



CIRCULAR 0-1-3

SAFETY CHAIN CONNECTION DEVICES FOR ROAD TRAILERS WHICH ARE UP TO 3.5 tonnes (3,500kg) AGGREGATE TRAILER MASS (ATM)

1. Scope

The purpose of this Circular is to provide assistance for owners and operators in selecting an appropriate safety chain connection device for a road trailer of up to 3,500 kg ATM.

2. Introduction

The Commonwealth's *Motor Vehicle Standards Act 1989* (the Act) requires all road vehicles (including trailers and caravans) to comply with national vehicle standards known as the Australian Design Rules (ADRs) before they can be supplied to the Australian market for use in transport. The ADRs are performance-based standards for vehicle safety, vehicle emissions, anti-theft and to promote the saving of energy.

Once a vehicle has been supplied to the Australian market, matters of in-service compliance, including registration, allowable combination vehicles, roadworthiness and modifications (including the fitting of aftermarket components) pass to relevant state or territory road authorities. Generally, state and territory road authorities require a vehicle to continue to comply with all relevant ADRs as of its date of manufacture (or later), with exceptions to account for special use vehicles and vehicle wear and tear.

The Australian Motor Vehicle Certification Board (AMVCB) provides a mechanism to manage specific issues that may occur from time to time between first supply to the market of a road vehicle and in-service operation. In this instance, the AMVCB has agreed to provide guidance material to assist owners and operators of light road trailers in selecting the appropriate safety chain connection device for a road trailer of up to 3,500 kg ATM.

This guidance material was developed with the agreement of state and territory regulators in order to provide a uniform approach in Australia to the use of safety chain connection devices. Since there is no legal obligation to comply with this guidance material, if an individual or a company chooses not to follow this material, it is the responsibility of the person or the company to demonstrate to state or territory road authorities that a particular safety chain connection device is appropriate for the combination vehicle.

3. Background to shackles as safety chain connection devices

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.

The relationship between WLL and towing capacity is given in Table 1. Typical shackles recommended based on trailer ATM.



4. Safety chain connection device recommendations

Safety chains may be attached to the towbar attachment points with a Bow, D or Pin-Shackle. As they are considered integral with the towbar, safety chain attachment points on the towbar that include a Pin-Shackle or bolt for attaching the chain are subject to performance requirements as per ADR 62/01 or 02 - Mechanical Connections between Vehicles.

Shackles used to attach safety chains to towbar attachment points should at a minimum exceed the required rating of the safety chain, as determined by the ATM of the road trailer. Additionally, the shackle should be fit for purpose and compatible with the safety chain in terms of strength and size. This may be fulfilled by:

- a) The use of a shackle that is compatible with the safety chain and complying with AS 2741. In this case, the shackle must have appropriate markings, as identified below:
 - Manufacturers Identification;
 - Quality or Grade as M or 4, or S or 6;
 - WLL, the maximum load that may be applied to the shackle; and
 - Identification marking to trace the shackle to a test certificate.

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

Table 1 – Typical shackles recommended based on trailer ATM

- b) 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 back the original manufacturer.

Issued by the
Administrator of Vehicle Standards
in consultation with the
Australian Motor Vehicle Certification Board
comprising Commonwealth, State and Territory representatives



Australian Government
Department of Infrastructure and Regional Development

5. Definitions

For definitions used in this Circular, refer to Vehicle Standard (Australian Design Rule Definitions and Vehicle Categories) 2005, as well as the following:

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.

AUSTRALIAN MOTOR VEHICLE CERTIFICATION BOARD (AMVCB) – A consultation forum that consists of representatives of government (Australian, state and territory as well as the National Heavy Vehicle Regulator and the National Transport Commission), with its primary role being to facilitate the first supply of vehicles into the Australian market.

AUSTRALIAN STANDARD 2741-2002 "SHACKLES" (AS 2741) - Specifies requirements for forged shackles.

AUSTRALIAN STANDARD 4177.4-2004 "CARAVAN AND LIGHT TRAILER TOWING COMPONENTS - SAFETY CHAINS UP TO 3,500KG CAPACITY" (AS 4177.4) - Specifies requirements for safety chains.

BOW-SHACKLE – "O" shaped body that is enclosed at the end by either a threaded clevis or cotter pin and used to connect a safety chain between a road motor vehicle and road trailer.

CARAVAN - any enclosed road trailer designed primarily for human occupation whilst stationary.

COMBINATION VEHICLE - a combination of a road motor vehicle and one road trailer.

D-SHACKLE – "U" shaped body that is enclosed at the end by either a threaded clevis or cotter pin and used to connect a safety chain between a road motor vehicle and road trailer.

PIN-SHACKLE – a device integral to a tow bar, which may consist of brackets and a bolt, clevis or cotter pin and used to connect a safety chain between a road motor vehicle and road trailer.

ROAD MOTOR VEHICLE - a motor vehicle designed solely or principally for the transport on public roads of people, animals or goods or a motor vehicle that is permitted to be used on public roads.

ROAD TRAILER - a vehicle without motive power designed for attachment to a road motor vehicle; or a piece of machinery or equipment that is equipped with wheels and designed to be towed behind a road motor vehicle.

SAFETY CHAIN – a chain, which is attached between the towbar of a road motor vehicle and the drawbar of a road trailer and, which for a road trailer with a ATM of up to 3,500kg meets the requirements of AS 4177.4, or is a cable which is appropriate for the application; and for a road trailer with a ATM exceeding 3,500kg a steel chain with a minimum of 800MPa breaking stress that conforms to the mechanical properties of Grade T chain.

SAFETY CHAIN CONNECTION DEVICE – a device that connects a safety chain to the towbar (mechanical connection) of a road motor vehicle, for example a D-shackle, Bow-Shackle or Pin shackle.

TOWBAR - a device attached to a road motor vehicle provided for connection of a road motor vehicle to a *'Coupling'* for the towing of a road trailer.

WORKING LOAD LIMIT (WLL) – the maximum load that may be applied to a Bow, D, or Pin-Shackle.