

Safe Towing

All about safe towing

February 2016

Creative Commons information

© State of Queensland (Department of Transport and Main Roads) 2016



<http://creativecommons.org/licenses/by/4.0/>

This work is licensed under a Creative Commons Attribution 4.0 Licence. You are free to copy, communicate and adapt the work, as long as you attribute the authors.

The Queensland Government supports and encourages the dissemination and exchange of information. However, copyright protects this publication. The State of Queensland has no objection to this material being reproduced, made available online or electronically but only if its recognised as the owner of the copyright and this material remains unaltered.



The Queensland Government is committed to providing accessible services to Queenslanders of all cultural and linguistic backgrounds. If you have difficulty understanding this publication and need a translator, please call the Translating and Interpreting Service (TIS National) on 13 14 50 and ask them to telephone the Queensland Department of Transport and Main Roads on 13 74 68.

Disclaimer: While every care has been taken in preparing this publication, the State of Queensland accepts no responsibility for decisions or actions taken as a result of any data, information, statement or advice, expressed or implied, contained within. To the best of our knowledge, the content was correct at the time of publishing.

Document control options

Departmental approvals

Status	This approved version replaces all previous versions of the Safe Towing Guide
Version	v2.1
Date of approval	1 February 2016

Contents

Introduction	1
Legal requirements	2
Definitions	2
Inspections	2
Towing vehicle	3
Towbars	3
Couplings	3
Braking systems	4
Trailers that do not exceed 750 kg GTM with a single axle	4
All other trailers that do not exceed 4500 kg ATM	4
Safety chains	5
Safety Chain Connections to Tow Bar	5
Rear Marker Plates (Do Not Overtake Turning Vehicle Signs)	6
Driver	6
Loading trailers	7
Weight Distribution Hitch	7
Maintenance	7
Before the trip	8
During the trip	8
Insurance	9
A final word of advice	9
Related documents and links	9

Introduction

Towing is very different from everyday driving - it requires additional driving skills and safety precautions. As a driver, you have a legal responsibility to other road users and yourself when towing a trailer, caravan or another vehicle, to drive to suit the conditions.

Also, the towing vehicle, trailer and its load must meet all legal and safety requirements. This Department of Transport and Main Roads (TMR) publication provides information on how to:

- ensure the vehicle and trailer are correctly equipped; and
- drive a vehicle and trailer combination safely.

Note: *The guidelines in this section relate to Queensland regulations. The object of the relevant Queensland regulations is to provide road rules that are substantially uniform with road rules elsewhere in Australia. However, if travelling outside Queensland, check the relevant state or territory legislation.*

Towing will affect your vehicle

The first step to safe towing is to ensure the vehicle, trailer and load are suited. While modern vehicles are lighter and provide better service for normal motoring, some do not have the necessary characteristics for towing. Vehicle manufacturers usually indicate in the owner's manuals the maximum weight and other features of trailers appropriate for the vehicle. These limits should not be exceeded. Similarly, some trailers are designed to carry certain types of loads and cannot be towed safely when carrying other materials.

Other ways towing will affect your vehicle are:

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

These effects become more pronounced on your vehicle as trailer size and the mass of the load increase. By understanding the limitations of your vehicle and trailer, you can help prevent crashes and both structural and mechanical damage to your vehicle.

Driving with a trailer takes practice.

Remember:

- Allow for the trailer's tendency to 'cut-in' on corners and curves.
- Allow longer distances for braking, overtaking and joining a traffic stream.
- When reversing, it is advisable to have someone outside the vehicle giving directions.
- Avoid sudden lane changes or changes of direction.
- Look further ahead than normal so you can react to changes in traffic or road conditions.
- Use the accelerator, brakes and steering smoothly and gently at all times.
- Use a lower gear when travelling downhill to increase vehicle control and reduce strain on brakes.
- Slow down well before entering corners and curves.
- Accelerator, brake and steering must be operated smoothly when towing. Unnecessary steering wheel movement should be avoided because sway or "snaking" of the vehicle and trailer may result. If sway occurs the trailer

brakes should be applied gently if they can be operated separately from the towing vehicle, otherwise a steady speed or slight acceleration should be maintained if possible, until the sway ceases. The tow vehicle's brakes should only be applied as a last resort.

- Take care not to hold up traffic unnecessarily.
- Plan more rest stops and shorter travelling days as towing is more stressful and tiring than normal driving.

Legal requirements

To ensure the safety of yourself and other road users, you must abide by the laws governing the towing of trailers. These are:

- the vehicle and trailer must comply with all relevant registration requirements;
- the vehicle and trailer must be in a roadworthy and safe condition;
- all trailers must be fitted with a rear number plate;
- towbars and couplings must not obscure the towing vehicle's number plate or rear lights when the trailer is not connected;
- towing more than one trailer is prohibited;
- people are not permitted to ride in trailers or caravans; and
- the speed limit for a vehicle towing a trailer is the same as for a normal vehicle.

Definitions

Aggregate Trailer Mass (ATM) is the total mass of the laden trailer when carrying the maximum load recommended by the manufacturer. This includes any mass imposed onto the drawing vehicle when the combination vehicle is resting on a horizontal supporting plane.

Gross Trailer Mass (GTM) is the mass transmitted to the ground by the axle or axles of the trailer when coupled to a drawing vehicle and carrying its maximum load uniformly distributed over the load bearing area.

Note: *If you are unsure about the mass of the trailer and its load, you can have it weighed at a public weighbridge.*

Pig Trailer is a trailer having one axle group near the middle of the length of its goods carrying surface. Most caravans, box, and boat trailers are this type.

Inspections

Light trailers with an ATM over 750 kg and up to and including 3500 kg require a current safety certificate and trailers over 3500 kg a certificate of inspection when:

- offered for sale or disposed of by way of gift whilst registered;
- re-registered after being unregistered; or
- transferred from interstate registration.

Towing vehicle

In the interests of reliability and safety, follow these rules and conditions:

- Ensure the vehicle is suitable for towing, if required, towing options such as special suspension or transmission options or load-distributing devices that may be fitted to the vehicle by either the manufacturer, dealer or a firm specialising in towing equipment.
- Ensure the vehicle is properly equipped for the type and size of trailer:
 - ✓ towbars and couplings must be of a suitable type and capacity;
 - ✓ electrical sockets for lighting are required;
 - ✓ suitable brake connections may be required;
 - ✓ extra mirrors may be required for towing large trailers.

Ensure that the lower of the following is not exceeded:

- The maximum towing capacity of the motor vehicle as specified by the vehicle manufacturer; or
- The capacity of the towing apparatus fitted to the vehicle.

Note: This information can be obtained from the owner's manual or the manufacturer. If the motor vehicle was manufactured prior to 1 January 1992 and the manufacturer has not specified a maximum towing capacity, the following is taken to be the maximum towing capacity for the purposes of the above:

- One and a half times the unladen mass of the motor vehicle if the trailer is fitted with appropriate brakes; or
- A maximum of 750 kg if the trailer is not fitted with brakes.

Towbars

A properly designed and fitted towbar is essential for safe towing. The load capacity of the towbar must be at least equal to the loaded mass of the trailer. As a guide to assessing this, towbars manufactured after 1 January 1992 for passenger vehicles must be marked with their load capacity and the vehicle model for which they are intended.

The towbar must be fitted with attachments for connecting safety chains capable of withstanding the rated load capacity of the towbar. The safety chain attachments must be mounted adjacent to the tow coupling and arranged so as to maintain the direction of the towed vehicle in the event of coupling failure or accidental disconnection. Towbars, including towbar tongues, must not protrude dangerously or have sharp corners.

Couplings

Trailers that do not exceed 3500 kg ATM must have a quick release coupling which is designed to be engaged and disengaged without the use of tools. It must be of a positive locking type with provision for a second independent locking device. The locking must be readily verifiable by visual inspection.

Typical approved couplings for light trailers are:

- 50 mm ball couplings for trailers with an ATM up to 2300 kg;
- heavy duty 50 mm ball couplings for trailers with an ATM up to 3500 kg; and
- pintle hook couplings for trailers with an ATM up to 4500 kg.

Couplings should be marked with their load capacity and the manufacturer's name or trademark.



Braking systems

Trailers that do not exceed 750 kg GTM with a single axle

No brakes are required.

Note: *Where a trailer has two axles where the centres are less than 1 metre apart are regarded as a single axle.*

All other trailers that do not exceed 4500 kg ATM

These trailers must be fitted with an efficient brake system that complies with ADR 38/-. Except for over-run brakes, all brakes must be operable from the driver's seat of the towing vehicle.

For trailers up to 2000 kg GTM, an efficient braking system is considered to have brakes operating on the wheels of at least one axle. Over-run brakes may only be used on trailers that do not exceed 2 tonnes GTM.

Every trailer over 2000 kg GTM must have brakes operating on **all wheels**. The brake system must cause immediate application of the trailer brakes in the event of the trailer becoming detached from the towing vehicle. Under these circumstances, the brakes must remain applied for at least 15 minutes.

All flexible hydraulic brake hoses, air or vacuum brake tubing and air and vacuum flexible hoses must conform to SAA, SAE, BS, JIS, DIN, ISO or ECE Standards and be fitted to the vehicle in a way that will prevent chafing, kinking or other mechanical damage under normal motion of the parts to which they are attached.

Safety chains

All pig trailers with rigid drawbars (with or without breakaway brakes but excluding converter dollies) and, any other trailer without breakaway brakes, must be fitted with safety chains that are marked in accordance with the relevant Australian Standard complying with the following:

- trailers that do not exceed 2500 kg ATM must have at least one safety chain complying with Australian Standard AS 4177.4-1994 or Australian Standard AS 4177.4-2004 'Caravan and light trailer towing components Part 4: Safety chains up to 3500kg capacity', or be a safety cable with a certified load capacity of the same
- trailers over 2.5 tonnes and not exceeding 3.5 tonnes ATM must have two safety chains of designation of 3500 kg complying with Australian Standard AS 4177.4-1994 or Australian Standard AS 4177.42004
- trailers over 3500 kg ATM must have two safety chains made from steel of a minimum 800 MPa breaking stress that conforms to the mechanical properties of Grade T chain as specified in [Australian Standard AS 2321-1979](#) 'Short Link Chain for Lifting Purposes (uncalibrated)' or [Australian Standard AS 2321-2006](#) 'Short Link Chain for Lifting Purposes.' Each chain must be sized such that the minimum breaking load exceeds the ATM.

The length of the safety chain/s must prevent the trailer's drawbar hitting the ground if the trailer is detached from the towing vehicle. The safety chains must be properly connected to the tow bar with attachments capable of withstanding the specified breaking load of each chain. Do not use padlocks.

For further information regarding couplings, brake requirements and safety chains please refer to the Vehicle Standard Bulletin - Building Small Trailers (VSB1) available on the Department of Infrastructure and Regional Development website (www.infrastructure.gov.au)

Safety Chain Connections to Tow Bar

Safety chain(s) must be suitably and appropriately connected to a tow bar. The use of a shackle is permitted, provided the shackle used is fit for the purpose and compatible with the safety chain in terms of strength and size.

It is the responsibility of the vehicle owner/operator to ensure that a shackle, if used to attach safety chain to tow bar, is fit for the purpose and compatible with the safety chain. This can be demonstrated in a couple of ways:

1. Use of a shackle that is compatible with the safety chain AND complies with AS 2741-2002 "*Shackles*". In this case the shackle will have appropriate markings.

Table-1 Selection of D Shackle (Guide only)

Trailer ATM (kg)	Chain size classification AS 4177.4-2004	Chain Marking AS 4177.4-2004	Suitable rated D shackle size AS 2741-2002 Grade "S" or "6 dee" or "6 bow"	Minimum Proof Load Strength (kN) Chain / Shackle
up to 1 000	1 000	4177-10	6mm S WLL 0.5T	4.9 / 9.9
up to 1 600	1 600	4177-16	6mm S WLL 0.5T	7.9 / 9.9
up to 2 500	2 500	4177-25	8mm S WLL 0.75T	12.3 / 14.8
up to 3 500	3 500	4177-35	10mm S WLL 1.0T	17.2 / 19.7

2. Alternatively, the use of a shackle that is compatible with the safety chain AND is of a reputable brand. In this case, the shackle will have appropriate markings to show the brand and/or part identification sufficient to trace its brand and strength.

It should be recognised that a shackle that does not have any markings makes it difficult to establish its strength or compatibility with the safety chain. It is the responsibility of the vehicle owner/operator to satisfactorily address inquiries raised during any roadside audit by an enforcement officer.

Notes:

Usually diameter of the shackle pin is larger than the shackle body.

The strength of a shackle will vary according to its grade. An "S" grade shackle will be stronger than an "M" grade shackle of the same size.

Stainless steel shackles are generally unsuitable for trailer use due to the material's general low resistance to bending stresses.

A Bow shackle will provide flexibility for greater angular movement compared to a "D" shackle.

Rear Marker Plates (Do Not Overtake Turning Vehicle Signs)



If your vehicle (meaning the towing vehicle together with the trailer and projecting load) is 7.5 metres long or longer, you may have the sign "Do not overtake turning vehicle" displayed at the rear of the rearmost vehicle. This can be either a separate sign or the words can be incorporated on either the left hand marking plate only, or both left and right plates. Please note: if your vehicle (meaning the towing vehicle together with the trailer and projecting load) needs to straddle lanes or turn from an adjacent lane in order to turn left or right at intersections, and it is 7.5 metres long or longer, you must have the sign "DO NOT OVERTAKE TURNING VEHICLE".

The Transport Operations (Road Use Management—Road Rules) Regulation 2009 Part 11 Keeping left, overtaking and other driving rules, section 143 states:

Passing or overtaking a vehicle displaying a do not overtake turning vehicle sign.

(1) A driver must not drive past, or overtake, to the left of a vehicle displaying a do not overtake turning vehicle sign if the vehicle is turning left and is giving a left change of direction signal, unless it is safe to do so.

(2) A driver must not drive past, or overtake, to the right of a vehicle displaying a do not overtake turning vehicle sign if the vehicle is turning right, or making a U-turn from the centre of the road, and is giving a right change of direction signal, unless it is safe to do so.

.Note: A person must not drive a vehicle or combination in Queensland displaying a do not overtake turning vehicle sign if the vehicle, together with any load or projection, is not 7.5m long, or longer.

Driver

Apart from the added legal responsibilities for drivers, towing requires more knowledge and skills than normal driving. Drivers not experienced in towing need to make sure they understand the general principles of driving with a trailer before attempting to tow in traffic or at highway speeds. When towing, drivers should:

- allow for the extra length and width of a trailer when entering traffic and allow for its tendency to "cut in" on corners and curves;

- apply the accelerator, brakes and steering smoothly and gently to avoid sway, especially in wet or slippery conditions;
- allow for the increased effects of cross-winds, passing vehicles and uneven road surfaces on the vehicle and trailer combination;
- avoid applying the towing vehicle's brakes if the trailer begins to sway or snake. If the trailer is fitted with brakes that can be operated independently, apply them gently. Otherwise, continue at a steady speed or accelerate slightly until the sway stops;
- leave a longer stopping distance to the vehicle ahead, increase the gap for longer, heavier trailers and allow even more distance in poor driving conditions;
- engage a lower gear in both manual and automatic vehicles when travelling downhill to increase vehicle control and reduce strain on brakes;
- allow more time and distance to overtake because of the reduced performance of the towing vehicle and avoid "cutting off" the overtaken vehicle when returning to the left lane;
- reverse, if possible, with a person watching the rear of the trailer - reversing is difficult and takes practice; and
- pull off the road where suitable, to avoid a build-up of traffic unable to overtake.
- be aware, when a heavy vehicle is overtaking the car/caravan combination, it will have a tendency to sway.

Loading trailers

It is unsafe and illegal to overload a trailer. Drivers must ensure:

- the ATM specified by the trailer manufacturer is not exceeded;
- lights, number plate and registration labels are not obscured in any way; and
- tyre or tow coupling capacities are not exceeded.

The load must be properly secured to your trailer. It is recommended that you refer to the Load Restraint Guide available from the [National Transport Commission website](#).

For further information on the size of load and any projection allowed for cars, utilities, trucks and trailers, please refer to the [Projecting Loads section](#) of the TMR website.

Weight Distribution Hitch

Many people, particularly those towing large caravans, use a weight distribution hitch. This device transfers some of the load imposed on the towbar ball to the front and rear suspension of the towing vehicle.

This retains vehicle ride height and effective steering control. Heavy duty towbars and attachments should be used with a weight distribution hitch. Consult the towbar manufacturer or caravan dealer before using this equipment as it may overload the towbar and/or its components.

Caution: A weight distribution hitch should never be used to compensate for a badly loaded trailer.

Maintenance

Proper, regular maintenance of your vehicle and trailer is vital for safe towing. See your trailer and/or vehicle dealer, the RACQ or other competent service agent in this field to check that:

- the towing vehicle and the trailer are in a roadworthy and safe condition; and
- the trailer's wheel-bearings, suspension and brakes are in good working condition.

This is particularly important for boat trailers or if the trailer has not been used for some time.

Before the trip

There are a number of safety checks you should make before each trip. These are:

- ✓ inspect all tyres carefully. When towing heavily loaded trailers, vehicle tyre pressures should be increased to the level recommended in the owner's handbook or on the tyre placard (usually about 15 kPa above normal). Otherwise, ask a reputable local tyre dealer;
- ✓ carry out normal service checks of oil, water, brake fluid, battery and tyre pressure., remembering that towing places additional demands on your vehicle;
- ✓ ensure the coupling socket and ball are the matching size. If the coupling is not a ball type check that all parts fit and function properly;
- ✓ check the coupling is securely fastened and latched or screwed down when the trailer is connected to the towing vehicle;
- ✓ check safety chains are properly connected with attachments capable of withstanding the specified breaking load of each chain. Do not use padlocks. If two chains are fitted, cross them under the drawbar before they are attached to the towing vehicle. This provides better directional control of the trailer and helps prevent the front of the drawbar hitting the road if the coupling disconnects;
- ✓ check trailer brake and light connections are secure and all lights work;
- ✓ check the initial operating adjustments of electric or vacuum operated brakes fitted to the trailer are in accordance with the manufacturer's instructions;
- ✓ disengage any reversing catch fitted to the trailer coupling (as used with over-run brakes);
- ✓ make one or two test stops from low speed to confirm the trailer brakes operate properly;
- ✓ ensure all doors, hatches, covers and any load or equipment are properly secured; and
- ✓ limit the mass of the load carried in the boot or luggage space of the towing vehicle.

During the trip

Soon after beginning each trip, stop in a safe location and make sure:

- ✓ couplings and safety chains are still fastened;
- ✓ brakes and wheel-bearings are not overheating;
- ✓ light connections are secure and lights are still working;
- ✓ tyres are still inflated correctly and are not rubbing on the mudguards, suspension, trailer body and so on;
- ✓ loads doors, hatches, covers and so on, are still properly secured.
- ✓ on long trips, repeat these checks every two to three hours when taking a rest stop.

Insurance

Compulsory Third Party insurance for trailers in Queensland is provided by the towing vehicle's insurance cover. If your trailer is being towed by an interstate registered vehicle, contact your insurer to obtain additional cover. A trailer may not be covered by comprehensive insurance if:

- it does not comply with Queensland registration and vehicle standard legislation;
- its on road mass exceeds your vehicle's towing capacity;
- it is not roadworthy or safe; or
- it is overloaded.

A final word of advice

When towing, ensure your trip is safer, better planned and more pleasant by:

- scheduling more rest stops and shorter travelling days for long trips because towing is more stressful than normal driving and more likely to cause driver fatigue;
- taking care not to hold up following traffic unnecessarily;
- looking further ahead than usual to anticipate appropriate driving actions for traffic and road conditions; and
- remembering fuel consumption increases for most light vehicles towing caravans and large trailers, particularly at speeds above 90km/h.

Related documents and links

Vehicle Standard Bulletin - Building Small Trailers (VSB 1)

Available on-line from the Department of Infrastructure and Regional Development

https://infrastructure.gov.au/roads/vehicle_regulation/bulletin/vsb1/index.aspx

Vehicle Standard Bulletin - Rear Marking Plates (VSB 12)

Available on-line from the Department of Infrastructure and Regional Development

https://infrastructure.gov.au/roads/vehicle_regulation/bulletin/index.aspx

Australian Design Rules

Available on-line from the Department of Infrastructure and Regional Development

<http://www.infrastructure.gov.au/roads/motor/design/index.aspx>

Australian Standard AS 4177 Safety Chains

Available for purchase from Standards Australia

www.standards.org.au

Load Restraint Guide

Available online from the National Transport Commission

<http://www.ntc.gov.au/heavy-vehicles/safety/load-restraint-guide/>