



It's Not Just 'Bum Sag'

Well, not entirely, anyway. I'm referring to the general view expressed by a dozen or more readers who've written this last fortnight after studying the photographs of *Far-Away* on its big aluminium trailer we published in issue #124 and again in #125.

In those issues, I explained that on our shakedown trip north to Cardwell from the Gold Coast, we were concerned that the evidence pointed to the trailer having too much weight too far forward, loading up the front axle to a dangerous extent – which did, in fact, result in us blowing out both front axle tyres.

As noted in issue #124, it



was not subtle – the front tyres were quite hot to touch, the middle axle tyres were warm but normal, whereas the rear axle tyres were quite cold.

Many readers wrote in with suggestions, with the fairly universal observation that it looked like the back of the Ford was dropping down ("sagging its bum") ("as they do") a view that was expressed by at least a dozen or so readers with Ford F-250 experience.

Actually, the photograph is a bit misleading because the front of the Ford is actually on a very slight incline in the parking area, making it look like the F-250's "bum" is sagging. This is not to say that with a tonne of gear in the back of the Ford, and a couple of hundred kilos on the towbar, the tail wouldn't sag, but in this instance, that wasn't happening.

We only had a (measured) 150kg on the towbar coupling from an allowable 500kg. In the back of the Ford, we did have some

gear, but only about 250kg from an allowable 900kg, so there's no way we could describe the Ford as being overloaded as far as its GVM was concerned.

What was hard for readers to see in the photograph was an observation that Ruth and I had made a couple of years ago when we left *Dusty Rover* on this very trailer at Mick and Linda Evan's secure yard at the Port Hinchinbrook Marina for several months.

The first time we did this we wanted to make sure that *Dusty Rover*, (our 7.6m diesel cruiser) had a very marked slope aft, to ensure that any water that got inside the covers of *Dusty* would run harmlessly across the self draining cockpit floor and out the rear scuppers.

No big deal, we just needed to jack up the front of the trailer to ensure that there was sufficient slope to make certain the water would run off the cockpit floor.

Wrong. Firstly, it proved

to be almost impossible to jack up the whole trailer, as the resistance of the 3 axles proved to be almost insurmountable. Secondly, as we quickly discovered, I could keep jacking up the front of the trailer until the 400kg AL-KO dolly wheel reached the limit of its travel, chock it, replace the dolly wheel with cement blocks and repeat the process.

In the end, I jacked up the front of the trailer nearly 300mm in the air, (ie, above horizontal!) without even moving the first axle or the chassis of the trailer - all I was doing was bending the front of the trailer up like a banana. (see pic).

In the end, we used our brains, pulled out our double jacks and actually jacked the whole of the front of the trailer up simultaneously, from a point just in front of the forward axles.

This is what's wrong with the commonly made suggestions that we should (a) Increase the towball coupling height, (b) Install a



The white dotted line represents where the boat's centre of gravity occurs - the yellow dotted line shows how far back it has to go to sit over the centre axle.

raised towball, or (c) Install air bags inside the rear suspension of the F-250. Yes, we could lift the towball height fairly easily (Ron Heindorf's Titan "Rapid Hitch" has merit in this situation) but we don't think it would do much at all about lifting the overall height of the trailer itself – as it would really only just keep bending "uphill" if we had any sort of weight on the front of the coupling.

And here's the rub – I'd still like to have at least 100-150kgs on that coupling for safety's sake, and I don't think this would affect the front AL-KO axle at all. These are 2.5 tonne axles, and in a perfect world, they should carry just 1.5 tonnes each i.e., the BMT weight of 4.5 tonnes divided by three axles = just 1.5 tonnes each. Loading the front axle up another couple of hundred kilos shouldn't make a scrap of difference.

Several readers made the astute observation that because the AL-KO axles are not "load sharing", there is a problem here that could be overcome if we'd used interconnected, load sharing leaf springs.

This is undoubtedly true but as a retro-fit now, this would be extremely complicated and horribly expensive. It is certainly an option, and if you were rebuilding a new trailer from scratch for a boat this big, there's no doubt there's a very strong case to go for a load sharing suspension. Several Australian companies make load sharing tri-axle leaf springs. It's interesting to note these can be purchased through AL-KO, too.

AL-KO is able to supply the best type of axle for any given situation and have a big variety of traditional load sharing suspension systems available through all of their stores and listed

in comprehensive detail in their catalogue.

However, when the trailer weight gets up into the 4-4.5 tonne range, they prefer to use the AL-KO independent suspension such as we've got here, and I can see why.

This trailer is nearly 5 years old, there's no sign of rust on any of the gal steel running gear, the brakes still work superbly, albeit with the new upgraded Sens-A-Brake power booster system, and I believe the AL-KO axles provides a very stable, comfortable ride for the boat.

Back To The Problem

At the end of the day, we still believe it's not so much one thing we need to fix, but several. These include:

Upgrading and refreshing the tyres – with a combination of Khumo and Kelly 16" LT steel belted radial tyres (with an "N" classification) gives us 1400kg per tyre, or 2.8 tonnes per axle for a total of 8.4 tonnes across the 3 axles. Given the rig weighs 4.5 tonnes plus or minus some liquids, this suggests we have ample capacity built into the tyres at long last.

In order to take the 'bow' (or bend) out of the trailer chassis leading up to the towbar, we now know the boat has to go back up to 500mm on the trailer in order to be dead centre over the centre axle. Now in

truth, when we worked this out properly, the distance it goes back is really determined by the winch post. As it transpired, the winch post could go back 350mm quite easily, 400mm was a challenge and 500mm required major re-engineering. Guess what we did? We're moving the boat back 350mm initially, and I'm hoping that that will be sufficient. Remember, we still want to have at least 100-200kg on the coupling. At this stage, I'm not clever enough to work out what the weight will be in theory, but by the time this magazine is printed, we'll know by the old fashioned way – we're going to move the boat aft the requisite 350mm, and then put a set of scales under the dolly wheel. This will tell us exactly how much weight is going to be on the coupling.

I think the F-250 will handle a 150-200kgs towbar loading on its ear (it's rated for 500kg) without needing airbag boosters, but we're quite prepared to do that if necessary. I suspect they'll be needed when we finally head off to the Kimberley late in February 2007, carrying our TV/video equipment. Along with all the other 'extras' needed for such an expedition, that will definitely push the Ford up towards its maximum tray load.

Extending the timber trailer bearers aft (see

below) was mandatory but not too hard. Teak and Fancy Timber's Rupert Goodall and his offsider Arthur did a beautiful job again, cutting two new carefully shaped "Amora" hardwood bearers (which we are capping with Teflon strips - not on in the pic) that allows us to move the boat aft the necessary 350mm quite happily. This still keeps the overhang of the trailer easily within legal limits, and because we added a fudge factor of 250mm to the bearer calculations (ie, original length plus 350mm plus 250mm) means *Far-Away* will have more aft support now than ever before.

Summary

All in all, we're hoping that the combination of all these elements will prove to be sufficient to make the trailer work well, but we've allowed quite a bit of flexibility in the way the trailer is set up in relation to the boat. We can now pull it backwards and forwards on the trailer over 250mm fairly easily, so in the final analysis, even if we have got our sums a bit wrong, we should be able to compensate and adjust to get the best outcome.

Next month, hopefully we'll be able to report that it was all the success we hoped, and move on to the next challenge – starting to get very serious about the Kimberley expedition.

F&B



New timber bearers without their teflon capping. The tops are shaped to 17° to match the hull - and they are tapered from the front to the back.

***Peter Webster has been at the forefront of boat trailer development and research for many years, and currently tows SEA Media's 4.5 tonne 8.2m Salty 27 on a tri-axle trailer, F&B's 2.5 tonne 6.70m camera boat (a Quintrex 670 Hardtop) on a tandem axle, steel trailer with SEA Media's Ford F-250. For more information about the latest trends, legislation and regulations affecting boat trailers, readers are reminded the definitive publication "Trailers, Towing & Rooftopping" is available on-line at www.seamedia.com.au*