Circular to Industry CI-119C

Safety Chains and Shackles for Trailers under 4.5 tonnes ATM built after 1991

All new trailers presented for licensing must comply with the requirements of Vehicle Standard Bulletin - Building Small Trailers (VSB1).

Summary

Trailers up to 3500kgs ATM (steel chain to AS4177)

- Marked safety chain must be used for caravans and trailers. The chain is marked with the digits 4177 followed by the first two digits of the chain load designation.

Trailers over 3.5 tonne ATM (short link chain to AS 2321)

- Safety chains for trailers over 3.5 tonne must be made from steel with a minimum 800 MPa breaking stress and conforming with the mechanical properties of grade T chain.

Shackles

- For trailers with an ATM up to 3500kg, ADR 62/02 requires compliance with Australian Standards AS 4177 “Caravan and light trailer towing components”.
- For trailers with an ATM over 3500kg, compliance with Australian Standards AS 2321 “Short-link chain for lifting purposes” is applicable.

Safety Chains

Background

Marked safety chain requirements for caravans and trailers are specified in ADR 62. The chain is now widely available and this requirement is enforced for new trailers. Trailers under 2500kg ATM must be fitted with at least one chain, trailers over 2500kg ATM must be fitted with two chains.

All previously licensed trailers are acceptable with chains that were originally supplied at the time of licensing providing they are in good condition, appropriately sized and are safely secured to the trailer.

Information

Trailers up to 3500kgs ATM (steel chain to AS4177)

Chain used on trailers up to 3500kgs ATM must comply with Australian Standard AS4177 Caravan and light trailer towing components - Part 4 Safety chains up to 3500 kg capacity. Refer to table 1.

If the chain is welded to the drawbar, the weld must cover at least 50% of the length of the link and the adjoining link must be able to move freely within the welded link. Alternatively a plate may be welded to the drawbar and suitably rated fittings such as Hammerlock fittings used.

Markings

Complying chain is marked with the digits 4177 (i.e. the number of this Australian Standard), followed by the first two digits of the chain load designation. For example, chain with a breaking load of 2500 kg will be marked 4177-25.

The marking on complying chain is repeated at intervals not exceeding 4 links.

Trailers over 3.5 tonne ATM (short link chain to AS 2321)

Records of all vehicles imported and details of modifications must be maintained and a copy of the Department of Infrastructure, Transport, Regional Development, Communication and the Arts ‘Import Approval’ document and ‘Vehicle Compliance Inspection Report for Pre 1989 Imported Vehicles' must be kept for each vehicle.

Audits will be conducted as determined by the Department of Transport and Major Infrastructure (DTMI).

Safety chains for trailers over 3.5 tonne must be made from steel with a minimum 800 MPa breaking stress and conforming with the mechanical properties of grade T chain as specified in AS2321 Short Link Chain for Lifting Purposes (non calibrated).

Drawbar attachment

The chain must be permanently attached to the trailer, shackles are not permitted.

The chain must not be welded to the draw bar. It may be attached to a plate that is welded to the drawbar or by an appropriate pin lock device such as a hammerlock or other acceptable type of suitably rated coupling. The design of the attachment to the drawbar must have sufficient load capacity to match the rating of the required chain as specified in Table 2.

Towbar attachment

Rated chain shackles or other suitable fittings must have sufficient load capacity to match the rating of the required chain as specified in Table 2.

Markings

Complying short link chain is marked with the manufacturer's or the importer's identification marking preceding the letter "T" or the numbers "8" or "80" or "800". This marking should appear on at least every 20 links.

Table 1: Diameter of link material and maximum load capacity

Aggregate trailer mass	Chain size (dia. of link material)	Marking on chain	Minimum chain breaking load
0 to 1000kg	6.3mm	4177-10	1000kg
up to 1600kg	8mm	4177-16	1600kg
up to 2500kg	10mm	4177-25	2500kg
up to 3500kg	13mm	4177-35	3500kg

Table 2: Diameter of link material and maximum load capacity

Aggregate trailer mass (tonnes)	Chain size (mm)	Minimum chain breaking load (tonnes)
0 to 1000kg	6.3mm	1000kg
up to 1600kg	8mm	1600kg
up to 2500kg	10mm	2500kg
up to 3500kg	13mm	3500kg

Light trailer safety chain shackles

Background

Regulation 366 Road Traffic (Vehicles) Regulations 2014 "Drawbar Couplings" of the Australian Vehicle Standards Rules requires that a trailer is kept in tow by a safety connection device if the tow coupling breaks or accidentally detaches from the towing vehicle.

A safety connection device includes a trailer safety chain or cable as outlined in Australian Design Rule (ADR) 62/02 "Mechanical Connection Between Vehicles".

For trailers with an Aggregate Trailer Mass (ATM) up to 3500kg, ADR 62/02 requires compliance with Australian Standards AS 4177 "Caravan and light trailer towing components". For trailers with an ATM over 3500kg, compliance with Australian Standards AS 2321 "Short-link chain for lifting purposes" is applicable.

Information

A suitable shackle is where:

- The shackle is rated and complies with Australian Standard AS 2741-2002 "Shackles" or other equiva-lent recognised standard; and
- The break load limit of the shackle is rated at least 1.5 times greater than the ATM of the trailer.

Example

Trailer ATM	Shackle rating (break load limit at least 4.5 times ATM)
750kg	1125kg
1000kg	1500kg

Requirement

Markings complying with AS 2741-2002 "Shackles" shall be legibly and permanently marked with the following information:

- The manufacturer's name or trademark;
- Quality grade of the shackle, e.g ("M" or "4", "S" or "6");
- Working load limit (WLL) or Rating; and
- Identification marking in order to correlate shackle to test certificate.

General information

- Generally, the break load limit of a rated shackle will be six times greater than its work load limit.
- The pin diameter of shackle will be greater than the diameter of the main shackle body.
- Same size shackles of different quality grades will have a different WLL (i.e 6mm "S" grade shackle has a greater WLL than a 6mm "M" grade shackle).
- Stainless steel shackles are unsuitable for trailer use due to the material's general low resistance to bending stresses.
- "S" or "6" grade "D" shackles bear similar characteristics to "S" or "6" grade Bow shackles.
- Bow shackles provide for greater angular usage compared with "D" shackles.
- Rated bolts, chain shackles or other suitable fittings (i.e hammerlocks) may be used as devices for con-nection on safety chains providing the break load limit of the device is at least 1.5 times greater than the ATM of the trailer.

Table 3: Shackle Matrix

Nominal shackle size	Woad load	Break load	Quality grade marking
5	330	1987	S or 6
6	250	1508	M or 4
6	500	3007	S or 6
8	750	4505	S or 6
10	500	3007	M or 4
10	1000	6004	S or 6
11	1500	9001	S or 6
13	750	4505	M or 4
13	2000	12040	S or 6
16	1500	9010	M or 4
16	3200	19285	S or 6
19	2000	12040	M or 4
19	4700	28265	S or 6

Enquiries

For enquiries contact DTMI on 13 11 56.