

# Shackles and Chains - Myths and facts.

## Our “facts” come from

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

Safe Towing - All about safe towing February 2016

### Safety chains

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.

### 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.
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.

**NOTE - the standards / regulations do NOT specify that you MUST use shackles. They do say you must, IF using shackles, adhere to the standards, they also prohibit the use of padlocks, and state that the INDIVIDUAL chain/shackle when used, must EACH be of a breaking strain that EXCEEDS ATM**

What exactly is “Fit for purpose when we are talking Shackles?”

Well, the regulations and guide issued by our masters is quite clear - there are two definitions on how:

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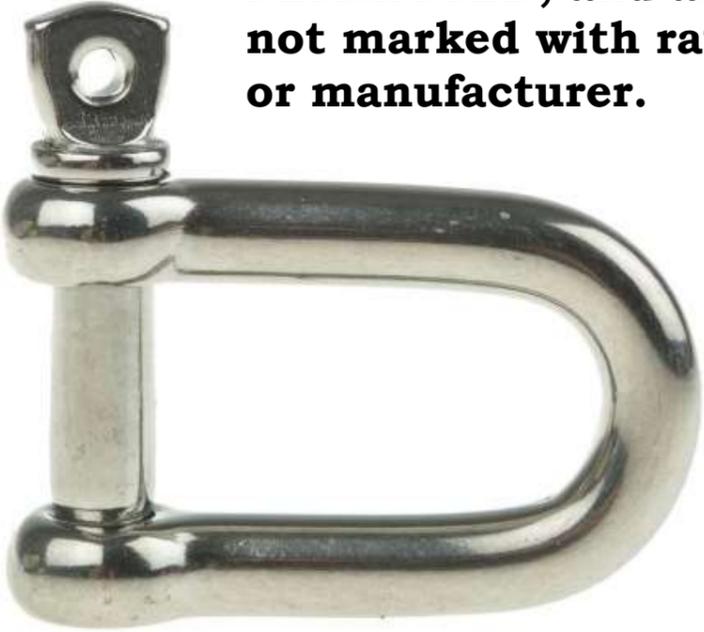
There is a difference between Breaking Strain and Working Load Limit (WLL) ratings (WLL is multiplied by safety factor to get MBS (Minimum breaking strength), typically 5 in lifting situations) See table below for how WLL rating relates to ATM loads.

Australian Standard, **AS 2741-2002**, which does not specify you MUST use shackles, does however dictate HOW and WHAT when you DO use them.

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

# What is a correct shackle?

**Stainless Steel - NOT PERMITTED, and also not marked with rating or manufacturer.**



**Gal Steel - NOT PERMITTED because not marked with rating or manufacturer.**



**A perfect Dee Shackle! Rated, Marked, Correct Pin Style, exceeds standard for 3.5ATM**



**A perfect Bow Shackle! Rated, Marked, Correct Pin Style, exceeds standard for 3.5ATM**



**A massively overspecced Bow Shackle! It would be lucky to fit any chains on a caravan, and is six times overrated for 3.5Tonne ATM Rated, Marked, Correct Pin Style, exceeds standard for 3.5ATM**

