reduce the need for wearing a safety belt.

In some vehicles airbags will only activate if seatbelts are on.

2.2 Child Restraints

- Children who are left unrestrained in cars have accidents even when the car is stationary. Do not leave them unsupervised and NEVER leave them alone in the car with the keys in the ignition. Use the childproof locks so that the rear doors can only be opened from outside the car.

2.3 Baby seat

- For babies up to nine months old, weighing up to 10 kg, a rearward-facing baby seat is the safest type of restraint. These should be fitted in the rear seat of a car using an adult seatbelt. A built-in harness with a crotch strap holds the infant in place.

2.4 Child seat

- For children weighing between 9 - 18 kg (4 years up) use an upright child seat (forward-or-rear-facing) secured by an adult safety belt or by its own straps. A built-in harness holds the child in place.
- Bigger children (15 - 35 kg) can use a booster seat to lift them so that the adult lap and diagonal belt fits properly. The diagonal section must rest midway between the neck and shoulder, the lap section must sit low on the pelvis, NOT across the stomach.

2.5 Head Restraints

- Head restraints are standard equipment on the front (and often rear) seats of cars. These padded restraints protect against whiplash (Neck injury, "especially when your car is hit from behind". To get the maximum benefit from head restraints, make sure that they are properly adjusted.
- Head restraints should be high enough to make contact with the back of your head, not the base of your skull.

2.6 Door locks

- Keep car doors locked. Locked doors not only are less likely to open in a crash, but they also help prevent uninvited people from entering your car when you've stopped (security).

3 PRE TRIP INSPECTION

3.1 Surrounding area

- Look for children playing nearby.
- Children under six years of age can be killed while playing in the family driveway.

- Look for an animal that may be hiding under, walking or sleeping near the car.
- Look for objects in the area of the car and on the roadway that may damage the tires like broken bottles, scrap metals etc.
- Check under the car for fresh stains that could be indication of fluid leaks.

3.2 Wheel

- Check for under inflated tires and for tire wear or damage
- Note which way your front wheels are turned. This is the direction in which your car will go as soon as it begins moving.

3.3 Car body

- Check for damaged or missing parts and that all lights and windows are clean and undamaged.

3.4 Under the Bonnet

- At least once a week or when you stop for gas, check the levels of the engine, oil, radiator coolant, battery, brake, transmission, and windshield-washer fluids.
- Check the battery connection. Are the cables tight?
- Are the terminals free from corrosion?

'POWER'

P	Petrol
O	Oil
W	Water
E	Electrics (Light)
R	Rubber (Tire and Wiper)

<i>Check list</i>	
Petrol	Cap, Lines, Gauge, Type
Oil	Engine, Transmission, Power steering, Braking / Clutch,
Water	Radiator, Battery, Washer bottles :Headlights, Tail-lights, Brake-lights,
Electric	Indicators, Hazard lights, Horn, Interior, lights, Wires, Harness
Rubber	Belts, Hoses, Wiper blades, Mud flaps, Tires (Spare tire)

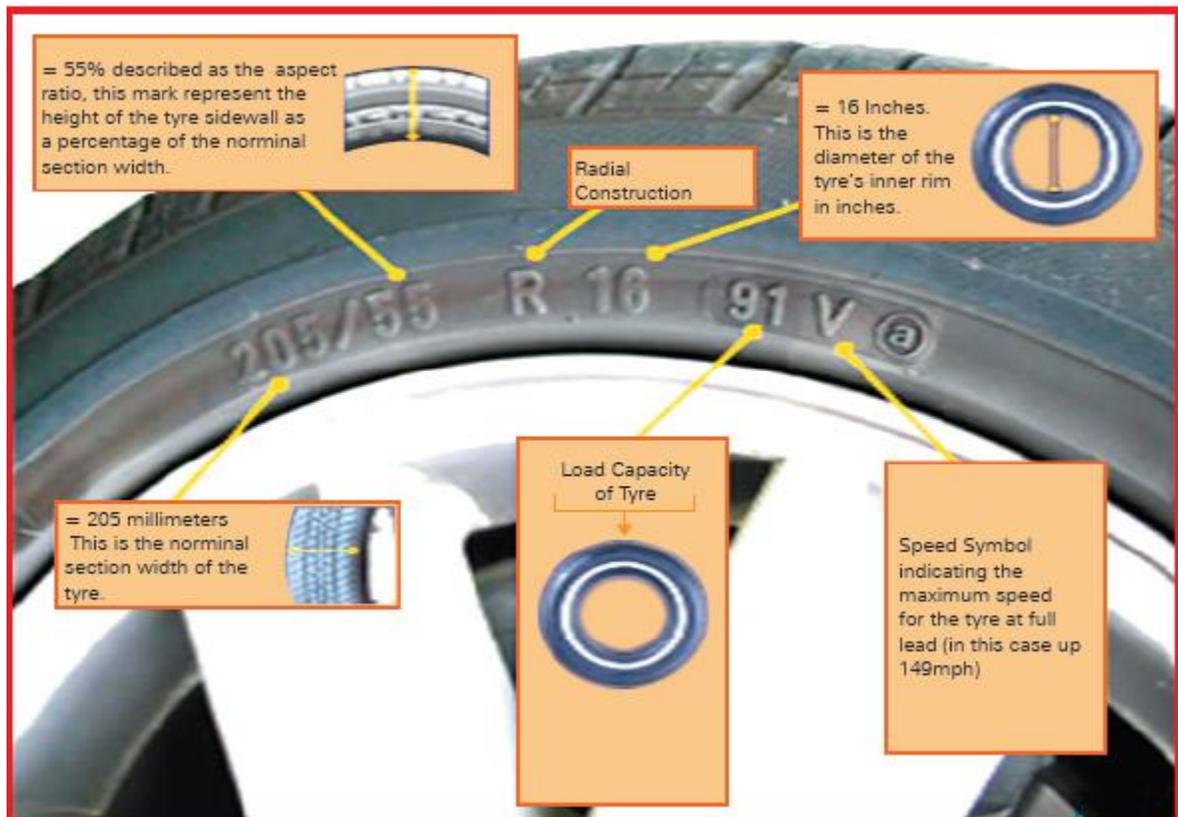
4 TYRE INSPECTION

4.1 Tyres

Studies of tyre safety show that maintaining proper tyre pressure, observing tyre and vehicle load limits, and inspecting tyres for cuts, slashes, and other irregularities are the most important things you can do to avoid tyre failure, such as tread separation or blowout and flat tyres.

These actions, along with other care and maintenance activities, can also:

- Improve vehicle handling
- Help protect you and others from avoidable breakdowns and accidents
- Improve fuel economy
- Increase the life of your tyres



4.2 What Information you must know about your car tyres

- Temperature resistance
- Traction
- Manufacturing Date
- Speed Symbol
- Max Load Capacity
- Tread Wear



4.3 Temperature Resistance

- These letters indicate a tyre's resistance to heat
- From the highest to lowest, a tyre's resistance to heat is graded as "A", "B", or "C"



Symbol	Area
A	Hot Area
B	Normal Weather Area
C	Cold Area

4.4 Tread Number

- This number indicates the tyre's wear rate.
- The higher the tread wear number is, the longer it should take for the tread to wear down.
- For example, a tyre graded 400 should last twice as long as a tyre graded 200.



Module Summary

This module summarizes the vehicle safety devices and their impacts. It provides information on pre-trip inspections and features and knowledge on vehicle tyres.