

Vehicle dimensions

and mass – guide to factsheet 13 series

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The information in the factsheet 13 series describes the legal requirements in the Land Transport Rule: Vehicle Dimensions and Mass 2002. The factsheets also include information about subsequent relevant legislation. Your obligations for road user charges (RUC) are not included here, refer to our website. Please note that RUC is being reviewed in 2010.

Read this factsheet for general information and then choose among the other factsheets for your specific vehicle or combination. This factsheet also contains the definitions of terms as well as dimension limits for 'standard' vehicles and mass limits for axles and axle sets.

Land Transport Rule: Vehicle Dimensions and Mass 2002

The Land Transport Rule: Vehicle Dimensions and Mass 2002 (the Rule) applies to all vehicles first registered anywhere in the world after 1 July 2002 and using New Zealand roads.

Most vehicles complied with the new Rule when it came into force on 1 July 2002, but it did introduce some changes. The rule allowed vehicles first registered in New Zealand before 1 July 2002 that had complied with previous legislation to continue to comply with that legislation. However, all heavy vehicles must now meet the static roll threshold requirements (see factsheet 13e *Static roll thresholds* and all heavy-vehicle combinations must comply with the trailer: truck mass ratio (set out in this factsheet).

Land Transport Rule: Vehicle Dimensions and Mass Amendment 2010

The factsheet 13 series includes changes made by the Land Transport Rule: Vehicle Dimensions and Mass Amendment 2010 (the Rule Amendment), in force from 1 May 2010. Changes in maximum dimensions have been highlighted so you can quickly see how you might be affected, and indicate the previous limit. The table opposite sets out some of the changes to this and other factsheets caused by this Rule Amendment.

If you modify your rigid vehicle or heavy trailer to take advantage of new dimension limits, you will need to have the modification certified by a heavy vehicle specialist certifier. A list of these can be found on the NZ Transport Agency (NZTA) website.

Two new factsheets have been created:

- Factsheet 13f has been prepared to clarify differences in dimension limits allowed for heavy buses as well as a dispensation for bike racks and their special operating conditions.
- Factsheet 13g describes the high productivity motor vehicle (HPMV) permit system.

Guide to the factsheet 13 series

Number	Title
13	<p><i>Vehicle dimensions and mass: Guide to the factsheet 13 series and general information</i></p> <ul style="list-style-type: none"> Provides general information about the legal maximum dimension and mass limits for standard vehicles on New Zealand roads. Includes updated tables of the allowed dimension limits for 'standard' vehicles, as of 1 May 2010. Certain dimension increases will mean that some vehicles that previously required permits or exemptions to operate will no longer require these, as these new limits are allowed 'as of right'. For example, a logging truck that previously operated on a 22 metre load-overhang permit will no longer need that permit. However, it will need to have a removable or adjustable rear underrun protection system fitted. This factsheet contains a comprehensive reference of definitions and specifications from the rule; some of these have been removed from other factsheets in this series. The drawings have been simplified by using a reference number on the drawing with the dimension and text details below.
13a	<p><i>Heavy rigid vehicles</i></p> <ul style="list-style-type: none"> Specific requirements for buses have been removed and placed in the new factsheet 13f. Dimensions have been updated in line with the Rule Amendment.
13b	<p><i>Light rigid vehicle</i></p> <ul style="list-style-type: none"> There are no changes for light rigid vehicles as a result of the Rule Amendment.
13c	<p><i>Heavy trailers and vehicle combinations (full, semi, simple, pole, A- and B-train)</i></p> <ul style="list-style-type: none"> This factsheet has been re-named and information clarified so that it refers to heavy-vehicle combinations with each trailer type having its own section. There have been some increases in standard vehicle dimensions 'as of right', for example a simple trailer can now be 12.5 metres long. General towing information and some definitions have been removed and put into this factsheet.

Number continued	Title continued
13d	<i>Light trailers (light simple trailers)</i> <ul style="list-style-type: none"> The Rule Amendment has allowed a standard light simple trailer to be 12.5 metres long, and the combination of vehicle and trailer to be 22 metres long.
13e	<i>Static roll thresholds</i> <ul style="list-style-type: none"> There are no changes to this factsheet, and no change to the minimum static roll threshold (SRT) requirements. Note that a vehicle operating on an HPMV permit must meet this minimum static roll threshold requirement, refer to factsheet 13g.
13f	<i>Heavy buses</i> <ul style="list-style-type: none"> This is a new factsheet. It brings together various bus-only rule requirements that were either previously spread throughout other factsheets in this series, or are results of the Rule Amendment.
13g	<i>High productivity motor vehicles (HPMV's)</i> <ul style="list-style-type: none"> This new factsheet was introduced to explain what an 'HPMV' is, and how to apply for a HPMV permit. It also identifies requirements that need to be met for your vehicle to be eligible for a HPMV permit, and requirements that may be in the permit conditions. It includes the mass tables that can be used to give an eligible vehicle a higher mass limit above 44,000kg.

What if my vehicle does not meet the mass dimension limits?

If your vehicle exceeds any of the mass or dimension limits in the Rule Amendment (as described in this factsheet), then you will not be allowed to operate it on New Zealand roads, unless it is eligible to be one of the following:

Overdimension vehicles or loads

If you want to carry an indivisible load that exceeds any of the dimension limits in the rule (ie an overdimension load) on a legally dimensioned vehicle, or to operate a special overdimension vehicle, read factsheet 53 *Overdimension vehicles and loads* or contact the Overdimension Permit Issuing Agency on 0800 OVERSIZE (0800 683 774).

Overweight vehicles or loads

If the vehicle or load exceeds the maximum permitted weights described in this factsheet, and you believe you're eligible for an overweight permit, contact your nearest NZTA office.

High productivity motor vehicles (HPMV's)

In 2010 a new permit system was introduced for HPMV's. These carry a divisible load and may be over-length and/or over-weight but not over-width or over-height. Refer to factsheet 13g *High productivity motor vehicles*.

What are the general mass (weight) limits on New Zealand roads?

The words 'mass' and 'weight' are sometimes used interchangeably though they mean the same thing. For example a vehicle's tare (in kilograms) is its unladen mass, but you would measure it by using a weighbridge.

There are two different types of mass limit that apply to your vehicle and its load.

First, there is the limitation imposed by the vehicle's design and construction. You must not exceed the vehicle ratings specified by the vehicle manufacturer for the chassis, axles, tyres and other components of the vehicle. For example, you are not allowed to load your vehicle above the specified maximum gross vehicle mass (GVM), gross combination mass (GCM), brake code mass (BCM) or tow a load greater than the drawbar is rated for.

Second, limits to axle mass are imposed to protect the road infrastructure. This is because certain sections of roads in New Zealand are not built to the same strength specifications as in other countries.

To find the operating gross mass (weight) of your vehicle add the tare mass of the unladen vehicle to the mass of the load the vehicle is carrying. You must take into account any mass transferred to the rigid vehicle by an attached trailer. You can also measure this mass by using a weighbridge. This total mass must not exceed any of the vehicle's design limits or the road limits.

Axles can have different types of tyres fitted to them, and the allowed mass changes depending on which type you are using.



Single standard-tyred axle (includes two axles spaced less than one metre apart).



Single large-tyred axle – tyres at least 330 millimetres (13 inch) width by 24 inch diameter or 355 millimetres (14 inch) width by 19.5 inch diameter (includes two axles spaced less than one metre apart).



Twin-tyred axle.

The limits on the weight of vehicles on New Zealand roads and bridges have been introduced to protect roads that are designed and are maintained to a level called 'Class 1'.

**HEAVY VEHICLE
BRIDGE LIMITS**
AXLES 4 300 kg
GROSS 50% OF CLASS 1
SPEED 15 km/h

Note: Some roads and bridges have lower weight limits than Class 1. These lower limits have been imposed by the Road Controlling Authority (RCA) to protect particular bridges or roads from damage. These special limits are indicated on road signs that read 'Class C' or 'Heavy Vehicle Axle Limit' or 'Heavy Vehicle Bridge Limits'. Only vehicles within the specified limits can use these roads or bridges.

For example, if you want to cross a bridge displaying the above sign, then an individual axle (not axle set) must not exceed 4300kg, each axle set must not exceed 50 percent of the axle set limits in the rule, and the vehicle must not travel over the bridge faster than 15km/h. Note that some of these signs will not have all three restrictions listed, for example if there is no 'speed' listed, you can cross at the appropriate speed.

What is the minimum mass on front axles?

In order to retain sufficient grip on the road surface when turning, your vehicle must have sufficient mass (weight) on the front axle(s). This mass shouldn't be less than 20 percent (one fifth) of the total mass on the axles of the vehicle. Drivers need to be aware of this at all times. The vehicle needs to be loaded in an appropriate way so this is achieved. Placing the full load behind the rear axles of the vehicle isn't recommended.

This guidance has been introduced to make sure that vehicles with an increased rear overhang (which the Rule allows) retain front traction and steering and remain stable.

Heavy rigid vehicles first registered in New Zealand on or after 1 July 2002 must have at least 20 percent of their mass on the front axles at all times.

Drivers of vehicles that tow simple trailers (ie those with one axle set which aren't semi-trailers) also need to be aware that the simple trailer can impose a large weight on the rear of the towing vehicle. This imposed weight can (by lever action through the chassis of the vehicle) reduce the effective mass bearing on the front axle(s) of the towing vehicle. Therefore simple trailers need to be loaded carefully so their load is distributed centrally over the axle(s) of the trailer. This will allow the towing vehicle to maintain front wheel traction.

Note: There needs to be a small downward force on the tow coupling, to make sure a simple trailer remains stable while it's being towed. The downward force should be about 10 percent of the weight of the trailer and its load.

What is the trailer:truck mass ratio?

Heavy trailers have been identified as more likely to show stability problems than buses or trucks. For this reason the maximum mass on the axles of a heavy trailer is limited, and can't be more than 50 percent higher than the mass of the vehicle which tows it. Trailers within this limit are easier to control when braking and during emergency manoeuvres. This limitation on the mass of a heavy trailer applies at all times when heavy trailers are being moved in areas open to public access.

Mass ratio of towed vehicles

For a rigid vehicle (truck, tractor or ute) towing one heavy vehicle, the ratio of gross mass of the towed vehicle to gross mass of the towing vehicle must not exceed 1.5.

$$\frac{\text{Gross towed vehicle mass}}{\text{Gross towing vehicle mass}} = 1.5 \text{ or less}$$

This requirement doesn't apply if the speed of the combination vehicle is less than 40km/h, or the vehicle is operating under an overweight permit with a vehicle axle index above 1.1.

For a rigid vehicle towing two vehicles, the ratio of the gross mass of the rearmost vehicle to the total gross mass of the rigid vehicle and the first towed vehicle must not exceed 1.5.

$$\frac{\text{Rear towed vehicle gross mass}}{\text{Truck gross mass} + \text{first towed vehicle gross mass}} = 1.5 \text{ or less}$$

Operators will need to ensure the vehicle that moves a loaded heavy trailer has sufficient mass for the purpose. It may be necessary to change loading practices so this can be achieved. This requirement mainly affects the movement of full and simple trailers. Semi-trailers and B-trains are less likely to be affected because part of the mass of these trailers is borne by the towing vehicle.

How do I assess stability by static roll threshold (SRT)?

The stability of vehicles can be greatly affected by the way they're loaded. The load needs to be arranged so that its mass and height are appropriate for the design of the vehicle and type of load.

The SRT of a vehicle is a *measure of the potential* for that vehicle to roll over sideways. Vehicles with a low SRT are more likely to roll over than those with a higher SRT, especially when going around sharp bends and in sudden emergency maneuvers. That means the lower your SRT the less stable your vehicle is.

To improve their stability, heavy vehicles with a gross vehicle mass (GVM) greater than certain specified limits *must meet or exceed a minimum SRT value*.

Trucks

The heaviest class of trucks (class NC with GVM over 12 tonnes) must meet a minimum SRT of 0.35g (where 'g' is the acceleration due to gravity). They aren't, however, required to be certified. Factsheet 13e *Static roll thresholds* contains further information.

Trailers

If their load or body is more than 2.8 metres high, the heaviest class of trailers (class TD, with GVM over 10 tonnes) need to be assessed for their tendency to roll over when loaded. This assessment is mandatory for all of these vehicles.

Trailers that don't meet the required level of stability will have their capacity to carry their existing load type reduced, could be recertified to carry a different type of load, or will need to be adjusted or modified to improve their stability.

Axle mass (weight) limits for standard vehicles

The following mass limits indicate the maximum mass (weight) allowed on Class 1 roads.

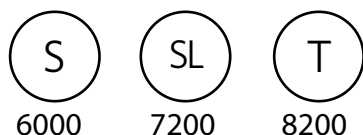
There are three road-imposed legal mass limits that you must not exceed:

1. The individual axle limit, and
2. The axle set limit, and
3. The combined axle set limit, which depends on the distance from the first axle in any set to the last axle in any other set.

Note: As well as not exceeding an individual axle limit you must also meet the axle group limit. This means that you may not be able to load each axle to its maximum legal limit, because this could overload the axle set or group.

1: Individual axle limits

Single axle or axle set

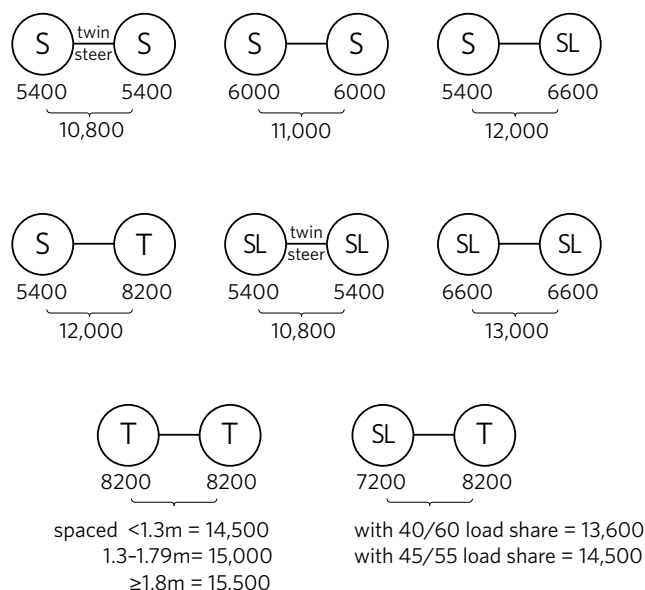


(One axle or a dual axle of two axles less than one metre apart.)

2: Axle-set limits

Axle set mass limits are in place due to the concentration effect of having two axles close together. If each axle was loaded to the maximum allowed for it, excess road damage would result. Below are the possible combinations. Some axle sets do not have load sharing so a tolerance is allowed, which is why in some cases the axle set limit is less than the sum of the individual axle limits.

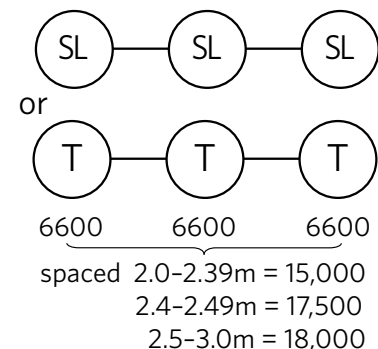
Tandem axle set



(Two axles spaced more than one metre but less than two metres apart.)

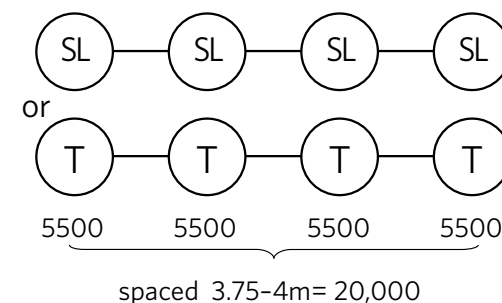
Note: The two metres maximum does not apply to twin steer axle sets.

Tri-axle set



(Three axles spaced more than two metres but less than three metres apart.)

Quad-axle set



Note: For weights on oscillating axles and other axle combinations not shown here, see the Rule.

3: Combined axle-set limits

Maximum vehicle and axle mass (kilograms):

The total mass of a heavy vehicle or vehicle combination must be within the limits set out below, when the distance from any axle in any set is measured to any other axle in another set. The table below gives the maximum allowed sum of the mass on any two or more axles that together do not constitute a single tandem axle set, a single tri-axle set or single quad-axle set, where the distance from the centre of the first axle to the centre of the last axle is 1.8 metres or more (including maximum gross weight).

1.8m but less than 2.5m	15,500kg
2.5m but less than 3.0m	17,500kg
3.0m but less than 3.3m	19,000kg
3.3m but less than 3.6m	20,000kg
3.6m but less than 4.0m	21,000kg
4.0m but less than 4.4m	22,000kg
4.4m but less than 4.7m	23,000kg
4.7m but less than 5.1m	24,000kg
5.1m but less than 5.4m	25,000kg
5.4m but less than 5.8m	26,000kg
5.8m but less than 6.4m	27,000kg
6.4m but less than 7.0m	28,000kg
7.0m but less than 7.6m	29,000kg
7.6m but less than 8.2m	30,000kg
8.2m but less than 8.8m	31,000kg
8.8m but less than 9.4m	32,000kg
9.4m but less than 10.0m	33,000kg
10.0m but less than 10.8m	34,000kg
10.8m but less than 11.6m	35,000kg
11.6m but less than 12.0m	36,000kg
12.0m but less than 12.5m	37,000kg
12.5m but less than 13.2m	38,000kg
13.2m but less than 14.0m	39,000kg
14.0m but less than 14.8m	40,000kg
14.8m but less than 15.2m	41,000kg
15.2m but less than 15.6m	42,000kg
15.6m but less than 16.0m	43,000kg
16.0m or more	44,000kg

Note: Vehicles can operate at higher mass on certain routes if on an HPMV permit, see factsheet 13g.

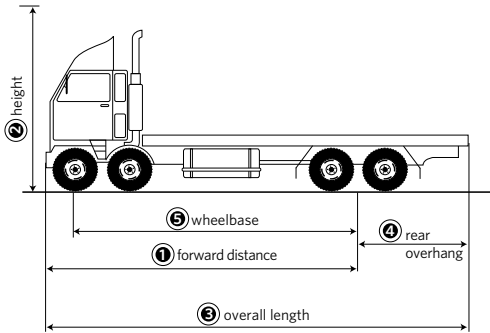
What are the dimension limits for ‘standard’ vehicles?

The law states the maximum allowed width, height and other dimensions for vehicles to be allowed on New Zealand roads, which have been designed and built to accommodate these dimensions. If your vehicle fits within these dimensions it is called a standard-size vehicle.

All dimension limits are maximums, in metres (m) or millimetres (mm), unless otherwise stated. For more detailed information see the appropriate vehicle factsheet.

Summary table of dimension limits for rigid vehicles

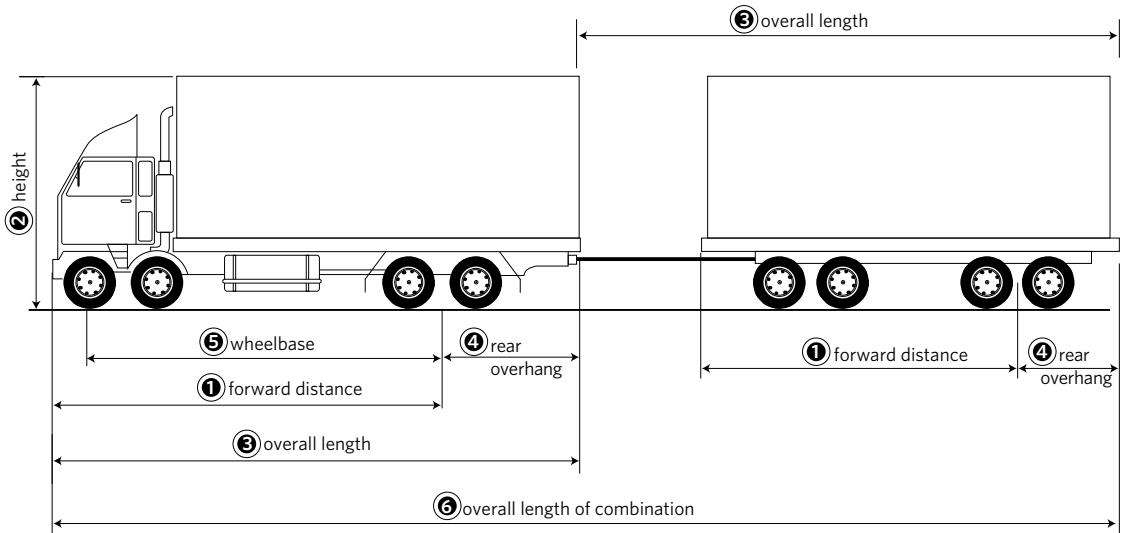
A rigid vehicle has two axle sets, a driver’s position, a steering system, motive power and a single rigid chassis.



	Rigid vehicles			
	Light vehicles (factsheet 13b)		Heavy vehicles (factsheet 13a)	
	Not towing	Towing	Not towing	Towing
Maximum width	Two-wheeled vehicles (Classes AA, AB, LA, LC); 1.0m. All others: 2.5m.			
Maximum height	4.25m			
Maximum forward distance	9.5m	8.5m	9.5m	8.5m
Maximum rear overhang	4m from rear axis.		With non-steering rearmost axle, the lesser of 4m from rear axis or 70% of foremost axle to rear axis. With steering rearmost axle, the lesser of 4.25m from rear axis or 70% of foremost axle to rear axis. A rigid bus that exceeds 12.6m in length, the lesser of 4.5m or 72% of wheelbase.	
Maximum front overhang	3m ahead of front of driver's seat when in its rearmost position (4m for an agricultural vehicle).			
Maximum overall length of vehicle	12.6m	11.5m	12.6m*	11.5m
Ground clearance	Light: No required minimum, but if light motor vehicles and trailers have their suspension modified so ground clearance is less than 100mm, then that suspension must be approved by a Low Volume Vehicle Certifier. Heavy: Minimum is the greater of 100mm OR 6% of the distance from the nearest axle to the point where the ground clearance is measured.			
Maximum turning circle	25m diameter from wall to wall, excluding collapsible mirrors.			
Maximum intervehicle spacing	N/A	N/A	N/A	N/A
Minimum SRT	N/A		0.35g (class NC only – over 12 tonnes GVM)	
* Note: Some buses can be longer, refer to factsheet 13f.				

Summary table of dimension limits for vehicle combinations

A combination vehicle is made up of a rigid vehicle towing another vehicle or vehicles.



	Trailers and vehicle combinations				
	Trailer with one axle set			Trailer with two axle set	
	Semi	Simple	Pole	Full	Pole
Maximum width	Two-wheeled vehicles (Classes AA, AB, LA, LC); 1.0m. All others: 2.5m.				
Maximum height	4.25m				
Maximum forward distance (See factsheet 13c for specific forward distance definitions (how they are measured))	9.2m (previously 8.5m).	8.5m	8.5m with fully extended drawbar.	8.5m	8.5m with fully extended drawbar.
Maximum rear overhang	Light: 4m from rear axis.				
	Heavy: Lesser of 4.3m (previously 4m) from rear axis or 50% of forward distance except for Class TC caravan trailer, they are the lesser of 4m or 65% of forward distance.	Lesser of 4m or 50% of tow coupling to rear axis.		Lesser of 4m or 50% of front axis to rear axis.	
Maximum front overhang	2.04m radius arc ahead of centre of kingpin.	2.04m radius arc ahead of centre of tow coupling.	2.04m radius arc ahead of centre of turntable on tow vehicle	2.04m radius arc ahead of centre of turntable.	2.04m radius arc ahead of centre of turntable on tow vehicle.
Maximum length of vehicle	N/A	12.5m (previously 11.5m)	11.5m excluding load	11.5m	11.5m excluding load
Maximum overall vehicle combination length	19m (previously 18m) or 18m if a quad with two steering axles.	22m (previously 20m)	20m (includes A-trains and B-trains and heavy rigid vehicles towing two trailers)		
Ground clearance	Light: No required minimum, but if light motor vehicles and trailers have their suspension modified so ground clearance is less than 100mm, then that suspension must be approved by a Low Volume Vehicle Certifier. Heavy: Minimum is the greater of 100mm or 6% of the distance from the nearest axle to the point where the ground clearance is measured.				
Maximum turning circle	25m diameter from wall to wall, excluding collapsible mirrors.				
Intervehicle spacing	N/A	4m	N/A	4m max, 1m min (factsheet 13c)	N/A
SRT	Light: N/A. Heavy: A Class TD trailer (over 10 tonnes GVM) with a load or body height over 2.8m above ground must be certified as having an SRT of 0.35g or higher.				

There are certain items that, for practicality, are allowed in addition to the maximum width and height limits for a vehicle. These are as follows.

What items are not included in determining the width of a vehicle?

The following items are not included in determining the width of a vehicle:

- side marker lamps and direction indicators
- collapsible mirrors that extend not more than 240 millimetres beyond the side of the vehicle or its trailer
- ropes, lashings, straps, chains, and related connectors or tensioning devices that extend not more than 25 millimetres from either side of the vehicle and are neither permanently nor rigidly fixed to the vehicle
- J-hook assemblies that extend not more than 25 millimetres from either side of the vehicle, not more than 1.275 metres when measured from the vehicle's longitudinal centre line, and that comply with the ratings specified on the manufacturer's plate affixed to the stockcrate or bin that is being secured
- central tyre inflation system hoses that extend not more than 75 millimetres beyond the outside of the tyre on the drive axles of a heavy motor vehicle
- hubodometers that extend not more than 75 millimetres beyond the 2.5 metres width limit from a non-lifting, non-steering axle whose outer casings are of a light colour, provided the hubodometer is fitted on the axle that causes the least overwidth
- cab exterior grabrails that extend not more than 50 millimetres from either side of the vehicle
- the bulge towards the bottom of a tyre
- the wheels, on a rear-steering single large-tyred axle of a rigid vehicle, that extend not more than 25 millimetres from either side of the vehicle.

What items are not included in determining the height of a vehicle?

Load-restraining devices, such as ropes, lashings, straps, chains, covers and related connectors and tensioning devices, that extend not more than 25 millimetres above the body or load of the vehicle, and that are neither permanently nor rigidly fixed to the vehicle.

What are the limits for projecting loads?

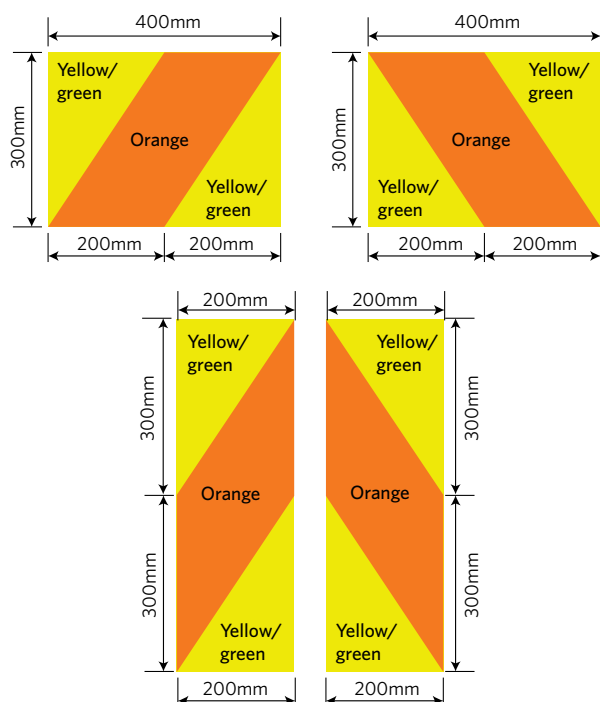
Vehicles may carry loads which are higher, longer or wider than the dimensions of the vehicle itself, provided that the load doesn't exceed the maximum permitted dimensions for that class and type of vehicle, and the vehicle can be moved safely when loaded. It's the operator's responsibility to ensure the load is properly secured to the vehicle so that the vehicle remains stable at all times, and the load or parts of it cannot fall off.

Trucks towing full trailers can have an overhanging load up to 2.3 metres wide (1.15 metres each side of the centre line), extending over the 20 metres maximum vehicle length to a maximum of 22 metres.

There is a requirement for a certified rear underrun system (contact a specialist heavy vehicle certifier for details) to be fitted if this overhang exceeds one metre, and the warning devices described below are still required. Please refer to the factsheet 13c section on full trailers. Loads that overhang the outside of the body or deck of the vehicle by more than one metre to the front or rear, or more than 200 millimetres to the left or right side, need to carry special warning devices attached to the overhanging end(s) of the load.

During the hours of daylight, there must be either:

- a clean white, or fluorescent red, orange or yellow flag, at least 400 millimetres long by 300 millimetres wide, or
- a frangible hazard warning panel (see diagrams below).



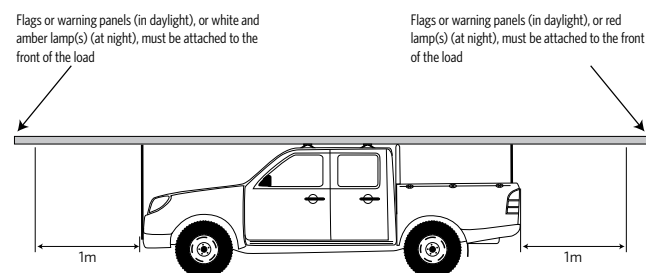
Minimum dimensions of hazard warning panels, which can be used instead of flags on projecting loads.

During the hours of darkness, the flags or hazard panels must be replaced with lights attached to the load as follows:

- For loads over one metre wide and extending more than one metre from the rear of the vehicle, one red lamp (facing toward the rear) on each side of load.
- For loads up to one metre wide and extending more than 1m from the rear of the vehicle, one red lamp (facing toward the rear) at the centre of load.
- For loads over one metre wide and extending from the front of the vehicle, one white or amber lamp (facing toward the front) on each side of load.
- For loads up to one metre wide and extending more than 1m from the front of the vehicle, one white or amber lamp (facing toward the front) at the centre of load.
- For loads extending more than 200 millimetres beyond the side of the body of the vehicle, one red lamp (facing toward the rear) on each side of the load at the rear and one white or amber lamp (facing toward the front) on each side of the load at the front.

These lights need to be clearly visible in clear weather at a distance of at least 200 metres during the hours of darkness. This applies to all vehicles, regardless of when they were first registered.

Please note: Goods service vehicles parked on a roadway must have a red light on the rear of the vehicle, or on the rear of projecting loads that extend more than 1.5 metres behind the vehicle.



General information about towing

Light vehicle towing

A light rigid vehicle (for example, a car or ute with a gross vehicle mass up to 3.5 tonnes) may only tow one vehicle. A light tractor, however, is allowed to tow two light vehicles at a speed not greater than 50km/h.

Towing a trailer and a motor vehicle

A heavy rigid vehicle can only tow both a trailer and an unpowered rigid vehicle if either:

- the rigid vehicle tows a semi-trailer, which tows an unpowered rigid vehicle, or
- the total gross mass of the combination is less than 20 tonnes and the rearmost vehicle is a light trailer or other light motor vehicle.

Towing two motor vehicles

A heavy rigid vehicle can only tow one unpowered heavy rigid vehicle.

A heavy rigid vehicle can tow two rigid vehicles without power only if:

- the gross mass of the combination is less than 20 tonnes, and
- the last vehicle is a light rigid vehicle, and
- at least one towing connection between consecutive vehicles is a rigid bar or A-frame.

Definitions and specifications

Axles

Single axle set means either one axle or two axles have their centres spaced less than one metre apart.

Tandem axle set means two axles have their centres spaced no less than one metre and no more than two metres apart.

Tri-axle set means there are three axles and:

- the centres of the first and third axles are spaced not less than two metres and not more than three metres apart, and
- all axles contain an equal number of tyres, and none of the axles is a single standard-tyred axle.

Twin-steer axle set means an axle set of two axles with single tyres, where both axles are connected to the same mechanism in order to steer similarly.

Quad-axle set means a set of four axles where:

- the centres of the first and fourth axles are spaced no less than 3.75 metres and no more than four metres apart, and
- all axles contain an equal number of tyres, and
- none of the tyres is a single standard tyre.

Forward distance

Forward distance, for a rigid vehicle, means the distance from the rear axis to the front of the vehicle or its load, whichever is foremost (excluding collapsible mirrors).

The maximum forward distance, for heavy rigid vehicles without a tow coupling, is 9.5 metres. Heavy rigid vehicles with a tow coupling are restricted to a maximum forward distance of 8.5 metres.

The forward distance for trailers is defined (measured) differently depending on the specific design (see factsheet 13c).

Ground clearance

Ground clearance is the distance from the ground to any part of the vehicle except for flexible mudflaps, wheels, tyres and devices designed to discharge static electricity.

Inter-vehicle spacing

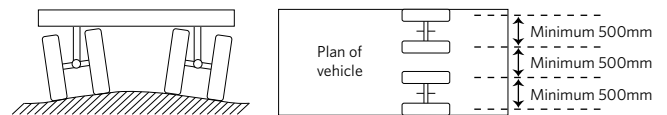
Inter-vehicle distance is the space between any two consecutive vehicles in a combination not including the drawbeam.

Oscillating axle

A pair of short axles in the same line across the vehicle, each axle being:

- mounted with two wheels on it (with each wheel at least 500 millimetres apart across the vehicle), and

- able to oscillate, that is, one wheel can rise while the other falls.



Overall length

The overall length of any combination of vehicles must not exceed 20 metres or 22 metres for a rigid vehicle and simple trailer combination or any combination with a rear full trailer carrying a reduced width load overhang utilizing a certified underrun system, see the factsheet 13c section on full trailers for details.

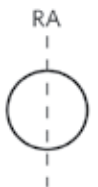
Outside turning circle

A vehicle, including a combination truck and towed vehicle or vehicles, must be able to complete a 360 degree turn, both to the left and to the right, within a 25 metre diameter circle (wall to wall). The only projections which can be outside this circle are collapsible mirrors. No part of a vehicle in a combination, other than its tow coupling, may come into contact with another vehicle in the combination when performing this turn.

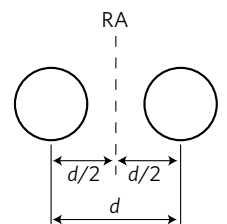
Rear axis

Rear axis (RA) is the point at which the vehicle rotates about during a turn.

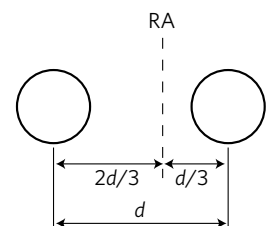
If the vehicle has only one non-steering axle, the RA is at the centre of that axle.



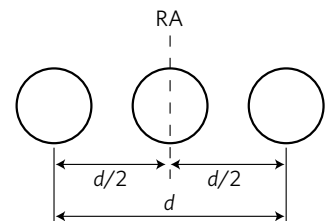
If the vehicle has a tandem axle set with only non-steering axles in its rear axle set and each axle has an equal number of tyres on it, the RA is midway between the centres of the axles.



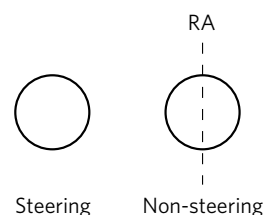
If the vehicle has a tandem axle set with only non-steering axles in its rear axle set and one axle has twice as many tyres on it as the other axle, the RA is positioned two-thirds of the distance from the lesser tyred axle towards the greater tyred axle.



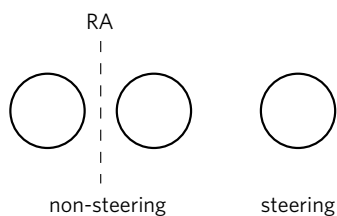
If the vehicle has a **non-steering tri-axle set** in its rear axle set, the RA is midway between the extreme axles of the set.



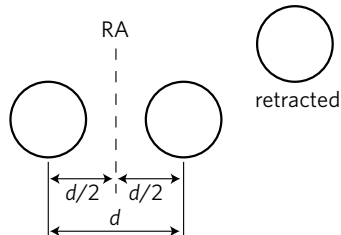
If the vehicle has **one steering axle in its rear set** together with one non-steering axle, the RA is at the non-steering axle.



If the vehicle has one or two steering axles in its rear set together with two non-steering axles, the RA is midway between the extreme nonsteering axles of the set.

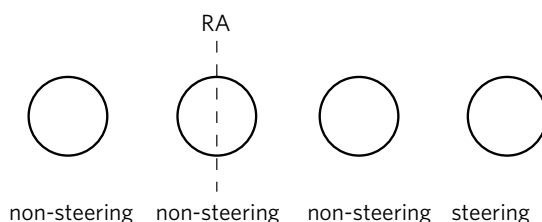
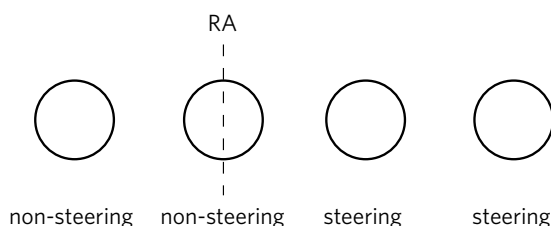
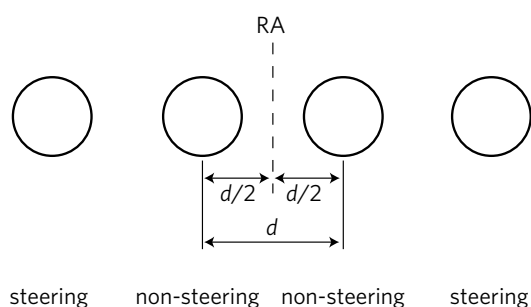


If the vehicle has **one or more retracting axles in its rear set** together with one or more non-retracted axles, the RA is midway between the extreme non-retracted axles of the set.



Quad-axle sets

If the vehicle has a quad-axle set with steering axles, the rear axis is as below:



Rear overhang

Rear overhang means the distance from the rear axis to the rear of the vehicle or its load, whichever is greater.

Speed of heavy vehicles without suspension

The maximum speed of heavy vehicles without springs or other effective cushioning suspension is limited to the lesser of 45km/h or the manufacturer's rating (typically the tyres will have a maximum allowable speed).

Speed of towing vehicles

Vehicles towing trailers (full, semi or simple) or other motor vehicles are limited to a maximum open road speed of 90km/h. Vehicles towing another vehicle without a rigid towing system are limited to 50km/h.

Drivers of these vehicles still need to obey lower speed limits set for particular roads.

Wheelbase

Wheelbase is measured from the rear axis to the centre of the foremost axle.

Where can I find out more?

- Factsheets 13a, 13b, 13c, 13d, 13e, 13f and 13g.
- Factsheet 53 *Overdimension vehicles and loads*.
- *Guide to safe loading and towing for light vehicles*.
- Land Transport Rule 41001: Vehicle Dimensions and Mass 2002 and its subsequent amendments.

About factsheets

The information in this factsheet is a general guide only. It is not the source of the law and should not be used in place of authoritative legal documents. Some factsheets are updated several times a year and print versions can quickly become out of date. If the currency of the information you are reading is important, check the factsheet index on our website (www.nzta.govt.nz/factsheets/numerical.html) or call us on 0800 108 809.

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