

Spare wheel safety

QFleet driver safety fact sheet

The purpose of a spare wheel is to provide a replacement in the event of a flat tyre or other tyre damage.

A spare wheel which is flat or unserviceable is useless in an emergency. It is important that spare wheels are regularly checked and maintained in the same manner as the other wheels fitted to a vehicle.

Vehicles which are equipped with a spare wheel should not be operated if the spare wheel is not serviceable. Spare wheels should be properly secured in the vehicle's spare wheel well or spare wheel bracket and unrestrained spare wheels must not be carried in or on a vehicle.

It is also important that the driver is familiar with the location of the vehicle's spare wheel, jack and other wheel changing equipment, and knows how to use it. It is recommended that this should be included in vehicle induction training. Some of the risks associated with spare wheels include:

- manual handling of heavy spare wheels
- proper restraint of spare wheels
- correct use of temporary and space saver spare wheels
- vehicles without spare wheels.

Manual handling of spare wheels

The spare wheel on a light truck or a 4WD vehicle can weigh in excess of 40kg. It is common for the spare wheel of a 4WD wagon to be fitted on one of its rear doors, or under the

tray, or against the tray's front headboard on light trucks and 4WD utilities. The removal and refitting of the spare wheel is a manual handling task that requires the exercise of care and appropriate manual handling procedures to avoid injury. Drivers who are required to change a heavy wheel should minimise the risk of personal injury by:

- clearing the work area of any trip hazards
- not attempting to lift loads that are too heavy
- seeking assistance from another person or calling roadside assistance for help
- using the correct lifting posture
 - avoiding lifting with a bent back
 - not twisting when carrying heavy loads
 - lifting and holding heavy loads close to the body
- exercising extra care when working on uneven ground
- using lifting aids and appliances instead of manual lifting.

Further information can be found in the Hazardous Manual Tasks publication available on the [Safe Work Australia website](#).

Additional spare wheels

QFleet encourages clients to carefully consider the need for additional spare wheels for the following reasons:

- An additional spare wheel can weigh 40-50kg and a rear bar mounted dual spare wheel restraint system can weigh up to 100kg (without the wheels fitted to it). The majority of SUV and 4WD vehicles have limited load

carrying capacity and the fitting of dual spare wheels and carriers can lead to overloading.

- Vehicle performance, handling and reliability are all diminished by extra weight.
- Extra weight on vehicles leads to increased fuel consumption and increased emissions.
- Spare wheels are expensive and attractive to thieves.
- Spare wheels are heavy and are dangerous if not properly restrained. The driver has an obligation to ensure their load is properly restrained.

Proper restraining of spare wheels

A spare wheel which is not properly restrained is a significant risk to both vehicle occupants and other road users, particularly in the event of a crash.

QFleet will not approve the supply of additional spare wheels unless QFleet is satisfied that the additional spare wheels can be safely restrained in or on the vehicle.

Light vehicle manufacturers do not usually supply additional spare wheel restraint systems as an approved accessory. However, QFleet will approve the fitting of some after-market spare wheel restraint systems. In approving a spare wheel restraint system, QFleet will be seeking evidence that the restraint's attachment and installation will minimise the possibility of injury to occupants and other road users. An acceptable restraint system will not fail or release when subjected to impact load forces equal to 20 times the combined mass of the restraint system and the spare wheel. (A test force of 20 G is commonly used in Australian Design Rule testing of other crash critical components of vehicles). Also, the spare wheel and its restraint must not cause a hazardous projection for the vehicle's occupants or interfere with the correct functioning of other internal fittings such as seat belts and child restraints.

Cargo barriers are not spare wheel restraints

Cargo barriers offer good protection to vehicle occupants from injury caused by cargo which moves forward in the event of a crash.

However, cargo barriers have load limits and the use of a cargo barrier does not negate the need for proper load restraint.

A cargo barrier will not be accepted as a spare wheel restraint system where the spare wheel is carried as unrestrained cargo behind the cargo barrier. Cargo barriers which conform to **AS/NZS 4034. 1:2008, Motor vehicles – Cargo barriers for occupant protection, Part 1: Cargo barriers**, are labelled with information which details their rated single mass capacity, which is usually 60 kg. When combined with the mass of the other cargo being carried, an unrestrained 4WD vehicle spare wheel, with a mass of 40 to 50 kg, is considered to exceed the load limit for the cargo barrier. The effect of NOT placing the unrestrained cargo against the rear face of the cargo barrier can increase the impact energy that must be dissipated by a factor of up to five times.

The plaque fitted to the barrier by the manufacturer specifies that cargo must still be restrained when a cargo barrier is fitted.

Roof rack mounted spare wheels

QFleet will not approve a roof rack mounted spare wheel restraint system for carrying additional spare wheels. Vehicle manufacturers publish recommended maximum load limits for roof racks which are usually approximately 70 kg for SUVs and 120 kg for heavy 4WD vehicles (Toyota LC = 120 kg and Nissan Patrol = 120 kg). They also publish loading guides which recommend that the only equipment which should be carried on a roof rack are items of equipment which are 'low' and 'light'. Low items have less effect on a vehicle's overall height and are less likely to create height clearance problems. Light items reduce the manual handling risks and their lower mass has less effect on the vehicles steering and handling and centre of gravity.

Another key area of concern is the manual handling aspects of removing and replacing heavy spare wheels from a roof rack. This task involves the lifting of a heavy and awkward load above head height without any mechanical aids, or climbing on the vehicle without steps. This is a significant manual handling and safety risk which can be avoided.

QFleet is also concerned about the ability of a roof rack to safely retain a spare wheel weighing 40 to 50 kg in a vehicle impact, where crash forces can exceed 20 times the combined mass of the restraint system and the spare wheel.

Headboard mounted spare wheels

An additional spare wheel may be attached to the headboard of a utility tray provided that it is restrained with a suitable restraint system. The restraint system could consist of a spindle and nut. Consideration should also be given to securing spare wheels, which are visible and accessible, against theft.

Temporary use spare tyres (TUST)

There is an increasing presence of temporary use spare tyres (TUSTs) in new motor vehicles. TUSTs are for emergency use only. Their temporary use will enable a vehicle to be driven home or to the nearest tyre repair facility. The original tyre must be repaired as a matter of urgency and refitted to the vehicle. There are limitations on the operating speed and distance for TUST use and they must not be used on a vehicle for an extended period of time.

TUSTs are commonly found in sedans, wagons and all-wheel-drive vehicles. Their durability and performance characteristics are different to normal wheels and tyres and this can adversely affect the handling and controllability of a vehicle if they are not used strictly in accordance with the vehicle manufacturer's recommendations. Refer to the vehicle owner's handbook for more information.

There are two common types of TUST:

- space saver spares

- temporary use spares.

Space saver spares are noticeably smaller and narrower than the other wheels and tyres fitted to the vehicle. The wheel is usually painted a bright colour such as yellow or orange and is usually fitted with a speed warning label e.g. 'speed limited to 80 kph'. There are limitations on the use of space saver spares and it is important that drivers understand their limited use through vehicle induction training. Space saver spares are safe to use provided that they are used within the limitations of the vehicle manufacturer's instructions. Some of the limitations include:

- reduced operating speeds e.g. 80 kph
- limited operating range (refer to owner's handbook)
- possible vehicle handling and braking irregularities because of the narrower tyre (hence speed restriction)
- possible loading and vehicle use restrictions (refer to handbook).

Temporary use spares or 'small wheel spares' are larger than a space saver spare but usually smaller than the other wheels fitted to the vehicle and usually have a reduced load and speed rating. The wheel is usually steel and black in colour and looks like a standard wheel taken from a base model vehicle from within the manufacturer's vehicle range. It is fitted with a decal advising of its reduced speed rating e.g. '80 kph'.

Temporary use spares also have restrictions on their use similar to space saver spares and the vehicle owner's handbook must be consulted for clear directions in their use.

Vehicle safety: TUSTs are approved for use in Australia. The safety of vehicles fitted with TUSTs will not be compromised providing the vehicle is operated in accordance with the vehicle manufacturer's recommendations.

Vehicle insurance: Insurance claims will not be compromised if a TUST is fitted to a vehicle and is operated in accordance with the vehicle manufacturer's recommendations. The insurer may make some enquiries to confirm this aspect before accepting a claim.

Vehicle selection: Some vehicle operators in very remote areas may have a preference for vehicles with a conventional full-sized spare wheel. This is an aspect which they should consider when selecting and ordering new vehicles.

Vehicles without spare wheels

Tyre technology and reliability has improved considerably in recent times. Some drivers are now fortunate enough to rarely experience a puncture. Vehicle manufacturers are responding to this situation by no longer equipping an increasing number of new vehicles with a spare wheel. This is occurring because:

- tyres are now tougher and more puncture resistant
- there is increasing need for additional passenger and luggage space, particularly in small vehicles
- vehicle manufacturers are working to reduce the weight of all vehicles for improved performance and for improved fuel efficiency and reduced greenhouse gas emissions
- without a spare wheel, designers have additional freedom to design vehicles with more effective rear crumple zones and increased luggage space
- there are risks associated with jacking a vehicle and changing a wheel at the roadside
- emergency roadside assistance is now readily available for the majority of vehicles.

Puncture repair kits

A puncture repair kit is usually provided in vehicles without a spare wheel. It usually consists of a very small portable electric air compressor and a canister of tyre sealant. The repair kit can be used to temporarily repair a normal puncture and to reinflate the tyre, without having to remove the wheel from the vehicle. After the temporary roadside repair has been completed the vehicle may continue being driven, but usually at reduced speed. This type of tyre repair is only temporary and the punctured tyre must be inspected and fully repaired by a qualified tyre repairer as soon as possible.

Puncture repair kits are not suitable for repairing tyres that have sustained major cuts or sidewall damage. Vehicles in this condition will require recovery to a specialist tyre repairer. The vehicle's handbook must be consulted for more information about temporary tyre repairs.

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