Motor Vehicle Registry Information Bulletin

V65 - Northern Territory Requirements for A-Frame Towing of Vehicles

Introduction

“A”-frame towing is the term used to refer to towing a motor vehicle, which has all its wheels on the road and is connected to the towbar of the towing vehicle by a triangular shaped frame commonly known as an “A”- Frame.

Persons wishing to undertake “A”-frame towing may need to seek advice from an engineering signatory to ensure that the “A-frame” device that they intend to use meets the technical requirements of this information bulletin. It is recommended that a copy of this information bulletin, together with any reports, approvals or other documentation, are carried in the vehicle at all times.

Persons who tow a registered motor vehicle in accordance with this information bulletin will be able to tow legally in the Northern Territory (NT).

Rules applicable for towing another motor vehicle

The Australian Road Rules state:-

294 (1) The driver of a motor vehicle must not tow another motor vehicle unless:

(a) Either:
  (i) the driver can control the movement of the towed vehicle; or
  (ii) the brakes and steering of the towed vehicle are in working order and a person who is licensed to drive the towed vehicle is sitting in the driver’s seat of the towed vehicle, and is in control of it’s brakes and steering; and

(b) it is safe to tow the vehicle.

This information bulletin is intended to assist persons who wish to undertake “A”-frame towing of a motor vehicle in a manner that satisfies the above Rule.

Towed Mass Ratio

The following requirements apply to the towing, with an A-frame, of an un-braked motor vehicle where the unladen mass (or tare mass) of the towing vehicle exceeds 3.5 times the laden mass (or Gross Vehicle Mass) of the towed vehicle (3.5:1) – that is, the unladen mass of the towing vehicle must be at least 3.5 times the mass of the laden towed vehicle. This ratio is to provide for adequate levels of vehicle stability, handling and braking performance.

Persons wishing to tow with a vehicle that has an unladen mass that is less than 3.5 times the laden mass of the towed vehicle are required to have control of the brakes on the towed vehicle. Such persons must seek further advice from the Motor Vehicle Registry (MVR) or from a recognised Engineering Signatory. Contact details of recognised NT signatories can be obtained from MVR.

Coupling Design

The "A"-frame coupling must:

- be designed and constructed with sufficient strength to hold the vehicles together in tow and must comply with the applicable requirements of Australian Design Rule 62 "Mechanical connections between vehicles" relevant to the laden mass of the towed vehicle;
- permit an adequate amount of angular movement between the towing and towed vehicles to cater for road undulations and curves;
- be secured to a substantial body member of the towed vehicle, such as a sub-frame or chassis member. Connection to the towed vehicle's bumper, suspension or steering components is not permitted, unless approved by the manufacturer of the towed vehicle;
- be marked with the manufacturer's name or trademark and the rated capacity. The "manufacturer" may include the owner in the case of a privately constructed device;
- be marked with the VIN/chassis numbers of both the towing vehicle and the towed vehicle; and
- maintain a space between the combination not exceeding 2 metres.

The "A"-frame coupling must be equipped with safety chains/cables as detailed below:

- Towed vehicles with a Gross Vehicle Mass (GVM) up to 2.5 tonnes shall be equipped with at least one safety chain (of size detailed in Table 1) complying with AS 4177.4-2004 "*Caravan and light trailer towing components Part 4: Safety chains up to 3500kg capacity",* or as amended.
- Towed vehicles with a GVM over 2.5 tonnes shall be equipped with two safety chains (of size detailed in Table 1) complying with AS 4177.4-2004 or as amended.

Table 1

Towed Vehicle Gross Vehicle Mass in kg	Nominal Material Size in mm	Chain markings
0 to 1000	6.3	4177-10
Up to 1600	8.0	4177-16
Up to 2500	10.0	4177-25
Up to 3500	13.0	4177-35

- Towed vehicles with a GVM between 3.5 and 4.3 tonnes require chains of at least 7.1mm in size, with a minimum chain breaking load of 6.4 tonnes. The chain must be steel of a minimum 800 MPa breaking stress and conforming to the mechanical properties of Grade T chain as specified in AS 2321-2006 '*Short- Link chain for lifting purposes*' (refer Table 2).
- Towed vehicles with a GVM over 4.3 and up to 7.5 tonnes shall have chains of at least 9.5mm in size, with a minimum chain breaking load of 11.6 tonnes. The chain must be made from steel of a minimum 800 Mpa breaking stress and conforming to the mechanical properties of Grade T chain as specified in AS 2321-2006 '*Short-Link chain for Lifting purposes*' (refer Table 2).
- Safety cables (fitted in lieu of safety chains) must comply with and be certified to AS 3569 "*Steel wire ropes*". The cable fitted with attachments (ie snap hooks and quick link) must be equal to or larger than that specified in Table 2.

Table 2

Towed Vehicle Gross Vehicle Mass in kg	Nominal Material Size in mm	Applicable Australian Standard
3500 to 4300	7.1	AS 2321-2006
Over 4300 & up to 7500	9.5	AS 2321-2001
Over7500 & up to 13500	12.7	AS 2321-2006
Over 13500 & up to 21500	15.9	AS 2321-2006
Over21500 & up to 30000	19.0	AS 2321-2006
Over 30000	22.0	AS 2321-2006

Towing Capacity of Towing Vehicle

The towing limits specified by the vehicle manufacturer must not be exceeded (most manufacturers specify towing limits for their vehicles in the vehicle handbook).

The loaded mass of the towed vehicle must not exceed the towing capacity of any component in the combination, including the "A"-frame, towbar, coupling and tow-ball.

Braking Requirements

The requirement for a 3.5:1 towed mass ratio is designed to give a combination adequate braking without the need for the brakes of the towed vehicle to be operated by the driver seated in the towing vehicle.

The vehicle combination must have braking of at least the performance in Table 3.

Table 3	**Stopping distance when brakes applied at 35km/h**	**Average deceleration rate from any legal speed**	**Peak deceleration rate from any legal speed**
Vehicle combination gross mass under 2.5 tonnes	12.5m	3.8 m/s^2	5.8 m/s^2
Vehicle combination gross mass 2.5 tonnes or over	16.5m	2.8 m/s^2	4.4 m/s^2

The parking brake of the towing vehicle must be able to hold the vehicle combination stationary on a 12% gradient.

Lighting Requirements

The following lights must be fitted to the rear of the towed vehicle and be operational whilst under tow:

- two amber turn signal lamps;
- two red stop lamps;
- two white reverse lamps;
- one registration plate lamp at the rear of the towed vehicle to illuminate the registration plate; and
- two red tail lamps.

These lamps may be the towed vehicle's own lights or as an alternative be arranged on a portable light bar providing it is properly secured to the rear of the towed vehicle.

Steering Requirements

The safety of the vehicle combination's steering is vital. The "A"-frame towing system shall provide safe and adequate steering control for the towed vehicle, and the overall combination. The stability and tracking of the vehicle combination and the steer-ability of the towed vehicle must be satisfactorily addressed.

The vehicle combination must be capable of turning within a 25m diameter circle, measured at the outer wheel track.

When travelling in a straight line on a level, smooth surface the towed vehicle must track (follow) in the path of the towing vehicle without deviating off-line by any more than 100mm.

It is recommended that the tow-ball or hitch position on the towing vehicle is located as close as practicable to the rear axle. This will reduce the tendency of the towed vehicle to worsen the handling characteristics of the combination.

Vehicle and Towing Components Manufacturer's Requirements

The vehicle manufacturer's recommendations must be complied with whilst carrying out "A"-frame towing. Vehicle owners are advised to check with their manufacturer/dealer to determine whether their towed vehicle is suitable for "A"-frame towing. Advice given in the "Owner's Manual" for the towing of the vehicle should always be followed.

Loads in Towed Vehicle

Carrying a load in the towed vehicle is not forbidden. However, when carrying such a load it is important to consider the following points:

- The loaded mass of the towed vehicle must not exceed the capacity of any component in the combination.
- The tare mass of the towing vehicle must remain greater than 3.5 times the mass of the towed vehicle when the vehicle is loaded.
- Any load carried in the towed vehicle should be placed as low as possible and placed toward the rear of the vehicle. Loading toward the rear will reduce the load on the front axle, reducing the tendency of the towed vehicle to worsen the handling characteristics of the combination.

Other Requirements

- The overall length of the vehicle combination must not exceed 19.0 metres.
- The “A”-frame, and any attachment which would constitute a dangerous projection, must be removed from the towed vehicle before it is driven on public roads.
- In most jurisdictions both the towing and the towed vehicle must be legally registered. Owners are advised to check with their Road Transport Authority to confirm this requirement.
- For the purpose of A-frame towing, towing more than one vehicle or trailer at once is prohibited.
- No person must ride in the towed vehicle.

Certification

Unless the A-Frame is a proprietary item that has been designed and is appropriately marked as being suitable for the make and model of the towed vehicle, the A-Frames and connecting hardware, including the connection of the A-frame and safety chains to the towed vehicle, must be certified by a recognised engineering signatory.

Contact Details	
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