

WATERPROOFING YOUR 4x4

If your next bush trip involves water crossings or long stretches of boggy ground make sure you've done your best to waterproof your 4x4's vitals.

The most damaging place water can get is inside your engine, so making sure your air intake is protected from water entry is the most important pre-trip job you can do.

A snorkel is the best form of engine intake water proofing, but even with a snorkel you can have troubles if the attachment screws and clamps are loose. All snorkel connections and hoses need careful checking.

If you don't have a snorkel you need to look for the air intake location – often easier said than done in today's crowded engine bays. When you know where it is you try to ensure that it's protected from splashes.



Air intakes inside mudguards are relatively safe during water crossings, unless the vehicle stops mid-stream in very deep water.

Air intakes behind headlights or above radiators are much more vulnerable and the only way to protect them is with a blind of some description.

The alternative is to have an auxiliary air intake pipe that you fit to the air cleaner before a water crossing – an intake that breathes up high under the bonnet.

A custom-made radiator blind is better than cobbling up one on the spot out of a ground sheet. It's easy to cut up a piece of cheap tarpaulin and fit it with clips that secure it above the air intake and under the bumper bar.

The air intake isn't your engine's only weak spot – electrical connections need to be tight and in good condition. If in doubt about the security of electrical connections wrap them in amalgamating tape.

Think twice about doing deep water crossings in vehicles that have powered front seats or, worse, computers under the seats. If you do get stuck mid-stream and water flows in around the door seals the repair bill will be high and a drowned computer may even see your vehicle immobilised.

Water doesn't just get into engines during water crossings – axles and transmissions are prime targets for water entry. You need to check the condition of your 4x4's breathers and seals. If oil can weep out water can force its way in – especially when the suction effect of cooling air inside a hot housing helps draw it in.

Breather connections must be tight and in good condition, with the extension tubes led high up inside the engine bay or bodywork. Lawn mower fuel filters make useful dust filters on breather extension tubes.

Some military vehicles use exhaust pipe extensions during deep water crossings, but these shouldn't be necessary on a normal 4x4, unless you're doing special preparation for competition-type water crossings. So long as the engine keeps running water won't get up the exhaust pipe and into the engine.

Inner Guards

A mate of ours had his brand new four-litre petrol Prado towed back from Birdsville, following a bizarre engine drowning. He was driving with some momentum across a muddy claypan, in tyre tracks that were filled with water about 250 mm deep, when the engine suddenly lost power and stopped. It could be cranked over, but wouldn't start.

He scored a tow into Birdsville where the engine was pronounced 'dead', with hardly any compression. Somehow, water had found its way into the engine air intake, inside the mudguard envelope.

The 'somehow' proved easy enough to trace.

He'd had a Toyota-supplied bull bar fitted, before the Simpson crossing, and had made two return trips to the dealer to have the plastic inner mudguards refitted properly (they have to be removed and replaced during the bar fitting operation).

However, the plastic inner guards worked loose during the Simpson crossing and were not tightly in place when the Prado encountered the soggy track. The gap between the inner and outer guards was wide enough to allow a jet stream of muddy water to hit the engine air intake.

The lesson is clear: if your engine breathes from its mudguard envelope, make sure that the inner guards are tight-fitting around the wheel arches.