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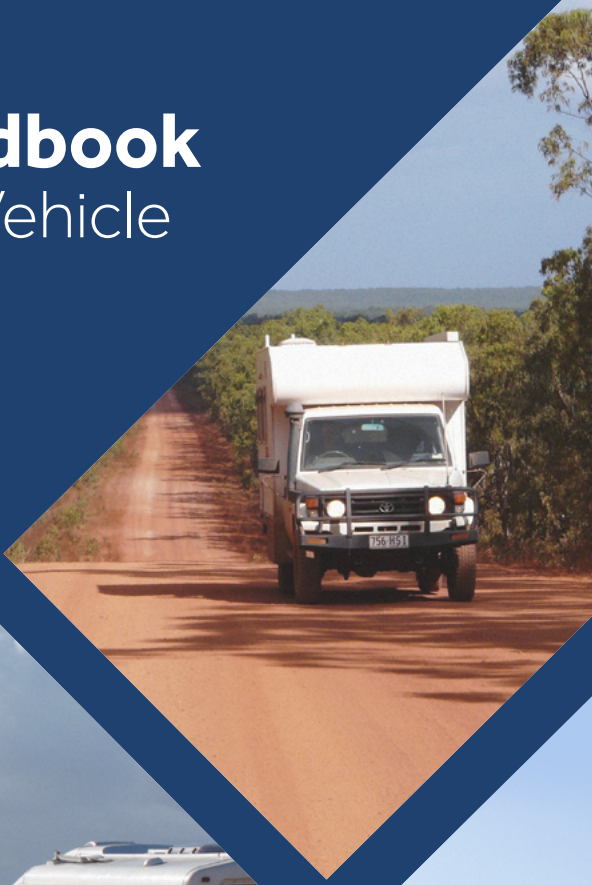
rvSafe Handbook

Recreational Vehicle Safety Guide

An initiative of CMCA



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Contents

Introduction

There are many types of RVs available on the market, including motorhomes, campervans, converted buses/coaches, side-ons, caravans, fifth-wheelers and camper trailers. As each vehicle type varies greatly, they all present their own challenges and safety risks.

rvSafe is a campaign designed to increase road safety awareness specific to the RV industry. The project is funded by the Federal Government's Road Safety Awareness and Enablers Fund and is proudly supported by the Campervan & Motorhome Club of Australia.

This guide will help you stay safe while exploring our great country.

Vehicles

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Types of RVs

There are over 840,000 recreational vehicles (RV) registered in Australia!

Types of RVs include motorhomes, campervans, converted buses/coaches, slide-ons, caravans, fifth-wheelers and camper trailers. There are numerous factors to consider when deciding which type of RV is right for you, and many RV enthusiasts find that they vary their choice of vehicle over their lifetime.

Motorhome

Campervan

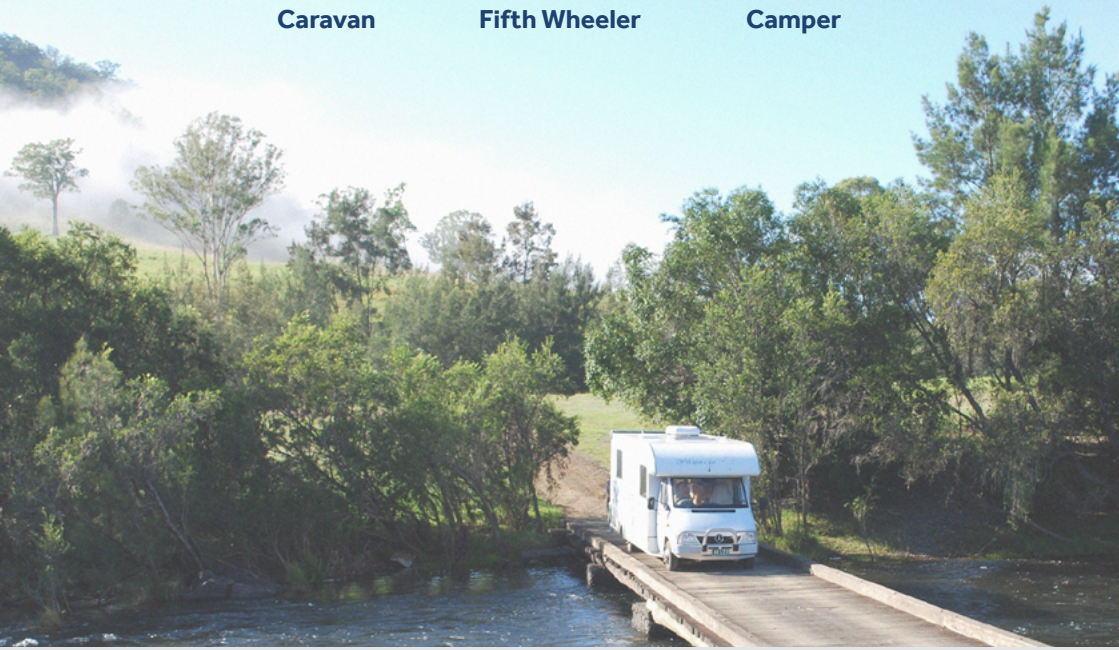
Bus

Slide On

Caravan

Fifth Wheeler

Camper



Vehicle Weights

It is estimated that over 50% of RVs are overweight. Overweight vehicles increase the risk of having an accident as the vehicle is more likely to become unstable or unable to stop. Additionally, you may also receive a fine and void your insurance.

To be compliant, you need to be within the gross vehicle mass (GVM) limit of your tow vehicle or motorhome, campervan, bus/coach or slide-on.

Gross Vehicle Mass (GVM)

Gross vehicle mass is specified by the manufacturer and is the maximum legal loaded mass of the vehicle. It includes the weight of the car, fuel, vehicle payload, all passengers, plus the tow ball weight if towing.

Tare Weight

Tare weight represents the unladen weight of the vehicle including all engine fluids and a 10L fuel reserve. It is important to note that this may not include dealer inclusions or optional fittings at the time of purchase.

Payload

Payload refers to the total weight you can add to your vehicle. This includes fresh and wastewater, gas bottles, personal items, clothes, bedding, food etc. It can also include optional extras and aftermarket modifications such as awnings and driving lights.

To calculate your payload:

GVM – Tare Weight = Payload

These weights will be stamped on your vehicle's compliance plate and listed in your owner's handbook.

Note, kerb weight is similar to tare weight but includes a full tank of fuel and no accessories.

It is very easy to exceed your vehicle's payload limit, but with careful planning when packing, you can stay within the threshold.

Note, if you are towing, your tow ball weight must be included in your vehicle's payload.

If you are planning on towing, you will also need to consider your gross combination mass.

You also need to know your vehicle's GVM to ensure you hold the correct licence (see Licensing).

Trailer Weights

If you are planning on towing a caravan or camper trailer, there are a few more weight compliances to be aware of. Here are some terms you should familiarise yourself with.

Tare Trailer Mass

Tare trailer mass represents the unladen weight of a trailer. Unlike a vehicle, it does not include any fluids.

Gross Trailer Mass (GTM)

Gross trailer mass is the tare weight on the axle(s) plus the proportion of the payload acting on the axle(s). This is specified by the manufacturer and is the total legal weight that can be supported by the wheels of a trailer.

Aggregate Trailer Mass (ATM)

Aggregate trailer mass is the maximum total weight of the caravan or camper trailer, unhitched from the tow vehicle. This is specified by the manufacturer and includes the tow ball weight.

Gross Combination Mass (GCM)

Gross combination mass is the total permissible weight of the loaded vehicle and caravan together and is specified by the manufacturer.

Braked Towing Capacity (BTC)

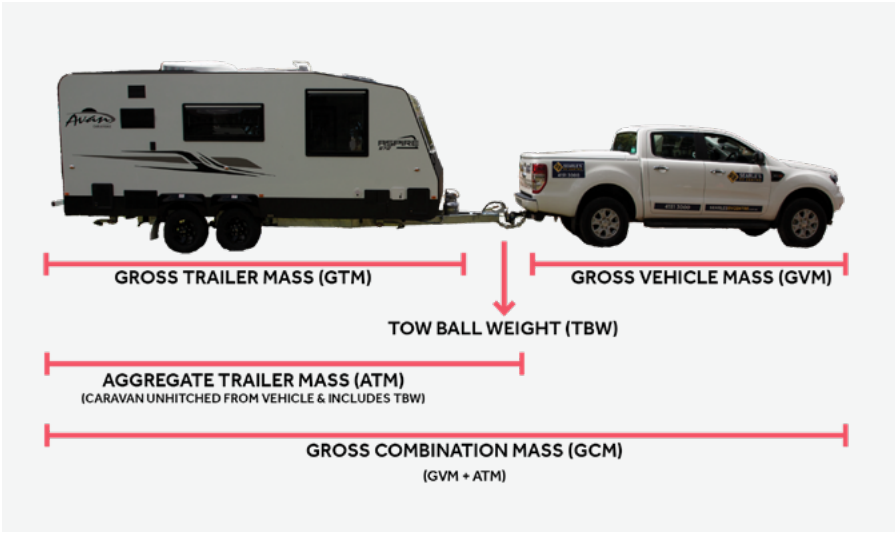
Braked towing capacity is the maximum allowable weight that can be legally towed by the vehicle.

Tow Ball Weight (TBW)

Tow ball weight, also referred to as tow ball mass, is the weight pushing down on the tow ball by the coupling of the RV being towed.

What do these mean for you?

Firstly, ensure that your **braked towing capacity** is greater than your **aggregate trailer mass**. You then need to get your vehicle weighed. You need to make sure that your actual weights are within the limits for gross vehicle mass (GVM), aggregate trailer mass (ATM), gross combination mass (GCM) and tow ball mass (TBM).



You can get your vehicle and trailer weighed at a public weigh bridge or mobile weighing station.

Note: if you wish to tow a trailer behind your motorhome or campervan, these weight limits apply as well.

Weight Distribution

Weight distribution greatly affects the handling of your RV.

If you are in a single vehicle RV, your front and rear axle loading and loading left to right will affect your handling. If you are towing, weight distribution in your trailer is extremely important for your handling and avoiding trailer sway.

Your tow ball mass maximum is stipulated by the manufacturer and is generally 10% of your aggregate trailer mass (ATM).

Tow ball mass too high

If your tow ball mass is too high, you will reduce your handling of your tow vehicle. You often see vehicles with a large gap between the tyre and wheel arch on the front axle, and a small gap on the rear axle and a dip in the middle between the tow vehicle and trailer. Adding toolboxes and storing items on the A-Frame of the trailer are common causes of this.

Tow ball mass too low

If your tow ball mass is too low, you will have too much weight at the rear of your trailer, which will make sway highly likely. This often occurs when bikes and toolboxes are added to the rear of the trailer.

The correct way to load your trailer is to have the heaviest weights low and central over the axles and to keep 10% of the trailer laden mass on the tow ball.

Keeping the RV community safe on our roads

Connecting and Disconnecting Your Trailer

Follow our step-by-step guide to connecting your caravan or trailer to your vehicle.

01. Check over the trailer ensuring tyre pressures are correct, gas cylinders are turned off and all water/electrical connections are disconnected.

02. Make sure you have attached your towing mirrors to your vehicle if required.

03. Ensure you have wound up your jockey wheel to a height that will allow the tow ball to clear under the coupling head.

04. Reverse your tow vehicle so the tow ball is positioned beneath the coupling head.

05. Pull the coupling latch up so you can lower onto the tow ball.

06. Lower the jockey wheel so the coupling hitch fits over the tow ball and takes the weight of the trailer.

07. Lower the coupling latch to secure the hitch over the tow ball ensuring it has connected properly and put the pin through the coupling latch to make sure it stays in place.

08. Put the jockey wheel into its travelling position or remove and stow as necessary.

09. Attach the safety chains below the hitch to your tow bar using D-shackles. If you have two chains, cross underneath the hitch. If the trailer was to become unhitched, it will fall and be held up by the chains.

10. Plug your trailer's electrical lead into the vehicle's socket.

11. For trailers over 2-tonne, connect the breakaway lanyard to the tow vehicle.

12. Disengage the trailer's handbrake.

13. Remove any chocks from the tyres.

14. Check that all the trailer lights are working.

When disconnecting your trailer:

01. Chock the wheels.

02. Fully apply the trailer's hand brake.

03. Unplug the trailer's electrics.

04. Put the jockey wheel into place.

05. Release the coupling latch and lower the jockey wheel to take the pressure off the tow ball.

06. Remove safety chains and breakaway brake cable.

Trailer Brakes

Trailer brakes might not be on the top of the list when thinking about your next adventure, but they are very important.

Trailers under 750kg do not require brakes; however, caravans and most camper trailers will weigh more than this.

Trailers weighing between 751kg and 2000kg require braking on both wheels on at least one axle. Override brakes are permitted when the gross trailer mass (GTM) is less than 2000kg and can be of the mechanical or hydraulic variety. Alternatively, electric brakes may be used.

Trailers weighing between 2001kg to 4500kg need to have braking on all wheels and electric brakes are required. An automatic breakaway system is also required for trailers over 2000kg in case the trailer becomes detached from the vehicle.

Electric brakes work by automatically applying the trailer brakes via the brake controller using electromagnetics and friction. Whilst they do work automatically when you press the brake pedal, they can also be manually operated via the controller installed within reach of the driver.

It is important to know how to use your electric brake controller. There are manual and proportional controllers. If you have older style manual electric brakes, you will need to adjust the level of braking to suit your trailer and driving conditions.

Modern advanced controllers have a proportional mode, so they automatically apply the trailer brakes in proportion to how you are braking on the tow vehicle. All brake controllers have the ability to apply just the trailer brakes. This is very important if you ever get trailer sway.

You can test your electric brakes are working by rolling along the flat slowly and then applying the trailer brake by pressing the manual control button. Your trailer brakes should apply and bring you to a stop.

If your trailer starts to sway, ease off your accelerator, and hold the steering wheel steady and apply the trailer brake button. This will bring the trailer back in line behind the car and slow the whole combination.

It is great to practise knowing where the electric brake button is in the case of an emergency. You need to be able to put your finger on the button without looking for it.

Breakaway Brakes

If your trailer is over 2000kg you are legally required to have breakaway brakes.

Breakaway brakes are a safety device that mounts to the trailer and in the event of the trailer becoming uncoupled from your tow vehicle, the device will activate the electric brakes and bring the trailer to a safe stop. Legally, the device must be capable of keeping the brakes engaged for a minimum of 15 minutes.

There are three main components of breakaway brakes; the battery, switch and cable connected to a pin. If the trailer breaks free, the pin will pull out from the switch and activate the brakes.

Tyres

Age

Tyres degrade with age. If your tyres are over five years old, they need to be checked for degradation by a reputable tyre business each year. Once they have reached 10 years old, they need to be replaced regardless of the tread left.

The age of your tyre is printed on the tyre wall. Find the code on the sidewall that starts with "DOT". The last four digits of the code represents the week and year the tyre was made. For example, 4922 is the 49th week of 2022.

Pressure

Keep tyres (including the spare) inflated to the recommended levels. Too much or too little air causes uneven wear, reduces handling and grip, and shortens the life of the tyres.

Tyre pressure can be too low, and you will not be able to notice with the naked eye – so get yourself a tyre pressure monitor or check at the service station next time you fill up.

Tyres on RVs typically carry more weight than standard vehicles, which makes it even more important to have the correct tyre pressure. The tyre placard will stipulate recommended tyre pressure for your rig, and we recommend checking your tyre pressure before heading off on your trip.

Tread

Inspect your tyres for uneven bulges, cuts and cracks. Remove any objects lodged in the tread and check for gouges or punctures.

Tyres must be replaced before the tread depth falls to 1.5mm; however, we recommend changing tyres at 3mm. Most tyres have tread depth indicators as a guide, or you can use a 20-cent coin. To measure your tyre's tread depth, place an Australian 20c coin into one of the central circumferential grooves of your tyre. If the tread doesn't reach the bill of the platypus, your tyre has less than 3mm of tread remaining. It's time to invest in some new tyres to make sure you stay safe while driving.

Unusual vibrations or uneven wear (bald) spots on tyres may suggest that a wheel balance is needed to avoid excessive loading to the vehicle's wheel bearings and suspension.

Final Tip!

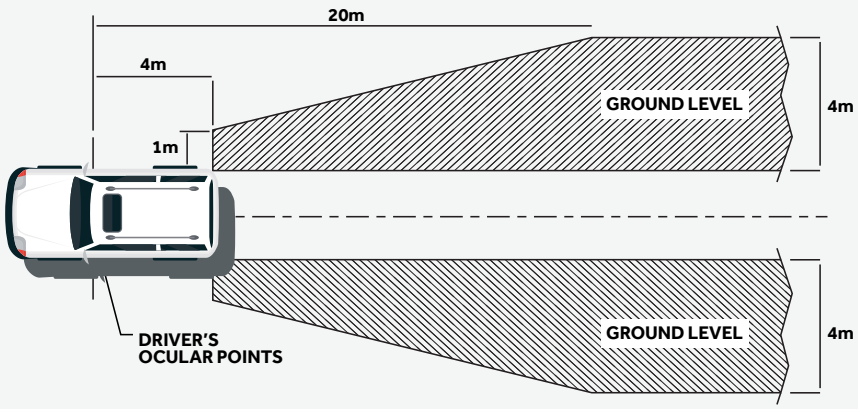
Don't forget your spare!
You need to ensure that it has pressure and is suitable for use in an emergency.

Mirrors

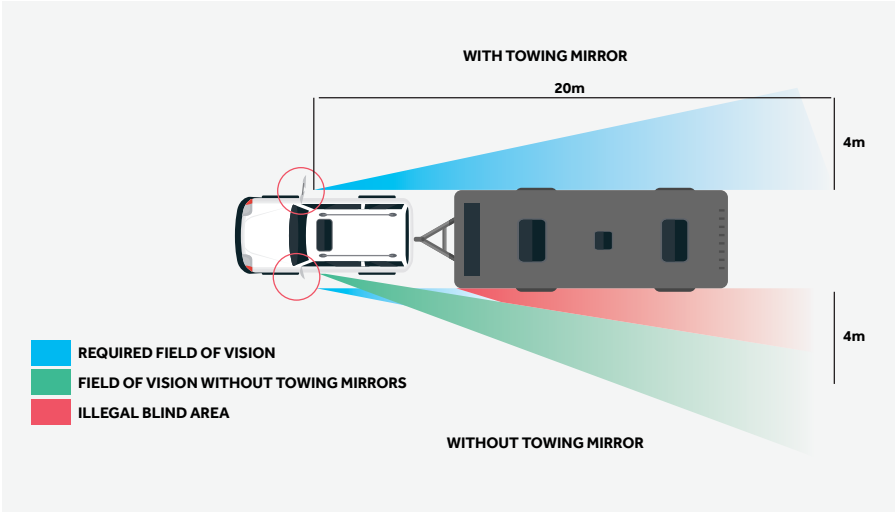
There is regular debate as to whether extended mirrors are required when towing. The field of vision required by a vehicle's external mirrors is set out in the Australian Design Rule 14/02 – Rear Vision Mirrors.

"The field of vision must be such that the driver can see at least a 4 m wide flat, horizontal portion of the road which is bounded by a plane parallel to the median longitudinal vertical plane passing through the outermost point of the vehicle on the passenger's side and which extends from 20 m behind the driver's ocular points to the horizon (see Figure 5). In addition, the road must be visible to the driver over a width of 1 m, which is bounded by a plane parallel to the median longitudinal vertical plane and passing through the outermost point of the vehicle starting from a point 4 m behind the vertical plane passing through the driver's ocular points."

Australian Design Rule 14/02 - Rear Vision Mirrors



You are required to see along the full length of your caravan or camper trailer at its widest point and a further 20m behind this. To further simplify this, your mirrors should be wider than what you are towing.



The above diagram shows the difference between using towing mirrors and standard mirrors. Without the towing mirrors there is a large blind area.

With most caravans, it is likely that you will require towing mirrors. You can purchase extendable mirrors to replace your vehicles existing mirrors or towing mirrors that will attach to your existing mirrors.

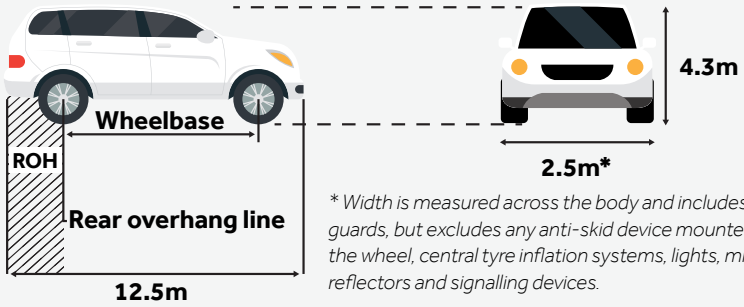
Finally, towing mirrors shouldn't be more than 150mm wider than the overall width of the vehicle or the trailer you're towing, whichever is more. Mirrors may be 230mm wider than the overall width, if they're capable of collapsing 150mm.

Vehicle Dimension and Rear Overhang

With many people wanting to add bike racks, toolboxes, and storage to the back of their motorhome or caravan, it's important to know your vehicle dimension and rear overhang rules.

Motor Vehicles

Light rigid motor vehicles include cars, utes, 4WDs, small buses and small trucks (e.g., motorhome). The following dimensions apply.



** Width is measured across the body and includes wheel guards, but excludes any anti-skid device mounted on the wheel, central tyre inflation systems, lights, mirrors, reflectors and signalling devices.*

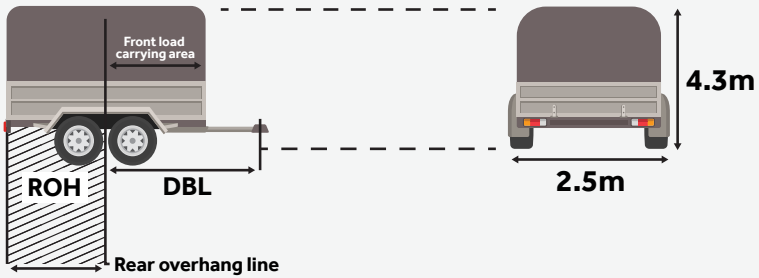
Rear overhang (ROH) is 60% of the wheelbase or 3.7 metres, whichever is the lesser, measured from the rear overhang line.

Any object permanently fitted to a vehicle (e.g., bullbar, winch, toolbox) is considered part of the vehicle and must be included within the applicable dimension limits.

Trailers

Dimension limits for trailers are divided into three categories: pig trailer, dog trailer and semi-trailer. Dog trailers aren't used as RVs.

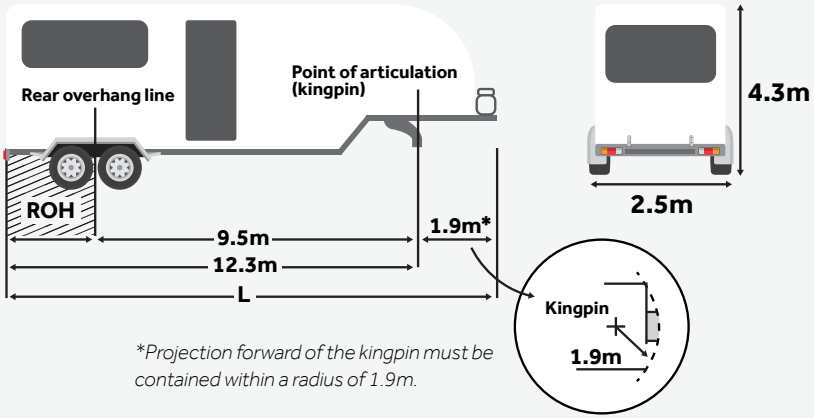
A ***pig trailer*** is a trailer that only has one axle group near the middle of the goods carrying surface. (e.g., caravan, camper trailer, box trailer).



Drawbar length (DBL) is measured from the centre of the axle group to the centre of the drawbar coupling pivot point with the drawbar level and must not be more than 8.5 metres.

Rear overhang (ROH) shall be no more than the length of the front load carrying area or body, ahead of the rear overhang line, or 3.7 metres, whichever is the lesser.

A ***semi-trailer*** is a trailer with a single axle or axle group towards the rear, with a means of attachment to a prime mover that would result in some of the load being imposed on the prime mover. (e.g., fifth- wheeler).



**Projection forward of the kingpin must be contained within a radius of 1.9m.*

Rear overhang (ROH) shall be no more than 60% of the distance between the centreline of the 'fifth- wheel' king pin and the line from which the rear overhang is measured, or 3.7 metres, whichever is the lesser.

Length (L): No specific limit, however, when combined with a prime mover, the overall combination length must not exceed 19 metres.


Uniden

Driver

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Licensing

Vehicle licences fall into the following categories:

01. Light Rigid Licence (LR) – Rigid vehicle that has a gross vehicle mass (GVM) over 4.5 tonnes but not more than 8 tonnes, and any trailer towed must not have a GVM over 9 tonnes.

02. Medium Rigid Licence (MR) - Any vehicle with 2 axles with a GVM over 8 tonnes, and any trailer towed must not have a GVM over 9 tonnes.

03. Heavy Rigid Licence (HR) - Trucks and buses with a GVM over 8 tonnes and 3 or more axles, any trailer towed must not have a GVM over 9 tonnes. This category also covers articulated buses with 3 or more axles.

04. Heavy Combination Licence (HC) – Articulated vehicles with three or more axles, tow trailer combinations with a GVM more than 9 tonnes.

05. Multi-combination Licence (MC) - Multi combination vehicles such as road trains and B-doubles.

06. Car Licence (C) – Vehicles up to 4.5 tonne GVM.

Most campervans require nothing more than a regular car licence, and there are few motorhomes that exceed the LR and MR licensing requirements.

To acquire LR or MR licences, you will need to have had a full driver's licence (Class C) for at least a year. The tests vary across states and territories, but you will need to pass a written test that clarifies your knowledge of road rules as they apply to heavy vehicles, as well as a physical driving test. By far the easiest way to take care of the whole process is to enrol with one of the many certified courses around the country. These generally last for one or two days, covering both theory and practical components, as well as the tests themselves.

Driving Posture

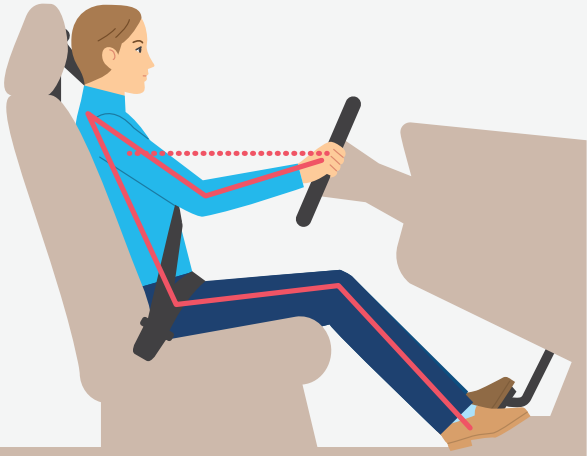
Posture is about being alert and stable.

Feet
Natural position against footrest

Legs
Go wide for lateral support

Back rest
Around 110 degrees

This level of perfection can only be sustained for about 2 hours.



Steering is about direction and stability.

Hands at equal points of 9 and 3 o'clock (4 and 8 for ideal conditions)

Thumbs wrapped around the wheel

Arms bent, up to 90 degrees

Never ever place hands at 12 o'clock. Consider what will happen if the air bags were to go off.

Driving Tips

Driving an RV is more strenuous than driving a passenger vehicle and there is a lot more to take into consideration. Here are our top tips for driving an RV!

- Allow longer stopping distances – your RV is bigger and heavier than a passenger car and it will take longer to stop. Therefore, you also need to leave a larger gap between yourself and the vehicle in front.
- Allow for slower acceleration. Once again, a bigger and heavier vehicle will be slower off the mark, so make sure you take this into consideration. For example, when trying to turn across an intersection, you will need a bigger gap.
- Try and avoid quick sharp turns to prevent instability and rollovers. Whether you are driving a motorhome or a car and trailer combination, neither will handle the same as a passenger car.
- Look further ahead than you would normally and factor in the environment including flora, fauna and weather.
- Don't forget the added height, width and length of your vehicle. Be careful of low bridges or branches. If you don't know the height of your vehicle – measure it before you head off! If merging lanes, allow for the extra length.
- Be comfortable using your mirrors. You will need to rely on them more with a larger vehicle. Take the time to set them up properly before you leave home.
- Take a wider swing when navigating corners as you will need more space. If your vehicle is over 7.5 metres, you can display a 'Do Not Overtake Turning Vehicle' sign and you are legally allowed to take up more than one lane to turn corners, intersections and roundabouts.
- Use a low gear when going down steep hills and avoid riding the brakes. If your brakes burnout, it quite simply means that you have no brakes. If you see a sign saying "Trucks Use Low Gear' it may be a good idea to do the same in your RV.
- If you need to go slower than other traffic, move over so they can safely pass.
- When using rest areas, think about other users and park at the end of the area. Don't use truck areas unless there is an emergency.

- Know how to use your electric brakes. This applies to towing combinations over 2 tonnes. Adjust them correctly and know how to apply the trailer brake manually in case of sway.
- When in cities or towns, try to plan ahead with regard to parking and driving so you don't get caught somewhere you don't fit.
- Rest often! Driving an RV is more tiring than driving a regular passenger car. Plan your rest stops and share driving when possible.
- If you are new to towing and don't know where to start or have little experience and want to become more confident in your towing skills, you should consider completing a towing course.

Reversing a Trailer

Reversing a caravan or trailer is challenging and can be extremely difficult for new caravan owners. But fear not! It is achievable for everyone. Just take the time to practise and get to know how to manoeuvre your vehicle.

It is imperative that you learn how to reverse as you may need to do this to get out of a tricky situation. You may find that knowing how to reverse will help you enjoy some better camping sites. The main thing to remember when reversing a caravan or camper trailer is the opposites rule – to move the caravan to the right, the steering wheel needs to be turned gradually to the left, and vice versa.

Before heading off on your journey, it is a good idea to find a quiet carpark or paddock where you can practise manoeuvring without the worry of other vehicles, people or being on time. If possible, take a friend with you so that they can help guide you. Remember, patience is key, and practise makes perfect.

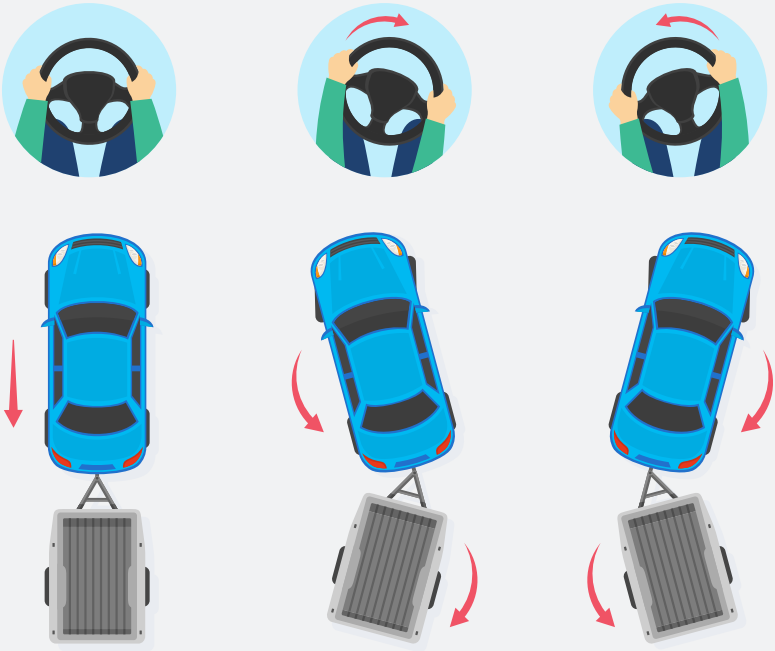
When you are about to reverse your caravan or camper trailer, get out of the car first and look at your surroundings and check whether the vehicle and caravan will fit and pace out the area. It is also a good idea to take into consideration the space needed for an awning or annex and factor this into your checks.

If possible, try and reverse from the right and position your caravan or camper trailer so that it is pointed in the direction that it needs to go. If you have a friend to assist, make sure they are clear with their communication and instructions. Some people like to use the 'right hand down, left hand down' method and others choose the 'push/pull' method to explain which way to turn the steering wheel. It is also important for your guide to use clear hand and voice instructions. Make sure you are both on the same page so there isn't any confusion!

Once you have the caravan or camper trailer positioned, apply the opposites rule. If the caravan needs to go right, turn the steering wheel to the left and vice versa.

Next, slowly begin reversing. This is where it is really important to practise so you gain the feel of which way to turn and work out what works best for you.

REVERSING TRAILER/CARAVAN



Remember, gradually reverse and turn the steering wheel. Only use small turns as the caravan or trailer will amplify the movement.

If you oversteer or miss where you need to go, move forward until you have the caravan or trailer in the correct position, stop and reverse again.

Caravan Sway

Caravan sway can be scary and rightly so. Whether you have experienced caravan sway or only heard the stories and seen dash cam footage, most people who tow caravans are aware that sway may occur. But do you know how to avoid it or what to do if your caravan does start to sway?

The most common cause of trailer sway is an incorrectly loaded caravan. When packing, it is important that heavy items are placed as close to the caravan axle as possible. Packing too heavily towards the rear of the caravan can result in instability. Generally, you should aim to keep your tow ball weight around 10% of your ATM or aggregate trailer mass.

Keep in mind that sway can also be caused by wind. On a high wind day, avoid towing if possible. Even an unexpected strong gust can cause some sway.

A large vehicle travelling at speed and overtaking can also cause sway. The rush of air between the vehicles can cause instability.

Speed also causes instability. As speed increases, stability decreases.

If your trailer does start to sway – do you know how to regain control?

The most effective way to minimise sway is to decrease speed by removing your foot from the accelerator and applying your trailer brakes. The effect of this will pull the trailer straight behind the tow vehicle and you will begin to regain control.

Stability always decreases as speed increases, and sudden moves will make the situation worse. Ensure you hold the steering wheel steady and don't make any sudden turns.

It is a great idea to practise reaching for the trailer brakes when stationary. That way you instinctively know where the control is. You can also get the control fitted so that it is central in the vehicle and your passenger can apply the trailer brakes if your hands are too busy holding the steering wheel steady.

Also ensure that you have your electric brakes set up suitably for your trailer. There are various models available so check your manufacturer's instructions to work out what is right for you.

Electronic Stability Control (ESC) is a great safety feature to reduce the chance of caravan sway.

Do Not Overtake Turning Vehicle

Trucks and vehicles over 7.5 metres long that display a 'Do Not Overtake Turning Vehicle' sign are legally allowed to take up more than one lane to turn corners, intersections and roundabouts. They can even use a right turn only lane to turn left or a left turn only lane to turn right.

So, whether you're turning left or right, or you are at a roundabout, do not drive past or overtake a turning truck unless you are absolutely sure it's safe to do so.

Vehicles MUST be fitted with 'Do Not Overtake' signs if the vehicle or combination is 7.5 metres or more in length and they have to straddle lanes or turn from an adjacent lane in order to turn left or right at intersections.

Rear Marking Plates must be fitted to:

- Motor vehicles with GVM over 12 tonne (NC category)
- Trailers with GTM over 10 tonne (TD category)
- Buses with GVM over 12 tonne (certain ME category), except those fitted with hand grips or similar equipment for standing passengers.

Rear Marking Plates may be fitted to:

- Any motor vehicle with less than 12 tonne GVM
- Any trailer less than 10 tonnes GTM.

Installation of Do Not Overtake signs:

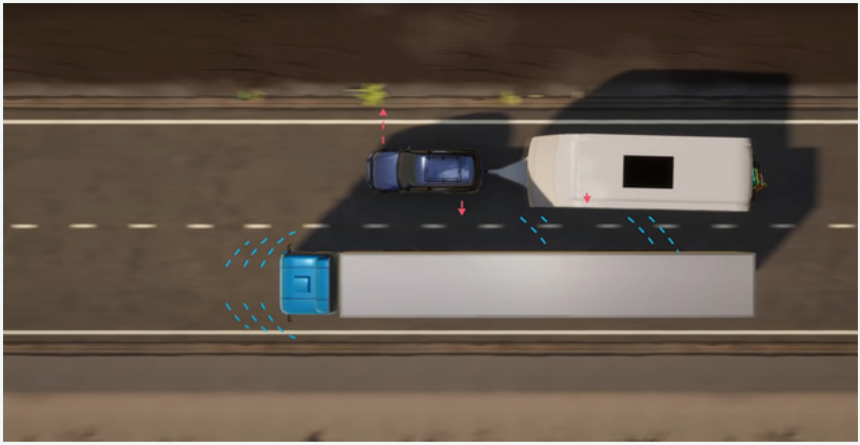
- Maximum of 500mm space from each side of vehicle
- Maximum of 2000mm gap from ground to bottom of sign.

Overtaking

When overtaking another vehicle, drivers must be extra vigilant whilst towing or driving a larger vehicle. It is recommended to overtake only when necessary.

Overtaking, especially when towing, requires significantly more time and space than what you might be used to, so it is essential to allow enough room to complete the manoeuvre.

Another important factor to consider is the air movement which may be caused by large vehicles travelling at speed beside you. This air movement may cause instability, and may force you away or towards the vehicle beside you and could potentially lead to sway or loss of control.



Only overtake when:

- The road conditions are suitable enough to do so
- You have a clear view of the road ahead
- You are confident and prepared for any wind turbulence on your vehicle
- The vehicle impeding your path is going reasonably slower than you (10km/hr less).

It is important to overtake without significantly increasing your speed. Any increase in speed will increase the risk of sway and loss of control. Remember, you must not exceed the legal speed limit.

When there is less oncoming traffic, it may be possible to perform a 'flying overtake'. This is when the driver anticipates a break in oncoming traffic and is able to maintain the vehicles current speed and safely pass the impeding vehicle.

Through UHF communication, you can also advise the vehicle ahead that you are planning to pass. Channel 18 is used for caravan and camper convoys, and channel 40 is the road safety channel Australia-wide.

What to do if you are being overtaken

Even if you're not the person doing the overtaking, there are still a few things to keep in mind when being overtaken.

- Maintain your speed
- Once the vehicle has past you, you can gently ease up on the accelerator
- Do not slow down too early. Keep in mind, a truck may lose momentum and will not have the acceleration to overtake safely
- Move to the left-hand side of the lane to increase the gap between vehicles.

Avoid directing other vehicles to overtake. It is impossible to know the capabilities of the other driver, and you may be encouraging an inexperienced driver to perform an unsafe manoeuvre.

UHF Communication

Anyone who has gone anywhere more than a couple of hours outside a capital city will likely have noticed a drop in phone signal. Telstra claims to cover 99 per cent of the population, while Optus has 98.5 per cent.

However, as this is based on population, realistically, Telstra covers around 2.5 million square kilometres and Optus covers 1.5 million square kilometres.

Given that Australia's land mass is around 7.69 million square kilometres, you're going to need something like a UHF radio for everywhere else.

Channels

5 and 35*: Emergency use only (repeater channels)

1–8: Repeater channels (output)

10: 4WD clubs or convoys and national parks

11*: Call channel (find a friend), once contact is made move to another channel

18: Caravan and camper convoys

22 and 23*: Telemetry and telecommand, used for data only

29: Road safety channel Pacific Highway and Pacific Motorway

40: Road safety channel Australia wide, used mainly by truckies and heavy vehicles

31–38: Repeater channels (input)

41–48: Repeater channels (output)

61–63*: Reserved for future use

71–78: Repeater channels (input)

General chat channels:
9, 12–17, 19–21, 24–28, 30, 39, 49–60, 64–70, 79 and 80

*Channels restricted by law

Rest

Driving an RV is more strenuous than driving a passenger car, which makes rest even more important.

Always make sure you have had adequate sleep before driving, regardless of the length of your trip.

If you skip your usual amount of sleep, you will accumulate a sleep debt. When we have a sleep debt, our tendency to fall asleep the next day increases – including when you are driving. A sleep debt can only be erased by having more sleep.

We know that sometimes things can happen outside our control and you may not get enough sleep; however, if you can avoid driving when tired – it is 100% worth it.

Avoid driving when you would normally be sleeping. We are programmed by our body's circadian rhythm to sleep at night and be awake during the day. This means that in night-time hours, we are not able to accomplish things at the same standard as during the day. Older drivers tend to have more fatigue-related crashes during the afternoon siesta hours. Try to avoid driving at these times and watch out for early warning signs.

Plan to take regular rest breaks and try to stop for 15 minutes every two hours.

Pull over for a break in a safe place. Hopefully, you have planned regular stops for your trip; however, if you are noticing signs of fatigue, make sure you pull over somewhere safe. Rest areas are ideal, but make sure you avoid designated areas for commercial truckies to take their required breaks.

Arranging to share the driving is an ideal way to avoid excessive fatigue. If you have a regular travelling companion, we recommend that you both have the ability to drive your RV. Unfortunately, it is a common occurrence to have only one person take on the driving responsibility. If this person becomes unwell and the passenger is not able or experienced enough to drive the RV, you may find yourself stuck!

If you are experiencing the signs of fatigue – pull over and take a nap! A 20-minute nap works best.

Signs of fatigue:

- Yawning
- Poor concentration
- Sore/tired eyes
- Restlessness
- Drowsiness
- Slow reactions
- Boredom
- Oversteering

Speed

Driving or towing an RV, especially a larger motorhome or car and caravan combination, can be strenuous, particularly if you are new to the task. It is important to consider your speed as it is not the same as driving a passenger vehicle.

The relationship between speed and fatal and serious injury outcomes has been well researched and documented, and it should not be news to anyone that speeding is dangerous. So, what is a safe speed to be travelling in your RV?

This can become complicated as states and territories vary in their legislation; however, ultimately it comes down to what is safe with your vehicle and the conditions.

The Laws

NSW

If your gross vehicle mass (GVM) or gross combination mass (GCM) is under 4.5t then you can travel at the sign posted limit. However, if your GVM or GCM is over 4.5t, the speed limit is capped at 100km/h.

WA

Maximum speed limit when towing a trailer or caravan is 100km/h.

The maximum speed for a heavy vehicle (with a GCM of over 22.5t) is 100km/h.

VIC

If your vehicle GVM is over 4.5t, your speed limit is capped at 100km/h. Otherwise, the posted speed limit applies.

TAS

Posted speed limit if towing.

Maximum speed limit on gravel roads is 80km/h.

If you are driving a bus with a GVM over 5t or another vehicle with a GVM over 12t, the maximum speed limit is 100km/h.

SA

Posted speed limit if towing.

The maximum speed limit for a vehicle with a GVM over 12t or a bus GVM over 5t is 100km/h.

ACT

There are no speed restrictions applying to caravans and trailers other than the signed maximum speed limit. The highest speed limit zone in ACT is 100 km/h.

NT

Drivers of heavy vehicles such as buses of more than 5t gross vehicle mass (GVM) or other heavy vehicles of more than 12t GVM must not exceed 100km/h.

QLD

Posted speed limit.

Manufacturers may also place speed restrictions so be sure to check your owners' manual.

It is often safer and more economical to drive slightly below the posted speed limit. Driving an RV is vastly different to driving a passenger car. You are likely to have:

- decreased acceleration and braking performance
- reduced vehicle control and manoeuvrability
- increased fuel consumption.

Speed is also a major contributor to vehicle stability. You may not notice your poorly distributed load when travelling at slow speeds; however, you may notice it at higher speeds as you are likely to end up with sway. The faster you travel, the more severe the consequences.

Larger heavy vehicles will use more fuel. If you push the engine harder to go faster, you will use more fuel yet again. Often you will find a comfortable speed where you feel safely in control and have a decent fuel economy. Often this speed will sit in the 80-90km/h range.

And of course, you must drive to the conditions.

Driving too slowly

You have likely heard the complaints. Many drivers claim that RV owners drive too slowly, holding up traffic. Some even claim that slow driving is illegal.

You should know that slow driving is not illegal, but unreasonably obstructing drivers or pedestrians can result in a fine. Each state and territory has its own laws on this. Generally, you should avoid driving abnormally slow for the speed limit and driving conditions, but always stay at a safe speed.

General RV Road Rules

General RV Rules

Throughout most of Australia, learner drivers cannot tow a trailer, and provisional or probationary drivers may only tow a small trailer up to 250kg unladen.

When towing a trailer, no drivers are allowed to have any passengers in it. You also cannot tow more than one trailer at once — that may seem obvious, but you never know what people will come up with!

Roadworthiness and Registration

All RVs must be registered before you hit the road. Campervans and motorhomes must display a number plate front and back, just like a car, and camper trailers and caravans must display a number plate at the rear, like other trailers.

Every state and territory have their own rules about roadworthiness, but they all boil down to the same general principle. Vehicles and trailers must comply with Australian Standards and Australian Design Rules, to be safe and roadworthy.

If you're driving a motorhome or campervan, you would have established that your RV is roadworthy before you were able to register it. If you're towing a caravan or camper trailer, you'll find that rules are less stringent.

The registration process will involve a basic inspection, but there isn't usually the same requirement to get a roadworthy certificate from a qualified mechanic. This could lead to you being caught out on a second-hand trailer, so it's important to ensure that it is safe and complies with road rules.

Electrics

Trailers and tow vehicles must have electrical sockets for lighting and brakes manufactured in accordance with Australian Design Rules.

Types, colours, positions, and visibility of lights are stipulated in detail for each state and territory. These must include indicators, brake lights, hazard lights, night lights, number plate light and reflectors. Reversing lights are a good idea, but they aren't compulsory.

Trailers must have side reflectors in SA if they are more than 2200mm wide. In the NT, trailers over 1800mm wide or 1600mm wide and over 4000mm long need side marker lamps.

Trailer Safety Chains

In the unfortunate event that your trailer becomes disconnected from your tow vehicle, safety chains are a backup connection.

Safety chains are required for all trailers, and trailers with an aggregate trailer mass (ATM) over 2,500kg, require two chains.

For a trailer with an ATM of up to 3,500kg, chains need to meet the requirements of AS4177.4 or have a cable which is appropriate for the application.

For a trailer with an ATM exceeding 3,500kg, a steel chain with a minimum of 800 MPa breaking stress conforms to the mechanical properties of a Grade T chain as specified in AS2321 is required.

The chain must be permanently attached to the trailer, they cannot be shackled. Below 3,500kg ATM, the chain can be welded to the drawbar with the weld forming 50% of the circumference of the link but the first link in the chain must have unfettered movement. Once above the 3,500kg ATM then you need to use rated pin lock couplings. No welding is permitted.

Shackles

Safety chains may be attached to the towbar attachment points with a Bow, D or Pin-shackle and are subject to the performance requirements per ADR 62/01 or 02 – Mechanical Connections between Vehicles.

Bow-Shackles and D-Shackles that comply with Australian Standard (AS) 2741 are rated for lifting applications and have a breaking load marked on the shackle that is higher than the Working Load Limit (WLL). Since the loading on these shackles is different when used to attach a safety chain to a road vehicle as compared to when used in lifting applications, a road trailer may be towed that is heavier than the shackle's WLL.

Everything you need to know about a shackle should be stamped on it. This includes its working load limit (WLL), manufacturer name or trademark, grade stamp and identification marking in order to correlate shackle to test certificate.

The shackle needs a break limit that is 1.5 times the ATM of your trailer. Generally, the break load limit of a rated shackle will be six times greater than its WLL.

Typical shackles recommended based on trailer ATM:

Trailer ATM (kg)	For Bow or D-Shackles complying with AS 2741			
	Minimum Shackle Working Load Limit (WLL) (kg)	Minimum Size of Shackles (Body diameter, not pin size)		
		Grade M (or 4) D-Shackle (mm)	Grade S (or 6) D-Shackle (mm)	Grade S (or 6) Bow-Shackle (mm)
0-1,000	250	6	6	5
1,001-1,600	400	10	6	6
1,601-2,500	625	13	8	8
2,501-3,500	875	16	10	10

Trailer Dimensions

Maximum trailer dimensions are defined in 'Vehicle Standard Bulletin 1'.

These are:

Maximum trailer width: 2.5 metres

Maximum trailer height: 4.3 metres

Maximum combination length: 19 metres

Vehicle Standards Bulletin 1 (VSB 1) contains additional information on maximum trailer overhang and projecting items. Google and download VSB 1 for further details.

Remaining Safe During a Breakdown

Do you know what to do in the unfortunate event your vehicle breaks down? Follow these tips to stay safe while you wait for help.

- Activate your hazard lights (and parking lights in poor visibility)
- Find a safe place to pull over, such as a hard shoulder or breakdown lane
- Position your vehicle as far away from other traffic as possible
- When you have pulled over, turn your wheels away from traffic
- If you are staying in your vehicle, you and all passengers must continue to wear seatbelts.

If you have to get out of your vehicle:

- Always check for traffic
- Leave your vehicle from the passenger side (away from traffic)
- Avoid crossing the road
- Stand clear of the road and move behind a safety barrier if it is safe to do so
- Wear a high visibility vest.

Do not attempt to change a tyre unless it is safe to do so. If possible, drive on a flat tyre to a safe location away from the traffic.

Before you leave home, please ensure:

- Your vehicle is well maintained
- Your phone is charged
- You have downloaded the Emergency Plus app
- You have Roadside Assistance and their contact numbers available
- You have a high visibility vest in your vehicle.

Checklists

Motorhome/Campervan

Checklist Item	
☐	Tyre pressure is correct as per the manufacturer's specifications.
☐	Spare wheel is packed and operational.
☐	Wheel nuts are tightened as per manufacturer's specifications.
☐	Wheel chocks and jack stands are working in case tyre changes are needed.
☐	Wheel bearings are correctly adjusted and lubricated.
☐	Tyres have legal tread depth, the tyre casings are not cracked or perished, and the tyres have not passed their expiration date.
☐	If solar panels are fitted, check they are securely fixed.
☐	Lights and number plates are clearly visible.
☐	UHF is functioning.
☐	Gas cylinders are turned off.
☐	All cupboard and fridge doors are closed and locked.
☐	Switch fridge over to 12-volt if necessary.
☐	Roll out awnings, steps and slide-outs are stored away and locked in travel position.
☐	Roof hatches, windows, and doors are both latched and locked.
☐	Electrical cord has been disconnected and stored.
☐	Water and waste/sullage hoses have been disconnected and stored.
☐	TV antenna and/or satellite is in travel position.
☐	All loads (including jerry cans, bikes etc) are adequately restrained.
☐	Insurance and Roadside Assistance are current.
☐	Walk around vehicle to double check – loop up and under as well – if packing jobs are divided, best to check each other.

Optional – Secondary Tow Vehicle – A Frame

Checklist Item	
☐	The A Frame is parallel with the road.
☐	If the A frame has extendable arms, check both arms are fully extended.
☐	The brake cable is connected.
☐	All safety cables are attached properly, and all electrics are working (lights and blinkers).
☐	The breakaway brake (if fitted) is connected.
☐	The "Vehicle Under Tow" sign is clearly visible.
☐	The towed vehicle is in the right configuration.
☐	The towed vehicle is in accessories mode (to allow the steering to stay unlocked), with all radios/nav screens turned off.

Caravan/Camper/ Fifth-Wheeler

Checklist Item	
☐	Tow vehicle and caravan tyre pressure is correct as per the manufacturer's specifications.
☐	Tow vehicle and caravan spare wheels are packed, and tyre pressure is checked.
☐	Wheel nuts are tightened as per caravan manufacturer's specifications.
☐	Wheel chocks and jack stands are working in case tyre changes are needed.
☐	Caravan wheel bearings are correctly adjusted and lubricated.
☐	Tyres have legal threat depth, the tyre casings are not cracked or perished and the tyres have not passed their expiration date.
☐	If solar panels are fitted, check they are securely fixed.
☐	Brakes are operating correctly on all axles of the caravan.
☐	Electric brakes (if fitted) are functioning.
☐	Caravan lights and number plate are clearly visible.
☐	Caravan light connections are secure, and all lights are in working order.
☐	Towing mirrors are fitted to your tow vehicle.
☐	All towing components are in good order with no cracks or substantial dents that may weaken the structure.
☐	Safety chains are correctly connected and crossed over beneath the tow ball.
☐	Breakaway monitor is correctly fitted.
☐	Front and rear corner stabilisers are in the up position.
☐	Coupling is correctly and securely fastened.
☐	Load is distributed safely.

Continued over page

Caravan/Camper/ Fifth-Wheeler (Continued)

Checklist Item
☐ The loaded mass does not exceed any of the: • Rated capacity of the towbar and tow coupling • Maximum towing capacity of the vehicle • Maximum gross vehicle mass • Maximum gross combined mass of tow vehicle and trailer • Maximum aggregate trailer mass.
☐ Gas cylinders are turned off.
☐ Ensure water and grey water tanks are empty unless necessary and outlet valves are turned off.
☐ All cupboard and fridge doors are closed and locked.
☐ Switch fridge over to 12-volt if required.
☐ Roll out awnings and slide-outs are stored away and locked in travel position.
☐ Roof hatches, windows, doors, steps are both latched and locked.
☐ Electrical cord has been disconnected and stored.
☐ Water hose and waste/sullage hoses have been disconnected and stored.
☐ TV antenna and/or satellite is in travel position.
☐ All loads (including jerry cans, bikes etc) are adequately restrained.
☐ Jockey wheel has been removed and stored or if swivel mount, locked in the travel position.
☐ Handbrake of trailer has been correctly released.
☐ Wheel chocks have been removed.
☐ Insurance and Roadside Assistance are current.
☐ Walk around vehicle to double check – loop up and under as well – if packing jobs are divided, best to check each other.

Weights Glossary

Tare Weight
Tare weight represents the unladen weight of the vehicle including all engine fluids and a 10L fuel reserve. It is important to note that this may not include dealer inclusions or optional fittings at the time of purchase.

Kerb Weight
Kerb weight is similar to tare weight but with a full tank of fuel and without any accessories.

Tare Trailer Mass
Tare trailer mass represents the unladen weight of a trailer. Unlike a vehicle, it does not include any fluids.

Payload
Payload refers to the total weight you can add to your vehicle. This includes fresh and wastewater, gas bottles, personal items, clothes, bedding, food etc. It can also include optional extras and aftermarket modifications such as awnings and driving lights. If you are towing, your tow ball weight must be included in your vehicle's payload.

You can calculate your caravan or camper trailer payload by subtracting the tare mass from the aggregate trailer mass (ATM).

Gross Trailer Mass (GTM)
Gross trailer mass is the tare weight on the axle(s) plus the proportion of the payload acting on the axle(s). This is specified by the manufacturer and is the legal total weight that can be supported by the wheels of a trailer.

Aggregate Trailer Mass (ATM)
Aggregate trailer mass is the maximum total weight of the caravan or camper trailer, unhitched from the tow vehicle. This is specified by the manufacturer and includes the tow ball weight.

Gross Vehicle Mass (GVM)
Gross vehicle mass is specified by the manufacturer and is the maximum legal loaded mass of the vehicle. It includes the weight of the car, fuel, vehicle payload, all passengers, plus tow ball weight if towing.

Braked Towing Capacity (BTC)
Braked towing capacity is the maximum allowable weight that can be legally towed by the vehicle.

Tow Ball Weight (TBW)
Tow ball weight, also referred to as tow ball mass, is the weight pushing down on the tow ball by the coupling of the RV being towed.

Gross Combination Mass (GCM)
Gross combination mass is the total permissible weight of the loaded vehicle and caravan together and is specified by the manufacturer.

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