

REAL Torque

May 2019

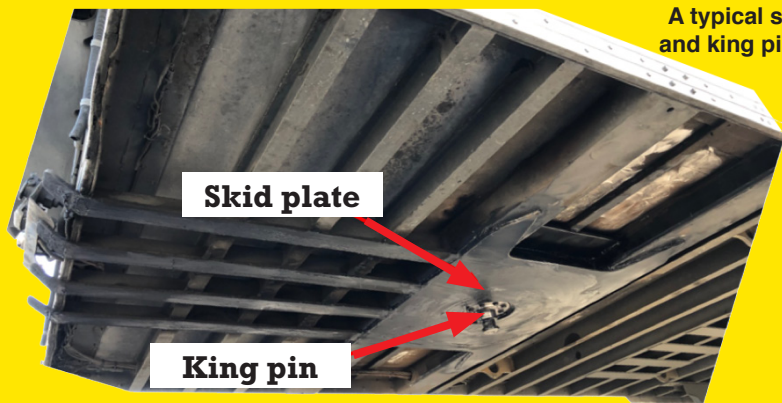
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Trailer Towing Connections – skid plates

Skid Plate and Rub Plate are two terms used to describe the same structural component. In November 2018, NZTA introduced a requirement to have the skid plate and king pin inspected and certified at every COF.

What is a skid plate?

- ▶ A skid plate is a structure forming part of the semi-trailer which houses the king pin, and which sits on top of the fifth wheel to form the connection between the towing vehicle and the trailer.
- ▶ Skid plates, just like any other structural part of a trailer are exposed to fatigue, wear, impact, and corrosion. Regular inspections and measurements ensure that the skid plate is structurally sound.



A typical skid plate and king pin design

Here are a few examples of what is inspected and why its important to inspect.

Pitting, deep groves, or unusual wear.

Deep groves reduce the structural strength of the skid plate. Each groove reduces the thickness of the plate, allowing dirt and debris to build up, further accelerating the problem. Continually unchecked, the plate will lose its structural strength.



Cracks in the skid plate or surrounding structure.

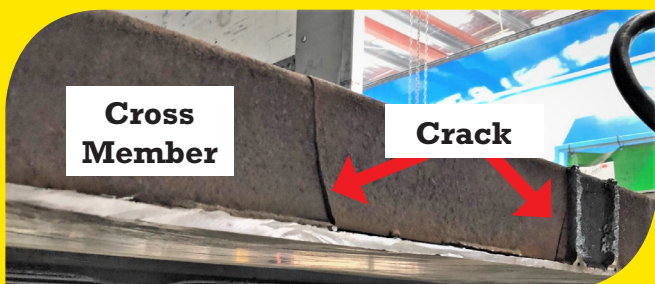
Cracks and corrosion are a major cause of concern and can even lead to complete separation of the trailer from the truck. Sometimes the corrosion may not look bad, however internally, it may be a lot worse. Here is an example of a king pin and its boss that failed in service, leading to the trailer separating from the truck.



The king pin boss is welded to the skid plate and has failed (cracked) due to fatigue.

Internal Inspection

The space or void between the floor of the trailer and the skid plate needs to be inspected to check for corrosion and hidden cracks. The below picture is of a cross member that has cracked in two places. This was only discovered once an internal inspection was carried out.



King pins

There are two main types of king pins in use:



Bolt in mounted king pin



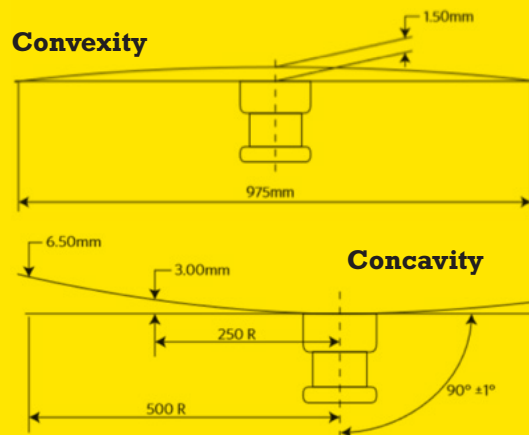
Welded king pin

King pins are subject to wear, damage, and fatigue and as such must also be inspected. In the images below a 'go/no-go gauge' is being used to check the throat of the king pin for wear. The second photo is using the same gauge but checking the top flange for wear.



Flatness

As a technical term, flatness is referred to as convexity or concavity. These terms refer to how straight or flat the skid plate is. As the skid plate wears and the towing/pulling forces act on the plate, the plate flexes and can twist in different directions. It is important to check these measurements and ensure the skid plate is flat, and the internal structure and integrity are sound.



To check for the above measurements, a straight edge with the cut outs for the king pin can be used.



Tips and Tricks

- ▶ All parts of the towing connections need to be lubricated with grease. Old grease gets contaminated with stones and debris and these build up and cause excessive wear. Old grease needs to be removed and replaced regularly, at least every 6 months.
- ▶ Remove stones and debris that build up on or around the fifth wheel. Stones especially can get in-between the surface of the fifth wheel and the skid plate, scoring the surface.
- ▶ When backing up to connect to a trailer, keep your speed low. Backing up at speed and impacting with the king pin will damage the king pin and the fifth wheel.
- ▶ Ensure any damage or cracks on the floor of the trailer are repaired immediately. Cracks and holes allow water to enter the void between above the skid plate. Water ingress leads to corrosion. This is especially important for refrigerated trailers as the insulation tends to hold the moisture accelerating corrosion.
- ▶ Ensure the height of the trailer skid plate and the fifth wheel are equal when hooking up a trailer. Make use of the vehicles air suspension to lower or raise the vehicle height.



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