

# DESERT DUNE DRIVING

Most vehicles driving across the Australian desert dune fields are heavily loaded and some are towing trailers. That means a compromise between load capacity and the ideal tyre pressures.

## Tyre Pressures

A tyre needs air pressure to carry vehicle weight, but the ideal pressure for sand driving is very low – usually 110kPa (16psi), or even lower in very soft sand conditions.



A rule of thumb our desert guru mate, Jol Fleming, showed us is to measure the contact patch as you're lowering tyre pressures.

A contact patch about a foot long (300mm) is what you're aiming at for good flotation in desert sand.

Remember, though, that tyres deflated to maybe half their normal pressure are safe at only 40km/h or so and even then won't respond to braking or steering as accurately as they do at normal pressure on a high-friction surface.

## Stay Alert

Most of the serious accidents in dune country involve roll-overs or head-on collisions. It's easy to roll over if you get side-on across a steep dune.

It's easy to have a head-on collision if you speed up dunes without checking if there's an oncoming vehicle.

Desert travellers should always have tall 'masts' tied to their roof bars, mounting bright red or orange pennants. These help you be seen by oncoming vehicles on dune crests.

It's also essential to set your CB radio on 'scan' so that you can pick up transmissions from other convoys that might be oncoming.



When you get response, you can exchange GPS co-ordinates, so you know where the oncoming vehicles are.

## Vehicle Weight

The best sand vehicles are lightweights, so don't take anything you don't need on a dune trip. Every kilogram is pushing your tyres into the sand and making the little mound of sand in front of each tyre that much taller. You have to power over those little hills all the time you're running in sand, so the heavier the vehicle the more the engine has to work.

## Wet Sand

Most wet sand is as hard as the hobs of hell, but some of it is slurry on top of an underground water flow. Drive into one of them and you could be there for keeps.

Clay pans are common in dune valleys and should be treated with a great deal of respect. Many have hard crusts that are solid enough to walk on, but will swallow a heavy vehicle with ease. Getting out of a claypan bogging can be extremely difficult.

## Driving Technique

Dune driving should be a pleasant experience for everyone. That means keeping up momentum without excessive speed or engine revs. The right gear ratio is one that lets the engine work in the middle of its operating range - too many revs and you tend to 'dig in' and too few will see the engine 'lugging'.

In soft sand, low range is a better option than high range. If you select low range you can use the higher main transmission ratios most of the time, but if you need a lower gear it's a simple downshift to get one.

Start off in high range and you'll be in the bottom of the main box already and a fast downshift into low range is impossible.

Full-time 4x4s with lockable centre differentials should have them locked for dune driving, but disengaged when manoeuvring on hard surfaces, such as when driving on firm ground in search of a campsite. Part-time 4x4 vehicles should be operated in four wheel drive for dune driving, but slipped back to two-wheel drive when on high-friction surfaces. Hubs can be left locked until you're on the bitumen.

If you have manually-operated traction aids, such as across-axle diff locks, use them for straight dune climbs, but flick them out of mesh when you're reached the next dune valley. Steering is difficult on hard surfaces with a rear diff lock engaged and impossible with front and rear diffs locked.



When driving in soft sand it's important to keep engine revs and the water pump spinning in the mid range, or you risk overheating the engine.

If you cease moving forward, get off the gas pedal, don't sit in one spot spinning your wheels, or you'll just dig yourself in deeper.

Keep it straight when climbing or descending dunes – side sloping can cause a roll-over. Don't brake when running down dunes, or you'll end up on your lid.

Don't 'gun it' too hard up steep sand hills or you'll get out of control if you hit a decent bump on the slope.

## Recovery Kit

Don't even think about venturing into the dunes without a shovel - a long-handled shovel is best, but that's an unrealistic fit in many wagons - an as-new snatch strap; a pair of shackles that actually fit your front and rear recovery points; a sturdy jacking plate (to prevent your jack heading to the centre of the earth); a tyre pump (electric or manual); an accurate pressure gauge; emergency water and food; and warm clothing.



## Recovering a Bogged Vehicle

When you do get stuck - don't panic. Even if you plan to get pulled out with a tow rope or snatch strap, use your shovel to make gradual ramps in front of each tyre. If you've been stubborn about tyre pressures, drop them to 110kPa (16psi) and try driving out.

Snatch straps work well at very low speed and with very little slack - you don't need a racing start from a point where the two vehicles are bumper to bumper. The vehicles should be spaced so that there's an 'S' in the middle of the snatch strap about one metre in length.

The towing vehicle should move off at normal pace in the highest low-range gear it can use and the bogged vehicle should assist using first gear low-range. People not directly involved in the recovery procedure should stay well clear, in case the strap or an anchor point lets go.



It's safest if the snatch strap is hooked on to both vehicles without shackle attachment, but some recovery points are too small for that method using conventional snatch straps. Staun Straps are the best in this regard.

Shackles should be stamped with Working Load Limit ratings; make sure they fit into your recovery points.

Don't hook a snatch strap over a tow ball: loop it around the towbar; or to the pin that locks a tongue trailer coupling in place.

## Towing In Sand

It's a general principle that towing anything through soft sand isn't a very good idea and that's why we're opposed to hauling camper trailers across the Simpson Desert.

However, like all generalisations there are exceptions. We've done a trip down the notorious Madigan Line with people hauling trailers and they managed very well. Note that these were very experienced people, pulling light trailers.

As with any foray on soft sand you need to drop pressures in your 4x4 and trailer tyres. Since your driving will be at low speed, we'd suggest dropping to 16psi straight away.

The trailer tyres can be lowered even further, provided they're not tiny little donuts.



If you get bogged and can't drive out with low tyre pressures, uncouple the trailer and that normally lets you drive the solo 4x4 to firmer ground.  
From this position you may be able to skull-drag the trailer to firm ground also, using a tow rope or a winch.  
The trailer jockey wheel is no use in this manoeuvre, but some form of a skid under the trailer drawbar will stop it digging in: an old piece of carpet tied in place works well.

