

# Tyres, wheels and hubs

7-1 Tyres and wheels

7-2 Hubs and axles

7-3 Mudguards



## Summary of legislation

### Applicable legislation

- Land Transport Rule: Tyres and Wheels 2001

### Mandatory equipment

#### Tyres

1. Tyres must be compatible with the vehicle to which they are fitted.
2. Tyres on the same axle must be of the same size designation and construction, and of the same tread pattern type.
3. Asymmetric tyres must be fitted in axle sets in accordance with manufacturer's instructions.
4. A unidirectional tyre must be fitted to a wheel position corresponding to its direction of rotation.
5. The speed category of a tyre must be compatible with the maximum legal speed limit for the vehicle, or the vehicle's maximum speed.
6. A vehicle must not be fitted with a metal tyre or other non-pneumatic tyre, or with a tyre with studs, cleats, lugs or other gripping devices.

#### Wheels

7. A wheel must:
  - a) be sufficiently strong for the type of vehicle to which it is fitted, and
  - b) be compatible with the vehicle to which it is fitted, and
  - c) be compatible with the tyre rim profile, flange height and valve fitment.
8. There must be adequate clearance for the brake, hub, suspension and steering mechanism and body parts.

### Permitted equipment

9. A vehicle may be fitted with retreaded tyres.

### Condition

#### Tyres (excluding spare tyres and space-saver tyres)

10. A tyre must be of good quality and construction, fit for its purpose, and maintained in a safe condition.
11. A tyre must not have worn, damaged or visible cords apparent by external examination.
12. A tyre on a motor vehicle must have a tread pattern depth of not less than 1.5 mm (excluding any tie-bar or tread depth indicator strip) within all the principal grooves containing moulded tread depth indicators and around the whole circumference of the tyre.
13. The regrooving of a tyre is permitted only if the tyre is identified as being specifically designed for regrooving after manufacture.
14. A tyre that is fitted to a vehicle must be maintained at a safe inflation pressure.

#### Spare tyre

15. If the vehicle carries a spare tyre, the tyre must be securely attached on or in the vehicle.

## Reasons for rejection

### Mandatory equipment

#### Tyres

1. Tyres on the same axle are:
  - a) not of the same size designation, or
  - b) not of the same construction (mixed steel ply, fabric radial ply, bias/cross ply), or
  - c) not of the same tread pattern type (mixed asymmetric, directional, normal highway, traction).
2. The tyres on an axle of a light trailer do not meet at least one of the following:
  - the tyre ply ratings are the same
  - the tyre load indices differ by no more than 2 (**Note 2**).
3. An asymmetric tyre is fitted to a vehicle with the 'inside' tyre wall facing outwards.
4. A unidirectional tyre is fitted contrary to its correct direction of rotation.
5. A tyre has a speed category that is less than the speed limit for the vehicle or less than the vehicle's maximum speed if this is less than the speed limit.
6. The vehicle has one or more of the following types of tyre fitted:
  - a) a space-saver tyre, or
  - b) a non-pneumatic tyre, or
  - c) a tyre with studs, cleats, lugs or other gripping devices, or
  - d) a tyre that is marked with any of the following:
    - i. 'NOT FOR HIGHWAY USE'
    - ii. 'NHS' (Not for Highway Service)
    - iii. 'ADV' (Agricultural Drawn Vehicle)
    - iv. 'RACING PURPOSES ONLY'

#### Wheels

7. A wheel is not compatible with the tyre fitted to it for rim profile, flange height, or valve fitment.

### Condition

#### Tyres (excluding spare tyres and space-saver tyres)

8. There are signs that a tyre is fouling on another part of the vehicle.
9. A tyre shows any of the following damage:
  - a) a lump or bulge that is likely to be caused by separation or partial failure of the tyre structure, or
  - b) a cut or crack in a sidewall or tread more than 25 mm long that reaches the cords, or
  - c) exposed or cut cords, or
  - d) the tread of a retreaded tyre shows signs of separation, or
  - e) nails or other sharp objects embedded in the tyre.

**Space-saver tyres**

16. A space-saver tyre carried in a vehicle first registered in NZ from 1/10/2002 must have an approved safety warning label permanently attached.
17. A space-saver tyre carried in a vehicle first registered in NZ prior to 1/10/2002 must have an approved safety warning label permanently attached by 1/10/2003.
18. The space-saver tyre warning label must have safety instructions that:
  - a) are printed clearly in English, and
  - b) identify that the tyre is for temporary use only, and
  - c) specify that the vehicle must not be operated with a space-saver tyre at a speed of more than 80 km/h or at a lesser speed specified by the tyre manufacturer, and
  - d) contain information on the recommended inflation pressure of the tyre when in use.

**Wheels**

19. The components of the wheel assembly must be in good condition.
20. The wheel must be securely attached to the hub.

**Reasons for rejection**

10. A tyre has a string type repair visible from the outside.
11. A tyre does not have a tread pattern depth of at least 1.5 mm (excluding any tie-bar or tread depth indicator strip) around the whole circumference of the tyre:
  - a) within all the principal grooves that normally contain moulded tread depth indicators, or
  - b) if the tyre does not normally have moulded tread depth indicators (such as some retreaded or vintage tyres), across at least three-quarters of the tread width.
12. A tyre not identified as designed for regrooving has had its tread depth increased by regrooving.
13. A tyre is noticeably under- or over-inflated.

**Spare tyres**

14. A spare tyre, if carried:
  - a) is not securely attached by a device that is in good condition and correctly applied, or
  - b) is not (eg if the manufacturer's attachment device is missing or faulty) stowed in a closed compartment separate from the occupant space.

**Space-saver tyres**

15. A space-saver tyre does not have an approved safety warning label (see **Figure 7-1-1**) permanently attached.
16. The space-saver tyre warning label does not have safety instructions that meet all of the following:
  - are printed clearly in English
  - identify that the tyre is for temporary use only
  - specify that the vehicle must not be operated with a space-saver tyre at a speed of more than 80 km/h or at a lesser speed specified by the tyre manufacturer
  - contain information on the recommended inflation pressure of the tyre when in use.

**Wheels**

17. There are signs that a wheel is fouling on another part of the vehicle.
18. A wheel is:
  - a) cracked, or
  - b) significantly damaged, distorted or deteriorated, or
  - c) not securely attached to the hub.
19. An alloy wheel has poor visible repairs.
20. A wheel nut is:
  - a) missing, or
  - b) loose, or
  - c) deteriorated, or
  - d) the incorrect type, or
  - e) has insufficient thread engagement to the wheel stud.

**Table 7-1-1. Tyre speed symbol categories**

Speed symbol – speed category (km/h)							
A1 – 5	A5 – 25	B – 50	F – 80	L – 120	Q – 160	U – 200	Y – 300
A2 – 10	A6 – 30	C – 60	G – 90	M – 130	R – 170	H – 210	ZR – over 240
A3 – 15	A7 – 35	D – 65	J – 100	N – 140	S – 180	V – 240	
A4 – 20	A8 – 40	E – 70	K – 110	P – 150	T – 190	W – 270	

**Table 7-1-2. Tyre interchangeability – imperial and metric**

Imperial sizing	Metric sizing
10/70R22.5	255/70R22.5
11/70R22.5	275/70R22.5
12/70R22.5	305/70R22.5
15R22.5	385/65R22.5
16.5R22.5	425/65R22.5

**Note 1** Definitions

**Asymmetric tyre:** tyre which, through tread pattern, is required to be fitted to a vehicle so that one particular side-wall faces outwards.

**Construction in relation to a tyre:**

- a) for a pneumatic tyre, the type of tyre carcass (including ply orientation and ply rating or load index), or
- b) for any other tyre, characteristics relating to size, shape and material.

**Cross-ply:** a pneumatic tyre structure in which the ply cords in the tyre carcass extend to the beads and are laid at alternate angles, which are substantially less than 90 degrees, to the centre-line of the tread. This tyre structure is also referred to as 'bias ply' or 'diagonal ply'.

**Modify** means to change a vehicle from its original state by altering, substituting, adding or removing a structure, system, component or equipment, but does not include repair.

**Pneumatic tyre:** a tyre that, when in use, is inflated by air or gas introduced from time to time under pressure so as to enclose, under normal inflation, a cushion of air or gas forming altogether at least half of the total area of an average cross-section of a tyre so inflated.

**Principal Grooves** means the wide grooves in the tyre tread which have the tread wear indicators located inside them. Any other grooves are secondary grooves which may wear out during the service life of the tyre.

**Radial-ply:** a pneumatic tyre structure in which the ply cords, which extend from bead to bead, are laid at approximately 90 degrees to the centreline of the tread, the carcass being stabilised by an essentially inextensible circumferential belt.

**Repair** means to restore a damaged or worn vehicle, its structure, systems, components or equipment to within safe tolerance of its condition when manufactured, including replacement with undamaged or new structures, systems, components or equipment.

**Rim:** that part of the wheel on which the tyre is mounted and supported.

**Speed category** means a code allocated to a tyre by a tyre manufacturer that indicates the maximum vehicle speed for which the use of the tyre is rated.

**Temporary-use spare tyre:** a combination tyre and wheel designed and constructed solely for temporary use under restricted driving conditions, and not intended for use under normal driving conditions (commonly known as a 'space-saver tyre').

**Tread** means that part of a pneumatic tyre which comes into contact with the ground.

**Tread depth indicator** (or tread wear indicator) means the projections within the principal grooves designed to give a visual indication of the degree of wear of the tread. To help locate these on a tyre, inspectors should look for a "Δ" or "TWI" mark on the outer edge of the tyre side wall (most tyres have these marks).

**Tube:** an inflatable elastic liner, in the form of a hollow ring fitted with an inflation valve assembly, designed for insertion into certain tyre assemblies to provide a cushion of air or gas, that, when inflated, supports the wheel (also known as an 'inner tube').

**Tyre carcass:** that structural part of a pneumatic tyre other than the tread and outermost rubber of the side-walls that, when inflated, contains the gas that supports the load.

**Wheel:** a rotating load-carrying member between the tyre and the hub, which usually consists of two major parts, the rim and the wheel disc, and which may be manufactured as one part, or permanently attached to each other, or detachable from each other.

**Wheel centre-disc:** that part of the wheel that is the supporting member between the hub and the rim.

**Wheel spacer:** an additional component used for the purpose of positioning the wheel centre-disc relative to the hub, or in multiple wheel sets, for the purpose of positioning the wheel centre-disc relative to another wheel.

**Note 2** The tyre load index and speed category are usually marked on the tyre. Where the tyre is not marked, the load and speed rating information must be obtained from the tyre manufacturer or a reference guide of tyre ratings before the tyre can be passed.

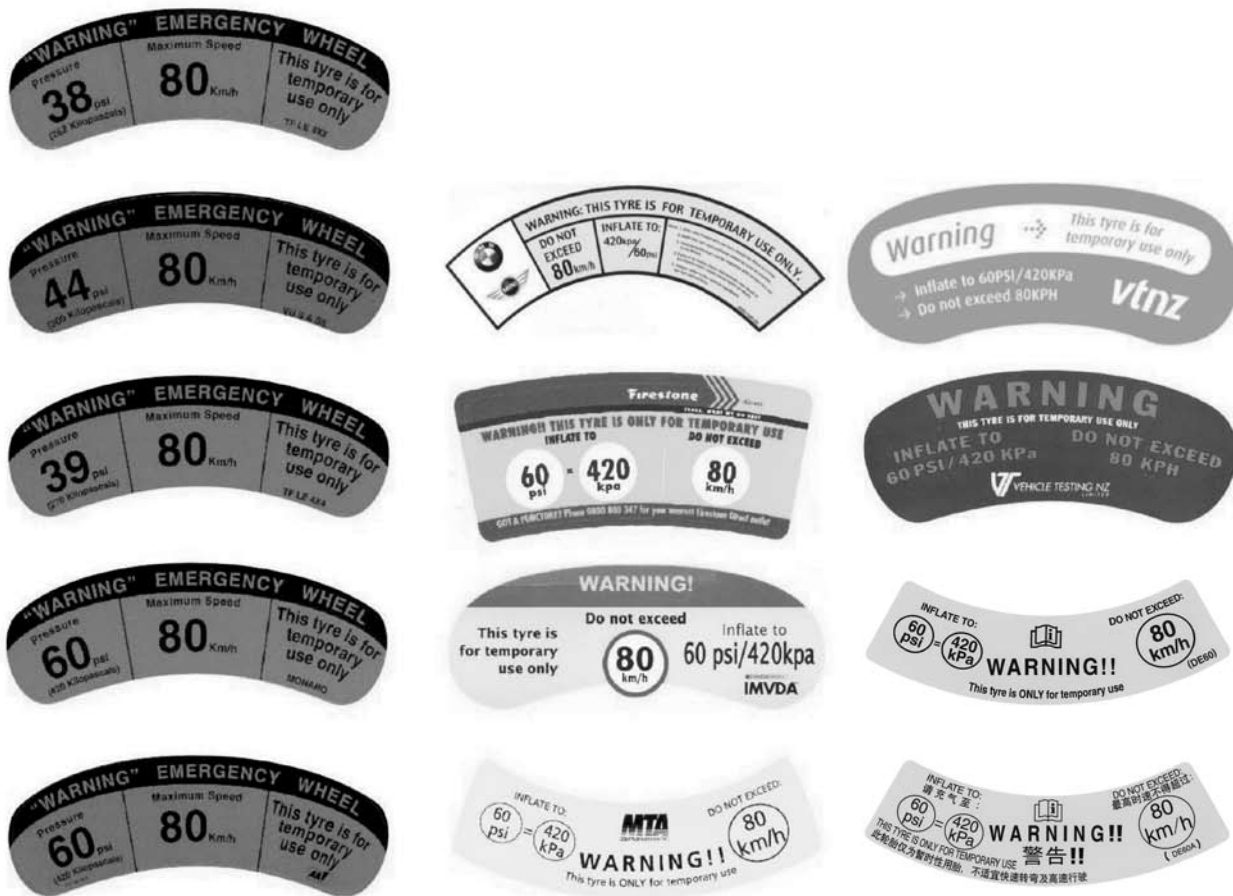


Figure 7-1-1. Approved space-saver tyre labels

(Note: See NZTA website for colour versions and any additional approved labels.)

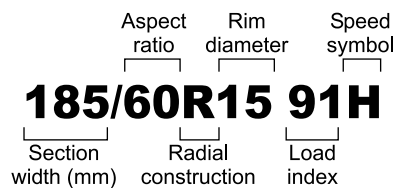


Figure 7-1-2. Tyre markings

## Summary of legislation

### Applicable legislation

- Land Transport Rule: Tyres and Wheels 2001

### Mandatory and permitted equipment

1. Refer to general vehicle pages.
2. Individual tyres of multiple tyre sets on groundspreaders or dedicated groundsprayers may be of different sizes or construction in the same set, but each multiple tyre set must be the same as the other multiple tyre set on the same axle.

### Condition

3. Refer to general vehicle pages.

### Performance

4. Refer to general vehicle pages.

### Modification and repair

5. A modification or repair that affects the tyres or wheels must be inspected and certified by a HVS certifier of category HVEC, HVMC or HVIC, unless the vehicle:
  - a) excluded from the requirement for HVS certification (**Table 7-1-3**), and
  - b) has been inspected in accordance with the requirements in this manual, including those for equipment, condition and performance.

## Reasons for rejection

### Mandatory and permitted equipment

1. General vehicle pages.
2. Individual tyres of multiple tyre sets on groundspreaders or dedicated groundsprayers may be of different sizes or construction in the same set, but each multiple tyre set must be the same as the other multiple tyre set on the same axle.
3. The tyres on an axle do not meet at least one of the following:
  - the tyre ply ratings differ by no more than 2
  - the tyre load indices differ by no more than 6
  - where no load index is indicated, the tyre load ratings (kg) on an axle differ by no more than 21% of the lowest rating.

### Condition

4. General vehicle pages.

### Performance

5. General vehicle pages.

### Modification and repair

6. A modification or repair affects the steering and suspension system and:
  - a) is not excluded from the requirements for HVS certification (**Table 7-1-3**), or
  - b) the modification is not for the purpose of law enforcement or the provision of emergency services, or
  - c) is missing proof of HVS certification, ie:
    - i. the vehicle was modified or repaired before the last CoF inspection and no LANDATA record has been entered, or
    - ii. the vehicle was modified or repaired since the last CoF inspection and no valid LT400 form from a HVS certifier of category HVEC, HVMC or HVIC has been presented.

Table 7-1-3. Requirements for HVS certification

HVS certification is required	HVS certification is not required
<ol style="list-style-type: none"> <li>1. increase of track width beyond vehicle manufacturer's specified limits</li> <li>2. fitting of tyres additional to the limit specified by the vehicle manufacturer</li> <li>3. Modified wheels</li> </ol>	<ol style="list-style-type: none"> <li>1. Modified wheels with written evidence from the vehicle manufacturer that the complete assembly of tyre, hub and axle is within the vehicle manufacturer's operating limits. Such approval is likely to contain the approved tyre and wheel sizes and the maximum track, separately for all axles, together with the maximum number of wheels fitted to one axle, and may also include a few restrictions such as reduced axle load etc.</li> <li>2. Retrofitting a tyre pressure control system in accordance with the equipment manufacturer's instructions.</li> <li>3. Fitting a regrooved tyre identified as specifically designed and constructed for the process of regrooving after manufacture.</li> <li>4. Fitting a single large tyre ('super-single') to a front axle when this is permitted by the vehicle manufacturer.</li> <li>5. Any modification or repair likely to have been carried out before 1/1/1997. (Modifications and repairs before this date generally required certification but for inspection purposes no evidence of this is required.)</li> <li>6. Any repair or modification not listed in the left-hand column unless the VI considers that certification is required because the modification or repair has affected the vehicle's safety performance (a second opinion from an expert may be needed, eg the manufacturer's representative, reputable workshop).</li> </ol>

**Note 1** Definitions

**Central tyre inflation system** means a type of tyre pressure control system that adjusts tyre pressure for the purpose of inflating and deflating tyres to improve tyre adhesion and reduce road surface damage and is under the central control of the driver or an automated system, or a combination of both the driver and an automated system. (Commonly known as 'CTI')

**Dedicated groundsprayer** means a self-propelled or trailing machine whose sole function is the application of chemicals or liquid fertiliser to crops or to the ground.

**Groundspreader** means a vehicle designed specifically for the carriage of powder or particulate artificial fertilisers on the road, and for the distribution of those fertilisers directly from the vehicle onto the land by means of a mechanical or pneumatic distributor that forms part of the vehicle.

## Summary of legislation

### Condition

1. The components of the assembly must be in good condition.
2. The hub and axle must be sufficiently strong for the type of vehicle to which they are fitted.
3. The hub and axle must have suitable and correctly adjusted geometry.

## Reasons for rejection

### Condition

1. A hub (**Note 1**):
  - a) is not securely attached to the vehicle, or
  - b) has a visible crack, or
  - c) is significantly damaged, distorted or deteriorated, or
  - d) has a broken or missing wheel stud.
2. A wheel bearing:
  - a) has play beyond the manufacturer's specifications, or
  - b) is over-tight or sounds rough.
3. An axle:
  - a) is insecure, eg, has loose U-bolts, or
  - b) is visibly cracked, or
  - c) is significantly damaged, distorted or deteriorated, or
  - d) shows signs of welding or heating after original manufacture, or
  - e) shows signs of fouling the vehicle structure or a brake, suspension or steering component.

### Performance

4. The geometry of a hub or axle causes the vehicle to veer significantly to one side.

#### **Note 1** Definition

**Hub** means the part of a vehicle that is attached to the axle and rotates on, or with, the axle, and to which the wheel is attached; and includes any bearings.

## Summary of legislation

### Applicable legislation

- Land Transport Rule: Vehicle Dimensions and Mass 2002
- Land Transport Rule: Heavy Vehicles 2004

### Mandatory and permitted equipment (Note 1)

1. A heavy trailer must not have any rear steering axles, unless the trailer is a semi-trailer that is not part of an A-train or B-train, provided no more than half of the axles within the rear axle set steer at any time.
2. A semi-trailer with a quad-axle set must have two steering axles, being either:
  - a) the two rearmost axles turning in the same direction, or
  - b) the foremost and the rearmost axles turning in opposite directions.
3. A heavy trailer must be fitted with an axle set permitted by **Table 7-2-1**.
4. A heavy trailer not part of an A-train or B-train may be fitted with a retractable axle in its rear axle set.
5. A sliding axle set must have:
  - a) an effective locking device to prevent inadvertent separation or extension, and
  - b) endstops at the end of the slideway to prevent the separation of the sliding parts if the primary locking device fails.

### Condition

6. Refer to general vehicle pages.
7. An axle fitted to a vehicle must have adequate strength and performance characteristics for all conditions of loading and operation for which the vehicle was constructed.

### Performance

8. Refer to general vehicle pages.
9. The locking of a sliding axle locking device must be readily verifiable by visual inspection.
10. If the sliding axle set locking device incorporates a system that provides energy for its operation, the device must remain fully engaged in the locking position, or the locking action must be initiated immediately, if the energising system fails.

### Modification and repair

11. A modification or repair that affects the hubs or axles must be inspected and certified by a HVS certifier of category HVEC, HVMC or HVIC, unless the vehicle:
  - a) excluded from the requirement for HVS certification (**Table 7-2-2**), and
  - b) has been inspected in accordance with the requirements in this manual, including those for equipment, condition and performance.

## Reasons for rejection

### Mandatory and permitted equipment (Note 1)

1. A heavy trailer, other than a semi-trailer that is not part of an A-train or B-train, is fitted with a steering axle in its rear axle set.
2. On a semi-trailer that is not part of an A-train or B-train more than half of the axles steer at any time.
3. A semi-trailer with a quad-axle set does not have two steering axles that are configured so that:
  - a) the two rearmost axles turn in the same direction, or
  - b) the foremost and the rearmost axles turn in opposite directions.
4. A heavy trailer is fitted with an axle set other than one permitted in **Table 7-2-1**.
5. An axle set, other than a twin-steer axle set, is not load sharing.
6. The manufacturer's plate for a tandem axle set with a twin-tyred axle and a large single-tyred axle (where these were fitted from 1/7/2002):
  - a) is missing, or
  - b) is not legible, or
  - c) does not show:
    - i. the load-share ratio of the axle set, or
    - ii. a ratio that is either 60:40 or 55:45, or
    - iii. the tyre size on each axle, or
    - iv. the maximum individual axle ratings, or
  - d) has details that do not match the vehicle.
7. A heavy trailer is presented as part of an A-train or B-train and is fitted with a retractable axle in its rear axle set.
8. A sliding axle set is not fitted with both:
  - a) an effective locking device to prevent inadvertent extension or separation, and
  - b) endstops at the end of the slideway to prevent the separation of the sliding parts if the primary locking device fails.

## Reasons for rejection

### Condition

9. General vehicle pages.
10. A sliding axle assembly is deteriorated, eg:
  - a) a chassis rail/guide, locking pin or other component is missing, deformed, cracked, or otherwise worn or damaged, or
  - b) a locking pin is too small or too short, or
  - c) there is an air leak from the lock pin air ram.

### Performance

11. General vehicle pages.
12. The locking of a sliding axle locking device is not readily verifiable by visual inspection.
13. A sliding axle locking device has wear or damage, such as a worn or bent pin, so that it is not effective.
14. A sliding axle locking device does not operate correctly.
15. A sliding axle end stop is:
  - a) missing, or
  - b) insecure, or
  - c) damaged.

### Modification and repair

16. A modification or repair affects the hubs and axles and:
  - a) is not excluded from the requirements for HVS certification (**Table 7-2-2**), or
  - b) the modification is not for the purpose of law enforcement or the provision of emergency services, or
  - c) is missing proof of HVS certification, ie:
    - i. the vehicle was modified or repaired before the last CoF inspection and no LANDATA record has been entered, or
    - ii. the vehicle was modified or repaired since the last CoF inspection and no valid LT400 form from a HVS certifier of category HVEC, HVMC or HVIC has been presented.

Table 7-2-1. Permitted axle sets for heavy trailers (See Figure 7-2-1)

Trailer type		Permitted axle sets	
Semi-trailer		Single axle; tandem axle set; tri-axle set; quad-axle set (not in A-train or B-train)	
Full trailer		<b>Front</b> Single axle; tandem axle set; Must be connected to the drawbar steering system	<b>Rear</b> Single axle; tandem axle set; tri-axle set (only with front tandem axle set)
Simple trailer		Single axle; tandem axle set; tri-axle set	
Pole trailer	One axle set	Single axle; tandem axle set; tri-axle set	
	Two axle sets	<b>Front</b> Single axle; tandem axle set Must be connected to the drawbar steering system	<b>Rear</b> Single axle; tandem axle set; tri-axle set (only with front tandem axle set)

Table 7-2-2. Requirements for HVS certification

HVS certification is required	HVS certification is not required
<ol style="list-style-type: none"> <li>1. An axle that is modified, including a replacement axle that is not identical to the one fitted by the vehicle manufacturer</li> <li>2. Fitting of an additional axle</li> <li>3. Steering axles in a quad axle set of a semi-trailer (unless the vehicle is a specialist overdimension vehicle)</li> <li>4. A retractable axle</li> </ol>	<ol style="list-style-type: none"> <li>1. Steering axles in a quad-axle set of a specialist overdimension vehicle</li> <li>2. Any modification or repair likely to have been carried out before 1/1/1997. (Modifications and repairs before this date generally required certification but for inspection purposes no evidence of this is required.)</li> <li>3. Any repair or modification not listed in the left-hand column unless the VI considers that certification is required because the modification or repair has affected the vehicle's safety performance (a second opinion from an expert may be needed, eg the manufacturer's representative, reputable workshop).</li> </ol>

**Note 1** For specialist overdimension vehicles, none of the equipment RfRs apply except number 5, ie, axle sets must be load sharing.

**Note 2** Definitions

**Retractable axle** means an axle that has a convenient adjustment to allow the axle load distribution of the axle set to be varied substantially. An axle that is retracted is not considered to be part of the axle set.

**Load-sharing axle set** means an axle set suspension system that has effective damping characteristics on all axles of the set and is built to divide the load between the tyres on the set so that no tyre carries a mass more than 10% greater than the mass it would carry if:

- a) the load were divided in the axle set so that each tyre carries an equal load, or
- b) the axle set is a tandem axle set comprising a twin-tyred axle and a large single-tyred axle and is built to divide the load between the tyres on the set so that:
  - i. 60% of the load is borne by the twin-tyred axle and 40% of the load is borne by the large single-tyred axle, or
  - ii. 55% of the load is borne by the twin tyred axle and 45% of the load is borne by the large single-tyred axle.

**Specialist overdimension vehicle** means

- a) a vehicle designed primarily to transport overdimension or overweight loads, or
- b) a vehicle whose primary purpose is to carry out a specialist function that requires overdimension equipment, and;
  - i. dismantling of the vehicle's equipment would make the equipment unusable for its intended purpose, or
  - ii. it would take more than four hours to dismantle the vehicle's equipment.


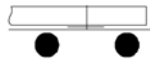
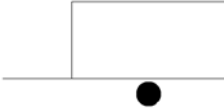
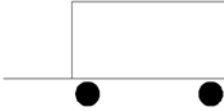



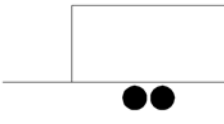
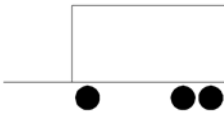
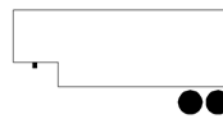
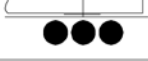

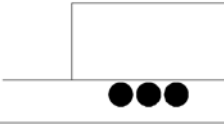
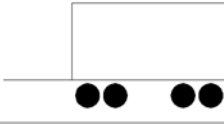
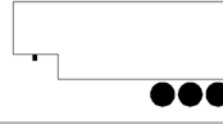
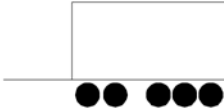
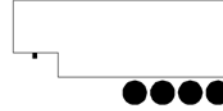
Pole trailer		Simple trailer	Full trailer	Semi-trailer
1 axle set	2 axle sets			
				
				
				
				

Figure 7-2-1. Permitted axle configurations

## Summary of legislation

### Applicable legislation

- Land Transport Rule: Vehicle Equipment 2004

### Mandatory equipment

1. A trailer must be fitted with a mudguard (**Note 1**) over each road wheel if it is reasonable and practicable to do so.
2. A mudguard must cover no less than the width of the tyre tread on each road wheel (**Figure 7-3-1**).
3. A trailer fitted with twin tyres or close-spaced multiple tyres must be fitted with a mudguard over each wheel on the rear axle that provides continuous protection from a horizontal line tangent to the top of the tyre tread (**Note 1**) to a line with a slope of 1:3 rising rearward from the tyre's contact point on the road (**Figure 7-3-2**).
4. A trailer designed for industrial purposes may be fitted with partial mudguards if the vehicle's construction makes it impracticable to fit full mudguards.
5. A trailer used for transporting round timber that cannot be fitted with mudguards over each road wheel must have at least partial mudguards mounted behind its rearmost axle that comply with the following (**Figure 7-3-2**):
  - a) the mudguard must provide continuous protection from a horizontal line tangent to the top of the tyre tread to a line with a slope of 1:3 rising rearward from the tyre's contact point on the road, and
  - b) the distance between the tyre and the mudguard must not be more than twice the tyre rolling radius.
6. The following trailers are not required to be fitted with mudguards:
  - a) a vehicle in an unfinished condition used under the authority of trade plates and operated in accordance with the Compliance Rule
  - b) a trailer towed by a vehicle that is not capable of exceeding a speed of 30 km/h.

### Mudguard condition

7. A mudguard must be securely fixed to the vehicle and must be constructed so that it does not present a hazard to road users.

## Reasons for rejection

### Mandatory equipment

1. A mudguard (**Note 1**) over a road wheel is missing where it is reasonable and practicable to fit a mudguard, unless the trailer is:
  - a) in an unfinished condition legally used under the authority of trade plates, or
  - b) is towed by a vehicle that is not capable of exceeding a speed of 30 km/h.
2. A mudguard does not cover the full tread (**Note 1**) width of a tyre or tyres fitted to a road wheel (**Figure 7-3-1**), except:
  - a) on a trailer designed for industrial purposes where it is not practicable to fit a full mudguard due to the vehicle's construction.
3. A trailer used for transporting round timber that cannot reasonably and practicably be fitted with a mudguard over each road wheel is not fitted with at least partial mudguards mounted behind the rearmost axle that meet the following requirements (**Figure 7-3-2**):
  - a) the mudguard is more than one-third higher than the horizontal distance between the vertical lines of the lowest point of the mudguard and the centre of the wheel, and
  - b) the distance between the tyre and the mudguard must not be more than twice the distance from the centre of the wheel to the road.
4. On a vehicle with twin or close-spaced multiple tyres a mudguard fitted over a wheel on the rear axle is more than one-third higher than the horizontal distance between the vertical lines of the lowest point of the mudguard and the centre of the wheel (**Figure 7-3-2**), except when:
  - a) the mudguard is fitted to a vehicle designed for industrial purposes and it is not practicable to fit a full mudguard due to the vehicle's construction.

### Mudguard condition

5. A mudguard is not securely fixed to the vehicle.
6. A mudguard is so constructed or damaged that it is likely to present a hazard to road users.

### Note 1 Definitions

**Mudguard** means a fitting, inclusive of any portion of the vehicle and of any mudflaps attached, that serves to intercept material thrown up by a wheel more or less on the plane of the wheel.

**Tyre tread** means the portion of a tyre that contacts the road.

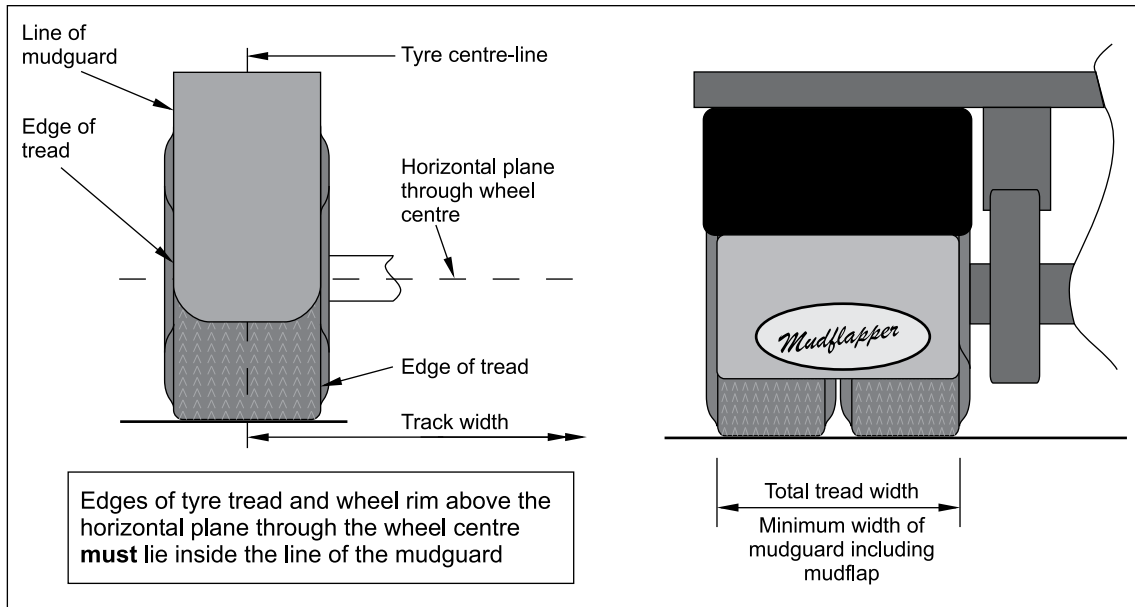


Figure 7-3-1. Position of mudguard in relation to tyre tread

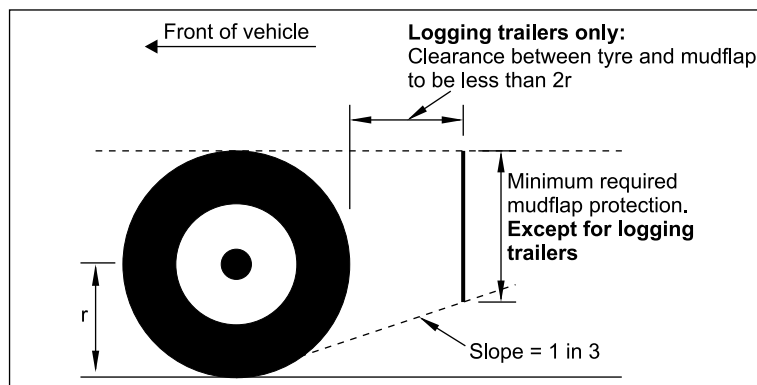


Figure 7-3-2. Size and position of mudguards for the rear wheels of a trailer fitted with dual wheels or close-spaced multiple wheels

