



# The Best Caravan and Trailer Spring Upgrade Choices

## How to upgrade your Camper Trailer

Caravan Trailer Spring Choices Caravan spring and boat trailer choices help prevent holiday accidents. I hope this helps you when making your trailer spring selection.

Yes, these matters are essential, and you will need professional help unless you happen to be an engineer or a tradesperson who understand a little basic engineering.

Will your car will stop your caravan in an emergency?

The information below may seem challenging to read but keep coming back to it as it is a good reference point for learning later.

When in doubt, call our sales team on 0733483822, Bruce, Mike or Christopher. We will be happy to discuss how you can make your rig safe and secure for the next big trip.

We recommend getting a weighbridge certificate so we can give you the correct information.

Weighbridge Certificate The best place to start caravan upgrade work is with a weighbridge certificate. This certificate allows you to select the following components correctly.

Springs Axles Coupling Tyres - gives you the correct information about the right tyre pressure. You will also need a tow ball scale so you can add the tow ball weight to your weighbridge certificate. Rocker Roller Springs Rocker roller springs would be the most commonly used caravan springs on trailers today.

However, foresight must be used to select your spring size correctly. Select a spring capacity of about 10% over your weighbridge certificate.

Planning for the future and shock-loading conditions will help you significantly avoid disasters.

There are many rocker roller springs on the market, so let's look at the best of them. The spring on the right uses the second leaf as a wrap. This wrap restricts the expansion of leaf #1 under extreme loading conditions.

Leaf #3 is located 80mm from the eye and support loads 80mm from the eye. Note: This is the breakage point, so the 3rd spring must be installed in this position.

Leaf #4 is located 100mm from the eye and supports leaf #3. If your leaves are further apart, we recommend selecting another brand of spring. Al-ko or Couplemate.

The Roller End of the spring has leaf #3 directly under the roller and 100mm from the end of the spring. Leaf #3 is the most important of the spring set because it is the foundation of the suspension's load capacity.

Axle loadings Trailer springs are rated according to maximum axle loadings. Axle loadings are

750kg - 39mm Round LM bearings 1000kg - 40mm Square LM bearings 1450kg - 45mm Round slimline bearings 1450kg - 45mm Square slimline bearings 1600kg - 45mm Square Parallel bearings 2250kg Square depending on bearings used The lowest common denominator calculates caravans and trailers weight ratings. It is the bearings used that determine axle rating.

Upgrade your caravan spring but do not exceed your axle capacity.

Exceeding Axle Capacity Let's say you choose to put six-leaf shackle springs (1500kg) on a 39mm Round Axle.

Yes, they fit but are not suitable to carry your desired load.

Although this axle can carry the weight short-term, your caravan springs will flex, causing premature ageing and failure. Your axle will also snap under stress loading due to vibration fatigue.

Premature Ageing and Failure Now you have assembled your 1500kg springs onto your 39mm Round Axle and loaded your trailer ready for that trip to Cape York.

Now run a straight edge across that axle. See the gap between the straight edge and the axle in the middle of the beam?

If the gap is more substantial than 5mm, you are in trouble, and your entire rig will fail.

The axle will wobble up the highway, creating reverberations to your springs. The stresses, if not dampened, are going to your springs from your axle and causing premature ageing.

These stresses affect your bearings, resulting in extreme bearing wear.

Now hit a pothole on the shoulder of the road, and your outer bearing snaps.

So let's go back to square one and do it right. Talk to the experts at Couplemate.

How to fix Dangerous Caravan Vibration Fatigue

Caravan Spring or Axle upgrade 2200mm x 45mm Square Parallel Axle

If you upgrade more than your axle rating without checking your components attached to the axle, then a problem can occur. Let's go through a few things you need to remember.

Correct axle selection will save you money on bearings, springs and other running costs.

Problems occur when your fully loaded caravan is almost the same capacity as your maximum carry load.

If you are over your maximum carrying load limit, you are at the stage of an axle and brake upgrade.

Fishplates Small springs may have 6mm fish plates, so upgrade those to 8mm. Off-Road springs have 10mm fishplates. Take care when tightening U-bolts, too much tension on one side may cause spring breakage.

It would be best if you tightened the u-bolts coming through your fish-plate evenly. Uneven tightening will cause your spring to crack and eventually break in the middle.

U-bolts U-bolts will be tight when you first install them. However, they are known to stretch after 500 km. Please give them a re-tighten.

We recommend and use nylock nuts on all of our u-bolts. Couplemate Trailer Parts supply the only know rated u-bolt on the Australian market.

Due to known failures in u-bolts manufactured in various countries, Couplemate batch tests every shipment. U-bolt failure is commonly known as hydrogen embrittlement and is caused by bending the u-bolt. We remove this stress by further baking u-bolts in ovens after the bending process.

The breaking capacity of Couplemate u-bolts are

1/2 inch - 17 tonne 16mm Heavy Duty U Bolts So not all u-bolts are the same, nor should you rely on the cheapest u-bolt being the best quality for you.

Couplemate u-bolts are premium and, as such, are tested and guaranteed. You may pay a few cents more. However, you can be sure that your u-bolts have been well designed, tried and tested long before your purchase.

Make sure your U-bolts holding your springs have not rusted and are tight. Loose U-Bolts have been known to break your springs. It is widespread for springs to rust in between the leaf. If you are dipping non galvanised springs in saltwater, you will get 4 - 5 years of life out of your springs.

Trailer Spring Choices Spring loading capacity must be known when you purchase your springs, so look at your axle size first. Note: Not all springs are the same; choose a good brand spring.

If your dealer cannot tell you the spring capacity, please walk out of the shop. The loaded spring rating is the first test of competence.

If your trailer total weight is 800kg, and you have a 45mm axle, please do not put six-leaf springs in because it is over-kill. Your trailer will bounce down the highway. Try and match your average loads exactly with your spring setup to ensure trouble-free trailering. Better to have the right springs on a heavier axle.

Eye to eye springs is common for campers, tandems, box trailers and some caravans.

Off-road springs are heavier again and are suited to campers. Why? Because Caravan and Camper springs are 60mm wide as opposed to 45mm for standard spring setup. 60mm springs are more durable and can handle extreme loads of tandem trailers when cornering.

Slipper springs are standard on boat and Jet Ski trailers.

If you are going into some large suspension spring systems, go for off-road or rocker roller type suspension systems. Rocker Roller spring systems give a better ride than standard tandem suspension system.

Should I put my springs on top of my axle to gain extra lift?

Here are examples of what not to do. 39mm Axle (750kg) with four left slipper springs (800kg). This system is ok, but often it is tempting to put six-leaf springs (1300kg) on this axle, thinking it is also OK. Unfortunately, you will break many sets of slippers in 12 months. Why? Because a lot of axle flexing occurs when axles are overloaded. This flex causes rapid deterioration of the springs, and they are breaking due to fatigue. Upgrade your axle to a 40mm Square or 45mm Round Axle, which will cost you about \$80. Another bloke wanted six stud Landcruiser hubs on his boat with a 39mm axle. Same problem, broken springs. You need to de-rate axles and springs by 20% when using six stud Landcruiser hubs because of the bigger wheel, more weight and more pressure on the axle setup. Again he needs to upgrade his axle. Another bloke had a 50mm Round Axle with a 4.2mtr boat and wanted six-leaf springs. It seems OK, but the boat was too light for this oversized setup, which would have resulted in it skipping through corners and bouncing down the highway. Don't sandblast springs. Measure the width of the spring at the spring centre bolt. If the width has grown on either side of the spring centre bolt, then your spring has cancer and needs to be replaced. Do not put slipper springs on your camper. Under extreme conditions, the slipper springs can dislodge themselves from it a rear hanger. Campers, especially off-road campers, use eye to eye springs. Campers with slipper springs are restricted to on-road use for problem-free motoring. Camper Trailer Spring Choices Off-road campers usually take a pounding in comparison to their bitumen only cousins. Off-road outback rebound springs are a must with 5/8" U-Bolts. 1/2" U-Bolts are typically installed on all trailers, but you need the larger U-Bolts when you are trying to kill your suspension in rugged country. Outback springs are 60mm Wide and cater for a fair whack due to twisting and turning in all sorts of terrain. Standard 45mm springs are going to give you trouble sooner or later. Axle width should be no less than 45mm Round or 45mm Square. Brake your trailer with either electric off-road or disc override rotors. Off-road electrics are the preferred favourite over standard electric brakes. Standard brakes cannot handle the dust and heat associated with off-road warriors but are commonly used by bitumen dwellers. There is also an issue with magnet rattle; Electric Brake Magnets. Tandem Springs Question: Where do I locate the middle hanger bracket?

Answer: The rule of thumb is to measure the box length of your chassis. 1 inch to 2 feet of the length is the distance from the centre to the back of the trailer where the centre rocker is hung. Boat trailers are heavier in the rear than a camper, so the rule varies a little.

The best tandem springs can be purchased here.

For example, if the measurement is 12', then  $12/2 = 6$  inches back of the centre.

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