

**Australian Camper Trailers Group**  
**10<sup>th</sup> National Meet**  
**held at Glen Innes Showground in NSW,**  
**Monday 22 September to Friday 26 September 2014.**

**Vehicle Standards Workshop**

**Please Note:** This material applies to standards acceptable in Queensland. However, some jurisdictions (states) may vary slightly in their application of the relevant standards.

**Definitions**

**TARE MASS** - mass of a vehicle (other than a L-group vehicle) ready for service, unoccupied and unladen, with all fluid reservoirs filled to nominal capacity except for fuel, which shall be 10 litres only, and with all standard equipment and any options fitted.

**GROSS TRAILER MASS (GTM)** - 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 approximately uniformly distributed over the load bearing area, and at which compliance with the appropriate Australian Design Rules has been or can be established.

**AGGREGATE TRAILER MASS (ATM)** - the total mass of the laden trailer when carrying the maximum load recommended by the 'Manufacturer'. This will include any mass imposed onto the drawing vehicle when the 'Combination Vehicle' is resting on a horizontal supporting plane.

**Trailer** - A vehicle without motive power constructed to be drawn behind a motor vehicle.

A **Pig Trailer** is a trailer having one axle group near the middle of the length of its goods carrying surface. Typically, caravans and camper trailers are pig trailers.

**Trailer Categories**

**VERY LIGHT TRAILER (TA)** - A single-axled trailer with a 'Gross Trailer Mass' not exceeding 0.75 tonne.

**LIGHT TRAILER (TB)** - A trailer with a 'Gross Trailer Mass' not exceeding 3.5 tonnes, other than a trailer of Category TA.

**MEDIUM TRAILER (TC)** - A trailer with a 'Gross Trailer Mass' exceeding 3.5 tonnes but not exceeding 10 tonnes.

**HEAVY TRAILER (TD)** - A trailer with a 'Gross Trailer Mass' exceeding 10 tonnes.

## **Vehicle Standard Bulletin 1 (VSB 1)**

Refer National Code of Practice for Building Small Trailers (Revision 5 – June 2009)

This Code of Practice summarises design and testing construction requirements for trailers that do not exceed 4.5 tonnes Aggregate Trailer Mass (ATM).

It is a summary, in a simplified form, of the Australian Design Rules (ADRs) relating to trailers that do **not** exceed 4.5 tonnes ATM.

The document provides a quick reference to all compliance issues that are relevant to trailers of the above mentioned sizes.

All manufacturers, importers, dealers of caravans and camper trailers and interested parties are advised to have a copy of this document available for quick reference. It can be downloaded from the federal Department of Infrastructure, Transport, Regional Development and Local Government website located at:

[http://www.infrastructure.gov.au/roads/vehicle\\_regulation/bulletin/index.aspx](http://www.infrastructure.gov.au/roads/vehicle_regulation/bulletin/index.aspx)

## **Utilising a Compliance Engineer**

Some manufacturers are providing equipment for sale to the public that is not compliant with the relevant requirements. This includes items such as, for example, lights, light positioning, obscuring of lights, safety chains, couplings and number plate placement etc.

If a manufacturer is constructing a particular model of caravan/camper trailer, only one (1) unit needs to be inspected and ADR complied, provided all future versions of the unit are identical to the initial unit that was ADR complied and certified.

A copy of the certifying engineers report relating to a particular model of recreational vehicle should be obtained for future reference, if required.

## **Vehicle Plate (Refer Section 7 of VSB 1)**

Manufacturers and interested parties should be aware that once the trailer/vehicle plate, appropriately completed with all relevant and required information, is attached to an individual unit, it is an indication that the particular unit is compliant with all relevant ADRs applicable to that class of vehicle and is ready for road use.

It is the legal responsibility of the person attaching the plate to ensure it does comply with the ADRs and that person could be prosecuted if the need arises.

Also, Sections 2, 4, 5 and 6 of VSB 1 give an indication of what could eventuate from non-compliant trailers being used on the road. For example, all trailers from a particular manufacturer could be required to be recalled for rectification work if the need arises.

The trailer plate should also be located on the trailer so that it can be easily read and is protected from accidental damage.

### **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 disconnection.

Towbars, including towbar tongues, must not protrude dangerously or have sharp corners.

### **Dimensions (Refer Section 21 of VSB 1)**

Manufacturers should ensure that all dimensional requirements applicable to motor vehicles and trailers are complied with.

Section 21 of VSB 1 provides examples of maximum permissible dimensional requirements.

Queensland legislation provides further information on dimensions for all types of vehicles.

For example, when installing an awning to a motorhome, fifth wheeler or caravan, the overall width must not exceed 2.5 metres.

Additionally, the above mentioned legislation permits, when measuring the width of a vehicle, any of the following items that may be fitted to the vehicle may be disregarded:

- anti-skid devices mounted on wheels;
- central tyre inflation systems;
- lights, mirrors, reflectors, signalling devices or tyre pressure gauges.

Motorhome rear overhang projections have also caused concerns in the past.

### **Braking**

Trailers that do not exceed 0.75 tonne GTM with a single axle do not require brakes.

**Note:** Two axles with centres spaced less than 1 metre apart are regarded as a single axle.

All other trailers that do not exceed 4.5 tonnes ATM 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 2 tonnes 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 2 tonnes 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 (Refer Sections 16.2 and 16.3 of VSB 1)**

The above mentioned section of VSB 1 advises requirements for safety chains for pig trailers (refer definition) with rigid drawbars (with or without breakaway brakes) and any other trailer without breakaway brakes and must be marked in accordance with the relevant Australian Standard (AS).

Trailers up to 3.5 tonnes ATM require compliance with AS 4177.4 (1994 or 2004). Part 4 specifies requirements for safety chains up to 3,500 kg capacity.

Trailers over 3.5 tonnes ATM require compliance with AS 2321 (refer VSB 1).

Section 9 of AS 4177.4 states:

**The chain shall be permanently and legibly marked with the manufacturer's or importer's identification and the digits 4177 (i.e. the number of this Australian Standard), followed by a hyphen and the first two digits of the chain designation (i.e. 4177-25 represents 2500 kg due to manufacturing limitation). The marking shall be repeated at intervals not exceeding 4 links and the characters on the links shall be not less than 1.5 mm high for chains less than 8 mm, and not less than 2 mm high for chains 8 mm and above.**

This requirement must be adhered to.

Requirements for chain sizes for relevant ATM ranges of trailers should be referenced from AS 4177.4. This Australian Standard lists specific chain sizes that are required.

Drawbar safety chain attachment points should not come into contact with the road surface when the trailer is disconnected.

Additionally, Queensland legislation requires:

### **Drawbar couplings**

(1) A coupling for attaching a trailer, other than a semitrailer or pole-type trailer, to a towing vehicle must be built and fitted so that—

- (a) the coupling is equipped with a positive locking mechanism; and
- (b) the positive locking mechanism can be released regardless of the angle of the trailer to the towing vehicle.

(2) If the trailer is in a combination and is not fitted with breakaway brakes, it must be connected to the towing vehicle by at least 1 chain, cable or other flexible device (the **connection**), as well as the coupling required by subsection (1).

(3) The connection must be built and fitted so that—

- (a) if the coupling breaks or accidentally detaches—the trailer is kept in tow; and
- (b) normal angular movement of the coupling is permitted without unnecessary slack.

(4) If practicable, the connection must be built and fitted so the drawbar of the trailer is prevented from hitting the ground if the coupling accidentally detaches.

**Please Note:** The ADRs take preference over the requirements of the above. In other words, if a vehicle is required to comply with the ADRs, then it must meet the requirement of the relevant ADR. If a vehicle is not required to meet the ADR requirement, it must meet the standard of the regulation given above.

For further information, refer to ADR 62/...

The ADRs can be referenced at the following website:

[http://www.infrastructure.gov.au/roads/motor/design/adr\\_online.aspx](http://www.infrastructure.gov.au/roads/motor/design/adr_online.aspx)

Instances have also been found where the safety chains have been galvanised or painted (powder coated) and the AS marking (some but not all) has not been able to be read. This is **not** acceptable. A means should be provided for the chain to be identified.

#### **Drawbars (Refer Section 16.1 of VSB 1)**

Manufacturers of recreational trailer vehicles should ensure that the requirements of this section are complied with.

Ideally, drawbars would be engineer certified but that process is part of putting the vehicle plate on the trailer. The vehicle plate verifies it meets the ADR requirements of strength etc.

#### **Couplings (Refer Section 16.4 of VSB 1)**

Trailers that do not exceed 3.5 tonnes 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 device. The locking must be readily verifiable by visual inspection.

For trailers having an ATM of 3.5 tonnes or greater, refer directly to ADR 62/...

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

Before purchasing a coupling for relevant sizes of trailers, manufacturers should request, from the coupling supplier, written confirmation that the coupling complies with the relevant version of ADR 62/...that applies to the year model of trailer.

All couplings must be marked in accordance with ADR 62/...requirements. This ADR calls up various Australian Standards or (as with lamps and reflectors) an internationally based ECE regulation R55/-. There is also provision for alternative couplings, with marking specified in Clause 12.4 of ADR 62/...

If a trailer manufacturer intends to manufacture one's own coupling, then the manufacturer will need to consult ADR 62/... and conduct physical testing to ensure compliance with the specified requirements.

### **Safety chain connections (shackles, pins or bolts)**

The requirements for shackle selection is provided in the Queensland Transport publication "All about safe towing" and this includes a Safety Chain Connections (Shackles) section. This information is available on the Queensland Transport website.

It gives an option of how to decide a suitable shackle and gives an explanation of how the load rating is determined.

As such, "D" Shackles that are used to connect a trailer safety chain(s) to the towing vehicle must have strength that is compatible with the safety chain (fit for purpose). This can be ensured in a couple of ways:

1. Use of "D" Shackles that comply with AS 2741-2002 "Shackles" and having the appropriate markings is one way. This method is recommended.
2. Another way of ensuring that the "D" Shackle used is of appropriate strength is to select a "D" Shackle of reputed brand (for example, a towbar manufacturer) so the part has its brand name/model permanently marked on it.

"D" Shackles that do not have any markings make it difficult to identify their source and strength and may raise questions during any roadside audit by enforcement officers.

Safety chain strength is specified in terms of minimum Proof Load in kN. Proof load is defined in AS 4177.4-2004 as "The load which chain must be able to withstand, while remaining in service".

D shackle strength is specified in terms of Working Load Limit (WLL) in kN. Working Load Limit is defined in AS 2741-2002 as "The maximum load that may be applied to the shackle, which may be re-rated for particular conditions of use".

Refer to the above mentioned publication for further information.

### **Lamps or Lights (Refer Section 13 of VSB 1)**

The most common faults in relation to trailer lighting relates to the following:

- Non-fitment of required lamps;
- Incorrect positioning (heights and angle) of required lamps;
- Obscuring of lamps at required visibility angles by other ancillary equipment or componentry (e.g. spare tyres attached to rear bumper bar);
- Use of non-compliant lenses (not fitted with relevant approval marking); and
- Non-installation of required and coloured reflector assemblies to front, side and rear of vehicle.

Lighting can be a complex issue, especially for larger vehicles, and if in any doubt, advice from a compliance engineer or reference to the relevant ADR should be undertaken.

Refer to the illustrations on pages 19 to 23 of VSB1 for locations of lamps and explanations.

### **Fire extinguishers (Refer Section 22.3 of VSB 1)**

Caravans and camper trailers **must** be provided with a fire extinguisher in accordance with required Australian Standards.

A caravan is defined as:

“An enclosed trailer which is intended for use as a mobile home or living quarters when parked. It will usually provide fixed sleeping accommodation and/or facilities for the preparation of food. A trailer permanently equipped with a folding and stowable roof (such as a camper trailer) is a caravan”.

Consequently, all caravans, camper trailers and motorhomes are required to be fitted with an approved type and size fire extinguisher.

The fire extinguisher should be placed in the vehicle so that it is readily available in the case of an emergency.

Refer also to AS 2444 Table 4.4, Page 18 for further information.

### **Number plates**

Number plate visibility must not be blocked by installation of ancillary equipment to the trailer.



No part of the number plate should be more than 1,300 mm from the ground.

### **LPG Installations**

All permanent LPG installations must be certified by an appropriate licensed gas installer and a certificate issued as to complying with relevant Australian Standard.

An installation is considered permanent if it is bolted or permanently attached to the unit. For example, a stove is bolted or riveted in place.

### **Item of interest regarding annexes fitted to caravans or camper trailers**

Most dealers, manufacturers, retailers etc. would, or at least should, know of the new LP Gas Regulations which came into effect in Queensland on 1 July 2014. Other states have had or will have other dates of commencement.

These have brought severe implications to the ability of those in the industry to fit an annexe if there is any venting of gas fridges, stoves etc on the annexe side and, in the case of camper trailers, effectively prohibits enclosing any area where a slide-out stove and the like is being used.

Those who sell in such circumstances actually face major liability issues if they defy the regulations.

Whilst the caravan industry association in Queensland has been active at a local level on these new laws, it is really a federal issue and is now being driven by a sub-committee under the banner of Caravan Industry Association of Australia (formerly CRVA).

As part of this a considerable amount of money is being expended on expert testing of true emissions on gas refrigerators, stoves and other gas appliances used in caravans and their derivatives. This follows earlier submissions and meetings with authorities.

This is having a severe financial effect on many in the industry and there appears to possibly be no quick fix.

In the meantime there are a few things you should remember –

1. if a caravan has any exhausting or venting of residual from LPG appliances into the rear side, the only way you can fit an annexe is if there is at least 30% of all walls fitted with mesh ventilation and not covered with a window flap.

2. if all venting and extraction is on the offside then there is no problem. Fit an annexe as normal.
3. if appliances are flued through the roof then no problem as per (2)
4. do not utilise an enclosed tent section on camper trailers if there is a gas stove or other gas appliance fitted in that area.

### **Mains power electrical connections**

All mains powered electrical installations must be certified by an appropriate electrical contractor and a certificate issued.

Some trailers have been found with a 240 volt connection on the side and nothing else. This practice should not be encouraged as it could be influential in the purchaser connecting mains power to the trailer himself.

### **Fitting of loaded jerry cans for the carriage of fuel etc. to caravans and recreational vehicles.**

The practice of motorists carrying jerry cans of fuel attached to both motor vehicles and caravans has been previously addressed by Queensland Transport.

Queensland legislation specifies that a person must not modify a vehicle, its parts or equipment in a way that adversely affects the safety of a vehicle. A vehicle by definition includes caravans, trailers and a motor vehicle used to tow a caravan etc.

As such, this legislation would prohibit the fitting of jerry cans containing dangerous or explosive substances to the rear of any vehicle.

The Dangerous Goods Section of Queensland Transport has previously provided the following information:

- People/persons have a "Duty of Care" responsibility under Queensland legislation relating to transporting dangerous goods safely. Personal/recreational use does not come under Queensland Transport legislation when the aggregate quantity does not exceed 250 litres.
- The definition of fuel needs to be clarified. "Petrol Fuel" is considered a dangerous good under the Australian Dangerous Goods Code whereas "Diesel Fuel" is not considered a dangerous good.

- The positioning of jerry cans of fuel (petrol) is, they believe, critical to the overall safety of a vehicle. Rear impact collisions are a common traffic occurrence and locating a jerry can at the rear of any vehicle would subsequently increase the severity of an incident (i.e. the likelihood of fire and/or tragedy is much greater).
- Positioning of jerry cans on the sides of recreational vehicles also pose a significant risk in the event of side on collisions e.g. the vehicle could easily exceed the maximum allowable width dimensions.
- Individual vehicle insurance needs to be checked out to ensure appropriate cover is in fact specified for dangerous goods on a case by case basis (this is often different for each vehicle and insurance organisation). For example, some insurance companies specifically forbid the carrying of dangerous goods other than in the fuel tanks of vehicles and/or have maximum limits imposed on their insurance policies (e.g. maximum of 20 or 60 litres only in approved containers).
- Vehicle modifications and/or changes made to vehicles by owners need to be assessed in the context of the insurance policy and its provisions.

### **Vehicle Identification Numbers (VIN) on Light Trailers (Refer Section 8 of VSB 1)**

As per the requirement of section 8 of Vehicle Standards Bulletin 1 - National Code of Practice Building Small Trailers, a state or territory registering authority may require the VIN to be stamped onto a substantial part of the trailer.

Queensland has always required the VIN be stamped into the trailer. However, for some time this requirement has not been fully enforced and a number of issues have arisen in relation to vehicle identification and refusal by other states and territories to transfer the registration of Queensland registered trailers. To improve the identification of trailers and prevent problems for transferring registration, all trailers will require a VIN to be stamped onto a substantial part of the trailer.

Trailers will not be eligible for registration in Queensland unless the 17 digit VIN is stamped or etched into a substantial part of the trailer. The VIN should be in characters at least 7 mm high, legible, uniform and in one line with characters less than one character apart.

### **Motorhome doors (Refer Section 22.1 of VSB 1)**

A number of enquiries regarding the door requirements for Motorhomes and Caravans have been received.

Consumers should be aware of potential safety related compliance issues relating to the inadequate provision of doors for entry to, or exit from, motorhomes, fifth wheelers and caravans.

The *Motor Vehicle Standards Act 1989* and Regulations prescribe the ADRs as the national standards which must be met before new vehicles can be marketed in Australia.

ADR 44/02 titled "Specific Purpose Vehicle Requirements" prescribes requirements for the construction of specific purpose vehicles including motorhomes, fifth wheelers and caravans. ADR 44/02, clause 44.8.1, Doors, states as follows:

"Every motor vehicle (motorhome) or trailer ("*Caravan*") equipped with fuel burning (cooking) facilities or living or sleeping accommodation shall have only outward-opening or sliding doors. At least one such door shall be located on the left-hand side or at the rear."

The federal Administrator of Vehicle Standards has provided an explanation to further clarify the required standards for doors fitted to these types of vehicles.

Based on all of the above requirements, the department requires that a door on the left hand side or rear of motorhomes, fifth wheelers and caravans be able to function as a door, in the normal sense of the word, providing direct entry to and egress from the vehicle without obstruction or aids.

In order that the door allows an average size person to easily enter and exit the vehicle without additional external fixtures or fittings, this guideline specifies door aperture dimensions as explained below.

In the case of imported units, if the original vehicle manufacturer provided an access door that was fitted to the right hand side, the additional or replacement door must be fitted to the left hand side (near side) or rear and meet the following requirements.

The term motorhome applies equally to a Caravan, Campervan, Fifth Wheeler and Motorhome.

## **Motorhome/Campervan Minimum Door Requirements in Queensland**

- **Dimensions** - Exterior door openings for rigid vehicles (motorhome/caravan) shall have a minimum aperture height of 1610 mm and a minimum clear width of 500 mm. Exterior door openings for rigid folding vehicles (pop-tops) up to 4.3 metre body length shall have a minimum aperture height of 1200 mm and a minimum clear width of 500 mm. Exterior door openings for rigid folding vehicles (pop-tops) over 4.3 metre body length shall have a minimum aperture height of 1500 mm and a minimum clear width of 500 mm. The door opening of the motorhome/caravan will be a minimum of those specified above, unless the roof height of the motorhome/caravan is such, it would make the door impossible to install (eg. Teardrop van).
- **Opening** - Door must be either outward opening or sliding only.
- **Location** - Door must be either to the left or rear of the vehicle. If to the rear, it is preferable for the door to be on the left half of the vehicle's rear face.
- **Access** - Door must provide direct entry to and exit from the vehicle. It is not acceptable to have door that is accessible only through another compartment, such as toilet, kitchen, load/cargo space and so on. Also, there must be no impediments to door such as seats, furniture and cargo.
- **Door Installation Height** - The bottom edge of the left, or rear door, shall be no higher than the lowest section of the motorhome/caravan floor. The door opening must be such that entry and exit is possible without additional external fixtures or fittings (e.g. ladder).

**Please Note:** A number of imported vehicles have been registered and which do not comply with the above mentioned requirements. These issues should be taken up with the registering authority if it is the intention to purchase a non-compliant vehicle.